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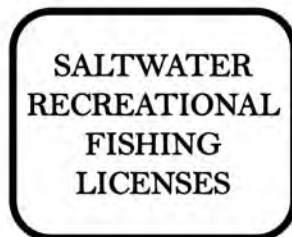


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# Fisheries-Independent Monitoring Program Annual Data Summary Report

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Compiled by the Fisheries-Independent Monitoring Program Staff  
Fish & Wildlife Research Institute  
100 8<sup>th</sup> Avenue SE  
St. Petersburg, FL 33701  
Telephone: (727) 896-8626



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FWRI INHOUSE REPORT

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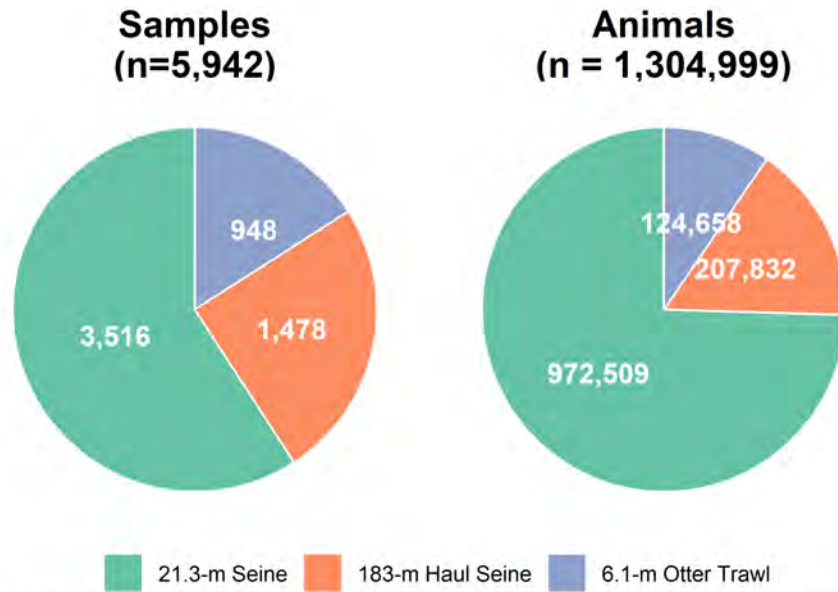
## Overview

This report provides a summary of the data collected in 2022 by the Florida Fish and Wildlife Conservation Commission (FWC) Fish and Wildlife Research Institute's (FWRI) Fisheries-Independent Monitoring (FIM) program. Monitoring was conducted following a stratified-random sampling (SRS) design in Fort Walton including the Santa Rosa Sound and Choctawhatchee Bay (monthly, June to December), Apalachicola Bay (monthly, January to December), Cedar Key (monthly, January to December), Tampa Bay (monthly, January to December), Sarasota Bay (bimonthly, January to December), Charlotte Harbor (monthly, January to December), northeast Florida (monthly, January to December), and the northern and southern portions of the Indian River Lagoon (monthly, January to December). Gears used for routine monitoring in the various areas included 21.3-m seines, 6.1-m otter trawls, and 183-m haul seines (Table 1).

**Table 1:** Gear usage by estuary for FIM program stratified-random-sampling, 2022.

Estuary	21.3-m Seines		183-m Haul Seines	6.1-m Otter Trawls
	Bay	River		
Santa Rosa Sound	X	–	–	–
Choctawhatchee Bay	X	–	–	–
Apalachicola Bay	X	X	X	X
Cedar Key	X	X	X	X
Tampa Bay	X	X	X	X
Sarasota Bay	X	X	–	–
Charlotte Harbor	X	X	X	X
Northeast Florida	X	–	X	X
Northern Indian River Lagoon	X	X	X	–
Southern Indian River Lagoon	X	–	X	–

There were 1,304,999 animals collected in 5,942 samples from all estuaries (Figure 1). The most samples were collected with 21.3-m seines (n=3,516), followed by 183-m haul seines (n=1,478), and 6.1-m otter trawls (n=948). Total sampling effort in the area areas ranged from 28 hauls made in Santa Rosa Sound to 1,337 hauls made in Northeast Florida (Table 3). The total number of animals collected ranged from 4,228 in Santa Rosa Sound to 309,526 in Tampa Bay. The majority of animals were collected in 21.3-m seines (n=972,509); 74.5% of the total catch).



'Samples' and 'Animals' are the total number of deployments and collected animals by gear type, respectively.

**Figure 1:** Summary of 2022 FIM program catch and effort data.

The top five dominant taxa were *Anchoa mitchilli*, *Lagodon rhomboides*, *Eucinostomus spp.*, *Menidia spp.*, and *Lucania parva*. Recreationally and commercially important animals (i.e., Selected Taxa; see Table 5) accounted for 12.1% (n=157,997) of the overall catch and comprised between 4.3% (Tampa Bay) and 38.4% (Northeast Florida) of the total SRS catches from each estuary. A total of 10 Selected Taxa were among the 10 most abundant taxa in some areas (Table 2).

**Table 2:** Selected taxa among the 10 most abundant taxa in FIM program stratified-random estuaries, 2022.

Estuary	Selected taxa among the 10 most abundant taxa:
Apalachicola Bay	<i>Micropogonias undulatus</i> , <i>Leiostomus xanthurus</i> , <i>Litopenaeus setiferus</i>
Cedar Key	<i>Litopenaeus setiferus</i> , <i>Mugil cephalus</i>
Charlotte Harbor	<i>Farfantepenaeus duorarum</i>
Choctawhatchee Bay	<i>Leiostomus xanthurus</i> , <i>Micropogonias undulatus</i> , <i>Mugil cephalus</i> , <i>Mugil curema</i> , <i>Elops saurus</i> , <i>Sciaenops ocellatus</i>
Northeast Florida	<i>Litopenaeus setiferus</i> , <i>Leiostomus xanthurus</i> , <i>Micropogonias undulatus</i> , <i>Mugil cephalus</i>
Northern Indian River Lagoon	<i>Mugil curema</i> , <i>Mugil cephalus</i>
Santa Rosa Sound	<i>Leiostomus xanthurus</i> , <i>Pomatomus saltatrix</i> , <i>Mugil cephalus</i> , <i>Mugil curema</i> , <i>Sciaenops ocellatus</i>
Sarasota Bay	<i>Farfantepenaeus duorarum</i>
Southern Indian River Lagoon	<i>Brevoortia spp.</i> , <i>Mugil curema</i>

Estuary	Selected taxa among the 10 most abundant taxa:
Tampa Bay	<i>Elops saurus</i>

A total of 612 fish and selected invertebrates were culled for fish health analyses of gross external abnormalities (including external parasites). Numbers of reported abnormalities from each estuary ranged from 0 (SR) to 535 (IR; see Fish Health section).

Species profiles, including indices of young-of-the-year relative abundance, were generated for many species of commercial, recreational, or ecological importance: *Centropomus undecimalis* (Common Snook), *Sciaenops ocellatus* (Red Drum), *Cynoscion nebulosus* (Spotted Seatrout), *Archosargus probatocephalus* (Sheepshead), *Lagodon rhomboides* (Pinfish), *Mugil cephalis* (Striped Mullet), and *Callinectes sapidus* (Blue Crab; see Species Profile section).

## Changelog from previous reports

Starting with the 2022 version of this report, several changes were made from previous versions, including:

- Addition of Santa Rosa Sound, Choctawhatchee Bay, and Sarasota Bay to data summaries
- Order of estuaries in data summaries was changed to reflect a more logical geographical order (i.e., west to east, north to south)
- Species profiles were amended to include a more quantitative, objective interpretation of Indices of Abundance figures
- Addition of section detailing annual monitoring of Gulf of Mexico polyhaline seagrass habitats
- Included more species in our list of selected species to account for reef-associated juvenile stages

**Table 3:** Summary of catch and effort data by estuary for FIM program stratified-random sampling, 2022.

Estuary	21.3-m Seines		183-m Haul Seines		6.1-m Otter Trawls		Totals	
	Hauls	Animals	Hauls	Animals	Hauls	Animals	Hauls	Animals
Santa Rosa Sound			28	4,228			28	4,228
Choctawhatchee Bay			32	10,423			32	10,423
Apalachicola Bay	317	55,576	195	19,056	71	52,744	583	127,376
Cedar Key	408	93,382	192	16,456	39	2,968	639	112,806
Tampa Bay	714	254,004	232	43,623	133	11,899	1,079	309,526
Sarasota Bay	115	44,524	36	5,891			151	50,415
Charlotte Harbor	775	177,469	202	40,827	127	12,024	1,104	230,320
Northeast Florida	569	105,751	190	7,285	578	45,023	1,337	158,059
Northern Indian River Lagoon	412	215,823	228	42,493			640	258,316
Southern Indian River Lagoon	206	25,981	143	17,550			349	43,531

'Hauls' are the total number of net deployments by each gear type and 'Animals' are the total number of animals collected by each gear type.

**Table 4:** Top 10 numerically dominant taxa collected in FIM program stratified-random estuaries, 2022.

<b>Estuary</b>	<b>Taxa</b>	<b>Number</b>
<b>Santa Rosa Sound</b>	<i>Lagodon rhomboides</i>	2,333
	<i>Harengula jaguana</i>	414
	<i>Leiostomus xanthurus</i>	341
	<i>Pomatomus saltatrix</i>	236
	<i>Mugil cephalus</i>	212
	<i>Eucinostomus harengulus</i>	185
	<i>Mugil curema</i>	94
	<i>Sciaenops ocellatus</i>	89
	<i>Eucinostomus gula</i>	67
	<i>Orthopristis chrysoptera</i>	62
	<b>Total (Top Ten)</b>	<b>4,033</b>
	<b>Total (Selected Taxa)</b>	<b>1,033</b>
	<b>Grand Total of Animals Collected</b>	<b>4,228</b>
<b>Choctawhatchee Bay</b>	<i>Lagodon rhomboides</i>	4,979
	<i>Leiostomus xanthurus</i>	2,613
	<i>Harengula jaguana</i>	881
	<i>Micropogonias undulatus</i>	521
	<i>Eucinostomus harengulus</i>	362
	<i>Mugil cephalus</i>	154
	<i>Mugil curema</i>	118
	<i>Elops saurus</i>	115
	<i>Bairdiella chrysoura</i>	84
	<i>Sciaenops ocellatus</i>	83
	<b>Total (Top Ten)</b>	<b>9,910</b>
	<b>Total (Selected Taxa)</b>	<b>3,851</b>
	<b>Grand Total of Animals Collected</b>	<b>10,423</b>

<b>Estuary</b>	<b>Taxa</b>	<b>Number</b>
<b>Apalachicola Bay</b>	<i>Anchoa mitchilli</i>	28,336
	<i>Anchoa</i> spp.	21,904
	<i>Lagodon rhomboides</i>	10,147
	<i>Micropogonias undulatus</i>	9,948
	<i>Menidia</i> spp.	6,954
	<i>Leiostomus xanthurus</i>	4,290
	<i>Litopenaeus setiferus</i>	4,237
	<i>Lucania parva</i>	3,672
	<i>Bairdiella chrysoura</i>	3,631
	<i>Eucinostomus</i> spp.	2,934
	<b>Total (Top Ten)</b>	<b>96,053</b>
	<b>Total (Selected Taxa)</b>	<b>31,926</b>
	<b>Grand Total of Animals Collected</b>	<b>127,375</b>
<b>Cedar Key</b>	<i>Anchoa mitchilli</i>	73,243
	<i>Menidia</i> spp.	3,957
	<i>Eucinostomus</i> spp.	3,332
	<i>Bairdiella chrysoura</i>	3,146
	<i>Ariopsis felis</i>	2,993
	<i>Litopenaeus setiferus</i>	2,776
	<i>Lagodon rhomboides</i>	2,740
	<i>Mugil cephalus</i>	2,372
	<i>Dasyatis sabina</i>	2,223
	<i>Ogcocephalus cubifrons</i>	932
	<b>Total (Top Ten)</b>	<b>97,714</b>
	<b>Total (Selected Taxa)</b>	<b>12,552</b>
	<b>Grand Total of Animals Collected</b>	<b>112,806</b>

<b>Estuary</b>	<b>Taxa</b>	<b>Number</b>	
	<i>Anchoa mitchilli</i>	129,487	
	<i>Menidia</i> spp.	45,167	
	<i>Lagodon rhomboides</i>	28,441	
	<i>Lucania parva</i>	18,797	
	<i>Eucinostomus</i> spp.	18,685	
	<i>Microgobius gulosus</i>	12,490	
	<b>Tampa Bay</b>	<i>Eucinostomus gula</i>	9,252
		<i>Eucinostomus harengulus</i>	4,667
		<i>Harengula jaguana</i>	4,171
		<i>Elops saurus</i>	4,039
	<b>Total (Top Ten)</b>	<b>275,196</b>	
	<b>Total (Selected Taxa)</b>	<b>13,346</b>	
	<b>Grand Total of Animals Collected</b>	<b>309,526</b>	
	<i>Lagodon rhomboides</i>	11,445	
	<i>Anchoa mitchilli</i>	10,583	
	<i>Eucinostomus</i> spp.	8,938	
	<i>Lucania parva</i>	8,275	
	<i>Eucinostomus gula</i>	2,041	
	<i>Farfantepenaeus duorarum</i>	1,333	
	<b>Sarasota Bay</b>	<i>Harengula jaguana</i>	1,105
		<i>Microgobius gulosus</i>	948
		<i>Menidia</i> spp.	923
		<i>Eucinostomus harengulus</i>	550
	<b>Total (Top Ten)</b>	<b>46,141</b>	
	<b>Total (Selected Taxa)</b>	<b>2,540</b>	
	<b>Grand Total of Animals Collected</b>	<b>50,415</b>	

<b>Estuary</b>	<b>Taxa</b>	<b>Number</b>
<b>Charlotte Harbor</b>	<i>Anchoa mitchilli</i>	50,378
	<i>Eucinostomus</i> spp.	44,401
	<i>Lagodon rhomboides</i>	38,866
	<i>Lucania parva</i>	23,402
	<i>Menidia</i> spp.	13,251
	<i>Eucinostomus gula</i>	6,550
	<i>Eugerres plumieri</i>	6,022
	<i>Microgobius gulosus</i>	5,417
	<i>Eucinostomus harengulus</i>	5,182
	<i>Farfantepenaeus duorarum</i>	4,164
	<b>Total (Top Ten)</b>	<b>197,633</b>
	<b>Total (Selected Taxa)</b>	<b>12,142</b>
	<b>Grand Total of Animals Collected</b>	<b>230,320</b>
<b>Northeast Florida</b>	<i>Anchoa mitchilli</i>	44,745
	<i>Litopenaeus setiferus</i>	19,740
	<i>Leiostomus xanthurus</i>	15,067
	<i>Micropogonias undulatus</i>	14,138
	<i>Menidia</i> spp.	13,041
	<i>Fundulus heteroclitus</i>	6,164
	<i>Menidia menidia</i>	4,765
	<i>Mugil cephalus</i>	4,361
	<i>Bairdiella chrysoura</i>	4,072
	<i>Anchoa hepsetus</i>	1,996
	<b>Total (Top Ten)</b>	<b>128,089</b>
	<b>Total (Selected Taxa)</b>	<b>60,714</b>
	<b>Grand Total of Animals Collected</b>	<b>158,059</b>

<b>Estuary</b>	<b>Taxa</b>	<b>Number</b>
<b>Northern Indian River Lagoon</b>	<i>Anchoa mitchilli</i>	165,023
	<i>Diapterus auratus</i>	19,070
	<i>Eucinostomus</i> spp.	13,994
	<i>Harengula jaguana</i>	10,761
	<i>Eucinostomus harengulus</i>	4,668
	<i>Mugil curema</i>	4,158
	<i>Bairdiella chrysoura</i>	4,005
	<i>Mugil cephalus</i>	3,709
	<i>Eugerres plumieri</i>	3,268
	<i>Menidia</i> spp.	2,815
	<b>Total (Top Ten)</b>	<b>231,471</b>
	<b>Total (Selected Taxa)</b>	<b>13,709</b>
	<b>Grand Total of Animals Collected</b>	<b>258,316</b>
<b>Southern Indian River Lagoon</b>	<i>Anchoa mitchilli</i>	10,085
	<i>Diapterus auratus</i>	8,602
	<i>Eucinostomus</i> spp.	3,996
	<i>Menidia</i> spp.	1,910
	<i>Harengula humeralis</i>	1,378
	<i>Eucinostomus harengulus</i>	1,333
	<i>Eucinostomus gula</i>	1,111
	<i>Eugerres plumieri</i>	1,082
	<i>Brevoortia</i> spp.	930
	<i>Mugil curema</i>	903
	<b>Total (Top Ten)</b>	<b>31,330</b>
	<b>Total (Selected Taxa)</b>	<b>6,184</b>
	<b>Grand Total of Animals Collected</b>	<b>43,531</b>

**Table 5:** Number of recreational or commercially important species (Selected Taxa) collected in FIM program stratified-random sampling, 2022.

Taxa	SR	CB	AP	CK	TB	SB	CH	JX	IR	TQ
<i>Albula</i> spp.	.	.	.	1	5	4	5	.	13	12
<i>Archosargus probatocephalus</i>	1	5	97	69	491	210	619	119	332	328
<i>Argopecten gibbus</i>	.	.	.	.	1	.	5	.	.	.
<i>Argopecten irradians</i>	.	.	2	.	2	3	6	.	.	.
<i>Brevoortia</i> spp.	1	49	2,316	330	33	.	201	698	315	930
<i>Calamus arctifrons</i>	.	.	3	.	1	.	.	.	.	1
<i>Calamus bajonado</i>	.	.	.	.	.	.	2	.	.	.
<i>Calamus penna</i>	.	.	.	.	16	27	37	.	.	.
<i>Calamus proridens</i>	.	.	.	.	.	.	1	.	.	.
<i>Calamus</i> spp.	.	.	.	.	13	5	4	.	.	.
<i>Callinectes sapidus</i>	6	23	1,367	602	291	43	489	1,328	312	392
<i>Caranx crysos</i>	.	.	.	.	2	.	.	.	1	18
<i>Caranx hippos</i>	4	16	25	57	258	2	115	72	232	223
<i>Carcharhinus leucas</i>	.	.	.	2	.	.	4	.	3	1
<i>Carcharhinus limbatus</i>	.	.	.	.	9	.	1	.	.	.
<i>Carcharhinus plumbeus</i>	.	.	.	.	.	.	.	6	.	.
<i>Centropomus ensiferus</i>	.	.	.	.	.	.	.	.	.	2
<i>Centropomus parallelus</i>	.	.	.	.	.	.	.	.	1	11
<i>Centropomus pectinatus</i>	.	.	.	.	.	.	.	.	1	1
<i>Centropomus undecimalis</i>	.	.	.	265	580	158	1,425	3	646	531
<i>Centropristis philadelphica</i>	.	.	1	.	.	.	.	8	.	.
<i>Centropristis striata</i>	.	.	18	12	16	2	10	2	.	.
<i>Cynoscion arenarius</i>	.	.	2,174	535	309	.	324	.	.	.
<i>Cynoscion complex</i>	.	.	.	.	.	.	.	1,000	26	10
<i>Cynoscion nebulosus</i>	12	16	740	325	878	221	480	171	269	17
<i>Cynoscion nothus</i>	.	.	3	.	.	.	.	4	.	.
<i>Diplectrum formosum</i>	.	.	6	10	6	.	16	2	1	.
<i>Elops saurus</i>	13	115	130	354	4,039	137	295	252	588	466
<i>Epinephelus itajara</i>	.	.	.	.	2	.	7	1	1	.

Taxa	SR	CB	AP	CK	TB	SB	CH	JX	IR	TQ
<i>Farfantepenaeus aztecus</i>	.	1	12	.	.	.	.	292	16	.
<i>Farfantepenaeus duorarum</i>	.	.	269	220	2,902	1,333	4,164	133	6	.
<i>Farfantepenaeus</i> spp.	2	.	1,463	720	.	.	.	1,165	686	366
<i>Haemulon aurolineatum</i>	.	.	.	.	.	.	.	.	.	5
<i>Haemulon parra</i>	.	.	.	.	.	.	.	.	10	11
<i>Haemulon plumierii</i>	.	.	.	3	35	14	27	.	.	.
<i>Haemulon sciurus</i>	.	.	.	.	.	.	.	.	.	19
<i>Lachnolaimus maximus</i>	.	.	.	.	.	.	.	.	.	1
<i>Leiostomus xanthurus</i>	341	2,613	4,290	924	254	16	438	15,067	589	166
<i>Litopenaeus setiferus</i>	.	8	4,237	2,776	.	.	1	19,740	105	66
<i>Lobotes surinamensis</i>	.	.	11	9	.	.	.	3	6	4
<i>Lutjanus analis</i>	.	.	.	.	.	2	8	8	37	160
<i>Lutjanus griseus</i>	5	9	44	37	178	148	427	126	170	97
<i>Lutjanus synagris</i>	.	.	66	9	93	10	324	49	15	22
<i>Megalops atlanticus</i>	.	.	.	1	.	1	8	.	20	7
<i>Menippe</i> spp.	.	.	29	33	22	3	87	9	1	.
<i>Menticirrhus americanus</i>	.	.	232	856	239	.	218	243	505	13
<i>Menticirrhus littoralis</i>	.	.	4	.	2	15	35	25	.	.
<i>Menticirrhus saxatilis</i>	.	5	23	32	25	.	25	.	.	.
<i>Micropogonias undulatus</i>	1	521	9,948	82	.	.	.	14,138	143	418
<i>Mugil cephalus</i>	212	154	2,718	2,372	1,080	54	300	4,361	3,709	452
<i>Mugil curema</i>	94	118	573	111	96	25	103	1,027	4,158	903
<i>Mugil rubrioculus</i>	.	.	.	.	.	.	.	.	29	36
<i>Mugil trichodon</i>	.	.	.	224	465	19	317	.	.	.
<i>Mycteroperca bonaci</i>	.	.	.	.	.	.	15	.	.	.
<i>Mycteroperca microlepis</i>	.	.	26	.	3	.	10	.	.	.
<i>Negaprion brevirostris</i>	.	.	2	.	3	.	3	1	.	.
<i>Ocyurus chrysurus</i>	.	.	.	.	.	.	6	.	.	.
<i>Paralichthys albigutta</i>	3	7	160	298	83	25	58	23	3	.
<i>Paralichthys dentatus</i>	.	.	.	.	.	.	.	6	.	.
<i>Paralichthys lethostigma</i>	.	1	38	.	.	.	.	191	1	5

<b>Taxa</b>	<b>SR</b>	<b>CB</b>	<b>AP</b>	<b>CK</b>	<b>TB</b>	<b>SB</b>	<b>CH</b>	<b>JX</b>	<b>IR</b>	<b>TQ</b>
<i>Paralichthys squamilentus</i>	.	.	3	.	.	.	.	.	.	.
<i>Pogonias cromis</i>	5	1	102	647	36	8	14	11	184	20
<i>Pomatomus saltatrix</i>	236	42	7	3	.	.	1	11	3	11
<i>Rachycentron canadum</i>	.	.	.	1	1	.	2	.	.	.
<i>Rhizoprionodon terraenovae</i>	.	.	.	.	.	.	.	.	.	1
<i>Sciaenops ocellatus</i>	89	83	728	452	721	29	1,402	359	367	14
<i>Scomberomorus maculatus</i>	.	.	4	9	2	4	9	5	5	14
<i>Scomberomorus regalis</i>	.	.	.	.	.	.	.	.	.	5
<i>Sphyraena barracuda</i>	6	9	3	.	25	4	42	2	27	291
<i>Sphyrna tiburo</i>	.	.	7	24	63	2	25	11	14	19
<i>Trachinotus carolinus</i>	1	6	20	8	15	4	12	21	22	23
<i>Trachinotus falcatus</i>	1	49	25	139	51	12	15	21	137	92
<b>Total</b>	<b>1,033</b>	<b>3,851</b>	<b>31,926</b>	<b>12,552</b>	<b>13,346</b>	<b>2,540</b>	<b>12,142</b>	<b>60,714</b>	<b>13,709</b>	<b>6,184</b>

Estuaryoratories are labeled as follows: TB (Tampa Bay), CH (Charlotte Harbor), IR (northern Indian River Lagoon), CK (Cedar Key), TQ (southern Indian River Lagoon), AP (Apalachicola Bay), JX (northeast Florida).

## **Part I**

# **Standard Fisheries-Independent Monitoring Survey**

# 1 Introduction

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

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

The Fish and Wildlife Research Institute initiated the FIM program in 1985 with funding provided by a Federal Sport Fish Restoration (SFR) grant. In 1988, additional funding became available from special appropriations. The FIM program is also supported, in part, by funds from the sale of Florida saltwater fishing licenses. Fisheries-Independent Monitoring program sampling began in Tampa Bay and Charlotte Harbor during 1989, in the northern Indian River Lagoon (IRL) during 1990, in Cedar Key during 1996, in the southern IRL during 1997, in Apalachicola Bay during 1998, and in northeast Florida during 2001. Sampling was also conducted in Choctawhatchee Bay/Santa Rosa Sound between 1992 and 1997 and 2009 to present, in Florida Bay between 1993 and 1997, and in Florida Keys National Marine Sanctuary between 1998 and 2004 (Figure 1.1). A 2013 increase in Florida saltwater fishing licenses (i.e., Snook Stamp funding) allowed the FIM program to enhance current research efforts in several bay systems (Tampa Bay, Charlotte Harbor, northern IRL, and southern IRL). In 2016, these enhancements became a permanent part of the sampling design in each of the systems.

Florida's coastline extends from subtropical to temperate regions and includes habitats such as seagrass beds, salt marshes, and mangroves. These habitats provide critical nursery areas for



**Figure 1.1:** Locations of Fisheries-Independent Monitoring program field laboratories. Years indicate initiation of sampling. If sampling was discontinued at a field lab, the last year of sampling is also provided. Fort Walton includes Choctawhatchee Bay and Santa Rosa Sound.

many fish and invertebrate species. It is estimated that more than 70% of the recreationally-important species and more than 90% of the commercially-important species in the Gulf of Mexico are estuarine-dependent during at least one stage of their life histories (Lindall and Saloman 1977). The FIM program data are summarized and analyzed for all fish and selected invertebrate species collected, yielding information on the relative abundance, recruitment, habitat use, and distribution of hundreds of estuarine and marine species. This approach provides a unique source of information on economically valuable species as well as on many poorly understood non-game species that may influence fisheries or may be important ecological indicators. This type of multi-species, multi-habitat, long-term monitoring program is extremely valuable for documenting ecosystem changes, evaluating the effects of natural and anthropogenic disturbances, and making management decisions (Coull 1985; Wolfe et al. 1987).

Although the FIM program has always used a suite of gears (e.g., seines, trawls, trammel nets) capable of capturing a broad range of fish species and sizes from a variety of habitats, initial program efforts focused primarily on collecting young-of-the-year (YOY) fishes that could be used to develop recruitment indices. The program expanded its efforts to monitor larger-sized fishes in Tampa Bay by developing 183-m haul seines (fixed stations sampled between 1993 and 1995; year-round stratified-random sampling [SRS] implemented in 1996), 183-m purse seines (implemented in 1997; discontinued in 2004), and by developing a visual sampling program for reef fishes in the Florida Keys (implemented in 1998; transferred from FIM program in 2004). The 183-m haul seine was implemented as part of the SRS component of the program in Charlotte Harbor during 1996, in the northern and southern IRL and Cedar Key during 1997, in Apalachicola Bay during 1998, and in northeast Florida during 2001. The purse seine was implemented for SRS in Charlotte Harbor in 1998 and was used on a trial basis in Apalachicola Bay during 2000 and 2001, but was no longer used in any sampling area after 2004. The FIM program initiated a visual survey in the Florida Keys in 1998 to obtain important fisheries data in this unique area of Florida. In 2004, the oversight and implementation of these ongoing surveys were assigned to other FWRI work groups and are therefore no longer included in the FIM program annual summaries after 2004. The FIM program also implemented a seasonal directed sampling program for Striped Mullet (*Mugil cephalus*) in Tampa Bay and Charlotte Harbor in 1993. Directed sampling for the Striped Mullet program uses a 366-m trammel net. After the 2008-2009 sampling season the seasonal directed sampling program was discontinued in both areas and has transitioned into a year-round monthly sampling survey completed every five years. In 1993, the FIM program implemented a seasonal directed sampling program in Tampa Bay for Red Drum (*Sciaenops ocellatus*) and further initiated a seasonal directed program for Red Drum in the northern Indian River Lagoon in 1995. The Red Drum sampling program uses a 547-m trammel net. The directed sampling in Indian River Lagoon was discontinued in 1999, but seasonal sampling for Red Drum in Tampa Bay continues at a reduced level. The entire suite of gears and methods used by the FIM program captures fishes at various stages of development, from initial recruitment into the estuary through harvestable sizes, thereby providing a continuous gauge of a particular stock's relative abundance, age and size composition, and reproductive potential. This section summarizes FIM program SRS data collected during 2022. Results from the sampling efforts in each estuary are presented separately. This section also summarizes results from fish health monitoring of samples collected by the FIM program. Profiles of several species that are of particular interest, because of their recreational or commercial value in Florida, are also presented, providing critical information for these species while also describing some of the ways the FIM program data are used to assess the status of important Florida fisheries.

## 2 Methods

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

The FIM program uses a multi-gear approach to collect data on various life history stages of fishes and selected invertebrates from a wide variety of habitats (Table 2.1). A 21.3-m center bag seine targeted YOY and juvenile fishes in shallow water ( $\leq 1.8$  m); a 6.1-m otter trawl targeted YOY, juvenile, and adult fish in deep water (1.0–7.6 m); a 183-m haul seine targeted sub-adult and adult fish along shorelines in water depths  $\leq 2.5$  m. Several different techniques were used, depending upon habitat, to stratify the samples collected with the various gears. The 21.3-m center bag seine was used in Apalachicola Bay, Cedar Key, Tampa Bay, Sarasota Bay, Charlotte Harbor, northeast Florida, and the northern IRL. In 2016, 21.3-m seine sampling was also initiated in the southern IRL system within the Loxahatchee and St. Lucie Rivers, and in tidal creeks in Charlotte Harbor. Two deployment techniques were used. The bay seine technique was used in all estuaries except northeast Florida and the southern IRL to sample shallow areas, and was pre-stratified by the presence or absence of bottom vegetation (except in the Cedar Key area) or the presence of a shoreline. The river seine technique was used in all estuaries to sample the shorelines of creeks and rivers. River seine deployments in Tampa Bay and Charlotte Harbor's rivers were pre-stratified by the presence or absence of overhanging shoreline vegetation. River seine deployments in the northern IRL, Cedar Key, Apalachicola Bay, northeast Florida, southern IRL, and Charlotte Harbor's tidal creeks were not pre-stratified by habitat type. Samples collected with 183-m haul seines in Tampa Bay and Charlotte Harbor were pre-stratified by the presence or absence of overhanging shoreline vegetation. Samples collected with 183-m haul seines in the northern and southern IRL were post-stratified by the presence or absence of overhanging shoreline vegetation. Samples collected with this gear were not stratified by habitat type in Cedar Key, Apalachicola Bay, and northeast Florida. All sampling was conducted during daytime hours (one hour after sunrise to one hour before sunset). Additional sampling details are described in the FIM program's Procedure Manual (FWC-FWRI 2023).

**Table 2.1:** Description of sampling gears used in 2022.

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

A more detailed description of each gear can be found in the FIM program's Procedure Manual

The sample work-up technique was similar for all samples, regardless of gear type or sampling regime. Environmental data consisting of water chemistry, habitat characteristics, and physical parameters, such as current and tidal conditions, were recorded for each sample. All fish and selected invertebrate species captured were identified to the lowest practical taxonomic level, counted, and a random sample of at least 10 individuals were measured (standard length for teleosts, precaudal length for sharks, disc width for rays, carapace width for crabs, and post-orbital head length for shrimp). A detailed explanation of the standard sample work-up for data collection is described in the FIM program's Procedure Manual (FWC-FWRI 2023).

Certain taxa were not identified to species because of the possibility of hybridization (e.g., *Brevoortia* spp., *Menidia* spp.) (Dahlberg 1970; Middaugh et al. 1986), or because they were morphologically or meristically indistinguishable at small juvenile sizes (e.g., *Eucinostomus* spp. <40 mm SL) (Matheson Jr. 1983). Beginning in [INSERT YEAR HERE] specimens of the genus *Albula* were tested for genetic identification; however, due to the lag between sampling and testing, all specimens will be referred to as *Albula* spp. in this report. In northern and southern IRL and north-east Florida sections, species accounts of *Cynoscion regalis* (Weakfish) and *Cynoscion arenarius* (Sand Seatrout) will be referred to collectively as *Cynoscion* complex. These two species mix and hybridize along the Atlantic coast of Florida and identification can only be determined with certainty by genetic testing (Tringali et al. 2004). Animals were released except for representative samples of each taxon (for laboratory confirmation of field identifications) and samples required for specific research projects. The taxonomic nomenclature in this report follows the American Fisheries Society's Common and Scientific Names of Fishes (Page et al. 2013). A detailed explanation of the standard sample work-up for data collection is described in the FIM program's Procedure Manual (FWC-FWRI 2023). Data for this report were summarized separately for each estuarine system and for each gear type. Data were also summarized separately for all taxa and for taxa of recreational or commercial importance ('Selected Taxa'; Table 2.2). Abundance estimates were

calculated for 21.3-m seines and 6.1-m trawl as the number of animals/100 m<sup>2</sup> of area sampled. Catch-per-unit-effort (CPUE) was calculated for 183-m haul seine samples as the number of animals/set. The appendices for each study area describe the catch by month, gear, stratum, and zone.

**Table 2.2:** Animals designated as Selected Taxa by the Fisheries Independent Monitoring program because of their commercial or recreational importance.

Scientific Name	Common Name
<i>Acanthocybium solandri</i>	Wahoo
<i>Albula goreensis</i>	Channel Bonefish
<i>Albula</i> sp. cf. <i>vulpes</i>	.
<i>Albula</i> spp.	.
<i>Albula vulpes</i>	Bonefish
<i>Alectis ciliaris</i>	African Pompano
<i>Alopias vulpinus</i>	Common Thresher Shark
<i>Alphesthes afer</i>	Mutton Hamlet
<i>Apsilus dentatus</i>	Black Snapper
<i>Archosargus probatocephalus</i>	Sheepshead
<i>Argopecten gibbus</i>	Atlantic Calico Scallop
<i>Argopecten irradians</i>	Bay Scallop
<i>Balistes capriscus</i>	Gray Triggerfish
<i>Brevoortia</i> spp.	Menhadens
<i>Calamus arctifrons</i>	Grass Porgy
<i>Calamus bajonado</i>	Jolthead Porgy
<i>Calamus calamus</i>	Saucereye Porgy
<i>Calamus leucosteus</i>	Whitebone Porgy
<i>Calamus nodosus</i>	Knobbed Porgy
<i>Calamus penna</i>	Sheepshead Porgy
<i>Calamus proridens</i>	Littlehead Porgy
<i>Calamus</i> spp.	.
<i>Callinectes sapidus</i>	Blue Crab
<i>Caranx crysos</i>	Blue Runner
<i>Caranx hippos</i>	Crevalle Jack

<b>Scientific Name</b>	<b>Common Name</b>
<i>Carcharhinus acronotus</i>	Blacknose Shark
<i>Carcharhinus brevipinna</i>	Spinner Shark
<i>Carcharhinus falciformis</i>	Silky Shark
<i>Carcharhinus isodon</i>	Finetooth Shark
<i>Carcharhinus leucas</i>	Bull Shark
<i>Carcharhinus limbatus</i>	Blacktip Shark
<i>Carcharhinus longimanus</i>	Oceanic Whitetip
<i>Carcharhinus obscurus</i>	Dusky Shark
<i>Carcharhinus plumbeus</i>	Sandbar Shark
<i>Caulolatilus chrysops</i>	Goldface Tilefish
<i>Caulolatilus cyanops</i>	Blackline Tilefish
<i>Caulolatilus intermedius</i>	Anchor Tilefish
<i>Caulolatilus microps</i>	Blueline Tilefish
<i>Centropomus ensiferus</i>	Swordspine Snook
<i>Centropomus mexicanus</i>	Largescale Fat Snook
<i>Centropomus parallelus</i>	Fat Snook
<i>Centropomus pectinatus</i>	Tarpon Snook
<i>Centropomus undecimalis</i>	Common Snook
<i>Centropristis ocyurus</i>	Bank Sea Bass
<i>Centropristis philadelphica</i>	Rock Sea Bass
<i>Centropristis striata</i>	Black Sea Bass
<i>Cephalopholis cruentata</i>	Graysby
<i>Cephalopholis fulva</i>	Coney
<i>Coryphaena equiselis</i>	Pompano Dolphin
<i>Coryphaena hippurus</i>	Dolphin
<i>Cynoscion arenarius</i>	Sand Seatrout
<i>Cynoscion complex</i>	C. regalis x C. arenarius
<i>Cynoscion nebulosus</i>	Spotted Seatrout
<i>Cynoscion nothus</i>	Silver Seatrout
<i>Cynoscion regalis</i>	Atlantic Weakfish
<i>Dermatolepis inermis</i>	Marbled Grouper

Scientific Name	Common Name
<i>Diplectrum formosum</i>	Sand Perch
<i>Elops saurus</i>	Ladyfish
<i>Elops smithi</i>	Malacho
<i>Epinephelus adscensionis</i>	Rock Hind
<i>Epinephelus drummondhayi</i>	Speckled Hind
<i>Epinephelus guttatus</i>	Red Hind
<i>Epinephelus itajara</i>	Goliath Grouper
<i>Epinephelus morio</i>	Red Grouper
<i>Epinephelus striatus</i>	Nassau Grouper
<i>Etelis oculatus</i>	Queen Snapper
<i>Euthynnus alletteratus</i>	Little Tunny
<i>Farfantepenaeus aztecus</i>	Brown Shrimp
<i>Farfantepenaeus brasiliensis</i>	Caribbean Brown Shrimp
<i>Farfantepenaeus duorarum</i>	Pink Shrimp
<i>Farfantepenaeus</i> spp.	Commercial Shrimps
<i>Galeocerdo cuvier</i>	Tiger Shark
<i>Ginglymostoma cirratum</i>	Nurse Shark
<i>Haemulon album</i>	Margate
<i>Haemulon aurolineatum</i>	Tomtate
<i>Haemulon flavolineatum</i>	French Grunt
<i>Haemulon macrostomum</i>	Spanish Grunt
<i>Haemulon melanurum</i>	Cottonwick
<i>Haemulon parra</i>	Sailors Choice
<i>Haemulon plumierii</i>	White Grunt
<i>Haemulon sciurus</i>	Bluestriped Grunt
<i>Hyporthodus flavolimbatus</i>	Yellowedge Grouper
<i>Hyporthodus mystacinus</i>	Misty Grouper
<i>Hyporthodus nigrurus</i>	Warsaw Grouper
<i>Hyporthodus niveatus</i>	Snowy Grouper
<i>Istiophorus platypterus</i>	Sailfish
<i>Isurus oxyrinchus</i>	Shortfin Mako

Scientific Name	Common Name
<i>Katsuwonus pelamis</i>	Skipjack Tuna
<i>Lachnolaimus maximus</i>	Hogfish
<i>Lamna nasus</i>	Porbeagle
<i>Leiostomus xanthurus</i>	Spot
<i>Litopenaeus setiferus</i>	White Shrimp
<i>Lobotes surinamensis</i>	Tripletail
<i>Lopholatilus chamaeleonticeps</i>	Tilefish
<i>Lutjanus analis</i>	Mutton Snapper
<i>Lutjanus apodus</i>	Schoolmaster
<i>Lutjanus buccanella</i>	Blackfin Snapper
<i>Lutjanus campechanus</i>	Red Snapper
<i>Lutjanus cyanopterus</i>	Cubera Snapper
<i>Lutjanus griseus</i>	Gray Snapper
<i>Lutjanus jocu</i>	Dog Snapper
<i>Lutjanus mahogoni</i>	Mahogany Snapper
<i>Lutjanus synagris</i>	Lane Snapper
<i>Lutjanus vivanus</i>	Silk Snapper
<i>Malacanthus plumieri</i>	Sand Tilefish
<i>Megalops atlanticus</i>	Tarpon
<i>Menippe spp.</i>	Stone Crab
<i>Menticirrhus americanus</i>	Southern Kingfish
<i>Menticirrhus littoralis</i>	Gulf Kingfish
<i>Menticirrhus saxatilis</i>	Northern Kingfish
<i>Micropogonias undulatus</i>	Atlantic Croaker
<i>Mugil cephalus</i>	Striped Mullet
<i>Mugil curema</i>	White Mullet
<i>Mugil liza</i>	Liza
<i>Mugil rubrioculus</i>	Redeye Mullet
<i>Mugil trichodon</i>	Fantail Mullet
<i>Mulloidichthys martinicus</i>	Yellow Goatfish
<i>Mullus auratus</i>	Red Goatfish

Scientific Name	Common Name
<i>Mustelus</i> spp.	.
<i>Mycteroperca bonaci</i>	Black Grouper
<i>Mycteroperca interstitialis</i>	Yellowmouth Grouper
<i>Mycteroperca microlepis</i>	Gag
<i>Mycteroperca phenax</i>	Scamp
<i>Mycteroperca tigris</i>	Tiger Grouper
<i>Mycteroperca venenosa</i>	Yellowfin Grouper
<i>Negaprion brevirostris</i>	Lemon Shark
<i>Ocyurus chrysurus</i>	Yellowtail Snapper
<i>Pagrus pagrus</i>	Red Porgy
<i>Panulirus argus</i>	Spiny Lobster
<i>Paralichthys albigutta</i>	Gulf Flounder
<i>Paralichthys dentatus</i>	Summer Flounder
<i>Paralichthys lethostigma</i>	Southern Flounder
<i>Paralichthys oblongus</i>	Fourspot Flounder
<i>Paralichthys squamilentus</i>	Broad Flounder
<i>Paranthias furcifer</i>	Creole-fish
<i>Pogonias cromis</i>	Black Drum
<i>Pomatomus saltatrix</i>	Bluefish
<i>Prionace glauca</i>	Blue Shark
<i>Pristipomoides aquilonaris</i>	Wenchman
<i>Pseudupeneus maculatus</i>	Spotted Goatfish
<i>Pterois</i> spp.	Lionfishes
<i>Rachycentron canadum</i>	Cobia
<i>Rhizoprionodon terraenovae</i>	Atlantic Sharpnose Shark
<i>Rhomboplites aurorubens</i>	Vermilion Snapper
<i>Sciaenops ocellatus</i>	Red Drum
<i>Scomberomorus cavalla</i>	King Mackerel
<i>Scomberomorus maculatus</i>	Spanish Mackerel
<i>Scomberomorus regalis</i>	Cero
<i>Seriola dumerili</i>	Greater Amberjack

<b>Scientific Name</b>	<b>Common Name</b>
<i>Seriola fasciata</i>	Lesser Amberjack
<i>Seriola rivoliana</i>	Almaco Jack
<i>Seriola zonata</i>	Banded Rudderfish
<i>Sphyrna barracuda</i>	Great Barracuda
<i>Sphyrna tiburo</i>	Bonnethead
<i>Thunnus albacares</i>	Yellowfin Tuna
<i>Thunnus atlanticus</i>	Blackfin Tuna
<i>Thunnus obesus</i>	Bigeye Tuna
<i>Thunnus thynnus</i>	Bluefin Tuna
<i>Trachinotus carolinus</i>	Florida Pompano
<i>Trachinotus falcatus</i>	Permit
<i>Trachinotus goodei</i>	Palometa
<i>Upeneus parvus</i>	Dwarf Goatfish

### 3 Study Areas

The FIM program conducted sampling in the following estuarine areas: Fort Walton including the Santa Rosa Sound and Choctawhatchee Bay, Apalachicola Bay, Cedar Key, Tampa Bay, Sarasota Bay, Charlotte Harbor, northeast Florida, and the northern and southern portions of the Indian River Lagoon (Figure 1.1). Sampling was conducted over a wide range of habitats encompassing different bottom types, shoreline types, and offshore areas. In addition to sampling in major estuaries, tidally-influenced portions of rivers that flow into Tampa Bay (Alafia, Braden, Little Manatee, and Manatee Rivers), Charlotte Harbor (Peace and Myakka Rivers, Alligator Creek), the Indian River Lagoon (Turkey Creek, St. Sebastian, Loxahatchee, and St. Lucie Rivers), the Cedar Key area (Suwannee River), Apalachicola Bay (Apalachicola River), and northeast Florida (St. Marys, Nassau, and St. Johns Rivers) were also sampled. The Tampa Bay, Charlotte Harbor, and northern IRL study areas were described in the FIM Program 1994 Annual Data Summary Report (FDEP-FMRI 1995). The Cedar Key study area was described in the FIM Program 1996 Annual Data Summary Report (FDEP-FMRI 1997); the southern IRL study area was described in the FIM Program 1997 Annual Data Summary Report (FDEP-FMRI 1998); the Apalachicola Bay study area and updates to the southern IRL study area were described in the FIM Program 1998 Annual Data Summary Report (FDEP-FMRI 1999); the northeast Florida study area was described in the FIM Program 2001 Annual Data Summary Report (FDEP-FMRI 2002); and expansion of 21.3-m seines in the southern IRL area is described later in this report (Southern Indian River Lagoon section, Section 4.10).

## 4 Data Summary by Estuary

### 4.1 Santa Rosa Sound

Santa Rosa Sound is a 109-km<sup>2</sup> lagoon connecting Pensacola Bay to the west and Choctawhatchee Bay to the east (Northwest Florida Water Management District 2017a). The lagoon has no tidal tributaries for direct freshwater input but is connected to the Gulf of Mexico by a deep pass west of Santa Rosa Island. Shoreline vegetation consists primarily of the marsh grasses *Spartina alterniflora* and *Panicum hemitomon* (Miller et al. 2001). Bottom substrate is mostly sand (Miller et al. 2001) and bottom vegetation consists primarily of seagrasses such as *Halodule wrightii* and *Thalassia testudinum* (Bradley and Houser 2009). Seagrass beds covered nearly 25% of the lagoon in 1960, but by 1992 less than half remained because of wastewater discharge, dredging, and beach modifications (Handley et al. 2007). By 2010, seagrass coverage declined by an additional 5% (Yarbro and Carlson 2016).

The Santa Rosa Sound sampling universe consists of a single bay zone (Zone A; Figure 4.1). Monthly stratified-random sampling (SRS) occurred in Santa Rosa Sound from June to December using 183-m haul seines. All methods were the same as those described in Chapter 2. Below is a summary of fisheries-independent monitoring effort and catch in Santa Rosa Sound during 2022.

#### Stratified-Random Sampling

A total of 4,228 animals, which included 42 taxa of fishes and 2 taxa of selected invertebrates, were collected from 28 Santa Rosa Sound SRS samples in 2022 ( Table 4.1, Table 4.5, Table 4.4, Table 4.6). *Lagodon rhomboides* (n=2,333) was the most numerous taxon collected, representing 55.2% of the total catch. *Harengula jaguana* (n=414) and *Leiostomus xanthurus* (n=341) were the next most abundant taxa collected, accounting for an additional 17.9% of the total catch. A total of 19 selected taxa (n=1,033 animals) composed 24.4% of the total catch. *Leiostomus xanthurus* (n=341) was the most abundant Selected Taxon, representing 8.1% of the total catch. *Pomatomus saltatrix* (n=236), *Mugil cephalus* (n=212), *Mugil curema* (n=94), and *Sciaenops ocellatus* (n=89) were the next most abundant selected taxa, comprising 14.9% of the total catch. Collections in 2022 included 0 species new to the Santa Rosa FIM collection..



**Figure 4.1:** Map of Fort Walton sampling area, including Santa Rosa Sound. Zones are labeled A-C. Santa Rosa Sound consists only of Zone A.

**Table 4.1:** Summary of catch and effort data for Santa Rosa Sound stratified-random sampling, 2022.

<b>Zone</b>	<b>183-m haul seine</b>		<b>Totals</b>	
	<b>Animals</b>	<b>Hauls</b>	<b>Animals</b>	<b>Hauls</b>
<b>A</b>	4,228	28	4,228	28
<b>Totals</b>	<b>4,228</b>	<b>28</b>	<b>4,228</b>	<b>28</b>

## Bay Sampling

### *183-m Haul Seines*

A total of 4,228 animals were collected in 28 183-m haul seines, representing 100% of the overall SRS catch (Table 4.1). *Lagodon rhomboides* (n = 2,333) and *Harengula jaguana* (n = 414) were the most abundant taxa, accounting for 65% of the bay seine catch (Table 4.2). The taxa most frequently caught in 183-m haul seines were *Lagodon rhomboides* (100.0% occurrence) and *Leiostomus xanthurus* (75.0% occurrence).

A total of 1,033 animals from 19 selected taxa were collected, representing 24.4% of the entire 183-m haul seine catch (Table 4.3). *Leiostomus xanthurus* (n=341) was the most abundant Selected Taxon, accounting for 33% of the selected taxa collected by this gear. The selected taxa most frequently caught in 183-m haul seines were *Leiostomus xanthurus* (75.0% occurrence) and *Mugil cephalus* (60.7% occurrence).

**Table 4.2:** Catch statistics for 10 dominant taxa collected in 28 183-m haul seine samples during Santa Rosa Sound stratified-random sampling, 2022.

Species	Number			Density Estimate (animals/set)				Standard Length (mm)			
	No.	%	% Occur	Mean	Stderr	CV	Max	Mean	Stderr	Min	Max
<i>Lagodon rhomboides</i>	2,333	55.2	100.0	83.32	15.55	98.74	362	109	0.57	58	175
<i>Harengula jaguana</i>	414	9.8	7.1	14.79	14.13	505.81	396	100	0.35	91	150
<i>Leiostomus xanthurus</i>	341	8.1	75.0	12.18	3.30	143.22	70	111	1.38	72	189
<i>Pomatomus saltatrix</i>	236	5.6	3.6	8.43	8.43	529.15	236	305	4.95	221	470
<i>Mugil cephalus</i>	212	5.0	60.7	7.57	2.59	180.82	53	208	5.37	104	374
<i>Eucinostomus harengulus</i>	185	4.4	60.7	6.61	2.30	184.00	57	99	0.61	50	116
<i>Mugil curema</i>	94	2.2	50.0	3.36	1.07	168.74	23	162	3.53	108	242
<i>Sciaenops ocellatus</i>	89	2.1	60.7	3.18	1.63	271.59	45	448	16.53	115	850
<i>Eucinostomus gula</i>	67	1.6	25.0	2.39	1.37	301.86	35	91	0.96	74	110
<i>Orthopristis chrysoptera</i>	62	1.5	35.7	2.21	1.26	301.16	34	115	2.87	89	192
Subtotals	4,033	95.5	.	.	.	.	.	.	.	50	850
<b>Totals</b>	<b>4,228</b>	<b>100.0</b>	.	<b>151.00</b>	<b>27.39</b>	<b>95.97</b>	<b>576</b>	.	.	<b>13</b>	<b>850</b>

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.

**Table 4.3:** Catch statistics for selected taxa collected in 28 183-m haul seine samples during Santa Rosa Sound stratified-random sampling, 2022.

Species	Number			Density Estimate (animals/set)				Standard Length (mm)			
	No.	%	% Occur	Mean	Stderr	CV	Max	Mean	Stderr	Min	Max
<i>Leiostomus xanthurus</i>	341	8.1	75.0	12.18	3.30	143.22	70	111	1.38	72	189
<i>Pomatomus saltatrix</i>	236	5.6	3.6	8.43	8.43	529.15	236	305	4.95	221	470
<i>Mugil cephalus</i>	212	5.0	60.7	7.57	2.59	180.82	53	208	5.37	104	374
<i>Mugil curema</i>	94	2.2	50.0	3.36	1.07	168.74	23	162	3.53	108	242
<i>Sciaenops ocellatus</i>	89	2.1	60.7	3.18	1.63	271.59	45	448	16.53	115	850
<i>Elops saurus</i>	13	0.3	17.9	0.46	0.26	301.66	7	240	3.57	215	258
<i>Cynoscion nebulosus</i>	12	0.3	32.1	0.43	0.14	173.09	3	306	41.83	146	510
<i>Callinectes sapidus</i>	6	0.1	14.3	0.21	0.12	293.97	3	78	22.83	37	160
<i>Sphyraena barracuda</i>	6	0.1	7.1	0.21	0.16	388.52	4	236	25.36	151	312
<i>Lutjanus griseus</i>	5	0.1	7.1	0.18	0.13	375.00	3	158	9.76	129	181
<i>Pogonias cromis</i>	5	0.1	3.6	0.18	0.18	529.15	5	224	17.74	202	295
<i>Caranx hippos</i>	4	0.1	3.6	0.14	0.14	529.15	4	130	2.33	125	136
<i>Paralichthys albigutta</i>	3	0.1	7.1	0.11	0.08	388.52	2	180	19.67	141	200
<i>Farfantepenaeus</i> spp.	2	<0.1	3.6	0.07	0.07	529.15	2	14	0.50	13	14
<i>Archosargus probatocephalus</i>	1	<0.1	3.6	0.04	0.04	529.15	1	79	.	79	79
<i>Brevoortia</i> spp.	1	<0.1	3.6	0.04	0.04	529.15	1	134	.	134	134
<i>Micropogonias undulatus</i>	1	<0.1	3.6	0.04	0.04	529.15	1	198	.	198	198
<i>Trachinotus carolinus</i>	1	<0.1	3.6	0.04	0.04	529.15	1	273	.	273	273
<i>Trachinotus falcatus</i>	1	<0.1	3.6	0.04	0.04	529.15	1	97	.	97	97

Species	Number		Density Estimate (animals/set)				Standard Length (mm)				
	No.	% Occur	Mean	Stderr	CV	Max	Mean	Stderr	Min	Max	
<b>Totals</b>	<b>1,033</b>	<b>24.4</b>	<b>.</b>	<b>36.89</b>	<b>9.49</b>	<b>136.12</b>	<b>251</b>	<b>.</b>	<b>.</b>	<b>13</b>	<b>850</b>

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.

## Appendix

**Table 4.4:** Monthly summary of taxa collected during Santa Rosa Sound stratified-random sampling, 2022.

Taxa	Month							Totals
	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
	E=4	E=4	E=4	E=4	E=4	E=4	E=4	E=28
<i>Acanthostracion quadricornis</i>	.	.	1	.	.	.	.	1
<b><i>Archosargus probatocephalus</i></b>	.	.	.	.	1	.	.	1
<i>Ariopsis felis</i>	5	1	3	5	1	.	.	15
<i>Bairdiella chrysoura</i>	.	.	.	.	.	.	1	1
<i>Brevoortia</i> sp.	.	.	.	.	.	1	.	1
<b><i>Callinectes sapidus</i></b>	4	1	.	1	.	.	.	6
<i>Caranx bartholomaei</i>	.	.	3	.	.	.	.	3
<b><i>Caranx hippos</i></b>	.	.	.	4	.	.	.	4
<i>Caranx latus</i>	.	.	.	.	.	1	.	1
<i>Chilomycterus schoepfii</i>	8	.	4	.	2	.	.	14
<b><i>Cynoscion nebulosus</i></b>	.	.	3	2	3	3	1	12
<i>Dasyatis sabina</i>	2	3	.	5	.	.	4	14
<i>Dasyatis say</i>	1	.	.	.	.	.	.	1
<i>Diapterus auratus</i>	.	.	.	1	.	.	.	1
<b><i>Elops saurus</i></b>	.	1	7	3	2	.	.	13
<i>Eucinostomus gula</i>	4	.	1	50	1	11	.	67
<i>Eucinostomus harengulus</i>	35	24	24	6	31	65	.	185
<i>Eucinostomus</i> spp.	.	.	.	2	.	.	.	2
<b><i>Farfantepenaeus</i> spp.</b>	2	.	.	.	.	.	.	2
<i>Fundulus similis</i>	3	2	.	2	.	.	.	7
<i>Harengula jaguana</i>	.	.	18	396	.	.	.	414
<i>Hyporhamphus meeki</i>	2	.	.	.	.	.	.	2
<i>Lagodon rhomboides</i>	308	278	289	486	625	238	109	2,333
<b><i>Leiostomus xanthurus</i></b>	27	51	27	27	125	33	51	341
<i>Lutjanus griseus</i>	.	.	3	2	.	.	.	5

Taxa	Month							Totals
	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
	E=4	E=4	E=4	E=4	E=4	E=4	E=4	E=28
<i>Menidia</i> sp.	.	.	.	1	.	.	.	1
<b><i>Micropogonias undulatus</i></b>	.	.	.	1	.	.	.	1
<b><i>Mugil cephalus</i></b>	2	13	.	7	38	110	42	212
<b><i>Mugil curema</i></b>	15	34	.	17	5	23	.	94
<i>Oligoplites saurus</i>	.	.	4	.	.	.	.	4
<i>Opsanus beta</i>	1	1	.	4	.	.	.	6
<i>Orthopristis chrysoptera</i>	.	1	11	13	37	.	.	62
<b><i>Paralichthys albigutta</i></b>	.	.	1	.	2	.	.	3
<b><i>Pogonias cromis</i></b>	.	.	.	.	.	.	5	5
<b><i>Pomatomus saltatrix</i></b>	.	.	236	.	.	.	.	236
<b><i>Sciaenops ocellatus</i></b>	47	3	4	5	12	15	3	89
<i>Selene vomer</i>	.	.	10	.	.	.	.	10
<i>Sphoeroides nephelus</i>	.	.	1	3	1	.	2	7
<b><i>Sphyraena barracuda</i></b>	.	.	.	4	2	.	.	6
<i>Strongylura marina</i>	.	.	1	6	1	.	.	8
<i>Synodus foetens</i>	1	1	1	13	7	1	.	24
<b><i>Trachinotus carolinus</i></b>	.	1	.	.	.	.	.	1
<b><i>Trachinotus falcatus</i></b>	.	1	.	.	.	.	.	1
<i>Tylosurus crocodilus</i>	.	.	9	.	.	.	3	12
<b>Totals</b>	<b>467</b>	<b>416</b>	<b>661</b>	<b>1,066</b>	<b>896</b>	<b>501</b>	<b>221</b>	<b>4,228</b>

Effort, or total number of hauls, is labeled 'E'. Taxa are arranged alphabetically. Selected taxa are highlighted in bold.

**Table 4.5:** Summary by gear and stratum of taxa collected during Santa Rosa Sound stratified-random sampling, 2022.

Taxa	Gear and Strata		Totals
	183-m haul seine		
	Over	Nonover	
	E=1	E=27	E=28
<i>Acanthostracion quadricornis</i>	.	1	1
<b><i>Archosargus probatocephalus</i></b>	.	1	1
<i>Ariopsis felis</i>	1	14	15
<i>Bairdiella chrysoura</i>	.	1	1
<i>Brevoortia</i> sp.	.	1	1
<b><i>Callinectes sapidus</i></b>	.	6	6
<i>Caranx bartholomaei</i>	.	3	3
<b><i>Caranx hippos</i></b>	.	4	4
<i>Caranx latus</i>	.	1	1
<i>Chilomycterus schoepfii</i>	.	14	14
<b><i>Cynoscion nebulosus</i></b>	.	12	12
<i>Dasyatis sabina</i>	.	14	14
<i>Dasyatis say</i>	.	1	1
<i>Diapterus auratus</i>	.	1	1
<b><i>Elops saurus</i></b>	2	11	13
<i>Eucinostomus gula</i>	.	67	67
<i>Eucinostomus harengulus</i>	2	183	185
<i>Eucinostomus</i> spp.	.	2	2
<b><i>Farfantepenaeus</i> spp.</b>	.	2	2
<i>Fundulus similis</i>	.	7	7
<i>Harengula jaguana</i>	.	414	414
<i>Hyporhamphus meeki</i>	.	2	2
<i>Lagodon rhomboides</i>	20	2,313	2,333
<b><i>Leiostomus xanthurus</i></b>	.	341	341
<b><i>Lutjanus griseus</i></b>	.	5	5
<i>Menidia</i> sp.	.	1	1

Taxa	Gear and Strata		Totals
	183-m haul seine		
	Over	Nonover	
	E=1	E=27	E=28
<b><i>Micropogonias undulatus</i></b>	.	1	1
<b><i>Mugil cephalus</i></b>	.	212	212
<b><i>Mugil curema</i></b>	1	93	94
<i>Oligoplites saurus</i>	.	4	4
<i>Opsanus beta</i>	.	6	6
<i>Orthopristis chrysoptera</i>	.	62	62
<b><i>Paralichthys albigutta</i></b>	2	1	3
<b><i>Pogonias cromis</i></b>	.	5	5
<b><i>Pomatomus saltatrix</i></b>	.	236	236
<b><i>Sciaenops ocellatus</i></b>	1	88	89
<i>Selene vomer</i>	.	10	10
<i>Sphoeroides nephelus</i>	.	7	7
<b><i>Sphyraena barracuda</i></b>	2	4	6
<i>Strongylura marina</i>	.	8	8
<i>Synodus foetens</i>	6	18	24
<b><i>Trachinotus carolinus</i></b>	.	1	1
<b><i>Trachinotus falcatus</i></b>	.	1	1
<i>Tylosurus crocodilus</i>	.	12	12
<b>Totals</b>	<b>37</b>	<b>4,191</b>	<b>4,228</b>

Sampling with 21.3-m river seine and 183-m haul seine was stratified by the presence or absence of overhanging vegetation ('Over' or 'Nonover'). Effort, or the total number of hauls, is labeled 'E'. Taxa are arranged alphabetically. Selected taxa are highlighted in bold.

**Table 4.6:** Summary by zone of taxa collected during Santa Rosa Sound stratified-random sampling, 2022.

Taxa	Zone	Totals
	A	
	E=28	E=28
<i>Acanthostracion quadricornis</i>	1	1
<b><i>Archosargus probatocephalus</i></b>	<b>1</b>	<b>1</b>
<i>Ariopsis felis</i>	15	15
<i>Bairdiella chrysoura</i>	1	1
<i>Brevoortia</i> sp.	1	1
<b><i>Callinectes sapidus</i></b>	<b>6</b>	<b>6</b>
<i>Caranx bartholomaei</i>	3	3
<b><i>Caranx hippos</i></b>	<b>4</b>	<b>4</b>
<i>Caranx latus</i>	1	1
<i>Chilomycterus schoepfii</i>	14	14
<b><i>Cynoscion nebulosus</i></b>	<b>12</b>	<b>12</b>
<i>Dasyatis sabina</i>	14	14
<i>Dasyatis say</i>	1	1
<i>Diapterus auratus</i>	1	1
<b><i>Elops saurus</i></b>	<b>13</b>	<b>13</b>
<i>Eucinostomus gula</i>	67	67
<i>Eucinostomus harengulus</i>	185	185
<i>Eucinostomus</i> spp.	2	2
<b><i>Farfantepenaeus</i> spp.</b>	<b>2</b>	<b>2</b>
<i>Fundulus similis</i>	7	7
<i>Harengula jaguana</i>	414	414
<i>Hyporhamphus meeki</i>	2	2
<i>Lagodon rhomboides</i>	2,333	2,333
<b><i>Leiostomus xanthurus</i></b>	<b>341</b>	<b>341</b>
<b><i>Lutjanus griseus</i></b>	<b>5</b>	<b>5</b>
<i>Menidia</i> sp.	1	1
<b><i>Micropogonias undulatus</i></b>	<b>1</b>	<b>1</b>

Taxa	Zone	Totals
	A	
	E=28	E=28
<b><i>Mugil cephalus</i></b>	212	212
<b><i>Mugil curema</i></b>	94	94
<i>Oligoplites saurus</i>	4	4
<i>Opsanus beta</i>	6	6
<i>Orthopristis chrysoptera</i>	62	62
<b><i>Paralichthys albigutta</i></b>	3	3
<b><i>Pogonias cromis</i></b>	5	5
<b><i>Pomatomus saltatrix</i></b>	236	236
<b><i>Sciaenops ocellatus</i></b>	89	89
<i>Selene vomer</i>	10	10
<i>Sphoeroides nephelus</i>	7	7
<b><i>Sphyraena barracuda</i></b>	6	6
<i>Strongylura marina</i>	8	8
<i>Synodus foetens</i>	24	24
<b><i>Trachinotus carolinus</i></b>	1	1
<b><i>Trachinotus falcatus</i></b>	1	1
<i>Tylosurus crocodilus</i>	12	12
<b>Totals</b>	<b>4,228</b>	<b>4,228</b>

Zone A was located in Santa Rosa Sound. Effort, or the total number of hauls, is labeled 'E'. Taxa are arranged alphabetically. selected taxa are highlighted in bold.

## 4.2 Choctawhatchee Bay

Choctawhatchee Bay is a 334-km<sup>2</sup> estuary located in the central Florida Panhandle that is connected to the Gulf of Mexico by a shallow man-made channel, East Pass, near the city of Destin (Handley et al. 2007; Northwest Florida Water Management District 2017b). Tidal influence is minimal and tidal ranges are small, from 0.15 to 0.5 meters (Huguenard et al. 2016). Major habitat types in Choctawhatchee Bay include tidal marshes, seagrass beds, bayous, and oyster beds (Northwest Florida Water Management District 2017b). Shoreline vegetation consists mostly of the marsh grasses *Juncus roemerianus*, *Spartina alterniflora*, and *Scirpus* spp. (Northwest Florida Water Management District 2017b). Choctawhatchee Bay is moderately deep with depths ranging from 3 to 13 meters and bottom substrate that is mostly sand, mud, and shell (Handley et al. 2007; Northwest Florida Water Management District 2017b). Bottom vegetation is predominantly *Halodule wrightii* with patches of *Ruppia maritima* and *Thalassia testudinum* (Handley et al. 2007; Northwest Florida Water Management District 2017b). Choctawhatchee Bay seagrass beds covered 17.2 km<sup>2</sup> in 1992 but had declined by 55% by 2007 (Yarbro and Carlson 2016). Seagrass losses observed in Choctawhatchee Bay are a result of urbanization, especially the construction of seawalls, which reduces the size of intertidal areas and impedes seagrass growth (Handley et al. 2007).

Choctawhatchee Bay is highly stratified, and its salinity is driven primarily by freshwater inflow from the Choctawhatchee River (Brown and Hemming 2004; Northwest Florida Water Management District 2017b). Major habitat types in the Choctawhatchee River include shoreline snags, tributary valley lakes, spring runs, and tidal marshes. The river is bordered by hardwood swamps in its upper reaches and stands of *Spartina cynosuroides* in its lower reaches (Northwest Florida Water Management District 2017b).

The Choctawhatchee Bay sampling universe consists of two bay zones (B and C; Figure 4.2). Monthly stratified-random sampling (SRS) occurred from June to December in bay zones B and C using 183-m haul seines. All methods were the same as those described in Chapter 2. Below is a summary of fisheries-independent monitoring effort and catch in Choctawhatchee Bay during 2022.

### Stratified-Random Sampling

A total of 10,423 animals, which included 45 taxa of fishes and 3 taxa of selected invertebrates, were collected from 35 Choctawhatchee Bay SRS samples in 2022 ( Table 4.7, Table 4.11, Table 4.10, Table 4.12). *Lagodon rhomboides* (n=4,979) was the most numerous taxon collected, representing 47.8% of the total catch. *Leiostomus xanthurus* (n=2,613) and *Harengula jaguana* (n=881) were the next most abundant taxa collected, accounting for an additional 33.5% of the total catch. A total of 22 selected taxa (n=3,851 animals) composed 36.9% of the total catch. *Leiostomus xanthurus* (n=2,613) was the most abundant Selected Taxon, representing 25.1% of the total catch. *Micropogonias undulatus* (n=521), *Mugil cephalus* (n=154), *Mugil curema* (n=118), and *Elops saurus* (n=115) were the next most abundant selected taxa, comprising 8.7% of the total catch. Collections in 2022 included 0 species new to the Choctawhatchee Bay FIM collection..



**Figure 4.2:** Map of Fort Walton sampling area, including Choctawhatchee Bay. Zones are labeled A-C. Choctawhatchee Bay comprises zones B and C.

**Table 4.7:** Summary of catch and effort data for Choctawhatchee Bay stratified-random sampling, 2022.

<b>Zone</b>	<b>183-m haul seine</b>		<b>Totals</b>	
	<b>Animals</b>	<b>Hauls</b>	<b>Animals</b>	<b>Hauls</b>
<b>B</b>	6,161	21	6,161	21
<b>C</b>	4,262	14	4,262	14
<b>Totals</b>	<b>10,423</b>	<b>35</b>	<b>10,423</b>	<b>35</b>

## Bay Sampling

### *183-m Haul Seines*

A total of 10,423 animals were collected in 35 183-m haul seines, representing 100% of the overall SRS catch (Table 4.7). *Lagodon rhomboides* (n = 4,979) and *Leiostomus xanthurus* (n = 2,613) were the most abundant taxa, accounting for 72.8% of the haul seine catch (Table 4.8). The taxa most frequently caught in 183-m haul seines were *Lagodon rhomboides* (88.6% occurrence) and *Leiostomus xanthurus* (80.0% occurrence).

A total of 3,851 animals from 22 selected taxa were collected, representing 36.9% of the entire 183-m haul seine catch (Table 4.9). *Leiostomus xanthurus* (n=2,613) was the most abundant Selected Taxon, accounting for 67.9% of the selected taxa collected by this gear. The selected taxa most frequently caught in 183-m bay seines were *Leiostomus xanthurus* (80.0% occurrence) and *Mugil cephalus* (65.7% occurrence).

**Table 4.8:** Catch statistics for 10 dominant taxa collected in 35 183-m haul seine samples during Choctawhatchee Bay stratified-random sampling, 2022.

Species	Number			Density Estimate (animals/set)				Standard Length (mm)			
	No.	%	% Occur	Mean	Stderr	CV	Max	Mean	Stderr	Min	Max
<i>Lagodon rhomboides</i>	4,979	47.8	88.6	155.59	27.92	101.52	515	118	0.32	67	174
<i>Leiostomus xanthurus</i>	2,613	25.1	80.0	81.66	42.30	293.02	1,353	111	0.38	57	219
<i>Harengula jaguana</i>	881	8.5	11.4	27.53	27.43	563.70	878	100	0.12	93	108
<i>Micropogonias undulatus</i>	521	5.0	37.1	16.28	7.10	246.61	187	144	0.94	100	225
<i>Eucinostomus harengulus</i>	362	3.5	45.7	11.31	6.24	311.84	199	102	0.47	82	126
<i>Mugil cephalus</i>	154	1.5	65.7	4.81	1.66	194.89	50	192	5.76	100	404
<i>Mugil curema</i>	118	1.1	34.3	3.69	1.33	204.15	29	187	3.45	100	289
<i>Elops saurus</i>	115	1.1	20.0	3.59	3.12	490.84	100	245	1.29	221	300
<i>Bairdiella chrysoura</i>	84	0.8	22.9	2.62	1.52	326.81	47	134	2.46	34	170
<i>Sciaenops ocellatus</i>	83	0.8	54.3	2.59	0.78	170.42	20	378	13.40	84	665
Subtotals	9,910	95.2	.	.	.	.	.	.	.	34	665
<b>Totals</b>	<b>10,423</b>	<b>100.0</b>	.	<b>325.72</b>	<b>68.95</b>	<b>125.23</b>	<b>1,996</b>	.	.	<b>18</b>	<b>812</b>

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.

**Table 4.9:** Catch statistics for selected taxa collected in 35 183-m haul seine samples during Choctawhatchee Bay stratified-random sampling, 2022.

Species	Number			Density Estimate (animals/set)				Standard Length (mm)			
	No.	%	% Occur	Mean	Stderr	CV	Max	Mean	Stderr	Min	Max
<i>Leiostomus xanthurus</i>	2,613	25.1	80.0	74.66	38.82	307.59	1,353	111	0.38	57	219
<i>Micropogonias undulatus</i>	521	5.0	37.1	14.89	6.53	259.42	187	144	0.94	100	225
<i>Mugil cephalus</i>	154	1.5	65.7	4.40	1.53	205.89	50	192	5.76	100	404
<i>Mugil curema</i>	118	1.1	34.3	3.37	1.23	215.47	29	187	3.45	100	289
<i>Elops saurus</i>	115	1.1	20.0	3.29	2.85	513.56	100	245	1.29	221	300
<i>Sciaenops ocellatus</i>	83	0.8	54.3	2.37	0.72	180.68	20	378	13.40	84	665
<i>Brevoortia</i> spp.	49	0.5	20.0	1.40	0.91	382.78	31	119	2.58	80	181
<i>Trachinotus falcatus</i>	49	0.5	14.3	1.40	0.87	367.17	29	152	3.13	97	188
<i>Pomatomus saltatrix</i>	42	0.4	5.7	1.20	1.12	549.73	39	353	7.58	133	450
<i>Callinectes sapidus</i>	23	0.2	14.3	0.66	0.35	313.05	9	141	7.21	62	199
<i>Caranx hippos</i>	16	0.2	28.6	0.46	0.14	178.68	3	118	4.86	90	168
<i>Cynoscion nebulosus</i>	16	0.2	25.7	0.46	0.19	245.10	6	243	31.84	75	475
<i>Lutjanus griseus</i>	9	0.1	11.4	0.26	0.13	303.33	3	142	14.55	90	184
<i>Sphyraena barracuda</i>	9	0.1	8.6	0.26	0.17	381.30	5	243	20.09	201	360
<i>Litopenaeus setiferus</i>	8	0.1	5.7	0.23	0.20	520.75	7	21	0.77	18	24
<i>Paralichthys albigutta</i>	7	0.1	11.4	0.20	0.11	316.23	3	180	21.51	72	245
<i>Trachinotus carolinus</i>	6	0.1	8.6	0.17	0.12	412.13	4	190	12.41	132	216
<i>Archosargus probatocephalus</i>	5	<0.1	11.4	0.14	0.07	300.98	2	287	44.70	109	342
<i>Menticirrhus saxatilis</i>	5	<0.1	5.7	0.14	0.10	420.78	3	154	6.70	137	177

Species	Number		Density Estimate (animals/set)				Standard Length (mm)				
	No.	% Occur	Mean	Stderr	CV	Max	Mean	Stderr	Min	Max	
<i>Farfantepenaeus aztecus</i>	1	<0.1	2.9	0.03	0.03	591.61	1	25	.	25	25
<i>Paralichthys lethostigma</i>	1	<0.1	2.9	0.03	0.03	591.61	1	194	.	194	194
<i>Pogonias cromis</i>	1	<0.1	2.9	0.03	0.03	591.61	1	770	.	770	770
<b>Totals</b>	<b>3,851</b>	<b>36.9</b>	<b>.</b>	<b>110.03</b>	<b>45.63</b>	<b>245.34</b>	<b>1,547</b>	<b>.</b>	<b>.</b>	<b>18</b>	<b>770</b>

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.

## Appendix

**Table 4.10:** Monthly summary of taxa collected during Choctawhatchee Bay stratified-random sampling, 2022.

Taxa	Month							Totals
	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
	E=5	E=5	E=5	E=5	E=5	E=5	E=5	E=35
<i>Archosargus probatocephalus</i>	1	3	.	1	.	.	.	5
<i>Ariopsis felis</i>	4	13	2	3	.	.	1	23
<i>Bagre marinus</i>	.	.	.	2	.	.	.	2
<i>Bairdiella chrysoura</i>	18	9	.	48	9	.	.	84
<b>Brevoortia spp.</b>	7	3	1	7	31	.	.	49
<i>Callinectes sapidus</i>	9	11	2	.	.	1	.	23
<b>Caranx hippos</b>	1	4	4	4	1	2	.	16
<i>Caranx latus</i>	1	.	.	1	.	1	.	3
<i>Chilomycterus schoepfii</i>	2	1	.	26	.	1	4	34
<i>Citharichthys spilopterus</i>	.	6	.	.	.	.	.	6
<i>Clupeidae</i> spp.	3	.	.	.	.	.	.	3
<b>Cynoscion nebulosus</b>	1	1	2	9	2	1	.	16
<i>Dasyatis sabina</i>	2	.	3	17	3	3	.	28
<i>Diapterus auratus</i>	.	.	.	.	.	4	.	4
<b>Elops saurus</b>	.	.	3	107	4	1	.	115
<i>Eucinostomus gula</i>	.	2	10	13	.	6	.	31
<i>Eucinostomus harengulus</i>	8	23	253	7	24	18	29	362
<i>Eucinostomus</i> spp.	.	.	.	10	.	.	.	10
<b>Farfantepenaeus aztecus</b>	.	1	.	.	.	.	.	1
<i>Gymnura micrura</i>	.	.	.	.	.	1	.	1
<i>Harengula jaguana</i>	1	.	1	878	1	.	.	881
<i>Hyporhamphus meeki</i>	1	.	.	3	.	.	.	4
<i>Lagodon rhomboides</i>	482	1,047	1,289	1,163	605	360	33	4,979
<b>Leiostomus xanthurus</b>	294	487	1,401	320	42	68	1	2,613
<i>Lepisosteus oculatus</i>	.	1	.	.	.	.	.	1

Taxa	Month							Totals
	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
	E=5	E=5	E=5	E=5	E=5	E=5	E=5	E=35
<i>Lepisosteus osseus</i>	.	1	.	.	.	.	.	1
<b><i>Litopenaeus setiferus</i></b>	.	7	1	.	.	.	.	8
<b><i>Lutjanus griseus</i></b>	5	1	.	3	.	.	.	9
<i>Menidia</i> sp.	1	.	.	.	.	.	.	1
<b><i>Menticirrhus saxatilis</i></b>	.	3	2	.	.	.	.	5
<b><i>Micropogonias undulatus</i></b>	6	13	181	302	19	.	.	521
<b><i>Mugil cephalus</i></b>	25	10	54	31	13	13	8	154
<b><i>Mugil curema</i></b>	5	2	43	3	48	17	.	118
<i>Oligoplites saurus</i>	1	1	8	.	.	.	.	10
<i>Orthopristis chrysoptera</i>	1	1	5	29	8	.	.	44
<b><i>Paralichthys albigutta</i></b>	.	.	1	3	2	.	1	7
<b><i>Paralichthys lethostigma</i></b>	.	1	.	.	.	.	.	1
<b><i>Pogonias cromis</i></b>	.	1	.	.	.	.	.	1
<b><i>Pomatomus saltatrix</i></b>	.	.	.	42	.	.	.	42
<i>Rhinoptera bonasus</i>	.	.	.	10	4	.	2	16
<b><i>Sciaenops ocellatus</i></b>	4	17	30	16	3	4	9	83
<i>Selene vomer</i>	.	.	2	1	.	.	.	3
<i>Sphoeroides nephelus</i>	1	1	9	2	1	.	.	14
<b><i>Sphyraena barracuda</i></b>	.	.	6	3	.	.	.	9
<i>Strongylura marina</i>	.	2	.	3	3	2	.	10
<i>Synodus foetens</i>	2	.	12	1	1	1	.	17
<b><i>Trachinotus carolinus</i></b>	.	.	2	4	.	.	.	6
<b><i>Trachinotus falcatus</i></b>	.	.	10	32	7	.	.	49
<b>Totals</b>	<b>886</b>	<b>1,673</b>	<b>3,337</b>	<b>3,104</b>	<b>831</b>	<b>504</b>	<b>88</b>	<b>10,423</b>

Effort, or total number of hauls, is labeled 'E'. Taxa are arranged alphabetically. Selected taxa are highlighted in bold.

**Table 4.11:** Summary by gear and stratum of taxa collected during Choctawhatchee Bay stratified-random sampling, 2022.

Taxa	Gear and Strata		Totals
	183-m haul seine		
	Over	Nonover	
	E=7	E=28	E=35
<i>Archosargus probatocephalus</i>	1	4	5
<i>Ariopsis felis</i>	6	17	23
<i>Bagre marinus</i>	.	2	2
<i>Bairdiella chrysoura</i>	56	28	84
<b><i>Brevoortia</i> spp.</b>	1	48	49
<b><i>Callinectes</i> <i>sapidus</i></b>	8	15	23
<b><i>Caranx</i> <i>hippos</i></b>	10	6	16
<i>Caranx latus</i>	1	2	3
<i>Chilomycterus schoepfii</i>	19	15	34
<i>Citharichthys spilopterus</i>	6	.	6
<i>Clupeidae</i> spp.	.	3	3
<b><i>Cynoscion</i> <i>nebulosus</i></b>	9	7	16
<i>Dasyatis sabina</i>	9	19	28
<i>Diapterus auratus</i>	4	.	4
<b><i>Elops</i> <i>saurus</i></b>	102	13	115
<i>Eucinostomus gula</i>	11	20	31
<i>Eucinostomus harengulus</i>	27	335	362
<i>Eucinostomus</i> spp.	.	10	10
<b><i>Farfantepenaeus</i> <i>aztecus</i></b>	1	.	1
<i>Gymnura micrura</i>	1	.	1
<i>Harengula jaguana</i>	1	880	881
<i>Hyporhamphus meeki</i>	.	4	4
<i>Lagodon rhomboides</i>	1,636	3,343	4,979
<b><i>Leiostomus</i> <i>xanthurus</i></b>	1,832	781	2,613
<i>Lepisosteus oculatus</i>	1	.	1
<i>Lepisosteus osseus</i>	.	1	1

Taxa	Gear and Strata		Totals
	183-m haul seine		
	Over	Nonover	
	E=7	E=28	E=35
<i>Litopenaeus setiferus</i>	8	.	8
<i>Lutjanus griseus</i>	1	8	9
<i>Menidia</i> sp.	.	1	1
<i>Menticirrhus saxatilis</i>	3	2	5
<i>Micropogonias undulatus</i>	377	144	521
<i>Mugil cephalus</i>	85	69	154
<i>Mugil curema</i>	32	86	118
<i>Oligoplites saurus</i>	5	5	10
<i>Orthopristis chrysoptera</i>	13	31	44
<i>Paralichthys albigutta</i>	3	4	7
<i>Paralichthys lethostigma</i>	1	.	1
<i>Pogonias cromis</i>	1	.	1
<i>Pomatomus saltatrix</i>	3	39	42
<i>Rhinoptera bonasus</i>	.	16	16
<i>Sciaenops ocellatus</i>	47	36	83
<i>Selene vomer</i>	3	.	3
<i>Sphoeroides nephelus</i>	2	12	14
<i>Sphyraena barracuda</i>	.	9	9
<i>Strongylura marina</i>	2	8	10
<i>Synodus foetens</i>	12	5	17
<i>Trachinotus carolinus</i>	1	5	6
<i>Trachinotus falcatus</i>	3	46	49
<b>Totals</b>	<b>4,344</b>	<b>6,079</b>	<b>10,423</b>

Sampling with 21.3-m river seine and 183-m haul seine was stratified by the presence or absence of overhanging vegetation ('Over' or 'Nonover'). Effort, or the total number of hauls, is labeled 'E'. Taxa are arranged alphabetically. Selected taxa are highlighted in bold.

**Table 4.12:** Summary by zone of taxa collected during Choctawhatchee Bay stratified-random sampling, 2022.

Taxa	Zone		Totals
	B	C	
	E=21	E=14	E=35
<b><i>Archosargus probatocephalus</i></b>	3	2	5
<i>Ariopsis felis</i>	11	12	23
<i>Bagre marinus</i>	2	.	2
<i>Bairdiella chrysoura</i>	70	14	84
<b><i>Brevoortia</i> spp.</b>	2	47	49
<b><i>Callinectes sapidus</i></b>	22	1	23
<b><i>Caranx hippos</i></b>	7	9	16
<i>Caranx latus</i>	2	1	3
<i>Chilomycterus schoepfii</i>	34	.	34
<i>Citharichthys spilopterus</i>	.	6	6
<i>Clupeidae</i> spp.	.	3	3
<b><i>Cynoscion nebulosus</i></b>	10	6	16
<i>Dasyatis sabina</i>	22	6	28
<i>Diapterus auratus</i>	4	.	4
<b><i>Elops saurus</i></b>	108	7	115
<i>Eucinostomus gula</i>	31	.	31
<i>Eucinostomus harengulus</i>	356	6	362
<i>Eucinostomus</i> spp.	10	.	10
<b><i>Farfantepenaeus aztecus</i></b>	.	1	1
<i>Gymnura micrura</i>	1	.	1
<i>Harengula jaguana</i>	878	3	881
<i>Hyporhamphus meeki</i>	4	.	4
<i>Lagodon rhomboides</i>	3,230	1,749	4,979
<b><i>Leiostomus xanthurus</i></b>	799	1,814	2,613
<i>Lepisosteus oculatus</i>	.	1	1
<i>Lepisosteus osseus</i>	.	1	1
<b><i>Litopenaeus setiferus</i></b>	.	8	8

Taxa	Zone		Totals
	B	C	
	E=21	E=14	E=35
<b><i>Lutjanus griseus</i></b>	9	.	9
<i>Menidia</i> sp.	1	.	1
<b><i>Menticirrhus saxatilis</i></b>	5	.	5
<b><i>Micropogonias undulatus</i></b>	195	326	521
<b><i>Mugil cephalus</i></b>	47	107	154
<b><i>Mugil curema</i></b>	82	36	118
<i>Oligoplites saurus</i>	3	7	10
<i>Orthopristis chrysoptera</i>	31	13	44
<b><i>Paralichthys albigutta</i></b>	7	.	7
<b><i>Paralichthys lethostigma</i></b>	.	1	1
<b><i>Pogonias cromis</i></b>	.	1	1
<b><i>Pomatomus saltatrix</i></b>	42	.	42
<i>Rhinoptera bonasus</i>	1	15	16
<b><i>Sciaenops ocellatus</i></b>	42	41	83
<i>Selene vomer</i>	1	2	3
<i>Sphoeroides nephelus</i>	14	.	14
<b><i>Sphyraena barracuda</i></b>	9	.	9
<i>Strongylura marina</i>	6	4	10
<i>Synodus foetens</i>	6	11	17
<b><i>Trachinotus carolinus</i></b>	5	1	6
<b><i>Trachinotus falcatus</i></b>	49	.	49
<b>Totals</b>	<b>6,161</b>	<b>4,262</b>	<b>10,423</b>

Zones B-C were located in Choctawhatchee Bay. Effort, or the total number of hauls, is labeled 'E'. Taxa are arranged alphabetically. selected taxa are highlighted in bold.

## 4.3 Apalachicola Bay

Apalachicola Bay is a shallow, semi-enclosed estuary, located on the northwestern coast of Florida. The estuary, bounded by a barrier island complex (St. Vincent Island, Little St. George Island, St. George Island, and Dog Island), is connected to the Gulf of Mexico through four passes (Indian Pass, West Pass, East Pass, and Sikes Cut). East of Dog Island, St. George Sound is open to the Gulf (Figure 4.3). Freshwater inflow to Apalachicola Bay primarily comes from the Apalachicola River and to a lesser extent the Carrabelle River (Livingston 1983). Shoreline vegetation consists largely of marsh grasses and bottom substrates are typically characterized as sand or mud with oyster beds scattered throughout the bay (Ingle and Dawson 1953). Less than 7% of the substrate is covered by seagrass (Continental Shelf Associates, Inc. 1985a).

The Fisheries-Independent Monitoring (FIM) program has conducted intensive sampling of fish and selected invertebrates in Apalachicola Bay since 1998. The area sampled was divided into two geographically defined bay zones (A and B) and one riverine zone (C; Figure 4.3). Monthly stratified-random sampling (SRS) was conducted in Zones A and B using 21.3-m bay seines, 183-m haul seines, and 6.1-m bay otter trawls. Monthly SRS was conducted in Zone C with 21.3-m river seines and 6.1-m river otter trawls. All methods were the same as those described in Chapter 2. This section summarizes data collected by the FIM program during 2022 in Apalachicola Bay.

### Stratified-Random Sampling

A total of 127,375 animals, which included 174 taxa of fishes and 19 taxa of selected invertebrates, were collected from 594 Apalachicola Bay SRS samples in 2022 (Table 4.13). *Anchoa mitchilli* (n=28,336) was the most numerous taxon collected, representing 22.2% of the total catch. *Anchoa spp.* (n=21,904) and *Lagodon rhomboides* (n=10,147) were the next most abundant taxa collected, accounting for an additional 25.2% of the total catch. A total of 41 selected taxa (n=31,926 animals) composed 25.1% of the total catch. *Micropogonias undulatus* (n=9,948) was the most abundant Selected Taxon, representing 7.8% of the total catch. *Leiostomus xanthurus* (n=4,290), *Litopenaeus setiferus* (n=4,237), *Mugil cephalus* (n=2,718), and *Brevoortia spp.* (n=2,316) were the next most abundant selected taxa, comprising 10.6% of the total catch. Collections in 2022 included 1 species new to the Apalachicola Bay FIM collection: *Aluterus heudelotii*.



**Figure 4.3:** Map of Apalachicola Bay sampling area. Zones are labeled A-C. Zones A and B are bay zones, while zone C is a river zone.

**Table 4.13:** Summary of catch and effort data for Apalachicola Bay stratified-random sampling, 2022.

Zone	21.3-m bay seine		21.3-m river seine		183-m haul seine		6.1-m otter trawl		Totals	
	Animals	Hauls	Animals	Hauls	Animals	Hauls	Animals	Hauls	Animals	Hauls
<b>A</b>	32,082	121	.	.	9,906	99	28,690	24	70,678	244
<b>B</b>	11,388	119	.	.	9,150	99	5,751	24	26,289	242
<b>C</b>	.	.	12,106	84	.	.	18,303	24	30,409	108
<b>Totals</b>	<b>43,470</b>	<b>240</b>	<b>12,106</b>	<b>84</b>	<b>19,056</b>	<b>198</b>	<b>52,744</b>	<b>72</b>	<b>127,376</b>	<b>594</b>

## Bay Sampling

### *21.3-m Bay Seines*

A total of 43,470 animals were collected in 240 21.3-m bay seines, representing 34.1% of the overall SRS catch (Table 4.13). *Menidia spp.* (n=6,282) and *Anchoa mitchilli* (n=4,500) were the most abundant taxa, accounting for 24.8% of the bay seine catch (Table 4.14). The taxa most frequently caught in 21.3-m bay seines were *Lagodon rhomboides* (47.5% occurrence) and *Ctenogobius boleosoma* (40.8% occurrence).

A total of 15,018 animals from 32 selected taxa were collected, representing 34.5% of the entire 21.3-m bay seine catch (Table 4.15). *Micropogonias undulatus* (n=4,412) was the most abundant Selected Taxon, accounting for 29.4% of the selected taxa collected by this gear. The selected taxa most frequently caught in 21.3-m bay seines were *Callinectes sapidus* (46.2% occurrence) and *Farfantepenaeus spp.* (41.7% occurrence).

**Table 4.14:** Catch statistics for 10 dominant taxa collected in 240 21.3-m bay seine samples during Apalachicola Bay stratified-random sampling, 2022.

Species	Number			Density Estimate (animals/100m <sup>2</sup> )				Standard Length (mm)			
	No.	%	% Occur	Mean	Stderr	CV	Max	Mean	Stderr	Min	Max
<i>Menidia</i> spp.	6,282	14.5	37.5	19.18	6.92	551.80	1,250.00	42	0.18	19	101
<i>Anchoa mitchilli</i>	4,500	10.4	33.3	13.74	2.83	314.71	337.14	36	0.16	13	68
<i>Micropogonias undulatus</i>	4,412	10.1	20.4	13.47	8.88	1,008.99	2,055.00	23	0.13	9	129
<i>Lagodon rhomboides</i>	3,508	8.1	47.5	10.35	2.51	376.75	353.57	35	0.29	12	178
<i>Lucania parva</i>	3,267	7.5	10.4	9.97	4.08	625.51	719.29	27	0.09	12	49
<i>Eucinostomus</i> spp.	2,460	5.7	32.1	7.51	1.58	320.99	229.29	25	0.14	9	48
<i>Leiostomus xanthurus</i>	2,353	5.4	31.2	7.18	2.29	487.60	393.57	23	0.25	8	180
<i>Bairdiella chrysoura</i>	2,199	5.1	20.8	6.60	1.72	401.89	254.29	42	0.54	8	159
<i>Litopenaeus setiferus</i>	2,044	4.7	22.5	6.24	2.22	544.62	399.29	9	0.09	2	21
<i>Ctenogobius boleosoma</i>	1,703	3.9	40.8	5.20	1.11	325.83	153.57	26	0.12	12	41
Subtotals	32,728	75.4	.	.	.	.	.	.	.	2	180
<b>Totals</b>	<b>43,470</b>	<b>100.0</b>	.	<b>132.69</b>	<b>15.44</b>	<b>180.27</b>	<b>2,166.43</b>	.	.	<b>2</b>	<b>630</b>

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.

**Table 4.15:** Catch statistics for selected taxa collected in 240 21.3-m bay seine samples during Apalachicola Bay stratified-random sampling, 2022.

Species	Number			Density Estimate (animals/100m <sup>2</sup> )				Standard Length (mm)			
	No.	%	% Occur	Mean	Stderr	CV	Max	Mean	Stderr	Min	Max
<i>Micropogonias undulatus</i>	4,412	10.1	20.4	13.13	8.66	1,021.91	2,055.00	23	0.13	9	129
<i>Leiostomus xanthurus</i>	2,353	5.4	31.2	7.00	2.23	494.04	393.57	23	0.25	8	180
<i>Litopenaeus setiferus</i>	2,044	4.7	22.5	6.08	2.17	551.76	399.29	9	0.09	2	21
<i>Farfantepenaeus</i> spp.	1,334	3.1	41.7	3.97	0.85	332.21	103.57	8	0.07	2	14
<i>Brevoortia</i> spp.	1,292	3.0	10.8	3.85	1.86	747.47	367.14	30	0.29	17	179
<i>Mugil cephalus</i>	1,063	2.4	12.1	3.16	1.09	532.91	165.71	27	0.55	18	302
<i>Callinectes sapidus</i>	784	1.8	46.2	2.33	0.47	312.13	70.00	16	0.63	4	171
<i>Cynoscion nebulosus</i>	567	1.3	31.7	1.69	0.41	380.41	80.71	38	0.93	14	172
<i>Cynoscion arenarius</i>	556	1.3	14.6	1.65	0.49	456.79	56.43	26	0.43	11	78
<i>Sciaenops ocellatus</i>	219	0.5	20.0	0.65	0.18	433.70	26.43	43	4.09	9	360
<i>Menticirrhus americanus</i>	140	0.3	12.1	0.42	0.11	423.17	14.29	34	1.89	10	152
<i>Mugil curema</i>	103	0.2	7.1	0.31	0.11	544.02	12.86	40	4.15	21	254
<i>Lutjanus synagris</i>	33	0.1	7.1	0.10	0.03	471.52	4.29	39	2.50	18	88
<i>Menticirrhus saxatilis</i>	22	0.1	4.6	0.07	0.03	606.96	5.00	42	5.82	11	130
<i>Lutjanus griseus</i>	21	<0.1	5.0	0.06	0.02	528.77	2.86	48	6.22	15	150
<i>Paralichthys albigutta</i>	19	<0.1	5.4	0.06	0.02	486.80	2.86	66	15.63	14	260
<i>Farfantepenaeus duorarum</i>	10	<0.1	3.8	0.03	0.01	528.36	1.43	16	0.48	15	20
<i>Caranx hippos</i>	6	<0.1	1.7	0.02	0.01	812.04	1.43	33	3.81	26	51
<i>Trachinotus falcatus</i>	6	<0.1	1.2	0.02	0.01	1,093.15	2.86	42	6.89	26	72

Species	Number			Density Estimate (animals/100m <sup>2</sup> )				Standard Length (mm)			
	No.	%	% Occur	Mean	Stderr	CV	Max	Mean	Stderr	Min	Max
<i>Archosargus probatocephalus</i>	5	<0.1	0.8	0.01	0.01	1,276.24	2.86	20	2.13	15	26
<i>Paralichthys lethostigma</i>	5	<0.1	1.7	0.01	0.01	815.33	1.43	183	75.28	22	400
<i>Pogonias cromis</i>	4	<0.1	0.8	0.01	0.01	1,093.15	1.43	209	5.81	195	223
<i>Trachinotus carolinus</i>	4	<0.1	0.8	0.01	0.01	1,223.21	2.14	72	9.51	61	100
<i>Farfantepenaeus aztecus</i>	3	<0.1	1.2	0.01	0.01	890.68	0.71	15	0.00	15	15
<i>Centropristis striata</i>	2	<0.1	0.8	0.01	<0.01	1,093.15	0.71	111	48.00	63	159
<i>Elops saurus</i>	2	<0.1	0.8	0.01	<0.01	1,093.15	0.71	249	31.00	218	280
<i>Menticirrhus littoralis</i>	2	<0.1	0.8	0.01	<0.01	1,093.15	0.71	54	28.00	26	82
<i>Mycteroperca microlepis</i>	2	<0.1	0.8	0.01	<0.01	1,093.15	0.71	163	36.00	127	199
<i>Paralichthys squamilentus</i>	2	<0.1	0.4	0.01	0.01	1,549.19	1.43	37	7.00	30	44
<i>Diplectrum formosum</i>	1	<0.1	0.4	<0.01	<0.01	1,549.19	0.71	93	.	93	93
<i>Menippe</i> spp.	1	<0.1	0.4	<0.01	<0.01	1,549.19	0.71	6	.	6	6
<i>Pomatomus saltatrix</i>	1	<0.1	0.4	<0.01	<0.01	1,549.19	0.71	34	.	34	34
<b>Totals</b>	<b>15,018</b>	<b>34.5</b>	<b>.</b>	<b>44.70</b>	<b>9.92</b>	<b>343.88</b>	<b>2,116.43</b>	<b>.</b>	<b>.</b>	<b>2</b>	<b>400</b>

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.

### **183-m Haul Seines**

A total of 19,056 animals were collected in 198 183-m haul seines, representing 15% of the overall SRS catch (Table 4.13). *Lagodon rhomboides* (n=6,353) was the most abundant taxon, accounting for 33.3% of the 183-m haul seine catch (Table 4.16). The taxa most frequently caught in 183-m haul seines were *Lagodon rhomboides* (74.7% occurrence), *Mugil cephalus* (72.7% occurrence), and *Dasyatis sabina* (58.1% occurrence).

A total of 8,509 animals from 34 selected taxa were collected, representing 44.7% of the entire 183-m haul seine catch (Table 4.17). *Leiostomus xanthurus* (n=1,826) and *Micropogonias undulatus* (n=1,626) were the most abundant selected taxa, accounting for 40.6% of the selected taxa collected by this gear. The selected taxa most frequently caught in 183-m haul seines were *Mugil cephalus* (72.7% occurrence) and *Sciaenops ocellatus* (52.5% occurrence).

**Table 4.16:** Catch statistics for 10 dominant taxa collected in 198 183-m haul seine samples during Apalachicola Bay stratified-random sampling, 2022.

Species	Number			Density Estimate (animals/set)				Standard Length (mm)			
	No.	%	% Occur	Mean	Stderr	CV	Max	Mean	Stderr	Min	Max
<i>Lagodon rhomboides</i>	6,353	33.3	74.7	32.41	4.20	181.54	430	115	0.35	55	204
<i>Leiostomus xanthurus</i>	1,826	9.6	47.5	9.36	1.84	274.95	267	140	0.70	37	210
<i>Micropogonias undulatus</i>	1,626	8.5	26.8	8.34	2.15	359.34	219	155	0.67	54	267
<i>Mugil cephalus</i>	1,592	8.4	72.7	8.16	1.14	195.37	142	227	2.04	70	402
<i>Bairdiella chrysoura</i>	1,228	6.4	25.3	6.30	2.48	549.23	444	116	0.65	33	175
<i>Litopenaeus setiferus</i>	1,189	6.2	9.6	6.10	5.35	1,226.25	1,042	23	0.09	9	35
<i>Dasyatis sabina</i>	691	3.6	58.1	3.54	0.45	178.51	34	226	1.32	100	348
<i>Sciaenops ocellatus</i>	472	2.5	52.5	2.41	0.34	198.80	36	327	6.14	41	716
<i>Mugil curema</i>	463	2.4	39.9	2.37	0.49	289.14	64	183	2.38	83	340
<i>Eucinostomus gula</i>	427	2.2	11.6	2.19	1.84	1,172.23	358	84	0.40	45	100
Subtotals	15,867	83.1	.	.	.	.	.	.	.	9	716
<b>Totals</b>	<b>19,056</b>	<b>100.0</b>	.	<b>97.72</b>	<b>9.51</b>	<b>136.98</b>	<b>1,347</b>	.	.	<b>9</b>	<b>1,020</b>

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.

**Table 4.17:** Catch statistics for selected taxa collected in 198 183-m haul seine samples during Apalachicola Bay stratified-random sampling, 2022.

