Florida Fish and Wildlife Conservation Commission
Florida Marine Research Institute

Fisheries-Independent Monitoring Program 2001 Annual Data Summary Report

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Contents

Overview

This report provides a summary of the data collected in 2001 by the Fisheries-Independent Monitoring (FIM) program, which completed its thirteenth 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, the Florida Keys, and northeast Florida. Gears used for routine monitoring at the various laboratories included 21.3-m seines, 6.1-m otter trawls, 183-m haul seines, and 183-m purse seines (Table OV01-01). In the Florida Keys, visual surveys were used to sample reef-fish. Details of the sampling methods for the Florida Keys are discussed in this report (see Fisheries-Independent Monitoring and the Florida Keys sections).

There were 1,892,716 animals collected in 6,572 samples from Tampa Bay, Charlotte Harbor, the northern Indian River Lagoon, Cedar Key, the southern Indian River Lagoon, Apalachicola Bay, the Florida Keys, and northeast Florida (Figure OV01-01). The majority of animals (n=1,487,590) were collected in 21.3-m seines, which constituted 79% of the total catch. The majority of samples were collected with 21.3-m seines (n=2,476), followed by 183-m haul seines (n=1,400), visual surveys (n=1,092), 6.1-m otter trawls (n=1,054), and 183-m purse seines (n=550). Total sampling effort in each study area ranged from 192 to 1,240 samples, and the total number of animals collected ranged from 17,034 to 591,833 (Table OV01-02).

In all study areas, net samples were dominated by bait and forage fishes such as *Anchoa mitchilli*, *Lagodon rhomboides*, *Menidia* spp., *Lucania parva*, *Harengula jaguana*, and *Eucinostomus* spp. (Table OV01-03). Recreationally and commercially important animals (i.e., Selected Taxa; see Table FIM01-02) accounted for 17% (n=318,401) of the overall FIM catch and comprised between 9 and 32% of the total net catches from each study area (Table OV01-03). 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: *Leiostomus xanthurus* and *Mugil cephalus* in Tampa Bay, *L*. *xanthurus* and *Farfantepenaeus duorarum* in Charlotte Harbor; *M*. *cephalus* in the northern Indian River Lagoon; *L. xanthurus* and *M. cephalus* in Cedar Key; *Mugil* *curema, Centropomus undecimalis, Archosargus probatocephalus*, *M. cephalus*, and *Elops saurus* in the southern Indian River Lagoon; *L. xanthurus*, *M. cephalus*, *Cynoscion arenarius*, and *Micropogonias undulatus* in Apalachicola; *Lutjanus synagris* and *Lutjanus griseus* in the Florida Keys (trawls), and *M*. *undulatus*, *L*. *xanthurus*, *Litopenaeus setiferus*, *M*. *cephalus*, and *F*. *duorarum* in northeast Florida (Tables OV01-03 and –04).

Seasonal directed sampling targeting *M. cephalus* was conducted during the winter (January-February) and fall (September-December) of 2001. Trammel nets were used to sample *M. cephalus* in Tampa Bay and Charlotte Harbor. During the 2001 season, 4,085 *M. cephalus* were collected (40 net sets) in Tampa Bay and 1,085 *M. cephalus* were collected (36 net sets) in Charlotte Harbor (see Directed Sampling section).

Fish health monitoring indicated that 1,138 fish (≥ 75 mm SL) were culled for analysis of external abnormalities (including parasites). Numbers of reported abnormalities from Tampa Bay, Charlotte Harbor, the northern Indian River Lagoon, Cedar Key, the southern Indian River Lagoon, Apalachicola Bay, the Florida Keys, and northeast Florida ranged from 9 (southern Indian River Lagoon) to 505 (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), *Archosargus probatocephalus* (sheepshead), *Callinectes sapidus* (blue crabs), *Mugil cephalus* (striped mullet), and *Lagodon rhomboides* (pinfish). Abundances were variable from year to year around generally stable long-term means (see Species Profile section).

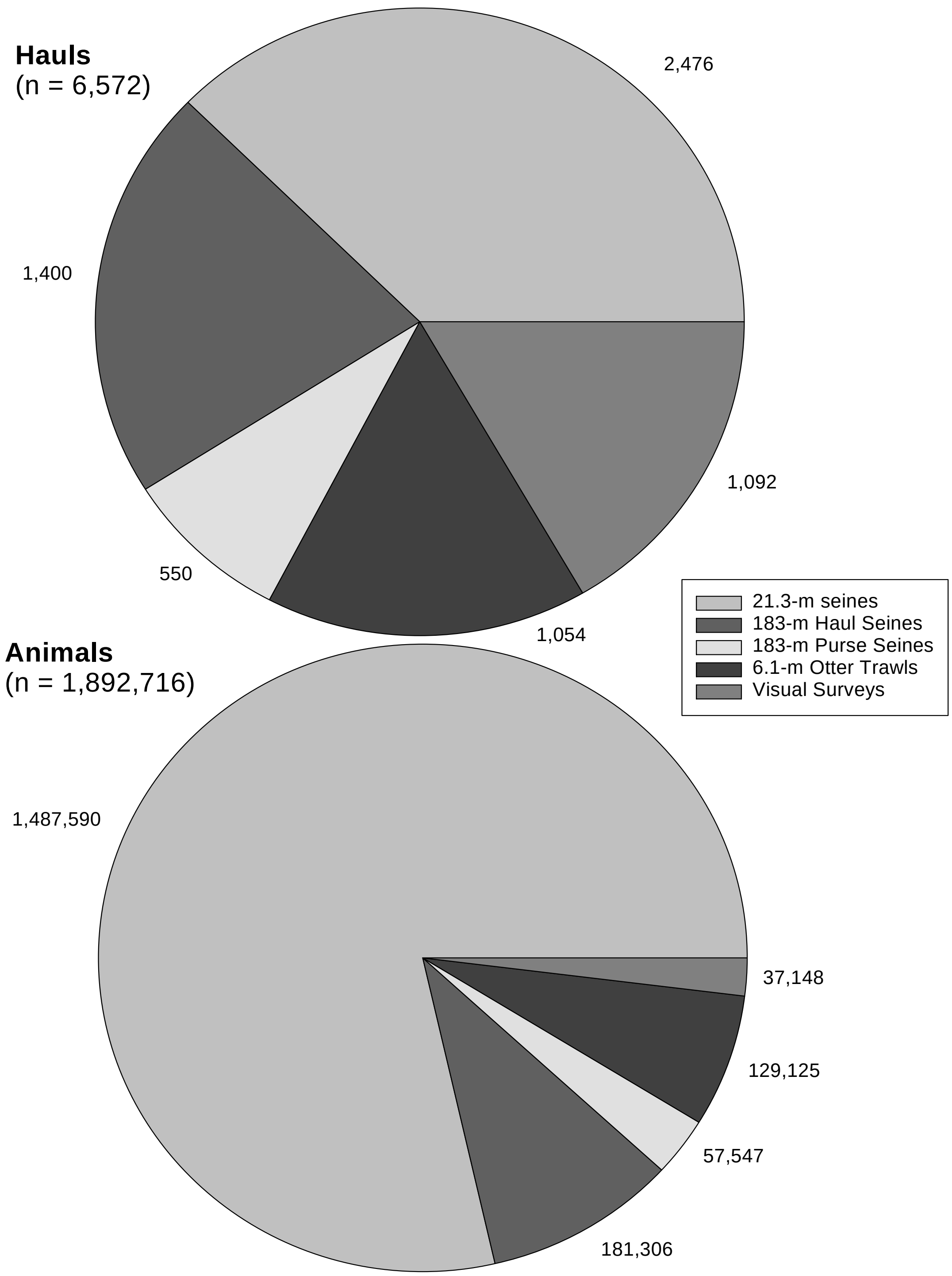

Figure OV01-01. Summary of catch and effort data during FIM program stratified-random sampling, 2001. 'Hauls' are the total number of deployments (or observations with visual surveys) by each gear, and 'Animals' are the total number of animals collected (or observed) by each sampling method.

Table OV01-01. Gear usage by field laboratories for FIM program stratified-random sampling, 2001.

Field Lab	21.3-m Seines			183-m	183-m	6.1-m	Visual
	Bay	Beach	River	Haul Seines	Purse Seines	Otter Trawls	Surveys
Tampa Bay	X		X	X	X	X	
Charlotte Harbor	X		X	X	X	X	
N. Indian River	X		X	X			
Cedar Key	X	X[1]	X	X		X	
Apalachicola	X		X	X	X	X	
S. Indian River				X			
Florida Keys						X	X
Northeast Florida			X	X		X	

[1] Beach seines were conducted in Cedar Key only during January 2001.

Table OV01-02. Summary of catch and effort data by area for FIM program stratified-random sampling, 2001. 'Hauls' are the total number of deployments (or observations with visual surveys) by each gear, and 'Animals' are the total number of animals collected (or observed) by each sampling method.

Gear	Tampa Bay		Charlotte Harbor	
	Hauls	Animals	Hauls	Animals
21.3-m seine	564	404,637	384	228,222
183-m haul seine	240	44,809	204	24,487
183-m purse seine	250	25,224	240	29,754
6.1-m otter trawl	186	40,209	90	7,683
Totals	**1,240**	**514,879**	**918**	**290,146**

Gear	N. Indian River Lagoon		Cedar Key	
	Hauls	Animals	Hauls	Animals
21.3-m seine	448	562,492	415	90,692
183-m haul seine	225	29,341	192	24,211
183-m purse seine	.	.	.	.
6.1-m otter trawl	.	.	165	9,315
Totals	**673**	**591,833**	**772**	**124,218**

Gear	S. Indian River Lagoon		Apalachicola Bay	
	Hauls	Animals	Hauls	Animals
21.3-m seine	.	.	408	112,177
183-m haul seine	192	17,034	216	28,083
183-m purse seine	.	.	60	2,569
6.1-m otter trawl	.	.	228	42,970
Totals	**192**	**17,034**	**912**	**185,799**

Table OV01-02. (Continued)

Gear	Florida Keys		Northeast Florida	
	Hauls/Observ.	**Animals**	**Hauls**	**Animals**
21.3-m seine	.	.	257	89,370
183-m haul seine	.	.	131	13,341
Visual surveys	1,092	37,148	.	.
6.1-m otter trawl	120	6,884	265	22,064
Totals	**1,212**	**44,032**	**653**	**124,775**

Table OV01-03. Top 10 numerically dominant taxa collected in FIM program stratified-random sample areas, 2001.

Tampa Bay		Charlotte Harbor	
Scientific Name	**Number**	**Scientific Name**	**Number**
Anchoa mitchilli	252,956	*Anchoa mitchilli*	98,922
Lagodon rhomboides	57,239	*Lagodon rhomboides*	86,952
Leiostomus xanthurus	40,668	*Menidia* spp.	11,815
Menidia spp.	27,514	*Leiostomus xanthurus*	10,413
Brevoortia spp.	11,760	*Opisthonema oglinum*	10,074
Sardinella aurita	10,636	*Lucania parva*	9,883
Lucania parva	9,609	*Bairdiella chrysoura*	5,817
Eucinostomus spp.	9,455	*Eucinostomus* spp.	5,416
Harengula jaguana	8,384	*Farfantepenaeus duorarum*	4,176
Mugil cephalus	7,211	*Orthopristis chrysoptera*	4,060
Total (dominant taxa)	**435,432**		**247,528**
Total (Selected Taxa)	**68,579**		**26,927**
Grand Total of Animals Collected	**514,879**		**290,146**

N. Indian River Lagoon		Cedar Key	
Scientific Name	**Number**	**Scientific Name**	**Number**
Anchoa mitchilli	372,449	*Anchoa mitchilli*	32,983
Lucania parva	46,999	*Leiostomus xanthurus*	31,763
Mugil cephalus	38,105	*Lagodon rhomboides*	10,457
Lagodon rhomboides	19,057	*Brevoortia* spp.	6,202
Eucinostomus spp.	18,442	*Bairdiella chrysoura*	5,076
Floridichthys carpio	11,933	*Membras martinica*	4,290
Brevoortia spp.	11,558	*Menidia* spp.	4,279
Menidia spp.	11,232	*Harengula jaguana*	2,687
Bairdiella chrysoura	9,767	*Mugil cephalus*	2,655
Diapterus auratus	4,889	*Eucinostomus* spp.	2,199
Total (dominant taxa)	**544,431**		**102,591**
Total (Selected Taxa)	**53,393**		**41,206**
Grand Total of Animals Collected	**591,833**		**124,218**

Table OV01-03. (Continued)

S. Indian River Lagoon		Apalachicola Bay	
Scientific Name	**Number**	**Scientific Name**	**Number**
Lagodon rhomboides	3,981	*Brevoortia* spp.	59,477
Diapterus auratus	3,550	*Leiostomus xanthurus*	37,621
Mugil curema	1,309	*Lagodon rhomboides*	18,704
Centropomus undecimalis	711	*Anchoa mitchilli*	16,292
Archosargus probatocephalus	705	*Mugil cephalus*	5,886
Arius felis	614	*Cynoscion arenarius*	4,523
Mugil cephalus	599	*Menidia* spp.	3,179
Dasyatis sabina	498	*Micropogonias undulatus*	3,092
Elops saurus	455	*Harengula jaguana*	2,920
Brevoortia spp.	431	*Bairdiella chrysoura*	2,868
Total (dominant taxa)	**12,853**		**154,562**
Total (Selected Taxa)	**4,613**		**58,778**
Grand Total of Animals Collected	**17,034**		**185,799**

Florida Keys			
6.1-m otter trawls		**Visual surveys**	
Scientific Name	**Number**	**Scientific Name**	**Number**
Haemulon plumieri	1,619	*Haemulon plumieri*	8,598
Monocanthus ciliatus	1,239	*Haemulon* spp.	6,581
Lagodon rhomboides	1,223	*Haemulon aurolineatum*	3,777
Eucinostomus gula	616	*Ocyurus chrysurus*	3,612
Eucinostomus spp.	406	*Haemulon sciurus*	3,478
Calamus arctifrons	192	*Lutjanus griseus*	1,914
Lactophrys quadricornis	144	*Haemulon flavolineatum*	1,810
Haemulon sciurus	142	*Anisotremus virginicus*	1,062
Lutjanus synagris	131	*Lachnolaimus maximus*	1,029
Lutjanus griseus	94	*Lutjanus apodus*	636
Total (dominant taxa)	**5,806**		**32,497**
Total (Selected Taxa)	**2,175**		**37,148**
Grand Total of Animals Collected	**6,884**		**37,148**

Table OV01-03. (Continued)

Northeast Florida	
Scientific Name	**Number**
Anchoa mitchilli	71,799
Micropogonias undulatus	11,809
Menidia spp.	10,342
Leiostomus xanthurus	4,333
Litopenaeus setiferus	2,802
Anchoa hepsetus	2,281
Lagodon rhomboides	1,872
Mugil cephalus	1,781
Farfantepenaeus duorarum	1,552
Bairdiella chrysoura	1,312
Total (dominant taxa)	**109,883**
Total (Selected Taxa)	**25,582**
Grand Total of Animals Collected	**124,775**

Table OV01-04. All species of recreational or commercial importance (Selected Taxa) collected in the FIM program stratified-random sample areas, 2001. Florida Keys data represents Selected Taxa as well as Selected Reef Fish Taxa.

Tampa Bay		Charlotte Harbor	
Scientific Name	**Number**	**Scientific Name**	**Number**
Leiostomus xanthurus	40,668	*Leiostomus xanthurus*	10,413
Mugil cephalus	7,211	*Farfantepenaeus duorarum*	4,176
Elops saurus	6,461	*Mugil cephalus*	3,359
Farfantepenaeus duorarum	3,393	*Cynoscion arenarius*	2,105
Cynoscion arenarius	2,497	*Elops saurus*	1,650
Centropomus undecimalis	1,302	*Centropomus undecimalis*	900
Cynoscion nebulosus	1,247	*Archosargus probatocephalus*	601
Callinectes sapidus	1,061	*Callinectes sapidus*	596
Mugil gyrans	979	*Menticirrhus americanus*	558
Mugil spp.	964	*Cynoscion nebulosus*	488
Menticirrhus americanus	727	*Lutjanus griseus*	457
Sciaenops ocellatus	690	*Pomatomus saltatrix*	443
Archosargus probatocephalus	491	*Sciaenops ocellatus*	382
Paralichthys albigutta	212	*Mugil gyrans*	238
Mugil curema	199	*Scomberomorus maculatus*	147
Lutjanus griseus	125	*Mycteroperca microlepis*	108
Trachinotus falcatus	115	*Paralichthys albigutta*	88
Scomberomorus maculatus	75	*Lutjanus synagris*	75
Pomatomus saltatrix	34	*Trachinotus falcatus*	62
Lutjanus synagris	33	*Mugil curema*	40
Menticirrhus littoralis	24	*Menticirrhus saxatilis*	16
Menticirrhus saxatilis	22	*Trachinotus carolinus*	12
Mycteroperca microlepis	19	*Menippe* spp.	8
Pogonias cromis	16	*Rachycentron canadum*	2
Trachinotus carolinus	7	*Megalops atlanticus*	1
Micropogonias undulatus	3	*Menticirrhus littoralis*	1
Rachycentron canadum	2	*Pogonias cromis*	1
Menticirrhus spp.	2		
Total	**68,579**		**26,927**

Table OV01-04. (Continued)

N. Indian River Lagoon		Cedar Key	
Scientific Name	**Number**	**Scientific Name**	**Number**
Mugil cephalus	38,105	*Leiostomus xanthurus*	31,763
Mugil curema	3,932	*Mugil cephalus*	2,655
Micropogonias undulatus	2,561	*Callinectes sapidus*	1,388
Farfantepenaeus duorarum	2,127	*Farfantepenaeus duorarum*	848
Leiostomus xanthurus	1,489	*Menticirrhus americanus*	842
Archosargus probatocephalus	1,105	*Cynoscion arenarius*	822
Elops saurus	722	*Sciaenops ocellatus*	613
Centropomus undecimalis	680	*Mugil curema*	339
Sciaenops ocellatus	672	*Cynoscion nebulosus*	330
Cynoscion nebulosus	531	*Pogonias cromis*	282
Callinectes sapidus	524	*Menippe* spp.	261
Menticirrhus americanus	320	*Elops saurus*	254
Lutjanus griseus	185	*Paralichthys albigutta*	251
Pogonias cromis	129	*Archosargus probatocephalus*	233
Trachinotus falcatus	75	*Paralichthys lethostigma*	107
Lutjanus synagris	55	*Lutjanus griseus*	44
Cynoscion regalis	40	*Mugil gyrans*	39
Lutjanus analis	33	*Scomberomorus maculatus*	36
Paralichthys albigutta	25	*Trachinotus falcatus*	35
Mycteroperca microlepis	24	*Micropogonias undulatus*	28
Litopenaeus setiferus	20	*Menticirrhus saxatilis*	15
Scomberomorus maculatus	17	*Trachinotus carolinus*	8
Trachinotus carolinus	8	*Lutjanus synagris*	6
Albula vulpes	2	*Lutjanus* spp.	2
Centropomus spp.	2	*Pomatomus saltatrix*	2
Mugil spp.	2	*Megalops atlanticus*	1
Paralichthys lethostigma	2	*Paralichthys* spp.	1
Pomatomus saltatrix	2	*Paralichthys squamilentus*	1
Centropomus parallelus	1		
Megalops atlanticus	1		
Menippe spp.	1		
Scomberomorus regalis	1		
Total	**53,393**		**41,206**

Table OV01-04. (Continued)

S. Indian River Lagoon		Apalachicola Bay	
Scientific Name	**Number**	**Scientific Name**	**Number**
Mugil curema	1,309	*Leiostomus xanthurus*	37,621
Centropomus undecimalis	711	*Mugil cephalus*	5,886
Archosargus probatocephalus	705	*Cynoscion arenarius*	4,523
Mugil cephalus	599	*Micropogonias undulatus*	3,092
Elops saurus	455	*Litopenaeus setiferus*	1,429
Micropogonias undulatus	239	*Callinectes sapidus*	1,233
Callinectes sapidus	192	*Farfantepenaeus* spp.	749
Lutjanus griseus	76	*Mugil curema*	697
Menticirrhus americanus	47	*Sciaenops ocellatus*	538
Sciaenops ocellatus	41	*Farfantepenaeus aztecus*	530
Lutjanus analis	37	*Menticirrhus americanus*	431
Leiostomus xanthurus	31	*Cynoscion nebulosus*	341
Lutjanus synagris	28	*Paralichthys albigutta*	195
Pogonias cromis	26	*Farfantepenaeus duorarum*	194
Centropomus parallelus	25	*Archosargus probatocephalus*	169
Cynoscion nebulosus	18	*Trachinotus falcatus*	147
Paralichthys albigutta	18	*Elops saurus*	144
Albula vulpes	17	*Lutjanus griseus*	125
Trachinotus falcatus	8	*Paralichthys lethostigma*	93
Mycteroperca microlepis	7	*Lutjanus synagris*	43
Megalops atlanticus	6	*Scomberomorus maculatus*	31
Scomberomorus maculatus	5	*Pomatomus saltatrix*	24
Paralichthys lethostigma	4	*Pogonias cromis*	22
Pomatomus saltatrix	3	*Menippe* spp.	20
Cynoscion spp.	2	*Menticirrhus saxatilus*	14
Cynoscion arenarius	1	*Mycteroperca microlepis*	11
Trachinotus carolinus	1	*Menticirrhus littoralis*	8
Epinephelus itajara	1	*Paralichthys squamilentus*	7
Farfantepenaeus duorarum	1	*Rachycentron canadum*	1
		Menticirrhus spp.	1
Total	**4,613**		**58,778**

Table OV01-04. (Continued)

Florida Keys			
Otter Trawl Samples		**Visual Surveys**	
Scientific Name	**Number**	**Scientific Name**	**Number**
Haemulon plumieri	1,619	*Haemulon plumieri*	8,598
Haemulon sciurus	142	*Haemulon* spp.	6,581
Lutjanus synagris	131	*Haemulon aurolineatum*	3,777
Lutjanus griseus	94	*Ocyurus chrysurus*	3,612
Lachnolaimus maximus	51	*Haemulon sciurus*	3,478
Ocyurus chrysurus	50	*Lutjanus griseus*	1,914
Panulirus argus	27	*Haemulon flavolineatum*	1,810
Farfantepenaeus duorarum	25	*Anisostremus virginicus*	1,062
Haemulon aurolineatum	8	*Lachnolaimus maximus*	1,029
Balistes capriscus	8	*Lutjanus apodus*	636
Menippe spp.	3	*Chaetodon capistratus*	537
Myctoperca microlepis	3	*Pomacanthus arcuatus*	511
Anisostremus virginicus	3	*Chaetodon ocellatus*	376
Paralichthys albigutta	3	*Chaetodon sedentarius*	339
Callinectes sapidus	2	*Holocanthus tricolor*	229
Epinephelus morio	2	*Epinephelus morio*	224
Mycteroperca bonaci	1	*Haemulon carbonarium*	223
Lutjanus analis	1	*Haemulon chrysargyreum*	201
Haemulon carbonarium	1	*Pomacanthus paru*	198
Pomacanthus arcuatus	1	*Lutjanus analis*	191
		Chaetodon striatus	170
		Epinephelus cruentatus	163
		Holocanthus ciliaris	162
		Bodianus rufus	159
		Haemulon parrai	159
		Mycteroperca bonaci	148
		Haemulon melanurum	148
		Holocanthus bermudensis	122
		Lutjanus synagris	64
		Balistes capriscus	62

Table OV01-04. (Continued)

Florida Keys (Continued)			
Trawl Samples		**Visual Surveys (Continued)**	
Scientific Name	**Number**	**Scientific Name**	**Number**
		Priacanthus arenatus	48
		Balistes vetula	29
		Haemulon macrostomum	28
		Epinephelus guttatus	23
		Lutjanus mahogoni	20
		Mycteroperca venenosa	16
		Epinephelus adscensionis	13
		Mycteroperca phenax	13
		Haemulon album	13
		Mycteroperca microlepis	11
		Epinephelus striatus	10
		Lutjanus jocu	9
		Priacanthus cruentatus	6
		Epinephelus fulvus	5
		Canthidermis sufflamen	5
		Bodianus pulchellus	3
		Cantherhines macrocerus	3
		Melichthys niger	1
Total	**2,175**		**37,148**

Table OV01-04. (Continued)

Northeast Florida	
Scientific Name	**Number**
Micropogonias undulatus	11,809
Leiostomus xanthurus	4,333
Litopenaeus setiferus	2,802
Mugil cephalus	1,781
Farfantepenaeus duorarum	1,552
Callinectes sapidus	861
Mugil curema	682
Cynoscion regalis	342
Menticirrhus americanus	286
Cynoscion nebulosus	230
Paralichthys lethostigma	187
Sciaenops ocellatus	120
Archosargus probatocephalus	97
Elops saurus	93
Trachinotus falcatus	89
Lutjanus griseus	65
Scomberomorus maculatus	42
Pomatomus saltatrix	42
Trachinotus carolinus	38
Paralichthys albigutta	34
Pogonias cromis	26
Lutjanus synagris	17
Menticirrhus saxatilus	16
Paralichthys dentatus	9
Menippe spp.	8
Menticirrhus littoralis	6
Centropomus undecimalis	3
Lutjanus analis	3
Paralichthys spp.	2
Cynoscion spp.	2
Albula vulpes	1
Cynoscion nothus	1
Rachycentron canadum	1
Lutjanus spp.	1
Paralichthys squamilentus	1
Total	**25,582**

Fisheries-Independent Monitoring

Introduction

The Florida Fish and Wildlife Conservation Commission (FWC), Florida Marine Research Institute's (FMRI), 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 fish and selected invertebrates; 2) provide timely information for use in management plans; and 3) monitor trends in the relative abundance of fishes 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, or 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, and necessary modifications to harvest regulations can 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 Florida Marine Research Institute (FMRI) 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 state appropriations. The FIM program is now partially supported by funds from the sale of Florida saltwater fishing licenses as well as the SFR grant. In addition, the Florida Keys National Marine Sanctuary (FKNMS) Final Management Plan, adopted by both the federal and State of Florida governments in 1996 and placed into effect on July 1, 1997, identifies the state's FIM program as having the primary responsibility for fisheries pre-recruitment monitoring in the FKNMS. 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 in 1998, in the FKNMS in 1999, and in northeast Florida (Jacksonville Field Laboratory) in 2001. Fisheries-Independent Monitoring program sampling was also conducted in Choctawhatchee Bay/Santa Rosa Sound between 1992 and 1997, and in Florida Bay between 1993 and 1997 (Figure FIM01-01).

Florida=s coastline extends from subtropical to temperate regions and includes habitats such as seagrass beds, salt marshes, and mangroves that 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 Florida Reef Tract, located immediately offshore of the eastern tip of the Florida Peninsula and the Florida Keys, supports a high proportion of the state's important recreational and commercial reef fish fisheries, which are primarily composed of snapper, grouper, and grunt species (Chiappone and Sluka 1996). The FIM program data are summarized and analyzed for all fish and selected invertebrate species collected, yielding information on the relative abundance, recruitment, habitat use, and distribution of hundreds of estuarine and marine species. This approach provides a unique source of information on economically valuable species as well as on many poorly understood non-game fishes 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 in developing recruitment indices. The program expanded its efforts to monitor larger-sized fishes in Tampa Bay by developing 183-m haul seines (implemented in 1993), 183-m purse seines (implemented in 1997), and by developing a visual sampling program for reef fishes in the Florida Keys (implemented in 1999). The 183-m haul seine gear was implemented as part of the stratified-random sampling (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. Implementation of purse seine SRS in Charlotte Harbor began in 1998 and in Apalachicola Bay during 2000. The FIM program also assumed responsibility for an ongoing, seasonal, directed sampling program for striped mullet (*Mugil cephalus*) in 1993. The inclusion of gears and directed sampling efforts which capture larger-sized fishes enables the FIM program to provide data on many species from initial recruitment into the estuarine system through harvestable size, thereby providing a continuous gauge of a particular stock=s relative abundance, age and size composition, and reproductive potential. An important expansion in the FIM program was the implementation of the visual surveys in the FKNMS in 1999, which for the first time allowed fisheries information to be obtained in this unique area of Florida.

This report summarizes monitoring data collected by the FIM program during 2001. Results from SRS in each system are presented separately. This report also summarizes directed sampling efforts for striped mullet and presents results from fish health monitoring. Profiles of several species that are of particular interest because of their recreational and commercial value in Florida are also presented. The profiles provide critical information for certain 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 multi-gear approach to collect data on fishes and selected invertebrates from a wide range of habitats and life history stages (Table FIM01-01). A 21.3-m center bag seine was used to collect juvenile and sub-adult fishes in shallow areas (< 1.8 m); a 6.1-m otter trawl was used to collect juvenile, sub-adult, and adult fish in deep water (1.8-7.6 m); a 183-m haul seine was used to collect sub-adult and adult fish in shallow water (< 2.5 m) along shorelines; a 183-m purse seine was used to collect sub-adult and adult fishes in intermediate depths (1.0-3.3 m); and visual surveys were conducted to observe reef fishes in the Florida Keys at depths to 30 m.

Several different techniques were used, depending on habitat, to stratify the samples collected with the various gears. Samples collected with 21.3-m seines in Tampa Bay, Charlotte Harbor, the northern Indian River Lagoon, Cedar Key (beginning February 2001), and Apalachicola Bay were made with the bay seine technique (formerly referred to as "offshore" or "standard" seine technique) stratified by the presence or absence of bottom vegetation (except in the Cedar Key area), or the presence of a shoreline. Samples collected with 21.3-m river seines (formerly referred to as the "boat" seine technique) in Tampa Bay and Charlotte Harbor were deployed directly from the boat along shorelines of rivers or tidal creeks and pre-stratified by the presence or absence of overhanging shoreline vegetation. Samples collected with river seines in the northern Indian River Lagoon, Cedar Key, Apalachicola Bay, and northeast Florida were not stratified by habitat type. Samples collected with 183-m haul seines in Tampa Bay and Charlotte Harbor were deployed along the shoreline and pre-stratified by the presence or absence of overhanging shoreline vegetation. Samples collected with this gear were not stratified by habitat type in Apalachicola Bay, Cedar Key, and northeast Florida. However, samples collected by 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 by 183-m purse seines were post-stratified by the presence or absence of bottom vegetation in Tampa Bay, Charlotte Harbor, and Apalachicola Bay. Details of other gears and sampling techniques, including visual survey techniques used to monitor reef tract species and trawls conducted throughout the state, are described in the FIM program's Procedure Manual.

A SRS design was used in all study areas. Each study area was divided into sampling zones based on 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, except during the visual sampling in the Florida Keys, where multiple (four 5-m radius point counts) censuses were conducted. Sampling grids were stratified by habitat and depth, thereby identifying the gear types that could be used in those areas. All sampling was conducted during daytime hours (one hour after sunrise to one hour before sunset).

Environmental data on water quality, 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 (i.e., blue crabs, stone crabs, and penaeid shrimp) 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). Several other invertebrates (i.e., horseshoe crabs, cannonball jellyfish, lesser blue crabs) were processed if encountered. Animals were then released except for representative samples of each taxon (for laboratory confirmation of field identifications) and samples required for specific research projects. During visual census sampling of reef fishes, estimated lengths (natural total length) of selected reef fish species were recorded using 5-cm length intervals for fishes below 60 cm, and into 10-cm intervals for fishes above 60 cm, based on direct observations by trained divers using SCUBA. A detailed explanation of the standard sample work-up and visual survey methodology for data collection is described in the FIM program=s Procedure Manual. The taxonomic nomenclature in this report follows the American Fisheries Society's Common and Scientific Names of Fishes (Robins et al. 1991).

Abundance estimates were calculated for 21.3-m seines, visual surveys, and trawls as the number of fish per 100 m^2 of area sampled. Catch-per-unit-effort was calculated for 183-m haul and purse seine samples as the number of fish per haul. Data were summarized separately for each bay system and for each gear type. Data were summarized separately for all taxa and for taxa of special recreational or commercial importance (Selected Taxa; Table FIM01-02). For trawl sampling conducted in the FKNMS, Selected Taxa included both the species of statewide special importance (Table FIM01-02) and the species targeted during the visual surveys (Table KY01-02). Certain taxa were grouped in the tables by genus or family (e.g., *Brevoortia* spp., *Eucinostomus* spp., Penaeidae spp.) to account for similar taxa that are difficult to identify in the field or as early juveniles could not be readily separated, and that, many times, were only identified to the genus or family level in the field. The appendices for each study area describe the catch by month (Appendix 1), as well as by gear, stratum, and zone (Appendix 2).

Study Areas

The FIM program has established monitoring programs in Tampa Bay, Charlotte Harbor, the northern Indian River Lagoon, Cedar Key, the southern Indian River Lagoon, Apalachicola Bay, the Florida Keys, and northeast Florida (Figure FIM01-01). 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, Little Manatee, and Manatee Rivers), Charlotte Harbor (Peace and Myakka Rivers), the Indian River Lagoon (Sebastian River and St. Lucie River), Apalachicola Bay (Apalachicola River and Carrabelle River), the Cedar Key area (Suwannee River), northeast Florida (St. Marys, Nassau, and St. Johns Rivers), and the shallow coastal marine waters and reef tract areas surrounding the Florida Keys were sampled. In contrast to the estuarine waters historically sampled by the FIM program, sampling in the Florida Keys region was conducted in the waters of the Florida Keys National Marine Sanctuary, which is comprised of coral reef, hardbottom, and seagrass habitats with consistent near-oceanic salinities. This has required the development and implementation of sampling strategies unique to the Keys area within the overall FIM program, including sampling of the Florida reef tract using visual survey methods. 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 are described in the FIM Program 1997 Annual Data Summary Report. The Apalachicola Bay study area, as well as changes to the southern Indian River Lagoon study area and a brief description of the Florida Keys study area, were described in the FIM Program 1998 Annual Data Summary Report. A more comprehensive description of the Florida Keys Study area was presented in the FIM Program 1999 Annual Data Summary Report. A detailed description of the northeast Florida (Jacksonville) study area is included below.

The FIM program expanded sampling efforts into northeast Florida beginning in April 2001 through a grant provided by the St. Johns River Water Management District through the Department of Environmental Protection. Three distinct waterways are sampled by the Jacksonville FIM program staff: the lower St. Marys River Basin, the lower Nassau River Basin and the lower St. Johns River Basin.

The St. Marys River Basin is a 209-km long stretch of blackwater (tannin enriched) defining the boundary between Georgia and Florida. The basin is home to an expansive marsh system and covers approximately 4,092 km^2 (St. Johns River Water Management District 2000a). The lower St. Marys River Basin encompasses the St. Marys River, Cumberland Sound, the Amelia River (Intracoastal Waterway), and numerous tributaries including Bells River, Jolly River, Kingsley Creek, Jackson Creek and Lanceford Creek. Residential and tourist-related development occurs on Amelia Island, but the remainder of the basin remains largely undeveloped (St. Johns River Water Management District 2000a).

The lower Nassau River Basin is a largely undeveloped waterway spanning Nassau County and the southern portion of Duval County (St. Johns River Water Management District 2000b). The Nassau River Basin covers approximately 1,114 km^2. The area currently targeted by the FIM program is the lower Nassau River Basin composed of the Nassau River, as well as the Ft. George River and many tributaries including Pumpkin Hill Creek, Edwards Creek, Mink Creek and Simpson Creek. Residential development along the Lower Nassau River Basin is limited, but increasing as the population of urban Jacksonville expands (St. Johns River Water Management District 2000b).

The lower St. Johns River Basin is also commonly referred to as the St. Johns Estuary, indicating the area's importance as breeding and feeding grounds to local fish and wildlife. The Basin covers an estimated 7,123 km^2 which includes the St. Johns River, Arlington River, Ortega River, Cedar River, Pottsburg Creek, Julington Creek, Black Creek and Doctor's Lake. Urban development is extensive and continuous in the waters of northern St. Johns County and Clay County (St. Johns River Water Management District 2000c). The northern portion of the lower St. Johns River Basin runs through downtown Jacksonville and is home to several large commercial shipping ports.

The sampling universe for northeast Florida was divided into five zones, designated as A-E (Figure JX01-01). The lower St. Marys River Basin (A), and the lower Nassau River Basin (B) represent the first two zones. The St. Johns

River was divided into three separate zones (C, D and E). Zones D and E typically have lower salinities than other zones, in part due to the distance of these zones from the mouth of the St. Johns River, but some tidal influence remains (St. Johns River Water Management District 2000c).

A variety of habitats are present in the northeast Florida study area. Several habitats are present in Zones A, B, and C, including *Spartina* spp. and *Juncus* spp. fields, oyster bars, mud-oyster bottom, and soft corals. These three zones do not contain any submerged vegetation. Habitats in Zones D and E include bottomland hardwood forests, as well as freshwater marsh vegetation. Some shallow nearshore areas of these two zones support beds of submerged aquatic vegetation which includes tapegrass (*Vallisneria* spp.) and widgeon grass (*Ruppia* spp.). Man-made habitats including bridges, docks, seawalls, and rock piles are also present in all zones.

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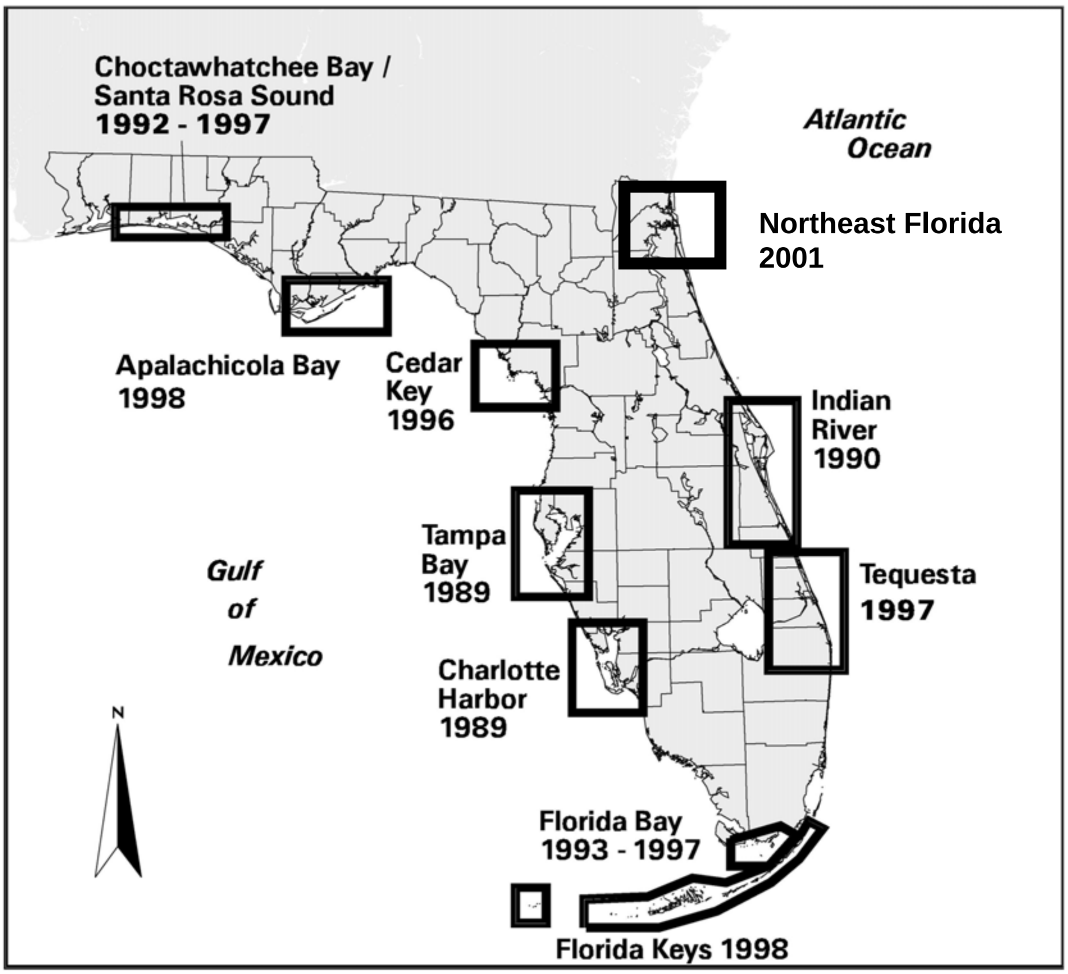

FIM01-01.	**Locations of Fisheries-Independent Monitoring program field labs. Years indicate initiation of sampling.**

Table FIM01-01. Description of monthly monitoring sampling gears used in 2001. 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 shallow (≤1.5m) near shore and shoreline areas
	Beach	3.2	338 m^2	• used along shorelines
	River	3.2	68 m^2	• used along river shorelines <1.8 m
183-m Haul Seine (center bag)	Boat	38.1	4,120m^2	• used along shorelines and well exposed sandbars (<2.5 m)
183-m Purse Seine	Boat	50	2,668m^2	• used in intermediate depths (<3.3 m)
6.1-m Otter Trawl	Straight Tow	38.1 (3.2 mm liner)	1,130m^2-2,259m^2	• used in areas from 1.8 m to 7.6 m deep
	Arc Tow	38.1 (3.2 mm liner)	1,130m^2-2,259m^2	• used in areas from 1.0 m to 1.8 m deep
Visual Surveys	Point Counts	-	5-m radius cylinder	• stationary diver censuses an area 10 m in diameter from the bottom to the surface

Table FIM01-02. Animals designated as Selected Taxa because of their commercial or recreational importance. In the Florida Keys, an additional listing of reef fish taxa is also used (see Table KY01-01).

Scientific Name	**Common Name**
Albula vulpes	bonefish
Archosargus probatocephalus	sheepshead
Callinectes sapidus	blue crab
Centropomus undecimalis	snook
Cynoscion arenarius	sand seatrout
Cynoscion nebulosus	spotted seatrout
Cynoscion nothus	silver seatrout
Cynoscion regalis	weakfish
Elops saurus	ladyfish
Epinephelus itajara	goliath grouper
Epinephelus morio	red grouper
Farfantepenaeus aztecus	brown shrimp
Farfantepenaeus duorarum	pink shrimp
Leiostomus xanthurus	spot
Litopenaeus setiferus	white shrimp
Lutjanus campechanus	red snapper
Lutjanus griseus	gray snapper
Lutjanus synagris	lane snapper
Megalops atlanticus	tarpon
Menippe adina	stone crab
Menippe mercenaria	stone crab
Menippe nodifrons	stone crab
Menticirrhus americanus	southern kingfish
Menticirrhus littoralis	gulf kingfish
Menticirrhus saxatillis	northern kingfish
Mugil cephalus	striped mullet
Mugil curema	white mullet
Mugil gyrans	fantail mullet
Mycteroperca microlepis	gag
Panulirus argus	spiny lobster
Paralichthys albigutta	gulf flounder
Paralichthys lethostigma	southern flounder
Paralichthys squamilentus	broad flounder
Pogonias cromis	black drum

Table FIM01-02. (Continued)

Scientific Name	**Common Name**
Pomotomus saltatrix	bluefish
Rachycentron canadum	cobia
Sciaenops ocellatus	red drum
Scomberomorus cavalla	king mackerel
Scomberomorus maculatus	Spanish mackerel
Trachinotus carolinus	pompano
Trachinotus falcatus	permit

Tampa Bay

Tampa Bay is Florida's largest (886 km^2) and most industrialized estuary, and is bordered by the rapidly growing urban areas of Tampa, Clearwater, and St. Petersburg. The counties surrounding the bay (Hillsborough, Pinellas, and Manatee) have experienced some of the greatest population growth in the entire Gulf of Mexico area (Rote 1991). The population density in the Tampa Bay watershed is already the highest among major U.S. Gulf coast estuaries (Lowery 1993). The regional population has impacted the natural resources, including fisheries, through a combination of habitat degradation, increased fishing pressure, and increased recreational use of aquatic resources (Estevez et al. 1985).

Since 1989, the Fisheries-Independent Monitoring (FIM) program has monitored the fish populations and selected invertebrates in Tampa Bay through an intensive sampling program. This section summarizes data collected by the FIM program during 2002. The sampling area was divided into five bay zones (A-E) and a riverine zone (F) that encompassed the lower portions of the Alafia (K), Little Manatee (L), Manatee (M), and Braden (N) Rivers (Figure TB01-01). Stratified-random sampling (SRS) was conducted each month with 21.3-m seines, 183-m haul seines, 183-m purse seines, and 6.1-m otter trawls. Sampling with 21.3-m seines and haul seines was stratified by zone, depth, and habitat whereas sampling with purse seines and otter trawls was stratified only by zone and depth. A fixed number of samples were collected with all gear types used in all zones, with the following exceptions: trawling in Zones A-E was limited to October and November, haul seines were not used in Zone F or the northern portion of Zone D, purse seine effort in Zone A was limited to April and October, and was not used in Zone F. All gear deployment methods were the same as those described in the Methods section of this report.

Stratified-Random Sampling

A total of 544,631 fishes and selected invertebrates were collected from 1,154 samples (Table TB01-01). The greatest number of fishes were collected during April, September, October, and November (Appendix TB01-01). *Anchoa mitchilli* and

Lagodon rhomboides dominated the annual catch overall (66.5% of the total catch). Both species were taken in all months and from all regions of the bay. Larger collections of *A. mitchilli* were observed during April, September, October, and November from areas in or adjacent to the rivers, while larger catches of *L. rhomboides* were taken during April-July in more vegetated areas of the bay (Appendices TB01-01 and –02).

Twenty-seven species categorized as Selected Taxa were captured in Tampa Bay SRS during 2002, representing 3.8% (n=21,113) of the annual catch. *Leiostomus xanthurus* was the most abundant selected finfish (n=4,111) and was collected primarily during March from Zones D, E and F (Appendices TB01-01 and –02). The second most abundant selected finfish was *Elops saurus* (n=3,766). The majority of *E. saurus* were collected in the 183-m purse seine, primarily during February, March and April. Members of the family Sciaenidae (i.e., *Cynoscion arenarius, Cynoscion nebulosus, L. xanthurus, Menticirrhus americanus, Menticirrhus littoralis, Menticirrhus saxatilis, Micropogonias undulatus, Pogonias cromis*, and *Sciaenops ocellatus*) composed the majority of Selected Taxa captured (n=7,610). The most abundant Selected Invertebrate was *Farfantepenaeus duorarum* (n=4,134). Most *F. duorarum* were collected from June through November in the rivers and in the vegetated areas throughout Tampa Bay.

Bay Sampling

21.3-m Bay Seines. A total of 128,908 animals were collected in 21.3-m bay seines (n=299 hauls; Table TB01-01), representing 23.6% of the total annual catch. *Anchoa mitchilli* (n=50,104) and *L. rhomboides* (n=10,848) accounted for the majority (47.3%) of the animals collected in the 21.3-m bay seine (Table TB01-02). The two most consistently collected taxa in the 21.3-m bay seines were *Eucinostomus spp* (48.2% occurrence) and *L. rhomboides.* (41.8% occurrence). Some of the more abundant taxa, such as *Eucinostomus* spp. (n=10,269) and *L. rhomboides*, were generally collected in vegetated habitats (Appendix TB01-02).

A total of 4,037 animals (20 taxa) designated as Selected Taxa were collected in 21.3-m bay seines, accounting for 3.1% of the total bay seine catch (Table TB01-03).

Among finfish, *L. xanthurus* (n=632) and *C. nebulosus* (n=343) were the most abundant Selected Taxa collected with the 21.3-m bay seine. *Farfantepenaeus duorarum* (n=2,404) was the most abundant Selected Invertebrate (Appendix TB01-02)

183-m Haul Seines. A total of 38,792 individuals was collected in 240 hauls, representing 80 fish taxa and 4 invertebrate taxa (Table TB01-01; Appendix TB01-02). *Lagodon rhomboides* (n=15,330) and *Harengula jaguana* (n=7,119) accounted for the majority (57.9%) of animals collected in the 183-m haul seine (Table TB01-04). Five species were exclusively collected in this gear: *Caranx latus* (n=1), *Diapterus auratus* (n=1), *Hemiramphus* spp. (n=3), *Lutjanus analis* (n=1) and *Sphyraena barracuda* (n=21).

Twenty-five Selected Taxa were captured in the haul seine and represented 12.5% (n=4,854) of the haul seine catch (Table TB01-05). *Mugil cephalus* (n=649) was the most abundant Selected Species, occurring in 49.6% of all samples. *Centropomus undecimalis* (n=1,575; 42.1% occurrence) was the second most abundant Selected Species, followed by *Archosargus probatocephalus* (n=288; 32.5% occurrence) and *E. saurus* (n=421; 32.1% occurrence).

183-m Purse Seines. A total of 26,155 animals were collected in 250 purse seine hauls, representing 80 fish taxa and 4 invertebrate taxa (Tables TB01-01 and -06, Appendix TB01-02). *Lagodon rhomboides* (n=4,895), *Opisthonema oglinum* (n=4,857), and *E. saurus* (n=3,255) accounted for 49.7% of the total purse seine catch (Table TB01-06). Two of the top ten numerically dominant species collected in purse seines, *E. saurus* and *L. xanthurus,* were Selected Taxa. Eight species were exclusively collected in 183-m purse seines: *Aetobatis narinari* (n=1), *Ancylopsetta quadrocellata* (n=3), *Caranx crysos* (n=6), *Echeneis neucratoides* (n=2), *Ginglymostoma cirratum* (n=1), *Ocyurus chrysurus* (n=1), *Peprilus alepidotus* (n=42), and *Pomatomus saltatrix* (n=20).

Twenty-three Selected Taxa were captured in the purse seine and represented 23% (n=6,021) of the total purse seine catch (Table TB01-07). *Elops saurus* (n=3,255; 28% occurrence) and *Cynoscion nebulosus* (n=274; 19.2% occurrence) were the most abundant Selected Taxa captured. Other Selected Taxa were captured less frequently and in less abundance.

Seasonal Bay 6.1-m Otter Trawls. A total of 1,455 animals were collected in 30 trawl deployments (Tables TB01-01 and -08). *Eucinostomus gula* (n=339), *Anchoa mitchilli* (n=269) and *P. scitulus* (n=192) were the three most abundant species in the seasonal trawl samples. *Prionotus scitulus* was more frequently collected (76.7% occurrence) in bay trawls than in any other sampling gear. Fewer, but larger *L. rhomboides* (n=72; mean SL=105 mm) were collected in bay trawls than in 21.3-m bay seines (n=10,848; mean SL=33 mm) (Table TB01-02).

Eight Selected Taxa were captured during otter trawl sampling, accounting for 13.9% (n=202) of the total otter trawl catch (Table TB01-09). Among these taxa, *C. arenarius* (n=40) and *M. americanus* (n=35) were the most abundant finfish, and *F. duorarum* (n=93) was the most abundant invertebrate. These three species represented 83% of all Selected Taxa collected in seasonal trawls.

River Sampling

21.3-m River Seines. River seine deployments (n=262) accounted for 62.5% (n=340,730) of the total animals collected during 2002 (Tables TB01-01 and -10). As in 21.3-m bay seine collections, *A. mitchilli* (n=273,920) made up the majority (80.3%) of the animals collected with this gear and comprised 50% of the total number of animals collected in 2001.

Fifteen Selected Taxa were captured during 21.3-m river seine sampling, representing about 1% (n=4,546) of the total 21.3-m river seine catch (Table TB01-11). Among these taxa, *L. xanthurus* (n=1,522; 15.3% occurrence) and *S. ocellatus* (n=714; 25.2% occurrence) were the most numerous finfishes. *Farfantepenaeus duorarum* (n=1,042; 37% occurrence) and *C. sapidus* (n=82; 12.2% occurrence) were the most numerous invertebrates sampled and identified by FIM.

River 6.1-m Otter Trawls. A total of 8,591 animals were collected in 73 trawl samples. These animals represented 2.4% of the total river catch and about 1.5% of the total captured in 2002 (Tables TB01-01 and -12). The three most abundant taxa in the 6.1-m river otter trawl catch were *A. mitchilli* (n=5,135; 35.6% occurrence), *Trinectes maculatus* (n=533; 6.2% occurrence) and *Cynoscion arenarius* (n=462; 5.4%

occurrence). *F. duorarum* (n=500; 5.8% occurrence) was the most abundant invertebrate collected in the river 6.1-m otter trawls.

A total of 1,368 animals categorized as Selected Taxa (10 taxa) were collected in river 6.1-m otter trawls, accounting for 15.9% of the annual river 6.1-m otter trawl catch (Table TB01-13). The four most abundant Selected Taxa collected by this gear were *F. duorarum* (n=500), *C. arenarius* (n=462), *M. americanus* (n=223) and *C. sapidus* (n=97).

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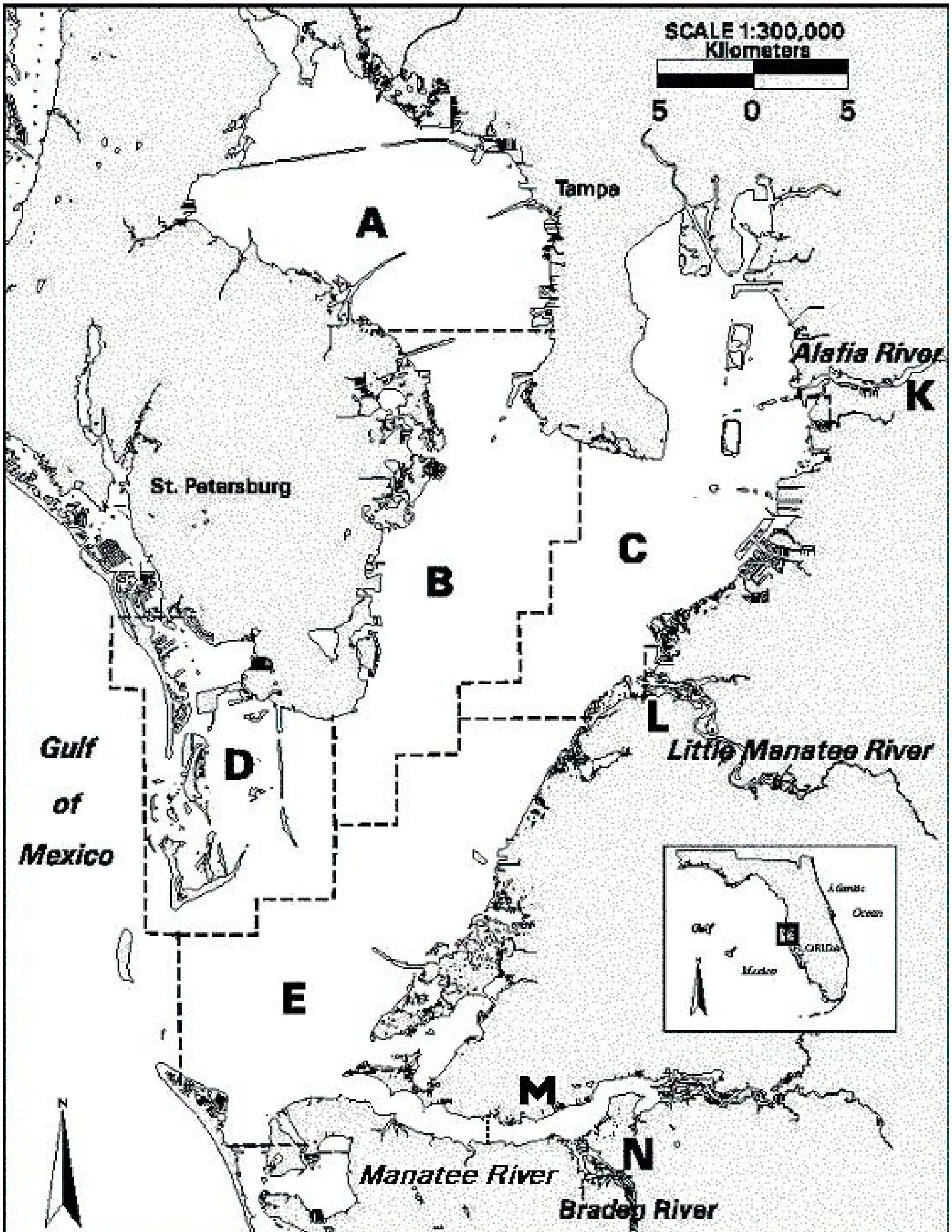

Figure TB01-01. Map of Tampa Bay sampling area. Zones are labeled A-E and K-M.

Table TB01-01. Summary of catch and effort data for Tampa Bay stratified-random sampling, 2001. Zones A-E were located in the bay, and Zones K, L, M, and N encompassed the Lower Alafia, Little Manatee, Manatee, and Braden Rivers, respectively. Trawling in Zones A-E was seasonal.

	21.3-m bay seine		**21.3-m river seine**		**183-m haul seine**		**183-m purse seine**		**6.1-m otter trawl**		**Totals**	
Zone	**Animals**	**Hauls**	**Animals**	**Hauls**	**Animals**	**Hauls**	**Animals**	**Hauls**	**Animals**	**Hauls**	**Animals**	**Hauls**
A	9,738	60	.	.	4,179	48	2,129	10	234	6	16,280	124
B	9,783	57	.	.	6,810	48	7,908	69	225	6	24,726	180
C	18,438	69	.	.	3,049	48	1,976	48	1,045	8	24,508	173
D	39,040	51	.	.	21,819	36	9,032	60	129	4	70,020	151
E	23,617	63	.	.	8,952	60	4,179	63	207	6	36,955	192
K	.	.	92,469	48	.	.	.	.	2,275	24	94,744	72
L	.	.	94,683	96	.	.	.	.	28,686	72	123,369	168
M	.	.	57,970	72	.	.	.	.	3,703	36	61,673	108
N	.	.	58,899	48	.	.	.	.	3,705	24	62,604	72
Totals	**100,616**	**300**	**304,021**	**264**	**44,809**	**240**	**25,224**	**250**	**40,209**	**186**	**514,879**	**1,240**

Table TB01-02. Catch statistics for 10 dominant taxa collected in 300 21.3-m bay seines during Tampa Bay stratified-random sampling, 2001. 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**
Lagodon rhomboides	23,040	22.9	49.3	54.86	13.46	425.06	3,085.71	29	0.11	11	147
Leiostomus xanthurus	17,708	17.6	21.3	42.16	15.64	642.56	3,737.14	24	0.06	9	127
Anchoa mitchilli	12,217	12.1	21.3	29.09	8.67	516.50	1,691.43	27	0.06	12	55
Sardinella aurita	10,619	10.6	1.0	25.28	24.32	1,666.36	7,293.57	77	0.08	54	95
Harengula jaguana	6,281	6.2	7.7	14.95	11.55	1,337.79	3,442.14	38	0.13	16	98
Menidia spp.	4,120	4.1	21.0	9.81	2.67	471.19	472.14	41	0.25	15	98
Eucinostomus spp.	4,048	4.0	36.7	9.64	1.81	325.64	300.71	25	0.12	9	48
Anchoa hepsetus	3,108	3.1	9.7	7.40	3.39	793.58	662.86	33	0.12	21	86
Opisthonema oglinum	2,911	2.9	1.7	6.93	6.90	1,723.10	2,068.57	42	0.14	31	84
Orthopristis chrysoptera	2,036	2.0	20.0	4.85	1.49	531.90	247.86	34	0.30	11	183
Subtotal	86,088	85.5	.	.	.	.	.	.	.	9	183
Totals	**100,616**	**100.0**	**.**	**239.56**	**42.50**	**307.30**	**7,326.43**	**.**	**.**	**3**	**712**

Table TB01-03. Catch statistics for Selected Taxa collected in 300 21.3-m bay seines during Tampa Bay stratified-random sampling, 2001. 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**
Leiostomus xanthurus	17,708	17.6	21.3	42.16	15.64	642.56	3,737.14	24	0.06	9	127
Farfantepenaeus duorarum	1,438	1.4	30.3	3.42	0.80	404.11	155.71	11	0.12	3	32
Cynoscion nebulosus	635	0.6	22.7	1.51	0.32	371.09	48.57	33	0.65	10	137
Mugil cephalus	82	0.1	2.7	0.20	0.13	1,131.02	37.14	33	2.66	18	130
Sciaenops ocellatus	78	0.1	7.3	0.19	0.06	562.58	12.14	27	2.26	12	147
Callinectes sapidus	70	0.1	13.7	0.17	0.04	403.98	8.57	39	3.77	7	171
Lutjanus griseus	68	0.1	7.7	0.16	0.05	570.84	12.14	27	1.06	10	45
Archosargus probatocephalus	48	0.0	5.3	0.11	0.04	560.32	6.43	47	9.11	11	351
Menticirrhus americanus	39	0.0	5.3	0.09	0.03	576.48	5.71	32	2.48	13	70
Paralichthys albigutta	32	0.0	8.0	0.08	0.02	377.92	2.14	79	10.02	18	235
Lutjanus synagris	27	0.0	3.0	0.06	0.03	849.00	7.14	29	1.95	13	52
Cynoscion arenarius	26	0.0	3.7	0.06	0.02	666.44	4.29	29	2.78	16	74
Menticirrhus saxatilis	17	0.0	3.3	0.04	0.01	595.40	2.14	38	9.83	9	182
Mugil gyrans	4	0.0	0.7	0.01	0.01	1,367.93	2.14	146	22.16	90	195
Mycteroperca microlepis	3	0.0	1.0	0.01	0.00	996.65	0.71	153	21.94	115	191
Centropomus undecimalis	2	0.0	0.7	0.00	0.00	1,222.70	0.71	400	63.00	337	463
Menticirrhus spp.	2	0.0	0.3	0.00	0.00	1,732.05	1.43	21	1.00	20	22
Elops saurus	1	0.0	0.3	0.00	0.00	1,732.05	0.71	280	.	280	280
Trachinotus falcatus	1	0.0	0.3	0.00	0.00	1,732.05	0.71	35	.	35	35
Mugil spp.	1	0.0	0.3	0.00	0.00	1,732.05	0.71	19	.	19	19
Totals	**20,282**	**20.2**	**67.7**	**48.29**	**15.65**	**561.23**	**3,737.14**	**.**	**.**	**3**	**463**

Table TB01-04. Catch statistics for 10 dominant taxa collected in 240 183-m haul seines during Tampa Bay stratified-random sampling, 2001. Percent (%) is the percent of the total catch represented by that taxon; percent occurrence (% Occur) is the percentage of samples in which that taxon was collected; CV is the coefficient of variation of the mean. Taxa are ranked in order of decreasing mean catch-per-unit-effort.

Species	Number		%	Catch-per-unit-effort (animals/set)				Standard Length (mm)			
	No.	%	Occur	Mean	Stderr	CV	Max	Mean	Stderr	Min	Max
Lagodon rhomboides	15,662	35.0	57.5	65.26	11.23	266.48	1,232.00	90	0.18	38	250
Brevoortia spp.	8,962	20.0	6.7	37.34	36.75	1,524.60	8,820.00	95	0.15	63	253
Elops saurus	3,666	8.2	36.7	15.28	5.65	573.26	1,094.00	298	0.86	80	525
Eucinostomus gula	2,261	5.0	42.5	9.42	1.82	299.02	271.00	79	0.25	42	138
Leiostomus xanthurus	1,963	4.4	30.4	8.18	2.52	476.83	398.00	95	0.39	50	211
Arius felis	1,713	3.8	40.4	7.14	2.08	452.10	441.00	295	1.07	85	433
Centropomus undecimalis	1,207	2.7	50.8	5.03	0.91	280.29	136.00	433	2.36	189	1005
Chaetodipterus faber	1,178	2.6	14.2	4.91	3.75	1,184.35	880.00	159	1.07	41	365
Mugil cephalus	1,070	2.4	48.8	4.46	1.08	376.43	211.00	274	3.06	35	453
Eucinostomus harengulus	774	1.7	30.4	3.23	0.58	278.76	76.00	86	0.35	45	142
Subtotal	38,456	85.8	.	.	.	.	.	.	.	35	1005
Totals	**44,809**	**100.0**	**.**	**186.70**	**41.64**	**345.52**	**9,279.00**	**.**	**.**	**11**	**1,450**

Table TB01-05. Catch statistics for Selected Taxa collected in 240 183-m haul seines during Tampa Bay stratified-random sampling, 2001. 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
Elops saurus	3,666	8.2	36.7	15.28	5.65	573.26	1,094.00	298	0.86	80	525
Leiostomus xanthurus	1,963	4.4	30.4	8.18	2.52	476.83	398.00	95	0.39	50	211
Centropomus undecimalis	1,207	2.7	50.8	5.03	0.91	280.29	136.00	433	2.36	189	1005
Mugil cephalus	1,070	2.4	48.8	4.46	1.08	376.43	211.00	274	3.06	35	453
Mugil gyrans	686	1.5	29.6	2.86	0.78	424.24	138.00	169	1.79	26	375
Archosargus probatocephalus	314	0.7	34.6	1.31	0.21	245.38	24.00	231	4.78	50	432
Callinectes sapidus	223	0.5	23.3	0.93	0.33	555.26	75.00	83	2.46	28	183
Mugil curema	181	0.4	12.1	0.75	0.21	428.20	35.00	205	4.15	99	335
Cynoscion nebulosus	164	0.4	15.0	0.68	0.24	548.54	42.00	228	5.81	61	537
Sciaenops ocellatus	123	0.3	21.7	0.51	0.10	313.75	16.00	315	13.50	91	623
Trachinotus falcatus	105	0.2	5.8	0.44	0.23	810.49	52.00	92	6.39	42	308
Farfantepenaeus duorarum	100	0.2	9.6	0.42	0.16	595.68	32.00	25	0.59	11	42
Paralichthys albigutta	94	0.2	19.2	0.39	0.08	317.33	13.00	143	7.37	63	340
Cynoscion arenarius	17	0.0	1.7	0.07	0.06	1,284.32	14.00	248	9.76	152	351
Lutjanus griseus	15	0.0	3.3	0.06	0.03	732.28	6.00	179	10.15	88	242
Mycteroperca microlepis	13	0.0	1.7	0.05	0.04	1,109.34	9.00	200	6.09	170	238
Scomberomorus maculatus	11	0.0	3.8	0.05	0.02	537.33	2.00	306	21.97	216	440
Pogonias cromis	9	0.0	3.8	0.04	0.01	507.68	1.00	275	50.14	146	658
Menticirrhus americanus	5	0.0	1.7	0.02	0.01	815.33	2.00	233	32.03	134	335
Lutjanus synagris	4	0.0	1.7	0.02	0.01	769.72	1.00	82	11.50	55	109
Menticirrhus littoralis	2	0.0	0.4	0.01	0.01	1,549.19	2.00	181	4.00	177	185
Micropogonias undulatus	2	0.0	0.4	0.01	0.01	1,549.19	2.00	257	6.50	250	263
Rachycentron canadum	1	0.0	0.4	0.00	0.00	1,549.19	1.00	259	.	259	259
Trachinotus carolinus	1	0.0	0.4	0.00	0.00	1,549.19	1.00	271	.	271	271
Totals	**9,976**	**22.3**	**94.6**	**41.57**	**7.00**	**260.76**	**1,257.00**	**.**	**.**	**11**	**1,005**

Table TB01-06. Catch statistics for 10 dominant taxa collected in 250 183-m purse seines during Tampa Bay stratified-random sampling, 2001. Percent (%) is the percent of the total catch represented by that taxon; percent occurrence (% Occur) is the percentage of samples in which that taxon was collected; CV is the coefficient of variation of the mean. Taxa are ranked in order of decreasing mean catch-per-unit-effort.

Species	Number		%	Catch-per-unit-effort (animals/set)				Standard Length (mm)			
	No.	%	Occur	Mean	Stderr	CV	Max	Mean	Stderr	Min	Max
Lagodon rhomboides	6,986	27.7	44.0	27.94	4.85	274.50	735.00	109	0.20	44	195
Opisthonema oglinum	3,254	12.9	33.2	13.02	2.86	347.66	325.00	135	0.26	88	240
Elops saurus	2,789	11.1	34.8	11.16	4.13	585.59	797.00	331	1.03	127	542
Arius felis	2,336	9.3	56.4	9.34	1.67	283.32	310.00	249	1.12	100	405
Brevoortia spp.	1,833	7.3	18.0	7.33	3.43	740.45	821.00	160	1.07	70	320
Leiostomus xanthurus	1,254	5.0	25.2	5.02	1.63	515.33	349.00	137	0.76	68	238
Harengula jaguana	1,093	4.3	21.6	4.37	1.31	475.13	211.00	119	0.27	92	160
Bairdiella chrysoura	993	3.9	11.6	3.97	1.32	526.51	192.00	137	0.38	103	187
Orthopristis chrysoptera	605	2.4	30.0	2.42	0.47	308.24	83.00	131	1.04	85	200
Chloroscombrus chrysurus	462	1.8	19.6	1.85	0.44	378.22	70.00	146	0.96	112	353
Subtotal	21,605	85.7	.	.	.	.	.	.	.	44	542
Totals	**25,224**	**100.0**	**.**	**100.90**	**10.05**	**157.46**	**1,182.00**	**.**	**.**	**19**	**950**

Table TB01-07. Catch statistics for Selected Taxa collected in 250 183-m purse seines during Tampa Bay stratified-random sampling, 2001. 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
Elops saurus	2,789	11.1	34.8	11.16	4.13	585.59	797.00	331	1.03	127	542
Leiostomus xanthurus	1,254	5.0	25.2	5.02	1.63	515.33	349.00	137	0.76	68	238
Cynoscion arenarius	379	1.5	17.6	1.52	0.52	537.62	91.00	211	1.89	109	313
Cynoscion nebulosus	251	1.0	18.4	1.00	0.29	453.54	56.00	262	4.10	138	493
Menticirrhus americanus	76	0.3	14.0	0.30	0.06	323.55	8.00	201	4.68	119	285
Scomberomorus maculatus	64	0.3	13.2	0.26	0.05	339.07	7.00	286	10.60	182	549
Paralichthys albigutta	64	0.3	16.8	0.26	0.05	292.50	7.00	178	5.58	77	291
Callinectes sapidus	57	0.2	12.8	0.23	0.05	349.38	7.00	100	5.80	37	312
Pomatomus saltatrix	34	0.1	0.8	0.14	0.13	1,490.66	32.00	384	3.43	338	442
Menticirrhus littoralis	22	0.1	1.6	0.09	0.05	899.64	9.00	223	8.02	164	285
Farfantepenaeus duorarum	11	0.0	3.2	0.04	0.02	585.33	2.00	34	2.96	19	47
Trachinotus falcatus	9	0.0	2.0	0.04	0.02	838.26	4.00	206	28.25	125	370
Lutjanus griseus	7	0.0	1.2	0.03	0.02	1,171.77	5.00	193	13.59	149	240
Archosargus probatocephalus	7	0.0	2.8	0.03	0.01	590.37	1.00	195	39.75	98	386
Trachinotus carolinus	6	0.0	1.2	0.02	0.02	1,115.79	4.00	288	29.37	172	358
Menticirrhus saxatilis	5	0.0	0.8	0.02	0.01	1,138.06	3.00	210	25.84	155	277
Menippe spp.	4	0.0	1.6	0.02	0.01	785.79	1.00	69	12.61	45	92
Mugil curema	4	0.0	1.2	0.02	0.01	965.00	2.00	185	8.12	163	202
Centropomus undecimalis	3	0.0	0.8	0.01	0.01	1,176.62	2.00	414	122.07	261	655
Mycteroperca microlepis	3	0.0	0.8	0.01	0.01	1,176.62	2.00	176	20.42	146	215
Pogonias cromis	2	0.0	0.4	0.01	0.01	1,581.14	2.00	167	4.50	162	171
Rachycentron canadum	1	0.0	0.4	0.00	0.00	1,581.14	1.00	940	.	940	940
Micropogonias undulatus	1	0.0	0.4	0.00	0.00	1,581.14	1.00	191	.	191	191
Mugil gyrans	1	0.0	0.4	0.00	0.00	1,581.14	1.00	181	.	181	181
Totals	**5,054**	**20.0**	**72.4**	**20.22**	**4.50**	**352.34**	**798.00**	**.**	**.**	**19**	**940**

Table TB01-08. Catch statistics for 10 dominant taxa collected seasonally in 30 bay 6.1-m otter trawls during Tampa Bay stratified-random sampling, 2001. 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**
Anchoa mitchilli	383	20.8	20.0	0.86	0.49	310.50	12.14	50	0.24	20	60
Cynoscion arenarius	293	15.9	33.3	0.66	0.29	242.13	7.29	34	1.02	9	110
Prionotus scitulus	278	15.1	73.3	0.63	0.16	141.62	3.78	89	2.06	18	164
Menticirrhus americanus	178	9.7	36.7	0.40	0.24	329.97	7.22	34	2.54	9	227
Farfantepenaeus duorarum	119	6.5	50.0	0.27	0.08	163.98	1.82	17	0.86	2	45
Anchoa hepsetus	112	6.1	13.3	0.25	0.23	498.69	6.88	30	0.91	24	80
Eucinostomus gula	96	5.2	43.3	0.22	0.08	193.75	1.69	84	0.93	63	110
Lagodon rhomboides	76	4.1	23.3	0.17	0.11	354.24	2.97	95	0.87	79	115
Arius felis	39	2.1	23.3	0.09	0.04	247.53	0.88	111	10.24	73	338
Synodus foetens	38	2.1	36.7	0.09	0.03	167.15	0.52	119	9.89	41	241
Subtotal	1,612	87.6	.	.	.	.	.	.	.	2	338
Totals	**1,840**	**100.0**	**.**	**4.14**	**0.96**	**126.99**	**22.40**	**.**	**.**	**2**	**497**

Table TB01-09. Catch statistics for Selected Taxa collected seasonally in 30 bay 6.1-m otter trawls during Tampa Bay stratified-random sampling, 2001. 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
Cynoscion arenarius	293	15.9	33.3	0.66	0.29	242.13	7.29	34	1.02	9	110
Menticirrhus americanus	178	9.7	36.7	0.40	0.24	329.97	7.22	34	2.54	9	227
Farfantepenaeus duorarum	119	6.5	50.0	0.27	0.08	163.98	1.82	17	0.86	2	45
Leiostomus xanthurus	30	1.6	20.0	0.07	0.04	323.77	1.15	122	2.11	99	145
Paralichthys albigutta	6	0.3	16.7	0.01	0.01	242.12	0.13	170	33.72	20	243
Sciaenops ocellatus	3	0.2	3.3	0.01	0.01	547.72	0.20	20	2.85	14	23
Menippe spp.	2	0.1	3.3	0.00	0.00	547.72	0.13	62	29.00	33	91
Lutjanus synagris	2	0.1	6.7	0.00	0.00	380.56	0.07	66	37.50	28	103
Callinectes sapidus	1	0.1	3.3	0.00	0.00	547.72	0.07	111	.	111	111
Totals	**634**	**34.5**	**66.7**	**1.43**	**0.54**	**206.66**	**13.29**	**.**	**.**	**2**	**243**

Table TB01-10. Catch statistics for 10 dominant taxa collected in 264 21.3-m river seines during Tampa Bay stratified-random sampling, 2001. 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
Anchoa mitchilli	221,075	72.7	63.6	1,231.48	318.00	419.57	44,017.65	28	0.01	11	57
Menidia spp.	23,387	7.7	83.3	130.28	13.64	170.11	1,800.00	36	0.07	13	78
Leiostomus xanthurus	13,869	4.6	37.9	77.26	38.31	805.72	9,858.82	24	0.12	10	128
Lucania parva	8,145	2.7	33.3	45.37	20.19	723.12	4,682.35	24	0.08	9	55
Lagodon rhomboides	6,254	2.1	61.0	34.84	7.13	332.51	1,139.71	30	0.19	11	100
Mugil cephalus	6,059	2.0	18.2	33.75	15.30	736.62	2,605.88	26	0.13	12	364
Eucinostomus spp.	4,930	1.6	65.2	27.46	3.67	217.40	416.18	30	0.09	10	47
Eucinostomus harengulus	3,454	1.1	68.2	19.24	2.39	202.13	338.24	61	0.22	22	107
Adinia xenica	2,192	0.7	2.3	12.21	9.62	1,280.30	2,432.35	21	0.08	13	31
Anchoa hepsetus	1,316	0.4	11.0	7.33	4.17	924.00	982.35	30	0.18	15	61
Subtotal	290,681	95.6	.	.	.	.	.	.	.	9	364
Totals	**304,021**	**100.0**	**.**	**1,693.52**	**331.52**	**318.07**	**44,164.71**	**.**	**.**	**2**	**790**

Table TB01-11. Catch statistics for Selected Taxa collected in 264 21.3-m river seines during Tampa Bay stratified-random sampling, 2001. 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
Leiostomus xanthurus	13,869	4.6	37.9	77.26	38.31	805.72	9,858.82	24	0.12	10	128
Mugil cephalus	6,059	2.0	18.2	33.75	15.30	736.62	2,605.88	26	0.13	12	364
Mugil spp.	963	0.3	1.5	5.36	3.61	1,091.94	882.35	23	0.08	19	43
Sciaenops ocellatus	419	0.1	22.3	2.33	0.63	439.32	116.18	37	1.01	10	140
Cynoscion arenarius	413	0.1	12.1	2.30	0.76	536.63	120.59	38	0.67	9	78
Farfantepenaeus duorarum	353	0.1	32.6	1.97	0.31	259.69	38.24	9	0.22	2	25
Mugil gyrans	288	0.1	4.9	1.60	0.84	847.74	160.29	47	0.79	10	131
Callinectes sapidus	232	0.1	30.3	1.29	0.21	258.40	25.00	34	1.71	9	144
Menticirrhus americanus	138	0.0	4.5	0.77	0.33	696.27	60.29	37	1.32	13	75
Cynoscion nebulosus	136	0.0	14.8	0.76	0.17	366.58	23.53	51	2.01	15	124
Archosargus probatocephalus	86	0.0	9.8	0.48	0.18	623.79	41.18	66	4.48	16	328
Centropomus undecimalis	81	0.0	13.3	0.45	0.10	364.06	16.18	305	10.29	20	645
Lutjanus griseus	31	0.0	6.8	0.17	0.07	671.18	17.65	57	8.43	21	195
Mugil curema	14	0.0	0.8	0.08	0.07	1,512.77	19.12	71	3.96	22	81
Elops saurus	4	0.0	1.1	0.02	0.01	991.83	2.94	127	44.13	31	245
Paralichthys albigutta	3	0.0	1.1	0.02	0.01	934.51	1.47	138	88.27	42	314
Pogonias cromis	2	0.0	0.4	0.01	0.01	1,624.81	2.94	71	5.00	66	76
Totals	**23,091**	**7.6**	**87.5**	**128.63**	**42.59**	**537.99**	**9,892.65**	**.**	**.**	**2**	**645**