Species	Number			Density Estimate (animals/set)				Standard Length (mm)			
	No.	%	% Occur	Mean	Stderr	CV	Max	Mean	Stderr	Min	Max
<i>Leiostomus xanthurus</i>	1,826	9.6	47.5	9.22	1.82	277.33	267	140	0.70	37	210
<i>Micropogonias undulatus</i>	1,626	8.5	26.8	8.21	2.11	362.29	219	155	0.67	54	267
<i>Mugil cephalus</i>	1,592	8.4	72.7	8.04	1.13	197.25	142	227	2.04	70	402
<i>Litopenaeus setiferus</i>	1,189	6.2	9.6	6.01	5.27	1,235.66	1,042	23	0.09	9	35
<i>Sciaenops ocellatus</i>	472	2.5	52.5	2.38	0.34	200.20	36	327	6.14	41	716
<i>Mugil curema</i>	463	2.4	39.9	2.34	0.48	291.61	64	183	2.38	83	340
<i>Brevoortia</i> spp.	348	1.8	10.6	1.76	0.65	518.09	84	157	2.05	71	210
<i>Cynoscion nebulosus</i>	164	0.9	30.8	0.83	0.14	231.48	13	208	8.37	36	577
<i>Elops saurus</i>	128	0.7	17.2	0.65	0.15	337.04	21	275	5.42	134	457
<i>Paralichthys albigutta</i>	123	0.6	31.8	0.62	0.09	207.90	7	163	6.43	44	430
<i>Callinectes sapidus</i>	111	0.6	25.8	0.56	0.11	272.81	12	124	4.85	22	194
<i>Pogonias cromis</i>	97	0.5	19.2	0.49	0.11	316.45	17	232	11.82	107	805
<i>Archosargus probatocephalus</i>	89	0.5	21.7	0.45	0.09	286.62	12	321	6.36	113	455
<i>Farfantepenaeus duorarum</i>	64	0.3	5.1	0.32	0.21	913.43	37	24	0.47	15	28
<i>Menticirrhus americanus</i>	31	0.2	9.1	0.16	0.04	381.13	5	147	7.55	84	258
<i>Mycteroperca microlepis</i>	24	0.1	3.0	0.12	0.06	678.10	9	145	8.63	60	208
<i>Paralichthys lethostigma</i>	23	0.1	7.6	0.12	0.03	399.04	4	252	23.39	79	482
<i>Caranx hippos</i>	19	0.1	4.0	0.10	0.04	617.53	5	117	3.80	92	159
<i>Trachinotus falcatus</i>	19	0.1	4.0	0.10	0.04	590.14	5	69	5.48	47	149

Species	Number			Density Estimate (animals/set)				Standard Length (mm)			
	No.	%	% Occur	Mean	Stderr	CV	Max	Mean	Stderr	Min	Max
<i>Lutjanus griseus</i>	18	0.1	4.0	0.09	0.04	588.38	5	73	10.92	27	177
<i>Farfantepenaeus</i> spp.	17	0.1	3.5	0.09	0.05	758.46	8	12	0.30	9	14
<i>Trachinotus carolinus</i>	16	0.1	2.0	0.08	0.05	830.41	7	119	16.74	51	298
<i>Lobotes surinamensis</i>	10	0.1	2.0	0.05	0.03	908.72	6	270	11.09	217	318
<i>Sphyrna tiburo</i>	7	<0.1	2.5	0.04	0.02	660.83	2	645	78.42	210	810
<i>Pomatomus saltatrix</i>	6	<0.1	3.0	0.03	0.01	567.12	1	161	14.49	102	196
<i>Farfantepenaeus aztecus</i>	5	<0.1	1.5	0.03	0.02	930.36	3	16	1.00	15	20
<i>Lutjanus synagris</i>	5	<0.1	2.0	0.03	0.01	739.70	2	74	24.57	37	162
<i>Scomberomorus maculatus</i>	4	<0.1	1.0	0.02	0.02	1,110.73	3	316	34.23	255	394
<i>Cynoscion arenarius</i>	3	<0.1	1.5	0.02	0.01	808.27	1	150	40.33	69	190
<i>Sphyrna barracuda</i>	3	<0.1	0.5	0.02	0.02	1,407.12	3	231	76.92	80	332
<i>Centropristis striata</i>	2	<0.1	1.0	0.01	0.01	992.46	1	128	48.50	80	177
<i>Menticirrhus littoralis</i>	2	<0.1	1.0	0.01	0.01	992.46	1	226	12.00	214	238
<i>Negaprion brevirostris</i>	2	<0.1	1.0	0.01	0.01	992.46	1	566	100.50	466	667
<i>Paralichthys squamilentus</i>	1	<0.1	0.5	0.01	0.01	1,407.12	1	88	.	88	88
<b>Totals</b>	<b>8,509</b>	<b>44.7</b>	<b>.</b>	<b>42.97</b>	<b>7.60</b>	<b>248.75</b>	<b>1,316</b>	<b>.</b>	<b>.</b>	<b>9</b>	<b>810</b>

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.

### **6.1-m Bay Otter Trawls**

A total of 34,441 animals were collected in 48 6.1-m bay otter trawls, representing 27% of the overall SRS catch (Table 4.13). *Anchoa spp.* (n=21,898), *Micropogonias undulatus* (n=3,691), *Anchoa mitchilli* (n=3,573), and *Anchoa cubana* (n=1,679) were the most abundant taxa, accounting for 89.5% of the 6.1-m bay otter trawl catch (Table 4.18). The taxa most frequently caught in 6.1-m bay otter trawls were *Farfantepenaeus duorarum* (64.6% occurrence), *Micropogonias undulatus* (62.5% occurrence), and *Anchoa mitchilli* (60.4% occurrence).

A total of 5,096 animals from 24 selected taxa were collected, representing 14.8% of the entire 6.1-m bay otter trawl catch (Table 4.19). *Micropogonias undulatus* (n=3,691), *Cynoscion arenarius* (n=436), and *Litopenaeus setiferus* (n=348) were the most abundant selected taxa, accounting for 87.8% of the selected taxa collected by this gear. The selected taxa most frequently caught in 6.1-m bay otter trawls were *Farfantepenaeus duorarum* (64.6% occurrence), *Micropogonias undulatus* (62.5% occurrence), and *Callinectes sapidus* (50.0% occurrence).

**Table 4.18:** Catch statistics for 10 dominant taxa collected in 48 6.1-m bay otter trawl samples during Apalachicola Bay stratified-random sampling, 2022.

Species	Number			Density Estimate (animals/100m <sup>2</sup> )				Standard Length (mm)			
	No.	%	% Occur	Mean	Stderr	CV	Max	Mean	Stderr	Min	Max
<i>Anchoa</i> spp.	21,898	63.6	8.3	26.77	24.19	626.03	1,157.23	12	0.01	6	37
<i>Micropogonias undulatus</i>	3,691	10.7	62.5	5.06	3.08	417.49	140.12	28	0.48	7	164
<i>Anchoa mitchilli</i>	3,573	10.4	60.4	4.97	1.39	191.77	47.02	57	0.21	15	77
<i>Anchoa cubana</i>	1,679	4.9	6.2	2.30	2.25	670.69	105.62	40	0.06	35	56
<i>Cynoscion arenarius</i>	436	1.3	43.8	0.54	0.18	236.14	8.09	64	1.93	5	250
<i>Litopenaeus setiferus</i>	348	1.0	41.7	0.49	0.19	271.84	7.97	24	0.30	6	34
<i>Ariopsis felis</i>	274	0.8	37.5	0.37	0.15	277.10	5.33	80	1.53	26	240
<i>Orthopristis chrysoptera</i>	228	0.7	35.4	0.30	0.08	194.70	2.33	92	1.64	55	178
<i>Lagodon rhomboides</i>	224	0.7	31.2	0.30	0.10	245.86	3.71	85	1.39	15	135
<i>Farfantepenaeus duorarum</i>	194	0.6	64.6	0.27	0.06	161.01	2.02	20	0.29	15	31
Subtotals	32,545	94.7	.	.	.	.	.	.	.	5	250
<b>Totals</b>	<b>34,441</b>	<b>100.0</b>	.	<b>44.65</b>	<b>27.21</b>	<b>422.20</b>	<b>1,294.61</b>	.	.	<b>3</b>	<b>613</b>

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.

**Table 4.19:** Catch statistics for selected taxa collected in 48 6.1-m bay otter trawl samples during Apalachicola Bay stratified-random sampling, 2022.

Species	Number			Density Estimate (animals/100m <sup>2</sup> )				Standard Length (mm)			
	No.	%	% Occur	Mean	Stderr	CV	Max	Mean	Stderr	Min	Max
<i>Micropogonias undulatus</i>	3,691	10.7	62.5	4.96	3.02	422.07	140.12	28	0.48	7	164
<i>Cynoscion arenarius</i>	436	1.3	43.8	0.58	0.23	275.79	9.77	64	1.93	5	250
<i>Litopenaeus setiferus</i>	348	1.0	41.7	0.48	0.19	275.05	7.97	24	0.30	6	34
<i>Farfantepenaeus duorarum</i>	194	0.6	64.6	0.27	0.06	163.35	2.02	20	0.29	15	31
<i>Callinectes sapidus</i>	115	0.3	50.0	0.16	0.06	246.95	1.86	48	3.40	6	180
<i>Farfantepenaeus</i> spp.	68	0.2	37.5	0.09	0.03	204.95	0.80	11	0.28	5	14
<i>Leiostomus xanthurus</i>	66	0.2	35.4	0.09	0.04	288.40	1.42	121	2.39	87	173
<i>Menticirrhus americanus</i>	61	0.2	37.5	0.08	0.03	239.29	1.00	55	4.69	11	142
<i>Lutjanus synagris</i>	28	0.1	18.8	0.04	0.02	372.11	0.94	40	5.01	15	110
<i>Menippe</i> spp.	28	0.1	20.8	0.04	0.01	254.42	0.54	15	1.60	5	37
<i>Paralichthys albigutta</i>	18	0.1	20.8	0.02	0.01	225.57	0.23	141	12.74	74	260
<i>Centropristis striata</i>	14	<0.1	8.3	0.02	0.01	393.99	0.43	120	7.06	85	163
<i>Diplectrum formosum</i>	5	<0.1	6.2	0.01	<0.01	441.68	0.18	103	16.82	54	133
<i>Lutjanus griseus</i>	4	<0.1	2.1	0.01	0.01	692.82	0.26	12	0.25	12	13
<i>Brevoortia</i> spp.	3	<0.1	2.1	<0.01	<0.01	692.82	0.19	22	0.88	21	24
<i>Calamus arctifrons</i>	3	<0.1	2.1	<0.01	<0.01	692.82	0.18	92	4.04	84	97
<i>Cynoscion nothus</i>	3	<0.1	4.2	<0.01	<0.01	508.60	0.13	109	6.77	100	122
<i>Farfantepenaeus aztecus</i>	3	<0.1	6.2	<0.01	<0.01	391.51	0.07	22	1.15	20	24
<i>Argopecten irradians</i>	2	<0.1	2.1	<0.01	<0.01	692.82	0.13	48	0.50	48	49

Species	Number		Density Estimate (animals/100m <sup>2</sup> )				Standard Length (mm)				
	No.	% Occur	Mean	Stderr	CV	Max	Mean	Stderr	Min	Max	
<i>Paralichthys lethostigma</i>	2	<0.1	4.2	<0.01	<0.01	485.36	0.07	256	24.50	232	281
<i>Centropristis philadelphica</i>	1	<0.1	2.1	<0.01	<0.01	692.82	0.06	71	.	71	71
<i>Cynoscion nebulosus</i>	1	<0.1	2.1	<0.01	<0.01	692.82	0.06	171	.	171	171
<i>Lobotes surinamensis</i>	1	<0.1	2.1	<0.01	<0.01	692.82	0.06	295	.	295	295
<i>Menticirrhus saxatilis</i>	1	<0.1	2.1	<0.01	<0.01	692.82	0.07	19	.	19	19
<b>Totals</b>	<b>5,096</b>	<b>14.8</b>	.	<b>6.85</b>	<b>3.11</b>	<b>314.75</b>	<b>143.46</b>	.	.	<b>5</b>	<b>295</b>

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.

## River Sampling

### *21.3-m River Seines*

A total of 12,106 animals were collected in 84 21.3-m river seines, representing 9.5% of the overall SRS catch (Table 4.13). *Anchoa mitchilli* (n=5,074) was the most abundant taxon collected, accounting for 41.9% of the 21.3-m river seine catch (Table 4.20). *Notropis petersoni* (n=2,469) and *Brevoortia spp.* (n=673) were the next most abundant taxa, accounting for an additional 26% of the 21.3-m river seine catch. The taxa most frequently caught in 21.3-m river seines were *Notropis petersoni* (69.0% occurrence), *Callinectes sapidus* (54.8% occurrence), and *Micropterus salmoides* (50.0% occurrence).

A total of 1,075 animals from 12 selected taxa were collected, representing 8.9% of the entire 21.3-m river seine catch (Table 4.21). *Brevoortia spp.* (n=673), and *Callinectes sapidus* (n=223) were the most abundant selected taxa, accounting for 83.3% of the selected taxa collected by this gear. The selected taxa most frequently caught in 21.3-m river seines were *Callinectes sapidus* (54.8% occurrence) and *Farfantepenaeus spp.* (11.9% occurrence).

**Table 4.20:** Catch statistics for 10 dominant taxa collected in 84 21.3-m river seine samples during Apalachicola Bay stratified-random sampling, 2022.

Species	Number			Density Estimate (animals/100m <sup>2</sup> )				Standard Length (mm)			
	No.	%	% Occur	Mean	Stderr	CV	Max	Mean	Stderr	Min	Max
<i>Anchoa mitchilli</i>	5,074	41.9	28.6	89.90	40.45	409.89	2,902.94	28	0.07	15	51
<i>Notropis petersoni</i>	2,469	20.4	69.0	43.75	7.16	149.02	339.71	33	0.14	17	55
<i>Brevoortia</i> spp.	673	5.6	10.7	11.92	11.23	857.98	932.35	24	0.06	20	28
<i>Menidia</i> spp.	665	5.5	27.4	11.78	4.61	356.70	304.41	42	0.28	20	71
<i>Lucania parva</i>	399	3.3	47.6	7.07	2.37	305.87	176.47	22	0.20	11	35
<i>Micropterus salmoides</i>	384	3.2	50.0	6.64	4.00	555.26	338.24	39	2.33	17	407
<i>Gambusia holbrooki</i>	278	2.3	27.4	4.93	2.09	385.67	154.41	21	0.30	14	36
<i>Eucinostomus</i> spp.	266	2.2	26.2	4.71	1.97	381.34	130.88	21	0.42	11	39
<i>Callinectes sapidus</i>	223	1.8	54.8	3.95	0.75	172.43	30.88	18	1.09	5	142
<i>Trinectes maculatus</i>	197	1.6	39.3	3.49	0.87	226.00	47.06	17	0.50	8	58
Subtotals	10,628	87.8	.	.	.	.	.	.	.	5	407
<b>Totals</b>	<b>12,105</b>	<b>100.0</b>	.	<b>214.48</b>	<b>44.19</b>	<b>188.82</b>	<b>2,935.29</b>	.	.	<b>3</b>	<b>560</b>

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.

**Table 4.21:** Catch statistics for selected taxa collected in 84 21.3-m river seine samples during Apalachicola Bay stratified-random sampling, 2022.

Species	Number			Density Estimate (animals/100m <sup>2</sup> )				Standard Length (mm)			
	No.	%	% Occur	Mean	Stderr	CV	Max	Mean	Stderr	Min	Max
<i>Brevoortia</i> spp.	673	5.6	10.7	11.78	11.10	863.14	932.35	24	0.06	20	28
<i>Callinectes sapidus</i>	223	1.8	54.8	3.90	0.74	173.80	30.88	18	1.09	5	142
<i>Mugil cephalus</i>	63	0.5	3.6	1.10	1.05	872.95	88.24	25	0.23	21	29
<i>Farfantepenaeus</i> spp.	37	0.3	11.9	0.65	0.27	375.20	16.18	7	0.35	4	14
<i>Litopenaeus setiferus</i>	32	0.3	11.9	0.56	0.24	388.51	16.18	5	0.30	3	9
<i>Sciaenops ocellatus</i>	24	0.2	2.4	0.42	0.30	653.26	20.59	27	1.73	15	45
<i>Mugil curema</i>	7	0.1	1.2	0.12	0.12	916.52	10.29	23	0.31	22	24
<i>Leiostomus xanthurus</i>	4	<0.1	1.2	0.07	0.07	916.52	5.88	16	0.29	15	16
<i>Micropogonias undulatus</i>	4	<0.1	3.6	0.07	0.04	555.59	2.94	15	1.93	10	19
<i>Paralichthys lethostigma</i>	4	<0.1	4.8	0.07	0.03	449.90	1.47	245	61.16	151	425
<i>Cynoscion nebulosus</i>	3	<0.1	1.2	0.05	0.05	916.52	4.41	29	1.00	28	31
<i>Farfantepenaeus aztecus</i>	1	<0.1	1.2	0.02	0.02	916.52	1.47	17	.	17	17
<b>Totals</b>	<b>1,075</b>	<b>8.9</b>	<b>.</b>	<b>18.82</b>	<b>11.13</b>	<b>542.10</b>	<b>932.35</b>	<b>.</b>	<b>.</b>	<b>3</b>	<b>425</b>

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.

### **6.1-m River Otter Trawls**

A total of 18,303 animals were collected in 24 6.1-m river otter trawls, representing 14.4% of the overall SRS catch (Table 4.13). *Anchoa mitchilli* (n=15,188) was the most abundant taxon collected, accounting for 83% of the 6.1-m river otter trawl catch (Table 4.22). The taxa most frequently caught in 6.1-m river otter trawls were *Anchoa mitchilli* (66.7% occurrence), *Callinectes sapidus* (62.5% occurrence), and *Trinectes maculatus* (58.3% occurrence).

A total of 2,228 animals from 13 selected taxa were collected, representing 12.2% of the entire 6.1-m river otter trawl catch (Table 4.23). *Cynoscion arenarius* (n=1,179), *Litopenaeus setiferus* (n=624), and *Micropogonias undulatus* (n=215) were the most abundant selected taxa, accounting for 90.6% of the selected taxa collected by this gear. The selected taxa most frequently caught in the 6.1-m river otter trawls were *Callinectes sapidus* (62.5% occurrence) and *Micropogonias undulatus* (50.0% occurrence).

**Table 4.22:** Catch statistics for 10 dominant taxa collected in 24 6.1-m river otter trawl samples during Apalachicola Bay stratified-random sampling, 2022.

Species	Number			Density Estimate (animals/100m <sup>2</sup> )				Standard Length (mm)			
	No.	%	% Occur	Mean	Stderr	CV	Max	Mean	Stderr	Min	Max
<i>Anchoa mitchilli</i>	15,188	83.0	66.7	77.87	31.48	202.13	591.61	27	0.08	15	68
<i>Cynoscion arenarius</i>	1,179	6.4	41.7	6.44	3.51	267.33	72.85	36	0.52	10	94
<i>Litopenaeus setiferus</i>	624	3.4	37.5	3.45	1.96	278.07	45.06	14	0.15	4	21
<i>Notropis texanus</i>	253	1.4	12.5	1.21	0.93	376.32	21.36	19	0.16	12	25
<i>Micropogonias undulatus</i>	215	1.2	50.0	1.07	0.49	232.86	9.71	28	2.03	6	189
<i>Eucinostomus</i> spp.	180	1.0	33.3	0.94	0.48	251.89	8.32	25	0.41	15	39
<i>Callinectes sapidus</i>	134	0.7	62.5	0.70	0.44	306.12	10.55	18	2.32	3	184
<i>Trinectes maculatus</i>	125	0.7	58.3	0.66	0.30	223.05	6.26	25	1.24	8	70
<i>Ictalurus furcatus</i>	87	0.5	16.7	0.45	0.31	354.93	7.83	117	7.04	64	340
<i>Ictalurus punctatus</i>	75	0.4	37.5	0.41	0.23	274.32	5.26	91	4.30	35	253
Subtotals	18,060	98.7	.	.	.	.	.	.	.	3	340
<b>Totals</b>	<b>18,303</b>	<b>100.0</b>	.	<b>97.90</b>	<b>34.95</b>	<b>174.91</b>	<b>649.62</b>	.	.	<b>3</b>	<b>422</b>

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.

**Table 4.23:** Catch statistics for selected taxa collected in 24 6.1-m river otter trawl samples during Apalachicola Bay stratified-random sampling, 2022.

Species	Number			Density Estimate (animals/100m <sup>2</sup> )				Standard Length (mm)			
	No.	%	% Occur	Mean	Stderr	CV	Max	Mean	Stderr	Min	Max
<i>Cynoscion arenarius</i>	1,179	6.4	41.7	6.44	3.51	267.33	72.85	36	0.52	10	94
<i>Litopenaeus setiferus</i>	624	3.4	37.5	3.45	1.96	278.07	45.06	14	0.15	4	21
<i>Micropogonias undulatus</i>	215	1.2	50.0	1.16	0.54	228.03	9.71	28	2.03	6	189
<i>Callinectes sapidus</i>	134	0.7	62.5	0.70	0.44	306.12	10.55	18	2.32	3	184
<i>Leiostomus xanthurus</i>	41	0.2	12.5	0.23	0.21	440.84	4.99	34	4.38	17	129
<i>Sciaenops ocellatus</i>	13	0.1	8.3	0.07	0.06	418.09	1.48	17	0.88	15	26
<i>Farfantepenaeus</i> spp.	7	<0.1	8.3	0.04	0.02	339.31	0.45	8	0.90	4	11
<i>Cynoscion nebulosus</i>	5	<0.1	20.8	0.03	0.01	199.64	0.15	84	22.60	13	141
<i>Paralichthys lethostigma</i>	4	<0.1	16.7	0.02	0.01	228.42	0.13	173	29.50	123	252
<i>Archosargus probatocephalus</i>	3	<0.1	8.3	0.02	0.01	354.03	0.25	191	51.24	96	272
<i>Farfantepenaeus duorarum</i>	1	<0.1	4.2	0.01	0.01	489.90	0.13	16	.	16	16
<i>Lutjanus griseus</i>	1	<0.1	4.2	0.01	0.01	489.90	0.12	52	.	52	52
<i>Pogonias cromis</i>	1	<0.1	4.2	0.01	0.01	489.90	0.12	275	.	275	275
<b>Totals</b>	<b>2,228</b>	<b>12.2</b>	<b>.</b>	<b>12.17</b>	<b>5.51</b>	<b>221.88</b>	<b>118.86</b>	<b>.</b>	<b>.</b>	<b>3</b>	<b>275</b>

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.

Appendix

**Table 4.24:** Monthly summary of taxa collected during Apalachicola Bay stratified-random sampling, 2022.

Taxa	Month												Totals
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
	E=43	E=45	E=49	E=57	E=49	E=45	E=61	E=45	E=49	E=57	E=49	E=45	
<i>Acanthostracion quadricornis</i>	.	.	.	3	.	.	3	.	.	.	.	2	8
<i>Achirus lineatus</i>	.	.	.	.	.	.	.	1	2	1	.	.	4
<i>Aetobatus narinari</i>	.	.	.	.	.	.	1	.	.	.	.	.	1
<i>Alosa chrysochloris</i>	.	3	1	.	.	.	.	.	.	.	.	.	4
<i>Aluterus heudelotii</i>	.	.	.	1	.	.	.	.	.	.	.	.	1
<i>Aluterus schoepfii</i>	.	.	.	.	.	.	.	1	.	.	.	.	1
<i>Ameiurus catus</i>	.	.	5	.	2	.	1	.	.	2	.	.	10
<i>Anchoa cubana</i>	.	.	.	18	.	.	78	14	.	1,651	.	.	1,761
<i>Anchoa hepsetus</i>	4	1	.	5	43	14	18	13	8	8	7	.	121
<i>Anchoa lyolepis</i>	25	.	.	11	.	5	.	5	.	.	.	.	46
<i>Anchoa mitchilli</i>	779	1	9	1,842	5,333	1,251	10,532	1,462	1,125	1,351	4,153	498	28,336
<i>Anchoa</i> spp.	1	.	.	.	2	.	21,900	.	1	.	.	.	21,904
<i>Ancylosetta quadrocellata</i>	6	.	3	9	.	.	2	1	.	4	2	3	30
<i>Aphredoderus sayanus</i>	.	.	.	.	1	.	.	.	.	.	.	.	1
<b><i>Archosargus probatocephalus</i></b>	.	<b>6</b>	<b>3</b>	<b>18</b>	<b>18</b>	<b>9</b>	<b>4</b>	<b>8</b>	<b>16</b>	<b>4</b>	<b>3</b>	<b>8</b>	<b>97</b>
<i>Arenaeus cribrarius</i>	.	.	.	.	.	.	3	.	.	.	.	.	3
<i>Argopecten irradians</i>	.	.	.	.	.	.	2	.	.	.	.	.	2

Taxa	Month												Totals
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
	E=43	E=45	E=49	E=57	E=49	E=45	E=61	E=45	E=49	E=57	E=49	E=45	
<i>Ariopsis felis</i>	5	3	2	22	30	25	62	36	55	228	11	4	483
<i>Astroscoptes y-graecum</i>	.	.	.	1	.	.	.	.	.	.	.	.	1
<i>Bagre marinus</i>	.	.	.	1	1	.	6	21	11	3	5	.	48
<i>Bairdiella chrysoura</i>	3	42	146	32	797	578	559	466	286	96	46	580	3,631
<i>Bathygobius soporator</i>	1	.	.	1	.	.	.	.	.	.	.	.	2
<b>Brevoortia spp.</b>	<b>36</b>	<b>246</b>	<b>69</b>	<b>1,672</b>	<b>93</b>	<b>57</b>	<b>22</b>	<b>97</b>	<b>5</b>	<b>14</b>	.	<b>5</b>	<b>2,316</b>
<b>Calamus arctifrons</b>	.	.	.	.	.	.	.	.	.	<b>3</b>	.	.	<b>3</b>
<i>Callinectes ornatus</i>	.	.	.	.	.	.	4	.	.	.	.	.	4
<b>Callinectes sapidus</b>	<b>301</b>	<b>122</b>	<b>227</b>	<b>54</b>	<b>32</b>	<b>58</b>	<b>215</b>	<b>96</b>	<b>48</b>	<b>90</b>	<b>54</b>	<b>70</b>	<b>1,367</b>
<i>Callinectes similis</i>	15	3	1	24	.	.	.	1	.	1	.	.	45
<i>Callinectes spp.</i>	.	.	.	.	1	.	1	.	.	.	.	.	2
<b>Caranx hippos</b>	.	.	.	.	.	<b>3</b>	.	<b>7</b>	<b>12</b>	<b>2</b>	.	<b>1</b>	<b>25</b>
<i>Caranx latus</i>	.	.	.	.	.	2	.	.	6	3	.	2	13
<b>Centropristis philadelphia</b>	.	.	.	.	.	.	<b>1</b>	.	.	.	.	.	<b>1</b>
<b>Centropristis striata</b>	<b>1</b>	.	<b>1</b>	<b>6</b>	.	.	<b>1</b>	<b>1</b>	.	<b>7</b>	.	<b>1</b>	<b>18</b>
<i>Chaetodipterus faber</i>	.	.	.	1	.	4	4	5	.	2	.	.	16
<i>Chasmodes saburrae</i>	.	.	.	.	.	.	.	7	2	.	1	.	10
<i>Chilomycterus schoepfii</i>	.	.	3	5	1	3	3	1	2	5	3	7	33
<i>Chloroscombrus chrysurus</i>	8	.	.	21	15	29	207	3	3	4	.	.	290
<i>Citharichthys macrops</i>	.	.	2	7	.	.	3	.	.	1	2	2	17

Taxa	Month												Totals
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
	E=43	E=45	E=49	E=57	E=49	E=45	E=61	E=45	E=49	E=57	E=49	E=45	
<i>Citharichthys spilopterus</i>	17	5	6	58	25	.	7	6	40	4	1	3	172
<i>Clupeidae</i> spp.	.	1	.	.	3	.	1	.	.	.	.	.	5
<i>Ctenogobius boleosoma</i>	223	495	516	162	83	98	94	45	19	161	100	29	2,025
<i>Ctenogobius shufeldti</i>	.	.	.	.	1	.	.	.	.	.	.	.	1
<i>Ctenogobius</i> sp.	.	.	.	.	.	.	1	.	.	.	.	.	1
<i>Ctenogobius stigmaticus</i>	1	.	.	.	.	.	.	.	.	.	.	.	1
<b><i>Cynoscion arenarius</i></b>	<b>26</b>	.	.	<b>168</b>	<b>18</b>	<b>132</b>	<b>1,477</b>	<b>180</b>	<b>37</b>	<b>59</b>	<b>77</b>	.	<b>2,174</b>
<b><i>Cynoscion nebulosus</i></b>	<b>2</b>	<b>11</b>	<b>1</b>	<b>4</b>	<b>68</b>	<b>51</b>	<b>179</b>	<b>173</b>	<b>103</b>	<b>78</b>	<b>42</b>	<b>28</b>	<b>740</b>
<b><i>Cynoscion nothus</i></b>	.	.	.	<b>3</b>	.	.	.	.	.	.	.	.	<b>3</b>
<i>Cyprinodon variegatus</i>	.	.	10	.	.	.	.	.	.	.	.	.	10
<i>Dasyatis americana</i>	.	.	.	.	2	2	.	.	1	.	.	.	5
<i>Dasyatis sabina</i>	9	15	30	139	104	98	27	75	49	78	38	87	749
<i>Dasyatis say</i>	.	.	1	.	11	9	2	5	3	.	1	.	32
<i>Diplectrum bivittatum</i>	1	.	.	.	.	.	.	.	.	1	.	.	2
<b><i>Diplectrum formosum</i></b>	<b>3</b>	.	.	<b>1</b>	.	.	<b>1</b>	<b>1</b>	.	.	.	.	<b>6</b>
<i>Diplectrum</i> spp.	.	.	.	.	.	.	2	.	.	.	.	.	2
<i>Dorosoma cepedianum</i>	.	.	.	.	15	.	.	.	.	25	1	.	41
<i>Dorosoma petenense</i>	1	.	.	2	2	732	11	4	83	.	.	.	835
<i>Echeneis neucratoides</i>	.	.	1	.	.	.	2	.	2	.	.	.	5
<i>Elassoma zonatum</i>	.	.	.	.	1	.	.	.	.	.	.	.	1

Taxa	Month												Totals
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
	E=43	E=45	E=49	E=57	E=49	E=45	E=61	E=45	E=49	E=57	E=49	E=45	E=594
<i>Elops saurus</i>	.	.	.	.	7	14	2	17	54	17	17	2	130
<i>Enneacanthus gloriosus</i>	5	2	7	6	54	16	17	7	21	.	.	.	135
<i>Erimyzon sucetta</i>	1	.	1	.	11	.	.	.	.	1	.	.	14
<i>Esox niger</i>	.	.	.	1	1	.	.	.	.	.	.	.	2
<i>Esox</i> sp.	.	1	.	.	.	.	.	.	.	.	.	.	1
<i>Etopus crossotus</i>	46	.	2	14	.	.	48	17	14	84	4	37	266
<i>Etopus cyclosquamus</i>	.	.	.	.	.	.	6	.	.	.	.	.	6
<i>Eucinostomus argenteus</i>	.	.	.	.	.	.	14	.	2	.	1	.	17
<i>Eucinostomus gula</i>	7	.	.	1	1	1	33	27	24	52	28	414	588
<i>Eucinostomus harengulus</i>	15	1	.	.	1	.	62	30	93	22	47	41	312
<i>Eucinostomus</i> spp.	3	.	.	.	.	78	472	1,110	439	328	478	26	2,934
<i>Farfantepenaeus aztecus</i>	1	.	.	.	1	1	6	.	.	3	.	.	12
<i>Farfantepenaeus duorarum</i>	74	.	20	127	1	2	27	4	2	7	4	1	269
<i>Farfantepenaeus</i> spp.	42	10	40	32	6	27	135	194	195	249	335	198	1,463
<i>Fundulus chrysotus</i>	1	1	3	11	16	1	4	3	3	8	.	.	51
<i>Fundulus confluentus</i>	.	1	.	.	.	.	.	.	.	.	.	.	1
<i>Fundulus grandis</i>	.	36	12	3	.	.	8	15	.	11	5	10	100
<i>Fundulus similis</i>	.	23	1	2	5	.	10	5	13	1	.	56	116
<i>Gambusia holbrooki</i>	124	92	22	1	3	.	1	1	2	19	14	.	279
<i>Gobiidae</i> spp.	.	.	.	.	.	1	5	.	.	.	.	.	6

Taxa	Month												Totals
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
	E=43	E=45	E=49	E=57	E=49	E=45	E=61	E=45	E=49	E=57	E=49	E=45	E=594
<i>Gobionellus oceanicus</i>	7	1	.	.	.	.	2	.	.	1	.	.	11
<i>Gobiosoma bosc</i>	8	7	4	.	1	7	9	10	4	12	3	12	77
<i>Gobiosoma longipala</i>	.	.	.	2	.	.	.	.	.	.	.	.	2
<i>Gobiosoma robustum</i>	1	6	13	1	.	1	1	.	.	1	4	4	32
<i>Gobiosoma</i> spp.	3	1	1	.	.	4	4	2	8	4	11	14	52
<i>Gymnura micrura</i>	.	.	.	1	3	1	5	7	.	1	.	.	18
<i>Harengula jaguana</i>	.	2	.	.	.	15	24	152	106	2	14	.	315
<i>Hemicaranx amblyrhynchus</i>	.	.	.	.	.	.	.	.	.	2	.	.	2
<i>Heterandria formosa</i>	15	6	20	2	15	1	4	1	.	2	2	.	68
<i>Hippocampus erectus</i>	1	.	.	.	.	.	1	.	1	.	.	1	4
<i>Hippocampus zosterae</i>	.	.	.	.	.	.	.	1	1	.	.	.	2
<i>Hyporhamphus meeki</i>	.	.	.	.	.	.	.	.	.	.	.	2	2
<i>Hyporhamphus</i> sp.	.	.	.	.	.	1	.	.	.	.	.	.	1
<i>Hypsoblennius hentz</i>	1	.	.	.	.	.	.	.	.	.	3	.	4
<i>Ictaluridae</i> sp.	.	.	.	.	1	.	.	.	.	.	.	.	1
<i>Ictalurus furcatus</i>	79	.	8	.	.	.	.	.	.	.	.	.	87
<i>Ictalurus punctatus</i>	15	.	45	.	.	24	.	.	16	.	.	.	100
<i>Labidesthes sicculus</i>	.	1	1	.	.	.	2	.	.	.	.	1	5
<i>Lagodon rhomboides</i>	161	634	1,440	677	1,802	1,050	652	825	1,396	872	493	145	10,147
<i>Larimus fasciatus</i>	.	.	.	.	.	.	.	.	.	1	.	.	1

Taxa	Month												Totals
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
	E=43	E=45	E=49	E=57	E=49	E=45	E=61	E=45	E=49	E=57	E=49	E=45	
<i>Leiostomus xanthurus</i>	83	633	1,563	259	250	119	211	640	215	148	113	56	4,290
<i>Lepisosteus oculatus</i>	1	.	1	1	3	.	1	1	2	.	.	1	11
<i>Lepisosteus osseus</i>	.	.	.	3	.	1	.	2	1	.	.	.	7
<i>Lepomis macrochirus</i>	1	.	.	7	1	.	3	3	.	1	2	2	20
<i>Lepomis microlophus</i>	24	35	6	5	6	.	.	9	8	14	10	5	122
<i>Lepomis punctatus</i>	10	8	30	21	17	8	14	4	17	1	11	3	144
<i>Lepomis</i> spp.	.	3	1	.	47	1	2	.	3	.	2	1	60
<i>Limulus polyphemus</i>	.	.	.	.	.	.	.	.	.	1	.	.	1
<i>Litopenaeus setiferus</i>	120	5	24	115	5	18	1,648	358	1,107	589	240	8	4,237
<i>Lobotes surinamensis</i>	1	.	.	.	.	.	.	6	3	1	.	.	11
<i>Lucania goodei</i>	.	.	2	.	.	.	3	8	1	2	.	1	17
<i>Lucania parva</i>	17	176	47	23	1,040	482	700	303	343	69	205	267	3,672
<i>Lutjanus griseus</i>	.	.	.	.	.	1	13	10	17	3	.	.	44
<i>Lutjanus synagris</i>	.	.	.	.	.	1	21	19	6	16	2	1	66
<i>Membras martinica</i>	.	.	.	10	69	372	20	60	.	.	48	.	579
<i>Menidia</i> spp.	90	29	82	52	1,998	257	2,630	1,107	256	362	37	54	6,954
<i>Menippe</i> spp.	4	.	.	18	.	.	.	.	.	6	1	.	29
<i>Menticirrhus americanus</i>	9	.	2	30	24	41	51	16	25	18	11	5	232
<i>Menticirrhus littoralis</i>	.	.	.	.	.	.	1	.	2	1	.	.	4
<i>Menticirrhus saxatilis</i>	2	.	.	10	5	4	1	.	.	1	.	.	23

Taxa	Month												Totals
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
	E=43	E=45	E=49	E=57	E=49	E=45	E=61	E=45	E=49	E=57	E=49	E=45	E=594
<i>Microdesmus longipinnis</i>	.	.	.	.	.	.	1	.	.	.	.	.	1
<i>Microgobius gulosus</i>	4	2	15	1	36	28	62	26	11	19	88	106	398
<i>Microgobius thalassinus</i>	3	.	.	1	.	6	70	.	2	9	1	.	92
<b><i>Micropogonias undulatus</i></b>	<b>3,650</b>	<b>86</b>	<b>3,328</b>	<b>725</b>	<b>159</b>	<b>39</b>	<b>321</b>	<b>559</b>	<b>517</b>	<b>139</b>	<b>315</b>	<b>110</b>	<b>9,948</b>
<i>Micropterus salmoides</i>	9	7	6	248	98	11	19	7	19	8	1	5	438
<i>Minytrema melanops</i>	.	.	.	.	1	.	.	.	.	.	.	.	1
<i>Monacanthus ciliatus</i>	.	.	.	.	.	.	2	.	.	6	.	.	8
<b><i>Mugil cephalus</i></b>	<b>30</b>	<b>252</b>	<b>817</b>	<b>284</b>	<b>207</b>	<b>59</b>	<b>182</b>	<b>81</b>	<b>132</b>	<b>238</b>	<b>228</b>	<b>208</b>	<b>2,718</b>
<b><i>Mugil curema</i></b>	<b>3</b>	<b>73</b>	<b>40</b>	<b>140</b>	<b>39</b>	<b>77</b>	<b>8</b>	<b>38</b>	<b>62</b>	<b>77</b>	<b>12</b>	<b>4</b>	<b>573</b>
<i>Mugil spp.</i>	.	.	.	.	.	.	.	2	.	.	.	.	2
<b><i>Mycteroperca microlepis</i></b>	.	.	.	.	.	4	6	11	5	.	.	.	26
<i>Narcine bancroftii</i>	.	.	.	1	.	.	.	.	.	.	.	.	1
<b><i>Negaprion brevirostris</i></b>	.	.	.	.	.	1	1	.	.	.	.	.	2
<i>Notemigonus crysoleucas</i>	1	.	1	3	7	.	7	47	26	1	2	7	102
<i>Notropis maculatus</i>	.	.	.	.	.	.	.	.	.	2	.	.	2
<i>Notropis petersoni</i>	23	326	214	244	196	393	220	484	166	144	67	88	2,565
<i>Notropis texanus</i>	.	.	.	6	253	.	.	.	.	.	.	.	259
<i>Noturus gyrinus</i>	.	.	.	.	.	3	.	.	.	.	.	.	3
<i>Ogocephalus cubifrons</i>	.	.	7	6	2	.	2	.	.	1	.	4	22
<i>Oligoplites saurus</i>	.	.	.	.	3	11	30	14	11	.	1	.	70

Taxa	Month												Totals
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
	E=43	E=45	E=49	E=57	E=49	E=45	E=61	E=45	E=49	E=57	E=49	E=45	E=594
<i>Ophichthus gomesii</i>	.	.	.	.	.	.	.	.	.	1	.	.	1
<i>Opisthonema oglinum</i>	.	.	.	2	.	2	.	.	1	.	.	.	5
<i>Opsanus beta</i>	.	.	.	1	.	2	1	1	.	1	.	.	6
<i>Orthopristis chrysoptera</i>	2	.	3	95	651	363	191	115	113	161	18	2	1,714
<i>Paralichthyidae</i> spp.	.	1	.	.	1	.	.	.	.	.	.	.	2
<b><i>Paralichthys albigutta</i></b>	<b>2</b>	<b>2</b>	<b>12</b>	<b>21</b>	<b>21</b>	<b>16</b>	<b>28</b>	<b>17</b>	<b>9</b>	<b>14</b>	<b>5</b>	<b>13</b>	<b>160</b>
<b><i>Paralichthys lethostigma</i></b>	<b>3</b>	<b>3</b>	<b>5</b>	<b>8</b>	<b>7</b>	<b>2</b>	<b>2</b>	<b>3</b>	<b>2</b>	.	<b>3</b>	.	<b>38</b>
<i>Paralichthys squamilentus</i>	.	.	2	.	.	1	.	.	.	.	.	.	3
<i>Penaeidae</i> spp.	.	.	.	.	.	1	.	.	.	2	.	.	3
<i>Peprilus burti</i>	1	1	6	11	.	.	.	.	.	.	1	.	20
<i>Peprilus paru</i>	5	.	.	4	.	4	5	9	.	5	.	.	32
<i>Peprilus</i> sp.	1	.	.	.	.	.	.	.	.	.	.	.	1
<i>Poecilia latipinna</i>	.	.	.	.	.	.	.	1	.	2	.	.	3
<b><i>Pogonias cromis</i></b>	.	<b>19</b>	.	<b>7</b>	<b>4</b>	<b>15</b>	<b>3</b>	<b>14</b>	<b>16</b>	<b>9</b>	<b>12</b>	<b>3</b>	<b>102</b>
<b><i>Pomatomus saltatrix</i></b>	.	.	<b>1</b>	<b>1</b>	<b>2</b>	.	<b>1</b>	<b>1</b>	<b>1</b>	.	.	.	<b>7</b>
<i>Pomoxis nigromaculatus</i>	.	.	.	.	1	.	.	.	.	.	.	.	1
<i>Porichthys plectrodon</i>	.	.	.	.	.	.	1	.	.	.	.	.	1
<i>Portunus</i> spp.	9	1	.	12	.	1	60	.	.	11	.	.	94
<i>Prionotus longispinosus</i>	.	.	.	1	.	.	.	.	.	.	.	.	1
<i>Prionotus rubio</i>	12	.	.	7	.	.	1	.	.	.	.	.	20

Taxa	Month												Totals
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
	E=43	E=45	E=49	E=57	E=49	E=45	E=61	E=45	E=49	E=57	E=49	E=45	E=594
<i>Prionotus scitulus</i>	16	2	2	39	.	4	23	1	1	5	.	6	99
<i>Prionotus tribulus</i>	33	4	1	10	.	3	4	2	.	3	3	6	69
<i>Rhinoptera bonasus</i>	.	.	.	2	.	3	.	.	.	12	.	2	19
<i>Rimapenaeus constrictus</i>	.	.	.	4	.	.	1	.	.	.	.	.	5
<i>Rimapenaeus similis</i>	7	.	.	15	.	.	2	.	.	.	.	.	24
<i>Rimapenaeus</i> spp.	16	2	.	11	.	.	24	.	.	8	7	2	70
<i>Sciaenidae</i> spp.	.	.	.	.	.	.	2	.	.	1	.	.	3
<b><i>Sciaenops ocellatus</i></b>	<b>8</b>	<b>51</b>	<b>52</b>	<b>34</b>	<b>46</b>	<b>71</b>	<b>18</b>	<b>26</b>	<b>47</b>	<b>138</b>	<b>144</b>	<b>93</b>	<b>728</b>
<b><i>Scomberomorus maculatus</i></b>	.	.	.	.	.	.	.	.	<b>4</b>	.	.	.	<b>4</b>
<i>Selene vomer</i>	.	.	.	.	.	.	.	.	3	7	1	1	12
<i>Serraniculus pumilio</i>	2	.	.	4	.	.	1	.	.	3	.	.	10
<i>Serranus subligarius</i>	1	.	.	.	.	.	2	1	.	2	.	.	6
<i>Sicyonia dorsalis</i>	1	.	.	.	.	.	.	.	.	.	.	.	1
<i>Sicyonia laevigata</i>	.	.	.	1	.	.	.	.	.	.	.	.	1
<i>Sphoeroides nephelus</i>	.	.	.	4	7	9	3	2	.	1	3	2	31
<i>Sphoeroides parvus</i>	3	.	.	.	.	.	.	.	.	.	.	.	3
<i>Sphoeroides</i> spp.	1	.	.	1	24	4	.	.	.	4	3	3	40
<b><i>Sphyraena barracuda</i></b>	.	.	.	.	.	.	.	.	.	<b>3</b>	.	.	<b>3</b>
<i>Sphyraena borealis</i>	.	.	.	.	.	4	.	.	.	.	.	.	4
<b><i>Sphyra tiburo</i></b>	.	.	.	.	<b>2</b>	.	.	<b>4</b>	<b>1</b>	.	.	.	<b>7</b>

Taxa	Month												Totals
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
	E=43	E=45	E=49	E=57	E=49	E=45	E=61	E=45	E=49	E=57	E=49	E=45	E=594
<i>Stellifer lanceolatus</i>	.	.	.	.	.	.	29	.	.	.	.	.	29
<i>Stephanolepis hispidus</i>	1	.	.	.	.	2	9	1	.	19	.	.	32
<i>Strongylura marina</i>	.	11	2	2	9	14	5	4	5	.	.	1	53
<i>Strongylura notata</i>	.	.	.	2	1	1	8	8	6	7	.	.	33
<i>Strongylura</i> spp.	.	.	.	8	27	2	.	.	.	.	.	.	37
<i>Symphurus plagiusa</i>	3	1	4	6	.	.	13	1	1	19	3	14	65
<i>Syngnathus floridae</i>	4	.	.	.	1	1	1	10	6	11	3	1	38
<i>Syngnathus louisianae</i>	2	.	.	2	1	3	11	6	1	2	2	.	30
<i>Syngnathus scovelli</i>	11	15	9	7	36	21	30	41	27	12	25	23	257
<i>Synodus foetens</i>	3	.	.	8	8	17	24	7	1	13	6	5	92
<b><i>Trachinotus carolinus</i></b>	.	.	.	.	.	<b>5</b>	<b>15</b>	.	.	.	.	.	<b>20</b>
<b><i>Trachinotus falcatus</i></b>	.	.	.	.	.	.	<b>13</b>	<b>1</b>	<b>5</b>	<b>5</b>	<b>1</b>	.	<b>25</b>
<i>Trinectes maculatus</i>	12	60	57	55	24	3	81	1	18	40	72	4	427
<i>Tylosurus crocodilus</i>	.	.	.	.	.	.	1	2	2	.	.	.	5
<i>Urophycis floridana</i>	7	2	4	12	.	.	.	.	.	.	.	1	26
<i>Urophycis</i> sp.	.	.	.	.	.	.	.	.	.	.	.	1	1
<b>Totals</b>	<b>6,329</b>	<b>3,589</b>	<b>9,023</b>	<b>7,782</b>	<b>13,970</b>	<b>6,916</b>	<b>43,853</b>	<b>9,257</b>	<b>7,540</b>	<b>7,984</b>	<b>7,719</b>	<b>3,413</b>	<b>127,375</b>

Effort, or total number of hauls, is labeled 'E'. Taxa are arranged alphabetically. Selected taxa are highlighted in bold.

**Table 4.25:** Summary by gear and stratum of taxa collected during Apalachicola Bay stratified-random sampling, 2022.

Taxa	Gear and Strata						Totals
	21.3-m bay seine			21.3-m river seine	183-m haul seine	6.1-m otter trawl	
	Veg	Unveg	Shore				
	E=74	E=58	E=108	E=84	E=198	E=72	
<i>Acanthostracion quadricornis</i>	.	.	.	.	4	4	8
<i>Achirus lineatus</i>	1	.	3	.	.	.	4
<i>Aetobatus narinari</i>	.	.	.	.	1	.	1
<i>Alosa chrysochloris</i>	.	.	.	.	4	.	4
<i>Aluterus heudelotii</i>	.	.	.	.	1	.	1
<i>Aluterus schoepfii</i>	1	.	.	.	.	.	1
<i>Ameiurus catus</i>	.	.	.	5	.	5	10
<i>Anchoa cubana</i>	67	8	7	.	.	1,679	1,761
<i>Anchoa hepsetus</i>	18	59	21	.	.	23	121
<i>Anchoa lyolepis</i>	3	5	2	.	.	36	46
<i>Anchoa mitchilli</i>	1,402	905	2,193	5,074	1	18,761	28,336
<i>Anchoa</i> spp.	1	1	3	.	.	21,899	21,904
<i>Ancylopsetta quadrocellata</i>	.	.	.	.	12	18	30
<i>Aphredoderus sayanus</i>	.	.	1	.	.	.	1
<b><i>Archosargus probatocephalus</i></b>	<b>1</b>	.	<b>4</b>	.	<b>89</b>	<b>3</b>	<b>97</b>
<i>Arenaeus cribrarius</i>	.	1	.	.	2	.	3
<b><i>Argopecten irradians</i></b>	.	.	.	.	.	<b>2</b>	<b>2</b>
<i>Ariopsis felis</i>	2	30	55	.	111	285	483
<i>Astroscopus y-graecum</i>	.	.	.	.	.	1	1
<i>Bagre marinus</i>	.	1	1	.	39	7	48
<i>Bairdiella chrysoura</i>	1,564	78	557	33	1,228	171	3,631
<i>Bathygobius soporator</i>	.	.	2	.	.	.	2
<b><i>Brevoortia</i> spp.</b>	<b>41</b>	<b>585</b>	<b>666</b>	<b>673</b>	<b>348</b>	<b>3</b>	<b>2,316</b>
<b><i>Calamus arctifrons</i></b>	.	.	.	.	.	<b>3</b>	<b>3</b>
<i>Callinectes ornatus</i>	.	.	.	.	.	4	4
<b><i>Callinectes sapidus</i></b>	<b>158</b>	<b>130</b>	<b>496</b>	<b>223</b>	<b>111</b>	<b>249</b>	<b>1,367</b>

Taxa	Gear and Strata						Totals
	21.3-m bay seine			21.3-m river seine	183-m haul seine	6.1-m otter trawl	
	Veg	Unveg	Shore				
	E=74	E=58	E=108	E=84	E=198	E=72	
<i>Callinectes similis</i>	.	.	4	.	1	40	45
<i>Callinectes</i> spp.	1	.	.	.	.	1	2
<b><i>Caranx hippos</i></b>	.	.	<b>6</b>	.	<b>19</b>	.	<b>25</b>
<i>Caranx latus</i>	.	2	3	.	8	.	13
<b><i>Centropristis philadelphica</i></b>	.	.	.	.	.	<b>1</b>	<b>1</b>
<b><i>Centropristis striata</i></b>	<b>2</b>	.	.	.	<b>2</b>	<b>14</b>	<b>18</b>
<i>Chaetodipterus faber</i>	1	.	5	.	5	5	16
<i>Chasmodes saburrae</i>	10	.	.	.	.	.	10
<i>Chilomycterus schoepfii</i>	2	2	1	.	22	6	33
<i>Chloroscombrus chrysurus</i>	1	.	6	.	250	33	290
<i>Citharichthys macrops</i>	.	.	.	.	8	9	17
<i>Citharichthys spilopterus</i>	1	2	18	1	124	26	172
<i>Clupeidae</i> spp.	.	.	.	1	.	4	5
<i>Ctenogobius boleosoma</i>	406	175	1,122	184	.	138	2,025
<i>Ctenogobius shufeldti</i>	.	.	.	.	.	1	1
<i>Ctenogobius</i> sp.	.	.	1	.	.	.	1
<i>Ctenogobius stigmaticus</i>	.	.	.	.	.	1	1
<b><i>Cynoscion arenarius</i></b>	<b>7</b>	<b>64</b>	<b>485</b>	.	<b>3</b>	<b>1,615</b>	<b>2,174</b>
<b><i>Cynoscion nebulosus</i></b>	<b>295</b>	<b>54</b>	<b>218</b>	<b>3</b>	<b>164</b>	<b>6</b>	<b>740</b>
<b><i>Cynoscion nothus</i></b>	.	.	.	.	.	<b>3</b>	<b>3</b>
<i>Cyprinodon variegatus</i>	.	.	10	.	.	.	10
<i>Dasyatis americana</i>	.	.	.	.	5	.	5
<i>Dasyatis sabina</i>	3	4	15	.	691	36	749
<i>Dasyatis say</i>	.	1	.	.	31	.	32
<i>Diplectrum bivittatum</i>	.	.	.	.	.	2	2
<b><i>Diplectrum formosum</i></b>	<b>1</b>	.	.	.	.	<b>5</b>	<b>6</b>
<i>Diplectrum</i> spp.	.	.	.	.	.	2	2
<i>Dorosoma cepedianum</i>	.	.	.	.	41	.	41

Taxa	Gear and Strata						Totals
	21.3-m bay seine			21.3-m river seine	183-m haul seine	6.1-m otter trawl	
	Veg	Unveg	Shore				
	E=74	E=58	E=108	E=84	E=198	E=72	
<i>Dorosoma petenense</i>	1	1	732	89	6	6	835
<i>Echeneis neucratoides</i>	.	.	.	.	5	.	5
<i>Elassoma zonatum</i>	.	.	.	1	.	.	1
<b><i>Elops saurus</i></b>	.	.	<b>2</b>	.	<b>128</b>	.	<b>130</b>
<i>Enneacanthus gloriosus</i>	2	.	.	133	.	.	135
<i>Erimyzon sucetta</i>	.	.	4	10	.	.	14
<i>Esox niger</i>	.	.	.	2	.	.	2
<i>Esox</i> sp.	.	.	.	1	.	.	1
<i>Etropus crossotus</i>	1	2	2	.	73	188	266
<i>Etropus cyclosquamus</i>	.	.	.	.	.	6	6
<i>Eucinostomus argenteus</i>	2	2	1	.	.	12	17
<i>Eucinostomus gula</i>	22	18	90	1	427	30	588
<i>Eucinostomus harengulus</i>	38	13	106	36	96	23	312
<i>Eucinostomus</i> spp.	838	103	1,519	266	6	202	2,934
<b><i>Farfantepenaeus aztecus</i></b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>5</b>	<b>3</b>	<b>12</b>
<b><i>Farfantepenaeus duorarum</i></b>	<b>6</b>	.	<b>4</b>	.	<b>64</b>	<b>195</b>	<b>269</b>
<b><i>Farfantepenaeus</i> spp.</b>	<b>417</b>	<b>128</b>	<b>789</b>	<b>37</b>	<b>17</b>	<b>75</b>	<b>1,463</b>
<i>Fundulus chrysotus</i>	.	.	1	50	.	.	51
<i>Fundulus confluentus</i>	.	.	.	1	.	.	1
<i>Fundulus grandis</i>	.	.	30	.	70	.	100
<i>Fundulus similis</i>	1	.	19	.	96	.	116
<i>Gambusia holbrooki</i>	.	.	1	278	.	.	279
<i>Gobiidae</i> spp.	.	.	.	1	.	5	6
<i>Gobionellus oceanicus</i>	.	1	.	2	.	8	11
<i>Gobiosoma bosc</i>	12	2	21	36	.	6	77
<i>Gobiosoma longipala</i>	.	.	.	.	.	2	2
<i>Gobiosoma robustum</i>	26	1	5	.	.	.	32
<i>Gobiosoma</i> spp.	12	6	6	24	.	4	52

Taxa	Gear and Strata						Totals
	21.3-m bay seine			21.3-m river seine	183-m haul seine	6.1-m otter trawl	
	Veg	Unveg	Shore				
	E=74	E=58	E=108	E=84	E=198	E=72	
<i>Gymnura micrura</i>	.	.	.	.	14	4	18
<i>Harengula jaguana</i>	28	.	3	.	282	2	315
<i>Hemicaranx amblyrhynchus</i>	.	.	1	.	.	1	2
<i>Heterandria formosa</i>	.	.	.	68	.	.	68
<i>Hippocampus erectus</i>	2	.	1	.	.	1	4
<i>Hippocampus zosterae</i>	1	1	.	.	.	.	2
<i>Hyporhamphus meeki</i>	.	.	.	.	2	.	2
<i>Hyporhamphus</i> sp.	.	.	.	.	1	.	1
<i>Hypsoblennius hentz</i>	4	.	.	.	.	.	4
<i>Ictaluridae</i> sp.	.	.	.	.	.	1	1
<i>Ictalurus furcatus</i>	.	.	.	.	.	87	87
<i>Ictalurus punctatus</i>	.	.	.	25	.	75	100
<i>Labidesthes sicculus</i>	.	.	.	5	.	.	5
<i>Lagodon rhomboides</i>	3,155	42	311	53	6,353	233	10,147
<i>Larimus fasciatus</i>	.	.	1	.	.	.	1
<b><i>Leiostomus xanthurus</i></b>	<b>1,137</b>	<b>611</b>	<b>605</b>	<b>4</b>	<b>1,826</b>	<b>107</b>	<b>4,290</b>
<i>Lepisosteus oculatus</i>	.	.	.	10	1	.	11
<i>Lepisosteus osseus</i>	.	.	.	1	5	1	7
<i>Lepomis macrochirus</i>	.	.	.	20	.	.	20
<i>Lepomis microlophus</i>	1	.	.	109	.	12	122
<i>Lepomis punctatus</i>	.	.	2	141	.	1	144
<i>Lepomis</i> spp.	.	1	5	54	.	.	60
<i>Limulus polyphemus</i>	.	.	.	.	1	.	1
<b><i>Litopenaeus setiferus</i></b>	<b>542</b>	<b>86</b>	<b>1,416</b>	<b>32</b>	<b>1,189</b>	<b>972</b>	<b>4,237</b>
<b><i>Lobotes surinamensis</i></b>	.	.	.	.	<b>10</b>	<b>1</b>	<b>11</b>
<i>Lucania goodei</i>	.	.	.	17	.	.	17
<i>Lucania parva</i>	935	2	2,330	399	.	6	3,672
<b><i>Lutjanus griseus</i></b>	<b>8</b>	.	<b>13</b>	.	<b>18</b>	<b>5</b>	<b>44</b>

Taxa	Gear and Strata						Totals
	21.3-m bay seine			21.3-m river seine	183-m haul seine	6.1-m otter trawl	
	Veg	Unveg	Shore				
	E=74	E=58	E=108	E=84	E=198	E=72	
<i>Lutjanus synagris</i>	20	7	6	.	5	28	66
<i>Membras martinica</i>	15	77	487	.	.	.	579
<i>Menidia</i> spp.	2,171	483	3,628	665	7	.	6,954
<i>Menippe</i> spp.	1	.	.	.	.	28	29
<i>Menticirrhus americanus</i>	4	60	76	.	31	61	232
<i>Menticirrhus littoralis</i>	.	1	1	.	2	.	4
<i>Menticirrhus saxatilis</i>	1	2	19	.	.	1	23
<i>Microdesmus longipinnis</i>	.	1	.	.	.	.	1
<i>Microgobius gulosus</i>	201	15	149	28	.	5	398
<i>Microgobius thalassinus</i>	.	13	46	.	.	33	92
<i>Micropogonias undulatus</i>	3,165	453	794	4	1,626	3,906	9,948
<i>Micropterus salmoides</i>	38	.	13	384	1	2	438
<i>Minytrema melanops</i>	.	.	.	1	.	.	1
<i>Monacanthus ciliatus</i>	.	.	.	.	.	8	8
<i>Mugil cephalus</i>	3	2	1,058	63	1,592	.	2,718
<i>Mugil curema</i>	.	5	98	7	463	.	573
<i>Mugil</i> spp.	.	.	.	.	2	.	2
<i>Mycteroperca microlepis</i>	2	.	.	.	24	.	26
<i>Narcine bancroftii</i>	.	.	.	.	.	1	1
<i>Negaprion brevirostris</i>	.	.	.	.	2	.	2
<i>Notemigonus crysoleucas</i>	1	.	.	101	.	.	102
<i>Notropis maculatus</i>	.	.	.	2	.	.	2
<i>Notropis petersoni</i>	14	.	72	2,469	.	10	2,565
<i>Notropis texanus</i>	.	.	.	6	.	253	259
<i>Noturus gyrinus</i>	.	.	.	3	.	.	3
<i>Ogcocephalus cubifrons</i>	.	.	.	.	20	2	22
<i>Oligoplites saurus</i>	9	5	37	4	14	1	70
<i>Ophichthus gomesii</i>	.	1	.	.	.	.	1

Taxa	Gear and Strata						Totals
	21.3-m bay seine			21.3-m river seine	183-m haul seine	6.1-m otter trawl	
	Veg	Unveg	Shore				
	E=74	E=58	E=108	E=84	E=198	E=72	
<i>Opisthonema oglinum</i>	.	1	.	.	2	2	5
<i>Opsanus beta</i>	1	.	.	.	2	3	6
<i>Orthopristis chrysoptera</i>	944	33	204	.	305	228	1,714
<i>Paralichthyidae</i> spp.	.	1	.	.	1	.	2
<b><i>Paralichthys albigutta</i></b>	<b>3</b>	<b>5</b>	<b>11</b>	.	<b>123</b>	<b>18</b>	<b>160</b>
<b><i>Paralichthys lethostigma</i></b>	<b>1</b>	.	<b>4</b>	<b>4</b>	<b>23</b>	<b>6</b>	<b>38</b>
<b><i>Paralichthys squamilentus</i></b>	.	.	<b>2</b>	.	<b>1</b>	.	<b>3</b>
<i>Penaeidae</i> spp.	.	1	2	.	.	.	3
<i>Peprilus burti</i>	1	.	.	.	7	12	20
<i>Peprilus paru</i>	.	.	.	.	19	13	32
<i>Peprilus</i> sp.	.	.	.	.	.	1	1
<i>Poecilia latipinna</i>	.	.	1	.	2	.	3
<b><i>Pogonias cromis</i></b>	.	.	<b>4</b>	.	<b>97</b>	<b>1</b>	<b>102</b>
<b><i>Pomatomus saltatrix</i></b>	<b>1</b>	.	.	.	<b>6</b>	.	<b>7</b>
<i>Pomoxis nigromaculatus</i>	.	.	.	1	.	.	1
<i>Porichthys plectrodon</i>	.	.	.	.	.	1	1
<i>Portunus</i> spp.	1	2	.	.	.	91	94
<i>Prionotus longispinosus</i>	.	.	.	.	.	1	1
<i>Prionotus rubio</i>	.	.	.	.	.	20	20
<i>Prionotus scitulus</i>	1	3	2	.	11	82	99
<i>Prionotus tribulus</i>	.	5	6	.	11	47	69
<i>Rhinoptera bonasus</i>	.	.	.	.	19	.	19
<i>Rimapenaeus constrictus</i>	.	.	.	.	.	5	5
<i>Rimapenaeus similis</i>	.	.	.	.	.	24	24
<i>Rimapenaeus</i> spp.	7	8	1	.	.	54	70
<i>Sciaenidae</i> spp.	.	.	1	.	.	2	3
<b><i>Sciaenops ocellatus</i></b>	<b>15</b>	<b>24</b>	<b>180</b>	<b>24</b>	<b>472</b>	<b>13</b>	<b>728</b>
<b><i>Scomberomorus maculatus</i></b>	.	.	.	.	<b>4</b>	.	<b>4</b>

Taxa	Gear and Strata						Totals
	21.3-m bay seine			21.3-m river seine	183-m haul seine	6.1-m otter trawl	
	Veg	Unveg	Shore				
	E=74	E=58	E=108	E=84	E=198	E=72	
<i>Selene vomer</i>	.	.	.	.	10	2	12
<i>Serraniculus pumilio</i>	.	.	.	.	.	10	10
<i>Serranus subligarius</i>	2	.	.	.	.	4	6
<i>Sicyonia dorsalis</i>	.	.	.	.	.	1	1
<i>Sicyonia laevigata</i>	.	.	.	.	.	1	1
<i>Sphoeroides nephelus</i>	4	3	13	.	5	6	31
<i>Sphoeroides parvus</i>	.	.	.	.	.	3	3
<i>Sphoeroides</i> spp.	10	9	21	.	.	.	40
<b><i>Sphyraena barracuda</i></b>	.	.	.	.	<b>3</b>	.	<b>3</b>
<i>Sphyraena borealis</i>	4	.	.	.	.	.	4
<b><i>Sphyrna tiburo</i></b>	.	.	.	.	<b>7</b>	.	<b>7</b>
<i>Stellifer lanceolatus</i>	.	.	.	.	.	29	29
<i>Stephanolepis hispidus</i>	7	.	.	.	1	24	32
<i>Strongylura marina</i>	1	4	21	.	27	.	53
<i>Strongylura notata</i>	1	1	17	.	14	.	33
<i>Strongylura</i> spp.	5	11	17	3	1	.	37
<i>Symphurus plagiusa</i>	1	12	21	2	2	27	65
<i>Syngnathus floridae</i>	26	.	1	.	.	11	38
<i>Syngnathus louisianae</i>	4	4	6	.	.	16	30
<i>Syngnathus scovelli</i>	163	7	37	33	.	17	257
<i>Synodus foetens</i>	8	23	18	.	17	26	92
<b><i>Trachinotus carolinus</i></b>	.	.	<b>4</b>	.	<b>16</b>	.	<b>20</b>
<b><i>Trachinotus falcatus</i></b>	.	.	<b>6</b>	.	<b>19</b>	.	<b>25</b>
<i>Trinectes maculatus</i>	.	1	3	197	14	212	427
<i>Tylosurus crocodilus</i>	.	.	.	.	5	.	5
<i>Urophycis floridana</i>	6	.	2	.	1	17	26
<i>Urophycis</i> sp.	.	.	1	.	.	.	1
<b>Totals</b>	<b>18,043</b>	<b>4,411</b>	<b>21,016</b>	<b>12,105</b>	<b>19,056</b>	<b>52,744</b>	<b>127,375</b>

Taxa	Gear and Strata					Totals	
	21.3-m bay seine			21.3-m river seine	183-m haul seine		6.1-m otter trawl
	Veg	Unveg	Shore				
	E=74	E=58	E=108	E=84	E=198		E=72

Sampling with 21.3-m bay seine was stratified by the presence or absence of a shoreline ('Shore' or offshore) within 5-m. Offshore sets were further stratified by the presence or absence of bottom vegetation ('Veg' or 'Unveg'). Sampling with 21.3-m river seine and 183-m haul seine was stratified by the presence or absence of overhanging vegetation ('Over' or 'Nonover'). Sampling with 6.1-m otter trawl was not stratified. Effort, or the total number of hauls, is labeled 'E'. Taxa are arranged alphabetically. Selected taxa are highlighted in bold.

**Table 4.26:** Summary by zone of taxa collected during Apalachicola Bay stratified-random sampling, 2022.

Taxa	Zone			Totals
	A	B	C	
	E=244	E=242	E=108	E=594
<i>Acanthostracion quadricornis</i>	.	8	.	8
<i>Achirus lineatus</i>	.	4	.	4
<i>Aetobatus narinari</i>	.	1	.	1
<i>Alosa chrysochloris</i>	3	1	.	4
<i>Aluterus heudelotii</i>	.	1	.	1
<i>Aluterus schoepfii</i>	.	1	.	1
<i>Ameiurus catus</i>	.	.	10	10
<i>Anchoa cubana</i>	8	1,753	.	1,761
<i>Anchoa hepsetus</i>	93	28	.	121
<i>Anchoa lyolepis</i>	30	16	.	46
<i>Anchoa mitchilli</i>	4,891	3,183	20,262	28,336
<i>Anchoa</i> spp.	21,891	12	1	21,904
<i>Ancylopsetta quadrocellata</i>	16	14	.	30
<i>Aphredoderus sayanus</i>	1	.	.	1
<b><i>Archosargus probatocephalus</i></b>	<b>51</b>	<b>43</b>	<b>3</b>	<b>97</b>
<i>Arenaeus cribrarius</i>	.	3	.	3
<b><i>Argopecten irradians</i></b>	.	<b>2</b>	.	<b>2</b>
<i>Ariopsis felis</i>	401	71	11	483
<i>Astroscopus y-graecum</i>	1	.	.	1
<i>Bagre marinus</i>	27	19	2	48
<i>Bairdiella chrysoura</i>	2,189	1,406	36	3,631
<i>Bathygobius soporator</i>	.	2	.	2
<b><i>Brevoortia</i> spp.</b>	<b>1,625</b>	<b>18</b>	<b>673</b>	<b>2,316</b>
<b><i>Calamus arctifrons</i></b>	.	<b>3</b>	.	<b>3</b>
<i>Callinectes ornatus</i>	3	1	.	4
<b><i>Callinectes sapidus</i></b>	<b>791</b>	<b>219</b>	<b>357</b>	<b>1,367</b>
<i>Callinectes similis</i>	37	8	.	45

Taxa	Zone			Totals
	A	B	C	
	E=244	E=242	E=108	E=594
<i>Callinectes</i> spp.	1	1	.	2
<b><i>Caranx hippos</i></b>	<b>14</b>	<b>11</b>	.	<b>25</b>
<i>Caranx latus</i>	9	4	.	13
<b><i>Centropristis philadelphica</i></b>	<b>1</b>	.	.	<b>1</b>
<b><i>Centropristis striata</i></b>	.	<b>18</b>	.	<b>18</b>
<i>Chaetodipterus faber</i>	9	7	.	16
<i>Chasmodes saburrae</i>	1	9	.	10
<i>Chilomycterus schoepfii</i>	1	32	.	33
<i>Chloroscombrus chrysurus</i>	68	222	.	290
<i>Citharichthys macrops</i>	2	15	.	17
<i>Citharichthys spilopterus</i>	167	4	1	172
<i>Clupeidae</i> spp.	.	.	5	5
<i>Ctenogobius boleosoma</i>	1,663	135	227	2,025
<i>Ctenogobius shufeldti</i>	.	.	1	1
<i>Ctenogobius</i> sp.	1	.	.	1
<i>Ctenogobius stigmaticus</i>	1	.	.	1
<b><i>Cynoscion arenarius</i></b>	<b>889</b>	<b>106</b>	<b>1,179</b>	<b>2,174</b>
<b><i>Cynoscion nebulosus</i></b>	<b>518</b>	<b>214</b>	<b>8</b>	<b>740</b>
<b><i>Cynoscion nothus</i></b>	.	<b>3</b>	.	<b>3</b>
<i>Cyprinodon variegatus</i>	.	10	.	10
<i>Dasyatis americana</i>	.	5	.	5
<i>Dasyatis sabina</i>	452	295	2	749
<i>Dasyatis say</i>	11	21	.	32
<i>Diplectrum bivittatum</i>	.	2	.	2
<b><i>Diplectrum formosum</i></b>	.	<b>6</b>	.	<b>6</b>
<i>Diplectrum</i> spp.	2	.	.	2
<i>Dorosoma cepedianum</i>	40	1	.	41
<i>Dorosoma petenense</i>	736	5	94	835
<i>Echeneis neucratoides</i>	.	5	.	5

Taxa	Zone			Totals
	A	B	C	
	E=244	E=242	E=108	E=594
<i>Elassoma zonatum</i>	.	.	1	1
<b><i>Elops saurus</i></b>	<b>102</b>	<b>28</b>	.	<b>130</b>
<i>Enneacanthus gloriosus</i>	2	.	133	135
<i>Erimyzon sucetta</i>	4	.	10	14
<i>Esox niger</i>	.	.	2	2
<i>Esox</i> sp.	.	.	1	1
<i>Etropus crossotus</i>	166	100	.	266
<i>Etropus cyclosquamus</i>	2	4	.	6
<i>Eucinostomus argenteus</i>	14	3	.	17
<i>Eucinostomus gula</i>	56	531	1	588
<i>Eucinostomus harengulus</i>	125	131	56	312
<i>Eucinostomus</i> spp.	1,181	1,307	446	2,934
<b><i>Farfantepenaeus aztecus</i></b>	<b>11</b>	.	<b>1</b>	<b>12</b>
<b><i>Farfantepenaeus duorarum</i></b>	<b>136</b>	<b>132</b>	<b>1</b>	<b>269</b>
<b><i>Farfantepenaeus</i> spp.</b>	<b>648</b>	<b>771</b>	<b>44</b>	<b>1,463</b>
<i>Fundulus chrysotus</i>	1	.	50	51
<i>Fundulus confluentus</i>	.	.	1	1
<i>Fundulus grandis</i>	27	73	.	100
<i>Fundulus similis</i>	35	81	.	116
<i>Gambusia holbrooki</i>	1	.	278	279
Gobiidae spp.	1	4	1	6
<i>Gobionellus oceanicus</i>	8	1	2	11
<i>Gobiosoma bosc</i>	26	9	42	77
<i>Gobiosoma longipala</i>	.	2	.	2
<i>Gobiosoma robustum</i>	2	30	.	32
<i>Gobiosoma</i> spp.	9	16	27	52
<i>Gymnura micrura</i>	2	16	.	18
<i>Harengula jaguana</i>	109	206	.	315
<i>Hemicaranx amblyrhynchus</i>	2	.	.	2

Taxa	Zone			Totals
	A	B	C	
	E=244	E=242	E=108	E=594
<i>Heterandria formosa</i>	.	.	68	68
<i>Hippocampus erectus</i>	2	2	.	4
<i>Hippocampus zosterae</i>	.	2	.	2
<i>Hyporhamphus meeki</i>	.	2	.	2
<i>Hyporhamphus</i> sp.	1	.	.	1
<i>Hypsoblennius hentz</i>	.	4	.	4
<i>Ictaluridae</i> sp.	.	.	1	1
<i>Ictalurus furcatus</i>	.	.	87	87
<i>Ictalurus punctatus</i>	.	.	100	100
<i>Labidesthes sicculus</i>	.	.	5	5
<i>Lagodon rhomboides</i>	3,260	6,825	62	10,147
<i>Larimus fasciatus</i>	.	1	.	1
<b><i>Leiostomus xanthurus</i></b>	<b>2,168</b>	<b>2,077</b>	<b>45</b>	<b>4,290</b>
<i>Lepisosteus oculatus</i>	1	.	10	11
<i>Lepisosteus osseus</i>	4	2	1	7
<i>Lepomis macrochirus</i>	.	.	20	20
<i>Lepomis microlophus</i>	1	.	121	122
<i>Lepomis punctatus</i>	2	.	142	144
<i>Lepomis</i> spp.	6	.	54	60
<i>Limulus polyphemus</i>	.	1	.	1
<b><i>Litopenaeus setiferus</i></b>	<b>3,265</b>	<b>316</b>	<b>656</b>	<b>4,237</b>
<b><i>Lobotes surinamensis</i></b>	<b>10</b>	<b>1</b>	.	<b>11</b>
<i>Lucania goodei</i>	.	.	17	17
<i>Lucania parva</i>	3,267	.	405	3,672
<b><i>Lutjanus griseus</i></b>	<b>33</b>	<b>10</b>	<b>1</b>	<b>44</b>
<b><i>Lutjanus synagris</i></b>	<b>20</b>	<b>46</b>	.	<b>66</b>
<i>Membras martinica</i>	556	23	.	579
<i>Menidia</i> spp.	5,556	733	665	6,954
<b><i>Menippe</i> spp.</b>	.	<b>29</b>	.	<b>29</b>

Taxa	Zone			Totals
	A	B	C	
	E=244	E=242	E=108	E=594
<b><i>Menticirrhus americanus</i></b>	118	114	.	232
<b><i>Menticirrhus littoralis</i></b>	.	4	.	4
<b><i>Menticirrhus saxatilis</i></b>	8	15	.	23
<i>Microdesmus longipinnis</i>	1	.	.	1
<i>Microgobius gulosus</i>	139	226	33	398
<i>Microgobius thalassinus</i>	63	28	1	92
<b><i>Micropogonias undulatus</i></b>	<b>8,574</b>	<b>1,155</b>	<b>219</b>	<b>9,948</b>
<i>Micropterus salmoides</i>	52	.	386	438
<i>Minytrema melanops</i>	.	.	1	1
<i>Monacanthus ciliatus</i>	.	8	.	8
<b><i>Mugil cephalus</i></b>	<b>2,136</b>	<b>519</b>	<b>63</b>	<b>2,718</b>
<b><i>Mugil curema</i></b>	<b>304</b>	<b>262</b>	<b>7</b>	<b>573</b>
<i>Mugil</i> spp.	.	2	.	2
<b><i>Mycteroperca microlepis</i></b>	<b>21</b>	<b>5</b>	.	<b>26</b>
<i>Narcine bancroftii</i>	.	1	.	1
<b><i>Negaprion brevirostris</i></b>	<b>1</b>	<b>1</b>	.	<b>2</b>
<i>Notemigonus crysoleucas</i>	1	.	101	102
<i>Notropis maculatus</i>	.	.	2	2
<i>Notropis petersoni</i>	86	.	2,479	2,565
<i>Notropis texanus</i>	.	.	259	259
<i>Noturus gyrinus</i>	.	.	3	3
<i>Ogcocephalus cubifrons</i>	1	21	.	22
<i>Oligoplites saurus</i>	43	22	5	70
<i>Ophichthus gomesii</i>	1	.	.	1
<i>Opisthonema oglinum</i>	1	4	.	5
<i>Opsanus beta</i>	.	6	.	6
<i>Orthopristis chrysoptera</i>	547	1,167	.	1,714
<i>Paralichthyidae</i> spp.	2	.	.	2
<b><i>Paralichthys albigutta</i></b>	<b>56</b>	<b>104</b>	.	<b>160</b>

Taxa	Zone			Totals
	A	B	C	
	E=244	E=242	E=108	E=594
<b><i>Paralichthys lethostigma</i></b>	29	1	8	38
<b><i>Paralichthys squamilentus</i></b>	2	1	.	3
<i>Penaeidae</i> spp.	1	2	.	3
<i>Peprilus burti</i>	5	15	.	20
<i>Peprilus paru</i>	27	5	.	32
<i>Peprilus</i> sp.	1	.	.	1
<i>Poecilia latipinna</i>	.	3	.	3
<b><i>Pogonias cromis</i></b>	63	38	1	102
<b><i>Pomatomus saltatrix</i></b>	4	3	.	7
<i>Pomoxis nigromaculatus</i>	.	.	1	1
<i>Porichthys plectrodon</i>	.	1	.	1
<i>Portunus</i> spp.	9	85	.	94
<i>Prionotus longispinosus</i>	1	.	.	1
<i>Prionotus rubio</i>	3	17	.	20
<i>Prionotus scitulus</i>	12	87	.	99
<i>Prionotus tribulus</i>	39	28	2	69
<i>Rhinoptera bonasus</i>	15	4	.	19
<i>Rimapenaeus constrictus</i>	1	4	.	5
<i>Rimapenaeus similis</i>	18	6	.	24
<i>Rimapenaeus</i> spp.	31	39	.	70
<i>Sciaenidae</i> spp.	3	.	.	3
<b><i>Sciaenops ocellatus</i></b>	440	251	37	728
<b><i>Scomberomorus maculatus</i></b>	4	.	.	4
<i>Selene vomer</i>	5	7	.	12
<i>Serraniculus pumilio</i>	1	9	.	10
<i>Serranus subligarius</i>	.	6	.	6
<i>Sicyonia dorsalis</i>	1	.	.	1
<i>Sicyonia laevigata</i>	.	1	.	1
<i>Sphoeroides nephelus</i>	4	27	.	31

Taxa	Zone			Totals
	A	B	C	
	E=244	E=242	E=108	E=594
<i>Spherooides parvus</i>	.	3	.	3
<i>Spherooides</i> spp.	5	35	.	40
<b><i>Sphyraena barracuda</i></b>	.	<b>3</b>	.	<b>3</b>
<i>Sphyraena borealis</i>	.	4	.	4
<b><i>Sphyrna tiburo</i></b>	<b>2</b>	<b>5</b>	.	<b>7</b>
<i>Stellifer lanceolatus</i>	29	.	.	29
<i>Stephanolepis hispidus</i>	.	32	.	32
<i>Strongylura marina</i>	26	27	.	53
<i>Strongylura notata</i>	13	20	.	33
<i>Strongylura</i> spp.	26	8	3	37
<i>Symphurus plagiusa</i>	36	24	5	65
<i>Syngnathus floridae</i>	1	37	.	38
<i>Syngnathus louisianae</i>	14	16	.	30
<i>Syngnathus scovelli</i>	101	115	41	257
<i>Synodus foetens</i>	27	65	.	92
<b><i>Trachinotus carolinus</i></b>	.	<b>20</b>	.	<b>20</b>
<b><i>Trachinotus falcatus</i></b>	<b>9</b>	<b>16</b>	.	<b>25</b>
<i>Trinectes maculatus</i>	41	64	322	427
<i>Tylosurus crocodilus</i>	1	4	.	5
<i>Urophycis floridana</i>	6	20	.	26
<i>Urophycis</i> sp.	1	.	.	1
<b>Totals</b>	<b>70,678</b>	<b>26,289</b>	<b>30,408</b>	<b>127,375</b>

Zones A and B were located in Apalachicola Bay, and Zone C encompassed the lower Apalachicola River. Effort, or the total number of hauls, is labeled 'E'. Taxa are arranged alphabetically. selected taxa are highlighted in bold.

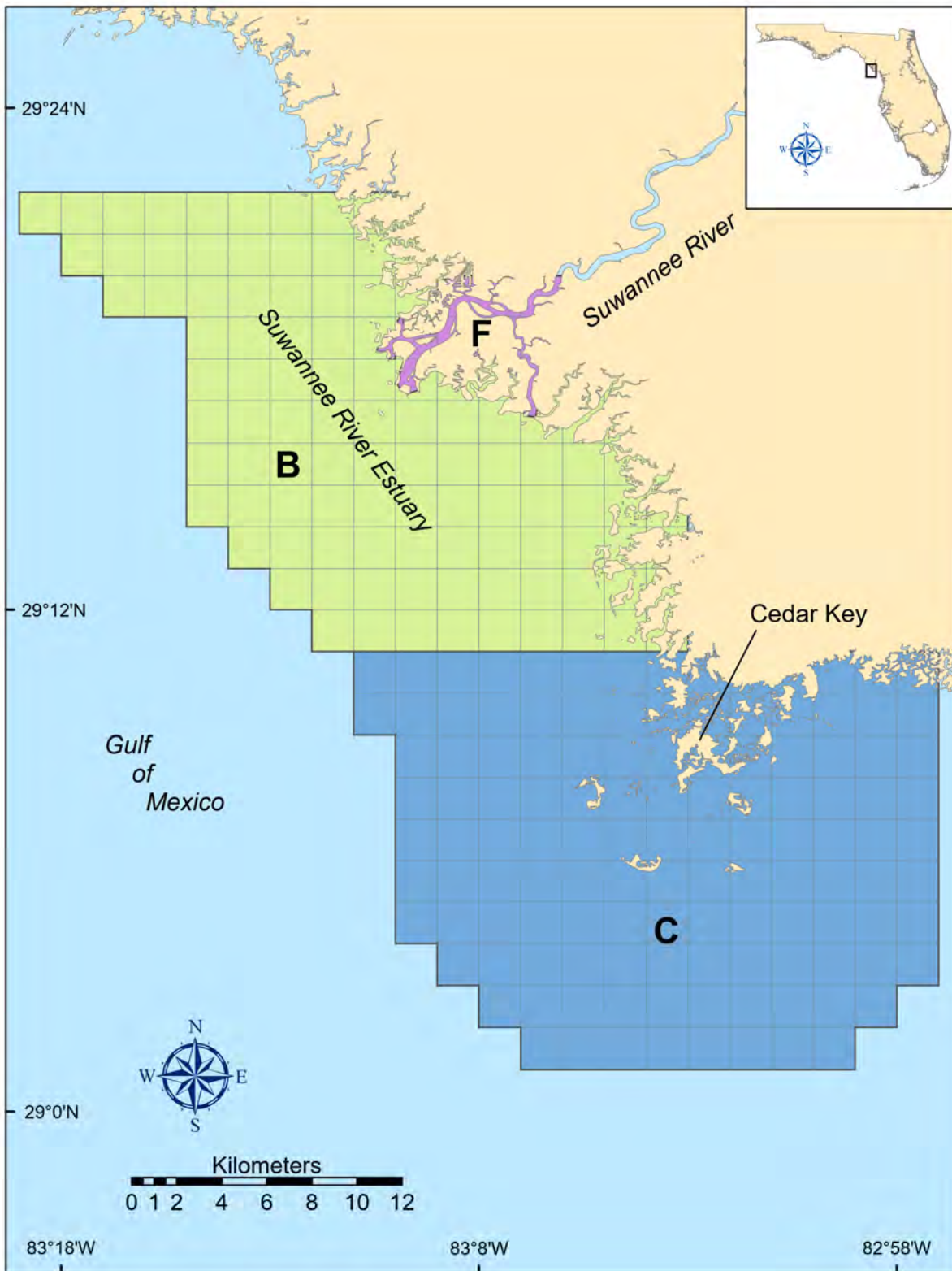
## 4.4 Cedar Key

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

The Fisheries-Independent Monitoring (FIM) program has conducted intensive sampling in the Cedar Key area since 1996. The area sampled was divided into two geographically-defined bay zones (B and C) and one riverine zone (F; Figure 4.4). Monthly stratified-random sampling (SRS) was conducted in Zones B and C using 21.3-m bay seines, 183-m haul seines, and 6.1-m bay otter trawls. Tidal creeks in Zone B were sampled using 21.3-m river seines. Monthly SRS was conducted in Zone F with 21.3-m river seines and 6.1-m river otter trawls. All methods were the same as those described in Chapter 2. This section summarizes data collected by the FIM program during 2022 in the Cedar Key area.

### Stratified-Random Sampling

A total of 112,806 animals, which included 144 taxa of fishes and 9 taxa of selected invertebrates, were collected from 652 Cedar Key SRS samples in 2022 (Table 4.27). *Anchoa mitchilli* (n=73,243) was the most numerous taxon collected, representing 64.9% of the total catch. *Menidia spp.* (n=3,957) and *Eucinostomus spp.* (n=3,332) were the next most abundant taxa collected, accounting for an additional 6.5% of the total catch. A total of 37 selected taxa (n=12,552 animals) composed 11.1% of the total catch. *Litopenaeus setiferus* (n=2,776) was the most abundant Selected Taxon, representing 2.5% of the total catch. *Mugil cephalus* (n=2,372), *Leiostomus xanthurus* (n=924), *Menticirrhus americanus* (n=856), and *Farfantepenaeus spp.* (n=720) were the next most abundant selected taxa, comprising 4.3% of the total catch. Collections in 2022 included 0 species new to the CK FIM collection..



**Figure 4.4:** Map of Cedar Key sampling area. Zones are labeled B, C, and F. Grids containing portions of Zones B and F are labeled B/F.

**Table 4.27:** Summary of catch and effort data for Cedar Key stratified-random sampling, 2022.

Zone	21.3-m bay seine		21.3-m river seine		183-m haul seine		6.1-m otter trawl		Totals	
	Animals	Hauls	Animals	Hauls	Animals	Hauls	Animals	Hauls	Animals	Hauls
<b>B</b>	17,434	120	45,616	108	7,164	96	1,740	20	71,954	344
<b>C</b>	11,843	132	.	.	9,292	96	1,228	20	22,363	248
<b>F</b>	.	.	18,489	60	.	.	.	.	18,489	60
<b>Totals</b>	<b>29,277</b>	<b>252</b>	<b>64,105</b>	<b>168</b>	<b>16,456</b>	<b>192</b>	<b>2,968</b>	<b>40</b>	<b>112,806</b>	<b>652</b>

## Bay Sampling

### *21.3-m Bay Seines*

A total of 29,277 animals were collected in 252 21.3-m bay seines, representing 26% of the overall SRS catch (Table 4.27). *Anchoa mitchilli* (n=18,958) and *Eucinostomus spp.* (n=2,097) were the most abundant taxa, accounting for 71.9% of the bay seine catch (Table 4.28). The taxa most frequently caught in 21.3-m bay seines were *Anchoa mitchilli* (32.1% occurrence) and *Lagodon rhomboides* (30.6% occurrence).

A total of 2,630 animals from 29 selected taxa were collected, representing 9% of the entire 21.3-m bay seine catch (Table 4.29). *Farfantepenaeus spp.* (n=636) was the most abundant Selected Taxon, accounting for 24.2% of the selected taxa collected by this gear. The selected taxa most frequently caught in 21.3-m bay seines were *Callinectes sapidus* (23.8% occurrence) and *Mentirrhhus americanus* (20.6% occurrence).

**Table 4.28:** Catch statistics for 10 dominant taxa collected in 252 21.3-m bay seine samples during Cedar Key stratified-random sampling, 2022.

Species	Number			Density Estimate (animals/100m <sup>2</sup> )				Standard Length (mm)			
	No.	%	% Occur	Mean	Stderr	CV	Max	Mean	Stderr	Min	Max
<i>Anchoa mitchilli</i>	18,958	64.8	32.1	55.73	19.74	552.23	3,601.43	27	0.07	15	78
<i>Eucinostomus</i> spp.	2,097	7.2	24.6	6.16	2.09	528.54	363.57	28	0.18	11	42
<i>Menidia</i> spp.	1,588	5.4	26.2	4.67	1.26	420.11	153.57	61	0.32	35	96
<i>Lagodon rhomboides</i>	760	2.6	30.6	2.20	0.48	343.57	75.00	43	0.75	13	143
<i>Farfantepenaeus</i> spp.	636	2.2	18.7	1.87	0.85	707.33	197.86	8	0.09	3	14
<i>Menticirrhus americanus</i>	545	1.9	20.6	1.60	0.61	590.53	115.00	38	0.98	10	219
<i>Ariopsis felis</i>	522	1.8	14.3	1.53	0.53	538.51	96.43	171	3.02	45	320
<i>Orthopristis chrysoptera</i>	333	1.1	6.7	0.97	0.64	1,026.39	150.71	33	0.64	11	68
<i>Bairdiella chrysoura</i>	329	1.1	9.1	0.95	0.62	1,016.18	150.00	40	1.64	12	149
<i>Eucinostomus gula</i>	323	1.1	19.0	0.95	0.26	422.26	45.00	54	0.50	40	87
Subtotals	26,091	89.2	.	.	.	.	.	.	.	3	320
<b>Totals</b>	<b>29,277</b>	<b>100.0</b>	.	<b>86.06</b>	<b>19.94</b>	<b>367.81</b>	<b>3,628.57</b>	.	.	<b>3</b>	<b>572</b>

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.

**Table 4.29:** Catch statistics for selected taxa collected in 252 21.3-m bay seine samples during Cedar Key stratified-random sampling, 2022.

Species	Number			Density Estimate (animals/100m <sup>2</sup> )				Standard Length (mm)			
	No.	%	% Occur	Mean	Stderr	CV	Max	Mean	Stderr	Min	Max
<i>Farfantepenaeus</i> spp.	636	2.2	18.7	1.80	0.82	720.51	197.86	8	0.09	3	14
<i>Menticirrhus americanus</i>	545	1.9	20.6	1.54	0.59	601.63	115.00	38	0.98	10	219
<i>Cynoscion arenarius</i>	243	0.8	13.1	0.69	0.17	396.58	22.86	32	1.17	10	131
<i>Leiostomus xanthurus</i>	225	0.8	9.1	0.64	0.22	542.55	37.14	37	1.35	15	131
<i>Litopenaeus setiferus</i>	222	0.8	9.9	0.63	0.23	586.14	45.71	14	0.37	5	40
<i>Callinectes sapidus</i>	188	0.6	23.8	0.53	0.12	357.73	18.57	32	2.78	7	167
<i>Mugil trichodon</i>	115	0.4	2.4	0.33	0.24	1,144.96	55.00	22	1.24	11	100
<i>Cynoscion nebulosus</i>	66	0.2	7.1	0.19	0.06	527.30	12.14	43	4.27	13	182
<i>Micropogonias undulatus</i>	61	0.2	2.4	0.17	0.10	912.36	22.14	28	0.75	15	43
<i>Pogonias cromis</i>	58	0.2	7.1	0.16	0.05	506.16	7.86	111	4.36	65	200
<i>Sciaenops ocellatus</i>	51	0.2	7.5	0.14	0.05	515.01	7.86	117	15.65	14	428
<i>Trachinotus falcatus</i>	49	0.2	2.4	0.14	0.12	1,364.72	30.00	35	1.43	21	70
<i>Mugil cephalus</i>	46	0.2	9.5	0.13	0.03	411.47	5.00	80	11.63	20	285
<i>Paralichthys albigutta</i>	35	0.1	10.3	0.10	0.02	328.15	2.14	80	12.28	7	308
<i>Menticirrhus saxatilis</i>	28	0.1	4.8	0.08	0.04	832.75	10.00	33	3.60	14	81
<i>Farfantepenaeus duorarum</i>	25	0.1	5.6	0.07	0.03	637.90	6.43	18	0.63	15	25
<i>Brevoortia</i> spp.	13	<0.1	2.8	0.04	0.02	737.48	3.57	35	2.71	22	51
<i>Elops saurus</i>	4	<0.1	1.2	0.01	0.01	968.88	1.43	276	29.43	245	364
<i>Lutjanus griseus</i>	4	<0.1	1.2	0.01	0.01	968.88	1.43	80	33.72	23	166

Species	Number		Density Estimate (animals/100m <sup>2</sup> )				Standard Length (mm)				
	No.	% Occur	Mean	Stderr	CV	Max	Mean	Stderr	Min	Max	
<i>Mugil curema</i>	3	<0.1	0.4	0.01	0.01	1,587.45	2.14	110	1.86	106	112
<i>Archosargus probatocephalus</i>	2	<0.1	0.8	0.01	<0.01	1,120.26	0.71	294	0.50	293	294
<i>Centropristis striata</i>	2	<0.1	0.8	0.01	<0.01	1,120.26	0.71	70	25.00	45	95
<i>Menippe</i> spp.	2	<0.1	0.8	0.01	<0.01	1,120.26	0.71	15	4.00	11	19
<i>Trachinotus carolinus</i>	2	<0.1	0.4	0.01	0.01	1,587.45	1.43	22	2.00	20	24
<i>Albula</i> spp.	1	<0.1	0.4	<0.01	<0.01	1,587.45	0.71	57	.	57	57
<i>Caranx hippos</i>	1	<0.1	0.4	<0.01	<0.01	1,587.45	0.71	155	.	155	155
<i>Centropomus undecimalis</i>	1	<0.1	0.4	<0.01	<0.01	1,587.45	0.71	509	.	509	509
<i>Diplectrum formosum</i>	1	<0.1	0.4	<0.01	<0.01	1,587.45	0.71	38	.	38	38
<i>Sphyrna tiburo</i>	1	<0.1	0.4	<0.01	<0.01	1,587.45	0.71	490	.	490	490
<b>Totals</b>	<b>2,630</b>	<b>9.0</b>	<b>.</b>	<b>7.45</b>	<b>1.21</b>	<b>257.49</b>	<b>198.57</b>	<b>.</b>	<b>.</b>	<b>3</b>	<b>509</b>

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.

### ***183-m Haul Seines***

A total of 16,456 animals were collected in 192 183-m haul seines, representing 14.6% of the overall SRS catch (Table 4.27). *Ariopsis felis* (n=2,375) was the most abundant taxon, accounting for 14.4% of the 183-m haul seine catch (Table 4.30). The taxa most frequently caught in 183-m haul seines were *Dasyatis sabina* (84.4% occurrence), *Mugil cephalus* (74.0% occurrence), and *Ariopsis felis* (56.2% occurrence).

A total of 5,876 animals from 33 selected taxa were collected, representing 35.7% of the entire 183-m haul seine catch (Table 4.31). *Mugil cephalus* (n=2,283) and *Pogonias cromis* (n=588) were the most abundant selected taxa, accounting for 48.9% of the selected taxa collected by this gear. The selected taxa most frequently caught in 183-m haul seines were *Mugil cephalus* (74.0% occurrence) and *Pogonias cromis* (49.0% occurrence).

**Table 4.30:** Catch statistics for 10 dominant taxa collected in 192 183-m haul seine samples during Cedar Key stratified-random sampling, 2022.

Species	Number			Density Estimate (animals/set)				Standard Length (mm)			
	No.	%	% Occur	Mean	Stderr	CV	Max	Mean	Stderr	Min	Max
<i>Ariopsis felis</i>	2,375	14.4	56.2	12.37	2.68	300.12	287	232	0.91	60	355
<i>Mugil cephalus</i>	2,283	13.9	74.0	11.89	1.92	224.13	221	197	1.27	103	423
<i>Dasyatis sabina</i>	2,141	13.0	84.4	11.15	1.22	151.53	99	216	0.79	112	512
<i>Lagodon rhomboides</i>	1,569	9.5	42.7	8.13	1.94	330.87	210	101	0.53	50	186
<i>Bairdiella chrysoura</i>	1,431	8.7	38.0	7.41	1.58	295.15	160	134	0.43	34	180
<i>Ogcocephalus cubifrons</i>	899	5.5	36.5	4.68	0.91	269.05	101	153	0.69	61	220
<i>Pogonias cromis</i>	588	3.6	49.0	3.06	0.65	294.77	91	278	8.30	60	803
<i>Harengula jaguana</i>	384	2.3	12.5	2.00	0.76	527.12	101	108	0.51	81	148
<i>Elops saurus</i>	349	2.1	42.2	1.82	0.30	227.65	31	265	2.44	125	482
<i>Dasyatis say</i>	324	2.0	26.0	1.69	0.45	366.08	63	429	6.10	152	655
Subtotals	12,343	75.0	.	.	.	.	.	.	.	34	803
<b>Totals</b>	<b>16,456</b>	<b>100.0</b>	.	<b>85.71</b>	<b>5.23</b>	<b>84.52</b>	<b>438</b>	.	.	<b>10</b>	<b>1,189</b>

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.

**Table 4.31:** Catch statistics for selected taxa collected in 192 183-m haul seine samples during Cedar Key stratified-random sampling, 2022.

Species	Number			Density Estimate (animals/set)				Standard Length (mm)			
	No.	%	% Occur	Mean	Stderr	CV	Max	Mean	Stderr	Min	Max
<i>Mugil cephalus</i>	2,283	13.9	74.0	11.89	1.92	224.13	221	197	1.27	103	423
<i>Pogonias cromis</i>	588	3.6	49.0	3.06	0.65	294.77	91	278	8.30	60	803
<i>Elops saurus</i>	349	2.1	42.2	1.82	0.30	227.65	31	265	2.44	125	482
<i>Brevoortia</i> spp.	307	1.9	8.3	1.60	0.98	846.51	156	96	1.77	69	246
<i>Leiostomus xanthurus</i>	294	1.8	22.4	1.53	0.47	428.31	79	134	1.48	39	247
<i>Callinectes sapidus</i>	278	1.7	30.7	1.45	0.42	398.08	71	128	2.45	30	274
<i>Centropomus undecimalis</i>	258	1.6	34.4	1.34	0.25	260.77	31	578	7.44	136	876
<i>Sciaenops ocellatus</i>	255	1.5	40.1	1.33	0.30	312.70	51	348	7.51	112	849
<i>Paralichthys albigutta</i>	224	1.4	42.7	1.17	0.14	166.50	11	158	4.24	65	352
<i>Cynoscion nebulosus</i>	177	1.1	31.2	0.92	0.20	302.35	32	220	6.34	94	451
<i>Litopenaeus setiferus</i>	135	0.8	17.7	0.70	0.19	376.44	27	29	0.72	10	46
<i>Menticirrhus americanus</i>	114	0.7	26.6	0.59	0.09	216.74	8	202	4.69	24	304
<i>Mugil trichodon</i>	109	0.7	14.6	0.57	0.17	417.91	20	135	2.29	105	237
<i>Mugil curema</i>	108	0.7	18.2	0.56	0.11	281.61	10	158	3.76	112	274
<i>Trachinotus falcatus</i>	90	0.5	12.0	0.47	0.18	535.13	27	104	5.94	44	201
<i>Farfantepenaeus duorarum</i>	74	0.4	11.5	0.39	0.11	395.36	15	23	0.42	15	35
<i>Archosargus probatocephalus</i>	66	0.4	17.2	0.34	0.07	281.87	6	292	5.52	140	391
<i>Caranx hippos</i>	56	0.3	6.8	0.29	0.19	910.05	36	163	5.89	74	344
<i>Sphyrna tiburo</i>	23	0.1	10.4	0.12	0.03	309.44	2	571	31.29	196	805

Species	Number			Density Estimate (animals/set)				Standard Length (mm)			
	No.	%	% Occur	Mean	Stderr	CV	Max	Mean	Stderr	Min	Max
<i>Cynoscion arenarius</i>	20	0.1	5.2	0.10	0.04	546.59	5	179	7.19	105	233
<i>Micropogonias undulatus</i>	19	0.1	3.6	0.10	0.05	727.97	9	182	5.60	160	259
<i>Lutjanus griseus</i>	10	0.1	3.6	0.05	0.02	643.86	4	123	14.94	57	193
<i>Lobotes surinamensis</i>	9	0.1	3.1	0.05	0.02	589.38	2	332	15.24	282	440
<i>Scomberomorus maculatus</i>	9	0.1	3.6	0.05	0.02	589.38	3	368	13.11	314	437
<i>Trachinotus carolinus</i>	6	<0.1	2.1	0.03	0.02	795.80	3	154	45.41	60	301
<i>Farfantepenaeus</i> spp.	3	<0.1	1.0	0.02	0.01	1,030.63	2	13	0.67	12	14
<i>Pomatomus saltatrix</i>	3	<0.1	1.6	0.02	0.01	795.80	1	194	14.42	166	214
<i>Carcharhinus leucas</i>	2	<0.1	1.0	0.01	0.01	977.23	1	720	99.50	621	820
<i>Centropristis striata</i>	2	<0.1	1.0	0.01	0.01	977.23	1	114	9.50	104	123
<i>Menippe</i> spp.	2	<0.1	1.0	0.01	0.01	977.23	1	36	1.50	35	38
<i>Lutjanus synagris</i>	1	<0.1	0.5	0.01	0.01	1,385.64	1	91	.	91	91
<i>Megalops atlanticus</i>	1	<0.1	0.5	0.01	0.01	1,385.64	1	.	.	.	.
<i>Rachycentron canadum</i>	1	<0.1	0.5	0.01	0.01	1,385.64	1	160	.	160	160
<b>Totals</b>	<b>5,876</b>	<b>35.7</b>	<b>.</b>	<b>30.60</b>	<b>2.47</b>	<b>112.00</b>	<b>227</b>	<b>.</b>	<b>.</b>	<b>.</b>	<b>.</b>

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.

### **6.1-m Bay Otter Trawls**

A total of 2,968 animals were collected in 40 6.1-m bay otter trawls, representing 2.6% of the overall SRS catch (Table 4.27). *Litopenaeus setiferus* (n=748), *Etropus crossotus* (n=260), *Menticirrhus americanus* (n=193), and *Portunus spp.* (n=156) were the most abundant taxa, accounting for 45.7% of the 6.1-m bay otter trawl catch (Table 4.32). The taxa most frequently caught in 6.1-m bay otter trawls were *Etropus crossotus* (67.5% occurrence), *Prionotus scitulus* (62.5% occurrence), and *Portunus spp.* (45.0% occurrence).

A total of 1,285 animals from 14 selected taxa were collected, representing 43.3% of the entire 6.1-m bay otter trawl catch (Table 4.33). *Litopenaeus setiferus* (n=748), *Menticirrhus americanus* (n=193), and *Farfantepenaeus duorarum* (n=121) were the most abundant selected taxa, accounting for 82.6% of the selected taxa collected by this gear. The selected taxa most frequently caught in 6.1-m bay otter trawls were *Litopenaeus setiferus* (40.0% occurrence), *Farfantepenaeus duorarum* (40.0% occurrence), and *Paralichthys albigutta* (35.0% occurrence).

**Table 4.32:** Catch statistics for 10 dominant taxa collected in 40 6.1-m bay otter trawl samples during Cedar Key stratified-random sampling, 2022.

Species	Number			Density Estimate (animals/100m <sup>2</sup> )				Standard Length (mm)			
	No.	%	% Occur	Mean	Stderr	CV	Max	Mean	Stderr	Min	Max
<i>Litopenaeus setiferus</i>	748	25.2	40.0	1.42	0.56	248.17	13.83	36	0.22	16	49
<i>Etropus crossotus</i>	260	8.8	67.5	0.44	0.13	188.19	4.18	86	1.30	31	122
<i>Menticirrhus americanus</i>	193	6.5	27.5	0.34	0.14	265.38	3.76	78	3.97	12	224
<i>Portunus</i> spp.	156	5.3	45.0	0.28	0.12	276.28	3.85	43	0.60	19	62
<i>Anchoa mitchilli</i>	137	4.6	27.5	0.25	0.11	272.71	3.85	65	1.20	33	81
<i>Prionotus scitulus</i>	134	4.5	62.5	0.24	0.05	131.30	1.27	85	2.81	31	161
<i>Prionotus martis</i>	134	4.5	17.5	0.23	0.16	442.01	6.27	65	0.75	32	80
<i>Farfantepenaeus duorarum</i>	121	4.1	40.0	0.22	0.07	216.98	2.02	26	0.47	15	39
<i>Eucinostomus gula</i>	124	4.2	15.0	0.21	0.14	393.20	4.59	77	1.24	46	95
<i>Bairdiella chrysoura</i>	113	3.8	27.5	0.20	0.06	209.18	1.60	106	1.66	13	148
Subtotals	2,120	71.5	.	.	.	.	.	.	.	12	224
<b>Totals</b>	<b>2,968</b>	<b>100.0</b>	.	<b>5.36</b>	<b>1.02</b>	<b>119.93</b>	<b>22.46</b>	.	.	<b>7</b>	<b>386</b>

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.

**Table 4.33:** Catch statistics for selected taxa collected in 40 6.1-m bay otter trawl samples during Cedar Key stratified-random sampling, 2022.

Species	Number			Density Estimate (animals/100m <sup>2</sup> )				Standard Length (mm)			
	No.	%	% Occur	Mean	Stderr	CV	Max	Mean	Stderr	Min	Max
<i>Litopenaeus setiferus</i>	748	25.2	40.0	1.39	0.55	251.77	13.83	36	0.22	16	49
<i>Menticirrhus americanus</i>	193	6.5	27.5	0.33	0.14	269.16	3.76	78	3.97	12	224
<i>Farfantepenaeus duorarum</i>	121	4.1	40.0	0.21	0.07	220.27	2.02	26	0.47	15	39
<i>Cynoscion arenarius</i>	88	3.0	10.0	0.14	0.13	607.51	5.21	132	2.18	80	233
<i>Paralichthys albigutta</i>	35	1.2	35.0	0.06	0.02	162.55	0.32	116	5.18	51	197
<i>Menippe</i> spp.	29	1.0	30.0	0.05	0.02	216.33	0.54	25	1.89	9	48
<i>Leiostomus xanthurus</i>	19	0.6	7.5	0.03	0.02	421.55	0.81	77	3.54	59	113
<i>Callinectes sapidus</i>	16	0.5	12.5	0.03	0.02	368.97	0.63	131	10.20	48	175
<i>Diplectrum formosum</i>	9	0.3	17.5	0.02	0.01	254.33	0.20	109	10.70	58	142
<i>Centropristis striata</i>	8	0.3	10.0	0.01	0.01	400.47	0.34	80	7.83	55	126
<i>Lutjanus synagris</i>	8	0.3	10.0	0.01	0.01	321.64	0.20	47	10.08	20	92
<i>Farfantepenaeus</i> spp.	4	0.1	10.0	0.01	<0.01	304.44	0.08	13	0.48	12	14
<i>Menticirrhus saxatilis</i>	4	0.1	2.5	0.01	0.01	632.46	0.27	41	2.48	35	47
<i>Haemulon plumierii</i>	3	0.1	2.5	0.01	0.01	632.46	0.20	59	3.79	52	65
<b>Totals</b>	<b>1,285</b>	<b>43.3</b>	<b>.</b>	<b>2.30</b>	<b>0.65</b>	<b>179.36</b>	<b>16.97</b>	<b>.</b>	<b>.</b>	<b>9</b>	<b>233</b>

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.

## River Sampling

### Tidal Creeks

#### \* 21.3-m River Seines

A total of 45,616 animals were collected in 108 21.3-m river seines in tidal creeks, representing 40.4% of the overall SRS catch (Table 4.27). *Anchoa mitchilli* (n=37,981) was the most abundant taxon collected, accounting for 83.3% of the 21.3-m river seine catch in tidal creeks (Table 4.34). *Menidia spp.* (n=2,086) and *Bairdiella chrysoura* (n=1,240) were the next most abundant taxa, accounting for an additional 7.3% of the 21.3-m river seine catch in tidal creeks. The taxa most frequently caught in 21.3-m river seines in tidal creeks were *Menidia spp.* (74.1% occurrence), *Anchoa mitchilli* (55.6% occurrence), and *Lagodon rhomboides* (50.0% occurrence).

A total of 2,032 animals from 17 selected taxa were collected, representing 4.5% of the entire 21.3-m river seine catch in tidal creeks (Table 4.35). *Litopenaeus setiferus* (n=1,220), and *Leiostomus xanthurus* (n=331) were the most abundant selected taxa, accounting for 76.3% of the selected taxa collected by this gear. The selected taxa most frequently caught in 21.3-m river seines in tidal creeks were *Leiostomus xanthurus* (29.6% occurrence) and *Litopenaeus setiferus* (27.8% occurrence).

**Table 4.34:** Catch statistics for 10 dominant taxa collected in 108 21.3-m creek seine samples during Cedar Key stratified-random sampling, 2022.

Species	Number			Density Estimate (animals/100m <sup>2</sup> )				Standard Length (mm)			
	No.	%	% Occur	Mean	Stderr	CV	Max	Mean	Stderr	Min	Max
<i>Anchoa mitchilli</i>	37,981	83.3	55.6	517.17	176.06	353.78	14,729.41	28	0.04	12	79
<i>Menidia</i> spp.	2,086	4.6	74.1	28.67	5.81	209.76	413.24	48	0.21	18	90
<i>Bairdiella chrysoura</i>	1,240	2.7	22.2	17.20	12.90	772.09	1,363.24	62	0.49	17	91
<i>Litopenaeus setiferus</i>	1,220	2.7	27.8	16.93	6.95	422.69	625.00	11	0.07	5	21
<i>Eucinostomus</i> spp.	1,072	2.4	47.2	14.87	2.85	197.62	167.65	26	0.23	9	44
<i>Leiostomus xanthurus</i>	331	0.7	29.6	4.59	1.47	328.78	141.18	28	0.76	12	100
<i>Lagodon rhomboides</i>	315	0.7	50.0	4.37	0.89	210.76	52.94	36	1.06	13	91
<i>Eucinostomus harengulus</i>	295	0.6	32.4	4.09	1.08	272.39	75.00	50	0.47	40	82
<i>Fundulus grandis</i>	193	0.4	20.4	2.68	1.25	481.78	120.59	44	0.92	16	88
<i>Cynoscion arenarius</i>	156	0.3	26.9	2.16	0.83	395.67	82.35	35	1.04	10	88
Subtotals	44,889	98.4	.	.	.	.	.	.	.	5	100
<b>Totals</b>	<b>45,616</b>	<b>100.0</b>	.	<b>632.85</b>	<b>178.54</b>	<b>293.19</b>	<b>14,852.94</b>	.	.	<b>5</b>	<b>445</b>

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.

**Table 4.35:** Catch statistics for selected taxa collected in 108 21.3-m creek seine samples during Cedar Key stratified-random sampling, 2022.

Species	Number			Density Estimate (animals/100m <sup>2</sup> )				Standard Length (mm)			
	No.	%	% Occur	Mean	Stderr	CV	Max	Mean	Stderr	Min	Max
<i>Litopenaeus setiferus</i>	1,220	2.7	27.8	16.61	6.82	426.84	625.00	11	0.07	5	21
<i>Leiostomus xanthurus</i>	331	0.7	29.6	4.51	1.44	332.13	141.18	28	0.76	12	100
<i>Cynoscion arenarius</i>	156	0.3	26.9	2.12	0.82	399.59	82.35	35	1.04	10	88
<i>Sciaenops ocellatus</i>	95	0.2	13.0	1.29	0.73	584.39	76.47	42	4.78	16	354
<i>Cynoscion nebulosus</i>	70	0.2	23.1	0.95	0.25	268.74	20.59	63	5.16	15	206
<i>Callinectes sapidus</i>	53	0.1	18.5	0.72	0.21	304.54	13.24	32	5.87	8	182
<i>Mugil cephalus</i>	42	0.1	13.0	0.57	0.26	468.82	25.00	67	7.16	20	236
<i>Farfantepenaeus</i> spp.	27	0.1	12.0	0.37	0.17	489.52	17.65	9	0.36	6	14
<i>Lutjanus griseus</i>	11	<0.1	7.4	0.15	0.06	401.35	4.41	84	8.80	33	137
<i>Brevoortia</i> spp.	9	<0.1	3.7	0.12	0.08	638.05	7.35	26	0.91	23	31
<i>Centropomus undecimalis</i>	6	<0.1	2.8	0.08	0.06	731.40	5.88	149	41.20	90	354
<i>Menticirrhus americanus</i>	4	<0.1	3.7	0.05	0.03	512.28	1.47	30	6.04	20	47
<i>Paralichthys albigutta</i>	3	<0.1	2.8	0.04	0.02	594.37	1.47	210	103.96	48	404
<i>Micropogonias undulatus</i>	2	<0.1	0.9	0.03	0.03	1,039.23	2.94	30	3.00	27	33
<i>Archosargus probatocephalus</i>	1	<0.1	0.9	0.01	0.01	1,039.23	1.47	304	.	304	304
<i>Elops saurus</i>	1	<0.1	0.9	0.01	0.01	1,039.23	1.47	249	.	249	249
<i>Pogonias cromis</i>	1	<0.1	0.9	0.01	0.01	1,039.23	1.47	104	.	104	104
<b>Totals</b>	<b>2,032</b>	<b>4.5</b>	<b>.</b>	<b>27.67</b>	<b>7.04</b>	<b>264.59</b>	<b>632.35</b>	<b>.</b>	<b>.</b>	<b>5</b>	<b>404</b>

Species	Number		Density Estimate (animals/100m <sup>2</sup> )				Standard Length (mm)			
	No.	% Occur	Mean	Stderr	CV	Max	Mean	Stderr	Min	Max

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.

## Lower Suwannee River

### \* 21.3-m River Seines

A total of 18,489 animals were collected in 60 21.3-m river seine samples conducted in the Lower Suwannee River (LSR), representing 16.4% of the overall SRS catch (Table 4.27). *Anchoa mitchilli* (n=16,167) was the most abundant taxon collected, accounting for 87.4% of the 21.3-m river seine catch in the LSR (Table 4.36). *Litopenaeus setiferus* (n=451) and *Menidia spp.* (n=283) were the next most abundant taxa, accounting for an additional 4% of the 21.3-m river seine catch in the LSR. The taxa most frequently caught in 21.3-m river seines in the LSR were *Eucinostomus spp.* (41.7% occurrence), *Callinectes sapidus* (41.7% occurrence), and *Anchoa mitchilli* (40.0% occurrence).

A total of 729 animals from 11 selected taxa were collected, representing 3.9% of the entire 21.3-m river seine catch in the LSR (Table 4.37). *Litopenaeus setiferus* (n=451), and *Callinectes sapidus* (n=67) were the most abundant selected taxa, accounting for 71.1% of the selected taxa collected by this gear. The selected taxa most frequently caught in 21.3-m river seines in the LSR were *Callinectes sapidus* (41.7% occurrence) and *Litopenaeus setiferus* (13.3% occurrence).

**Table 4.36:** Catch statistics for 10 dominant taxa collected in 60 21.3-m river seine samples during Cedar Key stratified-random sampling, 2022.

Species	Number			Density Estimate (animals/100m <sup>2</sup> )				Standard Length (mm)			
	No.	%	% Occur	Mean	Stderr	CV	Max	Mean	Stderr	Min	Max
<i>Anchoa mitchilli</i>	16,167	87.4	40.0	402.97	214.54	408.95	11,127.94	20	0.04	15	44
<i>Litopenaeus setiferus</i>	451	2.4	13.3	11.24	9.69	662.31	570.59	14	0.16	3	19
<i>Menidia</i> spp.	283	1.5	36.7	7.05	2.30	250.26	91.18	52	0.66	20	84
<i>Notropis petersoni</i>	257	1.4	15.0	6.41	3.90	468.06	220.59	35	0.48	17	54
<i>Fundulus seminolis</i>	190	1.0	26.7	4.74	1.95	316.63	86.76	43	1.06	13	69
<i>Eucinostomus</i> spp.	161	0.9	41.7	4.01	1.12	214.85	51.47	22	0.56	10	39
<i>Notropis maculatus</i>	100	0.5	8.3	2.49	1.26	387.70	54.41	33	0.66	21	50
<i>Gambusia holbrooki</i>	78	0.4	23.3	1.94	0.71	279.32	27.94	25	0.61	14	39
<i>Lucania parva</i>	69	0.4	13.3	1.72	0.75	335.39	27.94	25	0.56	14	37
<i>Callinectes sapidus</i>	67	0.4	41.7	1.67	0.44	204.54	19.12	27	3.16	6	131
Subtotals	17,823	96.3	.	.	.	.	.	.	.	3	131
<b>Totals</b>	<b>18,489</b>	<b>100.0</b>	.	<b>460.84</b>	<b>213.03</b>	<b>358.07</b>	<b>11,147.06</b>	.	.	<b>3</b>	<b>515</b>

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.

**Table 4.37:** Catch statistics for selected taxa collected in 60 21.3-m river seine samples during Cedar Key stratified-random sampling, 2022.

Species	Number			Density Estimate (animals/100m <sup>2</sup> )				Standard Length (mm)			
	No.	%	% Occur	Mean	Stderr	CV	Max	Mean	Stderr	Min	Max
<i>Litopenaeus setiferus</i>	451	2.4	13.3	11.05	9.53	667.94	570.59	14	0.16	3	19
<i>Callinectes sapidus</i>	67	0.4	41.7	1.64	0.44	206.65	19.12	27	3.16	6	131
<i>Leiostomus xanthurus</i>	55	0.3	11.7	1.35	0.60	347.48	27.94	31	1.35	15	61
<i>Sciaenops ocellatus</i>	51	0.3	11.7	1.25	0.75	463.97	41.18	52	8.34	16	304
<i>Farfantepenaeus</i> spp.	50	0.3	10.0	1.23	0.96	607.14	57.35	8	0.41	3	14
<i>Cynoscion arenarius</i>	28	0.2	8.3	0.69	0.41	462.57	22.06	40	2.16	26	71
<i>Cynoscion nebulosus</i>	12	0.1	6.7	0.29	0.18	467.59	8.82	61	10.02	24	113
<i>Lutjanus griseus</i>	12	0.1	6.7	0.29	0.20	535.20	11.76	64	8.51	33	149
<i>Brevoortia</i> spp.	1	<0.1	1.7	0.02	0.02	774.60	1.47	30	.	30	30
<i>Mugil cephalus</i>	1	<0.1	1.7	0.02	0.02	774.60	1.47	22	.	22	22
<i>Paralichthys albigutta</i>	1	<0.1	1.7	0.02	0.02	774.60	1.47	373	.	373	373
<b>Totals</b>	<b>729</b>	<b>3.9</b>	<b>.</b>	<b>17.87</b>	<b>9.75</b>	<b>422.47</b>	<b>575.00</b>	<b>.</b>	<b>.</b>	<b>3</b>	<b>373</b>

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.

Appendix

**Table 4.38:** Monthly summary of taxa collected during Cedar Key stratified-random sampling, 2022.

Taxa	Month												Totals
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
	E=61	E=51	E=51	E=61	E=51	E=51	E=61	E=51	E=51	E=61	E=51	E=51	E=652
<i>Acanthostracion quadricornis</i>	2	.	.	1	.	.	.	.	1	5	.	.	9
<i>Achirus lineatus</i>	3	.	.	.	.	.	14	3	5	1	.	.	26
<i>Adinia xenica</i>	1	.	.	.	.	.	.	2	12	.	.	7	22
<i>Aetobatus narinari</i>	.	.	.	.	.	.	.	.	.	1	.	.	1
<i>Albula</i> sp.	.	.	.	.	.	.	.	.	.	.	.	1	1
<i>Alosa alabamae</i>	.	2	.	.	.	.	.	.	.	.	.	.	2
<i>Aluterus schoepfii</i>	.	.	.	.	.	2	.	.	.	1	.	.	3
<i>Ameiurus catus</i>	.	3	.	.	.	.	.	.	.	.	.	.	3
<i>Amia calva</i>	.	.	1	.	.	.	.	.	.	.	1	.	2
<i>Anchoa hepsetus</i>	.	.	.	4	15	65	85	9	14	60	1	.	253
<i>Anchoa mitchilli</i>	261	304	427	155	85	2,842	693	10,151	30,179	8,547	15,338	4,261	73,243
<i>Anchoa</i> sp.	.	.	.	.	1	.	.	.	.	.	.	.	1
<i>Ancylosetta quadrocellata</i>	4	1	.	2	.	.	4	.	1	4	3	1	20
<b><i>Archosargus probatocephalus</i></b>	<b>1</b>	<b>3</b>	.	<b>17</b>	<b>7</b>	<b>5</b>	<b>9</b>	<b>12</b>	<b>3</b>	<b>10</b>	.	<b>2</b>	<b>69</b>
<i>Ariopsis felis</i>	129	7	87	110	491	794	674	344	152	88	56	61	2,993
<i>Astroscopus y-graecum</i>	4	.	1	3	.	.	.	.	.	2	.	.	10
<i>Bagre marinus</i>	8	.	.	4	1	4	11	1	35	23	3	.	90

Taxa	Month												Totals
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
	E=61	E=51	E=51	E=61	E=51	E=51	E=61	E=51	E=51	E=61	E=51	E=51	E=652
<i>Bairdiella chrysoura</i>	190	462	243	194	295	231	134	122	944	92	146	93	3,146
<i>Bathygobius soporator</i>	.	.	3	2	1	1	8	10	7	9	.	3	44
<b>Brevoortia spp.</b>	.	1	.	16	4	158	5	104	10	17	1	14	330
<b>Callinectes sapidus</b>	32	60	40	58	41	27	44	25	27	31	100	117	602
<i>Caranx hippos</i>	.	.	.	.	.	1	2	1	40	5	8	.	57
<i>Caranx latus</i>	.	.	.	.	.	.	.	.	.	.	1	.	1
<b>Carcharhinus leucas</b>	.	.	1	.	.	.	.	.	.	1	.	.	2
<b>Centropomus undecimalis</b>	27	2	4	13	21	32	55	28	11	34	36	2	265
<b>Centropristis striata</b>	2	.	.	3	.	1	.	.	.	5	.	1	12
<i>Chaetodipterus faber</i>	6	.	.	5	26	3	72	79	26	14	.	.	231
<i>Chasmodes saburrae</i>	3	.	.	1	.	.	.	1	.	.	.	.	5
<i>Chilomycterus schoepfii</i>	15	1	5	7	1	5	5	1	2	8	2	2	54
<i>Chloroscombrus chrysurus</i>	.	.	.	4	41	20	108	.	8	3	1	.	185
<i>Citharichthys macrops</i>	3	.	.	4	.	.	6	.	.	.	.	.	13
<i>Ctenogobius boleosoma</i>	.	.	1	1	6	10	2	.	.	.	.	1	21
<i>Ctenogobius smaragdus</i>	1	1	.	.	.	.	3	.	.	.	.	3	8
<b>Cynoscion arenarius</b>	2	.	.	.	26	100	112	37	37	187	34	.	535
<b>Cynoscion nebulosus</b>	10	19	2	5	1	12	59	39	51	58	54	15	325
<i>Cyprinodon variegatus</i>	.	.	.	.	.	.	2	.	.	.	.	1	3
<i>Dactyloscopus moorei</i>	.	.	.	1	.	.	.	.	.	.	.	.	1

Taxa	Month												Totals
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
	E=61	E=51	E=51	E=61	E=51	E=51	E=61	E=51	E=51	E=61	E=51	E=51	E=652
<i>Dasyatis americana</i>	.	.	.	.	.	.	8	5	9	.	1	.	23
<i>Dasyatis sabina</i>	108	171	117	151	342	193	193	143	199	230	216	160	2,223
<i>Dasyatis say</i>	.	.	4	16	48	80	23	9	126	1	21	.	328
<i>Diapterus auratus</i>	.	.	.	.	.	.	.	1	.	.	1	.	2
<b><i>Diplectrum formosum</i></b>	<b>2</b>	.	.	<b>2</b>	.	.	<b>2</b>	.	.	<b>4</b>	.	.	<b>10</b>
<i>Diplodus holbrookii</i>	.	.	.	.	.	1	.	.	.	.	.	.	1
<i>Dorosoma cepedianum</i>	15	8	3	.	2	.	.	2	4	11	29	2	76
<i>Dorosoma petenense</i>	1	.	.	.	.	.	.	.	1	.	1	.	3
<i>Echeneis neucratoides</i>	.	.	.	1	6	8	.	2	.	.	.	.	17
<b><i>Elops saurus</i></b>	<b>5</b>	<b>2</b>	.	<b>14</b>	<b>16</b>	<b>21</b>	<b>16</b>	<b>72</b>	<b>81</b>	<b>87</b>	<b>28</b>	<b>12</b>	<b>354</b>
<i>Etheostoma fusiforme</i>	.	.	.	1	.	.	.	.	.	.	.	.	1
<i>Etopus crossotus</i>	161	10	.	18	.	.	69	3	17	77	30	60	445
<i>Eucinostomus gula</i>	12	1	5	1	1	.	30	41	69	291	103	52	606
<i>Eucinostomus harengulus</i>	55	5	.	9	2	.	95	170	151	67	85	29	668
<i>Eucinostomus spp.</i>	128	4	5	2	.	71	1,503	512	419	216	369	103	3,332
<b><i>Farfantepenaeus duorarum</i></b>	<b>66</b>	<b>7</b>	<b>12</b>	<b>89</b>	<b>26</b>	<b>4</b>	<b>2</b>	.	<b>1</b>	<b>6</b>	<b>4</b>	<b>3</b>	<b>220</b>
<b><i>Farfantepenaeus spp.</i></b>	<b>7</b>	<b>2</b>	<b>2</b>	<b>9</b>	.	.	<b>449</b>	<b>72</b>	<b>52</b>	<b>7</b>	<b>28</b>	<b>92</b>	<b>720</b>
<i>Fundulus confluentus</i>	1	.	.	.	.	.	15	.	.	.	.	.	16
<i>Fundulus grandis</i>	30	2	4	.	1	3	141	7	42	1	.	20	251
<i>Fundulus seminolis</i>	5	.	8	.	.	17	4	103	1	33	12	11	194

Taxa	Month												Totals
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
	E=61	E=51	E=51	E=61	E=51	E=51	E=61	E=51	E=51	E=61	E=51	E=51	E=652
<i>Fundulus similis</i>	11	4	5	3	43	9	71	4	29	1	5	6	191
<i>Gambusia holbrooki</i>	.	1	30	1	.	.	1	8	4	37	7	5	94
<i>Gobionellus oceanicus</i>	1	.	.	.	.	.	.	.	.	.	.	.	1
<i>Gobiosoma bosc</i>	.	.	7	.	1	2	11	8	2	2	2	16	51
<i>Gobiosoma robustum</i>	3	1	2	3	.	.	5	.	.	.	3	.	17
<i>Gobiosoma spp.</i>	.	.	.	.	.	1	26	20	14	4	7	3	75
<i>Gymnura micrura</i>	.	.	.	.	1	14	7	1	10	3	2	.	38
<i>Haemulon plumierii</i>	.	.	.	.	.	.	.	.	.	3	.	.	3
<i>Harengula jaguana</i>	.	.	4	2	11	20	22	6	75	132	130	.	402
<i>Hemicaranx amblyrhynchus</i>	.	.	.	.	.	.	.	.	.	1	.	.	1
<i>Heterandria formosa</i>	.	.	.	.	.	.	.	1	.	1	.	1	3
<i>Hippocampus erectus</i>	.	.	.	2	.	.	2	.	.	1	.	1	6
<i>Hippocampus zosterae</i>	1	.	.	.	.	.	.	.	.	.	.	.	1
<i>Hyporhamphus meeki</i>	.	.	.	.	1	.	.	.	.	.	.	.	1
<i>Hyporhamphus sp.</i>	.	.	.	.	1	.	.	.	.	.	.	.	1
<i>Hypsoblennius henz</i>	2	.	.	.	.	.	.	.	.	.	.	.	2
<i>Labidesthes sicculus</i>	.	14	1	12	.	11	1	.	.	.	3	6	48
<i>Lagodon rhomboides</i>	193	25	261	457	176	184	242	138	458	197	409	.	2,740
<b><i>Leiostomus xanthurus</i></b>	<b>22</b>	<b>111</b>	<b>251</b>	<b>157</b>	<b>108</b>	<b>39</b>	<b>28</b>	<b>1</b>	<b>137</b>	<b>60</b>	<b>10</b>	.	<b>924</b>
<i>Lepisosteus osseus</i>	.	.	.	4	1	.	6	2	3	2	.	.	18

Taxa	Month												Totals
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
	E=61	E=51	E=51	E=61	E=51	E=51	E=61	E=51	E=51	E=61	E=51	E=51	E=652
<i>Lepisosteus platyrhincus</i>	.	.	2	1	.	.	.	4	2	.	.	.	9
<i>Lepomis auritus</i>	.	.	.	.	.	.	.	.	.	1	4	.	5
<i>Lepomis gulosus</i>	.	.	.	1	.	.	.	.	.	.	.	.	1
<i>Lepomis macrochirus</i>	.	.	2	5	.	3	.	1	1	.	1	.	13
<i>Lepomis microlophus</i>	.	.	4	.	.	.	.	.	.	4	.	.	8
<i>Lepomis punctatus</i>	5	.	8	7	.	.	1	.	.	.	.	.	21
<i>Lepomis</i> spp.	.	.	2	.	.	6	.	.	.	.	1	.	9
<i>Limulus polyphemus</i>	4	.	14	35	.	.	1	1	.	3	.	.	58
<b><i>Litopenaeus setiferus</i></b>	<b>299</b>	.	<b>18</b>	<b>281</b>	<b>42</b>	<b>28</b>	<b>1,082</b>	<b>684</b>	<b>237</b>	<b>54</b>	<b>20</b>	<b>31</b>	<b>2,776</b>
<b><i>Lobotes surinamensis</i></b>	.	.	.	.	.	1	.	.	2	3	2	1	9
<i>Lucania goodei</i>	.	.	2	.	.	10	.	.	.	.	5	.	17
<i>Lucania parva</i>	.	.	2	.	.	19	12	15	4	14	.	15	81
<b><i>Lutjanus griseus</i></b>	.	.	.	1	1	.	2	14	7	10	.	2	37
<b><i>Lutjanus synagris</i></b>	2	.	.	.	.	.	4	.	1	2	.	.	9
<b><i>Megalops atlanticus</i></b>	.	.	.	.	.	.	.	.	.	1	.	.	1
<i>Membras martinica</i>	.	.	47	2	6	13	29	37	111	1	2	1	249
<i>Menidia</i> spp.	161	51	63	26	43	303	350	439	554	1,023	552	392	3,957
<b><i>Menippe</i> spp.</b>	<b>13</b>	<b>2</b>	.	4	.	.	8	.	1	5	.	.	33
<b><i>Menticirrhus americanus</i></b>	<b>65</b>	.	3	13	47	171	193	179	39	79	58	9	856
<b><i>Menticirrhus saxatilis</i></b>	<b>4</b>	.	.	5	7	.	.	.	.	.	15	1	32

Taxa	Month												Totals
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
	E=61	E=51	E=51	E=61	E=51	E=51	E=61	E=51	E=51	E=61	E=51	E=51	E=652
<i>Microgobius gulosus</i>	.	.	.	.	1	1	3	3	6	2	1	1	18
<i>Microgobius thalassinus</i>	.	.	.	1	.	.	8	6	9	6	.	.	30
<b><i>Micropogonias undulatus</i></b>	.	.	12	47	.	.	.	10	8	1	.	4	82
<i>Micropterus salmoides</i>	1	.	2	2	.	13	2	2	.	2	.	.	24
<i>Monacanthus ciliatus</i>	3	.	.	.	.	.	.	.	.	1	.	.	4
<b><i>Mugil cephalus</i></b>	481	278	202	155	352	171	140	98	144	111	149	91	2,372
<b><i>Mugil curema</i></b>	5	28	3	11	12	11	4	4	8	20	4	1	111
<b><i>Mugil trichodon</i></b>	26	.	14	1	1	18	6	4	25	13	82	34	224
<i>Narcine bancroftii</i>	.	.	.	.	.	.	.	.	.	1	.	.	1
<i>Notemigonus crysoleucas</i>	1	.	19	.	.	11	.	.	.	.	.	.	31
<i>Notropis maculatus</i>	.	.	21	17	.	37	.	.	.	.	26	.	101
<i>Notropis petersoni</i>	.	.	67	.	.	161	1	12	.	1	15	.	257
<i>Ogcocephalus cubifrons</i>	131	4	47	97	67	76	85	44	126	47	66	142	932
<i>Oligoplites saurus</i>	1	.	.	.	9	16	43	49	45	19	5	3	190
<i>Opisthonema oglinum</i>	2	.	2	5	1	.	23	44	40	.	8	2	127
<i>Opsanus beta</i>	1	.	.	.	1	.	1	.	.	4	.	.	7
<i>Opsopoeodus emiliae</i>	1	3	7	.	1	1	.	.	.	1	3	.	17
<i>Orthopristis chrysoptera</i>	3	.	.	63	224	52	16	.	14	13	29	.	414
<b><i>Paralichthys albigutta</i></b>	17	14	13	28	46	20	37	10	40	48	16	9	298
<i>Peprius burti</i>	.	.	.	1	.	.	.	.	.	.	.	.	1

Taxa	Month												Totals
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
	E=61	E=51	E=51	E=61	E=51	E=51	E=61	E=51	E=51	E=61	E=51	E=51	E=652
<i>Peprilus paru</i>	15	.	3	2	97	5	.	.	.	.	.	.	122
<i>Poecilia latipinna</i>	.	.	.	.	.	.	10	.	1	.	.	4	15
<b><i>Pogonias cromis</i></b>	<b>97</b>	<b>90</b>	<b>35</b>	<b>21</b>	<b>31</b>	<b>65</b>	<b>44</b>	<b>96</b>	<b>72</b>	<b>51</b>	<b>37</b>	<b>8</b>	<b>647</b>
<b><i>Pomatomus saltatrix</i></b>	.	.	.	.	1	.	.	1	1	.	.	.	3
<i>Pomoxis nigromaculatus</i>	.	.	.	1	.	.	.	.	.	.	.	.	1
<i>Portunus</i> spp.	129	6	6	6	1	2	26	1	.	7	21	1	206
<i>Prionotus martis</i>	37	.	.	97	.	.	.	.	.	.	.	.	134
<i>Prionotus rubio</i>	13	.	.	1	.	.	.	.	.	.	.	.	14
<i>Prionotus scitulus</i>	53	.	6	6	5	4	50	2	2	30	4	2	164
<i>Prionotus tribulus</i>	26	5	1	13	1	3	2	.	.	4	8	15	78
<b><i>Rachycentron canadum</i></b>	.	.	.	.	.	.	.	.	1	.	.	.	1
<i>Rhinoptera bonasus</i>	5	7	.	.	2	18	.	.	.	.	.	3	35
<i>Rimapenaeus constrictus</i>	3	.	.	2	.	.	.	.	.	.	.	.	5
<i>Rimapenaeus</i> sp.	1	.	.	.	.	.	.	.	.	.	.	.	1
<i>Sardinella aurita</i>	.	.	.	.	31	.	.	.	.	.	.	.	31
<b><i>Sciaenops ocellatus</i></b>	<b>41</b>	<b>18</b>	<b>20</b>	<b>8</b>	<b>24</b>	<b>9</b>	<b>18</b>	<b>34</b>	<b>48</b>	<b>83</b>	<b>80</b>	<b>69</b>	<b>452</b>
<b><i>Scomberomorus maculatus</i></b>	.	.	.	.	.	.	1	.	4	1	3	.	9
<i>Selene vomer</i>	.	.	.	.	6	12	9	10	4	10	3	2	56
<i>Serraniculus pumilio</i>	.	.	.	.	.	.	1	.	.	1	.	.	2
<i>Sphaeroides nephelus</i>	4	1	3	1	3	28	2	1	2	8	6	6	65

Taxa	Month									
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct
	E=61	E=51	E=51	E=61	E=51	E=51	E=61	E=51	E=51	E=61
<b><i>Sphyrna tiburo</i></b>	1	.	3	.	2	3	.	2	3	3
<i>Stephanolepis hispidus</i>	2	.	.	1	.	5	3	.	.	1
<i>Strongylura marina</i>	1	1	5	.	7	19	8	1	8	.
<i>Strongylura notata</i>	.	.	1	.	.	.	1	.	17	4
<i>Strongylura</i> spp.	.	.	.	5	2	5	1	1	.	.
<i>Strongylura timucu</i>	.	.	.	.	1	5	1	.	10	.
<i>Symphurus plagiusa</i>	46	1	.	11	.	1	10	4	22	6
<i>Syngnathus floridae</i>	3	.	.	3	.	8	.	.	.	1
<i>Syngnathus louisianae</i>	2	.	.	3	.	1	6	2	1	2
<i>Syngnathus scovelli</i>	3	.	2	3	.	26	4	11	3	1
<i>Syngnathus springeri</i>	.	.	.	.	.	.	1	.	.	.
<i>Synodus foetens</i>	4	2	1	2	5	6	11	.	.	3
<b><i>Trachinotus carolinus</i></b>	.	.	.	.	.	2	4	.	.	1
<b><i>Trachinotus falcatus</i></b>	2	.	.	.	.	.	63	18	5	17
<i>Trinectes maculatus</i>	3	.	11	15	4	3	3	7	4	5
<i>Urophycis floridana</i>	4	.	2	1	.	.	.	.	.	.
<b>Totals</b>	<b>3,254</b>	<b>1,745</b>	<b>2,211</b>	<b>2,575</b>	<b>2,934</b>	<b>6,363</b>	<b>7,409</b>	<b>14,151</b>	<b>35,101</b>	<b>12,410</b>

Effort, or total number of hauls, is labeled 'E'. Taxa are arranged alphabetically. Selected taxa are highlighted in

**Table 4.39:** Summary by gear and stratum of taxa collected during Cedar Key stratified-random sampling, 2022.

Taxa	Gear and Strata						Totals
	21.3-m bay seine			21.3-m river seine	183-m haul seine	6.1-m otter trawl	
	Veg	Unveg	Shore				
	E=19	E=125	E=108	E=168	E=192	E=40	
<i>Acanthostracion quadricornis</i>	.	.	.	.	1	8	9
<i>Achirus lineatus</i>	1	6	5	11	.	3	26
<i>Adinia xenica</i>	.	.	.	22	.	.	22
<i>Aetobatus narinari</i>	.	.	.	.	1	.	1
<i>Albula</i> sp.	.	.	1	.	.	.	1
<i>Alosa alabamae</i>	.	.	.	.	2	.	2
<i>Aluterus schoepfii</i>	1	.	1	.	.	1	3
<i>Ameiurus catus</i>	.	.	.	.	3	.	3
<i>Amia calva</i>	.	.	.	2	.	.	2
<i>Anchoa hepsetus</i>	11	47	71	29	1	94	253
<i>Anchoa mitchilli</i>	1	3,227	15,730	54,148	.	137	73,243
<i>Anchoa</i> sp.	.	.	1	.	.	.	1
<i>Ancylopsetta quadrocellata</i>	.	.	.	.	9	11	20
<b><i>Archosargus probatocephalus</i></b>	.	.	<b>2</b>	<b>1</b>	<b>66</b>	.	<b>69</b>
<i>Ariopsis felis</i>	15	274	233	1	2,375	95	2,993
<i>Astroscopus y-graecum</i>	.	3	2	.	.	5	10
<i>Bagre marinus</i>	.	21	2	.	52	15	90
<i>Bairdiella chrysoura</i>	30	55	244	1,273	1,431	113	3,146
<i>Bathygobius soporator</i>	.	1	14	29	.	.	44
<b><i>Brevoortia</i> spp.</b>	.	<b>3</b>	<b>10</b>	<b>10</b>	<b>307</b>	.	<b>330</b>
<b><i>Callinectes sapidus</i></b>	<b>5</b>	<b>67</b>	<b>116</b>	<b>120</b>	<b>278</b>	<b>16</b>	<b>602</b>
<b><i>Caranx hippos</i></b>	.	<b>1</b>	.	.	<b>56</b>	.	<b>57</b>
<i>Caranx latus</i>	.	.	.	1	.	.	1
<b><i>Carcharhinus leucas</i></b>	.	.	.	.	<b>2</b>	.	<b>2</b>
<b><i>Centropomus undecimalis</i></b>	.	.	<b>1</b>	<b>6</b>	<b>258</b>	.	<b>265</b>
<b><i>Centropristis striata</i></b>	<b>2</b>	.	.	.	<b>2</b>	<b>8</b>	<b>12</b>

Taxa	Gear and Strata						Totals
	21.3-m bay seine			21.3-m river seine	183-m haul seine	6.1-m otter trawl	
	Veg	Unveg	Shore				
	E=19	E=125	E=108	E=168	E=192	E=40	
<i>Chaetodipterus faber</i>	.	9	57	.	137	28	231
<i>Chasmodes saburrae</i>	5	.	.	.	.	.	5
<i>Chilomycterus schoepfii</i>	7	1	5	.	28	13	54
<i>Chloroscombrus chrysurus</i>	.	.	.	.	177	8	185
<i>Citharichthys macrops</i>	.	.	.	.	.	13	13
<i>Ctenogobius boleosoma</i>	.	6	7	8	.	.	21
<i>Ctenogobius smaragdus</i>	.	.	4	4	.	.	8
<b><i>Cynoscion arenarius</i></b>	.	<b>92</b>	<b>151</b>	<b>184</b>	<b>20</b>	<b>88</b>	<b>535</b>
<b><i>Cynoscion nebulosus</i></b>	<b>5</b>	<b>18</b>	<b>43</b>	<b>82</b>	<b>177</b>	.	<b>325</b>
<i>Cyprinodon variegatus</i>	.	.	2	1	.	.	3
<i>Dactyloscopus moorei</i>	1	.	.	.	.	.	1
<i>Dasyatis americana</i>	.	.	.	.	23	.	23
<i>Dasyatis sabina</i>	.	33	20	2	2,141	27	2,223
<i>Dasyatis say</i>	.	.	3	.	324	1	328
<i>Diapterus auratus</i>	.	.	.	.	2	.	2
<b><i>Diplectrum formosum</i></b>	.	.	<b>1</b>	.	.	<b>9</b>	<b>10</b>
<i>Diplodus holbrookii</i>	1	.	.	.	.	.	1
<i>Dorosoma cepedianum</i>	.	.	.	.	76	.	76
<i>Dorosoma petenense</i>	.	.	.	1	2	.	3
<i>Echeneis neucratoides</i>	.	1	.	.	16	.	17
<b><i>Elops saurus</i></b>	<b>1</b>	<b>2</b>	<b>1</b>	<b>1</b>	<b>349</b>	.	<b>354</b>
<i>Etheostoma fusiforme</i>	.	.	.	1	.	.	1
<i>Etropus crossotus</i>	.	10	2	.	173	260	445
<i>Eucinostomus gula</i>	19	47	257	57	102	124	606
<i>Eucinostomus harengulus</i>	.	96	207	318	43	4	668
<i>Eucinostomus</i> spp.	276	732	1,089	1,233	.	2	3,332
<b><i>Farfantepenaeus duorarum</i></b>	<b>12</b>	<b>6</b>	<b>7</b>	.	<b>74</b>	<b>121</b>	<b>220</b>
<b><i>Farfantepenaeus</i> spp.</b>	<b>58</b>	<b>179</b>	<b>399</b>	<b>77</b>	<b>3</b>	<b>4</b>	<b>720</b>

Taxa	Gear and Strata						Totals
	21.3-m bay seine			21.3-m river seine	183-m haul seine	6.1-m otter trawl	
	Veg	Unveg	Shore				
	E=19	E=125	E=108	E=168	E=192	E=40	
<i>Fundulus confluentus</i>	.	.	.	16	.	.	16
<i>Fundulus grandis</i>	.	.	52	199	.	.	251
<i>Fundulus seminolis</i>	.	.	2	192	.	.	194
<i>Fundulus similis</i>	.	.	159	26	6	.	191
<i>Gambusia holbrooki</i>	.	.	.	94	.	.	94
<i>Gobionellus oceanicus</i>	.	.	.	.	.	1	1
<i>Gobiosoma bosc</i>	.	9	2	40	.	.	51
<i>Gobiosoma robustum</i>	8	5	3	1	.	.	17
<i>Gobiosoma</i> spp.	.	34	3	38	.	.	75
<i>Gymnura micrura</i>	.	.	.	.	38	.	38
<b><i>Haemulon plumierii</i></b>	.	.	.	.	.	<b>3</b>	<b>3</b>
<i>Harengula jaguana</i>	2	6	2	6	384	2	402
<i>Hemicaranx amblyrhynchus</i>	.	1	.	.	.	.	1
<i>Heterandria formosa</i>	.	.	.	3	.	.	3
<i>Hippocampus erectus</i>	1	.	.	.	.	5	6
<i>Hippocampus zosterae</i>	1	.	.	.	.	.	1
<i>Hyporhamphus meeki</i>	.	.	1	.	.	.	1
<i>Hyporhamphus</i> sp.	.	.	.	1	.	.	1
<i>Hypsoblennius hentz</i>	1	.	.	.	.	1	2
<i>Labidesthes sicculus</i>	.	.	.	48	.	.	48
<i>Lagodon rhomboides</i>	340	115	305	360	1,569	51	2,740
<b><i>Leiostomus xanthurus</i></b>	.	<b>40</b>	<b>185</b>	<b>386</b>	<b>294</b>	<b>19</b>	<b>924</b>
<i>Lepisosteus osseus</i>	.	.	.	1	17	.	18
<i>Lepisosteus platyrhincus</i>	.	.	.	9	.	.	9
<i>Lepomis auritus</i>	.	.	.	5	.	.	5
<i>Lepomis gulosus</i>	.	.	.	1	.	.	1
<i>Lepomis macrochirus</i>	.	.	.	13	.	.	13
<i>Lepomis microlophus</i>	.	.	.	8	.	.	8

Taxa	Gear and Strata						Totals
	21.3-m bay seine			21.3-m river seine	183-m haul seine	6.1-m otter trawl	
	Veg	Unveg	Shore				
	E=19	E=125	E=108	E=168	E=192	E=40	
<i>Lepomis punctatus</i>	.	.	.	21	.	.	21
<i>Lepomis</i> spp.	.	.	.	9	.	.	9
<i>Limulus polyphemus</i>	.	2	9	.	46	1	58
<b><i>Litopenaeus setiferus</i></b>	.	<b>26</b>	<b>196</b>	<b>1,671</b>	<b>135</b>	<b>748</b>	<b>2,776</b>
<b><i>Lobotes surinamensis</i></b>	.	.	.	.	<b>9</b>	.	<b>9</b>
<i>Lucania goodei</i>	.	.	.	17	.	.	17
<i>Lucania parva</i>	.	.	.	81	.	.	81
<b><i>Lutjanus griseus</i></b>	.	<b>1</b>	<b>3</b>	<b>23</b>	<b>10</b>	.	<b>37</b>
<b><i>Lutjanus synagris</i></b>	.	.	.	.	<b>1</b>	<b>8</b>	<b>9</b>
<b><i>Megalops atlanticus</i></b>	.	.	.	.	<b>1</b>	.	<b>1</b>
<i>Membras martinica</i>	.	36	199	14	.	.	249
<i>Menidia</i> spp.	.	54	1,534	2,369	.	.	3,957
<b><i>Menippe</i> spp.</b>	.	<b>2</b>	.	.	<b>2</b>	<b>29</b>	<b>33</b>
<b><i>Menticirrhus americanus</i></b>	.	<b>76</b>	<b>469</b>	<b>4</b>	<b>114</b>	<b>193</b>	<b>856</b>
<b><i>Menticirrhus saxatilis</i></b>	.	<b>6</b>	<b>22</b>	.	.	<b>4</b>	<b>32</b>
<i>Microgobius gulosus</i>	1	7	.	10	.	.	18
<i>Microgobius thalassinus</i>	.	24	6	.	.	.	30
<b><i>Micropogonias undulatus</i></b>	.	<b>43</b>	<b>18</b>	<b>2</b>	<b>19</b>	.	<b>82</b>
<i>Micropterus salmoides</i>	.	.	.	24	.	.	24
<i>Monacanthus ciliatus</i>	3	.	.	.	.	1	4
<b><i>Mugil cephalus</i></b>	<b>5</b>	<b>3</b>	<b>38</b>	<b>43</b>	<b>2,283</b>	.	<b>2,372</b>
<b><i>Mugil curema</i></b>	.	.	<b>3</b>	.	<b>108</b>	.	<b>111</b>
<b><i>Mugil trichodon</i></b>	.	.	<b>115</b>	.	<b>109</b>	.	<b>224</b>
<i>Narcine bancroftii</i>	.	.	.	.	.	1	1
<i>Notemigonus crysoleucas</i>	.	.	.	31	.	.	31
<i>Notropis maculatus</i>	.	.	.	101	.	.	101
<i>Notropis petersoni</i>	.	.	.	257	.	.	257
<i>Ogcocephalus cubifrons</i>	1	3	8	.	899	21	932

Taxa	Gear and Strata						Totals
	21.3-m bay seine			21.3-m river seine	183-m haul seine	6.1-m otter trawl	
	Veg	Unveg	Shore				
	E=19	E=125	E=108	E=168	E=192	E=40	
<i>Oligoplites saurus</i>	3	21	77	46	43	.	190
<i>Opisthonema oglinum</i>	.	1	40	1	82	3	127
<i>Opsanus beta</i>	.	.	.	.	2	5	7
<i>Opsopoeodus emiliae</i>	.	.	.	17	.	.	17
<i>Orthopristis chrysoptera</i>	79	33	221	6	51	24	414
<b><i>Paralichthys albigutta</i></b>	<b>4</b>	<b>14</b>	<b>17</b>	<b>4</b>	<b>224</b>	<b>35</b>	<b>298</b>
<i>Peprilus burti</i>	.	.	.	.	.	1	1
<i>Peprilus paru</i>	.	.	.	.	111	11	122
<i>Poecilia latipinna</i>	.	.	.	15	.	.	15
<b><i>Pogonias cromis</i></b>	.	<b>2</b>	<b>56</b>	<b>1</b>	<b>588</b>	.	<b>647</b>
<b><i>Pomatomus saltatrix</i></b>	.	.	.	.	<b>3</b>	.	<b>3</b>
<i>Pomoxis nigromaculatus</i>	.	.	.	.	1	.	1
<i>Portunus</i> spp.	4	31	2	.	13	156	206
<i>Prionotus martis</i>	.	.	.	.	.	134	134
<i>Prionotus rubio</i>	.	.	.	.	.	14	14
<i>Prionotus scitulus</i>	2	18	10	.	.	134	164
<i>Prionotus tribulus</i>	1	13	16	3	10	35	78
<b><i>Rachycentron canadum</i></b>	.	.	.	.	<b>1</b>	.	<b>1</b>
<i>Rhinoptera bonasus</i>	.	.	.	.	35	.	35
<i>Rimapenaeus constrictus</i>	.	.	.	.	.	5	5
<i>Rimapenaeus</i> sp.	.	.	.	.	.	1	1
<i>Sardinella aurita</i>	.	.	.	.	31	.	31
<b><i>Sciaenops ocellatus</i></b>	.	<b>2</b>	<b>49</b>	<b>146</b>	<b>255</b>	.	<b>452</b>
<b><i>Scomberomorus maculatus</i></b>	.	.	.	.	<b>9</b>	.	<b>9</b>
<i>Selene vomer</i>	.	.	.	2	54	.	56
<i>Serraniculus pumilio</i>	.	.	.	.	.	2	2
<i>Sphoeroides nephelus</i>	6	9	22	4	20	4	65
<b><i>Sphyrna tiburo</i></b>	.	<b>1</b>	.	.	<b>23</b>	.	<b>24</b>

Taxa	Gear and Strata						Totals
	21.3-m bay seine			21.3-m river seine	183-m haul seine	6.1-m otter trawl	
	Veg	Unveg	Shore				
	E=19	E=125	E=108	E=168	E=192	E=40	
<i>Stephanolepis hispidus</i>	5	1	1	.	.	5	12
<i>Strongylura marina</i>	.	7	16	6	23	.	52
<i>Strongylura notata</i>	.	.	4	17	4	.	25
<i>Strongylura</i> spp.	.	2	3	9	.	.	14
<i>Strongylura timuca</i>	.	.	3	4	10	.	17
<i>Symphurus plagiusa</i>	1	30	23	14	4	62	134
<i>Syngnathus floridae</i>	15	.	.	.	.	1	16
<i>Syngnathus louisianae</i>	4	1	1	.	.	12	18
<i>Syngnathus scovelli</i>	46	9	4	9	1	.	69
<i>Syngnathus springeri</i>	.	.	.	.	.	1	1
<i>Synodus foetens</i>	.	13	12	5	1	14	45
<b><i>Trachinotus carolinus</i></b>	.	.	2	.	6	.	8
<b><i>Trachinotus falcatus</i></b>	.	.	49	.	90	.	139
<i>Trinectes maculatus</i>	.	1	1	50	6	9	67
<i>Urophycis floridana</i>	3	.	.	.	.	4	7
<b>Totals</b>	<b>987</b>	<b>5,639</b>	<b>22,651</b>	<b>64,105</b>	<b>16,456</b>	<b>2,968</b>	<b>112,806</b>

Sampling with 21.3-m bay seine was stratified by the presence or absence of a shoreline ('Shore' or offshore) within 5-m. Offshore sets were further stratified by the presence or absence of bottom vegetation ('Veg' or 'Unveg'). Sampling with 21.3-m river seine and 183-m haul seine was stratified by the presence or absence of overhanging vegetation ('Over' or 'Nonover'). Sampling with 6.1-m otter trawl was not stratified. Effort, or the total number of hauls, is labeled 'E'. Taxa are arranged alphabetically. Selected taxa are highlighted in bold.

**Table 4.40:** Summary by zone of taxa collected during Cedar Key stratified-random sampling, 2022.

Taxa	Zone			Totals
	B	C	F	
	E=344	E=248	E=60	E=652
<i>Acanthostracion quadricornis</i>	1	8	.	9
<i>Achirus lineatus</i>	17	7	2	26
<i>Adinia xenica</i>	21	.	1	22
<i>Aetobatus narinari</i>	1	.	.	1
<i>Albula</i> sp.	.	1	.	1
<i>Alosa alabamae</i>	1	1	.	2
<i>Aluterus schoepfii</i>	1	2	.	3
<i>Ameiurus catus</i>	3	.	.	3
<i>Amia calva</i>	.	.	2	2
<i>Anchoa hepsetus</i>	176	76	1	253
<i>Anchoa mitchilli</i>	51,156	5,920	16,167	73,243
<i>Anchoa</i> sp.	1	.	.	1
<i>Ancylopsetta quadrocellata</i>	9	11	.	20
<b><i>Archosargus probatocephalus</i></b>	<b>38</b>	<b>31</b>	.	<b>69</b>
<i>Ariopsis felis</i>	1,210	1,783	.	2,993
<i>Astroscopus y-graecum</i>	8	2	.	10
<i>Bagre marinus</i>	52	38	.	90
<i>Bairdiella chrysoura</i>	2,003	1,110	33	3,146
<i>Bathygobius soporator</i>	27	2	15	44
<b><i>Brevoortia</i> spp.</b>	<b>316</b>	<b>13</b>	<b>1</b>	<b>330</b>
<b><i>Callinectes sapidus</i></b>	<b>343</b>	<b>192</b>	<b>67</b>	<b>602</b>
<b><i>Caranx hippos</i></b>	<b>51</b>	<b>6</b>	.	<b>57</b>
<i>Caranx latus</i>	1	.	.	1
<b><i>Carcharhinus leucas</i></b>	<b>1</b>	<b>1</b>	.	<b>2</b>
<b><i>Centropomus undecimalis</i></b>	<b>75</b>	<b>190</b>	.	<b>265</b>
<b><i>Centropristis striata</i></b>	.	<b>12</b>	.	<b>12</b>
<i>Chaetodipterus faber</i>	140	91	.	231

Taxa	Zone			Totals
	B	C	F	
	E=344	E=248	E=60	E=652
<i>Chasmodes saburrae</i>	.	5	.	5
<i>Chilomycterus schoepfii</i>	1	53	.	54
<i>Chloroscombrus chrysurus</i>	81	104	.	185
<i>Citharichthys macrops</i>	1	12	.	13
<i>Ctenogobius boleosoma</i>	12	6	3	21
<i>Ctenogobius smaragdus</i>	4	4	.	8
<b><i>Cynoscion arenarius</i></b>	<b>372</b>	<b>135</b>	<b>28</b>	<b>535</b>
<b><i>Cynoscion nebulosus</i></b>	<b>239</b>	<b>74</b>	<b>12</b>	<b>325</b>
<i>Cyprinodon variegatus</i>	2	1	.	3
<i>Dactyloscopus moorei</i>	.	1	.	1
<i>Dasyatis americana</i>	1	22	.	23
<i>Dasyatis sabina</i>	939	1,284	.	2,223
<i>Dasyatis say</i>	147	181	.	328
<i>Diapterus auratus</i>	.	2	.	2
<b><i>Diplectrum formosum</i></b>	<b>1</b>	<b>9</b>	.	<b>10</b>
<i>Diplodus holbrookii</i>	.	1	.	1
<i>Dorosoma cepedianum</i>	35	41	.	76
<i>Dorosoma petenense</i>	1	2	.	3
<i>Echeneis neucratoides</i>	2	15	.	17
<b><i>Elops saurus</i></b>	<b>219</b>	<b>135</b>	.	<b>354</b>
<i>Etheostoma fusiforme</i>	.	.	1	1
<i>Etropus crossotus</i>	252	193	.	445
<i>Eucinostomus gula</i>	177	419	10	606
<i>Eucinostomus harengulus</i>	378	267	23	668
<i>Eucinostomus</i> spp.	1,852	1,319	161	3,332
<b><i>Farfantepenaeus duorarum</i></b>	<b>44</b>	<b>176</b>	.	<b>220</b>
<b><i>Farfantepenaeus</i> spp.</b>	<b>235</b>	<b>435</b>	<b>50</b>	<b>720</b>
<i>Fundulus confluentus</i>	16	.	.	16
<i>Fundulus grandis</i>	221	24	6	251

Taxa	Zone			Totals
	B	C	F	
	E=344	E=248	E=60	E=652
<i>Fundulus seminolis</i>	2	2	190	194
<i>Fundulus similis</i>	144	47	.	191
<i>Gambusia holbrooki</i>	16	.	78	94
<i>Gobionellus oceanicus</i>	1	.	.	1
<i>Gobiosoma bosc</i>	20	1	30	51
<i>Gobiosoma robustum</i>	1	15	1	17
<i>Gobiosoma</i> spp.	40	8	27	75
<i>Gymnura micrura</i>	9	29	.	38
<b><i>Haemulon plumierii</i></b>	.	<b>3</b>	.	<b>3</b>
<i>Harengula jaguana</i>	338	64	.	402
<i>Hemicaranx amblyrhynchus</i>	.	1	.	1
<i>Heterandria formosa</i>	2	.	1	3
<i>Hippocampus erectus</i>	1	5	.	6
<i>Hippocampus zosterae</i>	.	1	.	1
<i>Hyporhamphus meeki</i>	.	1	.	1
<i>Hyporhamphus</i> sp.	1	.	.	1
<i>Hypsoblennius hentz</i>	.	2	.	2
<i>Labidesthes sicculus</i>	.	.	48	48
<i>Lagodon rhomboides</i>	705	1,990	45	2,740
<b><i>Leiostomus xanthurus</i></b>	<b>720</b>	<b>149</b>	<b>55</b>	<b>924</b>
<i>Lepisosteus osseus</i>	15	2	1	18
<i>Lepisosteus platyrhincus</i>	4	.	5	9
<i>Lepomis auritus</i>	.	.	5	5
<i>Lepomis gulosus</i>	.	.	1	1
<i>Lepomis macrochirus</i>	.	.	13	13
<i>Lepomis microlophus</i>	.	.	8	8
<i>Lepomis punctatus</i>	.	.	21	21
<i>Lepomis</i> spp.	.	.	9	9
<i>Limulus polyphemus</i>	36	22	.	58

Taxa	Zone			Totals
	B	C	F	
	E=344	E=248	E=60	E=652
<b><i>Litopenaeus setiferus</i></b>	1,911	414	451	2,776
<b><i>Lobotes surinamensis</i></b>	7	2	.	9
<i>Lucania goodei</i>	.	.	17	17
<i>Lucania parva</i>	12	.	69	81
<b><i>Lutjanus griseus</i></b>	23	2	12	37
<b><i>Lutjanus synagris</i></b>	4	5	.	9
<b><i>Megalops atlanticus</i></b>	1	.	.	1
<i>Membras martinica</i>	156	93	.	249
<i>Menidia</i> spp.	3,029	645	283	3,957
<b><i>Menippe</i> spp.</b>	12	21	.	33
<b><i>Menticirrhus americanus</i></b>	626	230	.	856
<b><i>Menticirrhus saxatilis</i></b>	26	6	.	32
<i>Microgobius gulosus</i>	10	2	6	18
<i>Microgobius thalassinus</i>	20	10	.	30
<b><i>Micropogonias undulatus</i></b>	76	6	.	82
<i>Micropterus salmoides</i>	3	.	21	24
<i>Monacanthus ciliatus</i>	.	4	.	4
<b><i>Mugil cephalus</i></b>	1,313	1,058	1	2,372
<b><i>Mugil curema</i></b>	38	73	.	111
<b><i>Mugil trichodon</i></b>	7	217	.	224
<i>Narcine bancroftii</i>	.	1	.	1
<i>Notemigonus crysoleucas</i>	.	.	31	31
<i>Notropis maculatus</i>	1	.	100	101
<i>Notropis petersoni</i>	.	.	257	257
<i>Ogcocephalus cubifrons</i>	35	897	.	932
<i>Oligoplites saurus</i>	101	81	8	190
<i>Opisthonema oglinum</i>	95	32	.	127
<i>Opsanus beta</i>	.	7	.	7
<i>Opsopoeodus emiliae</i>	.	.	17	17

Taxa	Zone			Totals
	B	C	F	
	E=344	E=248	E=60	E=652
<i>Orthopristis chrysoptera</i>	32	382	.	414
<b><i>Paralichthys albigutta</i></b>	<b>96</b>	<b>201</b>	<b>1</b>	<b>298</b>
<i>Peprilus burti</i>	1	.	.	1
<i>Peprilus paru</i>	80	42	.	122
<i>Poecilia latipinna</i>	15	.	.	15
<b><i>Pogonias cromis</i></b>	<b>384</b>	<b>263</b>	.	<b>647</b>
<b><i>Pomatomus saltatrix</i></b>	<b>3</b>	.	.	<b>3</b>
<i>Pomoxis nigromaculatus</i>	1	.	.	1
<i>Portunus</i> spp.	25	181	.	206
<i>Prionotus martis</i>	109	25	.	134
<i>Prionotus rubio</i>	3	11	.	14
<i>Prionotus scitulus</i>	51	113	.	164
<i>Prionotus tribulus</i>	40	38	.	78
<b><i>Rachycentron canadum</i></b>	.	<b>1</b>	.	<b>1</b>
<i>Rhinoptera bonasus</i>	19	16	.	35
<i>Rimapenaeus constrictus</i>	2	3	.	5
<i>Rimapenaeus</i> sp.	.	1	.	1
<i>Sardinella aurita</i>	31	.	.	31
<b><i>Sciaenops ocellatus</i></b>	<b>256</b>	<b>145</b>	<b>51</b>	<b>452</b>
<b><i>Scomberomorus maculatus</i></b>	<b>4</b>	<b>5</b>	.	<b>9</b>
<i>Selene vomer</i>	14	42	.	56
<i>Serraniculus pumilio</i>	1	1	.	2
<i>Sphoeroides nephelus</i>	12	53	.	65
<b><i>Sphyrna tiburo</i></b>	<b>11</b>	<b>13</b>	.	<b>24</b>
<i>Stephanolepis hispidus</i>	2	10	.	12
<i>Strongylura marina</i>	36	16	.	52
<i>Strongylura notata</i>	21	4	.	25
<i>Strongylura</i> spp.	10	2	2	14
<i>Strongylura timucu</i>	7	10	.	17

Taxa	Zone			Totals
	B	C	F	
	E=344	E=248	E=60	E=652
<i>Symphurus plagiusa</i>	94	38	2	134
<i>Syngnathus floridae</i>	.	16	.	16
<i>Syngnathus louisianae</i>	1	17	.	18
<i>Syngnathus scovelli</i>	9	53	7	69
<i>Syngnathus springeri</i>	.	1	.	1
<i>Synodus foetens</i>	26	19	.	45
<b><i>Trachinotus carolinus</i></b>	<b>3</b>	<b>5</b>	.	<b>8</b>
<b><i>Trachinotus falcatus</i></b>	<b>82</b>	<b>57</b>	.	<b>139</b>
<i>Trinectes maculatus</i>	24	11	32	67
<i>Urophycis floridana</i>	4	3	.	7
<b>Totals</b>	<b>71,954</b>	<b>22,363</b>	<b>18,489</b>	<b>112,806</b>

Zone B encompassed the northern portion of the universe and included all tidal creeks; Zone C encompassed the southern portion of the universe; Zone F encompassed the lower Suwanee River. Effort, or the total number of hauls, is labeled 'E'. Taxa are arranged alphabetically. selected taxa are highlighted in bold.

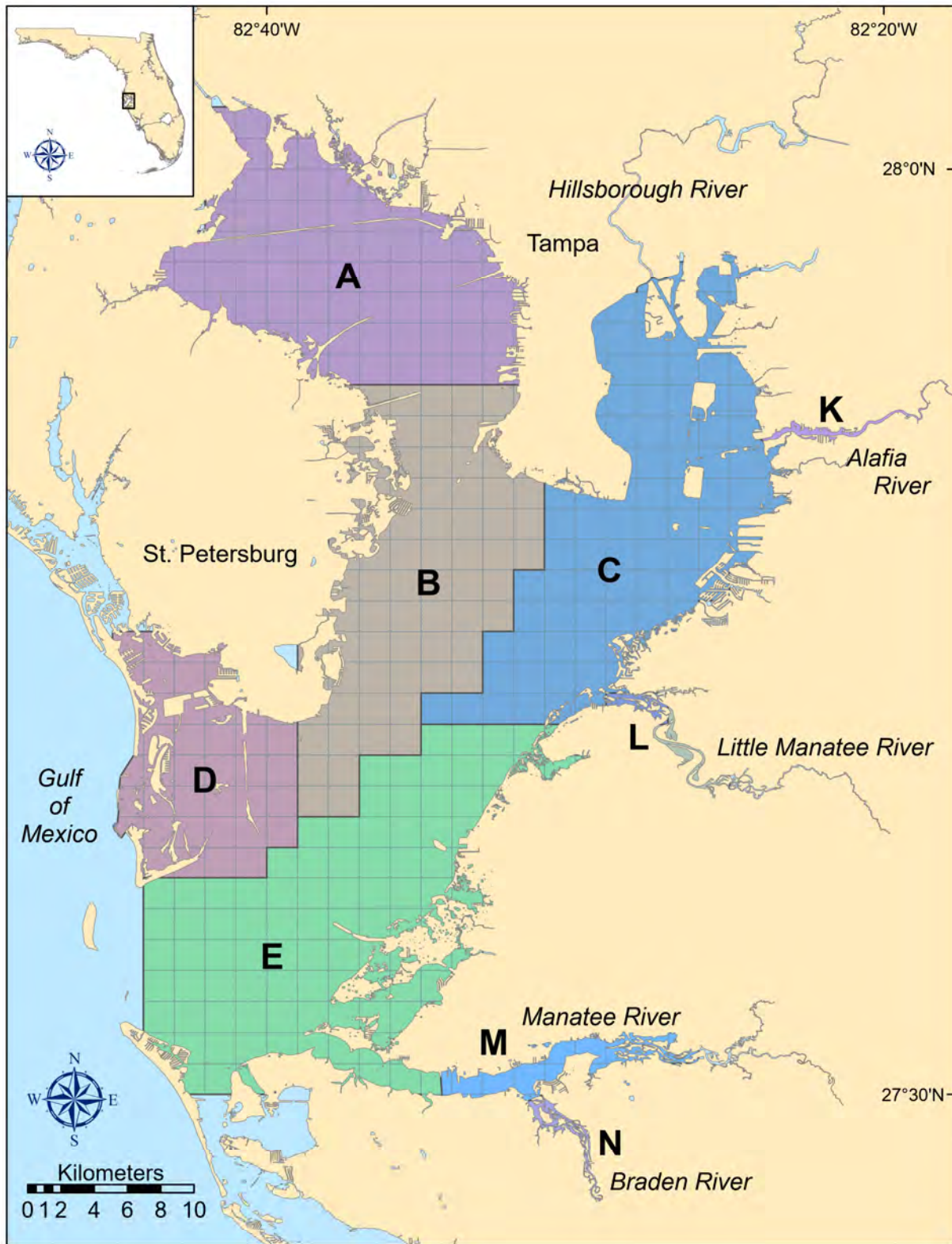
## 4.5 Tampa Bay

Tampa Bay is a drowned river estuary located on the west central coast of Florida. The bay is connected to the Gulf of Mexico through two main channels located on either side of Egmont Key and several smaller passes and channels to the north of Mullet and Long Keys and to the south of Anna Maria Island. Freshwater inflow comes from over 100 tributaries, although more than 80% enters from four main rivers (Alafia, Hillsborough, Manatee, and Little Manatee (Schmidt and Luther 2002)). Shoreline vegetation consists largely of mangroves and marsh grasses, and bottom substrates are typically characterized as sand, mud, oysters, or a combination thereof (Flannery 1989). Submerged seagrass meadows are the dominant vegetative cover in Tampa Bay and are widely distributed throughout the bay (Haddad 1989).

The Fisheries-Independent Monitoring (FIM) program has conducted intensive sampling of fish and selected invertebrates in Tampa Bay since 1989. The area sampled was divided into five geographically-defined bay zones (A–E) and four riverine zones (K–N; Figure 4.5). The riverine zones were defined as the Alafia (K), Little Manatee (L), Manatee (M), and Braden (N) rivers. Monthly stratified-random sampling (SRS) was conducted in Zones A–E using 21.3-m bay seines, 183-m haul seines, and 6.1-m bay otter trawls. Monthly SRS was conducted in Zones K–N with 21.3-m river seines and 6.1-m river otter trawls. All methods were the same as those described in Chapter 2. This section summarizes data collected by the FIM program during 2022 in Tampa Bay.

### Stratified-Random Sampling

A total of 309,526 animals, which included 150 taxa of fishes and 12 taxa of selected invertebrates, were collected from 1,116 Tampa Bay SRS samples in 2022 (Table 4.41, Table 4.53, Table 4.52, Table 4.54). *Anchoa mitchilli* (n=129,487) was the most numerous taxon collected, representing 41.8% of the total catch. *Menidia spp.* (n=45,167) and *Lagodon rhomboides* (n=28,441) were the next most abundant taxa collected, accounting for an additional 23.8% of the total catch. A total of 42 selected taxa (n=13,346 animals) composed 4.3% of the total catch. *Elops saurus* (n=4,039) was the most abundant Selected Taxon, representing 1.3% of the total catch. *Farfantepenaeus duorarum* (n=2,902), *Mugil cephalus* (n=1,080), *Cynoscion nebulosus* (n=878), and *Sciaenops ocellatus* (n=721) were the next most abundant selected taxa, comprising 1.8% of the total catch. Collections in 2022 included 3 species new to the TB FIM collection: *Argopecten gibbus*, *Chaetodon capistratus*, *Prionotus martis*.



**Figure 4.5:** Map of Tampa Bay sampling area. Zones are labeled A-E (bay zones) and K-N (river zones).

**Table 4.41:** Summary of catch and effort data for Tampa Bay stratified-random sampling, 2022.

Zone	21.3-m bay seine		21.3-m river seine		183-m haul seine		6.1-m otter trawl		Totals	
	Animals	Hauls	Animals	Hauls	Animals	Hauls	Animals	Hauls	Animals	Hauls
<b>A</b>	12,192	84	.	.	2,521	48	635	12	15,348	144
<b>B</b>	13,952	72	.	.	5,067	48	453	12	19,472	132
<b>C</b>	17,531	108	.	.	9,607	48	586	16	27,724	172
<b>D</b>	22,562	60	.	.	15,759	36	355	8	38,676	104
<b>E</b>	23,432	84	.	.	10,669	60	789	12	34,890	156
<b>K</b>	.	.	38,694	117	.	.	964	12	39,658	129
<b>L</b>	.	.	72,102	81	.	.	3,493	36	75,595	117
<b>M</b>	.	.	17,121	72	.	.	3,401	24	20,522	96
<b>N</b>	.	.	36,418	54	.	.	1,223	12	37,641	66
<b>Totals</b>	<b>89,669</b>	<b>408</b>	<b>164,335</b>	<b>324</b>	<b>43,623</b>	<b>240</b>	<b>11,899</b>	<b>144</b>	<b>309,526</b>	<b>1,116</b>

## Bay Sampling

### 21.3-m Bay Seines

A total of 89,669 animals were collected in 408 21.3-m bay seines, representing 29% of the overall SRS catch (Table 4.41). *Anchoa mitchilli* (n=19,662) and *Lucania parva* (n=13,438) were the most abundant taxa, accounting for 36.9% of the bay seine catch (Table 4.42). The taxa most frequently caught in 21.3-m bay seines were *Eucinostomus spp.* (51.7% occurrence) and *Microgobius gulosus* (48.3% occurrence).

A total of 3,324 animals from 29 selected taxa were collected, representing 3.7% of the entire 21.3-m bay seine catch (Table 4.43). *Farfantepenaeus duorarum* (n=1,713) was the most abundant Selected Taxon, accounting for 51.5% of the selected taxa collected by this gear. The selected taxa most frequently caught in 21.3-m bay seines were *Farfantepenaeus duorarum* (31.1% occurrence) and *Cynoscion nebulosus* (17.2% occurrence).

**Table 4.42:** Catch statistics for 10 dominant taxa collected in 408 21.3-m bay seine samples during Tampa Bay stratified-random sampling, 2022.

Species	Number			Density Estimate (animals/100m <sup>2</sup> )				Standard Length (mm)			
	No.	%	% Occur	Mean	Stderr	CV	Max	Mean	Stderr	Min	Max
<i>Anchoa mitchilli</i>	19,662	21.9	12.3	35.92	15.26	840.05	3,941.43	35	0.05	14	55
<i>Lucania parva</i>	13,438	15.0	35.3	24.55	5.46	439.60	1,267.86	25	0.04	9	51
<i>Eucinostomus</i> spp.	12,320	13.7	51.7	22.51	3.11	273.52	626.43	27	0.06	9	42
<i>Menidia</i> spp.	12,143	13.5	23.8	22.18	5.46	486.67	1,322.86	41	0.12	14	92
<i>Microgobius gulosus</i>	7,883	8.8	48.3	14.40	1.93	265.10	393.57	27	0.07	9	87
<i>Lagodon rhomboides</i>	6,678	7.4	25.2	12.11	4.31	706.79	1,475.00	34	0.19	12	135
<i>Eucinostomus gula</i>	3,383	3.8	34.8	6.18	0.84	267.75	173.57	55	0.17	40	106
<i>Floridichthys carpio</i>	2,859	3.2	22.1	5.21	1.07	404.80	192.14	31	0.20	9	61
<i>Farfantepenaeus duorarum</i>	1,713	1.9	31.1	3.13	0.60	379.80	120.71	9	0.09	2	23
<i>Eucinostomus harengulus</i>	1,178	1.3	22.1	2.15	0.39	360.35	98.57	60	0.35	40	101
Subtotals	81,257	90.5	.	.	.	.	.	.	.	2	135
<b>Totals</b>	<b>89,669</b>	<b>100.0</b>	.	<b>163.81</b>	<b>19.54</b>	<b>240.90</b>	<b>4,343.57</b>	.	.	<b>2</b>	<b>779</b>

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.

**Table 4.43:** Catch statistics for selected taxa collected in 408 21.3-m bay seine samples during Tampa Bay stratified-random sampling, 2022.

Species	Number			Density Estimate (animals/100m <sup>2</sup> )				Standard Length (mm)			
	No.	%	% Occur	Mean	Stderr	CV	Max	Mean	Stderr	Min	Max
<i>Farfantepenaeus duorarum</i>	1,713	1.9	31.1	3.00	0.58	388.51	120.71	9	0.09	2	23
<i>Cynoscion nebulosus</i>	405	0.5	17.2	0.71	0.16	463.91	53.57	36	1.03	12	193
<i>Mugil cephalus</i>	308	0.3	3.2	0.54	0.30	1,125.89	107.86	31	2.05	21	364
<i>Sciaenops ocellatus</i>	187	0.2	8.8	0.33	0.09	566.86	25.00	34	3.12	10	417
<i>Mugil trichodon</i>	178	0.2	4.2	0.31	0.18	1,175.06	71.43	31	1.79	15	142
<i>Leiostomus xanthurus</i>	171	0.2	1.7	0.30	0.25	1,675.37	100.71	29	0.82	14	73
<i>Lutjanus griseus</i>	67	0.1	3.4	0.12	0.09	1,485.51	35.00	134	4.46	22	215
<i>Lutjanus synagris</i>	44	<0.1	2.7	0.08	0.03	856.51	10.71	33	2.06	12	76
<i>Callinectes sapidus</i>	41	<0.1	6.9	0.07	0.01	415.28	2.86	41	6.27	8	155
<i>Archosargus probatocephalus</i>	33	<0.1	4.4	0.06	0.02	582.46	3.57	76	12.57	13	254
<i>Menticirrhus americanus</i>	31	<0.1	3.7	0.05	0.02	698.52	5.71	20	1.28	9	35
<i>Trachinotus falcatus</i>	31	<0.1	0.7	0.05	0.05	1,891.50	20.71	57	2.81	15	78
<i>Haemulon plumierii</i>	27	<0.1	1.5	0.05	0.03	1,251.60	10.00	47	1.74	27	66
<i>Menticirrhus saxatilis</i>	21	<0.1	2.2	0.04	0.02	981.73	6.43	33	3.09	13	55
<i>Paralichthys albigutta</i>	14	<0.1	2.9	0.02	0.01	604.64	1.43	92	21.57	25	299
<i>Calamus</i> spp.	13	<0.1	2.2	0.02	0.01	739.33	2.14	22	1.08	13	28
<i>Calamus penna</i>	10	<0.1	1.5	0.02	0.01	898.88	2.14	36	1.84	32	52
<i>Elops saurus</i>	6	<0.1	0.5	0.01	0.01	1,715.77	3.57	209	34.57	38	255
<i>Cynoscion arenarius</i>	5	<0.1	0.5	0.01	0.01	1,664.69	2.86	20	0.81	18	23

Species	Number		Density Estimate (animals/100m <sup>2</sup> )				Standard Length (mm)				
	No.	% Occur	Mean	Stderr	CV	Max	Mean	Stderr	Min	Max	
<i>Mugil curema</i>	5	<0.1	0.5	0.01	0.01	1,454.92	2.14	164	5.63	150	178
<i>Centropristis striata</i>	4	<0.1	0.7	0.01	<0.01	1,234.40	1.43	89	9.47	67	105
<i>Albula</i> spp.	2	<0.1	0.5	<0.01	<0.01	1,426.53	0.71	42	1.50	40	43
<i>Brevoortia</i> spp.	2	<0.1	0.5	<0.01	<0.01	1,426.53	0.71	21	2.00	19	23
<i>Argopecten irradians</i>	1	<0.1	0.2	<0.01	<0.01	2,019.90	0.71	58	.	58	58
<i>Centropomus undecimalis</i>	1	<0.1	0.2	<0.01	<0.01	2,019.90	0.71	349	.	349	349
<i>Epinephelus itajara</i>	1	<0.1	0.2	<0.01	<0.01	2,019.90	0.71	59	.	59	59
<i>Menticirrhus littoralis</i>	1	<0.1	0.2	<0.01	<0.01	2,019.90	0.71	183	.	183	183
<i>Sphyrna barracuda</i>	1	<0.1	0.2	<0.01	<0.01	2,019.90	0.71	51	.	51	51
<i>Sphyrna tiburo</i>	1	<0.1	0.2	<0.01	<0.01	2,019.90	0.71	543	.	543	543
<b>Totals</b>	<b>3,324</b>	<b>3.7</b>	<b>.</b>	<b>5.82</b>	<b>0.83</b>	<b>288.73</b>	<b>136.43</b>	<b>.</b>	<b>.</b>	<b>2</b>	<b>543</b>

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.

### ***183-m Haul Seines***

A total of 43,623 animals were collected in 240 183-m haul seines, representing 14.1% of the overall SRS catch (Table 4.41). *Lagodon rhomboides* (n=21,068) was the most abundant taxon, accounting for 48.3% of the 183-m haul seine catch (Table 4.44). The taxa most frequently caught in 183-m haul seines were *Eucinostomus gula* (45.4% occurrence), *Lagodon rhomboides* (42.5% occurrence), and *Ariopsis felis* (41.2% occurrence).

A total of 6,634 animals from 39 selected taxa were collected, representing 15.2% of the entire 183-m haul seine catch (Table 4.45). *Elops saurus* (n=4,017) and *Centropomus undecimalis* (n=481) were the most abundant selected taxa, accounting for 67.8% of the selected taxa collected by this gear. The selected taxa most frequently caught in 183-m haul seines were *Centropomus undecimalis* (35.8% occurrence) and *Archosargus probatocephalus* (35.0% occurrence).

**Table 4.44:** Catch statistics for 10 dominant taxa collected in 240 183-m haul seine samples during Tampa Bay stratified-random sampling, 2022.

Species	Number			Density Estimate (animals/set)				Standard Length (mm)			
	No.	%	% Occur	Mean	Stderr	CV	Max	Mean	Stderr	Min	Max
<i>Lagodon rhomboides</i>	21,068	48.3	42.5	90.03	16.47	279.82	1,862	95	0.15	32	188
<i>Eucinostomus gula</i>	5,251	12.0	45.4	22.63	7.72	519.67	1,657	83	0.13	45	184
<i>Elops saurus</i>	4,017	9.2	17.5	17.31	16.19	1,423.83	3,755	267	0.67	131	485
<i>Ariopsis felis</i>	2,672	6.1	41.2	11.52	2.81	371.66	415	266	0.79	132	392
<i>Harengula jaguana</i>	2,429	5.6	7.5	10.47	8.87	1,290.90	2,056	117	0.21	85	143
<i>Eucinostomus harengulus</i>	1,367	3.1	32.9	5.89	1.88	486.38	321	94	0.21	45	124
<i>Opisthonema oglinum</i>	1,008	2.3	6.2	4.34	3.33	1,167.07	767	132	0.61	81	182
<i>Orthopristis chrysoptera</i>	732	1.7	10.8	3.16	2.41	1,165.80	558	103	0.70	42	172
<i>Centropomus undecimalis</i>	481	1.1	35.8	2.07	0.31	228.75	33	430	4.45	241	862
<i>Archosargus probatocephalus</i>	391	0.9	35.0	1.59	0.22	218.74	26	198	4.45	40	371
Subtotals	39,416	90.3	.	.	.	.	.	.	.	32	862
<b>Totals</b>	<b>43,623</b>	<b>100.0</b>	.	<b>188.03</b>	<b>32.87</b>	<b>270.80</b>	<b>6,149</b>	.	.	<b>7</b>	<b>862</b>

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.

**Table 4.45:** Catch statistics for selected taxa collected in 240 183-m haul seine samples during Tampa Bay stratified-random sampling, 2022.

Species	Number			Density Estimate (animals/set)				Standard Length (mm)			
	No.	%	% Occur	Mean	Stderr	CV	Max	Mean	Stderr	Min	Max
<i>Elops saurus</i>	4,017	9.2	17.5	16.74	15.65	1,448.19	3,755	267	0.67	131	485
<i>Centropomus undecimalis</i>	481	1.1	35.8	2.00	0.30	233.39	33	430	4.45	241	862
<i>Archosargus probatocephalus</i>	391	0.9	35.0	1.63	0.23	222.13	26	198	4.45	40	371
<i>Cynoscion nebulosus</i>	263	0.6	12.1	1.10	0.90	1,272.52	216	179	3.73	52	435
<i>Caranx hippos</i>	258	0.6	8.8	1.07	0.54	782.48	121	339	6.68	85	494
<i>Mugil trichodon</i>	219	0.5	17.9	0.91	0.21	364.03	24	169	2.37	107	264
<i>Sciaenops ocellatus</i>	166	0.4	29.2	0.69	0.11	255.98	17	465	12.07	104	764
<i>Mugil cephalus</i>	127	0.3	17.5	0.53	0.14	422.35	29	321	8.52	104	455
<i>Callinectes sapidus</i>	115	0.3	20.8	0.48	0.08	245.93	7	104	3.68	30	171
<i>Lutjanus griseus</i>	107	0.2	12.1	0.45	0.11	395.02	18	150	3.78	81	269
<i>Mugil curema</i>	88	0.2	10.8	0.37	0.10	424.03	13	156	3.66	107	284
<i>Sphyrna tiburo</i>	62	0.1	12.5	0.26	0.08	479.02	16	538	13.56	354	773
<i>Farfantepenaeus duorarum</i>	56	0.1	6.2	0.23	0.10	651.87	17	23	0.85	7	35
<i>Paralichthys albigutta</i>	56	0.1	13.8	0.23	0.05	338.31	6	184	12.35	52	405
<i>Leiostomus xanthurus</i>	32	0.1	2.5	0.13	0.09	1,073.60	21	139	6.61	80	212
<i>Lutjanus synagris</i>	27	0.1	3.3	0.11	0.06	817.12	12	72	5.94	38	131
<i>Pogonias cromis</i>	25	0.1	4.2	0.10	0.05	725.23	8	366	20.02	153	575
<i>Sphyrna barracuda</i>	24	0.1	7.1	0.10	0.03	407.05	3	288	13.73	196	457
<i>Brevoortia</i> spp.	21	<0.1	1.2	0.09	0.06	1,048.50	11	214	7.51	80	251

Species	Number			Density Estimate (animals/set)				Standard Length (mm)			
	No.	%	% Occur	Mean	Stderr	CV	Max	Mean	Stderr	Min	Max
<i>Trachinotus falcatus</i>	20	<0.1	2.5	0.08	0.04	737.75	6	203	21.34	62	344
<i>Trachinotus carolinus</i>	15	<0.1	2.5	0.06	0.03	732.28	5	289	9.72	222	350
<i>Menticirrhus americanus</i>	11	<0.1	0.8	0.05	0.04	1,414.80	10	214	6.98	181	271
<i>Centropristis striata</i>	10	<0.1	2.5	0.04	0.02	721.23	3	124	3.44	103	135
<i>Carcharhinus limbatus</i>	9	<0.1	0.8	0.04	0.03	1,387.06	8	427	10.48	370	470
<i>Calamus penna</i>	6	<0.1	2.1	0.03	0.01	724.93	2	105	14.49	63	145
<i>Haemulon plumierii</i>	6	<0.1	0.8	0.03	0.02	1,315.50	5	68	3.07	60	78
<i>Albula</i> spp.	3	<0.1	0.4	0.01	0.01	1,549.19	3	291	8.67	274	300
<i>Mycteroperca microlepis</i>	3	<0.1	1.2	0.01	0.01	890.68	1	127	22.66	95	171
<i>Negaprion brevirostris</i>	3	<0.1	0.8	0.01	0.01	1,152.77	2	674	77.05	532	797
<i>Caranx crysos</i>	2	<0.1	0.4	0.01	0.01	1,549.19	2	120	1.50	118	121
<i>Menippe</i> spp.	2	<0.1	0.8	0.01	0.01	1,093.15	1	73	11.00	62	84
<i>Scomberomorus maculatus</i>	2	<0.1	0.4	0.01	0.01	1,549.19	2	280	15.00	265	295
<i>Calamus arctifrons</i>	1	<0.1	0.4	<0.01	<0.01	1,549.19	1	125	.	125	125
<i>Cynoscion arenarius</i>	1	<0.1	0.4	<0.01	<0.01	1,549.19	1	147	.	147	147
<i>Diplectrum formosum</i>	1	<0.1	0.4	<0.01	<0.01	1,549.19	1	138	.	138	138
<i>Epinephelus itajara</i>	1	<0.1	0.4	<0.01	<0.01	1,549.19	1	160	.	160	160
<i>Menticirrhus littoralis</i>	1	<0.1	0.4	<0.01	<0.01	1,549.19	1	164	.	164	164
<i>Menticirrhus saxatilis</i>	1	<0.1	0.4	<0.01	<0.01	1,549.19	1	125	.	125	125
<i>Rachycentron canadum</i>	1	<0.1	0.4	<0.01	<0.01	1,549.19	1	322	.	322	322
<b>Totals</b>	<b>6,634</b>	<b>15.2</b>	<b>.</b>	<b>27.64</b>	<b>16.67</b>	<b>934.09</b>	<b>4,004</b>	<b>.</b>	<b>.</b>	<b>7</b>	<b>862</b>

Species	Number		Density Estimate (animals/set)				Standard Length (mm)			
	No.	% Occur	Mean	Stderr	CV	Max	Mean	Stderr	Min	Max

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.

### **6.1-m Bay Otter Trawls**

A total of 2,818 animals were collected in 60 6.1-m bay otter trawls, representing 0.9% of the overall SRS catch (Table 4.41). *Lagodon rhomboides* (n=347), *Prionotus scitulus* (n=328), *Chaetodipterus faber* (n=316), and *Eucinostomus gula* (n=310) were the most abundant taxa, accounting for 46.2% of the 6.1-m bay otter trawl catch (Table 4.46). The taxa most frequently caught in 6.1-m bay otter trawls were *Prionotus scitulus* (66.7% occurrence), *Farfantepenaeus duorarum* (53.3% occurrence), and *Achirus lineatus* (46.7% occurrence).

A total of 460 animals from 16 selected taxa were collected, representing 16.3% of the entire 6.1-m bay otter trawl catch (Table 4.47). *Farfantepenaeus duorarum* (n=189), *Menticirrhus americanus* (n=104), and *Cynoscion arenarius* (n=71) were the most abundant selected taxa, accounting for 79.1% of the selected taxa collected by this gear. The selected taxa most frequently caught in 6.1-m bay otter trawls were *Farfantepenaeus duorarum* (53.3% occurrence), *Menippe spp.* (18.3% occurrence), and *Menticirrhus americanus* (16.7% occurrence).

**Table 4.46:** Catch statistics for 10 dominant taxa collected in 60 6.1-m bay otter trawl samples during Tampa Bay stratified-random sampling, 2022.

Species	Number			Density Estimate (animals/100m <sup>2</sup> )				Standard Length (mm)			
	No.	%	% Occur	Mean	Stderr	CV	Max	Mean	Stderr	Min	Max
<i>Lagodon rhomboides</i>	347	12.3	23.3	0.44	0.30	505.26	16.56	84	0.96	20	137
<i>Prionotus scitulus</i>	328	11.6	66.7	0.40	0.12	219.84	6.42	93	1.51	16	162
<i>Chaetodipterus faber</i>	316	11.2	21.7	0.40	0.37	692.54	20.73	59	0.44	15	88
<i>Eucinostomus gula</i>	310	11.0	23.3	0.38	0.14	270.58	5.60	72	0.94	40	126
<i>Anchoa mitchilli</i>	245	8.7	3.3	0.30	0.25	626.08	13.56	49	0.38	30	57
<i>Farfantepenaeus duorarum</i>	189	6.7	53.3	0.24	0.06	189.44	1.82	14	0.40	4	34
<i>Portunus</i> spp.	173	6.1	30.0	0.22	0.07	258.53	3.00	46	0.97	11	84
<i>Menticirrhus americanus</i>	104	3.7	16.7	0.13	0.07	395.78	3.48	33	3.02	13	211
<i>Achirus lineatus</i>	72	2.6	46.7	0.09	0.02	183.22	0.82	58	1.69	23	115
<i>Cynoscion arenarius</i>	71	2.5	10.0	0.09	0.05	461.85	2.91	45	4.75	17	190
Subtotals	2,155	76.4	.	.	.	.	.	.	.	4	211
<b>Totals</b>	<b>2,818</b>	<b>100.0</b>	.	<b>3.51</b>	<b>0.64</b>	<b>140.29</b>	<b>22.64</b>	.	.	<b>4</b>	<b>465</b>

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.

**Table 4.47:** Catch statistics for selected taxa collected in 60 6.1-m bay otter trawl samples during Tampa Bay stratified-random sampling, 2022.

Species	Number			Density Estimate (animals/100m <sup>2</sup> )				Standard Length (mm)			
	No.	%	% Occur	Mean	Stderr	CV	Max	Mean	Stderr	Min	Max
<i>Farfantepenaeus duorarum</i>	189	6.7	53.3	0.22	0.06	197.81	1.82	14	0.40	4	34
<i>Menticirrhus americanus</i>	104	3.7	16.7	0.12	0.06	410.31	3.48	33	3.02	13	211
<i>Cynoscion arenarius</i>	71	2.5	10.0	0.08	0.05	475.87	2.91	45	4.75	17	190
<i>Lutjanus synagris</i>	22	0.8	6.7	0.03	0.02	457.35	0.81	61	8.30	21	140
<i>Menippe</i> spp.	20	0.7	18.3	0.02	0.01	258.50	0.36	31	3.55	10	68
<i>Callinectes sapidus</i>	17	0.6	10.0	0.02	0.01	423.73	0.50	86	11.13	24	172
<i>Cynoscion nebulosus</i>	9	0.3	8.3	0.01	<0.01	365.23	0.21	66	26.75	20	224
<i>Paralichthys albigutta</i>	9	0.3	8.3	0.01	0.01	400.87	0.27	170	18.43	66	261
<i>Diplectrum formosum</i>	5	0.2	6.7	0.01	<0.01	400.88	0.14	121	12.43	82	157
<i>Archosargus probatocephalus</i>	4	0.1	5.0	<0.01	<0.01	463.55	0.13	109	16.46	72	146
<i>Menticirrhus saxatilis</i>	3	0.1	1.7	<0.01	<0.01	774.60	0.20	180	6.43	170	192
<i>Centropristis striata</i>	2	0.1	3.3	<0.01	<0.01	543.25	0.07	122	22.50	100	145
<i>Haemulon plumierii</i>	2	0.1	1.7	<0.01	<0.01	774.60	0.13	48	2.00	46	50
<i>Argopecten gibbus</i>	1	<0.1	1.7	<0.01	<0.01	774.60	0.07	28	.	28	28
<i>Argopecten irradians</i>	1	<0.1	1.7	<0.01	<0.01	774.60	0.07	26	.	26	26
<i>Sciaenops ocellatus</i>	1	<0.1	1.7	<0.01	<0.01	774.60	0.07	14	.	14	14
<b>Totals</b>	<b>460</b>	<b>16.3</b>	<b>.</b>	<b>0.54</b>	<b>0.14</b>	<b>209.61</b>	<b>7.67</b>	<b>.</b>	<b>.</b>	<b>4</b>	<b>261</b>

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.

## River Sampling

### *21.3-m River Seines*

A total of 164,335 animals were collected in 324 21.3-m river seines, representing 53.1% of the overall SRS catch (Table 4.41). *Anchoa mitchilli* (n=104,222) was the most abundant taxon collected, accounting for 63.4% of the 21.3-m river seine catch (Table 4.48). *Menidia spp.* (n=33,021) and *Eucinostomus spp.* (n=5,715) were the next most abundant taxa, accounting for an additional 23.6% of the 21.3-m river seine catch. The taxa most frequently caught in 21.3-m river seines were *Menidia spp.* (80.9% occurrence), *Microgobius gulosus* (67.6% occurrence), and *Eucinostomus spp.* (66.7% occurrence).

A total of 2,150 animals from 16 selected taxa were collected, representing 1.3% of the entire 21.3-m river seine catch (Table 4.49). *Mugil cephalus* (n=645), and *Farfantepenaeus duorarum* (n=524) were the most abundant selected taxa, accounting for 54.4% of the selected taxa collected by this gear. The selected taxa most frequently caught in 21.3-m river seines were *Farfantepenaeus duorarum* (25.9% occurrence) and *Sciaenops ocellatus* (20.7% occurrence).

**Table 4.48:** Catch statistics for 10 dominant taxa collected in 324 21.3-m river seine samples during Tampa Bay stratified-random sampling, 2022.

Species	Number			Density Estimate (animals/100m <sup>2</sup> )				Standard Length (mm)			
	No.	%	% Occur	Mean	Stderr	CV	Max	Mean	Stderr	Min	Max
<i>Anchoa mitchilli</i>	104,222	63.4	52.2	468.71	136.00	524.71	25,411.76	26	0.02	13	54
<i>Menidia</i> spp.	33,021	20.1	80.9	147.60	18.56	228.10	3,870.59	39	0.06	10	84
<i>Eucinostomus</i> spp.	5,715	3.5	66.7	25.47	3.78	269.82	989.71	25	0.09	9	41
<i>Lucania parva</i>	5,346	3.3	41.7	24.26	6.94	514.72	1,997.06	23	0.07	10	41
<i>Microgobius gulosus</i>	3,915	2.4	67.6	17.71	2.03	207.06	289.71	26	0.11	9	53
<i>Eucinostomus harengulus</i>	2,038	1.2	49.7	9.28	1.40	272.08	294.12	60	0.27	40	105
<i>Eugerres plumieri</i>	1,116	0.7	33.0	5.02	0.88	316.14	154.41	48	0.93	9	227
<i>Trinectes maculatus</i>	891	0.5	39.2	4.03	0.80	359.92	188.24	20	0.24	9	61
<i>Harengula jaguana</i>	838	0.5	1.2	3.82	2.77	1,307.08	791.18	62	0.25	29	76
<i>Gobiosoma bosc</i>	749	0.5	39.5	3.41	0.58	304.50	133.82	25	0.15	20	43
Subtotals	157,851	96.1	.	.	.	.	.	.	.	9	227
<b>Totals</b>	<b>164,335</b>	<b>100.0</b>	.	<b>748.20</b>	<b>142.46</b>	<b>342.74</b>	<b>26,038.24</b>	.	.	<b>2</b>	<b>686</b>

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.

**Table 4.49:** Catch statistics for selected taxa collected in 324 21.3-m river seine samples during Tampa Bay stratified-random sampling, 2022.

Species	Number			Density Estimate (animals/100m <sup>2</sup> )				Standard Length (mm)			
	No.	%	% Occur	Mean	Stderr	CV	Max	Mean	Stderr	Min	Max
<i>Mugil cephalus</i>	645	0.4	9.6	2.93	1.04	637.81	205.88	39	0.88	20	190
<i>Farfantepenaeus duorarum</i>	524	0.3	25.9	2.38	0.63	475.18	182.35	7	0.12	2	17
<i>Sciaenops ocellatus</i>	352	0.2	20.7	1.60	0.42	468.21	86.76	44	2.54	11	480
<i>Cynoscion nebulosus</i>	148	0.1	12.7	0.67	0.19	495.75	47.06	44	1.69	14	168
<i>Cynoscion arenarius</i>	104	0.1	3.1	0.47	0.25	967.10	72.06	33	0.93	18	65
<i>Centropomus undecimalis</i>	98	0.1	14.8	0.44	0.08	337.38	13.24	172	13.19	15	500
<i>Mugil trichodon</i>	68	<0.1	0.9	0.31	0.26	1,509.93	82.35	28	0.25	26	37
<i>Leiostomus xanthurus</i>	51	<0.1	3.7	0.23	0.15	1,181.39	48.53	18	1.83	10	68
<i>Callinectes sapidus</i>	43	<0.1	7.4	0.20	0.05	494.81	13.24	26	3.43	8	117
<i>Archosargus probatocephalus</i>	41	<0.1	9.6	0.19	0.04	345.70	4.41	117	9.99	27	267
<i>Menticirrhus americanus</i>	32	<0.1	1.5	0.15	0.11	1,324.63	33.82	38	1.22	27	52
<i>Elops saurus</i>	16	<0.1	1.2	0.07	0.06	1,474.31	19.12	31	1.98	26	60
<i>Pogonias cromis</i>	11	<0.1	0.3	0.05	0.05	1,800.00	16.18	401	35.02	260	611
<i>Brevoortia</i> spp.	10	<0.1	1.2	0.05	0.02	982.33	5.88	30	2.22	20	41
<i>Lutjanus griseus</i>	4	<0.1	0.9	0.02	0.01	1,099.42	2.94	151	22.75	102	191
<i>Mugil curema</i>	3	<0.1	0.6	0.01	0.01	1,339.98	2.94	124	9.50	105	134
<b>Totals</b>	<b>2,150</b>	<b>1.3</b>	<b>.</b>	<b>9.76</b>	<b>1.55</b>	<b>285.26</b>	<b>308.82</b>	<b>.</b>	<b>.</b>	<b>2</b>	<b>611</b>

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.

### **6.1-m River Otter Trawls**

A total of 9,081 animals were collected in 84 6.1-m river otter trawls, representing 2.9% of the overall SRS catch (Table 4.41). *Anchoa mitchilli* (n=5,358) was the most abundant taxon collected, accounting for 59% of the 6.1-m river otter trawl catch (Table 4.50). The taxa most frequently caught in 6.1-m river otter trawls were *Trinectes maculatus* (40.5% occurrence), *Microgobius gulosus* (38.1% occurrence), and *Farfantepenaeus duorarum* (36.9% occurrence).

A total of 778 animals from 8 selected taxa were collected, representing 8.6% of the entire 6.1-m river otter trawl catch (Table 4.51). *Farfantepenaeus duorarum* (n=420), *Cynoscion arenarius* (n=128), and *Callinectes sapidus* (n=75) were the most abundant selected taxa, accounting for 80.1% of the selected taxa collected by this gear. The selected taxa most frequently caught in the 6.1-m river otter trawls were *Farfantepenaeus duorarum* (36.9% occurrence) and *Callinectes sapidus* (36.9% occurrence).

**Table 4.50:** Catch statistics for 10 dominant taxa collected in 84 6.1-m river otter trawl samples during Tampa Bay stratified-random sampling, 2022.

Species	Number			Density Estimate (animals/100m <sup>2</sup> )				Standard Length (mm)			
	No.	%	% Occur	Mean	Stderr	CV	Max	Mean	Stderr	Min	Max
<i>Anchoa mitchilli</i>	5,358	59.0	27.4	9.21	5.21	497.01	353.11	26	0.08	17	62
<i>Microgobius gulosus</i>	690	7.6	38.1	1.25	0.62	432.96	40.88	24	0.25	9	47
<i>Eucinostomus</i> spp.	617	6.8	32.1	1.14	0.55	424.04	39.73	23	0.28	11	39
<i>Eugerres plumieri</i>	547	6.0	9.5	0.97	0.67	602.46	45.60	33	0.20	18	75
<i>Farfantepenaeus duorarum</i>	420	4.6	36.9	0.77	0.36	405.95	26.08	9	0.24	3	32
<i>Trinectes maculatus</i>	389	4.3	40.5	0.70	0.36	447.21	25.63	31	0.73	11	82
<i>Lagodon rhomboides</i>	146	1.6	14.3	0.27	0.16	537.22	10.79	26	0.68	19	86
<i>Cynoscion arenarius</i>	128	1.4	14.3	0.22	0.12	486.49	8.90	30	1.51	14	119
<i>Ariopsis felis</i>	88	1.0	23.8	0.16	0.08	421.91	5.67	164	11.73	46	380
<i>Eucinostomus harengulus</i>	80	0.9	21.4	0.14	0.05	286.10	2.83	54	1.39	40	88
Subtotals	8,463	93.2	.	.	.	.	.	.	.	3	380
<b>Totals</b>	<b>9,081</b>	<b>100.0</b>	.	<b>15.96</b>	<b>5.55</b>	<b>318.77</b>	<b>371.14</b>	.	.	<b>3</b>	<b>980</b>

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.

**Table 4.51:** Catch statistics for selected taxa collected in 84 6.1-m river otter trawl samples during Tampa Bay stratified-random sampling, 2022.

Species	Number			Density Estimate (animals/100m <sup>2</sup> )				Standard Length (mm)			
	No.	%	% Occur	Mean	Stderr	CV	Max	Mean	Stderr	Min	Max
<i>Farfantepenaeus duorarum</i>	420	4.6	36.9	0.70	0.33	424.85	26.08	9	0.24	3	32
<i>Cynoscion arenarius</i>	128	1.4	14.3	0.20	0.11	508.75	8.90	30	1.51	14	119
<i>Callinectes sapidus</i>	75	0.8	36.9	0.13	0.03	196.45	1.21	97	5.80	15	191
<i>Menticirrhus americanus</i>	61	0.7	14.3	0.10	0.04	328.26	2.10	32	4.01	13	198
<i>Cynoscion nebulosus</i>	53	0.6	11.9	0.09	0.04	464.20	2.85	39	2.37	19	132
<i>Archosargus probatocephalus</i>	22	0.2	13.1	0.04	0.01	344.53	0.90	117	11.04	18	227
<i>Sciaenops ocellatus</i>	15	0.2	6.0	0.02	0.02	631.22	1.35	38	20.87	10	330
<i>Paralichthys albigutta</i>	4	<0.1	4.8	0.01	<0.01	453.41	0.17	244	61.99	150	422
<b>Totals</b>	<b>778</b>	<b>8.6</b>	<b>.</b>	<b>1.29</b>	<b>0.42</b>	<b>295.94</b>	<b>31.03</b>	<b>.</b>	<b>.</b>	<b>3</b>	<b>422</b>

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.