Table TB01-12. Catch statistics for 10 dominant taxa collected in 156 river 6.1-m otter trawls during Tampa Bay stratified-random sampling, 2001. 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**
Anchoa mitchilli	19,281	50.3	42.9	16.70	11.78	881.33	1,830.55	27	0.05	14	63
Leiostomus xanthurus	5,844	15.2	22.4	5.66	2.27	501.91	233.63	23	0.30	9	147
Lagodon rhomboides	5,221	13.6	34.6	5.20	2.04	490.91	265.34	18	0.11	10	98
Trinectes maculatus	1,786	4.7	38.5	1.65	0.63	481.11	78.25	29	0.31	8	90
Cynoscion arenarius	1,369	3.6	33.3	1.20	0.31	321.53	25.36	33	0.35	10	119
Farfantepenaeus duorarum	1,372	3.6	52.6	1.19	0.42	436.69	56.53	13	0.16	2	39
Eucinostomus spp.	474	1.2	19.2	0.48	0.18	458.75	16.36	28	0.31	12	53
Callinectes sapidus	478	1.2	60.9	0.42	0.06	187.88	4.59	100	1.76	4	192
Microgobius gulosus	461	1.2	30.8	0.41	0.16	483.90	21.18	27	0.46	13	56
Arius felis	298	0.8	32.7	0.26	0.15	714.73	22.80	113	5.69	45	363
Subtotal	36,584	95.4	.	.	.	.	.	.	.	2	363
Totals	**38,369**	**100.0**	**.**	**34.71**	**12.55**	**451.73**	**1,852.40**	**.**	**.**	**2**	**770**

Table TB01-13. Catch statistics for Selected Taxa collected in 156 river 6.1-m otter trawls during Tampa Bay stratified-random sampling, 2001. 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
Leiostomus xanthurus	5,844	15.2	22.4	5.66	2.27	501.91	233.63	23	0.30	9	147
Cynoscion arenarius	1,369	3.6	33.3	1.20	0.31	321.53	25.36	33	0.35	10	119
Farfantepenaeus duorarum	1,372	3.6	52.6	1.19	0.42	436.69	56.53	13	0.16	2	39
Callinectes sapidus	478	1.2	60.9	0.42	0.06	187.88	4.59	100	1.76	4	192
Menticirrhus americanus	291	0.8	26.9	0.25	0.08	401.82	8.63	51	2.28	10	340
Sciaenops ocellatus	67	0.2	6.4	0.06	0.03	549.44	3.24	19	1.79	11	133
Cynoscion nebulosus	61	0.2	5.8	0.05	0.03	661.53	3.10	31	1.58	15	91
Archosargus probatocephalus	36	0.1	9.6	0.03	0.01	499.19	1.62	90	10.60	11	243
Paralichthys albigutta	13	0.0	6.4	0.01	0.00	463.71	0.54	151	17.16	55	302
Centropomus undecimalis	9	0.0	1.3	0.01	0.01	1,117.97	1.08	253	30.64	65	425
Lutjanus griseus	4	0.0	1.3	0.00	0.00	985.51	0.40	150	7.42	132	168
Pogonias cromis	3	0.0	1.9	0.00	0.00	716.44	0.13	355	92.65	185	504
Menippe spp.	2	0.0	1.3	0.00	0.00	880.32	0.13	47	2.50	44	49
Elops saurus	1	0.0	0.6	0.00	0.00	1,249.00	0.13	36	.	36	36
Totals	**9,550**	**24.9**	**88.5**	**8.89**	**2.33**	**327.81**	**233.86**	**.**	**.**	**2**	**504**

Appendix TB01-01. Monthly summary of species collected during Tampa Bay stratified-random sampling, 2001. 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=100	E=100	E=100	E=105	E=100	E=100	E=100	E=100	E=100	E=120	E=115	E=100	E=1,240
Achirus lineatus	13	6	3	3	6	18	24	15	20	21	6	3	138
Adinia xenica	.	2,175	2	.	.	.	.	.	.	.	.	15	2,192
Aetobatis narinari	.	1	.	.	.	.	1	.	1	1	.	1	5
Aluterus schoepfi	.	.	.	.	.	.	4	4	.	.	1	.	9
Aluterus scriptus	.	.	.	.	.	5	2	.	.	.	.	.	7
Ameiurus catus	.	.	.	.	.	.	.	.	1	.	.	.	1
Anchoa cubana	.	.	36	.	.	.	.	.	.	.	.	.	36
Anchoa hepsetus	.	.	.	416	1,682	1,222	1,077	49	37	118	1	.	4,602
Anchoa mitchilli	25,003	6,872	33,233	8,079	13,349	10,188	5,664	61,293	9,949	32,747	43,193	3,386	252,956
Anchoa spp.	.	.	.	.	.	.	.	2	.	.	.	.	2
Ancylopsetta quadrocellata	.	2	4	8	2	1	1	7	.	2	.	1	28
Archosargus probatocephalus	76	42	14	12	35	39	34	30	22	95	53	39	491
Arius felis	17	134	336	608	441	612	613	344	178	297	225	685	4,490
Astroscopus y-graecum	1	2	.	.	.	.	.	.	.	.	.	.	3
Bagre marinus	5	23	62	52	19	16	80	36	15	40	27	21	396
Bairdiella chrysoura	5	183	161	224	626	788	453	415	219	333	143	48	3,598
Bathygobius soporator	8	8	1	3	2	2	.	.	.	19	20	7	70
Belonesox belizanus	.	.	.	.	.	.	.	1	1	1	.	.	3
Brevoortia spp.	8	264	22	207	1,058	13	319	5	8,877	900	65	22	11,760
Calamus arctifrons	.	.	.	.	.	2	.	.	.	.	1	2	5
Callinectes sapidus	151	74	88	153	84	76	60	53	54	96	72	100	1,061
Caranx crysos	.	.	.	12	37	5	4	21	2	.	.	1	82
Caranx hippos	1	49	.	11	16	16	13	11	6	6	2	1	132
Caranx latus	.	.	.	.	.	.	.	.	.	2	.	.	2
Carcharhinus limbatus	.	.	.	.	.	.	1	1	.	.	.	.	2
Centropomus undecimalis	44	106	180	153	167	183	61	115	30	114	63	86	1,302
Centropristis striata	.	.	.	.	.	.	.	.	.	.	.	1	1
Chaetodipterus faber	.	.	5	30	23	27	75	37	8	26	17	1,086	1,334

Appendix TB01-01. (Continued)

Species	Month												Totals
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
	E=100	E=100	E=100	E=105	E=100	E=100	E=100	E=100	E=100	E=120	E=115	E=100	E=1,240
Chasmodes saburrae	.	2	.	2	6	8	15	23	7	2	5	40	110
Chilomycterus schoepfi	18	61	12	23	27	27	17	22	20	40	51	46	364
Chloroscombrus chrysurus	.	.	.	5	39	102	142	124	63	17	.	.	492
Clarias batrachus	.	.	.	.	.	.	.	.	1	.	.	.	1
Clupeidae spp.	.	.	.	.	.	.	1	.	.	.	.	.	1
Cynoscion arenarius	2	21	58	38	241	59	423	94	416	1,019	72	54	2,497
Cynoscion nebulosus	99	67	10	98	35	120	153	86	319	156	85	19	1,247
Cyprinodon variegatus	12	36	10	41	104	34	10	5	1	127	7	12	399
Dasyatis americana	1	.	.	7	1	.	1	.	.	1	.	1	12
Dasyatis sabina	59	64	44	79	64	50	67	61	39	64	47	59	697
Dasyatis say	2	7	8	16	13	4	13	9	2	5	.	1	80
Diapterus auratus	.	.	.	.	.	.	.	.	2	.	.	.	2
Diapterus plumieri	1	23	1	10	.	38	108	216	58	60	4	6	525
Diapterus spp.	.	.	.	.	.	2	.	.	.	.	.	.	2
Diplectrum formosum	.	.	.	.	1	.	.	1	1	1	3	3	10
Diplodus holbrooki	.	.	1	.	.	1	2	5	.	.	.	1	10
Dorosoma cepedianum	.	.	.	1	.	.	1	.	.	.	.	.	2
Dorosoma petenense	.	.	.	.	.	.	.	.	7	45	.	.	52
Echeneis naucrates	.	2	.	.	3	.	1	3	1	1	.	.	11
Echeneis neucratoides	.	.	2	.	.	.	.	.	.	1	.	4	7
Echeneis spp.	.	.	.	.	.	.	.	.	.	.	.	1	1
Elops saurus	1,579	2,253	1,024	382	141	150	192	213	46	188	199	94	6,461
Etropus crossotus	1	.	.	.	.	.	.	.	.	1	6	.	8
Eucinostomus gula	180	293	168	119	144	99	430	542	346	758	700	532	4,311
Eucinostomus harengulus	513	323	462	365	289	304	146	334	347	422	483	630	4,618
Eucinostomus spp.	691	664	377	169	53	226	2,381	912	978	1,671	972	361	9,455
Farfantepenaeus duorarum	109	139	56	39	31	35	1,130	569	502	434	180	169	3,393
Floridichthys carpio	17	34	176	17	29	219	53	424	164	166	196	149	1,644
Fundulus confluentus	.	.	.	.	.	.	.	.	.	.	.	6	6
Fundulus grandis	33	227	33	17	1	14	6	64	6	35	37	66	539

Appendix TB01-01. (Continued)

Species	Month												Totals
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
	E=100	E=100	E=100	E=105	E=100	E=100	E=100	E=100	E=100	E=120	E=115	E=100	E=1,240
Fundulus majalis	16	46	148	231	622	106	26	141	2	22	8	21	1,389
Fundulus seminolis	.	.	.	.	.	.	.	.	1	1	.	.	2
Gambusia holbrooki	1	662	.	82	5	.	.	.	10	95	.	8	863
Gobiesox strumosus	1	1	2	1	.	5	.	5	2	1	.	.	18
Gobionellus smaragdus	2	2	.	.	.	.	.	.	.	.	.	.	4
Gobiosoma bosc	52	81	35	9	4	16	33	5	26	32	3	6	302
Gobiosoma robustum	7	17	42	31	8	11	7	11	13	3	4	17	171
Gobiosoma spp.	33	285	7	.	2	31	89	33	54	55	14	60	663
Gymnura micrura	.	1	1	5	12	1	4	3	1	1	1	4	34
Haemulon plumieri	.	.	.	.	.	.	1	.	6	2	.	4	13
Haemulon sciurus	.	.	.	.	.	.	.	.	1	.	.	.	1
Harengula jaguana	.	89	65	28	333	63	5,636	700	754	636	75	5	8,384
Hemicaranx amblyrhynchus	.	.	.	.	.	.	1	.	1	.	.	.	2
Hippocampus erectus	1	4	6	1	1	.	.	.	.	.	1	2	16
Hippocampus zosterae	4	9	1	1	3	4	.	2	.	1	5	5	35
Hoplosternum spp.	.	.	.	.	.	.	.	.	3	.	.	.	3
Hypleurochilus caudovittatus	.	.	.	.	.	.	.	.	.	3	.	.	3
Hyporhamphus meeki	.	1	1	1	4	2	31	6	3	9	.	3	61
Hyporhamphus spp.	3	.	.	.	.	.	1	.	.	1	.	.	5
Hypsoblennius hentzi	.	.	.	.	.	.	.	1	1	.	1	.	3
Jordanella floridae	.	.	.	.	.	.	1	.	.	.	.	.	1
Lactophrys quadricornis	9	86	34	21	21	29	36	46	24	45	40	58	449
Lactophrys spp.	.	.	.	.	.	.	.	.	1	.	.	.	1
Lagodon rhomboides	2,127	18,829	5,876	5,528	5,213	2,312	3,287	3,943	1,901	4,328	1,361	2,534	57,239
Leiostomus xanthurus	4,478	28,103	2,955	1,217	1,131	667	685	696	361	288	50	37	40,668
Lepisosteus osseus	1	.	.	.	.	1	1	2	7	1	.	.	13
Lepomis macrochirus	.	.	.	.	.	.	1	6	22	12	.	.	41
Lepomis spp.	.	.	.	.	.	.	.	.	.	1	.	.	1
Limulus polyphemus	4	6	6	19	27	8	10	4	15	24	10	5	138
Lucania goodei	.	.	.	.	.	.	.	.	10	.	.	.	10

Appendix TB01-01. (Continued)

Species	Month												Totals
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
	E=100	E=100	E=100	E=105	E=100	E=100	E=100	E=100	E=100	E=120	E=115	E=100	E=1,240
Lucania parva	714	3,542	28	593	31	473	1,618	902	104	913	31	660	9,609
Lucania spp.	.	.	.	.	.	.	.	.	1	.	.	.	1
Lutjanus griseus	1	1	.	.	.	8	5	12	34	40	21	3	125
Lutjanus synagris	.	.	.	.	.	.	.	1	12	12	4	4	33
Membras martinica	.	.	4	.	.	67	907	27	5	5	4	.	1,019
Menidia spp.	593	1,161	2,977	1,707	3,159	2,075	4,067	2,791	2,094	2,896	2,386	1,608	27,514
Menippe spp.	1	1	.	1	1	2	.	.	.	.	2	.	8
Menticirrhus americanus	9	22	11	15	31	42	29	17	17	325	131	78	727
Menticirrhus littoralis	.	.	.	10	12	.	2	.	.	.	.	.	24
Menticirrhus saxatilis	2	1	6	8	2	.	1	.	.	.	2	.	22
Menticirrhus spp.	.	.	.	.	.	.	2	.	.	.	.	.	2
Microgobius gulosus	53	782	98	55	13	216	382	503	428	304	115	175	3,124
Microgobius thalassinus	2	1	6	3	.	.	7	8	.	4	9	6	46
Micropogonias undulatus	.	.	.	.	2	.	.	.	.	1	.	.	3
Micropterus salmoides	.	.	.	5	.	.	2	.	.	.	.	.	7
Monacanthus hispidus	3	3	.	1	1	12	5	11	9	10	4	13	72
Mugil cephalus	3,723	2,424	337	206	42	71	86	116	56	46	47	57	7,211
Mugil curema	3	23	12	30	11	1	20	14	3	9	2	71	199
Mugil gyrans	214	181	41	59	117	55	49	34	11	46	124	48	979
Mugil spp.	915	1	.	48	.	.	.	.	.	.	.	.	964
Mycteroperca microlepis	.	.	.	.	.	1	3	11	1	2	1	.	19
Myrophis punctatus	.	.	.	.	.	.	.	.	.	1	.	.	1
Nicholsina usta	.	1	.	.	1	.	2	.	.	.	.	.	4
Ogcocephalus radiatus	.	1	.	.	.	.	.	.	.	.	1	1	3
Ogcocephalus spp.	.	.	.	.	.	1	.	.	.	.	.	.	1
Oligoplites saurus	.	.	2	9	12	55	137	28	28	51	11	7	340
Opisthonema oglinum	.	62	636	1,254	527	378	2,955	119	39	262	11	7	6,250
Opsanus beta	1	3	5	8	6	14	3	9	5	18	2	3	77
Orthopristis chrysoptera	133	317	90	766	1,168	137	125	327	176	175	31	12	3,457
Paralichthys albigutta	3	14	15	34	38	14	28	12	23	12	13	6	212

Appendix TB01-01. (Continued)

Species	Month												Totals
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
	E=100	E=100	E=100	E=105	E=100	E=100	E=100	E=100	E=100	E=120	E=115	E=100	E=1,240
Peprilus alepidotus	.	3	1	18	4	11	2	4	.	1	1	.	45
Poecilia latipinna	56	385	31	22	3	14	.	4	4	67	11	73	670
Pogonias cromis	.	.	1	2	1	.	1	3	4	2	1	1	16
Pomatomus saltatrix	.	.	.	.	.	.	.	.	2	32	.	.	34
Prionotus scitulus	13	19	20	21	16	19	9	23	28	103	212	17	500
Prionotus tribulus	7	13	2	4	4	5	.	4	1	4	6	6	56
Rachycentron canadum	.	.	.	.	.	.	.	1	.	1	.	.	2
Rhinobatos lentiginosus	1	4	1	2	11	.	.	.	3	.	4	1	27
Rhinoptera bonasus	20	64	124	138	178	76	119	140	55	56	37	36	1,043
Sardinella aurita	.	.	.	.	.	.	.	11	10,619	6	.	.	10,636
Sciaenidae spp.	576	.	.	.	.	.	.	.	.	.	.	.	576
Sciaenops ocellatus	36	54	20	31	7	5	18	24	17	204	176	98	690
Scomberomorus maculatus	.	.	14	16	18	8	2	2	6	8	.	1	75
Selene vomer	.	.	.	3	3	2	6	3	1	.	.	.	18
Serraniculus pumilio	.	.	.	.	.	.	.	.	.	.	.	1	1
Sphoeroides nephelus	9	34	24	33	27	52	15	22	11	28	82	144	481
Sphyraena barracuda	.	.	.	.	.	.	.	.	.	.	1	.	1
Sphyrna tiburo	.	.	4	4	2	2	1	.	.	.	1	3	17
Strongylura marina	.	5	3	1	1	15	1	2	3	1	1	8	41
Strongylura notata	44	8	91	72	103	49	115	57	77	97	66	32	811
Strongylura spp.	.	.	10	10	6	12	1	2	.	.	.	.	41
Strongylura timucu	5	1	4	.	.	5	16	5	2	.	4	5	47
Symphurus plagiusa	18	6	11	3	2	9	9	11	1	10	16	10	106
Synbranchus spp.	.	.	.	.	.	.	.	.	1	.	.	.	1
Syngnathus floridae	10	21	.	.	10	.	7	8	2	18	.	2	78
Syngnathus louisianae	.	6	2	1	18	27	15	24	5	27	52	13	190
Syngnathus scovelli	22	36	42	46	156	95	121	84	36	25	62	104	829
Synodus foetens	4	15	12	21	39	34	17	20	19	32	88	26	327
Tilapia spp.	1	.	.	.	.	.	5	.	32	11	3	1	53
Trachinotus carolinus	.	.	.	.	2	.	.	.	.	4	1	.	7

Appendix TB01-01. (Continued)

Species	Month												Totals
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
	E=100	E=100	E=100	E=105	E=100	E=100	E=100	E=100	E=100	E=120	E=115	E=100	E=1,240
Trachinotus falcatus	1	.	1	4	.	1	.	62	13	20	12	1	115
Trinectes maculatus	145	287	457	150	163	608	33	62	205	621	103	242	3,076
Urophycis floridana	3	13	.	2	.	.	.	.	.	.	.	.	18
Totals	**42,729**	**71,894**	**50,911**	**23,990**	**32,103**	**22,632**	**34,576**	**77,270**	**40,158**	**52,103**	**52,401**	**14,112**	**514,879**

Appendix TB01-02. Summary by gear, stratum, and zone of species collected during Tampa Bay stratified-random sampling, 2001. Within each zone, sampling with 21.3-m bay seines was stratified by location (nearshore [Shore] versus offshore), and offshore sites were further stratified by bottom type (vegetated [Veg] versus unvegetated [Unveg]). Sampling with 21.3-m river seines and 183-m haul seines was stratified by the presence or absence of overhanging shoreline vegetation (Over or Nonover). Sampling with 183-m purse seines was post-stratified by the presence or absence of bottom vegetation (Veg or Unveg). Sampling with 6.1-m otter trawls was not stratified. Effort, or the total number of hauls, is labeled E. Zones A-E were located in Tampa Bay, and Zone F encompassed the lower Alafia (K), Little Manatee (L), Manatee (M), and Braden (N) Rivers. Taxa are listed in alphabetical order.

Species	Gear and Strata										Zone						Totals
	21.3-m bay seine			21.3-m river seine		183-m haul seine		183-m purse seine		6.1-m otter trawl							
	Veg	Unveg	Shore	Over	Nonover	Over	Nonover	Veg	Unveg		A	B	C	D	E	F	
	E=118	E=122	E=60	E=134	E=130	E=180	E=60	E=25	E=225	E=186	E=124	E=180	E=173	E=151	E=192	E=420	E=1,240
Achirus lineatus	15	11	23	26	22	6	.	3	16	16	6	9	19	15	29	60	138
Adinia xenica	.	.	.	2,189	3	.	.	.	.	.	.	.	.	.	.	2,192	2,192
Aetobatis narinari	.	.	.	.	.	2	.	.	3	.	.	1	2	.	2	.	5
Aluterus schoepfi	.	.	.	.	.	.	.	4	4	1	.	5	.	.	4	.	9
Aluterus scriptus	.	.	.	.	.	.	.	5	2	.	.	.	.	7	.	.	7
Ameiurus catus	.	.	.	.	.	.	.	.	.	1	.	.	.	.	.	1	1
Anchoa cubana	.	36	.	.	.	.	.	.	.	.	.	.	.	.	36	.	36
Anchoa hepsetus	2,343	749	16	483	833	.	.	.	.	178	57	98	1,342	1,608	115	1,382	4,602
Anchoa mitchilli	4,307	2,706	5,204	109,906	111,169	.	.	.	.	19,664	2,277	1,611	3,750	880	4,082	240,356	252,956
Anchoa spp.	.	.	.	.	.	.	.	.	.	2	.	.	.	.	.	2	2
Ancylopsetta quadrocellata	.	.	.	.	.	1	4	7	15	1	.	4	.	21	3	.	28
Archosargus probatocephalus	35	1	12	68	18	224	90	3	4	36	13	103	35	113	105	122	491
Arius felis	13	82	5	4	.	1,466	247	479	1,857	337	284	1,591	992	757	564	302	4,490
Astroscopus y-graecum	.	1	2	.	.	.	.	.	.	.	.	.	1	2	.	.	3
Bagre marinus	1	2	.	2	.	44	8	9	324	6	80	105	152	24	29	6	396
Bairdiella chrysoura	1,380	77	9	201	48	365	325	381	612	200	431	783	173	1,348	414	449	3,598
Bathygobius soporator	1	.	1	19	47	.	.	.	.	2	.	1	.	.	1	68	70
Belonesox belizanus	.	.	.	2	1	.	.	.	.	.	.	.	.	.	.	3	3
Brevoortia spp.	.	.	.	38	926	8,839	123	145	1,688	1	932	189	107	9,290	277	965	11,760

Appendix TB01-02. (Continued)

Species	Gear and Strata										Zone						Totals
	21.3-m bay seine			21.3-m river seine		183-m haul seine		183-m purse seine		6.1-m otter trawl							
	Veg	Unveg	Shore	Over	Nonover	Over	Nonover	Veg	Unveg		A	B	C	D	E	F	
	E=118	E=122	E=60	E=134	E=130	E=180	E=60	E=25	E=225	E=186	E=124	E=180	E=173	E=151	E=192	E=420	E=1,240
Calamus arctifrons	2	.	.	.	.	.	.	3	.	.	.	.	.	3	2	.	5
Callinectes sapidus	26	17	27	108	124	185	38	11	46	479	64	48	116	75	48	710	1,061
Caranx crysos	.	.	.	.	.	4	.	5	73	.	2	14	24	15	27	.	82
Caranx hippos	.	3	.	3	.	80	11	1	34	.	4	77	30	5	13	3	132
Caranx latus	.	.	.	.	.	1	1	.	.	.	.	1	.	1	.	.	2
Carcharhinus limbatus	.	.	.	.	.	.	1	.	1	.	.	1	1	.	.	.	2
Centropomus undecimalis	.	.	2	59	22	987	220	1	2	9	37	271	131	115	658	90	1,302
Centropristis striata	.	.	.	.	.	.	1	.	.	.	.	.	.	.	1	.	1
Chaetodipterus faber	13	2	5	.	1	933	245	4	56	75	28	22	254	45	926	59	1,334
Chasmodes saburrae	92	3	5	3	6	.	.	.	.	1	38	12	4	7	39	10	110
Chilomycterus schoepfi	34	1	1	.	.	44	72	71	117	24	13	65	12	151	115	8	364
Chloroscombrus chrysurus	2	.	.	.	1	20	7	96	366	.	15	106	192	53	125	1	492
Clarias batrachus	.	.	.	.	.	1	.	.	.	.	.	.	.	.	1	.	1
Clupeidae spp.	1	.	.	.	.	.	.	.	.	.	.	.	.	.	1	.	1
Cynoscion arenarius	9	5	12	292	121	16	1	9	370	1,662	83	74	321	83	154	1,782	2,497
Cynoscion nebulosus	535	38	62	73	63	137	27	62	189	61	255	199	68	269	259	197	1,247
Cyprinodon variegatus	114	.	123	29	130	2	1	.	.	.	2	1	141	33	63	159	399
Dasyatis americana	.	.	.	.	.	1	1	2	8	.	.	2	2	6	2	.	12
Dasyatis sabina	15	4	2	3	.	238	91	14	228	102	81	133	256	46	109	72	697
Dasyatis say	.	.	.	.	.	11	12	2	55	.	3	24	13	23	17	.	80
Diapterus auratus	.	.	.	1	.	1	.	.	.	.	.	.	.	.	1	1	2
Diapterus plumieri	3	.	.	163	149	86	4	1	.	119	36	4	8	5	41	431	525
Diapterus spp.	2	.	.	.	.	.	.	.	.	.	.	.	.	.	2	.	2
Diplectrum formosum	2	1	.	.	.	.	1	.	2	4	.	3	.	2	5	.	10

Appendix TB01-02. (Continued)

Species	Gear and Strata										Zone						Totals
	21.3-m bay seine			21.3-m river seine		183-m haul seine		183-m purse seine		6.1-m otter trawl							
	Veg	Unveg	Shore	Over	Nonover	Over	Nonover	Veg	Unveg		A	B	C	D	E	F	
	E=118	E=122	E=60	E=134	E=130	E=180	E=60	E=25	E=225	E=186	E=124	E=180	E=173	E=151	E=192	E=420	E=1,240
Diplodus holbrooki	1	.	.	.	.	.	5	1	3	.	.	.	.	9	1	.	10
Dorosoma cepedianum	.	.	.	.	.	.	1	.	.	1	1	.	.	.	.	1	2
Dorosoma petenense	1	.	19	3	9	.	1	.	16	3	16	.	19	.	2	15	52
Echeneis naucrates	.	.	.	.	.	6	1	1	3	.	.	6	1	1	3	.	11
Echeneis neucratoides	.	.	.	.	.	2	1	.	4	.	1	.	3	.	3	.	7
Echeneis spp.	.	.	.	.	.	.	.	.	1	.	.	.	.	1	.	.	1
Elops saurus	.	1	.	1	3	3,029	637	652	2,137	1	324	2,669	943	1,197	1,323	5	6,461
Etropus crossotus	.	.	.	.	.	.	.	.	1	7	.	5	.	2	1	.	8
Eucinostomus gula	761	162	198	281	147	1,499	762	56	313	132	611	880	529	909	918	464	4,311
Eucinostomus harengulus	22	56	94	1,670	1,784	525	249	.	28	190	207	218	125	134	291	3,643	4,618
Eucinostomus spp.	1,820	467	1,761	2,861	2,069	3	.	.	.	474	162	761	290	1,794	1,044	5,404	9,455
Farfantepenaeus duorarum	1,022	160	256	181	172	86	14	1	10	1,491	190	257	375	252	594	1,725	3,393
Floridichthys carpio	205	9	1,245	105	61	10	9	.	.	.	74	62	335	800	207	166	1,644
Fundulus confluentus	.	.	.	6	.	.	.	.	.	.	.	.	.	.	.	6	6
Fundulus grandis	.	.	75	262	176	26	.	.	.	.	7	.	2	89	3	438	539
Fundulus majalis	.	5	224	266	883	3	8	.	.	.	24	.	60	153	3	1,149	1,389
Fundulus seminolis	.	.	.	1	1	.	.	.	.	.	.	.	.	.	.	2	2
Gambusia holbrooki	.	.	.	766	97	.	.	.	.	.	.	.	.	.	.	863	863
Gobiesox strumosus	.	.	.	10	4	.	.	.	.	4	.	.	.	.	.	18	18
Gobionellus smaragdus	.	.	.	4	.	.	.	.	.	.	.	.	.	.	.	4	4
Gobiosoma bosc	.	1	4	182	106	.	.	.	.	9	2	1	2	.	.	297	302
Gobiosoma robustum	65	37	36	7	8	.	.	.	.	18	51	27	9	14	38	32	171
Gobiosoma spp.	237	18	24	257	76	.	.	.	.	51	90	11	16	5	158	383	663
Gymnura micrura	.	.	2	.	.	17	2	2	9	2	2	2	9	14	6	1	34

Appendix TB01-02. (Continued)

Species	Gear and Strata										Zone						Totals
	21.3-m bay seine			21.3-m river seine		183-m haul seine		183-m purse seine		6.1-m otter trawl							
	Veg	Unveg	Shore	Over	Nonover	Over	Nonover	Veg	Unveg		A	B	C	D	E	F	
	E=118	E=122	E=60	E=134	E=130	E=180	E=60	E=25	E=225	E=186	E=124	E=180	E=173	E=151	E=192	E=420	E=1,240
Haemulon plumieri	10	.	.	.	.	2	.	1	.	.	.	.	.	8	5	.	13
Haemulon sciurus	1	.	.	.	.	.	.	.	.	.	.	.	.	.	1	.	1
Harengula jaguana	5,938	238	105	798	147	37	22	256	837	6	261	540	91	5,707	838	947	8,384
Hemicaranx amblyrhynchus	.	.	.	.	.	.	.	.	1	1	.	.	.	.	1	1	2
Hippocampus erectus	3	.	.	.	.	1	2	.	8	2	1	.	1	9	3	2	16
Hippocampus zosterae	28	4	2	.	.	.	.	.	.	1	1	4	.	15	15	.	35
Hoplosternum spp.	.	.	.	.	1	.	.	.	.	2	.	.	.	.	.	3	3
Hypleurochilus caudovittatus	.	.	.	.	.	.	.	.	.	3	.	.	.	.	3	.	3
Hyporhamphus meeki	38	.	2	.	.	9	12	.	.	.	34	8	2	2	15	.	61
Hyporhamphus spp.	1	1	.	.	.	3	.	.	.	.	1	.	1	.	3	.	5
Hypsoblennius hentzi	3	.	.	.	.	.	.	.	.	.	.	1	.	.	2	.	3
Jordanella floridae	.	.	.	1	.	.	.	.	.	.	.	.	.	.	.	1	1
Lactophrys quadricornis	16	3	1	.	.	57	39	70	254	9	7	55	9	192	185	1	449
Lactophrys spp.	1	.	.	.	.	.	.	.	.	.	.	.	.	.	1	.	1
Lagodon rhomboides	18,261	842	3,937	3,675	2,579	8,775	6,887	2,157	4,829	5,297	2,959	6,776	2,459	20,502	13,068	11,475	57,239
Leiostomus xanthurus	5,024	2,304	10,380	10,898	2,971	1,322	641	419	835	5,874	3,546	845	5,840	6,020	4,704	19,713	40,668
Lepisosteus osseus	.	.	.	.	1	7	.	.	2	3	4	.	4	.	1	4	13
Lepomis macrochirus	.	.	.	14	26	.	.	.	.	1	.	.	.	.	.	41	41
Lepomis spp.	.	.	.	.	1	.	.	.	.	.	.	.	.	.	.	1	1
Limulus polyphemus	5	6	3	.	1	32	3	4	60	24	23	7	60	19	22	7	138
Lucania goodei	.	.	.	1	9	.	.	.	.	.	.	.	.	.	.	10	10
Lucania parva	983	220	205	6,448	1,697	.	.	.	.	56	14	.	764	377	253	8,201	9,609
Lucania spp.	.	.	.	.	1	.	.	.	.	.	.	.	.	.	.	1	1
Lutjanus griseus	44	8	16	18	13	9	6	6	1	4	3	4	7	26	50	35	125

Appendix TB01-02. (Continued)

Species	Gear and Strata										Zone						Totals
	21.3-m bay seine			21.3-m river seine		183-m haul seine		183-m purse seine		6.1-m otter trawl							
	Veg	Unveg	Shore	Over	Nonover	Over	Nonover	Veg	Unveg		A	B	C	D	E	F	
	E=118	E=122	E=60	E=134	E=130	E=180	E=60	E=25	E=225	E=186	E=124	E=180	E=173	E=151	E=192	E=420	E=1,240
Lutjanus synagris	17	10	.	.	.	3	1	.	.	2	.	3	1	4	25	.	33
Membras martinica	574	15	158	205	67	.	.	.	.	.	164	1	576	.	6	272	1,019
Menidia spp.	1,057	269	2,794	9,733	13,654	3	.	.	.	4	432	1,632	681	445	933	23,391	27,514
Menippe spp.	.	.	.	.	.	.	.	.	4	4	2	2	.	2	.	2	8
Menticirrhus americanus	18	11	10	90	48	3	2	4	72	469	46	14	202	20	16	429	727
Menticirrhus littoralis	.	.	.	.	.	.	2	.	22	.	.	.	.	13	11	.	24
Menticirrhus saxatilis	4	8	5	.	.	.	.	.	5	.	3	4	8	3	4	.	22
Menticirrhus spp.	.	2	.	.	.	.	.	.	.	.	.	.	2	.	.	.	2
Microgobius gulosus	1,088	216	464	474	421	.	.	.	.	461	359	300	161	41	907	1,356	3,124
Microgobius thalassinus	.	5	2	7	1	.	.	.	.	31	.	.	12	.	5	29	46
Micropogonias undulatus	.	.	.	.	.	2	.	.	1	.	.	.	.	3	.	.	3
Micropterus salmoides	.	.	.	4	2	.	.	.	.	1	.	.	.	.	.	7	7
Monacanthus hispidus	23	.	.	1	.	8	16	14	7	3	.	7	6	44	13	2	72
Mugil cephalus	.	.	82	2,704	3,355	628	442	.	.	.	317	319	100	112	304	6,059	7,211
Mugil curema	.	.	.	.	14	140	41	.	4	.	3	46	3	12	121	14	199
Mugil gyrans	.	.	4	125	163	540	146	.	1	.	119	81	56	92	343	288	979
Mugil spp.	.	1	.	824	139	.	.	.	.	.	.	.	.	.	1	963	964
Mycteroperca microlepis	3	.	.	.	.	2	11	.	3	.	.	2	.	15	2	.	19
Myrophis punctatus	.	.	.	1	.	.	.	.	.	.	.	.	.	.	.	1	1
Nicholsina usta	1	.	.	.	.	.	.	1	2	.	.	.	.	3	1	.	4
Ogcocephalus radiatus	.	.	.	.	.	.	1	.	2	.	.	.	1	1	1	.	3
Ogcocephalus spp.	.	.	.	.	.	.	1	.	.	.	1	.	.	.	.	.	1
Oligoplites saurus	30	25	52	71	90	37	14	1	20	.	40	32	33	27	47	161	340
Opisthonema oglinum	2,904	7	.	.	.	55	25	120	3,134	5	633	1,598	296	3,170	548	5	6,250

Appendix TB01-02. (Continued)

Species	Gear and Strata										Zone						Totals
	21.3-m bay seine			21.3-m river seine		183-m haul seine		183-m purse seine		6.1-m otter trawl							
	Veg	Unveg	Shore	Over	Nonover	Over	Nonover	Veg	Unveg		A	B	C	D	E	F	
	E=118	E=122	E=60	E=134	E=130	E=180	E=60	E=25	E=225	E=186	E=124	E=180	E=173	E=151	E=192	E=420	E=1,240
Opsanus beta	3	1	4	9	6	25	5	8	4	12	1	7	4	17	21	27	77
Orthopristis chrysoptera	1,983	13	40	10	23	302	382	183	422	99	103	545	808	1,354	524	123	3,457
Paralichthys albigutta	11	15	6	2	1	70	24	16	48	19	22	49	27	58	40	16	212
Peprilus alepidotus	.	1	.	.	1	.	4	.	39	.	5	.	33	3	3	1	45
Poecilia latipinna	.	.	.	524	144	.	2	.	.	.	.	.	.	2	.	668	670
Pogonias cromis	.	.	.	.	2	8	1	.	2	3	2	1	4	3	1	5	16
Pomatomus saltatrix	.	.	.	.	.	.	.	.	34	.	.	.	.	.	34	.	34
Prionotus scitulus	26	19	10	1	.	6	7	8	127	296	48	195	82	42	114	19	500
Prionotus tribulus	.	2	5	3	1	5	8	.	12	20	4	8	9	12	6	17	56
Rachycentron canadum	.	.	.	.	.	1	.	.	1	.	.	1	.	.	1	.	2
Rhinobatos lentiginosus	.	.	.	.	.	8	3	.	14	2	.	6	12	3	6	.	27
Rhinoptera bonasus	2	10	.	1	2	570	111	6	340	1	113	385	279	109	153	4	1,043
Sardinella aurita	10,619	.	.	.	.	5	12	.	.	.	.	43	.	10,587	6	.	10,636
Sciaenidae spp.	561	15	.	.	.	.	.	.	.	.	.	.	576	.	.	.	576
Sciaenops ocellatus	28	5	45	277	142	113	10	.	.	70	57	45	46	18	38	486	690
Scomberomorus maculatus	.	.	.	.	.	7	4	2	62	.	6	10	20	36	3	.	75
Selene vomer	2	.	.	.	.	4	4	2	4	2	2	5	1	4	4	2	18
Serraniculus pumilio	1	.	.	.	.	.	.	.	.	.	.	.	.	1	.	.	1
Sphoeroides nephelus	136	78	48	26	21	89	37	13	8	25	87	53	113	36	120	72	481
Sphyraena barracuda	.	.	.	.	.	1	.	.	.	.	.	.	.	1	.	.	1
Sphyrna tiburo	.	.	.	.	.	5	.	1	11	.	.	2	8	4	3	.	17
Strongylura marina	2	.	.	13	8	9	7	2	.	.	1	2	3	11	3	21	41
Strongylura notata	7	42	51	17	30	547	117	.	.	.	119	238	72	134	201	47	811
Strongylura spp.	.	.	10	12	19	.	.	.	.	.	.	.	.	.	10	31	41

Appendix TB01-02. (Continued)

Species	Gear and Strata										Zone						Totals
	21.3-m bay seine			21.3-m river seine		183-m haul seine		183-m purse seine		6.1-m otter trawl							
	Veg	Unveg	Shore	Over	Nonover	Over	Nonover	Veg	Unveg		A	B	C	D	E	F	
	E=118	E=122	E=60	E=134	E=130	E=180	E=60	E=25	E=225	E=186	E=124	E=180	E=173	E=151	E=192	E=420	E=1,240
Strongylura timucu	2	1	1	23	16	.	4	.	.	.	.	6	.	1	1	39	47
Symphurus plagiusa	9	8	4	1	20	9	.	.	2	53	8	4	34	2	1	57	106
Synbranchus spp.	.	.	.	.	1	.	.	.	.	.	.	.	.	.	.	1	1
Syngnathus floridae	77	.	1	.	.	.	.	.	.	.	1	20	.	29	28	.	78
Syngnathus louisianae	141	17	6	2	2	.	.	.	.	22	40	48	18	19	45	20	190
Syngnathus scovelli	619	48	20	22	18	.	.	.	.	102	134	219	43	116	176	141	829
Synodus foetens	82	65	30	9	16	26	9	13	29	48	36	72	44	75	65	35	327
Tilapia spp.	6	.	.	20	2	24	1	.	.	.	5	8	2	14	2	22	53
Trachinotus carolinus	.	.	.	.	.	1	.	.	6	.	.	1	.	1	5	.	7
Trachinotus falcatus	.	.	1	.	.	23	82	2	7	.	9	13	17	64	12	.	115
Trinectes maculatus	1	.	.	635	631	5	.	.	11	1,793	1	3	12	3	5	3,052	3,076
Urophycis floridana	1	.	.	.	.	2	.	.	.	15	.	.	1	1	1	15	18
Totals	**63,473**	**9,190**	**27,953**	**158,234**	**145,787**	**32,440**	**12,369**	**5,340**	**19,884**	**40,209**	**16,280**	**24,726**	**24,508**	**70,020**	**36,955**	**342,390**	**514,879**

Charlotte Harbor

Charlotte Harbor is the second-largest estuary in Florida (575 km^2) and is one of the most pristine bay systems in the state with approximately 90% of its waters designated as aquatic preserves (Florida Department of Natural Resources 1983). 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). It is estimated that between 1945 and 1982, 29% of Charlotte Harbor=s seagrass beds were lost (Harris et al. 1983).

The Fisheries-Independent Monitoring (FIM) program has conducted intensive ichthyological sampling in Charlotte Harbor since 1989. This section summarizes FIM data collected in Charlotte Harbor during 2001. The area sampled was divided into four bay zones (A-D) and a riverine zone (F) that encompassed the lower Myakka (M) and Peace (P) Rivers (Figure CH01-01). Monthly stratified-random sampling (SRS), stratified by depth, was conducted year-round using 21.3-m seines, 183-m haul seines, 183-m purse seines, and 6.1-m otter trawls. The 21.3-m and 183-m haul seine samples were also stratified by habitat type. The 6.1-m otter trawl sampling was conducted year-round in the rivers, but was limited to the fall season (October-November) in Charlotte Harbor proper (Zones A-C only). All methods used were the same as those described in the Methods section of this report.

Stratified-Random Sampling

A total of 290,146 fish and selected invertebrates were collected during Charlotte Harbor SRS in 2001 (Table CH01-01; Appendices CH01-01 and -02). More than 145 species were represented in 918 samples. As in previous years, small forage fishes were collected in the largest numbers. *Anchoa mitchilli* (n=98,922), *Lagodon rhomboides* (n=86,952), *Menidia* spp. (n=11,815), *Leiostomus xanthurus* (10,413), *Opisthonema* *oglinum* (n=10,074), *Lucania parva* (n=9,883), and the mojarras (*Eucinostomus* spp., *Eucinostomus gula,* and *Eucinostomus harengulus*; n=9,164) together comprised 82% of the year=s total catch. Monthly catch totals ranged from 5,760 (December) to 76,548 (April). The total yearly catch was largest in the rivers (Zone F; n=106,243; 168 samples) and smallest in the southern part of the harbor (Zone D; n=23,059; 108 samples). Selected Taxa (26,926 individuals; 28 taxa) accounted for 9% of the total catch. The most abundant Selected Taxa were *L. xanthurus* (n=10,413), *Farfantepenaeus duorarum* (n=4,176), *Mugil cephalus* (n=3,359), *Cynoscion arenarius* (n=2,105), *Elops saurus* (n=1,650), and *Centropomus undecimalis* (n=900). No young-of-the-year (YOY) *C. undecimalis* were collected during 2001 SRS.

Two species new to Charlotte Harbor FIM collections, the highfin goby (*Gobionellus oceanicus*) and the brown hoplo catfish (*Hoplosternum littorale*), were collected in 2001. We captured two specimens of *G. oceanicus*, one in July and one in December. This large (up to 20 cm) goby ranges from south Florida to Brazil (Robins et al. 1986). A single *H. littorale* was collected near the mouth of the Peace River in September. This species is indigenous to South America, and has become established in freshwater systems throughout south Florida after being introduced by the ornamental fish trade during the 1970's (Ramon Ruiz-Carus, FMRI, personal communication).

Bay Sampling

21.3-m Bay Seines. A total of 128,262 animals were collected in 288 21.3-m bay seine samples, representing 44% of the total annual SRS catch (Tables CH01-01 and -02). Zone C yielded the most fish and selected invertebrates (n=58,009; 96 hauls), while Zone A was the least productive (n=28,675; 96 hauls). *Lagodon rhomboides* (n=64,742) comprised over half (50.5%) of the catch in this gear. *Anchoa mitchilli* (n=12,067), *L. parva* (n=9,861), and *Menidia* spp. (n=9,145) were also collected in large numbers. *Lagodon rhomboides* (63% occurrence), *F. duorarum* (59% occurrence), and *Eucinostomus* spp. (52% occurrence) were collected most frequently.

About 9% of the 21.3-m bay seine catch was Selected Taxa (n=11,875; 20 taxa; Table CH01-03). *Leiostomus xanthurus* (n=6,154) and *F. duorarum* (n=3,544) were the most numerous, accounting for 82% of the Selected Taxa taken. Most *L. xanthurus* (94%

of yearly catch) were collected during January-March (Appendix CH01-01), when YOY of this species recruit to the estuary. *Mugil cephalus* (n=652), *C. arenarius* (n=491), *Cynoscion nebulosus* (n=290), *Lutjanus griseus* (n=230), and *Sciaenops ocellatus* (n=195) ranked next in abundance among the Selected Taxa.

183-m Haul Seines. A total of 24,487 animals were collected with 183-m haul seines (n=204; Tables CH01-01 and -04). Zones D (n=10,470; 48 hauls) and B (n=9,491; 48 hauls) produced the largest number of fish and selected invertebrates, while Zone A produced the fewest (n=1,228; 60 samples). *Lagodon rhomboides* (n=14,929) accounted for 61% of the total catch and were collected in over two-thirds (68%) of the 183-m haul seine samples. *Centropomus undecimalis* (n=888), *B. chrysoura* (n=796), *Orthopristis chrysoptera* (n=695), and *E. gula* (n=671) were also taken in large numbers. Most of the *C. undecimalis* collected in Charlotte Harbor this year (99%) were taken with this gear.

More Selected Taxa (22) were represented in 183-m haul seine collections than in those of any other gear (Table CH01-05). Besides *C. undecimalis, E. saurus* (n=592), *Archosargus probatocephalus* (n=502), *M. cephalus* (n=334), and *L. griseus* (n=208) were the most numerous. *Pogonias cromis* (n=1) was collected exclusively with this gear.

183-m Purse Seines. A total of 29,754 animals were collected in 240 183-m purse seine sets made during 2001 (Tables CH01-01 and -06). As in previous years, the catch was largest in Zone D (n=12,589). Two species dominated the 183-m purse seine catch, *O. oglinum (*n=10,037) and *L. rhomboides* (n=6,421). *Rachycentron canadum* (n=2) and *Menticirrhus littoralis* (n=1) were collected only with this gear.

Elops saurus (n=1,056) and *C. arenarius* (n=844) comprised over half (58%) of the Selected Taxa collected with 183-m purse seines (Table CH01-07). Both were present in about one-quarter of the samples (30 and 23% occurrence, respectively). While *Pomatomus saltatrix* (n=443) were also collected in large numbers, they were taken in only 3% of the samples. Sixteen other Selected Taxa were represented in 183-m purse seine samples.

Seasonal 6.1-m Bay Otter Trawls. The 18 seasonal 6.1-m bay otter trawl samples, collected in October and November, accounted for 1,400 animals (Table CH01-08). *Anchoa mitchilli* (n=425) was the most numerous; however, this species was present in only 28% of the samples. *Lagodon rhomboides* (n=221) and *E. gula* (n=113) were also collected in large numbers.

Nine Selected Taxa (n=273) were collected in seasonal 6.1-m bay otter trawls (Table CH01-09). The most numerous were *C. arenarius* (n=108), *F. duorarum* (n=95), and *M. americanus* (n=37), which together comprised 88% of the Selected Taxa catch.

River Sampling

21.3-m River Seines. Over 34% (n=99,960) of the animals collected during SRS sampling were taken with 21.3-m river seines (96 hauls; Table CH01-10). The estimated mean density obtained with 21.3-m river seines (1,531 animals/100 m^2) was higher than with any other gear type. *Anchoa mitchilli* dominated these collections (n=83,013; 83% of 21.3-m river seine catch), as in all past years of Charlotte Harbor SRS. *Menidia* spp. (n=2,667) and *Anchoa hepsetus* (n=2,552) were also collected in large numbers. *Menidia* spp. was collected most frequently (74% occurrence).

Less than 7% of the 21.3-m river seine catch (n=6,822; 13 taxa) consisted of Selected Taxa (Table CH01-11). The most numerous was *L. xanthurus* (n=3,677); all of these were young-of-the-year individuals (12-73 mm SL). *Mugil cephalus* (n=2,373), *Callinectes sapidus* (n=248), and *F. duorarum* (n=217) ranked next in abundance.

6.1-m River Otter Trawls. A total of 6,283 animals were collected in 72 6.1-m river otter trawl samples (Table CH01-12). *Anchoa mitchilli* (n=3,417) accounted for over half (54%) of the catch. *Trinectes maculatus* (n=688) were also collected in large numbers.

A large portion of the 6.1-m river otter trawl catch (n=1,341; 21%; 10 taxa) consisted of Selected Taxa (Table CH01-13). Five species, *C. arenarius* (n=628), *F. duorarum* (n=316), *M. americanus* (n=220), *C. sapidus* (n=120), and *L. xanthurus* (n=46), comprised most (99%) of the Selected Taxa. *Farfantepenaeus duorarum* and *C. sapidus* were collected most frequently (68% occurrence).

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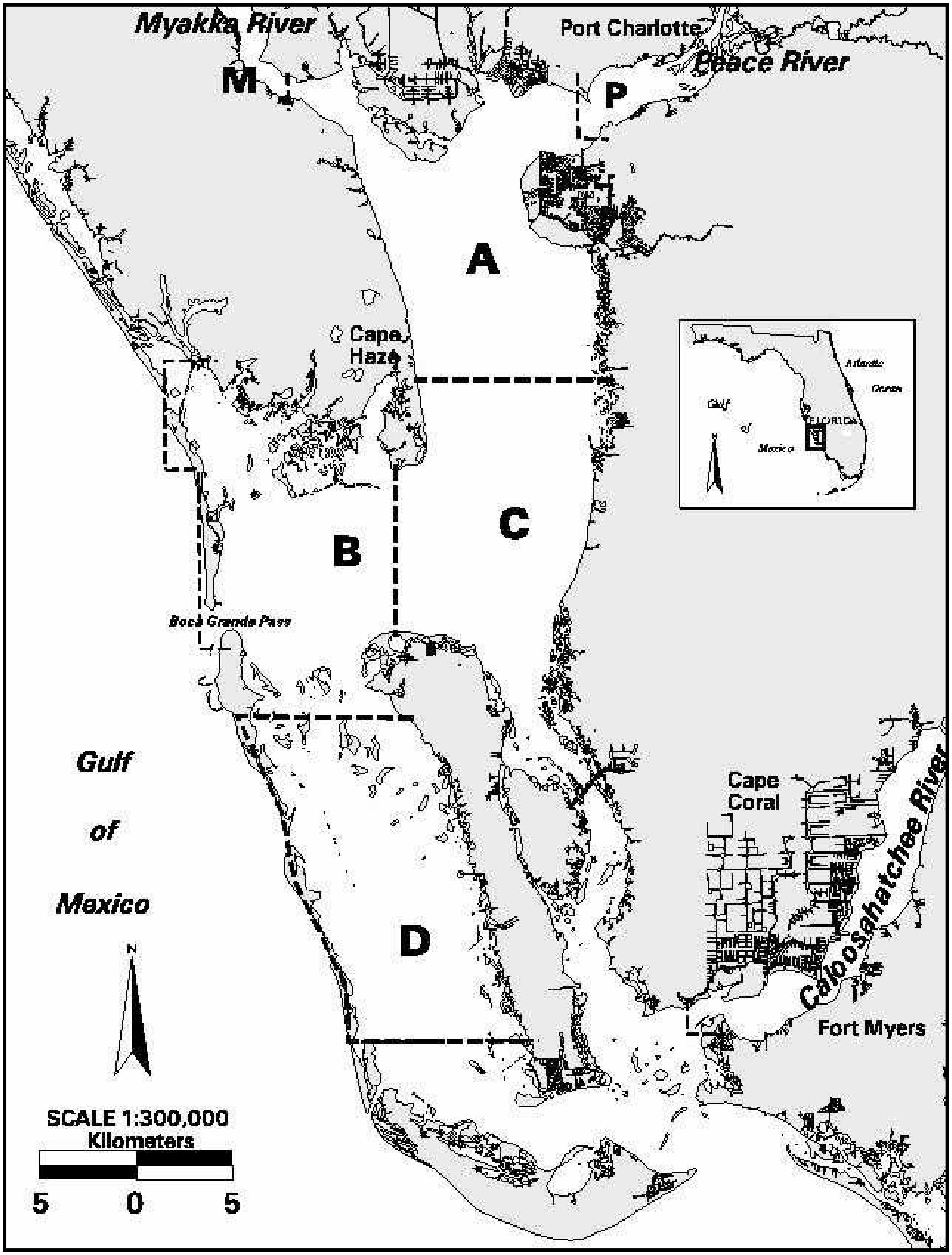

Figure CH01-01. Map of Charlotte Harbor sampling area. Zones are labeled A-D, M and P.

Table CH01-01. Summary of catch and effort data for Charlotte Harbor stratified-random sampling, 2001. Zones A-D were located in the bay and Zones M and P encompassed the lower Myakka and Peace Rivers, respectively.

	21.3-m bay seine		21.3-m river seine		183-m haul seine		183-m purse seine		6.1-m otter trawl		Totals	
Zone	**Animals**	**Hauls**	**Animals**	**Hauls**	**Animals**	**Hauls**	**Animals**	**Hauls**	**Animals**	**Hauls**	**Animals**	**Hauls**
A	28,675	96	.	.	1,228	60	6,108	60	543	6	36,554	222
B	41,578	96	.	.	9,491	48	5,667	60	421	6	57,157	210
C	58,009	96	.	.	3,298	48	5,390	60	436	6	67,133	210
D	.	.	.	.	10,470	48	12,589	60	.	.	23,059	108
F	.	.	99,960	96	.	.	.	.	6,283	72	106,243	168
Totals	**128,262**	**288**	**99,960**	**96**	**24,487**	**204**	**29,754**	**240**	**7,683**	**90**	**290,146**	**918**

Table CH01-02. Catch statistics for 10 dominant taxa collected in 288 21.3-m bay seine samples during Charlotte Harbor stratified-random sampling, 2001. 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**
Lagodon rhomboides	64,742	50.5	62.8	160.57	33.43	353.28	6,240.00	29	0.04	11	160
Anchoa mitchilli	12,067	9.4	25.7	29.93	7.88	446.71	1,640.00	32	0.08	17	67
Lucania parva	9,861	7.7	30.2	24.46	8.13	564.30	1,777.14	23	0.05	14	46
Menidia spp.	9,145	7.1	33.7	22.68	8.87	663.86	2,034.29	41	0.09	14	80
Leiostomus xanthurus	6,154	4.8	18.4	15.26	5.07	563.67	1,022.86	22	0.12	10	109
Eucinostomus spp.	5,101	4.0	51.7	12.65	1.84	247.46	271.43	27	0.10	11	41
Farfantepenaeus duorarum	3,544	2.8	59.0	8.79	1.39	269.07	256.43	12	0.08	3	31
Microgobius gulosus	3,086	2.4	47.9	7.65	1.22	270.25	162.86	29	0.13	13	71
Bairdiella chrysoura	2,217	1.7	25.3	5.50	1.75	541.54	371.43	43	0.35	8	148
Orthopristis chrysoptera	1,767	1.4	24.3	4.38	0.98	379.13	142.86	38	0.33	15	145
Subtotal	117,684	91.8	.	.	.	.	.	.	.	3	160
Totals	**128,262**	**100.0**	**.**	**318.11**	**38.17**	**203.63**	**6,502.86**	**.**	**.**	**3**	**720**

Table CH01-03. Catch statistics for Selected Taxa collected in 288 21.3-m bay seine samples during Charlotte Harbor stratified-random sampling, 2001. 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
Leiostomus xanthurus	6,154	4.8	18.4	15.26	5.07	563.67	1,022.86	22	0.12	10	109
Farfantepenaeus duorarum	3,544	2.8	59.0	8.79	1.39	269.07	256.43	12	0.08	3	31
Mugil cephalus	652	0.5	6.6	1.62	0.70	730.63	137.14	29	0.85	18	345
Cynoscion arenarius	491	0.4	4.2	1.22	1.14	1,583.51	327.14	30	0.27	15	51
Cynoscion nebulosus	290	0.2	24.0	0.72	0.12	288.61	22.86	41	1.40	15	265
Lutjanus griseus	230	0.2	13.5	0.57	0.18	524.75	31.43	36	2.00	11	182
Sciaenops ocellatus	195	0.2	9.7	0.48	0.22	769.01	59.29	31	2.67	12	392
Callinectes sapidus	100	0.1	16.0	0.25	0.05	335.41	8.57	28	2.71	8	152
Archosargus probatocephalus	84	0.1	11.5	0.21	0.05	382.66	6.43	44	5.22	12	244
Menticirrhus americanus	51	0.0	3.1	0.13	0.07	984.31	17.14	46	2.85	19	90
Lutjanus synagris	27	0.0	2.4	0.07	0.04	1,016.17	10.71	42	2.83	23	69
Paralichthys albigutta	16	0.0	3.8	0.04	0.02	647.27	3.57	88	24.09	18	407
Menticirrhus saxatilis	14	0.0	4.2	0.03	0.01	505.35	1.43	34	4.36	15	69
Centropomus undecimalis	8	0.0	2.4	0.02	0.01	664.48	1.43	405	30.98	285	575
Mycteroperca microlepis	6	0.0	2.1	0.01	0.01	686.76	0.71	155	16.14	97	204
Mugil gyrans	5	0.0	1.4	0.01	0.01	893.97	1.43	26	7.34	14	52
Mugil curema	4	0.0	1.4	0.01	0.00	844.08	0.71	91	34.12	27	151
Elops saurus	2	0.0	0.7	0.00	0.00	1,197.91	0.71	281	24.50	256	305
Menippe spp.	1	0.0	0.3	0.00	0.00	1,697.06	0.71	9	.	9	9
Trachinotus falcatus	1	0.0	0.3	0.00	0.00	1,697.06	0.71	24	.	24	24
Totals	**11,875**	**9.3**	**86.5**	**29.45**	**5.57**	**320.67**	**1,029.29**	**.**	**.**	**3**	**575**

Table CH01-04. Catch statistics for 10 dominant taxa collected in 204 183-m haul seine samples during Charlotte Harbor stratified-random sampling, 2001. Percent (%) is the percent of the total catch represented by that taxon; percent occurrence (% Occur) is the percentage of samples in which that taxon was collected; CV is the coefficient of variation of the mean. Taxa are ranked in order of decreasing mean catch-per-unit-effort.

Species	Number		%	Catch-per-unit-effort (animals/set)				Standard Length (mm)			
	No.	**%**	**Occur**	**Mean**	**Stderr**	**CV**	**Max**	**Mean**	**Stderr**	**Min**	**Max**
Lagodon rhomboides	14,929	61.0	68.1	73.18	12.00	234.14	1,545.00	101	0.21	56	221
Centropomus undecimalis	888	3.6	54.4	4.35	0.56	182.17	55.00	440	3.63	178	935
Bairdiella chrysoura	796	3.3	18.6	3.90	2.43	887.94	481.00	131	0.62	64	172
Orthopristis chrysoptera	695	2.8	24.5	3.41	0.98	411.58	143.00	121	1.56	70	227
Eucinostomus gula	671	2.7	31.4	3.29	0.81	352.50	117.00	84	0.46	52	142
Elops saurus	592	2.4	19.6	2.90	1.74	854.28	347.00	286	1.80	175	425
Eucinostomus harengulus	518	2.1	21.6	2.54	1.16	650.66	211.00	93	0.47	57	118
Archosargus probatocephalus	502	2.1	40.7	2.46	0.54	312.53	89.00	218	2.79	59	431
Strongylura notata	448	1.8	43.1	2.20	0.47	305.45	78.00	348	1.08	240	425
Arius felis	404	1.6	28.4	1.98	0.52	373.12	75.00	272	2.63	62	380
Subtotal	20,443	83.4	.	.	.	.	.	.	.	52	935
Totals	**24,487**	**100.0**	**.**	**120.03**	**14.77**	**175.70**	**1,623.00**	**.**	**.**	**24**	**1,000**

Table CH01-05. Catch statistics for Selected Taxa collected in 204 183-m haul seine samples during Charlotte Harbor stratified-random sampling, 2001. 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	888	3.6	54.4	4.35	0.56	182.17	55.00	440	3.63	178	935
Elops saurus	592	2.4	19.6	2.90	1.74	854.28	347.00	286	1.80	175	425
Archosargus probatocephalus	502	2.1	40.7	2.46	0.54	312.53	89.00	218	2.79	59	431
Mugil cephalus	334	1.4	43.6	1.64	0.27	237.26	29.00	267	4.84	102	430
Lutjanus griseus	208	0.8	24.0	1.02	0.21	299.41	27.00	154	2.56	55	275
Mugil gyrans	154	0.6	20.6	0.75	0.17	315.53	19.00	191	3.42	79	291
Leiostomus xanthurus	145	0.6	10.3	0.71	0.34	692.90	65.00	107	2.54	68	238
Sciaenops ocellatus	115	0.5	23.5	0.56	0.17	428.44	32.00	435	12.56	119	710
Callinectes sapidus	89	0.4	18.6	0.44	0.08	260.49	7.00	120	4.32	41	190
Mycteroperca microlepis	84	0.3	10.8	0.41	0.12	422.16	18.00	171	4.72	97	368
Cynoscion nebulosus	58	0.2	14.2	0.28	0.07	343.40	7.00	259	11.57	66	463
Trachinotus falcatus	56	0.2	3.9	0.27	0.15	781.65	27.00	156	9.75	51	444
Paralichthys albigutta	54	0.2	14.7	0.26	0.06	301.97	5.00	196	11.01	75	410
Mugil curema	31	0.1	8.8	0.15	0.04	398.09	5.00	214	8.51	125	282
Lutjanus synagris	22	0.1	5.4	0.11	0.05	649.60	9.00	99	5.90	80	216
Trachinotus carolinus	8	0.0	2.0	0.04	0.02	833.46	4.00	328	24.04	227	412
Menticirrhus americanus	4	0.0	1.5	0.02	0.01	871.04	2.00	240	22.20	198	295
Cynoscion arenarius	3	0.0	1.0	0.01	0.01	1,062.48	2.00	146	2.60	142	151
Farfantepenaeus duorarum	2	0.0	0.5	0.01	0.01	1,428.29	2.00	27	3.00	24	30
Menippe spp.	2	0.0	1.0	0.01	0.01	1,007.46	1.00	33	7.00	26	40
Scomberomorus maculatus	2	0.0	1.0	0.01	0.01	1,007.46	1.00	257	35.00	222	292
Pogonias cromis	1	0.0	0.5	0.00	0.00	1,428.29	1.00	175	.	175	175
Totals	**3,354**	**13.7**	**91.7**	**16.44**	**2.10**	**182.39**	**349.00**	**.**	**.**	**24**	**935**

Table CH01-06. Catch statistics for 10 dominant taxa collected in 240 183-m purse seine samples during Charlotte Harbor stratified-random sampling, 2001. 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**
Opisthonema oglinum	10,037	33.7	37.9	41.82	17.42	645.33	3,877.00	140	0.09	78	172
Lagodon rhomboides	6,421	21.6	43.3	26.75	3.88	224.44	409.00	104	0.18	56	173
Bairdiella chrysoura	2,334	7.8	20.8	9.73	4.30	685.59	721.00	134	0.19	103	161
Harengula jaguana	1,952	6.6	37.1	8.13	2.33	443.99	380.00	120	0.22	90	154
Orthopristis chrysoptera	1,555	5.2	34.2	6.48	1.50	358.83	291.00	137	0.69	81	252
Brevoortia spp.	1,400	4.7	27.1	5.83	1.56	413.20	249.00	182	0.91	102	275
Elops saurus	1,056	3.5	29.6	4.40	0.98	346.18	151.00	299	1.59	125	520
Cynoscion arenarius	844	2.8	22.9	3.52	1.05	461.74	193.00	207	1.02	105	332
Pomatomus saltatrix	443	1.5	3.3	1.85	1.60	1,346.93	382.00	298	1.09	130	423
Chloroscombrus chrysurus	433	1.5	20.4	1.80	0.46	392.55	62.00	128	0.59	79	174
Subtotal	26,475	88.9	.	.	.	.	.	.	.	56	520
Totals	**29,754**	**100.0**	**.**	**123.98**	**20.02**	**250.21**	**3,959.00**	**.**	**.**	**26**	**1,165**

Table CH01-07. Catch statistics for Selected Taxa collected in 240 183-m purse seine samples during Charlotte Harbor stratified-random sampling, 2001. 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**
Elops saurus	1,056	3.5	29.6	4.40	0.98	346.18	151.00	299	1.59	125	520
Cynoscion arenarius	844	2.8	22.9	3.52	1.05	461.74	193.00	207	1.02	105	332
Pomatomus saltatrix	443	1.5	3.3	1.85	1.60	1,346.93	382.00	298	1.09	130	423
Leiostomus xanthurus	391	1.3	18.8	1.63	0.44	421.20	73.00	140	1.05	97	202
Menticirrhus americanus	187	0.6	16.3	0.78	0.30	594.33	66.00	182	2.13	132	300
Scomberomorus maculatus	145	0.5	17.5	0.60	0.16	415.68	28.00	308	6.46	193	530
Cynoscion nebulosus	90	0.3	16.3	0.38	0.07	303.83	7.00	227	5.52	144	404
Callinectes sapidus	22	0.1	5.8	0.09	0.03	498.89	5.00	99	7.53	38	162
Lutjanus synagris	18	0.1	5.0	0.08	0.02	477.48	3.00	106	5.36	43	151
Mycteroperca microlepis	16	0.1	2.9	0.07	0.03	744.86	6.00	237	20.37	129	410
Lutjanus griseus	16	0.1	3.3	0.07	0.03	769.72	7.00	162	7.58	106	233
Paralichthys albigutta	14	0.0	5.0	0.06	0.02	459.66	2.00	181	16.83	85	300
Menippe spp.	5	0.0	1.7	0.02	0.01	815.33	2.00	39	5.64	26	57
Trachinotus falcatus	5	0.0	0.4	0.02	0.02	1,549.19	5.00	336	8.75	315	368
Trachinotus carolinus	4	0.0	1.7	0.02	0.01	769.72	1.00	281	18.80	232	320
Farfantepenaeus duorarum	2	0.0	0.8	0.01	0.01	1,093.15	1.00	34	4.00	30	38
Rachycentron canadum	2	0.0	0.8	0.01	0.01	1,093.15	1.00	827	38.50	788	865
Archosargus probatocephalus	1	0.0	0.4	0.00	0.00	1,549.19	1.00	173	.	173	173
Menticirrhus littoralis	1	0.0	0.4	0.00	0.00	1,549.19	1.00	224	.	224	224
Totals	**3,262**	**11.0**	**66.3**	**13.59**	**2.36**	**268.53**	**395.00**	**.**	**.**	**26**	**865**

Table CH01-08. Catch statistics for 10 dominant taxa collected in 18 seasonal bay 6.1-m otter trawl samples during Charlotte Harbor stratified-random sampling, 2001. 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**
Anchoa mitchilli	425	30.4	27.8	1.59	1.00	266.71	15.45	49	0.24	34	60
Lagodon rhomboides	221	15.8	55.6	0.89	0.56	265.19	10.12	85	0.59	62	135
Eucinostomus gula	113	8.1	66.7	0.43	0.16	160.29	2.77	73	0.80	42	95
Cynoscion arenarius	108	7.7	33.3	0.42	0.22	219.90	2.90	36	1.96	14	135
Farfantepenaeus duorarum	95	6.8	77.8	0.36	0.09	108.13	1.21	24	0.80	2	42
Prionotus scitulus	83	5.9	83.3	0.32	0.09	120.41	1.48	98	2.98	27	156
Trinectes maculatus	72	5.1	55.6	0.27	0.16	255.26	2.97	58	1.69	39	97
Menticirrhus americanus	37	2.6	33.3	0.14	0.08	237.71	1.42	55	8.69	10	204
Orthopristis chrysoptera	27	1.9	27.8	0.11	0.06	231.93	0.97	116	3.50	93	165
Chilomycterus schoepfi	21	1.5	44.4	0.08	0.04	187.36	0.61	133	7.24	75	186
Subtotal	1,202	85.8	.	.	.	.	.	.	.	2	204
Totals	**1,400**	**100.0**	**.**	**5.38**	**1.39**	**109.42**	**20.37**	**.**	**.**	**2**	**600**

Table CH01-09. Catch statistics for Selected Taxa collected in 18 seasonal bay 6.1-m otter trawl samples during Charlotte Harbor stratified-random sampling, 2001. 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
Cynoscion arenarius	108	7.7	33.3	0.42	0.22	219.90	2.90	36	1.96	14	135
Farfantepenaeus duorarum	95	6.8	77.8	0.36	0.09	108.13	1.21	24	0.80	2	42
Menticirrhus americanus	37	2.6	33.3	0.14	0.08	237.71	1.42	55	8.69	10	204
Callinectes sapidus	17	1.2	44.4	0.06	0.02	164.32	0.40	84	10.32	28	166
Lutjanus synagris	8	0.6	27.8	0.03	0.01	177.55	0.15	62	12.62	22	103
Paralichthys albigutta	3	0.2	16.7	0.01	0.01	230.44	0.07	160	4.62	152	168
Mycteroperca microlepis	2	0.1	5.6	0.01	0.01	424.26	0.13	211	0.50	210	211
Lutjanus griseus	2	0.1	5.6	0.01	0.01	424.26	0.13	145	0.50	144	145
Menticirrhus saxatilis	1	0.1	5.6	0.00	0.00	424.26	0.07	18	.	18	18
Totals	**273**	**19.5**	**83.3**	**1.05**	**0.35**	**141.71**	**5.40**	**.**	**.**	**2**	**211**

Table CH01-10. Catch statistics for 10 dominant taxa collected in 96 21.3-m river seine samples during Charlotte Harbor stratified-random sampling, 2001. 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**
Anchoa mitchilli	83,013	83.0	46.9	1,271.65	730.49	562.84	67,011.76	30	0.02	19	65
Leiostomus xanthurus	3,677	3.7	21.9	56.33	30.64	533.05	2,623.53	21	0.16	12	73
Menidia spp.	2,667	2.7	74.0	40.85	6.97	167.18	305.88	38	0.19	14	84
Anchoa hepsetus	2,552	2.6	9.4	39.09	28.97	726.19	2,670.59	31	0.10	25	62
Mugil cephalus	2,373	2.4	36.5	36.35	13.58	366.04	858.82	36	0.47	15	330
Brevoortia spp.	951	1.0	7.3	14.57	9.48	637.85	832.35	23	0.22	17	83
Gambusia holbrooki	649	0.6	15.6	9.94	4.80	473.15	423.53	22	0.18	15	38
Membras martinica	499	0.5	8.3	7.64	4.02	514.71	269.12	43	0.42	26	62
Lagodon rhomboides	352	0.4	32.3	5.39	1.62	293.67	125.00	39	0.71	15	83
Bairdiella chrysoura	310	0.3	7.3	4.75	4.43	913.36	425.00	41	0.44	8	58
Subtotal	97,043	97.2	.	.	.	.	.	.	.	8	330
Totals	**99,960**	**100.0**	**.**	**1,531.25**	**735.79**	**470.81**	**67,408.82**	**.**	**.**	**4**	**520**

Table CH01-11. Catch statistics for Selected Taxa collected in 96 21.3-m river seine samples during Charlotte Harbor stratified-random sampling, 2001. 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
Leiostomus xanthurus	3,677	3.7	21.9	56.33	30.64	533.05	2,623.53	21	0.16	12	73
Mugil cephalus	2,373	2.4	36.5	36.35	13.58	366.04	858.82	36	0.47	15	330
Callinectes sapidus	248	0.2	32.3	3.80	1.64	422.73	133.82	18	1.11	5	171
Farfantepenaeus duorarum	217	0.2	25.0	3.32	0.97	286.72	64.71	12	0.30	4	29
Mugil gyrans	79	0.1	6.3	1.21	0.88	712.94	82.35	37	2.63	24	150
Sciaenops ocellatus	72	0.1	14.6	1.10	0.43	384.98	26.47	46	1.84	12	92
Menticirrhus americanus	59	0.1	9.4	0.90	0.49	525.99	42.65	43	2.52	17	83
Cynoscion nebulosus	48	0.0	12.5	0.74	0.29	392.56	23.53	45	2.51	18	90
Cynoscion arenarius	31	0.0	9.4	0.47	0.25	521.09	22.06	30	2.59	15	84
Archosargus probatocephalus	8	0.0	6.3	0.12	0.05	414.47	2.94	103	20.64	55	215
Mugil curema	5	0.0	1.0	0.08	0.08	979.80	7.35	28	0.00	28	28
Centropomus undecimalis	4	0.0	4.2	0.06	0.03	482.10	1.47	410	47.52	305	520
Lutjanus griseus	1	0.0	1.0	0.02	0.02	979.80	1.47	184	.	184	184

Species	Number		%	Density Estimate (animals/100m^2)				Standard Length (mm)			
	No.	%	Occur	Mean	Stderr	CV	Max	Mean	Stderr	Min	Max
Totals	**6,822**	**6.8**	**75.0**	**104.50**	**40.89**	**383.36**	**3,485.29**	**.**	**.**	**4**	**520**

Table CH01-12. Catch statistics for 10 dominant taxa collected in 72 river 6.1-m otter trawl samples during Charlotte Harbor stratified-random sampling, 2001. 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
Anchoa mitchilli	3,417	54.4	36.1	6.40	2.36	313.30	116.84	33	0.23	15	64
Trinectes maculatus	688	11.0	59.7	1.33	0.51	325.48	27.12	44	0.62	10	113
Cynoscion arenarius	628	10.0	45.8	1.18	0.51	368.59	34.27	31	0.56	9	156
Farfantepenaeus duorarum	316	5.0	68.1	0.59	0.11	159.42	5.40	19	0.41	4	35
Lagodon rhomboides	287	4.6	22.2	0.54	0.27	426.31	16.73	53	1.37	13	91
Menticirrhus americanus	220	3.5	43.1	0.41	0.15	313.81	10.12	47	2.73	10	250
Bairdiella chrysoura	143	2.3	31.9	0.27	0.11	350.61	5.94	60	2.29	14	158
Callinectes sapidus	120	1.9	68.1	0.22	0.03	124.56	1.35	95	4.19	10	189
Arius felis	59	0.9	13.9	0.12	0.06	430.16	3.24	82	8.52	45	319
Dasyatis sabina	58	0.9	29.2	0.11	0.04	286.50	2.16	206	6.37	115	308

Species	Number		%	Density Estimate (animals/100m²)				Standard Length (mm)			
	No.	%	Occur	Mean	Stderr	CV	Max	Mean	Stderr	Min	Max
Subtotal	5,936	94.5	.	.	.	.	.	.	.	4	319
Totals	**6,283**	**100.0**	**.**	**11.83**	**2.84**	**203.43**	**163.52**	**.**	**.**	**4**	**920**

Table CH01-13. Catch statistics for Selected Taxa collected in 72 river 6.1-m otter trawl samples during Charlotte Harbor stratified-random sampling, 2001. 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/100m²)				Standard Length (mm)			
	No.	%	Occur	Mean	Stderr	CV	Max	Mean	Stderr	Min	Max
Cynoscion arenarius	628	10.0	45.8	1.18	0.51	368.59	34.27	31	0.56	9	156
Farfantepenaeus duorarum	316	5.0	68.1	0.59	0.11	159.42	5.40	19	0.41	4	35
Menticirrhus americanus	220	3.5	43.1	0.41	0.15	313.81	10.12	47	2.73	10	250
Callinectes sapidus	120	1.9	68.1	0.22	0.03	124.56	1.35	95	4.19	10	189
Leiostomus xanthurus	46	0.7	23.6	0.09	0.03	259.22	1.35	91	4.56	28	172
Archosargus probatocephalus	6	0.1	4.2	0.01	0.01	482.95	0.27	79	20.93	18	130
Cynoscion nebulosus	2	0.0	2.8	0.00	0.00	595.76	0.13	245	35.00	210	280

Species	Number No.	%	% Occur	Density Estimate (animals/100m^2) Mean	Stderr	CV	Max	Standard Length (mm) Mean	Stderr	Min	Max
Megalops atlanticus	1	0.0	1.4	0.00	0.00	848.53	0.13	920	.	920	920
Menticirrhus saxatilis	1	0.0	1.4	0.00	0.00	848.53	0.13	19	.	19	19
Paralichthys albigutta	1	0.0	1.4	0.00	0.00	848.53	0.13	181	.	181	181
Totals	**1,341**	**21.3**	**93.1**	**2.52**	**0.66**	**221.57**	**45.60**	**.**	**.**	**4**	**920**

Appendix CH01-01. Monthly summary of species collected during Charlotte Harbor stratified-random sampling, 2001. Effort, or total number of hauls, is labeled 'E'. Listing is sorted alphabetically by taxon.

Species	Month Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Totals
	E=75	E=75	E=75	E=75	E=75	E=75	E=75	E=75	E=75	E=84	E=84	E=75	E=918
Achirus lineatus	5	2	3	11	4	6	15	7	10	20	4	11	98
Adinia xenica	38	72	2	.	.	.	3	.	.	.	9	34	158
Aetobatis narinari	.	.	.	.	1	1	1	.	.	.	.	.	3
Aluterus schoepfi	.	1	2	.	.	.	.	1	.	1	1	15	21
Ameiurus catus	.	.	.	.	.	.	.	1	2	.	.	.	3
Anarchopterus criniger	.	.	.	1	.	.	.	.	.	.	.	.	1
Anchoa hepsetus	.	.	224	12	2,201	553	35	.	.	4	178	.	3,207
Anchoa mitchilli	3,693	8,419	7,893	59,335	3,740	2,602	3,674	1,542	1,953	3,666	1,272	1,133	98,922

Species	Month												Totals
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
	E=75	E=75	E=75	E=75	E=75	E=75	E=75	E=75	E=75	E=84	E=84	E=75	E=918
Ancylopsetta quadrocellata	1	.	.	.	2	.	.	1	.	1	2	1	8
Archosargus probatocephalus	134	67	25	50	61	48	34	20	60	65	19	18	601
Arius felis	5	31	108	43	27	97	83	75	83	56	4	78	690
Bagre marinus	1	3	19	14	4	16	22	43	102	35	.	3	262
Bairdiella chrysoura	16	774	1,158	126	365	1,674	475	186	79	166	777	21	5,817
Bathygobius soporator	2	3	.	.	1	2	.	.	.	.	.	3	11
Brevoortia spp.	11	149	666	643	342	59	176	27	16	189	97	142	2,517
Calamus arctifrons	3	2	2	.	3	3	.	3	.	.	.	1	17
Callinectes sapidus	142	116	44	15	13	18	30	9	11	38	63	97	596
Caranx crysos	.	2	9	10	3	9	.	.	.	.	.	.	33
Caranx hippos	.	.	38	16	4	12	7	3	.	7	20	3	110
Caranx latus	.	.	.	.	.	.	.	.	.	1	1	.	2
Carcharhinus limbatus	.	.	.	.	.	1	.	.	.	.	.	.	1

Appendix CH01-01. (Continued)

Species	Month												Totals
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
	E=75	E=75	E=75	E=75	E=75	E=75	E=75	E=75	E=75	E=84	E=84	E=75	E=918
Centropomus undecimalis	41	32	124	87	94	95	80	56	83	76	68	64	900
Centropristis striata	.	.	1	.	.	.	.	.	.	.	.	.	1
Chaetodipterus faber	.	56	35	50	10	36	42	5	23	179	35	40	511
Chasmodes saburrae	6	9	52	19	15	31	17	13	1	3	3	4	173
Chilomycterus schoepfi	25	62	50	32	65	31	34	41	43	43	66	32	524
Chloroscombrus chrysurus	.	.	14	62	19	76	215	44	3	14	9	.	456

Species	Month												Totals
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
	E=75	E=75	E=75	E=75	E=75	E=75	E=75	E=75	E=75	E=84	E=84	E=75	E=918
Citharichthys macrops	.	.	1	.	.	.	.	.	.	.	.	.	1
Cynoscion arenarius	19	24	199	88	13	1,005	121	167	35	236	185	13	2,105
Cynoscion nebulosus	11	30	22	16	19	115	77	72	20	59	33	14	488
Cyprinodon variegatus	6	14	1	130	2	.	13	18	2	32	.	1	219
Dasyatis americana	.	2	5	2	5	.	2	2	8	6	2	.	34
Dasyatis sabina	30	14	6	4	12	8	19	16	8	7	16	12	152
Dasyatis say	2	2	1	4	7	11	3	1	4	1	3	1	40
Dasyatis spp.	.	.	.	.	.	.	1	.	1	.	.	.	2
Decapterus punctatus	.	.	.	.	.	.	1	.	.	.	.	.	1
Diapterus auratus	.	.	.	.	.	1	2	25	4	11	.	.	43
Diapterus plumieri	6	.	6	4	71	34	63	118	120	24	35	8	489
Diodon holocanthus	.	1	.	.	.	.	.	.	.	.	.	.	1
Diplectrum formosum	.	.	1	1	.	.	.	.	.	.	1	.	3
Diplodus holbrooki	.	.	1	3	6	3	2	2	.	1	43	4	65
Dorosoma petenense	6	.	.	.	.	.	2	.	40	11	15	13	87
Echeneis neucratoides	.	.	1	.	.	.	.	.	.	.	.	.	1
Elops saurus	1	608	181	82	100	96	68	68	41	197	102	106	1,650

Appendix CH01-01. (Continued)

Species	Month												Totals
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
	E=75	E=75	E=75	E=75	E=75	E=75	E=75	E=75	E=75	E=84	E=84	E=75	E=918
Etropus crossotus	1	2	.	.	.	.	.	.	2	8	10	.	23
Eucinostomus gula	75	233	147	216	146	121	310	216	207	238	316	180	2,405

Species	Month												Totals
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
	E=75	E=75	E=75	E=75	E=75	E=75	E=75	E=75	E=75	E=84	E=84	E=75	E=918
Eucinostomus harengulus	29	45	58	66	46	19	182	79	486	214	36	83	1,343
Eucinostomus spp.	249	263	116	33	22	277	1,455	810	785	621	684	101	5,416
Farfantepenaeus duorarum	304	425	219	145	34	123	346	591	307	869	701	112	4,176
Floridichthys carpio	24	141	9	354	47	63	33	55	41	211	26	24	1,028
Fundulus confluentus	2	40	.	.	.	.	.	.	.	.	.	.	42
Fundulus grandis	36	54	53	3	2	.	4	3	.	16	20	130	321
Fundulus majalis	12	34	116	2	22	26	2	56	1	8	3	5	287
Fundulus seminolis	.	.	.	.	.	.	.	.	.	.	5	.	5
Gambusia holbrooki	25	293	19	.	.	.	41	.	22	92	63	104	659
Gobiesox strumosus	7	3	6	3	6	3	3	.	.	.	.	1	32
Gobionellus boleosoma	.	.	.	.	.	.	.	.	.	1	.	.	1
Gobionellus oceanicus	.	.	.	.	.	.	1	.	.	.	.	1	2
Gobionellus smaragdus	.	.	.	3	1	.	.	.	.	.	.	.	4
Gobiosoma bosc	23	19	10	.	5	3	9	3	7	1	11	4	95
Gobiosoma robustum	81	287	204	156	34	93	23	15	5	13	17	58	986
Gobiosoma spp.	26	49	14	5	1	34	43	43	3	8	1	3	230
Gymnura micrura	.	.	.	1	.	.	.	.	.	.	4	.	5
Haemulon plumieri	1	6	1	3	2	12	2	.	.	4	2	1	34
Harengula jaguana	9	627	271	93	112	291	612	194	63	25	363	13	2,673
Hemicaranx amblyrhynchus	.	.	.	.	1	.	.	.	.	.	.	1	2
Hippocampus erectus	1	.	5	5	.	.	.	1	.	1	4	2	19

Appendix CH01-01. (Continued)

Species	Month	Totals

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
	E=75	E=75	E=75	E=75	E=75	E=75	E=75	E=75	E=75	E=84	E=84	E=75	E=918
Hippocampus zosterae	11	41	3	18	6	2	8	2	2	.	3	6	102
Hoplosternum littorale	.	.	.	.	.	.	.	.	1	.	.	.	1
Hyporhamphus meeki	1	.	1	.	.	4	.	.	.	.	.	20	26
Hyporhamphus spp.	.	1	.	.	.	.	1	.	.	.	.	.	2
Hypsoblennius hentzi	.	.	.	.	.	.	.	.	.	.	2	.	2
Ictalurus punctatus	.	.	.	.	.	.	.	.	.	5	.	.	5
Jordanella floridae	.	.	.	.	.	.	.	.	1	.	.	.	1
Lactophrys quadricornis	40	33	28	35	56	36	24	17	6	57	53	21	406
Lactophrys trigonus	.	.	.	.	.	.	.	.	.	.	.	1	1
Lagodon rhomboides	986	25,493	23,505	9,941	4,914	3,826	3,228	2,691	2,731	6,249	2,631	757	86,952
Leiostomus xanthurus	1,745	6,721	1,315	166	154	57	87	41	75	38	14	.	10,413
Lepisosteus osseus	.	.	.	.	2	.	15	7	5	5	1	.	35
Lepisosteus platyrhincus	.	.	.	.	.	.	.	1	1	.	.	.	2
Lepomis gulosus	.	.	.	.	.	.	1	.	6	.	7	.	14
Lepomis macrochirus	.	.	.	.	.	.	6	4	3	1	1	5	20
Lepomis microlophus	.	.	.	.	.	.	1	.	.	.	.	.	1
Lepomis spp.	.	.	.	.	.	.	.	.	1	.	.	.	1
Limulus polyphemus	17	23	4	2	4	16	1	28	15	16	4	23	153
Lucania goodei	.	.	.	.	.	.	.	.	.	.	1	.	1
Lucania parva	27	649	618	1,962	167	941	689	1,104	447	3,038	231	10	9,883
Lutjanus griseus	4	2	2	1	11	27	31	71	73	220	7	8	457
Lutjanus synagris	.	.	5	1	.	4	.	21	2	16	11	15	75
Megalops atlanticus	1	.	.	.	.	.	.	.	.	.	.	.	1

Appendix CH01-01. (Continued)

Species	Month												Totals
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
	E=75	E=75	E=75	E=75	E=75	E=75	E=75	E=75	E=75	E=84	E=84	E=75	E=918
Membras martinica	.	.	1	82	457	1	147	.	.	.	.	.	688
Menidia spp.	189	62	3,148	430	705	1,228	598	2,435	1,569	606	552	293	11,815
Menippe spp.	1	3	3	1	.	.	.	.	.	.	.	.	8
Menticirrhus americanus	31	39	40	35	120	141	50	7	7	43	7	38	558
Menticirrhus littoralis	.	.	.	.	.	.	.	.	1	.	.	.	1
Menticirrhus saxatilis	5	.	3	3	.	.	.	.	.	1	1	3	16
Microgobius gulosus	101	358	180	249	84	448	232	491	207	527	304	54	3,235
Microgobius thalassinus	.	.	10	.	.	.	7	.	1	.	.	.	18
Micropterus salmoides	.	.	.	.	.	.	.	.	1	.	.	.	1
Monacanthus ciliatus	.	1	.	.	.	.	.	.	.	.	1	.	2
Monacanthus hispidus	13	45	16	17	8	12	10	19	.	1	14	50	205
Mugil cephalus	897	1,270	410	34	36	110	67	374	90	11	18	42	3,359
Mugil curema	3	7	3	5	3	.	1	.	6	2	9	1	40
Mugil gyrans	5	113	16	21	17	4	2	1	10	11	7	31	238
Mullidae spp.	.	.	1	.	.	.	.	.	.	.	.	.	1
Mycteroperca microlepis	1	.	1	.	2	14	11	21	21	25	12	.	108
Nicholsina usta	.	19	.	.	12	3	27	.	.	.	1	2	64
Notropis maculatus	.	.	.	.	.	.	.	.	.	.	1	.	1
Ocyurus chrysurus	.	.	.	.	.	.	.	.	.	.	1	.	1
Ogcocephalus radiatus	1	2	4	3	2	.	.	.	.	.	6	1	19
Oligoplites saurus	.	1	12	7	10	44	42	17	7	2	2	.	144
Opisthonema oglinum	.	359	617	243	4,220	1,447	1,817	401	60	161	45	704	10,074
Opistognathus robinsi	.	.	.	.	.	.	.	.	.	1	.	.	1

Appendix CH01-01. (Continued)

Species	Month												Totals
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
	E=75	E=75	E=75	E=75	E=75	E=75	E=75	E=75	E=75	E=84	E=84	E=75	E=918
Opsanus beta	2	3	7	5	9	10	11	7	4	9	6	1	74
Orthopristis chrysoptera	102	209	586	977	445	273	225	347	202	415	250	29	4,060
Paraclinus marmoratus	.	.	1	1	.	.	.	.	.	.	.	.	2
Paralichthys albigutta	.	1	8	16	13	8	3	5	6	14	12	2	88
Peprilus alepidotus	4	7	26	.	.	.	4	.	.	.	.	.	41
Poecilia latipinna	6	.	6	.	.	2	32	1	1	1	7	19	75
Pogonias cromis	.	.	.	.	.	.	.	.	1	.	.	.	1
Pomatomus saltatrix	.	2	5	.	52	1	.	.	.	.	.	383	443
Prionotus scitulus	9	28	20	14	21	26	23	6	12	51	58	13	281
Prionotus tribulus	13	7	4	5	2	3	3	.	.	18	6	18	79
Rachycentron canadum	.	.	.	1	.	.	.	.	.	.	.	1	2
Rhinobatos lentiginosus	.	.	1	3	2	.	.	.	.	.	.	.	6
Rhinoptera bonasus	27	19	72	18	16	56	12	29	17	59	35	33	393
Sardinella aurita	.	.	.	.	.	2	.	.	.	1	.	.	3
Sciaenops ocellatus	33	12	3	15	5	6	33	4	22	142	68	39	382
Scomberomorus maculatus	.	18	23	2	3	14	1	.	30	45	4	7	147
Scorpaena brasiliensis	.	.	.	.	.	1	.	2	.	.	.	.	3
Selene vomer	.	.	.	5	4	2	4	2	1	.	1	.	19
Sphoeroides nephelus	7	21	8	27	59	24	24	18	19	37	54	46	344
Sphoeroides spengleri	2	.	.	.	.	.	.	.	.	.	.	.	2
Sphyraena barracuda	.	.	.	.	.	.	.	1	2	3	4	11	21
Sphyraena picudilla	.	.	1	.	.	.	.	.	.	.	.	.	1

Appendix CH01-01. (Continued)

Species	Month												Totals
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
	E=75	E=75	E=75	E=75	E=75	E=75	E=75	E=75	E=75	E=84	E=84	E=75	E=918
Sphyraena spp.	.	.	.	.	1	.	.	.	.	.	.	.	1
Sphyrna tiburo	.	6	3	.	3	2	.	1	2	.	.	.	17
Stomolophus meleagris	.	.	.	.	.	.	.	.	.	.	.	3	3
Strongylura marina	6	1	2	.	.	1	.	.	9	10	13	59	101
Strongylura notata	10	23	36	34	50	30	42	40	74	45	125	51	560
Strongylura spp.	.	.	13	6	2	4	.	1	2	3	.	.	31
Strongylura timucu	.	1	1	2	5	4	3	.	.	1	1	.	18
Symphurus plagiusa	16	11	12	6	3	11	2	5	2	26	12	5	111
Syngnathus floridae	27	36	13	2	10	7	3	12	11	3	7	2	133
Syngnathus louisianae	2	.	2	3	9	11	2	3	1	6	9	5	53
Syngnathus scovelli	83	167	133	153	95	113	100	56	32	50	99	128	1,209
Synodus foetens	10	14	23	37	38	25	9	11	2	52	52	36	309
Tilapia aurea	.	.	.	.	.	.	.	2	.	.	.	.	2
Trachinotus carolinus	.	1	1	1	1	.	2	.	1	4	.	1	12
Trachinotus falcatus	5	.	.	.	.	5	.	.	13	.	11	28	62
Trinectes maculatus	98	23	13	11	14	22	79	448	170	104	47	60	1,089
Urophycis floridana	3	2	.	.	.	.	.	.	.	.	.	.	5
Totals	**9,653**	**48,870**	**43,111**	**76,548**	**19,542**	**16,736**	**16,103**	**13,386**	**10,666**	**19,614**	**10,157**	**5,760**	**290,146**

Appendix CH01-02. Summary by gear, stratum, and zone of species collected during Charlotte Harbor stratified-random sampling, 2001. Sampling with 21.3-m bay seine was stratified by the presence or absence of bottom vegetation (‘Veg’ or ‘Unveg’), or the presence or absence of a shoreline (‘Shore’). Sampling with 21.3-m river seine and 183-m haul seine was stratified by the presence or absence of overhanging shoreline vegetation (‘Over’ or ‘Nonover’). Sampling with 183-m purse seine was post-stratified by the presence or absence of bottom vegetation (‘Veg’ or ‘Unveg’). Sampling with the trawl was not stratified. Effort, or total number of hauls, is labeled ‘E’. Zones A-D were located in the bay, and Zone F encompassed the lower Peace and Myakka Rivers. Effort, or the total number of hauls, is labeled 'E'. Listing is sorted alphabetical by taxon.

Species	**Gear and Strata**										**Zone**					**Totals**
	21.3-m bay seine			**21.3-m river seine**		**183-m haul seine**		**183-m purse seine**		**6.1-m otter trawl**						
	Veg	**Unveg**	**Shore**	**Over**	**Nonover**	**Over**	**Nonover**	**Veg**	**Unveg**		**A**	**B**	**C**	**D**	**F**	
	E=98	**E=46**	**E=144**	**E=48**	**E=48**	**E=155**	**E=49**	**E=1**	**E=239**	**E=90**	**E=222**	**E=210**	**E=210**	**E=108**	**E=168**	**E=918**
Achirus lineatus	13	4	27	13	4	.	.	.	29	8	18	33	24	6	17	98
Adinia xenica	.	.	.	74	84	.	.	.	.	.	.	.	.	.	158	158
Aetobatis narinari	.	.	.	.	.	1	1	.	1	.	.	2	1	.	.	3
Aluterus schoepfi	.	.	.	.	.	.	.	.	21	.	.	3	16	2	.	21
Ameiurus catus	.	.	.	.	.	.	.	.	.	3	.	.	.	.	3	3
Anarchopterus criniger	.	.	1	.	.	.	.	.	.	.	.	1	.	.	.	1
Anchoa hepsetus	215	15	418	725	1,827	.	.	.	.	7	14	604	32	.	2,557	3,207
Anchoa mitchilli	4,181	1,179	6,707	9,259	73,754	.	.	.	.	3,842	2,372	5,412	4,708	.	86,430	98,922
Ancylopsetta quadrocellata	.	1	.	.	.	2	1	.	4	.	1	5	1	1	.	8
Archosargus probatocephalus	35	.	49	2	6	402	100	.	1	6	44	186	91	266	14	601
Arius felis	4	2	.	.	.	261	143	.	219	61	147	314	55	115	59	690
Bagre marinus	.	.	.	.	.	9	6	.	227	20	43	47	54	107	11	262
Bairdiella chrysoura	980	526	711	20	290	88	708	3	2,331	160	1,653	1,426	459	1,826	453	5,817
Bathygobius soporator	.	.	8	3	.	.	.	.	.	.	1	4	3	.	3	11
Brevoortia spp.	2	.	13	25	926	73	78	.	1,400	.	68	511	151	836	951	2,517
Calamus arctifrons	1	.	3	.	.	6	2	.	5	.	.	7	2	8	.	17
Callinectes sapidus	12	17	71	164	84	66	23	.	22	137	113	47	64	4	368	596

Appendix CH01-02. (Continued)

Species	Gear and Strata										Zone					Totals
	21.3-m bay seine			21.3-m river seine		183-m haul seine		183-m purse seine		6.1-m otter trawl						
	Veg	Unveg	Shore	Over	Nonover	Over	Nonover	Veg	Unveg		A	B	C	D	F	
	E=98	E=46	E=144	E=48	E=48	E=155	E=49	E=1	E=239	E=90	E=222	E=210	E=210	E=108	E=168	E=918
Caranx crysos	.	.	.	.	.	.	.	.	33	.	3	21	9	.	.	33
Caranx hippos	1	.	.	.	.	54	18	.	37	.	21	48	25	16	.	110
Caranx latus	.	.	.	.	.	2	.	.	.	.	.	2	.	.	.	2
Carcharhinus limbatus	.	.	.	.	.	.	1	.	.	.	.	1	.	.	.	1
Centropomus undecimalis	.	.	8	2	2	676	212	.	.	.	54	296	344	202	4	900
Centropristis striata	.	.	.	.	.	.	.	.	1	.	.	1	.	.	.	1
Chaetodipterus faber	6	.	3	2	.	325	67	1	85	22	21	90	48	333	19	511
Chasmodes saburrae	110	.	57	.	2	1	.	.	.	3	61	29	78	.	5	173
Chilomycterus schoepfi	54	4	5	.	.	176	109	1	151	24	54	213	143	111	3	524
Chloroscombrus chrysurus	1	.	.	.	.	.	14	.	433	8	158	84	165	49	.	456
Citharichthys macrops	.	.	.	.	.	1	.	.	.	.	.	.	.	1	.	1
Cynoscion arenarius	7	8	476	27	4	2	1	.	844	736	1,012	137	78	219	659	2,105
Cynoscion nebulosus	167	6	117	14	34	42	16	.	90	2	118	128	148	44	50	488
Cyprinodon variegatus	19	.	182	2	16	.	.	.	.	.	148	.	53	.	18	219
Dasyatis americana	.	.	.	.	.	17	7	.	9	1	1	9	4	20	.	34
Dasyatis sabina	3	4	6	1	1	38	13	.	26	60	58	8	20	6	60	152
Dasyatis say	.	2	.	.	.	12	8	.	16	2	5	11	17	6	1	40
Dasyatis spp.	.	.	.	.	.	1	.	.	1	.	.	1	.	1	.	2
Decapterus punctatus	.	.	.	.	.	.	.	.	1	.	.	1	.	.	.	1
Diapterus auratus	.	.	.	.	.	42	1	.	.	.	4	12	25	2	.	43
Diapterus plumieri	3	.	70	58	179	111	58	.	.	10	128	2	108	4	247	489
Diodon holocanthus	.	.	.	.	.	.	.	.	1	.	.	.	.	1	.	1

Appendix CH01-02. (Continued)

Species	Gear and Strata										Zone					Totals
	21.3-m bay seine			21.3-m river seine		183-m haul seine		183-m purse seine		6.1-m otter trawl						
	Veg	Unveg	Shore	Over	Nonover	Over	Nonover	Veg	Unveg		A	B	C	D	F	
	E=98	E=46	E=144	E=48	E=48	E=155	E=49	E=1	E=239	E=90	E=222	E=210	E=210	E=108	E=168	E=918
Diplectrum formosum	.	.	.	.	.	.	.	.	3	.	.	2	1	.	.	3
Diplodus holbrooki	8	.	1	.	.	9	44	.	3	.	.	54	5	6	.	65
Dorosoma petenense	.	.	.	.	40	11	1	.	34	1	40	6	.	.	41	87
Echeneis neucratoides	.	.	.	.	.	1	.	.	.	.	1	.	.	.	.	1
Elops saurus	1	1	.	.	.	180	412	.	1,056	.	133	646	223	648	.	1,650
Etropus crossotus	.	.	.	.	.	.	2	.	3	18	2	10	8	3	.	23
Eucinostomus gula	398	71	646	60	26	445	226	.	410	123	122	1,183	512	492	96	2,405
Eucinostomus harengulus	109	161	344	114	79	477	41	.	8	10	234	350	541	18	200	1,343
Eucinostomus spp.	1,311	188	3,602	211	97	.	.	.	.	7	283	3,093	1,731	.	309	5,416
Farfantepenaeus duorarum	1,079	119	2,346	150	67	2	.	.	2	411	532	1,307	1,804	.	533	4,176
Floridichthys carpio	106	.	922	.	.	.	.	.	.	.	27	670	331	.	.	1,028
Fundulus confluentus	.	.	.	40	2	.	.	.	.	.	.	.	.	.	42	42
Fundulus grandis	.	.	122	48	144	7	.	.	.	.	52	63	9	5	192	321
Fundulus majalis	.	.	143	24	120	.	.	.	.	.	28	101	14	.	144	287
Fundulus seminolis	.	.	.	.	5	.	.	.	.	.	.	.	.	.	5	5
Gambusia holbrooki	.	.	10	491	158	.	.	.	.	.	1	9	.	.	649	659
Gobiesox strumosus	2	.	5	8	3	.	.	.	.	14	6	.	1	.	25	32
Gobionellus boleosoma	.	.	1	.	.	.	.	.	.	.	.	1	.	.	.	1
Gobionellus oceanicus	.	.	.	.	.	1	.	.	.	1	1	.	.	.	1	2
Gobionellus smaragdus	1	.	3	.	.	.	.	.	.	.	.	1	3	.	.	4
Gobiosoma bosc	1	7	6	50	28	.	.	.	.	3	12	.	2	.	81	95

Species	Gear and Strata										Zone					Totals
	21.3-m bay seine			21.3-m river seine		183-m haul seine		183-m purse seine		6.1-m otter trawl						
	Veg	Unveg	Shore	Over	Nonover	Over	Nonover	Veg	Unveg		A	B	C	D	F	
	E=98	E=46	E=144	E=48	E=48	E=155	E=49	E=1	E=239	E=90	E=222	E=210	E=210	E=108	E=168	E=918
Gobiosoma robustum	340	101	538	6	1	.	.	.	.	.	86	454	439	.	7	986

Appendix CH01-02. (Continued)

Species	Gear and Strata										Zone					Totals
	21.3-m bay seine			21.3-m river seine		183-m haul seine		183-m purse seine		6.1-m otter trawl						
	Veg	Unveg	Shore	Over	Nonover	Over	Nonover	Veg	Unveg		A	B	C	D	F	
	E=98	E=46	E=144	E=48	E=48	E=155	E=49	E=1	E=239	E=90	E=222	E=210	E=210	E=108	E=168	E=918
Gobiosoma spp.	37	40	132	13	6	.	.	.	.	2	29	66	114	.	21	230
Gymnura micrura	.	.	.	.	.	4	.	.	1	.	.	4	.	1	.	5
Haemulon plumieri	9	.	.	.	.	10	13	.	2	.	.	20	1	13	.	34
Harengula jaguana	244	.	111	.	1	35	330	.	1,952	.	84	728	833	1,027	1	2,673
Hemicaranx amblyrhynchus	.	.	.	.	.	.	.	.	2	.	1	.	1	.	.	2
Hippocampus erectus	1	.	.	.	.	1	.	.	13	4	3	9	6	1	.	19
Hippocampus zosterae	26	2	74	.	.	.	.	.	.	.	5	44	53	.	.	102
Hoplosternum littorale	.	.	.	.	.	.	.	.	1	.	1	.	.	.	.	1
Hyporhamphus meeki	4	.	.	.	.	3	19	.	.	.	.	7	9	10	.	26
Hyporhamphus spp.	1	.	.	.	.	1	.	.	.	.	.	1	1	.	.	2
Hypsoblennius hentzi	2	.	.	.	.	.	.	.	.	.	.	2	.	.	.	2
Ictalurus punctatus	.	.	.	.	.	.	.	.	.	5	.	.	.	.	5	5
Jordanella floridae	.	.	.	1	.	.	.	.	.	.	.	.	.	.	1	1
Lactophrys quadricornis	4	.	2	.	.	53	66	.	271	10	2	153	105	146	.	406
Lactophrys trigonus	.	.	.	.	.	.	1	.	.	.	.	.	.	1	.	1
Lagodon rhomboides	35,220	292	29,230	204	148	10,616	4,313	1	6,420	508	14,085	27,082	33,153	11,993	639	86,952

Species	Gear and Strata										Zone					Totals
	21.3-m bay seine			21.3-m river seine		183-m haul seine		183-m purse seine		6.1-m otter trawl						
	Veg	Unveg	Shore	Over	Nonover	Over	Nonover	Veg	Unveg		A	B	C	D	F	
	E=98	E=46	E=144	E=48	E=48	E=155	E=49	E=1	E=239	E=90	E=222	E=210	E=210	E=108	E=168	E=918
Leiostomus xanthurus	831	1,805	3,518	1,559	2,118	69	76	.	391	46	4,306	1,319	954	111	3,723	10,413
Lepisosteus osseus	2	.	.	2	.	.	.	.	31	.	19	3	11	.	2	35
Lepisosteus platyrhincus	.	.	.	1	1	.	.	.	.	.	.	.	.	.	2	2
Lepomis gulosus	.	.	.	6	8	.	.	.	.	.	.	.	.	.	14	14
Lepomis macrochirus	.	.	.	9	10	.	.	.	.	1	.	.	.	.	20	20
Lepomis microlophus	.	.	.	.	1	.	.	.	.	.	.	.	.	.	1	1

Appendix CH01-02. (Continued)

Species	Gear and Strata										Zone					Totals
	21.3-m bay seine			21.3-m river seine		183-m haul seine		183-m purse seine		6.1-m otter trawl						
	Veg	Unveg	Shore	Over	Nonover	Over	Nonover	Veg	Unveg		A	B	C	D	F	
	E=98	E=46	E=144	E=48	E=48	E=155	E=49	E=1	E=239	E=90	E=222	E=210	E=210	E=108	E=168	E=918
Lepomis spp.	.	.	.	.	1	.	.	.	.	.	.	.	.	.	1	1
Limulus polyphemus	6	6	7	4	1	88	8	.	14	19	107	7	11	5	23	153
Lucania goodei	.	.	.	.	1	.	.	.	.	.	.	.	.	.	1	1
Lucania parva	2,121	25	7,715	15	7	.	.	.	.	.	621	3,803	5,437	.	22	9,883
Lutjanus griseus	84	.	146	1	.	151	57	1	15	2	18	284	49	105	1	457
Lutjanus synagris	18	.	9	.	.	18	4	.	18	8	2	36	17	20	.	75
Megalops atlanticus	.	.	.	.	.	.	.	.	.	1	.	.	.	.	1	1
Membras martinica	54	45	90	312	187	.	.	.	.	.	11	159	19	.	499	688
Menidia spp.	170	77	8,898	1,151	1,516	.	.	.	.	3	1,343	1,127	6,677	.	2,668	11,815
Menippe spp.	1	.	.	.	.	.	2	.	5	.	.	3	4	1	.	8
Menticirrhus americanus	.	4	47	47	12	1	3	.	187	257	211	41	18	9	279	558

Species	Gear and Strata										Zone					Totals
	21.3-m bay seine			21.3-m river seine		183-m haul seine		183-m purse seine		6.1-m otter trawl						
	Veg	Unveg	Shore	Over	Nonover	Over	Nonover	Veg	Unveg		A	B	C	D	F	
	E=98	E=46	E=144	E=48	E=48	E=155	E=49	E=1	E=239	E=90	E=222	E=210	E=210	E=108	E=168	E=918
Menticirrhus littoralis	.	.	.	.	.	.	.	.	1	.	.	.	.	1	.	1
Menticirrhus saxatilis	5	4	5	.	.	.	.	.	.	2	3	6	6	.	1	16
Microgobius gulosus	760	460	1,866	64	61	.	.	.	.	24	1,013	926	1,148	.	148	3,235
Microgobius thalassinus	.	.	.	.	2	.	.	.	.	16	.	.	.	.	18	18
Micropterus salmoides	.	.	.	1	.	.	.	.	.	.	.	.	.	.	1	1
Monacanthus ciliatus	.	.	.	.	.	2	.	.	.	.	.	1	.	1	.	2
Monacanthus hispidus	66	.	17	.	.	68	9	.	43	2	1	146	18	40	.	205
Mugil cephalus	1	.	651	1,194	1,179	287	47	.	.	.	564	277	95	50	2,373	3,359
Mugil curema	.	.	4	5	.	18	13	.	.	.	9	15	6	5	5	40
Mugil gyrans	.	.	5	17	62	123	31	.	.	.	17	55	66	21	79	238
Mullidae spp.	1	.	.	.	.	.	.	.	.	.	.	1	.	.	.	1

Appendix CH01-02. (Continued)

Species	Gear and Strata										Zone					Totals
	21.3-m bay seine			21.3-m river seine		183-m haul seine		183-m purse seine		6.1-m otter trawl						
	Veg	Unveg	Shore	Over	Nonover	Over	Nonover	Veg	Unveg		A	B	C	D	F	
	E=98	E=46	E=144	E=48	E=48	E=155	E=49	E=1	E=239	E=90	E=222	E=210	E=210	E=108	E=168	E=918
Mycteroperca microlepis	5	.	1	.	.	40	44	1	15	2	1	56	1	50	.	108
Nicholsina usta	19	.	5	.	.	2	32	.	6	.	.	23	12	29	.	64
Notropis maculatus	.	.	.	.	1	.	.	.	.	.	.	.	.	.	1	1
Ocyurus chrysurus	.	.	.	.	.	1	.	.	.	.	.	1	.	.	.	1
Ogcocephalus radiatus	.	.	1	.	.	7	3	.	6	2	1	9	5	4	.	19
Oligoplites saurus	12	3	42	13	10	20	20	.	24	.	34	43	38	6	23	144

Species	Gear and Strata										Zone					Totals
	21.3-m bay seine			21.3-m river seine		183-m haul seine		183-m purse seine		6.1-m otter trawl						
	Veg	Unveg	Shore	Over	Nonover	Over	Nonover	Veg	Unveg		A	B	C	D	F	
	E=98	E=46	E=144	E=48	E=48	E=155	E=49	E=1	E=239	E=90	E=222	E=210	E=210	E=108	E=168	E=918
Opisthonema oglinum	5	4	2	1	13	6	6	.	10,037	.	4,693	442	2,861	2,064	14	10,074
Opistognathus robinsi	.	.	.	.	.	1	.	.	.	.	.	.	1	.	.	1
Opsanus beta	2	.	5	.	.	43	5	.	7	12	8	13	15	29	9	74
Orthopristis chrysoptera	1,465	16	286	.	1	462	233	.	1,555	42	384	1,287	899	1,474	16	4,060
Paraclinus marmoratus	2	.	.	.	.	.	.	.	.	.	.	2	.	.	.	2
Paralichthys albigutta	3	3	10	.	.	33	21	.	14	4	9	34	25	19	1	88
Peprilus alepidotus	.	.	.	.	.	.	.	.	41	.	33	8	.	.	.	41
Poecilia latipinna	1	1	3	29	41	.	.	.	.	.	1	2	2	.	70	75
Pogonias cromis	.	.	.	.	.	1	.	.	.	.	.	.	.	1	.	1
Pomatomus saltatrix	.	.	.	.	.	.	.	.	443	.	.	3	439	1	.	443
Prionotus scitulus	6	5	11	.	3	2	16	.	139	99	49	77	117	19	19	281
Prionotus tribulus	4	3	7	.	.	2	.	.	20	43	26	17	5	5	26	79
Rachycentron canadum	.	.	.	.	.	.	.	.	2	.	2	.	.	.	.	2
Rhinobatos lentiginosus	.	.	.	.	.	1	3	.	2	.	.	.	4	2	.	6
Rhinoptera bonasus	.	.	1	.	.	86	26	.	280	.	118	89	152	34	.	393
Sardinella aurita	2	.	.	.	.	.	.	.	.	1	.	2	1	.	.	3

Appendix CH01-02. (Continued)

Species	Gear and Strata										Zone					Totals
	21.3-m bay seine			21.3-m river seine		183-m haul seine		183-m purse seine		6.1-m otter trawl						
	Veg	Unveg	Shore	Over	Nonover	Over	Nonover	Veg	Unveg		A	B	C	D	F	
	E=98	E=46	E=144	E=48	E=48	E=155	E=49	E=1	E=239	E=90	E=222	E=210	E=210	E=108	E=168	E=918
Sciaenops ocellatus	25	17	153	21	51	99	16	.	.	.	131	46	129	4	72	382

Species	Gear and Strata										Zone					Totals
	21.3-m bay seine			21.3-m river seine		183-m haul seine		183-m purse seine		6.1-m otter trawl						
	Veg	Unveg	Shore	Over	Nonover	Over	Nonover	Veg	Unveg		A	B	C	D	F	
	E=98	E=46	E=144	E=48	E=48	E=155	E=49	E=1	E=239	E=90	E=222	E=210	E=210	E=108	E=168	E=918
Scomberomorus maculatus	.	.	.	.	.	.	2	.	145	.	33	43	25	46	.	147
Scorpaena brasiliensis	1	.	2	.	.	.	.	.	.	.	.	3	.	.	.	3
Selene vomer	.	.	.	.	.	7	2	.	10	.	.	8	2	9	.	19
Sphoeroides nephelus	61	16	91	3	2	104	55	.	4	8	58	84	147	46	9	344
Sphoeroides spengleri	.	.	2	.	.	.	.	.	.	.	.	1	1	.	.	2
Sphyraena barracuda	.	.	.	.	.	20	1	.	.	.	.	7	1	13	.	21
Sphyraena picudilla	1	.	.	.	.	.	.	.	.	.	.	1	.	.	.	1
Sphyraena spp.	1	.	.	.	.	.	.	.	.	.	.	1	.	.	.	1
Sphyrna tiburo	.	.	.	.	.	3	1	.	13	.	2	1	6	8	.	17
Stomolophus meleagris	.	.	.	.	1	.	.	.	2	.	2	.	.	.	1	3
Strongylura marina	.	1	1	.	.	11	88	.	.	.	3	55	10	33	.	101
Strongylura notata	3	4	85	7	13	359	89	.	.	.	80	135	124	201	20	560
Strongylura spp.	5	.	20	4	2	.	.	.	.	.	6	11	8	.	6	31
Strongylura timucu	1	.	4	4	4	3	2	.	.	.	3	4	3	.	8	18
Symphurus plagiusa	8	17	20	4	12	2	7	.	2	39	45	9	14	2	41	111
Syngnathus floridae	102	2	28	.	.	.	.	.	.	1	15	66	52	.	.	133
Syngnathus louisianae	32	4	9	.	.	.	.	.	.	8	8	18	22	.	5	53
Syngnathus scovelli	634	22	506	7	8	.	.	.	.	32	229	400	534	.	46	1,209
Synodus foetens	88	35	88	8	3	22	12	.	33	20	60	124	75	36	14	309
Tilapia aurea	2	.	.	.	.	.	.	.	.	.	.	.	2	.	.	2

Appendix CH01-02. (Continued)

Species	Gear and Strata	Zone	Totals

	21.3-m bay seine			21.3-m river seine		183-m haul seine		183-m purse seine		6.1-m otter trawl						
	Veg	Unveg	Shore	Over	Nonover	Over	Nonover	Veg	Unveg		A	B	C	D	F	
	E=98	E=46	E=144	E=48	E=48	E=155	E=49	E=1	E=239	E=90	E=222	E=210	E=210	E=108	E=168	E=918
Trachinotus carolinus	.	.	.	.	.	5	3	.	4	.	1	1	9	1	.	12
Trachinotus falcatus	.	.	1	.	.	17	39	.	5	.	.	44	14	4	.	62
Trinectes maculatus	4	7	57	161	29	5	3	.	63	760	184	14	13	.	878	1,089
Urophycis floridana	5	.	.	.	.	.	.	.	.	.	.	2	3	.	.	5
Totals	**51,337**	**5,336**	**71,589**	**16,461**	**83,499**	**16,453**	**8,034**	**8**	**29,746**	**7,683**	**36,554**	**57,157**	**67,133**	**23,059**	**106,243**	**290,146**

Northern Indian River Lagoon

The Indian River Lagoon system (IRL) is a narrow estuarine lagoon extending from Ponce de Leon Inlet (29° 05'N) south to Jupiter Inlet (26° 50'N). The IRL system consists of three basins (Mosquito Lagoon, Indian River Lagoon proper, and Banana River) that extend approximately 260 km along the east central coast of Florida. Details of the northern Indian River Lagoon study area are given in the 1994 FIM Annual Report. All methods are the same as those described in the Methods section of this report. As a result of the events that occurred on September 11, 2001 and the resulting heightened security surrounding government installations, one sampling event (four 21.3-m seines, three 183-m haul seines) within the NASA security area (Zone D) was not completed during September.

This section summarizes Fisheries-Independent Monitoring (FIM) program data collected in northern Indian River Lagoon during 2001. Stratified-random sampling (SRS) was conducted monthly throughout 2001. The sampling area included six bay zones (A-E, and H) and one riverine zone (F) located in the northern portion of the Indian River Lagoon (Figure IR01-01). Zones A-C and H were located in the Indian River, 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 with 21.3-m bay and 183-m haul seines. 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. Zone E was also sampled monthly with the 183-m haul seines although this gear was not used in Zones A and B.

Stratified-Random Sampling

Stratified-random sampling consisted of 448 21.3-m seine and 225 183-m haul seine samples and captured a total of 591,833 animals, representing over 133 taxa (Table IR01-01; Appendices IR01-01 and -02). Three taxa, *Anchoa mitchilli*, *Lucania parva,* and *Mugil cephalus*, dominated the collections (77% of the total catch). Twenty-nine Selected Taxa (n=53,388 animals) composed 9% of the total catch. One new species was recorded: *Tylosurus crocodilus*, the houndfish (Appendix IR01-01 and –02). This fish was collected near Sebastian Inlet in Zone H.

Bay Sampling

21.3-m Bay Seines. A total of 376,216 individuals were collected in 376 bay seine samples and accounted for 66.5% of the annual SRS collections (Table IR01-01; Appendix IR01-02). The overall mean density estimate for this gear was 715 animals per 100 m^2 (Table IR01-02). The ten most abundant species accounted for 94% of the total seine collections. *Anchoa mitchilli* and *L. parva* were the most abundant species, accounting for 75% of the animals collected in the 21.3-m seines. Collections included 25,747 animals (22 taxa) classified as Selected Taxa, which represented 7% of the total 21.3-m seine catch (Table IR01-03). *Mugil cephalus, Farfantepenaeus duorarum,* and *Micropogonias undulatus* accounted for 89% of the Selected Taxa collected in this gear.

183-m haul seines. A total of 29,341 animals were collected in 225 183-m haul seines and accounted for 5% of the total annual SRS collections (Tables IR01-01 and –04; Appendix IR01-02). The overall mean CPUE for this gear was 130 animals per set. *Lagodon rhomboides* was the most abundant species, accounting for 38% of the total 183-m haul seine catch. The 183-m haul seine samples included 6,792 animals designated as Selected Taxa, accounting for 23% of the total 183-m haul seine catch (Table IR01-05). *Mugil curema* and *M. cephalus* were the most abundant Selected Taxa and accounted for 58% of the Selected Taxa collected in this gear.

River Sampling

21.3-m River Seines. A total of 186,276 individuals were collected in river seine samples (n=72) and accounted for 31.5% of the annual SRS collections (Table IR01-01; Appendix IR01-02). The overall mean density estimate for this gear was 3,805 animals per 100 m^2 (Table IR01-06). The ten most abundant species accounted for 98% of the total river seine collections. *Anchoa mitchilli, M. cephalus,* and *Eucinostomus* spp. accounted for 89% of the animals collected from seines. River seine collections included 20,849 animals (12 taxa) classified as Selected Taxa, representing 11% of the total river seine catch (Table IR01-07). *Mugil cephalus* accounted for 81% of the Selected Taxa collected in this gear.

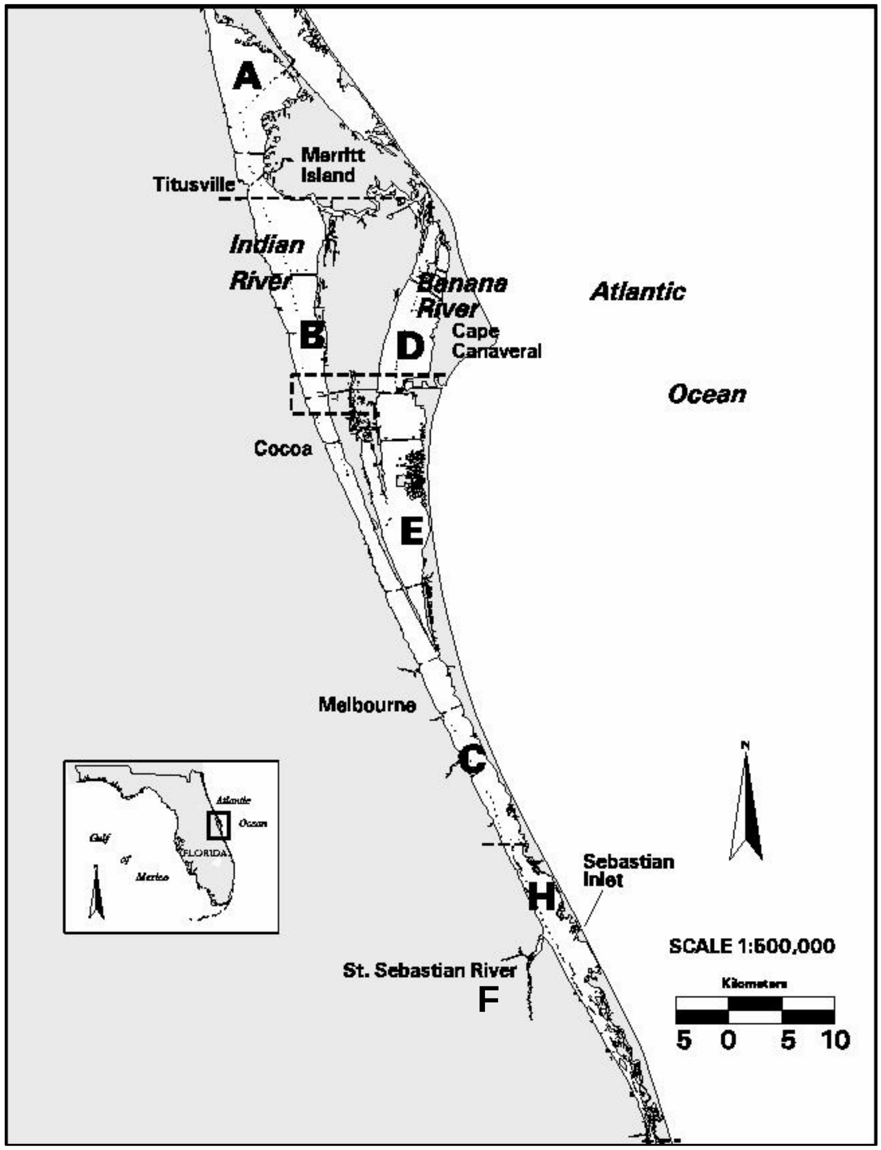

Figure IR01-01. Map of northern Indian River Lagoon sampling area. Zones are labeled A-F and H.

Table IR01-01. Summary of catch and effort data for northern Indian River stratified-random sampling, 2001.

	21.3-m bay seine		**21.3-m river seine**		**183-m haul seine**		**Totals**	
Zone	**Animals**	**Hauls**	**Animals**	**Hauls**	**Animals**	**Hauls**	**Animals**	**Hauls**
A	3,247	16	.	.	.	.	3,247	16
B	3,179	14	.	.	.	.	3,179	14
C	210,406	120	.	.	3,522	48	213,928	168
D	60,568	92	.	.	5,737	69	66,305	161
E	8,857	14	.	.	3,141	48	11,998	62
F	.	.	186,276	72	.	.	186,276	72
H	89,959	120	.	.	16,941	60	106,900	180
Totals	**376,216**	**376**	**186,276**	**72**	**29,341**	**225**	**591,833**	**673**

Table IR01-02. Catch statistics for 10 dominant taxa collected in 376 21.3-m bay seine samples during northern Indian River stratified-random sampling, 2001. 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
Anchoa mitchilli	236,468	62.9	48.7	449.22	154.51	666.93	50,849.29	37	0.02	10	62
Lucania parva	46,951	12.5	50.8	89.19	16.99	369.39	3,565.71	25	0.02	5	48
Mugil cephalus	19,568	5.2	22.3	37.17	21.45	1,118.81	7,864.29	24	0.06	14	404
Floridichthys carpio	11,933	3.2	38.3	22.67	4.26	364.73	914.29	31	0.09	9	63
Menidia spp.	10,532	2.8	46.3	20.01	4.39	425.15	1,144.29	38	0.15	8	83
Bairdiella chrysoura	8,221	2.2	29.5	15.62	6.96	864.43	2,469.29	28	0.20	7	133
Lagodon rhomboides	7,708	2.0	30.3	14.64	2.61	345.62	434.29	43	0.22	10	168
Eucinostomus spp.	4,747	1.3	38.0	9.02	1.68	360.29	388.57	25	0.12	7	64
Gobiosoma robustum	4,378	1.2	54.8	8.32	1.51	352.59	366.43	20	0.07	10	44
Microgobius gulosus	3,644	1.0	47.9	6.92	1.07	298.52	205.71	27	0.13	11	57
Subtotal	354,150	94.1	.	.	.	.	.	.	.	5	404
Totals	**376,216**	**100.0**	**.**	**714.70**	**157.29**	**426.75**	**51,052.14**	**.**	**.**	**2**	**550**

Table IR01-03. Catch statistics for Selected Taxa collected in 376 21.3-m bay seine samples during northern Indian River stratified-random sampling, 2001. 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**
Mugil cephalus	19,568	5.2	22.3	37.17	21.45	1,118.81	7,864.29	24	0.06	14	404
Farfantepenaeus duorarum	1,735	0.5	28.7	3.30	0.59	349.93	112.14	10	0.11	2	49
Micropogonias undulatus	1,676	0.4	10.4	3.18	1.34	818.19	434.29	25	0.16	10	62
Leiostomus xanthurus	903	0.2	9.3	1.72	0.75	844.19	216.43	23	0.34	11	85
Cynoscion nebulosus	440	0.1	21.3	0.84	0.21	477.10	63.57	40	0.98	15	292
Sciaenops ocellatus	411	0.1	12.2	0.78	0.21	511.17	36.43	34	1.92	9	550
Menticirrhus americanus	288	0.1	9.0	0.55	0.14	507.90	26.43	32	1.02	10	186
Mugil curema	217	0.1	15.4	0.41	0.09	422.33	17.14	89	2.38	16	236
Archosargus probatocephalus	215	0.1	15.4	0.41	0.10	462.97	22.86	64	4.20	12	355
Callinectes sapidus	86	0.0	9.3	0.16	0.05	548.56	12.86	45	3.66	10	158
Trachinotus falcatus	59	0.0	3.5	0.11	0.04	760.30	12.14	44	3.36	9	112
Lutjanus griseus	41	0.0	6.1	0.08	0.02	557.39	6.43	70	9.75	11	283
Lutjanus synagris	26	0.0	1.9	0.05	0.02	939.30	7.14	34	2.18	18	60
Elops saurus	25	0.0	2.4	0.05	0.02	903.53	7.14	106	20.46	31	294
Lutjanus analis	17	0.0	1.1	0.03	0.03	1,507.60	9.29	45	7.72	21	135
Centropomus undecimalis	12	0.0	3.2	0.02	0.01	551.49	0.71	231	44.39	24	465
Pogonias cromis	11	0.0	1.9	0.02	0.01	977.67	3.57	130	45.22	12	455
Cynoscion regalis	6	0.0	0.8	0.01	0.01	1,206.69	2.14	34	4.91	19	48
Paralichthys albigutta	5	0.0	1.1	0.01	0.01	1,022.54	1.43	105	44.79	28	267
Litopenaeus setiferus	4	0.0	0.8	0.01	0.00	1,184.79	1.43	10	2.56	5	17
Trachinotus carolinus	1	0.0	0.3	0.00	0.00	1,939.07	0.71	41	.	41	41
Paralichthys lethostigma	1	0.0	0.3	0.00	0.00	1,939.07	0.71	245	.	245	245
Totals	**25,747**	**6.8**	**69.9**	**48.91**	**21.56**	**854.87**	**7,867.86**	**.**	**.**	**2**	**550**

Table IR01-04 Catch statistics for 10 dominant taxa collected in 225 183-m haul seine samples during northern Indian River stratified-random sampling, 2001. Percent (%) is the percent of the total catch represented by that taxon; percent occurrence (% Occur) is the percentage of samples in which that taxon was collected; CV is the coefficient of variation of the mean. Taxa are ranked in order of decreasing mean catch-per-unit-effort.

Species	Number		%	Catch-per-unit-effort (animals/set)				Standard Length (mm)			
	No.	**%**	**Occur**	**Mean**	**Stderr**	**CV**	**Max**	**Mean**	**Stderr**	**Min**	**Max**
Lagodon rhomboides	11,272	38.4	59.6	50.10	8.52	255.21	920.00	123	0.26	51	298
Mugil curema	2,283	7.8	70.2	10.15	2.92	432.32	615.00	171	0.80	72	339
Mugil cephalus	1,643	5.6	72.4	7.30	1.07	219.52	163.00	264	1.35	93	420
Bairdiella chrysoura	1,544	5.3	27.6	6.86	4.30	940.33	963.00	129	0.35	51	236
Arius felis	1,360	4.6	60.4	6.04	1.11	276.03	170.00	275	1.52	119	382
Sphoeroides nephelus	1,277	4.4	64.0	5.68	0.73	191.94	61.00	171	0.76	49	295
Diapterus auratus	1,144	3.9	31.6	5.08	1.27	375.32	219.00	116	0.95	45	259
Orthopristis chrysoptera	948	3.2	20.0	4.21	1.22	432.85	189.00	132	0.91	39	223
Brevoortia spp.	934	3.2	15.6	4.15	2.50	902.46	548.00	196	1.97	80	285
Archosargus probatocephalus	802	2.7	49.8	3.56	0.51	214.52	48.00	185	3.10	53	472
Subtotal	23,207	79.1	.	.	.	.	.	.	.	39	472
Totals	**29,341**	**100.0**	**.**	**130.40**	**15.16**	**174.38**	**2,220.00**	**.**	**.**	**11**	**954**

Table IR01-05. Catch statistics for Selected Taxa collected in 225 183-m haul seine samples during northern Indian River stratified-random sampling, 2001. 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
Mugil curema	2,283	7.8	70.2	10.15	2.92	432.32	615.00	171	0.80	72	339
Mugil cephalus	1,643	5.6	72.4	7.30	1.07	219.52	163.00	264	1.35	93	420
Archosargus probatocephalus	802	2.7	49.8	3.56	0.51	214.52	48.00	185	3.10	53	472
Elops saurus	629	2.1	32.0	2.80	1.82	974.72	408.00	328	2.43	120	620
Centropomus undecimalis	326	1.1	25.8	1.45	0.30	313.30	43.00	422	6.58	141	907
Sciaenops ocellatus	238	0.8	40.0	1.06	0.14	191.62	17.00	491	10.56	53	954
Leiostomus xanthurus	181	0.6	15.1	0.80	0.19	347.79	20.00	153	2.94	76	237
Lutjanus griseus	125	0.4	18.7	0.56	0.21	557.86	44.00	198	5.80	69	394
Pogonias cromis	118	0.4	8.9	0.52	0.21	589.38	32.00	420	20.26	178	945
Callinectes sapidus	93	0.3	15.6	0.41	0.12	439.31	22.00	114	3.67	20	197
Cynoscion nebulosus	91	0.3	18.2	0.40	0.09	317.00	12.00	204	9.03	95	541
Micropogonias undulatus	48	0.2	4.4	0.21	0.10	668.63	17.00	152	4.58	109	242
Cynoscion regalis	34	0.1	2.2	0.15	0.10	1,026.40	21.00	202	4.17	120	258
Menticirrhus americanus	32	0.1	5.3	0.14	0.06	643.21	12.00	197	8.29	124	292

Table IR01-05. (Continued)

Lutjanus synagris	29	0.1	2.2	0.13	0.08	940.66	17.00	113	3.78	89	176
Mycteroperca microlepis	24	0.1	2.2	0.11	0.07	1,039.59	16.00	211	11.23	130	362
Paralichthys albigutta	20	0.1	5.3	0.09	0.03	553.50	6.00	144	12.17	54	256
Scomberomorus maculatus	17	0.1	3.6	0.08	0.03	610.86	4.00	316	16.64	251	537
Trachinotus falcatus	16	0.1	4.0	0.07	0.03	656.79	6.00	105	18.67	35	315
Lutjanus analis	16	0.1	2.2	0.07	0.04	744.96	5.00	146	10.22	100	220
Farfantepenaeus duorarum	12	0.0	2.7	0.05	0.03	744.96	5.00	21	2.60	11	41
Trachinotus carolinus	7	0.0	1.3	0.03	0.02	930.75	3.00	194	39.61	83	309
Albula vulpes	2	0.0	0.9	0.01	0.01	1,058.29	1.00	157	10.50	146	167
Pomatomus saltatrix	2	0.0	0.4	0.01	0.01	1,500.00	2.00	378	14.50	363	392
Menippe spp.	1	0.0	0.4	0.00	0.00	1,500.00	1.00	70	.	70	70
Megalops atlanticus	1	0.0	0.4	0.00	0.00	1,500.00	1.00	681	.	681	681
Scomberomorus regalis	1	0.0	0.4	0.00	0.00	1,500.00	1.00	347	.	347	347
Paralichthys lethostigma	1	0.0	0.4	0.00	0.00	1,500.00	1.00	347	.	347	347
Totals	**6,792**	**23.2**	**97.8**	**30.19**	**4.23**	**210.36**	**633.00**	**.**	**.**	**11**	**954**

Table IR01-06. Catch statistics for 10 dominant taxa collected in 72 21.3-m river seine samples during northern Indian River stratified-random sampling, 2001. 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**
Anchoa mitchilli	135,981	73.0	73.6	2,777.39	883.28	269.85	45,741.18	26	0.01	13	52
Mugil cephalus	16,894	9.1	31.9	345.06	241.88	594.81	17,191.18	25	0.05	17	332
Eucinostomus spp.	13,695	7.4	81.9	279.72	79.91	242.42	5,270.59	24	0.06	5	42
Brevoortia spp.	7,590	4.1	31.9	155.02	60.67	332.06	3,576.47	30	0.09	18	50
Diapterus auratus	2,711	1.5	93.1	55.37	14.55	222.98	941.18	38	0.33	12	159
Mugil curema	1,432	0.8	16.7	29.25	26.17	759.24	1,883.82	30	0.37	18	227
Eucinostomus harengulus	1,243	0.7	72.2	25.39	7.88	263.27	494.12	50	0.26	31	96
Opisthonema oglinum	1,032	0.6	2.8	21.08	20.98	844.37	1,510.29	31	0.10	26	44
Gambusia holbrooki	981	0.5	27.8	20.04	10.05	425.58	673.53	23	0.17	14	34
Micropogonias undulatus	837	0.4	15.3	17.10	8.78	435.78	532.35	25	0.27	13	51
Subtotal	182,396	97.9	.	.	.	.	.	.	.	5	332
Totals	**186,276**	**100.0**	**.**	**3,804.66**	**980.33**	**218.64**	**46,004.41**	**.**	**.**	**4**	**610**

Table IR01-07. Catch statistics for Selected Taxa collected in 72 21.3-m river seine samples during northern Indian River stratified-random sampling, 2001. 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
Mugil cephalus	16,894	9.1	31.9	345.06	241.88	594.81	17,191.18	25	0.05	17	332
Mugil curema	1,432	0.8	16.7	29.25	26.17	759.24	1,883.82	30	0.37	18	227
Micropogonias undulatus	837	0.4	15.3	17.10	8.78	435.78	532.35	25	0.27	13	51
Leiostomus xanthurus	405	0.2	23.6	8.27	3.99	408.93	252.94	24	0.57	14	102
Farfantepenaeus duorarum	380	0.2	40.3	7.76	2.33	255.16	126.47	7	0.13	4	18
Callinectes sapidus	345	0.2	30.6	7.05	3.21	386.36	213.24	21	1.11	6	171
Centropomus undecimalis	342	0.2	73.6	6.99	1.61	195.99	100.00	59	3.90	10	610
Archosargus probatocephalus	88	0.0	37.5	1.80	0.70	328.20	47.06	50	5.94	14	337
Elops saurus	68	0.0	4.2	1.39	1.17	716.34	83.82	36	0.48	26	52
Sciaenops ocellatus	23	0.0	9.7	0.47	0.29	530.18	20.59	53	3.83	20	93
Lutjanus griseus	19	0.0	18.1	0.39	0.11	237.91	4.41	152	7.29	87	204
Litopenaeus setiferus	16	0.0	1.4	0.33	0.33	848.53	23.53	12	0.98	6	18
Totals	**20,849**	**11.2**	**94.4**	**425.84**	**268.65**	**535.36**	**19,127.94**	**.**	**.**	**4**	**610**

Appendix IR01-01. Monthly summary of species collected during northern Indian River stratified-random sampling, 2001. Effort, or total number of hauls, is labeled 'E'. Listing is sorted alphabetically by taxon.

Species	Month												Totals
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
	E=53	E=53	E=53	E=53	E=53	E=53	E=53	E=53	E=46	E=75	E=75	E=53	E=673
Achirus lineatus	6	16	4	14	8	9	64	23	2	10	10	6	172
Albula vulpes	1	.	.	.	.	.	.	.	.	.	.	1	2
Amia calva	.	.	.	1	.	.	.	.	.	.	.	.	1
Anchoa hepsetus	.	.	.	118	10	58	1	.	.	1	224	.	412
Anchoa mitchilli	21,030	49,988	9,851	13,457	3,205	27,892	11,753	2,695	13,358	141,702	32,689	44,829	372,449
Archosargus probatocephalus	56	165	39	90	104	107	75	127	144	43	84	71	1,105
Archosargus rhomboidalis	5	.	3	2	.	.	1	14	2	.	7	.	34
Arius felis	12	255	24	62	66	117	306	148	220	98	86	67	1,461
Bagre marinus	.	4	1	.	3	.	5	5	4	.	1	.	23
Bairdiella chrysoura	91	21	998	108	1862	539	4,101	610	510	105	447	375	9,767
Bathygobius soporator	.	.	.	2	.	.	.	1	.	.	.	.	3
Brevoortia spp.	412	4,593	2,468	2,824	923	17	179	7	2	10	47	76	11,558
Calamus arctifrons	1	.	.	.	.	.	.	1	.	.	.	.	2
Callinectes sapidus	67	170	80	58	8	7	35	28	29	8	18	16	524
Callinectes similis	2	15	9	11	18	8	108	22	12	1	1	1	208
Caranx crysos	.	.	.	.	.	.	.	1	.	.	1	.	2
Caranx hippos	.	29	18	52	25	3	8	2	19	6	1	1	164
Caranx latus	.	1	.	.	.	.	.	.	.	.	.	.	1
Carcharhinus leucas	.	.	.	.	1	.	.	.	.	.	.	.	1
Centropomus parallelus	.	.	.	.	1	.	.	.	.	.	.	.	1
Centropomus spp.	.	.	.	.	.	.	.	.	.	.	2	.	2
Centropomus undecimalis	35	87	30	33	72	46	70	56	93	88	44	26	680

Appendix IR01-01. (Continued)

Species	Month												Totals
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
	E=53	E=53	E=53	E=53	E=53	E=53	E=53	E=53	E=46	E=75	E=75	E=53	E=673
Chaetodipterus faber	2	.	57	2	3	2	27	10	9	3	.	.	115
Chasmodes saburrae	11	26	6	19	10	31	145	25	8	7	27	4	319
Chilomycterus schoepfi	19	8	6	23	10	9	14	13	27	20	20	5	174
Chloroscombrus chrysurus	.	.	.	.	.	.	1	.	.	1	1	3	6
Citharichthys spilopterus	33	10	21	42	13	.	4	2	1	.	.	3	129
Clarias batrachus	.	.	.	.	.	.	.	.	1	.	.	.	1
Cynoscion nebulosus	33	5	3	1	10	23	140	72	141	56	36	11	531
Cynoscion regalis	21	.	.	.	10	3	1	.	.	3	2	.	40
Cyprinodon variegatus	3	13	140	.	109	81	223	118	129	32	49	24	921
Dasyatis sabina	39	71	55	74	82	43	136	26	55	67	78	19	745
Dasyatis say	1	6	11	9	2	4	11	13	4	7	3	3	74
Diapterus auratus	823	279	231	93	123	90	1,026	646	527	509	225	317	4,889
Diapterus plumieri	.	3	.	1	17	2	5	8	7	18	9	.	70
Dormitator maculatus	.	.	1	.	.	.	.	.	1	.	.	.	2
Dorosoma petenense	.	.	.	.	.	.	.	.	1	.	.	.	1
Elops saurus	61	426	17	27	39	.	23	50	24	22	15	18	722
Eucinostomus gula	10	32	60	53	31	177	385	263	106	66	62	31	1,276
Eucinostomus harengulus	104	89	106	325	516	150	211	130	187	31	115	185	2,149
Eucinostomus jonesi	.	.	.	.	.	.	.	.	.	.	1	.	1
Eucinostomus spp.	4,840	3,414	1,483	373	187	2,051	521	352	60	915	1,910	2,336	18,442
Evorthodus lyricus	1	.	5	.	1	2	.	2	6	6	11	1	35
Farfantepenaeus duorarum	53	345	351	351	91	107	6	62	78	50	280	353	2,127
Floridichthys carpio	55	98	668	341	475	902	2,835	2,017	36	1,598	1,738	1,170	11,933

Appendix IR01-01. (Continued)

Species	Month												Totals
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
	E=53	E=53	E=53	E=53	E=53	E=53	E=53	E=53	E=46	E=75	E=75	E=53	E=673
Fundulus grandis	75	8	6	1	.	12	50	8	5	23	2	4	194
Fundulus majalis	.	.	.	.	5	.	11	.	.	5	.	.	21
Fundulus seminolis	2	.	.	.	.	.	.	.	.	.	.	.	2
Fundulus similis	2	.	1	.	.	.	.	.	.	.	.	.	3
Gambusia holbrooki	17	597	196	75	1	12	8	.	11	22	11	50	1,000
Gobiesox strumosus	.	2	3	.	.	2	.	.	.	.	.	.	7
Gobiomorus dormitor	35	.	.	.	.	.	.	1	.	.	2	.	38
Gobionellus boleosoma	4	42	21	8	.	.	.	.	.	1	139	42	257
Gobionellus oceanicus	8	.	.	3	.	.	.	.	.	.	.	2	13
Gobionellus pseudofasciatus	.	.	.	3	.	.	.	.	.	.	.	.	3
Gobionellus shufeldti	2	8	.	.	.	.	.	.	.	.	.	.	10
Gobionellus smaragdus	.	.	1	2	1	.	.	.	.	.	1	.	5
Gobiosoma bosc	1	3	7	.	.	1	11	4	.	.	.	1	28
Gobiosoma robustum	710	822	591	201	169	267	658	151	147	217	430	224	4,587
Gobiosoma spp.	.	2	.	1	.	.	.	.	.	.	.	.	3
Gymnura micrura	.	.	3	1	.	.	.	.	.	.	.	.	4
Haemulon parrai	.	.	.	.	.	1	.	21	24	1	10	1	58
Haemulon plumieri	.	.	.	.	.	1	.	1	.	.	1	.	3
Halichoeres radiatus	.	.	.	.	.	1	12	7	.	.	.	.	20
Harengula jaguana	3	4	.	4	.	387	528	52	.	126	1	1	1,106
Heterandria formosa	.	.	.	.	.	.	.	.	1	.	.	.	1
Hippocampus erectus	3	1	5	1	.	2	1	2	.	10	3	.	28
Hippocampus zosterae	7	13	3	5	.	.	.	2	.	.	1	.	31

Appendix IR01-01. (Continued)

Species	Month												Totals
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
	E=53	E=53	E=53	E=53	E=53	E=53	E=53	E=53	E=46	E=75	E=75	E=53	E=673
Hyporhamphus meeki	.	.	.	.	.	2	2	2	.	3	.	.	9
Hypostomus plecostomus	.	.	.	.	.	.	.	1	.	.	1	.	2
Labidesthes sicculus	32	.	.	.	.	.	.	3	4	28	65	51	183
Lactophrys quadricornis	1	.	1	.	.	.	1	.	.	.	.	.	3
Lactophrys trigonus	.	.	.	.	.	.	.	.	.	.	2	.	2
Lagodon rhomboides	287	1,166	1,673	1,619	924	2,317	1,078	3,065	3,739	1,358	942	889	19,057
Leiostomus xanthurus	38	1,039	138	90	39	36	2	59	18	23	6	1	1,489
Lepisosteus platyrhincus	.	1	.	1	.	.	.	2	.	.	.	.	4
Lepomis gulosus	.	.	.	.	.	.	.	1	6	1	.	1	9
Lepomis macrochirus	.	.	.	.	.	.	.	.	2	.	35	1	38
Lepomis microlophus	.	.	.	.	.	.	.	.	.	.	.	11	11
Lepomis spp.	.	.	.	.	.	.	.	.	.	.	2	2	4
Limulus polyphemus	.	3	10	.	2	.	3	1	2	.	2	.	23
Litopenaeus setiferus	16	.	.	.	.	.	.	.	.	.	2	2	20
Lophogobius cyprinoides	4	68	20	3	1	1	.	.	1	.	.	.	98
Lucania parva	936	1,774	1,867	8,495	2,808	2,761	3,212	4,387	787	4,881	5,112	9,979	46,999
Lutjanus analis	.	.	.	.	.	.	2	5	8	1	17	.	33
Lutjanus griseus	3	1	5	3	8	13	14	19	73	13	19	14	185
Lutjanus synagris	.	.	.	.	.	.	17	19	3	2	13	1	55
Megalops atlanticus	.	.	.	.	.	.	.	1	.	.	.	.	1
Membras martinica	.	.	8	.	4	83	117	.	.	1	4	1	218
Menidia spp.	306	393	665	456	2,882	2,691	528	1,035	934	525	723	94	11,232
Menippe spp.	.	.	.	.	.	1	.	.	.	.	.	.	1

Appendix IR01-01. (Continued)

Species	Month												Totals
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
	E=53	E=53	E=53	E=53	E=53	E=53	E=53	E=53	E=46	E=75	E=75	E=53	E=673
Menticirrhus americanus	16	1	.	.	5	5	56	29	3	33	111	61	320
Microgobius gulosus	38	210	89	133	156	272	323	70	61	953	1236	216	3,757
Microgobius thalassinus	.	1	.	.	1	.	3	2	.	1	.	3	11
Microphis brachyurus	1	.	.	.	.	.	.	1	.	.	.	1	3
Micropogonias undulatus	881	193	34	6	19	2	11	9	9	29	199	1,169	2,561
Micropterus salmoides	.	.	.	.	.	.	.	.	.	.	.	1	1
Monacanthus hispidus	.	1	.	.	1	1	.	7	.	1	1	.	12
Mugil cephalus	15,485	17,001	4,258	159	300	181	52	96	87	55	216	215	38,105
Mugil curema	216	2,215	381	115	172	121	24	85	75	138	163	227	3,932
Mugil spp.	.	.	.	.	.	.	.	.	.	2	.	.	2
Mycteroperca microlepis	.	.	.	.	.	1	2	5	16	.	.	.	24
Myrophis punctatus	.	.	.	.	.	.	.	.	.	.	.	1	1
Oligoplites saurus	.	.	3	7	7	18	117	31	53	276	12	2	526
Opisthonema oglinum	1	2	134	12	4	1,015	20	1,050	320	60	.	214	2,832
Opsanus tau	2	1	.	1	1	9	8	2	3	2	.	1	30
Orthopristis chrysoptera	3	69	527	263	463	609	125	313	348	19	238	75	3,052
Paralichthys albigutta	.	4	2	4	2	8	.	1	1	.	2	1	25
Paralichthys lethostigma	.	.	.	.	.	.	1	.	.	1	.	.	2
Poecilia latipinna	228	75	208	14	20	80	538	95	140	83	52	34	1,567
Pogonias cromis	2	.	6	.	.	.	.	2	13	47	23	36	129
Pomatomus saltatrix	.	.	.	.	.	.	.	.	.	2	.	.	2
Prionotus scitulus	.	.	.	.	.	.	.	.	.	2	1	.	3
Prionotus tribulus	.	.	.	.	4	.	.	.	.	.	.	1	5

Appendix IR01-01. (Continued)

Species	Month												Totals
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
	E=53	E=53	E=53	E=53	E=53	E=53	E=53	E=53	E=46	E=75	E=75	E=53	E=673
Sciaenops ocellatus	65	90	24	15	16	11	12	10	14	72	209	134	672
Scomberomorus maculatus	.	4	5	.	4	.	.	.	2	1	1	.	17
Scomberomorus regalis	.	.	1	.	.	.	.	.	.	.	.	.	1
Scorpaena brasiliensis	.	.	.	.	.	.	.	.	1	.	.	.	1
Scorpaena grandicornis	.	.	.	.	.	.	.	2	.	.	.	2	4
Selene vomer	.	.	3	1	1	8	9	11	16	2	2	2	55
Sparisoma radians	.	.	.	.	.	.	.	4	.	.	.	.	4
Sphoeroides nephelus	137	153	183	104	134	106	125	169	67	84	60	52	1,374
Sphoeroides spengleri	1	.	.	.	.	.	1	.	.	.	.	.	2
Sphoeroides testudineus	3	49	.	4	45	9	2	12	6	5	4	3	142
Sphyraena barracuda	.	1	.	2	1	2	1	4	19	3	3	2	38
Sphyraena guachancho	.	.	.	.	.	1	.	.	.	.	.	.	1
Strongylura marina	.	5	.	1	4	2	1	.	.	.	1	.	14
Strongylura notata	8	3	27	14	28	45	73	71	50	75	124	19	537
Strongylura timucu	.	.	14	6	7	5	2	1	1	2	1	.	39
Symphurus plagiusa	.	.	.	1	.	.	.	.	.	1	.	1	3
Syngnathus louisianae	2	1	.	5	5	3	12	16	1	9	7	2	63
Syngnathus scovelli	77	181	94	131	124	182	73	86	12	80	250	146	1,436
Synodus foetens	.	.	1	.	7	3	1	1	2	5	6	.	26
Tilapia melanotheron	.	.	.	.	1	.	.	3	9	1	.	1	15
Tilapia spp.	.	2	.	.	.	.	.	.	1	.	.	.	3
Trachinotus carolinus	.	.	1	.	.	1	3	.	.	3	.	.	8
Trachinotus falcatus	.	.	.	.	1	8	10	32	5	8	5	6	75

Appendix IR01-01. (Continued)

Species	Month												Totals
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
	E=53	E=53	E=53	E=53	E=53	E=53	E=53	E=53	E=46	E=75	E=75	E=53	E=673
Trinectes maculatus	3	2	9	7	3	4	.	.	.	.	.	.	28
Tylosurus crocodilus	.	.	.	.	.	.	.	.	.	1	.	.	1
Totals	**47,488**	**86,380**	**27,974**	**30,543**	**16,415**	**43,783**	**30,280**	**18,618**	**22,903**	**154,780**	**48,717**	**63,952**	**591,833**

Appendix IR01-02. Summary by gear, stratum, and zone of species collected during northern Indian River stratified-random sampling, 2001. Strata for the 21-m seine was stratified by the presence or absence of bottom vegetation (‘Veg’ or ‘Unveg’), or shoreline presence (‘Shore’). Sampling with the 183-m seine was post-stratified by the presence or absence of overhanging vegetation (‘Over’ or ‘Nonover’). Zones A-C, and H were located in the Indian River and Zones D and E encompassed the Banana River. Effort, or the total number of hauls, is labeled 'E'. Listing is sorted alphabetical by taxon.