Appendix

**Table 4.52:** Monthly summary of taxa collected during Tampa Bay stratified-random sampling, 2022.

Taxa	Month												Totals
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
	E=119	E=90	E=68	E=105	E=68	E=90	E=83	E=90	E=104	E=105	E=104	E=90	
<i>Acanthostracion quadricornis</i>	27	16	2	17	7	2	1	4	7	17	1	6	107
<i>Achiridae</i> spp.	.	.	.	41	.	.	.	.	.	.	.	.	41
<i>Achirus lineatus</i>	25	17	8	29	2	11	42	28	18	35	46	61	322
<i>Adinia xenica</i>	.	1	.	.	.	.	.	16	.	22	.	2	41
<b><i>Albula</i> spp.</b>	.	.	.	.	<b>2</b>	.	.	.	.	<b>3</b>	.	.	<b>5</b>
<i>Aluterus schoepfii</i>	.	2	.	.	.	.	.	.	.	1	.	.	3
<i>Anarchopterus criniger</i>	.	.	.	.	.	.	.	.	.	.	1	.	1
<i>Anchoa cubana</i>	.	.	.	446	.	.	.	.	197	.	.	.	643
<i>Anchoa hepsetus</i>	.	.	.	.	15	2	.	.	.	11	.	.	28
<i>Anchoa mitchilli</i>	30,007	9,461	676	2,346	18	2,890	3,033	5,740	11,874	29,892	15,819	17,731	129,487
<i>Anchoa</i> spp.	.	.	.	.	.	2	.	1	.	.	.	.	3
<i>Ancylopussetta quadrocellata</i>	.	.	.	3	6	.	1	.	.	3	.	.	13
<b><i>Archosargus probatocephalus</i></b>	<b>75</b>	<b>31</b>	<b>21</b>	<b>20</b>	<b>38</b>	<b>46</b>	<b>35</b>	<b>35</b>	<b>58</b>	<b>44</b>	<b>44</b>	<b>44</b>	<b>491</b>
<i>Argopecten gibbus</i>	.	.	.	.	.	.	1	.	.	.	.	.	1
<i>Argopecten irradians</i>	.	.	.	.	.	.	1	.	.	.	.	1	2
<i>Ariopsis felis</i>	35	1	182	102	329	473	300	627	61	716	99	81	3,006
<i>Astroscopus y-graecum</i>	.	.	2	.	.	.	.	.	.	.	.	.	2

Taxa	Month												Totals
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
	E=119	E=90	E=68	E=105	E=68	E=90	E=83	E=90	E=104	E=105	E=104	E=90	
<i>Bagre marinus</i>	.	.	.	.	.	1	7	.	.	171	1	.	180
<i>Bairdiella chrysoura</i>	1	1	1	.	37	56	325	304	432	57	116	54	1,384
<i>Bathygobius soporator</i>	5	2	.	1	.	1	.	2	4	.	5	3	23
<i>Belonesox belizanus</i>	3	11	.	.	.	.	.	1	7	7	.	1	30
<i>Brevoortia</i> spp.	11	.	2	2	1	4	.	.	.	4	.	9	33
<i>Calamus arctifrons</i>	.	.	.	.	1	.	.	.	.	.	.	.	1
<i>Calamus penna</i>	.	3	2	6	.	1	.	1	2	1	.	.	16
<i>Calamus</i> spp.	4	6	3	.	.	.	.	.	.	.	.	.	13
<i>Callinectes ornatus</i>	.	.	.	.	1	.	.	.	1	.	.	.	2
<i>Callinectes sapidus</i>	34	20	50	14	24	6	15	6	35	23	30	34	291
<i>Callinectes</i> sp.	1	.	.	.	.	.	.	.	.	.	.	.	1
<i>Caranx crysos</i>	.	.	.	.	.	.	.	.	.	2	.	.	2
<i>Caranx hippos</i>	18	1	1	4	1	20	43	1	1	16	21	131	258
<i>Caranx latus</i>	1	.	.	.	.	.	.	1	.	2	1	1	6
<i>Carcharhinus limbatus</i>	.	.	.	.	8	1	.	.	.	.	.	.	9
<i>Centropomus undecimalis</i>	38	16	42	26	62	29	43	41	134	38	50	61	580
<i>Centropristis striata</i>	.	1	.	1	.	3	1	.	3	5	1	1	16
<i>Chaetodipterus faber</i>	.	.	2	292	104	14	43	7	20	96	2	1	581
<i>Chaetodon capistratus</i>	.	.	.	.	.	.	.	.	1	.	.	.	1
<i>Chasmodes saburrae</i>	2	.	.	.	2	1	3	12	2	2	17	9	50

Taxa	Month												Totals
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
	E=119	E=90	E=68	E=105	E=68	E=90	E=83	E=90	E=104	E=105	E=104	E=90	
<i>Chilomycterus schoepfii</i>	25	7	2	6	10	16	27	21	50	63	31	15	273
<i>Chloroscombrus chrysurus</i>	.	.	.	.	1	2	1	.	.	8	.	.	12
<i>Cichlasoma urophthalmus</i>	.	1	.	.	.	3	.	7	4	.	.	41	56
<i>Citharichthys macrops</i>	1	.	.	2	.	.	.	.	.	2	.	.	5
<i>Ctenogobius boleosoma</i>	1	.	.	.	.	.	.	.	.	.	.	.	1
<i>Ctenogobius smaragdus</i>	.	.	.	.	.	.	.	.	.	1	.	1	2
<b><i>Cynoscion arenarius</i></b>	<b>1</b>	.	<b>3</b>	.	.	<b>1</b>	<b>36</b>	<b>15</b>	<b>155</b>	<b>66</b>	<b>28</b>	<b>4</b>	<b>309</b>
<b><i>Cynoscion nebulosus</i></b>	<b>223</b>	<b>13</b>	.	<b>2</b>	<b>9</b>	<b>17</b>	<b>101</b>	<b>232</b>	<b>103</b>	<b>145</b>	<b>18</b>	<b>15</b>	<b>878</b>
<i>Cyprinodon variegatus</i>	41	15	3	23	40	3	51	27	64	15	1	3	286
<i>Dactyloscopus moorei</i>	1	.	1	.	.	.	.	.	.	.	.	.	2
<i>Dasyatis americana</i>	.	.	.	.	1	.	2	.	.	.	1	.	4
<i>Dasyatis sabina</i>	10	5	18	18	81	30	75	32	16	49	18	19	371
<i>Dasyatis say</i>	.	.	1	7	23	4	8	17	2	5	2	.	69
<i>Diapterus auratus</i>	.	2	.	2	30	8	109	23	99	.	1	.	274
<b><i>Diplectrum formosum</i></b>	<b>1</b>	.	.	<b>1</b>	.	.	<b>3</b>	.	<b>1</b>	.	.	.	<b>6</b>
<i>Diplodus holbrookii</i>	.	.	.	.	.	.	.	.	1	.	.	.	1
<i>Dorosoma petenense</i>	.	.	.	.	.	.	.	.	.	52	2	.	54
<b><i>Elops saurus</i></b>	<b>3,782</b>	<b>6</b>	<b>1</b>	<b>4</b>	<b>9</b>	<b>30</b>	<b>7</b>	<b>2</b>	<b>14</b>	<b>35</b>	<b>65</b>	<b>84</b>	<b>4,039</b>
<b><i>Epinephelus itajara</i></b>	.	.	.	.	.	.	<b>1</b>	.	.	.	.	<b>1</b>	<b>2</b>
<i>Etopus crossotus</i>	.	.	.	.	.	.	.	.	.	3	.	.	3

Taxa	Month												Totals
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
	E=119	E=90	E=68	E=105	E=68	E=90	E=83	E=90	E=104	E=105	E=104	E=90	
<i>Eucinostomus gula</i>	845	293	304	240	665	231	249	572	1,024	1,026	1,148	2,655	9,252
<i>Eucinostomus harengulus</i>	670	94	244	828	500	285	285	409	303	104	529	416	4,667
<i>Eucinostomus</i> spp.	1,094	832	140	460	76	350	1,401	1,604	1,402	2,567	4,464	4,295	18,685
<i>Eugerres plumieri</i>	34	104	.	14	5	23	438	367	513	150	156	126	1,930
<b><i>Farfantepenaeus duorarum</i></b>	<b>64</b>	<b>10</b>	<b>26</b>	<b>20</b>	<b>1</b>	<b>40</b>	<b>694</b>	<b>721</b>	<b>468</b>	<b>491</b>	<b>220</b>	<b>147</b>	<b>2,902</b>
<i>Floridichthys carpio</i>	78	214	2	86	48	53	519	321	348	252	328	697	2,946
<i>Fundulus confluentus</i>	.	.	.	.	.	.	.	.	.	.	.	3	3
<i>Fundulus grandis</i>	130	103	.	34	.	.	22	151	340	50	2	60	892
<i>Fundulus seminolis</i>	2	.	.	17	.	.	.	.	13	3	.	1	36
<i>Fundulus similis</i>	8	4	13	2	10	.	39	220	60	38	14	417	825
<i>Gambusia holbrooki</i>	63	168	.	5	.	.	.	32	5	56	17	303	649
<i>Gobiesox strumosus</i>	.	1	1	1	1	.	.	.	.	2	.	1	7
<i>Gobiosoma bosc</i>	98	133	7	15	25	64	3	119	146	16	62	102	790
<i>Gobiosoma longipala</i>	.	.	.	2	.	.	1	.	.	.	.	.	3
<i>Gobiosoma robustum</i>	79	17	32	28	38	12	33	68	100	21	9	43	480
<i>Gobiosoma</i> spp.	44	12	7	4	25	55	36	153	300	104	74	94	908
<i>Gymnura micrura</i>	1	.	.	.	3	5	2	1	.	.	.	.	12
<b><i>Haemulon plumierii</i></b>	.	.	.	.	.	.	<b>1</b>	.	.	<b>4</b>	<b>20</b>	<b>10</b>	<b>35</b>
<i>Harengula jaguana</i>	2,123	.	.	7	.	12	173	83	628	415	669	61	4,171
<i>Hemichromis letourmeuxi</i>	1	.	.	.	.	.	.	.	.	.	.	1	2

Taxa	Month												Totals
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
	E=119	E=90	E=68	E=105	E=68	E=90	E=83	E=90	E=104	E=105	E=104	E=90	
<i>Hemiramphus brasiliensis</i>	.	.	.	.	1	.	.	.	.	.	.	.	1
<i>Hippocampus erectus</i>	13	.	2	12	2	.	2	.	.	10	2	2	45
<i>Hippocampus zosterae</i>	5	1	6	4	.	1	5	7	14	7	4	13	67
<i>Hoplosternum littorale</i>	.	.	.	.	.	.	.	.	.	2	.	.	2
<i>Hyporhamphus</i> spp.	.	.	.	1	.	.	.	.	.	2	.	.	3
<i>Labidesthes sicculus</i>	.	.	.	.	.	.	.	1	.	.	.	26	27
<i>Lactophrys trigonus</i>	.	.	.	.	.	1	.	.	1	.	.	.	2
<i>Lagodon rhomboides</i>	166	855	2,540	1,772	2,592	1,643	2,117	2,658	8,153	3,409	1,769	767	28,441
<b><i>Leiostomus xanthurus</i></b>	.	<b>48</b>	<b>160</b>	<b>8</b>	<b>2</b>	<b>13</b>	.	<b>22</b>	.	<b>1</b>	.	.	<b>254</b>
<i>Lepisosteus osseus</i>	.	.	1	.	.	.	.	8	4	2	1	.	16
<i>Lepisosteus platyrhincus</i>	.	.	.	1	.	.	.	.	.	.	.	.	1
<i>Lepomis macrochirus</i>	6	2	.	5	.	2	.	3	1	12	6	4	41
<i>Lepomis microlophus</i>	1	.	.	.	.	.	.	.	1	1	.	1	4
<i>Lepomis</i> spp.	.	.	.	.	.	.	.	1	.	6	2	.	9
<i>Limulus polyphemus</i>	.	.	1	.	.	.	4	2	2	2	.	2	13
<i>Lophogobius cyprinoides</i>	5	7	1	8	.	2	.	95	70	16	66	81	351
<i>Lucania goodei</i>	.	.	.	1	.	.	.	.	.	1	5	.	7
<i>Lucania parva</i>	1,931	2,895	327	1,692	292	729	3,076	2,035	3,087	737	661	1,335	18,797
<b><i>Lutjanus griseus</i></b>	<b>4</b>	.	.	<b>2</b>	<b>13</b>	<b>15</b>	<b>76</b>	<b>13</b>	<b>43</b>	<b>10</b>	<b>2</b>	.	<b>178</b>
<b><i>Lutjanus synagris</i></b>	<b>4</b>	<b>2</b>	<b>1</b>	.	<b>6</b>	.	<b>4</b>	.	<b>7</b>	<b>44</b>	<b>18</b>	<b>7</b>	<b>93</b>

Taxa	Month												Totals
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
	E=119	E=90	E=68	E=105	E=68	E=90	E=83	E=90	E=104	E=105	E=104	E=90	
<i>Membras martinica</i>	.	.	.	.	.	.	.	1	.	.	.	.	1
<i>Menidia</i> spp.	1,447	2,114	2,589	6,619	890	4,949	696	10,951	5,380	4,600	3,247	1,685	45,167
<i>Menippe</i> spp.	2	.	.	9	1	.	3	.	1	6	.	.	22
<i>Menticirrhus americanus</i>	.	.	.	3	5	29	46	11	19	100	16	10	239
<i>Menticirrhus littoralis</i>	.	.	.	.	.	1	.	1	.	.	.	.	2
<i>Menticirrhus saxatilis</i>	1	1	4	.	2	.	.	.	.	3	4	10	25
<i>Microgobius gulosus</i>	452	178	223	501	777	1,142	1,092	2,353	2,706	1,314	1,103	649	12,490
<i>Microgobius thalassinus</i>	1	.	.	.	.	.	1	2	.	1	1	.	6
<i>Micropterus salmoides</i>	.	1	.	.	.	3	.	2	.	.	.	.	6
<i>Monacanthidae</i> sp.	.	.	.	.	.	.	.	.	.	1	.	.	1
<i>Monacanthus ciliatus</i>	.	2	.	.	.	.	.	.	.	1	.	1	4
<i>Mugil cephalus</i>	356	70	226	295	4	10	9	50	17	33	2	8	1,080
<i>Mugil curema</i>	10	12	4	23	9	6	23	.	4	3	2	.	96
<i>Mugil trichodon</i>	92	35	34	49	9	11	12	18	20	110	11	64	465
<i>Mycteroperca microlepis</i>	.	.	.	.	.	1	1	1	.	.	.	.	3
<i>Negaprion brevirostris</i>	.	.	.	.	.	.	1	2	.	.	.	.	3
<i>Nicholsina usta</i>	.	.	.	.	6	.	.	.	.	.	.	.	6
<i>Notropis petersoni</i>	.	.	.	.	.	.	.	.	1	.	.	.	1
<i>Oligoplites saurus</i>	5	1	.	1	6	33	40	42	39	11	18	3	199
<i>Opisthonema oglinum</i>	19	69	1	2	4	39	15	835	38	48	7	25	1,102

Taxa	Month												Totals
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
	E=119	E=90	E=68	E=105	E=68	E=90	E=83	E=90	E=104	E=105	E=104	E=90	
<i>Opsanus beta</i>	2	1	.	6	6	7	29	13	32	41	16	9	162
<i>Oreochromis aureus</i>	.	.	.	.	.	.	.	.	.	2	.	1	3
<i>Sarotherodon</i> spp.	3	.	.	.	24	7	9	54	3	10	.	1	111
<i>Orthopristis chrysoptera</i>	8	.	15	92	41	33	56	77	574	19	7	2	924
<b><i>Paralichthys albigutta</i></b>	<b>5</b>	<b>5</b>	<b>4</b>	<b>8</b>	<b>11</b>	<b>12</b>	<b>13</b>	<b>1</b>	<b>3</b>	<b>12</b>	<b>7</b>	<b>2</b>	<b>83</b>
<i>Pleuronectiformes</i> sp.	.	.	1	.	.	.	.	.	.	.	.	.	1
<i>Poecilia latipinna</i>	27	40	.	7	.	.	.	48	18	53	2	55	250
<i>Poecilia</i> sp.	.	.	.	.	.	.	.	1	.	.	.	.	1
<b><i>Pogonias cromis</i></b>	<b>8</b>	.	.	.	.	<b>19</b>	.	<b>2</b>	<b>3</b>	<b>3</b>	<b>1</b>	.	<b>36</b>
<i>Portunus</i> spp.	49	38	.	22	1	3	94	.	.	11	.	7	225
<i>Prionotus martis</i>	.	.	.	.	.	.	2	.	.	.	.	.	2
<i>Prionotus scitulus</i>	40	11	4	58	1	4	157	4	7	90	35	7	418
<i>Prionotus tribulus</i>	2	2	2	1	.	1	5	.	.	4	10	6	33
<i>Pterygoplichthys disjunctivus</i>	.	.	.	.	.	.	.	.	.	.	1	.	1
<i>Pterygoplichthys</i> spp.	.	.	.	.	.	.	.	.	1	1	.	.	2
<b><i>Rachycentron canadum</i></b>	.	.	.	.	.	.	.	.	.	.	<b>1</b>	.	<b>1</b>
<i>Rhinoptera bonasus</i>	.	.	58	23	2	5	2	5	1	2	25	11	134
<i>Rimapenaeus constrictus</i>	2	.	.	.	.	.	.	.	.	.	.	.	2
<i>Rimapenaeus</i> spp.	.	.	.	.	.	.	.	.	2	1	1	.	4
<i>Sardinella aurita</i>	.	.	.	.	.	.	.	.	9	.	.	.	9

Taxa	Month												Totals
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
	E=119	E=90	E=68	E=105	E=68	E=90	E=83	E=90	E=104	E=105	E=104	E=90	
<i>Sarotherodon melanotheron</i>	3	9	.	.	.	1	1	24	42	14	17	11	122
<b><i>Sciaenops ocellatus</i></b>	<b>56</b>	<b>26</b>	<b>20</b>	<b>10</b>	<b>21</b>	<b>15</b>	<b>14</b>	<b>31</b>	<b>26</b>	<b>30</b>	<b>237</b>	<b>235</b>	<b>721</b>
<b><i>Scomberomorus maculatus</i></b>	.	.	.	.	2	.	.	.	.	.	.	.	2
<i>Selene vomer</i>	.	1	.	.	42	.	1	.	2	6	1	.	53
<i>Serraniculus pumilio</i>	.	.	.	.	.	.	1	.	.	.	.	.	1
<i>Sicyonia typica</i>	.	.	.	1	.	.	.	.	.	.	.	.	1
<i>Sphoeroides nephelus</i>	46	26	21	36	22	19	15	8	29	43	28	20	313
<i>Sphoeroides spengleri</i>	1	.	.	.	.	.	1	.	.	3	.	.	5
<b><i>Sphyraena barracuda</i></b>	<b>4</b>	<b>5</b>	.	<b>2</b>	<b>2</b>	<b>1</b>	<b>2</b>	<b>1</b>	<b>1</b>	<b>2</b>	<b>2</b>	<b>3</b>	<b>25</b>
<i>Sphyraena borealis</i>	.	.	.	.	1	.	.	.	.	.	.	.	1
<b><i>Sphyrna tiburo</i></b>	<b>11</b>	.	.	<b>1</b>	<b>1</b>	<b>18</b>	<b>2</b>	<b>7</b>	<b>1</b>	<b>10</b>	<b>8</b>	<b>4</b>	<b>63</b>
<i>Stephanolepis hispidus</i>	24	13	.	4	.	22	5	.	.	2	4	4	78
<i>Strongylura marina</i>	.	2	1	4	1	9	.	6	.	.	5	.	28
<i>Strongylura notata</i>	12	41	7	25	17	40	71	74	58	13	35	49	442
<i>Strongylura</i> spp.	.	.	.	6	3	1	.	1	.	.	1	2	14
<i>Strongylura timucu</i>	1	.	.	.	.	1	.	.	1	.	9	.	12
<i>Symphurus plagiusa</i>	1	.	1	8	.	.	6	1	2	6	13	10	48
<i>Syngnathus floridae</i>	3	4	.	6	1	4	10	.	1	8	4	9	50
<i>Syngnathus louisianae</i>	3	2	1	10	2	3	12	4	1	17	19	4	78
<i>Syngnathus scovelli</i>	31	26	21	96	67	28	53	47	84	53	122	53	681

Taxa	Month												Totals
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
	E=119	E=90	E=68	E=105	E=68	E=90	E=83	E=90	E=104	E=105	E=104	E=90	
<i>Synodus foetens</i>	29	19	9	13	34	15	20	6	11	20	23	30	229
<b><i>Trachinotus carolinus</i></b>	<b>5</b>	<b>3</b>	.	.	.	.	.	<b>2</b>	.	.	<b>5</b>	.	<b>15</b>
<b><i>Trachinotus falcatus</i></b>	.	<b>5</b>	<b>29</b>	.	.	<b>1</b>	<b>3</b>	.	<b>1</b>	.	<b>5</b>	<b>7</b>	<b>51</b>
<i>Trinectes maculatus</i>	352	89	15	28	2	7	127	60	66	67	163	326	1,302
<i>Tylosurus crocodilus</i>	.	.	.	.	.	.	.	.	4	.	.	.	4
<b>Totals</b>	<b>44,955</b>	<b>18,285</b>	<b>8,128</b>	<b>16,653</b>	<b>7,184</b>	<b>13,713</b>	<b>16,145</b>	<b>31,615</b>	<b>39,607</b>	<b>47,947</b>	<b>31,887</b>	<b>33,407</b>	<b>309,526</b>

Effort, or total number of hauls, is labeled 'E'. Taxa are arranged alphabetically. Selected taxa are highlighted in bold.

**Table 4.53:** Summary by gear and stratum of taxa collected during Tampa Bay stratified-random sampling, 2022.

Taxa	Gear								Totals E=1,116
	21.3-m bay seine			21.3-m river seine		183-m haul seine		6.1-m otter trawl	
	Veg	Unveg	Shore	Over	Nonover	Over	Nonover		
	E=119	E=121	E=168	E=171	E=153	E=185	E=55	E=144	
<i>Acanthostracion quadricornis</i>	9	.	3	.	.	18	55	22	107
<i>Achiridae</i> spp.	.	.	.	24	17	.	.	.	41
<i>Achirus lineatus</i>	24	35	82	27	32	10	17	95	322
<i>Adinia xenica</i>	.	.	.	10	31	.	.	.	41
<b><i>Albula</i> spp.</b>	<b>1</b>	.	<b>1</b>	.	.	<b>3</b>	.	.	<b>5</b>
<i>Aluterus schoepfii</i>	1	.	.	.	.	.	2	.	3
<i>Anarchopterus criniger</i>	.	.	1	.	.	.	.	.	1
<i>Anchoa cubana</i>	197	.	446	.	.	.	.	.	643
<i>Anchoa hepsetus</i>	2	2	22	.	.	.	.	2	28
<i>Anchoa mitchilli</i>	7,180	549	11,933	73,220	31,002	.	.	5,603	129,487
<i>Anchoa</i> spp.	.	1	.	2	.	.	.	.	3
<i>Ancylopsetta quadrocellata</i>	.	.	.	.	.	6	1	6	13
<b><i>Archosargus probatocephalus</i></b>	<b>8</b>	<b>6</b>	<b>19</b>	<b>17</b>	<b>24</b>	<b>304</b>	<b>87</b>	<b>26</b>	<b>491</b>
<i>Argopecten gibbus</i>	.	.	.	.	.	.	.	1	1
<i>Argopecten irradians</i>	.	1	.	.	.	.	.	1	2
<i>Ariopsis felis</i>	121	49	29	3	1	1,585	1,087	131	3,006
<i>Astroscopus y-graecum</i>	.	1	1	.	.	.	.	.	2
<i>Bagre marinus</i>	.	.	.	.	.	3	172	5	180
<i>Bairdiella chrysoura</i>	773	16	138	174	107	60	26	90	1,384
<i>Bathygobius soporator</i>	1	.	.	10	12	.	.	.	23
<i>Belonesox belizanus</i>	.	.	.	9	21	.	.	.	30
<b><i>Brevoortia</i> spp.</b>	.	.	<b>2</b>	<b>7</b>	<b>3</b>	<b>21</b>	.	.	<b>33</b>
<i>Calamus arctifrons</i>	.	.	.	.	.	1	.	.	1
<i>Calamus penna</i>	6	4	.	.	.	3	3	.	16
<i>Calamus</i> spp.	11	.	2	.	.	.	.	.	13
<i>Callinectes ornatus</i>	.	.	1	.	.	1	.	.	2

Taxa	Gear								Totals
	21.3-m bay seine			21.3-m river seine		183-m haul seine		6.1-m otter trawl	
	Veg	Unveg	Shore	Over	Nonover	Over	Nonover		
	E=119	E=121	E=168	E=171	E=153	E=185	E=55	E=144	
<b><i>Callinectes sapidus</i></b>	12	5	24	24	19	82	33	92	291
<i>Callinectes</i> sp.	.	1	.	.	.	.	.	.	1
<b><i>Caranx crysos</i></b>	.	.	.	.	.	2	.	.	2
<b><i>Caranx hippos</i></b>	.	.	.	.	.	129	129	.	258
<i>Caranx latus</i>	.	.	.	1	.	4	1	.	6
<b><i>Carcharhinus limbatus</i></b>	.	.	.	.	.	9	.	.	9
<b><i>Centropomus undecimalis</i></b>	.	.	1	42	56	437	44	.	580
<b><i>Centropristis striata</i></b>	4	.	.	.	.	7	3	2	16
<i>Chaetodipterus faber</i>	8	3	3	.	.	127	120	320	581
<i>Chaetodon capistratus</i>	.	.	.	.	.	.	1	.	1
<i>Chasmodes saburrae</i>	32	1	11	.	3	.	.	3	50
<i>Chilomycterus schoepfii</i>	29	6	7	.	.	96	64	71	273
<i>Chloroscombrus chrysurus</i>	4	1	.	2	.	4	.	1	12
<i>Cichlasoma urophthalmus</i>	.	6	2	9	34	5	.	.	56
<i>Citharichthys macrops</i>	.	.	.	.	.	.	.	5	5
<i>Ctenogobius boleosoma</i>	.	.	.	.	.	.	.	1	1
<i>Ctenogobius smaragdus</i>	.	.	2	.	.	.	.	.	2
<b><i>Cynoscion arenarius</i></b>	.	1	4	47	57	1	.	199	309
<b><i>Cynoscion nebulosus</i></b>	288	33	84	87	61	247	16	62	878
<i>Cyprinodon variegatus</i>	4	18	171	14	78	1	.	.	286
<i>Dactyloscopus moorei</i>	2	.	.	.	.	.	.	.	2
<i>Dasyatis americana</i>	.	.	.	.	.	3	1	.	4
<i>Dasyatis sabina</i>	3	2	3	2	2	262	56	41	371
<i>Dasyatis say</i>	.	.	.	.	.	40	18	11	69
<i>Diapterus auratus</i>	.	.	.	4	2	132	136	.	274
<b><i>Diplectrum formosum</i></b>	.	.	.	.	.	.	1	5	6
<i>Diplodus holbrookii</i>	.	.	.	.	.	.	1	.	1
<i>Dorosoma petenense</i>	.	.	18	24	3	9	.	.	54

Taxa	Gear								Totals
	21.3-m bay seine			21.3-m river seine		183-m haul seine		6.1-m otter trawl	
	Veg	Unveg	Shore	Over	Nonover	Over	Nonover		
	E=119	E=121	E=168	E=171	E=153	E=185	E=55	E=144	
<i>Elops saurus</i>	.	1	5	.	16	3,969	48	.	4,039
<i>Epinephelus itajara</i>	.	.	1	.	.	.	1	.	2
<i>Etropus crossotus</i>	.	2	.	.	.	.	1	.	3
<i>Eucinostomus gula</i>	1,055	315	2,013	90	163	2,778	2,473	365	9,252
<i>Eucinostomus harengulus</i>	38	153	987	1,004	1,034	1,096	271	84	4,667
<i>Eucinostomus</i> spp.	4,005	1,135	7,180	3,416	2,299	1	.	649	18,685
<i>Eugerres plumieri</i>	46	81	71	400	716	63	6	547	1,930
<b><i>Farfantepenaeus duorarum</i></b>	<b>665</b>	<b>136</b>	<b>912</b>	<b>203</b>	<b>321</b>	<b>32</b>	<b>24</b>	<b>609</b>	<b>2,902</b>
<i>Floridichthys carpio</i>	135	30	2,694	48	38	1	.	.	2,946
<i>Fundulus confluentus</i>	.	.	.	3	.	.	.	.	3
<i>Fundulus grandis</i>	2	.	251	236	399	3	1	.	892
<i>Fundulus seminolis</i>	.	.	.	3	33	.	.	.	36
<i>Fundulus similis</i>	.	.	562	5	257	.	1	.	825
<i>Gambusia holbrooki</i>	.	.	.	404	245	.	.	.	649
<i>Gobiesox strumosus</i>	.	.	.	4	1	.	.	2	7
<i>Gobiosoma bosc</i>	1	27	5	513	236	.	.	8	790
<i>Gobiosoma longipala</i>	.	.	.	.	.	.	.	3	3
<i>Gobiosoma robustum</i>	253	48	103	15	9	.	.	52	480
<i>Gobiosoma</i> spp.	220	111	92	301	127	.	.	57	908
<i>Gymnura micrura</i>	.	.	.	.	.	11	.	1	12
<b><i>Haemulon plumierii</i></b>	<b>17</b>	.	<b>10</b>	.	.	<b>1</b>	<b>5</b>	<b>2</b>	<b>35</b>
<i>Harengula jaguana</i>	303	66	489	300	538	2,279	150	46	4,171
<i>Hemichromis letourneuxi</i>	.	.	.	.	2	.	.	.	2
<i>Hemiramphus brasiliensis</i>	.	.	.	.	.	1	.	.	1
<i>Hippocampus erectus</i>	8	5	3	.	1	2	2	24	45
<i>Hippocampus zosterae</i>	43	7	15	.	.	.	.	2	67
<i>Hoplosternum littorale</i>	.	.	.	1	1	.	.	.	2
<i>Hyporhamphus</i> spp.	.	2	1	.	.	.	.	.	3

Taxa	Gear								Totals
	21.3-m bay seine			21.3-m river seine		183-m haul seine		6.1-m otter trawl	
	Veg	Unveg	Shore	Over	Nonover	Over	Nonover		
	E=119	E=121	E=168	E=171	E=153	E=185	E=55	E=144	
<i>Labidesthes sicculus</i>	.	.	.	3	24	.	.	.	27
<i>Lactophrys trigonus</i>	.	.	.	.	.	.	2	.	2
<i>Lagodon rhomboides</i>	4,330	500	1,848	105	97	15,322	5,746	493	28,441
<b><i>Leiostomus xanthurus</i></b>	.	.	171	9	42	11	21	.	254
<i>Lepisosteus osseus</i>	.	1	.	3	.	9	1	2	16
<i>Lepisosteus platyrhincus</i>	.	.	.	.	1	.	.	.	1
<i>Lepomis macrochirus</i>	.	.	.	17	24	.	.	.	41
<i>Lepomis microlophus</i>	.	.	.	.	4	.	.	.	4
<i>Lepomis</i> spp.	.	.	.	6	3	.	.	.	9
<i>Limulus polyphemus</i>	.	2	4	.	.	4	2	1	13
<i>Lophogobius cyprinoides</i>	2	.	1	240	72	.	.	36	351
<i>Lucania goodei</i>	.	.	.	1	6	.	.	.	7
<i>Lucania parva</i>	2,823	312	10,303	3,179	2,167	.	.	13	18,797
<b><i>Lutjanus griseus</i></b>	9	1	57	4	.	55	52	.	178
<b><i>Lutjanus synagris</i></b>	11	16	17	.	.	4	23	22	93
<i>Membras martinica</i>	1	.	.	.	.	.	.	.	1
<i>Menidia</i> spp.	325	677	11,141	13,892	19,129	1	.	2	45,167
<b><i>Menippe</i> spp.</b>	.	.	.	.	.	2	.	20	22
<b><i>Menticirrhus americanus</i></b>	5	19	7	4	28	10	1	165	239
<b><i>Menticirrhus littoralis</i></b>	.	.	1	.	.	.	1	.	2
<b><i>Menticirrhus saxatilis</i></b>	2	.	19	.	.	.	1	3	25
<i>Microgobius gulosus</i>	3,017	2,380	2,486	2,198	1,717	.	.	692	12,490
<i>Microgobius thalassinus</i>	.	1	.	2	.	.	.	3	6
<i>Micropterus salmoides</i>	.	.	.	6	.	.	.	.	6
<i>Monacanthidae</i> sp.	1	.	.	.	.	.	.	.	1
<i>Monacanthus ciliatus</i>	1	.	.	.	.	2	.	1	4
<b><i>Mugil cephalus</i></b>	.	20	288	40	605	123	4	.	1,080
<b><i>Mugil curema</i></b>	3	.	2	1	2	64	24	.	96

Taxa	Gear								Totals
	21.3-m bay seine			21.3-m river seine		183-m haul seine		6.1-m otter trawl	
	Veg	Unveg	Shore	Over	Nonover	Over	Nonover		
	E=119	E=121	E=168	E=171	E=153	E=185	E=55	E=144	
<i>Mugil trichodon</i>	.	5	173	.	68	157	62	.	465
<i>Mycteroperca microlepis</i>	.	.	.	.	.	1	2	.	3
<i>Negaprion brevirostris</i>	.	.	.	.	.	3	.	.	3
<i>Nicholsina usta</i>	.	.	.	.	.	6	.	.	6
<i>Notropis petersoni</i>	.	.	.	.	1	.	.	.	1
<i>Oligoplites saurus</i>	8	9	54	27	40	42	18	1	199
<i>Opisthonema oglinum</i>	6	3	46	28	9	179	829	2	1,102
<i>Opsanus beta</i>	4	.	2	2	5	107	15	27	162
<i>Oreochromis aureus</i>	.	.	.	3	.	.	.	.	3
<i>Sarotherodon</i> spp.	6	27	7	15	55	1	.	.	111
<i>Orthopristis chrysoptera</i>	107	37	12	3	.	70	662	33	924
<b><i>Paralichthys albigutta</i></b>	<b>5</b>	<b>6</b>	<b>3</b>	.	.	<b>42</b>	<b>14</b>	<b>13</b>	<b>83</b>
<i>Pleuronectiformes</i> sp.	.	.	1	.	.	.	.	.	1
<i>Poecilia latipinna</i>	.	.	22	97	131	.	.	.	250
<i>Poecilia</i> sp.	.	.	.	.	1	.	.	.	1
<b><i>Pogonias cromis</i></b>	.	.	.	<b>11</b>	.	<b>24</b>	<b>1</b>	.	<b>36</b>
<i>Portunus</i> spp.	1	7	2	.	.	31	11	173	225
<i>Prionotus martis</i>	.	.	.	.	.	.	.	2	2
<i>Prionotus scitulus</i>	6	36	15	.	.	11	8	342	418
<i>Prionotus tribulus</i>	1	2	7	.	.	5	2	16	33
<i>Pterygoplichthys disjunctivus</i>	.	.	.	.	1	.	.	.	1
<i>Pterygoplichthys</i> spp.	.	.	.	.	2	.	.	.	2
<b><i>Rachycentron canadum</i></b>	.	.	.	.	.	<b>1</b>	.	.	<b>1</b>
<i>Rhinoptera bonasus</i>	3	.	.	.	.	82	49	.	134
<i>Rimapenaeus constrictus</i>	.	.	.	.	.	.	.	2	2
<i>Rimapenaeus</i> spp.	1	1	.	.	.	.	.	2	4
<i>Sardinella aurita</i>	9	.	.	.	.	.	.	.	9
<i>Sarotherodon melanotheron</i>	1	.	22	7	49	43	.	.	122

Taxa	Gear								Totals
	21.3-m bay seine			21.3-m river seine		183-m haul seine		6.1-m otter trawl	
	Veg	Unveg	Shore	Over	Nonover	Over	Nonover		
	E=119	E=121	E=168	E=171	E=153	E=185	E=55	E=144	
<i>Sciaenops ocellatus</i>	6	22	159	211	141	146	20	16	721
<i>Scomberomorus maculatus</i>	.	.	.	.	.	2	.	.	2
<i>Selene vomer</i>	.	.	1	1	.	8	43	.	53
<i>Serraniculus pumilio</i>	.	.	.	.	.	.	.	1	1
<i>Sicyonia typica</i>	.	.	.	.	.	.	.	1	1
<i>Sphoeroides nephelus</i>	48	17	54	.	1	102	72	19	313
<i>Sphoeroides spengleri</i>	.	.	.	.	.	.	.	5	5
<i>Sphyaena barracuda</i>	.	.	1	.	.	18	6	.	25
<i>Sphyaena borealis</i>	1	.	.	.	.	.	.	.	1
<i>Sphyrna tiburo</i>	.	.	1	.	.	41	21	.	63
<i>Stephanolepis hispidus</i>	42	4	7	.	.	3	9	13	78
<i>Strongylura marina</i>	.	2	13	4	7	2	.	.	28
<i>Strongylura notata</i>	3	9	168	51	64	126	21	.	442
<i>Strongylura</i> spp.	.	.	6	5	3	.	.	.	14
<i>Strongylura timucu</i>	.	.	.	6	5	1	.	.	12
<i>Symphurus plagiusa</i>	8	11	5	1	.	.	.	23	48
<i>Syngnathus floridae</i>	32	3	6	.	.	.	.	9	50
<i>Syngnathus louisianae</i>	21	5	19	.	1	.	.	32	78
<i>Syngnathus scovelli</i>	404	25	172	14	30	.	.	36	681
<i>Synodus foetens</i>	19	46	54	5	2	44	22	37	229
<i>Trachinotus carolinus</i>	.	.	.	.	.	13	2	.	15
<i>Trachinotus falcatus</i>	1	.	30	.	.	11	9	.	51
<i>Trinectes maculatus</i>	.	.	8	569	322	8	.	395	1,302
<i>Tylosurus crocodilus</i>	.	.	.	.	.	4	.	.	4
<b>Totals</b>	<b>26,784</b>	<b>7,066</b>	<b>55,819</b>	<b>101,475</b>	<b>62,860</b>	<b>30,790</b>	<b>12,833</b>	<b>11,899</b>	<b>309,526</b>

Taxa	Gear							Totals	
	21.3-m bay seine			21.3-m river seine		183-m haul seine			6.1-m otter trawl
	Veg	Unveg	Shore	Over	Nonover	Over	Nonover		
	E=119	E=121	E=168	E=171	E=153	E=185	E=55		E=144

Sampling with 21.3-m bay seine was stratified by the presence or absence of a shoreline ('Shore' or offshore) within 5-m. Offshore sets were further stratified by the presence or absence of bottom vegetation ('Veg' or 'Unveg'). Sampling with 21.3-m river seine and 183-m haul seine was stratified by the presence or absence of overhanging vegetation ('Over' or 'Nonover'). Sampling with 6.1-m otter trawl was not stratified. Effort, or the total number of hauls, is labeled 'E'. Taxa are arranged alphabetically. Selected taxa are highlighted in bold.

**Table 4.54:** Summary by zone of taxa collected during Tampa Bay stratified-random sampling, 2022.

Taxa	Zone									Totals
	A	B	C	D	E	K	L	M	N	
	E=144	E=132	E=172	E=104	E=156	E=129	E=117	E=96	E=66	
<i>Acanthostracion quadricornis</i>	5	29	5	47	20	.	.	1	.	107
<i>Achiridae</i> spp.	.	.	.	.	.	41	.	.	.	41
<i>Achirus lineatus</i>	32	45	79	16	68	56	7	10	9	322
<i>Adinia xenica</i>	.	.	.	.	.	.	.	39	2	41
<b><i>Albula</i> spp.</b>	.	.	<b>2</b>	.	<b>3</b>	.	.	.	.	<b>5</b>
<i>Aluterus schoepfii</i>	.	1	.	2	.	.	.	.	.	3
<i>Anarchopterus criniger</i>	.	.	.	.	1	.	.	.	.	1
<i>Anchoa cubana</i>	.	197	.	.	446	.	.	.	.	643
<i>Anchoa hepsetus</i>	1	.	24	.	3	.	.	.	.	28
<i>Anchoa mitchilli</i>	2,595	5,600	3,619	.	8,093	6,142	62,223	12,208	29,007	129,487
<i>Anchoa</i> spp.	.	.	1	.	.	2	.	.	.	3
<i>Ancylosetta quadrocellata</i>	.	3	.	8	2	.	.	.	.	13
<b><i>Archosargus probatocephalus</i></b>	<b>18</b>	<b>52</b>	<b>26</b>	<b>84</b>	<b>248</b>	<b>18</b>	<b>13</b>	<b>23</b>	<b>9</b>	<b>491</b>
<b><i>Argopecten gibbus</i></b>	.	.	.	.	<b>1</b>	.	.	.	.	<b>1</b>
<b><i>Argopecten irradians</i></b>	.	<b>1</b>	.	<b>1</b>	.	.	.	.	.	<b>2</b>
<i>Ariopsis felis</i>	697	898	846	38	435	14	29	47	2	3,006
<i>Astroscopus y-graecum</i>	.	1	.	1	.	.	.	.	.	2
<i>Bagre marinus</i>	174	1	.	.	3	.	2	.	.	180
<i>Bairdiella chrysoura</i>	74	120	533	173	128	184	88	11	73	1,384
<i>Bathygobius soporator</i>	.	1	.	.	.	2	6	9	5	23
<i>Belonesox belizanus</i>	.	.	.	.	.	29	1	.	.	30
<b><i>Brevoortia</i> spp.</b>	<b>1</b>	.	<b>20</b>	.	<b>2</b>	<b>2</b>	<b>7</b>	.	<b>1</b>	<b>33</b>
<b><i>Calamus arctifrons</i></b>	.	.	.	<b>1</b>	.	.	.	.	.	<b>1</b>
<b><i>Calamus penna</i></b>	.	<b>5</b>	<b>4</b>	<b>4</b>	<b>3</b>	.	.	.	.	<b>16</b>
<b><i>Calamus</i> spp.</b>	.	.	<b>4</b>	<b>5</b>	<b>4</b>	.	.	.	.	<b>13</b>
<i>Callinectes ornatus</i>	.	.	.	1	1	.	.	.	.	2
<b><i>Callinectes sapidus</i></b>	<b>15</b>	<b>34</b>	<b>43</b>	<b>41</b>	<b>40</b>	<b>42</b>	<b>19</b>	<b>48</b>	<b>9</b>	<b>291</b>

Taxa	Zone									Totals
	A	B	C	D	E	K	L	M	N	
	E=144	E=132	E=172	E=104	E=156	E=129	E=117	E=96	E=66	
<i>Callinectes</i> sp.	.	1	.	.	.	.	.	.	.	1
<b><i>Caranx crysos</i></b>	.	2	.	.	.	.	.	.	.	2
<b><i>Caranx hippos</i></b>	43	133	25	3	54	.	.	.	.	258
<i>Caranx latus</i>	1	.	.	1	3	.	.	1	.	6
<b><i>Carcharhinus limbatus</i></b>	.	1	.	.	8	.	.	.	.	9
<b><i>Centropomus undecimalis</i></b>	32	77	30	73	270	35	9	42	12	580
<b><i>Centropristis striata</i></b>	.	2	.	10	4	.	.	.	.	16
<i>Chaetodipterus faber</i>	21	39	326	2	189	1	.	3	.	581
<i>Chaetodon capistratus</i>	.	.	.	1	.	.	.	.	.	1
<i>Chasmodes saburrae</i>	22	7	7	2	8	.	.	4	.	50
<i>Chilomycterus schoepfii</i>	27	46	67	44	82	.	2	5	.	273
<i>Chloroscombrus chrysurus</i>	1	3	1	3	1	.	3	.	.	12
<i>Cichlasoma urophthalmus</i>	10	3	.	.	.	5	38	.	.	56
<i>Citharichthys macrops</i>	.	.	.	5	.	.	.	.	.	5
<i>Ctenogobius boleosoma</i>	.	.	.	.	.	.	.	1	.	1
<i>Ctenogobius smaragdus</i>	1	.	.	.	1	.	.	.	.	2
<b><i>Cynoscion arenarius</i></b>	62	.	7	.	8	192	3	25	12	309
<b><i>Cynoscion nebulosus</i></b>	60	169	319	43	86	77	39	59	26	878
<i>Cyprinodon variegatus</i>	19	14	55	93	13	19	2	54	17	286
<i>Dactyloscopus moorei</i>	1	1	.	.	.	.	.	.	.	2
<i>Dasyatis americana</i>	.	3	.	1	.	.	.	.	.	4
<i>Dasyatis sabina</i>	77	118	55	10	93	3	2	10	3	371
<i>Dasyatis say</i>	21	18	11	6	12	1	.	.	.	69
<i>Diapterus auratus</i>	106	.	2	17	143	.	1	1	4	274
<b><i>Diplectrum formosum</i></b>	.	.	.	4	2	.	.	.	.	6
<i>Diplodus holbrookii</i>	.	.	.	1	.	.	.	.	.	1
<i>Dorosoma petenense</i>	.	.	18	.	9	.	1	2	24	54
<b><i>Elops saurus</i></b>	36	22	3,878	15	72	2	.	14	.	4,039
<b><i>Epinephelus itajara</i></b>	.	.	.	1	1	.	.	.	.	2

Taxa	Zone									Totals
	A	B	C	D	E	K	L	M	N	
	E=144	E=132	E=172	E=104	E=156	E=129	E=117	E=96	E=66	
<i>Etropus crossotus</i>	.	1	.	2	.	.	.	.	.	3
<i>Eucinostomus gula</i>	649	1,026	2,218	3,201	1,850	114	42	151	1	9,252
<i>Eucinostomus harengulus</i>	385	660	380	763	361	514	398	633	573	4,667
<i>Eucinostomus</i> spp.	1,395	2,454	1,242	3,076	4,186	1,007	2,835	1,378	1,112	18,685
<i>Eugerres plumieri</i>	165	5	46	.	51	563	381	146	573	1,930
<b><i>Farfantepenaeus duorarum</i></b>	<b>181</b>	<b>198</b>	<b>361</b>	<b>365</b>	<b>853</b>	<b>221</b>	<b>280</b>	<b>359</b>	<b>84</b>	<b>2,902</b>
<i>Floridichthys carpio</i>	812	560	487	740	261	86	.	.	.	2,946
<i>Fundulus confluentus</i>	.	.	.	.	.	.	2	.	1	3
<i>Fundulus grandis</i>	32	31	45	139	10	434	23	156	22	892
<i>Fundulus seminolis</i>	.	.	.	.	.	18	17	1	.	36
<i>Fundulus similis</i>	504	37	4	17	1	252	.	10	.	825
<i>Gambusia holbrooki</i>	.	.	.	.	.	5	4	59	581	649
<i>Gobiesox strumosus</i>	.	.	.	.	.	.	3	4	.	7
<i>Gobiosoma bosc</i>	1	25	5	1	1	418	88	91	160	790
<i>Gobiosoma longipala</i>	.	.	1	2	.	.	.	.	.	3
<i>Gobiosoma robustum</i>	60	68	73	34	210	.	21	12	2	480
<i>Gobiosoma</i> spp.	53	69	91	10	209	210	138	40	88	908
<i>Gymnura micrura</i>	1	.	.	.	11	.	.	.	.	12
<b><i>Haemulon plumierii</i></b>	.	.	.	<b>5</b>	<b>30</b>	.	.	.	.	<b>35</b>
<i>Harengula jaguana</i>	193	30	2,269	750	91	830	.	8	.	4,171
<i>Hemichromis letourneuxi</i>	.	.	.	.	.	1	.	.	1	2
<i>Hemiramphus brasiliensis</i>	.	.	.	1	.	.	.	.	.	1
<i>Hippocampus erectus</i>	2	10	12	6	14	.	.	1	.	45
<i>Hippocampus zosterae</i>	13	17	9	10	17	.	.	1	.	67
<i>Hoplosternum littorale</i>	.	.	.	.	.	2	.	.	.	2
<i>Hyporhamphus</i> spp.	.	.	.	2	1	.	.	.	.	3
<i>Labidesthes sicculus</i>	.	.	.	.	.	2	.	.	25	27
<i>Lactophrys trigonus</i>	.	.	.	1	1	.	.	.	.	2
<i>Lagodon rhomboides</i>	279	2,162	135	16,850	8,667	16	25	176	131	28,441

Taxa	Zone									Totals
	A	B	C	D	E	K	L	M	N	
	E=144	E=132	E=172	E=104	E=156	E=129	E=117	E=96	E=66	
<b><i>Leiostomus xanthurus</i></b>	155	3	.	44	1	.	39	10	2	254
<i>Lepisosteus osseus</i>	.	.	10	.	1	1	4	.	.	16
<i>Lepisosteus platyrhincus</i>	.	.	.	.	.	.	1	.	.	1
<i>Lepomis macrochirus</i>	.	.	.	.	.	25	3	11	2	41
<i>Lepomis microlophus</i>	.	.	.	.	.	.	.	1	3	4
<i>Lepomis</i> spp.	.	.	.	.	.	2	.	4	3	9
<i>Limulus polyphemus</i>	3	1	6	.	2	.	1	.	.	13
<i>Lophogobius cyprinoides</i>	.	1	1	.	1	33	221	40	54	351
<i>Lucania goodei</i>	.	.	.	.	.	5	2	.	.	7
<i>Lucania parva</i>	1,091	447	4,336	5,249	2,316	3,201	613	770	774	18,797
<b><i>Lutjanus griseus</i></b>	.	17	2	124	31	1	.	.	3	178
<b><i>Lutjanus synagris</i></b>	.	1	3	25	64	.	.	.	.	93
<i>Membras martinica</i>	.	1	.	.	.	.	.	.	.	1
<i>Menidia</i> spp.	2,461	783	2,664	4,917	1,319	22,246	5,267	2,663	2,847	45,167
<b><i>Menippe</i> spp.</b>	.	1	6	4	11	.	.	.	.	22
<b><i>Menticirrhus americanus</i></b>	94	17	25	.	10	55	27	11	.	239
<b><i>Menticirrhus littoralis</i></b>	.	.	.	1	1	.	.	.	.	2
<b><i>Menticirrhus saxatilis</i></b>	.	6	15	.	4	.	.	.	.	25
<i>Microgobius gulosus</i>	1,803	1,409	2,300	37	2,336	1,636	1,809	350	810	12,490
<i>Microgobius thalassinus</i>	2	.	.	.	.	1	2	1	.	6
<i>Micropterus salmoides</i>	.	.	.	.	.	4	2	.	.	6
<i>Monacanthidae</i> sp.	.	1	.	.	.	.	.	.	.	1
<i>Monacanthus ciliatus</i>	.	.	.	.	4	.	.	.	.	4
<b><i>Mugil cephalus</i></b>	160	4	208	10	53	319	102	195	29	1,080
<b><i>Mugil curema</i></b>	26	10	3	21	33	.	.	3	.	96
<b><i>Mugil trichodon</i></b>	55	21	54	133	134	1	.	67	.	465
<i>Mycteroperca microlepis</i>	.	.	.	1	2	.	.	.	.	3
<b><i>Negaprion brevirostris</i></b>	.	.	.	.	3	.	.	.	.	3
<i>Nicholsina usta</i>	.	.	.	6	.	.	.	.	.	6

Taxa	Zone									Totals
	A	B	C	D	E	K	L	M	N	
	E=144	E=132	E=172	E=104	E=156	E=129	E=117	E=96	E=66	
<i>Notropis petersoni</i>	.	.	.	.	.	1	.	.	.	1
<i>Oligoplites saurus</i>	52	19	35	9	16	35	16	15	2	199
<i>Opisthonema oglinum</i>	24	784	161	25	71	19	17	1	.	1,102
<i>Opsanus beta</i>	11	10	3	73	55	2	4	4	.	162
<i>Oreochromis aureus</i>	.	.	.	.	.	.	.	3	.	3
<i>Sarotherodon</i> spp.	2	25	5	2	7	5	.	54	11	111
<i>Orthopristis chrysoptera</i>	1	109	9	693	101	.	.	5	6	924
<b><i>Paralichthys albigutta</i></b>	<b>7</b>	<b>25</b>	<b>4</b>	<b>5</b>	<b>38</b>	.	<b>1</b>	<b>3</b>	.	<b>83</b>
<i>Pleuronectiformes</i> sp.	.	1	.	.	.	.	.	.	.	1
<i>Poecilia latipinna</i>	8	.	1	13	.	27	50	105	46	250
<i>Poecilia</i> sp.	.	.	.	.	.	.	.	1	.	1
<b><i>Pogonias cromis</i></b>	.	<b>1</b>	.	<b>1</b>	<b>23</b>	<b>11</b>	.	.	.	<b>36</b>
<i>Portunus</i> spp.	1	43	9	109	63	.	.	.	.	225
<i>Prionotus martis</i>	.	.	.	.	2	.	.	.	.	2
<i>Prionotus scitulus</i>	35	211	62	56	40	11	1	2	.	418
<i>Prionotus tribulus</i>	1	6	5	1	11	.	.	9	.	33
<i>Pterygoplichthys disjunctivus</i>	.	.	.	.	.	1	.	.	.	1
<i>Pterygoplichthys</i> spp.	.	.	.	.	.	2	.	.	.	2
<b><i>Rachycentron canadum</i></b>	.	.	<b>1</b>	.	.	.	.	.	.	<b>1</b>
<i>Rhinoptera bonasus</i>	24	44	42	.	24	.	.	.	.	134
<i>Rimapeanaeus constrictus</i>	.	1	.	.	1	.	.	.	.	2
<i>Rimapeanaeus</i> spp.	.	1	.	.	1	2	.	.	.	4
<i>Sardinella aurita</i>	.	.	.	.	9	.	.	.	.	9
<i>Sarotherodon melanotheron</i>	8	7	.	5	46	16	16	20	4	122
<b><i>Sciaenops ocellatus</i></b>	<b>65</b>	<b>71</b>	<b>96</b>	<b>30</b>	<b>92</b>	<b>142</b>	<b>37</b>	<b>80</b>	<b>108</b>	<b>721</b>
<b><i>Scomberomorus maculatus</i></b>	.	.	.	<b>2</b>	.	.	.	.	.	<b>2</b>
<i>Selene vomer</i>	.	1	.	4	47	.	1	.	.	53
<i>Serraniculus pumilio</i>	.	.	1	.	.	.	.	.	.	1
<i>Sicyonia typica</i>	.	.	.	.	1	.	.	.	.	1

Taxa	Zone									Totals
	A	B	C	D	E	K	L	M	N	
	E=144	E=132	E=172	E=104	E=156	E=129	E=117	E=96	E=66	
<i>Sphoeroides nephelus</i>	37	81	28	66	94	.	2	4	1	313
<i>Sphoeroides spengleri</i>	.	.	1	.	4	.	.	.	.	5
<b><i>Sphyraena barracuda</i></b>	.	<b>3</b>	.	<b>6</b>	<b>16</b>	.	.	.	.	<b>25</b>
<i>Sphyraena borealis</i>	.	.	.	1	.	.	.	.	.	1
<b><i>Sphyrna tiburo</i></b>	<b>8</b>	<b>10</b>	<b>25</b>	<b>12</b>	<b>8</b>	.	.	.	.	<b>63</b>
<i>Stephanolepis hispidus</i>	1	1	2	39	35	.	.	.	.	78
<i>Strongylura marina</i>	.	4	.	5	8	7	1	3	.	28
<i>Strongylura notata</i>	107	48	9	83	80	18	20	76	1	442
<i>Strongylura</i> spp.	.	2	1	2	1	4	3	1	.	14
<i>Strongylura timucu</i>	.	1	.	.	.	7	2	2	.	12
<i>Symphurus plagiusa</i>	10	4	22	2	2	3	1	4	.	48
<i>Syngnathus floridae</i>	.	12	3	19	16	.	.	.	.	50
<i>Syngnathus louisianae</i>	3	18	19	10	24	1	2	1	.	78
<i>Syngnathus scovelli</i>	191	121	103	45	161	11	28	17	4	681
<i>Synodus foetens</i>	10	51	38	53	61	2	4	9	1	229
<b><i>Trachinotus carolinus</i></b>	.	.	7	.	<b>8</b>	.	.	.	.	<b>15</b>
<b><i>Trachinotus falcatus</i></b>	<b>2</b>	<b>34</b>	<b>2</b>	<b>1</b>	<b>12</b>	.	.	.	.	<b>51</b>
<i>Trinectes maculatus</i>	9	.	12	.	1	241	544	134	361	1,302
<i>Tylosurus crocodilus</i>	4	.	.	.	.	.	.	.	.	4
<b>Totals</b>	<b>15,348</b>	<b>19,472</b>	<b>27,724</b>	<b>38,676</b>	<b>34,890</b>	<b>39,658</b>	<b>75,595</b>	<b>20,522</b>	<b>37,641</b>	<b>309,526</b>

Zones A–E were located in Tampa Bay, while Zones K (Alafia River), L (Little Manatee River), M (Manatee River), and N (Braden River) were tributaries of Tampa Bay. Effort, or the total number of hauls, is labeled 'E'. Taxa are arranged alphabetically. selected taxa are highlighted in bold.

## 4.6 Sarasota Bay

Sarasota Bay, located on the southwest coast of Florida, is a coastal lagoon that extends from Anna Maria Sound south to Venice Inlet. The bay comprises five embayments (Palma Sola, Sarasota, Roberts, Little Sarasota, and Blackburn bays), which were formed behind a barrier island complex. This system is connected to the Gulf of Mexico through five inlets: Anna Maria Sound, Longboat Pass, New Pass, Big Sarasota Pass, and Venice Inlet. Freshwater inflow enters the estuary through a series of creeks, bayous, and unnamed drainage ditches (Roat and McKeon 2010). The main tributaries and receiving water bodies are Bowlees Creek and Whitaker and Hudson bayous (Sarasota Bay proper), Phillippi Creek (Roberts Bay), Clower and Catfish creeks (Little Sarasota Bay), and South Creek (Blackburn Bay). Shoreline vegetation consists largely of mangroves and marsh grasses, and bottom substrates are typically characterized as sand, mud, oysters, or a combination thereof (Flannery 1989). Seagrass meadows are the dominant, submerged vegetative cover in Sarasota Bay and are widely distributed throughout the estuary (Haddad 1989).

The Fisheries-Independent Monitoring (FIM) program has conducted intensive sampling of fish and selected invertebrates in Sarasota Bay since 2009. The area sampled was divided into zones representing the five embayments designated by the Sarasota Bay Estuary Program (Zone A - Palma Sola Bay, Zone B - Sarasota Bay proper, Zone C - Roberts Bay, Zone D - Little Sarasota Bay, and Zone E - Blackburn Bay; Figure 4.6). Bi-monthly Stratified-random sampling (SRS) was conducted in Zones A-E using 21.3-m bay seines and 183-m haul seines. All methods were the same as those described in Chapter 2. This section summarizes data collected by the FIM program during 2022 in Sarasota Bay.

### Stratified-Random Sampling

A total of 50,415 animals, which included 88 taxa of fishes and 7 taxa of selected invertebrates, were collected from 155 Sarasota Bay SRS samples in 2022 (Table 4.55, Table 4.61, Table 4.60, Table 4.62). *Lagodon rhomboides* (n=11,445) was the most numerous taxon collected, representing 22.7% of the total catch. *Anchoa mitchilli* (n=10,583) and *Eucinostomus spp.* (n=8,938) were the next most abundant taxa collected, accounting for an additional 38.7% of the total catch. A total of 31 Selected Taxa (n=2,540 animals) composed 5% of the total catch. *Farfantepenaeus duorarum* (n=1,333) was the most abundant Selected Taxon, representing 2.6% of the total catch. *Cynoscion nebulosus* (n=221), *Archosargus probatocephalus* (n=210), *Centropomus undecimalis* (n=158), and *Lutjanus griseus* (n=148) were the next most abundant Selected Taxa, comprising 1.5% of the total catch. Collections in 2022 included 1 species new to the Sarasota Bay FIM collection: *Lepomis macrochirus*.



**Figure 4.6:** Map of Sarasota Bay sampling area. Zones are labeled A-E.

**Table 4.55:** Summary of catch and effort data for Sarasota Bay stratified-random sampling, 2022.

Zone	21.3-m bay seine		183-m haul seine		Totals	
	Animals	Hauls	Animals	Hauls	Animals	Hauls
<b>A</b>	4,846	18	506	6	5,352	24
<b>B</b>	12,497	36	3,276	12	15,773	48
<b>C</b>	6,642	24	1,247	6	7,889	30
<b>D</b>	13,433	18	602	6	14,035	24
<b>E</b>	7,106	23	260	6	7,366	29
<b>Totals</b>	<b>44,524</b>	<b>119</b>	<b>5,891</b>	<b>36</b>	<b>50,415</b>	<b>155</b>

## Bay Sampling

### 21.3-m Bay Seines

A total of 44,524 animals were collected in 119 21.3-m bay seines, representing 88.3% of the overall SRS catch (Table 4.55). *Anchoa mitchilli* (n=10,583) and *Eucinostomus spp.* (n=8,938) were the most abundant taxa, accounting for 43.8% of the bay seine catch (Table 4.56). The taxa most frequently caught in 21.3-m bay seines were *Eucinostomus spp.* (70.6% occurrence) and *Lagodon rhomboides* (67.2% occurrence).

A total of 1,742 animals from 23 Selected Taxa were collected, representing 3.9% of the entire 21.3-m bay seine catch (Table 4.57). *Farfantepenaeus duorarum* (n=1,330) was the most abundant Selected Taxon, accounting for 76.3% of the Selected Taxa collected by this gear. The Selected Taxa most frequently caught in 21.3-m bay seines were *Farfantepenaeus duorarum* (45.4% occurrence) and *Cynoscion nebulosus* (23.5% occurrence).

**Table 4.56:** Catch statistics for 10 dominant taxa collected in 119 21.3-m bay seine samples during Sarasota Bay stratified-random sampling, 2022.

Species	Number			Density Estimate (animals/100m <sup>2</sup> )				Standard Length (mm)			
	No.	%	% Occur	Mean	Stderr	CV	Max	Mean	Stderr	Min	Max
<i>Anchoa mitchilli</i>	10,583	23.8	11.8	65.17	38.94	643.65	4,205.71	33	0.05	19	54
<i>Eucinostomus</i> spp.	8,938	20.1	70.6	55.04	8.53	166.98	522.14	28	0.07	10	39
<i>Lucania parva</i>	8,275	18.6	47.9	50.95	15.00	317.12	1,130.71	24	0.05	12	43
<i>Lagodon rhomboides</i>	7,990	17.9	67.2	48.78	9.42	208.98	506.43	39	0.18	12	121
<i>Eucinostomus gula</i>	1,457	3.3	59.7	9.05	1.67	197.68	151.43	52	0.24	40	92
<i>Farfantepenaeus duorarum</i>	1,330	3.0	45.4	8.19	3.03	398.10	305.71	9	0.08	3	22
<i>Harengula jaguana</i>	1,085	2.4	5.0	6.74	6.46	1,028.28	742.86	40	0.20	29	66
<i>Microgobius gulosus</i>	948	2.1	39.5	5.89	1.84	335.15	131.43	25	0.18	13	57
<i>Menidia</i> spp.	923	2.1	14.3	5.73	2.54	474.92	178.57	46	0.48	25	84
<i>Floridichthys carpio</i>	478	1.1	8.4	2.97	1.31	471.63	107.86	30	0.44	14	54
Subtotals	42,007	94.4	.	.	.	.	.	.	.	3	121
<b>Totals</b>	<b>44,524</b>	<b>100.0</b>	.	<b>276.55</b>	<b>48.30</b>	<b>190.52</b>	<b>4,550.00</b>	.	.	<b>3</b>	<b>705</b>

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.

**Table 4.57:** Catch statistics for Selected Taxa collected in 119 21.3-m bay seine samples during Sarasota Bay stratified-random sampling, 2022.

Species	Number			Density Estimate (animals/100m <sup>2</sup> )				Standard Length (mm)			
	No.	%	% Occur	Mean	Stderr	CV	Max	Mean	Stderr	Min	Max
<i>Farfantepenaeus duorarum</i>	1,330	3.0	45.4	7.98	2.95	403.65	305.71	9	0.08	3	22
<i>Cynoscion nebulosus</i>	209	0.5	23.5	1.25	0.32	278.24	21.43	42	1.68	12	195
<i>Lutjanus griseus</i>	39	0.1	12.6	0.23	0.08	368.62	6.43	60	7.31	12	207
<i>Archosargus probatocephalus</i>	30	0.1	11.8	0.18	0.06	358.60	4.29	74	15.18	19	288
<i>Callinectes sapidus</i>	18	<0.1	10.9	0.11	0.03	340.37	2.86	40	7.86	12	145
<i>Calamus penna</i>	17	<0.1	5.0	0.10	0.05	509.74	3.57	40	2.29	30	63
<i>Mugil trichodon</i>	15	<0.1	2.5	0.09	0.07	885.80	8.57	21	0.64	15	25
<i>Haemulon plumierii</i>	12	<0.1	1.7	0.07	0.07	1,003.32	7.86	64	3.37	35	78
<i>Mugil cephalus</i>	12	<0.1	2.5	0.07	0.05	778.86	5.71	114	47.61	14	408
<i>Sciaenops ocellatus</i>	10	<0.1	6.7	0.06	0.02	397.40	1.43	113	46.66	28	436
<i>Lutjanus synagris</i>	9	<0.1	3.4	0.05	0.03	624.45	2.86	19	0.75	16	22
<i>Paralichthys albigutta</i>	9	<0.1	5.0	0.05	0.02	491.72	2.14	79	19.23	23	171
<i>Centropomus undecimalis</i>	7	<0.1	3.4	0.04	0.02	597.74	2.14	181	67.51	34	445
<i>Calamus</i> spp.	5	<0.1	3.4	0.03	0.02	570.91	1.43	19	3.09	12	27
<i>Albula</i> spp.	4	<0.1	2.5	0.02	0.01	663.29	1.43	31	7.53	21	53
<i>Leiostomus xanthurus</i>	4	<0.1	2.5	0.02	0.01	663.29	1.43	76	3.66	71	87
<i>Elops saurus</i>	3	<0.1	1.7	0.02	0.01	810.33	1.43	217	13.53	202	244
<i>Argopecten irradians</i>	2	<0.1	0.8	0.01	0.01	1,090.87	1.43	18	1.50	16	19
<i>Caranx hippos</i>	2	<0.1	1.7	0.01	0.01	768.09	0.71	137	104.00	33	241

Species	Number		Density Estimate (animals/100m <sup>2</sup> )				Standard Length (mm)				
	No.	% Occur	Mean	Stderr	CV	Max	Mean	Stderr	Min	Max	
<i>Scomberomorus maculatus</i>	2	<0.1	0.8	0.01	0.01	1,090.87	1.43	37	0.00	37	37
<i>Centropristis striata</i>	1	<0.1	0.8	0.01	0.01	1,090.87	0.71	80	.	80	80
<i>Megalops atlanticus</i>	1	<0.1	0.8	0.01	0.01	1,090.87	0.71	705	.	705	705
<i>Menippe</i> spp.	1	<0.1	0.8	0.01	0.01	1,090.87	0.71	27	.	27	27
<b>Totals</b>	<b>1,742</b>	<b>3.9</b>	<b>.</b>	<b>10.46</b>	<b>3.12</b>	<b>325.62</b>	<b>317.86</b>	<b>.</b>	<b>.</b>	<b>3</b>	<b>705</b>

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.

### **183-m Haul Seines**

A total of 5,891 animals were collected in 36 183-m haul seines, representing 11.7% of the overall SRS catch (Table 4.55). *Lagodon rhomboides* (n=3,455) was the most abundant taxon, accounting for 58.6% of the 183-m haul seine catch (Table 4.58). The taxa most frequently caught in 183-m haul seines were *Lagodon rhomboides* (75.0% occurrence), *Archosargus probatocephalus* (72.2% occurrence), and *Centropomus undecimalis* (69.4% occurrence).

A total of 798 animals from 27 Selected Taxa were collected, representing 13.5% of the entire 183-m haul seine catch (Table 4.59). *Archosargus probatocephalus* (n=180) and *Centropomus undecimalis* (n=151) were the most abundant Selected Taxa, accounting for 41.5% of the Selected Taxa collected by this gear. The Selected Taxa most frequently caught in 183-m haul seines were *Archosargus probatocephalus* (72.2% occurrence) and *Centropomus undecimalis* (69.4% occurrence).

**Table 4.58:** Catch statistics for 10 dominant taxa collected in 36 183-m haul seine samples during Sarasota Bay stratified-random sampling, 2022.

Species	Number			Density Estimate (animals/set)				Standard Length (mm)			
	No.	%	% Occur	Mean	Stderr	CV	Max	Mean	Stderr	Min	Max
<i>Lagodon rhomboides</i>	3,455	58.6	75.0	95.97	29.33	183.38	725	110	0.51	41	211
<i>Eucinostomus gula</i>	584	9.9	61.1	16.22	8.35	308.74	283	80	0.31	42	105
<i>Ariopsis felis</i>	344	5.8	63.9	9.56	2.96	186.14	75	279	2.50	148	462
<i>Eucinostomus harengulus</i>	208	3.5	16.7	5.78	5.08	527.07	183	99	0.55	83	119
<i>Archosargus probatocephalus</i>	180	3.1	72.2	4.74	1.06	138.28	29	224	5.34	58	364
<i>Orthopristis chrysoptera</i>	163	2.8	27.8	4.53	1.79	236.79	50	99	1.42	75	192
<i>Centropomus undecimalis</i>	151	2.6	69.4	4.19	1.20	172.09	35	405	7.55	230	867
<i>Elops saurus</i>	134	2.3	16.7	3.72	1.75	281.37	40	255	2.46	135	366
<i>Lutjanus griseus</i>	109	1.9	44.4	3.03	1.04	205.80	29	148	3.94	48	266
<i>Diapterus auratus</i>	55	0.9	27.8	1.53	0.70	274.81	21	196	6.96	66	292
Subtotals	5,383	91.4	.	.	.	.	.	.	.	41	867
<b>Totals</b>	<b>5,891</b>	<b>100.0</b>	.	<b>163.64</b>	<b>35.50</b>	<b>130.17</b>	<b>872</b>	.	.	<b>18</b>	<b>867</b>

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.

**Table 4.59:** Catch statistics for Selected Taxa collected in 36 183-m haul seine samples during Sarasota Bay stratified-random sampling, 2022.

Species	Number			Density Estimate (animals/set)				Standard Length (mm)			
	No.	%	% Occur	Mean	Stderr	CV	Max	Mean	Stderr	Min	Max
<i>Archosargus probatocephalus</i>	180	3.1	72.2	5.00	1.11	133.35	29	224	5.34	58	364
<i>Centropomus undecimalis</i>	151	2.6	69.4	4.19	1.20	172.09	35	405	7.55	230	867
<i>Elops saurus</i>	134	2.3	16.7	3.72	1.75	281.37	40	255	2.46	135	366
<i>Lutjanus griseus</i>	109	1.9	44.4	3.03	1.04	205.80	29	148	3.94	48	266
<i>Mugil cephalus</i>	42	0.7	33.3	1.17	0.63	323.65	22	292	8.11	156	422
<i>Callinectes sapidus</i>	25	0.4	22.2	0.69	0.31	270.65	9	111	5.44	46	148
<i>Mugil curema</i>	25	0.4	16.7	0.69	0.39	340.45	13	231	12.85	110	296
<i>Sciaenops ocellatus</i>	19	0.3	27.8	0.53	0.19	214.78	5	408	28.06	243	674
<i>Paralichthys albigutta</i>	16	0.3	27.8	0.44	0.14	189.74	3	209	21.37	66	409
<i>Menticirrhus littoralis</i>	15	0.3	2.8	0.42	0.42	600.00	15	216	4.90	183	248
<i>Cynoscion nebulosus</i>	12	0.2	16.7	0.33	0.14	258.57	4	200	28.70	127	432
<i>Leiostomus xanthurus</i>	12	0.2	8.3	0.33	0.28	502.00	10	98	9.57	81	200
<i>Trachinotus falcatus</i>	12	0.2	11.1	0.33	0.19	343.93	6	212	26.42	85	352
<i>Calamus penna</i>	10	0.2	11.1	0.28	0.18	381.10	6	91	8.29	67	145
<i>Pogonias cromis</i>	8	0.1	11.1	0.22	0.11	306.36	3	316	38.63	182	477
<i>Mugil trichodon</i>	4	0.1	8.3	0.11	0.07	358.57	2	203	45.02	108	286
<i>Sphyraena barracuda</i>	4	0.1	8.3	0.11	0.07	358.57	2	322	55.94	203	473
<i>Trachinotus carolinus</i>	4	0.1	2.8	0.11	0.11	600.00	4	278	7.14	261	295
<i>Farfantepenaeus duorarum</i>	3	0.1	8.3	0.08	0.05	336.37	1	19	0.58	18	20

Species	Number		Density Estimate (animals/set)				Standard Length (mm)				
	No.	% Occur	Mean	Stderr	CV	Max	Mean	Stderr	Min	Max	
<i>Haemulon plumierii</i>	2	<0.1	5.6	0.06	0.04	418.16	1	77	6.00	71	83
<i>Lutjanus analis</i>	2	<0.1	2.8	0.06	0.06	600.00	2	100	8.00	92	108
<i>Menippe</i> spp.	2	<0.1	5.6	0.06	0.04	418.16	1	75	7.00	68	82
<i>Scomberomorus maculatus</i>	2	<0.1	2.8	0.06	0.06	600.00	2	190	4.00	186	194
<i>Sphyrna tiburo</i>	2	<0.1	5.6	0.06	0.04	418.16	1	722	26.50	695	748
<i>Argopecten irradians</i>	1	<0.1	2.8	0.03	0.03	600.00	1	31	.	31	31
<i>Centropristis striata</i>	1	<0.1	2.8	0.03	0.03	600.00	1	109	.	109	109
<i>Lutjanus synagris</i>	1	<0.1	2.8	0.03	0.03	600.00	1	48	.	48	48
<b>Totals</b>	<b>798</b>	<b>13.5</b>	<b>.</b>	<b>22.17</b>	<b>3.37</b>	<b>91.13</b>	<b>75</b>	<b>.</b>	<b>.</b>	<b>18</b>	<b>867</b>

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.

## Appendix

**Table 4.60:** Monthly summary of taxa collected during Sarasota Bay stratified-random sampling, 2022.

Taxa	Month						Totals
	Feb	Apr	Jun	Aug	Oct	Dec	
	E=26	E=26	E=26	E=26	E=25	E=26	E=155
<i>Acanthostracion quadricornis</i>	.	3	.	.	2	2	7
<i>Achirus lineatus</i>	.	.	.	1	6	3	10
<b><i>Albula</i> spp.</b>	.	<b>3</b>	<b>1</b>	.	.	.	<b>4</b>
<i>Aluterus schoepfii</i>	.	.	2	.	.	.	2
<i>Anchoa mitchilli</i>	1	1	1,387	5,897	1,374	1,923	10,583
<i>Ancylopsetta quadrocellata</i>	1	.	.	.	.	.	1
<b><i>Archosargus probatocephalus</i></b>	<b>34</b>	<b>25</b>	<b>53</b>	<b>13</b>	<b>57</b>	<b>28</b>	<b>210</b>
<b><i>Argopecten irradians</i></b>	.	<b>1</b>	.	.	.	<b>2</b>	<b>3</b>
<i>Ariopsis felis</i>	5	61	29	51	131	78	355
<i>Bagre marinus</i>	.	.	.	3	2	.	5
<i>Bairdiella chrysoura</i>	.	5	189	50	101	.	345
<b><i>Calamus penna</i></b>	<b>7</b>	<b>9</b>	<b>9</b>	.	<b>2</b>	.	<b>27</b>
<b><i>Calamus</i> spp.</b>	<b>3</b>	<b>2</b>	.	.	.	.	<b>5</b>
<b><i>Callinectes sapidus</i></b>	<b>7</b>	<b>6</b>	<b>8</b>	<b>3</b>	<b>15</b>	<b>4</b>	<b>43</b>
<b><i>Caranx hippos</i></b>	<b>1</b>	.	.	<b>1</b>	.	.	<b>2</b>
<i>Caranx latus</i>	.	.	.	.	.	1	1
<b><i>Centropomus undecimalis</i></b>	<b>1</b>	<b>14</b>	<b>19</b>	<b>55</b>	<b>40</b>	<b>29</b>	<b>158</b>
<b><i>Centropristis striata</i></b>	.	.	<b>1</b>	.	<b>1</b>	.	<b>2</b>
<i>Chaetodipterus faber</i>	.	2	1	3	32	3	41
<i>Chasmodes saburrae</i>	.	.	1	.	2	2	5
<i>Chilomycterus schoepfii</i>	5	5	8	8	20	3	49
<i>Chloroscombrus chrysurus</i>	.	.	.	1	6	.	7
<i>Cichlasoma urophthalmus</i>	.	.	.	.	5	.	5
<i>Ctenogobius boleosoma</i>	.	.	1	.	.	.	1
<b><i>Cynoscion nebulosus</i></b>	.	<b>1</b>	<b>22</b>	<b>39</b>	<b>158</b>	<b>1</b>	<b>221</b>

Taxa	Month						Totals
	Feb	Apr	Jun	Aug	Oct	Dec	
	E=26	E=26	E=26	E=26	E=25	E=26	E=155
<i>Cyprinodon variegatus</i>	35	.	.	5	.	1	41
<i>Dasyatis sabina</i>	.	4	.	2	1	1	8
<i>Dasyatis say</i>	.	.	.	.	3	.	3
<i>Diapterus auratus</i>	.	.	39	13	3	.	55
<i>Diplodus holbrookii</i>	.	.	1	.	.	.	1
<b><i>Elops saurus</i></b>	.	.	.	<b>2</b>	<b>95</b>	<b>40</b>	<b>137</b>
<i>Eucinostomus gula</i>	361	98	217	442	522	401	2,041
<i>Eucinostomus harengulus</i>	21	19	134	332	14	30	550
<i>Eucinostomus spp.</i>	609	314	924	1,510	4,277	1,304	8,938
<i>Eugerres plumieri</i>	.	.	.	7	.	.	7
<b><i>Farfantepenaeus duorarum</i></b>	<b>14</b>	<b>5</b>	<b>38</b>	<b>233</b>	<b>929</b>	<b>114</b>	<b>1,333</b>
<i>Floridichthys carpio</i>	45	.	.	244	115	74	478
<i>Fundulus grandis</i>	4	.	.	26	.	3	33
<i>Gobiosoma robustum</i>	42	42	17	10	53	52	216
<i>Gobiosoma spp.</i>	23	.	23	1	119	17	183
<i>Gymnura micrura</i>	.	.	.	.	3	1	4
<b><i>Haemulon plumierii</i></b>	.	.	.	.	<b>2</b>	<b>12</b>	<b>14</b>
<i>Harengula jaguana</i>	.	.	7	1	1,088	9	1,105
<i>Hippocampus erectus</i>	.	.	1	.	1	.	2
<i>Hippocampus zosterae</i>	8	.	2	2	6	4	22
<i>Lagodon rhomboides</i>	1,760	2,619	3,822	1,704	1,318	222	11,445
<b><i>Leiostomus xanthurus</i></b>	.	.	<b>14</b>	<b>1</b>	<b>1</b>	.	<b>16</b>
<i>Lepomis macrochirus</i>	.	.	.	.	1	.	1
<i>Limulus polyphemus</i>	.	.	.	1	.	.	1
<i>Lophogobius cyprinoides</i>	.	.	.	1	.	.	1
<i>Lucania parva</i>	399	26	489	4,367	2,440	554	8,275
<b><i>Lutjanus analis</i></b>	<b>2</b>	.	.	.	.	.	<b>2</b>
<b><i>Lutjanus griseus</i></b>	.	<b>4</b>	<b>36</b>	<b>47</b>	<b>59</b>	<b>2</b>	<b>148</b>
<b><i>Lutjanus synagris</i></b>	.	.	.	.	<b>9</b>	<b>1</b>	<b>10</b>

Taxa	Month						Totals
	Feb	Apr	Jun	Aug	Oct	Dec	
	E=26	E=26	E=26	E=26	E=25	E=26	E=155
<i>Megalops atlanticus</i>	.	1	.	.	.	.	1
<i>Menidia</i> spp.	174	.	242	470	16	21	923
<i>Menippe</i> spp.	1	.	.	.	1	1	3
<i>Menticirrhus littoralis</i>	.	.	.	15	.	.	15
<i>Microgobius gulosus</i>	23	28	45	25	792	35	948
<i>Mugil cephalus</i>	36	7	2	5	2	2	54
<i>Mugil curema</i>	13	1	4	5	2	.	25
<i>Mugil</i> sp.	.	.	.	.	1	.	1
<i>Mugil trichodon</i>	13	2	.	.	3	1	19
<i>Nicholsina usta</i>	.	3	3	.	.	.	6
<i>Oligoplites saurus</i>	.	4	3	6	16	2	31
<i>Opisthonema oglinum</i>	.	.	19	.	17	.	36
<i>Opsanus beta</i>	1	4	7	5	24	2	43
<i>Oreochromis niloticus</i>	.	.	.	.	1	.	1
<i>Sarotherodon</i> spp.	.	.	.	.	4	1	5
<i>Orthopristis chrysoptera</i>	7	167	142	60	45	.	421
<i>Paralichthys albigutta</i>	1	6	2	3	12	1	25
<i>Pogonias cromis</i>	.	.	3	.	2	3	8
<i>Portunus</i> spp.	9	1	.	.	.	14	24
<i>Prionotus scitulus</i>	2	2	.	.	2	2	8
<i>Prionotus tribulus</i>	.	1	.	.	.	1	2
<i>Rimapenaeus</i> sp.	.	.	.	.	.	1	1
<i>Sarotherodon melanotheron</i>	.	.	.	.	1	8	9
<i>Sciaenidae</i> spp.	.	.	.	.	2	.	2
<i>Sciaenops ocellatus</i>	5	8	1	.	6	9	29
<i>Scomberomorus maculatus</i>	.	.	.	2	2	.	4
<i>Selene vomer</i>	.	.	.	.	1	.	1
<i>Sphoeroides nephelus</i>	11	15	5	3	43	12	89
<i>Sphyaena barracuda</i>	.	.	.	2	.	2	4

Taxa	Month						Totals
	Feb	Apr	Jun	Aug	Oct	Dec	
	E=26	E=26	E=26	E=26	E=25	E=26	E=155
<b><i>Sphyrna tiburo</i></b>	.	.	1	1	.	.	2
<i>Stephanolepis hispidus</i>	1	2	10	.	.	4	17
<i>Strongylura marina</i>	2	.	.	.	.	.	2
<i>Strongylura notata</i>	1	7	24	46	27	12	117
<i>Symphurus plagiusa</i>	1	.	.	.	.	.	1
<i>Syngnathus floridae</i>	1	2	4	2	.	9	18
<i>Syngnathus louisianae</i>	1	4	5	1	4	4	19
<i>Syngnathus scovelli</i>	77	24	23	12	77	14	227
<i>Synodus foetens</i>	29	9	22	5	12	18	95
<b><i>Trachinotus carolinus</i></b>	.	4	.	.	.	.	4
<b><i>Trachinotus falcatus</i></b>	.	.	1	3	6	2	12
<i>Tylosurus crocodilus</i>	.	.	1	.	.	.	1
<b>Totals</b>	<b>3,797</b>	<b>3,571</b>	<b>8,064</b>	<b>15,747</b>	<b>14,134</b>	<b>5,102</b>	<b>50,415</b>

Effort, or total number of hauls, is labeled 'E'. Taxa are arranged alphabetically. Selected taxa are highlighted in bold.

**Table 4.61:** Summary by gear and stratum of taxa collected during Sarasota Bay stratified-random sampling, 2022.

Taxa	Gear and Strata					Totals
	21.3-m bay seine			183-m haul seine		
	Veg	Unveg	Shore	Over	Nonover	
	E=54	E=29	E=36	E=28	E=8	E=155
<i>Acanthostracion quadricornis</i>	2	.	.	1	4	7
<i>Achirus lineatus</i>	3	1	6	.	.	10
<b><i>Albula</i> spp.</b>	<b>1</b>	<b>3</b>	.	.	.	<b>4</b>
<i>Aluterus schoepfii</i>	1	.	.	1	.	2
<i>Anchoa mitchilli</i>	1,392	373	8,818	.	.	10,583
<i>Ancylopsetta quadrocellata</i>	.	.	.	.	1	1
<b><i>Archosargus probatocephalus</i></b>	<b>17</b>	<b>3</b>	<b>10</b>	<b>171</b>	<b>9</b>	<b>210</b>
<b><i>Argopecten irradians</i></b>	<b>2</b>	.	.	<b>1</b>	.	<b>3</b>
<i>Ariopsis felis</i>	10	.	1	303	41	355
<i>Bagre marinus</i>	.	.	.	5	.	5
<i>Bairdiella chrysoura</i>	150	.	165	27	3	345
<b><i>Calamus penna</i></b>	<b>17</b>	.	.	<b>3</b>	<b>7</b>	<b>27</b>
<b><i>Calamus</i> spp.</b>	<b>4</b>	<b>1</b>	.	.	.	<b>5</b>
<b><i>Callinectes sapidus</i></b>	<b>7</b>	.	<b>11</b>	<b>22</b>	<b>3</b>	<b>43</b>
<b><i>Caranx hippos</i></b>	<b>1</b>	.	<b>1</b>	.	.	<b>2</b>
<i>Caranx latus</i>	.	.	.	.	1	1
<b><i>Centropomus undecimalis</i></b>	.	.	<b>7</b>	<b>94</b>	<b>57</b>	<b>158</b>
<b><i>Centropristis striata</i></b>	<b>1</b>	.	.	<b>1</b>	.	<b>2</b>
<i>Chaetodipterus faber</i>	.	1	.	37	3	41
<i>Chasmodes saburrae</i>	4	.	1	.	.	5
<i>Chilomycterus schoepfii</i>	11	2	2	31	3	49
<i>Chloroscombrus chrysurus</i>	1	1	5	.	.	7
<i>Cichlasoma urophthalmus</i>	1	.	4	.	.	5
<i>Ctenogobius boleosoma</i>	1	.	.	.	.	1
<b><i>Cynoscion nebulosus</i></b>	<b>108</b>	<b>14</b>	<b>87</b>	<b>11</b>	<b>1</b>	<b>221</b>
<i>Cyprinodon variegatus</i>	.	.	41	.	.	41

Taxa	Gear and Strata					Totals
	21.3-m bay seine			183-m haul seine		
	Veg	Unveg	Shore	Over	Nonover	
	E=54	E=29	E=36	E=28	E=8	
<i>Dasyatis sabina</i>	.	1	.	6	1	8
<i>Dasyatis say</i>	.	.	.	3	.	3
<i>Diapterus auratus</i>	.	.	.	41	14	55
<i>Diplodus holbrookii</i>	.	.	.	1	.	1
<b><i>Elops saurus</i></b>	.	.	<b>3</b>	<b>69</b>	<b>65</b>	<b>137</b>
<i>Eucinostomus gula</i>	552	198	707	175	409	2,041
<i>Eucinostomus harengulus</i>	53	194	95	4	204	550
<i>Eucinostomus</i> spp.	4,106	811	4,021	.	.	8,938
<i>Eugerres plumieri</i>	.	.	1	6	.	7
<b><i>Farfantepenaeus duorarum</i></b>	<b>570</b>	<b>89</b>	<b>671</b>	<b>2</b>	<b>1</b>	<b>1,333</b>
<i>Floridichthys carpio</i>	21	1	456	.	.	478
<i>Fundulus grandis</i>	.	.	33	.	.	33
<i>Gobiosoma robustum</i>	141	9	66	.	.	216
<i>Gobiosoma</i> spp.	89	10	84	.	.	183
<i>Gymnura micrura</i>	.	.	.	4	.	4
<b><i>Haemulon plumieri</i></b>	<b>12</b>	.	.	<b>1</b>	<b>1</b>	<b>14</b>
<i>Harengula jaguana</i>	43	.	1,042	7	13	1,105
<i>Hippocampus erectus</i>	2	.	.	.	.	2
<i>Hippocampus zosterae</i>	14	3	5	.	.	22
<i>Lagodon rhomboides</i>	4,702	74	3,214	2,683	772	11,445
<b><i>Leiostomus xanthurus</i></b>	<b>1</b>	.	<b>3</b>	<b>11</b>	<b>1</b>	<b>16</b>
<i>Lepomis macrochirus</i>	.	1	.	.	.	1
<i>Limulus polyphemus</i>	.	.	.	1	.	1
<i>Lophogobius cyprinoides</i>	.	.	1	.	.	1
<i>Lucania parva</i>	3,493	89	4,693	.	.	8,275
<b><i>Lutjanus analis</i></b>	.	.	.	.	<b>2</b>	<b>2</b>
<b><i>Lutjanus griseus</i></b>	<b>22</b>	.	<b>17</b>	<b>64</b>	<b>45</b>	<b>148</b>
<b><i>Lutjanus synagris</i></b>	<b>8</b>	.	<b>1</b>	.	<b>1</b>	<b>10</b>

Taxa	Gear and Strata					Totals
	21.3-m bay seine			183-m haul seine		
	Veg	Unveg	Shore	Over	Nonover	
	E=54	E=29	E=36	E=28	E=8	
<i>Megalops atlanticus</i>	.	1	.	.	.	1
<i>Menidia</i> spp.	270	3	650	.	.	923
<i>Menippe</i> spp.	1	.	.	2	.	3
<i>Menticirrhus littoralis</i>	.	.	.	.	15	15
<i>Microgobius gulosus</i>	506	60	382	.	.	948
<i>Mugil cephalus</i>	1	.	11	41	1	54
<i>Mugil curema</i>	.	.	.	25	.	25
<i>Mugil</i> sp.	.	.	1	.	.	1
<i>Mugil trichodon</i>	.	.	15	4	.	19
<i>Nicholsina usta</i>	2	.	.	4	.	6
<i>Oligoplites saurus</i>	1	4	19	3	4	31
<i>Opisthonema oglinum</i>	26	.	10	.	.	36
<i>Opsanus beta</i>	3	1	3	35	1	43
<i>Oreochromis niloticus</i>	.	.	.	1	.	1
<i>Sarotherodon</i> spp.	.	.	5	.	.	5
<i>Orthopristis chrysoptera</i>	172	.	86	96	67	421
<i>Paralichthys albigutta</i>	2	1	6	11	5	25
<i>Pogonias cromis</i>	.	.	.	5	3	8
<i>Portunus</i> spp.	12	11	.	.	1	24
<i>Prionotus scitulus</i>	3	2	.	2	1	8
<i>Prionotus tribulus</i>	.	.	1	.	1	2
<i>Rimapenaeus</i> sp.	.	1	.	.	.	1
<i>Sarotherodon melanotheron</i>	.	.	8	1	.	9
<i>Sciaenidae</i> spp.	2	.	.	.	.	2
<i>Sciaenops ocellatus</i>	3	.	7	14	5	29
<i>Scomberomorus maculatus</i>	.	.	2	2	.	4
<i>Selene vomer</i>	.	.	.	1	.	1
<i>Sphoeroides nephelus</i>	40	5	11	31	2	89

Taxa	Gear and Strata					Totals
	21.3-m bay seine			183-m haul seine		
	Veg	Unveg	Shore	Over	Nonover	
	E=54	E=29	E=36	E=28	E=8	
<b><i>Sphyraena barracuda</i></b>	.	.	.	4	.	4
<b><i>Sphyrna tiburo</i></b>	.	.	.	1	1	2
<i>Stephanolepis hispidus</i>	9	.	5	1	2	17
<i>Strongylura marina</i>	.	.	.	.	2	2
<i>Strongylura notata</i>	11	9	76	15	6	117
<i>Symphurus plagiusa</i>	1	.	.	.	.	1
<i>Syngnathus floridae</i>	16	.	2	.	.	18
<i>Syngnathus louisianae</i>	14	2	3	.	.	19
<i>Syngnathus scovelli</i>	144	27	56	.	.	227
<i>Synodus foetens</i>	45	22	17	9	2	95
<b><i>Trachinotus carolinus</i></b>	.	.	.	.	4	4
<b><i>Trachinotus falcatus</i></b>	.	.	.	6	6	12
<i>Tylosurus crocodilus</i>	.	.	1	.	.	1
<b>Totals</b>	<b>16,847</b>	<b>2,028</b>	<b>25,649</b>	<b>4,100</b>	<b>1,791</b>	<b>50,415</b>

Sampling with 21.3-m bay seine was stratified by the presence or absence of a shoreline ('Shore' or offshore) within 5-m. Offshore sets were further stratified by the presence or absence of bottom vegetation ('Veg' or 'Unveg'). Sampling with 21.3-m river seine and 183-m haul seine was stratified by the presence or absence of overhanging vegetation ('Over' or 'Nonover'). Sampling with 6.1-m otter trawl was not stratified. Effort, or the total number of hauls, is labeled 'E'. Taxa are arranged alphabetically. Selected taxa are highlighted in bold.

**Table 4.62:** Summary by zone of taxa collected during Sarasota Bay stratified-random sampling, 2022.

Taxa	Zone					Totals
	A	B	C	D	E	
	E=24	E=48	E=30	E=24	E=29	E=155
<i>Acanthostracion quadricornis</i>	5	1	1	.	.	7
<i>Achirus lineatus</i>	3	2	4	.	1	10
<b><i>Albula</i> spp.</b>	.	.	1	2	1	4
<i>Aluterus schoepfii</i>	.	1	1	.	.	2
<i>Anchoa mitchilli</i>	9	652	1,924	7,919	79	10,583
<i>Ancylosetta quadrocellata</i>	.	1	.	.	.	1
<b><i>Archosargus probatocephalus</i></b>	<b>19</b>	<b>43</b>	<b>35</b>	<b>60</b>	<b>53</b>	<b>210</b>
<b><i>Argopecten irradians</i></b>	.	2	.	.	1	3
<i>Ariopsis felis</i>	49	63	23	196	24	355
<i>Bagre marinus</i>	.	.	.	3	2	5
<i>Bairdiella chrysoura</i>	1	75	67	55	147	345
<b><i>Calamus penna</i></b>	.	13	8	.	6	27
<b><i>Calamus</i> spp.</b>	1	1	3	.	.	5
<b><i>Callinectes sapidus</i></b>	<b>5</b>	<b>19</b>	<b>3</b>	<b>9</b>	<b>7</b>	<b>43</b>
<b><i>Caranx hippos</i></b>	.	.	.	2	.	2
<i>Caranx latus</i>	.	1	.	.	.	1
<b><i>Centropomus undecimalis</i></b>	<b>22</b>	<b>64</b>	<b>22</b>	<b>15</b>	<b>35</b>	<b>158</b>
<b><i>Centropristis striata</i></b>	.	1	1	.	.	2
<i>Chaetodipterus faber</i>	2	6	2	22	9	41
<i>Chasmodes saburrae</i>	2	2	.	1	.	5
<i>Chilomycterus schoepfii</i>	5	7	9	22	6	49
<i>Chloroscombrus chrysurus</i>	.	6	.	.	1	7
<i>Cichlasoma urophthalmus</i>	.	.	.	.	5	5
<i>Ctenogobius boleosoma</i>	.	.	.	.	1	1
<b><i>Cynoscion nebulosus</i></b>	<b>12</b>	<b>61</b>	<b>62</b>	<b>58</b>	<b>28</b>	<b>221</b>
<i>Cyprinodon variegatus</i>	1	35	.	.	5	41
<i>Dasyatis sabina</i>	.	1	2	5	.	8

Taxa	Zone					Totals
	A	B	C	D	E	
	E=24	E=48	E=30	E=24	E=29	E=155
<i>Dasyatis say</i>	.	1	2	.	.	3
<i>Diapterus auratus</i>	5	18	1	8	23	55
<i>Diplodus holbrookii</i>	.	1	.	.	.	1
<b><i>Elops saurus</i></b>	<b>40</b>	<b>31</b>	<b>2</b>	<b>24</b>	<b>40</b>	<b>137</b>
<i>Eucinostomus gula</i>	150	819	661	220	191	2,041
<i>Eucinostomus harengulus</i>	52	226	101	145	26	550
<i>Eucinostomus</i> spp.	1,560	2,647	2,204	1,492	1,035	8,938
<i>Eugerres plumieri</i>	6	.	.	1	.	7
<b><i>Farfantepenaeus duorarum</i></b>	<b>122</b>	<b>68</b>	<b>132</b>	<b>212</b>	<b>799</b>	<b>1,333</b>
<i>Floridichthys carpio</i>	247	227	4	.	.	478
<i>Fundulus grandis</i>	28	3	2	.	.	33
<i>Gobiosoma robustum</i>	11	56	80	24	45	216
<i>Gobiosoma</i> spp.	7	8	36	24	108	183
<i>Gymnura micrura</i>	.	.	.	4	.	4
<b><i>Haemulon plumierii</i></b>	.	<b>12</b>	<b>1</b>	.	<b>1</b>	<b>14</b>
<i>Harengula jaguana</i>	.	1,095	.	10	.	1,105
<i>Hippocampus erectus</i>	1	1	.	.	.	2
<i>Hippocampus zosterae</i>	9	9	1	2	1	22
<i>Lagodon rhomboides</i>	679	5,010	1,846	2,500	1,410	11,445
<b><i>Leiostomus xanthurus</i></b>	.	<b>14</b>	.	<b>1</b>	<b>1</b>	<b>16</b>
<i>Lepomis macrochirus</i>	.	.	.	1	.	1
<i>Limulus polyphemus</i>	.	.	.	1	.	1
<i>Lophogobius cyprinoides</i>	.	.	1	.	.	1
<i>Lucania parva</i>	2,077	3,483	88	245	2,382	8,275
<b><i>Lutjanus analis</i></b>	.	<b>2</b>	.	.	.	<b>2</b>
<b><i>Lutjanus griseus</i></b>	.	<b>68</b>	<b>26</b>	<b>33</b>	<b>21</b>	<b>148</b>
<b><i>Lutjanus synagris</i></b>	.	<b>2</b>	.	<b>4</b>	<b>4</b>	<b>10</b>
<b><i>Megalops atlanticus</i></b>	.	.	<b>1</b>	.	.	<b>1</b>
<i>Menidia</i> spp.	12	348	43	246	274	923

Taxa	Zone					Totals
	A	B	C	D	E	
	E=24	E=48	E=30	E=24	E=29	E=155
<i>Menippe</i> spp.	.	1	1	.	1	3
<i>Menticirrhus littoralis</i>	.	15	.	.	.	15
<i>Microgobius gulosus</i>	69	24	141	281	433	948
<i>Mugil cephalus</i>	1	18	4	25	6	54
<i>Mugil curema</i>	.	5	1	17	2	25
<i>Mugil</i> sp.	1	.	.	.	.	1
<i>Mugil trichodon</i>	.	17	.	1	1	19
<i>Nicholsina usta</i>	.	5	.	.	1	6
<i>Oligoplites saurus</i>	9	12	2	6	2	31
<i>Opisthonema oglinum</i>	.	17	.	18	1	36
<i>Opsanus beta</i>	8	23	7	4	1	43
<i>Oreochromis niloticus</i>	.	.	.	1	.	1
<i>Sarotherodon</i> spp.	.	1	.	.	4	5
<i>Orthopristis chrysoptera</i>	23	175	174	15	34	421
<i>Paralichthys albigutta</i>	4	6	8	4	3	25
<i>Pogonias cromis</i>	3	.	.	3	2	8
<i>Portunus</i> spp.	8	2	3	.	11	24
<i>Prionotus scitulus</i>	.	1	3	.	4	8
<i>Prionotus tribulus</i>	1	.	1	.	.	2
<i>Rimapenaeus</i> sp.	.	.	.	1	.	1
<i>Sarotherodon melanotheron</i>	1	8	.	.	.	9
<i>Sciaenidae</i> spp.	.	.	.	2	.	2
<i>Sciaenops ocellatus</i>	7	5	11	2	4	29
<i>Scomberomorus maculatus</i>	.	2	.	2	.	4
<i>Selene vomer</i>	.	1	.	.	.	1
<i>Sphoeroides nephelus</i>	10	22	32	12	13	89
<i>Sphyraena barracuda</i>	.	1	3	.	.	4
<i>Sphyrna tiburo</i>	1	1	.	.	.	2
<i>Stephanolepis hispidus</i>	1	15	1	.	.	17

Taxa	Zone					Totals
	A	B	C	D	E	
	E=24	E=48	E=30	E=24	E=29	E=155
<i>Strongylura marina</i>	2	.	.	.	.	2
<i>Strongylura notata</i>	6	57	18	19	17	117
<i>Symphurus plagiusa</i>	.	.	1	.	.	1
<i>Syngnathus floridae</i>	4	11	2	.	1	18
<i>Syngnathus louisianae</i>	3	9	2	2	3	19
<i>Syngnathus scovelli</i>	38	68	55	44	22	227
<i>Synodus foetens</i>	6	35	18	8	28	95
<b><i>Trachinotus carolinus</i></b>	4	.	.	.	.	4
<b><i>Trachinotus falcatus</i></b>	.	9	1	2	.	12
<i>Tylosurus crocodilus</i>	.	1	.	.	.	1
<b>Totals</b>	<b>5,352</b>	<b>15,773</b>	<b>7,889</b>	<b>14,035</b>	<b>7,366</b>	<b>50,415</b>

Zones A–E are the five embayments designated by the Sarasota Bay Estuary Program. Effort, or the total number of hauls, is labeled 'E'. Taxa are arranged alphabetically. Selected taxa are highlighted in bold.

## 4.7 Charlotte Harbor

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

The Fisheries-Independent Monitoring (FIM) program has conducted intensive sampling of fish and selected invertebrates in Charlotte Harbor since 1989. The area sampled was divided into four geographically-defined bay zones (A–D) and three riverine zones (K, M, and P; Figure 4.7). Monthly stratified-random sampling (SRS) was conducted in Zones A–D using 21.3-m bay seines, 183-m haul seines, and 6.1-m bay otter trawls. Monthly SRS was conducted in Zones M and P with 21.3-m river seines and 6.1-m river otter trawls, and Zone K with 21.3-m river seines (starting in 2016). Beginning in 2016, tidal creeks in Zones A, B, and C were sampled monthly using 21.3-m river seines. All methods were the same as those described in Chapter 2. This section summarizes data collected by the FIM program during 2022 in Charlotte Harbor.

### Stratified-Random Sampling

A total of 230,320 animals, which included 159 taxa of fishes and 14 taxa of selected invertebrates, were collected from 1,122 Charlotte Harbor SRS samples in 2022 (Table 4.63). *Anchoa mitchilli* (n=50,378) was the most numerous taxon collected, representing 21.9% of the total catch. *Eucinostomus spp.* (n=44,401) and *Lagodon rhomboides* (n=38,866) were the next most abundant taxa collected, accounting for an additional 36.2% of the total catch. A total of 49 selected taxa (n=12,142 animals) composed 5.3% of the total catch. *Farfantepenaeus duorarum* (n=4,164) was the most abundant Selected Taxon, representing 1.8% of the total catch. *Centropomus undecimalis* (n=1,425), *Sciaenops ocellatus* (n=1,402), *Archosargus probatocephalus* (n=619), and *Callinectes sapidus* (n=489) were the next most abundant selected taxa, comprising 1.7% of the total catch. Collections in 2022 included 3 species new to the Charlotte Harbor FIM collection: *Litopenaeus setiferus*, *Monopterus albus*, *Oreochromis niloticus*.