Species	Gear and Strata							Zone							Totals
	21.3-m bay seine			21.3-m river seine		183-m haul seine									
	Veg	Unveg	Shore	Over	Nonover	Over	Nonover	A	B	C	D	E	F	H	
	E=112	E=49	E=215	E=49	E=23	E=119	E=106	E=16	E=14	E=168	E=161	E=62	E=72	E=180	E=673
Achirus lineatus	27	5	106	10	4	10	10	.	.	110	1	8	14	39	172
Albula vulpes	.	.	.	.	.	1	1	.	.	1	1	.	.	.	2
Amia calva	.	.	.	1	.	.	.	.	.	.	.	.	1	.	1
Anchoa hepsetus	399	1	6	1	5	.	.	.	.	.	.	.	6	406	412
Anchoa mitchilli	36,864	42,366	157,238	122,796	13,185	.	.	12	1,507	187,410	1,520	5,885	135,981	40,134	372,449
Archosargus probatocephalus	44	4	167	79	9	465	337	.	.	194	130	4	88	689	1,105
Archosargus rhomboidalis	4	.	.	.	.	22	8	.	.	.	.	.	.	34	34
Arius felis	11	25	51	14	.	787	573	.	4	490	253	365	14	335	1,461
Bagre marinus	1	.	.	.	.	10	12	.	.	10	.	1	.	12	23
Bairdiella chrysoura	5,134	200	2,887	2	.	383	1,161	17	50	7,151	133	196	2	2,218	9,767
Bathygobius soporator	.	.	1	2	.	.	.	.	.	.	.	.	2	1	3
Brevoortia spp.	58	14	2,962	4,998	2,592	708	226	.	1	166	37	185	7,590	3,579	11,558
Calamus arctifrons	.	.	1	.	.	1	.	.	.	.	.	.	.	2	2
Callinectes sapidus	25	4	57	165	180	23	70	.	.	42	.	4	345	133	524
Callinectes similis	3	1	44	.	.	89	71	.	.	42	.	.	.	166	208
Caranx crysos	.	.	.	.	.	1	1	.	.	.	.	.	.	2	2
Caranx hippos	.	.	.	2	.	101	61	.	.	18	32	3	2	109	164
Caranx latus	.	.	.	1	.	.	.	.	.	.	.	.	1	.	1

Appendix IR01-02. (Continued)

Species	Gear and Strata							Zone							Totals
	21.3-m bay seine			21.3-m river seine		183-m haul seine									
	Veg	Unveg	Shore	Over	Nonover	Over	Nonover	A	B	C	D	E	F	H	
	E=112	E=49	E=215	E=49	E=23	E=119	E=106	E=16	E=14	E=168	E=161	E=62	E=72	E=180	E=673
Carcharhinus leucas	.	.	.	.	.	.	1	.	.	1	.	.	.	.	1
Centropomus parallelus	.	.	.	1	.	.	.	.	.	.	.	.	1	.	1
Centropomus spp.	.	.	.	2	2	.	.	.	.	.	.	.	4	.	4
Centropomus undecimalis	2	.	10	168	172	136	190	.	.	32	14	23	340	269	678
Chaetodipterus faber	2	3	5	.	.	22	83	.	.	28	13	2	.	72	115
Chasmodes saburrae	152	2	162	.	.	3	.	.	1	202	79	5	.	32	319
Chilomycterus schoepfi	5	.	3	.	.	85	81	2	.	43	27	41	.	61	174
Chloroscombrus chrysurus	.	.	.	.	.	4	2	.	.	1	1	.	.	4	6
Citharichthys spilopterus	4	1	15	76	29	1	3	.	.	4	.	.	105	20	129
Clarias batrachus	.	.	.	.	1	.	.	.	.	.	.	.	1	.	1
Cynoscion nebulosus	207	35	198	.	.	51	40	10	6	250	31	79	.	155	531
Cynoscion regalis	.	.	6	.	.	23	11	.	2	14	.	22	.	2	40
Cyprinodon variegatus	4	1	916	.	.	.	.	3	14	34	807	32	.	31	921
Dasyatis sabina	12	6	39	.	1	319	368	3	3	161	258	188	1	131	745
Dasyatis say	.	3	2	.	.	44	25	.	.	36	4	13	.	21	74
Diapterus auratus	243	13	778	1,544	1,167	812	332	.	.	872	63	57	2,711	1,186	4,889
Diapterus plumieri	.	.	4	27	11	3	25	.	.	2	13	3	38	14	70
Dormitator maculatus	.	.	.	2	.	.	.	.	.	.	.	.	2	.	2
Dorosoma petenense	.	.	.	1	.	.	.	.	.	.	.	.	1	.	1
Elops saurus	5	4	16	64	4	537	92	.	.	82	46	39	68	487	722
Eucinostomus gula	77	6	551	.	.	513	129	.	.	30	42	75	.	1,129	1,276
Eucinostomus harengulus	60	16	376	647	596	246	208	4	.	111	286	56	1,243	449	2,149

Appendix IR01-02. (Continued)

Species	Gear and Strata							Zone								Totals
	21.3-m bay seine			21.3-m river seine		183-m haul seine										
	Veg	Unveg	Shore	Over	Nonover	Over	Nonover	A	B	C	D	E	F	H		
	E=112	E=49	E=215	E=49	E=23	E=119	E=106	E=16	E=14	E=168	E=161	E=62	E=72	E=180		E=673
Eucinostomus jonesi	.	.	1	.	.	.	.	.	.	.	.	.	.	1		1
Eucinostomus spp.	1,325	30	3,392	11,174	2,521	.	.	33	.	594	111	95	13,695	3,914		18,442
Evorthodus lyricus	2	.	17	2	14	.	.	.	.	.	.	.	16	19		35
Farfantepenaeus duorarum	552	7	1,176	270	110	6	6	.	.	104	4	1	380	1,638		2,127
Floridichthys carpio	709	1,179	10,045	.	.	.	.	283	369	760	10,029	340	.	152		11,933
Fundulus grandis	.	.	181	.	.	12	1	.	1	3	96	.	.	94		194
Fundulus majalis	.	.	21	.	.	.	.	.	.	.	21	.	.	.		21
Fundulus seminolis	.	.	.	.	.	2	.	.	.	.	2	.	.	.		2
Fundulus similis	.	.	.	.	.	.	3	.	.	.	3	.	.	.		3
Gambusia holbrooki	.	.	19	834	147	.	.	.	.	.	17	.	981	2		1,000
Gobiesox strumosus	.	1	6	.	.	.	.	.	.	6	1	.	.	.		7
Gobiomorus dormitor	.	.	.	35	3	.	.	.	.	.	.	.	38	.		38
Gobionellus boleosoma	23	.	199	33	2	.	.	.	.	.	.	.	35	222		257
Gobionellus oceanicus	2	.	.	11	.	.	.	.	.	.	.	.	11	2		13
Gobionellus pseudofasciatus	.	.	.	3	.	.	.	.	.	.	.	.	3	.		3
Gobionellus shufeldti	.	.	8	2	.	.	.	.	.	.	.	.	2	8		10
Gobionellus smaragdus	.	.	5	.	.	.	.	.	.	.	.	.	.	5		5
Gobiosoma bosc	.	.	4	21	3	.	.	.	.	.	.	.	24	4		28
Gobiosoma robustum	1,887	61	2,430	134	75	.	.	9	3	1,388	484	66	209	2,428		4,587
Gobiosoma spp.	.	.	.	1	2	.	.	.	.	.	.	.	3	.		3
Gymnura micrura	2	.	.	.	.	1	1	.	.	.	.	.	.	4		4
Haemulon parrai	13	.	43	.	.	1	1	.	.	.	.	.	.	58		58

Appendix IR01-02. (Continued)

Species	Gear and Strata							Zone								Totals
	21.3-m bay seine			21.3-m river seine		183-m haul seine										
	Veg	Unveg	Shore	Over	Nonover	Over	Nonover	A	B	C	D	E	F	H		
	E=112	E=49	E=215	E=49	E=23	E=119	E=106	E=16	E=14	E=168	E=161	E=62	E=72	E=180		E=673
Haemulon plumieri	1	.	.	.	.	.	2	.	.	.	.	.	.	3		3
Halichoeres radiatus	1	.	4	.	.	.	15	.	.	.	.	.	.	20		20
Harengula jaguana	409	.	532	.	26	13	126	.	.	149	2	.	26	929		1,106
Heterandria formosa	.	.	.	.	1	.	.	.	.	.	.	.	1	.		1
Hippocampus erectus	4	1	12	.	.	7	4	.	.	7	15	5	.	1		28
Hippocampus zosterae	20	1	10	.	.	.	.	.	.	2	27	.	.	2		31
Hyporhamphus meeki	4	4	.	.	.	1	.	.	2	5	1	.	.	1		9
Hypostomus plecostomus	.	.	.	2	.	.	.	.	.	.	.	.	2	.		2
Labidesthes sicculus	.	.	.	170	13	.	.	.	.	.	.	.	183	.		183
Lactophrys quadricornis	.	.	1	.	.	2	.	.	.	1	.	.	.	2		3
Lactophrys trigonus	.	.	.	.	.	1	1	.	.	.	.	.	.	2		2
Lagodon rhomboides	3,557	14	4,137	57	20	7,080	4,192	.	4	478	2,495	864	77	15,139		19,057
Leiostomus xanthurus	19	177	707	215	190	111	70	.	.	267	48	15	405	754		1,489
Lepisosteus platyrhincus	.	.	.	2	2	.	.	.	.	.	.	.	4	.		4
Lepomis gulosus	.	.	.	6	3	.	.	.	.	.	.	.	9	.		9
Lepomis macrochirus	.	.	.	6	32	.	.	.	.	.	.	.	38	.		38
Lepomis microlophus	.	.	.	11	.	.	.	.	.	.	.	.	11	.		11
Lepomis spp.	.	.	.	2	2	.	.	.	.	.	.	.	4	.		4
Limulus polyphemus	.	.	.	.	.	15	8	.	.	2	4	17	.	.		23
Litopenaeus setiferus	.	.	4	16	.	.	.	2	.	1	.	.	16	1		20
Lophogobius cyprinoides	.	.	.	93	5	.	.	.	.	.	.	.	98	.		98
Lucania parva	17,485	110	29,356	32	16	.	.	2,223	842	1,060	36,722	1,566	48	4,538		46,999

Appendix IR01-02. (Continued)

Species	Gear and Strata							Zone							Totals
	21.3-m bay seine			21.3-m river seine		183-m haul seine									
	Veg	Unveg	Shore	Over	Nonover	Over	Nonover	A	B	C	D	E	F	H	
	E=112	E=49	E=215	E=49	E=23	E=119	E=106	E=16	E=14	E=168	E=161	E=62	E=72	E=180	E=673
Lutjanus analis	14	.	3	.	.	1	15	.	.	.	.	.	.	33	33
Lutjanus griseus	15	.	26	11	8	43	82	.	.	16	6	2	19	142	185
Lutjanus synagris	17	.	9	.	.	4	25	.	.	.	.	.	.	55	55
Megalops atlanticus	.	.	.	.	.	1	.	.	.	.	.	1	.	.	1
Membras martinica	120	1	97	.	.	.	.	.	.	161	47	.	.	10	218
Menidia spp.	1,405	379	8,748	616	84	.	.	252	75	5,909	2,230	227	700	1,839	11,232
Menippe spp.	.	.	.	.	.	1	.	.	.	1	.	.	.	.	1
Menticirrhus americanus	44	12	232	.	.	18	14	3	27	267	1	17	.	5	320
Microgobius gulosus	1,222	174	2,248	99	14	.	.	311	219	655	1,011	383	113	1,065	3,757
Microgobius thalassinus	4	.	7	.	.	.	.	.	.	4	.	.	.	7	11
Microphis brachyurus	.	.	.	2	1	.	.	.	.	.	.	.	3	.	3
Micropogonias undulatus	455	1	1,220	613	224	18	30	.	.	214	.	.	837	1,510	2,561
Micropterus salmoides	.	.	.	1	.	.	.	.	.	.	.	.	1	.	1
Monacanthus hispidus	3	1	5	.	.	.	3	.	.	.	1	.	.	11	12
Mugil cephalus	879	51	18,638	2,570	14,324	1,064	579	3	10	1,982	5,918	243	16,894	13,055	38,105
Mugil curema	37	9	171	124	1,308	1,609	674	21	1	607	381	313	1,432	1,177	3,932
Mugil spp.	.	2	.	.	.	.	.	.	.	.	2	.	.	.	2
Mycteroperca microlepis	.	.	.	.	.	1	23	.	.	.	.	.	.	24	24
Myrophis punctatus	.	.	1	.	.	.	.	.	.	.	.	.	.	1	1
Oligoplites saurus	25	10	407	1	2	19	62	1	1	426	15	13	3	67	526
Opisthonema oglinum	443	.	586	5	1,027	608	163	.	.	298	.	10	1,032	1,492	2,832
Opsanus tau	2	.	6	.	.	3	19	.	.	16	3	7	.	4	30

Appendix IR01-02. (Continued)

Species	Gear and Strata							Zone							Totals
	21.3-m bay seine			21.3-m river seine		183-m haul seine									
	Veg	Unveg	Shore	Over	Nonover	Over	Nonover	A	B	C	D	E	F	H	
	E=112	E=49	E=215	E=49	E=23	E=119	E=106	E=16	E=14	E=168	E=161	E=62	E=72	E=180	E=673
Orthopristis chrysoptera	1,013	103	988	.	.	567	381	.	.	137	10	12	.	2,893	3,052
Paralichthys albigutta	1	.	4	.	.	14	6	.	.	.	.	.	.	25	25
Paralichthys lethostigma	1	.	.	.	.	.	1	1	.	.	.	.	.	1	2
Poecilia latipinna	63	4	1,204	231	65	.	.	20	10	7	969	30	296	235	1,567
Pogonias cromis	2	.	9	.	.	66	52	.	.	15	41	.	.	73	129
Pomatomus saltatrix	.	.	.	.	.	2	.	.	.	.	.	.	.	2	2
Prionotus scitulus	.	.	1	.	.	2	.	.	1	.	.	2	.	.	3
Prionotus tribulus	.	.	.	.	.	3	2	.	.	.	.	.	.	5	5
Sciaenops ocellatus	42	.	369	22	1	102	136	6	.	41	147	23	23	432	672
Scomberomorus maculatus	.	.	.	.	.	10	7	.	.	4	.	.	.	13	17
Scomberomorus regalis	.	.	.	.	.	.	1	.	.	.	.	.	.	1	1
Scorpaena brasiliensis	.	.	.	.	.	.	1	.	.	.	.	.	.	1	1
Scorpaena grandicornis	.	.	.	.	.	2	2	.	.	.	.	.	.	4	4
Selene vomer	2	.	1	.	.	29	23	.	.	.	.	.	.	55	55
Sparisoma radians	.	.	.	.	.	.	4	.	.	.	.	.	.	4	4
Sphoeroides nephelus	32	16	49	.	.	514	763	4	2	243	645	358	.	122	1,374
Sphoeroides spengleri	.	.	1	.	.	.	1	.	.	.	.	.	.	2	2
Sphoeroides testudineus	1	1	11	.	.	71	58	.	.	1	.	.	.	141	142
Sphyraena barracuda	4	.	5	.	.	10	19	.	.	2	1	.	.	35	38
Sphyraena guachancho	1	.	.	.	.	.	.	.	.	.	.	.	.	1	1
Strongylura marina	2	1	2	1	.	4	4	.	.	4	6	1	1	2	14
Strongylura notata	38	43	277	2	13	52	112	15	19	91	278	42	15	77	537

Appendix IR01-02. (Continued)

Species	Gear and Strata							Zone							Totals
	21.3-m bay seine			21.3-m river seine		183-m haul seine									
	Veg	Unveg	Shore	Over	Nonover	Over	Nonover	A	B	C	D	E	F	H	
	E=112	E=49	E=215	E=49	E=23	E=119	E=106	E=16	E=14	E=168	E=161	E=62	E=72	E=180	E=673
Strongylura timucu	3	.	35	1	.	.	.	.	.	9	9	2	1	18	39
Symphurus plagiusa	1	.	2	.	.	.	.	.	.	.	.	.	.	3	3
Syngnathus louisianae	32	3	28	.	.	.	.	1	2	20	4	7	.	29	63
Syngnathus scovelli	689	44	700	2	1	.	.	8	3	394	697	49	3	282	1,436
Synodus foetens	4	2	12	.	.	5	3	.	.	.	.	.	.	26	26
Tilapia melanotheron	1	.	12	.	1	1	.	.	.	3	6	.	1	5	15
Tilapia spp.	.	.	.	.	.	.	3	.	.	1	2	.	.	.	3
Trachinotus carolinus	.	.	1	.	.	3	4	.	.	7	.	.	.	1	8
Trachinotus falcatus	.	.	59	.	.	2	14	.	.	26	2	1	.	46	75
Trinectes maculatus	3	.	.	11	11	.	3	.	.	3	.	.	22	3	28
Tylosurus crocodilus	.	.	1	.	.	.	.	.	.	.	.	.	.	1	1
Totals	**75,978**	**45,152**	**255,086**	**148,047**	**38,229**	**17,501**	**11,840**	**3,247**	**3,179**	**213,928**	**66,305**	**11,998**	**186,276**	**106,900**	**591,833**

Cedar Key

Cedar Key is located along the Gulf coast of Florida within the area known as the Big Bend. Unusual characteristics of the area include its 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 eight miles north of the river mouth southeastward to the islands comprising the Cedar Keys and extends approximately five miles offshore (Suwannee River Water Management District, unpublished data). The area is characterized by large expanses of saltmarsh, tidal creeks, oyster bars, mud flats, and seagrasses (predominately surrounding the keys).

The Fisheries-Independent Monitoring (FIM) program has conducted intensive fisheries sampling in the Cedar Key area since 1996. The sampling area (731 km^2) was divided into three zones (Figure CK01-01). Zone B encompassed the northern portion of the sampling universe and included the mouth of the Suwannee River and all tidal creeks. Zone C encompassed the southern portion of the sampling universe and included the area containing the Cedar Keys. Zone F contained the lower Suwannee River from the mouth upstream to the vicinity of Monden Creek. The seaward demarcation for sampling is marked by the 3-nm line on NOAA Chart 11408. Monthly stratified-random sampling (SRS) was conducted year-round using 21.3-m bay seines, 183-m haul seines, and 6.1-m otter trawls. The 21.3-m bay seine with shoreline stratum was implemented in February to replace the 21.3-m beach set. 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.

River seines and trawling in the lower Suwannee River and trawling in the Gulf of Mexico were initiated in February 2001 as part of a project funded by the Gulf of Mexico Program. The objective of the project was to investigate the relationship between freshwater inflow and the abundance of fisheries resources in the Suwannee River estuary. This section summarizes FIM data collected in the Cedar Key area during 2001. All methods were identical to those described in the Methods section of this report.

Stratified-Random Sampling

A total of 124,218 fishes (152 taxa) and selected invertebrates (4 taxa) were collected in 2001 (Table CK01-01, Appendices CK01-01 and -02). The highest monthly catch occurred in February (n=19,979). The lowest catches occurred in April (n=4,471) and May (n=4,620). Collections in 2001 included eleven species new to the Cedar Key FIM collection. These species were: *Fundulus lineolatus* (lined topminnow), *Gymnothorax saxicola* (honeycomb moray), *Haemulon aurolineatum* (tomtate), *Labidesthes sicculus* (brook silverside), *Lepomis auritus* (redbreast sunfish), *Megalops atlanticus* (tarpon), *Mullus auratus* (red goatfish), *Narcine brasiliensis* (lesser electric ray), *Paralichthys squamilentus* (broad flounder), *Pomacanthus paru* (French angelfish), and *Pomoxis nigromaculatus* (black crappie). Most of these species were associated with the additional effort applied in the lower Suwannee River and trawling in the Gulf of Mexico.

21.3-m Bay Seines. A total of 36,461 animals were collected in 252 offshore (vegetated or unvegetated) and shoreline 21.3-m bay seine samples (Tables CK01-01 and -02). The mean density estimate for this gear using these deployment techniques was 101 animals/100 m^2. *Leiostomus xanthurus* was the most abundant species collected (n=11,500) followed by *Anchoa mitchilli* (n=7,642). Together, these two species accounted for 52.5% of the 21.3-m bay seine catch. *Bairdiella chrysoura* (n=2,112), *Lagodon rhomboides* (n=2,048), and *Menidia spp.* (n=1,687) were the next three most abundant species collected.

A total of 13,423 animals representing 20 taxa designated as Selected Taxa were collected (Table CK01-03), accounting for 37% of the total 21.3-m bay seine catch. *Leiostomus xanthurus* (n=11,500) was the most abundant of the Selected Taxa and comprised 86% of the total Selected Taxa captured. *Farfantepenaeus duorarum* (n=355), *Callinectes sapidus* (n=322), and *Menticirrhus americanus* (n=295) were the next three most abundant Selected Taxa.

21.3-m River Seines. A total of 36,486 animals were collected in 108 21.3-m river seine samples taken in Zone B tidal creeks (Tables CK01-01 and -04). The mean density estimate for this gear was 497 animals/100 m^2. *Leiostomus xanthurus* (n=14,185) dominated the catch, comprising 39% of the total catch and occurring in 64% of the 21.3-m river seine samples taken. *Anchoa mitchilli* (n=9,680), *Brevoortia* spp. (n=3,751), and *Membras martinica* (n=2,371) were the next three most abundant taxa.

Sixteen Selected Taxa were collected with this seining technique in 2001 and *L. xanthurus* (n=14,185) accounted for 94% of the Selected Taxa collected (Table CK01-05). *Callinectes sapidus* (n=298), *Cynoscion arenarius* (n=218), and *F. duorarum* (n=176) were the next three most abundant Selected Taxa.

183-m Haul Seines. A total of 24,211 animals were collected in 192 hauls with the 183-m haul seine (Tables CK01-01 and -06). The mean catch-per-unit-effort for this gear was 126 animals per set. *Lagodon rhomboides* (n=6,159) was the dominant species collected, followed by *L. xanthurus* (n=3,255), *B. chrysoura* (n=2,083), and *Mugil cephalus* (n=2,055).

A total of 23 Selected Taxa were collected in the 183-m haul seine samples (Table CK01-07). Selected Taxa comprised 33% of the total 183-m seine catch and *L. xanthurus* and *M. cephalus* accounted for 67% of the Selected Taxa catch.

6.1-m Bay Otter Trawl. A total of 4,574 animals were collected in 110 tows with the 6.1-m bay otter trawl (Table CK01-08). The mean density estimate for this gear was three animals/100 m^2. *Anchoa mitchilli* (n=661) was the dominant species caught, followed by *B. chrysoura* (n=495) and *Orthopristis chrysoptera* (n=480).

A total of 14 Selected Taxa were collected in 6.1-m bay otter trawl samples (CK01-09). *Menippe* spp. (n=255) was the most abundant taxa accounting for 26% of the Selected Taxa caught . *Cynoscion arenarius* (n=211), *M. americanus* (n=197), and *F. duorarum* (n=177) were the next three most abundant Selected Taxa caught.

Lower Suwannee River Sampling

Lower Suwannee River sampling (Zone F) consisted of 55 6.1-m river otter trawls and 55 21.3-m river seines capturing a total of 22,486 animals representing 74 taxa (Table CK01-01 and Appendix CK01-02). Five of the 11 species new to the Cedar Key FIM collection (*F. lineolatus, G. saxicola, L. sicculus, L. auritus,* and *P. nigromaculatus)* were caught in the lower Suwannee River. *Anchoa mitchilli* (n=15,000) accounted for 67% of the total number of individuals captured in the lower Suwannee River (Appendix CK01-02). *Leiostomus xanthurus* (n=2,747) was the second most abundant species caught representing 12% of the total catch.

21.3-m River Seine. A total of 17,745 animals, accounting for 79% of the total lower Suwannee River collections were taken in the 21.3-m seines (Tables CK01-01 and -10). The overall mean density estimate for animals captured in this gear was 475 animals/100 m^2 . *Anchoa mitchilli* (n=13,106), *L. xanthurus* (n=933), and *M. martinica* (n=646) were the three most abundant species collected.

Eleven Selected Taxa (n=1,404), accounted for 8% of the total lower Suwannee River seine catch (Table CK01-11). *Leiostomus xanthurus* comprised 66% of the Selected Taxa captured. *Callinectes sapidus* (n=305), *M. cephalus* (n=63), and *F. duorarum* (n=37) were the next three most abundant species.

6.1-m River Otter Trawl. A total of 4,741 animals were collected in 6.1-m river otter trawl samples and accounted for 21% of the total number of individuals captured during lower Suwannee River sampling (Table CK01-01 and -12). The overall mean density estimate for animals captured in this gear was 12 animals/100 m^2 (Table CK01-12). *Anchoa mitchilli* (n=1,894), *L. xanthurus* (n=1,814), and *C. sapidus* (n=223) were the three most abundant species collected.

Eleven Selected Taxa (n=2,275), accounted for 48% of the total lower Suwannee River trawl catch (Table CK01-13). *Leiostomus xanthurus* (n=1,814) comprised 80% of the Selected Taxa captured. *Callinectes sapidus* (n=223), *C. arenarius* (n=94), and *F. duorarum* (n=84) were the next three most abundant species.

References

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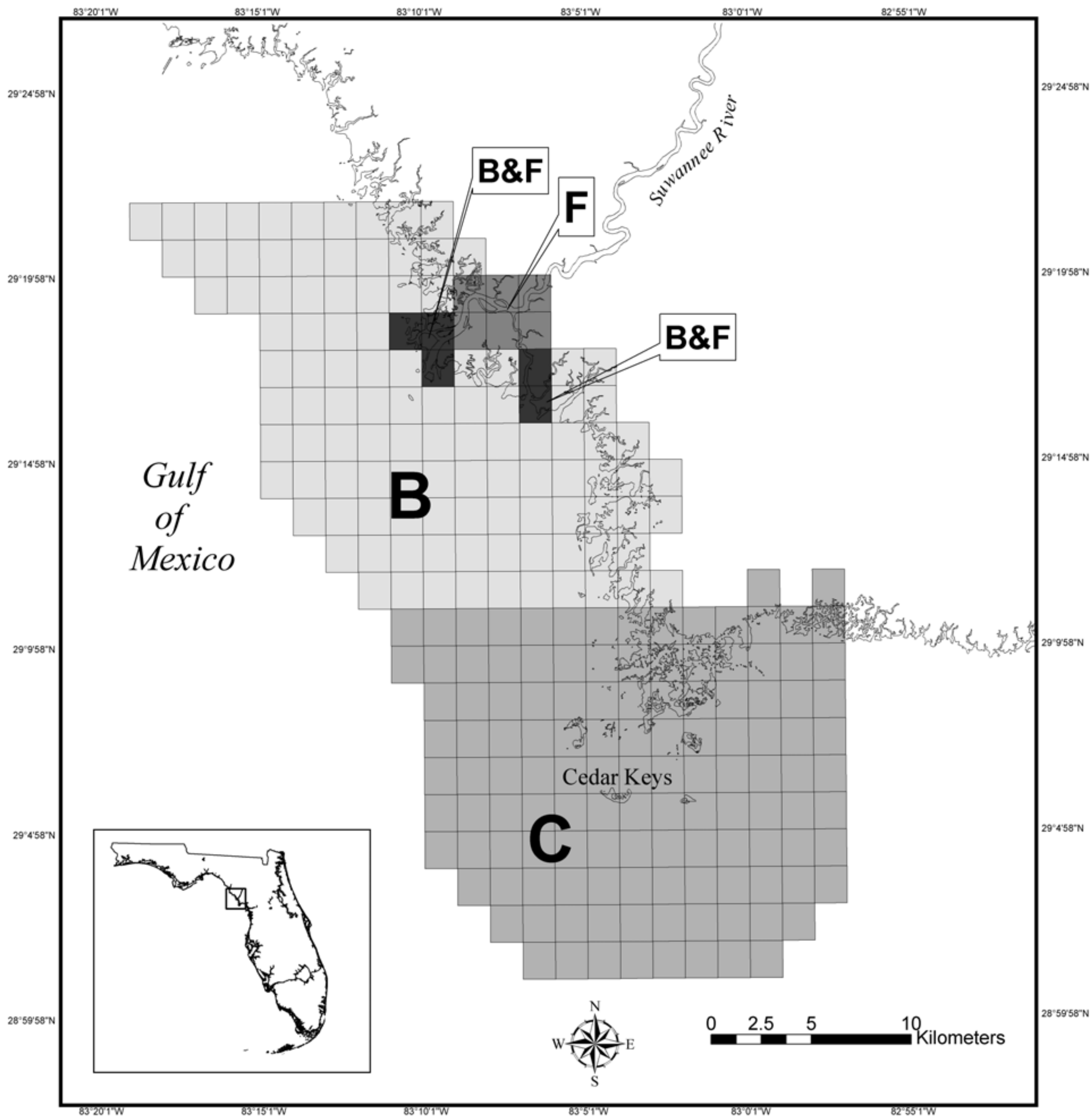

Figure CK01-01. Map of Cedar Key sampling area. Zones are labeled B, C, and F.

Table CK01-01. Summary of catch and effort data for Cedar Key and lower Suwannee River stratified-random sampling, 2001.

	21.3-m bay seine		21.3-m river seine		183-m haul seine		6.1-m otter trawl		Totals	
Zone	**Animals**	**Hauls**	**Animals**	**Hauls**	**Animals**	**Hauls**	**Animals**	**Hauls**	**Animals**	**Hauls**
B	17,790	120	36,486	108	10,251	96	2,384	55	66,911	379
C	18,671	132	.	.	13,960	96	2,190	55	34,821	283
F	.	.	17,745	55	.	.	4,741	55	22,486	110
Totals	**36,461**	**252**	**54,231**	**163**	**24,211**	**192**	**9,315**	**165**	**124,218**	**772**

Table CK01-02. Catch statistics for 10 dominant taxa collected in 252 21.3-m bay seine samples during Cedar Key stratified-random sampling, 2001. 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**
Leiostomus xanthurus	11,500	31.5	33.7	31.49	11.92	600.75	2,555.71	23	0.11	11	173
Anchoa mitchilli	7,642	21.0	34.5	21.66	9.65	707.20	2,298.57	32	0.11	17	85
Bairdiella chrysoura	2,112	5.8	18.7	5.99	3.52	932.98	772.86	75	0.65	7	156
Lagodon rhomboides	2,048	5.6	44.0	5.72	1.94	537.31	446.43	31	0.43	12	161
Menidia spp.	1,687	4.6	30.2	4.74	1.53	512.12	276.43	58	0.40	19	96
Brevoortia spp.	1,582	4.3	4.4	4.48	2.97	1,050.53	704.29	26	0.07	20	86
Harengula jaguana	1,468	4.0	7.1	4.16	2.43	928.48	506.43	51	0.32	18	115
Membras martinica	1,273	3.5	19.8	3.61	1.07	469.47	171.43	40	0.50	20	95
Eucinostomus spp.	1,260	3.5	23.0	3.57	1.48	657.47	337.86	26	0.21	11	50
Anchoa hepsetus	1,013	2.8	20.2	2.87	1.02	562.96	153.57	33	0.33	16	164
Subtotal	31,585	86.6	.	.	.	.	.	.	.	7	173
Totals	**36,461**	**100.0**	**.**	**101.22**	**17.16**	**269.09**	**2,564.29**	**.**	**.**	**4**	**750**

Table CK01-03. Catch statistics for Selected Taxa collected in 252 21.3-m bay seine samples during Cedar Key stratified-random sampling, 2001. 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**
Leiostomus xanthurus	11,500	31.5	33.7	31.49	11.92	600.75	2,555.71	23	0.11	11	173
Farfantepenaeus duorarum	355	1.0	25.0	1.00	0.26	405.06	50.00	11	0.24	4	29
Callinectes sapidus	322	0.9	30.2	0.86	0.17	309.42	30.71	20	1.04	4	158
Menticirrhus americanus	295	0.8	19.8	0.84	0.16	312.99	18.57	44	1.79	12	251
Cynoscion arenarius	265	0.7	13.1	0.75	0.26	558.52	52.86	31	0.86	11	89
Mugil cephalus	451	1.2	12.7	0.64	0.28	703.36	57.40	30	1.47	18	286
Cynoscion nebulosus	87	0.2	11.1	0.25	0.08	508.96	16.43	37	3.77	13	218
Paralichthys albigutta	55	0.2	10.7	0.13	0.03	354.58	2.96	44	5.81	12	222
Sciaenops ocellatus	26	0.1	5.2	0.07	0.03	663.34	6.43	154	24.79	20	465
Menticirrhus saxatilis	15	0.0	2.8	0.04	0.02	704.25	3.57	37	4.27	13	62
Archosargus probatocephalus	11	0.0	0.8	0.03	0.03	1,449.76	7.14	23	5.72	15	80
Lutjanus griseus	10	0.0	1.6	0.03	0.02	949.09	3.57	30	2.47	21	46
Pogonias cromis	9	0.0	3.2	0.03	0.01	577.53	1.43	185	35.71	60	380
Scomberomorus maculatus	6	0.0	1.2	0.02	0.01	986.85	2.14	45	12.89	23	91
Menippe spp.	5	0.0	2.0	0.01	0.01	704.25	0.71	25	8.13	9	56
Lutjanus synagris	4	0.0	0.8	0.01	0.01	1,253.49	2.14	24	3.45	18	33
Paralichthys lethostigma	3	0.0	0.8	0.01	0.01	1,181.33	1.43	232	49.17	182	330
Trachinotus falcatus	2	0.0	0.8	0.01	0.00	1,120.26	0.71	30	14.50	15	44
Mugil curema	1	0.0	0.4	0.00	0.00	1,587.45	0.71	31	.	31	31
Mugil gyrans	1	0.0	0.4	0.00	0.00	1,587.45	0.71	14	.	14	14
Totals	**13,423**	**36.8**	**71.4**	**36.22**	**11.92**	**522.50**	**2,555.71**	**.**	**.**	**4**	**465**

Table CK01-04. Catch statistics for 10 dominant taxa collected in 108 21.3-m river seine samples during Cedar Key stratified-random sampling, 2001. 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 decreasing order of mean density.

Species	Number		%	Density Estimate (animals/100m^2)				Standard Length (mm)			
	No.	%	Occur	Mean	Stderr	CV	Max	Mean	Stderr	Min	Max
Leiostomus xanthurus	14,185	38.9	63.9	193.15	72.74	391.35	4,814.71	23	0.09	12	157
Anchoa mitchilli	9,680	26.5	65.7	131.81	39.48	311.24	3,717.65	38	0.12	13	71
Brevoortia spp.	3,751	10.3	22.2	51.08	42.42	863.08	4,576.47	29	0.07	22	93
Membras martinica	2,371	6.5	18.5	32.28	17.22	554.32	1,623.53	28	0.14	19	89
Menidia spp.	1,991	5.5	76.9	27.11	4.96	189.99	289.71	47	0.27	20	86
Lagodon rhomboides	1,586	4.3	61.1	21.60	8.65	416.23	905.88	30	0.41	11	136
Eucinostomus spp.	716	2.0	35.2	9.75	2.72	289.52	194.12	26	0.29	8	39
Callinectes sapidus	298	0.8	46.3	4.06	1.71	438.86	180.88	20	1.02	5	152
Harengula jaguana	263	0.7	6.5	3.58	2.56	743.63	252.94	57	0.56	23	80
Bairdiella chrysoura	219	0.6	19.4	2.98	1.20	418.04	104.41	60	1.70	17	148
Subtotal	35,060	96.1	.	.	.	.	.	.	.	5	157
Totals	**36,486**	**100.0**	**.**	**496.81**	**118.41**	**247.69**	**10,391.18**	**.**	**.**	**4**	**590**

Table CK01-05. Catch statistics for Selected Taxa collected in 108 21.3-m river seine samples during Cedar Key stratified-random sampling, 2001. 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 decreasing order of mean density.

Species	Number		%	Density Estimate (animals/100m^2)				Standard Length (mm)			
	No.	%	Occur	Mean	Stderr	CV	Max	Mean	Stderr	Min	Max
Leiostomus xanthurus	14,185	38.9	63.9	193.15	72.74	391.35	4,814.71	23	0.09	12	157
Callinectes sapidus	298	0.8	46.3	4.06	1.71	438.86	180.88	20	1.02	5	152
Cynoscion arenarius	218	0.6	25.0	2.97	1.02	356.35	73.53	31	0.79	12	109
Farfantepenaeus duorarum	176	0.5	30.6	2.40	0.70	304.18	52.94	10	0.30	4	27
Mugil cephalus	86	0.2	24.1	1.17	0.41	366.94	39.71	44	5.33	20	315
Cynoscion nebulosus	39	0.1	20.4	0.53	0.13	246.70	8.82	43	4.49	18	165
Menticirrhus americanus	28	0.1	7.4	0.38	0.23	620.31	23.53	39	2.21	16	74
Sciaenops ocellatus	20	0.1	11.1	0.27	0.09	331.39	5.88	136	39.49	26	590
Paralichthys lethostigma	16	0.0	10.2	0.22	0.07	355.20	5.88	122	6.67	69	161
Lutjanus griseus	15	0.0	5.6	0.20	0.14	706.13	14.71	35	3.27	21	58
Scomberomorus maculatus	6	0.0	1.9	0.08	0.06	771.70	5.88	32	3.80	24	45
Archosargus probatocephalus	5	0.0	4.6	0.07	0.03	455.99	1.47	175	58.30	50	364
Trachinotus falcatus	4	0.0	0.9	0.05	0.05	1,039.23	5.88	17	0.65	15	18
Pogonias cromis	4	0.0	3.7	0.05	0.03	512.28	1.47	174	22.22	130	223
Paralichthys albigutta	2	0.0	1.9	0.03	0.02	731.40	1.47	75	42.00	33	117
Elops saurus	1	0.0	0.9	0.01	0.01	1,039.23	1.47	237	.	237	237
Totals	**15,103**	**41.4**	**91.7**	**205.65**	**72.93**	**368.53**	**4,838.24**	**.**	**.**	**4**	**590**

Table CK01-06. Catch statistics for 10 dominant taxa collected in 192 183-m haul seine samples during Cedar Key stratified-random sampling, 2001. Percent (%) is the percent of the total catch represented by that taxon; percent occurrence (% Occur) is the percentage of samples in which that taxon was collected; CV is the coefficient of variation of the mean. Taxa are ranked in order of decreasing mean catch-per-unit-effort.

Species	**Number**		**%**	**Catch-per-unit-effort (animals/set)**				**Standard Length (mm)**			
	No.	**%**	**Occur**	**Mean**	**Stderr**	**CV**	**Max**	**Mean**	**Stderr**	**Min**	**Max**
Lagodon rhomboides	6,159	25.4	71.9	32.08	6.31	272.74	776.00	97	0.29	28	194
Leiostomus xanthurus	3,255	13.4	57.3	16.95	3.06	250.41	324.00	115	0.48	42	213
Bairdiella chrysoura	2,083	8.6	41.1	10.85	2.01	256.95	181.00	122	0.41	65	298
Mugil cephalus	2,055	8.5	78.6	10.70	1.32	171.45	120.00	219	1.41	57	384
Dasyatis sabina	1,804	7.5	78.1	9.40	1.09	161.06	127.00	229	1.08	50	400
Harengula jaguana	946	3.9	29.2	4.93	1.17	330.21	131.00	99	0.60	60	158
Brevoortia spp.	842	3.5	21.4	4.39	2.24	707.47	419.00	106	0.68	63	215
Eucinostomus gula	760	3.1	21.4	3.96	1.20	419.15	146.00	75	0.29	51	183
Sciaenops ocellatus	554	2.3	48.4	2.89	0.67	320.39	102.00	405	5.46	84	682
Ogcocephalus radiatus	468	1.9	21.9	2.44	0.56	317.19	57.00	147	1.13	68	202
Subtotal	18,926	78.1	.	.	.	.	.	.	.	28	682
Totals	**24,211**	**100.0**	**.**	**126.10**	**10.00**	**109.86**	**872.00**	**.**	**.**	**18**	**1,200**

Table CK01-07. Catch statistics for Selected Taxa collected in 192 183-m haul seine samples during Cedar Key stratified-random sampling, 2001. 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
Leiostomus xanthurus	3,255	13.4	57.3	16.95	3.06	250.41	324.00	115	0.48	42	213
Mugil cephalus	2,055	8.5	78.6	10.70	1.32	171.45	120.00	219	1.41	57	384
Sciaenops ocellatus	554	2.3	48.4	2.89	0.67	320.39	102.00	405	5.46	84	682
Mugil curema	337	1.4	16.7	1.76	0.67	527.57	101.00	201	2.17	94	282
Menticirrhus americanus	314	1.3	25.5	1.64	0.35	295.62	37.00	135	2.43	60	288
Pogonias cromis	268	1.1	29.7	1.40	0.42	412.56	69.00	498	17.85	84	940
Elops saurus	253	1.0	39.1	1.32	0.25	257.77	26.00	270	3.37	128	435
Archosargus probatocephalus	213	0.9	35.4	1.11	0.20	248.77	26.00	346	4.74	72	490
Cynoscion nebulosus	191	0.8	35.9	0.99	0.15	208.92	15.00	222	7.87	82	538
Callinectes sapidus	178	0.7	21.9	0.93	0.29	437.00	47.00	80	2.80	32	192
Paralichthys albigutta	153	0.6	28.1	0.80	0.14	248.52	13.00	134	5.57	54	448
Paralichthys lethostigma	39	0.2	7.8	0.20	0.09	613.98	16.00	167	9.57	91	385
Mugil gyrans	38	0.2	7.8	0.20	0.06	448.48	7.00	156	7.24	46	283
Trachinotus falcatus	29	0.1	4.7	0.15	0.08	698.54	13.00	100	9.20	40	288
Scomberomorus maculatus	24	0.1	7.8	0.13	0.03	370.65	3.00	221	19.54	102	437
Micropogonias undulatus	23	0.1	2.6	0.12	0.09	1,094.35	18.00	202	9.00	137	320
Farfantepenaeus duorarum	19	0.1	5.7	0.10	0.04	501.92	5.00	25	1.33	18	35
Cynoscion arenarius	14	0.1	4.2	0.07	0.03	569.87	4.00	200	21.66	73	300
Trachinotus carolinus	8	0.0	0.5	0.04	0.04	1,385.64	8.00	74	1.61	69	81
Lutjanus griseus	4	0.0	2.1	0.02	0.01	687.36	1.00	160	34.95	92	248
Pomatomus saltatrix	2	0.0	1.0	0.01	0.01	977.23	1.00	219	97.50	121	316
Menippe spp.	1	0.0	0.5	0.01	0.01	1,385.64	1.00	85	.	85	85
Megalops atlanticus	1	0.0	0.5	0.01	0.01	1,385.64	1.00	1,200	.	1,200	1,200
Totals	**7,973**	**32.9**	**97.9**	**41.53**	**3.88**	**129.60**	**429.00**	**.**	**.**	**18**	**1,200**

Table CK01-08. Catch statistics for 10 dominant taxa collected in 110 bay 6.1-m otter trawl samples during Cedar Key stratified-random sampling, 2001. 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
Anchoa mitchilli	661	14.5	18.2	0.41	0.15	399.40	11.60	50	0.49	22	70
Bairdiella chrysoura	495	10.8	15.5	0.30	0.18	633.53	18.89	95	1.02	10	160
Orthopristis chrysoptera	480	10.5	28.2	0.29	0.11	388.72	10.19	89	1.90	15	256
Lagodon rhomboides	251	5.5	33.6	0.18	0.07	398.04	6.34	80	2.24	11	137
Menippe spp.	255	5.6	40.9	0.16	0.05	328.78	4.11	25	0.92	4	164
Prionotus scitulus	239	5.2	48.2	0.15	0.03	218.01	2.36	96	1.71	27	168
Etropus crossotus	236	5.2	41.8	0.15	0.03	216.81	2.29	84	1.20	33	125
Cynoscion arenarius	211	4.6	7.3	0.13	0.06	509.92	5.53	43	1.81	14	127
Arius felis	208	4.5	9.1	0.13	0.10	844.92	11.20	92	2.27	73	307
Menticirrhus americanus	197	4.3	12.7	0.12	0.07	571.59	5.33	75	3.65	16	318
Subtotal	3,233	70.7	.	.	.	.	.	.	.	4	318
Totals	**4,574**	**100.0**	**.**	**2.87**	**0.60**	**218.77**	**56.40**	**.**	**.**	**4**	**450**

Table CK01-09. Catch statistics for Selected Taxa collected in 110 bay 6.1-m otter trawl samples during Cedar Key stratified-random sampling, 2001. 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**
Menippe spp.	255	5.6	40.9	0.16	0.05	328.78	4.11	25	0.92	4	164
Cynoscion arenarius	211	4.6	7.3	0.13	0.06	509.92	5.53	43	1.81	14	127
Menticirrhus americanus	197	4.3	12.7	0.12	0.07	571.59	5.33	75	3.65	16	318
Farfantepenaeus duorarum	177	3.9	31.8	0.12	0.03	302.49	2.56	20	0.48	7	40
Callinectes sapidus	62	1.4	13.6	0.05	0.02	458.85	1.89	56	4.62	9	175
Leiostomus xanthurus	43	0.9	10.0	0.03	0.01	466.32	0.94	88	8.30	16	162
Paralichthys albigutta	32	0.7	18.2	0.02	0.01	291.05	0.47	167	12.98	47	305
Paralichthys lethostigma	5	0.1	3.6	0.00	0.00	548.39	0.13	201	18.36	146	245
Lutjanus griseus	2	0.0	1.8	0.00	0.00	778.86	0.13	56	0.50	55	56
Cynoscion nebulosus	3	0.1	2.7	0.00	0.00	599.95	0.07	66	37.10	18	139
Lutjanus synagris	2	0.0	1.8	0.00	0.00	738.21	0.07	80	23.50	56	103
Sciaenops ocellatus	2	0.0	0.9	0.00	0.00	1,048.81	0.13	40	0.50	39	40
Pogonias cromis	1	0.0	0.9	0.00	0.00	1,048.81	0.07	171	.	171	171
Paralichthys squamilentus	1	0.0	0.9	0.00	0.00	1,048.81	0.07	80	.	80	80
Totals	**993**	**21.7**	**65.5**	**0.63**	**0.15**	**254.53**	**10.52**	**.**	**.**	**4**	**318**

Table CK01-10. Catch statistics for 10 dominant taxa collected in 55 21.3-m river seine samples during lower Suwannee River stratified-random sampling, 2001. 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 decreasing order of mean density.

Species	**Number**		**%**	**Density Estimate (animals/100m^2)**				**Standard Length (mm)**			
	No.	**%**	**Occur**	**Mean**	**Stderr**	**CV**	**Max**	**Mean**	**Stderr**	**Min**	**Max**
Anchoa mitchilli	13,106	73.9	30.9	350.43	228.56	483.70	12,141.18	32	0.06	19	57
Leiostomus xanthurus	933	5.3	32.7	24.95	9.35	277.88	373.53	37	0.77	12	99
Membras martinica	646	3.6	3.6	17.27	17.11	734.64	941.18	29	0.25	23	96
Menidia spp.	594	3.3	56.4	15.88	4.51	210.40	141.18	50	0.69	20	84
Lagodon rhomboides	339	1.9	50.9	9.06	3.40	278.01	167.65	45	1.00	15	113
Lepomis punctatus	306	1.7	23.6	8.18	4.40	399.01	226.47	43	1.29	9	140
Callinectes sapidus	305	1.7	56.4	8.16	2.62	238.67	107.35	23	0.93	5	126
Eucinostomus spp.	197	1.1	30.9	5.27	2.14	301.40	89.71	27	0.58	13	48
Gambusia holbrooki	157	0.9	14.5	4.20	3.37	594.56	183.82	33	0.47	17	46
Bairdiella chrysoura	133	0.7	9.1	3.56	2.56	533.67	136.76	77	1.64	35	102
Subtotal	16,716	94.1	.	.	.	.	.	.	.	5	140
Totals	**17,745**	**100.0**	**.**	**474.47**	**231.56**	**361.94**	**12,151.47**	**.**	**.**	**5**	**420**

Table CK01-11. Catch statistics for Selected Taxa collected in 55 21.3-m river seine samples during lower Suwannee River stratified-random sampling, 2001. 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 decreasing order of mean density.

Species	Number		%	Density Estimate (animals/100m^2)				Standard Length (mm)			
	No.	%	Occur	Mean	Stderr	CV	Max	Mean	Stderr	Min	Max
Leiostomus xanthurus	933	5.3	32.7	24.95	9.35	277.88	373.53	37	0.77	12	99
Callinectes sapidus	305	1.7	56.4	8.16	2.62	238.67	107.35	23	0.93	5	126
Mugil cephalus	63	0.4	9.1	1.68	1.12	493.40	57.35	56	3.09	27	233
Farfantepenaeus duorarum	37	0.2	10.9	0.99	0.45	337.34	19.12	10	0.48	5	16
Cynoscion arenarius	20	0.1	3.6	0.53	0.51	704.83	27.94	31	0.46	24	36
Paralichthys lethostigma	13	0.1	16.4	0.35	0.12	257.01	4.41	76	16.06	20	236
Cynoscion nebulosus	10	0.1	10.9	0.27	0.12	336.24	4.41	46	5.94	25	83
Lutjanus griseus	8	0.0	7.3	0.21	0.12	406.05	4.41	33	3.88	18	52
Sciaenops ocellatus	8	0.0	5.5	0.21	0.16	567.82	8.82	35	14.57	11	126
Archosargus probatocephalus	4	0.0	7.3	0.11	0.05	360.36	1.47	78	26.55	42	157
Paralichthys albigutta	3	0.0	3.6	0.08	0.06	548.66	2.94	39	12.01	26	63
Totals	**1,404**	**7.9**	**80.0**	**37.54**	**9.80**	**193.65**	**377.94**	**.**	**.**	**5**	**236**

Table CK01-12. Catch statistics for 10 dominant taxa collected in 55 river 6.1-m otter trawl samples during lower Suwannee River stratified-random sampling, 2001. 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
Anchoa mitchilli	1,894	39.9	34.5	4.65	2.93	467.72	157.99	38	0.27	15	72
Leiostomus xanthurus	1,814	38.3	32.7	4.45	2.05	341.50	107.12	37	0.41	16	121
Callinectes sapidus	223	4.7	40.0	0.55	0.25	332.68	11.33	40	2.93	8	183
Ameiurus catus	104	2.2	21.8	0.26	0.11	315.12	4.59	63	3.97	17	182
Trinectes maculatus	104	2.2	18.2	0.26	0.23	662.23	12.55	43	0.59	12	52
Cynoscion arenarius	94	2.0	27.3	0.23	0.08	258.42	3.24	35	1.39	13	75
Symphurus plagiusa	94	2.0	9.1	0.23	0.20	633.06	10.79	54	1.70	33	95
Farfantepenaeus duorarum	84	1.8	21.8	0.21	0.10	344.83	4.59	14	0.40	6	20
Lagodon rhomboides	74	1.6	10.9	0.18	0.10	405.64	4.86	22	1.09	15	70
Ictalurus punctatus	42	0.9	14.5	0.10	0.04	299.22	1.75	62	4.23	16	132
Subtotal	4,527	95.6	.	.	.	.	.	.	.	6	183
Totals	**4,741**	**100.0**	**.**	**11.63**	**3.60**	**229.63**	**158.93**	**.**	**.**	**6**	**952**

Table CK01-13. Catch statistics for Selected Taxa collected in 55 river 6.1-m otter trawl samples during lower Suwannee River stratified-random sampling, 2001. 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**
Leiostomus xanthurus	1,814	38.3	32.7	4.45	2.05	341.50	107.12	37	0.41	16	121
Callinectes sapidus	223	4.7	40.0	0.55	0.25	332.68	11.33	40	2.93	8	183
Cynoscion arenarius	94	2.0	27.3	0.23	0.08	258.42	3.24	35	1.39	13	75
Farfantepenaeus duorarum	84	1.8	21.8	0.21	0.10	344.83	4.59	14	0.40	6	20
Paralichthys lethostigma	31	0.7	21.8	0.08	0.03	334.13	1.75	65	6.39	28	165
Menticirrhus americanus	8	0.2	3.6	0.02	0.01	519.53	0.54	34	2.80	22	45
Paralichthys albigutta	6	0.1	7.3	0.01	0.01	420.17	0.40	116	20.85	55	175
Lutjanus griseus	5	0.1	7.3	0.01	0.01	382.97	0.27	82	12.97	45	110
Micropogonias undulatus	5	0.1	1.8	0.01	0.01	741.62	0.67	55	3.17	50	67
Sciaenops ocellatus	3	0.1	3.6	0.01	0.01	548.66	0.27	28	12.01	15	52
Archosargus probatocephalus	2	0.0	3.6	0.00	0.00	519.53	0.13	176	14.00	162	190
Totals	**2,275**	**48.0**	**74.5**	**5.58**	**2.09**	**277.81**	**108.34**	**.**	**.**	**6**	**190**

Appendix CK01-01. Monthly summary of species collected during Cedar Key and lower Suwannee River stratified-random sampling, 2001. Effort, or total number of hauls, is labeled 'E'. Listing is sorted alphabetically by taxon.

Species	Month												Totals
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
	E=46	E=66	E=66	E=66	E=66	E=66	E=66	E=66	E=66	E=66	E=66	E=66	E=772
Achirus lineatus	.	5	.	5	.	.	14	4	2	2	1	.	33
Acipenser oxyrhynchus	.	.	.	.	.	.	.	.	.	.	1	.	1
Adinia xenica	22	8	.	1	.	.	.	.	.	4	.	.	35
Aetobatis narinari	.	.	.	.	.	1	.	.	2	.	.	1	4
Alosa alabamae	2	.	.	.	.	.	.	.	.	.	.	.	2
Aluterus schoepfi	.	.	1	.	.	1	.	.	2	3	3	1	11
Ameiurus catus	.	.	1	8	26	1	40	19	11	.	.	.	106
Anarchopterus criniger	.	.	2	.	.	.	.	.	.	.	.	.	2
Anchoa hepsetus	1	1	9	11	843	80	175	30	99	6	1	.	1,256
Anchoa mitchilli	59	679	1,013	126	306	6,822	3,755	551	1,921	3,919	2,389	11,443	32,983
Ancylopsetta quadrocellata	.	3	.	10	12	1	5	1	6	1	1	2	42
Archosargus probatocephalus	18	24	9	9	28	25	13	8	9	9	56	27	235
Arius felis	1	5	55	63	33	43	31	121	141	264	10	24	791
Astroscopus y-graecum	.	2	.	.	.	.	.	.	.	.	.	.	2
Bagre marinus	.	.	.	3	7	14	11	90	197	113	2	2	439
Bairdiella chrysoura	17	84	268	393	307	181	788	376	514	694	1,326	128	5,076
Bathygobius soporator	.	2	.	.	.	.	.	1	.	3	.	2	8
Brevoortia spp.	2	1,786	3,431	87	4	6	91	103	140	505	13	31	6,199
Calamus arctifrons	.	.	.	.	.	2	5	6	1	15	.	.	29
Callinectes sapidus	65	57	94	230	51	45	74	157	48	82	219	266	1,388
Caranx hippos	.	.	.	3	2	4	2	2	9	128	2	22	174
Carcharhinus leucas	.	.	.	.	.	.	.	.	.	.	2	.	2
Centropristis striata	.	2	3	2	13	2	5	15	4	8	5	1	60

Appendix CK01-01. (Continued)

Species	Month												Totals
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
	E=46	E=66	E=66	E=66	E=66	E=66	E=66	E=66	E=66	E=66	E=66	E=66	E=772
Chaetodipterus faber	.	.	1	19	1	3	18	311	31	23	.	2	409
Chasmodes saburrae	.	1	.	.	1	3	1	2	2	5	.	.	15
Chilomycterus schoepfi	.	9	10	4	19	16	10	7	12	13	3	15	118
Chloroscombrus chrysurus	.	.	.	.	.	2	1	9	68	1	.	.	81
Citharichthys macrops	.	.	.	.	1	.	.	2	1	1	2	1	8
Cynoscion arenarius	.	.	1	4	12	37	205	333	76	150	4	.	822
Cynoscion nebulosus	13	6	14	6	9	51	20	34	83	50	15	29	330
Cyprinodon variegatus	12	1	20	.	1	2	.	.	.	.	.	.	36
Dasyatis americana	.	.	.	.	1	3	.	2	.	.	.	.	6
Dasyatis sabina	25	65	318	142	208	181	148	133	238	280	125	105	1,968
Dasyatis say	.	.	.	6	29	13	6	9	18	1	.	1	83
Diplectrum formosum	.	.	.	.	1	.	2	1	4	2	5	2	17
Diplodus holbrooki	.	1	1	2	.	.	.	.	.	1	.	.	5
Dorosoma cepedianum	.	.	.	.	.	1	1	.	.	.	1	.	3
Echeneis naucrates	.	.	.	.	.	3	.	1	31	5	1	2	43
Echeneis neucratoides	.	.	.	.	5	.	.	.	.	.	.	.	5
Elops saurus	3	.	1	10	29	13	22	16	22	101	5	32	254
Etropus crossotus	.	9	20	27	10	1	27	42	133	107	122	60	558
Eucinostomus gula	.	.	.	.	.	.	.	75	274	81	401	332	1,163
Eucinostomus harengulus	.	.	.	.	.	.	4	72	53	144	53	178	504
Eucinostomus spp.	.	.	.	.	.	148	192	243	414	822	94	286	2,199
Farfantepenaeus duorarum	1	35	25	36	3	19	139	182	134	124	78	72	848
Fundulus confluentus	2	.	1	.	.	.	.	3	.	.	.	.	6

Appendix CK01-01. (Continued)

Species	Month												Totals
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
	E=46	E=66	E=66	E=66	E=66	E=66	E=66	E=66	E=66	E=66	E=66	E=66	E=772
Fundulus grandis	55	15	38	7	8	29	.	10	16	110	15	65	368
Fundulus lineolatus	.	.	.	.	.	.	.	1	.	.	.	.	1
Fundulus majalis	48	34	77	4	12	25	65	60	27	22	1	149	524
Fundulus seminolis	.	.	10	1	3	11	3	15	.	2	16	.	61
Gambusia holbrooki	30	.	.	.	.	18	.	128	1	2	9	45	233
Gobiesox strumosus	.	.	.	.	1	1	.	.	.	.	.	.	2
Gobiidae spp.	.	.	.	.	.	.	1	.	.	.	.	.	1
Gobionellus boleosoma	.	.	.	1	2	.	.	.	.	2	.	.	5
Gobiosoma bosc	.	15	6	7	.	26	7	16	3	27	19	21	147
Gobiosoma longipala	.	.	.	.	.	.	.	2	.	.	.	.	2
Gobiosoma robustum	1	.	.	.	.	.	1	6	5	2	1	.	16
Gobiosoma spp.	1	.	.	.	.	3	.	2	.	1	.	.	7
Gymnothorax saxicola	.	.	.	1	.	.	.	.	.	.	.	.	1
Gymnura micrura	.	.	.	3	4	5	3	11	6	.	.	.	32
Haemulon aurolineatum	.	.	.	.	.	.	.	1	.	.	.	.	1
Haemulon plumieri	.	.	.	.	.	.	5	6	4	15	1	2	33
Halichoeres bivittatus	.	.	.	.	.	.	.	.	.	1	.	.	1
Harengula jaguana	2	.	.	13	6	239	132	243	1,592	284	18	158	2,687
Heterandria formosa	.	.	.	.	.	.	.	3	.	.	.	.	3
Hippocampus erectus	.	1	4	1	.	1	.	.	.	1	1	2	11
Hypleurochilus caudovittatus	.	.	.	.	.	.	.	.	1	1	.	.	2
Hyporhamphus meeki	.	.	.	.	.	10	3	.	28	8	3	5	57
Hypsoblennius hentzi	.	.	1	.	.	1	.	.	.	.	.	.	2

Appendix CK01-01. (Continued)

Species	Month												Totals
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
	E=46	E=66	E=66	E=66	E=66	E=66	E=66	E=66	E=66	E=66	E=66	E=66	E=772
Ictalurus punctatus	.	.	.	.	.	.	8	6	25	3	.	.	42
Labidesthes sicculus	.	.	.	.	.	.	1	.	2	.	.	.	3
Lactophrys quadricornis	.	4	17	1	3	2	3	1	6	7	.	9	53
Lagodon rhomboides	122	744	1,359	1,119	466	528	1,404	1,715	898	509	754	839	10,457
Leiostomus xanthurus	4,145	15,567	6,329	1,297	664	749	775	756	899	372	106	71	31,730
Lepisosteus osseus	.	.	.	4	2	3	2	5	3	1	6	.	26
Lepisosteus platyrhincus	.	.	.	.	2	.	.	.	.	.	.	.	2
Lepomis auritus	.	.	.	.	.	.	8	11	20	.	.	.	39
Lepomis macrochirus	.	.	.	.	2	.	.	1	4	.	.	.	7
Lepomis microlophus	.	.	3	.	2	1	1	.	.	.	.	.	7
Lepomis punctatus	1	.	2	6	22	64	11	160	37	4	.	.	307
Lepomis spp.	.	.	.	.	1	.	2	.	.	.	.	.	3
Limulus polyphemus	.	.	12	25	1	.	7	1	5	3	2	1	57
Lucania goodei	.	.	16	.	28	.	.	9	.	.	.	.	53
Lucania parva	18	4	34	1	.	3	2	1	.	4	.	.	67
Lutjanus griseus	.	.	.	.	.	1	1	.	5	27	8	2	44
Lutjanus spp.	.	.	.	.	.	.	.	.	2	.	.	.	2
Lutjanus synagris	.	.	.	.	.	.	.	.	6	.	.	.	6
Megalops atlanticus	.	.	.	1	.	.	.	.	.	.	.	.	1
Membras martinica	.	.	.	9	346	1,340	2,327	56	142	5	65	.	4,290
Menidia spp.	51	254	247	96	64	871	202	242	448	836	282	685	4,278
Menippe spp.	.	66	23	11	69	9	5	26	36	4	11	1	261
Menticirrhus americanus	.	.	10	13	26	44	107	137	153	239	87	26	842

Appendix CK01-01. (Continued)

Species	Month												Totals
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
	E=46	E=66	E=66	E=66	E=66	E=66	E=66	E=66	E=66	E=66	E=66	E=66	E=772
Menticirrhus saxatilis	.	.	.	.	11	2	.	.	.	.	.	2	15
Microgobius gulosus	3	21	13	34	12	15	43	13	7	9	2	6	178
Microgobius thalassinus	.	.	.	12	1	.	16	42	10	6	3	5	95
Micropogonias undulatus	1	.	.	1	5	.	.	.	20	.	.	1	28
Micropterus salmoides	3	3	1	1	12	8	2	6	7	5	.	.	48
Monacanthus ciliatus	.	1	.	.	.	.	.	2	.	.	.	.	3
Monacanthus hispidus	.	.	.	.	22	4	2	2	1	1	3	8	43
Mugil cephalus	625	257	165	151	145	92	90	225	121	256	200	328	2,655
Mugil curema	57	1	23	2	4	5	3	59	4	17	114	49	338
Mugil gyrans	1	.	.	4	8	.	2	2	1	9	5	7	39
Mullus auratus	.	.	.	1	.	.	.	.	.	.	.	.	1
Myrophis punctatus	9	5	.	1	3	.	.	6	3	.	22	.	49
Narcine brasiliensis	.	.	.	1	.	.	.	.	.	.	.	.	1
Notemigonus crysoleucas	.	.	.	.	.	.	2	.	.	.	.	.	2
Notropis petersoni	.	.	.	.	.	.	9	.	.	.	.	.	9
Notropis spp.	.	55	11	2	.	1	.	.	.	28	.	.	97
Ogcocephalus radiatus	.	8	12	36	53	36	58	37	112	76	62	57	547
Oligoplites saurus	.	.	.	3	3	16	62	27	19	45	20	21	216
Opisthonema oglinum	.	.	.	.	.	17	1	2	6	1	1	.	28
Opsanus beta	.	1	2	2	.	2	3	6	2	1	.	1	20
Orthopristis chrysoptera	.	.	2	8	285	246	127	282	197	120	18	43	1,328
Parablennius marmoreus	.	.	.	.	.	1	.	.	.	.	.	.	1
Paralichthys albigutta	23	9	40	38	31	20	38	20	17	9	5	1	251

Appendix CK01-01. (Continued)

Species	Month												Totals
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
	E=46	E=66	E=66	E=66	E=66	E=66	E=66	E=66	E=66	E=66	E=66	E=66	E=772
Paralichthys lethostigma	.	.	12	22	4	9	14	10	21	3	2	10	107
Paralichthys spp.	.	.	.	1	.	.	.	.	.	.	.	.	1
Paralichthys squamilentus	.	.	.	.	1	.	.	.	.	.	.	.	1
Peprilus alepidotus	1	.	.	11	160	13	1	.	.	.	.	.	186
Peprilus burti	.	2	.	3	.	.	.	.	.	.	.	.	5
Poecilia latipinna	.	.	.	.	1	.	.	.	.	.	.	.	1
Pogonias cromis	2	8	3	27	11	19	14	23	108	26	13	28	282
Pomacanthus paru	.	.	.	.	.	.	.	.	2	.	.	.	2
Pomatomus saltatrix	.	.	.	1	.	.	.	.	.	.	.	1	2
Pomoxis nigromaculatus	.	.	.	.	.	.	.	6	.	1	.	.	7
Prionotus scitulus	.	26	15	12	14	6	6	8	69	60	25	29	270
Prionotus tribulus	.	6	10	10	6	2	1	5	7	37	34	20	138
Raja eglanteria	.	.	.	.	.	.	.	.	.	.	1	.	1
Rhinoptera bonasus	.	.	1	9	15	31	12	11	10	22	21	17	149
Rhizoprionodon terraenovae	.	.	.	.	1	.	.	.	.	.	.	.	1
Sardinella aurita	.	.	.	.	.	.	.	.	23	.	.	.	23
Sciaenops ocellatus	19	58	69	30	18	128	30	40	25	26	103	67	613
Scomberomorus maculatus	.	.	.	.	7	7	5	.	6	3	4	4	36
Scorpaena spp.	.	.	.	.	.	.	.	.	.	.	1	.	1
Selene vomer	.	.	.	.	1	1	7	2	1	18	1	5	36
Serraniculus pumilio	.	.	.	.	.	.	.	.	.	.	.	1	1
Serranus subligarius	.	.	.	.	.	.	.	.	.	.	1	.	1
Soleidae spp.	.	.	.	.	.	.	.	1	.	.	.	.	1

Appendix CK01-01. (Continued)

Species	Month												Totals
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
	E=46	E=66	E=66	E=66	E=66	E=66	E=66	E=66	E=66	E=66	E=66	E=66	E=772
Sphoeroides nephelus	.	.	1	1	30	32	9	4	2	11	27	6	123
Sphyraena borealis	.	.	.	.	1	.	.	.	.	.	.	.	1
Sphyrna tiburo	.	.	.	2	1	.	1	7	2	.	.	1	14
Strongylura marina	.	6	3	2	3	9	4	1	5	6	17	18	74
Strongylura notata	.	.	1	.	.	.	1	.	.	.	.	.	2
Strongylura spp.	.	.	.	.	2	3	.	.	.	.	.	.	5
Strongylura timucu	.	.	.	.	6	3	4	9	4	5	.	11	42
Symphurus plagiusa	1	1	7	91	4	2	52	36	18	30	10	7	259
Syngnathus floridae	.	3	4	1	5	2	18	47	49	19	13	6	167
Syngnathus louisianae	.	2	.	.	2	1	10	5	2	7	3	1	33
Syngnathus scovelli	.	4	2	15	15	17	12	17	7	5	3	.	97
Synodus foetens	.	1	.	.	18	18	11	18	6	35	9	21	137
Trachinotus carolinus	.	.	.	.	.	.	8	.	.	.	.	.	8
Trachinotus falcatus	.	.	.	.	.	.	.	5	6	6	2	16	35
Trinectes maculatus	.	2	3	106	3	4	9	29	5	29	10	2	202
Urophycis floridana	2	9	15	2	.	.	.	.	.	.	.	.	28
Urophycis regia	.	1	.	.	.	.	.	.	.	.	.	.	1
Totals	**5,464**	**19,979**	**13,901**	**4,471**	**4,620**	**12,480**	**11,578**	**7,607**	**9,979**	**11,091**	**7,100**	**15,948**	**124,218**

Appendix CK01-02. Summary by gear, stratum, and zone of species collected during Cedar Key and lower Suwannee River stratified-random sampling, 2001. Sampling with 21.3-m bay seines was stratified by presence or absence of a shoreline (shoreline and offshore). Offshore seines were post-stratified by the presence or absence of bottom vegetation (‘veg’ or ‘unveg’). Sampling with 21.3-m river seines and 183-m haul seines was post-stratified by presence or absence of overhanging shoreline vegetation (‘over’ or ‘nonover’). Sampling with 6.1-m otter trawl was not stratified. Zone B encompassed the northern portion of the sampling universe and all tidal creeks. Zone C encompassed the southern portion of the sampling universe and included the area containing the Cedar Keys. Zone F contained the lower Suwannee River. Effort, or the total number of hauls, is labeled 'E'. Listing is sorted alphabetical by taxon.

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=31	E=113	E=108	E=163	E=192	E=165	E=379	E=283	E=110	E=772
Achirus lineatus	.	4	4	18	.	7	20	11	2	33
Acipenser oxyrhynchus	.	.	.	.	.	1	.	.	1	1
Adinia xenica	.	.	12	23	.	.	34	.	1	35
Aetobatis narinari	.	.	.	.	4	.	3	1	.	4
Alosa alabamae	.	.	.	.	2	.	2	.	.	2
Aluterus schoepfi	9	.	.	.	.	2	.	11	.	11
Ameiurus catus	.	.	.	2	.	104	.	.	106	106
Anarchopterus criniger	.	.	.	.	.	2	2	.	.	2
Anchoa hepsetus	91	366	556	229	.	14	575	599	82	1,256
Anchoa mitchilli	20	1,087	6,535	22,786	.	2,555	16,143	1,840	15,000	32,983
Ancylopsetta quadrocellata	.	.	1	.	21	20	12	30	.	42
Archosargus probatocephalus	.	10	1	9	213	2	188	39	6	235
Arius felis	.	95	69	1	415	211	152	636	3	791
Astroscopus y-graecum	.	1	1	.	.	.	1	1	.	2
Bagre marinus	.	24	1	.	396	18	52	384	3	439
Bairdiella chrysoura	833	140	1,139	352	2,083	529	2,262	2,647	167	5,076
Bathygobius soporator	.	.	1	7	.	.	4	.	4	8
Brevoortia spp.	.	1,530	52	3,766	842	9	5,906	269	24	6,199
Calamus arctifrons	4	.	.	.	.	25	.	29	.	29
Callinectes sapidus	2	162	158	603	178	285	654	206	528	1,388
Caranx hippos	.	.	.	.	174	.	155	19	.	174
Carcharhinus leucas	.	.	.	.	2	.	2	.	.	2
Centropristis striata	15	7	.	.	.	38	22	38	.	60
Chaetodipterus faber	.	9	8	3	356	33	307	102	.	409
Chasmodes saburrae	8	3	1	2	.	1	4	11	.	15
Chilomycterus schoepfi	15	10	3	.	33	57	42	76	.	118
Chloroscombrus chrysurus	.	10	2	6	1	62	80	1	.	81

Appendix CK01-02 (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=31	E=113	E=108	E=163	E=192	E=165	E=379	E=283	E=110	E=772
Citharichthys macrops	.	.	.	.	.	8	3	5	.	8
Cynoscion arenarius	.	140	125	238	14	305	453	255	114	822
Cynoscion nebulosus	28	37	22	49	191	3	220	100	10	330
Cyprinodon variegatus	.	.	31	4	1	.	11	25	.	36
Dasyatis americana	.	.	.	.	5	1	1	5	.	6
Dasyatis sabina	7	52	20	6	1,804	79	874	1,085	9	1,968
Dasyatis say	.	2	.	.	77	4	13	70	.	83
Diplectrum formosum	2	.	.	.	.	15	5	12	.	17
Diplodus holbrooki	1	.	.	1	.	3	1	3	1	5
Dorosoma cepedianum	.	.	.	.	3	.	2	1	.	3
Echeneis naucrates	.	.	.	.	42	1	12	31	.	43
Echeneis neucratoides	.	.	.	.	5	.	5	.	.	5
Elops saurus	.	.	.	1	253	.	122	132	.	254
Etropus crossotus	.	37	60	6	214	241	290	263	5	558
Eucinostomus gula	12	28	162	9	760	192	523	638	2	1,163
Eucinostomus harengulus	2	22	100	118	235	27	308	144	52	504
Eucinostomus spp.	138	206	916	913	.	26	972	1,006	221	2,199
Farfantepenaeus duorarum	39	121	195	213	19	261	418	309	121	848
Fundulus confluentus	.	.	.	6	.	.	2	.	4	6
Fundulus grandis	.	16	115	224	13	.	179	95	94	368
Fundulus lineolatus	.	.	.	1	.	.	.	.	1	1
Fundulus majalis	.	32	433	30	29	.	128	388	8	524
Fundulus seminolis	.	.	.	61	.	.	.	.	61	61
Gambusia holbrooki	.	.	.	233	.	.	76	.	157	233
Gobiesox strumosus	.	.	1	1	.	.	1	1	.	2
Gobiidae spp.	.	.	.	1	.	.	1	.	.	1
Gobionellus boleosoma	.	2	.	3	.	.	3	2	.	5
Gobiosoma bosc	3	29	15	95	.	5	108	.	39	147
Gobiosoma longipala	.	.	.	.	.	2	2	.	.	2
Gobiosoma robustum	3	1	11	1	.	.	4	11	1	16
Gobiosoma spp.	.	4	.	3	.	.	6	1	.	7
Gymnothorax saxicola	.	.	.	.	1	.	.	1	.	1
Gymnura micrura	.	.	.	.	27	5	11	21	.	32

Appendix CK01-02 (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=31	E=113	E=108	E=163	E=192	E=165	E=379	E=283	E=110	E=772
Haemulon aurolineatum	.	.	.	.	.	1	.	1	.	1
Haemulon plumieri	33	.	.	.	.	.	1	32	.	33
Halichoeres bivittatus	1	.	.	.	.	.	.	1	.	1
Harengula jaguana	496	52	920	263	946	10	727	1,960	.	2,687
Heterandria formosa	.	.	.	3	.	.	.	.	3	3
Hippocampus erectus	.	2	.	.	.	9	6	5	.	11
Hypleurochilus caudovittatus	.	.	.	.	.	2	1	1	.	2
Hyporhamphus meeki	5	.	12	.	40	.	.	57	.	57
Hypsoblennius hentzi	1	.	.	.	.	1	1	1	.	2
Ictalurus punctatus	.	.	.	.	.	42	.	.	42	42
Labidesthes sicculus	.	.	.	3	.	.	.	.	3	3
Lactophrys quadricornis	11	.	.	.	.	42	15	38	.	53
Lagodon rhomboides	183	365	1,500	1,925	6,159	325	4,485	5,559	413	10,457
Leiostomus xanthurus	113	1,338	10,049	15,118	3,255	1,857	19,474	9,509	2,747	31,730
Lepisosteus osseus	.	.	.	4	22	.	20	4	2	26
Lepisosteus platyrhincus	.	.	.	2	.	.	.	.	2	2
Lepomis auritus	.	.	.	39	.	.	.	.	39	39
Lepomis macrochirus	.	.	.	7	.	.	.	.	7	7
Lepomis microlophus	.	.	.	7	.	.	.	.	7	7
Lepomis punctatus	.	.	.	307	.	.	1	.	306	307
Lepomis spp.	.	.	.	3	.	.	.	.	3	3
Limulus polyphemus	.	1	1	.	54	1	16	41	.	57
Lucania goodei	.	.	.	53	.	.	.	.	53	53
Lucania parva	.	.	.	67	.	.	19	.	48	67
Lutjanus griseus	6	.	4	23	4	7	20	11	13	44
Lutjanus spp.	.	.	.	.	.	2	2	.	.	2
Lutjanus synagris	4	.	.	.	.	2	5	1	.	6
Megalops atlanticus	.	.	.	.	1	.	1	.	.	1
Membras martinica	74	309	890	3,017	.	.	3,166	478	646	4,290
Menidia spp.	3	165	1,519	2,585	.	6	2,818	865	595	4,278
Menippe spp.	1	2	2	.	1	255	202	59	.	261
Menticirrhus americanus	.	160	135	28	314	205	331	503	8	842
Menticirrhus saxatilis	.	6	9	.	.	.	6	9	.	15

Appendix CK01-02 (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=31	E=113	E=108	E=163	E=192	E=165	E=379	E=283	E=110	E=772
Microgobius gulosus	4	51	23	78	.	22	110	11	57	178
Microgobius thalassinus	.	63	25	3	.	4	17	76	2	95
Micropogonias undulatus	.	.	.	.	23	5	3	20	5	28
Micropterus salmoides	.	.	2	45	1	.	5	.	43	48
Monacanthus ciliatus	1	.	.	.	.	2	.	3	.	3
Monacanthus hispidus	10	20	3	1	.	9	31	12	.	43
Mugil cephalus	.	31	420	149	2,055	.	1,930	662	63	2,655
Mugil curema	.	.	1	.	337	.	262	76	.	338
Mugil gyrans	.	.	1	.	38	.	14	25	.	39
Mullus auratus	.	.	.	.	.	1	.	1	.	1
Myrophis punctatus	2	10	2	29	.	6	8	10	31	49
Narcine brasiliensis	.	.	.	.	.	1	1	.	.	1
Notemigonus crysoleucas	.	.	.	2	.	.	.	.	2	2
Notropis petersoni	.	.	.	9	.	.	.	.	9	9
Notropis spp.	.	.	.	97	.	.	.	.	97	97
Ogcocephalus radiatus	.	5	5	.	468	69	23	524	.	547
Oligoplites saurus	2	19	60	68	66	1	84	99	33	216
Opisthonema oglinum	.	.	1	.	26	1	7	21	.	28
Opsanus beta	1	2	1	1	2	13	7	11	2	20
Orthopristis chrysoptera	251	176	9	1	411	480	366	962	.	1,328
Parablennius marmoreus	.	.	.	.	.	1	.	1	.	1
Paralichthys albigutta	7	26	22	5	153	38	126	116	9	251
Paralichthys lethostigma	.	.	3	29	39	36	61	2	44	107
Paralichthys spp.	1	.	.	.	.	.	1	.	.	1
Paralichthys squamilentus	.	.	.	.	.	1	1	.	.	1
Peprilus alepidotus	.	.	1	.	185	.	15	171	.	186
Peprilus burti	.	.	.	.	3	2	.	5	.	5
Poecilia latipinna	.	.	.	1	.	.	1	.	.	1
Pogonias cromis	.	1	8	4	268	1	116	166	.	282
Pomacanthus paru	.	.	.	.	.	2	2	.	.	2
Pomatomus saltatrix	.	.	.	.	2	.	.	2	.	2
Pomoxis nigromaculatus	.	.	.	7	.	.	.	.	7	7
Prionotus scitulus	5	20	5	.	.	240	118	151	1	270

Appendix CK01-02 (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=31	E=113	E=108	E=163	E=192	E=165	E=379	E=283	E=110	E=772
Prionotus tribulus	1	19	22	20	26	50	79	46	13	138
Raja eglanteria	.	.	.	.	.	1	.	1	.	1
Rhinoptera bonasus	.	3	.	.	146	.	36	113	.	149
Rhizoprionodon terraenovae	.	1	.	.	.	.	.	1	.	1
Sardinella aurita	23	.	.	.	.	.	.	23	.	23
Sciaenops ocellatus	.	1	25	28	554	5	360	242	11	613
Scomberomorus maculatus	1	3	2	6	24	.	21	15	.	36
Scorpaena spp.	.	.	.	.	.	1	.	1	.	1
Selene vomer	1	.	.	.	35	.	21	15	.	36
Serraniculus pumilio	.	1	.	.	.	.	.	1	.	1
Serranus subligarius	.	.	.	.	.	1	.	1	.	1
Soleidae spp.	.	.	.	.	.	1	.	.	1	1
Sphoeroides nephelus	17	29	29	8	6	34	61	59	3	123
Sphyraena borealis	.	1	.	.	.	.	1	.	.	1
Sphyrna tiburo	.	.	.	.	13	1	1	13	.	14
Strongylura marina	1	2	7	12	52	.	51	22	1	74
Strongylura notata	.	.	1	.	1	.	1	1	.	2
Strongylura spp.	.	.	2	3	.	.	3	1	1	5
Strongylura timucu	1	4	15	11	11	.	29	7	6	42
Symphurus plagiusa	5	49	51	32	2	120	90	67	102	259
Syngnathus floridae	136	5	2	.	.	24	11	156	.	167
Syngnathus louisianae	9	5	1	.	.	18	8	25	.	33
Syngnathus scovelli	45	21	4	13	.	14	39	51	7	97
Synodus foetens	7	30	24	20	15	41	67	62	8	137
Trachinotus carolinus	.	.	.	.	8	.	.	8	.	8
Trachinotus falcatus	.	1	1	4	29	.	5	30	.	35
Trinectes maculatus	.	6	1	67	3	125	10	28	164	202
Urophycis floridana	.	2	2	.	.	24	12	16	.	28
Urophycis regia	.	1	.	.	.	.	1	.	.	1
Totals	**2,694**	**7,195**	**26,572**	**54,231**	**24,211**	**9,315**	**66,911**	**34,821**	**22,486**	**124,218**

Apalachicola Bay

Apalachicola Bay is the third-largest estuary (544 km^2) in Florida (ANERR 1998). This estuarine system is a shallow, semi-enclosed estuary bounded by a barrier island complex that includes St. Vincent Island, Cape St. George Island, St. George Island, and Dog Island. The bay is connected to the Gulf of Mexico through three naturally occurring passes: St. Vincent Pass, West Pass, and East Pass; and a man-made pass at Sikes Cut on St. George Island. On the eastern end, the bay is connected to the Gulf through Dog Island Sound. The Apalachicola Bay system is one of the least developed estuaries in the state, surrounded by approximately 48,000 acres of state and federal reserves (ANERR 1998). The towns of Apalachicola, East Point, and Carrabelle are the only substantial areas of development on the bay and support a population of approximately 12,000 people. Apalachicola Bay receives the majority of its freshwater from the Apalachicola River which drains an area of approximately 50,660 km^2. The Apalachicola River has the highest flow rate (690 m^3/s at Chatahoochee, Florida) and the broadest flood plain (450 km^2) of any river in Florida (Livingston 1983). The sampling universe for the Apalchicola Bay system is divided into four geographical zones, A, B, C, and D (Figure AP01-01). Zone A is an estuarine habitat that consists of St. Vincent Sound, Apalachicola Bay, and East Bay, and is greatly influenced by freshwater input from the Apalachicola River. Habitats in Zone A are dominanted by oyster bars, mud-oyster, sand, and mud bottom types, and to a lesser extent, seagrass beds. Zone B consists of St. George Sound and is characterized as a stable marine environment due to minimal freshwater input. Bottom substrates consist primarily of sand although some oyster and mud bottom types exist. Shallow areas near the mainland and the barrier islands are made up of seagrass meadows of varying density consisting of *Halodule wrightii*, *Thalassia testudinum*, and *Syringodium filiforme*. Zone C consists of the lower Apalachicola River and the St. Marks, Little St. Marks, and the East rivers which are distributaries of the Apalachicola River. Zone D consists of the Carrabelle River which lies near the eastern end of the sampling universe.

This section summarizes Fisheries-Independent Monitoring (FIM) program data collected in the Apalachicola Bay region during 2001. Stratified-random sampling (SRS) was conducted in all four geographic zones. Zones A and B were sampled monthly using a 21.3-m bay seine, a 6.1-m otter trawl, a 183-m haul seine, and a 183-m purse seine. Zones C and D were sampled monthly using a 21.3-m river seine and a 6.1-m otter trawl. The 183-m purse seine was used until August 2001 when boat problems and an evaluation of this gear led to an indefinite postponement of sampling. All sampling methods were the same as those described in the Methods section of this report.

Stratified-Random Sampling

A total of 185,799 fishes and selected invertebrates, representing 159 taxa and 64 families, were collected in 912 samples during Apalachicola Bay stratified-random sampling (Table AP01-01; Appendices AP01-01 and AP01-02). There were five species new to SRS collections in 2001. These species were *Carpiodes cyprinus* (quillback carpsucker), *Pomoxis nigromaculatus* (black crappie), *Amia calva* (bowfin), *Percina nigrofasciata* (blackbanded darter), and *Polydactylus octonemus* (Atlantic threadfin). The most abundant taxon collected in Apalachicola SRS collections was *Brevoortia* spp. (n=59,477), accounting for 32% of the total catch. Other commonly captured taxa included *Leiostomus xanthurus* (n=37,621), *Lagodon rhomboides* (n=18,704), *Anchoa mitchilli* (n=16,292), *Mugil cephalus* (n=5,886), and *Cynoscion arenarius* (n=4,523). Together with *Brevoortia* spp., these species represented 77% of the total catch.

Twenty nine Selected Taxa (n=58,028) were collected, accounting for 31% of the total catch. The most abundant Selected Taxa were *L. xanthurus* (n=37,621), *M. cephalus* (n=5,886), *Micropogonias undulatus* (3,092), and *Litopenaeus setiferus* (n=1,429). Other commonly collected Selected Taxa included *Callinectes sapidus* (n=1,233), *Mugil curema* (n=697), *Sciaenops ocellatus* (n=538), *Farfantepenaeus aztecus* (n=530), and *Trachinotus carolinus* (n=459).

Bay Sampling

21.3-m Bay Seines. There were 88,457 fishes and selected invertebrates collected in 240 21.3-m bay seine samples, accounting for 48% of the total SRS catch (Table AP01-02, Appendix AP01-02). Mean density estimate for the 21.3-m bay seine was 263 animals/100 m^2. The dominant taxa collected in bay seine samples were

Brevoortia spp. (n=46,341) and *L. xanthurus* (n=18,606). These taxa accounted for 73% of the total catch with this gear. There were 18,079 animals collected in 78 offshore-vegetated collections, accounting for 20% of the total 21.3-m bay seine catch. One hundred and seven shoreline collections yielded 25,919 animals, which accounted for 29% of the bay seine catch. Fifty-five samples were taken from offshore-unvegetated strata yielding 44,459 animals, accounting for half of the total catch with this gear.

A total of 22,785 animals classified as Selected Taxa were collected with the 21.3-m bay seine (Table AP01-03). Selected Taxa (n=26) represented 26% of the total catch with this gear. The most abundant Selected Taxa collected in bay seine samples was *L. xanthurus* (n=18,606), followed by *M. cephalus* (n=2,087).

183-m Haul Seines. A total of 28,083 fishes and selected invertebrates were collected in 216 183-m haul seine samples, accounting for 15% of the total catch from 2001 SRS collections (Table AP01-04). The mean catch-per-unit-effort for the 183-m haul seine was 130 animals/set. The two most abundant taxa, *L. rhomboides* (n=9,127) and *Brevoortia* spp. (n=4,534), accounted for 49% of the total catch with this gear. *Leiostomus xanthurus* (n=2,988) and *Harengula jaguana* (n=2,336) accounted for an additional 19% of the 183-m haul seine catch. The ten most abundant taxa accounted for 84% of the total catch with this gear.

A total of 28 Selected Taxa were collected with the 183-m haul seine. Selected Taxa represented 26% (n=7,356) of the total catch with this gear (Table AP01-05). The most abundant Selected Taxa collected in haul seine samples were *L. xanthurus* (n=2,988) and *M. cephalus* (n=1,218), accounting for 15% of the total 183-m haul seine catch. Other common Selected Taxa collected with this gear included *M. undulatus* (n=628) and *T. carolinus* (n=457).

183-m Purse Seines. A total of 2,569 fishes and selected invertebrates were collected in 60 183-m purse seine samples (Table AP01-06). The mean catch-per-unit-effort for this gear was 43 animals/set. *Lagodon rhomboides* (n=433) was the most numerically dominant species collected in 183-m purse seine samples. The ten most dominant taxa accounted for 79% of the total 183-m purse seine catch.

A total of 17 Selected Taxa were collected with the 183-m purse seine. Selected Taxa represented 15% (n=380) of the total catch with this gear (Table AP01-07). The most abundant Selected Species collected in 183-m purse seine samples was *L. xanthurus* (n=161), accounting for 42% of the Selected Taxa and 6% of the total 183-m purse seine catch. *Micropogonias undulatus* (n=77) was the next most abundant Selected Taxa collected in 183-m purse seine samples.

6.1-m Bay Otter Trawls. A total of 20,830 fishes and selected invertebrates were collected in 144 6.1-m bay otter trawl samples, accounting for 11% of the total 2001 SRS collection (Table AP01-08). Mean density estimate for 6.1-m bay otter trawl samples was 10 animals/100 m^2. *Leiostomus xanthurus* (n=6,354) was the most abundant species in collections with this gear, accounting for 30.5% of the total 6.1-m bay otter trawl catch. The eleven most dominant taxa represented 87% of the total catch with this gear.

A total of 9,898 animals designated as Selected Taxa were collected in 6.1-m bay otter trawl samples (Table AP01-09). Selected Taxa (n=16) made up 47.5% of the total catch with this gear. The most abundant Selected Taxa included *L. xanthurus* (n=6,354), *M. undulatus* (n=1,906), *C. arenarius* (n=627), and *F. aztecus* (n=369).

River Sampling

21.3-m River Seines. There were 23,720 fishes and selected invertebrates collected in 168 21.3-m river seine samples, accounting for 13% of the total SRS catch for 2001 (Table AP01-10). Mean density estimate for river seine collections was 208 animals/100 m^2. The most abundant taxon was *Brevoortia* spp. (n=5,794), accounting for 24% of the total catch with this gear in the rivers. The ten most abundant taxa accounted for 85% of the total 21.3-m river seine collection.

Selected Taxa (n=16) collected from 21.3-m river seine samples made up 30% (n=7,194) of the total catch with this gear in the rivers (Table AP01-11). *Leiostomus xanthurus* (n=3,779), *M. cephalus* (n=2,581), and *C. sapidus* (n=478) were among the most abundant Selected Taxa making up 95% of the Selected Taxa collected in river seine samples.

6.1-m River Otter Trawls. A total of 22,140 fishes and selected invertebrates were collected in 84 river otter trawl samples, accounting for 12% of the total 2001 SRS collection (Table AP01-12). Mean density estimate for river otter trawls was 35 animals/100 m^2. The ten most dominant taxa represented 96% of the total catch with this gear in the rivers. *Anchoa mitchilli* (n=6,702), the most abundant species, accounted for 30% of the total 6.1-m river otter trawl catch.

There were 10,415 animals designated as Selected Taxa (n=13) collected in river otter trawl samples, representing 47% of the total trawl catch in the rivers (Table AP01-13). The most abundant Selected Taxa were *L. xanthurus* (n=5,733) and *C. arenarius* (n=3,627). These species accounted for 90% of the Selected Taxa collected in the river otter trawl samples.

References

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Livingston, R. J. 1983. Resource Atlas of the Apalachicola Estuary. 64 pp.

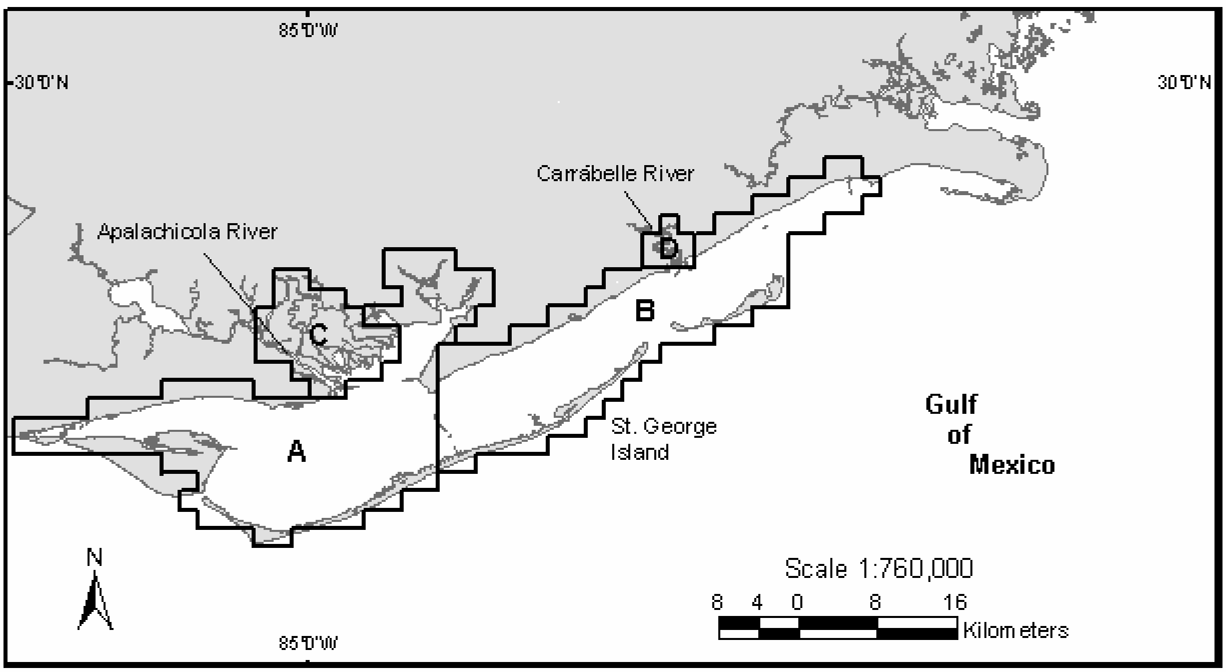


Figure AP01-01. Map of the Apalachicola Bay sampling area. Zones are labeled A–D.

Table AP01-01. Summary of catch and effort data for Apalachicola Bay stratified-random sampling, 2001.

	21.3-m bay seine		**21.3-m river seine**		**183-m haul seine**		**183-m purse seine**		**6.1-m otter trawl**		**Totals**	
Zone	**Animals**	**Hauls**	**Animals**	**Hauls**	**Animals**	**Hauls**	**Animals**	**Hauls**	**Animals**	**Hauls**	**Animals**	**Hauls**
A	71,448	120	.	.	12,050	108	607	24	15,329	72	99,434	324
B	17,009	120	.	.	16,033	108	1,962	36	5,501	72	40,505	336
C	.	.	13,038	96	.	.	.	.	12,689	48	25,728	144
D	.	.	10,682	72	.	.	.	.	9,451	36	20,133	108
Totals	**88,457**	**240**	**23,720**	**168**	**28,083**	**216**	**2,569**	**60**	**42,970**	**228**	**185,799**	**912**

Table AP01-02. Catch statistics for 10 dominant taxa collected in 240 21.3-m bay seine samples during Apalachicola Bay stratified-random sampling, 2001. 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**
Brevoortia spp.	46,341	52.4	13.3	137.92	107.08	1,202.80	25,577.14	28	0.03	19	94
Leiostomus xanthurus	18,606	21.0	50.4	55.38	10.68	298.72	1,820.71	28	0.08	11	195
Lagodon rhomboides	7,763	8.8	57.5	23.10	4.75	318.43	797.14	31	0.18	9	134
Anchoa mitchilli	2,691	3.0	22.5	8.01	2.83	547.47	417.86	32	0.21	12	70
Mugil cephalus	2,087	2.4	19.2	6.21	2.26	563.43	413.57	29	0.31	12	315
Eucinostomus spp.	1,875	2.1	20.4	5.58	1.35	375.45	176.43	25	0.15	9	48
Menidia spp.	1,164	1.3	29.2	3.46	0.86	384.86	110.00	56	0.46	13	100
Bairdiella chrysoura	1,095	1.2	16.7	3.26	1.08	514.44	178.57	40	0.47	12	160
Orthopristis chrysoptera	795	0.9	18.3	2.37	0.58	379.51	73.57	39	0.57	11	157
Farfantepenaeus spp.	656	0.7	25.8	1.95	0.41	323.85	42.14	11	0.09	4	18
Subtotal	83,073	93.8	.	.	.	.	.	.	.	4	315
Totals	**88,457**	**100.0**	**.**	**263.34**	**109.48**	**644.24**	**26,059.29**	**.**	**.**	**3**	**351**

Table AP01-03. Catch statistics for Selected Taxa collected in 240 21.3-m bay seine samples during Apalachicola Bay stratified-random sampling, 2001. 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
Leiostomus xanthurus	18,606	21.0	50.4	55.38	10.68	298.72	1,820.71	28	0.08	11	195
Mugil cephalus	2,087	2.4	19.2	6.21	2.26	563.43	413.57	29	0.31	12	315
Litopenaeus setiferus	647	0.7	10.0	1.93	1.14	919.54	264.29	10	0.23	4	32
Callinectes sapidus	283	0.3	28.8	0.84	0.17	307.65	22.86	21	1.13	3	120
Cynoscion arenarius	254	0.3	9.6	0.76	0.27	550.25	45.00	29	0.71	12	81
Cynoscion nebulosus	166	0.2	16.3	0.49	0.12	382.31	19.29	45	1.90	17	137
Menticirrhus americanus	160	0.2	11.3	0.48	0.17	556.98	26.43	41	2.30	10	132
Farfantepenaeus aztecus	137	0.2	13.3	0.41	0.14	531.60	27.86	15	0.36	9	30
Mugil curema	107	0.1	5.8	0.32	0.22	1,056.58	51.43	35	2.15	17	115
Sciaenops ocellatus	80	0.1	5.8	0.24	0.14	925.24	32.86	42	6.74	10	272
Lutjanus griseus	65	0.1	6.3	0.19	0.10	825.07	22.86	37	1.50	13	71
Farfantepenaeus duorarum	61	0.1	7.5	0.18	0.06	485.21	8.57	16	0.45	8	30
Paralichthys albigutta	45	0.1	10.4	0.13	0.03	381.93	5.00	58	9.13	14	328

Table AP01-03. (Continued)

Species	Number		%	Density Estimate (animals/100m^2)				Standard Length (mm)			
	No.	%	Occur	Mean	Stderr	CV	Max	Mean	Stderr	Min	Max
Micropogonias undulatus	37	0.0	5.0	0.11	0.04	542.69	5.00	54	6.67	12	170
Lutjanus synagris	17	0.0	4.6	0.05	0.02	530.88	2.86	32	3.65	16	65
Menticirrhus saxatilis	6	0.0	1.7	0.02	0.01	890.68	2.14	26	4.12	12	35
Elops saurus	5	0.0	0.4	0.01	0.01	1,549.19	3.57	25	0.32	24	26
Paralichthys squamilentus	5	0.0	0.4	0.01	0.01	1,549.19	3.57	53	2.46	47	58
Menippe spp.	4	0.0	1.7	0.01	0.01	769.72	0.71	35	19.78	11	94
Paralichthys lethostigma	4	0.0	1.7	0.01	0.01	769.72	0.71	231	57.91	90	342
Trachinotus falcatus	3	0.0	0.8	0.01	0.01	1,152.77	1.43	21	4.51	16	30
Archosargus probatocephalus	2	0.0	0.8	0.01	0.00	1,093.15	0.71	40	11.50	28	51
Mycteroperca microlepis	1	0.0	0.4	0.00	0.00	1,549.19	0.71	162	.	162	162
Trachinotus carolinus	1	0.0	0.4	0.00	0.00	1,549.19	0.71	47	.	47	47
Menticirrhus littoralis	1	0.0	0.4	0.00	0.00	1,549.19	0.71	18	.	18	18
Pogonias cromis	1	0.0	0.4	0.00	0.00	1,549.19	0.71	122	.	122	122
Totals	**22,785**	**25.8**	**78.8**	**67.81**	**11.16**	**254.89**	**1,823.57**	**.**	**.**	**3**	**342**

Table AP01-04. Catch statistics for 10 dominant taxa collected in 216 183-m haul seine samples during Apalachicola Bay stratified-random sampling, 2001. Percent (%) is the percent of the total catch represented by that taxon; percent occurrence (% Occur) is the percentage of samples in which that taxon was collected; CV is the coefficient of variation of the mean. Taxa are ranked in order of decreasing mean catch-per-unit-effort.

Species	**Number**		**%**	**Catch-per-unit-effort (animals/set)**				**Standard Length (mm)**			
	No.	**%**	**Occur**	**Mean**	**Stderr**	**CV**	**Max**	**Mean**	**Stderr**	**Min**	**Max**
Lagodon rhomboides	9,127	32.5	76.9	42.25	4.59	159.48	383.00	102	0.27	42	220
Brevoortia spp.	4,534	16.1	12.0	20.99	14.86	1,040.45	3,103.00	85	0.31	27	290
Leiostomus xanthurus	2,988	10.6	58.3	13.83	2.73	290.12	365.00	117	0.99	41	178
Harengula jaguana	2,336	8.3	15.3	10.81	8.49	1,153.70	1,828.00	106	0.21	59	196
Mugil cephalus	1,218	4.3	67.1	5.64	0.96	251.27	170.00	263	2.49	81	460
Dasyatis sabina	896	3.2	64.4	4.15	0.76	269.25	126.00	223	1.42	72	364
Bairdiella chrysoura	818	2.9	17.6	3.79	1.42	552.27	241.00	127	0.84	25	186
Orthopristis chrysoptera	642	2.3	29.2	2.97	0.76	376.43	116.00	115	1.34	46	245
Micropogonias undulatus	628	2.2	15.3	2.91	1.02	517.08	171.00	156	1.18	78	290
Eucinostomus gula	492	1.8	16.2	2.28	0.70	449.39	106.00	80	0.35	54	110
Subtotal	23,679	84.2	.	.	.	.	.	.	.	25	1,781
Totals	**28,083**	**100.0**	**.**	**130.01**	**20.66**	**233.54**	**3,353.00**	**.**	**.**	**12**	**1,781**

Table AP01-05. Catch statistics for Selected Taxa collected in 216 183-m haul seine samples during Apalachicola Bay stratified-random sampling, 2001. 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
Leiostomus xanthurus	2,988	10.6	58.3	13.83	2.73	290.12	365.00	117	0.99	41	178
Mugil cephalus	1,218	4.3	67.1	5.64	0.96	251.27	170.00	263	2.49	81	460
Micropogonias undulatus	628	2.2	15.3	2.91	1.02	517.08	171.00	156	1.18	78	290
Trachinotus carolinus	457	1.6	9.3	2.12	1.51	1,051.09	322.00	84	0.88	41	236
Sciaenops ocellatus	443	1.6	43.1	2.05	0.32	229.91	43.00	321	6.13	66	690
Mugil curema	428	1.5	34.3	1.98	0.39	285.77	49.00	161	2.57	58	298
Callinectes sapidus	182	0.6	23.1	0.84	0.22	389.91	39.00	100	3.22	18	251
Trachinotus falcatus	144	0.5	5.1	0.67	0.40	878.22	79.00	49	0.95	34	87
Archosargus probatocephalus	143	0.5	21.8	0.66	0.14	305.30	19.00	307	7.43	71	484
Litopenaeus setiferus	138	0.5	2.3	0.64	0.44	1,003.53	76.00	41	0.29	28	47
Cynoscion nebulosus	117	0.4	18.5	0.54	0.10	283.67	10.00	234	8.92	70	453
Paralichthys albigutta	110	0.4	24.5	0.51	0.11	324.18	18.00	175	6.90	61	402
Elops saurus	105	0.4	14.4	0.49	0.12	364.22	15.00	297	5.45	200	487

Table AP01-05. (Continued)

Species	Number		%	Catch-per-unit-effort (animals/set)				Standard Length (mm)			
	No.	%	Occur	Mean	Stderr	CV	Max	Mean	Stderr	Min	Max
Menticirrhus americanus	102	0.4	12.0	0.47	0.20	618.46	40.00	141	3.88	43	305
Paralichthys lethostigma	39	0.1	10.6	0.18	0.05	370.01	5.00	230	16.93	65	440
Pomatomus saltatrix	21	0.1	3.2	0.10	0.05	704.83	8.00	163	12.19	80	296
Pogonias cromis	21	0.1	5.1	0.10	0.04	556.60	6.00	200	16.25	96	455
Scomberomorus maculatus	21	0.1	3.7	0.10	0.05	683.57	7.00	277	24.73	92	510
Farfantepenaeus aztecus	16	0.1	4.6	0.07	0.03	543.25	4.00	24	1.43	17	40
Mycteroperca microlepis	8	0.0	0.9	0.04	0.03	1,160.27	6.00	187	13.11	108	228
Menticirrhus saxatilis	8	0.0	1.9	0.04	0.02	857.85	4.00	129	10.41	90	181
Menticirrhus littoralis	7	0.0	2.3	0.03	0.02	752.12	3.00	132	5.20	116	152
Lutjanus synagris	4	0.0	1.9	0.02	0.01	729.70	1.00	74	6.89	60	89
Lutjanus griseus	3	0.0	1.4	0.01	0.01	844.57	1.00	140	49.21	87	238
Farfantepenaeus duorarum	2	0.0	0.5	0.01	0.01	1,469.69	2.00	23	0.00	23	23
Menippe spp.	1	0.0	0.5	0.00	0.00	1,469.69	1.00	71	.	71	71
Cynoscion arenarius	1	0.0	0.5	0.00	0.00	1,469.69	1.00	225	.	225	225
Paralichthys squamilentus	1	0.0	0.5	0.00	0.00	1,469.69	1.00	83	.	83	83
Totals	**7,356**	**26.2**	**89.4**	**34.06**	**4.06**	**175.12**	**511.00**	**.**	**.**	**17**	**1,781**

Table AP01-06. Catch statistics for 10 dominant taxa collected in 60 183-m purse seine samples during Apalachicola Bay stratified-random sampling, 2001. Percent (%) is the percent of the total catch represented by that taxon; percent occurrence (% Occur) is the percentage of samples in which that taxon was collected; CV is the coefficient of variation of the mean. Taxa are ranked in order of decreasing mean catch-per-unit-effort.

Species	Number		%	Catch-per-unit-effort (animals/set)				Standard Length (mm)			
	No.	%	Occur	Mean	Stderr	CV	Max	Mean	Stderr	Min	Max
Lagodon rhomboides	433	16.9	30.0	7.22	2.77	297.38	132.00	123	1.00	51	196
Bairdiella chrysoura	414	16.1	26.7	6.90	2.50	280.98	106.00	138	0.57	53	172
Arius felis	379	14.8	50.0	6.32	2.57	315.33	149.00	218	2.31	85	364
Dasyatis sabina	162	6.3	51.7	2.70	1.11	317.38	64.00	229	2.79	141	381
Leiostomus xanthurus	161	6.3	43.3	2.68	0.70	202.44	25.00	137	2.48	70	206
Harengula jaguana	115	4.5	20.0	1.92	0.80	324.52	39.00	130	0.66	111	145
Peprilus alepidotus	104	4.0	10.0	1.73	1.44	641.90	86.00	87	1.00	55	103
Orthopristis chrysoptera	95	3.7	26.7	1.58	0.54	264.47	24.00	145	2.92	85	260
Chilomycterus schoepfi	88	3.4	23.3	1.47	0.66	346.63	36.00	144	4.24	50	255
Lactophrys quadricornis	83	3.2	21.7	1.38	0.56	311.31	22.00	144	3.11	59	200
Subtotal	2,034	79.2	.	.	.	.	.	.	.	50	381
Totals	**2,569**	**100.0**	**.**	**42.82**	**6.65**	**120.23**	**250.00**	**.**	**.**	**32**	**1,074**

Table AP01-07. Catch statistics for Selected Taxa collected in 60 183-m purse seine samples during Apalachicola Bay stratified-random sampling, 2001. 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
Leiostomus xanthurus	161	6.3	43.3	2.68	0.70	202.44	25.00	137	2.48	70	206
Micropogonias undulatus	77	3.0	21.7	1.28	0.58	351.15	28.00	148	2.24	106	208
Elops saurus	34	1.3	15.0	0.57	0.26	357.94	13.00	332	5.70	282	463
Cynoscion nebulosus	31	1.2	16.7	0.52	0.19	283.95	9.00	276	17.86	83	527
Callinectes sapidus	25	1.0	21.7	0.42	0.14	262.50	7.00	89	6.77	41	170
Paralichthys albigutta	21	0.8	16.7	0.35	0.15	331.97	8.00	183	18.52	96	370
Scomberomorus maculatus	10	0.4	8.3	0.17	0.08	352.23	3.00	365	30.97	217	575
Cynoscion arenarius	4	0.2	1.7	0.07	0.07	774.60	4.00	208	11.32	176	229
Paralichthys lethostigma	4	0.2	6.7	0.07	0.03	377.32	1.00	196	30.17	137	255
Pomatomus saltatrix	3	0.1	5.0	0.05	0.03	439.57	1.00	240	31.09	205	302
Menticirrhus americanus	3	0.1	5.0	0.05	0.03	439.57	1.00	183	23.13	142	222
Mycteroperca microlepis	2	0.1	3.3	0.03	0.02	543.06	1.00	110	28.00	82	138
Litopenaeus setiferus	1	0.0	1.7	0.02	0.02	774.60	1.00	32	.	32	32
Menippe spp.	1	0.0	1.7	0.02	0.02	774.60	1.00	69	.	69	69
Rachycentron canadum	1	0.0	1.7	0.02	0.02	774.60	1.00	230	.	230	230
Trachinotus carolinus	1	0.0	1.7	0.02	0.02	774.60	1.00	334	.	334	334
Lutjanus synagris	1	0.0	1.7	0.02	0.02	774.60	1.00	184	.	184	184
Totals	**380**	**14.8**	**70.0**	**6.33**	**1.32**	**161.75**	**42.00**	**.**	**.**	**32**	**575**

Table AP01-08. Catch statistics for 10 dominant taxa collected in 144 6.1-m bay otter trawl samples during Apalachicola Bay stratified-random sampling, 2001. 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**
Leiostomus xanthurus	6,354	30.5	52.1	3.02	0.78	308.24	66.65	50	0.22	7	178
Anchoa mitchilli	5,725	27.5	41.7	2.70	0.65	290.73	45.80	53	0.14	18	76
Micropogonias undulatus	1,906	9.2	29.2	0.90	0.25	339.85	19.29	50	0.59	9	273
Arius felis	1,037	5.0	32.6	0.50	0.15	349.20	12.07	73	0.88	35	286
Cynoscion arenarius	627	3.0	28.5	0.32	0.07	254.24	4.72	45	0.98	8	145
Etropus crossotus	527	2.5	52.1	0.25	0.04	200.22	3.24	69	0.72	28	160
Lagodon rhomboides	493	2.4	40.3	0.23	0.06	303.86	5.73	83	1.00	15	131
Brevoortia spp.	395	1.9	10.4	0.19	0.09	562.65	8.43	32	0.64	18	210
Farfantepenaeus aztecus	369	1.8	30.6	0.18	0.04	290.02	4.05	24	0.38	10	45
Bagre marinus	293	1.4	4.9	0.17	0.16	1,147.82	23.44	76	2.18	45	465
Subtotal	17,726	85.2	.	.	.	.	.	.	.	7	465
Totals	**20,830**	**100.0**	**.**	**9.94**	**1.34**	**161.50**	**88.64**	**.**	**.**	**4**	**971**

Table AP01-09. Catch statistics for Selected Taxa collected in 144 6.1-m bay otter trawl samples during Apalachicola Bay stratified-random sampling, 2001. 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
Leiostomus xanthurus	6,354	30.5	52.1	3.02	0.78	308.24	66.65	50	0.22	7	178
Micropogonias undulatus	1,906	9.2	29.2	0.90	0.25	339.85	19.29	50	0.59	9	273
Cynoscion arenarius	627	3.0	28.5	0.32	0.07	254.24	4.72	45	0.98	8	145
Farfantepenaeus aztecus	369	1.8	30.6	0.18	0.04	290.02	4.05	24	0.38	10	45
Callinectes sapidus	203	1.0	29.2	0.10	0.02	297.65	2.16	46	2.17	11	256
Litopenaeus setiferus	152	0.7	20.1	0.08	0.03	419.96	2.87	24	0.55	5	48
Menticirrhus americanus	120	0.6	13.9	0.07	0.03	520.04	3.79	61	3.49	22	206
Farfantepenaeus duorarum	108	0.5	25.0	0.05	0.01	281.39	0.88	25	0.83	13	78
Lutjanus synagris	21	0.1	6.9	0.01	0.00	481.40	0.47	74	5.34	38	100
Menippe spp.	13	0.1	4.2	0.01	0.00	551.38	0.27	21	3.15	8	41
Paralichthys albigutta	12	0.1	7.6	0.01	0.00	368.20	0.15	181	20.39	76	300
Sciaenops ocellatus	5	0.0	0.7	0.00	0.00	1,200.00	0.34	30	7.47	17	56
Paralichthys lethostigma	3	0.0	2.1	0.00	0.00	688.85	0.07	199	26.30	147	230
Cynoscion nebulosus	3	0.0	1.4	0.00	0.00	891.92	0.13	146	33.61	80	190
Lutjanus griseus	1	0.0	0.7	0.00	0.00	1,200.00	0.07	12	.	12	12
Paralichthys squamilentus	1	0.0	0.7	0.00	0.00	1,200.00	0.07	83	.	83	83
Totals	**9,898**	**47.5**	**75.7**	**4.74**	**1.01**	**256.04**	**81.22**	**.**	**.**	**5**	**300**

Table AP01-10. Catch statistics for 10 dominant taxa collected in 168 21.3-m river seine samples during Apalachicola Bay stratified random sampling, 2001. 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
Brevoortia spp.	5,794	24.4	13.1	50.72	27.69	707.56	3,400.00	25	0.04	20	61
Leiostomus xanthurus	3,779	15.9	37.5	33.08	10.29	403.36	1,388.24	27	0.17	12	134
Mugil cephalus	2,581	10.9	22.0	22.59	10.61	608.58	1,463.24	27	0.13	20	163
Notropis spp.	2,525	10.6	23.8	22.10	5.48	321.54	469.12	31	0.11	15	70
Menidia spp.	1,924	8.1	41.1	16.84	3.37	259.69	363.24	51	0.28	20	82
Anchoa mitchilli	1,174	4.9	15.5	10.28	4.97	627.11	692.65	34	0.22	11	61
Lagodon rhomboides	852	3.6	31.5	7.46	3.00	521.80	360.29	23	0.44	12	162
Eucinostomus spp.	764	3.2	32.7	6.69	1.26	244.54	94.12	24	0.28	10	48
Callinectes sapidus	478	2.0	45.2	4.18	0.88	273.84	94.12	20	0.84	4	126
Lucania parva	430	1.8	14.3	3.76	1.87	642.67	276.47	23	0.21	12	36
Subtotal	20,301	85.4	.	.	.	.	.	.	.	4	163
Totals	**23,720**	**100.0**	**.**	**207.64**	**35.79**	**223.18**	**3,542.65**	**.**	**.**	**4**	**604**

Table AP01-11. Catch statistics for Selected Taxa collected in 168 21.3-m river seine samples during Apalachicola Bay stratified-random sampling, 2001. 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
Leiostomus xanthurus	3,779	15.9	37.5	33.08	10.29	403.36	1,388.24	27	0.17	12	134
Mugil cephalus	2,581	10.9	22.0	22.59	10.61	608.58	1,463.24	27	0.13	20	163
Callinectes sapidus	478	2.0	45.2	4.18	0.88	273.84	94.12	20	0.84	4	126
Mugil curema	162	0.7	2.4	1.42	1.27	1,156.41	211.76	27	0.18	23	36
Lutjanus griseus	52	0.2	6.0	0.46	0.23	651.89	27.94	57	2.75	18	88
Litopenaeus setiferus	39	0.2	5.4	0.34	0.15	586.85	16.18	12	0.62	6	20
Micropogonias undulatus	32	0.1	3.6	0.28	0.18	822.51	27.94	47	3.33	12	80
Cynoscion nebulosus	17	0.1	6.5	0.15	0.05	413.80	4.41	54	7.15	19	107
Paralichthys lethostigma	15	0.1	5.4	0.13	0.05	531.87	7.35	90	9.70	47	186
Cynoscion arenarius	10	0.0	1.2	0.09	0.08	1,172.94	13.24	63	2.96	47	81
Sciaenops ocellatus	10	0.0	4.2	0.09	0.03	510.24	2.94	102	20.41	43	243
Farfantepenaeus duorarum	7	0.0	3.0	0.06	0.03	662.06	4.41	16	1.48	8	21
Paralichthys albigutta	6	0.0	2.4	0.05	0.03	743.84	4.41	81	35.85	40	260
Archosargus probatocephalus	4	0.0	2.4	0.04	0.02	642.23	1.47	158	48.24	60	272
Farfantepenaeus aztecus	1	0.0	0.6	0.01	0.01	1,296.15	1.47	19	.	19	19
Menippe spp.	1	0.0	0.6	0.01	0.01	1,296.15	1.47	.	.	.	.
Totals	**7,194**	**30.3**	**66.1**	**62.97**	**17.31**	**356.35**	**2,079.41**	**.**	**.**	**4**	**272**

Table AP01-12. Catch statistics for 10 dominant taxa collected in 84 6.1-m river otter trawl samples during Apalachicola Bay stratified-random sampling, 2001. 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**
Anchoa mitchilli	6,702	30.2	36.9	10.75	3.89	332.02	248.38	40	0.12	17	62
Leiostomus xanthurus	5,733	25.9	46.4	9.21	4.31	429.38	237.45	24	0.16	11	178
Cynoscion arenarius	3,627	16.4	33.3	5.73	3.51	562.54	290.74	40	0.27	12	140
Brevoortia spp.	2,338	10.5	6.0	3.76	3.66	893.62	307.61	24	0.04	21	31
Trinectes maculatus	980	4.4	21.4	1.57	1.43	832.31	120.08	21	0.52	9	70
Ictalurus punctatus	663	3.0	22.6	1.06	0.64	552.40	51.13	75	0.67	23	163
Litopenaeus setiferus	452	2.0	23.8	0.73	0.35	441.92	26.98	19	0.19	6	27
Micropogonias undulatus	412	1.9	25.0	0.66	0.29	408.04	20.51	31	0.94	12	176
Bairdiella chrysoura	262	1.2	20.2	0.42	0.17	377.27	11.60	71	1.92	34	160
Eucinostomus spp.	161	0.7	15.5	0.26	0.12	434.73	7.42	30	0.53	13	39
Subtotal	21,330	96.2	.	.	.	.	.	.	.	6	178
Totals	**22,140**	**100.0**	**.**	**35.45**	**9.01**	**232.86**	**522.94**	**.**	**.**	**6**	**1,380**

Table AP01-13. Catch statistics for Selected Taxa collected in 84 6.1-m river otter trawl samples during Apalachicola Bay stratified-random sampling, 2001. 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
Leiostomus xanthurus	5,733	25.9	46.4	9.21	4.31	429.38	237.45	24	0.16	11	178
Cynoscion arenarius	3,627	16.4	33.3	5.73	3.51	562.54	290.74	40	0.27	12	140
Litopenaeus setiferus	452	2.0	23.8	0.73	0.35	441.92	26.98	19	0.19	6	27
Micropogonias undulatus	412	1.9	25.0	0.66	0.29	408.04	20.51	31	0.94	12	176
Callinectes sapidus	62	0.3	35.7	0.10	0.02	188.25	1.08	64	6.52	9	183
Menticirrhus americanus	46	0.2	15.5	0.07	0.03	316.17	1.35	32	2.17	10	67
Paralichthys lethostigma	28	0.1	14.3	0.04	0.02	432.70	1.62	126	18.65	37	390
Archosargus probatocephalus	20	0.1	14.3	0.03	0.01	265.78	0.40	180	17.29	96	314
Farfantepenaeus duorarum	16	0.1	6.0	0.03	0.01	464.43	0.67	27	1.53	19	40
Cynoscion nebulosus	7	0.0	4.8	0.01	0.01	565.26	0.54	173	16.25	141	244
Farfantepenaeus aztecus	7	0.0	6.0	0.01	0.01	464.14	0.40	22	2.63	14	32
Lutjanus griseus	4	0.0	3.6	0.01	0.00	555.59	0.27	72	14.40	32	97
Paralichthys albigutta	1	0.0	1.2	0.00	0.00	916.52	0.13	249	.	249	249
Totals	**10,415**	**47.0**	**77.4**	**16.63**	**5.61**	**308.95**	**293.31**	**.**	**.**	**6**	**390**

Appendix AP01-01. Monthly summary of species collected during Apalachicola Bay stratified-random sampling, 2001. Effort, or total number of hauls, is labeled 'E'. Listing is sorted alphabetically by taxon.

Species	Month												Totals
	Jan	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**	**Oct**	**Nov**	**Dec**	
	E=79	**E=79**	**E=79**	**E=79**	**E=79**	**E=79**	**E=79**	**E=75**	**E=71**	**E=71**	**E=71**	**E=71**	**E=912**
Achirus lineatus	.	.	1	.	.	.	.	.	.	.	.	.	1
Acipenser oxyrhynchus	.	.	.	.	.	.	.	.	.	.	1	.	1
Adinia xenica	.	96	5	80	.	1	.	.	.	9	.	8	199
Aetobatis narinari	.	.	.	.	.	.	.	.	.	1	.	.	1
Alosa chrysochloris	.	.	22	.	.	.	.	.	.	.	.	.	22
Amia calva	.	.	.	.	.	.	.	.	.	1	.	.	1
Anchoa hepsetus	.	1	1	11	21	47	22	24	86	15	3	10	241
Anchoa mitchilli	4	28	1,684	1,147	1,901	1,824	895	825	2,214	1,132	3,900	738	16,292
Ancylopsetta quadrocellata	1	2	11	19	16	11	3	.	6	3	3	2	77
Anguilla rostrata	.	.	.	.	.	1	.	.	.	.	.	.	1
Archosargus probatocephalus	1	.	10	15	12	17	12	13	13	19	41	16	169
Arius felis	.	1	18	213	182	123	198	314	344	507	169	.	2,069
Astroscopus y-graecum	2	3	.	2	.	.	.	.	1	.	1	1	10
Atherinidae spp.	.	.	.	.	.	.	9	.	.	.	.	.	9
Bagre marinus	.	.	1	9	20	14	11	296	3	2	.	.	356
Bairdiella chrysoura	.	117	41	263	49	806	705	270	53	336	176	52	2,868
Bathygobius soporator	.	.	.	.	.	.	.	.	.	.	.	1	1
Bothidae spp.	.	.	.	.	.	.	.	.	.	.	.	1	1
Brevoortia spp.	107	531	42,765	8,283	2,968	1,172	3,206	7	398	23	.	17	59,477
Callinectes sapidus	32	129	257	170	44	49	211	61	67	44	43	126	1,233
Callinectes similis	.	2	.	.	8	20	16	11	3	7	3	5	75

Appendix AP01-01. (Continued)

Species	Month												Totals
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
	E=79	E=79	E=79	E=79	E=79	E=79	E=79	E=75	E=71	E=71	E=71	E=71	E=912
Callinectes spp.	.	.	.	.	.	.	.	.	3	.	.	.	3
Caranx crysos	.	.	.	.	.	.	.	.	.	.	9	.	9
Caranx hippos	.	1	.	.	.	10	4	20	10	26	16	.	87
Carcharhinus leucas	.	.	.	.	.	.	1	.	.	.	.	.	1
Carpiodes cyprinus	1	.	.	.	.	.	.	.	.	.	.	.	1
Centropristis philadelphica	.	.	.	1	.	1	.	.	2	.	.	1	5
Centropristis striata	.	.	.	.	.	.	3	3	.	1	.	.	7
Chaetodipterus faber	.	.	.	4	.	2	5	9	4	3	2	1	30
Chasmodes saburrae	.	.	.	.	.	2	3	3	21	9	1	4	43
Chilomycterus schoepfi	.	4	48	16	19	6	18	23	5	43	17	19	218
Chloroscombrus chrysurus	.	1	5	46	8	88	31	8	2	19	1	.	209
Citharichthys macrops	.	.	.	1	1	5	.	3	.	3	1	3	17
Citharichthys spilopterus	1	7	.	5	2	23	16	7	3	4	.	.	68
Cynoscion arenarius	.	.	1	1	25	121	2,643	405	963	193	147	24	4,523
Cynoscion nebulosus	4	9	11	7	8	40	51	81	14	62	45	9	341
Cyprinidae spp.	.	.	.	.	7	17	.	.	.	1	.	.	25
Cyprinodon variegatus	18	26	3	90	.	.	1	.	12	1	.	.	151
Dasyatis sabina	64	106	50	163	213	85	106	66	65	97	57	65	1,137
Dasyatis say	.	.	.	11	17	22	20	1	31	3	.	.	105
Diplectrum bivittatum	.	.	.	.	.	.	7	1	2	3	1	1	15
Diplectrum formosum	.	.	.	.	.	.	.	.	.	2	.	1	3
Diplodus holbrooki	.	.	.	.	.	.	.	.	1	.	.	.	1
Dormitator maculatus	.	.	.	.	.	.	.	.	2	.	.	.	2

Appendix AP01-01. (Continued)

Species	Month												Totals
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
	E=79	E=79	E=79	E=79	E=79	E=79	E=79	E=75	E=71	E=71	E=71	E=71	E=912
Dorosoma cepedianum	.	.	.	.	.	.	1	.	2	6	.	.	9
Dorosoma petenense	.	.	4	.	.	175	2	8	19	.	.	.	208
Echeneis naucrates	.	.	1	.	.	1	1	7	3	1	1	1	16
Elops saurus	5	.	.	.	19	17	31	27	27	17	1	.	144
Enneacanthus gloriosus	.	.	.	.	.	.	.	1	1	.	.	.	2
Esox niger	.	.	.	.	1	.	.	.	.	.	.	.	1
Etropus crossotus	5	11	31	51	4	6	39	120	167	193	115	27	769
Etropus microstomus	.	.	.	.	.	.	.	.	.	.	1	1	2
Eucinostomus gula	.	.	.	.	.	.	.	79	45	136	291	159	710
Eucinostomus harengulus	.	.	.	.	.	.	9	67	79	89	88	131	463
Eucinostomus spp.	.	.	.	.	.	66	1,177	357	550	235	289	180	2,854
Farfantepenaeus aztecus	.	2	33	12	133	75	104	137	17	12	4	1	530
Farfantepenaeus duorarum	4	2	27	35	6	11	8	8	5	45	19	24	194
Farfantepenaeus spp.	11	27	125	5	29	54	58	112	26	133	73	96	749
Fundulus chrysotus	.	.	.	.	.	1	7	1	1	11	.	1	22
Fundulus grandis	12	33	62	2	.	.	.	.	21	5	3	40	178
Fundulus majalis	3	2	12	15	1	24	4	10	15	1	2	9	98
Fundulus similis	.	.	.	.	.	1	.	.	.	.	.	.	1
Gambusia holbrooki	.	4	3	1	1	.	1	.	36	26	3	.	75
Gobionellus boleosoma	.	10	45	54	43	16	3	49	27	60	80	222	609
Gobionellus oceanicus	.	.	.	.	1	.	2	.	.	.	.	1	4
Gobionellus shufeldti	.	.	2	.	.	.	1	2	2	.	.	.	7

Appendix AP01-01. (Continued)

Species	Month												Totals
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
	E=79	E=79	E=79	E=79	E=79	E=79	E=79	E=75	E=71	E=71	E=71	E=71	E=912
Gobiosoma bosc	.	2	102	1	1	.	9	.	4	9	5	12	145
Gobiosoma robustum	.	1	1	6	2	5	.	1	.	.	.	1	17
Gobiosoma spp.	.	.	.	.	.	.	.	.	.	.	.	1	1
Gymnura micrura	.	.	1	5	4	2	8	.	1	.	1	.	22
Halichoeres bivittatus	.	.	.	.	.	.	.	14	1	.	.	.	15
Harengula jaguana	.	.	.	113	190	8	190	26	357	1,905	64	67	2,920
Hemicaranx amblyrhynchus	.	.	.	.	.	1	.	1	2	1	.	.	5
Hippocampus erectus	1	.	.	1	1	2	.	.	.	.	.	.	5
Hyporhamphus meeki	.	.	.	.	.	.	.	.	.	4	7	4	15
Ictalurus furcatus	.	.	.	.	.	.	.	1	.	.	.	.	1
Ictalurus punctatus	.	1	20	2	1	13	382	21	30	191	2	.	663
Labidesthes sicculus	.	.	.	2	.	.	3	7	20	49	.	19	100
Lactophrys quadricornis	.	3	22	20	30	5	12	11	.	2	.	2	107
Lagodon rhomboides	370	973	2,862	2,345	1,948	1,897	1,670	1,669	1,251	1,926	926	867	18,704
Leiostomus xanthurus	2,815	8,459	12,612	6,495	3,070	828	774	312	623	867	468	298	37,621
Lepisosteus osseus	3	4	7	7	.	1	2	.	.	1	.	1	26
Lepisosteus platyrhincus	.	.	.	.	.	.	.	.	.	4	.	.	4
Lepomis macrochirus	5	21	3	3	10	.	271	27	28	47	5	4	424
Lepomis microlophus	1	4	1	.	4	8	4	18	25	69	3	9	146
Lepomis punctatus	.	.	.	.	1	1	1	7	.	.	9	.	19
Lepomis spp.	.	.	.	.	.	.	1	20	.	3	5	.	29
Limulus polyphemus	.	.	1	.	1	.	.	.	6	.	2	.	10

Appendix AP01-01. (Continued)

Species	Month												Totals
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
	E=79	E=79	E=79	E=79	E=79	E=79	E=79	E=75	E=71	E=71	E=71	E=71	E=912
Litopenaeus setiferus	.	.	19	17	139	4	32	598	286	156	129	49	1,429
Lobotes surinamensis	.	.	.	.	.	.	.	.	.	.	.	1	1
Lucania parva	231	46	225	2	.	.	130	14	42	35	8	1	734
Lutjanus griseus	.	.	.	.	.	.	.	40	25	57	3	.	125
Lutjanus synagris	.	.	.	.	.	.	6	12	7	9	7	2	43
Membras martinica	.	.	16	130	11	62	18	247	2	2	.	.	488
Menidia spp.	102	126	207	114	57	332	458	452	403	474	127	327	3,179
Menippe spp.	1	1	1	4	.	1	5	2	.	4	.	1	20
Menticirrhus americanus	1	8	1	10	5	14	99	37	66	105	58	27	431
Menticirrhus littoralis	.	.	.	.	.	1	.	4	1	1	1	.	8
Menticirrhus saxatilis	.	1	.	.	.	6	2	1	.	.	1	3	14
Menticirrhus spp.	.	.	.	.	.	1	.	.	.	.	.	.	1
Microgobius gulosus	1	2	.	7	6	20	22	6	11	9	1	2	87
Microgobius thalassinus	.	.	5	68	2	6	30	27	6	24	.	2	170
Micropogonias undulatus	80	6	1,013	794	267	334	345	47	110	3	50	43	3,092
Micropterus salmoides	.	1	1	.	11	7	24	4	13	6	4	3	74
Monacanthus ciliatus	.	.	.	.	.	.	3	.	.	.	.	2	5
Monacanthus hispidus	.	1	.	.	2	4	43	56	3	17	1	12	139
Morone saxatilis x chrysops	.	.	.	.	.	17	1	1	1	.	1	.	21
Moxostoma carinatum	.	.	.	.	.	.	.	1	.	.	.	.	1
Mugil cephalus	1,378	1,323	1,568	265	249	87	136	362	102	208	116	92	5,886
Mugil curema	5	2	194	52	23	88	20	53	161	26	49	24	697
Mycteroperca microlepis	.	.	.	.	.	.	2	1	6	2	.	.	11

Appendix AP01-01. (Continued)

Species	Month												Totals
	Jan	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**	**Oct**	**Nov**	**Dec**	
	E=79	**E=79**	**E=79**	**E=79**	**E=79**	**E=79**	**E=79**	**E=75**	**E=71**	**E=71**	**E=71**	**E=71**	**E=912**
Myrophis punctatus	246	3	.	.	.	.	.	.	1	.	.	.	250
Narcine brasiliensis	.	.	.	.	.	.	.	1	.	.	.	.	1
Nicholsina usta	.	.	.	.	.	.	.	1	.	1	.	.	2
Notemigonus crysoleucas	.	.	.	1	3	.	33	2	25	.	.	2	66
Notropis petersoni	5	3	.	.	.	.	.	.	.	.	.	.	8
Notropis spp.	.	.	13	10	.	406	478	314	253	648	279	159	2,560
Ogcocephalus radiatus	.	.	1	4	.	1	2	.	.	5	2	.	15
Oligoplites saurus	.	.	.	1	.	2	6	21	14	5	2	.	51
Ophichthus gomesi	.	.	.	.	.	.	1	.	1	.	.	.	2
Opisthonema oglinum	.	.	.	36	27	8	30	2	.	21	.	.	124
Opsanus beta	.	.	1	3	4	6	5	.	4	3	3	2	31
Opsopoeodus emiliae	1	.	.	.	.	.	.	.	.	.	.	.	1
Orthopristis chrysoptera	.	1	1	16	394	381	242	244	83	321	54	89	1,826
Paralichthys albigutta	8	12	29	12	21	16	34	17	11	7	16	12	195
Paralichthys lethostigma	1	2	14	7	17	13	8	4	12	5	10	.	93
Paralichthys squamilentus	.	.	5	1	1	.	.	.	.	.	.	.	7
Peprilus alepidotus	.	.	11	16	13	110	46	.	.	1	.	.	197
Peprilus burti	4	84	182	27	.	.	1	.	.	.	.	.	298
Percina nigrofasciata	.	.	.	.	.	.	1	.	.	.	.	.	1
Poecilia latipinna	.	.	2	1	1	.	.	.	1	10	.	1	16
Pogonias cromis	4	1	1	1	6	.	.	2	2	2	3	.	22
Polydactylus octonemus	.	.	.	.	.	.	.	.	.	1	.	.	1

Appendix AP01-01. (Continued)

Species	Month												Totals
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
	E=79	E=79	E=79	E=79	E=79	E=79	E=79	E=75	E=71	E=71	E=71	E=71	E=912
Pomatomus saltatrix	.	.	2	3	10	.	8	.	.	1	.	.	24
Pomoxis nigromaculatus	.	.	.	.	.	.	1	.	.	1	1	.	3
Porichthys plectrodon	.	.	.	1	1	20	41	5	2	1	.	.	71
Prionotus scitulus	7	6	2	31	1	9	18	12	5	20	12	4	127
Prionotus tribulus	4	8	28	8	2	5	7	7	2	29	16	4	120
Rachycentron canadum	.	.	.	.	.	.	.	1	.	.	.	.	1
Rhinoptera bonasus	.	.	3	2	5	2	.	.	.	13	.	.	25
Rhizoprionodon terraenovae	.	.	.	1	.	2	5	.	.	.	.	.	8
Sardinella aurita	.	.	2	.	.	.	1	1	1	4	.	.	9
Sciaenidae spp.	9	.	.	.	.	.	1	.	.	.	.	.	10
Sciaenops ocellatus	6	20	39	53	35	35	32	51	35	81	117	34	538
Scomberomorus maculatus	.	.	4	14	.	.	2	.	1	2	8	.	31
Selene vomer	.	.	.	1	1	.	8	2	3	2	1	1	19
Serraniculus pumilio	.	.	.	1	.	3	.	.	.	.	.	.	4
Serranus subligarius	.	.	.	.	1	.	.	.	.	.	.	4	5
Sphoeroides nephelus	.	.	1	1	9	4	7	.	3	6	3	3	37
Sphoeroides parvus	.	.	3	.	24	6	16	4	1	21	8	10	93
Sphyraena barracuda	.	.	.	.	.	.	.	.	1	.	.	1	2
Sphyraena borealis	.	.	2	.	.	.	.	.	.	.	.	.	2
Sphyraena spp.	.	.	.	.	.	.	1	.	.	.	.	.	1
Sphyrna tiburo	.	.	.	2	7	.	2	.	4	.	1	.	16
Stellifer lanceolatus	.	.	.	.	.	.	.	106	.	1	.	.	107
Stenotomus caprinus	.	.	.	.	5	.	.	.	.	.	.	.	5

Appendix AP01-01. (Continued)

Species	Month												Totals
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
	E=79	E=79	E=79	E=79	E=79	E=79	E=79	E=75	E=71	E=71	E=71	E=71	E=912
Stomolophus meleagris	.	1	.	.	.	.	3	.	.	1	.	.	5
Strongylura marina	.	.	5	3	4	17	7	5	27	13	21	14	116
Strongylura notata	.	.	.	.	.	1	.	8	6	.	.	.	15
Strongylura spp.	.	.	.	.	1	.	.	.	.	.	.	.	1
Symphurus parvus	.	.	1	.	.	.	.	.	.	.	.	.	1
Symphurus plagiusa	2	5	36	101	14	9	28	28	30	25	9	49	336
Syngnathus floridae	.	.	.	.	.	3	.	.	.	2	3	3	11
Syngnathus louisianae	1	1	4	1	3	8	17	21	4	6	5	1	72
Syngnathus scovelli	20	20	17	11	11	46	14	34	52	48	33	12	318
Synodus foetens	1	.	.	.	9	74	57	30	24	25	24	22	266
Trachinotus carolinus	.	.	.	1	.	1	67	361	12	1	15	1	459
Trachinotus falcatus	.	.	.	.	.	.	3	10	7	2	123	2	147
Trinectes maculatus	31	33	103	39	68	9	950	63	15	82	50	25	1,468
Urophycis floridana	27	21	75	30	.	.	.	.	.	.	.	1	154
Totals	**5,646**	**12,361**	**64,748**	**21,635**	**12,492**	**9,906**	**16,531**	**8,893**	**9,606**	**11,172**	**8,479**	**4,330**	**185,799**

Appendix AP01-02. Summary by gear, stratum, and zone of species collected during Apalachicola Bay stratified-random sampling, 2001. Sampling with 21.3-m bay seines was stratified by the presence or absence of bottom vegetation ('Veg' or 'Unveg') or the presence or absence of a shoreline ('Shore'). Sampling with 21.3-m river seine, 183-m haul seine, and 6.1-m trawl were not stratified. Sampling with 183-m purse seine was post-stratified by the presence or absence of bottom vegetation ('Veg' or 'Unveg'). Effort, or the total number of hauls, is labeled 'E'. Zones A and B are bay zones, and Zone F are riverine zones. Listing is sorted alphabetical by taxon.

Species	Gear and Strata								Zone			Totals
	21.3-m bay seine			21.3-m river seine	183-m haul seine	183-m purse seine		6.1-m otter trawl				
	Veg	Unveg	Shore			Veg	Unveg		A	B	F	
	E=78	E=55	E=107	E=168	E=216	E=10	E=50	E=228	E=324	E=336	E=252	E=912
Achirus lineatus	.	1	.	.	.	.	.	.	.	1	.	1
Acipenser oxyrhynchus	.	.	.	.	1	.	.	.	.	1	.	1
Adinia xenica	.	.	.	199	.	.	.	.	.	.	199	199
Aetobatis narinari	.	.	.	.	1	.	.	.	.	1	.	1
Alosa chrysochloris	.	.	.	.	22	.	.	.	22	.	.	22
Amia calva	.	.	.	1	.	.	.	.	.	.	1	1
Anchoa hepsetus	70	17	52	15	3	.	.	84	94	123	24	241
Anchoa mitchilli	122	164	2,405	1,174	.	.	.	12,427	4,995	3,421	7,876	16,292
Ancylopsetta quadrocellata	.	.	.	.	8	.	6	63	28	49	.	77
Anguilla rostrata	.	.	.	.	.	.	.	1	.	.	1	1
Archosargus probatocephalus	1	.	1	4	143	.	.	20	40	105	24	169
Arius felis	41	124	249	.	216	41	338	1,060	1,770	276	23	2,069
Astroscopus y-graecum	.	1	3	.	2	.	.	4	2	8	.	10
Atherinidae spp.	.	.	.	9	.	.	.	.	.	.	9	9
Bagre marinus	.	.	1	.	24	.	33	298	334	17	5	356
Bairdiella chrysoura	714	7	374	221	818	95	319	320	777	1,608	483	2,868
Bathygobius soporator	.	.	.	1	.	.	.	.	.	.	1	1
Bothidae spp.	.	.	1	.	.	.	.	.	.	1	.	1

Appendix AP01-02. (Continued)

Species	Gear and Strata								Zone			Totals
	21.3-m bay seine			21.3-m river seine	183-m haul seine	183-m purse seine		6.1-m otter trawl				
	Veg	Unveg	Shore			Veg	Unveg		A	B	F	
	E=78	E=55	E=107	E=168	E=216	E=10	E=50	E=228	E=324	E=336	E=252	E=912
Brevoortia spp.	1,268	38,424	6,649	5,794	4,534	.	75	2,733	51,188	157	8,132	59,477
Callinectes sapidus	45	103	135	478	182	7	18	265	549	144	540	1,233
Callinectes similis	1	.	1	1	1	.	.	71	63	9	3	75
Callinectes spp.	.	3	.	.	.	.	.	.	3	.	.	3
Caranx crysos	.	.	.	.	9	.	.	.	.	9	.	9
Caranx hippos	1	1	9	4	70	.	.	2	23	60	4	87
Carcharhinus leucas	.	.	.	.	1	.	.	.	1	.	.	1
Carpiodes cyprinus	.	.	.	1	.	.	.	.	.	.	1	1
Centropristis philadelphica	.	.	.	.	.	.	1	4	1	4	.	5
Centropristis striata	.	.	.	.	2	.	5	.	.	7	.	7
Chaetodipterus faber	.	.	.	.	.	3	5	22	14	11	5	30
Chasmodes saburrae	38	.	.	.	5	.	.	.	3	40	.	43
Chilomycterus schoepfi	8	1	.	.	105	60	28	16	30	187	1	218
Chloroscombrus chrysurus	2	.	1	.	136	4	9	57	91	118	.	209
Citharichthys macrops	.	.	.	.	5	.	.	12	6	11	.	17
Citharichthys spilopterus	2	.	1	5	31	1	3	25	40	23	5	68
Cynoscion arenarius	5	49	200	10	1	.	4	4,254	793	93	3,637	4,523
Cynoscion nebulosus	78	8	80	17	117	9	22	10	163	154	24	341
Cyprinidae spp.	.	.	.	22	.	.	.	3	.	.	25	25
Cyprinodon variegatus	.	.	1	147	3	.	.	.	1	3	147	151
Dasyatis sabina	1	5	9	3	896	5	157	61	466	660	11	1,137
Dasyatis say	2	.	.	.	88	4	6	5	8	97	.	105

Appendix AP01-02. (Continued)

Species	Gear and Strata								Zone			Totals
	21.3-m bay seine			21.3-m river seine	183-m haul seine	183-m purse seine		6.1-m otter trawl				
	Veg	Unveg	Shore			Veg	Unveg		A	B	F	
	E=78	E=55	E=107	E=168	E=216	E=10	E=50	E=228	E=324	E=336	E=252	E=912
Diplectrum bivittatum	1	.	.	.	2	.	.	12	11	4	.	15
Diplectrum formosum	.	.	.	.	2	.	.	1	.	3	.	3
Diplodus holbrooki	.	.	.	.	1	.	.	.	.	1	.	1
Dormitator maculatus	.	.	.	2	.	.	.	.	.	.	2	2
Dorosoma cepedianum	.	.	.	.	9	.	.	.	9	.	.	9
Dorosoma petenense	5	14	10	165	8	.	.	6	36	5	167	208
Echeneis naucrates	.	.	2	.	7	1	4	2	2	13	1	16
Elops saurus	.	5	.	.	105	9	25	.	93	51	.	144
Enneacanthus gloriosus	.	.	.	2	.	.	.	.	.	.	2	2
Esox niger	.	.	.	1	.	.	.	.	.	.	1	1
Etropus crossotus	.	16	13	.	207	.	3	530	550	216	3	769
Etropus microstomus	.	.	.	.	.	.	.	2	.	2	.	2
Eucinostomus gula	36	.	37	11	492	.	.	134	60	615	35	710
Eucinostomus harengulus	35	15	35	102	199	.	.	77	76	250	137	463
Eucinostomus spp.	1,330	34	511	764	.	.	.	215	367	1,562	925	2,854
Farfantepenaeus aztecus	40	48	49	1	16	.	.	376	404	118	8	530
Farfantepenaeus duorarum	48	1	12	7	2	.	.	124	96	75	23	194
Farfantepenaeus spp.	392	79	185	47	1	.	.	45	468	232	49	749
Fundulus chrysotus	.	.	.	22	.	.	.	.	.	.	22	22
Fundulus grandis	.	.	3	136	39	.	.	.	3	39	136	178
Fundulus majalis	.	.	7	30	61	.	.	.	11	57	30	98
Fundulus similis	.	.	.	1	.	.	.	.	.	.	1	1

Appendix AP01-02. (Continued)

Species	Gear and Strata								Zone			Totals
	21.3-m bay seine			21.3-m river seine	183-m haul seine	183-m purse seine		6.1-m otter trawl				
	Veg	Unveg	Shore			Veg	Unveg		A	B	F	
	E=78	E=55	E=107	E=168	E=216	E=10	E=50	E=228	E=324	E=336	E=252	E=912
Gambusia holbrooki	.	.	.	72	.	.	.	3	3	.	72	75
Gobionellus boleosoma	141	46	63	351	.	.	.	8	220	36	353	609
Gobionellus oceanicus	.	.	1	2	.	.	.	1	2	.	2	4
Gobionellus shufeldti	4	.	.	3	.	.	.	.	2	2	3	7
Gobiosoma bosc	12	4	5	119	.	.	.	5	18	4	123	145
Gobiosoma robustum	13	.	3	.	.	.	.	1	6	11	.	17
Gobiosoma spp.	.	.	.	.	.	.	.	1	.	.	1	1
Gymnura micrura	.	1	.	.	17	.	1	3	3	19	.	22
Halichoeres bivittatus	14	.	.	.	.	.	.	1	.	15	.	15
Harengula jaguana	110	15	341	.	2,336	52	63	3	590	2,330	.	2,920
Hemicaranx amblyrhynchus	.	.	.	.	3	.	.	2	3	2	.	5
Hippocampus erectus	2	.	.	.	.	.	.	3	1	4	.	5
Hyporhamphus meeki	.	.	.	.	15	.	.	.	5	10	.	15
Ictalurus furcatus	.	.	.	.	.	.	.	1	.	.	1	1
Ictalurus punctatus	.	.	.	.	.	.	.	663	.	.	663	663
Labidesthes sicculus	.	.	.	100	.	.	.	.	.	.	100	100
Lactophrys quadricornis	3	.	.	.	15	45	38	6	1	106	.	107
Lagodon rhomboides	5,363	770	1,630	852	9,127	88	345	529	7,539	10,277	888	18,704
Leiostomus xanthurus	6,153	3,841	8,612	3,779	2,988	21	140	12,087	17,406	10,703	9,512	37,621
Lepisosteus osseus	.	.	.	4	3	.	12	7	10	7	9	26
Lepisosteus platyrhincus	.	.	.	4	.	.	.	.	.	.	4	4
Lepomis macrochirus	.	.	.	423	.	.	.	1	.	.	424	424

Appendix AP01-02. (Continued)

Species	Gear and Strata								Zone			Totals
	21.3-m bay seine			21.3-m river seine	183-m haul seine	183-m purse seine		6.1-m otter trawl				
	Veg	Unveg	Shore			Veg	Unveg		A	B	F	
	E=78	E=55	E=107	E=168	E=216	E=10	E=50	E=228	E=324	E=336	E=252	E=912
Lepomis microlophus	.	.	.	144	.	.	.	2	.	.	146	146
Lepomis punctatus	.	.	.	19	.	.	.	.	.	.	19	19
Lepomis spp.	1	.	2	26	.	.	.	.	1	2	26	29
Limulus polyphemus	.	.	1	.	9	.	.	.	.	10	.	10
Litopenaeus setiferus	34	56	557	39	138	.	1	604	906	32	491	1,429
Lobotes surinamensis	.	.	.	.	1	.	.	.	1	.	.	1
Lucania parva	281	.	13	430	.	.	.	10	20	274	440	734
Lutjanus griseus	29	.	36	52	3	.	.	5	17	52	56	125
Lutjanus synagris	12	.	5	.	4	.	1	21	20	23	.	43
Membras martinica	116	177	179	16	.	.	.	.	237	235	16	488
Menidia spp.	394	114	656	1,924	1	.	.	90	743	422	2,014	3,179
Menippe spp.	1	2	1	1	1	.	1	13	3	16	1	20
Menticirrhus americanus	4	7	149	.	102	.	3	166	229	156	46	431
Menticirrhus littoralis	.	1	.	.	7	.	.	.	.	8	.	8
Menticirrhus saxatilis	3	1	2	.	8	.	.	.	1	13	.	14
Menticirrhus spp.	.	1	.	.	.	.	.	.	1	.	.	1
Microgobius gulosus	30	5	36	11	.	.	.	5	66	9	12	87
Microgobius thalassinus	9	18	11	1	.	.	.	131	118	49	3	170
Micropogonias undulatus	10	11	16	32	628	17	60	2,318	2,452	196	444	3,092
Micropterus salmoides	.	.	.	74	.	.	.	.	.	.	74	74
Monacanthus ciliatus	2	.	.	.	.	.	3	.	.	5	.	5
Monacanthus hispidus	50	2	9	.	25	23	15	15	14	124	1	139

Appendix AP01-02. (Continued)

Species	Gear and Strata								Zone			Totals
	21.3-m bay seine			21.3-m river seine	183-m haul seine	183-m purse seine		6.1-m otter trawl				
	Veg	Unveg	Shore			Veg	Unveg		A	B	F	
	E=78	E=55	E=107	E=168	E=216	E=10	E=50	E=228	E=324	E=336	E=252	E=912
Morone saxatilis x chrysops	.	.	.	20	.	.	.	1	.	.	21	21
Moxostoma carinatum	.	.	.	1	.	.	.	.	.	.	1	1
Mugil cephalus	156	43	1,888	2,581	1,218	.	.	.	2,601	704	2,581	5,886
Mugil curema	.	2	105	162	428	.	.	.	214	321	162	697
Mycteroperca microlepis	1	.	.	.	8	1	1	.	9	2	.	11
Myrophis punctatus	.	3	.	1	.	.	.	246	240	3	7	250
Narcine brasiliensis	.	.	.	.	.	.	1	.	.	1	.	1
Nicholsina usta	2	.	.	.	.	.	.	.	1	1	.	2
Notemigonus crysoleucas	.	.	.	66	.	.	.	.	.	.	66	66
Notropis petersoni	.	.	.	7	.	.	.	1	.	.	8	8
Notropis spp.	.	.	.	2,525	.	.	.	35	.	.	2,560	2,560
Ogcocephalus radiatus	.	.	.	.	8	1	.	6	.	15	.	15
Oligoplites saurus	8	3	19	9	8	.	4	.	14	28	9	51
Ophichthus gomesi	.	.	.	.	.	.	.	2	1	.	1	2
Opisthonema oglinum	.	24	2	.	37	8	51	2	29	95	.	124
Opsanus beta	2	.	.	1	15	1	6	6	7	22	2	31
Opsopoeodus emiliae	.	.	.	1	.	.	.	.	.	.	1	1
Orthopristis chrysoptera	502	52	241	.	642	8	87	294	596	1,229	1	1,826
Paralichthys albigutta	8	23	14	6	110	1	20	13	47	141	7	195
Paralichthys lethostigma	.	1	3	15	39	.	4	31	40	10	43	93
Paralichthys squamilentus	.	5	.	.	1	.	.	1	6	1	.	7

Appendix AP01-02. (Continued)

Species	Gear and Strata								Zone			Totals
	21.3-m bay seine			21.3-m river seine	183-m haul seine	183-m purse seine		6.1-m otter trawl				
	Veg	Unveg	Shore			Veg	Unveg		A	B	F	
	E=78	E=55	E=107	E=168	E=216	E=10	E=50	E=228	E=324	E=336	E=252	E=912
Peprilus alepidotus	.	1	.	.	83	.	104	9	50	147	.	197
Peprilus burti	.	1	.	.	.	.	4	293	35	178	85	298
Percina nigrofasciata	.	.	.	1	.	.	.	.	.	.	1	1
Poecilia latipinna	.	.	1	15	.	.	.	.	1	.	15	16
Pogonias cromis	.	.	1	.	21	.	.	.	16	6	.	22
Polydactylus octonemus	.	.	.	.	1	.	.	.	.	1	.	1
Pomatomus saltatrix	.	.	.	.	21	1	2	.	11	13	.	24
Pomoxis nigromaculatus	.	.	.	3	.	.	.	.	.	.	3	3
Porichthys plectrodon	.	.	.	.	.	.	.	71	61	9	1	71
Prionotus scitulus	.	7	.	.	28	.	1	91	30	96	1	127
Prionotus tribulus	4	11	17	2	10	.	3	73	82	26	12	120
Rachycentron canadum	.	.	.	.	.	.	1	.	.	1	.	1
Rhinoptera bonasus	.	.	.	.	21	.	4	.	21	4	.	25
Rhizoprionodon terraenovae	.	.	.	.	4	.	4	.	.	8	.	8
Sardinella aurita	.	.	1	.	5	1	1	1	2	6	1	9
Sciaenidae spp.	.	.	.	.	.	.	.	10	1	9	.	10
Sciaenops ocellatus	14	12	54	10	443	.	.	5	352	176	10	538
Scomberomorus maculatus	.	.	.	.	21	3	7	.	.	31	.	31
Selene vomer	.	.	1	.	12	1	2	3	5	14	.	19
Serraniculus pumilio	.	.	.	.	.	.	.	4	.	4	.	4
Serranus subligarius	4	.	.	.	.	.	.	1	1	4	.	5
Sphoeroides nephelus	17	1	4	4	5	.	.	6	7	24	6	37

Appendix AP01-02. (Continued)

Species	Gear and Strata								Zone			Totals
	21.3-m bay seine			21.3-m river seine	183-m haul seine	183-m purse seine		6.1-m otter trawl				
	Veg	Unveg	Shore			Veg	Unveg		A	B	F	
	E=78	E=55	E=107	E=168	E=216	E=10	E=50	E=228	E=324	E=336	E=252	E=912
Sphoeroides parvus	9	27	13	7	32	.	.	5	41	45	7	93
Sphyraena barracuda	.	.	.	.	2	.	.	.	2	.	.	2
Sphyraena borealis	.	2	.	.	.	.	.	.	.	2	.	2
Sphyraena spp.	.	.	.	.	.	.	.	1	1	.	.	1
Sphyrna tiburo	.	.	.	.	13	.	3	.	6	10	.	16
Stellifer lanceolatus	1	.	.	.	.	.	.	106	.	1	106	107
Stenotomus caprinus	.	.	.	.	.	.	.	5	1	4	.	5
Stomolophus meleagris	.	.	.	.	4	.	.	1	2	3	.	5
Strongylura marina	9	3	30	9	65	.	.	.	15	92	9	116
Strongylura notata	.	.	9	.	6	.	.	.	2	13	.	15
Strongylura spp.	1	.	.	.	.	.	.	.	.	1	.	1
Symphurus parvus	.	.	.	.	.	.	.	1	1	.	.	1
Symphurus plagiusa	6	24	33	39	6	.	1	227	221	52	63	336
Syngnathus floridae	10	.	.	.	.	.	.	1	5	6	.	11
Syngnathus louisianae	25	4	7	2	.	.	.	34	29	38	5	72
Syngnathus scovelli	196	4	72	29	.	.	.	17	105	178	35	318
Synodus foetens	19	11	28	7	44	.	1	156	108	123	35	266
Trachinotus carolinus	.	.	1	.	457	.	1	.	8	451	.	459
Trachinotus falcatus	.	.	3	.	144	.	.	.	4	143	.	147
Trinectes maculatus	.	2	2	322	115	.	1	1,026	32	134	1,302	1,468
Urophycis floridana	8	1	6	.	.	.	.	139	42	86	26	154
Totals	**18,079**	**44,459**	**25,919**	**23,720**	**28,083**	**511**	**2,058**	**42,970**	**99,434**	**40,505**	**45,861**	**185,799**

Southern Indian River Lagoon

This section summarizes the Fisheries-Independent Monitoring (FIM) program data collected in the southern Indian River Lagoon (Vero Beach south to Jupiter Inlet; Tequesta Field Laboratory). Sampling was conducted in three geographic zones, including two estuarine zones (Zones I and J) and one riverine zone (Zone T; Figure TQ01-01). For a more detailed description of the habitats of the southern Indian River Lagoon system and rationale for the FIM program initiating 183-m haul seine sampling there, see the Study Area section of the FIM program 1997 Annual Data Summary Report.

The FIM program has been conducting sampling in the southern Indian River Lagoon system since January 1997. Sampling sites were randomly selected, regardless of habitat type. Four samples per month were collected in Zones I and J. In April 1998, the FIM program expanded sampling to include the St. Lucie River (8 samples/month; Zone T) because of an increase in the incidence of lesioned fish in this system. All sampling methods were the same as those described in the Methods section of this report.

Stratified-Random Sampling

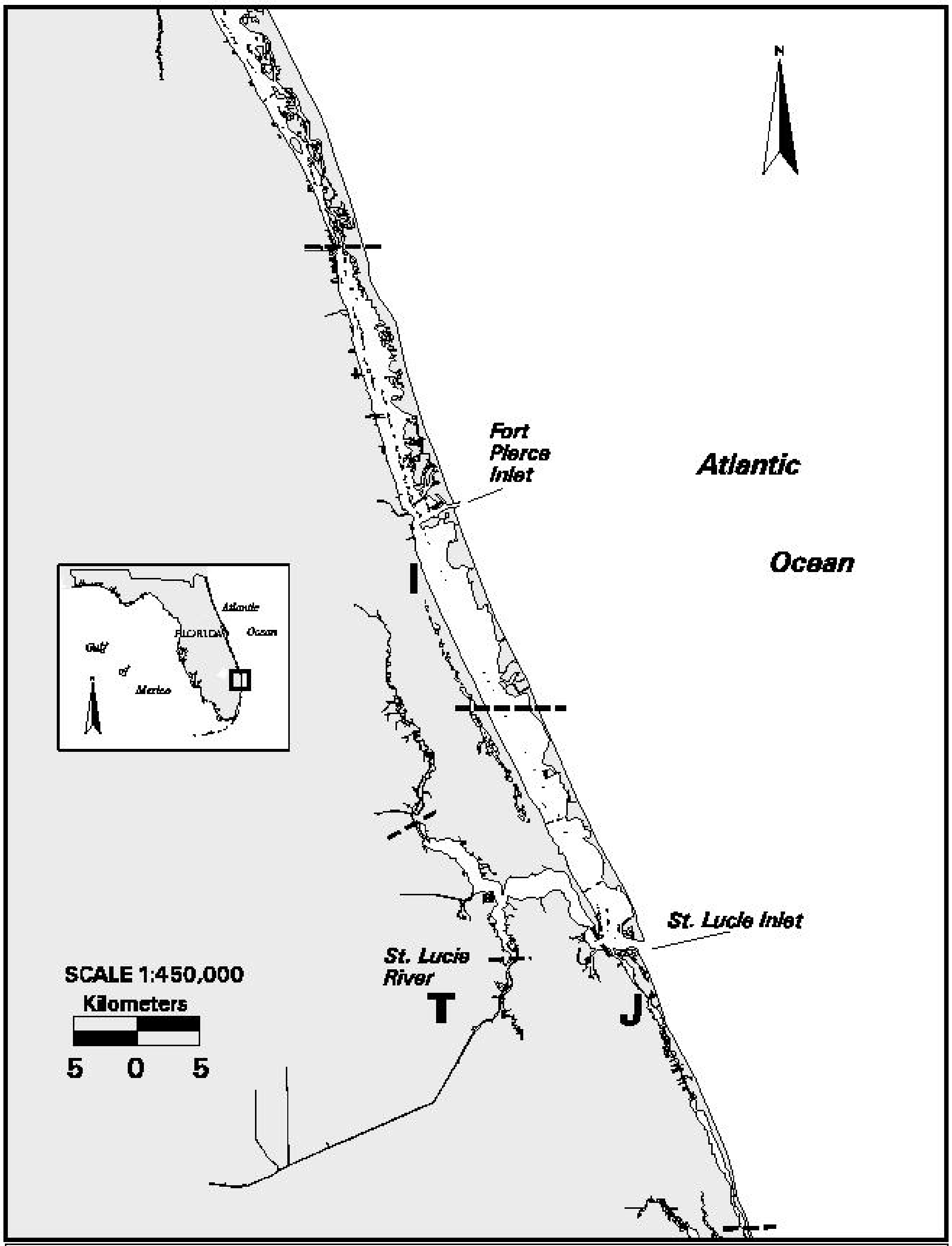
183-m haul seines. A total of 17,034 fishes and selected invertebrates were collected in 192 samples, representing 109 taxa (Table TQ01-01, Appendices TQ01-01, TQ01-02). The total number of individuals collected in each of the three zones was very similar despite differences in effort. Samples from Zones I and J (n=48 hauls per zone) contained 6,541 and 5,211 individuals, respectively. In Zone T, 5,282 individuals were collected from 96 samples. Monthly catch totals (all species) ranged from 839 to 2,738 specimens, with peak catches occurring from October through February, and the lowest monthly catch being recorded in June.

The ten dominant taxa (n=12,853) collected in the 183-m haul seine accounted for 75% of the total number of animals collected during Tequesta SRS in 2001 (Table TQ01-02). *Lagodon rhomboides* (n=3,981) was the most abundant species collected and occurred in 41% of the samples. Other abundant species included *Diapterus auratus* (n=3,550), *Mugil curema* (n=1,309), *Centropomus undecimalis* (n=711), *Archosargus probatocephalus* (n=705), *Arius felis* (n=614), *Mugil cephalus* (n=599), *Dasyatis sabina* (n=498), *Elops saurus* (n=455), and *Brevoortia* spp. (n=431).

Twenty-eight Selected Taxa (n=4,602) accounted for 27% of the overall 183-m haul seine catch (Table TQ01-03). Four species, *M. curema* (n=1,309), *C. undecimalis* (n=711), *A. probatocephalus* (n=705), and *M. cephalus* (n=599), accounted for 72% of the Selected Taxa collected. All four of these species occurred in >50% of the hauls. Other abundant Selected Taxa in the 183-m haul seine samples included, *E. saurus* (n=455), *Micropogonias undulatus* (n=239), *Callinectes sapidus* (n=192), and *Lutjanus griseus* (n=76).

References

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



N
Fort
Pierce
Inlet
Atlantic
Ocean
I
St. Lucie Inlet
St. Lucie
River
T
J
SCALE 1:450,000
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5 0 5

Table TQ01-01. Summary of catch and effort data for southern Indian River Lagoon stratified-random sampling, 2001.

	183-m haul seine	
Zone	**Animals**	**Hauls**
I	6,541	48
J	5,211	48
T	5,282	96
Totals	**17,034**	**192**

Table TQ01-02. Catch statistics for 10 dominant taxa collected in 192 183-m haul seine samples during southern Indian River Lagoon stratified-random sampling, 2001. Percent (%) is the percent of the total catch represented by that taxon; percent occurrence (% Occur) is the percentage of samples in which that taxon was collected; CV is the coefficient of variation of the mean. Taxa are ranked in order of decreasing mean catch-per-unit-effort.

Species	**Number**		**%**	**Catch-per-unit-effort (animals/set)**				**Standard Length (mm)**			
	No.	**%**	**Occur**	**Mean**	**Stderr**	**CV**	**Max**	**Mean**	**Stderr**	**Min**	**Max**
Lagodon rhomboides	3,981	23.4	41.1	20.73	5.24	350.48	778.00	107	0.50	52	272
Diapterus auratus	3,550	20.8	67.7	18.49	3.24	243.14	334.00	138	0.76	48	305
Mugil curema	1,309	7.7	58.9	6.82	1.94	394.90	348.00	208	1.44	88	407
Centropomus undecimalis	711	4.2	65.6	3.70	0.47	174.72	47.00	426	5.86	110	984
Archosargus probatocephalus	705	4.1	70.3	3.67	0.40	151.09	32.00	244	2.95	45	417
Arius felis	614	3.6	46.4	3.20	1.11	480.02	207.00	263	2.68	92	436
Mugil cephalus	599	3.5	51.6	3.12	0.49	215.64	60.00	288	2.56	112	578
Dasyatis sabina	498	2.9	53.6	2.59	0.37	197.82	46.00	230	2.30	75	378
Elops saurus	455	2.7	28.6	2.37	0.75	440.53	106.00	325	3.76	143	562
Brevoortia spp.	431	2.5	5.7	2.24	2.11	1,305.20	406.00	109	1.30	88	352
Subtotal	12,853	75.4	.	.	.	.	.	.	.	45	984
Totals	**17,034**	**100.0**	**.**	**88.72**	**9.37**	**146.37**	**1,281.00**	**.**	**.**	**25**	**999**

Table TQ01-03. Catch statistics for Selected Taxa collected in 192 183-m haul seine samples during southern Indian River Lagoon stratified-random sampling, 2001. 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
Mugil curema	1,309	7.7	58.9	6.82	1.94	394.90	348.00	208	1.44	88	407
Centropomus undecimalis	711	4.2	65.6	3.70	0.47	174.72	47.00	426	5.86	110	984
Archosargus probatocephalus	705	4.1	70.3	3.67	0.40	151.09	32.00	244	2.95	45	417
Mugil cephalus	599	3.5	51.6	3.12	0.49	215.64	60.00	288	2.56	112	578
Elops saurus	455	2.7	28.6	2.37	0.75	440.53	106.00	325	3.76	143	562
Micropogonias undulatus	239	1.4	16.1	1.24	0.43	474.36	62.00	280	3.17	150	391
Callinectes sapidus	192	1.1	16.7	1.00	0.50	693.27	89.00	88	1.60	48	172
Lutjanus griseus	76	0.4	14.1	0.40	0.11	371.90	13.00	161	5.27	86	276
Menticirrhus americanus	47	0.3	5.7	0.24	0.13	717.67	22.00	250	6.50	145	343
Sciaenops ocellatus	41	0.2	9.9	0.21	0.06	404.13	9.00	246	21.99	103	583
Lutjanus analis	37	0.2	9.9	0.19	0.05	363.79	6.00	153	6.74	87	244
Leiostomus xanthurus	31	0.2	4.7	0.16	0.06	552.51	8.00	112	4.21	81	175
Lutjanus synagris	28	0.2	6.3	0.15	0.05	470.49	6.00	113	3.91	89	178
Pogonias cromis	26	0.2	6.8	0.14	0.05	485.27	6.00	247	11.06	168	386

Table TQ01-03. (Continued)

Species	Number		%	Catch-per-unit-effort (animals/set)				Standard Length (mm)			
	No.	%	Occur	Mean	Stderr	CV	Max	Mean	Stderr	Min	Max
Cynoscion nebulosus	18	0.1	6.3	0.09	0.03	465.09	4.00	262	29.02	90	480
Paralichthys albigutta	18	0.1	6.8	0.09	0.03	438.73	4.00	217	22.55	74	471
Albula vulpes	17	0.1	1.6	0.09	0.07	1,088.75	13.00	208	10.58	126	305
Panulirus argus	16	0.1	2.1	0.08	0.06	1,058.70	12.00	56	6.15	25	96
Trachinotus falcatus	8	0.0	2.1	0.04	0.02	808.33	4.00	151	27.56	87	305
Mycteroperca microlepis	7	0.0	3.1	0.04	0.02	586.90	2.00	166	15.87	117	231
Megalops atlanticus	6	0.0	1.0	0.03	0.02	1,030.63	4.00	411	73.76	211	684
Scomberomorus maculatus	5	0.0	2.6	0.03	0.01	613.15	1.00	298	22.20	253	376
Paralichthys lethostigma	4	0.0	1.6	0.02	0.01	844.82	2.00	236	76.12	79	371
Pomatomus saltatrix	3	0.0	1.6	0.02	0.01	795.80	1.00	374	45.11	305	459
Farfantepenaeus duorarum	1	0.0	0.5	0.01	0.01	1,385.64	1.00	38	.	38	38
Epinephelus itajara	1	0.0	0.5	0.01	0.01	1,385.64	1.00	103	.	103	103
Trachinotus carolinus	1	0.0	0.5	0.01	0.01	1,385.64	1.00	348	.	348	348
Cynoscion arenarius	1	0.0	0.5	0.01	0.01	1,385.64	1.00	248	.	248	248
Totals	**4,602**	**27.0**	**99.0**	**23.97**	**2.58**	**149.18**	**356.00**	**.**	**.**	**25**	**984**

Appendix TQ01-01. Monthly summary of species collected during southern Indian River Lagoon stratified-random sampling, 2001. Effort, or total number of hauls, is labeled 'E'. Listing is sorted alphabetically by taxon.