**Figure 4.7:** Map of Charlotte Harbor sampling area. Zones are labeled A–D (bay zones) and K, M, and P (river zones).

**Table 4.63:** Summary of catch and effort data for Charlotte Harbor stratified-random sampling, 2022.

Zone	21.3-m bay seine		21.3-m river seine		183-m haul seine		6.1-m otter trawl		Totals	
	Animals	Hauls	Animals	Hauls	Animals	Hauls	Animals	Hauls	Animals	Hauls
<b>A</b>	17,070	120	12,807	90	1,643	60	2,518	28	34,038	298
<b>B</b>	19,386	96	36,221	90	21,216	48	890	24	77,713	258
<b>C</b>	35,934	96	13,047	90	5,548	48	2,386	24	56,915	258
<b>D</b>	25,266	96	.	.	12,420	48	3,325	20	41,011	164
<b>K</b>	.	.	4,060	36	.	.	.	.	4,060	36
<b>M</b>	.	.	9,661	36	.	.	2,075	18	11,736	54
<b>P</b>	.	.	4,017	36	.	.	830	18	4,847	54
<b>Totals</b>	<b>97,656</b>	<b>408</b>	<b>79,813</b>	<b>378</b>	<b>40,827</b>	<b>204</b>	<b>12,024</b>	<b>132</b>	<b>230,320</b>	<b>1,122</b>

## Bay Sampling

### 21.3-m Bay Seines

A total of 97,656 animals were collected in 408 21.3-m bay seines, representing 42.4% of the overall SRS catch (Table 4.63). *Eucinostomus spp.* (n=23,664) and *Anchoa mitchilli* (n=22,751) were the most abundant taxa, accounting for 47.5% of the bay seine catch (Table 4.64). The taxa most frequently caught in 21.3-m bay seines were *Eucinostomus spp.* (69.4% occurrence) and *Microgobius gulosus* (52.2% occurrence).

A total of 4,528 animals from 33 selected taxa were collected, representing 4.6% of the entire 21.3-m bay seine catch (Table 4.65). *Farfantepenaeus duorarum* (n=2,636) was the most abundant Selected Taxon, accounting for 58.2% of the selected taxa collected by this gear. The selected taxa most frequently caught in 21.3-m bay seines were *Farfantepenaeus duorarum* (37.7% occurrence) and *Cynoscion nebulosus* (23.5% occurrence).

**Table 4.64:** Catch statistics for 10 dominant taxa collected in 408 21.3-m bay seine samples during Charlotte Harbor stratified-random sampling, 2022.

Species	Number			Density Estimate (animals/100m <sup>2</sup> )				Standard Length (mm)			
	No.	%	% Occur	Mean	Stderr	CV	Max	Mean	Stderr	Min	Max
<i>Eucinostomus</i> spp.	23,664	24.2	69.4	41.74	5.16	248.58	1,430.71	27	0.04	5	41
<i>Anchoa mitchilli</i>	22,751	23.3	11.0	40.13	34.95	1,753.12	14,148.57	33	0.03	14	63
<i>Lucania parva</i>	15,761	16.1	42.2	27.87	4.81	347.27	947.86	24	0.03	11	41
<i>Lagodon rhomboides</i>	6,893	7.1	40.9	12.19	1.92	316.00	370.00	44	0.22	11	154
<i>Eucinostomus gula</i>	4,359	4.5	52.0	7.71	0.80	208.68	150.00	54	0.14	40	117
<i>Microgobius gulosus</i>	3,995	4.1	52.2	7.06	1.08	306.89	313.57	30	0.10	12	54
<i>Menidia</i> spp.	3,671	3.8	18.9	6.49	1.60	495.98	357.86	40	0.14	22	87
<i>Farfantepenaeus duorarum</i>	2,636	2.7	37.7	4.66	0.90	388.43	260.00	8	0.06	2	29
<i>Eucinostomus harengulus</i>	1,967	2.0	35.8	3.48	0.49	280.74	87.86	56	0.27	40	115
<i>Bairdiella chrysoura</i>	1,887	1.9	19.9	3.34	0.85	511.32	175.71	52	0.59	11	144
Subtotals	87,584	89.7	.	.	.	.	.	.	.	2	154
<b>Totals</b>	<b>97,656</b>	<b>100.0</b>	.	<b>172.66</b>	<b>37.22</b>	<b>435.41</b>	<b>14,800.71</b>	.	.	<b>2</b>	<b>634</b>

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.

**Table 4.65:** Catch statistics for selected taxa collected in 408 21.3-m bay seine samples during Charlotte Harbor stratified-random sampling, 2022.

Species	Number			Density Estimate (animals/100m <sup>2</sup> )				Standard Length (mm)			
	No.	%	% Occur	Mean	Stderr	CV	Max	Mean	Stderr	Min	Max
<i>Farfantepenaeus duorarum</i>	2,636	2.7	37.7	4.61	0.89	390.48	260.00	8	0.06	2	29
<i>Sciaenops ocellatus</i>	686	0.7	11.0	1.20	0.68	1,137.49	247.14	36	0.88	12	364
<i>Leiostomus xanthurus</i>	344	0.4	2.0	0.60	0.58	1,949.64	237.14	22	0.17	15	33
<i>Cynoscion nebulosus</i>	330	0.3	23.5	0.58	0.08	262.82	10.00	37	1.00	15	122
<i>Callinectes sapidus</i>	141	0.1	12.7	0.25	0.05	435.59	15.71	43	4.18	4	189
<i>Menticirrhus americanus</i>	81	0.1	2.5	0.14	0.09	1,247.11	34.29	22	0.56	15	50
<i>Lutjanus griseus</i>	62	0.1	10.8	0.11	0.02	343.01	3.57	74	6.93	17	230
<i>Archosargus probatocephalus</i>	54	0.1	6.9	0.09	0.03	561.59	8.57	39	5.86	14	250
<i>Lutjanus synagris</i>	34	<0.1	3.9	0.06	0.02	643.85	5.71	38	2.45	18	91
<i>Menticirrhus saxatilis</i>	24	<0.1	2.7	0.04	0.01	666.65	2.86	26	2.37	14	57
<i>Mugil trichodon</i>	18	<0.1	1.0	0.03	0.02	1,408.72	8.57	39	3.28	16	66
<i>Centropomus undecimalis</i>	17	<0.1	2.2	0.03	0.01	773.64	2.86	264	33.06	31	434
<i>Cynoscion arenarius</i>	17	<0.1	2.2	0.03	0.01	938.92	5.00	27	2.46	18	57
<i>Brevoortia</i> spp.	14	<0.1	0.5	0.02	0.02	1,880.81	9.29	22	0.36	19	24
<i>Mugil cephalus</i>	10	<0.1	1.7	0.02	0.01	852.16	2.14	64	32.46	22	354
<i>Haemulon plumierii</i>	9	<0.1	1.0	0.02	0.01	1,073.01	2.14	48	5.43	24	74
<i>Elops saurus</i>	8	<0.1	1.2	0.01	0.01	1,006.22	2.14	253	4.23	233	269
<i>Calamus penna</i>	6	<0.1	1.2	0.01	<0.01	948.09	1.43	46	2.72	35	55
<i>Paralichthys albigutta</i>	6	<0.1	1.5	0.01	<0.01	819.54	0.71	190	42.14	47	267

Species	Number			Density Estimate (animals/100m <sup>2</sup> )				Standard Length (mm)			
	No.	%	% Occur	Mean	Stderr	CV	Max	Mean	Stderr	Min	Max
<i>Calamus</i> spp.	4	<0.1	1.0	0.01	<0.01	1,006.22	0.71	23	3.09	14	28
<i>Caranx hippos</i>	4	<0.1	0.2	0.01	0.01	2,019.90	2.86	39	2.90	31	45
<i>Pogonias cromis</i>	4	<0.1	0.5	0.01	0.01	1,595.69	2.14	281	14.18	243	308
<i>Diplectrum formosum</i>	3	<0.1	0.5	0.01	<0.01	1,504.06	1.43	66	10.49	46	81
<i>Albula</i> spp.	2	<0.1	0.5	<0.01	<0.01	1,426.53	0.71	45	0.00	45	45
<i>Calamus bajonado</i>	2	<0.1	0.2	<0.01	<0.01	2,019.90	1.43	48	0.50	48	49
<i>Lutjanus analis</i>	2	<0.1	0.5	<0.01	<0.01	1,426.53	0.71	38	18.50	20	57
<i>Menippe</i> spp.	2	<0.1	0.5	<0.01	<0.01	1,426.53	0.71	12	4.50	7	16
<i>Sphyaena barracuda</i>	2	<0.1	0.5	<0.01	<0.01	1,426.53	0.71	260	14.50	245	274
<i>Trachinotus falcatus</i>	2	<0.1	0.2	<0.01	<0.01	2,019.90	1.43	17	1.00	16	18
<i>Epinephelus itajara</i>	1	<0.1	0.2	<0.01	<0.01	2,019.90	0.71	121	.	121	121
<i>Menticirrhus littoralis</i>	1	<0.1	0.2	<0.01	<0.01	2,019.90	0.71	28	.	28	28
<i>Mugil curema</i>	1	<0.1	0.2	<0.01	<0.01	2,019.90	0.71	32	.	32	32
<i>Negaprion brevirostris</i>	1	<0.1	0.2	<0.01	<0.01	2,019.90	0.71	435	.	435	435
<b>Totals</b>	<b>4,528</b>	<b>4.6</b>	<b>.</b>	<b>7.93</b>	<b>1.30</b>	<b>330.93</b>	<b>261.43</b>	<b>.</b>	<b>.</b>	<b>2</b>	<b>435</b>

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.

### ***183-m Haul Seines***

A total of 40,827 animals were collected in 204 183-m haul seines, representing 17.7% of the overall SRS catch (Table 4.63). *Lagodon rhomboides* (n=29,647) was the most abundant taxon, accounting for 72.6% of the 183-m haul seine catch (Table 4.66). The taxa most frequently caught in 183-m haul seines were *Centropomus undecimalis* (56.9% occurrence), *Sphoeroides nephelus* (56.4% occurrence), and *Lagodon rhomboides* (54.9% occurrence).

A total of 3,713 animals from 41 selected taxa were collected, representing 9.1% of the entire 183-m haul seine catch (Table 4.67). *Centropomus undecimalis* (n=1,253) and *Archosargus probatocephalus* (n=510) were the most abundant selected taxa, accounting for 47.5% of the selected taxa collected by this gear. The selected taxa most frequently caught in 183-m haul seines were *Centropomus undecimalis* (56.9% occurrence) and *Archosargus probatocephalus* (42.6% occurrence).

**Table 4.66:** Catch statistics for 10 dominant taxa collected in 204 183-m haul seine samples during Charlotte Harbor stratified-random sampling, 2022.

Species	Number			Density Estimate (animals/set)				Standard Length (mm)			
	No.	%	% Occur	Mean	Stderr	CV	Max	Mean	Stderr	Min	Max
<i>Lagodon rhomboides</i>	29,647	72.6	54.9	146.77	21.61	209.22	1,921	105	0.15	12	203
<i>Ariopsis felis</i>	1,551	3.8	33.8	7.68	4.13	764.21	822	263	1.06	88	428
<i>Orthopristis chrysoptera</i>	1,514	3.7	17.2	7.50	4.00	758.25	768	127	0.87	59	219
<i>Centropomus undecimalis</i>	1,253	3.1	56.9	6.20	0.99	226.75	86	433	3.31	195	872
<i>Eucinostomus gula</i>	733	1.8	34.3	3.63	0.71	276.85	79	82	0.37	45	112
<i>Archosargus probatocephalus</i>	510	1.2	42.6	2.52	0.46	258.57	50	214	3.47	42	426
<i>Bairdiella chrysoura</i>	488	1.2	11.8	2.42	1.12	658.52	157	127	0.80	65	236
<i>Sphoeroides nephelus</i>	382	0.9	56.4	1.89	0.29	218.11	50	148	1.80	54	248
<i>Diapterus auratus</i>	358	0.9	15.7	1.77	0.59	474.08	82	173	1.47	79	284
<i>Chaetodipterus faber</i>	347	0.8	17.2	1.72	0.76	630.37	128	184	2.05	60	278
Subtotals	36,783	90.0	.	.	.	.	.	.	.	12	872
<b>Totals</b>	<b>40,827</b>	<b>100.0</b>	.	<b>202.11</b>	<b>25.57</b>	<b>180.71</b>	<b>2,914</b>	.	.	<b>12</b>	<b>1,040</b>

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.

**Table 4.67:** Catch statistics for selected taxa collected in 204 183-m haul seine samples during Charlotte Harbor stratified-random sampling, 2022.

Species	Number			Density Estimate (animals/set)				Standard Length (mm)			
	No.	%	% Occur	Mean	Stderr	CV	Max	Mean	Stderr	Min	Max
<i>Centropomus undecimalis</i>	1,253	3.1	56.9	6.14	0.98	228.08	86	433	3.31	195	872
<i>Archosargus probatocephalus</i>	510	1.2	42.6	2.50	0.46	260.03	50	214	3.47	42	426
<i>Lutjanus griseus</i>	310	0.8	31.9	1.52	0.29	272.50	31	181	2.41	62	264
<i>Elops saurus</i>	281	0.7	20.1	1.38	0.47	486.17	74	281	3.08	139	500
<i>Mugil trichodon</i>	202	0.5	12.7	0.99	0.51	731.42	100	210	2.67	102	330
<i>Mugil cephalus</i>	199	0.5	27.9	0.98	0.17	251.19	20	327	5.85	111	558
<i>Sciaenops ocellatus</i>	187	0.5	26.5	0.92	0.23	365.25	38	534	8.57	88	778
<i>Caranx hippos</i>	111	0.3	14.7	0.54	0.25	652.73	49	243	12.61	97	609
<i>Callinectes sapidus</i>	107	0.3	20.6	0.52	0.14	368.14	22	117	3.61	39	183
<i>Mugil curema</i>	95	0.2	8.8	0.47	0.18	562.87	32	201	5.25	58	434
<i>Cynoscion nebulosus</i>	79	0.2	20.1	0.39	0.08	293.59	9	253	13.72	69	504
<i>Lutjanus synagris</i>	73	0.2	7.8	0.36	0.12	493.42	13	106	2.33	44	159
<i>Paralichthys albigutta</i>	41	0.1	13.7	0.20	0.04	301.95	4	208	10.65	80	343
<i>Sphyrna barracuda</i>	39	0.1	9.3	0.19	0.06	427.42	8	351	17.47	155	826
<i>Menticirrhus littoralis</i>	34	0.1	0.5	0.17	0.17	1,428.29	34	224	5.26	186	299
<i>Calamus penna</i>	29	0.1	6.4	0.14	0.05	454.86	5	102	5.99	64	184
<i>Sphyrna tiburo</i>	25	0.1	6.9	0.12	0.06	662.81	11	598	23.60	412	803
<i>Mycteroperca bonaci</i>	15	<0.1	1.5	0.07	0.05	1,009.72	10	204	7.01	126	250
<i>Trachinotus falcatus</i>	13	<0.1	2.9	0.06	0.03	698.07	5	195	14.53	154	306

Species	Number			Density Estimate (animals/set)				Standard Length (mm)			
	No.	%	% Occur	Mean	Stderr	CV	Max	Mean	Stderr	Min	Max
<i>Trachinotus carolinus</i>	12	<0.1	3.4	0.06	0.02	575.87	3	328	10.88	280	399
<i>Centropristis striata</i>	9	<0.1	2.9	0.04	0.02	648.23	3	133	12.65	104	199
<i>Mycteroperca microlepis</i>	9	<0.1	2.9	0.04	0.02	648.23	3	305	41.52	107	470
<i>Pogonias cromis</i>	9	<0.1	1.0	0.04	0.04	1,278.69	8	306	25.27	250	485
<i>Scomberomorus maculatus</i>	9	<0.1	1.0	0.04	0.03	1,013.72	5	359	17.74	272	464
<i>Farfantepenaeus duorarum</i>	8	<0.1	3.4	0.04	0.02	557.02	2	24	2.13	18	35
<i>Brevoortia</i> spp.	7	<0.1	1.5	0.03	0.03	1,058.10	5	138	7.69	108	154
<i>Epinephelus itajara</i>	6	<0.1	2.0	0.03	0.02	820.55	3	200	21.16	97	236
<i>Haemulon plumierii</i>	6	<0.1	1.5	0.03	0.02	1,007.46	4	142	11.52	91	164
<i>Leiostomus xanthurus</i>	6	<0.1	2.0	0.03	0.02	747.94	2	122	19.58	90	192
<i>Lutjanus analis</i>	6	<0.1	2.0	0.03	0.02	747.94	2	165	24.50	112	246
<i>Ocyurus chrysurus</i>	5	<0.1	2.0	0.02	0.01	750.98	2	95	24.79	43	177
<i>Carcharhinus leucas</i>	4	<0.1	2.0	0.02	0.01	708.85	1	702	49.47	620	840
<i>Menippe</i> spp.	3	<0.1	1.5	0.01	0.01	820.55	1	46	0.88	45	48
<i>Megalops atlanticus</i>	2	<0.1	1.0	0.01	0.01	1,007.46	1	740	131.00	609	871
<i>Negaprion brevirostris</i>	2	<0.1	1.0	0.01	0.01	1,007.46	1	560	64.50	496	625
<i>Rachycentron canadum</i>	2	<0.1	1.0	0.01	0.01	1,007.46	1	851	48.00	803	899
<i>Albula</i> spp.	1	<0.1	0.5	<0.01	<0.01	1,428.29	1	350	.	350	350
<i>Argopecten irradians</i>	1	<0.1	0.5	<0.01	<0.01	1,428.29	1	59	.	59	59
<i>Carcharhinus limbatus</i>	1	<0.1	0.5	<0.01	<0.01	1,428.29	1	484	.	484	484
<i>Diplectrum formosum</i>	1	<0.1	0.5	<0.01	<0.01	1,428.29	1	120	.	120	120

Species	Number			Density Estimate (animals/set)				Standard Length (mm)			
	No.	%	% Occur	Mean	Stderr	CV	Max	Mean	Stderr	Min	Max
<i>Pomatomus saltatrix</i>	1	<0.1	0.5	<0.01	<0.01	1,428.29	1	451	.	451	451
<b>Totals</b>	<b>3,713</b>	<b>9.1</b>	<b>.</b>	<b>18.20</b>	<b>1.74</b>	<b>136.85</b>	<b>129</b>	<b>.</b>	<b>.</b>	<b>18</b>	<b>899</b>

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.

### **6.1-m Bay Otter Trawls**

A total of 9,119 animals were collected in 96 6.1-m bay otter trawls, representing 4% of the overall SRS catch (Table 4.63). *Lagodon rhomboides* (n=1,969), *Eucinostomus gula* (n=1,134), *Portunus spp.* (n=1,031), and *Farfantepenaeus duorarum* (n=838) were the most abundant taxa, accounting for 54.5% of the 6.1-m bay otter trawl catch (Table 4.68). The taxa most frequently caught in 6.1-m bay otter trawls were *Prionotus scitulus* (60.4% occurrence), *Portunus spp.* (54.2% occurrence), and *Lutjanus synagris* (49.0% occurrence).

A total of 1,568 animals from 21 selected taxa were collected, representing 17.2% of the entire 6.1-m bay otter trawl catch (Table 4.69). *Farfantepenaeus duorarum* (n=838), *Lutjanus synagris* (n=210), and *Cynoscion arenarius* (n=140) were the most abundant selected taxa, accounting for 75.8% of the selected taxa collected by this gear. The selected taxa most frequently caught in 6.1-m bay otter trawls were *Lutjanus synagris* (49.0% occurrence), *Farfantepenaeus duorarum* (36.5% occurrence), and *Menippe spp.* (27.1% occurrence).

**Table 4.68:** Catch statistics for 10 dominant taxa collected in 96 6.1-m bay otter trawl samples during Charlotte Harbor stratified-random sampling, 2022.

Species	Number			Density Estimate (animals/100m <sup>2</sup> )				Standard Length (mm)			
	No.	%	% Occur	Mean	Stderr	CV	Max	Mean	Stderr	Min	Max
<i>Lagodon rhomboides</i>	1,969	21.6	47.9	1.40	0.40	282.15	22.87	87	0.46	19	144
<i>Eucinostomus gula</i>	1,134	12.4	42.7	0.84	0.22	250.98	11.50	66	0.42	40	120
<i>Portunus</i> spp.	1,031	11.3	54.2	0.76	0.20	257.57	9.65	49	0.35	7	80
<i>Farfantepenaeus duorarum</i>	838	9.2	36.5	0.60	0.23	376.23	15.52	11	0.15	4	28
<i>Bairdiella chrysoura</i>	692	7.6	20.8	0.49	0.20	405.12	16.19	71	1.15	12	132
<i>Eucinostomus</i> spp.	519	5.7	29.2	0.37	0.13	336.29	9.78	29	0.31	12	39
<i>Prionotus scitulus</i>	456	5.0	60.4	0.33	0.06	178.49	3.64	75	1.33	16	178
<i>Trinectes maculatus</i>	276	3.0	20.8	0.20	0.09	448.71	7.22	57	0.66	34	91
<i>Orthopristis chrysoptera</i>	266	2.9	36.5	0.19	0.06	293.98	3.91	81	2.28	17	179
<i>Lutjanus synagris</i>	210	2.3	49.0	0.15	0.03	198.85	1.62	55	2.00	16	138
Subtotals	7,391	81.0	.	.	.	.	.	.	.	4	179
<b>Totals</b>	<b>9,119</b>	<b>100.0</b>	.	<b>6.58</b>	<b>0.92</b>	<b>136.31</b>	<b>48.77</b>	.	.	<b>4</b>	<b>655</b>

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.

**Table 4.69:** Catch statistics for selected taxa collected in 96 6.1-m bay otter trawl samples during Charlotte Harbor stratified-random sampling, 2022.

Species	Number			Density Estimate (animals/100m <sup>2</sup> )				Standard Length (mm)			
	No.	%	% Occur	Mean	Stderr	CV	Max	Mean	Stderr	Min	Max
<i>Farfantepenaeus duorarum</i>	838	9.2	36.5	0.60	0.23	378.33	15.52	11	0.15	4	28
<i>Lutjanus synagris</i>	210	2.3	49.0	0.15	0.03	200.15	1.62	55	2.00	16	138
<i>Cynoscion arenarius</i>	140	1.5	12.5	0.10	0.05	512.02	4.72	36	1.48	15	110
<i>Menticirrhus americanus</i>	104	1.1	14.6	0.07	0.03	357.78	1.62	57	4.25	14	200
<i>Menippe</i> spp.	82	0.9	27.1	0.06	0.01	234.07	0.74	25	1.44	5	62
<i>Callinectes sapidus</i>	55	0.6	19.8	0.04	0.01	257.22	0.61	70	4.65	13	141
<i>Cynoscion nebulosus</i>	43	0.5	11.5	0.03	0.01	468.74	1.28	67	5.92	24	169
<i>Archosargus probatocephalus</i>	23	0.3	3.1	0.02	0.01	895.71	1.42	42	3.77	14	119
<i>Lutjanus griseus</i>	20	0.2	5.2	0.01	0.01	667.72	0.88	141	9.78	30	223
<i>Diplectrum formosum</i>	12	0.1	8.3	0.01	<0.01	452.01	0.34	100	7.76	61	165
<i>Haemulon plumierii</i>	12	0.1	3.1	0.01	0.01	822.83	0.67	91	6.12	40	125
<i>Paralichthys albigutta</i>	11	0.1	8.3	0.01	<0.01	377.13	0.20	249	20.97	116	328
<i>Argopecten gibbus</i>	5	0.1	4.2	<0.01	<0.01	511.39	0.13	28	0.93	26	31
<i>Argopecten irradians</i>	5	0.1	1.0	<0.01	<0.01	979.80	0.34	13	1.83	9	18
<i>Calamus penna</i>	2	<0.1	2.1	<0.01	<0.01	689.16	0.07	104	22.00	82	126
<i>Calamus proridens</i>	1	<0.1	1.0	<0.01	<0.01	979.80	0.07	59	.	59	59
<i>Centropristis striata</i>	1	<0.1	1.0	<0.01	<0.01	979.80	0.07	128	.	128	128
<i>Mycteroperca microlepis</i>	1	<0.1	1.0	<0.01	<0.01	979.80	0.07	120	.	120	120
<i>Ocyurus chrysurus</i>	1	<0.1	1.0	<0.01	<0.01	979.80	0.07	52	.	52	52

Species	Number		Density Estimate (animals/100m <sup>2</sup> )				Standard Length (mm)				
	No.	% Occur	Mean	Stderr	CV	Max	Mean	Stderr	Min	Max	
<i>Sciaenops ocellatus</i>	1	<0.1	1.0	<0.01	<0.01	979.80	0.07	16	.	16	16
<i>Sphyraena barracuda</i>	1	<0.1	1.0	<0.01	<0.01	979.80	0.07	72	.	72	72
<b>Totals</b>	<b>1,568</b>	<b>17.2</b>	.	<b>1.12</b>	<b>0.28</b>	<b>246.09</b>	<b>16.73</b>	.	.	<b>4</b>	<b>328</b>

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.

## River Sampling

### Tidal Creeks

#### *21.3-m River Seines*

A total of 62,075 animals were collected in 270 21.3-m river seines in tidal creeks, representing 27% of the overall SRS catch (Table 4.63). *Anchoa mitchilli* (n=19,730) was the most abundant taxon collected, accounting for 31.8% of the 21.3-m river seine catch (Table 4.70). *Eucinostomus spp.* (n=15,586) and *Lucania parva* (n=7,604) were the next most abundant taxa, accounting for an additional 37.4% of the 21.3-m river seine catch. The taxa most frequently caught in 21.3-m river seines in tidal creeks were *Eucinostomus spp.* (65.2% occurrence), *Microgobius gulosus* (53.7% occurrence), and *Eucinostomus harengulus* (51.9% occurrence).

A total of 1,473 animals from 17 selected taxa were collected, representing 2.4% of the entire 21.3-m river seine catch in tidal creeks (Table 4.71). *Farfantepenaeus duorarum* (n=482), and *Sciaenops ocellatus* (n=456) were the most abundant selected taxa, accounting for 63.7% of the selected taxa collected by this gear. The selected taxa most frequently caught in 21.3-m river seines in tidal creeks were *Farfantepenaeus duorarum* (23.7% occurrence) and *Centropomus undecimalis* (18.9% occurrence).

**Table 4.70:** Catch statistics for 10 dominant taxa collected in 270 21.3-m creek seine samples during Charlotte Harbor stratified-random sampling, 2022.

Species	Number			Density Estimate (animals/100m <sup>2</sup> )				Standard Length (mm)			
	No.	%	% Occur	Mean	Stderr	CV	Max	Mean	Stderr	Min	Max
<i>Anchoa mitchilli</i>	19,730	31.8	13.7	109.49	58.85	874.96	14,823.53	32	0.04	16	55
<i>Eucinostomus</i> spp.	15,586	25.1	65.2	86.17	15.13	286.42	2,517.65	26	0.05	10	39
<i>Lucania parva</i>	7,604	12.2	42.2	42.36	8.92	342.32	1,254.41	24	0.05	14	39
<i>Menidia</i> spp.	6,570	10.6	46.7	36.60	8.15	361.89	1,527.94	37	0.10	14	83
<i>Eugerres plumieri</i>	3,589	5.8	39.3	19.92	6.64	542.48	1,176.47	30	0.36	12	246
<i>Eucinostomus harengulus</i>	1,665	2.7	51.9	9.27	1.10	193.00	110.29	56	0.34	40	111
<i>Gambusia holbrooki</i>	1,123	1.8	7.0	6.26	3.36	871.71	708.82	24	0.09	15	35
<i>Microgobius gulosus</i>	1,072	1.7	53.7	5.95	0.75	205.09	98.53	28	0.21	10	54
<i>Cyprinodon variegatus</i>	929	1.5	7.4	5.17	2.63	824.74	589.71	27	0.23	13	48
<i>Diapterus auratus</i>	887	1.4	13.7	4.94	1.88	618.98	294.12	28	0.93	12	292
Subtotals	58,755	94.6	.	.	.	.	.	.	.	10	292
<b>Totals</b>	<b>62,075</b>	<b>100.0</b>	.	<b>345.78</b>	<b>62.13</b>	<b>295.24</b>	<b>14,857.35</b>	.	.	<b>3</b>	<b>619</b>

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.

**Table 4.71:** Catch statistics for selected taxa collected in 270 21.3-m creek seine samples during Charlotte Harbor stratified-random sampling, 2022.

Species	Number			Density Estimate (animals/100m <sup>2</sup> )				Standard Length (mm)			
	No.	%	% Occur	Mean	Stderr	CV	Max	Mean	Stderr	Min	Max
<i>Farfantepenaeus duorarum</i>	482	0.8	23.7	2.63	1.26	787.41	332.35	9	0.13	3	23
<i>Sciaenops ocellatus</i>	456	0.7	17.0	2.48	0.74	489.54	155.88	35	1.39	13	619
<i>Centropomus undecimalis</i>	144	0.2	18.9	0.78	0.14	296.62	17.65	167	10.18	18	523
<i>Mugil trichodon</i>	97	0.2	3.3	0.53	0.40	1,230.18	104.41	29	1.53	22	128
<i>Callinectes sapidus</i>	80	0.1	15.2	0.44	0.09	321.63	13.24	29	3.77	6	157
<i>Brevoortia</i> spp.	79	0.1	1.1	0.43	0.42	1,601.68	113.24	27	0.44	19	45
<i>Mugil cephalus</i>	50	0.1	3.0	0.27	0.19	1,151.29	50.00	65	16.03	22	412
<i>Leiostomus xanthurus</i>	25	<0.1	3.0	0.14	0.06	729.36	13.24	32	3.36	13	66
<i>Archosargus probatocephalus</i>	19	<0.1	6.3	0.10	0.03	403.27	2.94	123	15.30	28	297
<i>Lutjanus griseus</i>	14	<0.1	3.3	0.08	0.03	591.15	4.41	126	12.72	57	192
<i>Megalops atlanticus</i>	6	<0.1	1.9	0.03	0.02	769.54	2.94	382	35.43	289	511
<i>Mugil curema</i>	6	<0.1	1.1	0.03	0.02	1,159.73	5.88	130	29.46	22	185
<i>Cynoscion nebulosus</i>	5	<0.1	1.5	0.03	0.01	865.32	2.94	48	11.06	19	76
<i>Elops saurus</i>	5	<0.1	0.7	0.03	0.02	1,182.87	4.41	32	1.24	28	35
<i>Albula</i> spp.	2	<0.1	0.7	0.01	0.01	1,159.73	1.47	41	14.00	27	55
<i>Cynoscion arenarius</i>	2	<0.1	0.4	0.01	0.01	1,643.17	2.94	36	1.50	35	38
<i>Pogonias cromis</i>	1	<0.1	0.4	0.01	0.01	1,643.17	1.47	19	.	19	19
<b>Totals</b>	<b>1,473</b>	<b>2.4</b>	<b>.</b>	<b>8.02</b>	<b>1.65</b>	<b>337.56</b>	<b>333.82</b>	<b>.</b>	<b>.</b>	<b>3</b>	<b>619</b>

Species	Number		Density Estimate (animals/100m <sup>2</sup> )				Standard Length (mm)			
	No.	% Occur	Mean	Stderr	CV	Max	Mean	Stderr	Min	Max

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.

## Rivers

### 21.3-m River Seines

A total of 17,738 animals were collected in 108 21.3-m river seines, representing 7.7% of the overall SRS catch (Table 4.63). *Anchoa mitchilli* (n=6,543) was the most abundant taxon collected, accounting for 36.9% of the 21.3-m river seine catch (Table 4.72). *Eucinostomus spp.* (n=4,567) and *Menidia spp.* (n=3,010) were the next most abundant taxa, accounting for an additional 42.7% of the 21.3-m river seine catch. The taxa most frequently caught in 21.3-m river seines were *Eucinostomus spp.* (74.1% occurrence), *Menidia spp.* (63.9% occurrence), and *Eucinostomus harengulus* (58.3% occurrence).

A total of 478 animals from 16 selected taxa were collected, representing 2.7% of the entire 21.3-m river seine catch (Table 4.73). *Brevoortia spp.* (n=101), and *Sciaenops ocellatus* (n=69) were the most abundant selected taxa, accounting for 35.6% of the selected taxa collected by this gear. The selected taxa most frequently caught in 21.3-m river seines were *Farfantepenaeus duorarum* (20.4% occurrence) and *Sciaenops ocellatus* (18.5% occurrence).

**Table 4.72:** Catch statistics for 10 dominant taxa collected in 108 21.3-m river seine samples during Charlotte Harbor stratified-random sampling, 2022.

Species	Number			Density Estimate (animals/100m <sup>2</sup> )				Standard Length (mm)			
	No.	%	% Occur	Mean	Stderr	CV	Max	Mean	Stderr	Min	Max
<i>Anchoa mitchilli</i>	6,543	36.9	32.4	89.93	33.39	384.05	2,223.53	32	0.08	16	49
<i>Eucinostomus</i> spp.	4,567	25.7	74.1	62.77	11.16	183.93	686.76	28	0.09	10	39
<i>Menidia</i> spp.	3,010	17.0	63.9	41.37	9.96	249.05	864.71	38	0.13	8	61
<i>Eucinostomus harengulus</i>	1,340	7.6	58.3	18.42	4.17	234.12	341.18	59	0.44	40	104
<i>Microgobius gulosus</i>	307	1.7	44.4	4.22	1.07	263.23	80.88	25	0.34	12	48
<i>Eugerres plumieri</i>	262	1.5	34.3	3.60	0.89	254.44	64.71	42	2.23	10	224
<i>Trinectes maculatus</i>	134	0.8	18.5	1.84	0.63	356.44	45.59	19	0.76	11	48
<i>Lagodon rhomboides</i>	129	0.7	16.7	1.77	0.66	386.50	48.53	42	1.53	13	81
<i>Gambusia holbrooki</i>	126	0.7	13.9	1.73	0.90	536.17	69.12	25	0.35	14	35
<i>Strongylura notata</i>	105	0.6	15.7	1.44	0.71	510.86	73.53	164	5.01	50	303
Subtotals	16,523	93.2	.	.	.	.	.	.	.	8	303
<b>Totals</b>	<b>17,738</b>	<b>100.0</b>	.	<b>243.79</b>	<b>41.15</b>	<b>175.42</b>	<b>2,405.88</b>	.	.	<b>3</b>	<b>536</b>

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.

**Table 4.73:** Catch statistics for selected taxa collected in 108 21.3-m river seine samples during Charlotte Harbor stratified-random sampling, 2022.

Species	Number			Density Estimate (animals/100m <sup>2</sup> )				Standard Length (mm)			
	No.	%	% Occur	Mean	Stderr	CV	Max	Mean	Stderr	Min	Max
<i>Brevoortia</i> spp.	101	0.6	0.9	1.38	1.38	1,039.23	148.53	45	0.32	38	50
<i>Sciaenops ocellatus</i>	69	0.4	18.5	0.94	0.31	348.00	27.94	48	3.94	16	272
<i>Callinectes sapidus</i>	64	0.4	14.8	0.87	0.49	580.47	51.47	20	1.68	4	57
<i>Leiostomus xanthurus</i>	63	0.4	5.6	0.86	0.71	860.86	76.47	25	1.32	18	65
<i>Farfantepenaeus duorarum</i>	55	0.3	20.4	0.75	0.18	255.39	10.29	7	0.35	3	15
<i>Mugil cephalus</i>	41	0.2	6.5	0.56	0.34	626.59	26.47	49	5.27	21	156
<i>Cynoscion arenarius</i>	22	0.1	5.6	0.30	0.14	487.50	11.76	31	2.16	18	51
<i>Lutjanus griseus</i>	21	0.1	12.0	0.29	0.09	333.21	7.35	101	12.42	35	234
<i>Archosargus probatocephalus</i>	13	0.1	8.3	0.18	0.07	405.05	5.88	108	13.66	63	213
<i>Centropomus undecimalis</i>	11	0.1	6.5	0.15	0.06	443.98	4.41	215	41.97	45	448
<i>Cynoscion nebulosus</i>	11	0.1	6.5	0.15	0.06	443.98	4.41	52	9.57	18	95
<i>Menticirrhus americanus</i>	3	<0.1	1.9	0.04	0.03	771.70	2.94	57	2.33	53	61
<i>Elops saurus</i>	1	<0.1	0.9	0.01	0.01	1,039.23	1.47	31	.	31	31
<i>Litopenaeus setiferus</i>	1	<0.1	0.9	0.01	0.01	1,039.23	1.47	16	.	16	16
<i>Menticirrhus saxatilis</i>	1	<0.1	0.9	0.01	0.01	1,039.23	1.47	33	.	33	33
<i>Mugil curema</i>	1	<0.1	0.9	0.01	0.01	1,039.23	1.47	82	.	82	82
<b>Totals</b>	<b>478</b>	<b>2.7</b>	<b>.</b>	<b>6.51</b>	<b>1.90</b>	<b>303.09</b>	<b>148.53</b>	<b>.</b>	<b>.</b>	<b>3</b>	<b>448</b>

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.

### **6.1-m River Otter Trawls**

A total of 2,905 animals were collected in 36 6.1-m river otter trawls, representing 1.3% of the overall SRS catch (Table 4.63). *Anchoa mitchilli* (n=1,298) was the most abundant taxon collected, accounting for 44.7% of the 6.1-m river otter trawl catch (Table 4.74). The taxa most frequently caught in 6.1-m river otter trawls were *Callinectes sapidus* (44.4% occurrence), *Trinectes maculatus* (41.7% occurrence), and *Farfantepenaeus duorarum* (38.9% occurrence).

A total of 382 animals from 7 selected taxa were collected, representing 13.1% of the entire 6.1-m river otter trawl catch (Table 4.75). *Cynoscion arenarius* (n=143), *Farfantepenaeus duorarum* (n=145), and *Callinectes sapidus* (n=42) were the most abundant selected taxa, accounting for 86.4% of the selected taxa collected by this gear. The selected taxa most frequently caught in the 6.1-m river otter trawls were *Callinectes sapidus* (44.4% occurrence) and *Farfantepenaeus duorarum* (38.9% occurrence).

**Table 4.74:** Catch statistics for 10 dominant taxa collected in 36 6.1-m river otter trawl samples during Charlotte Harbor stratified-random sampling, 2022.

Species	Number			Density Estimate (animals/100m <sup>2</sup> )				Standard Length (mm)			
	No.	%	% Occur	Mean	Stderr	CV	Max	Mean	Stderr	Min	Max
<i>Anchoa mitchilli</i>	1,298	44.7	27.8	5.47	3.01	311.45	88.24	32	0.28	19	71
<i>Bairdiella chrysoura</i>	389	13.4	25.0	1.64	1.36	469.58	43.58	54	0.59	32	104
<i>Eugerres plumieri</i>	241	8.3	22.2	1.01	0.94	523.43	30.09	31	0.54	16	84
<i>Trinectes maculatus</i>	217	7.5	41.7	0.88	0.32	207.52	8.09	43	0.84	11	86
<i>Cynoscion arenarius</i>	143	4.9	27.8	0.64	0.39	340.16	11.99	42	1.02	11	88
<i>Farfantepenaeus duorarum</i>	145	5.0	38.9	0.61	0.31	283.49	9.31	12	0.33	4	28
<i>Ariopsis felis</i>	58	2.0	22.2	0.24	0.13	295.18	3.51	94	10.44	46	330
<i>Eucinostomus</i> spp.	65	2.2	8.3	0.23	0.22	544.45	7.08	32	0.45	24	39
<i>Microgobius gulosus</i>	43	1.5	19.4	0.18	0.12	388.75	3.91	25	1.44	13	44
<i>Callinectes sapidus</i>	42	1.4	44.4	0.18	0.05	147.34	1.08	86	8.48	7	182
Subtotals	2,641	90.9	.	.	.	.	.	.	.	4	330
<b>Totals</b>	<b>2,905</b>	<b>100.0</b>	.	<b>12.18</b>	<b>3.77</b>	<b>185.55</b>	<b>91.74</b>	.	.	<b>4</b>	<b>435</b>

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.

**Table 4.75:** Catch statistics for selected taxa collected in 36 6.1-m river otter trawl samples during Charlotte Harbor stratified-random sampling, 2022.

Species	Number			Density Estimate (animals/100m <sup>2</sup> )				Standard Length (mm)			
	No.	%	% Occur	Mean	Stderr	CV	Max	Mean	Stderr	Min	Max
<i>Cynoscion arenarius</i>	143	4.9	27.8	0.57	0.34	361.93	11.99	42	1.02	11	88
<i>Farfantepenaeus duorarum</i>	145	5.0	38.9	0.54	0.27	302.28	9.31	12	0.33	4	28
<i>Callinectes sapidus</i>	42	1.4	44.4	0.16	0.04	160.06	1.08	86	8.48	7	182
<i>Menticirrhus americanus</i>	30	1.0	25.0	0.11	0.04	238.55	1.08	52	2.50	29	83
<i>Cynoscion nebulosus</i>	12	0.4	11.1	0.04	0.03	343.93	0.81	63	6.48	17	102
<i>Lutjanus synagris</i>	7	0.2	5.6	0.03	0.02	518.96	0.81	77	3.46	68	97
<i>Sciaenops ocellatus</i>	3	0.1	2.8	0.01	0.01	600.00	0.40	17	1.53	15	20
<b>Totals</b>	<b>382</b>	<b>13.1</b>	<b>.</b>	<b>1.46</b>	<b>0.50</b>	<b>206.38</b>	<b>13.49</b>	<b>.</b>	<b>.</b>	<b>4</b>	<b>182</b>

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.

Appendix

**Table 4.76:** Monthly summary of taxa collected during Charlotte Harbor stratified-random sampling, 2022.

Taxa	Month												Totals
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
	E=123	E=93	E=57	E=117	E=57	E=93	E=81	E=93	E=99	E=117	E=99	E=93	
<i>Acanthostracion quadricornis</i>	13	1	134	15	6	1	22	2	5	20	8	4	231
<i>Achiridae</i> spp.	2	.	.	.	.	.	.	.	.	.	.	.	2
<i>Achirus lineatus</i>	17	19	1	19	1	6	21	11	24	25	28	23	195
<i>Adinia xenica</i>	.	3	.	.	.	.	.	.	.	2	.	.	5
<i>Aetobatus narinari</i>	.	.	1	.	2	.	.	.	.	.	.	.	3
<b><i>Albula</i> spp.</b>	<b>1</b>	<b>2</b>	.	.	.	.	.	.	.	.	.	<b>2</b>	<b>5</b>
<i>Aluterus schoepfii</i>	.	.	.	.	1	1	.	.	1	.	.	.	3
<i>Anarchopterus criniger</i>	.	1	.	1	.	.	5	1	.	6	.	.	14
<i>Anchoa hepsetus</i>	1	.	.	.	.	.	.	.	.	.	.	.	1
<i>Anchoa mitchilli</i>	3,200	873	47	2,195	.	1,373	647	513	10,520	3,046	22,278	5,686	50,378
<i>Ancylosetta quadrocellata</i>	1	.	.	2	.	.	2	.	.	3	.	.	8
<b><i>Archosargus probatocephalus</i></b>	<b>35</b>	<b>92</b>	<b>27</b>	<b>28</b>	<b>76</b>	<b>70</b>	<b>37</b>	<b>25</b>	<b>29</b>	<b>89</b>	<b>72</b>	<b>39</b>	<b>619</b>
<i>Archosargus rhomboidalis</i>	1	.	.	.	.	.	.	.	1	5	2	.	9
<b><i>Argopecten gibbus</i></b>	<b>2</b>	.	.	<b>1</b>	.	.	<b>2</b>	.	.	.	.	.	<b>5</b>
<b><i>Argopecten irradians</i></b>	.	.	.	<b>5</b>	.	.	.	.	<b>1</b>	.	.	.	<b>6</b>
<i>Ariopsis felis</i>	9	10	153	69	95	928	120	64	54	91	61	12	1,666
<i>Astroscopus y-graecum</i>	.	.	1	.	.	.	.	.	.	.	.	.	1

Taxa	Month												Totals
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
	E=123	E=93	E=57	E=117	E=57	E=93	E=81	E=93	E=99	E=117	E=99	E=93	
<i>Bagre marinus</i>	.	.	.	5	1	14	1	1	1	1	10	.	34
<i>Bairdiella chrysoura</i>	212	10	59	49	165	663	1,316	174	470	124	284	23	3,549
<i>Bathygobius soporator</i>	20	22	3	6	2	3	1	14	8	4	3	7	93
<b>Brevoortia spp.</b>	.	13	5	180	.	1	.	1	.	1	.	.	201
<i>Calamus bajonado</i>	.	.	.	.	.	.	2	.	.	.	.	.	2
<i>Calamus penna</i>	.	2	2	1	3	10	6	.	8	1	4	.	37
<i>Calamus proridens</i>	.	.	.	.	.	.	1	.	.	.	.	.	1
<i>Calamus spp.</i>	.	3	.	1	.	.	.	.	.	.	.	.	4
<i>Callinectes ornatus</i>	1	1	4	.	.	.	1	.	.	.	.	.	7
<i>Callinectes sapidus</i>	112	81	20	18	4	16	11	4	38	36	72	77	489
<i>Caranx hippos</i>	4	61	4	2	3	.	8	2	3	19	7	2	115
<i>Caranx latus</i>	.	.	.	.	.	.	.	.	.	2	.	.	2
<i>Carcharhinus leucas</i>	.	.	.	1	.	.	.	1	1	.	1	.	4
<i>Carcharhinus limbatus</i>	.	1	.	.	.	.	.	.	.	.	.	.	1
<i>Centropomus undecimalis</i>	170	54	72	127	139	139	177	44	71	197	176	59	1,425
<i>Centropristis striata</i>	2	.	.	.	.	.	1	1	4	1	1	.	10
<i>Chaetodipterus faber</i>	128	1	5	11	8	37	26	4	25	146	22	2	415
<i>Chasmodes saburrae</i>	18	14	.	3	8	34	8	7	30	8	1	4	135
<i>Chilomycterus schoepfii</i>	43	6	54	52	27	18	57	26	50	67	61	18	479
<i>Chloroscombrus chrysurus</i>	1	.	.	.	.	3	1	12	.	5	.	.	22

Taxa	Month												Totals
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
	E=123	E=93	E=57	E=117	E=57	E=93	E=81	E=93	E=99	E=117	E=99	E=93	
<i>Cichlasoma urophthalmus</i>	2	2	.	.	.	.	.	1	4	18	13	6	46
<i>Citharichthys macrops</i>	1	.	.	1	1	.	.	.	.	.	.	.	3
<i>Clupeidae</i> spp.	.	.	.	.	.	.	.	.	9	.	.	.	9
<i>Ctenogobius boleosoma</i>	.	.	.	.	.	.	.	1	.	.	.	1	2
<i>Ctenogobius smaragdus</i>	.	7	.	2	.	.	.	.	.	3	.	2	14
<b><i>Cynoscion arenarius</i></b>	<b>1</b>	<b>.</b>	<b>.</b>	<b>.</b>	<b>1</b>	<b>4</b>	<b>41</b>	<b>1</b>	<b>31</b>	<b>140</b>	<b>105</b>	<b>.</b>	<b>324</b>
<b><i>Cynoscion nebulosus</i></b>	<b>18</b>	<b>8</b>	<b>5</b>	<b>9</b>	<b>19</b>	<b>44</b>	<b>121</b>	<b>60</b>	<b>78</b>	<b>74</b>	<b>26</b>	<b>18</b>	<b>480</b>
<i>Cyprinodon variegatus</i>	684	242	.	13	.	6	27	75	2	2	4	19	1,074
<i>Dasyatis americana</i>	.	.	3	.	2	3	1	.	3	2	1	1	16
<i>Dasyatis sabina</i>	8	10	3	9	13	30	2	12	6	10	4	1	108
<i>Dasyatis say</i>	2	.	3	7	3	6	.	.	.	.	1	1	23
<i>Diapterus auratus</i>	20	4	1	15	12	182	13	12	41	110	728	131	1,269
<i>Diodon holocanthus</i>	.	1	.	.	.	.	.	.	.	.	.	.	1
<b><i>Diplectrum formosum</i></b>	<b>2</b>	<b>1</b>	<b>.</b>	<b>1</b>	<b>.</b>	<b>.</b>	<b>2</b>	<b>.</b>	<b>.</b>	<b>9</b>	<b>.</b>	<b>1</b>	<b>16</b>
<i>Echeneis neucratoides</i>	.	.	.	.	.	.	.	.	.	1	.	.	1
<b><i>Elops saurus</i></b>	<b>19</b>	<b>8</b>	<b>20</b>	<b>1</b>	<b>.</b>	<b>6</b>	<b>1</b>	<b>8</b>	<b>38</b>	<b>91</b>	<b>87</b>	<b>16</b>	<b>295</b>
<b><i>Epinephelus itajara</i></b>	<b>.</b>	<b>.</b>	<b>1</b>	<b>.</b>	<b>1</b>	<b>.</b>	<b>.</b>	<b>1</b>	<b>4</b>	<b>.</b>	<b>.</b>	<b>.</b>	<b>7</b>
<i>Etropus crossotus</i>	2	.	.	.	.	.	.	.	.	5	.	.	7
<i>Eucinostomus gula</i>	488	338	306	397	374	298	673	795	804	1,096	377	604	6,550
<i>Eucinostomus harengulus</i>	254	566	208	1,128	205	348	441	683	571	79	281	418	5,182

Taxa	Month												Totals
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
	E=123	E=93	E=57	E=117	E=57	E=93	E=81	E=93	E=99	E=117	E=99	E=93	
<i>Eucinostomus</i> spp.	3,795	4,285	439	691	428	2,948	4,922	3,438	5,529	3,129	8,585	6,212	44,401
<i>Eugerres plumieri</i>	33	174	.	38	75	1,897	1,379	1,135	549	329	293	120	6,022
<b><i>Farfantepenaeus duorarum</i></b>	<b>55</b>	<b>25</b>	<b>12</b>	<b>14</b>	<b>7</b>	<b>66</b>	<b>1,072</b>	<b>929</b>	<b>653</b>	<b>876</b>	<b>258</b>	<b>197</b>	<b>4,164</b>
<i>Fistularia tabacaria</i>	1	.	.	.	.	.	.	.	.	.	.	.	1
<i>Floridichthys carpio</i>	91	50	9	61	11	163	16	317	271	216	136	36	1,377
<i>Fundulus confluentus</i>	.	9	.	.	.	.	.	.	.	.	.	.	9
<i>Fundulus grandis</i>	57	35	6	1	24	.	.	20	2	22	1	2	170
<i>Fundulus similis</i>	.	.	1	.	.	.	.	17	6	.	20	3	47
<i>Gambusia holbrooki</i>	4	79	1	1	.	.	.	.	1	994	302	94	1,476
<i>Gerreidae</i> spp.	.	.	.	.	.	18	.	.	1	.	.	.	19
<i>Gerres cinereus</i>	.	.	.	.	.	.	5	1	.	.	.	.	6
<i>Gobiesox strumosus</i>	6	2	6	2	1	1	.	.	3	1	.	2	24
<i>Gobiosoma bosc</i>	11	41	5	1	1	1	1	1	15	1	1	2	81
<i>Gobiosoma longipala</i>	1	.	.	6	.	.	.	.	.	.	.	.	7
<i>Gobiosoma robustum</i>	135	217	95	103	63	77	79	51	43	17	17	96	993
<i>Gobiosoma</i> spp.	81	61	12	16	16	29	31	29	47	16	4	8	350
<i>Gymnura micrura</i>	2	.	.	.	.	.	.	.	.	.	.	1	3
<b><i>Haemulon plumierii</i></b>	<b>10</b>	.	.	.	.	<b>2</b>	<b>2</b>	<b>4</b>	.	<b>4</b>	<b>3</b>	<b>2</b>	<b>27</b>
<i>Harengula jaguana</i>	2	1	17	2	.	82	5	151	23	137	102	178	700
<i>Hemichromis letourmeuxi</i>	.	.	.	.	.	.	.	.	.	.	3	.	3

Taxa	Month												Totals
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
	E=123	E=93	E=57	E=117	E=57	E=93	E=81	E=93	E=99	E=117	E=99	E=93	
<i>Hemiramphus brasiliensis</i>	.	.	.	5	1	.	.	.	.	.	.	.	6
<i>Hippocampus erectus</i>	5	.	.	14	.	.	3	.	.	5	.	.	27
<i>Hippocampus zosterae</i>	8	13	4	1	2	3	6	1	1	1	4	3	47
<i>Hoplosternum littorale</i>	.	.	.	.	.	.	.	.	.	2	.	.	2
<i>Hypleurochilus caudovittatus</i>	1	.	.	.	.	.	.	.	.	.	.	.	1
<i>Hyporhamphus meeki</i>	.	.	.	.	1	.	.	2	1	.	.	.	4
<i>Hyporhamphus</i> sp.	.	.	.	.	.	1	.	.	.	.	.	.	1
<i>Hyporhamphus unifasciatus</i>	.	.	1	.	.	.	.	3	.	.	.	.	4
<i>Hypsoblennius hentz</i>	.	.	.	2	.	.	1	.	.	1	.	.	4
<i>Labidesthes sicculus</i>	.	.	.	.	.	.	.	.	.	1	1	.	2
<i>Lagodon rhomboides</i>	1,483	1,527	3,431	3,024	4,386	3,697	3,949	3,501	5,537	4,266	3,625	440	38,866
<b><i>Leiostomus xanthurus</i></b>	.	<b>75</b>	<b>342</b>	<b>17</b>	<b>3</b>	<b>1</b>	.	.	.	.	.	.	<b>438</b>
<i>Lepisosteus osseus</i>	.	.	.	.	.	.	1	.	1	.	.	.	2
<i>Lepisosteus platyrhincus</i>	.	.	.	.	.	.	.	.	.	3	1	.	4
<i>Lepomis macrochirus</i>	.	.	.	.	.	.	.	1	2	24	5	1	33
<i>Lepomis microlophus</i>	.	.	.	.	.	.	.	.	.	6	.	.	6
<i>Lepomis</i> spp.	.	.	.	.	.	.	.	.	.	8	.	.	8
<i>Limulus polyphemus</i>	1	.	6	1	1	2	2	1	.	1	.	3	18
<b><i>Litopenaeus setiferus</i></b>	.	.	.	.	.	.	.	.	<b>1</b>	.	.	.	<b>1</b>
<i>Lophogobius cyprinoides</i>	12	12	3	1	.	2	1	3	9	12	21	6	82

Taxa	Month												Totals
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
	E=123	E=93	E=57	E=117	E=57	E=93	E=81	E=93	E=99	E=117	E=99	E=93	
<i>Lucania parva</i>	2,564	2,443	946	1,612	248	3,911	2,292	4,837	2,113	860	775	801	23,402
<i>Lutjanus analis</i>	2	.	1	.	.	2	1	1	.	1	.	.	8
<i>Lutjanus griseus</i>	19	14	10	44	63	55	45	43	59	35	19	21	427
<i>Lutjanus synagris</i>	60	3	18	5	4	12	114	17	23	62	4	2	324
<i>Megalops atlanticus</i>	.	.	.	.	.	2	.	.	.	4	2	.	8
<i>Membras martinica</i>	.	.	.	1	.	.	1	.	.	2	.	.	4
<i>Menidia</i> spp.	649	856	252	1,137	277	2,357	1,044	1,642	1,863	873	1,440	861	13,251
<i>Menippe</i> spp.	20	2	1	10	1	.	10	.	.	43	.	.	87
<i>Menticirrhus americanus</i>	27	.	1	3	4	6	72	.	.	98	4	3	218
<i>Menticirrhus littoralis</i>	.	.	.	.	.	.	34	.	.	.	1	.	35
<i>Menticirrhus saxatilis</i>	3	9	.	1	.	.	.	.	.	2	10	.	25
<i>Microgobius gulosus</i>	352	516	144	396	158	733	1,117	687	604	432	115	163	5,417
<i>Monacanthus ciliatus</i>	.	.	1	.	.	.	2	.	.	1	.	.	4
<i>Monopterus albus</i>	.	.	.	.	.	.	.	.	.	5	.	.	5
<i>Mugil cephalus</i>	44	72	12	13	5	27	5	10	3	73	12	24	300
<i>Mugil curema</i>	4	7	1	16	3	6	1	12	41	7	.	5	103
<i>Mugil trichodon</i>	119	6	19	103	4	3	1	9	18	15	.	20	317
<i>Mycteroperca bonaci</i>	.	.	.	.	.	.	.	2	13	.	.	.	15
<i>Mycteroperca microlepis</i>	.	.	.	.	.	4	1	1	4	.	.	.	10
<i>Myrophis punctatus</i>	.	1	.	.	.	.	.	.	.	1	.	.	2

Taxa	Month												Totals
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
	E=123	E=93	E=57	E=117	E=57	E=93	E=81	E=93	E=99	E=117	E=99	E=93	
<i>Negaprion brevirostris</i>	.	.	.	.	.	3	.	.	.	.	.	.	3
<i>Nicholsina usta</i>	4	1	1	1	1	.	1	.	1	.	.	1	11
<i>Notemigonus crysoleucas</i>	.	.	.	.	.	.	.	.	.	1	.	.	1
<i>Notropis maculatus</i>	.	.	.	.	.	.	.	.	.	1	.	.	1
<i>Ocyurus chrysurus</i>	2	.	.	.	.	.	1	1	2	.	.	.	6
<i>Ogcocephalus cubifrons</i>	2	.	5	1	.	.	3	.	.	4	.	.	15
<i>Oligoplites saurus</i>	.	4	7	8	13	114	34	63	111	19	5	1	379
<i>Opisthonema oglinum</i>	.	.	81	1	.	10	2	31	3	12	542	2	684
<i>Opistognathus robinsi</i>	.	.	.	.	.	.	.	.	.	1	.	.	1
<i>Opsanus beta</i>	7	2	3	12	3	12	27	1	6	35	7	1	116
<i>Oreochromis aureus</i>	3	2	.	.	.	.	.	.	.	1	3	.	9
<i>Oreochromis niloticus</i>	.	.	.	.	.	.	.	.	.	2	.	2	4
<i>Sarotherodon</i> spp.	.	.	.	.	.	4	4	2	.	.	.	.	10
<i>Orthopristis chrysoptera</i>	9	50	207	220	214	315	218	105	295	99	768	.	2,500
<i>Paraclinus marmoratus</i>	.	.	.	.	.	.	.	.	1	2	.	1	4
<i>Paralichthys albigutta</i>	5	6	4	4	1	6	7	.	.	13	6	6	58
<i>Poecilia latipinna</i>	8	486	.	3	.	4	5	90	2	62	16	10	686
<i>Pogonias cromis</i>	.	.	.	1	.	.	.	.	.	10	.	3	14
<i>Pomatomus saltatrix</i>	.	.	.	.	.	.	.	.	.	1	.	.	1
<i>Portunidae</i> sp.	.	.	.	.	.	.	.	.	.	.	.	1	1

Taxa	Month												Totals
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
	E=123	E=93	E=57	E=117	E=57	E=93	E=81	E=93	E=99	E=117	E=99	E=93	
<i>Portunus</i> spp.	312	12	5	623	4	.	78	.	.	21	8	8	1,071
<i>Prionotus rubio</i>	.	.	.	.	.	.	.	.	.	1	.	.	1
<i>Prionotus scitulus</i>	197	10	1	175	4	2	54	.	.	79	5	7	534
<i>Prionotus tribulus</i>	16	.	1	1	.	.	.	.	.	1	5	3	27
<i>Pristis pectinata</i>	.	.	.	.	.	1	.	.	.	.	.	.	1
<i>Pterygoplichthys disjunctivus</i>	.	.	.	.	.	.	.	.	.	.	1	.	1
<b><i>Rachycentron canadum</i></b>	.	.	.	.	.	1	.	.	.	1	.	.	2
<i>Rimapenaeus constrictus</i>	6	.	.	.	.	.	2	.	.	.	.	.	8
<i>Rimapenaeus</i> spp.	7	.	.	.	.	.	7	.	.	2	.	.	16
<i>Sarotherodon melanotheron</i>	.	1	.	.	.	2	.	1	3	7	1	.	15
<i>Sciaenidae</i> sp.	.	.	.	.	.	.	1	.	.	.	.	.	1
<b><i>Sciaenops ocellatus</i></b>	<b>318</b>	<b>47</b>	<b>10</b>	<b>18</b>	<b>18</b>	<b>59</b>	<b>6</b>	<b>23</b>	<b>9</b>	<b>32</b>	<b>217</b>	<b>645</b>	<b>1,402</b>
<b><i>Scomberomorus maculatus</i></b>	.	.	.	.	.	.	.	4	5	.	.	.	9
<i>Scorpaena brasiliensis</i>	3	1	.	1	.	.	6	.	.	12	.	.	23
<i>Selene vomer</i>	.	.	.	.	.	1	1	.	3	1	.	.	6
<i>Serraniculus pumilio</i>	.	.	.	.	.	.	.	.	.	6	.	.	6
<i>Sicyonia laevigata</i>	1	.	.	1	.	.	2	.	.	.	.	.	4
<i>Sicyonia typica</i>	2	1	.	2	.	.	.	.	.	.	.	.	5
<i>Sphaeroides nephelus</i>	60	34	41	58	39	39	38	22	46	41	125	51	594
<i>Sphaeroides spengleri</i>	1	2	.	.	1	.	2	.	.	9	.	3	18

Taxa	Month												Totals
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
	E=123	E=93	E=57	E=117	E=57	E=93	E=81	E=93	E=99	E=117	E=99	E=93	
<b><i>Sphyraena barracuda</i></b>	8	4	1	1	6	8	1	.	2	3	5	3	42
<b><i>Sphyrna tiburo</i></b>	1	11	2	1	1	1	2	.	1	.	2	3	25
<i>Stephanolepis hispidus</i>	70	21	19	18	2	.	41	2	21	.	2	.	196
<i>Strongylura marina</i>	1	2	2	1	.	4	.	1	10	4	5	3	33
<i>Strongylura notata</i>	31	28	10	20	57	84	37	166	161	36	42	25	697
<i>Strongylura</i> spp.	.	.	.	1	.	.	.	.	.	.	1	3	5
<i>Strongylura timucu</i>	1	1	.	4	.	4	2	12	8	13	4	4	53
<i>Symphurus plagiusa</i>	28	2	.	11	.	.	18	.	3	85	12	45	204
<i>Syngnathus floridae</i>	28	10	2	5	4	13	24	4	4	3	.	.	97
<i>Syngnathus louisianae</i>	14	5	.	8	1	.	4	1	.	5	1	12	51
<i>Syngnathus scovelli</i>	64	60	30	40	34	51	75	45	27	33	14	36	509
<i>Synodus foetens</i>	117	58	54	49	15	4	12	8	3	8	15	34	377
<b><i>Trachinotus carolinus</i></b>	.	5	1	.	.	.	1	.	.	.	3	2	12
<b><i>Trachinotus falcatus</i></b>	.	1	1	2	2	.	.	1	5	.	3	.	15
<i>Trinectes maculatus</i>	79	33	2	53	1	12	168	32	93	236	32	6	747
<i>Tylosurus crocodilus</i>	.	.	.	.	.	1	.	.	7	.	.	.	8
<b>Totals</b>	<b>16,556</b>	<b>13,892</b>	<b>7,428</b>	<b>13,060</b>	<b>7,380</b>	<b>21,107</b>	<b>20,894</b>	<b>20,037</b>	<b>31,203</b>	<b>19,027</b>	<b>42,332</b>	<b>17,404</b>	<b>230,320</b>

Effort, or total number of hauls, is labeled 'E'. Taxa are arranged alphabetically. Selected taxa are highlighted in bold.

**Table 4.77:** Summary by gear and stratum of taxa collected during Charlotte Harbor stratified-random sampling, 2022.

Taxa	Gear								Totals E=1,122
	21.3-m bay seine			21.3-m river seine		183-m haul seine		6.1-m otter trawl	
	Veg	Unveg	Shore	Over	Nonover	Over	Nonover		
	E=142	E=62	E=204	E=315	E=63	E=156	E=48	E=132	
<i>Acanthostracion quadricornis</i>	1	1	1	.	.	6	178	44	231
<i>Achiridae</i> spp.	.	.	.	.	2	.	.	.	2
<i>Achirus lineatus</i>	33	11	56	61	4	4	2	24	195
<i>Adinia xenica</i>	.	.	1	4	.	.	.	.	5
<i>Aetobatus narinari</i>	.	.	.	.	.	2	1	.	3
<b><i>Albula</i> spp.</b>	<b>1</b>	<b>1</b>	.	<b>2</b>	.	<b>1</b>	.	.	<b>5</b>
<i>Aluterus schoepfii</i>	.	.	.	.	.	2	1	.	3
<i>Anarchopterus criniger</i>	1	.	1	.	.	.	.	12	14
<i>Anchoa hepsetus</i>	.	.	.	.	.	.	.	1	1
<i>Anchoa mitchilli</i>	609	88	22,054	23,818	2,455	.	.	1,354	50,378
<i>Ancylosetta quadrocellata</i>	.	.	.	.	.	.	.	8	8
<b><i>Archosargus probatocephalus</i></b>	<b>20</b>	<b>1</b>	<b>33</b>	<b>22</b>	<b>10</b>	<b>450</b>	<b>60</b>	<b>23</b>	<b>619</b>
<i>Archosargus rhomboidalis</i>	.	.	.	.	.	4	5	.	9
<b><i>Argopecten gibbus</i></b>	.	.	.	.	.	.	.	<b>5</b>	<b>5</b>
<b><i>Argopecten irradians</i></b>	.	.	.	.	.	<b>1</b>	.	<b>5</b>	<b>6</b>
<i>Ariopsis felis</i>	9	17	4	7	.	1,458	93	78	1,666
<i>Astroscopus y-graecum</i>	.	.	1	.	.	.	.	.	1
<i>Bagre marinus</i>	.	.	.	.	.	32	1	1	34
<i>Bairdiella chrysoura</i>	1,016	23	848	92	1	461	27	1,081	3,549
<i>Bathygobius soporator</i>	6	.	21	32	32	.	.	2	93
<b><i>Brevoortia</i> spp.</b>	.	.	<b>14</b>	<b>180</b>	.	<b>1</b>	<b>6</b>	.	<b>201</b>
<i>Calamus bajonado</i>	.	.	<b>2</b>	.	.	.	.	.	<b>2</b>
<b><i>Calamus penna</i></b>	<b>4</b>	<b>1</b>	<b>1</b>	.	.	<b>17</b>	<b>12</b>	<b>2</b>	<b>37</b>
<b><i>Calamus proridens</i></b>	.	.	.	.	.	.	.	<b>1</b>	<b>1</b>
<b><i>Calamus</i> spp.</b>	<b>3</b>	.	<b>1</b>	.	.	.	.	.	<b>4</b>
<i>Callinectes ornatus</i>	.	1	2	.	.	.	3	1	7

Taxa	Gear								Totals
	21.3-m bay seine			21.3-m river seine		183-m haul seine		6.1-m otter trawl	
	Veg	Unveg	Shore	Over	Nonover	Over	Nonover		
	E=142	E=62	E=204	E=315	E=63	E=156	E=48	E=132	
<i>Callinectes sapidus</i>	45	45	51	126	18	77	30	97	489
<i>Caranx hippos</i>	.	.	4	.	.	95	16	.	115
<i>Caranx latus</i>	.	.	.	.	.	2	.	.	2
<i>Carcharhinus leucas</i>	.	.	.	.	.	4	.	.	4
<i>Carcharhinus limbatus</i>	.	.	.	.	.	1	.	.	1
<i>Centropomus undecimalis</i>	1	.	16	148	7	932	321	.	1,425
<i>Centropristis striata</i>	.	.	.	.	.	7	2	1	10
<i>Chaetodipterus faber</i>	4	1	3	.	.	328	19	60	415
<i>Chasmodes saburrae</i>	81	2	46	1	2	.	.	3	135
<i>Chilomycterus schoepfii</i>	35	2	3	.	.	182	146	111	479
<i>Chloroscombrus chrysurus</i>	1	.	.	.	.	2	13	6	22
<i>Cichlasoma urophthalmus</i>	.	.	4	24	18	.	.	.	46
<i>Citharichthys macrops</i>	.	.	1	.	.	1	1	.	3
<i>Clupeidae</i> spp.	.	.	9	.	.	.	.	.	9
<i>Ctenogobius boleosoma</i>	.	1	1	.	.	.	.	.	2
<i>Ctenogobius smaragdus</i>	1	.	2	9	2	.	.	.	14
<i>Cynoscion arenarius</i>	2	3	12	13	11	.	.	283	324
<i>Cynoscion nebulosus</i>	206	21	103	13	3	67	12	55	480
<i>Cyprinodon variegatus</i>	28	.	111	929	6	.	.	.	1,074
<i>Dasyatis americana</i>	.	.	.	.	.	11	5	.	16
<i>Dasyatis sabina</i>	2	3	5	6	1	88	2	1	108
<i>Dasyatis say</i>	.	.	.	.	1	17	4	1	23
<i>Diapterus auratus</i>	.	.	7	902	2	300	58	.	1,269
<i>Diodon holocanthus</i>	.	.	.	.	.	1	.	.	1
<i>Diplectrum formosum</i>	2	.	1	.	.	.	1	12	16
<i>Echeneis neucratoides</i>	.	.	1	.	.	.	.	.	1
<i>Elops saurus</i>	3	2	3	6	.	239	42	.	295
<i>Epinephelus itajara</i>	.	.	1	.	.	5	1	.	7

Taxa	Gear								Totals
	21.3-m bay seine			21.3-m river seine		183-m haul seine		6.1-m otter trawl	
	Veg	Unveg	Shore	Over	Nonover	Over	Nonover		
	E=142	E=62	E=204	E=315	E=63	E=156	E=48	E=132	
<i>Etropus crossotus</i>	.	.	.	.	.	.	.	7	7
<i>Eucinostomus gula</i>	1,633	187	2,539	315	9	427	306	1,134	6,550
<i>Eucinostomus harengulus</i>	149	436	1,382	2,208	797	107	57	46	5,182
<i>Eucinostomus</i> spp.	7,608	3,828	12,228	16,985	3,168	.	.	584	44,401
<i>Eugerres plumieri</i>	63	168	1,342	3,656	195	324	3	271	6,022
<b><i>Farfantepenaeus duorarum</i></b>	<b>1,485</b>	<b>135</b>	<b>1,016</b>	<b>501</b>	<b>36</b>	<b>7</b>	<b>1</b>	<b>983</b>	<b>4,164</b>
<i>Fistularia tabacaria</i>	.	.	.	.	.	.	.	1	1
<i>Floridichthys carpio</i>	70	24	1,035	245	3	.	.	.	1,377
<i>Fundulus confluentus</i>	.	.	7	2	.	.	.	.	9
<i>Fundulus grandis</i>	.	.	76	63	31	.	.	.	170
<i>Fundulus similis</i>	.	.	6	1	40	.	.	.	47
<i>Gambusia holbrooki</i>	.	1	226	1,191	58	.	.	.	1,476
<i>Gerreidae</i> spp.	.	.	1	18	.	.	.	.	19
<i>Gerres cinereus</i>	.	.	.	.	.	1	5	.	6
<i>Gobiesox strumosus</i>	1	7	8	3	5	.	.	.	24
<i>Gobiosoma bosc</i>	.	2	16	48	14	.	.	1	81
<i>Gobiosoma longipala</i>	.	.	.	.	.	.	.	7	7
<i>Gobiosoma robustum</i>	260	41	427	175	17	.	.	73	993
<i>Gobiosoma</i> spp.	47	34	75	145	18	.	.	31	350
<i>Gymnura micrura</i>	.	.	.	.	.	2	.	1	3
<b><i>Haemulon plumierii</i></b>	<b>7</b>	.	<b>2</b>	.	.	<b>2</b>	<b>4</b>	<b>12</b>	<b>27</b>
<i>Harengula jaguana</i>	60	6	370	.	.	134	118	12	700
<i>Hemichromis letourneuxi</i>	.	.	.	3	.	.	.	.	3
<i>Hemiramphus brasiliensis</i>	.	.	.	.	.	1	5	.	6
<i>Hippocampus erectus</i>	.	.	1	.	.	.	1	25	27
<i>Hippocampus zosterae</i>	24	.	20	1	.	.	.	2	47
<i>Hoplosternum littorale</i>	.	.	2	.	.	.	.	.	2
<i>Hyppleurochilus caudovittatus</i>	.	.	.	.	.	.	.	1	1

Taxa	Gear								Totals
	21.3-m bay seine			21.3-m river seine		183-m haul seine		6.1-m otter trawl	
	Veg	Unveg	Shore	Over	Nonover	Over	Nonover		
	E=142	E=62	E=204	E=315	E=63	E=156	E=48	E=132	
<i>Hyporhamphus meeki</i>	.	.	.	.	.	.	4	.	4
<i>Hyporhamphus</i> sp.	1	.	.	.	.	.	.	.	1
<i>Hyporhamphus unifasciatus</i>	.	.	.	.	.	.	4	.	4
<i>Hypsoblennius hentz</i>	.	.	.	.	.	.	.	4	4
<i>Labidesthes sicculus</i>	.	.	.	1	1	.	.	.	2
<i>Lagodon rhomboides</i>	4,557	233	2,103	268	54	23,736	5,911	2,004	38,866
<b><i>Leiostomus xanthurus</i></b>	.	<b>1</b>	<b>343</b>	<b>78</b>	<b>10</b>	<b>6</b>	.	.	<b>438</b>
<i>Lepisosteus osseus</i>	.	.	.	.	.	1	.	1	2
<i>Lepisosteus platyrhincus</i>	.	.	1	3	.	.	.	.	4
<i>Lepomis macrochirus</i>	.	1	.	7	25	.	.	.	33
<i>Lepomis microlophus</i>	.	.	.	1	5	.	.	.	6
<i>Lepomis</i> spp.	.	.	2	.	6	.	.	.	8
<i>Limulus polyphemus</i>	.	.	3	1	.	12	.	2	18
<b><i>Litopenaeus setiferus</i></b>	.	.	.	1	.	.	.	.	1
<i>Lophogobius cyprinoides</i>	4	3	3	29	41	.	.	2	82
<i>Lucania parva</i>	5,532	647	9,582	7,605	29	.	.	7	23,402
<b><i>Lutjanus analis</i></b>	<b>2</b>	.	.	.	.	<b>5</b>	<b>1</b>	.	<b>8</b>
<b><i>Lutjanus griseus</i></b>	<b>35</b>	.	<b>27</b>	<b>25</b>	<b>10</b>	<b>248</b>	<b>62</b>	<b>20</b>	<b>427</b>
<b><i>Lutjanus synagris</i></b>	<b>20</b>	<b>3</b>	<b>11</b>	.	.	<b>38</b>	<b>35</b>	<b>217</b>	<b>324</b>
<b><i>Megalops atlanticus</i></b>	.	.	.	<b>6</b>	.	<b>2</b>	.	.	<b>8</b>
<i>Membras martinica</i>	2	.	2	.	.	.	.	.	4
<i>Menidia</i> spp.	118	889	2,664	7,569	2,011	.	.	.	13,251
<b><i>Menippe</i> spp.</b>	.	<b>2</b>	.	.	.	<b>2</b>	<b>1</b>	<b>82</b>	<b>87</b>
<b><i>Menticirrhus americanus</i></b>	<b>59</b>	<b>8</b>	<b>14</b>	<b>1</b>	<b>2</b>	.	.	<b>134</b>	<b>218</b>
<b><i>Menticirrhus littoralis</i></b>	.	.	<b>1</b>	.	.	.	<b>34</b>	.	<b>35</b>
<b><i>Menticirrhus saxatilis</i></b>	<b>1</b>	<b>12</b>	<b>11</b>	.	<b>1</b>	.	.	.	<b>25</b>
<i>Microgobius gulosus</i>	1,459	774	1,762	1,227	152	.	.	43	5,417
<i>Monacanthus ciliatus</i>	.	.	.	.	.	1	.	3	4

Taxa	Gear								Totals
	21.3-m bay seine			21.3-m river seine		183-m haul seine		6.1-m otter trawl	
	Veg	Unveg	Shore	Over	Nonover	Over	Nonover		
	E=142	E=62	E=204	E=315	E=63	E=156	E=48	E=132	
<i>Monopterus albus</i>	.	3	1	.	1	.	.	.	5
<b><i>Mugil cephalus</i></b>	1	.	9	53	38	157	42	.	300
<b><i>Mugil curema</i></b>	.	.	1	7	.	61	34	.	103
<b><i>Mugil trichodon</i></b>	3	.	15	97	.	177	25	.	317
<b><i>Mycteroperca bonaci</i></b>	.	.	.	.	.	10	5	.	15
<b><i>Mycteroperca microlepis</i></b>	.	.	.	.	.	3	6	1	10
<i>Myrophis punctatus</i>	.	.	1	.	.	.	.	1	2
<b><i>Negaprion brevirostris</i></b>	.	.	1	.	.	2	.	.	3
<i>Nicholsina usta</i>	4	.	.	.	.	1	1	5	11
<i>Notemigonus crysoleucas</i>	.	.	.	.	1	.	.	.	1
<i>Notropis maculatus</i>	.	.	1	.	.	.	.	.	1
<b><i>Ocyurus chrysurus</i></b>	.	.	.	.	.	1	4	1	6
<i>Ogcocephalus cubifrons</i>	.	.	.	.	.	5	1	9	15
<i>Oligoplites saurus</i>	11	15	116	132	28	60	17	.	379
<i>Opisthonema oglinum</i>	33	.	527	26	.	92	1	5	684
<i>Opistognathus robinsi</i>	.	.	.	.	.	.	.	1	1
<i>Opsanus beta</i>	4	.	8	3	3	40	8	50	116
<i>Oreochromis aureus</i>	.	.	1	7	1	.	.	.	9
<i>Oreochromis niloticus</i>	.	.	.	2	.	.	2	.	4
<i>Sarotherodon</i> spp.	3	.	5	.	2	.	.	.	10
<i>Orthopristis chrysoptera</i>	421	56	197	17	.	1,232	282	295	2,500
<i>Paraclinus marmoratus</i>	3	.	.	.	.	.	.	1	4
<b><i>Paralichthys albigutta</i></b>	1	1	4	.	.	22	19	11	58
<i>Poecilia latipinna</i>	.	5	509	106	66	.	.	.	686
<b><i>Pogonias cromis</i></b>	.	.	4	1	.	1	8	.	14
<b><i>Pomatomus saltatrix</i></b>	.	.	.	.	.	.	1	.	1
<i>Portunidae</i> sp.	1	.	.	.	.	.	.	.	1
<i>Portunus</i> spp.	5	11	19	.	.	4	1	1,031	1,071

Taxa	Gear								Totals
	21.3-m bay seine			21.3-m river seine		183-m haul seine		6.1-m otter trawl	
	Veg	Unveg	Shore	Over	Nonover	Over	Nonover		
	E=142	E=62	E=204	E=315	E=63	E=156	E=48	E=132	
<i>Prionotus rubio</i>	.	.	.	.	.	.	.	1	1
<i>Prionotus scitulus</i>	14	4	13	1	.	2	10	490	534
<i>Prionotus tribulus</i>	1	4	3	1	.	1	1	16	27
<i>Pristis pectinata</i>	.	.	.	.	.	.	1	.	1
<i>Pterygoplichthys disjunctivus</i>	.	.	.	.	1	.	.	.	1
<b><i>Rachycentron canadum</i></b>	.	.	.	.	.	<b>2</b>	.	.	<b>2</b>
<i>Rimapenaeus constrictus</i>	.	.	.	.	.	.	.	8	8
<i>Rimapenaeus</i> spp.	.	.	.	.	.	.	.	16	16
<i>Sarotherodon melanotheron</i>	2	.	2	2	.	9	.	.	15
<i>Sciaenidae</i> sp.	.	.	.	.	.	.	.	1	1
<b><i>Sciaenops ocellatus</i></b>	<b>81</b>	<b>23</b>	<b>582</b>	<b>479</b>	<b>46</b>	<b>183</b>	<b>4</b>	<b>4</b>	<b>1,402</b>
<b><i>Scomberomorus maculatus</i></b>	.	.	.	.	.	.	<b>9</b>	.	<b>9</b>
<i>Scorpaena brasiliensis</i>	.	.	1	.	.	.	.	22	23
<i>Selene vomer</i>	1	.	.	.	.	1	4	.	6
<i>Serraniculus pumilio</i>	2	.	.	.	.	.	.	4	6
<i>Sicyonia laevigata</i>	.	.	.	.	.	.	.	4	4
<i>Sicyonia typica</i>	.	.	1	.	.	.	.	4	5
<i>Sphoeroides nephelus</i>	65	17	91	9	1	233	149	29	594
<i>Sphoeroides spengleri</i>	4	1	2	.	.	3	1	7	18
<b><i>Sphyraena barracuda</i></b>	.	.	<b>2</b>	.	.	<b>34</b>	<b>5</b>	<b>1</b>	<b>42</b>
<b><i>Sphyrna tiburo</i></b>	.	.	.	.	.	<b>20</b>	<b>5</b>	.	<b>25</b>
<i>Stephanolepis hispidus</i>	23	1	18	.	.	33	3	118	196
<i>Strongylura marina</i>	.	3	.	3	.	4	23	.	33
<i>Strongylura notata</i>	12	6	156	221	90	129	83	.	697
<i>Strongylura</i> spp.	.	.	1	4	.	.	.	.	5
<i>Strongylura timucu</i>	.	.	7	33	7	6	.	.	53
<i>Symphurus plagiusa</i>	23	28	22	3	2	2	.	124	204
<i>Syngnathus floridae</i>	61	.	4	.	.	.	.	32	97

Taxa	Gear								Totals
	21.3-m bay seine			21.3-m river seine		183-m haul seine		6.1-m otter trawl	
	Veg	Unveg	Shore	Over	Nonover	Over	Nonover		
	E=142	E=62	E=204	E=315	E=63	E=156	E=48	E=132	
<i>Syngnathus louisianae</i>	12	4	6	1	.	.	.	28	51
<i>Syngnathus scovelli</i>	304	11	87	23	4	.	.	80	509
<i>Synodus foetens</i>	46	22	94	26	7	25	8	149	377
<b><i>Trachinotus carolinus</i></b>	.	.	.	.	.	10	2	.	12
<b><i>Trachinotus falcatus</i></b>	.	.	2	.	.	2	11	.	15
<i>Trinectes maculatus</i>	.	51	27	106	62	8	.	493	747
<i>Tylosurus crocodilus</i>	.	.	.	.	.	4	4	.	8
<b>Totals</b>	<b>26,452</b>	<b>7,932</b>	<b>63,272</b>	<b>70,140</b>	<b>9,673</b>	<b>32,433</b>	<b>8,394</b>	<b>12,024</b>	<b>230,320</b>

Sampling with 21.3-m bay seine was stratified by the presence or absence of a shoreline ('Shore' or offshore) within 5-m. Offshore sets were further stratified by the presence or absence of bottom vegetation ('Veg' or 'Unveg'). Sampling with 21.3-m river seine and 183-m haul seine was stratified by the presence or absence of overhanging vegetation ('Over' or 'Nonover'). Sampling with 6.1-m otter trawl was not stratified. Effort, or the total number of hauls, is labeled 'E'. Taxa are arranged alphabetically. Selected taxa are highlighted in bold.

**Table 4.78:** Summary by zone of taxa collected during Charlotte Harbor stratified-random sampling, 2022.

Taxa	Zone							Totals
	A	B	C	D	K	M	P	
	E=298	E=258	E=258	E=164	E=36	E=54	E=54	E=1,122
<i>Acanthostracion quadricornis</i>	.	28	17	186	.	.	.	231
<i>Achiridae</i> spp.	.	.	.	.	.	2	.	2
<i>Achirus lineatus</i>	93	31	51	13	3	2	2	195
<i>Adinia xenica</i>	.	2	1	1	.	1	.	5
<i>Aetobatus narinari</i>	.	.	3	.	.	.	.	3
<b><i>Albula</i> spp.</b>	<b>3</b>	<b>2</b>	.	.	.	.	.	<b>5</b>
<i>Aluterus schoepfii</i>	.	2	1	.	.	.	.	3
<i>Anarchopterus criniger</i>	.	2	3	9	.	.	.	14
<i>Anchoa hepsetus</i>	.	.	.	1	.	.	.	1
<i>Anchoa mitchilli</i>	3,941	15,040	23,162	394	157	6,150	1,534	50,378
<i>Ancylopsetta quadrocellata</i>	.	4	2	2	.	.	.	8
<b><i>Archosargus probatocephalus</i></b>	<b>37</b>	<b>201</b>	<b>176</b>	<b>192</b>	<b>7</b>	<b>3</b>	<b>3</b>	<b>619</b>
<i>Archosargus rhomboidalis</i>	.	1	.	8	.	.	.	9
<b><i>Argopecten gibbus</i></b>	<b>1</b>	<b>1</b>	.	<b>3</b>	.	.	.	<b>5</b>
<b><i>Argopecten irradians</i></b>	.	.	.	<b>6</b>	.	.	.	<b>6</b>
<i>Ariopsis felis</i>	900	217	291	199	.	30	29	1,666
<i>Astroscoptes y-graecum</i>	.	.	.	1	.	.	.	1
<i>Bagre marinus</i>	13	9	11	.	.	1	.	34
<i>Bairdiella chrysoura</i>	725	782	893	757	2	343	47	3,549
<i>Bathygobius soporator</i>	8	2	13	10	22	22	16	93
<b><i>Brevoortia</i> spp.</b>	.	<b>8</b>	<b>78</b>	<b>14</b>	.	<b>101</b>	.	<b>201</b>
<b><i>Calamus bajonado</i></b>	.	.	.	<b>2</b>	.	.	.	<b>2</b>
<b><i>Calamus penna</i></b>	.	<b>17</b>	<b>5</b>	<b>15</b>	.	.	.	<b>37</b>
<b><i>Calamus proridens</i></b>	.	.	.	<b>1</b>	.	.	.	<b>1</b>
<b><i>Calamus</i> spp.</b>	.	<b>2</b>	<b>1</b>	<b>1</b>	.	.	.	<b>4</b>
<i>Callinectes ornatus</i>	1	5	.	1	.	.	.	7
<b><i>Callinectes sapidus</i></b>	<b>152</b>	<b>84</b>	<b>106</b>	<b>41</b>	<b>10</b>	<b>66</b>	<b>30</b>	<b>489</b>

Taxa	Zone							Totals
	A	B	C	D	K	M	P	
	E=298	E=258	E=258	E=164	E=36	E=54	E=54	E=1,122
<b><i>Caranx hippos</i></b>	18	61	15	21	.	.	.	115
<i>Caranx latus</i>	.	.	.	2	.	.	.	2
<b><i>Carcharhinus leucas</i></b>	2	1	1	.	.	.	.	4
<b><i>Carcharhinus limbatus</i></b>	.	1	.	.	.	.	.	1
<b><i>Centropomus undecimalis</i></b>	213	481	444	276	4	2	5	1,425
<b><i>Centropristis striata</i></b>	.	6	.	4	.	.	.	10
<i>Chaetodipterus faber</i>	28	134	238	11	.	.	4	415
<i>Chasmodes saburrae</i>	40	26	33	34	2	.	.	135
<i>Chilomycterus schoepfii</i>	43	186	136	114	.	.	.	479
<i>Chloroscombrus chrysurus</i>	2	2	16	2	.	.	.	22
<i>Cichlasoma urophthalmus</i>	19	.	.	.	3	21	3	46
<i>Citharichthys macrops</i>	.	2	1	.	.	.	.	3
<i>Clupeidae</i> spp.	.	9	.	.	.	.	.	9
<i>Ctenogobius boleosoma</i>	1	.	.	1	.	.	.	2
<i>Ctenogobius smaragdus</i>	2	.	8	2	2	.	.	14
<b><i>Cynoscion arenarius</i></b>	63	3	92	1	.	66	99	324
<b><i>Cynoscion nebulosus</i></b>	118	108	133	98	.	10	13	480
<i>Cyprinodon variegatus</i>	93	838	39	98	.	6	.	1,074
<i>Dasyatis americana</i>	1	3	4	8	.	.	.	16
<i>Dasyatis sabina</i>	28	16	59	3	.	1	1	108
<i>Dasyatis say</i>	.	9	12	1	1	.	.	23
<i>Diapterus auratus</i>	26	893	253	80	1	15	1	1,269
<i>Diodon holocanthus</i>	.	1	.	.	.	.	.	1
<b><i>Diplectrum formosum</i></b>	1	9	.	6	.	.	.	16
<i>Echeneis neucratoides</i>	.	.	1	.	.	.	.	1
<b><i>Elops saurus</i></b>	34	123	122	15	.	1	.	295
<b><i>Epinephelus itajara</i></b>	.	5	.	2	.	.	.	7
<i>Etropus crossotus</i>	.	.	3	4	.	.	.	7
<i>Eucinostomus gula</i>	1,111	2,051	1,116	2,258	11	3	.	6,550

Taxa	Zone							Totals
	A	B	C	D	K	M	P	
	E=298	E=258	E=258	E=164	E=36	E=54	E=54	E=1,122
<i>Eucinostomus harengulus</i>	1,366	1,040	929	491	497	459	400	5,182
<i>Eucinostomus</i> spp.	4,741	16,061	8,616	10,351	2,484	1,338	810	44,401
<i>Eugerres plumieri</i>	2,508	2,107	893	11	121	310	72	6,022
<b><i>Farfantepenaeus duorarum</i></b>	<b>1,649</b>	<b>813</b>	<b>890</b>	<b>612</b>	<b>40</b>	<b>118</b>	<b>42</b>	<b>4,164</b>
<i>Fistularia tabacaria</i>	.	.	.	1	.	.	.	1
<i>Floridichthys carpio</i>	85	567	109	613	3	.	.	1,377
<i>Fundulus confluentus</i>	.	2	1	6	.	.	.	9
<i>Fundulus grandis</i>	20	65	11	20	27	16	11	170
<i>Fundulus similis</i>	6	1	.	.	.	40	.	47
<i>Gambusia holbrooki</i>	572	223	517	38	12	108	6	1,476
<i>Gerreidae</i> spp.	18	1	.	.	.	.	.	19
<i>Gerres cinereus</i>	.	.	.	6	.	.	.	6
<i>Gobiesox strumosus</i>	17	1	1	.	.	.	5	24
<i>Gobiosoma bosc</i>	13	6	12	.	1	30	19	81
<i>Gobiosoma longipala</i>	.	4	3	.	.	.	.	7
<i>Gobiosoma robustum</i>	181	366	184	235	10	10	7	993
<i>Gobiosoma</i> spp.	107	109	62	20	13	12	27	350
<i>Gymnura micrura</i>	1	.	1	1	.	.	.	3
<b><i>Haemulon plumieri</i></b>	.	<b>11</b>	.	<b>16</b>	.	.	.	<b>27</b>
<i>Harengula jaguana</i>	15	210	185	290	.	.	.	700
<i>Hemichromis letourneuxi</i>	2	.	.	.	1	.	.	3
<i>Hemiramphus brasiliensis</i>	.	6	.	.	.	.	.	6
<i>Hippocampus erectus</i>	3	13	6	5	.	.	.	27
<i>Hippocampus zosterae</i>	2	21	3	21	.	.	.	47
<i>Hoplosternum littorale</i>	2	.	.	.	.	.	.	2
<i>Hypleurochilus caudovittatus</i>	.	1	.	.	.	.	.	1
<i>Hyporhamphus meeki</i>	.	2	.	2	.	.	.	4
<i>Hyporhamphus</i> sp.	1	.	.	.	.	.	.	1
<i>Hyporhamphus unifasciatus</i>	.	.	.	4	.	.	.	4

Taxa	Zone							Totals
	A	B	C	D	K	M	P	
	E=298	E=258	E=258	E=164	E=36	E=54	E=54	E=1,122
<i>Hypsoblennius hertz</i>	2	.	2	.	.	.	.	4
<i>Labidesthes sicculus</i>	.	.	.	.	1	.	1	2
<i>Lagodon rhomboides</i>	610	19,696	4,715	13,681	7	79	78	38,866
<b><i>Leiostomus xanthurus</i></b>	<b>20</b>	<b>349</b>	<b>4</b>	<b>2</b>	<b>4</b>	<b>59</b>	.	<b>438</b>
<i>Lepisosteus osseus</i>	1	1	.	.	.	.	.	2
<i>Lepisosteus platyrhincus</i>	1	.	2	.	1	.	.	4
<i>Lepomis macrochirus</i>	2	.	.	.	5	25	1	33
<i>Lepomis microlophus</i>	.	.	.	.	.	6	.	6
<i>Lepomis</i> spp.	2	.	.	.	.	6	.	8
<i>Limulus polyphemus</i>	11	1	6	.	.	.	.	18
<b><i>Litopenaeus setiferus</i></b>	.	.	.	.	.	.	<b>1</b>	<b>1</b>
<i>Lophogobius cyprinoides</i>	14	2	2	1	28	29	6	82
<i>Lucania parva</i>	5,068	6,760	4,678	6,866	19	3	8	23,402
<b><i>Lutjanus analis</i></b>	.	<b>3</b>	.	<b>5</b>	.	.	.	<b>8</b>
<b><i>Lutjanus griseus</i></b>	<b>38</b>	<b>127</b>	<b>114</b>	<b>127</b>	<b>2</b>	<b>12</b>	<b>7</b>	<b>427</b>
<b><i>Lutjanus synagris</i></b>	<b>31</b>	<b>85</b>	<b>71</b>	<b>130</b>	.	<b>6</b>	<b>1</b>	<b>324</b>
<b><i>Megalops atlanticus</i></b>	<b>2</b>	<b>4</b>	<b>2</b>	.	.	.	.	<b>8</b>
<i>Membras martinica</i>	2	1	1	.	.	.	.	4
<i>Menidia</i> spp.	4,084	2,855	2,973	329	203	1,802	1,005	13,251
<b><i>Menippe</i> spp.</b>	<b>5</b>	<b>36</b>	<b>15</b>	<b>31</b>	.	.	.	<b>87</b>
<b><i>Menticirrhus americanus</i></b>	<b>102</b>	<b>9</b>	<b>73</b>	<b>1</b>	.	<b>16</b>	<b>17</b>	<b>218</b>
<b><i>Menticirrhus littoralis</i></b>	.	.	.	<b>35</b>	.	.	.	<b>35</b>
<b><i>Menticirrhus saxatilis</i></b>	<b>7</b>	<b>15</b>	.	<b>2</b>	.	.	<b>1</b>	<b>25</b>
<i>Microgobius gulosus</i>	2,516	1,136	1,014	401	120	109	121	5,417
<i>Monacanthus ciliatus</i>	.	2	.	2	.	.	.	4
<i>Monopterus albus</i>	4	.	.	.	.	1	.	5
<b><i>Mugil cephalus</i></b>	<b>93</b>	<b>75</b>	<b>45</b>	<b>46</b>	<b>18</b>	<b>21</b>	<b>2</b>	<b>300</b>
<b><i>Mugil curema</i></b>	<b>4</b>	<b>33</b>	<b>11</b>	<b>54</b>	.	<b>1</b>	.	<b>103</b>
<b><i>Mugil trichodon</i></b>	<b>22</b>	<b>212</b>	<b>33</b>	<b>50</b>	.	.	.	<b>317</b>

Taxa	Zone							Totals
	A	B	C	D	K	M	P	
	E=298	E=258	E=258	E=164	E=36	E=54	E=54	E=1,122
<i>Mycteroperca bonaci</i>	.	12	3	.	.	.	.	15
<i>Mycteroperca microlepis</i>	.	3	3	4	.	.	.	10
<i>Myrophis punctatus</i>	1	1	.	.	.	.	.	2
<i>Negaprion brevirostris</i>	.	1	.	2	.	.	.	3
<i>Nicholsina usta</i>	.	6	2	3	.	.	.	11
<i>Notemigonus crysoleucas</i>	.	.	.	.	.	1	.	1
<i>Notropis maculatus</i>	1	.	.	.	.	.	.	1
<i>Ocyurus chrysurus</i>	.	2	2	2	.	.	.	6
<i>Ogocephalus cubifrons</i>	.	6	1	8	.	.	.	15
<i>Oligoplites saurus</i>	80	59	141	26	7	16	50	379
<i>Opisthonema oglinum</i>	7	10	529	114	.	24	.	684
<i>Opistognathus robinisi</i>	.	.	1	.	.	.	.	1
<i>Opsanus beta</i>	12	32	10	58	3	.	1	116
<i>Oreochromis aureus</i>	1	.	.	.	3	5	.	9
<i>Oreochromis niloticus</i>	4	.	.	.	.	.	.	4
<i>Sarotherodon</i> spp.	.	.	8	.	2	.	.	10
<i>Orthopristis chrysoptera</i>	90	1,598	232	538	.	28	14	2,500
<i>Paraclinus marmoratus</i>	.	1	.	3	.	.	.	4
<b><i>Paralichthys albigutta</i></b>	<b>8</b>	<b>24</b>	<b>15</b>	<b>11</b>	.	.	.	<b>58</b>
<i>Poecilia latipinna</i>	45	69	403	97	51	21	.	686
<b><i>Pogonias cromis</i></b>	<b>1</b>	<b>9</b>	.	<b>4</b>	.	.	.	<b>14</b>
<b><i>Pomatomus saltatrix</i></b>	.	.	.	<b>1</b>	.	.	.	<b>1</b>
<i>Portunidae</i> sp.	.	1	.	.	.	.	.	1
<i>Portunus</i> spp.	151	282	596	42	.	.	.	1,071
<i>Prionotus rubio</i>	.	.	1	.	.	.	.	1
<i>Prionotus scitulus</i>	202	52	208	38	.	1	33	534
<i>Prionotus tribulus</i>	14	5	6	1	.	1	.	27
<i>Pristis pectinata</i>	1	.	.	.	.	.	.	1
<i>Pterygoplichthys disjunctivus</i>	.	.	.	.	.	.	1	1

Taxa	Zone							Totals
	A	B	C	D	K	M	P	
	E=298	E=258	E=258	E=164	E=36	E=54	E=54	E=1,122
<i>Rachycentron canadum</i>	1	.	.	1	.	.	.	2
<i>Rimapenaeus constrictus</i>	2	1	5	.	.	.	.	8
<i>Rimapenaeus</i> spp.	3	.	13	.	.	.	.	16
<i>Sarotherodon melanotheron</i>	.	.	13	2	.	.	.	15
<i>Sciaenidae</i> sp.	.	.	.	.	.	.	1	1
<b><i>Sciaenops ocellatus</i></b>	<b>788</b>	<b>201</b>	<b>267</b>	<b>74</b>	<b>31</b>	<b>23</b>	<b>18</b>	<b>1,402</b>
<b><i>Scomberomorus maculatus</i></b>	.	.	<b>9</b>	.	.	.	.	<b>9</b>
<i>Scorpaena brasiliensis</i>	.	5	.	18	.	.	.	23
<i>Selene vomer</i>	.	1	3	2	.	.	.	6
<i>Serraniculus pumilio</i>	.	1	2	3	.	.	.	6
<i>Sicyonia laevigata</i>	.	1	1	2	.	.	.	4
<i>Sicyonia typica</i>	2	1	2	.	.	.	.	5
<i>Sphoeroides nephelus</i>	62	224	180	126	1	.	1	594
<i>Sphoeroides spengleri</i>	.	4	.	14	.	.	.	18
<b><i>Sphyaena barracuda</i></b>	.	<b>19</b>	<b>4</b>	<b>19</b>	.	.	.	<b>42</b>
<b><i>Sphyrna tiburo</i></b>	<b>2</b>	<b>18</b>	<b>2</b>	<b>3</b>	.	.	.	<b>25</b>
<i>Stephanolepis hispidus</i>	2	106	7	66	.	15	.	196
<i>Strongylura marina</i>	2	11	6	12	.	.	2	33
<i>Strongylura notata</i>	103	230	166	93	76	23	6	697
<i>Strongylura</i> spp.	4	.	.	.	.	.	1	5
<i>Strongylura timucu</i>	9	7	26	4	6	.	1	53
<i>Symphurus plagiosa</i>	135	7	40	2	1	2	17	204
<i>Syngnathus floridae</i>	7	46	14	30	.	.	.	97
<i>Syngnathus louisianae</i>	12	21	8	9	.	.	1	51
<i>Syngnathus scovelli</i>	143	116	122	114	4	6	4	509
<i>Synodus foetens</i>	150	61	67	48	.	29	22	377
<b><i>Trachinotus carolinus</i></b>	<b>1</b>	<b>7</b>	<b>3</b>	<b>1</b>	.	.	.	<b>12</b>
<b><i>Trachinotus falcatus</i></b>	.	<b>7</b>	.	<b>8</b>	.	.	.	<b>15</b>
<i>Trinectes maculatus</i>	325	3	68	.	33	79	239	747

Taxa	Zone							Totals
	A	B	C	D	K	M	P	
	<b>E=298</b>	<b>E=258</b>	<b>E=258</b>	<b>E=164</b>	<b>E=36</b>	<b>E=54</b>	<b>E=54</b>	<b>E=1,122</b>
<i>Tylosurus crocodilus</i>		2	2	4				8
<b>Totals</b>	<b>34,038</b>	<b>77,713</b>	<b>56,915</b>	<b>41,011</b>	<b>4,060</b>	<b>11,736</b>	<b>4,847</b>	<b>230,320</b>

Zones A–D were located in Charlotte Harbor, while Zones K (Alligator Creek), M (Myakka River) and P (Peace River) were tributaries of Charlotte Harbor. Effort, or the total number of hauls, is labeled 'E'. Taxa are arranged alphabetically. selected taxa are highlighted in bold.