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=16	E=16	E=16	E=192
Achirus lineatus	.	1	1	1	.	.	.	.	.	.	.	.	3
Aetobatis narinari	.	.	.	.	.	.	.	.	.	.	.	1	1
Albula vulpes	13	.	4	.	.	.	.	.	.	.	.	.	17
Archosargus probatocephalus	98	75	49	49	66	26	57	83	61	34	57	50	705
Archosargus rhomboidalis	3	21	44	11	.	.	5	19	4	25	2	9	143
Arius felis	39	28	25	46	7	26	50	46	17	234	42	54	614
Bagre marinus	.	.	.	2	.	3	.	2	.	.	.	.	7
Bairdiella chrysoura	32	6	15	29	1	.	.	12	1	21	1	.	118
Bothidae spp.	.	.	1	.	.	.	.	.	.	.	.	.	1
Brevoortia spp.	4	1	2	3	.	.	408	.	.	.	2	11	431
Calamus arctifrons	.	.	.	.	.	.	.	2	.	.	.	.	2
Callinectes sapidus	5	2	3	5	94	34	40	2	1	3	.	3	192
Caranx bartholomaei	.	.	.	.	.	1	.	.	1	2	.	.	4
Caranx crysos	.	.	.	.	.	.	.	.	.	.	1	.	1
Caranx hippos	23	51	15	15	4	12	9	9	3	12	9	26	188
Centropomus parallelus	.	.	.	.	.	.	.	.	2	14	.	9	25
Centropomus undecimalis	22	85	45	69	60	25	69	73	48	67	57	91	711
Chaetodipterus faber	1	4	.	.	1	.	1	3	3	2	1	1	17
Chilomycterus schoepfi	1	13	18	9	20	4	14	5	1	15	12	16	128
Citharichthys macrops	.	.	2	.	.	.	.	.	.	.	.	.	2
Citharichthys spilopterus	.	.	1	1	2	.	1	8	2	8	.	.	23
Cynoscion arenarius	.	.	.	.	1	.	.	.	.	.	.	.	1

Appendix TQ01-01. (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=16	E=16	E=16	E=192
Cynoscion nebulosus	2	6	3	.	.	.	.	.	1	4	1	1	18
Cynoscion spp.	.	.	.	2	.	.	.	.	.	.	.	.	2
Dasyatis americana	.	.	1	1	.	.	.	.	.	.	.	.	2
Dasyatis sabina	28	60	23	40	23	80	44	70	24	39	30	37	498
Dasyatis say	.	1	7	2	9	1	3	1	1	10	2	2	39
Diapterus auratus	27	293	182	680	277	305	71	148	137	206	310	914	3,550
Diapterus plumieri	.	.	.	5	1	.	.	15	2	59	8	47	137
Diodon hystrix	.	.	.	.	.	1	3	.	.	.	.	.	4
Elops saurus	22	229	48	41	5	11	6	33	6	13	11	30	455
Epinephelus itajara	.	.	.	.	1	.	.	.	.	.	.	.	1
Eucinostomus argenteus	.	.	.	.	.	.	.	.	.	.	.	2	2
Eucinostomus gula	29	38	44	84	2	18	2	18	15	7	2	7	266
Eucinostomus harengulus	3	257	1	.	67	19	1	.	.	.	.	.	348
Eucinostomus jonesi	.	.	.	5	.	.	.	.	.	.	.	.	5
Eucinostomus melanopterus	2	.	.	.	.	.	.	.	.	.	.	.	2
Eucinostomus spp.	9	1	10	.	.	.	.	.	.	.	.	.	20
Farfantepenaeus duorarum	.	.	.	.	1	.	.	.	.	.	.	.	1
Gambusia holbrooki	2	.	.	.	.	.	.	.	.	.	.	.	2
Gerres cinereus	59	1	4	.	2	.	6	1	1	.	1	12	87
Gobiesox strumosus	.	.	1	.	.	.	.	.	.	.	.	.	1
Gymnura micrura	.	1	1	2	.	1	.	1	.	.	2	3	11
Haemulon aurolineatum	.	.	.	.	.	.	.	1	.	.	.	.	1
Haemulon parrai	.	.	.	.	.	.	.	.	.	15	.	.	15

Appendix TQ01-01. (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=16	E=16	E=16	E=192
Haemulon plumieri	.	.	2	1	1	2	.	.	6	188	.	.	200
Haemulon sciurus	.	.	3	.	.	.	.	.	5	71	1	.	80
Harengula jaguana	261	.	18	31	.	.	.	.	1	1	.	.	312
Hemiramphus brasiliensis	.	1	.	.	.	.	.	.	.	.	.	.	1
Hippocampus erectus	.	.	.	1	1	.	.	.	.	.	.	.	2
Lachnolaimus maximus	.	.	.	.	.	.	.	1	.	13	.	.	14
Lactophrys quadricornis	1	.	.	.	.	.	.	1	.	3	1	.	6
Lactophrys trigonus	.	1	3	.	3	.	.	2	1	1	3	2	16
Lagodon rhomboides	123	148	151	150	228	154	203	487	459	1202	317	359	3,981
Leiostomus xanthurus	.	.	.	10	6	2	8	1	.	4	.	.	31
Lepisosteus osseus	.	.	.	.	.	.	.	.	.	.	1	.	1
Lepisosteus platostomus	.	.	.	.	.	.	.	1	.	.	.	.	1
Lepisosteus platyrhincus	.	.	.	.	.	.	.	.	3	.	.	.	3
Limulus polyphemus	1	.	2	1	.	.	.	.	.	.	.	.	4
Lobotes surinamensis	2	.	.	.	.	.	.	.	.	.	.	1	3
Lutjanus analis	.	.	8	5	.	.	2	3	2	6	8	3	37
Lutjanus griseus	1	.	.	6	1	4	6	22	14	13	8	1	76
Lutjanus synagris	.	.	2	10	.	1	3	1	2	1	2	6	28
Megalops atlanticus	.	.	.	.	.	.	.	2	4	.	.	.	6
Menticirrhus americanus	7	.	8	22	2	3	.	1	.	.	2	2	47
Micropogonias undulatus	1	62	2	23	7	3	.	37	18	25	19	42	239
Monacanthus ciliatus	.	.	2	.	.	.	2	.	1	5	.	.	10
Monacanthus hispidus	.	1	.	.	.	.	.	.	.	36	.	.	37

Appendix TQ01-01. (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=16**	**E=16**	**E=16**	**E=192**
Micropogonias undulatus	1	62	2	23	7	3	.	37	18	25	19	42	239
Monacanthus ciliatus	.	.	2	.	.	.	2	.	1	5	.	.	10
Monacanthus hispidus	.	1	.	.	.	.	.	.	.	36	.	.	37
Mugil cephalus	72	59	46	123	17	27	28	30	49	64	31	53	599
Mugil curema	552	111	134	104	70	25	35	15	59	66	70	68	1,309
Mycteroperca microlepis	.	.	.	.	.	1	1	2	1	.	2	.	7
Myliobatis freminvillei	1	.	.	.	.	.	.	.	.	.	.	.	1
Nicholsina usta	.	4	7	1	.	9	8	.	2	32	.	.	63
Oligoplites saurus	.	14	.	4	.	1	.	2	.	.	.	7	28
Opisthonema oglinum	.	2	1	.	.	.	.	.	.	3	.	.	6
Opsanus tau	1	.	.	1	.	.	.	1	.	2	.	.	5
Orthopristis chrysoptera	2	4	3	.	.	1	12	14	12	49	42	85	224
Panulirus argus	.	.	.	3	.	.	.	.	1	12	.	.	16
Paralichthys albigutta	.	2	.	1	1	1	3	1	.	8	1	.	18
Paralichthys lethostigma	.	.	1	.	3	.	.	.	.	.	.	.	4
Poeciliidae spp.	1	.	.	.	.	.	.	.	.	.	.	.	1
Pogonias cromis	1	3	6	2	.	.	1	5	.	1	6	1	26
Pomatomus saltatrix	.	.	.	.	.	1	.	.	.	2	.	.	3
Prionotus scitulus	3	1	4	.	4	.	2	.	.	.	.	.	14
Prionotus tribulus	.	.	.	2	.	.	.	.	.	.	.	.	2
Sciaenops ocellatus	.	.	3	4	9	4	2	4	3	5	5	2	41
Scomberomorus maculatus	.	2	.	.	.	.	1	.	.	2	.	.	5
Scorpaena brasiliensis	.	.	2	.	.	.	.	.	.	1	.	.	3

Appendix TQ01-01. (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=16	E=16	E=16	E=192
Scorpaena grandicornis	.	.	1	.	.	.	.	1	.	1	2	.	5
Scorpaena plumieri	.	.	.	.	.	.	2	.	.	7	1	.	10
Selene vomer	1	23	39	22	11	2	35	22	17	51	27	49	299
Sparisoma chrysopterum	.	.	.	.	.	.	.	.	1	27	.	.	28
Sparisoma radians	.	.	.	.	.	.	.	.	.	1	.	.	1
Sparisoma rubripinne	.	.	.	.	.	.	1	.	1	.	.	.	2
Sphoeroides nephelus	7	2	4	7	3	2	3	3	5	15	17	15	83
Sphoeroides spengleri	4	3	7	.	.	.	.	.	.	1	4	1	20
Sphoeroides testudineus	3	14	16	10	22	20	12	5	4	7	8	7	128
Sphyraena barracuda	1	2	7	6	1	2	3	21	7	14	9	17	90
Sphyrna tiburo	.	.	.	.	.	.	.	.	.	.	.	1	1
Strongylura marina	.	1	.	1	.	.	.	.	.	.	.	.	2
Strongylura notata	6	2	.	.	.	2	.	.	1	4	4	2	21
Symphurus plagiusa	.	.	.	.	.	.	1	.	.	.	.	.	1
Syngnathus louisianae	.	.	1	.	.	.	.	.	.	.	.	.	1
Synodus foetens	.	.	1	.	1	.	.	2	.	4	.	.	8
Tilapia melanotheron	.	.	.	.	.	.	.	.	1	.	.	.	1
Tilapia spp.	.	.	.	.	.	.	1	.	.	.	.	.	1
Trachinotus carolinus	.	.	.	.	1	.	.	.	.	.	.	.	1
Trachinotus falcatus	.	.	1	.	.	4	.	3	.	.	.	.	8
Trichiurus lepturus	.	.	.	.	.	.	.	.	.	.	.	1	1
Trinectes maculatus	6	.	.	1	.	1	.	2	.	.	.	1	11
Totals	**1,482**	**1,636**	**1,035**	**1,654**	**1,036**	**839**	**1,165**	**1,244**	**1,011**	**2,738**	**1,142**	**2,052**	**17,034**

Appendix TQ01-02. Summary by gear, stratum, and zone of species collected during southern Indian River Lagoon stratified-random sampling, 2001. These data were post-stratified by the presence or absence of overhanging shoreline vegetation (Over or Nonover). Effort, or the total number of hauls, is labeled 'E'. Listing is sorted alphabetical by taxon.

Species	Gear and Strata		Zone			Totals
	183-m haul seine					
	Over	Nonover	I	J	T	
	E=138	E=54	E=48	E=48	E=96	E=192
Achirus lineatus	2	1	1	.	2	3
Aetobatis narinari	1	.	.	1	.	1
Albula vulpes	4	13	.	.	17	17
Archosargus probatocephalus	569	136	205	192	308	705
Archosargus rhomboidalis	128	15	90	53	.	143
Arius felis	509	105	333	82	199	614
Bagre marinus	7	.	2	.	5	7
Bairdiella chrysoura	66	52	52	34	32	118
Bothidae spp.	1	.	.	.	1	1
Brevoortia spp.	423	8	420	7	4	431
Calamus arctifrons	.	2	.	2	.	2
Callinectes sapidus	137	55	5	7	180	192
Caranx bartholomaei	3	1	.	4	.	4
Caranx crysos	1	.	.	.	1	1
Caranx hippos	167	21	70	53	65	188
Centropomus parallelus	23	2	.	7	18	25
Centropomus undecimalis	577	134	333	174	204	711
Chaetodipterus faber	11	6	8	5	4	17
Chilomycterus schoepfi	94	34	25	81	22	128
Citharichthys macrops	2	.	1	.	1	2
Citharichthys spilopterus	21	2	1	13	9	23
Cynoscion arenarius	1	.	.	.	1	1
Cynoscion nebulosus	12	6	8	6	4	18
Cynoscion spp.	2	.	.	.	2	2
Dasyatis americana	2	.	.	.	2	2
Dasyatis sabina	379	119	36	81	381	498
Dasyatis say	33	6	6	32	1	39
Diapterus auratus	3,103	447	1,296	1,042	1,212	3,550

Appendix TQ01-02. (Continued)

Species	Gear and Strata 183-m haul seine		Zone			Totals
	Over	Nonover	I	J	T	
	E=138	E=54	E=48	E=48	E=96	E=192
Diapterus plumieri	88	49	1	6	130	137
Diodon hystrix	4	.	.	4	.	4
Elops saurus	328	127	90	116	249	455
Epinephelus itajara	.	1	1	.	.	1
Eucinostomus argenteus	2	.	.	2	.	2
Eucinostomus gula	201	65	60	158	48	266
Eucinostomus harengulus	311	37	4	6	338	348
Eucinostomus jonesi	4	1	.	1	4	5
Eucinostomus melanopterus	.	2	.	.	2	2
Eucinostomus spp.	14	6	.	3	17	20
Farfantepenaeus duorarum	1	.	.	1	.	1
Gambusia holbrooki	2	.	2	.	.	2
Gerres cinereus	72	15	7	59	21	87
Gobiesox strumosus	1	.	.	.	1	1
Gymnura micrura	7	4	3	4	4	11
Haemulon aurolineatum	.	1	1	.	.	1
Haemulon parrai	15	.	2	13	.	15
Haemulon plumieri	193	7	1	199	.	200
Haemulon sciurus	75	5	2	78	.	80
Harengula jaguana	51	261	32	.	280	312
Hemiramphus brasiliensis	.	1	.	1	.	1
Hippocampus erectus	2	.	.	.	2	2
Lachnolaimus maximus	14	.	1	13	.	14
Lactophrys quadricornis	4	2	.	6	.	6
Lactophrys trigonus	14	2	5	11	.	16
Lagodon rhomboides	3,507	474	2,435	1,530	16	3,981
Leiostomus xanthurus	20	11	7	17	7	31
Lepisosteus osseus	1	.	.	.	1	1
Lepisosteus platostomus	1	.	.	.	1	1
Lepisosteus platyrhincus	3	.	3	.	.	3
Limulus polyphemus	4	.	.	.	4	4
Lobotes surinamensis	2	1	.	1	2	3

Appendix TQ01-02. (Continued)

Species	Gear and Strata 183-m haul seine Over		Zone I			Totals
	Over	Nonover	I	J	T	
	E=138	E=54	E=48	E=48	E=96	E=192
Lutjanus analis	30	7	19	16	2	37
Lutjanus griseus	52	24	27	40	9	76
Lutjanus synagris	24	4	7	12	9	28
Megalops atlanticus	6	.	4	.	2	6
Menticirrhus americanus	40	7	2	2	43	47
Micropogonias undulatus	167	72	13	95	131	239
Monacanthus ciliatus	9	1	.	10	.	10
Monacanthus hispidus	37	.	.	37	.	37
Mugil cephalus	437	162	148	154	297	599
Mugil curema	685	624	282	216	811	1,309
Mycteroperca microlepis	3	4	7	.	.	7
Myliobatis freminvillei	1	.	.	1	.	1
Nicholsina usta	62	1	.	63	.	63
Oligoplites saurus	28	.	15	10	3	28
Opisthonema oglinum	4	2	2	2	2	6
Opsanus tau	5	.	2	3	.	5
Orthopristis chrysoptera	200	24	162	61	1	224
Panulirus argus	14	2	2	14	.	16
Paralichthys albigutta	16	2	9	8	1	18
Paralichthys lethostigma	3	1	.	2	2	4
Poeciliidae spp.	1	.	1	.	.	1
Pogonias cromis	21	5	11	12	3	26
Pomatomus saltatrix	3	.	1	1	1	3
Prionotus scitulus	8	6	2	2	10	14
Prionotus tribulus	2	.	.	.	2	2
Sciaenops ocellatus	36	5	9	7	25	41
Scomberomorus maculatus	4	1	1	3	1	5
Scorpaena brasiliensis	3	.	1	2	.	3
Scorpaena grandicornis	5	.	1	3	1	5
Scorpaena plumieri	8	2	.	10	.	10
Selene vomer	265	34	77	157	65	299
Sparisoma chrysopterum	27	1	.	28	.	28

Appendix TQ01-02. (Continued)

Species	Gear and Strata		Zone			Totals
	183-m haul seine					
	Over	Nonover	I	J	T	
	E=138	E=54	E=48	E=48	E=96	E=192
Sparisoma radians	1	.	.	1	.	1
Sparisoma rubripinne	1	1	.	2	.	2
Sphoeroides nephelus	77	6	58	20	5	83
Sphoeroides spengleri	20	.	6	13	1	20
Sphoeroides testudineus	90	38	71	25	32	128
Sphyraena barracuda	77	13	27	60	3	90
Sphyrna tiburo	1	.	.	1	.	1
Strongylura marina	2	.	.	1	1	2
Strongylura notata	19	2	16	5	.	21
Symphurus plagiusa	.	1	.	.	1	1
Syngnathus louisianae	1	.	1	.	.	1
Synodus foetens	8	.	4	4	.	8
Tilapia melanotheron	1	.	1	.	.	1
Tilapia spp.	1	.	1	.	.	1
Trachinotus carolinus	1	.	.	.	1	1
Trachinotus falcatus	2	6	1	3	4	8
Trichiurus lepturus	1	.	1	.	.	1
Trinectes maculatus	4	7	.	.	11	11
Totals	**13,732**	**3,302**	**6,541**	**5,211**	**5,282**	**17,034**

Florida Keys

This section summarizes the third year of routine Fisheries-Independent Monitoring (FIM) program sampling in the coastal and oceanic waters of the Florida Keys region, specifically within the Florida Keys National Marine Sanctuary (FKNMS). The FKNMS is one of the country's largest marine sanctuaries (9,500 km^2) and includes the only living barrier coral reef in the United States. The Florida Keys are a chain of limestone islands running to the south and then west from the tip of the Florida peninsula, extending from Key Biscayne, on the southeastern mainland coast, to the Dry Tortugas, over 360 km to the southwest. The coastal and marine areas adjacent to the Keys contain many mangrove islands and extensive seagrass meadows, while to the south and east is the Florida Reef Tract, the third largest barrier reef system in the world (Jaap 1984).

Over 80,000 people reside permanently in the Keys, and more than four million visitors also come to the islands annually. Over 70% of these visitors are estimated to use FKNMS waters for fishing, diving, boating and other ecotourism activities (U.S. Dept. of Commerce 1996). Concerns that over-development of the islands and over-utilization of the surrounding marine environment were leading to environmental degradation were the principal reasons for the formation of the FKNMS (created in 1990). The ecological uniqueness of the area contained within the FKNMS is clearly evidenced by the fact that within its boundaries there are over a dozen previously established marine sanctuaries, wildlife refuges, aquatic preserves and state and national parks.

The FIM program was identified in the FKNMS Final Management Plan (U.S. Dept. of Commerce 1996) as a major component of the Sanctuary's long term fisheries monitoring program. The major program elements implemented in 1999 and continued in 2000 consisted of a monthly trawl survey, designed to identify nursery areas and monitor juvenile abundance, and a seasonal (spring through fall) visual census-based survey, designed to assess the relative abundance and population size structure of important reef fish species (primarily the snapper/grouper complex).

After reviewing and comparing the results from the first two years of both the trawl and visual survey sampling programs at the end of 2000, several modifications in sampling design and implementation were initiated in 2001. Evaluation of the FIM trawling methodology proved it to be largely ineffective for identifying major nursery habitats for reef fish species in the Keys region. With few exceptions, catches of early juveniles and of all the commercially and recreationally important species were very low in number. Sampling efforts were either not sampling in or not effectively sampling the critical settlement and early recruitment habitats of these species. Therefore, after completing two full years of monthly sampling, the trawl program was modified from a monthly sampling program to a single seasonal sampling event conducted from September through October with a revised objective of monitoring long-term trends in habitat utilization and extreme changes in relative juvenile abundances. Seasonal sampling was scheduled to take place during late summer and early fall when overall abundances, as well as abundances of the majority of Selected Taxa, are at annual maximums.

In addition, examination of the FIM visual survey sampling protocol demonstrated that the use of both point count and transect methodology was unnecessary. While the transect methodology was able to survey a greater number of individuals per sample for most species, estimated densities were much lower, reflecting a much lower sampling efficiency. Overall, length frequencies were very similar between the two survey methods. The point count methodology provided better estimates of abundance, allowed divers an extended time period of observation of fish (providing more accurate enumeration and size estimation), and was logistically simpler to execute. Therefore, beginning in 2001, the transect methodology was discontinued, and a commensurate increase in sampling effort using the point count method was implemented.

The trawling and visual survey programs are based on the standard FIM stratified-random sampling design. A habitat-based site selection process, based on the Florida Keys Benthic Habitat Geographical Information System (FDEP/NOAA 1998), is also employed. Grids containing bottom habitat mapped as continuous or patchy seagrass (with the exception of patchy seagrass habitat in backreef areas, which our reconnaissance surveys showed to contain too many intermixed corals and sponges to allow trawling operations) have been included in the trawl survey sampling universe, whereas grids with bottom habitat mapped as reef have been included in the visual survey sampling universe.

Trawl sampling was conducted in Zones B, C, and D in January 2001 (in order to obtain a full two years of sampling, which began in February 1999) and in September and October 2001 (Figure KY01-01). One three-minute trawl was conducted at each selected site, with a total of 40 sites sampled in January and 80 sites sampled in September and October. The revised visual sampling program began in April 2001 and was conducted monthly in Zones A-D through October 2001. The total number of visual survey sites sampled monthly was increased by 1.5 times, and at each site, four 5-m radius circular point counts were conducted. Divers enumerated and assigned to distinct size intervals all snappers, groupers, grunts, hogfish, triggerfish, and selected major tropical ornamental species (Table KY01-01). More detailed methods are described in the Methods section of this report.

Stratified-Random Sampling

A total of 44,032 fishes and selected invertebrates, representing 133 taxa, were collected or recorded during 120 trawl collections and 1,092 visual surveys in 2001 (Table KY01-02; Appendices KY01-01, -02, -03 and -04).

6.1-m Otter Trawls. A total of 6,884 fish and selected invertebrates, representing approximately 100 taxa, were collected in 120 trawl samples in the FKNMS in 2001 (Table KY01-03; Appendices KY01-01 and -02). *Haemulon plumieri* (n=1,619) dominated both the overall and Selected Taxa caught. Only three other Selected Taxa, *Haemulon sciurus*, *Lutjanus synagris* and *Lutjanus griseus,* were among the ten dominant taxa, and accounted for only 2%, 2% and 1% of the total catch, respectively (Table KY01-04). In addition to *H. plumieri*, overall trawl catches were dominated by *Monocanthus ciliatus*, *Lagodon rhomboides*, *Eucinostomus gula*, and *Eucinostomus* spp.*,* each of which constituted between 6% and 18% percent of the total catch. Selected Taxa (n=2,175) (which include species from both the statewide FIM Selected Taxa list and the Selected Reef Fish list) comprised about 32% of the total individuals, primarily due to the large number of *H. plumieri* (23.5% of all individuals) caught.

Limited seasonal trends were seen as the trawling program was scaled down in 2001; however, overall catch rates were higher during the early fall seasonal survey (64 animals/haul) than in January (45 animals/haul) (Appendix KY01-01). There were very clear spatial differences in abundance between areas (Appendix KY01-02). Similar to results seen in 1999 and 2000, the first and second years of sampling, overall catch rates in the Gulfside stratum (G) were more than four times higher than those in the Oceanside stratum (O). Additionally, catch rates in Zones C and D were more than twice the catch rates in Zone B, indicating that the very large seagrass beds in southwestern Florida Bay (Zone C-Gulf) may be exceptionally important finfish nursery areas within the FKNMS.

Visual Censuses. A total of 37,148 animals of Selected Reef Fish species were recorded during 1,092 5-m radius point counts in 2001 (Tables KY01-02 and -05; Appendices KY01-03 and -04). During point count surveys, 49 of the 52 Selected Reef Fish Species were observed. Overall mean densities observed from point counts were about 44 animals/100 m^2 and most of these fish were from the smallest size classes (Table KY01-06).

Haemulids strongly dominated the point count observations, accounting for 70% of the individuals recorded, with *H. plumieri*, *Haemulon* spp., *Haemulon aurolineatum*, and *Haemulon sciurus* comprising 60% of the total number of individuals (Table KY01-05). The other major dominant species in the point count surveys was *Ocyurus chrysurus* (10% of all individuals; 33% of non-grunt species). *Lutjanus griseus, Lachnolaimus maximus,* and *Lutjanus apodus* were the second through fourth most abundant non-grunt species. These three species, in addition to *O. chrysurus,* accounted for 65% of the non-grunt species observed in point count surveys.

Overall numbers of fishes recorded during visual point count surveys were higher during mid-summer (July and August) than during the other five months in which sampling was completed, but there was limited evidence of distinct seasonal changes in abundance of individual species (Appendix KY01-03). The lowest overall numbers of animals were recorded in April, May, June, September, and October (less than 5,155 animals per month), while peak numbers were observed during July and August (from 6,763 to 7,072 animals per month).

Most of the more abundant species were present during all months sampled and exhibited monthly fluctuations that did not show any consistent trends. One strong exception was *Haemulon* spp., (haemulids < 10 cm TL) which were present in relatively large numbers during June, July and August (Appendix KY01-03). This summer peak indicates a potentially crucial time period for grunt recruitment and settlement in the Keys.

With respect to sampling areas, overall mean counts per point count were not as similar among the four zones as they were in 2000. During 2000, the overall mean counts per survey in the four zones ranged from 22 to 27 animals/sample, whereas in 2001, the overall mean counts per survey ranged from about 27 animals/sample in Zone D to 47 animals/sample in Zone C. Zones A and B had the most comparable overall mean counts per survey (36 and 31 animals/sample, respectively) (Appendix KY01-04). Interestingly, the visual survey results were consistent with those obtained by the trawl sampling program in that the largest number of animals/sample were collected in Zone C, once again indicating the relative importance of the Middle Keys for fish abundance.

Overall length-frequencies observed during point counts were very similar between fish surveyed in 2000 and 2001. Size distributions and mean sizes for Selected taxa such as *H. plumieri, L. griseus, L. maximus, Epinephelus morio, and Mycteroperca bonaci* were similar between years (Table KY01-06).

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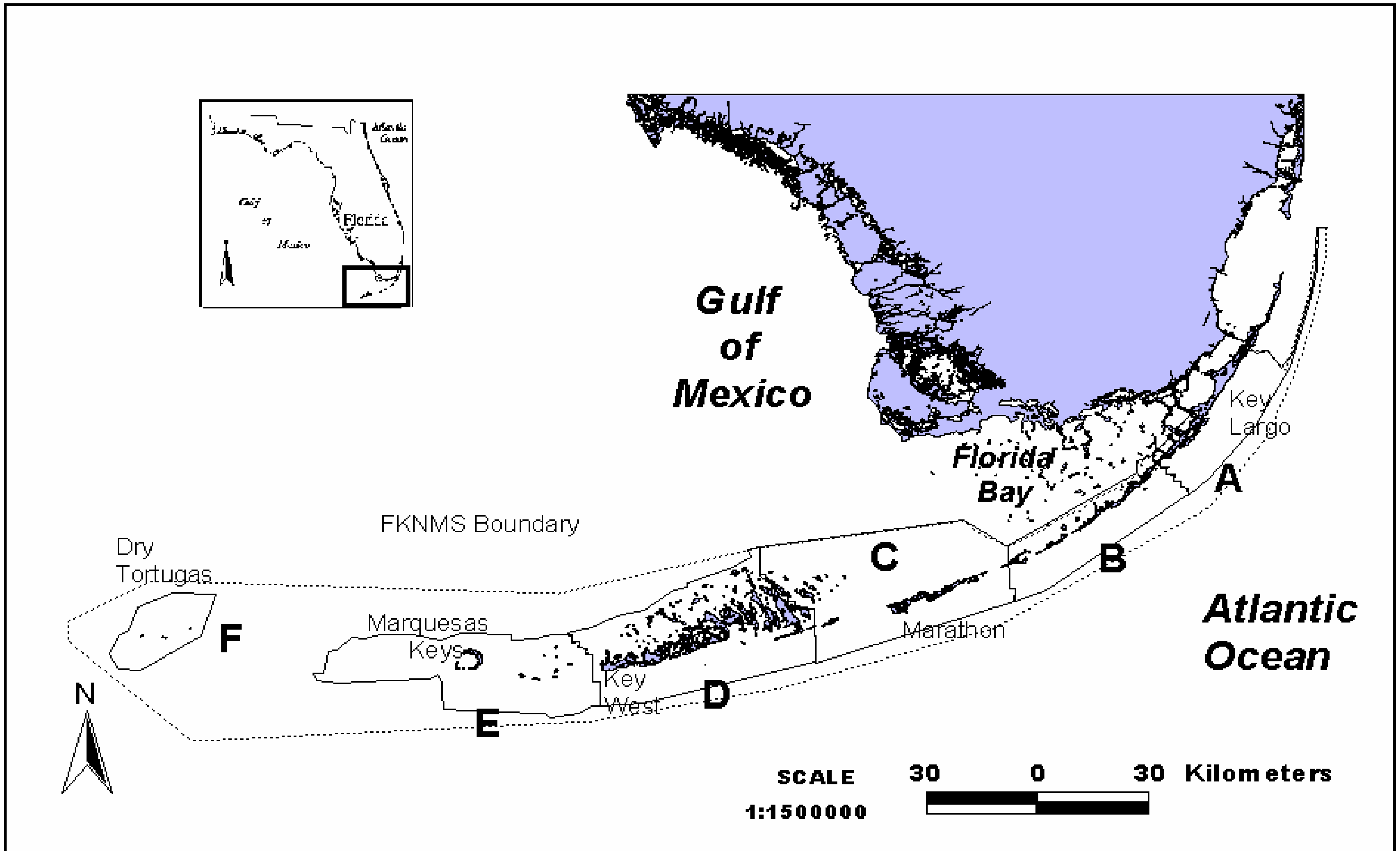

Figure KY01-01. Map of FIM sampling areas in the Florida Keys National Marine Sanctuary. Zones are labeled A-F.

Table KY01-01. Animals designated as Selected Reef Fish Species because of their recreational or commercial importance.

	Scientific Name	Common Name
1	*Anisotremus surinamensis*	black margate
2	*Anisotremus virginicus*	porkfish
3	*Balistes capriscus*	gray triggerfish
4	*Balistes vetula*	queen triggerfish
5	*Bodianus pulchellus*	spotfin hogfish
6	*Bodianus rufus*	Spanish hogfish
7	*Canthidermis sufflamen*	ocean triggerfish
8	*Chaetodon capistratus*	foureye butterflyfish
9	*Chaetodon ocellatus*	spotfin butterflyfish
10	*Chaetodon sedentarius*	reef butterflyfish
11	*Chaetodon striatus*	banded butterflyfish
12	*Epinephelus adscensionis*	rock hind
13	*Epinephelus cruentatus*	graysby
14	*Epinephelus fulvus*	coney
15	*Epinephelus guttatus*	red hind
16	*Epinephelus itajara*	goliath grouper
17	*Epinephelus morio*	red grouper
18	*Epinephelus striatus*	Nassau grouper
19	*Haemulon album*	margate
20	*Haemulon aurolineatum*	tomtate
21	*Haemulon carbonarium*	caesar grunt
22	*Haemulon chrysargyreum*	smallmouth grunt
23	*Haemulon flavolineatum*	French grunt
24	*Haemulon macrostomum*	Spanish grunt
25	*Haemulon melanurum*	cottonwick
26	*Haemulon parrai*	sailors choice
27	*Haemulon plumieri*	white grunt
28	*Haemulon sciurus*	bluestriped grunt
29	*Haemulon striatum*	striped grunt
30	*Holacanthus bermudensis*	blue angelfish
31	*Holacanthus ciliaris*	queen angelfish
32	*Holacanthus tricolor*	rock beauty
33	*Lachnolaimus maximus*	hogfish
34	*Lutjanus analis*	mutton snapper
35	*Lutjanus apodus*	schoolmaster
36	*Lutjanus cyanopterus*	cubera snapper
37	*Lutjanus griseus*	gray snapper
38	*Lutjanus jocu*	dog snapper
39	*Lutjanus mahogoni*	mahogany snapper
40	*Lutjanus synagris*	lane snapper
41	*Melichthys niger*	black durgon
42	*Mycteroperca bonaci*	black grouper

Table KY01-01. (Continued)

	Scientific Name	Common Name
43	*Mycteroperca microlepis*	gag grouper
44	*Mycteroperca phenax*	scamp
45	*Mycteroperca tigris*	tiger grouper
46	*Mycteroperca venenosa*	yellowfin grouper
47	*Mycteroperca interstitialis*	yellowmouth grouper
48	*Ocyurus chrysurus*	yellowtail snapper
49	*Pomacanthus arcuatus*	gray angelfish
50	*Pomacanthus paru*	French angelfish
51	*Priacanthus arenatus*	bigeye
52	*Priacanthus cruentatus*	glasseye snapper

Table KY01-02. Summary of effort and catch data for Florida Keys stratified-random sampling, 2001. Zones were located linearly along the Keys island chain from the Upper Keys (Zone A) through the Lower Keys (Zone D).

	6.1-m Otter Trawl		Visual Census		Totals	
Zone	**Animals**	**Hauls**	**Animals**	**Counts**	**Animals**	**Samples**
A			12,953	364	12,953	364
B	836	27	8,757	280	9,593	307
C	3,170	48	7,965	168	11,135	216
D	2,878	45	7,473	280	10,351	325
Totals	**6,884**	**120**	**37,148**	**1,092**	**44,032**	**1,212**

Table KY01-03. Catch statistics for ten dominant taxa collected in 40 monthly (January) and 80 seasonal 6.1-m otter trawl samples during Florida Keys stratified-random sampling, 2001. Percent (%) is the percentage of the total catch represented by that species; percent occurrence (% Occur) is the percentage of samples in which the species was collected; CV is the coefficient of variation. 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
Haemulon plumieri	1,619	23.5	75.0	3.02	0.44	160.64	25.86	73	0.65	17	180
Monacanthus ciliatus	1,239	18.0	84.2	2.31	0.26	123.30	13.49	59	0.41	16	166
Lagodon rhomboides	1,223	17.7	55.8	2.29	0.35	167.67	20.46	77	0.37	46	135
Eucinostomus gula	616	8.9	48.3	1.15	0.23	220.11	15.52	53	0.54	26	142
Eucinostomus spp.	406	5.9	37.5	0.76	0.23	332.28	23.39	33	0.21	14	48
Calamus arctifrons	192	2.8	37.5	0.36	0.07	219.24	4.95	72	2.03	35	175
Lactophrys quadricornis	144	2.1	53.3	0.27	0.04	157.52	2.70	92	3.14	11	195
Haemulon sciurus	142	2.1	18.3	0.27	0.12	515.64	13.04	115	3.30	16	197
Lutjanus synagris	131	1.9	39.2	0.25	0.04	180.46	2.47	73	2.70	16	178
Lutjanus griseus	94	1.4	19.2	0.18	0.06	387.09	5.62	145	3.72	51	264
Subtotal	**5,806**	**84.4**	**.**	**10.68**	**.**	**.**	**.**	**.**	**.**	**11**	**264**
Totals	**6,884**	**100.0**	**.**	**12.86**	**1.35**	**114.87**	**70.38**	**.**	**.**	**7**	**363**

Table KY01-04. Catch statistics for Selected taxa collected in 40 monthly (January) and 80 seasonal 6.1-m otter trawl samples during Florida Keys stratified-random sampling, 2001. Percent (%) is the percent of the total catch represented by that species; percent occurrence (% Occur) is the percentage of samples in which the species was collected; CV is the coefficient of variation. 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
Haemulon plumieri	1,619	23.5	75.0	3.02	0.44	160.64	25.86	73	0.65	17	180
Haemulon sciurus	142	2.1	18.3	0.27	0.12	515.64	13.04	115	3.31	16	197
Lutjanus synagris	131	1.9	39.2	0.25	0.04	180.46	2.47	73	2.70	16	178
Lutjanus griseus	94	1.4	19.2	0.18	0.06	387.09	5.62	145	3.72	51	264
Ocyurus chrysurus	50	0.7	20.8	0.09	0.02	237.05	0.90	83	3.27	24	127
Lachnolaimus maximus	51	0.7	16.7	0.09	0.02	286.11	1.80	90	4.11	30	236
Panulirus argus	27	0.4	9.2	0.05	0.02	530.79	2.70	47	2.43	24	68
Farfantepenaeus duorarum	25	0.4	10.0	0.05	0.02	362.29	1.12	17	1.29	7	31
Haemulon aurolineatum	8	0.1	4.2	0.01	0.01	540.77	0.67	67	8.65	40	110
Balistes capriscus	8	0.1	6.7	0.01	0.01	375.73	0.22	100	10.38	72	140
Menippe spp.	3	0.0	2.5	0.01	0.00	627.12	0.22	17	0.50	16	17
Mycteroperca microlepis	3	0.0	0.8	0.01	0.01	1,095.45	0.67	164	7.75	154	179
Anisotremus virginicus	3	0.0	2.5	0.01	0.00	627.12	0.22	84	6.66	72	95
Paralichthys albigutta	3	0.0	2.5	0.01	0.00	627.12	0.22	173	65.37	96	303
Callinectes sapidus	2	0.0	0.8	0.00	0.00	1,095.45	0.45	79	16.50	62	95

Table KY01-04. (Continued)

Species	Number		%	Density Estimate (animals/100m^2)				Standard Length (mm)			
	No.	%	Occur	Mean	Stderr	CV	Max	Mean	Stderr	Min	Max
Epinephelus morio	2	0.0	0.8	0.00	0.00	1,095.45	0.45	122	13.00	109	135
Mycteroperca bonaci	1	0.0	0.8	0.00	0.00	1,095.45	0.22	152	.	152	152
Lutjanus analis	1	0.0	0.8	0.00	0.00	1,095.45	0.22	166	.	166	166
Haemulon carbonarium	1	0.0	0.8	0.00	0.00	1,095.45	0.22	83	.	83	83
Pomacanthus arcuatus	1	0.0	0.8	0.00	0.00	1,095.45	0.22	78	.	78	78
Totals	**2,175**	**31.6**	**82.5**	**4.06**	**0.57**	**153.11**	**42.50**	**.**	**.**	**7**	**303**

Table KY01-05. Catch statistics for Selected Reef Fish Species observed in 1,092 point counts during Florida Keys sampling, 2001. Percent (%) is the percentage of total observations represented by that species; percent occurrence (% Occur) is the percentage of samples in which the species was observed; CV is the coefficient of variation. Taxa are ranked in order of decreasing mean density.

Species	Number		%	Density Estimate (animals/100m^2)			
	No.	**%**	**Occur**	**Mean**	**Stderr**	**CV**	**Max**
Haemulon plumieri	8,598	23.1	51.9	10.25	0.67	212.95	178.25
Haemulon spp.	6,581	17.7	7.4	7.85	1.55	646.01	1,018.59
Haemulon aurolineatum	3,777	10.2	4.4	4.50	1.26	916.73	1,018.59
Ocyurus chrysurus	3,612	9.7	39.2	4.31	0.34	255.11	122.23
Haemulon sciurus	3,478	9.4	27.8	4.15	0.41	326.18	280.11
Lutjanus griseus	1,914	5.2	22.5	2.28	0.25	357.91	101.86
Haemulon flavolineatum	1,810	4.9	15.1	2.16	0.41	613.16	369.24
Anisotremus virginicus	1,062	2.9	23.7	1.27	0.16	414.4	73.85
Lachnolaimus maximus	1,029	2.8	43.8	1.23	0.06	169.14	17.83
Lutjanus apodus	636	1.7	9.9	0.76	0.13	552.14	70.03
Chaetodon capistratus	537	1.4	25.7	0.64	0.04	196.26	7.64
Pomacanthus arcuatus	511	1.4	28.9	0.61	0.04	201.37	14.01
Chaetodon ocellatus	376	1	18.3	0.45	0.03	227.03	5.09
Chaetodon sedentarius	339	0.9	18.4	0.40	0.03	237.7	6.37
Holacanthus tricolor	229	0.6	12.9	0.27	0.03	305.52	7.64
Epinephelus morio	224	0.6	16.4	0.27	0.03	301.62	16.55
Haemulon carbonarium	223	0.6	2.1	0.27	0.08	982.05	44.56
Haemulon chrysargyreum	201	0.5	0.7	0.24	0.11	1,550.29	89.13

Table KY01-05. (Continued)

Species	Number		%	Density Estimate (animals/100m^2)			
	No.	%	Occur	Mean	Stderr	CV	Max
Pomacanthus paru	198	0.5	11.8	0.24	0.03	347.67	11.46
Lutjanus analis	191	0.5	13.5	0.23	0.02	295.92	6.37
Chaetodon striatus	170	0.5	10.2	0.20	0.02	314.23	3.82
Epinephelus cruentatus	163	0.4	11.6	0.19	0.02	304.29	3.82
Holacanthus ciliaris	162	0.4	11.1	0.19	0.02	320.02	6.37
Bodianus rufus	159	0.4	10.5	0.19	0.02	338.72	7.64
Haemulon parrai	159	0.4	1.6	0.19	0.12	2,094.96	127.32
Mycteroperca bonaci	148	0.4	10.8	0.18	0.02	344.72	8.91
Haemulon melanurum	148	0.4	2	0.18	0.06	1,040.77	38.2
Holacanthus bermudensis	122	0.3	9.8	0.15	0.01	321.67	3.82
Lutjanus synagris	64	0.2	1.1	0.08	0.03	1,448.71	26.74
Balistes capriscus	62	0.2	3.7	0.07	0.01	602.2	6.37
Priacanthus arenatus	48	0.1	1.1	0.06	0.02	1,358.64	15.28
Balistes vetula	29	0.1	2.2	0.04	0.01	782.84	5.09
Haemulon macrostomum	28	0.1	1.9	0.03	0.01	819.6	5.09
Epinephelus guttatus	23	0.1	1.9	0.03	0.01	758.96	2.55
Lutjanus mahogoni	20	0.1	1.2	0.02	0.01	1,029.07	5.09
Mycteroperca venenosa	16	0	1.2	0.02	0.01	953.24	2.55
Epinephelus adscensionis	13	0	1.1	0.02	0.01	968.92	2.55
Mycteroperca phenax	13	0	1.1	0.02	0.01	968.92	2.55
Haemulon album	13	0	0.8	0.02	0.01	1,303.02	5.09

Table KY01-05. (Continued)

Species	Number		% Occur	Density Estimate (animals/100m^2)			
	No.	**%**		**Mean**	**Stderr**	**CV**	**Max**
Mycteroperca microlepis	11	0	0.8	0.01	0.01	1,221.43	3.82
Epinephelus striatus	10	0	0.8	0.01	0.00	1,128.18	2.55
Lutjanus jocu	9	0	0.7	0.01	0.00	1,200.72	2.55
Priacanthus cruentatus	6	0	0.3	0.01	0.00	2,036.47	3.82
Epinephelus fulvus	5	0	0.4	0.01	0.00	1,727.19	2.55
Canthidermis sufflamen	5	0	0.2	0.01	0.01	2,694.29	5.09
Bodianus pulchellus	3	0	0.3	0.00	0.00	1,885.03	1.27
Cantherhines macrocerus	3	0	0.1	0.00	0.00	3,268.03	3.82
Melichthys niger	1	0	0.1	0.00	0.00	3,268.03	1.27
Totals	**37,148**	**100.00**	**.**	**44.28**	**2.44**	**180.75**	**1,103.90**
Haemulids	**26,087**	**70.2**	**.**	**30.81**			
Other Species	**11,061**	**29.8**	**.**	**13.47**			

Table KY01-06. Size distribution of Selected Reef Fishes recorded during 1,092 visual point count surveys in the Florida Keys during 2001.

	ESTIMATED TOTAL LENGTHS (cm)																	
Scientific Name	**< 5**	**5-10**	**10-15**	**15-20**	**20-25**	**25-30**	**30-35**	**35-40**	**40-45**	**45-50**	**50-55**	**55-60**	**60-70**	**70-80**	**80-90**	**90-100**	**100+**	**Totals**
Haemulon plumieri	121	872	1,585	3,151	2,095	641	125	8										8,598
Haemulon spp.	6,403	178																6,581
Haemulon aurolineatum	1,350	1,941	221	212	49	4												3,777
Ocyurus chrysurus	16	522	672	909	720	467	240	45	17	3		1						3,612
Haemulon sciurus	1	192	712	1,374	922	218	58	1										3,478
Lutjanus griseus		1	42	315	548	481	263	166	84	10	4							1,914
Haemulon flavolineatum	98	661	559	445	34	8	5											1,810
Anisotremus virginicus	28	69	137	402	284	107	29	6										1,062
Lachnolaimus maximus		2	71	203	325	266	117	31	10	2	1	1						1,029
Lutjanus apodus		2	8	140	216	197	59	8	3	2	1							636
Chaetodon capistratus	75	424	33	5														537
Pomacanthus arcuatus	1	5	8	45	98	150	136	57	10		1							511
Chaetodon ocellatus	1	193	179	3														376
Chaetodon sedentarius	81	219	29	10														339
Holacanthus tricolor	48	95	59	16	6	1	3	1										229
Epinephelus morio				8	25	28	40	60	28	22	7	4	2					224
Haemulon carbonarium	15	19	67	84	35	2	1											223
Haemulon chrysargyreum		41	145	15														201
Pomacanthus paru	4	5	10	24	45	51	40	16	3									198
Lutjanus analis				2	6	3	19	43	42	28	18	13	14	3				191
Chaetodon striatus	3	117	45	5														170
Epinephelus cruentatus		17	40	77	20	5	3	1										163
Holacanthus ciliaris	4	11	24	44	32	25	18	4										162
Bodianus rufus	39	30	18	24	25	13	9	2										160
Haemulon parrai	9	90	34	5	18	2	1											159
Mycteroperca bonaci			1	8	8	18	17	22	19	15	14	9	10	5		2		148
Haemulon melanurum	21	115	10			2												148
Holacanthus bermudensis	3	6	3	3	21	30	38	12	5		1							122
Lutjanus synagris	1		4	40	14	5												64
Balistes capriscus			1	17	23	8	7	6										62
Priacanthus arenatus				1	7	30	9	1										48

Table KY01-06 (Continued)

Scientific Name	**ESTIMATED TOTAL LENGTHS (cm)**																	
	< 5	**5-10**	**10-15**	**15-20**	**20-25**	**25-30**	**30-35**	**35-40**	**40-45**	**45-50**	**50-55**	**55-60**	**60-70**	**70-80**	**80-90**	**90-100**	**100+**	**Totals**
Balistes vetula			1	5	7	7	4	4										28
Haemulon macrostomum		5	2	6	5	6	3	1										28
Epinephelus guttatus		1	5	2	3	5	5	2										23
Lutjanus mahogoni			1		4	4	6	3	2									20
Mycteroperca venenosa						1	1	2	3	4	4		1					16
Epinephelus adscensionis			1		4	5	1	1	1									13
Mycteroperca phenax					1	4	5	3										13
Haemulon album				4	4	1	1		3									13
Mycteroperca microlepis							1	2	2	2	1	2	1					11
Epinephelus striatus						1		1	4		2	1	1					10
Lutjanus jocu				1	2	3	1		2									9
Anisotremus surinamensis						2	3	1	2	1								9
Priacanthus cruentatus					6													6
Epinephelus fulvus	1	1	2						1									5
Canthidermis sufflamen					1					4								5
Bodianus pulchellus	2			1														3
Cantherhines macrocerus							3											3
Melichthys niger					1													1
Totals	**8,325**	**5,834**	**4,729**	**7,606**	**5,614**	**2,801**	**1,271**	**510**	**241**	**93**	**54**	**31**	**29**	**8**	**0**	**2**	**0**	**37,148**

Appendix KY01-01. Monthly summary of species collected during Florida Keys stratified-random sampling, 2001. Listing is sorted alphabetically by taxa. Effort, or total number of hauls, is labeled 'E'.

Species	Month												Totals
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
	E=40	.	.	.	.	.	.	.	E=34	E=46	.	.	E=120
Acanthurus chirurgus	.	.	.	.	.	.	.	.	1	.	.	.	1
Achirus lineatus	.	.	.	.	.	.	.	.	1	1	.	.	2
Aluterus schoepfi	.	.	.	.	.	.	.	.	.	1	.	.	1
Anarchopterus criniger	3	.	.	.	.	.	.	.	.	1	.	.	4
Anisotremus virginicus	.	.	.	.	.	.	.	.	.	3	.	.	3
Apogon binotatus	.	.	.	.	.	.	.	.	.	1	.	.	1
Apogonidae spp.	1	.	.	.	.	.	.	.	.	.	.	.	1
Archosargus rhomboidalis	30	.	.	.	.	.	.	.	18	11	.	.	59
Argopecten irradians	.	.	.	.	.	.	.	.	2	.	.	.	2
Arius felis	.	.	.	.	.	.	.	.	1	.	.	.	1
Astrapogon puncticulatus	.	.	.	.	.	.	.	.	.	1	.	.	1
Bairdiella batabana	2	.	.	.	.	.	.	.	1	2	.	.	5
Bairdiella chrysoura	4	.	.	.	.	.	.	.	6	2	.	.	12
Balistes capriscus	1	.	.	.	.	.	.	.	4	3	.	.	8
Bothus ocellatus	5	.	.	.	.	.	.	.	3	1	.	.	9
Bryx dunckeri	.	.	.	.	.	.	.	.	1	.	.	.	1
Calamus arctifrons	42	.	.	.	.	.	.	.	65	85	.	.	192
Calamus bajonado	.	.	.	.	.	.	.	.	.	6	.	.	6
Calamus calamus	.	.	.	.	.	.	.	.	.	4	.	.	4
Calamus proridens	8	.	.	.	.	.	.	.	.	.	.	.	8
Callinectes sapidus	.	.	.	.	.	.	.	.	.	2	.	.	2
Chilomycterus schoepfi	24	.	.	.	.	.	.	.	12	10	.	.	46
Coryphopterus glaucofraenum	.	.	.	.	.	.	.	.	3	.	.	.	3

Appendix KY01-01. (Continued)

Species	Month												Totals
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
	E=40	.	.	.	.	.	.	.	E=34	E=46	.	.	E=120
Cosmocampus albirostris	1	.	.	.	.	.	.	.	4	.	.	.	5
Cosmocampus elucens	.	.	.	.	.	.	.	.	2	.	.	.	2
Cryptotomus roseus	4	.	.	.	.	.	.	.	7	1	.	.	12
Dasyatis americana	1	.	.	.	.	.	.	.	.	.	.	.	1
Decapterus punctatus	.	.	.	.	.	.	.	.	5	.	.	.	5
Diodon holocanthus	.	.	.	.	.	.	.	.	1	.	.	.	1
Diplectrum formosum	7	.	.	.	.	.	.	.	4	7	.	.	18
Epinephelus morio	.	.	.	.	.	.	.	.	.	2	.	.	2
Eucinostomus gula	135	.	.	.	.	.	.	.	160	321	.	.	616
Eucinostomus harengulus	1	.	.	.	.	.	.	.	.	.	.	.	1
Eucinostomus jonesi	4	.	.	.	.	.	.	.	.	.	.	.	4
Eucinostomus spp.	19	.	.	.	.	.	.	.	143	244	.	.	406
Farfantepenaeus duorarum	9	.	.	.	.	.	.	.	3	13	.	.	25
Ginglymostoma cirratum	.	.	.	.	.	.	.	.	.	1	.	.	1
Gobiosoma robustum	.	.	.	.	.	.	.	.	1	.	.	.	1
Gymnothorax moringa	.	.	.	.	.	.	.	.	.	1	.	.	1
Haemulon aurolineatum	.	.	.	.	.	.	.	.	3	5	.	.	8
Haemulon plumieri	505	.	.	.	.	.	.	.	392	722	.	.	1,619
Haemulon sciurus	18	.	.	.	.	.	.	.	47	77	.	.	142
Haemulon spp.	.	.	.	.	.	.	.	.	.	2	.	.	2
Halichoeres bivittatus	2	.	.	.	.	.	.	.	5	.	.	.	7
Harengula jaguana	.	.	.	.	.	.	.	.	2	1	.	.	3
Hemipteronotus splendens	.	.	.	.	.	.	.	.	4	.	.	.	4
Hippocampus erectus	13	.	.	.	.	.	.	.	6	3	.	.	22

Appendix KY01-01. (Continued)

Species	Month												Totals
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
	E=40	.	.	.	.	.	.	.	E=34	E=46	.	.	E=120
Hippocampus zosterae	.	.	.	.	.	.	.	.	.	1	.	.	1
Hypoplectrus unicolor	21	.	.	.	.	.	.	.	15	19	.	.	55
Lachnolaimus maximus	13	.	.	.	.	.	.	.	27	11	.	.	51
Lactophrys quadricornis	42	.	.	.	.	.	.	.	48	54	.	.	144
Lactophrys spp.	.	.	.	.	.	.	.	.	1	.	.	.	1
Lactophrys trigonus	2	.	.	.	.	.	.	.	1	4	.	.	7
Lagodon rhomboides	292	.	.	.	.	.	.	.	391	540	.	.	1,223
Lucania parva	4	.	.	.	.	.	.	.	12	31	.	.	47
Lutjanus analis	1	.	.	.	.	.	.	.	.	.	.	.	1
Lutjanus griseus	7	.	.	.	.	.	.	.	25	62	.	.	94
Lutjanus synagris	19	.	.	.	.	.	.	.	33	79	.	.	131
Menippe spp.	1	.	.	.	.	.	.	.	.	2	.	.	3
Microgobius gulosus	.	.	.	.	.	.	.	.	.	1	.	.	1
Monacanthus ciliatus	432	.	.	.	.	.	.	.	382	425	.	.	1,239
Monacanthus hispidus	1	.	.	.	.	.	.	.	30	27	.	.	58
Mycteroperca bonaci	.	.	.	.	.	.	.	.	1	.	.	.	1
Mycteroperca microlepis	.	.	.	.	.	.	.	.	.	3	.	.	3
Nicholsina usta	30	.	.	.	.	.	.	.	33	28	.	.	91
Ocyurus chrysurus	6	.	.	.	.	.	.	.	13	31	.	.	50
Ogilbia cayorum	.	.	.	.	.	.	.	.	1	.	.	.	1
Ophidion holbrooki	1	.	.	.	.	.	.	.	.	.	.	.	1
Opisthonema oglinum	.	.	.	.	.	.	.	.	2	.	.	.	2
Opsanus beta	17	.	.	.	.	.	.	.	37	26	.	.	80
Orthopristis chrysoptera	10	.	.	.	.	.	.	.	13	17	.	.	40

Appendix KY01-01. (Continued)

Species	Month												Totals
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
	E=40	.	.	.	.	.	.	.	E=34	E=46	.	.	E=120
Panulirus argus	2	.	.	.	.	.	.	.	2	23	.	.	27
Paraclinus fasciatus	.	.	.	.	.	.	.	.	2	.	.	.	2
Paraclinus marmoratus	2	.	.	.	.	.	.	.	7	3	.	.	12
Paralichthys albigutta	.	.	.	.	.	.	.	.	2	1	.	.	3
Phaeoptyx pigmentaria	.	.	.	.	.	.	.	.	.	1	.	.	1
Pomacanthus arcuatus	.	.	.	.	.	.	.	.	1	.	.	.	1
Prionotus scitulus	.	.	.	.	.	.	.	.	1	.	.	.	1
Pseudopeneus maculatus	.	.	.	.	.	.	.	.	.	1	.	.	1
Scarus croicensis	.	.	.	.	.	.	.	.	9	1	.	.	10
Scorpaena brasiliensis	5	.	.	.	.	.	.	.	2	6	.	.	13
Scorpaena plumieri	.	.	.	.	.	.	.	.	.	1	.	.	1
Sparisoma chrysopterum	4	.	.	.	.	.	.	.	32	29	.	.	65
Sparisoma radians	1	.	.	.	.	.	.	.	9	5	.	.	15
Sparisoma rubripinne	.	.	.	.	.	.	.	.	2	.	.	.	2
Sparisoma spp.	.	.	.	.	.	.	.	.	4	.	.	.	4
Sphoeroides nephelus	1	.	.	.	.	.	.	.	.	1	.	.	2
Sphoeroides spengleri	11	.	.	.	.	.	.	.	17	14	.	.	42
Sphyraena barracuda	1	.	.	.	.	.	.	.	1	.	.	.	2
Syacium papillosum	4	.	.	.	.	.	.	.	.	.	.	.	4
Syngnathus floridae	18	.	.	.	.	.	.	.	21	11	.	.	50
Syngnathus louisianae	.	.	.	.	.	.	.	.	2	.	.	.	2
Syngnathus scovelli	.	.	.	.	.	.	.	.	1	2	.	.	3

Appendix KY01-01. (Continued)

Species	Month												Totals
	Jan	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**	**Oct**	**Nov**	**Dec**	
	E=40	**.**	**.**	**.**	**.**	**.**	**.**	**.**	**E=34**	**E=46**	**.**	**.**	**E=120**
Synodus foetens	1	.	.	.	.	.	.	.	3	10	.	.	14
Urolophus jamaicensis	.	.	.	.	.	.	.	.	.	2	.	.	2
Totals	**1,788**	**.**	**.**	**.**	**.**	**.**	**.**	**.**	**2,090**	**3,006**	**.**	**.**	**6,884**

Appendix KY01-02. Summary by stratum (G = Gulfside, O = Oceanside) and zone of species collected during Florida Keys stratified-random monthly and seasonal 6.1-m otter trawl sampling, 2001. Effort, or the total number of hauls, is labeled 'E'. Taxa are listed in alphabetical order.

Species	Gear		Zone			Totals
	6.1-m otter trawl					
	Gulf	Ocean	B	C	D	
	E=78	E=42	E=27	E=48	E=45	E=120
Acanthurus chirurgus	1	.	1	.	.	1
Achirus lineatus	2	.	.	1	1	2
Aluterus schoepfi	1	.	.	.	1	1
Anarchopterus criniger	4	.	.	3	1	4
Anisotremus virginicus	3	.	.	.	3	3
Apogon binotatus	1	.	.	1	.	1
Apogonidae spp.	.	1	1	.	.	1
Archosargus rhomboidalis	58	1	1	36	22	59
Argopecten irradians	2	.	.	2	.	2
Arius felis	1	.	.	1	.	1
Astrapogon puncticulatus	1	.	.	.	1	1
Bairdiella batabana	5	.	.	3	2	5
Bairdiella chrysoura	12	.	.	11	1	12
Balistes capriscus	.	8	4	4	.	8
Bothus ocellatus	1	8	2	2	5	9
Bryx dunckeri	.	1	1	.	.	1
Calamus arctifrons	186	6	2	120	70	192
Calamus bajonado	5	1	.	1	5	6
Calamus calamus	2	2	.	.	4	4
Calamus proridens	7	1	.	7	1	8
Callinectes sapidus	2	.	.	.	2	2
Chilomycterus schoepfi	40	6	5	22	19	46
Coryphopterus glaucofraenum	1	2	2	1	.	3
Cosmocampus albirostris	5	.	3	2	.	5
Cosmocampus elucens	.	2	2	.	.	2
Cryptotomus roseus	2	10	7	3	2	12
Dasyatis americana	1	.	1	.	.	1
Decapterus punctatus	.	5	5	.	.	5
Diodon holocanthus	.	1	1	.	.	1
Diplectrum formosum	10	8	2	8	8	18
Epinephelus morio	.	2	.	.	2	2

Appendix KY01-02. (Continued)

Species	Gear		Zone			Totals
	6.1-m otter trawl					
	Gulf	Ocean	B	C	D	
	E=78	E=42	E=27	E=48	E=45	E=120
Eucinostomus gula	607	9	77	252	287	616
Eucinostomus harengulus	1	.	.	.	1	1
Eucinostomus jonesi	4	.	.	.	4	4
Eucinostomus spp.	402	4	43	233	130	406
Farfantepenaeus duorarum	25	.	7	3	15	25
Ginglymostoma cirratum	.	1	.	.	1	1
Gobiosoma robustum	1	.	1	.	.	1
Gymnothorax moringa	.	1	.	1	.	1
Haemulon aurolineatum	4	4	3	1	4	8
Haemulon plumieri	1,438	181	153	657	809	1,619
Haemulon sciurus	126	16	25	41	76	142
Haemulon spp.	1	1	.	.	2	2
Halichoeres bivittatus	.	7	7	.	.	7
Harengula jaguana	3	.	.	2	1	3
Hemipteronotus splendens	.	4	4	.	.	4
Hippocampus erectus	12	10	12	5	5	22
Hippocampus zosterae	1	.	.	.	1	1
Hypoplectrus unicolor	54	1	.	42	13	55
Lachnolaimus maximus	49	2	4	42	5	51
Lactophrys quadricornis	114	30	17	62	65	144
Lactophrys spp.	1	.	.	1	.	1
Lactophrys trigonus	2	5	1	4	2	7
Lagodon rhomboides	1,206	17	20	682	521	1,223
Lucania parva	47	.	.	29	18	47
Lutjanus analis	1	.	.	.	1	1
Lutjanus griseus	94	.	17	18	59	94
Lutjanus synagris	114	17	8	61	62	131
Menippe spp.	3	.	.	.	3	3
Microgobius gulosus	.	1	.	.	1	1
Monacanthus ciliatus	1,002	237	230	575	434	1,239
Monacanthus hispidus	38	20	19	19	20	58
Mycteroperca bonaci	1	.	1	.	.	1
Mycteroperca microlepis	3	.	.	.	3	3

Appendix KY01-02. (Continued)

Species	Gear		Zone			Totals
	6.1-m otter trawl					
	Gulf	Ocean	B	C	D	
	E=78	E=42	E=27	E=48	E=45	E=120
Nicholsina usta	78	13	13	49	29	91
Ocyurus chrysurus	21	29	15	9	26	50
Ogilbia cayorum	1	.	1	.	.	1
Ophidion holbrooki	1	.	.	1	.	1
Opisthonema oglinum	2	.	.	2	.	2
Opsanus beta	73	7	16	41	23	80
Orthopristis chrysoptera	40	.	.	28	12	40
Panulirus argus	25	2	3	6	18	27
Paraclinus fasciatus	2	.	2	.	.	2
Paraclinus marmoratus	10	2	4	4	4	12
Paralichthys albigutta	2	1	1	2	.	3
Phaeoptyx pigmentaria	1	.	.	.	1	1
Pomacanthus arcuatus	.	1	1	.	.	1
Prionotus scitulus	1	.	1	.	.	1
Pseudopeneus maculatus	.	1	.	1	.	1
Scarus croicensis	.	10	9	.	1	10
Scorpaena brasiliensis	2	11	2	5	6	13
Scorpaena plumieri	.	1	.	.	1	1
Sparisoma chrysopterum	37	28	30	19	16	65
Sparisoma radians	.	15	9	3	3	15
Sparisoma rubripinne	.	2	2	.	.	2
Sparisoma spp.	.	4	4	.	.	4
Sphoeroides nephelus	2	.	.	2	.	2
Sphoeroides spengleri	15	27	15	13	14	42
Sphyraena barracuda	2	.	.	1	1	2
Syacium papillosum	1	3	.	.	4	4
Syngnathus floridae	37	13	13	20	17	50
Syngnathus louisianae	2	.	2	.	.	2
Syngnathus scovelli	2	1	1	.	2	3
Synodus foetens	8	6	3	4	7	14
Urolophus jamaicensis	.	2	.	2	.	2
Totals	**6,071**	**813**	**836**	**3,170**	**2,878**	**6,884**

Appendix KY01-03. Monthly summary of Selected Reef species observed during Florida Keys visual surveys (point counts), 2001. Effort, or total number of surveys, is labeled "E". Taxa are listed in alphabetical order.

Scientific Name	Months							Totals
	April	May	Jun	Jul	Aug	Sep	Oct	
	N=156	N=156	N=156	N=156	N=156	N=156	N=156	N=1092
Anisotremus surinamensis	3	.	.	3	.	3	.	9
Anisotremus virginicus	169	110	130	137	239	207	70	1,062
Balistes capriscus	11	8	18	10	13	.	2	62
Balistes vetula	6	.	10	6	2	.	4	28
Bodianus pulchellus	.	.	1	1	.	.	1	3
Bodianus rufus	8	11	37	29	30	22	23	160
Cantherhines macrocerus	.	.	.	3	.	.	.	3
Canthidermis sufflamen	.	.	.	1	.	.	4	5
Chaetodon capistratus	62	64	90	80	105	72	64	537
Chaetodon ocellatus	69	36	56	51	72	44	48	376
Chaetodon sedentarius	53	45	38	65	52	47	39	339
Chaetodon striatus	26	18	33	23	20	16	34	170
Epinephelus adscensionis	2	2	5	2	.	2	.	13
Epinephelus cruentatus	11	22	38	20	16	27	29	163
Epinephelus fulvus	.	2	2	.	1	.	.	5
Epinephelus guttatus	.	3	3	1	10	5	1	23
Epinephelus morio	31	39	27	27	39	14	47	224
Epinephelus striatus	1	1	.	6	.	.	2	10
Haemulon album	.	.	5	3	1	3	1	13
Haemulon aurolineatum	730	165	601	500	5	725	1,051	3,777
Haemulon carbonarium	16	.	25	46	62	7	67	223
Haemulon chrysargyreum	.	.	.	44	116	41	.	201
Haemulon flavolineatum	224	193	89	240	529	286	249	1,810
Haemulon macrostomum	4	.	2	5	5	7	5	28
Haemulon melanurum	38	9	.	5	12	33	51	148
Haemulon parrai	2	5	2	100	15	32	3	159

Appendix KY01-03. (Continued)

Scientific Name	Months							Totals
	April	May	Jun	Jul	Aug	Sep	Oct	Totals
	N=156	N=156	N=156	N=156	N=156	N=156	N=156	N=1092
Haemulon plumieri	1,213	1,609	972	1,044	1,328	972	1,460	8,598
Haemulon sciurus	736	571	377	464	595	455	280	3,478
Haemulon spp.	.	71	1,010	2,532	2,275	338	355	6,581
Holacanthus bermudensis	20	12	16	10	27	23	14	122
Holacanthus ciliaris	24	27	14	31	27	27	12	162
Holacanthus tricolor	24	15	35	42	40	40	33	229
Lachnolaimus maximus	208	133	174	126	146	67	175	1,029
Lutjanus analis	29	29	35	30	28	21	19	191
Lutjanus apodus	76	58	109	146	184	49	14	636
Lutjanus griseus	403	267	219	387	382	99	157	1,914
Lutjanus jocu	2	1	2	2	.	1	1	9
Lutjanus mahogoni	1	2	1	6	.	5	5	20
Lutjanus synagris	22	33	2	3	.	4	.	64
Melichthys niger	.	.	.	.	1	.	.	1
Mycteroperca bonaci	13	25	23	19	23	16	29	148
Mycteroperca microlepis	2	3	3	.	1	.	2	11
Mycteroperca phenax	6	.	4	.	1	1	1	13
Mycteroperca venenosa	.	4	3	3	1	.	5	16
Ocyurus chrysurus	796	540	298	382	551	575	470	3,612
Pomacanthus arcuatus	79	61	77	99	83	40	72	511
Pomacanthus paru	34	30	37	20	33	25	19	198
Priacanthus arenatus	.	3	33	9	.	1	2	48
Priacanthus cruentatus	1	3	.	.	2	.	.	6
Totals	**5,155**	**4,230**	**4,656**	**6,763**	**7,072**	**4,352**	**4,920**	**37,148**

Appendix KY01-04. Summary by zone of species collected during Florida Keys visual surveys (point counts), 2001. Effort, or total number of surveys, is labeled “E”.

Scientific Name	Zone				Point Count
	A	B	C	D	Totals
	E=364	E=280	E=168	E=280	E=1,092
Anisotremus surinamensis	5	2	.	2	9
Anisotremus virginicus	323	295	197	247	1,062
Balistes capriscus	15	30	17	.	62
Balistes vetula	14	12	1	1	28
Bodianus pulchellus	1	1	.	1	3
Bodianus rufus	46	51	18	45	160
Cantherhines macrocerus	.	3	.	.	3
Canthidermis sufflamen	.	.	5	.	5
Chaetodon capistratus	65	151	88	233	537
Chaetodon ocellatus	81	118	76	101	376
Chaetodon sedentarius	75	105	65	94	339
Chaetodon striatus	43	50	44	33	170
Epinephelus adscensionis	.	2	3	8	13
Epinephelus cruentatus	24	61	30	48	163
Epinephelus fulvus	.	1	2	2	5
Epinephelus guttatus	8	6	1	8	23
Epinephelus morio	80	88	26	30	224
Epinephelus striatus	.	3	3	4	10
Haemulon album	8	2	2	1	13
Haemulon aurolineatum	1,284	122	2,279	92	3,777
Haemulon carbonarium	119	62	15	27	223
Haemulon chrysargyreum	43	154	.	4	201
Haemulon flavolineatum	452	426	171	761	1,810
Haemulon macrostomum	10	7	2	9	28
Haemulon melanurum	110	30	3	5	148
Haemulon parrai	18	2	4	135	159
Haemulon plumieri	3,937	2,369	1,361	931	8,598
Haemulon sciurus	1,357	697	750	674	3,478
Haemulon spp.	909	2,133	1,529	2,010	6,581
Holacanthus bermudensis	21	40	19	42	122
Holacanthus ciliaris	76	23	26	37	162
Holacanthus tricolor	45	77	37	70	229
Lachnolaimus maximus	311	312	165	241	1,029
Lutjanus analis	107	32	23	29	191
Lutjanus apodus	166	208	24	238	636

Appendix KY01-04. (Continued)

Scientific Name	**Zone**				**Point Count**
	A	**B**	**C**	**D**	**Totals**
	E=364	**E=280**	**E=168**	**E=280**	**E=1,092**
Lutjanus griseus	909	407	353	245	1,914
Lutjanus jocu	5	.	.	4	9
Lutjanus mahogoni	10	.	.	10	20
Lutjanus synagris	25	33	.	6	64
Melichthys niger	.	.	.	1	1
Mycteroperca bonaci	31	36	39	42	148
Mycteroperca microlepis	1	1	4	5	11
Mycteroperca phenax	2	4	.	7	13
Mycteroperca venenosa	.	2	.	14	16
Ocyurus chrysurus	1,858	563	353	838	3,612
Pomacanthus arcuatus	189	116	92	114	511
Pomacanthus paru	125	37	14	22	198
Priacanthus arenatus	.	45	1	2	48
Priacanthus cruentatus	.	6	.	.	6
Totals	**12,908**	**8,925**	**7,842**	**7,473**	**37,148**

Northeast Florida

Northeast Florida is located in the southern region of the Atlantic Coastal Plain (Durako et al. 1988). Within this area 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. The lower St. Marys River Basin is a 209-km long stretch of blackwater (tannin enriched) defining the boundary between Georgia and Florida. The basin is home to an expansive marsh system and covers approximately 4,092 km^2 (St. Johns River Water Management District, 2000a). The lower St. Marys River Basin encompasses the St. Marys River, Cumberland Sound, the Amelia River (Intracoastal Waterway), and numerous tributaries. The lower Nassau River Basin (1,114 km^2) is a largely undeveloped waterway spanning Nassau County and the southern portion of Duval County (St. Johns River Water Management District, 2000b). The area currently targeted by the FIM program is composed of the Nassau River, as well as the Ft. George River and many tributaries. 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). The lower St. Johns is also commonly referred to as the St. Johns Estuary, indicating the area's potential importance as breeding and feeding grounds to local fish and wildlife (see Fisheries-Independent Monitoring section for more detail on the northeast Florida study area).

The Fisheries-Independent Monitoring program expanded sampling efforts into northeast Florida beginning in April 2001. The purpose of the expansion was to monitor trends in estuarine fish abundance through time. Three sampling trips were conducted in April using the stratified-random sampling (SRS) method at a reduced level (n=21). Sampling sites were randomly chosen and three gear types were used. Regular monthly sampling has been conducted since May 1, 2001. This section summarizes the data collected during the initial eight months of Jacksonville area sampling in 2001. Monthly SRS, was conducted using 21.3-m river seines, 183-m haul seines, and 6.1-m otter trawls. The area sampled was divided into five zones. The lower St. Marys River Basin (A) and the lower Nassau River Basin (B) represent the first two zones. The St. Johns River was divided into three separate zones (C, D and E; Figure JX01-01). All methods used were the same as those described in the Methods section of this report.

Stratified-Random Sampling

A total of 124,775 fish and selected invertebrates were collected during northeast Florida SRS in 2001 (Table JX01-01; Appendices JX01-01 and -02). One hundred sixty species were represented in 653 samples. *Anchoa mitchilli* were the most abundant fish collected (n=71,799), comprising 57.5% of the 2001 total catch. Other small forage fishes were also among the most dominant species, including *Menidia* spp. (n=10,342), *Anchoa hepsetus* (n=2,281), *Lagodon rhomboides* (n=1,872), and *Bairdiella chrysoura* (n=1,312). Five Selected Taxa accounted for five of the 10 dominant taxa collected for all hauls: *Micropogonias undulatus* (n=11,809), *Leiostomus xanthurus* (n=4,333), *Litopenaeus setiferus* (n=2,802), *Mugil cephalus* (n=1,781), and *Farfantepenaeus duorarum* (n=1,552), accounting for 18% of the total catch.

21.3-m River Seines. A total of 89,370 animals were collected in 257 21.3-m river seine samples, representing 72% of the total annual SRS catch (Tables JX01-01 and -02). Zone B (n=24,404; 65 samples) produced the most fish and selected invertebrates while the fewest were collected in Zone E (n=8,352; 31 hauls). The most abundant species was *A. mitchilli* (n=59,962) accounting for 67% of the total catch with the 21.3-m river seine. *Menidia* spp. (n=10,340) and *M. undulatus* (n=6,034) were also collected in large numbers.

Selected Taxa (n=11,912; 27 taxa) were a relatively large proportion (13%) of animals collected in 21.3-m river seines (Table JX01-03). *Micropogonias undulatus* (n=6,034) was the most numerous of the Selected Taxa, occuring in 20% of 21.3-m river seines. *Leiostomus xanthurus* (n=2,170), *L. setiferus* (n=1,752), *F. duorarum* (n=505), *M. cephalus* (n=452), *M. curema* (n=322), and *Callinectes sapidus* (n=258) were next in abundance among the Selected Taxa.

183-m Haul Seines. A total of 13,341 animals were collected in 131 seine hauls (Tables JX01-01 and -04). More fish and selected invertebrates were collected in Zone E (379 fish per haul) than any other zone, comprising 48% of all fish and selected invertebrates collected with the 183-m haul seine. Zone D produced the fewest number of fish and selected invertebrates (58 fish per haul). The two most abundant taxa collected with the 183-m haul seine were the Selected Taxa *M. undulatus* (n=4,505) and *L. xanthurus* (n=1,652). These two taxa accounted for 46% of the total catch with this gear. *Lagodon rhomboides* (n=1,480) was also collected in large numbers.

There were 27 Selected Taxa represented in 183-m haul seine samples (Table JX01-05). In addition to *M. undulatus* and *L. xanthurus*, the other abundant Selected Taxa collected were *M. cephalus* (n=1,328), *M. curema* (n=360), *Cynoscion nebulosus* (n=113), *C. sapidus* (n=103), and *Paralichthys lethostigma* (n=103).

6.1-m Otter trawls. A total of 22,064 fish and selected invertebrates were collected in 265 samples (Tables JX01-01 and -06). *Anchoa mitchilli* (n=11,837) was the most abundant, accounting for 53.5% of the total catch. *Micropogonias undulatus* (n=1,270) and *F. duorarum* (n=1,044) were also collected in large numbers. Two taxa (*Gobiesox strumosus*, n=9 and *Stellifer lanceolatus*, n=446) were noticebly absent from all other gears except for the otter trawl (Appendix JX01-02).

Twenty five Selected Taxa (n=4,952) were collected in otter trawls, comprising 22% of the total catch (Table JX01-07). The most numerous were *M. undulatus* (n=1,270), *F. duorarum* (n=1,044), and *L. setiferus* (n=964). *Leiostomus xanthurus* (n=511), *C. sapidus* (n=500), *Cynoscion regalis* (n=336), and *Menticirrhus americanus* (n=196) were also present in notable numbers.

References

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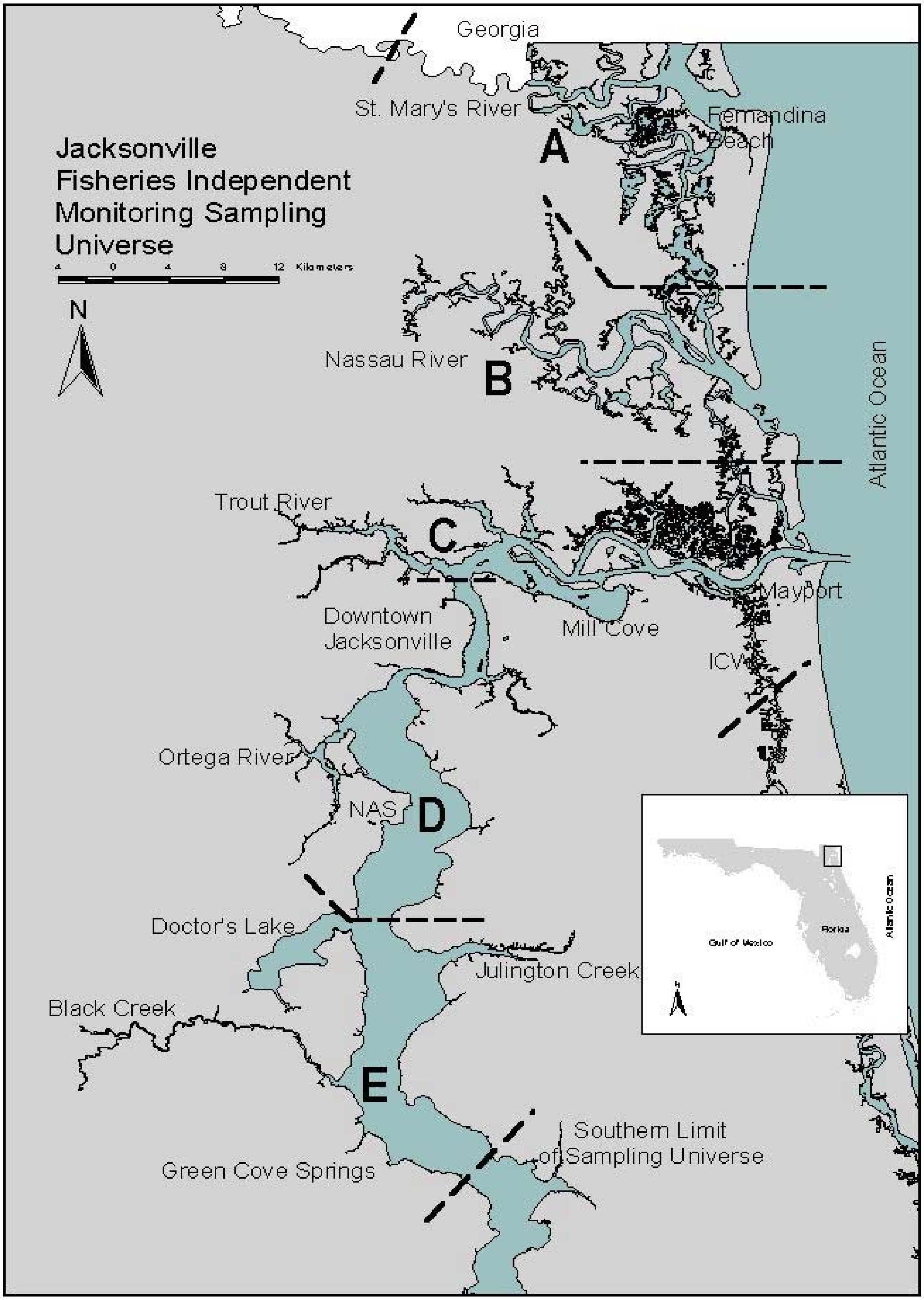

Figure JX01-01. Northeast Florida sampling universe.

Table JX01-01. Summary of catch and effort data for northeast Florida stratified-random sampling, 2001. Zone A is the Lower St. Marys River Basin, Zone B is the Lower Nassau River Basin and Zones C, D and E are located in the St. Johns River.

	21.3-m river seine		**183-m haul seine**		**6.1-m otter trawl**		**Totals**	
Zone	**Animals**	**Hauls**	**Animals**	**Hauls**	**Animals**	**Hauls**	**Animals**	**Hauls**
A	21,458	64	2,211	32	3,025	63	26,694	159
B	24,404	65	1,655	32	6,446	64	32,505	161
C	17,061	65	2,052	33	9,076	68	28,189	166
D	18,095	32	979	17	1,906	34	20,980	83
E	8,352	31	6,444	17	1,611	36	16,407	84
Totals	**89,370**	**257**	**13,341**	**131**	**22,064**	**265**	**124,775**	**653**

Table JX01-02. Catch statistics for 10 dominant taxa collected in 257 21.3-m river seine samples during northeast Florida stratified-random sampling, 2001. 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
Anchoa mitchilli	59,962	67.1	64.6	343.11	79.11	369.63	15,529.41	34	0.04	15	510
Menidia spp.	10,340	11.6	70.0	59.17	10.69	289.77	1,623.53	43	0.09	12	76
Micropogonias undulatus	6,034	6.8	20.2	34.53	20.11	933.58	4,682.35	51	0.19	9	123
Leiostomus xanthurus	2,170	2.4	32.3	12.42	3.59	463.73	651.47	54	0.34	12	176
Litopenaeus setiferus	1,752	2.0	32.7	10.03	3.34	533.75	617.65	11	0.12	2	38
Anchoa hepsetus	1,349	1.5	18.7	7.72	3.15	655.00	582.35	37	0.22	20	88
Eucinostomus spp.	1,150	1.3	31.9	6.58	1.38	335.00	217.65	27	0.20	10	46
Farfantepenaeus duorarum	505	0.6	26.8	2.89	0.68	379.14	113.24	12	0.20	3	31
Eucinostomus harengulus	492	0.6	30.4	2.82	0.43	242.34	44.12	57	0.53	29	91
Gambusia holbrooki	492	0.6	7.4	2.82	1.44	821.00	261.76	24	0.22	13	39
Subtotal	84,246	94.5	.	.	.	.	.	.	.	2	510
Totals	**89,370**	**100.0**	**.**	**511.39**	**85.01**	**266.49**	**15,647.06**	**.**	**.**	**2**	**510**

Table JX01-03. Catch statistics for Selected Taxa collected in 257 21.3-m river seine samples during northeast Florida stratified-random sampling, 2001. 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	6,034	6.8	20.2	34.53	20.11	933.58	4,682.35	51	0.19	9	123
Leiostomus xanthurus	2,170	2.4	32.3	12.42	3.59	463.73	651.47	54	0.34	12	176
Litopenaeus setiferus	1,752	2.0	32.7	10.03	3.34	533.75	617.65	11	0.12	2	38
Farfantepenaeus duorarum	505	0.6	26.8	2.89	0.68	379.14	113.24	12	0.20	3	31
Mugil cephalus	452	0.5	24.1	2.59	0.88	548.22	204.41	71	2.35	15	345
Mugil curema	322	0.4	7.0	1.84	1.33	1,158.44	336.76	35	1.21	19	169
Callinectes sapidus	258	0.3	26.1	1.48	0.32	347.36	57.35	44	2.15	8	163
Cynoscion nebulosus	106	0.1	13.2	0.61	0.15	390.56	22.06	54	3.24	9	166
Lutjanus griseus	62	0.1	8.6	0.35	0.12	558.69	27.94	24	1.81	12	91
Menticirrhus americanus	61	0.1	4.7	0.35	0.23	1,042.20	57.35	38	3.86	18	251
Paralichthys lethostigma	42	0.0	11.7	0.24	0.05	313.36	4.41	134	15.53	35	412
Sciaenops ocellatus	36	0.0	8.9	0.21	0.05	381.11	5.88	67	12.19	10	324
Trachinotus carolinus	24	0.0	1.6	0.14	0.07	845.93	13.24	32	2.82	13	70

Table JX01-03. (Continued)

Species	Number		%	Density Estimate (animals/100m^2)				Standard Length (mm)			
	No.	%	Occur	Mean	Stderr	CV	Max	Mean	Stderr	Min	Max
Trachinotus falcatus	22	0.0	1.6	0.13	0.07	900.49	13.24	33	2.53	11	46
Archosargus probatocephalus	19	0.0	4.7	0.11	0.04	558.19	5.88	82	11.96	15	205
Pomatomus saltatrix	14	0.0	1.9	0.08	0.05	981.86	11.76	99	9.23	40	156
Paralichthys albigutta	7	0.0	1.6	0.04	0.02	995.18	5.88	84	17.71	24	134
Cynoscion regalis	5	0.0	1.9	0.03	0.01	711.31	1.47	56	9.94	33	82
Pogonias cromis	5	0.0	1.2	0.03	0.02	1,060.74	4.41	64	11.36	23	93
Menticirrhus saxatilis	4	0.0	0.8	0.02	0.02	1,265.89	4.41	85	18.31	31	114
Centropomus undecimalis	3	0.0	0.8	0.02	0.01	1,193.03	2.94	29	3.21	23	34
Menticirrhus littoralis	2	0.0	0.8	0.01	0.01	1,131.36	1.47	65	19.50	45	84
Scomberomorus maculatus	2	0.0	0.8	0.01	0.01	1,131.36	1.47	92	15.50	76	107
Paralichthys dentatus	2	0.0	0.8	0.01	0.01	1,131.36	1.47	55	3.00	52	58
Albula vulpes	1	0.0	0.4	0.01	0.01	1,603.12	1.47	49	.	49	49
Lutjanus analis	1	0.0	0.4	0.01	0.01	1,603.12	1.47	20	.	20	20
Paralichthys squamilentus	1	0.0	0.4	0.01	0.01	1,603.12	1.47	112	.	112	112
Totals	**11,912**	**13.3**	**78.6**	**68.16**	**22.87**	**537.92**	**4,969.12**	**.**	**.**	**2**	**412**

Table JX01-04. Catch statistics for 10 dominant taxa collected in 131 183-m haul seine samples during northeast Florida stratified-random sampling, 2001. 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**
Micropogonias undulatus	4,505	33.8	16.0	34.39	33.25	1,106.51	4,356.00	85	0.21	20	241
Leiostomus xanthurus	1,652	12.4	55.0	12.61	4.52	410.27	428.00	96	0.59	18	198
Lagodon rhomboides	1,480	11.1	46.6	11.30	4.20	425.25	429.00	107	0.65	52	222
Mugil cephalus	1,328	10.0	72.5	10.14	2.80	316.53	327.00	192	1.37	71	446
Bairdiella chrysoura	683	5.1	19.1	5.21	2.73	599.21	329.00	122	0.62	84	179
Brevoortia spp.	422	3.2	27.5	3.22	1.09	385.75	111.00	113	1.99	36	323
Dasyatis sabina	420	3.1	51.9	3.21	0.60	215.46	48.00	229	2.10	85	347
Mugil curema	360	2.7	33.6	2.75	0.78	323.03	80.00	165	2.17	83	286
Stomolophus meleagris	257	1.9	9.2	1.96	1.09	633.77	130.00	70	1.01	43	180
Chloroscombrus chrysurus	214	1.6	16.8	1.63	0.71	500.73	76.00	83	0.81	61	152
Subtotal	11,321	84.9	.	.	.	.	.	.	.	18	446
Totals	**13,341**	**100.0**	**.**	**101.84**	**39.15**	**440.03**	**5,109.00**	**.**	**.**	**15**	**1,157**

Table JX01-05. Catch statistics for Selected Taxa collected in 131 183-m haul seine samples during northeast Florida stratified-random sampling, 2001. 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
Micropogonias undulatus	4,505	33.8	16.0	34.39	33.25	1,106.51	4,356.00	85	0.21	20	241
Leiostomus xanthurus	1,652	12.4	55.0	12.61	4.52	410.27	428.00	96	0.59	18	198
Mugil cephalus	1,328	10.0	72.5	10.14	2.80	316.53	327.00	192	1.37	71	446
Mugil curema	360	2.7	33.6	2.75	0.78	323.03	80.00	165	2.17	83	286
Cynoscion nebulosus	113	0.8	25.2	0.86	0.20	271.60	14.00	258	6.59	129	510
Callinectes sapidus	103	0.8	35.1	0.79	0.13	185.99	8.00	116	3.43	44	194
Paralichthys lethostigma	103	0.8	27.5	0.79	0.17	241.83	12.00	208	8.60	72	399
Elops saurus	92	0.7	22.1	0.70	0.21	344.60	19.00	326	7.83	200	597
Litopenaeus setiferus	86	0.6	13.0	0.66	0.22	383.86	19.00	24	0.34	15	30
Sciaenops ocellatus	78	0.6	22.1	0.60	0.16	315.77	16.00	311	18.49	80	641
Trachinotus falcatus	66	0.5	2.3	0.50	0.37	836.10	44.00	80	2.93	54	176
Archosargus probatocephalus	62	0.5	22.9	0.47	0.11	276.52	9.00	284	13.71	82	486

Table JX01-05. (Continued)

Species	Number		%	Catch-per-unit-effort (animals/set)				Standard Length (mm)			
	No.	%	Occur	Mean	Stderr	CV	Max	Mean	Stderr	Min	Max
Scomberomorus maculatus	39	0.3	13.7	0.30	0.09	342.79	7.00	195	10.47	90	398
Menticirrhus americanus	29	0.2	13.0	0.22	0.06	303.23	4.00	166	8.90	71	286
Pomatomus saltatrix	28	0.2	9.9	0.21	0.08	410.37	8.00	232	10.98	149	391
Pogonias cromis	18	0.1	9.2	0.14	0.05	380.46	4.00	248	20.93	109	395
Trachinotus carolinus	14	0.1	3.1	0.11	0.08	908.34	11.00	194	48.50	72	818
Paralichthys albigutta	14	0.1	7.6	0.11	0.04	389.31	3.00	151	11.39	100	265
Lutjanus synagris	7	0.1	1.5	0.05	0.04	878.18	5.00	86	1.80	81	95
Menticirrhus saxatilis	6	0.0	1.5	0.05	0.04	971.24	5.00	145	20.81	109	248
Farfantepenaeus duorarum	3	0.0	2.3	0.02	0.01	655.70	1.00	25	3.84	19	32
Lutjanus griseus	2	0.0	1.5	0.02	0.01	806.20	1.00	91	2.00	89	93
Rachycentron canadum	1	0.0	0.8	0.01	0.01	1,144.55	1.00	178	.	178	178
Lutjanus analis	1	0.0	0.8	0.01	0.01	1,144.55	1.00	152	.	152	152
Cynoscion regalis	1	0.0	0.8	0.01	0.01	1,144.55	1.00	199	.	199	199
Menticirrhus littoralis	1	0.0	0.8	0.01	0.01	1,144.55	1.00	124	.	124	124
Paralichthys dentatus	1	0.0	0.8	0.01	0.01	1,144.55	1.00	97	.	97	97
Totals	**8,713**	**65.3**	**98.5**	**66.51**	**36.63**	**630.30**	**4,790.00**	**.**	**.**	**15**	**818**

Table JX01-06. Catch statistics for 10 dominant taxa collected in 265 river 6.1-m otter trawl samples during northeast Florida stratified-random sampling, 2001. 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**
Anchoa mitchilli	11,837	53.5	50.6	6.08	1.63	437.00	328.12	45	0.07	15	85
Micropogonias undulatus	1,270	5.7	32.5	0.65	0.17	426.54	36.83	39	0.72	10	172
Farfantepenaeus duorarum	1,044	4.7	40.8	0.54	0.08	253.60	10.66	15	0.22	3	39
Litopenaeus setiferus	964	4.4	41.5	0.49	0.08	263.66	11.87	19	0.22	2	45
Anchoa hepsetus	932	4.2	4.2	0.47	0.33	1,125.17	69.08	44	0.37	22	96
Trinectes maculatus	735	3.3	20.0	0.47	0.17	601.45	41.15	38	0.71	15	139
Chloroscombrus chrysurus	722	3.3	7.5	0.37	0.34	1,499.69	89.72	46	0.44	4	84
Leiostomus xanthurus	511	2.3	22.6	0.26	0.07	444.54	15.52	87	1.02	10	162
Callinectes sapidus	500	2.3	42.6	0.26	0.04	269.63	6.88	96	2.05	9	202
Stellifer lanceolatus	446	2.0	14.3	0.23	0.06	455.15	9.85	48	0.75	11	132
Subtotal	18,961	85.7	.	.	.	.	.	.	.	2	202
Totals	**22,064**	**100.0**	**.**	**11.46**	**1.82**	**258.22**	**335.13**	**.**	**.**	**2**	**640**

Table JX01-07. Catch statistics for Selected Taxa collected in 265 river 6.1-m otter trawl samples during northeast Florida stratified-random sampling, 2001. 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	1,270	5.7	32.5	0.65	0.17	426.54	36.83	39	0.72	10	172
Farfantepenaeus duorarum	1,044	4.7	40.8	0.54	0.08	253.60	10.66	15	0.22	3	39
Litopenaeus setiferus	964	4.4	41.5	0.49	0.08	263.66	11.87	19	0.22	2	45
Leiostomus xanthurus	511	2.3	22.6	0.26	0.07	444.54	15.52	87	1.02	10	162
Callinectes sapidus	500	2.3	42.6	0.26	0.04	269.63	6.88	96	2.05	9	202
Cynoscion regalis	336	1.5	21.1	0.17	0.06	588.56	14.98	48	1.10	13	176
Menticirrhus americanus	196	0.9	18.5	0.10	0.02	320.28	2.56	42	1.73	13	223
Paralichthys lethostigma	42	0.2	10.9	0.02	0.00	323.37	0.40	138	12.03	36	374
Archosargus probatocephalus	16	0.1	3.4	0.01	0.00	636.86	0.54	286	29.15	99	460
Paralichthys albigutta	13	0.1	4.5	0.01	0.00	475.46	0.27	135	11.36	60	176
Cynoscion nebulosus	11	0.0	4.2	0.01	0.00	481.44	0.13	65	23.29	12	249
Lutjanus synagris	10	0.0	1.5	0.01	0.00	945.71	0.67	53	7.80	23	85
Menippe spp.	8	0.0	1.9	0.00	0.00	809.30	0.40	80	12.30	23	110

Table JX01-07. (Continued)

Species	Number No.	Number %	% Occur	CPUE Mean	CPUE Stderr	CPUE CV	CPUE Max	SL Mean	SL Stderr	SL Min	SL Max
Sciaenops ocellatus	6	0.0	1.9	0.00	0.00	757.00	0.27	118	63.38	15	415
Menticirrhus saxatilis	6	0.0	2.3	0.00	0.00	658.26	0.13	47	5.92	32	68
Paralichthys dentatus	6	0.0	1.9	0.00	0.00	762.29	0.27	163	35.96	11	235
Menticirrhus littoralis	3	0.0	0.8	0.00	0.00	1,211.51	0.27	30	11.84	18	54
Pogonias cromis	3	0.0	1.1	0.00	0.00	936.29	0.13	176	50.14	83	255
Mugil cephalus	1	0.0	0.4	0.00	0.00	1,627.88	0.17	225	.	225	225
Elops saurus	1	0.0	0.4	0.00	0.00	1,627.88	0.13	45	.	45	45
Trachinotus falcatus	1	0.0	0.4	0.00	0.00	1,627.88	0.13	126	.	126	126
Lutjanus griseus	1	0.0	0.4	0.00	0.00	1,627.88	0.13	50	.	50	50
Lutjanus analis	1	0.0	0.4	0.00	0.00	1,627.88	0.13	16	.	16	16
Cynoscion nothus	1	0.0	0.4	0.00	0.00	1,627.88	0.13	95	.	95	95
Scomberomorus maculatus	1	0.0	0.4	0.00	0.00	1,627.88	0.13	27	.	27	27
Totals	**4,952**	**22.4**	**84.2**	**2.53**	**0.27**	**174.25**	**36.83**	**.**	**.**	**2**	**460**

Appendix JX01-01. Monthly summary of species collected during northeast Florida stratified-random sampling, 2001. Effort, or total number of hauls, is labeled 'E'. Listing is sorted alphabetically by taxon.

Species	**Month**												**Totals**
	Jan	**Feb**	**Mar**	**Apr**[1]	**May**	**Jun**	**Jul**	**Aug**	**Sep**	**Oct**	**Nov**	**Dec**	
	.	**.**	**.**	**E=21**	**E=80**	**E=76**	**E=78**	**E=78**	**E=80**	**E=80**	**E=80**	**E=80**	**E=653**
Achirus lineatus	.	.	.	.	2	4	12	12	13	20	10	9	82
Albula vulpes	.	.	.	.	.	.	.	.	.	.	.	1	1
Alosa aestivalis	.	.	.	.	1	1	.	.	.	.	.	.	2
Ameiurus catus	.	.	.	.	.	6	2	.	55	7	5	24	99
Ameiurus nebulosus	.	.	.	.	.	.	.	2	33	3	2	2	42
Amia calva	.	.	.	.	2	.	.	.	.	.	.	.	2
Anchoa hepsetus	.	.	.	5	513	296	413	523	527	3	.	1	2,281
Anchoa mitchilli	.	.	.	1,599	6,139	6,180	10,716	7,045	7,835	3,334	22,571	6,380	71,799
Ancylopsetta quadrocellata	.	.	.	.	1	6	.	.	.	.	.	.	7
Anguilla rostrata	.	.	.	1	.	.	.	.	.	1	.	4	6
Archosargus probatocephalus	.	.	.	1	11	9	5	9	13	23	13	13	97
Arius felis	.	.	.	1	.	8	.	21	14	5	1	.	50
Astroscopus y-graecum	.	.	.	.	.	.	.	.	1	.	.	.	1
Bagre marinus	.	.	.	.	.	.	1	1	.	.	.	.	2
Bairdiella chrysoura	.	.	.	5	56	373	35	116	145	57	455	70	1,312
Bathygobius soporator	.	.	.	.	.	.	.	.	.	1	.	.	1
Brevoortia spp.	.	.	.	28	275	35	29	200	85	8	49	79	788
Callinectes sapidus	.	.	.	44	149	152	72	72	125	122	50	75	861
Callinectes similis	.	.	.	.	99	60	40	28	17	18	27	1	290

Appendix JX01-01. (Continued)

Species	Month												Totals
	Jan	Feb	Mar	Apr[1]	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
	.	.	.	E=21	E=80	E=76	E=78	E=78	E=80	E=80	E=80	E=80	E=653
Callinectes spp.	.	.	.	.	.	.	2	.	.	.	.	.	2
Carangidae spp.	.	.	.	.	2	.	.	.	.	.	.	.	2
Caranx hippos	.	.	.	4	12	13	16	23	12	3	2	1	86
Caranx latus	.	.	.	.	.	.	.	.	.	.	2	.	2
Carcharhinus limbatus	.	.	.	.	.	1	.	.	.	.	.	.	1
Centropomus undecimalis	.	.	.	.	.	.	.	.	1	2	.	.	3
Centropristis philadelphica	.	.	.	.	.	.	3	.	6	7	3	.	19
Centropristis striata	.	.	.	.	.	.	.	.	.	.	2	.	2
Chaetodipterus faber	.	.	.	.	7	2	19	44	27	11	2	.	112
Chasmodes saburrae	.	.	.	.	.	.	.	2	.	1	1	1	5
Chilomycterus schoepfi	.	.	.	.	11	14	16	21	19	10	12	5	108
Chloroscombrus chrysurus	.	.	.	.	13	24	21	767	120	12	4	.	961
Citharichthys macrops	.	.	.	.	.	.	2	1	.	.	.	.	3
Citharichthys spilopterus	.	.	.	7	53	128	53	72	30	8	3	1	355
Clupeidae spp.	.	.	.	.	.	.	.	.	2	3	.	.	5
Cynoscion nebulosus	.	.	.	.	8	27	32	27	34	41	37	24	230
Cynoscion nothus	.	.	.	.	1	.	.	.	.	.	.	.	1
Cynoscion regalis	.	.	.	.	4	70	9	44	9	151	50	5	342
Cynoscion spp.	.	.	.	.	.	2	.	.	.	.	.	.	2
Cyprinodon variegatus	.	.	.	.	.	.	.	.	.	.	3	.	3
Dasyatis sabina	.	.	.	.	33	91	40	40	127	37	74	31	473

Appendix JX01-01. (Continued)

Species	Month												Totals
	Jan	Feb	Mar	Apr[1]	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
	.	.	.	E=21	E=80	E=76	E=78	E=78	E=80	E=80	E=80	E=80	E=653
Dasyatis say	.	.	.	.	6	6	1	5	.	1	.	.	19
Diapterus auratus	.	.	.	.	.	.	.	.	9	62	46	11	128
Dorosoma cepedianum	.	.	.	.	17	.	13	2	.	.	3	.	35
Dorosoma petenense	.	.	.	.	.	1	.	.	1	2	2	25	31
Dorosoma spp.	.	.	.	.	16	.	.	.	.	.	.	.	16
Elassoma okefenokee	.	.	.	.	.	.	.	.	.	.	.	1	1
Elops saurus	.	.	.	.	27	10	4	2	25	22	3	.	93
Esox niger	.	.	.	.	.	.	.	.	.	.	1	.	1
Etheostoma fusiforme	.	.	.	.	.	.	.	.	.	2	.	.	2
Etheostoma spp.	.	.	.	.	.	.	.	.	.	.	.	9	9
Etropus crossotus	.	.	.	.	1	2	37	14	16	39	44	39	192
Eucinostomus gula	.	.	.	.	.	1	36	68	9	2	11	6	133
Eucinostomus harengulus	.	.	.	.	.	152	71	54	78	162	75	100	692
Eucinostomus jonesi	.	.	.	.	.	.	.	.	.	.	1	.	1
Eucinostomus spp.	.	.	.	.	1	120	9	207	221	368	156	176	1,258
Evorthodus lyricus	.	.	.	.	.	.	.	.	.	5	.	.	5
Farfantepenaeus duorarum	.	.	.	16	163	291	193	231	199	374	51	34	1,552
Fundulus grandis	.	.	.	.	27	26	.	.	.	.	.	.	53
Fundulus heteroclitus	.	.	.	.	.	.	125	11	140	93	5	46	420
Fundulus majalis	.	.	.	.	1	18	5	1	44	18	6	6	99
Fundulus seminolis	.	.	.	.	.	.	.	2	16	.	.	.	18

Appendix JX01-01. (Continued)

Species	Month												Totals
	Jan	Feb	Mar	Apr[1]	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
	.	.	.	E=21	E=80	E=76	E=78	E=78	E=80	E=80	E=80	E=80	E=653
Fundulus similis	.	.	.	.	.	1	.	.	.	.	.	.	1
Fundulus spp.	.	.	.	57	.	1	.	.	6	.	.	.	64
Gambusia holbrooki	.	.	.	1	.	3	219	1	35	183	4	46	492
Gobiesox strumosus	.	.	.	.	.	1	1	.	.	1	6	.	9
Gobionellus boleosoma	.	.	.	.	8	1	.	1	6	6	14	7	43
Gobionellus oceanicus	.	.	.	.	1	.	1	.	.	.	2	.	4
Gobionellus shufeldti	.	.	.	.	.	.	.	.	1	2	.	.	3
Gobionellus smaragdus	.	.	.	.	.	.	.	.	.	.	.	1	1
Gobiosoma bosc	.	.	.	2	.	4	4	5	9	1	5	5	35
Gobiosoma robustum	.	.	.	.	1	.	1	5	10	3	25	1	46
Gymnura micrura	.	.	.	.	2	18	3	1	5	.	1	1	31
Harengula jaguana	.	.	.	.	.	.	.	2	1	.	1	.	4
Hippocampus erectus	.	.	.	.	.	1	.	.	.	.	.	.	1
Ictalurus punctatus	.	.	.	.	.	1	5	.	14	11	3	42	76
Labidesthes sicculus	.	.	.	.	.	7	3	46	1	3	59	102	221
Lagodon rhomboides	.	.	.	40	67	412	295	129	523	198	84	124	1,872
Larimus fasciatus	.	.	.	.	.	1	1	.	1	.	15	.	18
Leiostomus xanthurus	.	.	.	924	827	1,111	638	287	156	96	107	187	4,333
Lepisosteus osseus	.	.	.	1	4	2	2	.	22	1	1	3	36
Lepisosteus platyrhincus	.	.	.	2	5	7	22	15	.	3	7	6	67
Lepomis auritus	.	.	.	.	.	1	11	16	.	5	.	28	61

Appendix JX01-01. (Continued)

Species	Month												Totals
	Jan	Feb	Mar	Apr[1]	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
	.	.	.	E=21	E=80	E=76	E=78	E=78	E=80	E=80	E=80	E=80	E=653
Lepomis gulosus	.	.	.	.	1	.	.	3	.	.	.	.	4
Lepomis macrochirus	.	.	.	.	.	1	63	34	50	161	4	36	349
Lepomis microlophus	.	.	.	.	.	.	5	9	21	11	.	25	71
Lepomis spp.	.	.	.	.	.	.	.	.	8	.	.	5	13
Lepophidium brevibarbe	.	.	.	.	.	.	.	.	.	1	.	1	2
Limulus polyphemus	.	.	.	.	.	.	.	.	.	1	.	1	2
Litopenaeus setiferus	.	.	.	.	7	6	494	373	339	792	428	363	2,802
Lucania goodei	.	.	.	.	.	.	.	.	.	.	.	2	2
Lucania parva	.	.	.	.	.	.	.	3	42	3	4	.	52
Lutjanus analis	.	.	.	.	.	.	.	.	2	1	.	.	3
Lutjanus griseus	.	.	.	.	.	.	4	9	33	11	3	5	65
Lutjanus spp.	.	.	.	.	.	.	.	.	1	.	.	.	1
Lutjanus synagris	.	.	.	.	.	.	.	5	.	9	3	.	17
Membras martinica	.	.	.	.	.	.	2	2	3	7	73	.	87
Menidia spp.	.	.	.	181	207	1,109	1,616	1,862	2,504	631	690	1,542	10,342
Menippe spp.	.	.	.	.	.	.	2	.	3	1	2	.	8
Menticirrhus americanus	.	.	.	.	9	49	22	36	100	45	19	6	286
Menticirrhus littoralis	.	.	.	.	.	.	3	1	2	.	.	.	6
Menticirrhus saxatilis	.	.	.	.	3	1	4	7	1	.	.	.	16
Microgobius gulosus	.	.	.	.	4	5	.	.	4	14	8	18	53
Microgobius thalassinus	.	.	.	2	.	5	4	38	19	3	2	4	77

Appendix JX01-01. (Continued)

Species	Month												Totals
	Jan	Feb	Mar	Apr[1]	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
	.	.	.	E=21	E=80	E=76	E=78	E=78	E=80	E=80	E=80	E=80	E=653
Micropogonias undulatus	.	.	.	5,306	528	4,647	232	44	9	38	275	730	11,809
Micropterus salmoides	.	.	.	.	3	1	.	3	6	1	.	1	15
Monacanthus hispidus	.	.	.	.	6	9	7	6	1	1	.	3	33
Monacanthus spp.	.	.	.	.	1	.	.	.	.	.	.	.	1
Mugil cephalus	.	.	.	202	174	431	346	222	117	108	57	124	1,781
Mugil curema	.	.	.	.	89	330	71	20	45	63	23	41	682
Myrophis punctatus	.	.	.	.	1	.	.	.	.	2	.	.	3
Negaprion brevirostris	.	.	.	.	.	1	.	.	.	.	.	.	1
Notemigonus crysoleucas	.	.	.	.	.	.	.	.	2	.	.	.	2
Notropis chalybaeus	.	.	.	.	.	.	.	6	.	.	.	.	6
Ocyurus chrysurus	.	.	.	.	.	.	.	5	.	2	3	.	10
Ogcocephalidae spp.	.	.	.	.	.	1	.	.	.	.	.	.	1
Ogcocephalus parvus	.	.	.	.	.	.	.	.	.	.	1	1	2
Oligoplites saurus	.	.	.	.	1	2	11	11	13	.	4	1	43
Opisthonema oglinum	.	.	.	.	33	13	13	5	1	.	1	3	69
Opsanus tau	.	.	.	6	9	4	6	7	13	28	10	13	96
Orthopristis chrysoptera	.	.	.	.	10	11	26	8	5	1	9	1	71
Paralichthys albigutta	.	.	.	.	6	6	6	6	2	4	3	1	34
Paralichthys dentatus	.	.	.	.	4	1	.	.	1	1	2	.	9
Paralichthys lethostigma	.	.	.	12	35	18	42	29	18	15	13	5	187
Paralichthys spp.	.	.	.	2	.	.	.	.	.	.	.	.	2

Appendix JX01-01. (Continued)

Species	Month												Totals
	Jan	Feb	Mar	Apr[1]	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
	.	.	.	E=21	E=80	E=76	E=78	E=78	E=80	E=80	E=80	E=80	E=653
Paralichthys squamilentus	.	.	.	.	.	1	.	.	.	.	.	.	1
Penaeidae spp.	.	.	.	.	3	.	.	.	2	1	105	.	111
Peprilus triacanthus	.	.	.	.	1	.	.	.	.	.	.	.	1
Poecilia latipinna	.	.	.	.	.	.	3	.	.	108	2	1	114
Pogonias cromis	.	.	.	.	.	6	1	5	3	7	3	1	26
Pomatomus saltatrix	.	.	.	.	2	5	9	2	1	.	4	19	42
Pomoxis nigromaculatus	.	.	.	.	1	.	1	.	.	.	.	11	13
Prionotus rubio	.	.	.	.	.	1	.	.	.	.	.	.	1
Prionotus scitulus	.	.	.	1	25	41	4	3	9	2	3	.	88
Prionotus tribulus	.	.	.	.	8	5	1	2	2	13	5	6	42
Rachycentron canadum	.	.	.	.	.	.	.	.	1	.	.	.	1
Sciaenidae spp.	.	.	.	.	2	.	.	.	10	.	.	.	12
Sciaenops ocellatus	.	.	.	6	30	11	11	5	15	27	11	4	120
Scomberomorus maculatus	.	.	.	7	6	10	7	6	2	1	1	2	42
Selene setapinnis	.	.	.	.	.	.	.	.	.	.	2	.	2
Selene vomer	.	.	.	.	.	8	8	5	11	1	11	2	46
Sphoeroides maculatus	.	.	.	.	.	.	.	1	.	.	.	.	1
Sphoeroides nephelus	.	.	.	2	17	16	10	7	8	11	10	8	89
Sphyraena barracuda	.	.	.	.	.	.	.	.	.	.	1	.	1
Sphyrna tiburo	.	.	.	.	3	3	1	1	.	.	.	.	8

Appendix JX01-01. (Continued)

Species	Month												Totals
	Jan	Feb	Mar	Apr[1]	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
	.	.	.	E=21	E=80	E=76	E=78	E=78	E=80	E=80	E=80	E=80	E=653
Stellifer lanceolatus	.	.	.	.	11	.	4	117	42	104	148	20	446
Stomolophus meleagris	.	.	.	.	5	2	1	.	1	3	213	63	288
Strongylura marina	.	.	.	.	6	5	1	3	2	14	37	9	77
Strongylura notata	.	.	.	1	2	1	.	1	.	.	.	.	5
Strongylura timucu	.	.	.	.	3	1	.	.	.	.	.	.	4
Symphurus plagiusa	.	.	.	1	15	59	59	33	37	71	16	62	353
Syngnathus floridae	.	.	.	.	.	.	.	1	.	.	.	.	1
Syngnathus fuscus	.	.	.	.	.	.	.	1	.	.	.	.	1
Syngnathus louisianae	.	.	.	.	12	7	4	1	5	6	3	.	38
Syngnathus scovelli	.	.	.	13	7	2	4	5	9	17	.	2	59
Synodus foetens	.	.	.	.	10	41	10	12	10	14	2	2	101
Trachinotus carolinus	.	.	.	.	10	12	.	2	3	11	.	.	38
Trachinotus falcatus	.	.	.	.	.	.	2	20	16	50	.	1	89
Trichiurus lepturus	.	.	.	.	2	.	.	.	.	.	.	.	2
Trinectes maculatus	.	.	.	3	9	12	40	20	452	127	57	61	781
Totals	**.**	**.**	**.**	**8,483**	**9,887**	**16,601**	**16,398**	**13,182**	**14,804**	**8,094**	**26,387**	**10,939**	**124,775**

1

[1] The month of April includes SRS trips performed at a reduced level. Three sampling trips (21 hauls) were completed: 8 21.3-m river seines, 3 183-m haul seines, and 10 6.1-m otter trawls.

Appendix JX01-02. Summary by gear and zone of species collected during northeast Florida stratified-random sampling, 2001. Effort, or the total number of hauls, is labeled 'E'. Listing is sorted alphabetical by taxon.

Species	Gear			Zone					Totals
	21.3-m river seine	183-m haul seine	6.1-m otter trawl	A	B	C	D	E	
	E=257	E=131	E=265	E=159	E=161	E=166	E=83	E=84	E=653
Achirus lineatus	26	7	49	9	13	40	16	4	82
Albula vulpes	1	.	.	.	.	1	.	.	1
Alosa aestivalis	2	.	.	2	.	.	.	.	2
Ameiurus catus	.	16	83	1	34	3	12	49	99
Ameiurus nebulosus	.	5	37	.	15	.	2	25	42
Amia calva	.	2	.	.	.	.	.	2	2
Anchoa hepsetus	1,349	.	932	727	891	631	31	1	2,281
Anchoa mitchilli	59,962	.	11,837	17,854	20,781	15,530	16,391	1,243	71,799
Ancylopsetta quadrocellata	1	6	.	5	1	1	.	.	7
Anguilla rostrata	1	1	4	.	.	2	4	.	6
Archosargus probatocephalus	19	62	16	22	25	39	6	5	97
Arius felis	20	5	25	2	42	2	4	.	50
Astroscopus y-graecum	.	.	1	1	.	.	.	.	1
Bagre marinus	.	.	2	1	1	.	.	.	2
Bairdiella chrysoura	349	683	280	588	374	228	26	96	1,312
Bathygobius soporator	1	.	.	.	.	1	.	.	1
Brevoortia spp.	364	422	2	101	409	241	28	9	788
Callinectes sapidus	258	103	500	219	259	284	67	32	861
Callinectes similis	81	18	191	161	32	96	1	.	290
Callinectes spp.	.	.	2	1	1	.	.	.	2
Carangidae spp.	2	.	.	.	.	2	.	.	2
Caranx hippos	9	77	.	8	21	32	16	9	86
Caranx latus	.	2	.	.	.	2	.	.	2
Carcharhinus limbatus	.	.	1	.	1	.	.	.	1
Centropomus undecimalis	3	.	.	.	.	.	.	3	3
Centropristis philadelphica	.	3	16	14	4	1	.	.	19
Centropristis striata	.	.	2	.	1	1	.	.	2
Chaetodipterus faber	4	42	66	33	68	11	.	.	112
Chasmodes saburrae	3	1	1	.	1	4	.	.	5
Chilomycterus schoepfi	22	50	36	29	25	52	2	.	108
Chloroscombrus chrysurus	25	214	722	44	20	860	37	.	961
Citharichthys macrops	.	2	1	.	2	1	.	.	3

Appendix JX01-02. (Continued)

Species	Gear			Zone					Totals
	21.3-m river seine	183-m haul seine	6.1-m otter trawl	A	B	C	D	E	
	E=257	E=131	E=265	E=159	E=161	E=166	E=83	E=84	E=653
Citharichthys spilopterus	150	89	116	71	139	108	33	4	355
Clupeidae spp.	5	.	.	.	.	5	.	.	5
Cynoscion nebulosus	106	113	11	46	76	81	16	11	230
Cynoscion nothus	.	.	1	1	.	.	.	.	1
Cynoscion regalis	5	1	336	44	87	168	21	22	342
Cynoscion spp.	.	.	2	.	2	.	.	.	2
Cyprinodon variegatus	3	.	.	3	.	.	.	.	3
Dasyatis sabina	13	420	40	152	106	147	57	11	473
Dasyatis say	.	17	2	6	6	4	.	3	19
Diapterus auratus	105	6	17	18	25	69	13	3	128
Dorosoma cepedianum	2	33	.	.	.	18	4	13	35
Dorosoma petenense	.	31	.	1	2	2	13	13	31
Dorosoma spp.	.	16	.	.	.	16	.	.	16
Elassoma okefenokee	1	.	.	.	.	.	.	1	1
Elops saurus	.	92	1	23	37	27	5	1	93
Esox niger	1	.	.	.	.	.	.	1	1
Etheostoma fusiforme	.	.	2	.	.	.	.	2	2
Etheostoma spp.	9	.	.	.	.	.	.	9	9
Etropus crossotus	7	55	130	133	42	15	2	.	192
Eucinostomus gula	66	55	12	10	39	83	1	.	133
Eucinostomus harengulus	492	25	175	62	232	201	74	123	692
Eucinostomus jonesi	1	.	.	.	1	.	.	.	1
Eucinostomus spp.	1,150	.	108	323	233	369	104	229	1,258
Evorthodus lyricus	5	.	.	.	.	5	.	.	5
Farfantepenaeus duorarum	505	3	1,044	340	662	394	60	96	1,552
Fundulus grandis	53	.	.	33	9	5	6	.	53
Fundulus heteroclitus	419	.	1	107	144	164	5	.	420
Fundulus majalis	99	.	.	33	31	35	.	.	99
Fundulus seminolis	18	.	.	.	.	.	.	18	18
Fundulus similis	1	.	.	1	.	.	.	.	1
Fundulus spp.	64	.	.	1	.	57	.	6	64
Gambusia holbrooki	492	.	.	.	41	185	39	227	492
Gobiesox strumosus	.	.	9	.	.	2	5	2	9

Appendix JX01-02. (Continued)

Species	Gear			Zone					Totals
	21.3-m river seine	183-m haul seine	6.1-m otter trawl	A	B	C	D	E	
	E=257	E=131	E=265	E=159	E=161	E=166	E=83	E=84	E=653
Gobionellus boleosoma	43	.	.	7	4	32	.	.	43
Gobionellus oceanicus	2	.	2	1	.	3	.	.	4
Gobionellus shufeldti	2	.	1	.	2	1	.	.	3
Gobionellus smaragdus	1	.	.	1	.	.	.	.	1
Gobiosoma bosc	26	.	9	8	2	20	2	3	35
Gobiosoma robustum	36	.	10	1	4	23	2	16	46
Gymnura micrura	.	27	4	21	7	3	.	.	31
Harengula jaguana	3	1	.	1	1	2	.	.	4
Hippocampus erectus	.	.	1	.	.	1	.	.	1
Ictalurus punctatus	2	53	21	.	16	.	12	48	76
Labidesthes sicculus	221	.	.	.	6	.	15	200	221
Lagodon rhomboides	351	1,480	41	183	155	319	240	975	1,872
Larimus fasciatus	.	1	17	2	1	15	.	.	18
Leiostomus xanthurus	2,170	1,652	511	446	327	851	1,227	1,482	4,333
Lepisosteus osseus	.	36	.	19	10	.	4	3	36
Lepisosteus platyrhincus	4	63	.	7	7	1	4	48	67
Lepomis auritus	34	16	11	.	3	1	1	56	61
Lepomis gulosus	.	3	1	.	.	.	.	4	4
Lepomis macrochirus	86	113	150	.	7	2	153	187	349
Lepomis microlophus	34	28	9	.	3	.	6	62	71
Lepomis spp.	8	.	5	.	.	.	.	13	13
Lepophidium brevibarbe	.	.	2	1	.	1	.	.	2
Limulus polyphemus	1	.	1	1	1	.	.	.	2
Litopenaeus setiferus	1,752	86	964	692	1,031	970	72	37	2,802
Lucania goodei	2	.	.	.	.	.	.	2	2
Lucania parva	52	.	.	.	.	.	.	52	52
Lutjanus analis	1	1	1	1	2	.	.	.	3
Lutjanus griseus	62	2	1	6	34	17	7	1	65
Lutjanus spp.	1	.	.	.	1	.	.	.	1
Lutjanus synagris	.	7	10	13	2	2	.	.	17
Membras martinica	87	.	.	5	1	.	81	.	87
Menidia spp.	10,340	.	2	2,113	4,299	3,123	540	267	10,342
Menippe spp.	.	.	8	6	1	1	.	.	8

Appendix JX01-02. (Continued)

Species	Gear			Zone					Totals
	21.3-m river seine	183-m haul seine	6.1-m otter trawl	A	B	C	D	E	
	E=257	E=131	E=265	E=159	E=161	E=166	E=83	E=84	E=653
Menticirrhus americanus	61	29	196	137	108	34	7	.	286
Menticirrhus littoralis	2	1	3	2	3	1	.	.	6
Menticirrhus saxatilis	4	6	6	3	1	11	1	.	16
Microgobius gulosus	50	.	3	.	.	24	3	26	53
Microgobius thalassinus	22	.	55	6	5	60	3	3	77
Micropogonias undulatus	6,034	4,505	1,270	157	264	438	1,117	9,833	11,809
Micropterus salmoides	12	3	.	.	.	1	1	13	15
Monacanthus hispidus	4	.	29	21	8	3	1	.	33
Monacanthus spp.	.	.	1	1	.	.	.	.	1
Mugil cephalus	452	1,328	1	671	366	414	70	260	1,781
Mugil curema	322	360	.	99	128	450	4	1	682
Myrophis punctatus	1	.	2	1	.	2	.	.	3
Negaprion brevirostris	.	1	.	1	.	.	.	.	1
Notemigonus crysoleucas	2	.	.	.	.	.	.	2	2
Notropis chalybaeus	6	.	.	.	.	.	.	6	6
Ocyurus chrysurus	.	4	6	1	5	1	3	.	10
Ogcocephalidae spp.	.	1	.	.	.	1	.	.	1
Ogcocephalus parvus	.	.	2	1	.	1	.	.	2
Oligoplites saurus	42	1	.	15	9	19	.	.	43
Opisthonema oglinum	8	59	2	12	36	6	4	11	69
Opsanus tau	4	8	84	11	14	63	8	.	96
Orthopristis chrysoptera	8	3	60	25	25	21	.	.	71
Paralichthys albigutta	7	14	13	10	5	18	1	.	34
Paralichthys dentatus	2	1	6	3	5	1	.	.	9
Paralichthys lethostigma	42	103	42	48	33	65	24	17	187
Paralichthys spp.	.	.	2	.	.	2	.	.	2
Paralichthys squamilentus	1	.	.	.	.	1	.	.	1
Penaeidae spp.	.	.	111	5	1	105	.	.	111
Peprilus triacanthus	1	.	.	.	.	1	.	.	1
Poecilia latipinna	114	.	.	1	2	109	2	.	114
Pogonias cromis	5	18	3	4	9	2	6	5	26
Pomatomus saltatrix	14	28	.	12	14	16	.	.	42
Pomoxis nigromaculatus	.	8	5	.	.	.	.	13	13

Appendix JX01-02. (Continued)

Species	Gear			Zone					Totals
	21.3-m river seine	183-m haul seine	6.1-m otter trawl	A	B	C	D	E	
	E=257	E=131	E=265	E=159	E=161	E=166	E=83	E=84	E=653
Prionotus rubio	.	.	1	.	.	1	.	.	1
Prionotus scitulus	43	1	44	53	13	21	1	.	88
Prionotus tribulus	12	4	26	19	19	4	.	.	42
Rachycentron canadum	.	1	.	.	.	1	.	.	1
Sciaenidae spp.	.	.	12	12	.	.	.	.	12
Sciaenops ocellatus	36	78	6	18	10	39	18	35	120
Scomberomorus maculatus	2	39	1	17	9	9	.	7	42
Selene setapinnis	.	2	.	.	.	2	.	.	2
Selene vomer	7	35	4	8	9	26	3	.	46
Sphoeroides maculatus	.	1	.	1	.	.	.	.	1
Sphoeroides nephelus	26	33	30	14	7	58	6	4	89
Sphyraena barracuda	.	1	.	.	1	.	.	.	1
Sphyrna tiburo	.	8	.	8	.	.	.	.	8
Stellifer lanceolatus	.	.	446	256	40	107	43	.	446
Stomolophus meleagris	.	257	31	6	12	270	.	.	288
Strongylura marina	16	61	.	6	14	8	5	44	77
Strongylura notata	3	2	.	.	2	.	1	2	5
Strongylura timucu	4	.	.	.	2	.	2	.	4
Symphurus plagiusa	188	.	165	142	146	50	15	.	353
Syngnathus floridae	1	.	.	1	.	.	.	.	1
Syngnathus fuscus	.	.	1	1	.	.	.	.	1
Syngnathus louisianae	23	.	15	21	6	10	1	.	38
Syngnathus scovelli	54	.	5	3	18	5	9	24	59
Synodus foetens	57	2	42	34	30	27	10	.	101
Trachinotus carolinus	24	14	.	19	11	8	.	.	38
Trachinotus falcatus	22	66	1	12	45	30	2	.	89
Trichiurus lepturus	.	.	2	.	.	2	.	.	2
Trinectes maculatus	37	9	735	31	208	28	142	372	781
Totals	**89,370**	**13,341**	**22,064**	**26,694**	**32,505**	**28,189**	**20,980**	**16,407**	**124,775**

Directed Sampling

Introduction

The Fisheries-Independent Monitoring (FIM) program conducted a seasonal directed sampling project for striped mullet (*Mugil cephalus*). Data obtained from directed sampling were used cooperatively by a number of Florida Marine Research Institute (FMRI) research groups, including Fisheries Assessment and Fish Biology, to provide stock assessments on this species. The objectives of directed sampling were to determine the size, age, and sex composition of localized populations of these species in select Florida estuaries. This report summarizes data collected from January 1 to February 14, 2001 and from September 15 to December 31, 2001.

Methods

Tampa Bay. Directed sampling for striped mullet during the 2001 year 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 mullet in water <3 m deep. Fish collected from January to February 2001 were considered part of the 2000 sampling season's data, while fish collected from September to December 2001 represented part of the 2001 sampling season. The study period was divided into five 4-week sampling windows (September 15-October 14, October 15-November 14, November 15-December 14, December 15-January 14, and January 15-February 14), with approximately two days of sampling being conducted within each window.

During each sampling window, 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 zones (Figure DR01-01). 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 composition). Secondary areas were sampled only if the minimum number of mullet were not collected in the primary areas. Additional sampling days were added as necessary to procure the required amount of culled (100 fish retained for age and sex composition) and measured mullet (400 fish) per sampling window. To increase the probability of successful collections, primary zones were non-randomly selected because striped mullet were generally found in the upper reaches of estuaries prior to the spawning season and moved closer to the mouth of the bay as the spawning season progressed. Therefore, sampling was directed toward upper areas of Tampa Bay early in the season and shifted to lower Tampa Bay later in the winter season.

Charlotte Harbor. A similar sampling design and collection method was used in Charlotte Harbor. The sampling period was divided into four 4-week sampling windows (October 15-November 14, November 15-December 14, December 15-January 14, and January 15-February 14). Fall 2001 sampling was conducted from October 15 to December 31. For analysis purposes, sampling conducted from January 1, 2001 to February 15, 2001 was considered part of the 2000 sampling season.

The study area was divided into four zones (Figure DR01-02). 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 zones (Figure DR01-02). Additional sampling days were added as necessary to procure the required amount of culled (160 fish retained for age and sex composition) and measured mullet (400 fish) per sampling window.

Results and Discussion

Tampa Bay. A total of 4,085 striped mullet were collected during 19 sampling trips (40 net sets) in 2001 (Table DR01-01). For the fall 2001 season (Sept.-Dec.), a total of 2,142 striped mullet were collected from 10 trips and 25 hauls (Table DR01-02). Striped mullet were collected throughout all months of the fall survey. In the 2001 fall season, striped mullet lengths ranged from 225 to 505 mm fork length (FL) with a single mode occurring at 395 mm FL (Figure DR01-03). Although striped mullet were collected in all sampling zones, the greatest number was collected in the west/north zone (n=567, 26.5%) and the smallest number was collected in the west/south zone (n=221, 10%; Figure DR01-01). For analysis purposes, the striped mullet collected from January to February, 2001 (n=1,943) were considered part of the 2000 season.

Charlotte Harbor. A total of 14 sampling trips occurred during 2001 (36 net sets), collecting 1,817 striped mullet (Table DR01-01). For the fall 2001 season (Oct.-Dec.), a total of 1,085 striped mullet were collected from 8 trips and 26 hauls. The majority (n=862, 79%) of striped mullet were collected in the northwest zone (Table DR01-02; Figure DR01-02). Mullet lengths during the fall 2001 season ranged from 250 to 500 mm FL (Figure DR01-03). For analysis purposes, the striped mullet collected from January to February 2001 (n=732) were considered part of the 2000 season.

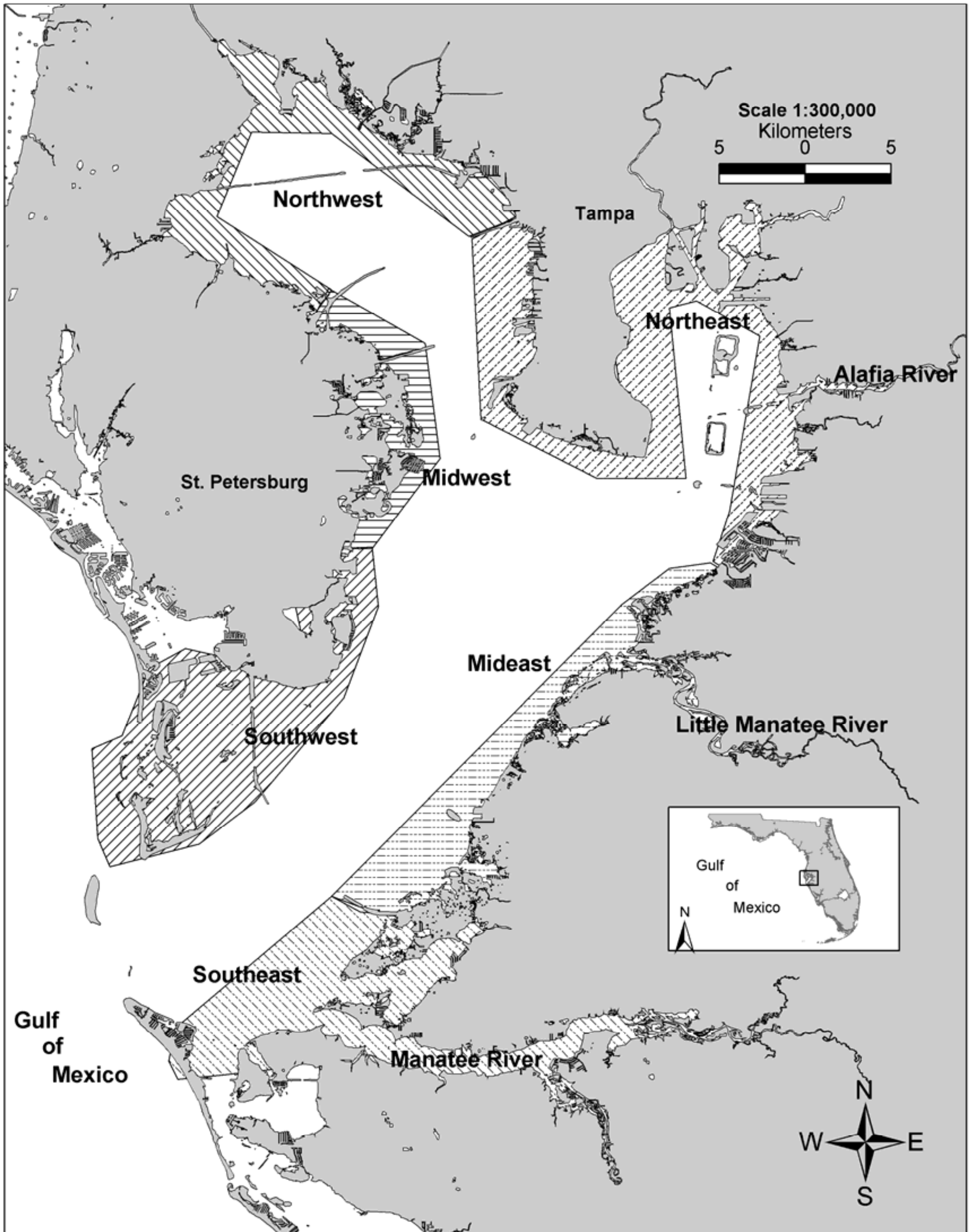

Figure DR01-01. Map of striped mullet sampling areas in Tampa Bay.

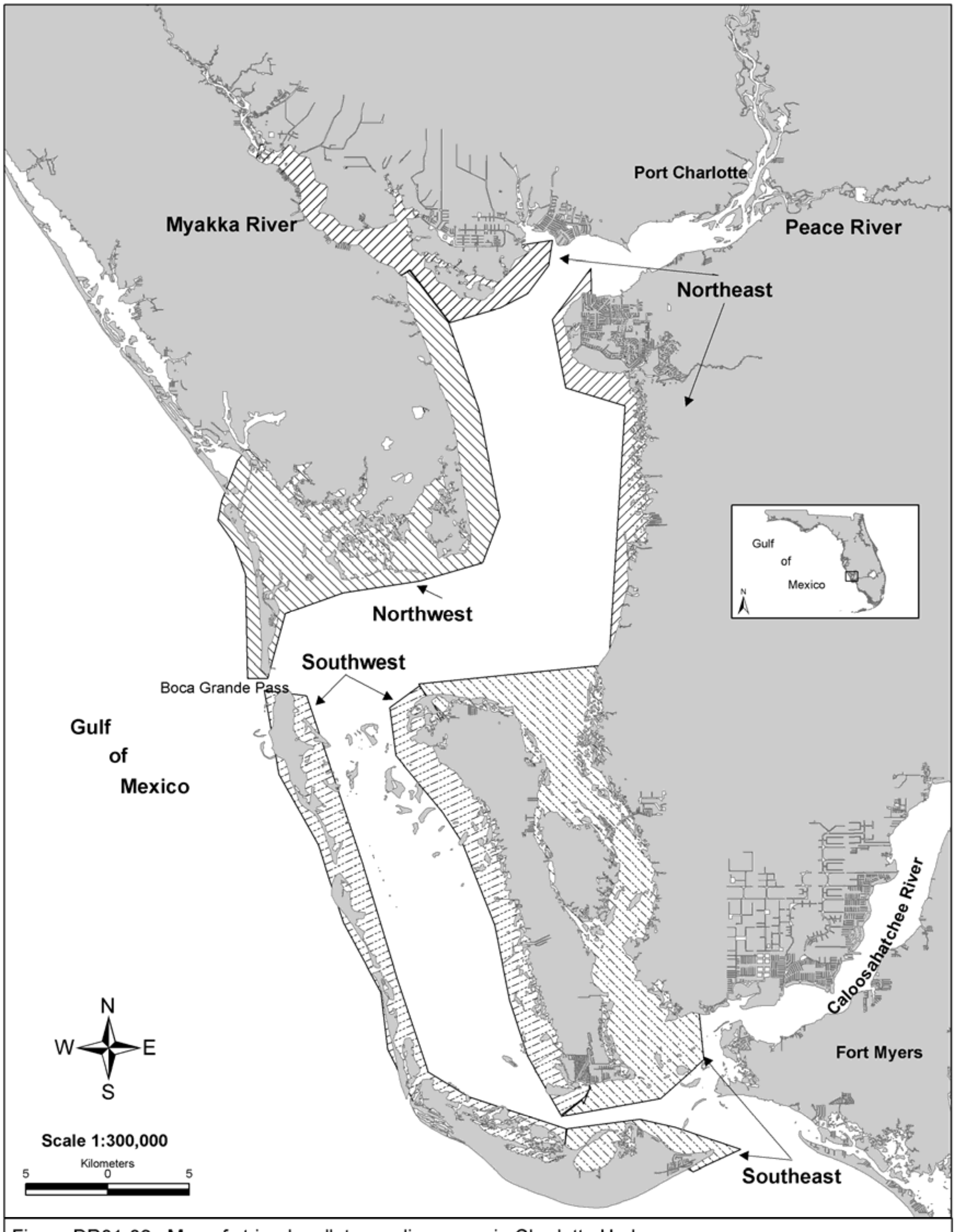

Figure DR01-02. Map of striped mullet sampling areas in Charlotte Harbor.

Table DR01-01. Summary of effort and catch data for directed striped mullet sampling in Tampa Bay and Charlotte Harbor, 2001. Collections for the 2001 sampling season were initiated in mid-October for Charlotte Harbor.

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	6	923	2	6	282
January 15 – February 14*	6	9	1,020	4	4	450
September 15 – October 14	2	6	426	-	-	-
October 15 – November 14	2	5	675	3	9	541
November 15 – December 14	3	8	585	4	12	403
December 15 – 31	3	6	456	1	5	141
Sub-Total (Jan. – Feb.)	**9**	**15**	**1,943**	**6**	**10**	**732**
Sub-Total (Sept. – Dec.)	**10**	**25**	**2,142**	**8**	**26**	**1,085**
Grand Total(2001 Calendar Year)	**19**	**40**	**4,085**	**14**	**36**	**1,817**

* Fish collected in Jan. – Feb., 2001 were treated as part of the 2000 sampling season.

Table DR01-02. Striped mullet sampling and capture locations in Tampa Bay and Charlotte Harbor, fall 2001. Sampling areas are defined in Figures DR01-01 and DR01-02.

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	567
	West/Mid: Howard Franklin Bridge south to St. Pete Pier	1	3	235
	West/South: St. Pete Pier south to Mullet Key	2	3	221
	East/North: Hillsborough Bay south to Apollo Beach	3	4	288
	East/Mid: Apollo Beach south to Piney Point	2	4	345
	East/South: Piney Point south to Manatee River	2	5	486
Charlotte Harbor	North/East: Myakka River south to Burnt Store	3	6	80
	North/West: Bull Bay/Turtle Bay	6	18	862
	South/East: Burnt Store south to Matlacha Pass	2	1	27
	South/West: south of Boca Grande Pass, including Pine Island Sound to York Island	2	1	116

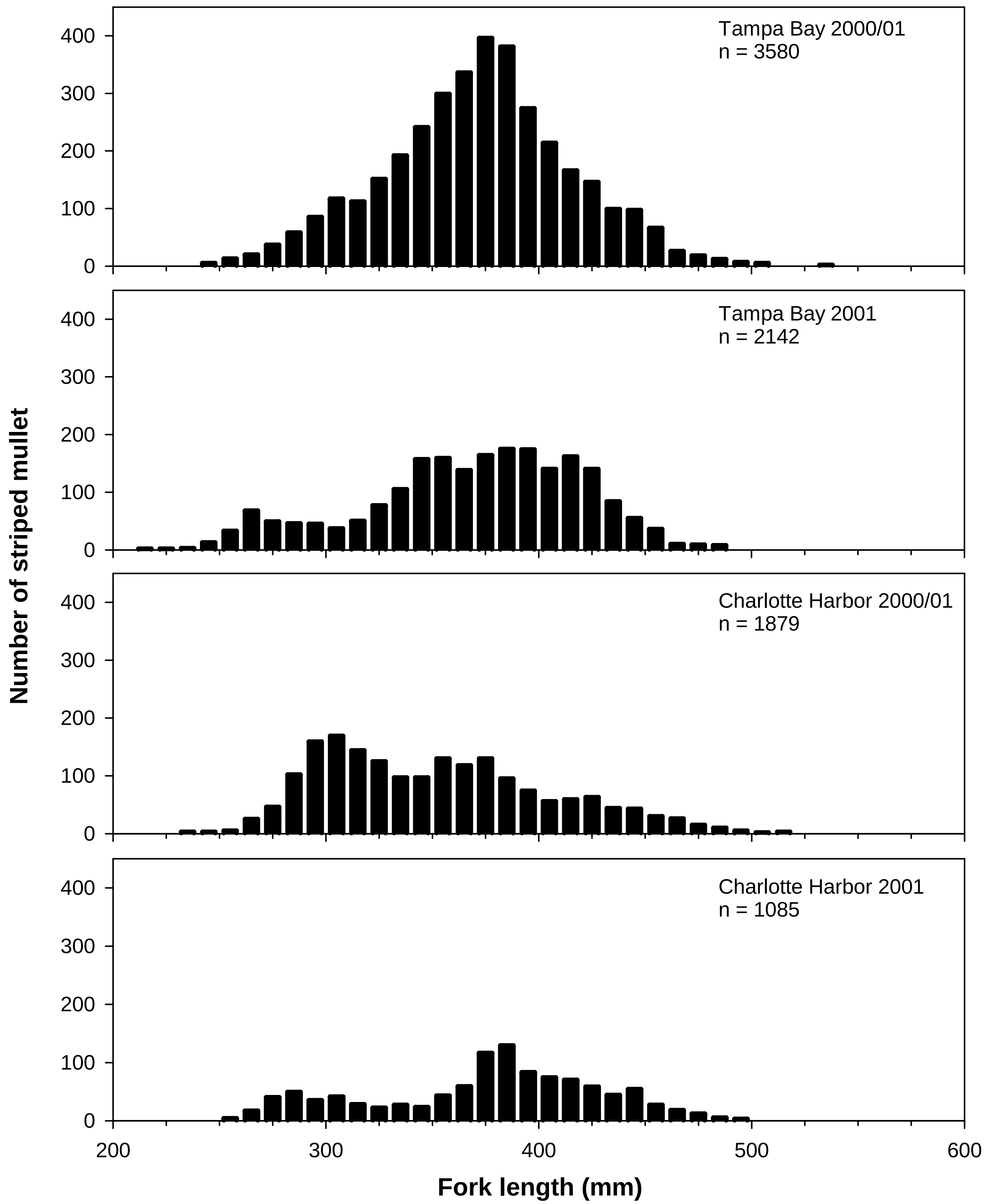

Figure DR01-03. Size distributions of striped mullet collected during trammel net surveys in Tampa Bay and Charlotte Harbor, 2000-2001. The 2000/01 graphs represent striped mullet collected from September 2000 to February 2001. The 2001 graphs represent striped mullet collected from September 2001 to December 2001.

Fish Health Monitoring

Introduction

The long-term, multi-gear and multi-habitat sampling approach of fisheries-independent monitoring programs not only provides information to fisheries managers, but it helps document changes and evaluate the effects of natural and anthropogenic disturbances to ecosystems (Wolfe et al. 1987). Increased urban development in coastal areas has made adjacent aquatic ecosystems (estuaries, bays, and tidal rivers) some of the most intensively fertilized environments on earth (Cloern et al. 1995). This influx of nutrients and other materials commonly associated with 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 occurrence of certain diseases in fish continues to accumulate (Sinderman 1979). The incidence of gross external abnormalities in fish, defined as those illnesses or deformations easily observed in the field, provides valuable information on the environmental stresses in estuarine and coastal waters (Fournie et al. 1996). Baseline information on the frequency of occurrence of external abnormalities is necessary to monitor changes in the ecological health of Florida's estuaries, particularly when attempting to correlate specific fish kills to ecosystem degradation.

In April 1998, the Florida Marine Research Institute's (FMRI) Fisheries-Independent Monitoring (FIM) program began to document gross external abnormalities (including parasites) of fishes in Florida's estuaries. The main objectives of the fish health monitoring component of the FIM program are to categorize prominent types of gross external abnormalities observed, document which species are most susceptible, and document normal background levels of fish health problems. This report summarizes the occurrence of gross external abnormalities in fish and selected invertebrates collected primarily from adult stratified-random sampling (SRS) in selected Florida estuaries from January to December 2001.

Methods

Fish health monitoring was conducted in all estuarine waters sampled by the FIM program. As of May 2001 the St. Johns River and nearby waters in northeast Florida were added to the Florida estuaries sampled by the FIM program. Methods for fish health monitoring in the Florida Keys are still being developed, though some samples were collected in this area. In all study locations, affected specimens were identified and recorded from all gear types, but only specimens $\geq$75 mm standard length (SL) were actively examined for external abnormalities. Some abnormalities were opportunistically observed on fish < 75 mm SL and these occurrences were also recorded. In most instances, affected specimens were assigned an "Aquatic Health Code" (AHC), noted on FIM data sheets, and were sent to the FMRI's Aquatic Health Group in St. Petersburg for detailed diagnoses. Affected specimens were packed on ice in the field and returned to the lab. Specimens from Tampa Bay collections were taken directly to the Aquatic Health Group fresh on ice. Specimens from other field labs were either fixed in 10% Formalin or shipped on ice to the Aquatic Health Group. A "Fish Health Code" (FHC) was initially assigned in the field to each affected specimen by FIM staff. The following 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)
O	Other (condition not specifically listed)
P	Parasitic infestation

For the purposes of this report, the assigned FHC and its corresponding AHC were compared to produce a final "Health Code" (HC) which was used for all data analysis. In those instances where fish were not returned to the fish pathologist and were thus not assigned an AHC, the HC was determined according to the FHC assigned. In instances where specimens were returned to the fish pathologist and the FHC and the AHC differed, the HC was determined to be the same as the AHC assigned. In all other instances where the FHC and the AHC assigned agreed, the HC was the same.

Results and Discussion

A total of 254,160 fish ≥ 75 mm SL were collected during FIM program sampling in 2001. Of these fish, 1,138 specimens (0.45%) had gross external abnormalities (Table FH01-01). Charlotte Harbor had the highest percent incidence of affected specimens collected (0.94%), whereas the southern Indian River Lagoon had the lowest incidence of affected specimens collected (0.06%) (Table FH01-01).

Incidence by Lab

Apalachicola Bay: Apalachicola staff collected 32,711 fish ≥75 mm SL (Table FH01-01). Two hundred twenty-nine of these fish (0.70%), belonging to 16 taxa, had gross external abnormalities (Table FH01-02). The most common abnormnality was the presence of parasites (HC=P; n=179), predominantly affecting *Brevoortia* spp. (HC=P; n=164).

Cedar Key: Cedar Key staff collected 28,271 fish ≥ 75 mm SL (Table FH01-01). Twenty-two of these fish (0.08%), belonging to nine species, had gross external abnormalities (Table FH01-03). The most common abnormality observed was red or bloody areas (HC=B; n=8) primarily affecting *Arius felis* (n=4).

Charlotte Harbor: Charlotte Harbor staff collected 53,785 large fish (≥ 75 mm SL) (Table FH01-01). Of these, 505 fish (0.94%), belonging to 14 taxa, had gross external abnormalities (Table FH01-04). The most common abnormality recorded was the presence of parasites, (HC=P; n=456), mainly affecting *Brevoortia* spp. (n=448).

Northern Indian River Lagoon: Indian River staff collected 31,513 fish ≥75 mm SL (Table FH01-01). Twenty-three of these fish (0.07%), belonging to 13 taxa, had gross external abnormalities (Table FH01-05). The most common category recorded was 'Other' (HC=O; n=8).

Northeast Florida: Jacksonville staff collected 15,088 fish ≥ 75 mm SL (Table FH01-01). Fifty-one of these fish (0.34%) belonging to 11 taxa had gross external abnormalities (Table FH01-06). The most common abnormality was ulcers (HC=U; n=27), most commonly observed on *Lagodon rhomboides* (n= 20).

Florida Keys: A few preliminary samples from the Florida Keys were sent to the Aquatic Health Group for analysis. These included nine *Ocyurus chrysurus*, four *Lutjanus griseus*, three *Lutjanus analis*, and one *Lutjanus synagris*. All of these specimens had gonadal parasites.

Tampa Bay: Tampa Bay staff collected 76,755 fish ≥75 mm SL (Table FH01-01). Of these, 299 fish (0.39%), belonging to 20 taxa, had external abnormalities (Table FH01-07). The most common abnormality observed was the presence of parasites (HC=P; n=185) primarily associated with *Arius felis* (n=47), *Brevoortia* spp. (n=49), and *Callinectus sapidus* (n=65).

Southern Indian River Lagoon: Tequesta staff collected 16,037 fish ≥ 75 mm SL (Table FH01-01). Nine of these fish (0.06%), belonging to six taxa had abnormalities (Table FH01-08). The most common abnormalities was ulcers (HC=U; n=4) predominatly found on *Mugil* spp. (n=3).

Incidence by Month

For all estuaries combined, the highest percentages of fish with external abnormalities were collected in February (5%), April (5%), and July (4%). The lowest percentages of fish with external abnormalities were collected in March (1%) and August (0.7%) (Figure FH01-01).

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Wolfe, D. A., M. A. Champ, D. A. Flemer, and A. J. Mearns. 1987. Long-term biological data sets: their role in research, monitoring, and management of estuarine and coastal marine systems. Estuaries 10: 181–193.

Table FH01-01. Incidence of external abnormalities in fish collected during stratified-random sampling in each study area during 2001. 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	% Affected
Apalachicola Bay	32,711	229	0.70%
Cedar Key	28,271	22	0.08%
Charlotte Harbor	53,785	505	0.94%
N. Indian River Lagoon	31,513	23	0.07%
Northeast Florida	15,088	51	0.34%
Tampa Bay	76,755	299	0.39%
S. Indian River Lagoon	16,037	9	0.06%
Totals	254,160	1,138	0.45%

Table FH01-02. Alphabetical list of taxa having gross external abnormalities collected in Apalachicola Bay during stratified-random sampling, 2001. Number collected = number of each species collected. Number affected = total number of each species 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
Arius felis	1,035	34	3	28	.	.	.	3	.	.	3.29%
Bairdiella chrysoura	1,393	3	.	.	3	.	.	.	.	.	0.22%
Brevoortia spp.	3,830	165	164		1	.	.	.	.	.	4.31%
Caranx hippos	66	1	1	.	.	.	.	.	.	.	1.52%
Chloroscombrus chrysurus	104	3	3	.	.	.	.	.	.	.	2.87%
Harengula jaguana	2,593	1	1	.	.	.	.	.	.	.	0.04%
Lactophrys quadricornis	100	1	1	.	.	.	.	.	.	.	1.00%
Leiostomus xanthurus	3,691	7	1	2	2	2	.	.	.	.	0.19%
Lepisosteus osseus	26	2	1	.	1	.	.	.	.	.	7.69%
Lepomis microlophus	32	1	.	.	1	.	.	.	.	.	3.14%
Menticirrhus americanus	161	2	2	.	.	.	.	.	.	.	1.24%
Micropogonias undulatus	1,003	4	.	.	2	2	.	.	.	.	0.44%
Mugil cephalus	1,267	1	.	.	.	.	.	.	.	1	0.08%
Mugil curema	435	2	.	.	1	.	.	.	.	1	0.46%
Peprilus alepidotus	161	1	1	.	.	.	.	.	.	.	0.62%
Sphoeroides nephelus	6	1	1	.	.	.	.	.	.	.	16.67%
Totals	15,903	229	179	30	11	4	0	3	0	2	

* P = Parasitic infestation; B = red or bloody areas; F = fin rot; U = ulcer or lesion; E = erosion or scale loss; S = skeletal abnormalities; T = tumor or cyst; O = other

Table FH01-03. Alphabetical list of taxa having gross external abnormalities collected in Cedar Key during stratified-random sampling, 2001. Number collected = number of each species collected. Number affected = total number of each species 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 Incidence
Alosa alabamae	2	1	.	.	.	.	.	1	.	.	50.00%
Arius felis	667	5	1	4	.	.	.	.	.	.	0.75%
Caranx hippos	173	1	.	1	.	.	.	.	.	.	0.58%
Cynoscion nebulosus	208	1	.	.	.	.	.	.	.	1	0.48%
Lagodon rhomboides	5,764	1	1	.	.	.	.	.	.	.	0.02%
Leiostomus xanthurus	3,637	4	.	.	.	.	.	3	1	.	0.11%
Mugil cephalus	2,087	6	.	2	.	4	.	.	.	.	0.29%
Mugil curema	337	2	.	1	.	1	.	.	.	.	0.59%
Paralichthys albigutta	171	1	1	.	.	.	.	.	.	.	0.58%
Totals	13,046	22	3	8	0	5	0	4	1	1	

* P = Parasitic infestation; B = red or bloody areas; F = fin rot; U = ulcer or lesion; E = erosion or scale loss; S = skeletal abnormalities; T = tumor or cyst; O = other

Table FH01-04. Alphabetical list of taxa having gross external abnormalities collected in Charlotte Harbor during stratified-random sampling, 2001. Number collected = number of each species collected. Number affected = total number of each species 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
Arius felis	637	21	.	20	1	.	.	.	.	.	3.30%
Brevoortia spp.	1,553	450	448	.	.	2	.	.	.	.	28.98%
Callinectes sapidus	179	2	2	.	.	.	.	.	.	.	1.12%
Centropomus undecimalis	900	1	.	1	.	.	.	.	.	.	0.11%
Chilomycterus schoepfi	437	1	.	1	.	.	.	.	.	.	0.23%
Elops saurus	1,650	1	.	.	.	.	.	1	.	.	0.06%
Harengula jaguana	2,319	1	.	.	.	.	.	1	.	.	0.04%
Lagodon rhomboides	19,570	16	.	.	.	16	.	.	.	.	0.08%
Lepisosteus osseus	34	1	.	1	.	.	.	.	.	.	2.94%
Mugil cephalus	612	1	.	.	.	.	.	1	.	.	0.16%
Opisthonema oglinum	10,052	2	2	.	.	.	.	.	.	.	0.02%
Orthopristis chrysoptera	2,289	1	.	.	1	.	.	.	.	.	0.04%
Paralichthys albigutta	73	2	.	.	.	1	1	.	.	.	2.74%
Sphyraena barracuda	21	1	.	1	.	.	.	.	.	.	4.76%
Totals	40,326	505	456	24	2	19	1	3	0	0	

* 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

Table FH01-05. Alphabetical list of taxa having gross external abnormalities collected in the northern Indian River Lagoon during stratified-random sampling, 2001. Number collected = number of each species collected. Number affected = total number of each species 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	851	2	.	.	1	.	.	1	.	.	0.24%
Arius felis	1,426	1	.	.	.	.	1	.	.	.	0.07%
Brevoortia spp.	935	1	.	.	1	.	.	.	.	.	0.11%
Caranx hippos	161	2	.	.	.	1	.	.	1	.	1.24%
Centropomus undecimalis	385	5	.	.	.	.	.	.	.	5	1.30%
Lutjanus griseus	153	1	.	.	.	.	.	1	.	.	0.65%
Mugil cephalus	1,691	1	.	1	.	.	.	.	.	.	0.06%
Mugil curema	2,437	2	.	.	1	1	.	.	.	.	0.08%
Oligoplites saurus	94	1	.	1	.	.	.	.	.	.	1.06%
Orthopristis chrysoptera	1,055	2	.	.	.	.	.	.	.	2	0.19%
Pogonias cromis	123	2	.		.	1	.	1	.	.	1.63%
Sphoeroides nephelus	1,339	1	.	.	.	.	.	.	.	1	0.07%
Strongylura notata	380	2	.	.	.	.	.	.	2	.	0.53%
Totals	11,030	23		2	3	3	1	3	3	8	

* P = Parasitic infestation; B = red or bloody areas; F = fin rot; U = ulcer or lesion; E = erosion or scale loss; S = skeletal abnormalities; T = tumor or cyst; O = other

Table FH01-06. Alphabetical list of taxa having gross external abnormalities collected in northeast Florida during stratified-random sampling, 2001. Number collected = number of each species collected. Number affected = total number of each species with abnormalities by health code[1]. 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	84	1	1	.	.	.	.	.	.	.	1.19%
Bairdiella chrysoura	877	2	.	.	.	2	.	.	.	.	0.23%
Brevoortia spp.	423	1	.	.	.	.	1	.	.	.	0.24%
Lagodon rhomboides	1,548	28	.	2	.	20	.	6	.	.	1.83%
Leiostomus xanthurus	2,085	1	.	.	.	.	1	.	.	.	0.06%
Lepisosteus platyrhincus	67	1	1	.	.	.	.	.	.	.	1.49%
Mugil cephalus	1,488	13	.	5	.	5	2	.	.	1	0.86%
Mugil curema	381	1	.	.	.	.	.	.	1	.	0.26%
Scomberomorus maculatus	41	1	1	.	.	.	.	.	.	.	2.44%
Stellifer lanceolatus	21	1	.	.	.	.	.	.	.	1	4.74%
Paralichthys lethostigma	162	1	1		.	.	.	.	.	.	0.62%
Totals	7,160	51	4	7	0	27	4	6	1	2	

* P = Parasitic infestation; B = red or bloody areas; F = fin rot; U = ulcer or lesion; E = erosion or scale loss; S = skeletal abnormalities; T = tumor or cyst; O = other

Table FH01-07. Alphabetical list of taxa having gross external abnormalities collected in Tampa Bay during stratified-random sampling, 2001. Number collected = number of each species collected. Number affected = total number of each species with abnormalities by health code. Percent affected = number affected / number collected ∗ 100.