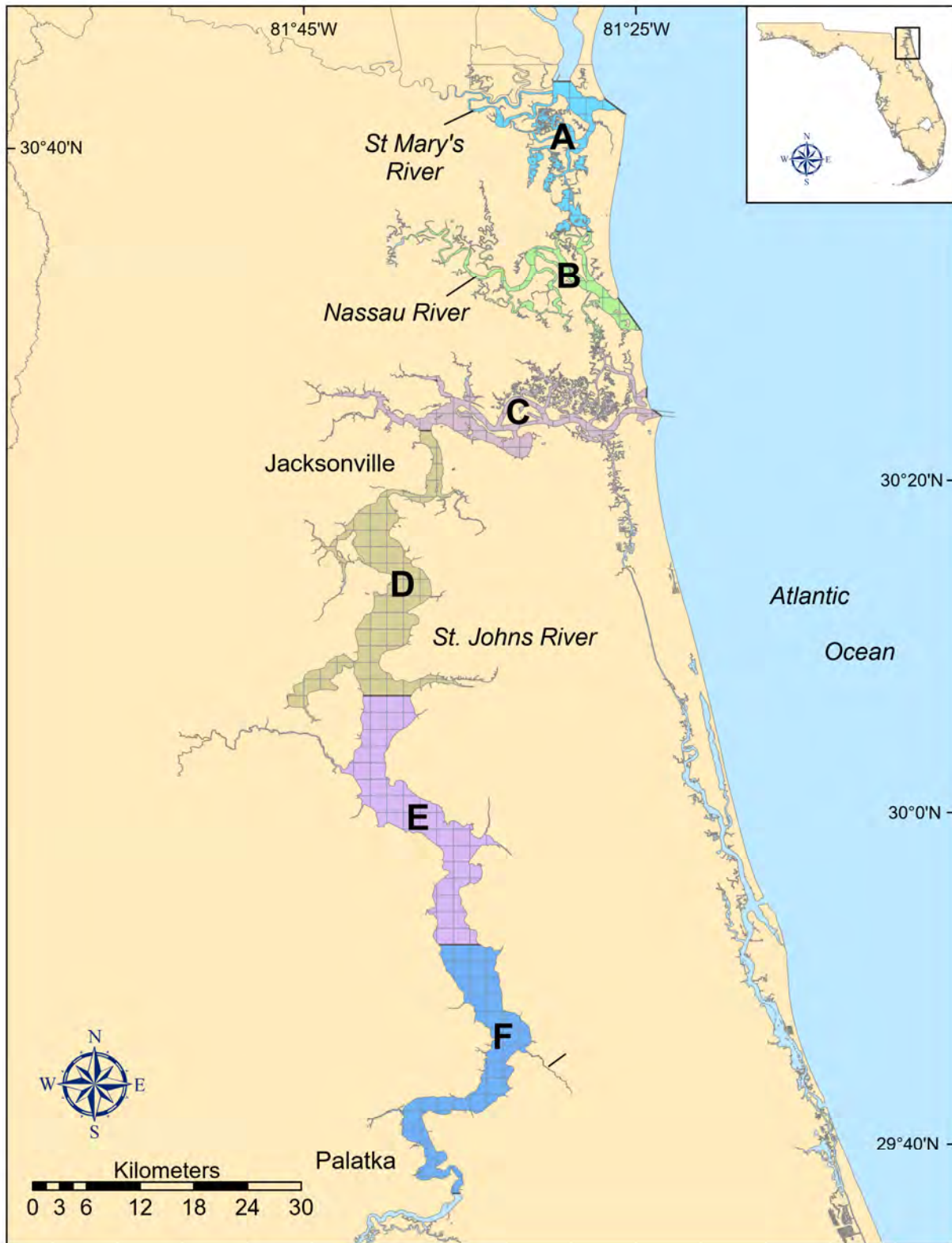
## 4.8 Northeast Florida

Northeast Florida encompasses three coastal plain estuaries, each defined by their respective lower river basins (St. Marys River, Nassau River, and St. Johns River) and interconnected via the Intracoastal Waterway (ICW; Figure 4.8). Shoreline vegetation in the lower St. Marys and Nassau rivers is characterized by an expansive saltmarsh system, while the lower St. Johns River is characterized by marshes, hardwood forests, and hardwood swamps (St. Johns River Water Management District 1993, 2000). Bottom substrates are typically characterized as mud, sand, and occasional oysters (Solomon et al. 2006). Bottom vegetation is only present in the oligohaline reaches of the St. Johns River upriver of downtown Jacksonville (Burns et al. 1997).

The Fisheries-Independent Monitoring (FIM) program has conducted intensive sampling of fish and selected invertebrates in northeast Florida since 2001. The area sampled was divided into six geographically-defined riverine zones (A–F; Figure 4.8). Monthly stratified-random sampling (SRS) was conducted in Zones A–D using 21.3-m river seines, 183-m haul seines, and 6.1-m river otter trawls. Monthly SRS was conducted in Zones E and F with only 21.3-m river seines and 6.1-m river otter trawls. All methods were the same as those described in Chapter 2. This section summarizes data collected by the FIM program during 2022 in northeast Florida.

### Stratified-Random Sampling

A total of 158,059 animals, which included 167 taxa of fishes and 16 taxa of selected invertebrates, were collected from 1,356 northeast Florida SRS samples in 2022 (Table 4.79). *Anchoa mitchilli* (n=44,745) was the most numerous taxon collected, representing 28.3% of the total catch. *Litopenaeus setiferus* (n=19,740) and *Leiostomus xanthurus* (n=15,067) were the next most abundant taxa collected, accounting for an additional 22% of the total catch. A total of 41 selected taxa (n=60,714 animals) composed 38.4% of the total catch. *Litopenaeus setiferus* (n=19,740) was the most abundant Selected Taxon, representing 12.5% of the total catch. *Leiostomus xanthurus* (n=15,067), *Micropogonias undulatus* (n=14,138), *Mugil cephalus* (n=4,361), and *Callinectes sapidus* (n=1,328) were the next most abundant selected taxa, comprising 22.1% of the total catch. Collections in 2022 included 3 species new to the Northeast Florida FIM collection: *Aphredoderus sayanus*, *Carcharhinus plumbeus*, *Eucinostomus melanopterus*.



**Figure 4.8:** Map of northeast Florida sampling area. Zones are labeled A–F.

**Table 4.79:** Summary of catch and effort data for northeast Florida stratified-random sampling, 2022.

Zone	21.3-m river seine		183-m haul seine		6.1-m otter trawl		Totals	
	Animals	Hauls	Animals	Hauls	Animals	Hauls	Animals	Hauls
<b>A</b>	16,806	84	1,436	36	8,275	84	26,517	204
<b>B</b>	18,989	84	1,114	36	5,261	84	25,364	204
<b>C</b>	21,461	108	3,209	60	5,963	108	30,633	276
<b>D</b>	12,704	108	1,526	60	11,148	120	25,378	288
<b>E</b>	13,807	96	.	.	5,414	96	19,221	192
<b>F</b>	21,984	96	.	.	8,962	96	30,946	192
<b>Totals</b>	<b>105,751</b>	<b>576</b>	<b>7,285</b>	<b>192</b>	<b>45,023</b>	<b>588</b>	<b>158,059</b>	<b>1,356</b>

### **21.3-m River Seines**

A total of 105,751 animals were collected in 576 21.3-m river seines, representing 66.9% of the overall SRS catch (Table 4.79). *Anchoa mitchilli* (n=34,048) was the most abundant taxon collected, accounting for 32.2% of the 21.3-m river seine catch (Table 4.80). *Menidia spp.* (n=13,040) and *Litopenaeus setiferus* (n=12,524) were the next most abundant taxa, accounting for an additional 24.2% of the 21.3-m river seine catch. The taxa most frequently caught in 21.3-m river seines were *Menidia spp.* (46.2% occurrence), *Anchoa mitchilli* (37.7% occurrence), and *Leiostomus xanthurus* (34.0% occurrence).

A total of 31,143 animals from 29 selected taxa were collected, representing 29.4% of the entire 21.3-m river seine catch (Table 4.81). *Litopenaeus setiferus* (n=12,524), and *Leiostomus xanthurus* (n=12,522) were the most abundant selected taxa, accounting for 80.4% of the selected taxa collected by this gear. The selected taxa most frequently caught in 21.3-m river seines were *Leiostomus xanthurus* (34.0% occurrence) and *Litopenaeus setiferus* (31.2% occurrence).

**Table 4.80:** Catch statistics for 10 dominant taxa collected in 576 21.3-m river seine samples during northeast Florida stratified-random sampling, 2022.

Species	Number			Density Estimate (animals/100m <sup>2</sup> )				Standard Length (mm)			
	No.	%	% Occur	Mean	Stderr	CV	Max	Mean	Stderr	Min	Max
<i>Anchoa mitchilli</i>	34,048	32.2	37.7	87.69	19.62	534.68	8,235.29	31	0.05	12	69
<i>Menidia</i> spp.	13,040	12.3	46.2	33.70	5.62	398.00	1,785.29	36	0.08	4	95
<i>Litopenaeus setiferus</i>	12,524	11.8	31.2	32.26	6.61	489.81	2,382.35	11	0.03	2	37
<i>Leiostomus xanthurus</i>	12,522	11.8	34.0	32.25	6.70	496.51	2,260.29	26	0.12	10	113
<i>Fundulus heteroclitus</i>	6,163	5.8	12.2	15.90	9.58	1,438.62	4,435.29	35	0.12	19	75
<i>Menidia menidia</i>	4,765	4.5	26.9	12.29	2.60	505.81	1,063.24	44	0.18	14	106
<i>Mugil cephalus</i>	2,851	2.7	25.7	7.37	2.41	779.21	1,189.71	29	0.59	14	406
<i>Bairdiella chrysoura</i>	2,326	2.2	10.9	6.01	1.98	784.93	817.65	44	0.41	8	150
<i>Anchoa hepsetus</i>	1,762	1.7	12.3	4.55	2.59	1,354.92	1,339.71	37	0.22	15	96
<i>Eucinostomus</i> spp.	1,732	1.6	26.4	4.47	0.85	451.73	339.71	28	0.18	10	47
Subtotals	91,733	86.6	.	.	.	.	.	.	.	2	406
<b>Totals</b>	<b>105,751</b>	<b>100.0</b>	.	<b>273.31</b>	<b>27.00</b>	<b>237.11</b>	<b>8,576.47</b>	.	.	<b>2</b>	<b>1,370</b>

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.

**Table 4.81:** Catch statistics for selected taxa collected in 576 21.3-m river seine samples during northeast Florida stratified-random sampling, 2022.

Species	Number			Density Estimate (animals/100m <sup>2</sup> )				Standard Length (mm)			
	No.	%	% Occur	Mean	Stderr	CV	Max	Mean	Stderr	Min	Max
<i>Litopenaeus setiferus</i>	12,524	11.8	31.2	31.98	6.56	492.16	2,382.35	11	0.03	2	37
<i>Leiostomus xanthurus</i>	12,522	11.8	34.0	31.97	6.64	498.78	2,260.29	26	0.12	10	113
<i>Mugil cephalus</i>	2,851	2.7	25.7	7.28	2.38	784.06	1,189.71	29	0.59	14	406
<i>Micropogonias undulatus</i>	871	0.8	17.4	2.22	0.46	497.77	189.71	37	0.67	8	121
<i>Farfantepenaeus</i> spp.	644	0.6	13.4	1.64	0.53	773.49	226.47	10	0.12	3	14
<i>Brevoortia</i> spp.	429	0.4	4.5	1.10	0.46	1,012.11	225.00	28	0.47	20	130
<i>Callinectes sapidus</i>	322	0.3	25.9	0.82	0.10	300.25	41.18	44	2.12	5	160
<i>Mugil curema</i>	255	0.2	10.6	0.65	0.22	808.04	91.18	60	2.19	17	224
<i>Sciaenops ocellatus</i>	124	0.1	9.5	0.32	0.08	619.08	39.71	77	7.90	12	441
<i>Lutjanus griseus</i>	112	0.1	3.5	0.29	0.19	1,603.27	108.82	24	2.17	11	229
<i>Cynoscion nebulosus</i>	97	0.1	6.9	0.25	0.06	554.10	19.12	48	3.14	16	135
<i>Menticirrhus americanus</i>	87	0.1	3.5	0.22	0.07	733.55	22.06	46	2.16	14	131
<i>Farfantepenaeus aztecus</i>	41	<0.1	1.4	0.10	0.07	1,498.38	35.29	17	0.26	15	22
<i>Paralichthys lethostigma</i>	40	<0.1	4.9	0.10	0.02	492.36	4.41	145	16.07	16	408
<i>Farfantepenaeus duorarum</i>	37	<0.1	0.9	0.09	0.06	1,638.05	35.29	16	0.20	15	19
<i>Lutjanus synagris</i>	34	<0.1	1.7	0.09	0.04	1,130.38	20.59	28	1.85	19	55
<i>Cynoscion</i> complex	30	<0.1	1.6	0.08	0.04	1,139.23	17.65	41	2.03	25	74
<i>Menticirrhus littoralis</i>	25	<0.1	0.5	0.06	0.05	1,822.84	26.47	53	6.14	26	135
<i>Elops saurus</i>	21	<0.1	2.6	0.05	0.02	688.54	4.41	110	18.80	25	356

Species	Number		Density Estimate (animals/100m <sup>2</sup> )				Standard Length (mm)				
	No.	% Occur	Mean	Stderr	CV	Max	Mean	Stderr	Min	Max	
<i>Trachinotus carolinus</i>	20	<0.1	0.5	0.05	0.04	1,669.86	19.12	39	2.89	20	72
<i>Trachinotus falcatus</i>	15	<0.1	0.7	0.04	0.02	1,326.44	8.82	29	4.58	13	63
<i>Archosargus probatocephalus</i>	12	<0.1	1.6	0.03	0.01	889.59	4.41	100	21.38	34	306
<i>Caranx hippos</i>	10	<0.1	1.4	0.03	0.01	955.61	4.41	30	2.66	21	47
<i>Lutjanus analis</i>	8	<0.1	0.2	0.02	0.02	2,400.00	11.76	17	0.00	17	17
<i>Paralichthys albigutta</i>	6	<0.1	1.0	0.02	0.01	975.53	1.47	110	22.69	11	180
<i>Centropomus undecimalis</i>	2	<0.1	0.3	0.01	<0.01	1,695.58	1.47	56	26.50	30	83
<i>Sphyræna barracuda</i>	2	<0.1	0.3	0.01	<0.01	1,695.58	1.47	116	28.00	88	144
<i>Centropristis philadelphica</i>	1	<0.1	0.2	<0.01	<0.01	2,400.00	1.47	60	.	60	60
<i>Lobotes surinamensis</i>	1	<0.1	0.2	<0.01	<0.01	2,400.00	1.47	135	.	135	135
<b>Totals</b>	<b>31,143</b>	<b>29.4</b>	<b>.</b>	<b>79.51</b>	<b>9.85</b>	<b>297.31</b>	<b>2,519.12</b>	<b>.</b>	<b>.</b>	<b>2</b>	<b>441</b>

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.

### **183-m Haul Seines**

A total of 7,285 animals were collected in 192 183-m haul seines, representing 4.6% of the overall SRS catch (Table 4.79). *Mugil cephalus* (n=1,510) was the most abundant taxon, accounting for 20.7% of the 183-m haul seine catch (Table 4.82). The taxa most frequently caught in 183-m haul seines were *Mugil cephalus* (69.3% occurrence), *Mugil curema* (46.4% occurrence), and *Dasyatis sabina* (38.0% occurrence).

A total of 4,301 animals from 31 selected taxa were collected, representing 59% of the entire 183-m haul seine catch (Table 4.83). *Mugil cephalus* (n=1,510) and *Mugil curema* (n=772) were the most abundant selected taxa, accounting for 53.1% of the selected taxa collected by this gear. The selected taxa most frequently caught in 183-m haul seines were *Mugil cephalus* (69.3% occurrence) and *Mugil curema* (46.4% occurrence).

**Table 4.82:** Catch statistics for 10 dominant taxa collected in 192 183-m haul seine samples during northeast Florida stratified-random sampling, 2022.

Species	Number			Density Estimate (animals/set)				Standard Length (mm)			
	No.	%	% Occur	Mean	Stderr	CV	Max	Mean	Stderr	Min	Max
<i>Mugil cephalus</i>	1,510	20.7	69.3	7.95	1.05	182.69	101	199	1.59	62	398
<i>Bairdiella chrysoura</i>	871	12.0	19.3	4.58	1.85	556.86	311	117	0.48	79	181
<i>Mugil curema</i>	772	10.6	46.4	4.06	1.57	532.36	291	149	1.33	83	289
<i>Leiostomus xanthurus</i>	583	8.0	32.8	3.07	0.79	353.65	85	113	1.22	29	185
<i>Chloroscombrus chrysurus</i>	377	5.2	6.8	1.98	1.80	1,247.29	341	58	0.56	49	132
<i>Litopenaeus setiferus</i>	322	4.4	15.1	1.69	0.69	564.05	83	19	0.22	11	30
<i>Eucinostomus harengulus</i>	285	3.9	27.6	1.50	0.73	671.72	134	87	0.51	55	129
<i>Brevoortia</i> spp.	245	3.4	11.5	1.29	0.54	577.18	55	116	1.12	76	197
<i>Dasyatis sabina</i>	231	3.2	38.0	1.22	0.15	174.86	13	218	2.64	109	365
<i>Dorosoma cepedianum</i>	207	2.8	13.5	1.09	0.32	402.89	34	198	6.32	75	410
Subtotals	5,403	74.2	.	.	.	.	.	.	.	11	410
<b>Totals</b>	<b>7,285</b>	<b>100.0</b>	.	<b>38.34</b>	<b>4.61</b>	<b>166.56</b>	<b>549</b>	.	.	<b>11</b>	<b>1,265</b>

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.

**Table 4.83:** Catch statistics for selected taxa collected in 192 183-m haul seine samples during northeast Florida stratified-random sampling, 2022.

Species	Number			Density Estimate (animals/set)				Standard Length (mm)			
	No.	%	% Occur	Mean	Stderr	CV	Max	Mean	Stderr	Min	Max
<i>Mugil cephalus</i>	1,510	20.7	69.3	7.86	1.04	183.93	101	199	1.59	62	398
<i>Mugil curema</i>	772	10.6	46.4	4.02	1.55	535.24	291	149	1.33	83	289
<i>Leiostomus xanthurus</i>	583	8.0	32.8	3.04	0.78	355.65	85	113	1.22	29	185
<i>Litopenaeus setiferus</i>	322	4.4	15.1	1.68	0.69	567.09	83	19	0.22	11	30
<i>Brevoortia</i> spp.	245	3.4	11.5	1.28	0.53	580.28	55	116	1.12	76	197
<i>Elops saurus</i>	186	2.6	24.5	0.97	0.36	515.20	66	287	3.61	157	506
<i>Sciaenops ocellatus</i>	126	1.7	25.5	0.66	0.12	247.36	9	262	10.92	82	555
<i>Micropogonias undulatus</i>	120	1.6	19.8	0.62	0.14	306.96	20	126	3.22	50	204
<i>Callinectes sapidus</i>	90	1.2	20.3	0.47	0.09	267.28	8	107	4.77	29	190
<i>Archosargus probatocephalus</i>	76	1.0	17.7	0.40	0.11	397.10	19	261	10.06	82	438
<i>Caranx hippos</i>	62	0.9	12.5	0.32	0.09	389.39	10	170	7.46	55	421
<i>Cynoscion nebulosus</i>	61	0.8	15.1	0.32	0.08	332.87	8	209	10.79	77	461
<i>Paralichthys lethostigma</i>	35	0.5	15.1	0.18	0.03	265.14	3	218	10.02	80	334
<i>Menticirrhus americanus</i>	19	0.3	5.7	0.10	0.03	480.14	4	204	11.51	104	279
<i>Cynoscion</i> complex	11	0.2	3.6	0.06	0.02	570.01	3	206	15.22	130	300
<i>Pogonias cromis</i>	11	0.2	3.1	0.06	0.03	718.56	5	237	19.42	152	365
<i>Pomatomus saltatrix</i>	11	0.2	3.6	0.06	0.03	623.47	4	184	15.50	104	274
<i>Sphyrna tiburo</i>	11	0.2	4.2	0.06	0.02	510.99	2	666	62.95	331	950
<i>Farfantepenaeus</i> spp.	10	0.1	3.1	0.05	0.03	754.30	5	17	1.08	12	21

Species	Number			Density Estimate (animals/set)				Standard Length (mm)			
	No.	%	% Occur	Mean	Stderr	CV	Max	Mean	Stderr	Min	Max
<i>Lutjanus griseus</i>	9	0.1	3.6	0.05	0.02	589.38	3	149	22.60	78	265
<i>Carcharhinus plumbeus</i>	6	0.1	1.6	0.03	0.02	977.23	4	502	9.37	463	528
<i>Trachinotus falcatus</i>	6	0.1	1.0	0.03	0.03	1,176.38	5	86	8.60	53	112
<i>Paralichthys albigutta</i>	5	0.1	2.6	0.03	0.01	613.15	1	159	27.22	66	215
<i>Scomberomorus maculatus</i>	3	<0.1	1.0	0.02	0.01	1,030.63	2	199	47.37	149	294
<i>Lobotes surinamensis</i>	2	<0.1	1.0	0.01	0.01	977.23	1	280	182.00	98	462
<i>Lutjanus synagris</i>	2	<0.1	0.5	0.01	0.01	1,385.64	2	90	0.50	90	91
<i>Menippe</i> spp.	2	<0.1	1.0	0.01	0.01	977.23	1	31	3.00	28	34
<i>Paralichthys dentatus</i>	2	<0.1	1.0	0.01	0.01	977.23	1	118	27.50	90	145
<i>Centropomus undecimalis</i>	1	<0.1	0.5	0.01	0.01	1,385.64	1	674	.	674	674
<i>Negaprion brevirostris</i>	1	<0.1	0.5	0.01	0.01	1,385.64	1	775	.	775	775
<i>Trachinotus carolinus</i>	1	<0.1	0.5	0.01	0.01	1,385.64	1	175	.	175	175
<b>Totals</b>	<b>4,301</b>	<b>59.0</b>	.	<b>22.40</b>	<b>2.83</b>	<b>175.26</b>	<b>414</b>	.	.	<b>11</b>	<b>950</b>

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.

### **6.1-m River Otter Trawls**

A total of 45,023 animals were collected in 588 6.1-m river otter trawls, representing 28.5% of the overall SRS catch (Table 4.79). *Micropogonias undulatus* (n=13,147) was the most abundant taxon collected, accounting for 29.2% of the 6.1-m river otter trawl catch (Table 4.84). The taxa most frequently caught in 6.1-m river otter trawls were *Micropogonias undulatus* (61.1% occurrence), *Litopenaeus setiferus* (52.4% occurrence), and *Callinectes sapidus* (47.8% occurrence).

A total of 25,270 animals from 26 selected taxa were collected, representing 56.1% of the entire 6.1-m river otter trawl catch (Table 4.85). *Micropogonias undulatus* (n=13,147), *Litopenaeus setiferus* (n=6,894), and *Leiostomus xanthurus* (n=1,962) were the most abundant selected taxa, accounting for 87.1% of the selected taxa collected by this gear. The selected taxa most frequently caught in the 6.1-m river otter trawls were *Micropogonias undulatus* (61.1% occurrence) and *Litopenaeus setiferus* (52.4% occurrence).

**Table 4.84:** Catch statistics for 10 dominant taxa collected in 588 6.1-m river otter trawl samples during northeast Florida stratified-random sampling, 2022.

Species	Number			Density Estimate (animals/100m <sup>2</sup> )				Standard Length (mm)			
	No.	%	% Occur	Mean	Stderr	CV	Max	Mean	Stderr	Min	Max
<i>Micropogonias undulatus</i>	13,147	29.2	61.1	2.97	0.33	274.28	104.64	34	0.19	3	209
<i>Anchoa mitchilli</i>	10,697	23.8	46.1	2.60	0.52	480.06	182.29	40	0.11	13	83
<i>Litopenaeus setiferus</i>	6,894	15.3	52.4	1.65	0.17	254.01	40.74	18	0.08	2	46
<i>Leiostomus xanthurus</i>	1,962	4.4	25.2	0.47	0.12	615.23	52.75	33	0.65	10	184
<i>Trinectes maculatus</i>	1,221	2.7	32.8	0.29	0.05	422.27	20.84	46	0.52	10	132
<i>Callinectes similis</i>	983	2.2	16.2	0.23	0.07	731.48	32.78	47	0.51	11	150
<i>Cynoscion complex</i>	959	2.1	32.0	0.23	0.04	375.93	13.12	41	1.18	5	300
<i>Callinectes sapidus</i>	916	2.0	47.8	0.22	0.02	181.94	3.00	81	1.69	6	204
<i>Ameiurus catus</i>	918	2.0	24.1	0.21	0.04	401.61	14.17	122	2.02	23	374
<i>Bairdiella chrysoura</i>	875	1.9	11.6	0.21	0.15	1,790.16	88.64	32	1.31	9	200
Subtotals	38,572	85.6	.	.	.	.	.	.	.	2	374
<b>Totals</b>	<b>45,023</b>	<b>100.0</b>	.	<b>10.80</b>	<b>0.72</b>	<b>161.24</b>	<b>182.29</b>	.	.	<b>2</b>	<b>1,130</b>

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.

**Table 4.85:** Catch statistics for selected taxa collected in 588 6.1-m river otter trawl samples during northeast Florida stratified-random sampling, 2022.

Species	Number			Density Estimate (animals/100m <sup>2</sup> )				Standard Length (mm)			
	No.	%	% Occur	Mean	Stderr	CV	Max	Mean	Stderr	Min	Max
<i>Micropogonias undulatus</i>	13,147	29.2	61.1	3.06	0.35	279.06	105.68	34	0.19	3	209
<i>Litopenaeus setiferus</i>	6,894	15.3	52.4	1.62	0.18	264.36	40.74	18	0.08	2	46
<i>Leiostomus xanthurus</i>	1,962	4.4	25.2	0.46	0.12	619.71	52.75	33	0.65	10	184
<i>Cynoscion complex</i>	959	2.1	32.0	0.22	0.03	379.39	13.12	41	1.18	5	300
<i>Callinectes sapidus</i>	916	2.0	47.8	0.21	0.02	183.97	3.00	81	1.69	6	204
<i>Farfantepenaeus</i> spp.	511	1.1	16.7	0.12	0.02	462.47	7.42	10	0.12	2	15
<i>Farfantepenaeus aztecus</i>	251	0.6	8.8	0.06	0.01	578.11	5.25	18	0.19	15	30
<i>Menticirrhus americanus</i>	137	0.3	9.0	0.03	0.01	488.98	2.43	36	2.09	12	187
<i>Paralichthys lethostigma</i>	116	0.3	14.6	0.03	<0.01	290.49	0.67	167	7.53	10	409
<i>Sciaenops ocellatus</i>	109	0.2	1.7	0.03	0.02	2,076.79	12.68	20	3.85	8	330
<i>Farfantepenaeus duorarum</i>	96	0.2	3.7	0.02	0.01	826.53	2.56	21	0.49	15	33
<i>Elops saurus</i>	45	0.1	3.7	0.01	<0.01	591.56	0.75	37	0.62	26	45
<i>Archosargus probatocephalus</i>	31	0.1	3.2	0.01	<0.01	624.67	0.60	157	12.49	55	326
<i>Brevoortia</i> spp.	24	0.1	1.4	0.01	<0.01	1,488.02	2.19	59	13.00	21	252
<i>Cynoscion nebulosus</i>	13	<0.1	1.0	<0.01	<0.01	1,413.39	0.94	98	17.83	11	213
<i>Lutjanus synagris</i>	13	<0.1	1.5	<0.01	<0.01	940.51	0.54	72	8.04	26	116
<i>Paralichthys albigutta</i>	12	<0.1	1.5	<0.01	<0.01	892.64	0.40	89	22.89	13	223
<i>Centropristis philadelphica</i>	7	<0.1	1.0	<0.01	<0.01	1,035.81	0.27	97	13.45	18	120
<i>Menippe</i> spp.	7	<0.1	0.9	<0.01	<0.01	1,150.31	0.30	55	13.30	13	101

Species	Number		Density Estimate (animals/100m <sup>2</sup> )				Standard Length (mm)				
	No.	% % Occur	Mean	Stderr	CV	Max	Mean	Stderr	Min	Max	
<i>Lutjanus griseus</i>	5	<0.1	0.7	<0.01	<0.01	1,302.97	0.27	83	29.21	14	185
<i>Cynoscion nothus</i>	4	<0.1	0.5	<0.01	<0.01	1,459.44	0.27	31	7.72	16	46
<i>Paralichthys dentatus</i>	4	<0.1	0.7	<0.01	<0.01	1,217.96	0.17	132	23.42	82	192
<i>Centropristis striata</i>	2	<0.1	0.3	<0.01	<0.01	1,715.56	0.15	79	19.00	60	98
<i>Diplectrum formosum</i>	2	<0.1	0.3	<0.01	<0.01	1,720.27	0.13	70	13.50	56	83
<i>Scomberomorus maculatus</i>	2	<0.1	0.3	<0.01	<0.01	1,723.76	0.17	97	76.00	21	173
<i>Epinephelus itajara</i>	1	<0.1	0.2	<0.01	<0.01	2,424.87	0.15	15	.	15	15
<b>Totals</b>	<b>25,270</b>	<b>56.1</b>	.	<b>5.92</b>	<b>0.43</b>	<b>174.55</b>	<b>106.58</b>	.	.	<b>2</b>	<b>409</b>

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.

Appendix

**Table 4.86:** Monthly summary of taxa collected during northeast Florida stratified-random sampling, 2022.

Taxa	Month												Totals
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
	E=113	E=113	E=113	E=113	E=113	E=113	E=113	E=113	E=113	E=113	E=113	E=113	E=1,356
<i>Achirus lineatus</i>	4	2	1	.	2	7	1	2	1	.	5	5	30
<i>Agonostomus monticola</i>	.	.	.	.	.	.	.	.	.	.	1	.	1
<i>Alosa aestivalis</i>	.	.	.	.	.	9	.	.	.	.	.	.	9
<i>Alosa mediocris</i>	.	.	.	4	37	.	.	.	1	.	.	.	42
<i>Alosa sapidissima</i>	3	.	.	1	.	.	.	.	.	.	3	.	7
<i>Alosa sp.</i>	.	.	.	.	.	.	.	.	.	.	1	.	1
<i>Ameiurus catus</i>	75	335	45	70	42	15	39	24	19	81	112	101	958
<i>Ameiurus nebulosus</i>	.	1	1	.	.	.	.	1	.	.	.	.	3
<i>Amia calva</i>	1	.	.	1	.	.	.	.	.	.	.	2	4
<i>Anchoa hepsetus</i>	10	8	10	4	234	1,035	96	102	489	3	5	.	1,996
<i>Anchoa lyolepis</i>	.	.	.	15	45	35	1	.	757	1	.	.	854
<i>Anchoa mitchilli</i>	1,088	2,197	1,861	1,458	1,323	3,877	3,764	810	2,432	8,460	6,979	10,496	44,745
<i>Anchoa sp.</i>	.	.	.	.	.	1	.	.	.	.	.	.	1
<i>Ancylosetta quadrocellata</i>	.	1	15	6	1	.	.	.	.	.	.	1	24
<i>Anguilla rostrata</i>	3	.	.	.	.	.	.	.	.	.	1	.	4
<i>Aphredoderus sayanus</i>	1	.	.	.	.	.	.	.	.	.	.	.	1
<i>Archosargus probatocephalus</i>	2	3	10	26	4	6	12	13	13	8	6	16	119

Taxa	Month												Totals
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
	E=113	E=113	E=113	E=113	E=113	E=113	E=113	E=113	E=113	E=113	E=113	E=113	E=1,356
<i>Ariopsis felis</i>	2	9	3	48	21	21	60	92	36	8	6	40	346
<i>Astroscoptes y-graecum</i>	.	.	.	1	.	.	.	.	.	.	.	.	1
<i>Bagre marinus</i>	.	.	.	.	.	2	10	7	3	10	.	.	32
<i>Bairdiella chrysoura</i>	22	12	51	123	838	1,271	346	597	52	100	530	130	4,072
<i>Bathygobius soporator</i>	5	4	7	7	1	4	46	3	2	7	1	2	89
<b><i>Brevoortia</i> spp.</b>	<b>4</b>	<b>143</b>	<b>161</b>	<b>192</b>	<b>69</b>	<b>1</b>	<b>4</b>	<b>2</b>	<b>.</b>	<b>59</b>	<b>54</b>	<b>9</b>	<b>698</b>
<i>Callinectes ornatus</i>	.	.	1	.	.	.	6	.	.	.	.	1	8
<b><i>Callinectes sapidus</i></b>	<b>98</b>	<b>125</b>	<b>147</b>	<b>137</b>	<b>116</b>	<b>76</b>	<b>179</b>	<b>96</b>	<b>80</b>	<b>66</b>	<b>102</b>	<b>106</b>	<b>1,328</b>
<i>Callinectes similis</i>	35	15	190	650	67	76	51	137	20	25	16	25	1,307
<b><i>Caranx hippos</i></b>	<b>.</b>	<b>.</b>	<b>.</b>	<b>11</b>	<b>21</b>	<b>8</b>	<b>15</b>	<b>2</b>	<b>7</b>	<b>3</b>	<b>4</b>	<b>1</b>	<b>72</b>
<b><i>Carcharhinus plumbeus</i></b>	<b>6</b>	<b>.</b>	<b>.</b>	<b>.</b>	<b>.</b>	<b>.</b>	<b>.</b>	<b>.</b>	<b>.</b>	<b>.</b>	<b>.</b>	<b>.</b>	<b>6</b>
<b><i>Centropomus undecimalis</i></b>	<b>1</b>	<b>.</b>	<b>.</b>	<b>.</b>	<b>1</b>	<b>.</b>	<b>.</b>	<b>.</b>	<b>.</b>	<b>1</b>	<b>.</b>	<b>.</b>	<b>3</b>
<b><i>Centropristis philadelphica</i></b>	<b>.</b>	<b>.</b>	<b>.</b>	<b>1</b>	<b>.</b>	<b>.</b>	<b>1</b>	<b>.</b>	<b>.</b>	<b>1</b>	<b>4</b>	<b>1</b>	<b>8</b>
<b><i>Centropristis striata</i></b>	<b>.</b>	<b>.</b>	<b>.</b>	<b>.</b>	<b>.</b>	<b>.</b>	<b>.</b>	<b>.</b>	<b>.</b>	<b>.</b>	<b>1</b>	<b>1</b>	<b>2</b>
<i>Chaetodipterus faber</i>	.	.	.	1	2	11	38	13	1	7	.	1	74
<i>Charybdis hellerii</i>	.	.	.	.	.	.	.	.	2	.	.	1	3
<i>Chasmodes bosquianus</i>	.	.	.	1	1	.	10	.	.	.	.	.	12
<i>Chasmodes saburrae</i>	.	.	.	.	1	.	.	.	.	.	.	.	1
<i>Chilomycterus schoepfii</i>	.	.	1	.	2	5	4	.	3	3	8	7	33
<i>Chloroscombrus chrysurus</i>	1	.	.	.	93	14	24	6	11	4	342	5	500

Taxa	Month												Totals
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
	E=113	E=113	E=113	E=113	E=113	E=113	E=113	E=113	E=113	E=113	E=113	E=113	E=1,356
<i>Citharichthys spilopterus</i>	9	10	116	203	204	67	84	63	34	29	3	8	830
<i>Clupeidae</i> sp.	.	.	.	.	.	.	.	.	1	.	.	.	1
<i>Ctenogobius boleosoma</i>	25	5	58	17	29	35	44	23	33	85	17	10	381
<i>Ctenogobius shufeldti</i>	106	108	99	95	17	13	86	43	151	61	64	47	890
<i>Ctenogobius smaragdus</i>	1	1	1	.	1	3	1	.	3	3	5	22	41
<i>Ctenogobius</i> spp.	.	.	7	.	.	.	.	.	1	.	.	.	8
<i>Ctenogobius stigmaticus</i>	.	1	.	.	3	1	.	.	.	.	.	.	5
<b><i>Cynoscion</i> complex</b>	<b>5</b>	<b>24</b>	<b>2</b>	<b>11</b>	<b>332</b>	<b>93</b>	<b>140</b>	<b>63</b>	<b>169</b>	<b>75</b>	<b>47</b>	<b>39</b>	<b>1,000</b>
<b><i>Cynoscion nebulosus</i></b>	<b>3</b>	<b>8</b>	<b>11</b>	<b>8</b>	<b>3</b>	<b>14</b>	<b>29</b>	<b>16</b>	<b>25</b>	<b>30</b>	<b>7</b>	<b>17</b>	<b>171</b>
<b><i>Cynoscion nothus</i></b>	<b>1</b>	.	.	.	.	.	<b>1</b>	.	.	<b>2</b>	.	.	<b>4</b>
<i>Cyprinodon variegatus</i>	1	.	5	1	.	.	5	.	.	.	.	.	12
<i>Dasyatis sabina</i>	47	18	33	38	36	40	18	30	25	42	33	45	405
<i>Dasyatis say</i>	.	.	.	.	3	17	.	.	3	.	.	.	23
<i>Diapterus auratus</i>	9	5	1	1	13	12	6	18	31	31	49	19	195
<b><i>Diplectrum formosum</i></b>	.	.	.	.	.	.	.	.	.	<b>1</b>	.	<b>1</b>	<b>2</b>
<i>Dormitator maculatus</i>	.	.	.	.	.	.	.	1	.	.	.	.	1
<i>Dorosoma cepedianum</i>	4	2	2	.	4	.	3	8	18	109	69	18	237
<i>Dorosoma petenense</i>	4	.	.	.	9	66	5	256	91	298	432	52	1,213
<i>Elassoma evergladei</i>	.	.	.	.	.	.	.	.	.	.	1	.	1
<i>Elopiformes</i> sp.	.	.	.	.	.	.	.	.	.	.	1	.	1

Taxa	Month												Totals
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
	E=113	E=113	E=113	E=113	E=113	E=113	E=113	E=113	E=113	E=113	E=113	E=113	E=1,356
<i>Elops saurus</i>	7	12	20	34	98	10	18	11	24	12	3	3	252
<i>Epinephelus itajara</i>	.	.	.	.	.	.	.	.	1	.	.	.	1
<i>Erotelis smaragdus</i>	.	.	.	.	1	.	.	.	.	.	.	.	1
<i>Etropus crossotus</i>	21	7	16	34	3	18	26	34	25	43	41	83	351
<i>Eucinostomus gula</i>	7	6	1	.	3	.	5	19	36	12	15	29	133
<i>Eucinostomus harengulus</i>	76	56	39	35	80	65	145	359	126	240	137	149	1,507
<i>Eucinostomus melanopterus</i>	.	.	.	.	.	.	.	.	.	3	.	.	3
<i>Eucinostomus spp.</i>	87	19	5	13	31	58	164	293	437	354	177	154	1,792
<i>Evorthodus lyricus</i>	.	.	.	.	.	.	.	.	.	6	1	1	8
<i>Farfantepenaeus aztecus</i>	1	2	7	73	107	85	10	.	.	3	4	.	292
<i>Farfantepenaeus duorarum</i>	3	2	16	62	46	1	.	.	.	.	.	3	133
<i>Farfantepenaeus spp.</i>	38	16	63	245	524	76	25	31	41	42	33	31	1,165
<i>Fundulus confluentus</i>	.	.	4	.	.	.	.	.	.	1	.	1	6
<i>Fundulus heteroclitus</i>	75	29	177	48	52	107	3,104	339	33	1	2,182	17	6,164
<i>Fundulus majalis</i>	7	.	.	1	8	3	54	21	4	1	.	3	102
<i>Fundulus seminolis</i>	2	35	11	31	18	1	269	570	17	1	18	9	982
<i>Gambusia holbrooki</i>	1	6	110	32	12	2	7	.	4	10	7	.	191
<i>Gobiesox strumosus</i>	.	.	.	3	.	.	1	1	.	.	.	.	5
<i>Gobioides broussonetii</i>	5	.	2	21	8	10	.	7	1	.	.	.	54
<i>Gobionellus oceanicus</i>	5	1	5	17	15	18	2	1	4	5	8	3	84

Taxa	Month												Totals
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
	E=113	E=113	E=113	E=113	E=113	E=113	E=113	E=113	E=113	E=113	E=113	E=113	
<i>Gobiosoma bosc</i>	4	12	8	9	2	5	13	3	4	6	3	2	71
<i>Gobiosoma ginsburgi</i>	.	1	.	.	.	.	2	.	.	.	.	.	3
<i>Gobiosoma robustum</i>	1	1	.	.	.	.	.	.	.	.	.	.	2
<i>Gobiosoma</i> spp.	31	17	5	3	2	4	8	15	30	24	18	5	162
<i>Gymnura micrura</i>	.	1	1	1	2	4	4	3	2	2	.	.	20
<i>Harengula jaguana</i>	.	.	1	1	3	564	6	144	258	5	10	4	996
<i>Heterandria formosa</i>	.	.	1	.	.	.	.	.	.	.	.	.	1
<i>Hypsoblennius hentz</i>	.	.	.	1	.	.	2	.	.	.	.	.	3
<i>Hypsoblennius ionthas</i>	.	1	.	.	.	.	8	2	.	.	2	.	13
<i>Ictalurus punctatus</i>	67	93	18	19	15	9	3	3	2	22	48	28	327
<i>Labidesthes sicculus</i>	18	.	29	13	1	223	.	.	3	7	21	23	338
<i>Lagodon rhomboides</i>	12	10	51	15	27	37	49	37	18	18	4	2	280
<i>Larimus fasciatus</i>	.	.	.	.	.	.	.	.	2	.	.	.	2
<b><i>Leiostomus xanthurus</i></b>	<b>1,647</b>	<b>1,908</b>	<b>7,001</b>	<b>1,789</b>	<b>1,841</b>	<b>324</b>	<b>195</b>	<b>56</b>	<b>46</b>	<b>105</b>	<b>20</b>	<b>135</b>	<b>15,067</b>
<i>Lepisosteus osseus</i>	1	4	4	14	6	2	5	6	1	2	7	5	57
<i>Lepisosteus platyrhincus</i>	.	.	6	2	3	.	2	3	1	.	.	1	18
<i>Lepomis auritus</i>	15	32	16	10	6	11	10	11	14	12	9	11	157
<i>Lepomis macrochirus</i>	275	134	104	36	27	21	184	175	29	85	37	40	1,147
<i>Lepomis microlophus</i>	.	5	3	2	.	5	.	.	1	.	2	7	25
<i>Lepomis</i> spp.	36	.	.	.	.	77	50	4	44	4	.	1	216

Taxa	Month												Totals
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
	E=113	E=113	E=113	E=113	E=113	E=113	E=113	E=113	E=113	E=113	E=113	E=113	
<i>Limulus polyphemus</i>	1	2	1	.	1	.	.	.	.	1	2	.	8
<i>Litopenaeus setiferus</i>	88	83	61	129	202	6,057	3,975	1,956	991	2,779	2,562	857	19,740
<i>Lobotes surinamensis</i>	.	.	.	1	1	.	.	1	.	.	.	.	3
<i>Lucania goodei</i>	.	.	1	.	.	.	.	.	.	.	.	.	1
<i>Lucania parva</i>	.	.	.	.	.	2	4	.	1	.	.	.	7
<i>Lutjanus analis</i>	.	.	.	.	.	.	8	.	.	.	.	.	8
<i>Lutjanus griseus</i>	.	2	.	.	.	2	91	10	10	8	1	2	126
<i>Lutjanus synagris</i>	2	.	.	.	.	4	21	6	4	2	8	2	49
<i>Membras martinica</i>	.	.	.	2	.	1	23	116	11	11	1	1	166
<i>Menidia menidia</i>	333	166	324	159	356	1,211	710	1,084	127	102	66	127	4,765
<i>Menidia</i> spp.	1,402	3,135	546	593	367	739	1,938	1,934	790	854	360	383	13,041
<i>Menippe</i> spp.	.	2	.	1	2	.	1	.	.	1	2	.	9
<i>Menticirrhus americanus</i>	.	2	1	4	45	34	48	47	27	8	9	18	243
<i>Menticirrhus littoralis</i>	.	.	.	.	.	.	24	.	.	1	.	.	25
<i>Microgobius gulosus</i>	92	31	75	74	34	30	97	32	87	30	15	37	634
<i>Microgobius thalassinus</i>	.	.	.	1	.	1	3	1	9	1	5	1	22
<i>Microphis brachyurus</i>	.	.	.	.	.	.	.	.	.	.	1	.	1
<i>Micropogonias undulatus</i>	987	1,450	2,692	2,902	2,330	546	197	81	36	199	2,029	689	14,138
<i>Micropterus salmoides</i>	.	.	2	6	6	19	10	6	6	4	3	9	71
<i>Morone saxatilis</i>	.	.	.	.	.	.	.	1	1	.	.	.	2

Taxa	Month												Totals
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
	E=113	E=113	E=113	E=113	E=113	E=113	E=113	E=113	E=113	E=113	E=113	E=113	
<i>Morone</i> spp.	.	.	.	.	6	1	.	1	.	.	.	.	8
<b><i>Mugil cephalus</i></b>	<b>206</b>	<b>2,135</b>	<b>484</b>	<b>176</b>	<b>463</b>	<b>104</b>	<b>191</b>	<b>107</b>	<b>191</b>	<b>100</b>	<b>102</b>	<b>102</b>	<b>4,361</b>
<b><i>Mugil curema</i></b>	<b>61</b>	<b>57</b>	<b>43</b>	<b>54</b>	<b>345</b>	<b>91</b>	<b>114</b>	<b>43</b>	<b>45</b>	<b>75</b>	<b>73</b>	<b>26</b>	<b>1,027</b>
<i>Myrophis punctatus</i>	.	1	.	.	.	.	.	.	.	.	.	2	3
<i>Negaprion brevirostris</i>	.	.	.	.	.	.	.	.	1	.	.	.	1
<i>Notemigonus crysoleucas</i>	.	5	.	.	.	.	11	.	.	.	.	.	16
<i>Notropis maculatus</i>	.	.	.	123	.	1	.	.	.	.	.	.	124
<i>Ogcocephalus cubifrons</i>	.	.	1	.	2	.	.	2	.	.	1	.	6
<i>Oligoplites saurus</i>	.	.	.	.	.	11	16	15	10	8	5	.	65
<i>Opisthonema oglinum</i>	2	.	13	4	67	371	1	16	66	12	2	.	554
<i>Opsanus tau</i>	.	.	2	5	1	.	2	1	.	.	3	.	14
<i>Oreochromis</i> complex	.	.	.	1	.	.	85	.	5	.	2	1	94
<i>Sarotherodon</i> spp.	.	.	.	.	.	6	69	7	7	.	.	.	89
<i>Orthopristis chrysoptera</i>	.	.	3	3	19	8	25	3	.	2	.	.	63
<i>Paralichthyidae</i> spp.	.	.	4	.	.	.	.	.	.	.	.	.	4
<b><i>Paralichthys albigutta</i></b>	<b>4</b>	.	.	<b>6</b>	<b>3</b>	<b>2</b>	.	<b>3</b>	<b>2</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>23</b>
<b><i>Paralichthys dentatus</i></b>	.	.	<b>1</b>	<b>1</b>	<b>2</b>	.	.	.	.	<b>1</b>	.	<b>1</b>	<b>6</b>
<b><i>Paralichthys lethostigma</i></b>	<b>14</b>	<b>23</b>	<b>30</b>	<b>17</b>	<b>33</b>	<b>12</b>	<b>17</b>	<b>7</b>	<b>21</b>	<b>12</b>	<b>2</b>	<b>3</b>	<b>191</b>
<i>Paralichthys</i> spp.	.	.	2	.	.	.	.	.	.	.	.	.	2
<i>Pepilus paru</i>	.	.	2	.	1	.	.	.	.	4	1	.	8

Taxa	Month												Totals
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
	E=113	E=113	E=113	E=113	E=113	E=113	E=113	E=113	E=113	E=113	E=113	E=113	
<i>Peprilus triacanthus</i>	7	13	11	.	3	.	.	.	.	1	2	1	38
<i>Poecilia latipinna</i>	.	.	1	.	2	.	11	.	1	1	.	1	17
<b><i>Pogonias cromis</i></b>	1	.	.	2	.	.	.	1	5	1	1	.	11
<b><i>Pomatomus saltatrix</i></b>	.	1	3	1	.	1	1	.	.	.	.	4	11
<i>Pomoxis nigromaculatus</i>	1	2	.	1	2	.	.	.	1	17	9	18	51
<i>Portunus</i> spp.	1	1	2	.	.	5	12	4	.	1	2	6	34
<i>Prionotus carolinus</i>	.	.	.	4	1	.	.	.	.	.	1	2	8
<i>Prionotus evolans</i>	4	2	10	11	8	2	.	.	.	.	1	.	38
<i>Prionotus scitulus</i>	.	.	3	.	2	3	2	.	.	.	.	2	12
<i>Prionotus</i> sp.	.	.	.	.	.	.	.	.	.	.	1	.	1
<i>Prionotus tribulus</i>	4	2	4	9	4	.	.	.	4	2	4	9	42
<i>Pterygoplichthys</i> spp.	.	.	.	1	1	.	.	.	1	.	.	.	3
<i>Rhinoptera bonasus</i>	.	.	.	.	.	2	2	.	.	.	.	.	4
<i>Rimapenaeus constrictus</i>	.	.	18	15	.	.	.	.	.	.	1	.	34
<i>Rimapenaeus</i> spp.	7	1	51	2	23	28	6	5	3	10	43	.	179
<i>Sciaenidae</i> sp.	.	.	.	1	.	.	.	.	.	.	.	.	1
<b><i>Sciaenops ocellatus</i></b>	19	28	35	12	28	16	21	10	10	48	106	26	359
<b><i>Scomberomorus maculatus</i></b>	1	.	1	.	1	.	.	.	.	.	.	2	5
<i>Selene vomer</i>	.	.	.	.	3	1	2	.	1	5	10	2	24
<i>Sicyonia brevirostris</i>	.	.	.	1	.	.	.	.	.	.	.	.	1

Taxa	Month												Totals
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
	E=113	E=113	E=113	E=113	E=113	E=113	E=113	E=113	E=113	E=113	E=113	E=113	E=1,356
<i>Sphaeroides nephelus</i>	.	1	1	3	2	1	.	3	.	1	2	1	15
<i>Sphaeroides spengleri</i>	1	.	.	.	.	.	.	.	.	1	.	.	2
<b><i>Sphyraena barracuda</i></b>	.	.	.	.	.	.	1	.	.	.	1	.	2
<i>Sphyraena guachancho</i>	.	.	.	.	.	.	.	1	.	.	.	1	2
<b><i>Sphyrna tiburo</i></b>	1	.	.	.	2	1	.	4	.	2	1	.	11
<i>Stellifer lanceolatus</i>	5	2	2	15	101	25	198	92	25	80	1	9	555
<i>Stephanolepis hispidus</i>	1	1	1	.	.	.	8	2	1	4	8	3	29
<i>Stomolophus meleagris</i>	1	3	.	.	.	.	.	.	.	.	.	.	4
<i>Strongylura marina</i>	7	1	4	12	18	14	5	7	13	2	5	2	90
<i>Strongylura notata</i>	.	.	.	.	.	.	.	5	1	.	.	.	6
<i>Strongylura</i> spp.	.	.	5	29	9	11	8	2	2	2	.	.	68
<i>Symphurus civitatum</i>	.	1	4	.	.	.	.	.	.	.	.	.	5
<i>Symphurus plagiusa</i>	3	2	26	28	10	43	19	46	17	12	15	44	265
<i>Symphurus</i> sp.	.	.	1	.	.	.	.	.	.	.	.	.	1
<i>Syngnathus floridae</i>	.	.	.	1	.	.	.	.	.	.	.	.	1
<i>Syngnathus fuscus</i>	.	.	2	.	.	1	.	.	.	2	.	.	5
<i>Syngnathus louisianae</i>	1	.	2	1	2	1	.	8	6	1	10	6	38
<i>Syngnathus scovelli</i>	2	.	3	.	2	.	4	3	4	2	3	2	25
<i>Synodus foetens</i>	.	2	.	1	12	8	8	1	6	9	.	.	47
<b><i>Trachinotus carolinus</i></b>	.	.	.	.	.	13	7	1	.	.	.	.	21

Taxa	Month												Totals
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
	E=113	E=113	E=113	E=113	E=113	E=113	E=113	E=113	E=113	E=113	E=113	E=113	
<b><i>Trachinotus falcatus</i></b>	.	.	.	.	.	.	1	6	5	8	.	1	21
<i>Trichiurus lepturus</i>	.	.	1	.	1	.	.	.	.	.	.	.	2
<i>Trinectes maculatus</i>	282	51	134	54	91	80	110	35	84	130	102	138	1,291
<i>Urophycis floridana</i>	.	1	1	1	.	.	.	.	.	.	.	.	3
<i>Urophycis regia</i>	.	1	.	1	.	.	.	.	.	.	.	.	2
<i>Xiphopenaeus kroyeri</i>	.	.	5	.	.	.	3	.	3	.	.	.	11
<b>Totals</b>	<b>7,559</b>	<b>12,657</b>	<b>15,182</b>	<b>10,163</b>	<b>11,130</b>	<b>18,084</b>	<b>17,610</b>	<b>10,292</b>	<b>8,363</b>	<b>15,197</b>	<b>17,301</b>	<b>14,521</b>	<b>158,059</b>

Effort, or total number of hauls, is labeled 'E'. Taxa are arranged alphabetically. Selected taxa are highlighted in bold.

**Table 4.87:** Summary by gear and stratum of taxa collected during northeast Florida stratified-random sampling, 2022.

Taxa	Gear and Strata			Totals
	21.3-m river seine	183-m haul seine	6.1-m otter trawl	
	E=576	E=192	E=588	
<i>Achirus lineatus</i>	2	9	19	30
<i>Agonostomus monticola</i>	1	.	.	1
<i>Alosa aestivalis</i>	9	.	.	9
<i>Alosa mediocris</i>	40	1	1	42
<i>Alosa sapidissima</i>	5	.	2	7
<i>Alosa</i> sp.	.	.	1	1
<i>Ameiurus catus</i>	7	33	918	958
<i>Ameiurus nebulosus</i>	.	1	2	3
<i>Amia calva</i>	4	.	.	4
<i>Anchoa hepsetus</i>	1,762	2	232	1,996
<i>Anchoa lyolepis</i>	200	.	654	854
<i>Anchoa mitchilli</i>	34,048	.	10,697	44,745
<i>Anchoa</i> sp.	1	.	.	1
<i>Ancylosetta quadrocellata</i>	.	7	17	24
<i>Anguilla rostrata</i>	.	.	4	4
<i>Aphredoderus sayanus</i>	1	.	.	1
<b><i>Archosargus probatocephalus</i></b>	<b>12</b>	<b>76</b>	<b>31</b>	<b>119</b>
<i>Ariopsis felis</i>	.	68	278	346
<i>Astroscopus y-graecum</i>	.	.	1	1
<i>Bagre marinus</i>	.	12	20	32
<i>Bairdiella chrysoura</i>	2,326	871	875	4,072
<i>Bathygobius soporator</i>	79	.	10	89
<b><i>Brevoortia</i> spp.</b>	<b>429</b>	<b>245</b>	<b>24</b>	<b>698</b>
<i>Callinectes ornatus</i>	2	.	6	8
<b><i>Callinectes sapidus</i></b>	<b>322</b>	<b>90</b>	<b>916</b>	<b>1,328</b>
<i>Callinectes similis</i>	302	22	983	1,307

Taxa	Gear and Strata			Totals
	21.3-m river seine	183-m haul seine	6.1-m otter trawl	
	E=576	E=192	E=588	E=1,356
<i>Caranx hippos</i>	10	62	.	72
<i>Carcharhinus plumbeus</i>	.	6	.	6
<i>Centropomus undecimalis</i>	2	1	.	3
<i>Centropristis philadelphica</i>	1	.	7	8
<i>Centropristis striata</i>	.	.	2	2
<i>Chaetodipterus faber</i>	2	17	55	74
<i>Charybdis hellerii</i>	.	.	3	3
<i>Chasmodes bosquianus</i>	11	.	1	12
<i>Chasmodes saburrae</i>	1	.	.	1
<i>Chilomycterus schoepfii</i>	8	19	6	33
<i>Chloroscombrus chrysurus</i>	85	377	38	500
<i>Citharichthys spilopterus</i>	312	78	440	830
<i>Clupeidae</i> sp.	.	.	1	1
<i>Ctenogobius boleosoma</i>	347	.	34	381
<i>Ctenogobius shufeldti</i>	531	.	359	890
<i>Ctenogobius smaragdus</i>	37	.	4	41
<i>Ctenogobius</i> spp.	1	.	7	8
<i>Ctenogobius stigmaticus</i>	1	.	4	5
<b>Cynoscion complex</b>	<b>30</b>	<b>11</b>	<b>959</b>	<b>1,000</b>
<i>Cynoscion nebulosus</i>	97	61	13	171
<i>Cynoscion nothus</i>	.	.	4	4
<i>Cyprinodon variegatus</i>	12	.	.	12
<i>Dasyatis sabina</i>	24	231	150	405
<i>Dasyatis say</i>	.	22	1	23
<i>Diapterus auratus</i>	50	127	18	195
<i>Diplectrum formosum</i>	.	.	2	2
<i>Dormitator maculatus</i>	1	.	.	1
<i>Dorosoma cepedianum</i>	14	207	16	237

Taxa	Gear and Strata			Totals
	21.3-m river seine	183-m haul seine	6.1-m otter trawl	
	E=576	E=192	E=588	E=1,356
<i>Dorosoma petenense</i>	1,067	58	88	1,213
<i>Elassoma evergladei</i>	1	.	.	1
<i>Elopiformes</i> sp.	.	.	1	1
<b><i>Elops saurus</i></b>	<b>21</b>	<b>186</b>	<b>45</b>	<b>252</b>
<b><i>Epinephelus itajara</i></b>	.	.	<b>1</b>	<b>1</b>
<i>Erotelis smaragdus</i>	.	.	1	1
<i>Etropus crossotus</i>	52	65	234	351
<i>Eucinostomus gula</i>	70	43	20	133
<i>Eucinostomus harengulus</i>	1,163	285	59	1,507
<i>Eucinostomus melanopterus</i>	3	.	.	3
<i>Eucinostomus</i> spp.	1,732	.	60	1,792
<i>Evorthodus lyricus</i>	8	.	.	8
<b><i>Farfantepenaeus aztecus</i></b>	<b>41</b>	.	<b>251</b>	<b>292</b>
<b><i>Farfantepenaeus duorarum</i></b>	<b>37</b>	.	<b>96</b>	<b>133</b>
<b><i>Farfantepenaeus</i> spp.</b>	<b>644</b>	<b>10</b>	<b>511</b>	<b>1,165</b>
<i>Fundulus confluentus</i>	6	.	.	6
<i>Fundulus heteroclitus</i>	6,163	1	.	6,164
<i>Fundulus majalis</i>	101	1	.	102
<i>Fundulus seminolis</i>	982	.	.	982
<i>Gambusia holbrooki</i>	191	.	.	191
<i>Gobiesox strumosus</i>	3	.	2	5
<i>Gobioides broussonetii</i>	.	.	54	54
<i>Gobionellus oceanicus</i>	31	3	50	84
<i>Gobiosoma bosc</i>	52	.	19	71
<i>Gobiosoma ginsburgi</i>	.	.	3	3
<i>Gobiosoma robustum</i>	2	.	.	2
<i>Gobiosoma</i> spp.	139	.	23	162
<i>Gymnura micrura</i>	.	9	11	20

Taxa	Gear and Strata			Totals
	21.3-m river seine	183-m haul seine	6.1-m otter trawl	
	E=576	E=192	E=588	E=1,356
<i>Harengula jaguana</i>	976	16	4	996
<i>Heterandria formosa</i>	1	.	.	1
<i>Hypsoblennius hentz</i>	3	.	.	3
<i>Hypsoblennius ionthas</i>	8	.	5	13
<i>Ictalurus punctatus</i>	2	49	276	327
<i>Labidesthes sicculus</i>	338	.	.	338
<i>Lagodon rhomboides</i>	141	122	17	280
<i>Larimus fasciatus</i>	.	.	2	2
<b><i>Leiostomus xanthurus</i></b>	<b>12,522</b>	<b>583</b>	<b>1,962</b>	<b>15,067</b>
<i>Lepisosteus osseus</i>	6	45	6	57
<i>Lepisosteus platyrhincus</i>	13	2	3	18
<i>Lepomis auritus</i>	151	3	3	157
<i>Lepomis macrochirus</i>	1,117	7	23	1,147
<i>Lepomis microlophus</i>	7	7	11	25
<i>Lepomis</i> spp.	214	.	2	216
<i>Limulus polyphemus</i>	.	.	8	8
<b><i>Litopenaeus setiferus</i></b>	<b>12,524</b>	<b>322</b>	<b>6,894</b>	<b>19,740</b>
<b><i>Lobotes surinamensis</i></b>	<b>1</b>	<b>2</b>	.	<b>3</b>
<i>Lucania goodei</i>	1	.	.	1
<i>Lucania parva</i>	7	.	.	7
<b><i>Lutjanus analis</i></b>	<b>8</b>	.	.	<b>8</b>
<b><i>Lutjanus griseus</i></b>	<b>112</b>	<b>9</b>	<b>5</b>	<b>126</b>
<b><i>Lutjanus synagris</i></b>	<b>34</b>	<b>2</b>	<b>13</b>	<b>49</b>
<i>Membras martinica</i>	162	.	4	166
<i>Menidia menidia</i>	4,765	.	.	4,765
<i>Menidia</i> spp.	13,040	.	1	13,041
<b><i>Menippe</i> spp.</b>	.	<b>2</b>	<b>7</b>	<b>9</b>
<b><i>Menticirrhus americanus</i></b>	<b>87</b>	<b>19</b>	<b>137</b>	<b>243</b>

Taxa	Gear and Strata			Totals
	21.3-m river seine	183-m haul seine	6.1-m otter trawl	
	E=576	E=192	E=588	E=1,356
<b><i>Menticirrhus littoralis</i></b>	25	.	.	25
<i>Microgobius gulosus</i>	293	.	341	634
<i>Microgobius thalassinus</i>	11	.	11	22
<i>Microphis brachyurus</i>	1	.	.	1
<b><i>Micropogonias undulatus</i></b>	871	120	13,147	14,138
<i>Micropterus salmoides</i>	67	1	3	71
<i>Morone saxatilis</i>	2	.	.	2
<i>Morone</i> spp.	1	.	7	8
<b><i>Mugil cephalus</i></b>	2,851	1,510	.	4,361
<b><i>Mugil curema</i></b>	255	772	.	1,027
<i>Myrophis punctatus</i>	.	.	3	3
<b><i>Negaprion brevirostris</i></b>	.	1	.	1
<i>Notemigonus crysoleucas</i>	16	.	.	16
<i>Notropis maculatus</i>	121	.	3	124
<i>Ogcocephalus cubifrons</i>	.	1	5	6
<i>Oligoplites saurus</i>	60	5	.	65
<i>Opisthonema oglinum</i>	476	29	49	554
<i>Opsanus tau</i>	.	2	12	14
<i>Oreochromis</i> complex	91	2	1	94
<i>Sarotherodon</i> spp.	89	.	.	89
<i>Orthopristis chrysoptera</i>	38	2	23	63
<i>Paralichthyidae</i> spp.	4	.	.	4
<b><i>Paralichthys albigutta</i></b>	6	5	12	23
<b><i>Paralichthys dentatus</i></b>	.	2	4	6
<b><i>Paralichthys lethostigma</i></b>	40	35	116	191
<i>Paralichthys</i> spp.	.	.	2	2
<i>Peprilus paru</i>	.	1	7	8
<i>Peprilus triacanthus</i>	3	4	31	38

Taxa	Gear and Strata			Totals
	21.3-m river seine	183-m haul seine	6.1-m otter trawl	
	E=576	E=192	E=588	E=1,356
<i>Poecilia latipinna</i>	17	.	.	17
<b><i>Pogonias cromis</i></b>	.	11	.	11
<b><i>Pomatomus saltatrix</i></b>	.	11	.	11
<i>Pomoxis nigromaculatus</i>	4	1	46	51
<i>Portunus</i> spp.	9	.	25	34
<i>Prionotus carolinus</i>	.	.	8	8
<i>Prionotus evolans</i>	1	.	37	38
<i>Prionotus scitulus</i>	3	.	9	12
<i>Prionotus</i> sp.	.	.	1	1
<i>Prionotus tribulus</i>	7	1	34	42
<i>Pterygoplichthys</i> spp.	1	.	2	3
<i>Rhinoptera bonasus</i>	.	3	1	4
<i>Rimapenaeus constrictus</i>	.	.	34	34
<i>Rimapenaeus</i> spp.	8	.	171	179
<i>Sciaenidae</i> sp.	.	.	1	1
<b><i>Sciaenops ocellatus</i></b>	<b>124</b>	<b>126</b>	<b>109</b>	<b>359</b>
<b><i>Scomberomorus maculatus</i></b>	.	3	2	5
<i>Selene vomer</i>	.	15	9	24
<i>Sicyonia brevirostris</i>	.	.	1	1
<i>Sphoeroides nephelus</i>	3	2	10	15
<i>Sphoeroides spengleri</i>	.	.	2	2
<b><i>Sphyraena barracuda</i></b>	<b>2</b>	.	.	<b>2</b>
<i>Sphyraena guachancho</i>	1	.	1	2
<b><i>Sphyrna tiburo</i></b>	.	11	.	11
<i>Stellifer lanceolatus</i>	.	.	555	555
<i>Stephanolepis hispidus</i>	13	.	16	29
<i>Stomolophus meleagris</i>	.	4	.	4
<i>Strongylura marina</i>	34	56	.	90

Taxa	Gear and Strata			Totals
	21.3-m river seine	183-m haul seine	6.1-m otter trawl	
	E=576	E=192	E=588	
<i>Strongylura notata</i>	.	6	.	6
<i>Strongylura</i> spp.	68	.	.	68
<i>Symphurus civitatum</i>	.	.	5	5
<i>Symphurus plagiosa</i>	124	.	141	265
<i>Symphurus</i> sp.	.	.	1	1
<i>Syngnathus floridae</i>	.	.	1	1
<i>Syngnathus fuscus</i>	1	.	4	5
<i>Syngnathus louisianae</i>	20	.	18	38
<i>Syngnathus scovelli</i>	16	.	9	25
<i>Synodus foetens</i>	15	4	28	47
<b><i>Trachinotus carolinus</i></b>	<b>20</b>	<b>1</b>	.	<b>21</b>
<b><i>Trachinotus falcatus</i></b>	<b>15</b>	<b>6</b>	.	<b>21</b>
<i>Trichiurus lepturus</i>	.	.	2	2
<i>Trinectes maculatus</i>	45	25	1,221	1,291
<i>Urophycis floridana</i>	.	.	3	3
<i>Urophycis regia</i>	.	.	2	2
<i>Xiphopenaeus kroyeri</i>	1	.	10	11
<b>Totals</b>	<b>105,751</b>	<b>7,285</b>	<b>45,023</b>	<b>158,059</b>

Sampling with 21.3-m river seine and 183-m haul seine was stratified by the presence or absence of overhanging vegetation ('Over' or 'Nonover'). Sampling with 6.1-m otter trawl was not stratified. Effort, or the total number of hauls, is labeled 'E'. Taxa are arranged alphabetically. Selected taxa are highlighted in bold.

**Table 4.88:** Summary by zone of taxa collected during northeast Florida stratified-random sampling, 2022.

Taxa	Zone						Totals
	A	B	C	D	E	F	
	E=204	E=204	E=276	E=288	E=192	E=192	E=1,356
<i>Achirus lineatus</i>	8	7	7	6	2	.	30
<i>Agonostomus monticola</i>	.	.	.	.	1	.	1
<i>Alosa aestivalis</i>	.	.	9	.	.	.	9
<i>Alosa mediocris</i>	.	1	1	3	2	35	42
<i>Alosa sapidissima</i>	.	1	.	1	3	2	7
<i>Alosa</i> sp.	.	.	.	1	.	.	1
<i>Ameiurus catus</i>	19	20	2	95	361	461	958
<i>Ameiurus nebulosus</i>	.	.	.	1	1	1	3
<i>Amia calva</i>	.	.	.	.	2	2	4
<i>Anchoa hepsetus</i>	171	1,155	525	144	1	.	1,996
<i>Anchoa lyolepis</i>	2	106	734	12	.	.	854
<i>Anchoa mitchilli</i>	9,141	4,722	5,353	5,713	8,835	10,981	44,745
<i>Anchoa</i> sp.	.	.	.	.	1	.	1
<i>Ancylopsetta quadrocellata</i>	17	5	2	.	.	.	24
<i>Anguilla rostrata</i>	.	.	.	1	.	3	4
<i>Aphredoderus sayanus</i>	.	.	.	.	.	1	1
<b><i>Archosargus probatocephalus</i></b>	<b>2</b>	<b>19</b>	<b>69</b>	<b>29</b>	.	.	<b>119</b>
<i>Ariopsis felis</i>	41	122	100	82	1	.	346
<i>Astroscopus y-graecum</i>	.	1	.	.	.	.	1
<i>Bagre marinus</i>	5	15	11	1	.	.	32
<i>Bairdiella chrysoura</i>	1,077	845	1,087	1,030	29	4	4,072
<i>Bathygobius soporator</i>	14	43	26	6	.	.	89
<b><i>Brevoortia</i> spp.</b>	<b>70</b>	<b>330</b>	<b>167</b>	<b>17</b>	<b>27</b>	<b>87</b>	<b>698</b>
<i>Callinectes ornatus</i>	2	1	5	.	.	.	8
<b><i>Callinectes sapidus</i></b>	<b>205</b>	<b>170</b>	<b>242</b>	<b>351</b>	<b>162</b>	<b>198</b>	<b>1,328</b>
<i>Callinectes similis</i>	889	186	224	8	.	.	1,307
<b><i>Caranx hippos</i></b>	<b>3</b>	<b>22</b>	<b>30</b>	<b>16</b>	<b>1</b>	.	<b>72</b>

Taxa	Zone						Totals
	A	B	C	D	E	F	
	E=204	E=204	E=276	E=288	E=192	E=192	E=1,356
<i>Carcharhinus plumbeus</i>	5	.	1	.	.	.	6
<i>Centropomus undecimalis</i>	.	.	2	1	.	.	3
<i>Centropristis philadelphica</i>	5	1	2	.	.	.	8
<i>Centropristis striata</i>	.	1	1	.	.	.	2
<i>Chaetodipterus faber</i>	26	38	9	1	.	.	74
<i>Charybdis hellerii</i>	.	1	2	.	.	.	3
<i>Chasmodes bosquianus</i>	1	8	3	.	.	.	12
<i>Chasmodes saburrae</i>	1	.	.	.	.	.	1
<i>Chilomycterus schoepfii</i>	6	10	17	.	.	.	33
<i>Chloroscombrus chrysurus</i>	18	23	452	7	.	.	500
<i>Citharichthys spilopterus</i>	195	167	191	154	61	62	830
<i>Clupeidae</i> sp.	.	.	1	.	.	.	1
<i>Ctenogobius boleosoma</i>	105	51	173	50	2	.	381
<i>Ctenogobius shufeldti</i>	57	9	51	348	336	89	890
<i>Ctenogobius smaragdus</i>	5	3	33	.	.	.	41
<i>Ctenogobius</i> spp.	.	1	7	.	.	.	8
<i>Ctenogobius stigmaticus</i>	.	1	4	.	.	.	5
<b><i>Cynoscion</i> complex</b>	<b>86</b>	<b>210</b>	<b>170</b>	<b>208</b>	<b>249</b>	<b>77</b>	<b>1,000</b>
<b><i>Cynoscion nebulosus</i></b>	<b>22</b>	<b>48</b>	<b>73</b>	<b>25</b>	<b>3</b>	.	<b>171</b>
<b><i>Cynoscion nothus</i></b>	<b>4</b>	.	.	.	.	.	<b>4</b>
<i>Cyprinodon variegatus</i>	.	12	.	.	.	.	12
<i>Dasyatis sabina</i>	64	62	118	81	31	49	405
<i>Dasyatis say</i>	3	15	5	.	.	.	23
<i>Diapterus auratus</i>	2	8	110	73	.	2	195
<b><i>Diplectrum formosum</i></b>	<b>2</b>	.	.	.	.	.	<b>2</b>
<i>Dormitator maculatus</i>	.	.	.	1	.	.	1
<i>Dorosoma cepedianum</i>	.	.	95	122	1	19	237
<i>Dorosoma petenense</i>	8	1	60	39	368	737	1,213
<i>Elassoma evergladei</i>	.	.	.	.	1	.	1

Taxa	Zone						Totals
	A	B	C	D	E	F	
	E=204	E=204	E=276	E=288	E=192	E=192	
<i>Elopiformes</i> sp.	1	.	.	.	.	.	1
<b><i>Elops saurus</i></b>	<b>26</b>	<b>48</b>	<b>45</b>	<b>123</b>	<b>2</b>	<b>8</b>	<b>252</b>
<b><i>Epinephelus itajara</i></b>	.	<b>1</b>	.	.	.	.	<b>1</b>
<i>Erotelis smaragdus</i>	.	.	1	.	.	.	1
<i>Etropus crossotus</i>	179	70	99	3	.	.	351
<i>Eucinostomus gula</i>	16	20	77	20	.	.	133
<i>Eucinostomus harengulus</i>	75	90	530	545	179	88	1,507
<i>Eucinostomus melanopterus</i>	.	3	.	.	.	.	3
<i>Eucinostomus</i> spp.	46	262	1,005	273	124	82	1,792
<i>Evorthodus lyricus</i>	.	.	4	4	.	.	8
<b><i>Farfantepenaeus aztecus</i></b>	<b>53</b>	<b>153</b>	<b>42</b>	<b>33</b>	<b>11</b>	.	<b>292</b>
<b><i>Farfantepenaeus duorarum</i></b>	<b>82</b>	<b>45</b>	<b>5</b>	<b>1</b>	.	.	<b>133</b>
<b><i>Farfantepenaeus</i> spp.</b>	<b>185</b>	<b>489</b>	<b>279</b>	<b>204</b>	<b>8</b>	.	<b>1,165</b>
<i>Fundulus confluentus</i>	1	.	1	.	.	4	6
<i>Fundulus heteroclitus</i>	2,675	3,211	236	42	.	.	6,164
<i>Fundulus majalis</i>	59	15	28	.	.	.	102
<i>Fundulus seminolis</i>	.	.	.	10	22	950	982
<i>Gambusia holbrooki</i>	22	4	20	37	92	16	191
<i>Gobiesox strumosus</i>	.	4	1	.	.	.	5
<i>Gobioides broussonetii</i>	.	.	.	52	2	.	54
<i>Gobionellus oceanicus</i>	2	6	21	50	1	4	84
<i>Gobiosoma bosc</i>	4	3	16	14	20	14	71
<i>Gobiosoma ginsburgi</i>	.	.	3	.	.	.	3
<i>Gobiosoma robustum</i>	.	.	.	.	.	2	2
<i>Gobiosoma</i> spp.	.	4	2	31	82	43	162
<i>Gymnura micrura</i>	11	6	3	.	.	.	20
<i>Harengula jaguana</i>	41	655	299	1	.	.	996
<i>Heterandria formosa</i>	.	.	.	.	1	.	1
<i>Hypsoblennius hentz</i>	1	2	.	.	.	.	3

Taxa	Zone						Totals
	A	B	C	D	E	F	
	E=204	E=204	E=276	E=288	E=192	E=192	E=1,356
<i>Hypsoblennius ionthas</i>	3	4	6	.	.	.	13
<i>Ictalurus punctatus</i>	4	1	.	69	47	206	327
<i>Labidesthes sicculus</i>	.	.	.	299	11	28	338
<i>Lagodon rhomboides</i>	29	27	132	63	28	1	280
<i>Larimus fasciatus</i>	.	2	.	.	.	.	2
<b><i>Leiostomus xanthurus</i></b>	<b>3,179</b>	<b>1,034</b>	<b>6,459</b>	<b>3,394</b>	<b>669</b>	<b>332</b>	<b>15,067</b>
<i>Lepisosteus osseus</i>	16	5	.	29	3	4	57
<i>Lepisosteus platyrhincus</i>	.	2	.	3	10	3	18
<i>Lepomis auritus</i>	.	.	.	20	28	109	157
<i>Lepomis macrochirus</i>	.	1	.	56	92	998	1,147
<i>Lepomis microlophus</i>	.	.	.	13	2	10	25
<i>Lepomis spp.</i>	.	.	.	6	75	135	216
<i>Limulus polyphemus</i>	7	1	.	.	.	.	8
<b><i>Litopenaeus setiferus</i></b>	<b>4,098</b>	<b>4,031</b>	<b>6,018</b>	<b>3,324</b>	<b>1,282</b>	<b>987</b>	<b>19,740</b>
<b><i>Lobotes surinamensis</i></b>	<b>1</b>	<b>.</b>	<b>2</b>	<b>.</b>	<b>.</b>	<b>.</b>	<b>3</b>
<i>Lucania goodei</i>	.	.	.	1	.	.	1
<i>Lucania parva</i>	.	.	.	2	1	4	7
<b><i>Lutjanus analis</i></b>	<b>.</b>	<b>8</b>	<b>.</b>	<b>.</b>	<b>.</b>	<b>.</b>	<b>8</b>
<b><i>Lutjanus griseus</i></b>	<b>3</b>	<b>91</b>	<b>18</b>	<b>14</b>	<b>.</b>	<b>.</b>	<b>126</b>
<b><i>Lutjanus synagris</i></b>	<b>12</b>	<b>33</b>	<b>4</b>	<b>.</b>	<b>.</b>	<b>.</b>	<b>49</b>
<i>Membras martinica</i>	4	2	9	125	15	11	166
<i>Menidia menidia</i>	1,055	1,713	1,967	29	.	1	4,765
<i>Menidia spp.</i>	179	64	172	1,145	2,546	8,935	13,041
<b><i>Menippe spp.</i></b>	<b>2</b>	<b>1</b>	<b>6</b>	<b>.</b>	<b>.</b>	<b>.</b>	<b>9</b>
<b><i>Menticirrhus americanus</i></b>	<b>55</b>	<b>91</b>	<b>95</b>	<b>2</b>	<b>.</b>	<b>.</b>	<b>243</b>
<b><i>Menticirrhus littoralis</i></b>	<b>7</b>	<b>18</b>	<b>.</b>	<b>.</b>	<b>.</b>	<b>.</b>	<b>25</b>
<i>Microgobius gulosus</i>	.	.	1	172	220	241	634
<i>Microgobius thalassinus</i>	1	2	15	3	.	1	22
<i>Microphis brachyurus</i>	.	.	.	.	1	.	1

Taxa	Zone						Totals
	A	B	C	D	E	F	
	E=204	E=204	E=276	E=288	E=192	E=192	
<b><i>Micropogonias undulatus</i></b>	686	1,830	537	4,363	2,437	4,285	14,138
<i>Micropterus salmoides</i>	.	.	.	32	12	27	71
<i>Morone saxatilis</i>	.	.	.	.	.	2	2
<i>Morone</i> spp.	.	.	.	.	.	8	8
<b><i>Mugil cephalus</i></b>	464	1,672	1,024	938	138	125	4,361
<b><i>Mugil curema</i></b>	77	124	610	205	1	10	1,027
<i>Myrophis punctatus</i>	.	.	1	.	.	2	3
<b><i>Negaprion brevirostris</i></b>	1	.	.	.	.	.	1
<i>Notemigonus crysoleucas</i>	.	.	.	.	.	16	16
<i>Notropis maculatus</i>	.	.	.	124	.	.	124
<i>Ogcocephalus cubifrons</i>	2	3	1	.	.	.	6
<i>Oligoplites saurus</i>	13	9	18	18	7	.	65
<i>Opisthonema oglinum</i>	21	397	89	47	.	.	554
<i>Opsanus tau</i>	3	3	8	.	.	.	14
<i>Oreochromis</i> complex	.	.	2	.	6	86	94
<i>Sarotherodon</i> spp.	.	.	.	3	16	70	89
<i>Orthopristis chrysoptera</i>	6	22	33	2	.	.	63
<i>Paralichthyidae</i> spp.	4	.	.	.	.	.	4
<b><i>Paralichthys albigutta</i></b>	13	5	5	.	.	.	23
<b><i>Paralichthys dentatus</i></b>	1	1	4	.	.	.	6
<b><i>Paralichthys lethostigma</i></b>	20	36	50	35	29	21	191
<i>Paralichthys</i> spp.	1	.	1	.	.	.	2
<i>Peprilus paru</i>	3	1	4	.	.	.	8
<i>Peprilus triacanthus</i>	15	14	9	.	.	.	38
<i>Poecilia latipinna</i>	.	12	1	2	1	1	17
<b><i>Pogonias cromis</i></b>	2	1	8	.	.	.	11
<b><i>Pomatomus saltatrix</i></b>	4	6	1	.	.	.	11
<i>Pomoxis nigromaculatus</i>	.	.	.	18	8	25	51
<i>Portunus</i> spp.	13	16	5	.	.	.	34

Taxa	Zone						Totals
	A	B	C	D	E	F	
	E=204	E=204	E=276	E=288	E=192	E=192	E=1,356
<i>Prionotus carolinus</i>	3	1	4	.	.	.	8
<i>Prionotus evolans</i>	31	.	7	.	.	.	38
<i>Prionotus scitululus</i>	2	4	6	.	.	.	12
<i>Prionotus</i> sp.	.	1	.	.	.	.	1
<i>Prionotus tribulus</i>	21	7	14	.	.	.	42
<i>Pterygoplichthys</i> spp.	.	.	.	1	.	2	3
<i>Rhinoptera bonasus</i>	.	1	3	.	.	.	4
<i>Rimapenaeus constrictus</i>	33	1	.	.	.	.	34
<i>Rimapenaeus</i> spp.	112	59	8	.	.	.	179
<i>Sciaenidae</i> sp.	.	.	.	1	.	.	1
<b><i>Sciaenops ocellatus</i></b>	<b>3</b>	<b>22</b>	<b>138</b>	<b>157</b>	<b>20</b>	<b>19</b>	<b>359</b>
<b><i>Scomberomorus maculatus</i></b>	<b>1</b>	<b>3</b>	<b>1</b>	.	.	.	<b>5</b>
<i>Selene vomer</i>	5	6	12	1	.	.	24
<i>Sicyonia brevirostris</i>	1	.	.	.	.	.	1
<i>Sphoeroides nephelus</i>	2	5	8	.	.	.	15
<i>Sphoeroides spengleri</i>	.	.	2	.	.	.	2
<b><i>Sphyaena barracuda</i></b>	.	.	<b>2</b>	.	.	.	<b>2</b>
<i>Sphyaena guachancho</i>	1	1	.	.	.	.	2
<b><i>Sphyrna tiburo</i></b>	<b>3</b>	<b>6</b>	<b>2</b>	.	.	.	<b>11</b>
<i>Stellifer lanceolatus</i>	281	230	15	29	.	.	555
<i>Stephanolepis hispidus</i>	7	17	5	.	.	.	29
<i>Stomolophus meleagris</i>	4	.	.	.	.	.	4
<i>Strongylura marina</i>	4	1	55	10	8	12	90
<i>Strongylura notata</i>	.	1	5	.	.	.	6
<i>Strongylura</i> spp.	.	1	1	17	17	32	68
<i>Symphurus civitatum</i>	4	.	.	1	.	.	5
<i>Symphurus plagiusa</i>	92	67	62	44	.	.	265
<i>Symphurus</i> sp.	.	.	1	.	.	.	1
<i>Syngnathus floridae</i>	.	.	1	.	.	.	1

Taxa	Zone						Totals
	A	B	C	D	E	F	
	E=204	E=204	E=276	E=288	E=192	E=192	E=1,356
<i>Syngnathus fuscus</i>	2	.	2	1	.	.	5
<i>Syngnathus louisianae</i>	18	12	6	2	.	.	38
<i>Syngnathus scovelli</i>	2	1	7	7	5	3	25
<i>Synodus foetens</i>	12	13	22	.	.	.	47
<b><i>Trachinotus carolinus</i></b>	<b>4</b>	<b>13</b>	<b>4</b>	.	.	.	<b>21</b>
<b><i>Trachinotus falcatus</i></b>	<b>1</b>	<b>5</b>	<b>15</b>	.	.	.	<b>21</b>
<i>Trichiurus lepturus</i>	1	1	.	.	.	.	2
<i>Trinectes maculatus</i>	89	68	19	481	461	173	1,291
<i>Urophycis floridana</i>	3	.	.	.	.	.	3
<i>Urophycis regia</i>	1	1	.	.	.	.	2
<i>Xiphopenaeus kroyeri</i>	10	1	.	.	.	.	11
<b>Totals</b>	<b>26,517</b>	<b>25,364</b>	<b>30,633</b>	<b>25,378</b>	<b>19,221</b>	<b>30,946</b>	<b>158,059</b>

Effort, or the total number of hauls, is labeled 'E'. Taxa are arranged alphabetically. selected taxa are highlighted in bold.

## 4.9 Northern Indian River Lagoon

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

The Fisheries-Independent Monitoring (FIM) program has conducted intensive sampling of fish and selected invertebrates in the northern IRL since 1990. The area sampled was divided into six geographically-defined bay zones (A–E and H) and one riverine zone that includes Turkey Creek and St. Sebastian River (F; Figure 4.9). Zones A and B were dropped from the sampling universe in [INSERT YEAR HERE]. Monthly stratified-random sampling (SRS) was conducted in Zones C, D, and H using 21.3-m bay and 183-m haul seines. Monthly SRS was conducted in Zone E with only 183-m haul seines. Zone F was sampled monthly with 21.3-m river seines. All methods were the same as those described in Chapter 2. This section summarizes data collected by the FIM program during 2022 in the northern IRL.

### Stratified-Random Sampling

A total of 258,316 animals, which included 156 taxa of fishes and 12 taxa of selected invertebrates, were collected from 654 northern Indian River Lagoon SRS samples in 2022 (Table 4.89). *Anchoa mitchilli* (n=165,023) was the most numerous taxon collected, representing 63.9% of the total catch. *Diapterus auratus* (n=19,070) and *Eucinostomus spp.* (n=13,994) were the next most abundant taxa collected, accounting for an additional 12.8% of the total catch. A total of 42 selected taxa (n=13,709 animals) composed 5.3% of the total catch. *Mugil curema* (n=4,158) was the most abundant Selected Taxon, representing 1.6% of the total catch. *Mugil cephalus* (n=3,709), *Farfantepenaeus spp.* (n=686), *Centropomus undecimalis* (n=646), and *Leiostomus xanthurus* (n=589) were the next most abundant selected taxa, comprising 2.2% of the total catch. Collections in 2022 included 1 species new to the northern Indian River Lagoon FIM collection: *Diplectrum formosum*.



**Figure 4.9:** Map of the northern Indian River Lagoon sampling area. Zones are labeled C–E (bay zones), F (river zone), and H (bay zone).

**Table 4.89:** Summary of catch and effort data for northern Indian River Lagoon stratified-random sampling, 2022.

Zone	21.3-m bay seine		21.3-m river seine		183-m haul seine		Totals	
	Animals	Hauls	Animals	Hauls	Animals	Hauls	Animals	Hauls
C	52,965	120	.	.	12,054	48	65,019	168
D	14,038	96	.	.	5,160	72	19,198	168
E	.	.	.	.	5,336	48	5,336	48
F	.	.	65,674	90	.	.	65,674	90
H	83,146	120	.	.	19,943	60	103,089	180
<b>Totals</b>	<b>150,149</b>	<b>336</b>	<b>65,674</b>	<b>90</b>	<b>42,493</b>	<b>228</b>	<b>258,316</b>	<b>654</b>

## Bay Sampling

### *21.3-m Bay Seines*

A total of 150,149 animals were collected in 336 21.3-m bay seines, representing 58.1% of the overall SRS catch (Table 4.89). *Anchoa mitchilli* (n=112,753) and *Eucinostomus spp.* (n=9,377) were the most abundant taxa, accounting for 81.3% of the bay seine catch (Table 4.90). The taxa most frequently caught in 21.3-m bay seines were *Eucinostomus spp.* (47.3% occurrence) and *Anchoa mitchilli* (38.1% occurrence).

A total of 4,983 animals from 30 selected taxa were collected, representing 3.3% of the entire 21.3-m bay seine catch (Table 4.91). *Mugil cephalus* (n=2,648) was the most abundant Selected Taxon, accounting for 53.1% of the selected taxa collected by this gear. The selected taxa most frequently caught in 21.3-m bay seines were *Farfantepenaeus spp.* (29.8% occurrence) and *Cynoscion nebulosus* (16.7% occurrence).

**Table 4.90:** Catch statistics for 10 dominant taxa collected in 336 21.3-m bay seine samples during northern Indian River Lagoon stratified-random sampling, 2022.

Species	Number			Density Estimate (animals/100m <sup>2</sup> )				Standard Length (mm)			
	No.	%	% Occur	Mean	Stderr	CV	Max	Mean	Stderr	Min	Max
<i>Anchoa mitchilli</i>	112,753	75.1	38.1	237.57	79.81	618.55	17,942.86	32	0.03	15	84
<i>Eucinostomus</i> spp.	9,377	6.2	47.3	20.17	3.80	343.58	701.43	25	0.08	8	67
<i>Harengula jaguana</i>	6,514	4.3	8.0	14.23	9.73	1,237.05	3,120.00	42	0.18	18	106
<i>Bairdiella chrysoura</i>	2,812	1.9	21.1	5.92	1.43	444.95	285.00	40	0.40	6	125
<i>Mugil cephalus</i>	2,648	1.8	8.9	5.86	2.69	824.49	766.43	22	0.20	16	277
<i>Menidia</i> spp.	2,531	1.7	24.4	5.43	1.28	428.70	318.57	42	0.25	12	90
<i>Opisthonema oglinum</i>	2,192	1.5	8.3	4.73	1.85	710.78	462.86	34	0.24	21	72
<i>Diapterus auratus</i>	1,327	0.9	35.7	2.80	0.41	271.93	88.57	39	0.60	11	138
<i>Eugerres plumieri</i>	996	0.7	16.7	2.15	0.71	598.38	207.14	30	0.50	8	186
<i>Microgobius gulosus</i>	777	0.5	38.1	1.71	0.36	377.77	86.43	29	0.27	11	57
Subtotals	141,927	94.6	.	.	.	.	.	.	.	6	277
<b>Totals</b>	<b>150,149</b>	<b>100.0</b>	.	<b>332.04</b>	<b>84.65</b>	<b>467.32</b>	<b>18,417.14</b>	.	.	<b>2</b>	<b>679</b>

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.

**Table 4.91:** Catch statistics for selected taxa collected in 336 21.3-m bay seine samples during northern Indian River Lagoon stratified-random sampling, 2022.

Species	Number			Density Estimate (animals/100m <sup>2</sup> )				Standard Length (mm)			
	No.	%	% Occur	Mean	Stderr	CV	Max	Mean	Stderr	Min	Max
<i>Mugil cephalus</i>	2,648	1.8	8.9	5.63	2.58	841.11	766.43	22	0.20	16	277
<i>Farfantepenaeus</i> spp.	560	0.4	29.8	1.19	0.28	432.55	80.00	6	0.13	2	20
<i>Leiostomus xanthurus</i>	334	0.2	7.1	0.71	0.27	694.62	65.00	47	1.12	14	102
<i>Menticirrhus americanus</i>	314	0.2	11.3	0.67	0.29	791.80	90.71	49	1.48	10	111
<i>Sciaenops ocellatus</i>	203	0.1	9.8	0.43	0.20	833.85	60.71	34	2.25	8	291
<i>Cynoscion nebulosus</i>	184	0.1	16.7	0.39	0.08	391.17	20.00	34	1.44	9	134
<i>Brevoortia</i> spp.	143	0.1	3.9	0.30	0.19	1,134.22	61.43	24	0.21	17	31
<i>Mugil curema</i>	120	0.1	12.8	0.26	0.06	441.57	13.57	92	3.44	19	194
<i>Callinectes sapidus</i>	102	0.1	11.0	0.22	0.06	508.74	13.57	35	4.40	3	192
<i>Litopenaeus setiferus</i>	89	0.1	4.5	0.19	0.08	733.75	15.71	9	0.39	3	16
<i>Micropogonias undulatus</i>	64	<0.1	3.3	0.14	0.06	861.38	14.29	20	1.21	13	60
<i>Archosargus probatocephalus</i>	41	<0.1	6.0	0.09	0.02	490.48	4.29	78	10.51	16	263
<i>Trachinotus falcatus</i>	35	<0.1	3.0	0.07	0.03	797.79	7.86	24	2.13	8	59
<i>Lutjanus analis</i>	24	<0.1	0.3	0.05	0.05	1,833.03	17.14	24	0.60	21	34
<i>Cynoscion</i> complex	19	<0.1	2.4	0.04	0.02	885.14	5.71	44	3.76	16	79
<i>Lutjanus griseus</i>	18	<0.1	5.1	0.04	0.01	444.97	1.43	66	16.51	14	228
<i>Farfantepenaeus aztecus</i>	14	<0.1	3.0	0.03	0.01	634.53	2.14	17	0.58	15	23
<i>Lutjanus synagris</i>	14	<0.1	0.3	0.03	0.03	1,833.03	10.00	32	2.76	22	49
<i>Albula</i> spp.	13	<0.1	1.8	0.03	0.01	853.10	2.86	40	4.70	21	69

Species	Number		Density Estimate (animals/100m <sup>2</sup> )				Standard Length (mm)				
	No.	% Occur	Mean	Stderr	CV	Max	Mean	Stderr	Min	Max	
<i>Centropomus undecimalis</i>	12	<0.1	2.1	0.03	0.01	742.73	2.14	151	59.86	20	559
<i>Pogonias cromis</i>	7	<0.1	1.8	0.01	0.01	780.36	1.43	288	50.08	8	409
<i>Lobotes surinamensis</i>	5	<0.1	0.6	0.01	0.01	1,510.49	2.86	38	9.70	13	63
<i>Elops saurus</i>	4	<0.1	1.2	0.01	<0.01	912.40	0.71	230	26.02	182	276
<i>Mugil rubrioculus</i>	4	<0.1	0.6	0.01	0.01	1,447.84	2.14	75	22.94	51	144
<i>Sphyraena barracuda</i>	4	<0.1	1.2	0.01	<0.01	912.40	0.71	115	29.08	81	202
<i>Farfantepenaeus duorarum</i>	3	<0.1	0.9	0.01	<0.01	1,055.14	0.71	18	2.00	16	22
<i>Haemulon parra</i>	2	<0.1	0.6	<0.01	<0.01	1,294.21	0.71	44	25.00	19	69
<i>Carcharhinus leucas</i>	1	<0.1	0.3	<0.01	<0.01	1,833.03	0.71	679	.	679	679
<i>Diplectrum formosum</i>	1	<0.1	0.3	<0.01	<0.01	1,833.03	0.71	67	.	67	67
<i>Paralichthys albigutta</i>	1	<0.1	0.3	<0.01	<0.01	1,833.03	0.71	37	.	37	37
<b>Totals</b>	<b>4,983</b>	<b>3.3</b>	<b>.</b>	<b>10.59</b>	<b>2.67</b>	<b>462.84</b>	<b>767.86</b>	<b>.</b>	<b>.</b>	<b>2</b>	<b>679</b>

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.

### **183-m Haul Seines**

A total of 42,493 animals were collected in 228 183-m haul seines, representing 16.5% of the overall SRS catch (Table 4.89). *Diapterus auratus* (n=15,167) was the most abundant taxon, accounting for 35.7% of the 183-m haul seine catch (Table 4.92). The taxa most frequently caught in 183-m haul seines were *Mugil curema* (78.1% occurrence), *Dasyatis sabina* (66.7% occurrence), and *Ariopsis felis* (58.3% occurrence).

A total of 7,840 animals from 37 selected taxa were collected, representing 18.5% of the entire 183-m haul seine catch (Table 4.93). *Mugil curema* (n=3,998) and *Mugil cephalus* (n=1,050) were the most abundant selected taxa, accounting for 64.4% of the selected taxa collected by this gear. The selected taxa most frequently caught in 183-m haul seines were *Mugil curema* (78.1% occurrence) and *Mugil cephalus* (57.9% occurrence).

**Table 4.92:** Catch statistics for 10 dominant taxa collected in 228 183-m haul seine samples during northern Indian River Lagoon stratified-random sampling, 2022.

Species	Number			Density Estimate (animals/set)				Standard Length (mm)			
	No.	%	% Occur	Mean	Stderr	CV	Max	Mean	Stderr	Min	Max
<i>Diapterus auratus</i>	15,167	35.7	57.5	65.94	11.60	266.76	1,642	106	0.18	54	282
<i>Harengula jaguana</i>	4,244	10.0	22.4	18.61	7.06	572.62	1,198	107	0.15	74	163
<i>Mugil curema</i>	3,998	9.4	78.1	17.54	2.85	245.47	321	137	0.42	71	332
<i>Eucinostomus harengulus</i>	3,260	7.7	53.1	14.30	2.61	275.12	399	103	0.20	51	147
<i>Ariopsis felis</i>	2,609	6.1	58.3	11.39	1.64	218.33	206	240	0.75	71	389
<i>Lagodon rhomboides</i>	2,109	5.0	34.2	9.01	2.63	447.03	480	121	0.39	64	252
<i>Eucinostomus gula</i>	1,439	3.4	33.8	6.31	1.78	424.84	333	88	0.27	57	195
<i>Bairdiella chrysoura</i>	1,193	2.8	20.2	5.23	1.88	541.99	313	116	0.27	59	216
<i>Mugil cephalus</i>	1,050	2.5	57.9	4.61	1.37	448.47	294	246	1.55	109	435
<i>Dasyatis sabina</i>	1,041	2.4	66.7	4.57	1.20	397.75	264	241	1.17	108	441
Subtotals	36,110	85.0	.	.	.	.	.	.	.	51	441
<b>Totals</b>	<b>42,493</b>	<b>100.0</b>	.	<b>186.37</b>	<b>18.54</b>	<b>150.24</b>	<b>2,022</b>	.	.	<b>20</b>	<b>1,615</b>

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.

**Table 4.93:** Catch statistics for selected taxa collected in 228 183-m haul seine samples during northern Indian River Lagoon stratified-random sampling, 2022.

Species	Number			Density Estimate (animals/set)				Standard Length (mm)			
	No.	%	% Occur	Mean	Stderr	CV	Max	Mean	Stderr	Min	Max
<i>Mugil curema</i>	3,998	9.4	78.1	17.54	2.85	245.47	321	137	0.42	71	332
<i>Mugil cephalus</i>	1,050	2.5	57.9	4.61	1.37	448.47	294	246	1.55	109	435
<i>Elops saurus</i>	584	1.4	32.9	2.56	0.55	324.48	84	265	1.94	96	479
<i>Archosargus probatocephalus</i>	274	0.6	35.5	1.20	0.19	235.28	27	212	4.81	71	411
<i>Leiostomus xanthurus</i>	242	0.6	12.3	1.06	0.34	481.91	52	145	2.08	54	198
<i>Caranx hippos</i>	232	0.5	22.8	1.02	0.20	297.05	27	205	5.85	72	441
<i>Centropomus undecimalis</i>	219	0.5	26.8	0.96	0.17	267.68	19	473	12.07	141	861
<i>Menticirrhus americanus</i>	191	0.4	11.8	0.84	0.31	563.31	63	162	1.51	119	226
<i>Pogonias cromis</i>	177	0.4	17.5	0.78	0.20	392.69	28	358	8.45	122	728
<i>Sciaenops ocellatus</i>	160	0.4	29.8	0.70	0.10	211.01	9	390	13.70	104	913
<i>Lutjanus griseus</i>	139	0.3	11.0	0.61	0.39	957.08	87	176	2.49	115	261
<i>Brevoortia</i> spp.	115	0.3	7.9	0.50	0.17	502.98	23	198	3.20	84	274
<i>Trachinotus falcatus</i>	97	0.2	5.7	0.43	0.21	734.03	36	152	8.76	49	324
<i>Cynoscion nebulosus</i>	84	0.2	13.6	0.37	0.12	511.16	25	200	9.73	105	503
<i>Callinectes sapidus</i>	81	0.2	14.5	0.36	0.09	392.88	15	110	4.28	45	179
<i>Micropogonias undulatus</i>	49	0.1	7.9	0.21	0.06	430.68	7	189	4.68	125	264
<i>Mugil rubrioculus</i>	25	0.1	3.5	0.11	0.06	894.27	14	126	3.46	96	174
<i>Trachinotus carolinus</i>	22	0.1	4.4	0.10	0.04	591.23	6	284	20.44	62	415
<i>Megalops atlanticus</i>	20	<0.1	5.3	0.09	0.03	503.30	4	632	27.31	412	832

Species	Number			Density Estimate (animals/set)				Standard Length (mm)			
	No.	%	% Occur	Mean	Stderr	CV	Max	Mean	Stderr	Min	Max
<i>Sphyræna barracuda</i>	18	<0.1	4.4	0.08	0.03	643.46	6	275	9.59	204	349
<i>Sphyrna tiburo</i>	14	<0.1	1.8	0.06	0.04	973.67	8	712	20.29	542	796
<i>Lutjanus analis</i>	13	<0.1	3.9	0.06	0.02	549.20	3	140	9.23	93	189
<i>Haemulon parra</i>	8	<0.1	1.8	0.04	0.02	796.26	3	99	4.75	80	126
<i>Cynoscion complex</i>	5	<0.1	1.8	0.02	0.01	794.46	2	170	16.40	124	213
<i>Scomberomorus maculatus</i>	5	<0.1	1.8	0.02	0.01	794.46	2	270	22.94	201	323
<i>Farfantepenaeus duorarum</i>	3	<0.1	0.4	0.01	0.01	1,509.97	3	34	8.76	20	50
<i>Carcharhinus leucas</i>	2	<0.1	0.9	0.01	0.01	1,065.35	1	668	61.50	606	729
<i>Farfantepenaeus aztecus</i>	2	<0.1	0.9	0.01	0.01	1,065.35	1	24	2.50	21	26
<i>Litopenaeus setiferus</i>	2	<0.1	0.9	0.01	0.01	1,065.35	1	20	0.50	20	21
<i>Pomatomus saltatrix</i>	2	<0.1	0.9	0.01	0.01	1,065.35	1	310	57.00	253	367
<i>Caranx crysos</i>	1	<0.1	0.4	<0.01	<0.01	1,509.97	1	255	.	255	255
<i>Centropomus parallelus</i>	1	<0.1	0.4	<0.01	<0.01	1,509.97	1	210	.	210	210
<i>Lobotes surinamensis</i>	1	<0.1	0.4	<0.01	<0.01	1,509.97	1	322	.	322	322
<i>Lutjanus synagris</i>	1	<0.1	0.4	<0.01	<0.01	1,509.97	1	63	.	63	63
<i>Menippe spp.</i>	1	<0.1	0.4	<0.01	<0.01	1,509.97	1	112	.	112	112
<i>Paralichthys albigutta</i>	1	<0.1	0.4	<0.01	<0.01	1,509.97	1	213	.	213	213
<i>Paralichthys lethostigma</i>	1	<0.1	0.4	<0.01	<0.01	1,509.97	1	271	.	271	271
<b>Totals</b>	<b>7,840</b>	<b>18.5</b>	<b>.</b>	<b>34.39</b>	<b>3.46</b>	<b>152.02</b>	<b>324</b>	<b>.</b>	<b>.</b>	<b>20</b>	<b>913</b>

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.