Scientific Name	Number Collected ($\geq$75 mm SL)	Number Affected ($\geq$75 mm SL)	Health Code* P	B	F	U	E	S	T	O	Percent Affected
Arius felis	4,271	111	47	53	5	3	.	.	.	3	2.59%
Bagre marinus	395	4	.	2	.	.	.	.	.	2	1.01%
Bairdiella chrysoura	1,862	1	1	.	.	.	.	.	.	.	0.05%
Brevoortia spp.	10,776	52	49	1	.	.	.	.	.	2	0.48%
Callinectus sapidus	548	65	65	.	.	.	.	.	.	.	11.8%
Caranx hippos	128	1	1	.	.	.	.	.	.	.	0.93%
Centropomus undecimalis	1,297	4	3	.	1	.	.	.	.	.	0.31%
Chilomycterus schoepfi	316	2	1	.	.	.	.	.	.	1	0.63%
Dasyatis sabina	697	5	3	2	.	.	.	.	.	.	0.72%
Eucinostomus gula	1,823	2	2	.	.	.	.	.	.	.	0.11%
Gymnura micrura	34	2	1	1	.	.	.	.	.	.	5.88%
Lagodon rhomboides	19,416	25	1	10	.	1	.	7	.	6	0.13%
Menticirrhus americanus	147	5	5	.	.	.	.	.	.	.	3.41%
Mugil cephalus	1,127	5	3	.	.	.	.	.	.	2	0.43%
Orthopristis chrysoptera	1,316	2	1	.	.	1	.	.	.	.	0.15%
Peprilus alepidotus	40	2	1	.	1	.	.	.	.	.	5.00%
Pogonias cromis	15	1		.	.	.	.	.	.	1	6.67%
Rhinoptera bonasus	1042	2	1	1	.	.	.	.	.	.	0.21%
Strongylura notata	797	5	.	.	.	.	1	3	1	.	0.63%
Sciaenops ocellatus	148	3	.	1	.	1	.	.	.	1	2.03%
Totals	46,645	299	185	71	7	6	1	10	1	18	

* 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

Table FH01-08. Alphabetical list of taxa having gross external abnormalities collected in the southern Indian River Lagoon during stratified-random sampling, 2001. Number collected = number of each species collected. Number affected = total number of each species 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
Arius felis	614	1	.	1	.	.	.	.	.	.	0.16%
Brevoortia spp.	431	1	.	.	.	1	.	.	.	.	0.23%
Centropomus undecimalis	711	1	.	1	.	.	.	.	.	.	0.14%
Chilomycterus schoepfi	119	2	.	.	.	.	1	.	.	1	1.68%
Mugil cephalus	599	3	.	.	1	2	.	.	.	.	0.50%
Mugil curema	1,309	1	.	.	.	1	.	.	.	.	0.08%
Totals	3,783	9	0	2	1	4	1	0	0	1	

* P = Parasitic infestation; B = red or bloody areas; F = fin rot; U = ulcer or lesion; E = erosion or scale loss; S = skeletal abnormalities; T = tumor or cyst; O = other

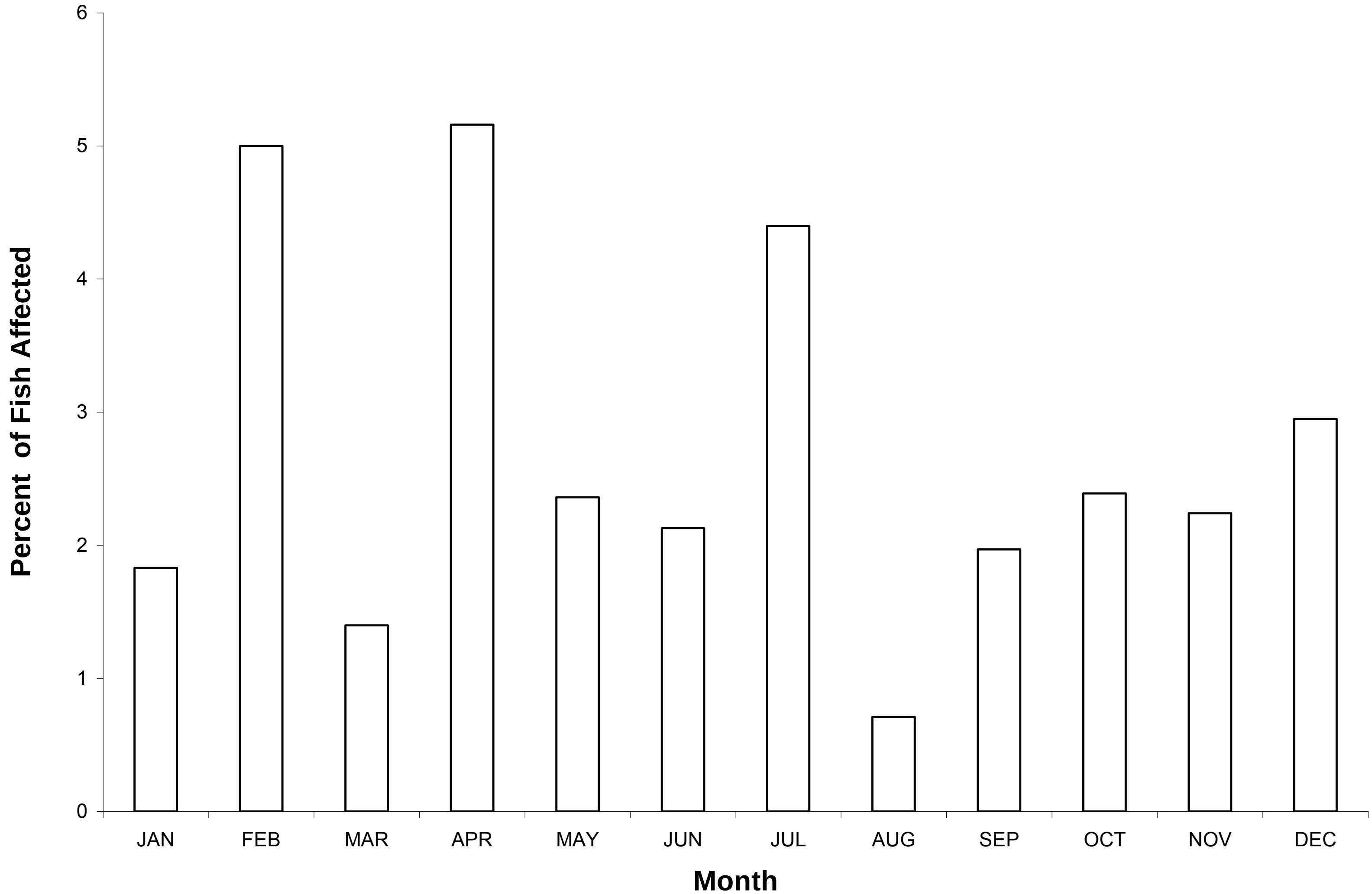

Figure FH01-01. Monthly percentage of fish with gross external abnormalities for all estuaries combined in 2001.

Species Profiles

Introduction

An important use of Fisheries-Independent Monitoring (FIM) program data is to track relative abundance of fish stocks and provide information that can be used in species management plans, including information on the abundance of juvenile fish. Juvenile abundance indices 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, including red drum, spotted seatrout, sheepshead, blue crab, striped mullet, and pinfish.

Similar analyses were used for developing recruitment indices for each species. Data from stratified-random or fixed station sampling were used to assess abundance of newly-recruiting or YOY target species. Study areas included in the analyses were selected based on adequate sample sizes of the target species or years of available data, and separate indices were calculated for each study area. The specific time periods and sizes of specimens included in the analyses varied among species based on 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 may not be YOY and other processes (i.e., immigration, emigration, mortality, and gear selectivity) may influence their abundance or availability. Therefore sub-adult and adult sized fish were analyzed separately.

Annual recruitment or YOY abundance indices 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 PROC GLM procedure (SAS Institute 1989) was used to complete all ANCOVA analyses. In an attempt 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. Variables, except year, that were not significant at α=0.05 were dropped and the analysis repeated. With the ANCOVA analysis, 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 (μ=0, σ=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 (Goodyear 1987). 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 current status of Florida's red drum populations is uncertain, as fishing mortality estimates have steadily increased since the early 1990's, 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 January, with peaks occurring in October and November (Reagan 1985; Peters and McMichael 1987; Daniel 1988). Data collected by the FIM program from 1989 to 1996 indicated that settlement of juvenile red drum typically occurred in the middle or upper reaches of the estuaries away from ocean inlets or passes, and was strongly influenced by the availability of low to moderate salinity habitats (FDEP-FMRI 1996).

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. Data from stratified-random 21.3-m seine samples were examined to assess the recruitment of juvenile red drum in five Florida estuaries: Tampa Bay, Charlotte Harbor, northern Indian River Lagoon, Cedar Key, and Apalachicola Bay. Indices of abundance for juvenile red drum were not calculated for Florida Bay due to the low numbers of fish collected. Historical length-frequency data indicated that red drum less than 40 mm SL recruited to habitats sampled with 21.3-m seines in these estuaries primarily from October-January (October-December in Tampa Bay and Apalachicola Bay; September-January in Cedar Key).

Red drum were collected in four Gulf coast study areas (Figure SP01-01). On Florida's southwest coast between 1989 and 1994, median estimates of relative abundance for juvenile red drum in Tampa Bay fluctuated slightly with peaks observed in 1989 and 1991. During this same period, median estimates from Charlotte Harbor were also stable and relatively low. In 1995, there was a pronounced increase in relative abundances in both of these systems, followed in 1996 through 2000 by a return to and continuation of the levels observed prior to 1995. Specific reasons for the peak values reached in 1995 in Tampa Bay and Charlotte Harbor are currently unknown and may be related to natural recruitment cycles, fluctuations in adult spawning success, or abiotic recruitment-related processes. The fact that similar patterns were observed in these disjunct estuarine systems suggested that red drum recruitment on this section of Florida=s Gulf coast may have been influenced by factors which operated over regional scales. On Florida's northwest coast, relative abundances of juvenile red drum in Cedar Key between 1996 and 2001 reached a peak in 1997 and have fluctuated at lower levels through 2001. In Apalachicola Bay, estimates of abundance were relatively low and varied without trend during the short period of available data between 1998 and 2001.

In the northern Indian River Lagoon on Florida's east coast, relative abundance estimates for juvenile red drum remained stable from 1990-1997, exhibited an apparent increase in 1998, and declined sharply during 1999 (Figure SP01-01). Beginning in 1998, the sampling area was revised to include some of the more productive juvenile red drum nursery habitats located in the vicinity of the St. Sebastian River, and the increase in relative abundances observed in the

Indian River Lagoon during 1998 may have reflected this shift in sampling emphasis. If so, then the low abundances observed in these same sampling areas during 1999 may actually represent a considerable decline in recruitment success for this year class. The 2000 and 2001 year classes both demonstrated increases from the 1999 minimum.

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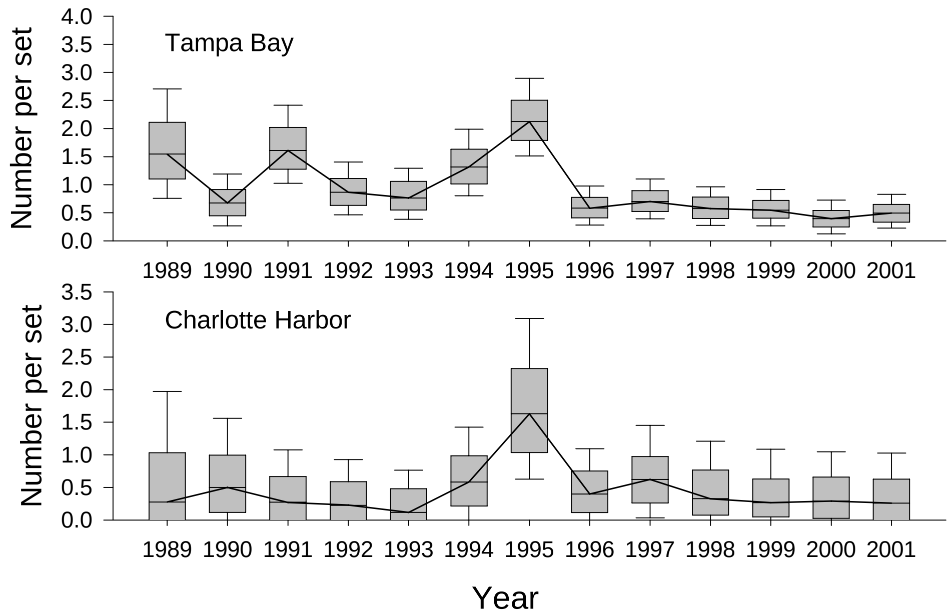
A) Southwest Coast (Gulf of Mexico)



B) Northwest Coast (Gulf of Mexico)

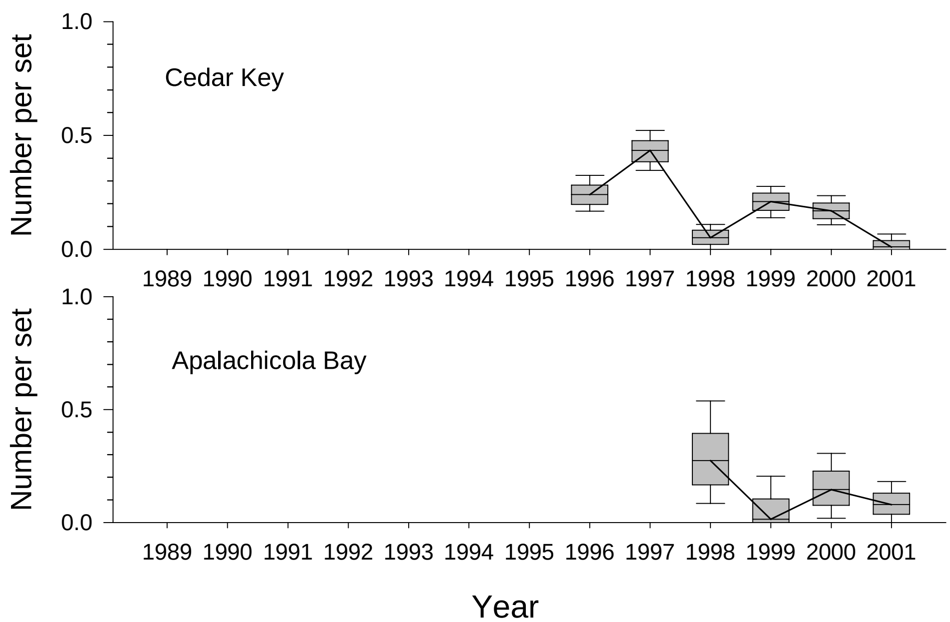


Figure SP01-01. Indices of relative abundance for juvenile red drum (< 40 mm SL) collected in 21.3-m seines during stratified-random sampling between September and January from five Florida estuarine systems located on Florida's **(A)** Southwest Coast, **(B)** Northwest Coast, and **(C)** East Coast between 1989 and 2001. The box represents 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 the change in sampling universe in this estuary.

C) East Coast (Atlantic Ocean)

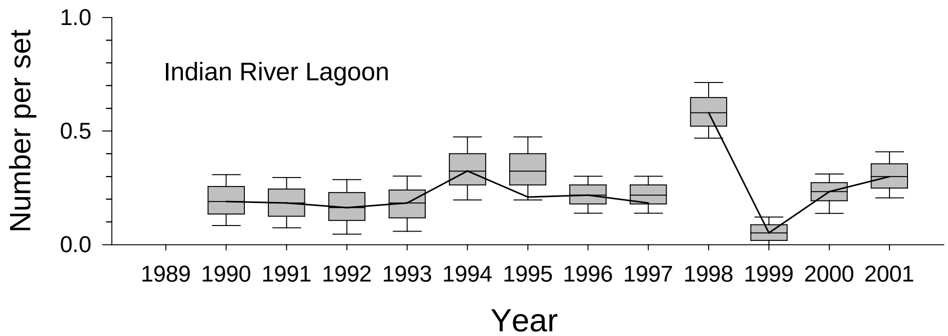


Figure SP01-01 (Continued). Indices of relative abundance for juvenile red drum (< 40 mm SL) collected in 21.3-m seines during stratified-random sampling between September and January from five Florida estuarine systems located on Florida's **(A)** Southwest Coast, **(B)** Northwest Coast, and **(C)** East Coast between 1989 and 2001. The box represents 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 the change in sampling universe in this estuary.

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Spotted Seatrout, *Cynoscion nebulosus*

Spotted seatrout, *Cynoscion nebulosus*, occur in temperate to tropical estuarine waters on the Atlantic and Gulf of Mexico coasts of the United States (Idyll and Fahy 1970). In Florida, spotted seatrout have supported economically important recreational and commercial fisheries. Recent fishing regulations that have affected the spotted seatrout fishery include the “limitation” on the use of entangling nets in Florida waters in 1995 and the establishment of regional recreational slot and bag limits on the recreational fishery in 1996. With these regulatory changes, the spotted seatrout fishery has moved from what was a mixed–sector fishery with about 20% of the landings made by commercial fishers to an almost exclusive (>95% by weight) recreational fishery (Muller 1999). Beginning in 1996, commercial and recreational landings of spotted seatrout have dropped by as much as 97% and 35%, respectively (FWC 2001). Total-catch rates for recreational anglers have increased since 1996 on the Gulf Coast and fluctuated at higher levels on the Atlantic coast (Murphy et al. 2000).

Adult spotted seatrout begin to spawn in March/April in southern Florida estuaries (i.e., Tampa Bay and Charlotte Harbor; McMichael and Peters 1989) and in April/May in the more northerly Florida estuarine areas (i.e., the northern Indian River Lagoon, Cedar Key, and Apalachicola Bay; Devries et al. 1997). Protracted spawning for spotted seatrout continues throughout the summer and into late September or October depending on location (Murphy et al. 1999). Spawning generally occurs during the evening hours in deep channels and depressions near grass flats in saline estuarine areas in water temperatures >21°C (Tabb 1966; Helser et al. 1993). Recruitment of juveniles into estuarine areas is evident from April to October in Tampa Bay and Charlotte Harbor, and later at higher latitudes, lasting from May to November in the Indian River and Cedar Key. In the Apalachicola Bay region, young-of-the-year spotted seatrout recruitment does not begin until June, continuing through October (FWC-FMRI 2000).

The Florida Marine Research Institute’s Fisheries-Independent Monitoring (FIM) program’s data are used to generate indices of relative abundance (IOA) for young-of-the-year (YOY) and adult spotted seatrout in select Florida estuaries. These data allow us to monitor relative year-class strength, to improve the ability to predict future adult spotted seatrout abundances, and attempt to correlate juvenile abundances with subsequent 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 select estuarine areas (i.e., Tampa Bay (TB), Charlotte Harbor (CH), the northern Indian River Lagoon (IR), Cedar Key (CK), and Apalachicola Bay (AP)). The "recruitment windows" used for examining YOY spotted seatrout moving into an estuarine area varied depending on latitude (April-October in TB and CH; May-November in IR and CK; and June-October in AP). These time periods coincide with the previously documented recruitment windows for YOY spotted seatrout (Lassuy 1983; McMichael and Peters 1989).

Overall, annual relative abundance estimates from all estuarine systems appear to be relatively stable, with possible indications of a strong influence by recent fisheries management regulations introduced in 1996, especially for Tampa Bay, Charlotte Harbor and Indian River populations (Figure SP01-02). Relative abundance estimates from Tampa Bay fluctuated in a wider range among earlier years, becoming less variable following a strong recruitment year class in 1996, continuing through 2001. One interesting trend to note is the slight overall decline in Tampa Bay relative abundance estimates since 1996. Charlotte Harbor YOY spotted seatrout IOA's indicated two clear years of strong recruitment (0.83-0.85 fish/set), followed by periods of weaker recruitment (0.12-0.62 fish/set). In 2001, YOY abundance estimates still indicated a lower annual recruitment compared to the 2000 index, with an overall declining trend still evident since 1995, similar to Tampa Bay. Indian River IOA's showed a clear indication of one very strong recruitment year in 1995 followed by a gradual declining trend in recruitment through 2001 (Figure SP01-02). Similar to TB and CH, relative abundance for IR fluctuated in a wide range among earlier years, becoming less variable after 1996. The 2001 Indian River YOY spotted seatrout abundance estimates were similar to 1992, 1998, and 2000. Cedar Key and Apalachicola Bay spotted seatrout relative abundance estimates were both nearly stable throughout the years, with Cedar Key showing a small peak in recruitment during 1998 and Apalachicola Bay showing a small decline in recruitment from 1998 through 2000, followed by a slight increase in relative abundance during 2001.

Monthly stratified-random sampling with 183-m haul (0-2.5 m water depths) and purse seines (1-3.3 m water depth) was included in the Fisheries-Independent Monitoring program beginning in 1996 and 1997, respectively. Sampling with the 183-m haul seine was established in all estuarine sampling areas, while purse-net sampling began only in Tampa Bay, Charlotte Harbor and Apalachicola Bay (Table SP01-01). The haul seine was deployed along shallow-water shoreline areas, while the purse net fished the slightly deeper, offshore seagrass beds and sand flats. Data collected from both 183-m seine nets (January-December) were used to assess the abundance of the larger sized spotted seatrout (>100 mm SL) from the following estuarine areas: Tampa Bay, Charlotte Harbor, Indian River, Cedar Key, and Apalachicola Bay (Figure SP01-02). Collections from the southern Indian River (Tequesta) were not included in our analysis due to very low numbers of spotted seatrout. Annual relative abundance estimates of larger spotted seatrout were lower and more stable than the juvenile catches in all estuarine areas, except in Cedar Key where a strong peak was observed in 1998, and in Apalachicola Bay where larger seatrout have been collected in greater numbers for the past three years. A few correlations between the juvenile and adult abundance indices are apparent in the analysis performed here. Charlotte Harbor data, however, initially implies the expected correlation between the indices when the adult index is lagged roughly by one year. In contrast, the Tampa Bay and Cedar Key indices correlate without lag.

Preliminary analysis does suggest that collections from the two adult oriented gear types provide an excellent snapshot of the entire (pre-fishery) spotted seatrout population in Tampa Bay and Charlotte Harbor (Table SP01-01). The haul seine collections each year from Tampa Bay contained primarily smaller (mean 226-279 mm SL) spotted seatrout while the majority of spotted seatrout collected using purse net seines were of a larger size (mean 247-261 mm SL; Table SP01-01). The opposite trends were observed each year in Charlotte Harbor with the larger spotted seatrout being taken in the haul seine (mean 205-304 mm SL) and slightly smaller seatrout (mean 227-270 mm SL) collected in the purse net (Table SP01-01). Collections of various sized spotted seatrout in the purse net may suggest some type of shift in habitat preference depending on each estuary and the available habitat. One interesting trend to note: in the Indian River, Cedar Key, and Apalachicola Bay, spotted seatrout mean annual length patterns taken from haul seine collections were gradually getting smaller over the past several years (Table SP01-01). Spotted seatrout length frequency comparisons between gear types were not performed using Apalachicola Bay data since the purse net collections were only initiated in 2000 and ended in 2001.

Our knowledge and understanding of the number and size of adult spotted seatrout populations in Florida waters have been increasing since the inception of monthly stratified-random sampling in 1996 using the larger 183-m seines. Stronger management regulations in the past few years have limited both recreational and commercial harvesting of spotted seatrout. These new regulations may have directly influenced the adult populations by limiting exploitation in Florida waters; however, various environmental and biological factors may also have influenced the growth and mortality of adult spotted seatrout. The Fisheries-Independent Monitoring program will continue to monitor the spotted seatrout as well as many other species found in Florida estuarine waters.

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Table SP01-01. Number of spotted seatrout collected per haul (CPUE) using 183-m seines in six estuarine systems. The number in parenthesis is the mean standard length (SL, mm).

Gears	**1996**		**1997**		**1998**		**1999**		**2000**		**2001**	
	Haul	**Purse**	**Haul**	**Purse**	**Haul**	**Purse**	**Haul**	**Purse**	**Haul**	**Purse**	**Haul**	**Purse**
Bays	**CPUE (SL)**		**CPUE (SL)**		**CPUE (SL)**		**CPUE (SL)**		**CPUE (SL)**		**CPUE (SL)**	
Tampa Bay	0.81 (244)	N/A	0.45 (226)	1.04 (247)	0.54 (226)	0.95 (249)	0.98 (279)	1.06 (247)	0.30 (241)	317 (254)	0.68 (228)	1.00 (261)
Charlotte Harbor	0.45 (205)	N/A	0.43 (280)	N/A	0.19 (230)	0.38 (270)	0.46 (304)	0.38 (251)	0.3 (284)	0.39 (238)	0.28 (259)	0.38 (227)
N. Indian River	N/A	N/A	0.34 (246)	N/A	0.47 (243)	N/A	0.51 (215)	N/A	0.49 (206)	N/A	0.40 (204)	N/A
Cedar Key	N/A	N/A	1.08 (239)	N/A	4.13 (235)	N/A	2.06 (202)	N/A	1.03 (261)	N/A	0.99 (222)	N/A
Apalachicola Bay	N/A	N/A	N/A	N/A	0.56 (253)	N/A	1.31 (255)	N/A	0.88 (245)	N/A	0.54 (234)	N/A
S. Indian River	N/A	N/A	0.1 (314)	N/A	0.11 (300)	N/A	0.16 (308)	N/A	0.07 (382)	N/A	0.10 (262)	N/A

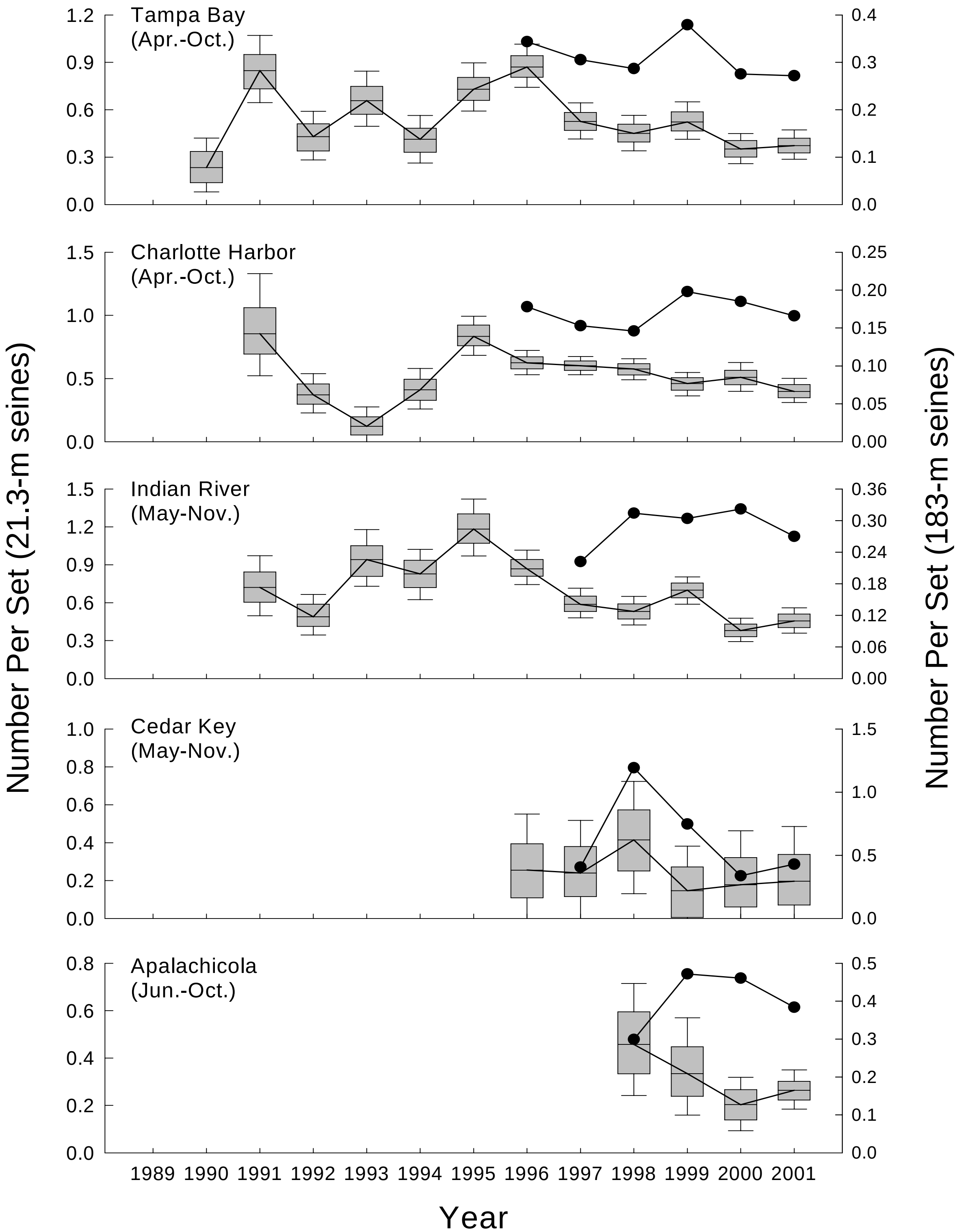

Figure SP01-02. Relative abundance of spotted seatrout (≤100 mm SL) collected during 1990-2001 using 21.3-m seines. The box represents the 25th and 75th percentiles, the vertical line extends from the 10th–90th percentiles, and the horizontal line indicates the median estimate. The line and scatter plot (•) represents median relative abundance of adult spotted seatrout (>100 mm SL) collected using 183-m seines. Note different scales.

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 an average of 85% of the total pounds landed between 1986 and 1996 (Murphy et al. 1997). Sheepshead in Florida waters are currently regulated by size (12" fork length . 268 mm standard length) and bag (15 fish/day) limits. Although the most recent stock assessment indicates that growth overfishing is unlikely, the potential for recruitment overfishing remains for Atlantic Coast sheepshead (Murphy et al. 1997). Annual estimates of relative abundance for sheepshead during various life stages (young-of-the-year, pre-fishery, and fully recruited) are valuable tools for fine-tuning virtual population models developed for stock assessments and can be used to investigate associations between young-of-the-year and adult abundances.

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 July. Young-of-the-year sheepshead grow to approximately 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; MacDonald unpublished data). Based upon data from Louisiana, sheepshead reach sexual maturity at two years of age (Render and Wilson 1992), shortly before they recruit into the fishery in Florida waters.

Catch data from the Fisheries-Independent Monitoring (FIM) program's stratified-random sampling 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 SP01-02). In each estuary, sheepshead #40 mm SL represented early YOY (Figure SP01-03), while sheepshead between 50 and 95 mm SL represented late YOY (Figure SP01-04). Analyses were conducted separately for sheepshead that had not yet entered the fishery (131 to 267 mm SL) and for those that were fully recruited to the fishery (≥268 mm SL; Figure SP01-04). Relatively few YOY sheepshead were collected in either Cedar Key or Apalachicola Bay (Figures SP01-03 and -04), so annual estimates of relative abundance were not prepared for either early or late YOY sheepshead in these estuaries. Similarly, annual estimates for early YOY sheepshead were not prepared for the southern Indian River Lagoon where 21.3-m seine samples were not collected.

Annual estimates of relative abundance for early YOY sheepshead have been fairly constant on the Atlantic Coast between 1997 and 2001, and have generally followed a three-year cyclical pattern between 1989 and 1998 on the Gulf Coast (Figure SP01-05). In Tampa Bay and Charlotte Harbor, two years of low to moderate abundance estimates have typically been followed by a year of higher relative abundance (1991, 1994, and 1997). This cyclical pattern continued in Tampa Bay from 1999-2001, with 2000 having a higher relative abundance than either 1999 or 2001. In Charlotte Harbor, however, there was no obvious trend in abundance estimates between 1999 and 2001. Annual estimates of relative abundance for the northern Indian River Lagoon have fluctuated around 0.1 fish per set with a peak of 0.18 in 2000.

Late YOY sheepshead estimates of relative abundance were fairly stable on the Gulf Coast through 2000, and on the Atlantic Coast through 1999 (Figure SP01-05). Higher abundance estimates during 2000 in both the northern and southern Indian River Lagoon were followed by relatively lower abundance estimates in 2001. The higher relative abundance of YOY sheepshead on the Atlantic Coast in 2000 mirrors that of early YOY sheepshead in the northern Indian River Lagoon. Annual abundance estimates for late YOY in Tampa Bay were lowest in 1996 (0.03 fish per set) and highest in 2000 (0.15) with a median abundance estimate of 0.09 fish per set across all years. Charlotte Harbor abundance estimates were highest in 1996 (0.09) and lowest in 2001 (0.01).

Pre-fishery and fully recruited size-classes of sheepshead along the Gulf and Atlantic Coasts of Florida had estuarine-specific trends in abundance estimates. Cedar Key and Tampa Bay have had fairly stable abundance estimates through 2001 (Figure SP01-06). Charlotte Harbor and Apalachicola have had increasing trends in the abundance estimates of both pre-fishery and fully recruited sheepshead since sampling began (1996 and 1998, respectively). The southern Indian River Lagoon has had a decreasing trend in annual abundance estimates for pre-fishery sheepshead since 1998. The northern Indian River Lagoon has had relatively stable abundance estimates for fully recruited sheepshead and an increasing trend in pre-fishery abundance estimates between 1998 and 2001.

Comparisons between estuaries for pre-fishery sheepshead show that abundance estimates were highest in the northern and southern Indian River Lagoon (0.19 to 0.91 fish per set); intermediate in Charlotte Harbor, Tampa Bay, and Apalachicola (0.18 to 0.44); and lowest in Cedar Key (0.04 to 0.13). Estimates of relative abundance for fully recruited sheepshead, however, were consistently higher in Cedar Key (0.66–0.79) than in any of the other estuaries sampled (0.01–0.69).

Pearson correlation coefficients between early and late YOY annual abundance estimates were positive and relatively high for Tampa Bay and the Northern Indian River Lagoon (0.87 and 0.64, respectively). Early and late YOY abundance estimates for Charlotte Harbor, however, were negatively correlated (-0.43) because of two years (1996 and 2001; Figure SP01-05). With the inclusion of environmental parameters in a regression model and the accumulation of additional years of abundance estimates, the correlation between early and late YOY should become more apparent. Correlating relative abundance estimates among other size-classes will be more difficult, probably requiring the inclusion of age data, since the pre-fishery and fully recruited size classes represent wide ranges of overlapping ages (Beckman et al. 1991; Dutka-Gianelli and Murie 2001; MacDonald unpublished data).

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Table SP01-02. Size ranges, gear types, and months examined when calculating annual relative abundance estimates for each life history stage of sheepshead.

Life History Stage	Size Range (mm SL)	Gear types	Months
Early YOY	0-40	21.3-m seines (offshore, beach, and boat sets)	April-July
Late YOY	50-95	183-m haul seine	August-December
Pre-fishery	131-267	183-m haul seine	April-March
Full Recruited	≥268 mm	183-m haul seine	April-March

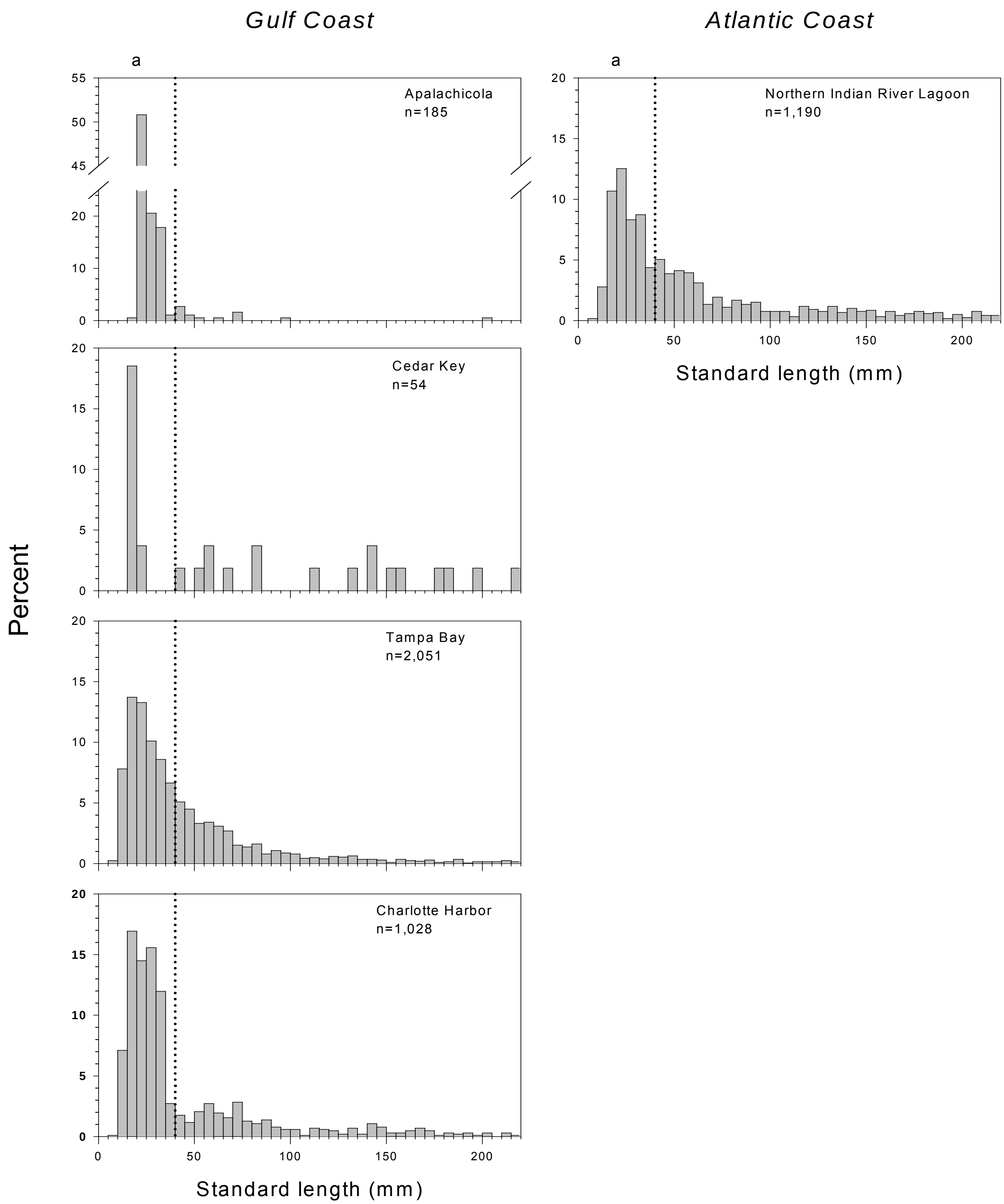

Figure SP01-03. Length frequency distribution of sheepshead collected during 21.3-m seine stratified-random sampling in each of the estuaries surveyed by the Fisheries-Independent Monitoring program. Charlotte Harbor and Tampa Bay were surveyed from 1989 to 2001; the northern Indian River was surveyed from 1990 to 2001; Cedar Key was surveyed from 1996 to 2001; and Apalachicola was surveyed between 1998 and 2001. The southern Indian River 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.

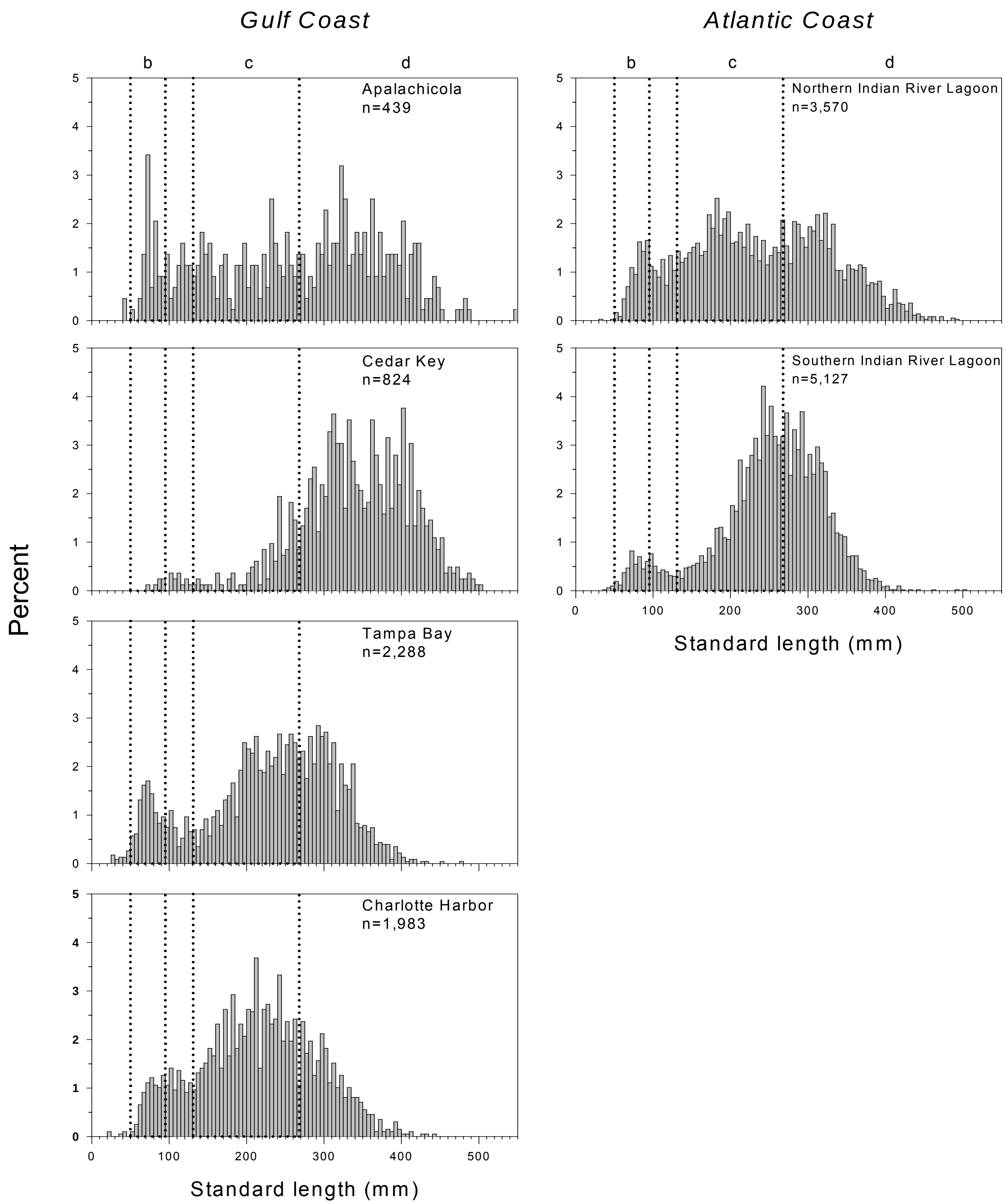

Figure SP01-04. Length frequency distribution of sheepshead collected during 183-m haul seine stratified-random sampling surveys in each of the estuaries surveyed by the Fisheries-Independent Monitoring program. Charlotte Harbor and Tampa Bay were surveyed from 1996 to 2001; southern and northern Indian River, and Cedar Key were surveyed from 1997 to 2001; and Apalachicola was surveyed from 1998 to 2001. The dotted vertical lines and letters designate three of the size classes analyzed: b) late young-of-year, c) pre-fishery, and d) fully recruited. n = number of fish.

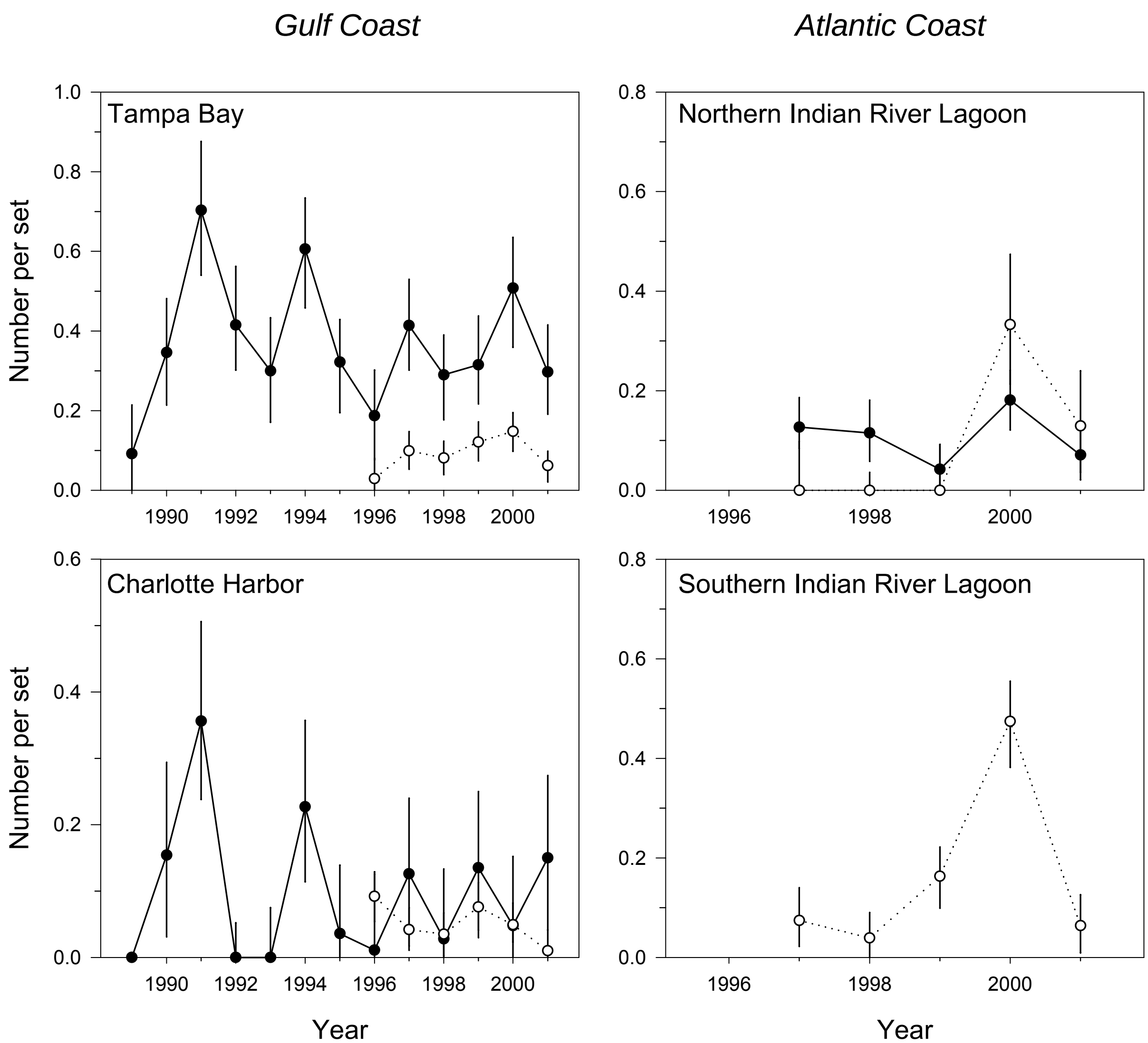

Figure SP01-05. Annual relative abundance estimates for young-of-the-year sheepshead collected during stratified-random sampling surveys in estuaries along the Gulf and Atlantic Coasts of Florida. Early YOY sheepshead (≤40 mm SL, collected in 21.3-m seines between April and July) are represented by filled circles and solid lines. The dotted lines and 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.

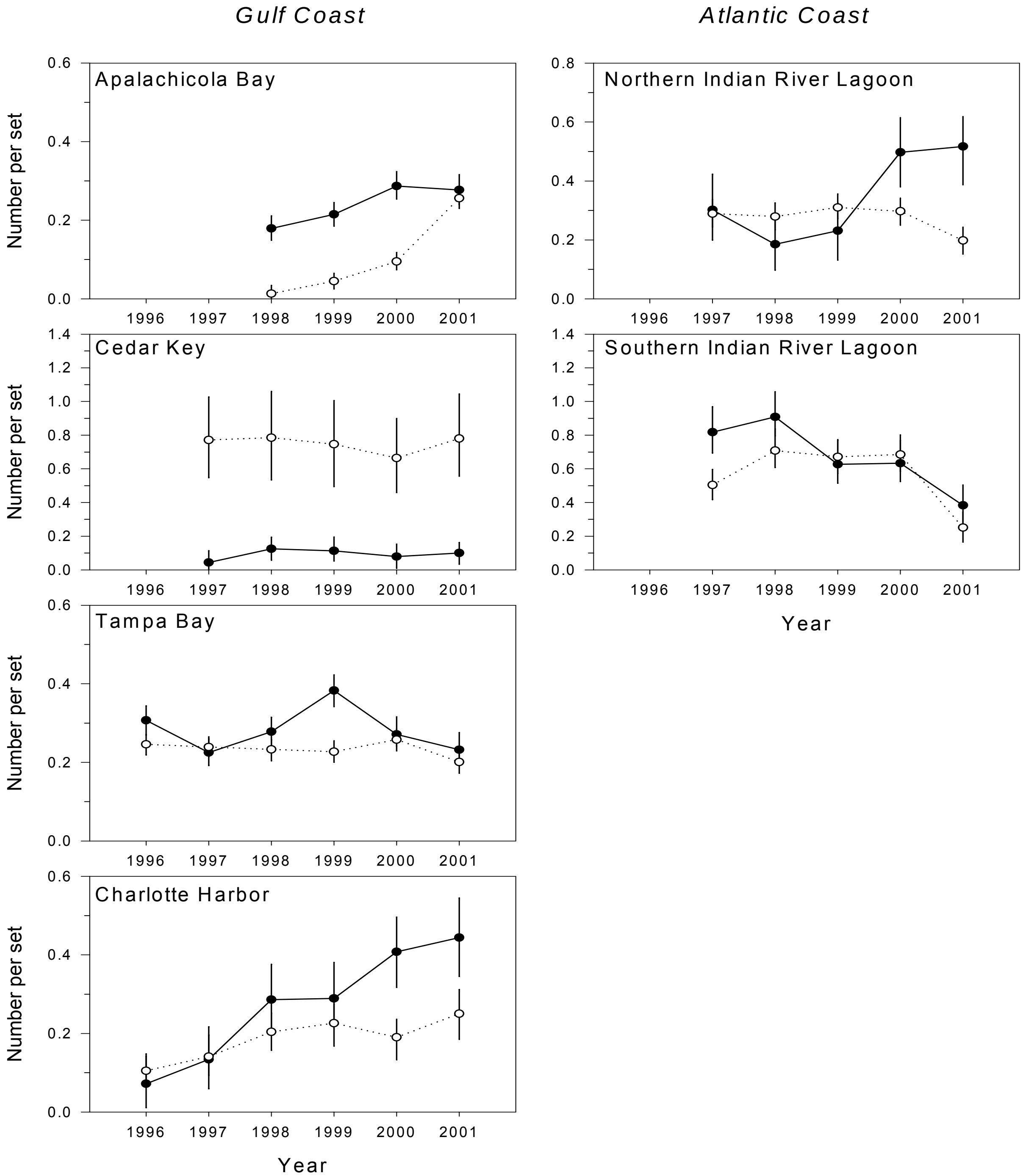

Figure SP01-06. Annual relative abundance estimates for pre-fishery (131 to 267 mm SL) and fully recruited (≥268 mm SL) sheepshead collected during stratified-random sampling surveys in estuaries along the Gulf and Atlantic Coasts of Florida. Pre-fishery sheepshead are represented by filled circles and solid lines, while the dotted lines and open circles represent sheepshead that have recruited into the fishery. Year represents a biological year (April–March); abundance estimates for 2001, therefore, are based on a partial year since January–March 2002 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 fish species (Odum 1970; Leard et al. 1995). Recreational anglers capture striped mullet for bait and food. This species supported a valuable commercial fishery from the early 1960s to the late 1980s, with approximately 90% of all U.S. production occurring in the Gulf of Mexico and over 80% of all commercially caught striped mullet landed in Florida waters (Rivas 1980; Leard et al. 1995). However, from 1991 to 1994 commercial striped mullet landings severely declined in Florida from 79% to 46% of the total Gulf production (Leard et al. 1995). With 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 in Florida, striped mullet commercial landings were reduced by 80% (Mahmoudi 1997). 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, but mainly from November through January. Recruitment of young-of-the-year (YOY) striped mullet to the estuary usually begins in January and continues through April, with peaks of abundance in February and March. However, FIM length-frequency data have indicated that recruitment can occur in Florida's estuaries as early as the end of December. Typically, YOY striped mullet recruit into Florida's estuaries at 20 to 35 mm standard length (Kilby 1949; Futch 1966).

Recruitment indices for YOY striped mullet were developed in select Florida estuaries to assess long-term trends in the YOY abundance in order to predict future stock fluctuations in the adult population. Using 21.3-m seines, YOY striped mullet were collected at fixed-stations from 1989 to 1995 (Tampa Bay, Charlotte Harbor and northern Indian River Lagoon only) and at stratified-random sampling (SRS) sites from 1996 to 2001. Data from January to April of each year were used to examine the recruitment of YOY (# 35 mm SL) striped mullet in Tampa Bay (1989 to 2001), Charlotte Harbor (1991 to 2001), northern Indian River Lagoon (1991 to 2001), Cedar Key (1997 to 2001), and Apalachicola

Bay (1998 to 2001).

Small fluctuations in YOY striped mullet abundance were detected in fixed-station sampling from Tampa Bay between 1989 and 1993, with striped mullet abundance peaking in 1994 and 1995 (Figure SP01-07). When SRS was initiated, abundance estimates were stable from 1996 to 2001 with a peak in 1998. Relative abundance of YOY striped mullet in Charlotte Harbor fixed-station sampling fluctuated only slightly from 1991 to 1994, but increased sharply in 1995. Stratified-random sampling indicated relative abundances were stable in Charlotte Harbor, showing a similar pattern as Tampa Bay, except for the peak observed in 2001. In the northern Indian River Lagoon, fixed-station sampling from 1991 to 1995 indicated consistent YOY abundance estimates with an upward trend. Since implementation of SRS in 1996, YOY abundance has been cyclic in the northern Indian River Lagoon with a two-year period. In 1996, 1998, and 2000 increases in relative abundance were evident, but in 1997 and 1999 levels decreased markedly. In 2001, an increase was observed in the northern Indian River Lagoon compared to 2000. Initiation of SRS began in 1997 in Cedar Key and relative abundance estimates of YOY striped mullet has shown a slight increase through 2001. Apalachicola SRS began in 1998 and YOY abundance estimates have been stable with the exception of 2000. In 2001, YOY striped mullet abundance estimates were highest for stratified-random sampling in Charlotte Harbor, northern Indian River Lagoon, Cedar Key, and Apalachicola Bay.

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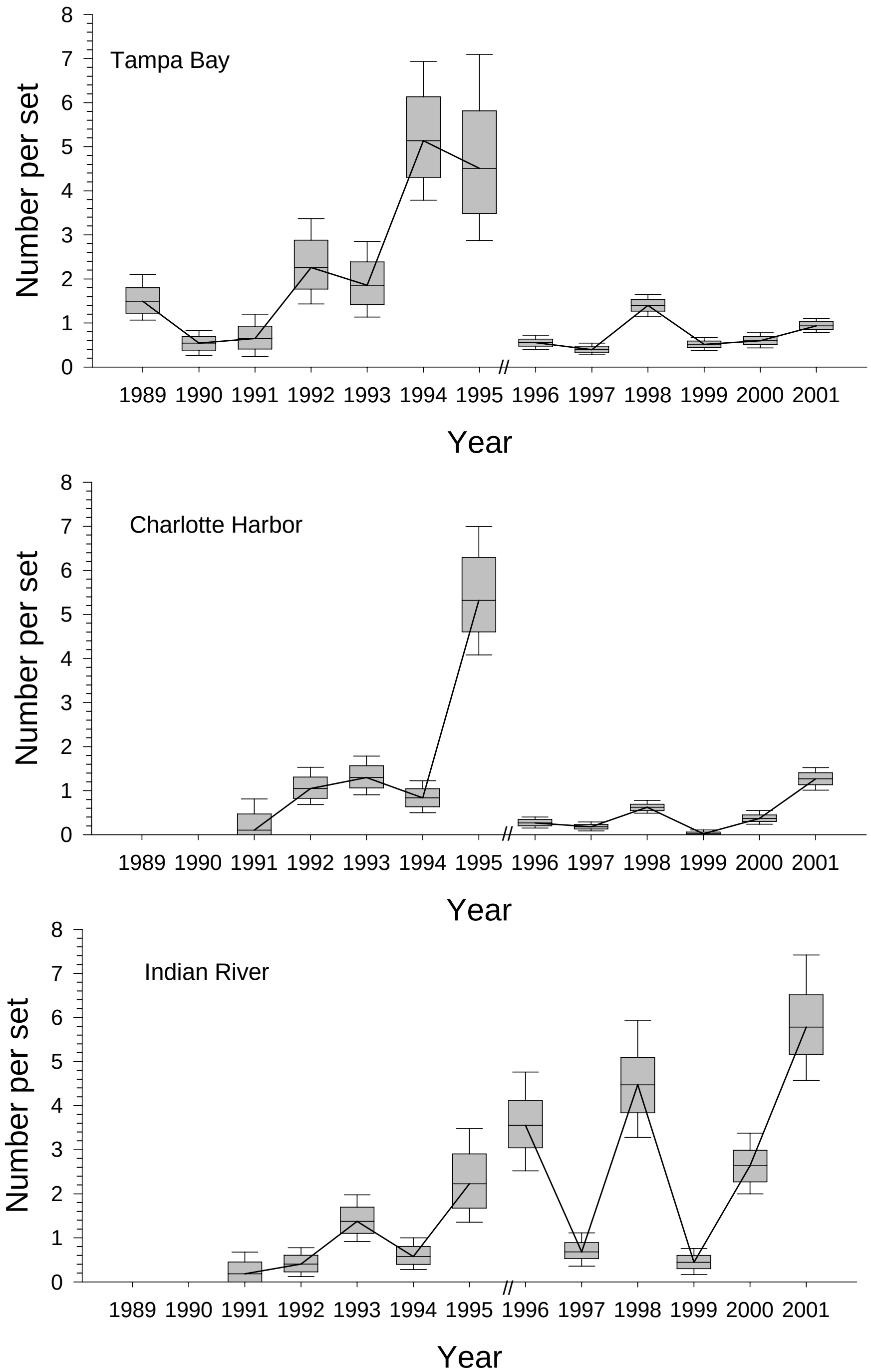
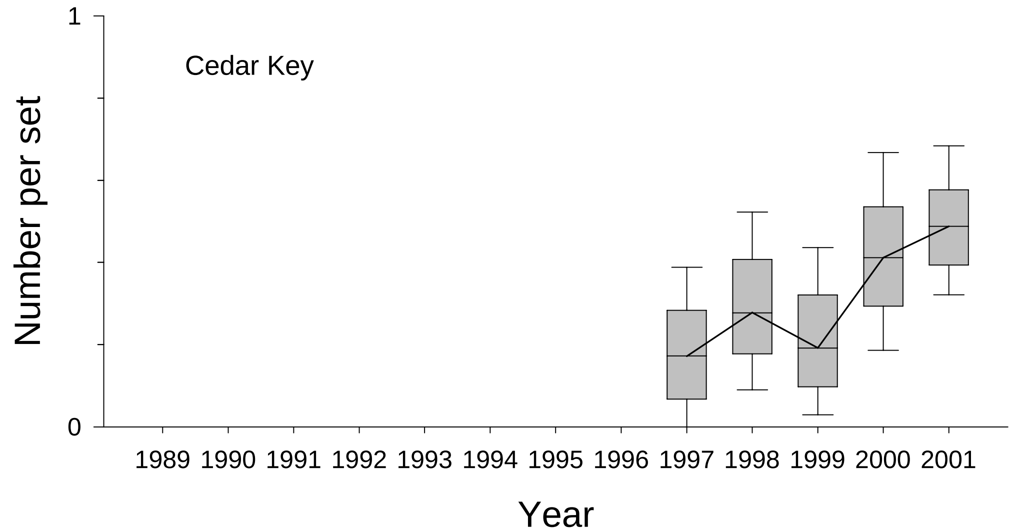


Figure SP01-07. Indices of relative abundance for young-of-the-year striped mullet (#35 mm SL) collected in 21.3-m seines during fixed-station sampling (January - April, 1989 – 1995) and stratified-random sampling (January - April, 1996 – 2001) surveys in Tampa Bay, Charlotte Harbor, and Indian River Lagoon. The break on the x-axis between years 1995 and 1996 for each estuarine system indicates the separation between fixed-station sampling and stratified-random sampling. The box represents the 25th to 75th percentiles, the vertical line represents the 10th to 90th percentiles, and the horizontal line represents the median estimate.



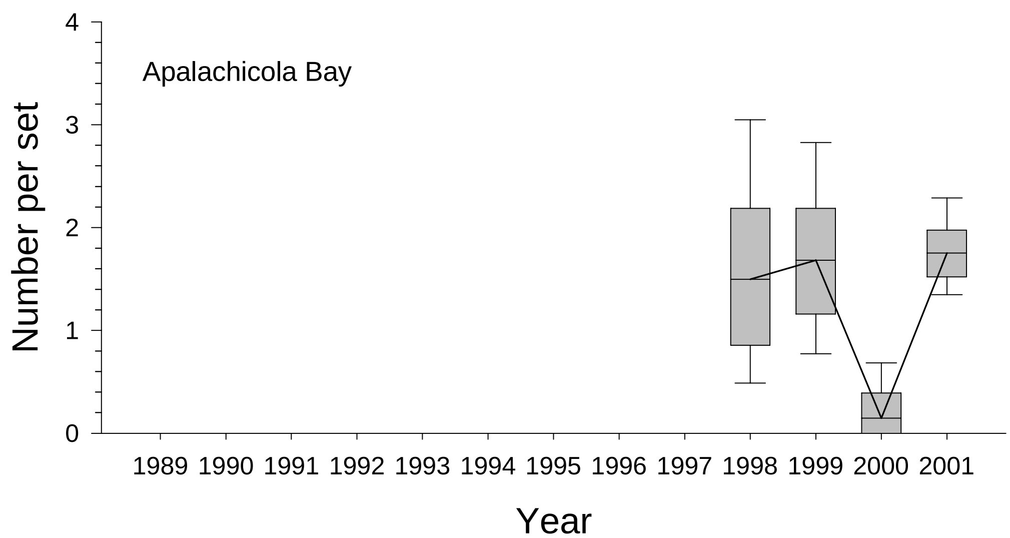


Figure SP01-07 (Continued). Indices of relative abundance for young-of-the-year striped mullet (#35 mm SL) collected in 21.3-m seines during stratified-random sampling (January – April) surveys in Cedar Key and Apalachicola Bay. The box represents the 25^{th} to 75^{th} percentiles, the vertical line represents the 10^{th} to 90^{th} 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 captured in estuaries of the northeastern Gulf of Mexico (Hoese and Jones 1963; Hansen 1970; Ogren and Brusher 1977). 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). Young-of-the-year (YOY) and adults are commonly targeted by anglers for use as bait when fishing for recreationally important species such as sailfish (*Istiophorus platypterus*), red drum (*Sciaenops ocellatus*), spotted seatrout (*Cynoscion nebulosus*), southern flounder (*Paralichthys lethostigma*), snook (*Centropomus undecimalis*), and gag grouper (*Mycteroperca microlepis*).

To understand the mechanisms influencing YOY recruitment, annual indices of abundance were generated to determine if similar trends in YOY densities were evident in Tampa Bay, Charlotte Harbor, northern Indian River Lagoon, Cedar Key, and Apalachicola. Only 21.3-m seine data from January-June stratified-random sampling were used because this period covered peak YOY recruitment into the estuaries. Only individuals measuring less than 80 mm SL were used in the YOY data set. This cutoff length represents the average maximum size that individuals of YOY cohorts attain through June.

In Tampa Bay, indices of relative abundance (median fish/haul) showed that YOY pinfish abundance peaked in 1992 with 19 fish/haul and was relatively stable in other years with small fluctuations between 4 fish/haul and 11 fish/haul (Figure SP01-08). A definite increase in relative abundance over the past three years would suggest strong and successful recruitment seasons over the past few years in this estuarine system. In Charlotte Harbor, relative abundance peaked in 1994 (24 fish/haul) and 1995 (20 fish/haul) with high fluctuations among years (3 fish/haul – 24 fish/haul). Over the past five years (1997-2001), relative abundance was low with small fluctuations, showing a slight increasing trend over the past three years. In the northern Indian River Lagoon, relative abundance of YOY pinfish remained at a consistently low level of less than 1.5 fish/haul. It is to be noted that a new sampling universe was implemented in 1998 in the northern Indian River Lagoon. Relative abundance of 2001 YOY pinfish in the northern Indian River Lagoon also showed a slight increase similar to what was observed in Tampa Bay and Charlotte Harbor. In Cedar Key, pinfish abundance peaked at 5 fish/haul in 2000 and fluctuated around 1 fish/haul for other years. In Apalachicola, YOY pinfish significantly increased in 2001 peaking at 4 fish/haul. Consistently high 21.3-m seine hauls of YOY pinfish during the 2001 recruitment window accounted for this increase.

Inter-bay comparisons also revealed that the relative abundance of YOY pinfish was generally highest in Charlotte Harbor (mean 11.0 fish/haul), followed by Tampa Bay (mean 8.2 fish/haul), Cedar Key (mean 2.0 fish/haul), Apalachicola (mean 1.4 fish/haul), and the northern Indian River Lagoon (mean 0.7 fish/haul). Comparisons of annual indices between Tampa Bay, Charlotte Harbor, northern Indian River Lagoon, and Apalachicola showed similar increasing trends in abundance over the last two or three years (Figure SP01-08). Such similarities suggest that shared environmental factors such as temperature may be influencing recruitment of YOY in these bays (Nelson, 1998). A four-year cycle of pinfish abundance was observed in three of the four estuaries (Figure SP01-08): Tampa Bay 1990-1993, 1993-1996, and 1996-1999; and Charlotte Harbor 1993-1996 and 1996-1999. In the northern Indian River lagoon, the cycles (1992-1994, 1994-1997, and 1997-2000) lagged one year behind the Gulf of Mexico cycles. In Cedar Key and Apalachicola, abundance trends are not clearly defined. The magnitude and timing of the peak abundances varied among cycles. Pinfish catch-rates from FMRI offshore baitfish cruises exhibited the same cycles as the Gulf of Mexico cycles.

Additional years of sampling and further studies are required to verify the periodicity and to identify the mechanisms behind this phenomenon.

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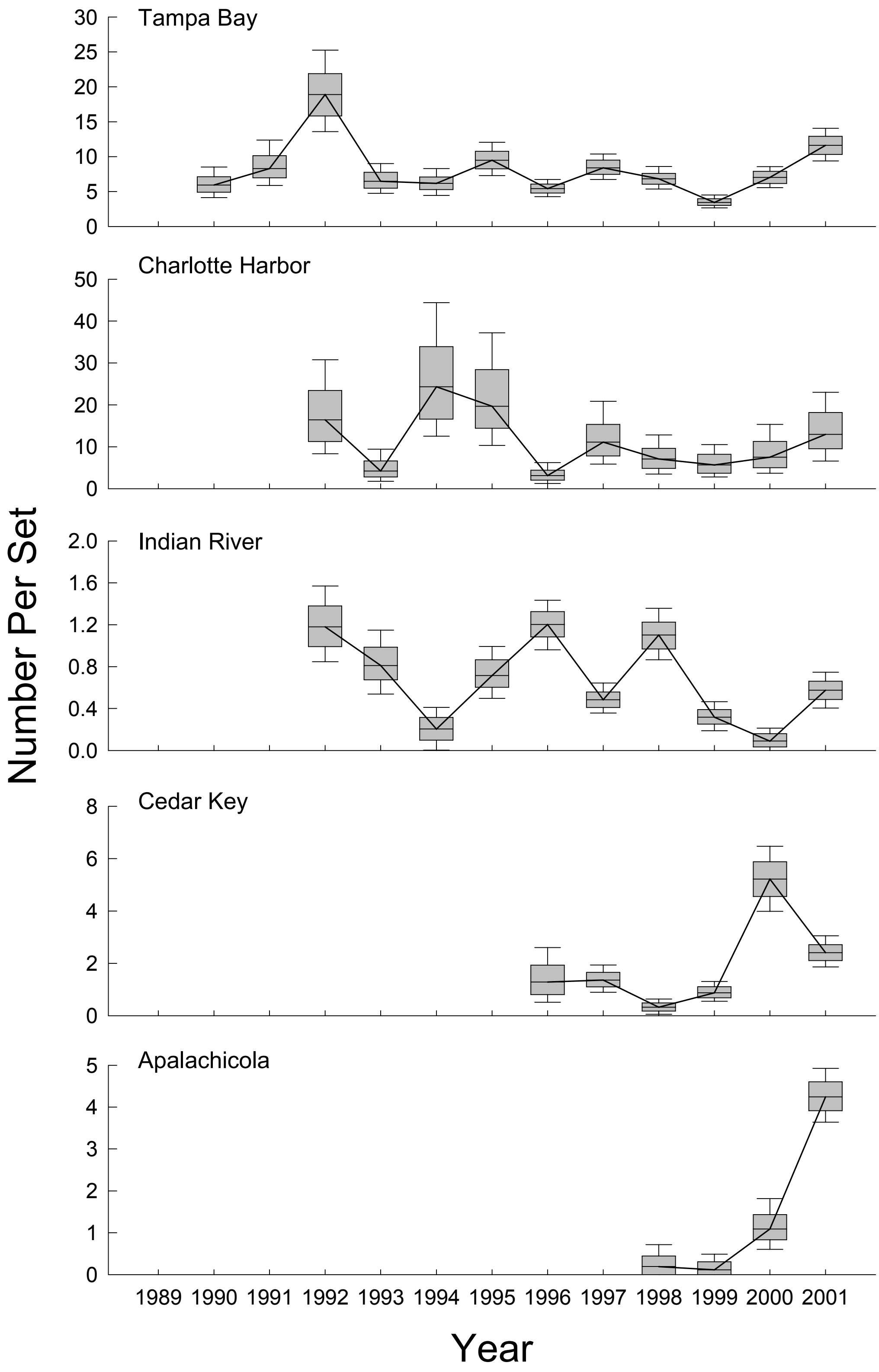

Figure SP01-08. Relative abundance of pinfish (<80 mm SL) collected in Jan.-Jun. in Tampa Bay, Charlotte Harbor, Cedar Key, Apalachicola, and Indian River lagoon, 1990 – 2001. The box represents the 25^{th} – 75^{th} percentiles, the vertical line extends from the 10^{th} – 90^{th} percentiles, and the horizontal line indicates the median estimate.

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Blue Crab, *Callinectes sapidus*

Blue crabs, *Callinectes sapidus*, play a major role in the commercial fisheries of Florida, and are also sought by recreational fishers for food and bait. The entanglement net limitation in 1995 raised concern that blue crab populations may experience increased fishing pressure, as former net fishers seek income from other fisheries resources, namely blue crabs. Because blue crabs make up a large portion of the diet of large red and black drum (Gunter 1945; Simmons and Breuer 1962), increased harvest of the blue crab fishery may have indirect effects on other recreational fisheries. Baseline data are necessary to monitor changes, resulting from increased exploitation, in the blue crab population.

Juvenile blue crabs (≤ 65 mm carapace width (CW)) are frequently captured in offshore, shoreline, and river 21.3-m seine sampling in Fisheries-Independent Monitoring (FIM) program study areas. Small blue crabs are abundant in FIM seine samples from October through June, and stratified-random sampling data from these months were used to calculate juvenile abundance indices. Data from October to December of one year and January to June of the following year were combined to create a year of data (data collected prior to 1996 includes September to December and March to June seasonal data only). This method produces a 2000 index that includes data from both 2000 and 2001. A juvenile index value for 2001 is not shown because spring 2002 data were not yet available. Abundance indices were calculated from stratified-random sampling data for Apalachicola Bay, Cedar Key, Tampa Bay, Charlotte Harbor, and the northern Indian River Lagoon. Data from northeast Florida were not examined because less than one year of sampling has been completed in this area.

The relative abundances of juvenile blue crabs were generally consistent among years in Apalachicola Bay, Cedar Key, Tampa Bay, and Charlotte Harbor (all 21.3-m seine sets combined) suggesting that blue crab populations were relatively stable during the study period (Figure SP01-09). Although only three years of complete data exist for Apalachicola Bay, the catch rates are relatively constant and are the highest calculated from around the state over the last three years, followed closely by Cedar Key. With the exception of the peak levels observed in 1998, relative abundances in Tampa Bay and Charlotte Harbor have remained very stable since 1992. In the northern Indian River Lagoon, relative abundance peaked in 1991, then declined and remained at similar levels through 1997. The catch rates declined again in 1998 to a lower level, where they have remained for the last three years.

Data collected from 183-m haul seines (January-December) were used to assess the abundance of larger blue crabs (> 100 mm CW, the size at which females first start to mature (Steele and Bert 1994)). The 183-m haul seine is a shoreline-set seine, and the use of this gear began in 1996. Data from January through December stratified-random sampling were used to calculate abundance indices for the larger crabs. For the most part, the adult relative abundance estimate stayed at comparable levels thoughout the study period with the exception of 1998. The 1998 indices were the highest calculated in all of the estuaries. Compared to the juvenile abundance estimates, the adult catches were lower for Apalachicola Bay and Cedar Key, similar for Tampa Bay, and higher for Charlotte Harbor and the northern Indian River Lagoon. Overall the highest adult abundance estimates occurred in Charlotte Harbor. Apalachicola Bay had the highest juvenile indices.

Due to the time lag in the calculation of juvenile indices (October through June), the adults from a given year will most likely be the parents of the juveniles in that year’s index. In all the estuaries, the two indices show comparable trends. This is most apparent for Tampa Bay and Charlotte Harbor, with the peak in both indices in 1998. If this pattern continues over time, the strength of the adult populations may be strongly linked to the amount of juvenile recruitment.

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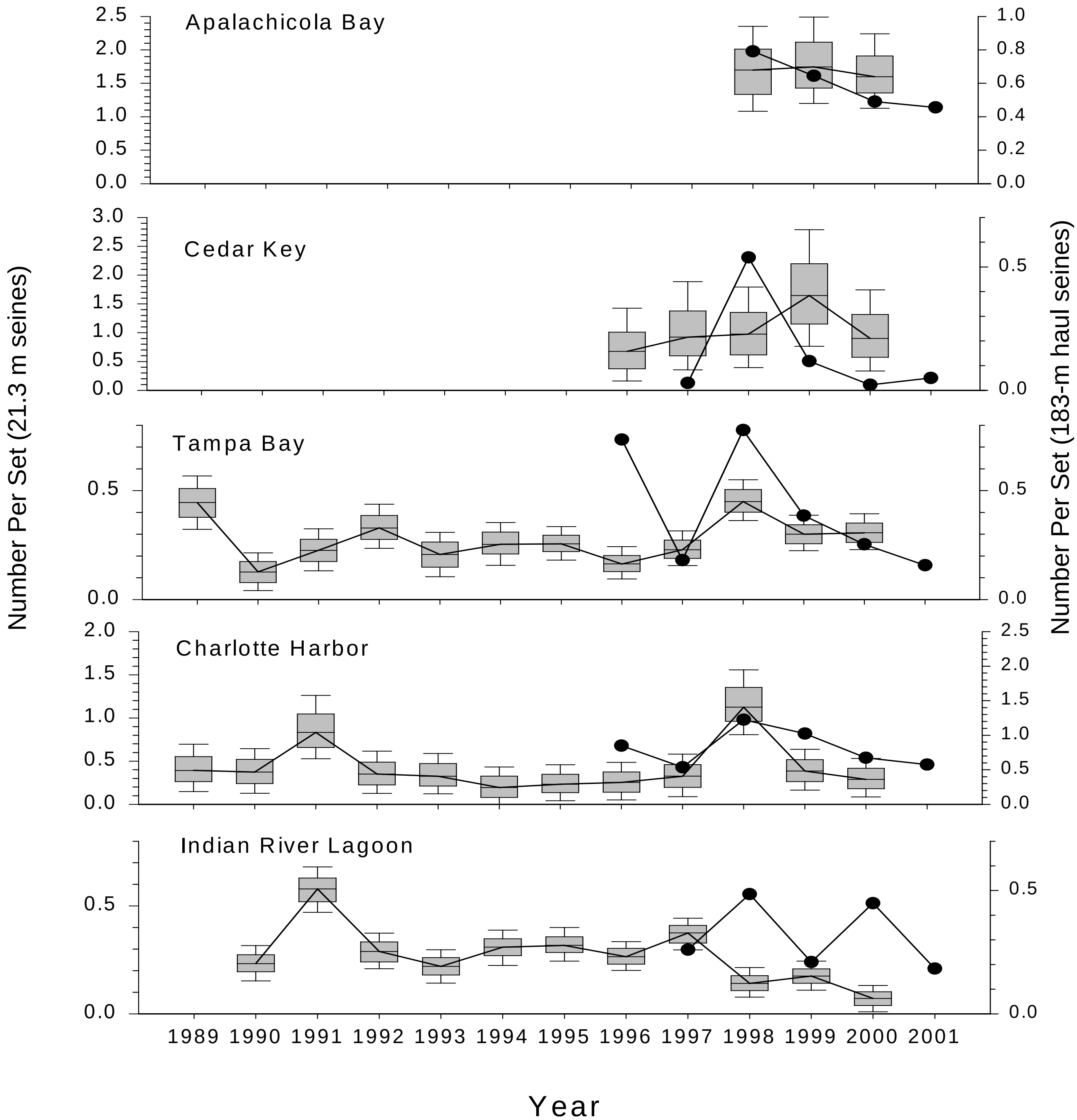

Figure SP01-09. Relative abundance of juvenile blue crabs (≤ 65 mm CW) collected in offshore, shoreline, and 21.3-m river seines from September to June SRS, 1989-2001. The box represents the 25^{th}-75^{th} percentiles, the vertical line extends from the 10^{th}-90^{th} percentiles, and the horizontal line represents the median value. The line and scatter plot (●) represents median relative abundance of larger blue crabs (> 100 mm CW) collected using 183-m haul seines. Please note the change of axis on all of the graphs.