## River Sampling

### *21.3-m River Seines*

A total of 65,674 animals were collected in 90 21.3-m river seines, representing 25.4% of the overall SRS catch (Table 4.89). *Anchoa mitchilli* (n=52,270) was the most abundant taxon collected, accounting for 79.6% of the 21.3-m river seine catch (Table 4.94). *Eucinostomus spp.* (n=4,617) and *Diapterus auratus* (n=2,576) were the next most abundant taxa, accounting for an additional 11% of the 21.3-m river seine catch. The taxa most frequently caught in 21.3-m river seines were *Diapterus auratus* (78.9% occurrence), *Eucinostomus spp.* (75.6% occurrence), and *Eucinostomus harengulus* (60.0% occurrence).

A total of 886 animals from 20 selected taxa were collected, representing 1.3% of the entire 21.3-m river seine catch (Table 4.95). *Centropomus undecimalis* (n=415), and *Callinectes sapidus* (n=129) were the most abundant selected taxa, accounting for 61.4% of the selected taxa collected by this gear. The selected taxa most frequently caught in 21.3-m river seines were *Centropomus undecimalis* (55.6% occurrence) and *Callinectes sapidus* (25.6% occurrence).

**Table 4.94:** Catch statistics for 10 dominant taxa collected in 90 21.3-m river seine samples during northern Indian River Lagoon stratified-random sampling, 2022.

Species	Number			Density Estimate (animals/100m <sup>2</sup> )				Standard Length (mm)			
	No.	%	% Occur	Mean	Stderr	CV	Max	Mean	Stderr	Min	Max
<i>Anchoa mitchilli</i>	52,270	79.6	32.2	809.13	381.67	459.76	30,235.29	26	0.02	17	49
<i>Eucinostomus</i> spp.	4,617	7.0	75.6	73.01	13.86	183.03	755.88	25	0.10	9	39
<i>Diapterus auratus</i>	2,576	3.9	78.9	34.44	8.52	259.43	733.82	37	0.34	11	148
<i>Eugerres plumieri</i>	2,041	3.1	50.0	29.72	10.61	358.65	760.29	25	0.48	7	240
<i>Eucinostomus harengulus</i>	749	1.1	60.0	11.84	2.84	231.27	223.53	52	0.42	40	109
<i>Anchoa lyolepis</i>	493	0.8	1.1	8.06	7.84	923.72	705.88	43	0.20	38	51
<i>Lophogobius cyprinoides</i>	422	0.6	42.2	6.97	2.17	293.07	133.82	23	0.35	11	45
<i>Centropomus undecimalis</i>	415	0.6	55.6	6.29	1.22	190.36	63.24	39	1.80	10	388
<i>Menidia</i> spp.	284	0.4	31.1	4.69	1.34	269.82	86.76	33	0.64	12	69
<i>Lagodon rhomboides</i>	239	0.4	2.2	3.95	3.93	939.41	350.00	46	0.53	30	72
Subtotals	64,106	97.5	.	.	.	.	.	.	.	7	388
<b>Totals</b>	<b>65,674</b>	<b>100.0</b>	.	<b>1,085.16</b>	<b>409.68</b>	<b>358.16</b>	<b>31,027.94</b>	.	.	<b>2</b>	<b>495</b>

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.

**Table 4.95:** Catch statistics for selected taxa collected in 90 21.3-m river seine samples during northern Indian River Lagoon stratified-random sampling, 2022.

Species	Number			Density Estimate (animals/100m <sup>2</sup> )				Standard Length (mm)			
	No.	%	% Occur	Mean	Stderr	CV	Max	Mean	Stderr	Min	Max
<i>Centropomus undecimalis</i>	415	0.6	55.6	6.78	1.31	183.35	63.24	39	1.80	10	388
<i>Callinectes sapidus</i>	129	0.2	25.6	2.11	0.86	384.99	54.41	21	2.98	5	176
<i>Farfantepenaeus</i> spp.	126	0.2	25.6	2.06	0.65	297.28	32.35	5	0.20	2	13
<i>Brevoortia</i> spp.	57	0.1	5.6	0.93	0.61	625.54	52.94	30	1.09	18	43
<i>Mugil curema</i>	40	0.1	5.6	0.65	0.56	808.17	50.00	39	3.92	18	109
<i>Micropogonias undulatus</i>	30	<0.1	4.4	0.49	0.32	624.77	22.06	15	1.20	10	47
<i>Archosargus probatocephalus</i>	17	<0.1	14.4	0.28	0.09	295.82	5.88	171	20.60	31	332
<i>Litopenaeus setiferus</i>	14	<0.1	6.7	0.23	0.10	419.08	5.88	7	0.84	3	14
<i>Leiostomus xanthurus</i>	13	<0.1	3.3	0.21	0.17	745.21	14.71	42	5.10	17	66
<i>Lutjanus griseus</i>	13	<0.1	10.0	0.21	0.07	320.90	2.94	139	14.51	38	228
<i>Mugil cephalus</i>	11	<0.1	7.8	0.18	0.08	403.59	4.41	256	12.63	198	339
<i>Sphyraena barracuda</i>	5	<0.1	3.3	0.08	0.05	624.77	4.41	61	22.43	29	150
<i>Trachinotus falcatus</i>	5	<0.1	1.1	0.08	0.08	948.68	7.35	19	0.97	16	21
<i>Sciaenops ocellatus</i>	4	<0.1	2.2	0.07	0.05	747.47	4.41	64	7.09	43	72
<i>Cynoscion</i> complex	2	<0.1	1.1	0.03	0.03	948.68	2.94	50	12.50	37	62
<i>Centropomus pectinatus</i>	1	<0.1	1.1	0.02	0.02	948.68	1.47	29	.	29	29
<i>Cynoscion nebulosus</i>	1	<0.1	1.1	0.02	0.02	948.68	1.47	42	.	42	42
<i>Epinephelus itajara</i>	1	<0.1	1.1	0.02	0.02	948.68	1.47	229	.	229	229
<i>Paralichthys albigutta</i>	1	<0.1	1.1	0.02	0.02	948.68	1.47	262	.	262	262

Species	Number			Density Estimate (animals/100m <sup>2</sup> )				Standard Length (mm)			
	No.	%	% Occur	Mean	Stderr	CV	Max	Mean	Stderr	Min	Max
<i>Pomatomus saltatrix</i>	1	<0.1	1.1	0.02	0.02	948.68	1.47	38	.	38	38
<b>Totals</b>	<b>886</b>	<b>1.3</b>	<b>.</b>	<b>14.48</b>	<b>2.05</b>	<b>134.56</b>	<b>102.94</b>	<b>.</b>	<b>.</b>	<b>2</b>	<b>388</b>

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.

## Appendix

**Table 4.96:** Monthly summary of taxa collected during northern Indian River Lagoon stratified-random sampling, 2022.

Taxa	Month												Totals
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
	E=57	E=57	E=47	E=57	E=47	E=57	E=47	E=57	E=57	E=57	E=57	E=57	E=654
<i>Acanthostracion quadricornis</i>	1	.	.	.	.	.	.	.	.	.	2	.	3
<i>Achirus lineatus</i>	8	18	11	2	.	14	9	5	15	16	21	9	128
<i>Aetobatus narinari</i>	.	.	.	.	.	2	.	.	.	1	.	.	3
<i>Agonostomus monticola</i>	.	.	.	.	.	.	.	.	.	14	1	1	16
<b><i>Albula</i> spp.</b>	.	.	.	<b>3</b>	<b>4</b>	<b>4</b>	.	.	.	<b>1</b>	.	<b>1</b>	<b>13</b>
<i>Anchoa cubana</i>	.	.	.	.	.	.	1	.	.	6	.	.	7
<i>Anchoa hepsetus</i>	.	1	.	2	2	3	2	.	.	.	.	.	10
<i>Anchoa lyolepis</i>	.	.	.	.	1	.	.	.	3	243	836	.	1,083
<i>Anchoa mitchilli</i>	11,128	2,954	4,529	5,761	4,774	3,317	251	728	15,906	11,522	85,936	18,217	165,023
<i>Anisotremus virginicus</i>	.	.	.	.	.	.	.	1	.	.	.	.	1
<b><i>Archosargus probatocephalus</i></b>	<b>9</b>	<b>10</b>	<b>30</b>	<b>40</b>	<b>23</b>	<b>39</b>	<b>53</b>	<b>39</b>	<b>27</b>	<b>27</b>	<b>25</b>	<b>10</b>	<b>332</b>
<i>Archosargus rhomboidalis</i>	16	4	10	11	2	12	11	169	118	96	66	61	576
<i>Archosargus</i> spp.	1	.	.	3	.	.	.	.	.	.	.	.	4
<i>Ariopsis felis</i>	38	48	263	212	219	301	380	311	254	491	167	94	2,778
<i>Bagre marinus</i>	.	2	11	4	12	5	12	8	6	23	4	2	89
<i>Bairdiella chrysoura</i>	6	23	131	725	337	269	644	790	27	492	241	320	4,005
<i>Bathygobius soporator</i>	.	.	1	1	5	1	.	1	.	1	1	.	11

Taxa	Month												Totals
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
	E=57	E=57	E=47	E=57	E=47	E=57	E=47	E=57	E=57	E=57	E=57	E=57	E=654
<b>Brevoortia spp.</b>	7	7	110	67	5	35	22	20	2	3	14	23	315
<i>Callinectes ornatus</i>	1	.	1	1	10	2	6	.	.	4	1	2	28
<b>Callinectes sapidus</b>	72	27	25	21	5	8	10	24	43	35	13	29	312
<i>Callinectes similis</i>	1	6	7	8	3	3	13	2	.	.	.	18	61
<i>Callinectes</i> spp.	.	.	1	.	3	.	.	.	.	.	1	10	15
<b>Caranx crysos</b>	.	.	.	.	.	.	.	.	.	1	.	.	1
<b>Caranx hippos</b>	17	10	54	7	24	33	13	4	5	14	35	16	232
<i>Carcharhinus leucas</i>	.	.	.	1	.	1	.	.	.	1	.	.	3
<b>Centropomus parallelus</b>	.	.	.	.	.	.	.	.	.	1	.	.	1
<b>Centropomus pectinatus</b>	.	.	.	.	.	1	.	.	.	.	.	.	1
<i>Centropomus</i> sp.	.	.	.	.	.	1	.	.	.	.	.	.	1
<b>Centropomus undecimalis</b>	24	40	13	29	39	75	22	66	84	133	70	51	646
<i>Chaetodipterus faber</i>	.	.	3	.	6	2	6	6	4	9	4	.	40
<i>Chasmodes saburrae</i>	.	.	4	3	.	2	49	11	1	2	.	2	74
<i>Chilomycterus schoepfii</i>	4	13	10	10	9	5	2	9	14	47	11	10	144
<i>Chloroscombrus chrysurus</i>	.	.	1	.	.	5	.	.	.	9	9	2	26
<i>Cichlasoma urophthalmus</i>	8	5	.	8	.	38	.	1	.	.	.	5	65
<i>Citharichthys spilopterus</i>	3	3	30	9	14	4	2	.	13	2	5	14	99
<i>Corvula sanctaeluciae</i>	1	.	.	.	.	.	.	.	.	.	.	.	1
<i>Ctenogobius boleosoma</i>	.	.	1	.	.	.	.	.	.	.	.	2	3

Taxa	Month												Totals
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
	E=57	E=57	E=47	E=57	E=47	E=57	E=47	E=57	E=57	E=57	E=57	E=57	
<i>Ctenogobius pseudofasciatus</i>	1	.	.	.	.	.	.	.	.	.	.	.	1
<i>Ctenogobius smaragdus</i>	.	.	2	.	.	.	1	.	.	.	.	1	4
<b>Cynoscion complex</b>	5	.	.	2	.	2	1	8	3	3	1	1	26
<b><i>Cynoscion nebulosus</i></b>	3	4	12	5	3	11	44	15	63	71	27	11	269
<i>Cyprinodon variegatus</i>	.	.	.	7	.	.	3	.	.	.	.	.	10
<i>Dasyatis americana</i>	.	.	.	.	.	.	.	.	.	.	1	.	1
<i>Dasyatis sabina</i>	64	51	76	50	82	63	334	54	57	57	118	78	1,084
<i>Dasyatis say</i>	14	5	48	21	9	24	26	17	18	18	49	12	261
<i>Diapterus auratus</i>	1,074	3,309	923	920	1,585	2,752	2,385	1,432	1,869	896	931	994	19,070
<i>Diapterus rhombeus</i>	1	11	14	1	.	101	106	7	48	.	5	19	313
<i>Diapterus</i> spp.	.	.	.	.	.	.	.	.	.	.	.	2	2
<b><i>Diplectrum formosum</i></b>	.	.	.	.	.	.	.	.	.	.	1	.	1
<i>Diplodus holbrookii</i>	1	.	60	.	.	.	.	.	.	.	.	.	61
<i>Dormitator maculatus</i>	1	2	.	.	.	.	.	.	1	.	.	.	4
<i>Echeneis naucrates</i>	.	.	.	.	.	.	.	.	.	1	.	.	1
<i>Echeneis neucratoides</i>	.	.	.	.	.	.	.	.	.	1	.	1	2
<i>Echeneis</i> sp.	.	.	.	1	.	.	.	.	.	.	.	.	1
<i>Eleotridae</i> sp.	.	.	.	1	.	.	.	.	.	.	.	.	1
<i>Eleotris amblyopsis</i>	1	.	.	1	.	.	.	.	.	.	.	.	2
<b><i>Elops saurus</i></b>	13	90	81	61	38	76	13	13	60	113	7	23	588

Taxa	Month												Totals
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
	E=57	E=57	E=47	E=57	E=47	E=57	E=47	E=57	E=57	E=57	E=57	E=57	E=654
<i>Elops</i> sp.	.	.	.	.	.	.	.	.	.	.	.	1	1
<i>Enneacanthus gloriosus</i>	.	.	.	.	.	.	.	.	.	1	.	.	1
<b><i>Epinephelus itajara</i></b>	.	.	.	.	.	.	.	.	1	.	.	.	1
<i>Etheostoma fusiforme</i>	.	.	.	.	.	.	.	.	.	.	.	1	1
<i>Eucinostomus argenteus</i>	.	.	.	.	.	.	18	.	.	.	.	.	18
<i>Eucinostomus gula</i>	503	89	173	121	88	180	172	308	160	76	302	93	2,265
<i>Eucinostomus harengulus</i>	191	475	520	486	510	380	413	522	315	194	221	441	4,668
<i>Eucinostomus jonesii</i>	4	.	82	20	13	4	1	2	5	7	42	19	199
<i>Eucinostomus melanopterus</i>	.	.	.	.	.	.	.	.	.	1	.	.	1
<i>Eucinostomus</i> spp.	1,309	1,563	163	160	52	290	905	729	802	1,640	3,904	2,477	13,994
<i>Eugerres plumieri</i>	117	10	31	91	92	1,982	152	341	176	125	67	84	3,268
<i>Evorthodus lyricus</i>	.	.	.	.	.	26	.	.	3	.	.	1	30
<b><i>Farfantepenaeus aztecus</i></b>	.	1	.	3	3	.	.	1	.	1	5	2	16
<b><i>Farfantepenaeus duorarum</i></b>	.	2	.	.	.	.	3	.	1	.	.	.	6
<b><i>Farfantepenaeus</i> spp.</b>	<b>76</b>	<b>34</b>	<b>137</b>	<b>35</b>	<b>10</b>	<b>32</b>	<b>7</b>	<b>19</b>	<b>60</b>	<b>56</b>	<b>175</b>	<b>45</b>	<b>686</b>
<i>Floridichthys carpio</i>	24	1	.	15	1	3	28	173	123	18	2	31	419
<i>Fundulus seminolis</i>	.	.	.	.	.	.	.	.	.	.	.	1	1
<i>Fundulus similis</i>	.	.	1	.	.	.	.	.	.	.	.	.	1
<i>Gambusia holbrooki</i>	7	10	.	11	.	37	.	4	1	8	9	8	95
<i>Gerreidae</i> spp.	.	.	.	.	.	.	.	.	79	15	.	.	94

Taxa	Month												Totals
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
	E=57	E=57	E=47	E=57	E=47	E=57	E=47	E=57	E=57	E=57	E=57	E=57	E=654
<i>Gerres cinereus</i>	5	2	.	.	2	10	18	11	14	16	10	27	115
<i>Gobiesox strumosus</i>	.	.	.	.	.	.	1	1	.	.	.	.	2
<i>Gobioides broussonetii</i>	.	.	.	.	.	.	.	.	.	.	1	.	1
<i>Gobiomorus dormitor</i>	.	2	.	.	.	.	.	.	.	.	.	.	2
<i>Gobionellus oceanicus</i>	.	.	.	.	.	.	.	1	.	.	1	.	2
<i>Gobiosoma bosc</i>	1	5	.	.	.	3	1	.	.	.	.	.	10
<i>Gobiosoma robustum</i>	9	30	78	8	21	36	195	43	50	3	15	12	500
<i>Gobiosoma spp.</i>	15	2	13	6	5	40	62	32	103	34	31	54	397
<i>Gymnura micrura</i>	1	2	2	1	.	1	2	.	.	1	.	3	13
<b><i>Haemulon parra</i></b>	.	.	.	<b>6</b>	.	<b>1</b>	.	.	.	.	.	<b>3</b>	<b>10</b>
<i>Harengula jaguana</i>	1,241	19	939	1,109	7	36	6,194	26	7	49	972	162	10,761
<i>Heterandria formosa</i>	.	.	.	.	.	.	.	.	.	2	.	.	2
<i>Hippocampus erectus</i>	.	.	1	.	.	.	.	.	.	.	.	1	2
<i>Hippocampus zosterae</i>	.	1	.	.	.	.	.	.	.	.	.	.	1
<i>Hyporhamphus sp.</i>	.	.	.	.	1	.	.	.	.	.	.	.	1
<i>Labidesthes sicculus</i>	40	27	.	.	.	.	.	.	2	7	18	20	114
<i>Lactophrys trigonus</i>	1	.	.	.	.	.	.	.	.	.	.	.	1
<i>Lagodon rhomboides</i>	83	12	64	302	49	216	395	521	175	141	337	120	2,415
<b><i>Leiostomus xanthurus</i></b>	.	<b>13</b>	<b>137</b>	<b>190</b>	<b>66</b>	<b>47</b>	<b>59</b>	<b>20</b>	.	.	<b>56</b>	<b>1</b>	<b>589</b>
<i>Lepisosteus platyrhincus</i>	1	1	.	.	.	.	.	.	.	.	.	.	2

Taxa	Month												Totals
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
	E=57	E=57	E=47	E=57	E=47	E=57	E=47	E=57	E=57	E=57	E=57	E=57	E=654
<i>Lepomis gulosus</i>	.	.	.	.	.	.	.	.	.	2	.	.	2
<i>Lepomis macrochirus</i>	.	.	.	.	.	1	.	.	.	3	.	4	8
<i>Lepomis microlophus</i>	.	.	.	.	.	.	.	.	.	2	.	4	6
<i>Lepomis</i> spp.	.	.	.	.	.	.	.	.	2	25	.	3	30
<i>Limulus polyphemus</i>	2	3	.	14	3	.	1	4	3	3	2	1	36
<b><i>Litopenaeus setiferus</i></b>	<b>5</b>	<b>2</b>	.	.	.	<b>11</b>	.	.	<b>3</b>	<b>2</b>	<b>79</b>	<b>3</b>	<b>105</b>
<b><i>Lobotes surinamensis</i></b>	.	.	.	.	.	.	.	.	.	<b>4</b>	<b>2</b>	.	<b>6</b>
<i>Lophogobius cyprinoides</i>	5	19	.	44	.	266	.	64	6	8	9	3	424
<i>Lucania goodei</i>	.	.	.	1	.	.	.	.	.	2	.	.	3
<i>Lucania parva</i>	5	29	15	304	98	.	85	52	20	1	2	5	616
<i>Lupinoblennius nicholsi</i>	.	1	.	.	.	.	.	.	.	1	.	.	2
<b><i>Lutjanus analis</i></b>	<b>3</b>	.	.	<b>1</b>	.	.	.	.	<b>1</b>	<b>1</b>	<b>25</b>	<b>6</b>	<b>37</b>
<b><i>Lutjanus griseus</i></b>	<b>9</b>	.	<b>2</b>	<b>14</b>	<b>2</b>	<b>3</b>	<b>5</b>	<b>13</b>	<b>15</b>	<b>8</b>	<b>94</b>	<b>5</b>	<b>170</b>
<b><i>Lutjanus synagris</i></b>	<b>1</b>	.	.	.	.	.	.	.	.	.	<b>14</b>	.	<b>15</b>
<b><i>Megalops atlanticus</i></b>	.	.	.	<b>4</b>	<b>2</b>	.	<b>4</b>	.	<b>2</b>	<b>6</b>	<b>1</b>	<b>1</b>	<b>20</b>
<i>Membras martinica</i>	1	.	.	8	.	42	2	80	.	1	127	2	263
<i>Menidia</i> spp.	261	219	180	457	179	216	280	266	73	442	115	127	2,815
<i>Menippe</i> sp.	.	.	.	.	.	1	.	.	.	.	.	.	1
<b><i>Menticirrhus americanus</i></b>	.	.	<b>23</b>	<b>32</b>	<b>33</b>	<b>136</b>	<b>37</b>	<b>9</b>	<b>43</b>	<b>104</b>	<b>81</b>	<b>7</b>	<b>505</b>
<i>Microgobius gulosus</i>	19	24	26	28	38	189	118	28	116	144	47	55	832

Taxa	Month												Totals
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
	E=57	E=57	E=47	E=57	E=47	E=57	E=47	E=57	E=57	E=57	E=57	E=57	
<i>Microgobius microlepis</i>	.	.	.	.	1	3	7	1	63	109	11	.	195
<i>Microgobius thalassinus</i>	.	.	.	.	.	.	1	2	1	1	.	.	5
<i>Microphis brachyurus</i>	.	.	.	.	.	3	.	.	.	.	.	.	3
<b><i>Micropogonias undulatus</i></b>	<b>2</b>	<b>8</b>	<b>17</b>	<b>3</b>	<b>4</b>	<b>10</b>	<b>11</b>	<b>4</b>	<b>3</b>	<b>4</b>	<b>47</b>	<b>30</b>	<b>143</b>
<i>Micropterus salmoides</i>	.	.	.	10	.	4	.	.	.	.	.	.	14
<i>Monacanthus ciliatus</i>	.	.	.	.	.	.	.	.	.	.	3	.	3
<b><i>Mugil cephalus</i></b>	<b>50</b>	<b>2,075</b>	<b>615</b>	<b>75</b>	<b>105</b>	<b>29</b>	<b>79</b>	<b>87</b>	<b>34</b>	<b>351</b>	<b>92</b>	<b>117</b>	<b>3,709</b>
<b><i>Mugil curema</i></b>	<b>1,297</b>	<b>794</b>	<b>305</b>	<b>386</b>	<b>179</b>	<b>114</b>	<b>222</b>	<b>89</b>	<b>171</b>	<b>204</b>	<b>189</b>	<b>208</b>	<b>4,158</b>
<b><i>Mugil rubrioculus</i></b>	.	<b>22</b>	<b>1</b>	<b>1</b>	.	<b>3</b>	.	.	<b>1</b>	.	<b>1</b>	.	<b>29</b>
<i>Mugil spp.</i>	.	.	.	.	.	.	.	.	.	17	31	1	49
<i>Oligoplites saurus</i>	9	13	62	19	19	24	40	34	105	69	24	120	538
<i>Opisthonema oglinum</i>	13	.	59	38	168	134	1,448	364	53	367	55	1	2,700
<i>Opsanus tau</i>	.	.	.	2	.	1	1	.	.	2	.	.	6
<i>Sarotherodon sp.</i>	.	.	.	.	.	.	.	.	1	.	.	.	1
<i>Orthopristis chrysoptera</i>	36	.	12	2	1	.	12	8	3	19	5	2	100
<b><i>Paralichthys albigutta</i></b>	.	.	.	<b>2</b>	.	.	.	.	<b>1</b>	.	.	.	<b>3</b>
<b><i>Paralichthys lethostigma</i></b>	.	.	.	.	.	.	.	.	.	.	<b>1</b>	.	<b>1</b>
<i>Penaeus monodon</i>	.	1	.	.	.	.	.	.	.	.	.	.	1
<i>Poecilia latipinna</i>	.	.	.	.	.	.	.	.	1	1	.	12	14
<b><i>Pogonias cromis</i></b>	<b>21</b>	<b>2</b>	<b>5</b>	<b>14</b>	<b>5</b>	<b>12</b>	<b>7</b>	<b>39</b>	<b>7</b>	<b>49</b>	<b>5</b>	<b>18</b>	<b>184</b>

Taxa	Month												Totals
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
	E=57	E=57	E=47	E=57	E=47	E=57	E=47	E=57	E=57	E=57	E=57	E=57	E=654
<i>Pomatomus saltatrix</i>	.	1	.	.	.	.	.	.	.	.	1	1	3
<i>Portunus</i> spp.	.	.	.	.	2	1	.	.	.	.	.	.	3
<i>Prionotus scitulus</i>	2	.	.	.	1	.	.	1	.	.	2	.	6
<i>Prionotus tribulus</i>	.	.	3	1	2	.	.	.	.	.	.	.	6
<i>Rhinoptera bonasus</i>	.	.	.	.	.	4	.	.	.	.	.	.	4
<i>Sardinella aurita</i>	1	.	.	.	.	.	.	.	.	.	.	.	1
<i>Sarotherodon melanotheron</i>	3	.	.	.	.	.	.	.	.	.	.	.	3
<b><i>Sciaenops ocellatus</i></b>	17	10	20	22	24	13	25	10	27	22	118	59	367
<b><i>Scomberomorus maculatus</i></b>	3	1	1	.	.	.	.	.	.	.	.	.	5
<i>Scorpaena grandicornis</i>	1	.	.	.	.	.	.	.	.	.	.	.	1
<i>Selene vomer</i>	12	101	48	8	50	18	6	2	1	14	4	6	270
<i>Sphoeroides nephelus</i>	19	18	63	24	51	44	14	35	9	79	33	51	440
<i>Sphoeroides spengleri</i>	1	.	.	1	.	1	.	.	.	3	3	.	9
<i>Sphoeroides testudineus</i>	32	38	57	69	43	10	15	10	7	17	35	22	355
<b><i>Sphyraena barracuda</i></b>	5	.	1	1	.	3	1	1	1	9	5	.	27
<b><i>Sphyrna tiburo</i></b>	.	.	.	.	.	1	4	8	.	.	1	.	14
<i>Stephanolepis hispidus</i>	.	.	1	.	.	.	.	.	.	.	7	2	10
<i>Strongylura marina</i>	.	6	.	1	.	3	.	.	2	2	1	2	17
<i>Strongylura notata</i>	4	13	8	6	5	9	12	13	15	13	3	5	106
<i>Strongylura</i> spp.	1	.	.	1	.	1	.	.	.	.	.	.	3

Taxa	Month												Totals
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
	E=57	E=57	E=47	E=57	E=47	E=57	E=47	E=57	E=57	E=57	E=57	E=57	E=654
<i>Strongylura timucu</i>	.	.	.	.	.	.	1	.	.	.	.	.	1
<i>Symphurus plagiosa</i>	3	.	1	.	.	.	.	2	.	.	.	1	7
<i>Syngnathus louisianae</i>	2	1	.	.	1	2	4	1	.	.	.	2	13
<i>Syngnathus scovelli</i>	1	2	12	18	7	14	33	14	6	1	10	4	122
<i>Synodus foetens</i>	4	.	2	.	4	1	.	.	1	.	4	.	16
<b><i>Trachinotus carolinus</i></b>	.	.	3	.	.	3	3	.	2	10	1	.	22
<b><i>Trachinotus falcatus</i></b>	1	3	3	.	1	30	17	38	3	14	23	4	137
<i>Trichiurus lepturus</i>	1	.	.	.	.	.	.	.	.	.	.	.	1
<i>Trinectes maculatus</i>	9	2	1	.	.	1	.	14	1	1	4	3	36
<i>Tylosurus crocodilus</i>	.	.	.	.	.	.	.	.	.	.	.	1	1
<i>Umbrina coroides</i>	.	.	.	.	1	.	.	.	.	.	.	.	1
<b>Totals</b>	<b>18,012</b>	<b>12,352</b>	<b>10,349</b>	<b>12,173</b>	<b>9,163</b>	<b>11,896</b>	<b>15,542</b>	<b>7,788</b>	<b>21,521</b>	<b>18,886</b>	<b>96,088</b>	<b>24,546</b>	<b>258,316</b>

Effort, or total number of hauls, is labeled 'E'. Taxa are arranged alphabetically. Selected taxa are highlighted in bold.

**Table 4.97:** Summary by gear and stratum of taxa collected during northern Indian River Lagoon stratified-random sampling, 2022.

Taxa	Gear							Totals
	21.3-m bay seine			21.3-m river seine		183-m haul seine		
	Veg	Unveg	Shore	Over	Nonover	Over	Nonover	
	E=62	E=82	E=192	E=72	E=18	E=176	E=52	
<i>Acanthostracion quadricornis</i>	2	.	.	.	.	.	1	3
<i>Achirus lineatus</i>	6	14	49	20	.	27	12	128
<i>Aetobatus narinari</i>	.	.	.	.	.	2	1	3
<i>Agonostomus monticola</i>	.	.	1	7	8	.	.	16
<b><i>Albula</i> spp.</b>	.	1	12	.	.	.	.	13
<i>Anchoa cubana</i>	.	.	7	.	.	.	.	7
<i>Anchoa hepsetus</i>	.	.	10	.	.	.	.	10
<i>Anchoa lyolepis</i>	.	4	586	493	.	.	.	1,083
<i>Anchoa mitchilli</i>	1,908	10,932	99,913	48,242	4,028	.	.	165,023
<i>Anisotremus virginicus</i>	.	.	.	.	.	1	.	1
<b><i>Archosargus probatocephalus</i></b>	1	4	36	9	8	204	70	332
<i>Archosargus rhomboidalis</i>	6	3	10	.	.	453	104	576
<i>Archosargus</i> spp.	.	.	.	.	.	3	1	4
<i>Ariopsis felis</i>	37	83	45	3	1	2,030	579	2,778
<i>Bagre marinus</i>	.	2	.	.	.	59	28	89
<i>Bairdiella chrysoura</i>	1,747	47	1,018	.	.	382	811	4,005
<i>Bathygobius soporator</i>	.	.	8	2	.	1	.	11
<b><i>Brevoortia</i> spp.</b>	10	.	133	21	36	85	30	315
<i>Callinectes ornatus</i>	8	3	5	.	.	8	4	28
<b><i>Callinectes sapidus</i></b>	17	33	52	98	31	44	37	312
<i>Callinectes similis</i>	2	6	12	.	.	35	6	61
<i>Callinectes</i> spp.	1	12	2	.	.	.	.	15
<b><i>Caranx crysos</i></b>	.	.	.	.	.	1	.	1
<b><i>Caranx hippos</i></b>	.	.	.	.	.	169	63	232
<i>Carcharhinus leucas</i>	.	1	.	.	.	2	.	3
<b><i>Centropomus parallelus</i></b>	.	.	.	.	.	1	.	1

Taxa	Gear							Totals
	21.3-m bay seine			21.3-m river seine		183-m haul seine		
	Veg	Unveg	Shore	Over	Nonover	Over	Nonover	
	E=62	E=82	E=192	E=72	E=18	E=176	E=52	
<b><i>Centropomus pectinatus</i></b>	.	.	.	1	.	.	.	1
<i>Centropomus</i> sp.	.	.	.	1	.	.	.	1
<b><i>Centropomus undecimalis</i></b>	.	.	12	390	25	155	64	646
<i>Chaetodipterus faber</i>	1	.	4	.	.	28	7	40
<i>Chasmodes saburrae</i>	28	2	42	.	.	.	2	74
<i>Chilomycterus schoepfii</i>	1	1	5	.	.	63	74	144
<i>Chloroscombrus chrysurus</i>	.	.	3	.	.	22	1	26
<i>Cichlasoma urophthalmus</i>	.	.	.	48	17	.	.	65
<i>Citharichthys spilopterus</i>	10	23	57	1	.	5	3	99
<i>Corvula sanctaeluciae</i>	.	.	.	.	.	.	1	1
<i>Ctenogobius boleosoma</i>	.	2	1	.	.	.	.	3
<i>Ctenogobius pseudofasciatus</i>	.	.	.	1	.	.	.	1
<i>Ctenogobius smaragdus</i>	.	1	3	.	.	.	.	4
<b><i>Cynoscion</i> complex</b>	1	1	17	2	.	3	2	26
<b><i>Cynoscion nebulosus</i></b>	49	28	107	1	.	40	44	269
<i>Cyprinodon variegatus</i>	.	.	10	.	.	.	.	10
<i>Dasyatis americana</i>	.	.	.	.	.	1	.	1
<i>Dasyatis sabina</i>	5	12	26	.	.	585	456	1,084
<i>Dasyatis say</i>	4	4	5	.	.	140	108	261
<i>Diapterus auratus</i>	51	47	1,229	2,012	564	13,846	1,321	19,070
<i>Diapterus rhombeus</i>	1	3	102	1	.	205	1	313
<i>Diapterus</i> spp.	.	.	.	.	.	2	.	2
<b><i>Diplectrum formosum</i></b>	.	.	1	.	.	.	.	1
<i>Diplodus holbrookii</i>	.	.	60	.	.	.	1	61
<i>Dormitator maculatus</i>	.	.	.	4	.	.	.	4
<i>Echeneis naucrates</i>	.	.	.	.	.	1	.	1
<i>Echeneis neucratoides</i>	.	.	.	.	.	1	1	2
<i>Echeneis</i> sp.	.	1	.	.	.	.	.	1

Taxa	Gear							Totals
	21.3-m bay seine			21.3-m river seine		183-m haul seine		
	Veg	Unveg	Shore	Over	Nonover	Over	Nonover	
	E=62	E=82	E=192	E=72	E=18	E=176	E=52	
<i>Eleotridae</i> sp.	.	.	.	1	.	.	.	1
<i>Eleotris amblyopsis</i>	.	.	.	2	.	.	.	2
<b><i>Elops saurus</i></b>	1	1	2	.	.	514	70	588
<i>Elops</i> sp.	.	1	.	.	.	.	.	1
<i>Enneacanthus gloriosus</i>	.	.	.	1	.	.	.	1
<b><i>Epinephelus itajara</i></b>	.	.	.	.	1	.	.	1
<i>Etheostoma fusiforme</i>	.	.	.	.	1	.	.	1
<i>Eucinostomus argenteus</i>	.	.	18	.	.	.	.	18
<i>Eucinostomus gula</i>	34	34	664	26	68	1,095	344	2,265
<i>Eucinostomus harengulus</i>	35	66	558	590	159	2,128	1,132	4,668
<i>Eucinostomus jonesii</i>	1	6	110	.	.	81	1	199
<i>Eucinostomus melanopterus</i>	.	.	1	.	.	.	.	1
<i>Eucinostomus</i> spp.	1,983	896	6,498	3,851	766	.	.	13,994
<i>Eugerres plumieri</i>	7	37	952	1,902	139	178	53	3,268
<i>Evorthodus lyricus</i>	.	.	1	29	.	.	.	30
<b><i>Farfantepenaeus aztecus</i></b>	5	1	8	.	.	1	1	16
<b><i>Farfantepenaeus duorarum</i></b>	.	.	3	.	.	.	3	6
<b><i>Farfantepenaeus</i> spp.</b>	82	99	379	123	3	.	.	686
<i>Floridichthys carpio</i>	5	.	414	.	.	.	.	419
<i>Fundulus seminolis</i>	.	.	.	.	1	.	.	1
<i>Fundulus similis</i>	.	.	1	.	.	.	.	1
<i>Gambusia holbrooki</i>	.	.	9	25	61	.	.	95
<i>Gerreidae</i> spp.	.	1	93	.	.	.	.	94
<i>Gerres cinereus</i>	8	.	7	31	18	27	24	115
<i>Gobiesox strumosus</i>	.	.	2	.	.	.	.	2
<i>Gobioides broussonetii</i>	.	.	.	1	.	.	.	1
<i>Gobiomorus dormitor</i>	.	.	.	2	.	.	.	2
<i>Gobionellus oceanicus</i>	.	.	.	2	.	.	.	2

Taxa	Gear							Totals
	21.3-m bay seine			21.3-m river seine		183-m haul seine		
	Veg	Unveg	Shore	Over	Nonover	Over	Nonover	
	E=62	E=82	E=192	E=72	E=18	E=176	E=52	
<i>Gobiosoma bosc</i>	.	.	1	9	.	.	.	10
<i>Gobiosoma robustum</i>	274	24	201	1	.	.	.	500
<i>Gobiosoma</i> spp.	202	76	106	12	1	.	.	397
<i>Gymnura micrura</i>	.	.	1	.	.	8	4	13
<b><i>Haemulon parra</i></b>	<b>1</b>	.	<b>1</b>	.	.	<b>4</b>	<b>4</b>	<b>10</b>
<i>Harengula jaguana</i>	4	169	6,341	3	.	2,712	1,532	10,761
<i>Heterandria formosa</i>	.	.	.	2	.	.	.	2
<i>Hippocampus erectus</i>	.	1	.	.	.	1	.	2
<i>Hippocampus zosterae</i>	.	.	1	.	.	.	.	1
<i>Hyporhamphus</i> sp.	.	.	1	.	.	.	.	1
<i>Labidesthes sicculus</i>	.	.	.	74	40	.	.	114
<i>Lactophrys trigonus</i>	.	.	.	.	.	.	1	1
<i>Lagodon rhomboides</i>	1	1	65	1	238	1,877	232	2,415
<b><i>Leiostomus xanthurus</i></b>	<b>1</b>	<b>5</b>	<b>328</b>	<b>3</b>	<b>10</b>	<b>195</b>	<b>47</b>	<b>589</b>
<i>Lepisosteus platyrhincus</i>	.	.	.	2	.	.	.	2
<i>Lepomis gulosus</i>	.	.	.	2	.	.	.	2
<i>Lepomis macrochirus</i>	.	.	.	5	3	.	.	8
<i>Lepomis microlophus</i>	.	.	.	2	4	.	.	6
<i>Lepomis</i> spp.	.	.	.	29	1	.	.	30
<i>Limulus polyphemus</i>	.	.	4	.	.	28	4	36
<b><i>Litopenaeus setiferus</i></b>	<b>7</b>	<b>3</b>	<b>79</b>	<b>14</b>	.	<b>2</b>	.	<b>105</b>
<b><i>Lobotes surinamensis</i></b>	.	.	<b>5</b>	.	.	<b>1</b>	.	<b>6</b>
<i>Lophogobius cyprinoides</i>	.	.	2	324	98	.	.	424
<i>Lucania goodei</i>	.	.	.	2	1	.	.	3
<i>Lucania parva</i>	207	2	209	1	197	.	.	616
<i>Lupinoblennius nicholsi</i>	.	.	.	2	.	.	.	2
<b><i>Lutjanus analis</i></b>	<b>24</b>	.	.	.	.	<b>10</b>	<b>3</b>	<b>37</b>
<b><i>Lutjanus griseus</i></b>	<b>8</b>	<b>2</b>	<b>8</b>	<b>8</b>	<b>5</b>	<b>118</b>	<b>21</b>	<b>170</b>

Taxa	Gear							Totals
	21.3-m bay seine			21.3-m river seine		183-m haul seine		
	Veg	Unveg	Shore	Over	Nonover	Over	Nonover	
	E=62	E=82	E=192	E=72	E=18	E=176	E=52	
<i>Lutjanus synagris</i>	14	.	.	.	.	.	1	15
<i>Megalops atlanticus</i>	.	.	.	.	.	18	2	20
<i>Membras martinica</i>	126	.	137	.	.	.	.	263
<i>Menidia</i> spp.	14	64	2,453	148	136	.	.	2,815
<i>Menippe</i> sp.	.	.	.	.	.	.	1	1
<b><i>Menticirrhus americanus</i></b>	<b>3</b>	<b>27</b>	<b>284</b>	.	.	<b>73</b>	<b>118</b>	<b>505</b>
<i>Microgobius gulosus</i>	331	135	311	17	38	.	.	832
<i>Microgobius microlepis</i>	82	9	104	.	.	.	.	195
<i>Microgobius thalassinus</i>	1	3	1	.	.	.	.	5
<i>Microphis brachyurus</i>	.	.	.	3	.	.	.	3
<b><i>Micropogonias undulatus</i></b>	<b>2</b>	<b>21</b>	<b>41</b>	<b>30</b>	.	<b>42</b>	<b>7</b>	<b>143</b>
<i>Micropterus salmoides</i>	.	.	.	.	14	.	.	14
<i>Monacanthus ciliatus</i>	3	.	.	.	.	.	.	3
<b><i>Mugil cephalus</i></b>	<b>373</b>	<b>1,105</b>	<b>1,170</b>	<b>10</b>	<b>1</b>	<b>870</b>	<b>180</b>	<b>3,709</b>
<b><i>Mugil curema</i></b>	<b>3</b>	<b>11</b>	<b>106</b>	<b>6</b>	<b>34</b>	<b>3,422</b>	<b>576</b>	<b>4,158</b>
<b><i>Mugil rubrioculus</i></b>	.	.	<b>4</b>	.	.	<b>24</b>	<b>1</b>	<b>29</b>
<i>Mugil</i> spp.	.	.	27	7	15	.	.	49
<i>Oligoplites saurus</i>	6	18	188	9	1	233	83	538
<i>Opisthonema oglinum</i>	191	29	1,972	9	154	306	39	2,700
<i>Opsanus tau</i>	.	.	.	.	.	2	4	6
<i>Sarotherodon</i> sp.	.	.	.	1	.	.	.	1
<i>Orthopristis chrysoptera</i>	2	2	12	.	.	44	40	100
<b><i>Paralichthys albigutta</i></b>	.	.	<b>1</b>	.	<b>1</b>	.	<b>1</b>	<b>3</b>
<b><i>Paralichthys lethostigma</i></b>	.	.	.	.	.	<b>1</b>	.	<b>1</b>
<i>Penaeus monodon</i>	.	.	.	1	.	.	.	1
<i>Poecilia latipinna</i>	.	1	1	1	11	.	.	14
<b><i>Pogonias cromis</i></b>	.	.	<b>7</b>	.	.	<b>135</b>	<b>42</b>	<b>184</b>
<b><i>Pomatomus saltatrix</i></b>	.	.	.	<b>1</b>	.	<b>2</b>	.	<b>3</b>

Taxa	Gear							Totals
	21.3-m bay seine			21.3-m river seine		183-m haul seine		
	Veg	Unveg	Shore	Over	Nonover	Over	Nonover	
	E=62	E=82	E=192	E=72	E=18	E=176	E=52	
<i>Portunus</i> spp.	3	.	.	.	.	.	.	3
<i>Prionotus scitulus</i>	.	.	.	.	.	4	2	6
<i>Prionotus tribulus</i>	.	.	.	.	.	5	1	6
<i>Rhinoptera bonasus</i>	.	.	.	.	.	4	.	4
<i>Sardinella aurita</i>	.	.	.	.	.	1	.	1
<i>Sarotherodon melanotheron</i>	.	.	.	.	.	3	.	3
<b><i>Sciaenops ocellatus</i></b>	.	14	189	4	.	132	28	367
<b><i>Scomberomorus maculatus</i></b>	.	.	.	.	.	3	2	5
<i>Scorpaena grandicornis</i>	.	.	.	.	.	.	1	1
<i>Selene vomer</i>	.	.	5	.	.	248	17	270
<i>Sphoeroides nephelus</i>	11	9	15	.	.	202	203	440
<i>Sphoeroides spengleri</i>	1	.	2	.	.	5	1	9
<i>Sphoeroides testudineus</i>	5	31	53	2	1	172	91	355
<b><i>Sphyaena barracuda</i></b>	.	.	4	2	3	14	4	27
<b><i>Sphyrna tiburo</i></b>	.	.	.	.	.	13	1	14
<i>Stephanolepis hispidus</i>	5	1	1	.	.	3	.	10
<i>Strongylura marina</i>	.	.	3	.	.	12	2	17
<i>Strongylura notata</i>	.	5	78	.	.	20	3	106
<i>Strongylura</i> spp.	.	.	1	2	.	.	.	3
<i>Strongylura timucu</i>	.	.	1	.	.	.	.	1
<i>Symphurus plagiusa</i>	.	1	1	.	.	5	.	7
<i>Syngnathus louisianae</i>	6	3	4	.	.	.	.	13
<i>Syngnathus scovelli</i>	76	5	40	.	1	.	.	122
<i>Synodus foetens</i>	.	1	7	.	.	8	.	16
<b><i>Trachinotus carolinus</i></b>	.	.	.	.	.	17	5	22
<b><i>Trachinotus falcatus</i></b>	.	.	35	5	.	93	4	137
<i>Trichiurus lepturus</i>	.	.	.	.	.	.	1	1
<i>Trinectes maculatus</i>	.	.	.	32	2	2	.	36

Taxa	Gear							Totals
	21.3-m bay seine			21.3-m river seine		183-m haul seine		
	Veg	Unveg	Shore	Over	Nonover	Over	Nonover	
	E=62	E=82	E=192	E=72	E=18	E=176	E=52	
<i>Tylosurus crocodilus</i>	.	.	.	.	.	1	.	1
<i>Umbrina coroides</i>	.	.	1	.	.	.	.	1
<b>Totals</b>	<b>8,044</b>	<b>14,190</b>	<b>127,915</b>	<b>58,729</b>	<b>6,945</b>	<b>33,723</b>	<b>8,770</b>	<b>258,316</b>

Sampling with 21.3-m bay seine was stratified by the presence or absence of a shoreline ('Shore' or offshore) within 5-m. Offshore sets were further stratified by the presence or absence of bottom vegetation ('Veg' or 'Unveg'). Sampling with 21.3-m river seine and 183-m haul seine was stratified by the presence or absence of overhanging vegetation ('Over' or 'Nonover'). Effort, or the total number of hauls, is labeled 'E'. Taxa are arranged alphabetically. Selected taxa are highlighted in bold.

**Table 4.98:** Summary by zone of taxa collected during northern Indian River Lagoon stratified-random sampling, 2022.

Taxa	Zone					Totals
	C	D	E	H	F	
	E=168	E=168	E=48	E=180	E=90	E=654
<i>Acanthostracion quadricornis</i>	.	.	.	3	.	3
<i>Achirus lineatus</i>	59	9	17	23	20	128
<i>Aetobatus narinari</i>	.	.	1	2	.	3
<i>Agonostomus monticola</i>	1	.	.	.	15	16
<b><i>Albula</i> spp.</b>	.	.	.	13	.	13
<i>Anchoa cubana</i>	.	.	.	7	.	7
<i>Anchoa hepsetus</i>	4	.	.	6	.	10
<i>Anchoa lyolepis</i>	27	.	.	563	493	1,083
<i>Anchoa mitchilli</i>	43,353	8,488	.	60,912	52,270	165,023
<i>Anisotremus virginicus</i>	.	.	.	1	.	1
<b><i>Archosargus probatocephalus</i></b>	<b>49</b>	<b>77</b>	<b>19</b>	<b>170</b>	<b>17</b>	<b>332</b>
<i>Archosargus rhomboidalis</i>	36	49	20	471	.	576
<i>Archosargus</i> spp.	.	.	.	4	.	4
<i>Ariopsis felis</i>	699	723	644	708	4	2,778
<i>Bagre marinus</i>	38	12	7	32	.	89
<i>Bairdiella chrysoura</i>	3,206	38	306	455	.	4,005
<i>Bathygobius soporator</i>	7	.	.	2	2	11
<b><i>Brevoortia</i> spp.</b>	<b>183</b>	<b>7</b>	<b>1</b>	<b>67</b>	<b>57</b>	<b>315</b>
<i>Callinectes ornatus</i>	.	.	.	28	.	28
<b><i>Callinectes sapidus</i></b>	<b>67</b>	<b>1</b>	<b>7</b>	<b>108</b>	<b>129</b>	<b>312</b>
<i>Callinectes similis</i>	1	.	.	60	.	61
<i>Callinectes</i> spp.	.	.	.	15	.	15
<i>Caranx crysos</i>	.	.	.	1	.	1
<i>Caranx hippos</i>	68	23	1	140	.	232
<i>Carcharhinus leucas</i>	1	1	.	1	.	3
<i>Centropomus parallelus</i>	.	.	.	1	.	1
<i>Centropomus pectinatus</i>	.	.	.	.	1	1

Taxa	Zone					Totals
	C	D	E	H	F	
	E=168	E=168	E=48	E=180	E=90	E=654
<i>Centropomus</i> sp.	.	.	.	.	1	1
<b><i>Centropomus undecimalis</i></b>	<b>24</b>	<b>43</b>	<b>4</b>	<b>160</b>	<b>415</b>	<b>646</b>
<i>Chaetodipterus faber</i>	18	2	4	16	.	40
<i>Chasmodes saburrae</i>	44	28	.	2	.	74
<i>Chilomycterus schoepfii</i>	85	13	6	40	.	144
<i>Chloroscombrus chrysurus</i>	4	2	1	19	.	26
<i>Cichlasoma urophthalmus</i>	.	.	.	.	65	65
<i>Citharichthys spilopterus</i>	15	1	.	82	1	99
<i>Corvula sanctaeluciae</i>	.	.	.	1	.	1
<i>Ctenogobius boleosoma</i>	.	.	.	3	.	3
<i>Ctenogobius pseudofasciatus</i>	.	.	.	.	1	1
<i>Ctenogobius smaragdus</i>	.	.	.	4	.	4
<b><i>Cynoscion</i> complex</b>	<b>21</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>2</b>	<b>26</b>
<b><i>Cynoscion nebulosus</i></b>	<b>177</b>	<b>22</b>	<b>19</b>	<b>50</b>	<b>1</b>	<b>269</b>
<i>Cyprinodon variegatus</i>	.	10	.	.	.	10
<i>Dasyatis americana</i>	.	.	.	1	.	1
<i>Dasyatis sabina</i>	488	189	204	203	.	1,084
<i>Dasyatis say</i>	100	33	41	87	.	261
<i>Diapterus auratus</i>	5,860	369	963	9,302	2,576	19,070
<i>Diapterus rhombeus</i>	43	1	.	268	1	313
<i>Diapterus</i> spp.	.	.	2	.	.	2
<b><i>Diplectrum formosum</i></b>	.	.	.	<b>1</b>	.	<b>1</b>
<i>Diplodus holbrookii</i>	.	.	.	61	.	61
<i>Dormitator maculatus</i>	.	.	.	.	4	4
<i>Echeneis naucrates</i>	.	.	.	1	.	1
<i>Echeneis neucratoides</i>	1	.	.	1	.	2
<i>Echeneis</i> sp.	1	.	.	.	.	1
<i>Eleotridae</i> sp.	.	.	.	.	1	1
<i>Eleotris amblyopsis</i>	.	.	.	.	2	2

Taxa	Zone					Totals
	C	D	E	H	F	
	E=168	E=168	E=48	E=180	E=90	E=654
<b><i>Elops saurus</i></b>	221	65	103	199	.	588
<i>Elops</i> sp.	.	.	.	1	.	1
<i>Enneacanthus gloriosus</i>	.	.	.	.	1	1
<b><i>Epinephelus itajara</i></b>	.	.	.	.	1	1
<i>Etheostoma fusiforme</i>	.	.	.	.	1	1
<i>Eucinostomus argenteus</i>	.	.	.	18	.	18
<i>Eucinostomus gula</i>	258	132	74	1,707	94	2,265
<i>Eucinostomus harengulus</i>	1,501	1,175	469	774	749	4,668
<i>Eucinostomus jonesii</i>	11	3	.	185	.	199
<i>Eucinostomus melanopterus</i>	.	.	.	1	.	1
<i>Eucinostomus</i> spp.	1,156	706	.	7,515	4,617	13,994
<i>Eugerres plumieri</i>	519	250	126	332	2,041	3,268
<i>Evorthodus lyricus</i>	.	.	.	1	29	30
<b><i>Farfantepenaeus aztecus</i></b>	14	.	.	2	.	16
<b><i>Farfantepenaeus duorarum</i></b>	6	.	.	.	.	6
<b><i>Farfantepenaeus</i> spp.</b>	122	.	.	438	126	686
<i>Floridichthys carpio</i>	6	413	.	.	.	419
<i>Fundulus seminolis</i>	.	.	.	.	1	1
<i>Fundulus similis</i>	.	1	.	.	.	1
<i>Gambusia holbrooki</i>	9	.	.	.	86	95
<i>Gerreidae</i> spp.	94	.	.	.	.	94
<i>Gerres cinereus</i>	2	2	.	62	49	115
<i>Gobiesox strumosus</i>	2	.	.	.	.	2
<i>Gobioides broussonetii</i>	.	.	.	.	1	1
<i>Gobiomorus dormitor</i>	.	.	.	.	2	2
<i>Gobionellus oceanicus</i>	.	.	.	.	2	2
<i>Gobiosoma bosc</i>	1	.	.	.	9	10
<i>Gobiosoma robustum</i>	215	210	.	74	1	500
<i>Gobiosoma</i> spp.	86	95	.	203	13	397

Taxa	Zone					Totals
	C	D	E	H	F	
	E=168	E=168	E=48	E=180	E=90	E=654
<i>Gymnura micrura</i>	3	.	1	9	.	13
<b><i>Haemulon parra</i></b>	.	.	.	<b>10</b>	.	<b>10</b>
<i>Harengula jaguana</i>	666	386	219	9,487	3	10,761
<i>Heterandria formosa</i>	.	.	.	.	2	2
<i>Hippocampus erectus</i>	.	.	.	2	.	2
<i>Hippocampus zosterae</i>	.	.	.	1	.	1
<i>Hyporhamphus</i> sp.	1	.	.	.	.	1
<i>Labidesthes sicculus</i>	.	.	.	.	114	114
<i>Lactophrys trigonus</i>	.	.	.	1	.	1
<i>Lagodon rhomboides</i>	107	538	473	1,058	239	2,415
<b><i>Leiostomus xanthurus</i></b>	<b>137</b>	<b>103</b>	<b>67</b>	<b>269</b>	<b>13</b>	<b>589</b>
<i>Lepisosteus platyrhincus</i>	.	.	.	.	2	2
<i>Lepomis gulosus</i>	.	.	.	.	2	2
<i>Lepomis macrochirus</i>	.	.	.	.	8	8
<i>Lepomis microlophus</i>	.	.	.	.	6	6
<i>Lepomis</i> spp.	.	.	.	.	30	30
<i>Limulus polyphemus</i>	7	3	26	.	.	36
<b><i>Litopenaeus setiferus</i></b>	<b>89</b>	.	.	<b>2</b>	<b>14</b>	<b>105</b>
<b><i>Lobotes surinamensis</i></b>	.	.	.	<b>6</b>	.	<b>6</b>
<i>Lophogobius cyprinoides</i>	.	.	.	2	422	424
<i>Lucania goodei</i>	.	.	.	.	3	3
<i>Lucania parva</i>	46	372	.	.	198	616
<i>Lupinoblennius nicholsi</i>	.	.	.	.	2	2
<b><i>Lutjanus analis</i></b>	.	.	.	<b>37</b>	.	<b>37</b>
<b><i>Lutjanus griseus</i></b>	<b>26</b>	.	<b>2</b>	<b>129</b>	<b>13</b>	<b>170</b>
<b><i>Lutjanus synagris</i></b>	.	.	.	<b>15</b>	.	<b>15</b>
<b><i>Megalops atlanticus</i></b>	<b>2</b>	<b>10</b>	<b>2</b>	<b>6</b>	.	<b>20</b>
<i>Membras martinica</i>	253	10	.	.	.	263
<i>Menidia</i> spp.	873	1,656	.	2	284	2,815

Taxa	Zone					Totals
	C	D	E	H	F	
	E=168	E=168	E=48	E=180	E=90	E=654
<i>Menippe</i> sp.	1	.	.	.	.	1
<b><i>Menticirrhus americanus</i></b>	<b>346</b>	<b>28</b>	<b>34</b>	<b>97</b>	.	<b>505</b>
<i>Microgobius gulosus</i>	251	308	.	218	55	832
<i>Microgobius microlepis</i>	.	.	.	195	.	195
<i>Microgobius thalassinus</i>	.	.	.	5	.	5
<i>Microphis brachyurus</i>	.	.	.	.	3	3
<b><i>Micropogonias undulatus</i></b>	<b>14</b>	.	<b>2</b>	<b>97</b>	<b>30</b>	<b>143</b>
<i>Micropterus salmoides</i>	.	.	.	.	14	14
<i>Monacanthus ciliatus</i>	.	.	.	3	.	3
<b><i>Mugil cephalus</i></b>	<b>1,083</b>	<b>851</b>	<b>33</b>	<b>1,731</b>	<b>11</b>	<b>3,709</b>
<b><i>Mugil curema</i></b>	<b>1,097</b>	<b>793</b>	<b>1,096</b>	<b>1,132</b>	<b>40</b>	<b>4,158</b>
<b><i>Mugil rubrioculus</i></b>	<b>20</b>	<b>1</b>	.	<b>8</b>	.	<b>29</b>
<i>Mugil</i> spp.	27	.	.	.	22	49
<i>Oligoplites saurus</i>	232	87	29	180	10	538
<i>Opisthonema oglinum</i>	370	298	155	1,714	163	2,700
<i>Opsanus tau</i>	3	.	2	1	.	6
<i>Sarotherodon</i> sp.	.	.	.	.	1	1
<i>Orthopristis chrysoptera</i>	24	12	2	62	.	100
<b><i>Paralichthys albigutta</i></b>	.	.	.	<b>2</b>	<b>1</b>	<b>3</b>
<b><i>Paralichthys lethostigma</i></b>	.	.	.	<b>1</b>	.	<b>1</b>
<i>Penaeus monodon</i>	.	.	.	.	1	1
<i>Poecilia latipinna</i>	1	.	.	1	12	14
<b><i>Pogonias cromis</i></b>	<b>10</b>	<b>87</b>	<b>18</b>	<b>69</b>	.	<b>184</b>
<b><i>Pomatomus saltatrix</i></b>	.	.	.	<b>2</b>	<b>1</b>	<b>3</b>
<i>Portunus</i> spp.	.	.	.	3	.	3
<i>Prionotus scitulus</i>	.	.	.	6	.	6
<i>Prionotus tribulus</i>	.	.	.	6	.	6
<i>Rhinoptera bonasus</i>	4	.	.	.	.	4
<i>Sardinella aurita</i>	.	.	.	1	.	1

Taxa	Zone					Totals
	C	D	E	H	F	
	E=168	E=168	E=48	E=180	E=90	E=654
<i>Sarotherodon melanotheron</i>	.	.	3	.	.	3
<b><i>Sciaenops ocellatus</i></b>	<b>79</b>	<b>99</b>	<b>9</b>	<b>176</b>	<b>4</b>	<b>367</b>
<b><i>Scomberomorus maculatus</i></b>	<b>1</b>	.	.	<b>4</b>	.	<b>5</b>
<i>Scorpaena grandicornis</i>	.	.	.	1	.	1
<i>Selene vomer</i>	48	97	4	121	.	270
<i>Sphoeroides nephelus</i>	116	178	82	64	.	440
<i>Sphoeroides spengleri</i>	.	.	.	9	.	9
<i>Sphoeroides testudineus</i>	15	.	.	337	3	355
<b><i>Sphyraena barracuda</i></b>	.	<b>1</b>	.	<b>21</b>	<b>5</b>	<b>27</b>
<b><i>Sphyrna tiburo</i></b>	<b>5</b>	.	.	<b>9</b>	.	<b>14</b>
<i>Stephanolepis hispidus</i>	.	.	.	10	.	10
<i>Strongylura marina</i>	6	6	2	3	.	17
<i>Strongylura notata</i>	19	62	8	17	.	106
<i>Strongylura</i> spp.	1	.	.	.	2	3
<i>Strongylura timucu</i>	.	.	.	1	.	1
<i>Symphurus plagiusa</i>	.	.	.	7	.	7
<i>Syngnathus louisianae</i>	10	2	.	1	.	13
<i>Syngnathus scovelli</i>	94	14	.	13	1	122
<i>Synodus foetens</i>	.	.	.	16	.	16
<b><i>Trachinotus carolinus</i></b>	<b>5</b>	<b>1</b>	<b>1</b>	<b>15</b>	.	<b>22</b>
<b><i>Trachinotus falcatus</i></b>	<b>23</b>	.	<b>25</b>	<b>84</b>	<b>5</b>	<b>137</b>
<i>Trichiurus lepturus</i>	.	.	.	1	.	1
<i>Trinectes maculatus</i>	1	.	1	.	34	36
<i>Tylosurus crocodilus</i>	.	1	.	.	.	1
<i>Umbrina coroides</i>	.	.	.	1	.	1
<b>Totals</b>	<b>65,019</b>	<b>19,198</b>	<b>5,336</b>	<b>103,089</b>	<b>65,674</b>	<b>258,316</b>

Taxa	Zone					Totals
	C	D	E	H	F	
		<b>E=168</b>	<b>E=168</b>	<b>E=48</b>	<b>E=180</b>	<b>E=90</b>

Zones C and H were located in the Indian River; Zones D—E encompassed the Banana River; Zone F encompassed the lower Sebastian River and Turkey Creek. Effort, or the total number of hauls, is labeled 'E'. Taxa are arranged alphabetically. selected taxa are highlighted in bold.

## 4.10 Southern Indian River Lagoon

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

The Fisheries-Independent Monitoring (FIM) program has conducted intensive sampling of fish and selected invertebrates in the southern IRL using 183-m haul seines since 1997. Monthly stratified-random sampling (SRS) has been focused in two geographically-defined bay zones (I and J) and one riverine zone (T; Figure 4.10). Beginning in 2016, in an effort to expand the collection of juvenile fish data in the region, monthly sampling with 21.3-m seines was initiated in the Loxahatchee and St. Lucie rivers (Zones L and T; Figure 4.10). As a result, the 21.3-m seine sampling universe in Zone T was expanded to include the upstream and backwater areas of the St. Lucie River that were not previously accessible with the 183-m haul seines.

Loxahatchee River (Zone L; Figure 4.10) was also added to the 21.3-m seine sampling universe. The Loxahatchee River covers an ecosystem of approximately 673 km<sup>2</sup> in Martin and Palm Beach County and is one of only two river systems in Florida designated as a “Wild and Scenic River.” The Loxahatchee River includes the North Fork, Northwest Fork, and the Southwest Fork, all of which drain into the Atlantic Ocean through Jupiter Inlet at the terminus of the Southern Indian River Lagoon. Shoreline slopes can be steep along much of the sampling area with many shorelines closer to urbanization characterized by man-made habitats including seawalls, rip-rap, and docks. Much of the sampling area is brackish with shoreline vegetation consisting of a mixture of salt-tolerant overhanging trees and shrubs while upstream habitats include freshwater marsh vegetation (swamp lily, lily pads, leather fern, etc.). Upriver and backwater areas typically have a mud/detritus substrate while the mainstem and areas closer to the Indian River Lagoon are comprised of mainly sand/shell hash due to stronger water flow. Submerged aquatic vegetation is minimal, but can include tapegrass (*Vallisneria* spp.) in low salinity habitats and shoal grass (*Halodule* spp.) in higher salinity habitats closer to the mouth of the river.

All methods were the same as those described in the Methods section of this report. This section summarizes data collected by the FIM program during 2022 in southern Indian River Lagoon.

### Stratified-Random Sampling

A total of 43,531 animals, which included 151 taxa of fishes and 7 taxa of selected invertebrates, were collected from 351 southern Indian River Lagoon SRS samples in 2022 (Table 4.99). *Anchoa mitchilli* (n=10,085) was the most numerous taxon collected, representing 23.2% of the total catch. *Diapterus auratus* (n=8,602) and *Eucinostomus* spp. (n=3,996) were the next most abundant taxa collected, accounting for an additional 28.9% of the total catch. A total of 43 selected taxa (n=6,184 animals) comprised 14.2% of the total catch. *Brevoortia* spp. (n=930) was the most



**Figure 4.10:** Map of Southern Indian River Lagoon sampling area, separated into four geographic zones: I, J, L, and T.

abundant Selected Taxon, representing 2.1% of the total catch. *Mugil curema* (n=903), *Centropomus undecimalis* (n=531), *Elops saurus* (n=466), and *Mugil cephalus* (n=452) were the next most abundant selected taxa, comprising 5.4% of the total catch. Collections in 2022 included 3 species new to the southern Indian River Lagoon FIM collection: *Aluterus schoepfii*, *Halichoeres bivittatus*, *Sparisoma atomarium*.

**Table 4.99:** Summary of catch and effort data for southern Indian River Lagoon stratified-random sampling, 2022.

Zone	21.3-m river seine		183-m haul seine		Totals	
	Animals	Hauls	Animals	Hauls	Animals	Hauls
I	.	.	7,500	48	7,500	48
J	.	.	6,154	48	6,154	48
L	5,330	45	.	.	5,330	45
T	20,651	162	3,896	48	24,547	210
<b>Totals</b>	<b>25,981</b>	<b>207</b>	<b>17,550</b>	<b>144</b>	<b>43,531</b>	<b>351</b>

## Bay Sampling

### *183-m Haul Seines*

A total of 17,550 animals were collected in 144 183-m haul seines, representing 40.3% of the overall SRS catch (Table 4.99). *Diapterus auratus* (n=7,737) was the most abundant taxon, accounting for 44.1% of the 183-m haul seine catch (Table 4.100). The taxa most frequently caught in 183-m haul seines were *Diapterus auratus* (72.2% occurrence), *Ariopsis felis* (57.6% occurrence), and *Mugil curema* (52.8% occurrence).

A total of 4,098 animals from 38 selected taxa were collected, representing 23.4% of the entire 183-m haul seine catch (Table 4.101). *Mugil curema* (n=779) and *Brevoortia spp.* (n=661) were the most abundant selected taxa, accounting for 35.1% of the selected taxa collected by this gear. The selected taxa most frequently caught in 183-m haul seines were *Archosargus probatocephalus* (53.5% occurrence) and *Mugil curema* (52.8% occurrence).

**Table 4.100:** Catch statistics for 10 dominant taxa collected in 144 183-m haul seine samples during southern Indian River Lagoon stratified-random sampling, 2022.

Species	Number			Density Estimate (animals/set)				Standard Length (mm)			
	No.	%	% Occur	Mean	Stderr	CV	Max	Mean	Stderr	Min	Max
<i>Diapterus auratus</i>	7,737	44.1	72.2	54.10	9.27	204.95	522	141	0.38	61	322
<i>Ariopsis felis</i>	798	4.5	57.6	5.58	1.12	239.56	93	226	1.85	103	358
<i>Mugil curema</i>	779	4.4	52.8	5.45	1.15	252.97	98	183	1.27	95	350
<i>Eucinostomus gula</i>	737	4.2	37.5	5.15	1.55	360.13	188	85	0.29	60	127
<i>Brevoortia</i> spp.	661	3.8	3.5	4.62	3.93	1,016.35	556	165	1.21	109	274
<i>Eucinostomus harengulus</i>	606	3.5	33.3	4.24	1.49	419.21	159	101	0.45	72	134
<i>Diapterus rhombeus</i>	484	2.8	2.8	3.38	3.32	1,173.52	475	64	0.38	54	160
<i>Elops saurus</i>	462	2.6	26.4	3.23	1.35	499.71	168	290	2.33	150	545
<i>Selene vomer</i>	412	2.3	28.5	2.88	1.08	447.86	141	153	1.28	100	280
<i>Archosargus rhomboidalis</i>	403	2.3	25.0	2.82	0.94	400.01	108	160	2.25	69	255
Subtotals	13,079	74.5	.	.	.	.	.	.	.	54	545
<b>Totals</b>	<b>17,550</b>	<b>100.0</b>	.	<b>122.73</b>	<b>16.58</b>	<b>162.07</b>	<b>1,438</b>	.	.	<b>40</b>	<b>1,600</b>

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.

**Table 4.101:** Catch statistics for selected taxa collected in 144 183-m haul seine samples during southern Indian River Lagoon stratified-random sampling, 2022.

Species	Number			Density Estimate (animals/set)				Standard Length (mm)			
	No.	%	% Occur	Mean	Stderr	CV	Max	Mean	Stderr	Min	Max
<i>Mugil curema</i>	779	4.4	52.8	5.41	1.15	253.99	98	183	1.27	95	350
<i>Brevoortia</i> spp.	661	3.8	3.5	4.59	3.90	1,019.91	556	165	1.21	109	274
<i>Elops saurus</i>	462	2.6	26.4	3.21	1.34	501.51	168	290	2.33	150	545
<i>Micropogonias undulatus</i>	380	2.2	20.1	2.64	0.91	412.36	114	239	2.83	111	457
<i>Archosargus probatocephalus</i>	307	1.7	53.5	2.13	0.45	253.79	56	276	2.80	95	415
<i>Mugil cephalus</i>	265	1.5	29.9	1.84	0.43	283.46	39	269	3.72	127	419
<i>Sphyraena barracuda</i>	263	1.5	41.7	1.83	0.41	269.43	48	323	6.43	145	935
<i>Caranx hippos</i>	218	1.2	27.8	1.51	0.38	301.03	37	196	5.57	107	635
<i>Centropomus undecimalis</i>	171	1.0	42.4	1.19	0.20	203.60	16	458	14.37	194	900
<i>Lutjanus analis</i>	157	0.9	25.7	1.09	0.24	260.76	14	144	3.13	80	282
<i>Lutjanus griseus</i>	67	0.4	6.9	0.47	0.29	750.54	40	195	5.06	88	374
<i>Trachinotus falcatus</i>	55	0.3	6.9	0.38	0.23	721.51	32	155	5.16	107	320
<i>Callinectes sapidus</i>	44	0.3	13.9	0.31	0.08	307.88	6	123	5.97	50	181
<i>Leiostomus xanthurus</i>	31	0.2	6.2	0.22	0.09	491.85	8	122	4.85	85	168
<i>Trachinotus carolinus</i>	22	0.1	2.8	0.15	0.10	775.32	11	240	17.35	105	370
<i>Pogonias cromis</i>	20	0.1	6.9	0.14	0.06	478.74	6	264	12.28	181	380
<i>Haemulon sciurus</i>	19	0.1	2.1	0.13	0.10	879.32	13	93	1.34	83	104
<i>Sphyrna tiburo</i>	19	0.1	2.1	0.13	0.12	1,076.49	17	710	15.72	465	794
<i>Caranx crysos</i>	18	0.1	6.2	0.12	0.05	432.27	4	172	17.54	78	340

Species	Number			Density Estimate (animals/set)				Standard Length (mm)			
	No.	%	% Occur	Mean	Stderr	CV	Max	Mean	Stderr	Min	Max
<i>Cynoscion nebulosus</i>	16	0.1	2.1	0.11	0.08	818.32	10	331	14.23	214	429
<i>Scomberomorus maculatus</i>	14	0.1	3.5	0.10	0.06	800.61	9	199	19.34	135	339
<i>Albula</i> spp.	12	0.1	3.5	0.08	0.04	626.68	5	296	22.79	175	392
<i>Lutjanus synagris</i>	11	0.1	5.6	0.08	0.03	466.51	3	99	2.39	88	112
<i>Menticirrhus americanus</i>	11	0.1	2.1	0.08	0.05	790.62	6	190	19.53	136	302
<i>Pomatomus saltatrix</i>	11	0.1	1.4	0.08	0.07	1,095.59	10	277	12.61	165	336
<i>Cynoscion</i> complex	10	0.1	2.8	0.07	0.04	715.51	5	222	17.21	148	310
<i>Haemulon parra</i>	10	0.1	3.5	0.07	0.04	754.96	6	104	8.39	79	171
<i>Sciaenops ocellatus</i>	9	0.1	3.5	0.06	0.03	633.78	4	394	24.57	280	531
<i>Megalops atlanticus</i>	7	<0.1	2.8	0.05	0.03	658.66	3	837	129.47	629	1,600
<i>Mugil rubrioculus</i>	7	<0.1	4.2	0.05	0.02	506.23	2	191	27.11	130	306
<i>Haemulon aurolineatum</i>	5	<0.1	1.4	0.03	0.02	862.53	3	90	1.95	83	95
<i>Scomberomorus regalis</i>	5	<0.1	1.4	0.03	0.03	987.92	4	216	14.93	160	240
<i>Lobotes surinamensis</i>	4	<0.1	2.8	0.03	0.01	593.67	1	203	31.87	129	282
<i>Paralichthys lethostigma</i>	4	<0.1	2.8	0.03	0.01	593.67	1	278	12.86	254	307
<i>Calamus arctifrons</i>	1	<0.1	0.7	0.01	0.01	1,200.00	1	136	.	136	136
<i>Carcharhinus leucas</i>	1	<0.1	0.7	0.01	0.01	1,200.00	1	690	.	690	690
<i>Lachnolaimus maximus</i>	1	<0.1	0.7	0.01	0.01	1,200.00	1	98	.	98	98
<i>Rhizoprionodon terraenovae</i>	1	<0.1	0.7	0.01	0.01	1,200.00	1	522	.	522	522
<b>Totals</b>	<b>4,098</b>	<b>23.4</b>	<b>.</b>	<b>28.46</b>	<b>5.05</b>	<b>212.83</b>	<b>604</b>	<b>.</b>	<b>.</b>	<b>50</b>	<b>1,600</b>

Species	Number		Density Estimate (animals/set)				Standard Length (mm)			
	No.	% Occur	Mean	Stderr	CV	Max	Mean	Stderr	Min	Max

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.

## River Sampling

### *21.3-m River Seines*

A total of 25,981 animals were collected in 207 21.3-m river seines, representing 59.7% of the overall SRS catch (Table 4.99). *Anchoa mitchilli* (n=10,085) was the most abundant taxon collected, accounting for 38.8% of the 21.3-m river seine catch (Table 4.102). *Eucinostomus spp.* (n=3,996) and *Menidia spp.* (n=1,910) were the next most abundant taxa, accounting for an additional 22.7% of the 21.3-m river seine catch. The taxa most frequently caught in 21.3-m river seines were *Eucinostomus spp.* (75.8% occurrence), *Eucinostomus harengulus* (54.1% occurrence), and *Menidia spp.* (48.3% occurrence).

A total of 2,086 animals from 27 selected taxa were collected, representing 8% of the entire 21.3-m river seine catch (Table 4.103). *Farfantepenaeus spp.* (n=366), and *Centropomus undecimalis* (n=360) were the most abundant selected taxa, accounting for 34.8% of the selected taxa collected by this gear. The selected taxa most frequently caught in 21.3-m river seines were *Farfantepenaeus spp.* (45.4% occurrence) and *Callinectes sapidus* (41.1% occurrence).

**Table 4.102:** Catch statistics for 10 dominant taxa collected in 207 21.3-m river seine samples during southern Indian River Lagoon stratified-random sampling, 2022.

Species	Number			Density Estimate (animals/100m <sup>2</sup> )				Standard Length (mm)			
	No.	%	% Occur	Mean	Stderr	CV	Max	Mean	Stderr	Min	Max
<i>Anchoa mitchilli</i>	10,085	38.8	21.3	71.65	38.12	765.49	7,500.00	33	0.05	17	63
<i>Eucinostomus</i> spp.	3,996	15.4	75.8	27.98	5.93	307.17	839.71	24	0.14	9	39
<i>Menidia</i> spp.	1,910	7.4	48.3	13.57	3.22	341.61	404.41	31	0.16	11	58
<i>Harengula humeralis</i>	1,378	5.3	1.0	9.74	8.96	1,327.07	1,858.82	28	0.16	23	54
<i>Eugerres plumieri</i>	1,070	4.1	44.9	7.35	2.05	407.11	398.53	40	1.03	6	227
<i>Diapterus auratus</i>	865	3.3	44.9	6.00	0.89	215.83	110.29	44	0.82	9	161
<i>Eucinostomus harengulus</i>	727	2.8	54.1	5.19	0.70	194.87	72.06	53	0.38	40	91
<i>Gambusia holbrooki</i>	713	2.7	20.8	5.09	2.32	652.84	444.12	25	0.19	12	43
<i>Eucinostomus gula</i>	374	1.4	19.3	2.67	0.70	377.18	92.65	53	0.45	40	86
<i>Farfantepenaeus</i> spp.	366	1.4	45.4	2.61	0.34	185.96	26.47	6	0.15	2	14
Subtotals	21,484	82.6	.	.	.	.	.	.	.	2	227
<b>Totals</b>	<b>25,981</b>	<b>100.0</b>	.	<b>185.47</b>	<b>43.16</b>	<b>334.79</b>	<b>7,902.94</b>	.	.	<b>2</b>	<b>606</b>

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.

**Table 4.103:** Catch statistics for selected taxa collected in 207 21.3-m river seine samples during southern Indian River Lagoon stratified-random sampling, 2022.

Species	Number			Density Estimate (animals/100m <sup>2</sup> )				Standard Length (mm)			
	No.	%	% Occur	Mean	Stderr	CV	Max	Mean	Stderr	Min	Max
<i>Farfantepenaeus</i> spp.	366	1.4	45.4	2.60	0.34	186.54	26.47	6	0.15	2	14
<i>Centropomus undecimalis</i>	360	1.4	40.6	2.56	0.42	234.42	60.29	70	4.33	12	606
<i>Callinectes sapidus</i>	348	1.3	41.1	2.47	0.43	248.76	61.76	19	1.13	3	151
<i>Brevoortia</i> spp.	269	1.0	9.7	1.91	1.32	993.91	269.12	38	0.64	17	58
<i>Mugil cephalus</i>	187	0.7	10.6	1.33	0.82	891.05	166.18	35	4.16	16	357
<i>Leiostomus xanthurus</i>	135	0.5	3.9	0.96	0.68	1,022.08	138.24	42	1.26	11	61
<i>Mugil curema</i>	124	0.5	9.2	0.88	0.42	685.11	82.35	63	3.50	16	180
<i>Litopenaeus setiferus</i>	66	0.3	3.9	0.47	0.31	945.71	60.29	6	0.29	3	11
<i>Micropogonias undulatus</i>	38	0.1	5.8	0.27	0.12	624.82	16.18	46	8.87	13	272
<i>Trachinotus falcatus</i>	37	0.1	3.9	0.26	0.13	704.21	20.59	30	2.68	8	65
<i>Lutjanus griseus</i>	30	0.1	8.7	0.21	0.06	406.94	7.35	90	10.59	11	204
<i>Mugil rubrioculus</i>	29	0.1	1.0	0.21	0.20	1,389.78	41.18	50	1.93	18	70
<i>Sphyraena barracuda</i>	28	0.1	7.2	0.20	0.06	449.67	8.82	92	11.76	20	213
<i>Archosargus probatocephalus</i>	21	0.1	7.2	0.15	0.05	449.67	7.35	128	18.82	23	279
<i>Centropomus parallelus</i>	11	<0.1	2.4	0.08	0.04	769.17	7.35	80	16.25	25	174
<i>Lutjanus synagris</i>	11	<0.1	2.4	0.08	0.05	949.24	10.29	37	5.53	19	82
<i>Caranx hippos</i>	5	<0.1	1.0	0.04	0.03	1,035.17	4.41	90	32.86	35	186
<i>Sciaenops ocellatus</i>	5	<0.1	2.4	0.04	0.02	637.15	1.47	24	4.66	9	35
<i>Elops saurus</i>	4	<0.1	1.9	0.03	0.01	714.12	1.47	45	5.58	33	60

Species	Number		Density Estimate (animals/100m <sup>2</sup> )				Standard Length (mm)				
	No.	% Occur	Mean	Stderr	CV	Max	Mean	Stderr	Min	Max	
<i>Lutjanus analis</i>	3	<0.1	1.4	0.02	0.01	826.62	1.47	93	19.60	63	130
<i>Centropomus ensiferus</i>	2	<0.1	0.5	0.01	0.01	1,438.75	2.94	70	10.50	59	80
<i>Menticirrhus americanus</i>	2	<0.1	0.5	0.01	0.01	1,438.75	2.94	48	11.00	37	59
<i>Centropomus pectinatus</i>	1	<0.1	0.5	0.01	0.01	1,438.75	1.47	22	.	22	22
<i>Cynoscion nebulosus</i>	1	<0.1	0.5	0.01	0.01	1,438.75	1.47	23	.	23	23
<i>Haemulon parra</i>	1	<0.1	0.5	0.01	0.01	1,438.75	1.47	42	.	42	42
<i>Paralichthys lethostigma</i>	1	<0.1	0.5	0.01	0.01	1,438.75	1.47	442	.	442	442
<i>Trachinotus carolinus</i>	1	<0.1	0.5	0.01	0.01	1,438.75	1.47	26	.	26	26
<b>Totals</b>	<b>2,086</b>	<b>8.0</b>	<b>.</b>	<b>14.82</b>	<b>2.02</b>	<b>196.45</b>	<b>291.18</b>	<b>.</b>	<b>.</b>	<b>2</b>	<b>606</b>

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.

## Appendix

**Table 4.104:** Monthly summary of taxa collected during southern Indian River Lagoon stratified-random sampling, 2022.

Taxa	Month												Totals
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
	E=35	E=35	E=12	E=35	E=12	E=35	E=12	E=35	E=35	E=35	E=35	E=35	E=351
<i>Acanthostracion quadricornis</i>	1	.	.	2	.	.	3	.	5	2	.	.	13
<i>Achirus lineatus</i>	3	5	.	2	.	3	1	10	3	10	18	.	55
<i>Aetobatus narinari</i>	.	.	.	.	.	.	.	.	.	.	1	.	1
<i>Agonostomus monticola</i>	.	.	.	.	.	.	.	.	.	15	6	.	21
<b><i>Albula</i> spp.</b>	.	.	.	2	1	.	5	1	.	.	3	.	12
<i>Aluterus schoepfii</i>	.	.	.	.	.	.	.	.	.	.	1	.	1
<i>Anchoa lyolepis</i>	.	21	.	.	.	.	.	.	.	.	.	.	21
<i>Anchoa mitchilli</i>	5	1,070	.	1,419	.	353	.	404	109	69	5,226	1,430	10,085
<b><i>Archosargus probatocephalus</i></b>	<b>9</b>	<b>13</b>	<b>18</b>	<b>55</b>	<b>5</b>	<b>41</b>	<b>78</b>	<b>33</b>	<b>15</b>	<b>23</b>	<b>21</b>	<b>17</b>	<b>328</b>
<i>Archosargus rhomboidalis</i>	114	20	37	1	9	15	.	20	109	17	58	3	403
<i>Archosargus</i> spp.	.	1	.	.	.	.	.	1	3	.	11	.	16
<i>Ariopsis felis</i>	8	47	56	49	114	119	98	192	43	31	47	2	806
<i>Bagre marinus</i>	.	2	1	1	8	.	17	1	.	.	10	.	40
<i>Bairdiella chrysoura</i>	344	.	.	5	32	1	1	.	.	2	2	.	387
<i>Bathygobius soporator</i>	.	.	.	1	.	.	.	1	.	.	.	1	3
<b><i>Brevoortia</i> spp.</b>	<b>559</b>	<b>6</b>	.	<b>220</b>	.	<b>8</b>	<b>3</b>	<b>16</b>	.	.	<b>102</b>	<b>16</b>	<b>930</b>
<i>Calamus arctifrons</i>	.	.	.	.	.	.	.	.	.	1	.	.	1

Taxa	Month												Totals
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
	E=35	E=35	E=12	E=35	E=12	E=35	E=12	E=35	E=35	E=35	E=35	E=35	E=351
<i>Callinectes ornatus</i>	.	3	8	2	1	5	.	7	.	7	18	5	56
<b><i>Callinectes sapidus</i></b>	<b>28</b>	<b>28</b>	<b>4</b>	<b>23</b>	<b>11</b>	<b>20</b>	<b>3</b>	<b>20</b>	<b>23</b>	<b>103</b>	<b>65</b>	<b>64</b>	<b>392</b>
<i>Callinectes similis</i>	2	4	2	6	5	7	.	2	.	1	.	4	33
<i>Callinectes</i> spp.	.	1	.	9	.	.	.	2	.	.	.	.	12
<i>Caranx bartholomaei</i>	.	.	.	1	.	.	.	.	.	.	.	.	1
<b><i>Caranx crysos</i></b>	.	<b>2</b>	.	<b>3</b>	<b>2</b>	<b>1</b>	<b>2</b>	.	.	<b>5</b>	.	<b>3</b>	<b>18</b>
<b><i>Caranx hippos</i></b>	<b>35</b>	<b>16</b>	<b>17</b>	<b>22</b>	<b>25</b>	<b>3</b>	<b>16</b>	<b>19</b>	<b>1</b>	<b>6</b>	<b>58</b>	<b>5</b>	<b>223</b>
<i>Caranx latus</i>	.	1	1	.	3	1	.	2	.	.	3	.	11
<i>Caranx ruber</i>	.	.	.	.	.	.	4	.	.	.	.	.	4
<b><i>Carcharhinus leucas</i></b>	.	.	.	.	.	.	.	.	.	.	.	<b>1</b>	<b>1</b>
<b><i>Centropomus ensiferus</i></b>	.	.	.	.	.	<b>2</b>	.	.	.	.	.	.	<b>2</b>
<b><i>Centropomus parallelus</i></b>	.	.	.	<b>3</b>	.	<b>5</b>	.	.	<b>3</b>	.	.	.	<b>11</b>
<b><i>Centropomus pectinatus</i></b>	<b>1</b>	.	.	.	.	.	.	.	.	.	.	.	<b>1</b>
<i>Centropomus</i> sp.	.	.	.	.	.	.	.	.	.	.	1	.	1
<b><i>Centropomus undecimalis</i></b>	<b>53</b>	<b>46</b>	<b>6</b>	<b>75</b>	<b>8</b>	<b>36</b>	<b>9</b>	<b>69</b>	<b>43</b>	<b>45</b>	<b>97</b>	<b>44</b>	<b>531</b>
<i>Chaetodipterus faber</i>	.	.	.	.	3	.	.	.	2	2	.	.	7
<i>Chilomycterus schoepfii</i>	4	1	5	5	.	1	1	.	.	1	3	3	24
<i>Chloroscombrus chrysurus</i>	.	.	.	.	.	.	.	.	.	26	.	.	26
<i>Cichlasoma urophthalmus</i>	2	3	.	3	.	3	.	9	9	.	1	5	35
<i>Citharichthys spilopterus</i>	5	9	1	31	1	8	3	26	17	.	13	6	120

Taxa	Month												Totals
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
	E=35	E=35	E=12	E=35	E=12	E=35	E=12	E=35	E=35	E=35	E=35	E=35	E=351
<i>Ctenogobius boleosoma</i>	19	11	.	2	.	.	.	.	.	2	6	7	47
<i>Ctenogobius fasciatus</i>	.	.	.	.	.	1	.	.	.	.	.	.	1
<i>Ctenogobius pseudofasciatus</i>	.	.	.	.	.	.	.	.	.	.	.	1	1
<i>Ctenogobius shufeldti</i>	.	2	.	.	.	.	.	.	.	.	.	.	2
<i>Ctenogobius smaragdus</i>	1	.	.	.	.	.	.	5	3	.	5	.	14
<b>Cynoscion complex</b>	<b>3</b>	.	.	<b>1</b>	.	<b>5</b>	.	.	.	.	<b>1</b>	.	<b>10</b>
<b><i>Cynoscion nebulosus</i></b>	.	.	<b>2</b>	.	.	<b>1</b>	<b>4</b>	.	.	.	<b>10</b>	.	<b>17</b>
<i>Dasyatis centroura</i>	.	.	.	.	.	.	.	.	.	1	1	.	2
<i>Dasyatis sabina</i>	2	1	4	3	3	7	18	1	4	15	9	4	71
<i>Dasyatis say</i>	.	8	6	14	9	18	13	5	15	18	3	3	112
<i>Diapterus auratus</i>	301	1,594	869	910	563	536	391	1,172	641	117	838	670	8,602
<i>Diapterus rhombeus</i>	476	5	.	5	3	.	.	2	1	.	.	.	492
<i>Diodon holocanthus</i>	.	1	.	.	.	.	.	.	.	.	.	.	1
<i>Diplodus holbrookii</i>	.	.	.	12	3	.	.	.	.	.	.	.	15
<i>Dormitator maculatus</i>	.	.	.	1	.	.	.	.	.	.	.	.	1
<i>Dorosoma petenense</i>	1	.	.	.	.	1	.	.	.	45	.	.	47
<i>Echeneis neucratoides</i>	.	.	.	.	.	.	.	.	.	.	1	.	1
<i>Eleotris amblyopsis</i>	.	1	.	6	.	.	.	.	.	.	.	.	7
<b><i>Elops saurus</i></b>	<b>27</b>	<b>17</b>	<b>55</b>	<b>39</b>	<b>10</b>	<b>171</b>	<b>89</b>	<b>4</b>	<b>1</b>	<b>9</b>	<b>39</b>	<b>5</b>	<b>466</b>
<i>Eucinostomus gula</i>	49	88	69	90	275	124	37	167	69	51	54	38	1,111

Taxa	Month												Totals
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
	E=35	E=35	E=12	E=35	E=12	E=35	E=12	E=35	E=35	E=35	E=35	E=35	E=351
<i>Eucinostomus harengulus</i>	59	159	134	196	213	159	30	133	113	63	41	33	1,333
<i>Eucinostomus jonesii</i>	20	5	8	77	39	97	.	.	.	.	1	7	254
<i>Eucinostomus melanopterus</i>	1	1	2	4	1	4	6	9	1	4	1	1	35
<i>Eucinostomus</i> spp.	405	309	.	671	.	225	.	320	111	226	1,500	229	3,996
<i>Eugerres plumieri</i>	19	60	.	255	1	454	2	110	75	58	35	13	1,082
<i>Evorthodus lyricus</i>	.	.	.	9	.	32	.	6	3	.	18	.	68
<b><i>Farfantepenaeus</i> spp.</b>	<b>26</b>	<b>58</b>	.	<b>68</b>	.	<b>19</b>	.	<b>58</b>	<b>71</b>	<b>12</b>	<b>39</b>	<b>15</b>	<b>366</b>
<i>Gambusia holbrooki</i>	46	388	.	34	.	1	.	16	2	17	93	116	713
<i>Gerres cinereus</i>	18	65	2	23	5	16	27	26	55	67	107	20	431
<i>Gobiomorus dormitor</i>	3	2	.	3	.	.	.	1	.	1	.	1	11
<i>Gobionellus oceanicus</i>	2	9	.	2	.	5	.	8	1	1	16	37	81
<i>Gobiosoma bosc</i>	3	6	.	5	.	2	.	2	4	1	3	10	36
<i>Gobiosoma robustum</i>	.	.	.	.	.	.	.	.	.	.	1	.	1
<i>Gobiosoma</i> spp.	6	1	.	6	.	4	.	3	63	5	16	9	113
<i>Gymnura micrura</i>	1	1	.	.	.	1	6	.	.	.	.	.	9
<b><i>Haemulon aurolineatum</i></b>	<b>3</b>	<b>2</b>	.	.	.	.	.	.	.	.	.	.	<b>5</b>
<b><i>Haemulon parra</i></b>	<b>6</b>	.	<b>1</b>	.	.	.	.	<b>2</b>	.	<b>2</b>	.	.	<b>11</b>
<b><i>Haemulon sciurus</i></b>	.	.	.	.	<b>5</b>	.	.	.	<b>13</b>	<b>1</b>	.	.	<b>19</b>
<i>Haemulon</i> sp.	.	.	.	.	.	.	.	1	.	.	.	.	1
<i>Halichoeres bivittatus</i>	.	.	.	.	.	1	.	.	.	.	.	.	1

Taxa	Month												Totals
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
	E=35	E=35	E=12	E=35	E=12	E=35	E=12	E=35	E=35	E=35	E=35	E=35	E=351
<i>Harengula humeralis</i>	.	.	.	1,378	.	.	.	.	.	.	.	.	1,378
<i>Harengula jaguana</i>	44	20	4	229	64	.	2	91	.	5	.	.	459
<i>Harengula</i> spp.	.	.	.	5	.	.	.	.	.	.	.	.	5
<i>Hemiramphus brasiliensis</i>	.	.	1	.	.	.	.	.	.	.	.	.	1
<i>Heterandria formosa</i>	.	.	.	.	.	1	.	.	.	.	.	.	1
<i>Hyporhamphus meeki</i>	.	.	.	.	.	.	.	.	.	.	4	.	4
<i>Labidesthes sicculus</i>	3	3	.	8	.	16	.	3	14	8	58	20	133
<b><i>Lachnolaimus maximus</i></b>	.	.	.	.	.	.	.	.	.	1	.	.	1
<i>Lactophrys trigonus</i>	2	1	3	1	1	1	2	.	18	9	4	.	42
<i>Lagodon rhomboides</i>	31	25	1	13	48	2	19	25	11	6	9	16	206
<b><i>Leiostomus xanthurus</i></b>	1	35	.	109	6	3	12	.	.	.	.	.	166
<i>Lepisosteus osseus</i>	1	.	.	.	.	.	.	.	.	.	.	.	1
<i>Lepisosteus platyrhincus</i>	.	1	.	2	.	1	.	1	.	.	.	.	5
<i>Lepomis macrochirus</i>	6	6	.	2	.	.	.	.	6	7	7	25	59
<i>Lepomis microlophus</i>	.	.	.	.	.	.	.	.	1	2	.	.	3
<i>Lepomis</i> spp.	.	.	.	.	.	.	.	.	40	7	.	2	49
<b><i>Litopenaeus setiferus</i></b>	.	1	.	13	.	50	.	.	.	.	.	2	66
<b><i>Lobotes surinamensis</i></b>	.	.	.	.	.	1	.	.	.	2	.	1	4
<i>Lophogobius cyprinoides</i>	3	17	.	28	.	24	.	43	24	16	22	29	206
<b><i>Lutjanus analis</i></b>	5	12	9	1	15	5	6	13	10	44	28	12	160

Taxa	Month												Totals
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
	E=35	E=35	E=12	E=35	E=12	E=35	E=12	E=35	E=35	E=35	E=35	E=35	E=351
<i>Lutjanus griseus</i>	2	1	.	3	.	.	3	56	15	8	8	1	97
<i>Lutjanus synagris</i>	1	2	2	1	1	1	.	1	3	.	9	1	22
<i>Megalops atlanticus</i>	1	.	.	.	.	.	3	2	.	.	1	.	7
<i>Menidia</i> spp.	460	84	.	46	.	88	.	287	317	99	467	62	1,910
<i>Menticirrhus americanus</i>	6	.	.	.	1	.	.	2	.	.	4	.	13
<i>Microgobius gulosus</i>	23	24	.	13	.	16	.	13	89	35	102	26	341
<i>Microgobius microlepis</i>	1	45	.	.	.	46	.	.	.	.	.	2	94
<i>Microgobius thalassinus</i>	.	.	.	3	.	.	.	2	1	1	.	.	7
<i>Microphis brachyurus</i>	2	3	.	.	.	.	.	5	.	1	.	.	11
<i>Micropogonias undulatus</i>	28	40	12	43	33	67	130	27	.	1	23	14	418
<i>Micropterus salmoides</i>	.	.	.	.	.	.	.	.	.	.	1	.	1
<i>Mugil cephalus</i>	40	191	43	9	23	9	40	26	6	11	10	44	452
<i>Mugil curema</i>	137	214	32	34	9	42	15	119	37	17	47	200	903
<i>Mugil rubrioculus</i>	1	1	3	1	.	1	.	28	1	.	.	.	36
<i>Mugil</i> spp.	.	.	.	.	.	.	.	.	.	.	66	2	68
<i>Myrophis punctatus</i>	.	.	.	.	.	1	.	.	.	.	.	.	1
<i>Narcine bancroftii</i>	.	1	.	.	.	.	.	.	.	1	.	1	3
<i>Oligoplites saurus</i>	7	6	3	7	17	4	9	7	5	28	42	7	142
<i>Opisthonema oglinum</i>	.	.	8	41	.	6	2	4	.	5	.	.	66
<i>Oreochromis</i> complex	1	1	.	3	.	3	.	3	1	3	.	2	17

Taxa	Month												Totals
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
	E=35	E=35	E=12	E=35	E=12	E=35	E=12	E=35	E=35	E=35	E=35	E=35	E=351
<i>Sarotherodon</i> spp.	.	23	.	9	.	9	.	.	2	.	.	2	45
<i>Orthopristis chrysoptera</i>	.	.	.	1	58	.	.	.	.	4	.	.	63
<b><i>Paralichthys lethostigma</i></b>	.	.	.	.	.	1	1	3	.	.	.	.	5
<i>Poecilia latipinna</i>	.	2	.	1	.	.	.	.	.	.	1	1	5
<i>Pogonias cromis</i>	.	1	1	2	.	.	6	.	1	.	9	.	20
<b><i>Pomatomus saltatrix</i></b>	.	.	.	.	.	.	.	.	.	1	10	.	11
<i>Portunus</i> sp.	.	.	.	.	.	.	.	1	.	.	.	.	1
<i>Prionotus scitulus</i>	1	2	.	.	.	.	.	.	.	.	.	.	3
<i>Prionotus</i> sp.	.	.	.	1	.	.	.	.	.	.	.	.	1
<i>Prionotus tribulus</i>	1	1	1	.	.	.	.	.	.	1	.	.	4
<i>Pterygoplichthys</i> spp.	.	.	.	.	.	1	.	.	1	.	.	1	3
<i>Rhinoptera bonasus</i>	.	.	.	.	.	.	.	.	.	.	1	.	1
<b><i>Rhizoprionodon terraenovae</i></b>	.	1	.	.	.	.	.	.	.	.	.	.	1
<i>Sardinella aurita</i>	.	.	.	36	.	.	.	.	.	.	.	.	36
<b><i>Sciaenops ocellatus</i></b>	3	.	.	.	.	.	.	.	1	5	4	1	14
<b><i>Scomberomorus maculatus</i></b>	.	1	.	.	3	.	9	.	.	.	1	.	14
<b><i>Scomberomorus regalis</i></b>	.	.	.	.	.	.	.	1	.	.	4	.	5
<i>Scorpaena brasiliensis</i>	.	.	.	.	.	.	1	.	.	.	.	.	1
<i>Scorpaena grandicornis</i>	.	1	.	3	.	1	.	2	3	.	.	.	10
<i>Scorpaena</i> spp.	.	.	.	.	.	.	2	.	.	.	.	.	2

Taxa	Month												Totals
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
	E=35	E=35	E=12	E=35	E=12	E=35	E=12	E=35	E=35	E=35	E=35	E=35	E=351
<i>Selene vomer</i>	22	44	26	54	8	6	14	18	2	12	195	11	412
<i>Sparisoma atomarium</i>	.	.	.	.	.	.	.	.	.	3	.	.	3
<i>Sphaeroides nephelus</i>	5	5	3	1	.	.	2	.	2	3	2	.	23
<i>Sphaeroides spengleri</i>	4	2	3	4	.	.	1	.	5	.	1	.	20
<i>Sphaeroides</i> sp.	.	1	.	.	.	.	.	.	.	.	.	.	1
<i>Sphaeroides testudineus</i>	38	31	10	30	18	51	46	113	29	46	36	17	465
<b><i>Sphyræna barracuda</i></b>	<b>30</b>	<b>22</b>	<b>22</b>	<b>12</b>	<b>32</b>	<b>8</b>	<b>18</b>	<b>15</b>	<b>19</b>	<b>23</b>	<b>54</b>	<b>36</b>	<b>291</b>
<b><i>Sphyrna tiburo</i></b>	.	17	.	.	.	.	.	1	.	.	1	.	19
<i>Strongylura marina</i>	.	1	.	.	.	.	.	.	.	.	5	.	6
<i>Strongylura notata</i>	2	.	1	1	1	1	1	4	1	1	12	.	25
<i>Strongylura timucu</i>	.	.	.	1	.	.	.	.	2	.	.	1	4
<i>Symphurus plagiusa</i>	.	.	.	.	.	.	.	.	.	.	.	1	1
<i>Syngnathus louisianae</i>	1	.	.	.	.	1	.	.	.	.	.	.	2
<i>Syngnathus scovelli</i>	.	.	.	.	.	.	.	.	1	.	.	.	1
<i>Synodus foetens</i>	4	5	.	1	.	3	2	.	.	.	1	1	17
<i>Tilapia mariae</i>	.	2	.	.	.	.	.	.	.	.	4	.	6
<b><i>Trachinotus carolinus</i></b>	<b>1</b>	.	.	.	<b>11</b>	.	<b>1</b>	.	.	.	<b>9</b>	<b>1</b>	<b>23</b>
<b><i>Trachinotus falcatus</i></b>	.	<b>5</b>	<b>5</b>	<b>7</b>	.	<b>4</b>	.	<b>3</b>	<b>43</b>	<b>1</b>	<b>5</b>	<b>19</b>	<b>92</b>
<i>Trinectes maculatus</i>	12	11	.	11	4	9	.	8	10	3	5	7	80
<i>Tylosurus crocodilus</i>	8	.	.	.	.	2	4	.	.	2	.	2	18

Taxa	Month												Totals
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
	E=35	E=35	E=12	E=35	E=12	E=35	E=12	E=35	E=35	E=35	E=35	E=35	
<i>Tylosurus</i> sp.									1				1
<b>Totals</b>	<b>3,608</b>	<b>5,005</b>	<b>1,501</b>	<b>6,544</b>	<b>1,711</b>	<b>3,001</b>	<b>1,218</b>	<b>3,813</b>	<b>2,353</b>	<b>1,504</b>	<b>9,875</b>	<b>3,398</b>	<b>43,531</b>

Effort, or total number of hauls, is labeled 'E'. Taxa are arranged alphabetically. Selected taxa are highlighted in bold.

**Table 4.105:** Summary by gear and stratum of taxa collected during southern Indian River Lagoon stratified-random sampling, 2022.

Taxa	Gear and Strata				Totals
	21.3-m river seine		183-m haul seine		
	Over	Nonover	Over	Nonover	
	E=149	E=58	E=110	E=34	
<i>Acanthostracion quadricornis</i>	.	.	10	3	13
<i>Achirus lineatus</i>	41	8	6	.	55
<i>Aetobatus narinari</i>	.	.	1	.	1
<i>Agonostomus monticola</i>	15	6	.	.	21
<b><i>Albula</i> spp.</b>	.	.	7	5	12
<i>Aluterus schoepfii</i>	.	.	1	.	1
<i>Anchoa lyolepis</i>	21	.	.	.	21
<i>Anchoa mitchilli</i>	7,942	2,143	.	.	10,085
<b><i>Archosargus probatocephalus</i></b>	15	6	249	58	328
<i>Archosargus rhomboidalis</i>	.	.	398	5	403
<i>Archosargus</i> spp.	.	.	16	.	16
<i>Ariopsis felis</i>	4	4	722	76	806
<i>Bagre marinus</i>	.	.	28	12	40
<i>Bairdiella chrysoura</i>	4	.	38	345	387
<i>Bathygobius soporator</i>	2	1	.	.	3
<b><i>Brevoortia</i> spp.</b>	254	15	105	556	930
<b><i>Calamus arctifrons</i></b>	.	.	1	.	1
<i>Callinectes ornatus</i>	9	9	36	2	56
<b><i>Callinectes sapidus</i></b>	287	61	32	12	392
<i>Callinectes similis</i>	9	5	12	7	33
<i>Callinectes</i> spp.	4	3	.	5	12
<i>Caranx bartholomaei</i>	.	.	.	1	1
<b><i>Caranx crysos</i></b>	.	.	13	5	18
<b><i>Caranx hippos</i></b>	5	.	180	38	223
<i>Caranx latus</i>	.	1	6	4	11
<i>Caranx ruber</i>	.	.	.	4	4

Taxa	Gear and Strata				Totals
	21.3-m river seine		183-m haul seine		
	Over	Nonover	Over	Nonover	
	E=149	E=58	E=110	E=34	
<i>Carcharhinus leucas</i>	.	.	.	1	1
<i>Centropomus ensiferus</i>	2	.	.	.	2
<i>Centropomus parallelus</i>	11	.	.	.	11
<i>Centropomus pectinatus</i>	.	1	.	.	1
<i>Centropomus</i> sp.	1	.	.	.	1
<b><i>Centropomus undecimalis</i></b>	<b>229</b>	<b>131</b>	<b>142</b>	<b>29</b>	<b>531</b>
<i>Chaetodipterus faber</i>	.	.	4	3	7
<i>Chilomycterus schoepfii</i>	.	.	21	3	24
<i>Chloroscombrus chrysurus</i>	.	.	26	.	26
<i>Cichlasoma urophthalmus</i>	23	12	.	.	35
<i>Citharichthys spilopterus</i>	61	45	14	.	120
<i>Ctenogobius boleosoma</i>	36	11	.	.	47
<i>Ctenogobius fasciatus</i>	1	.	.	.	1
<i>Ctenogobius pseudofasciatus</i>	1	.	.	.	1
<i>Ctenogobius shufeldti</i>	2	.	.	.	2
<i>Ctenogobius smaragdus</i>	9	5	.	.	14
<b><i>Cynoscion complex</i></b>	.	.	<b>1</b>	<b>9</b>	<b>10</b>
<b><i>Cynoscion nebulosus</i></b>	<b>1</b>	.	<b>16</b>	.	<b>17</b>
<i>Dasyatis centroura</i>	.	.	2	.	2
<i>Dasyatis sabina</i>	4	.	58	9	71
<i>Dasyatis say</i>	.	.	91	21	112
<i>Diapterus auratus</i>	662	203	6,290	1,447	8,602
<i>Diapterus rhombeus</i>	1	7	6	478	492
<i>Diodon holocanthus</i>	.	1	.	.	1
<i>Diplodus holbrookii</i>	.	12	.	3	15
<i>Dormitator maculatus</i>	1	.	.	.	1
<i>Dorosoma petenense</i>	46	.	.	1	47
<i>Echeneis neucratoides</i>	.	.	1	.	1

Taxa	Gear and Strata				Totals
	21.3-m river seine		183-m haul seine		
	Over	Nonover	Over	Nonover	
	E=149	E=58	E=110	E=34	
<i>Eleotris amblyopsis</i>	7	.	.	.	7
<b><i>Elops saurus</i></b>	<b>2</b>	<b>2</b>	<b>264</b>	<b>198</b>	<b>466</b>
<i>Eucinostomus gula</i>	206	168	374	363	1,111
<i>Eucinostomus harengulus</i>	603	124	351	255	1,333
<i>Eucinostomus jonesii</i>	29	175	47	3	254
<i>Eucinostomus melanopterus</i>	.	.	28	7	35
<i>Eucinostomus</i> spp.	2,821	1,175	.	.	3,996
<i>Eugerres plumieri</i>	818	252	11	1	1,082
<i>Evorthodus lyricus</i>	63	5	.	.	68
<b><i>Farfantepenaeus</i> spp.</b>	<b>228</b>	<b>138</b>	.	.	<b>366</b>
<i>Gambusia holbrooki</i>	171	542	.	.	713
<i>Gerres cinereus</i>	216	50	120	45	431
<i>Gobiomorus dormitor</i>	10	1	.	.	11
<i>Gobionellus oceanicus</i>	41	40	.	.	81
<i>Gobiosoma bosc</i>	31	5	.	.	36
<i>Gobiosoma robustum</i>	1	.	.	.	1
<i>Gobiosoma</i> spp.	97	16	.	.	113
<i>Gymnura micrura</i>	.	.	5	4	9
<b><i>Haemulon aurolineatum</i></b>	.	.	<b>5</b>	.	<b>5</b>
<b><i>Haemulon parra</i></b>	.	<b>1</b>	<b>10</b>	.	<b>11</b>
<b><i>Haemulon sciurus</i></b>	.	.	<b>19</b>	.	<b>19</b>
<i>Haemulon</i> sp.	.	1	.	.	1
<i>Halichoeres bivittatus</i>	.	.	1	.	1
<i>Harengula humeralis</i>	7	1,371	.	.	1,378
<i>Harengula jaguana</i>	15	144	175	125	459
<i>Harengula</i> spp.	.	5	.	.	5
<i>Hemiramphus brasiliensis</i>	.	.	1	.	1
<i>Heterandria formosa</i>	1	.	.	.	1

Taxa	Gear and Strata				Totals
	21.3-m river seine		183-m haul seine		
	Over	Nonover	Over	Nonover	
	E=149	E=58	E=110	E=34	
<i>Hyporhamphus meeki</i>	.	.	4	.	4
<i>Labidesthes sicculus</i>	91	42	.	.	133
<b><i>Lachnolaimus maximus</i></b>	.	.	1	.	1
<i>Lactophrys trigonus</i>	.	.	40	2	42
<i>Lagodon rhomboides</i>	13	12	164	17	206
<b><i>Leiostomus xanthurus</i></b>	<b>29</b>	<b>106</b>	<b>21</b>	<b>10</b>	<b>166</b>
<i>Lepisosteus osseus</i>	.	.	.	1	1
<i>Lepisosteus platyrhincus</i>	3	2	.	.	5
<i>Lepomis macrochirus</i>	39	20	.	.	59
<i>Lepomis microlophus</i>	3	.	.	.	3
<i>Lepomis</i> spp.	47	2	.	.	49
<b><i>Litopenaeus setiferus</i></b>	<b>4</b>	<b>62</b>	.	.	<b>66</b>
<b><i>Lobotes surinamensis</i></b>	.	.	<b>3</b>	<b>1</b>	<b>4</b>
<i>Lophogobius cyprinoides</i>	176	30	.	.	206
<b><i>Lutjanus analis</i></b>	<b>2</b>	<b>1</b>	<b>146</b>	<b>11</b>	<b>160</b>
<b><i>Lutjanus griseus</i></b>	<b>23</b>	<b>7</b>	<b>67</b>	.	<b>97</b>
<b><i>Lutjanus synagris</i></b>	<b>10</b>	<b>1</b>	<b>10</b>	<b>1</b>	<b>22</b>
<b><i>Megalops atlanticus</i></b>	.	.	<b>6</b>	<b>1</b>	<b>7</b>
<i>Menidia</i> spp.	1,332	578	.	.	1,910
<b><i>Menticirrhus americanus</i></b>	.	<b>2</b>	<b>5</b>	<b>6</b>	<b>13</b>
<i>Microgobius gulosus</i>	260	81	.	.	341
<i>Microgobius microlepis</i>	1	93	.	.	94
<i>Microgobius thalassinus</i>	3	4	.	.	7
<i>Microphis brachyurus</i>	8	3	.	.	11
<b><i>Micropogonias undulatus</i></b>	<b>35</b>	<b>3</b>	<b>303</b>	<b>77</b>	<b>418</b>
<i>Micropterus salmoides</i>	.	1	.	.	1
<b><i>Mugil cephalus</i></b>	<b>40</b>	<b>147</b>	<b>215</b>	<b>50</b>	<b>452</b>
<b><i>Mugil curema</i></b>	<b>76</b>	<b>48</b>	<b>514</b>	<b>265</b>	<b>903</b>

Taxa	Gear and Strata				Totals
	21.3-m river seine		183-m haul seine		
	Over	Nonover	Over	Nonover	
	E=149	E=58	E=110	E=34	
<b><i>Mugil rubrioculus</i></b>	29	.	2	5	36
<i>Mugil</i> spp.	66	2	.	.	68
<i>Myrophis punctatus</i>	1	.	.	.	1
<i>Narcine bancroftii</i>	.	.	2	1	3
<i>Oligoplites saurus</i>	1	.	131	10	142
<i>Opisthonema oglinum</i>	42	8	15	1	66
<i>Oreochromis</i> complex	12	5	.	.	17
<i>Sarotherodon</i> spp.	26	19	.	.	45
<i>Orthopristis chrysoptera</i>	.	1	62	.	63
<b><i>Paralichthys lethostigma</i></b>	.	1	2	2	5
<i>Poecilia latipinna</i>	1	4	.	.	5
<b><i>Pogonias cromis</i></b>	.	.	20	.	20
<b><i>Pomatomus saltatrix</i></b>	.	.	11	.	11
<i>Portunus</i> sp.	.	1	.	.	1
<i>Prionotus scitulus</i>	.	2	.	1	3
<i>Prionotus</i> sp.	.	.	.	1	1
<i>Prionotus tribulus</i>	3	.	1	.	4
<i>Pterygoplichthys</i> spp.	2	1	.	.	3
<i>Rhinoptera bonasus</i>	.	.	1	.	1
<b><i>Rhizoprionodon terraenovae</i></b>	.	.	1	.	1
<i>Sardinella aurita</i>	.	36	.	.	36
<b><i>Sciaenops ocellatus</i></b>	4	1	9	.	14
<b><i>Scomberomorus maculatus</i></b>	.	.	13	1	14
<b><i>Scomberomorus regalis</i></b>	.	.	4	1	5
<i>Scorpaena brasiliensis</i>	.	.	.	1	1
<i>Scorpaena grandicornis</i>	3	2	5	.	10
<i>Scorpaena</i> spp.	.	.	2	.	2
<i>Selene vomer</i>	.	.	340	72	412

Taxa	Gear and Strata				Totals
	21.3-m river seine		183-m haul seine		
	Over	Nonover	Over	Nonover	
	E=149	E=58	E=110	E=34	
<i>Sparisoma atomarium</i>	.	.	3	.	3
<i>Sphoeroides nephelus</i>	4	3	15	1	23
<i>Sphoeroides spengleri</i>	4	1	10	5	20
<i>Sphoeroides</i> sp.	.	1	.	.	1
<i>Sphoeroides testudineus</i>	61	38	230	136	465
<b><i>Sphyraena barracuda</i></b>	<b>14</b>	<b>14</b>	<b>203</b>	<b>60</b>	<b>291</b>
<b><i>Sphyrna tiburo</i></b>	.	.	<b>19</b>	.	<b>19</b>
<i>Strongylura marina</i>	.	.	6	.	6
<i>Strongylura notata</i>	11	2	12	.	25
<i>Strongylura timucu</i>	4	.	.	.	4
<i>Symphurus plagiosa</i>	.	1	.	.	1
<i>Syngnathus louisianae</i>	1	1	.	.	2
<i>Syngnathus scovelli</i>	1	.	.	.	1
<i>Synodus foetens</i>	8	5	1	3	17
<i>Tilapia mariae</i>	5	1	.	.	6
<b><i>Trachinotus carolinus</i></b>	.	<b>1</b>	<b>21</b>	<b>1</b>	<b>23</b>
<b><i>Trachinotus falcatus</i></b>	<b>10</b>	<b>27</b>	<b>51</b>	<b>4</b>	<b>92</b>
<i>Trinectes maculatus</i>	63	12	1	4	80
<i>Tylosurus crocodilus</i>	.	.	8	10	18
<i>Tylosurus</i> sp.	.	.	1	.	1
<b>Totals</b>	<b>17,641</b>	<b>8,340</b>	<b>12,645</b>	<b>4,905</b>	<b>43,531</b>

Sampling with 21.3-m bay seine was stratified by the presence or absence of a shoreline ('Shore' or offshore) within 5-m. Offshore sets were further stratified by the presence or absence of bottom vegetation ('Veg' or 'Unveg'). Sampling with 21.3-m river seine and 183-m haul seine was stratified by the presence or absence of overhanging vegetation ('Over' or 'Nonover'). Effort, or the total number of hauls, is labeled 'E'. Taxa are arranged alphabetically. Selected taxa are highlighted in bold.

**Table 4.106:** Summary by zone of taxa collected during southern Indian River Lagoon stratified-random sampling, 2022.

Taxa	Zone				Totals
	I	J	L	T	
	E=48	E=48	E=45	E=210	E=351
<i>Acanthostracion quadricornis</i>	.	13	.	.	13
<i>Achirus lineatus</i>	4	1	13	37	55
<i>Aetobatus narinari</i>	1	.	.	.	1
<i>Agonostomus monticola</i>	.	.	.	21	21
<b><i>Albula</i> spp.</b>	.	<b>10</b>	.	<b>2</b>	<b>12</b>
<i>Aluterus schoepfii</i>	.	1	.	.	1
<i>Anchoa lyolepis</i>	.	.	.	21	21
<i>Anchoa mitchilli</i>	.	.	911	9,174	10,085
<b><i>Archosargus probatocephalus</i></b>	<b>92</b>	<b>48</b>	<b>2</b>	<b>186</b>	<b>328</b>
<i>Archosargus rhomboidalis</i>	312	91	.	.	403
<i>Archosargus</i> spp.	3	13	.	.	16
<i>Ariopsis felis</i>	330	305	1	170	806
<i>Bagre marinus</i>	17	15	.	8	40
<i>Bairdiella chrysoura</i>	35	3	.	349	387
<i>Bathygobius soporator</i>	.	.	1	2	3
<b><i>Brevoortia</i> spp.</b>	<b>2</b>	<b>87</b>	<b>18</b>	<b>823</b>	<b>930</b>
<b><i>Calamus arctifrons</i></b>	<b>1</b>	.	.	.	<b>1</b>
<i>Callinectes ornatus</i>	14	24	2	16	56
<b><i>Callinectes sapidus</i></b>	<b>13</b>	<b>11</b>	<b>41</b>	<b>327</b>	<b>392</b>
<i>Callinectes similis</i>	.	15	7	11	33
<i>Callinectes</i> spp.	.	5	3	4	12
<i>Caranx bartholomaei</i>	.	1	.	.	1
<b><i>Caranx crysos</i></b>	<b>4</b>	<b>9</b>	.	<b>5</b>	<b>18</b>
<b><i>Caranx hippos</i></b>	<b>84</b>	<b>107</b>	<b>2</b>	<b>30</b>	<b>223</b>
<i>Caranx latus</i>	4	4	.	3	11
<i>Caranx ruber</i>	.	4	.	.	4
<b><i>Carcharhinus leucas</i></b>	.	.	.	<b>1</b>	<b>1</b>

Taxa	Zone				Totals
	I	J	L	T	
	E=48	E=48	E=45	E=210	E=351
<i>Centropomus ensiferus</i>	.	.	.	2	2
<i>Centropomus parallelus</i>	.	.	.	11	11
<i>Centropomus pectinatus</i>	.	.	.	1	1
<i>Centropomus</i> sp.	.	.	.	1	1
<b><i>Centropomus undecimalis</i></b>	<b>95</b>	<b>37</b>	<b>28</b>	<b>371</b>	<b>531</b>
<i>Chaetodipterus faber</i>	5	2	.	.	7
<i>Chilomycterus schoepfii</i>	9	15	.	.	24
<i>Chloroscombrus chrysurus</i>	.	.	.	26	26
<i>Cichlasoma urophthalmus</i>	.	.	.	35	35
<i>Citharichthys spilopterus</i>	.	7	19	94	120
<i>Ctenogobius boleosoma</i>	.	.	39	8	47
<i>Ctenogobius fasciatus</i>	.	.	1	.	1
<i>Ctenogobius pseudofasciatus</i>	.	.	.	1	1
<i>Ctenogobius shufeldti</i>	.	.	.	2	2
<i>Ctenogobius smaragdus</i>	.	.	14	.	14
<b><i>Cynoscion complex</i></b>	.	<b>2</b>	.	<b>8</b>	<b>10</b>
<b><i>Cynoscion nebulosus</i></b>	.	<b>16</b>	.	<b>1</b>	<b>17</b>
<i>Dasyatis centroura</i>	2	.	.	.	2
<i>Dasyatis sabina</i>	12	37	.	22	71
<i>Dasyatis say</i>	74	24	.	14	112
<i>Diapterus auratus</i>	3,655	3,113	177	1,657	8,602
<i>Diapterus rhombeus</i>	6	.	2	484	492
<i>Diodon holocanthus</i>	.	.	1	.	1
<i>Diplodus holbrookii</i>	3	.	.	12	15
<i>Dormitator maculatus</i>	.	.	.	1	1
<i>Dorosoma petenense</i>	.	.	1	46	47
<i>Echeneis neucratoides</i>	1	.	.	.	1
<i>Eleotris amblyopsis</i>	.	.	.	7	7
<b><i>Elops saurus</i></b>	<b>254</b>	<b>179</b>	.	<b>33</b>	<b>466</b>

Taxa	Zone				Totals
	I	J	L	T	
	E=48	E=48	E=45	E=210	E=351
<i>Eucinostomus gula</i>	568	157	250	136	1,111
<i>Eucinostomus harengulus</i>	351	222	205	555	1,333
<i>Eucinostomus jonesii</i>	3	47	8	196	254
<i>Eucinostomus melanopterus</i>	15	7	.	13	35
<i>Eucinostomus</i> spp.	.	.	1,118	2,878	3,996
<i>Eugerres plumieri</i>	1	4	455	622	1,082
<i>Evorthodus lyricus</i>	.	.	50	18	68
<b><i>Farfantepenaeus</i> spp.</b>	.	.	<b>107</b>	<b>259</b>	<b>366</b>
<i>Gambusia holbrooki</i>	.	.	351	362	713
<i>Gerres cinereus</i>	34	119	200	78	431
<i>Gobiomorus dormitor</i>	.	.	1	10	11
<i>Gobionellus oceanicus</i>	.	.	23	58	81
<i>Gobiosoma bosc</i>	.	.	4	32	36
<i>Gobiosoma robustum</i>	.	.	.	1	1
<i>Gobiosoma</i> spp.	.	.	5	108	113
<i>Gymnura micrura</i>	.	7	.	2	9
<b><i>Haemulon aurolineatum</i></b>	<b>2</b>	<b>3</b>	.	.	<b>5</b>
<b><i>Haemulon parra</i></b>	<b>2</b>	<b>8</b>	<b>1</b>	.	<b>11</b>
<b><i>Haemulon sciurus</i></b>	<b>5</b>	<b>14</b>	.	.	<b>19</b>
<i>Haemulon</i> sp.	.	.	1	.	1
<i>Halichoeres bivittatus</i>	.	1	.	.	1
<i>Harengula humeralis</i>	.	.	7	1,371	1,378
<i>Harengula jaguana</i>	72	66	15	306	459
<i>Harengula</i> spp.	.	.	.	5	5
<i>Hemiramphus brasiliensis</i>	1	.	.	.	1
<i>Heterandria formosa</i>	.	.	1	.	1
<i>Hyporhamphus meeki</i>	.	4	.	.	4
<i>Labidesthes sicculus</i>	.	.	4	129	133
<b><i>Lachnolaimus maximus</i></b>	<b>1</b>	.	.	.	<b>1</b>

Taxa	Zone				Totals
	I	J	L	T	
	E=48	E=48	E=45	E=210	E=351
<i>Lactophrys trigonus</i>	5	34	.	3	42
<i>Lagodon rhomboides</i>	144	33	13	16	206
<b><i>Leiostomus xanthurus</i></b>	<b>12</b>	<b>9</b>	<b>1</b>	<b>144</b>	<b>166</b>
<i>Lepisosteus osseus</i>	.	.	.	1	1
<i>Lepisosteus platyrhincus</i>	.	.	1	4	5
<i>Lepomis macrochirus</i>	.	.	.	59	59
<i>Lepomis microlophus</i>	.	.	.	3	3
<i>Lepomis</i> spp.	.	.	.	49	49
<b><i>Litopenaeus setiferus</i></b>	.	.	1	<b>65</b>	<b>66</b>
<b><i>Lobotes surinamensis</i></b>	<b>1</b>	.	.	<b>3</b>	<b>4</b>
<i>Lophogobius cyprinoides</i>	.	.	105	101	206
<b><i>Lutjanus analis</i></b>	<b>88</b>	<b>65</b>	<b>3</b>	<b>4</b>	<b>160</b>
<b><i>Lutjanus griseus</i></b>	<b>59</b>	<b>1</b>	<b>22</b>	<b>15</b>	<b>97</b>
<b><i>Lutjanus synagris</i></b>	<b>3</b>	<b>5</b>	<b>9</b>	<b>5</b>	<b>22</b>
<b><i>Megalops atlanticus</i></b>	.	.	.	<b>7</b>	<b>7</b>
<i>Menidia</i> spp.	.	.	634	1,276	1,910
<b><i>Menticirrhus americanus</i></b>	<b>4</b>	<b>1</b>	.	<b>8</b>	<b>13</b>
<i>Microgobius gulosus</i>	.	.	124	217	341
<i>Microgobius microlepis</i>	.	.	94	.	94
<i>Microgobius thalassinus</i>	.	.	3	4	7
<i>Microphis brachyurus</i>	.	.	2	9	11
<b><i>Micropogonias undulatus</i></b>	<b>23</b>	<b>108</b>	<b>1</b>	<b>286</b>	<b>418</b>
<i>Micropterus salmoides</i>	.	.	.	1	1
<b><i>Mugil cephalus</i></b>	<b>154</b>	<b>13</b>	<b>2</b>	<b>283</b>	<b>452</b>
<b><i>Mugil curema</i></b>	<b>369</b>	<b>272</b>	<b>7</b>	<b>255</b>	<b>903</b>
<b><i>Mugil rubrioculus</i></b>	<b>2</b>	<b>2</b>	<b>1</b>	<b>31</b>	<b>36</b>
<i>Mugil</i> spp.	.	.	2	66	68
<i>Myrophis punctatus</i>	.	.	1	.	1
<i>Narcine bancroftii</i>	2	1	.	.	3

Taxa	Zone				Totals
	I	J	L	T	
	E=48	E=48	E=45	E=210	E=351
<i>Oligoplites saurus</i>	34	79	.	29	142
<i>Opisthonema oglinum</i>	12	4	42	8	66
<i>Oreochromis complex</i>	.	.	4	13	17
<i>Sarotherodon</i> spp.	.	.	37	8	45
<i>Orthopristis chrysoptera</i>	62	.	.	1	63
<b><i>Paralichthys lethostigma</i></b>	<b>1</b>	.	.	<b>4</b>	<b>5</b>
<i>Poecilia latipinna</i>	.	.	3	2	5
<b><i>Pogonias cromis</i></b>	<b>6</b>	<b>8</b>	.	<b>6</b>	<b>20</b>
<b><i>Pomatomus saltatrix</i></b>	.	<b>10</b>	.	<b>1</b>	<b>11</b>
<i>Portunus</i> sp.	.	.	.	1	1
<i>Prionotus scitulus</i>	.	.	2	1	3
<i>Prionotus</i> sp.	.	1	.	.	1
<i>Prionotus tribulus</i>	1	.	2	1	4
<i>Pterygoplichthys</i> spp.	.	.	.	3	3
<i>Rhinoptera bonasus</i>	1	.	.	.	1
<b><i>Rhizoprionodon terraenovae</i></b>	<b>1</b>	.	.	.	<b>1</b>
<i>Sardinella aurita</i>	.	.	.	36	36
<b><i>Sciaenops ocellatus</i></b>	<b>5</b>	<b>3</b>	.	<b>6</b>	<b>14</b>
<b><i>Scomberomorus maculatus</i></b>	<b>3</b>	<b>11</b>	.	.	<b>14</b>
<b><i>Scomberomorus regalis</i></b>	.	<b>5</b>	.	.	<b>5</b>
<i>Scorpaena brasiliensis</i>	.	1	.	.	1
<i>Scorpaena grandicornis</i>	.	5	2	3	10
<i>Scorpaena</i> spp.	.	1	.	1	2
<i>Selene vomer</i>	131	258	.	23	412
<i>Sparisoma atomarium</i>	.	3	.	.	3
<i>Sphoeroides nephelus</i>	9	7	1	6	23
<i>Sphoeroides spengleri</i>	2	13	1	4	20
<i>Sphoeroides</i> sp.	.	.	.	1	1
<i>Sphoeroides testudineus</i>	152	87	76	150	465

Taxa	Zone				Totals
	I	J	L	T	
	E=48	E=48	E=45	E=210	E=351
<b><i>Sphyraena barracuda</i></b>	89	168	17	17	291
<b><i>Sphyrna tiburo</i></b>	19	.	.	.	19
<i>Strongylura marina</i>	.	5	.	1	6
<i>Strongylura notata</i>	8	4	8	5	25
<i>Strongylura timucu</i>	.	.	2	2	4
<i>Symphurus plagiusa</i>	.	.	.	1	1
<i>Syngnathus louisianae</i>	.	.	1	1	2
<i>Syngnathus scovelli</i>	.	.	.	1	1
<i>Synodus foetens</i>	.	3	2	12	17
<i>Tilapia mariae</i>	.	.	2	4	6
<b><i>Trachinotus carolinus</i></b>	2	20	.	1	23
<b><i>Trachinotus falcatus</i></b>	9	45	4	34	92
<i>Trinectes maculatus</i>	.	.	9	71	80
<i>Tylosurus crocodilus</i>	.	10	.	8	18
<i>Tylosurus</i> sp.	.	1	.	.	1
<b>Totals</b>	<b>7,500</b>	<b>6,154</b>	<b>5,330</b>	<b>24,547</b>	<b>43,531</b>

Zones I and J were located in the Indian River, and Zone L and T encompassed the St. Lucie and Loxahatchee Rivers. Effort, or the total number of hauls, is labeled 'E'. Taxa are arranged alphabetically. selected taxa are highlighted in bold.

# 5 Species Profiles

## 5.1 Introduction

An important use of Fisheries-Independent Monitoring (FIM) program data is to track the relative abundance of fish stocks and provide information for species management plans, including information on the abundance of juvenile fish. Juvenile indices of abundance (IOAs) measure the relative abundance of newly-recruited or young-of-the-year (YOY) fish and may be used to describe recruitment processes and forecast population trends. Similarly, adult IOAs measure the relative abundance of larger, older fish and may be used to describe the sexually mature portion of a population and also help forecast future population trends. When combined, these two pieces of information can provide a comprehensive picture of the relative condition of a fish population within an estuarine system. This section provides profiles of target species that are routinely collected in FIM program sampling and are of recreational or commercial importance in Florida: Common Snook, Red Drum, Spotted Seatrout, Sheepshead, Pinfish, Striped Mullet, and Blue Crab.

Similar analyses were used to develop recruitment indices for each species examined. Data from stratified-random sampling (SRS) were used to create IOAs for YOY and adults of target species. Starting with the 2013 FIM Annual Report, only monthly SRS data (1996 to present) were used for IOAs as opposed to previous reporting years (1989-2012) that also included seasonal sampling (spring and fall, 1989-1995). Study areas (i.e., estuarine systems) included in the analyses were selected based upon adequate sample sizes of the target species and years of available data, and separate IOAs were calculated for each study area. The specific time periods and sizes of specimens included in the analyses varied among species based upon their individual patterns of recruitment and growth. In general, for each species, only months of peak abundance were included in the analyses. Prior to IOA analyses, length-frequency histograms were examined to determine the size at which the target species fully recruited to the sampling gears.

The annual IOAs representing either juvenile recruitment (YOY IOAs) or the sub-adult and adult portion of the population (Adult IOAs) were computed using generalized linear models. The FIM program's SRS design generates count data, the distribution of which is bounded by zero. Often, the frequency distribution of these counts is highly non-normal; therefore, a Poisson or negative binomial distribution was used to create IOAs. This report represents a data summary and not an in-depth analysis of factors affecting abundance, therefore, year is the only factor retained in the model runs for the FIM Annual Report Species Profiles. All IOAs were completed in R version 4.2.1 (R Core Team 2022) using the `MASS` (version 7.3.57; Venables and Ripley (2002)) and `stats` (version 4.2.1; R Core Team (2022)) packages.

Relative abundance was calculated as the median annual number of fish per set. Median values were determined from the least-squares adjusted means by multiplying the standard error by a random normal deviate ( $m=0$ ,  $s=1$ ) and adding it to the least-squares mean. These data were then back-transformed ( $e^x$ ). The process was repeated 500 times for each year to create a sampling

distribution of back-transformed values and summary statistics (median, 25<sup>th</sup>, and 75<sup>th</sup> percentiles) were then calculated and plotted to view annual trends in IOAs (Sokal and Rohlf 1969). A weighted least squares regression was used to determine the strength and direction of IOA trends, where a non-significant slope was indicative of a generally stable trend. Changes in abundance from the previous year were calculated based on overlapping 95% confidence intervals (i.e., two standard errors above and below each abundance estimate). If confidence intervals overlapped, the two years were deemed to be similar to each other. Note that the error bars shown in all indices of abundance represent one standard error above and below the abundance estimate, and thus are not equivalent to the 95% confidence intervals used to determine annual changes in abundance.

## 5.2 Common Snook, *Centropomus undecimalis*

Common Snook, *Centropomus undecimalis*, are found in estuaries, adjacent rivers, and in nearshore waters of the tropical and subtropical western Atlantic and Gulf of Mexico (Gilmore et al. 1983; Rivas 1986; Winner et al. 2010). This species supports an important recreational fishery in Florida and is one of the most popular game fish in state waters. There has been no legal commercial harvest of Common Snook in Florida since the State Legislature declared it a game fish in 1957 and prohibited its sale. Fishing effort targeting Common Snook has increased consistently over the past 30 years on both coasts, but more so on Florida's Gulf coast (Muller and Taylor 2006). While the overall harvest of Common Snook has declined since the mid-1990s, the numbers of fish caught and released has remained consistently high over the past 25 years (Muller and Taylor 2006). Recent estimates of transitional spawning potential ratios were near the 40% objective on the Atlantic coast and far exceeded the objective (~60%) on the Gulf coast, therefore both stocks are currently meeting agency management objectives. In response to cold weather induced fish kills that occurred statewide during January 2010, the FWC issued executive orders that prohibited the harvest of Common Snook through August 31, 2010, and subsequent executive orders extended the closure through August 31, 2011 ("Temporary modification of regulations for red drum and snook in southwest florida" 2010). At the June 2011 Florida Fish and Wildlife Conservation Commission Meeting, Commissioners concluded that the Atlantic coast stock was less severely impacted by cold weather than the Gulf coast stock. Based on this information, the Commissioners ruled to reopen Common Snook harvest on September 1, 2011, in Atlantic waters, but Gulf coast waters remained closed through August 31, 2013. Following a red tide event that persisted in the Gulf of Mexico for 16 months in southwest Florida (2017-2019), that area of the fishery was closed in August 2018 and remained closed through May 2022.

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

To monitor year-class strength and to improve the ability to predict future adult Common Snook abundances, the FIM program developed relative indices of abundance (IOAs) of young-of-the-year (YOY) Common Snook recruitment into selected Florida estuaries. Abundance data for YOY Common Snook  $\leq 50$  mm SL collected in stratified-random 21.3-m seine samples were examined to assess recruitment into three Florida estuaries: Tampa Bay and Charlotte Harbor on the Gulf coast and the northern and the southern Indian River Lagoon (IRL) on the Atlantic coast. Although collected in limited numbers throughout the year, YOY Common Snook were primarily captured in riverine/creek habitats sampled with 21.3-m seines during their recruitment windows into each estuary: August through November in Tampa Bay, August through February in Charlotte Harbor, July through February in the northern IRL, and August through February in the southern IRL. Data collected from August through December of each year were combined with data from January and February of the following year to create a biological year. Only data from this habitat and these primary time periods were used in developing IOAs for YOY Common Snook.

The FIM program also monitored the relative abundances of large juvenile and adult Common Snook in Florida estuaries within the range of this species. Individuals between 200 mm and 609

mm SL were included in the IOA since they are typically reproductively mature males and serve as a “pre-recruitment” indicator for the fishery. The upper limit of 609 mm SL used in this IOA corresponds to the lower regulatory minimum size of 711 mm total length (TL). Data from stratified-random 183-m haul seines were used to develop IOAs for reproductively mature Common Snook within Tampa Bay, Sarasota Bay, Charlotte Harbor, Cedar Key, northern IRL, and southern IRL. These IOAs were derived by including all Common Snook between 200 – 609 mm SL collected between January and December from 1996 – 2022. Due to historical changes in sampling design and available habitat, only consistently sampled zones and habitats (bay or river) in each estuary were included to generate annual IOAs.

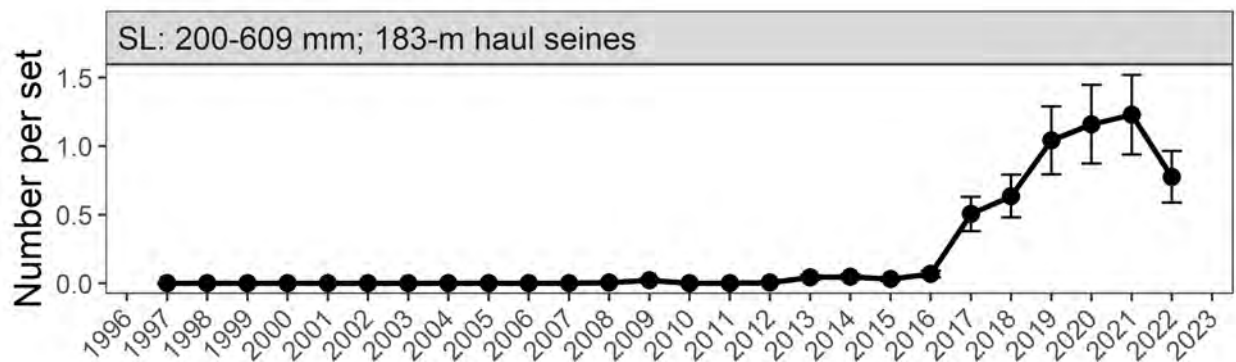
## Indices of Abundance

The following figures show relative abundance of young-of-the-year Common Snook ( $\leq 50$  mm SL) collected in 21.3-m seines and of pre-fishery subadult and adult Common Snook (200-609 mm SL) collected in 183-m haul seines during stratified-random sampling across all estuaries. Note different scales for estimates from 21.3-m and 183-m seines.

### Cedar Key

In the Cedar Key estuary, Common Snook catches were zero or near-zero between 1997 and 2016 (Figure 5.1). These low levels of abundance in Cedar Key waters are consistent with the historical range of this temperature-sensitive species in Florida (Taylor et al. 1993; Winner et al. 2010). However, recent effects of climate change (i.e., increasing water temperatures, more temperate winters) have resulted in an obvious range extension for Common Snook on Florida's Gulf coast (Purtlebaugh et al. 2020).

Annual IOAs of pre-fishery subadult and adult Common Snook in Cedar Key have generally increased since sampling began in 1997. Pre-fishery subadult and adult Common Snook abundance in 2022 did not differ significantly from the previous year.

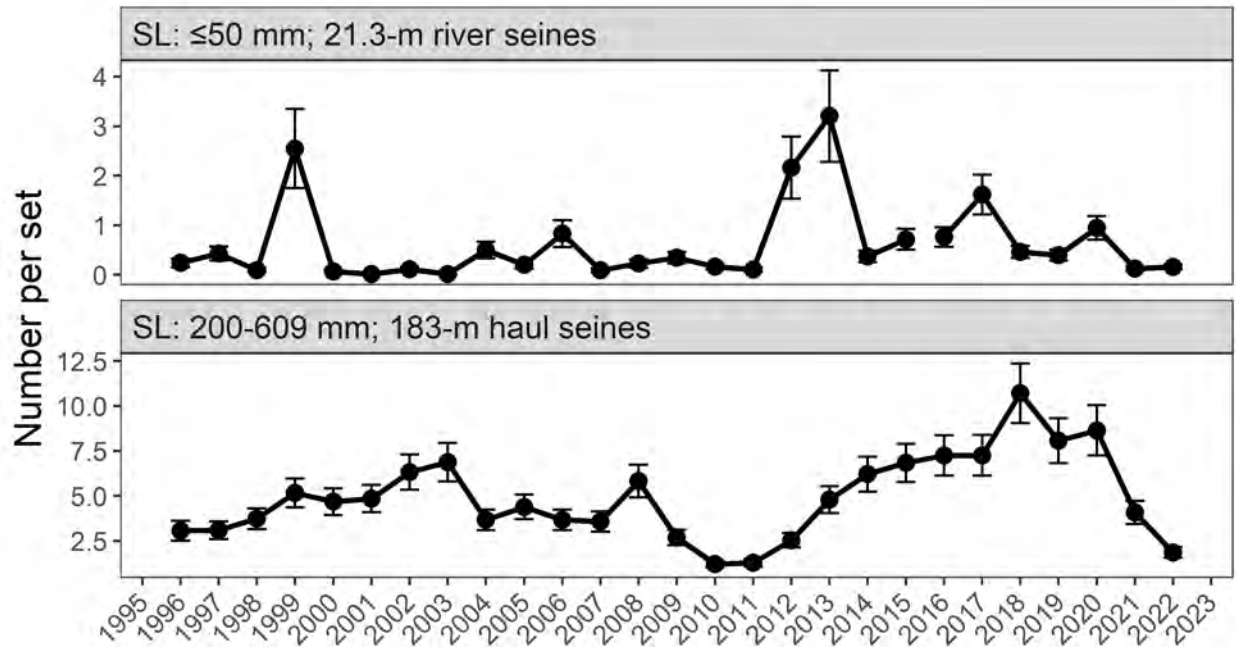


**Figure 5.1:** Relative abundance of subadult/adult Common Snook collected between 1996 and 2022 during stratified-random sampling of Cedar Key.

## Tampa Bay

Annual IOAs of YOY Common Snook in river habitats of Tampa Bay have generally remained stable since sampling began in 1996 (Figure 5.2). Relative abundance of YOY Common Snook in river habitats in 2022 did not differ significantly from the previous year.

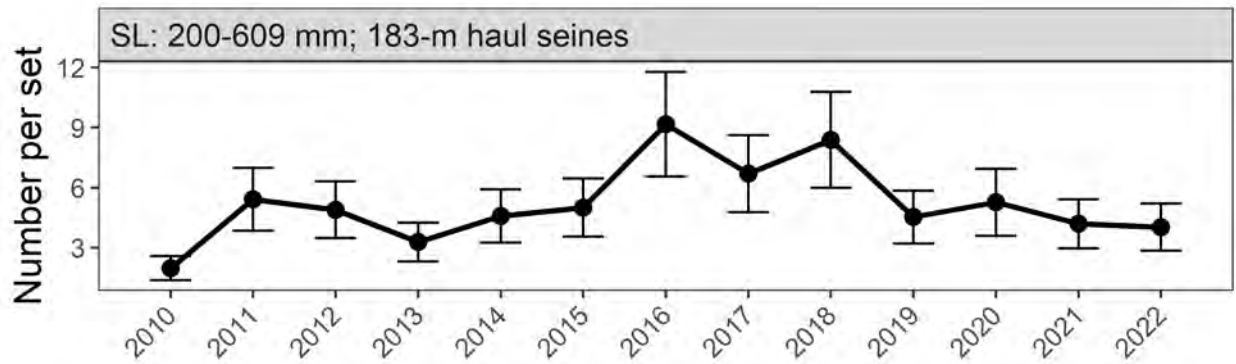
Annual IOAs of pre-fishery subadult and adult Common Snook in Tampa Bay have generally increased since sampling began in 1996 (Figure 5.2). Relative abundance of pre-fishery subadult and adult Common Snook in 2022 decreased from the previous year.



**Figure 5.2:** Relative abundance of young-of-the-year and subadult/adult Common Snook collected between 1996 and 2022 during stratified-random sampling of Tampa Bay.

### Sarasota Bay

Annual IOAs of pre-fishery subadult and adult Common Snook in Sarasota Bay have generally remained stable since sampling began in 2010 (Figure 5.3). Relative abundance of pre-fishery subadult and adult Common Snook in 2022 did not differ significantly from the previous year.

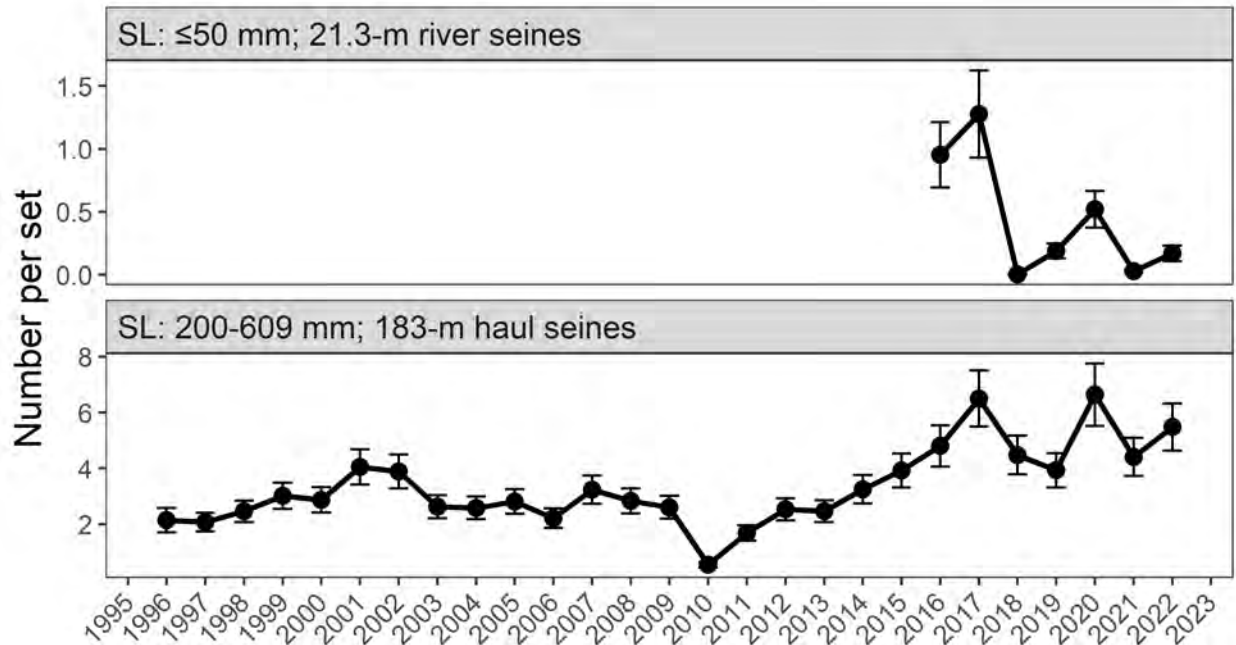


**Figure 5.3:** Relative abundance of subadult/adult Common Snook collected between 2010 and 2022 during bimonthly stratified-random sampling of Sarasota Bay.

## Charlotte Harbor

Annual IOAs of YOY Common Snook in river habitats of Charlotte Harbor have generally decreased since sampling began in 2016 (Figure 5.4). Relative abundance of YOY Common Snook in river habitats in 2022 did not differ significantly from the previous year.

Annual IOAs of pre-fishery subadult and adult Common Snook in Charlotte Harbor have generally increased since sampling began in 1996 (Figure 5.4). Relative abundance of pre-fishery subadult and adult Common Snook in 2022 did not differ significantly from the previous year.

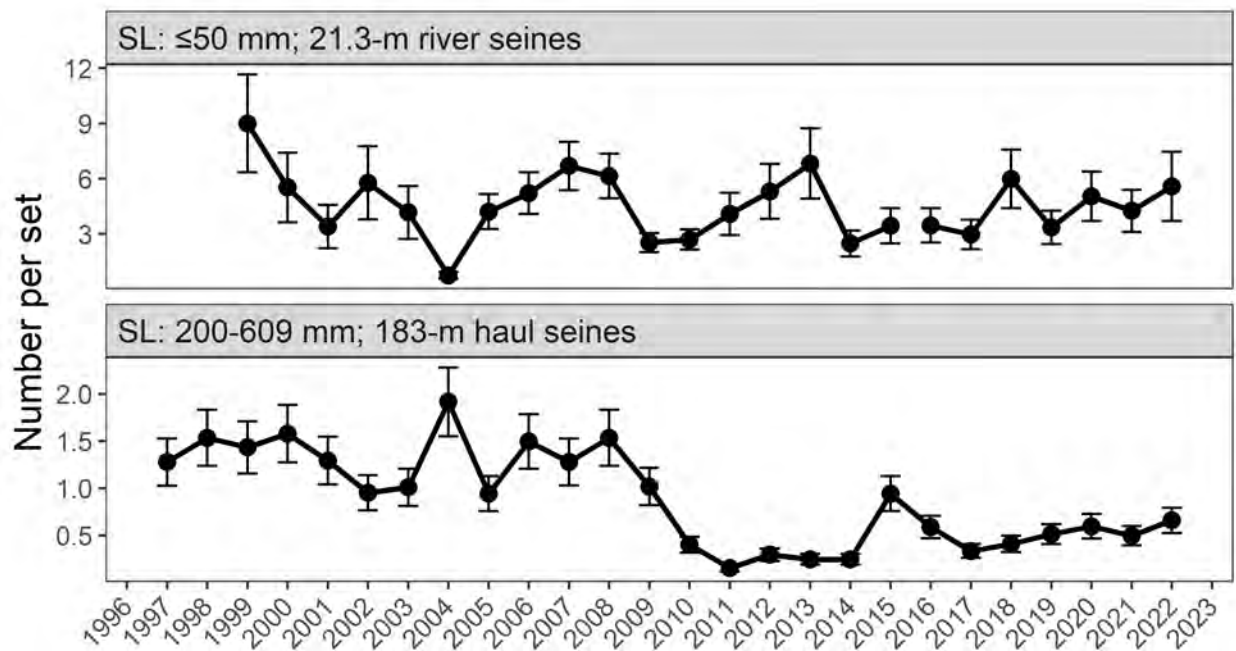


**Figure 5.4:** Relative abundance of young-of-the-year and subadult/adult Common Snook collected between 1996 and 2022 during stratified-random sampling of Charlotte Harbor. Note that dedicated juvenile snook sampling in previously underrepresented habitats (i.e., tidal creeks and tributaries) began in 2016.

### Northern Indian River Lagoon

Annual IOAs of YOY Common Snook in river habitats of the northern Indian River Lagoon have generally remained stable since sampling began in 1999 (Figure 5.5). Relative abundance of YOY Common Snook in river habitats in 2022 did not differ significantly from the previous year.

Annual IOAs of pre-fishery subadult and adult Common Snook in the northern Indian River Lagoon have generally decreased since sampling began in 1997 (Figure 5.5). Relative abundance of pre-fishery subadult and adult Common Snook in 2022 did not differ significantly from the previous year.

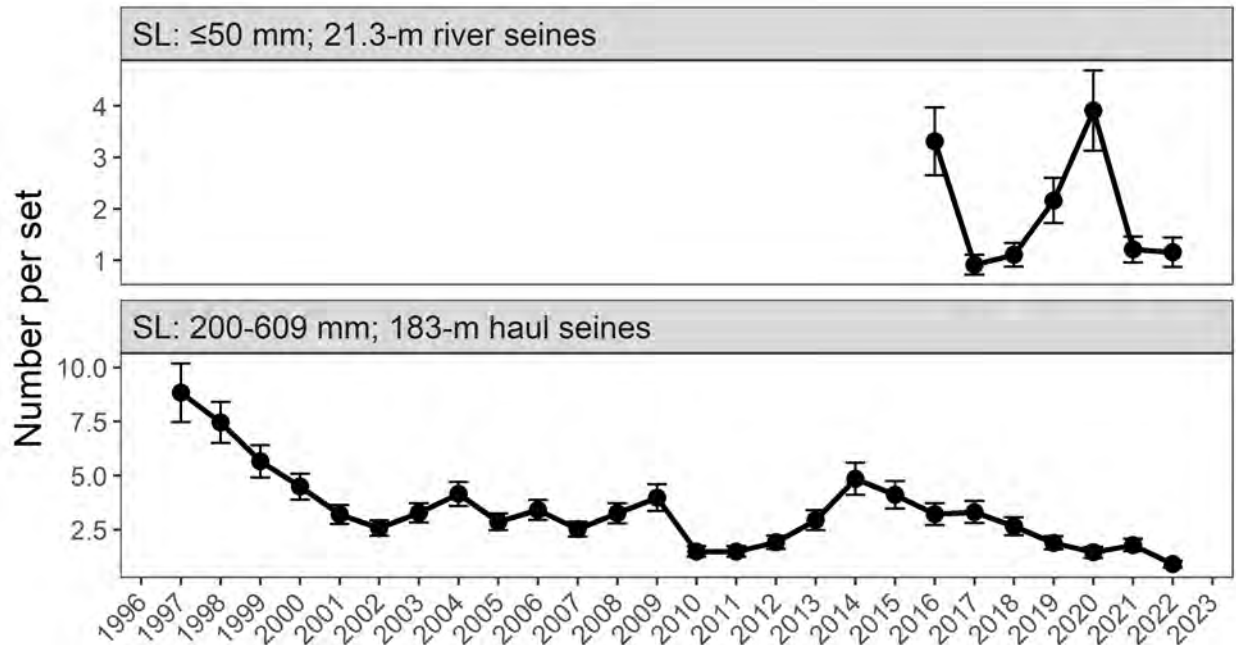


**Figure 5.5:** Relative abundance of young-of-the-year and subadult/adult Common Snook collected between 1997 and 2022 during stratified-random sampling of the northern portion of the Indian River Lagoon.

### Southern Indian River Lagoon

Annual IOAs of YOY Common Snook in river habitats of the southern Indian River Lagoon have generally remained stable since sampling began in 2016 (Figure 5.6). Relative abundance of YOY Common Snook in river habitats in 2022 did not differ significantly from the previous year.

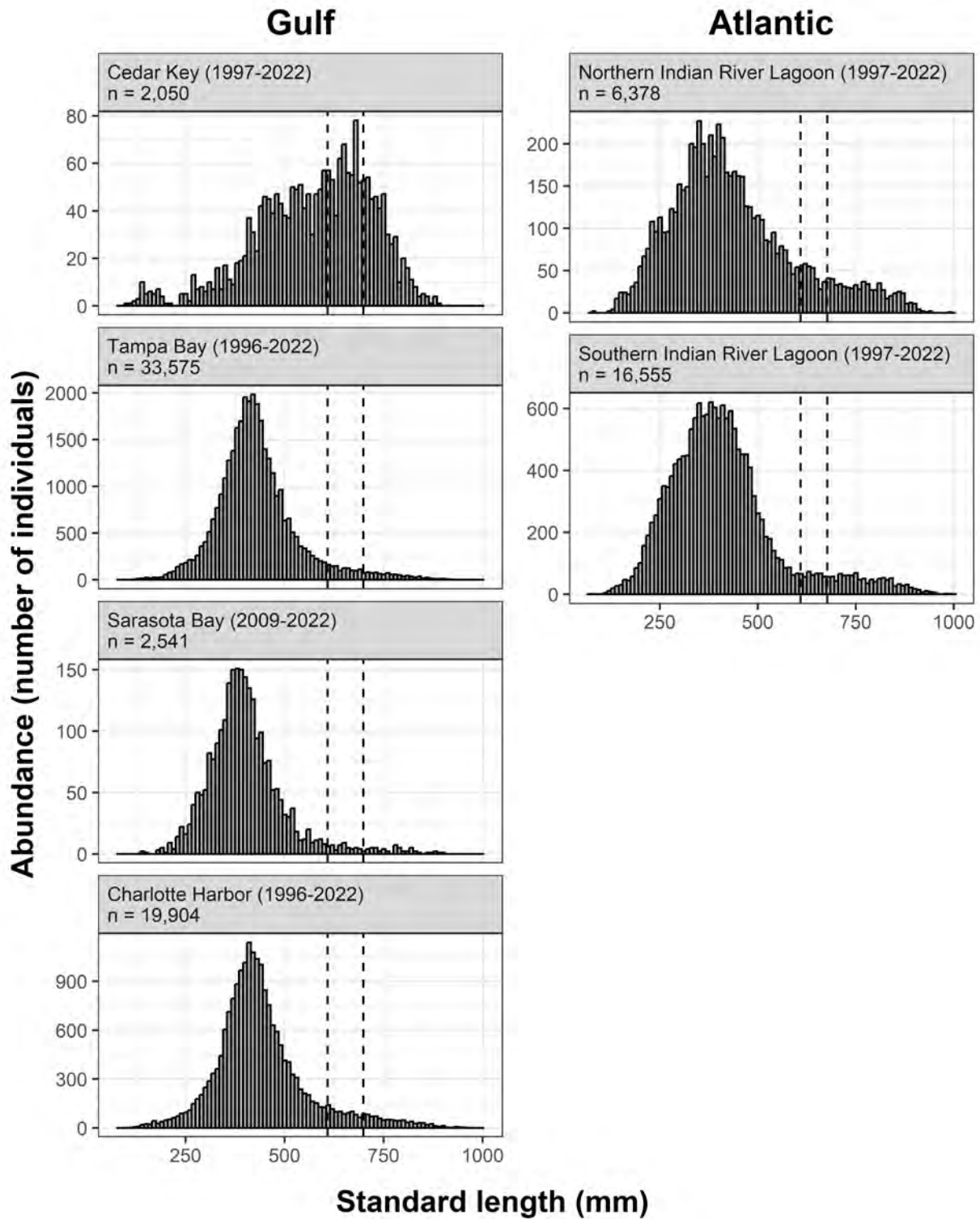
Annual IOAs of pre-fishery subadult and adult Common Snook in the southern Indian River Lagoon have generally decreased since sampling began in 1997 (Figure 5.6). Relative abundance of pre-fishery subadult and adult Common Snook in 2022 decreased from the previous year.



**Figure 5.6:** Relative abundance of young-of-the-year and subadult/adult Common Snook collected between 1996 and 2022 during stratified-random sampling of the southern portion of the Indian River Lagoon. Note that dedicated juvenile Snook sampling in previously underrepresented habitats (i.e., tidal creeks and tributaries) began in 2016.

## Length-Frequency Diagrams

The following figure shows length frequency diagrams of Common Snook collected in 183-m haul seines. All lengths are standard length (SL). Note different scales and years of collection for each estuary. Length-frequency data collected with 183-m haul seines indicate that this gear provides valuable information on larger juvenile and adult Common Snook in Florida estuaries (Figure 5.7). Common Snook length frequency distributions generally followed a unimodal distribution with modes varying across estuaries.



**Figure 5.7:** Length frequency diagrams of Common Snook collected in 183-m haul seines. Vertical dashed lines indicate the lower and upper recreational size limits for Common Snook in each estuary.

### 5.3 Red Drum, *Sciaenops ocellatus*

The Red Drum, *Sciaenops ocellatus*, is an estuarine-dependent species inhabiting coastal waters from Massachusetts to northern Mexico (Yokel 1966; Reagan 1985). This species supports important recreational fisheries throughout the U.S. South Atlantic and Gulf of Mexico coasts. In Florida, dramatic stock reductions in the mid-1980s resulted in a 1986 moratorium on commercial and recreational Red Drum fisheries. In 1989, the fishery was reopened with strict size and bag limits, as well as a no-sale provision that effectively eliminated the commercial Red Drum fishery in Florida. Since that time, Red Drum stocks have recovered significantly. In the 2020 stock assessment, model predictions for age-specific indices of Red Drum indicated that populations in Florida exceeded the Florida Fish and Wildlife Conservation Commission's (FWC) management target of at least a 40% escapement rate (geometric mean of 2017-2019) in three (NW, SW, NE) of the four statewide assessment regions (Addis 2020). In these three regions, Red Drum are not considered overfished nor undergoing overfishing. The SE region of Florida exceeded the escapement rate management target (55%) in 2019, the terminal year of the assessment, but did not meet the escapement rate management target over the three-year time period analyzed. Current escapement rates for 2017-2019 were 48% in the NW, 72% in the SW, 61% in the NE, and 35% in the SE region (Addis 2020). In addition, continued improvement of escapement rates within the northeast management region of the state led to an increase of the daily bag limit from one to two fish in early 2012 and a renewed interest in opening coastal Red Drum to harvest in the Gulf. However, bag limits within the southern and northwest management areas of the state are at one fish per person per day. Bag limits within the southern management areas of the state have remained at one fish per person per day since 1989.

Following a red tide event that persisted for 16 months in southwest Florida (2017-2019) the Red Drum fishery was closed in state waters of Pasco County south to Gordon Pass (Collier County) through Executive Order (EO, "Temporary modification of regulations for red drum and snook in southwest florida" 2018) in August 2018. This EO was subsequently modified in 2019 to include Spotted Seatrout ("Temporary modification of regulations for spotted seatrout in southwest florida" 2019), and extended through additional EOs ("Temporary modification of regulations for red drum, snook, and spotted seatrout in southwest florida" 2019, 2020) through May 2021. Based on indicators and stakeholder feedback suggesting that fisheries in the Tampa Bay area had improved since the prolonged 2017-2019 red tide bloom, the Redfish fishery was reopened from Pinellas County south to State Road 64 in Manatee County in October 2021 ("Temporary modification of regulations for red drum, snook, and spotted seatrout in the tampa bay area" 2021). The Red Drum fishery remained closed south of State Road 64 (Manatee County) south through Gordon Pass through August 2022 ("Temporary modification of regulations for red drum, snook, and spotted seatrout in a portion of southwest florida" 2021; "Temporary modification of regulations for red drum, snook, and spotted seatrout in southwest florida" 2022).

In September 2022, the FWC adopted a more holistic management approach for Red Drum focused on smaller management regions, in which management decisions are informed by 6 management metrics: escapement, relative abundance, habitat, harmful algal blooms, fishing effort, and stakeholder feedback. The management plan established 9 smaller regions evaluated yearly for potential changes in Red Drum regulations. The IOAs described here are the "relative abundance" metric used by the FWC in their annual reviews for Red Drum management. Currently, the Indian River Lagoon is the only management region in which Red Drum are closed for recreational harvest.

In Florida, adult Red Drum spawn from mid-August through late November (Yokel 1966). Spawning occurs primarily near bay mouths, inlets, or over nearshore continental shelf waters (Mercer 1984; Murphy and Taylor 1990), and in some locations inside estuaries (Murphy and Taylor 1990; Johnson and Funicelli 1991). In Florida estuaries, recruitment of juveniles begins in September and continues through February, with peaks occurring in October and November (Reagan 1985; Peters and McMichael 1987; Daniel 1988). Settlement of young-of-the-year (YOY) Red Drum typically occurs in the middle to upper reaches of estuaries, away from ocean inlets or passes, and can be strongly influenced by the availability of low to moderate salinity habitats (Bacheler et al. 2008). On both coasts, large juvenile Red Drum enter the fishery at approximately 15-18 months of age, and are fully recruited at the beginning of their third year (age-2, Chagaris et al. 2015). The legal recreational slot limit (457-686 mm total length (TL); 18-27 inches TL) includes predominantly age-1 and age-2 fish. Red Drum greater than 700 mm standard length (SL) are uncommon in the Fisheries-Independent Monitoring (FIM) program samples from west Florida estuaries, but are occasionally collected on the east coast in the Indian River Lagoon [IRL; FWC-FWRI (2015)].

In an effort to monitor year-class strength and to improve the ability to predict future adult Red Drum abundances, relative indices of abundance (IOAs) were developed to estimate YOY Red Drum recruitment into selected Florida estuaries. Abundance data for YOY Red Drum ( $\leq 40$  mm SL) that were collected in stratified-random 21.3-m seine samples were examined to assess recruitment in eight Florida estuaries: Apalachicola Bay, Cedar Key, Tampa Bay, Sarasota Bay, Charlotte Harbor, northeast Florida, and the northern and southern IRL. Young-of-the-year Red Drum recruited to habitats sampled with 21.3-m seines primarily from September through February. Data collected from September through December of each year were combined with data from January through February of the following year to create a biological year of data. The IOAs for 2022, therefore, only included data from September through December 2022. Separate analyses for river and bay sets were conducted when possible to examine differences in recruitment between the two habitats. Annual IOAs were also developed for legal-size Red Drum that fall within the permitted recreational harvest size range (457-686 mm TL, 374-565 mm SL, Murphy and Taylor 1990) in each estuary, including the southern IRL. These IOAs included all legal-size Red Drum collected in stratified-random 183-m haul seines during each calendar year (January-December). Due to historical changes in sampling design and available habitat, only consistently sampled zones and habitats (bay or river) in each estuary were included to generate annual IOAs.

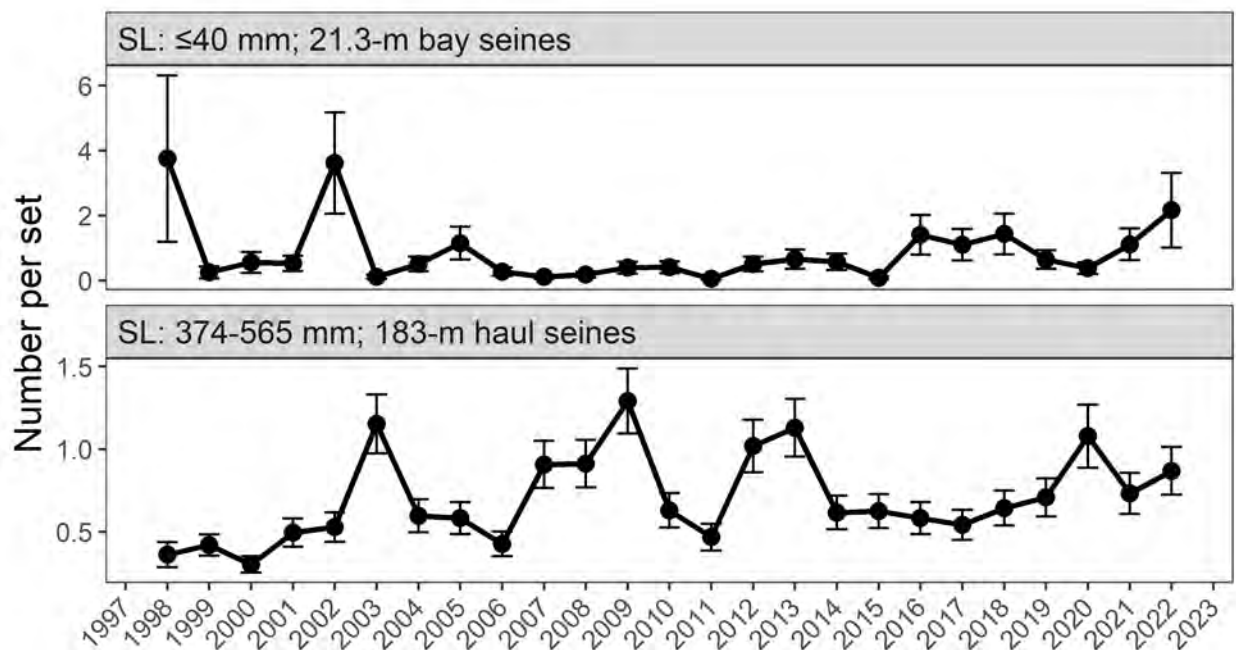
## Indices of Abundance

The following figures show relative abundance of young-of-the-year Red Drum ( $\leq 40$  mm SL) collected in 21.3-m seines and of legal-sized Red Drum (374-565 mm SL) collected in 183-m haul seines during stratified-random sampling across all estuaries. Points represent the median estimate while the vertical bars represent the 25th-75th percentiles. Note different scales for estimates from 21.3-m and 183-m seines.

### Apalachicola Bay

Annual IOAs of YOY Red Drum in bay habitats of Apalachicola Bay have generally decreased since sampling began in 1998 (Figure 5.8). Relative abundance of YOY Red Drum in bay habitats in 2022 did not differ significantly from the previous year.

Annual IOAs of legal-sized Red Drum in Apalachicola Bay have generally remained stable since sampling began in 1998 (Figure 5.8). Relative abundance of legal-sized Red Drum in 2022 did not differ significantly from the previous year.



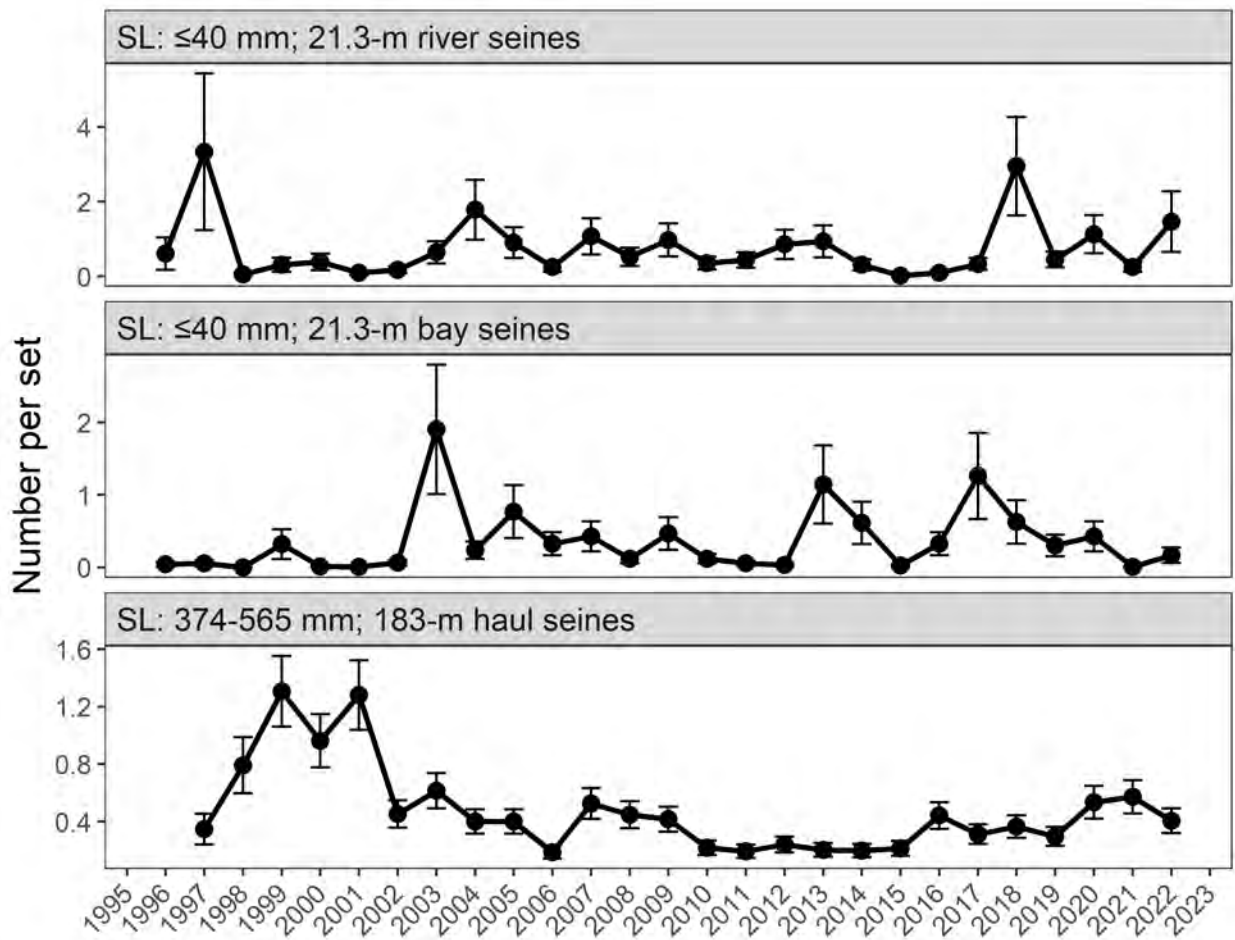
**Figure 5.8:** Relative abundance of young-of-the-year and legal Red Drum collected between 1996 and 2022 during stratified-random sampling of Apalachicola Bay.

## Cedar Key

Annual IOAs of YOY Red Drum in river habitats of Cedar Key have generally remained stable since sampling began in 1996 (Figure 5.9). Relative abundance of YOY Red Drum in river habitats in 2022 did not differ significantly from the previous year.

Annual IOAs of YOY Red Drum in bay habitats of Cedar Key have generally remained stable since sampling began in 1996 (Figure 5.9). Relative abundance of YOY Red Drum in bay habitats in 2022 did not differ significantly from the previous year.

Annual IOAs of legal-sized Red Drum in Cedar Key have generally decreased since sampling began in 1997 (Figure 5.9). Relative abundance of subadult Red Drum in 2022 did not differ significantly from the previous year.



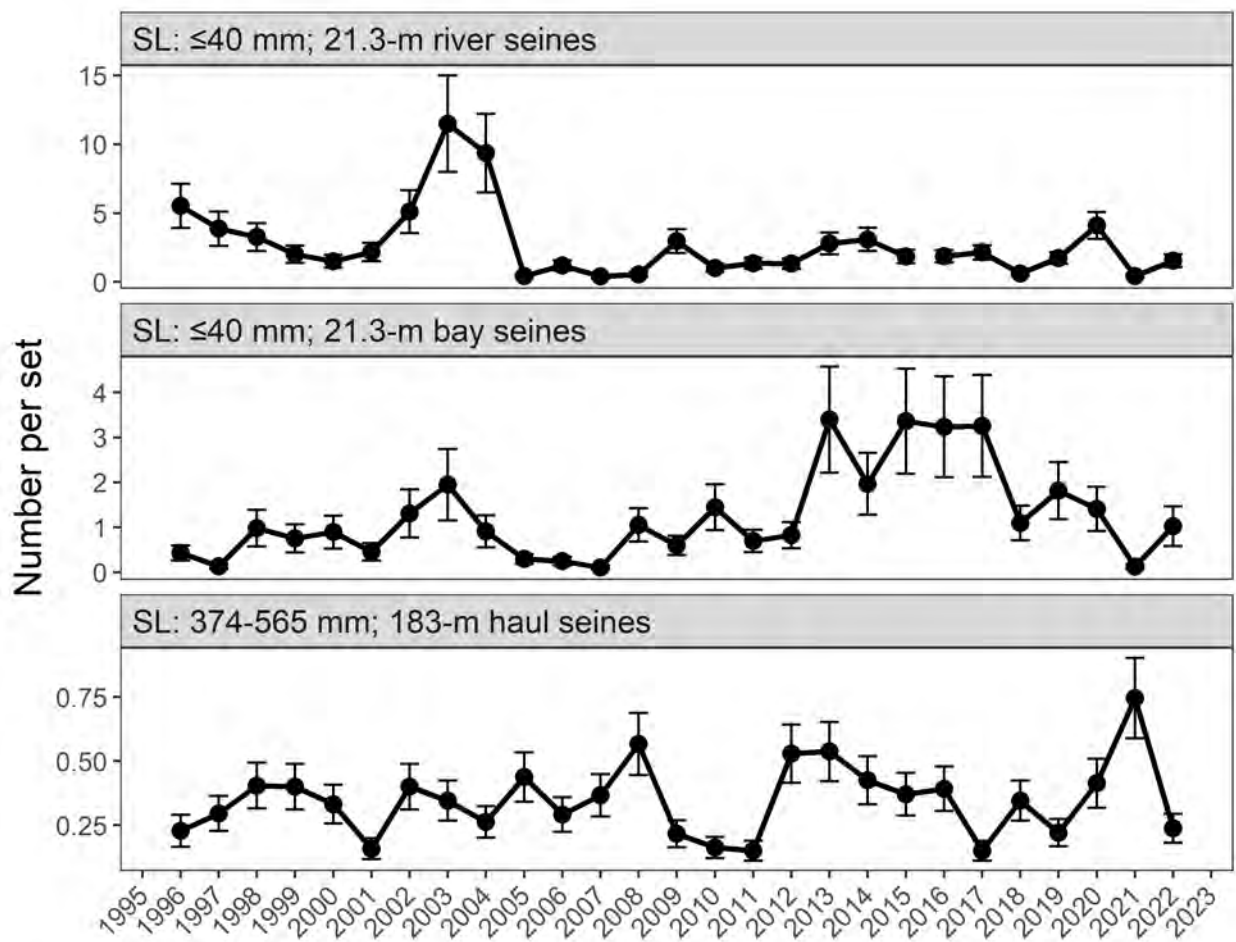
**Figure 5.9:** Relative abundance of young-of-the-year and legal Red Drum collected between 1996 and 2022 during stratified-random sampling of Cedar Key.

## Tampa Bay

Annual IOAs of YOY Red Drum in river habitats of Tampa Bay have generally remained stable since sampling began in 1996 (Figure 5.10). Relative abundance of YOY Red Drum in river habitats in 2022 did not differ significantly from the previous year.

Annual IOAs of YOY Red Drum in bay habitats of Tampa Bay have generally increased since sampling began in 1996 (Figure 5.10). Relative abundance of YOY Red Drum in bay habitats in 2022 did not differ significantly from the previous year.

Annual IOAs of legal-sized Red Drum in Tampa Bay have generally remained stable since sampling began in 1996 (Figure 5.10). Relative Abundance of subadult Red Drum in 2022 increased from the previous year.

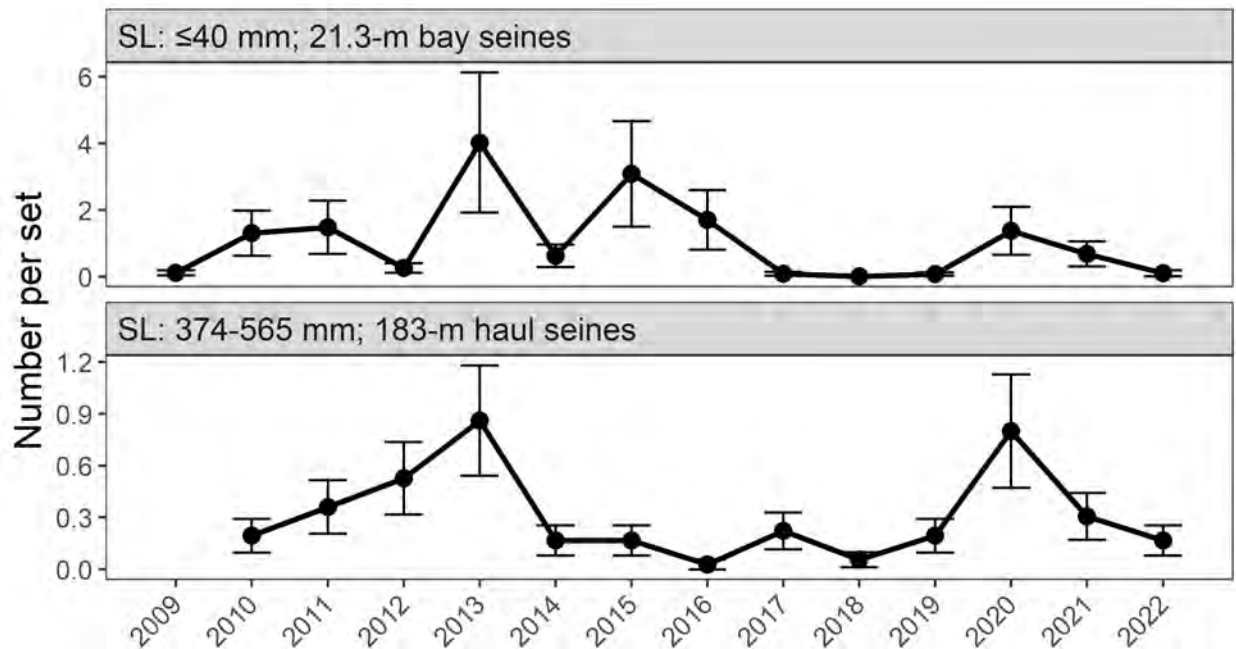


**Figure 5.10:** Relative abundance of young-of-the-year and legal Red Drum collected between 1996 and 2022 during stratified-random sampling of Tampa Bay.

## Sarasota Bay

Annual IOAs of YOY Red Drum in bay habitats of Sarasota Bay have generally remained stable since sampling began in 2009 (Figure 5.11). Relative abundance of YOY Red Drum in bay habitats in 2022 did not differ significantly from the previous year.

Annual IOAs of legal-sized Red Drum in Sarasota Bay have generally remained stable since sampling began in 2010 (Figure 5.11). Relative abundance of subadult Red Drum in 2022 did not differ significantly from the previous year.



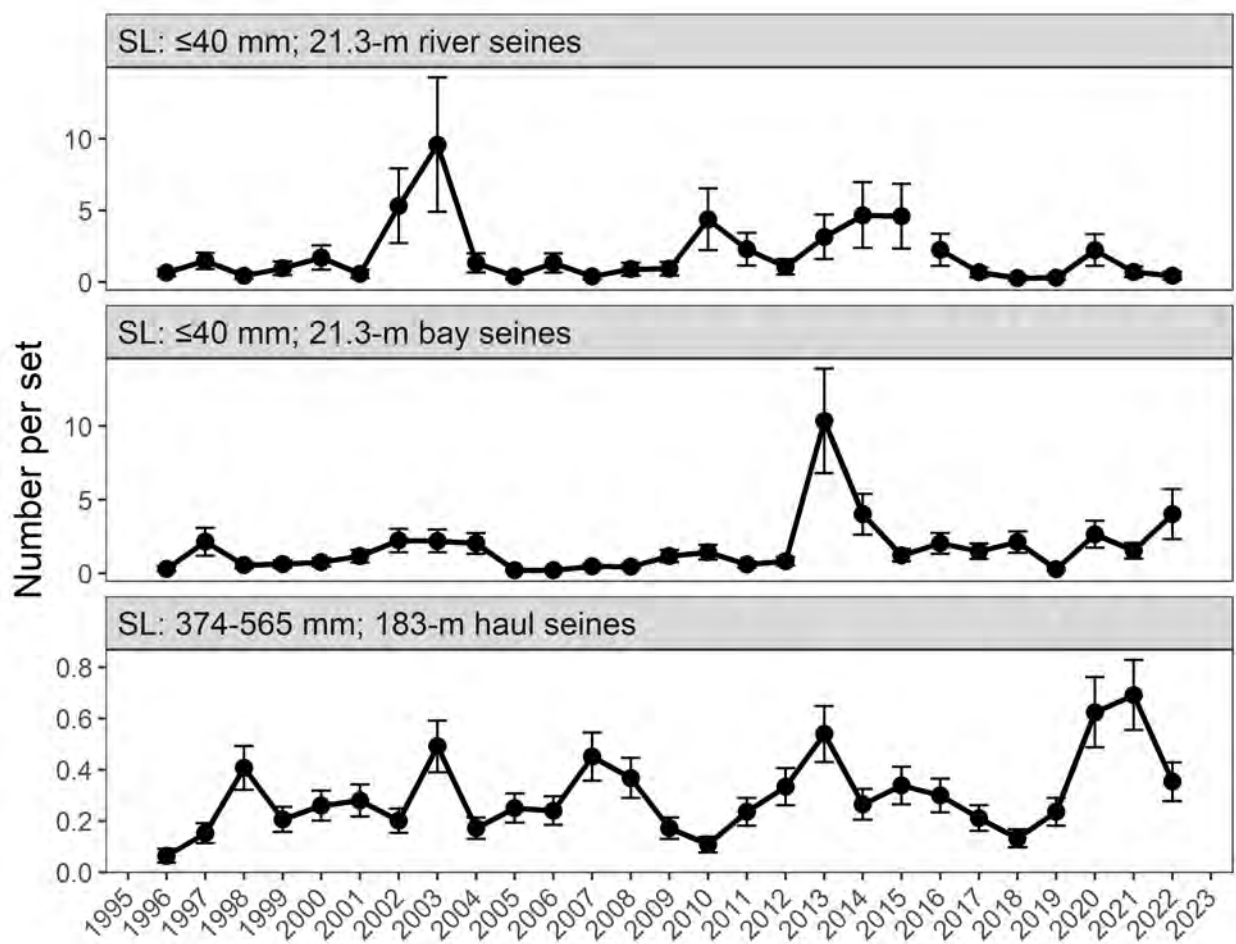
**Figure 5.11:** Relative abundance of young-of-the-year and legal Red Drum collected between 2009 and 2022 during stratified-random sampling of Sarasota Bay.

## Charlotte Harbor

Annual IOAs of YOY Red Drum in river and creek habitats of Charlotte Harbor have generally remained stable since sampling began in 1996 (Figure 5.12). Relative abundance of YOY Red Drum in bay habitats in 2022 did not differ significantly from the previous year.

Annual IOAs of YOY Red Drum in bay habitats of Charlotte Harbor have generally remained stable since sampling began in 1996 (Figure 5.12). Relative abundance of YOY Red Drum in river and creek habitats in 2022 did not differ significantly from the previous year.

Annual IOAs of legal-sized Red Drum in Charlotte Harbor have generally increased since sampling began in 1996 (Figure 5.12). Relative abundance of subadult Red Drum in 2022 did not differ significantly from the previous year.

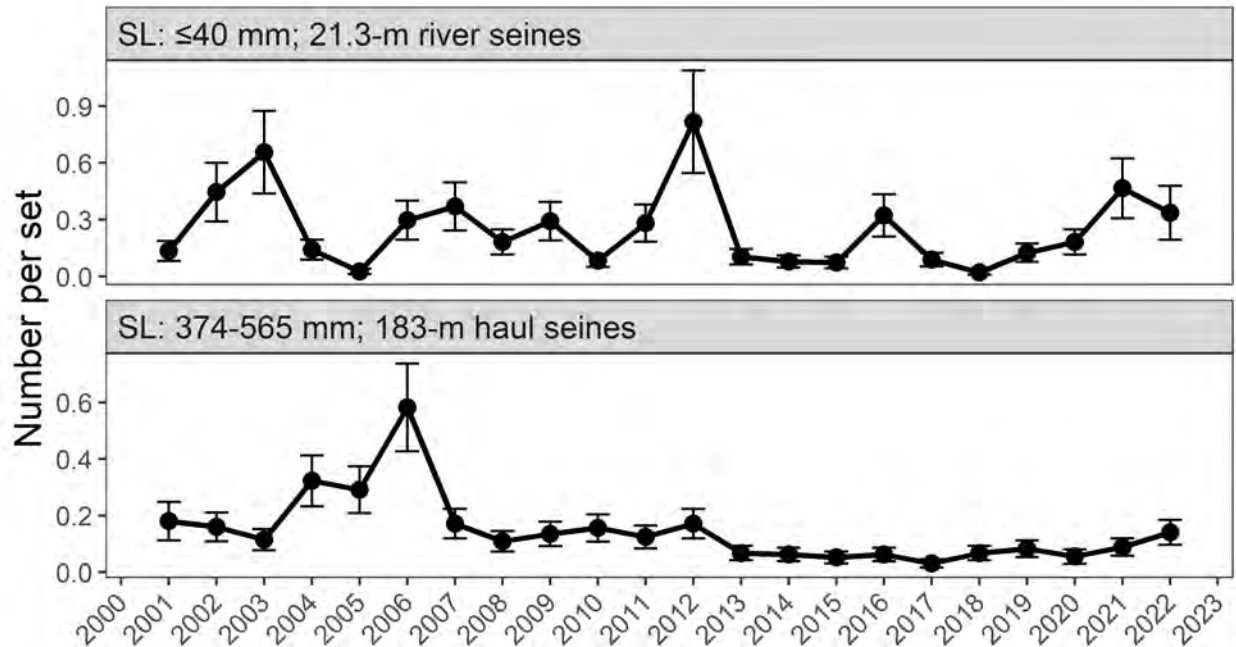


**Figure 5.12:** Relative abundance of young-of-the-year and legal Red Drum collected between 1996 and 2022 during stratified-random sampling of Charlotte Harbor. Note that survey design changes were implemented in 2016 to include sampling of tidal creeks and tributaries. These changes are reflected in the break in the IOA timeseries between 2015 and 2016.

### Northeast Florida

Annual IOAs of YOY Red Drum in river habitats of Northeast Florida have generally remained stable since sampling began in 2001 (Figure 5.13). Relative abundance of YOY Red Drum in river habitats in 2022 did not differ significantly from the previous year.

Annual IOAs of legal-sized Red Drum in Northeast Florida have generally decreased since sampling began in 2001 (Figure 5.13). Relative abundance of subadult Red Drum in 2022 did not differ significantly from the previous year.



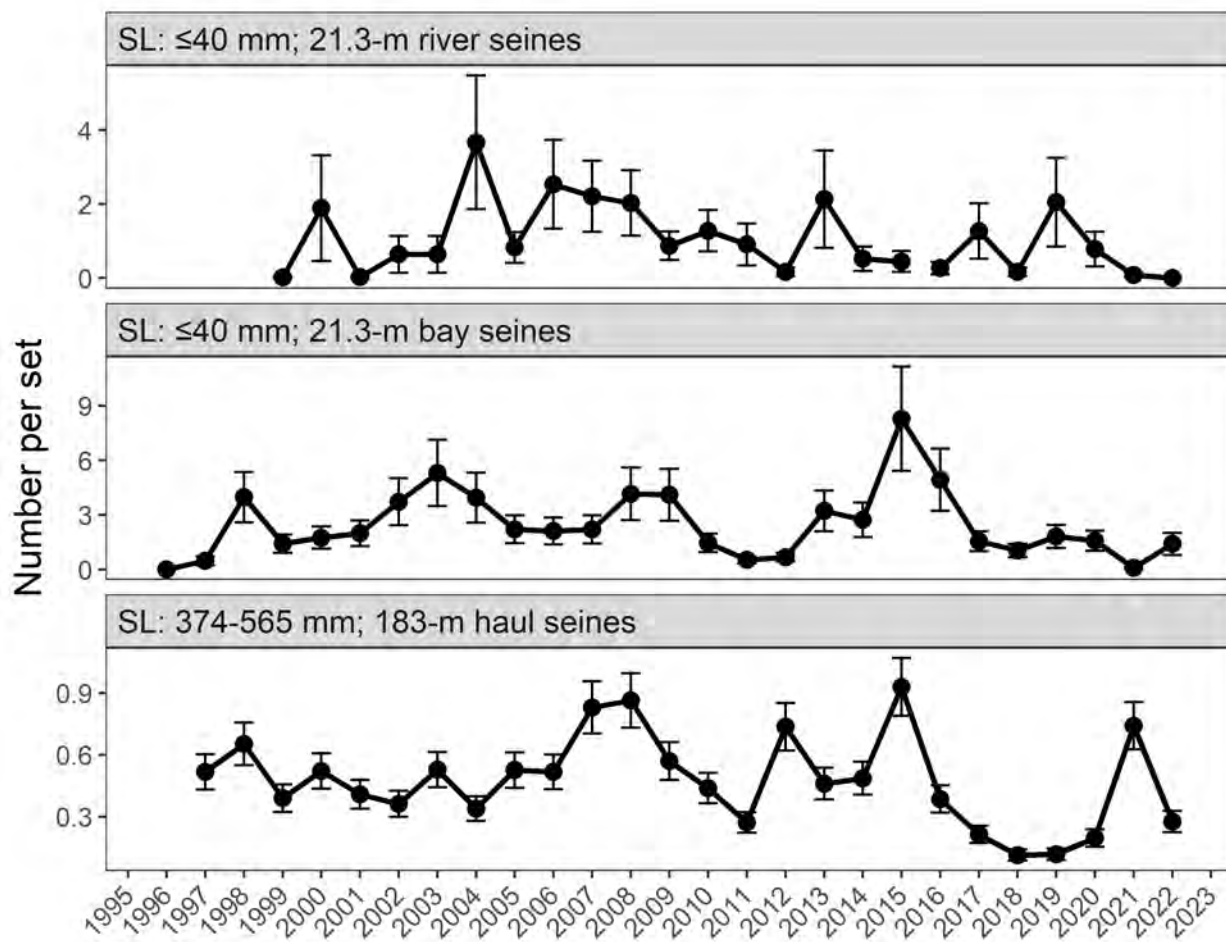
**Figure 5.13:** Relative abundance of young-of-the-year and legal Red Drum collected between 2001 and 2022 during stratified-random sampling of northeast Florida.

### Northern Indian River Lagoon

Annual IOAs of YOY Red Drum in river habitats of the Northern Indian River Lagoon have generally remained stable since sampling began in 1999 (Figure 5.14). Relative abundance of YOY Red Drum in bay habitats in 2022 did not differ significantly from the previous year.

Annual IOAs of YOY Red Drum in bay habitats of the Northern Indian River Lagoon have generally remained stable since sampling began in 1996 (Figure 5.14). Relative abundance of YOY Red Drum in river habitats in 2022 decreased from the previous year.

Annual IOAs of legal-sized Red Drum in the Northern Indian River Lagoon have generally remained stable since sampling began in 1997 (Figure 5.14). Relative abundance of subadult Red Drum in 2022 increased from the previous year.

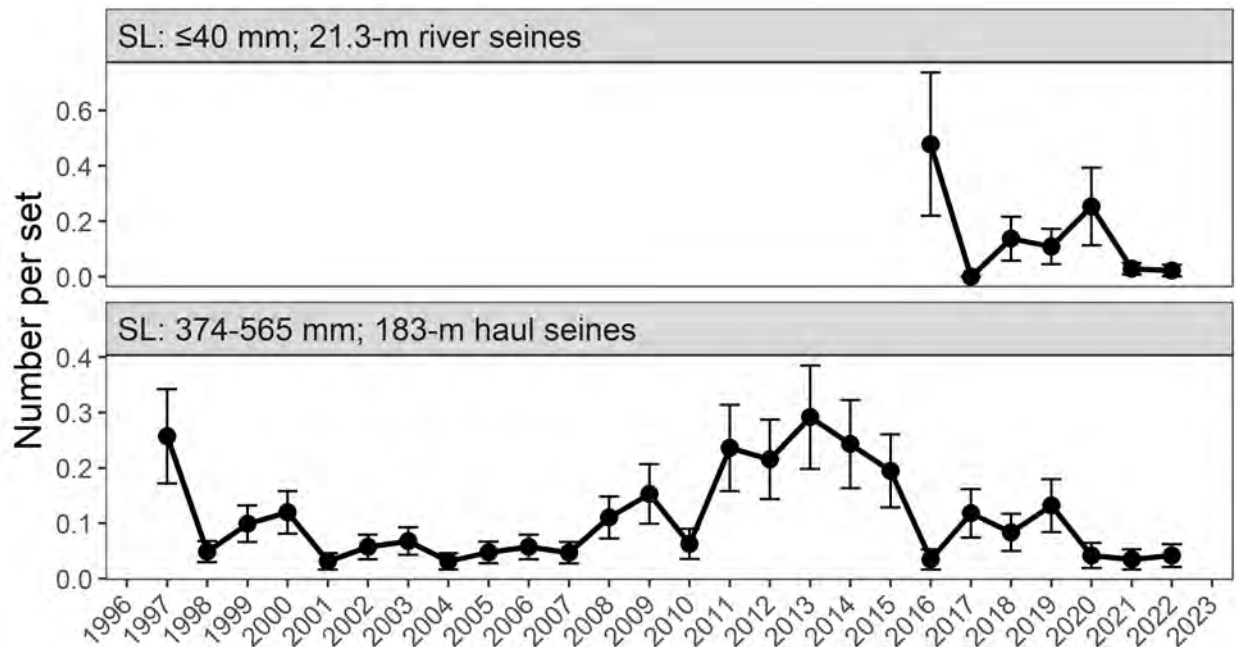


**Figure 5.14:** Relative abundance of young-of-the-year and legal Red Drum collected between 1996 and 2022 during stratified-random sampling of the northern portion of the Indian River Lagoon. Note that survey design changes were implemented in 2016 to include sampling of tidal creeks and tributaries. These changes are reflected in the break in the IOA timeseries between 2015 and 2016.

### Southern Indian River Lagoon

Annual IOAs of YOY Red Drum in river habitats of the Southern Indian River Lagoon have generally decreased since sampling began in 2016 (Figure 5.15). Relative abundance of YOY Red Drum in river habitats in 2022 did not differ significantly from the previous year.

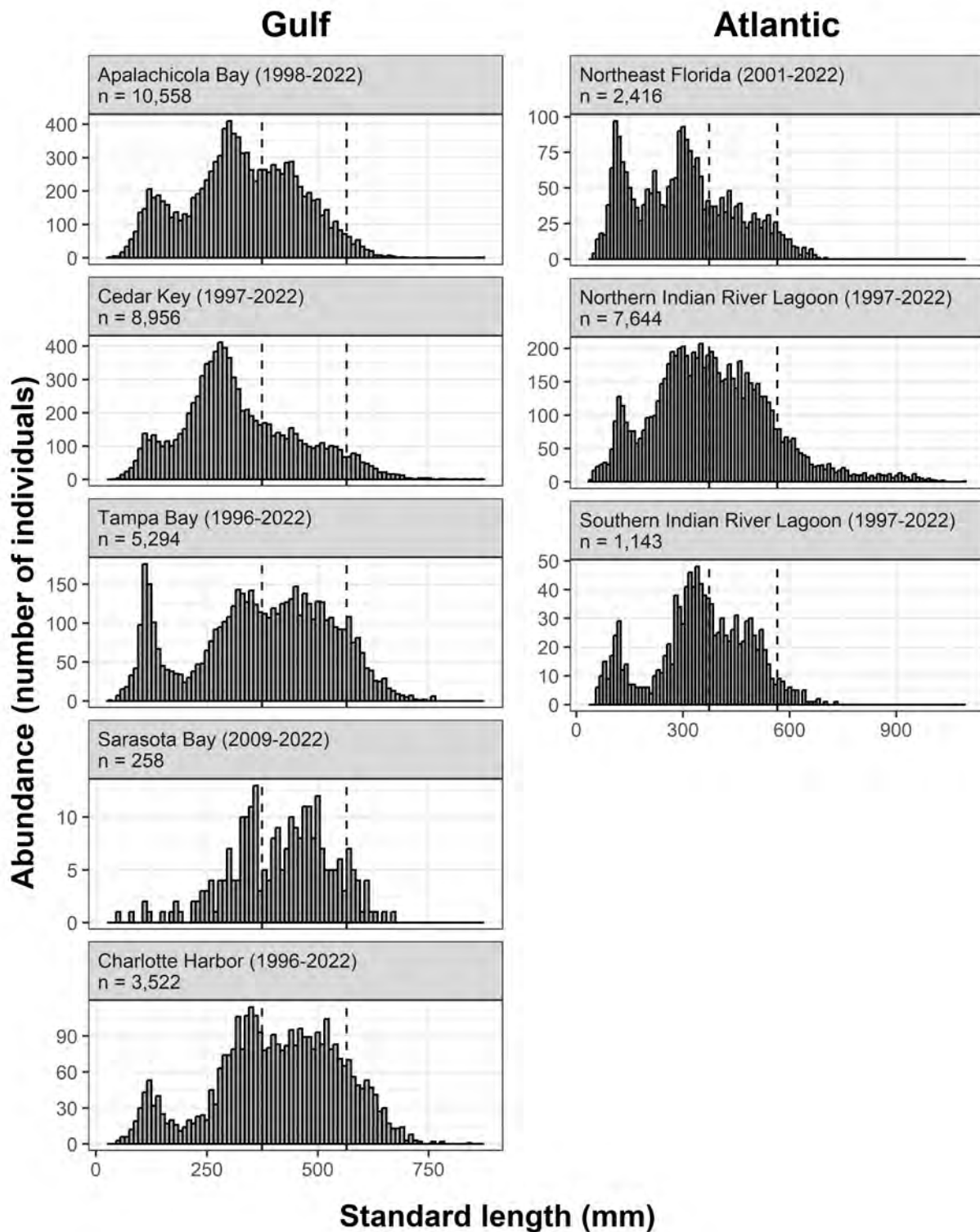
Annual IOAs of legal-sized Red Drum in the Southern Indian River Lagoon have generally remained stable since sampling began in 1997 (Figure 5.15). Relative abundance of subadult Red Drum in 2022 did not differ significantly from the previous year.



**Figure 5.15:** Relative abundance of young-of-the-year and legal Red Drum collected between 1997 and 2022 during stratified-random sampling of the southern portion of the Indian River Lagoon. Note that river sampling began in 2016 to include previously underrepresented habitats (i.e., tidal creeks and tributaries).

## Length-Frequency Diagrams

The following figure shows length frequency diagrams of Red Drum collected in 183-m haul seines. All lengths are standard length (SL). Note different scales and years of collection for each estuary. Length-frequency data collected with 183-m haul seines indicate that this gear provides valuable information on larger juvenile and adult Red Drum in Florida estuaries (Figure 5.16). Red Drum length frequency distributions generally followed a polymodal distribution across estuaries. In addition, the length-frequency in all estuaries declined sharply after the upper slot limit. Large Red Drum (age-4 and older) at these sizes are becoming sexually mature, and will leave the estuaries to move to coastal areas to join schools of other reproductively mature individuals, with the exception of a portion of the population in the northern IRL that resides and spawns within the estuary (Johnson and Funicelli 1991; Reyier et al. 2011).



**Figure 5.16:** Length frequency diagrams of Red Drum collected in 183-m haul seines. Vertical dashed lines indicate the lower and upper recreational size limits for Red Drum in each estuary.

## 5.4 Spotted Seatrout, *Cynoscion nebulosus*

Spotted Seatrout, *Cynoscion nebulosus*, occur in temperate to tropical estuarine and coastal waters on the Atlantic and Gulf of Mexico (Gulf) coasts of the United States (Bortone 2002). In Florida, Spotted Seatrout have historically supported economically important recreational and commercial fisheries. Overall, annual commercial landings of Spotted Seatrout in Florida declined quite slowly during the period 1950 through the 1970s (Murphy et al. 2011). During the early 1990s, statewide commercial landings never exceeded much more than 500,000 fish and dropped drastically to fewer than 50,000 fish after implementation of the constitutional amendment significantly limiting the use of entangling gear in 1995 and the establishment of a 3-month open season in 1996. Declines in the number of commercial trips from the mid-1980s to more recent years were over 90% on the Atlantic coast and nearly 99% on the Gulf coast (Murphy et al. 2011). With these regulatory changes, the Spotted Seatrout fishery has moved from a mixed-sector fishery, to primarily a recreational fishery that makes up more than 99% of the total landings in Florida (13,133,000 fish during 2011-2015, Addis et al. 2018). Between 1990 and 2022 various commercial and recreational fishing regulations have been adopted in an effort to support the rebuilding of Spotted Seatrout stocks (Murphy and Nelson 1999; Addis et al. 2023). In Florida, studies have indicated the presence of Spotted Seatrout stock subdivisions with most of the major estuaries having a separate stock (Iversen and Tabb 1962; Seyoum et al. 2014). Since 2012 the FWC has managed Spotted Seatrout in four different regions, increasing to five regions in 2020, with different regulations in each region (Addis et al. 2023). Over the years, various management regulations have been exercised based upon updated stock assessments and regional responses to environmental perturbations (i.e., red tides), which at various times have resulted in seasonal and emergency closures for each of the management zones. There have also been adjustments to the legal harvest size of Spotted Seatrout, with the most recent change adopted February 1, 2020 which set a recreational slot limit of 325-410 mm SL.

Adult Spotted Seatrout begin to spawn in March or April in Tampa Bay and Charlotte Harbor (McMichael and Peters 1989) and in April or May in the northern Indian River Lagoon (IRL), Cedar Key, Apalachicola (Moody 1949; Tabb 1961; Crabtree and Adams 1998; DeVries et al. 2002), and Northeast Florida (MacDonald et al. 2009). Spotted Seatrout are generally reproductively mature at age 2 [males  $\geq 200$  mm standard length [SL], females  $\geq 235$  mm SL; Murphy et al. (2011)]. Protracted spawning of; Spotted Seatrout continues throughout the summer and into late September or October, depending upon location (Murphy and Nelson 1999). Spawning generally occurs during the evening hours in deep channels and depressions near grass flats in estuarine areas with water temperatures  $>21^{\circ}\text{C}$  (Tabb 1961; Helser et al. 1993). Estuarine water temperatures below  $20^{\circ}\text{C}$  may reduce hatching success for Spotted Seatrout (Gray et al. 1991).

In an effort to monitor year-class strength and to improve the ability to predict future adult Spotted Seatrout abundances, relative indices of abundance (IOAs) were developed for young-of-the-year (YOY) Spotted Seatrout recruitment into selected Florida estuaries. Abundance data for YOY Spotted Seatrout ( $\leq 100$  mm SL) collected from stratified-random 21.3-m seine samples were examined to assess recruitment in eight Florida estuaries: Apalachicola Bay, Cedar Key, Tampa Bay, Sarasota Bay, Charlotte Harbor, northeast Florida, northern IRL, and southern IRL. Young-of-the-year Spotted Seatrout recruited to habitats sampled with 21.3-m seines primarily from April through October in Tampa Bay, Sarasota Bay, and Charlotte Harbor, and from May through November in the northern IRL, southern IRL, northeast Florida, and Cedar Key. In Apalachicola Bay, recruitment

of YOY Spotted Seatrout was evident from June through October. These recruitment periods coincide with published recruitment and spawning periods of Spotted Seatrout throughout Florida (Moody 1949; Nelson and Leffler 2001; DeVries et al. 2002; Walters et al. 2007). Therefore, these bay-specific months were used to define the respective recruitment seasons for each estuary in subsequent analyses. Indices were not calculated for estuaries where 21.3-m seines were not deployed or where limited data were available. Data from stratified-random 183-m haul seines collected within these same Florida estuarine systems (including the southern IRL) were used to develop IOAs for adult Spotted Seatrout ( $\geq 200$  mm SL). Indices for adult fish were derived by including all Spotted Seatrout  $\geq 200$  mm SL collected between January and December from 1996 to 2022. Due to historical changes in sampling design and available habitat, only consistently sampled zones and habitats (bay or river) in each estuary were included to generate annual IOAs.

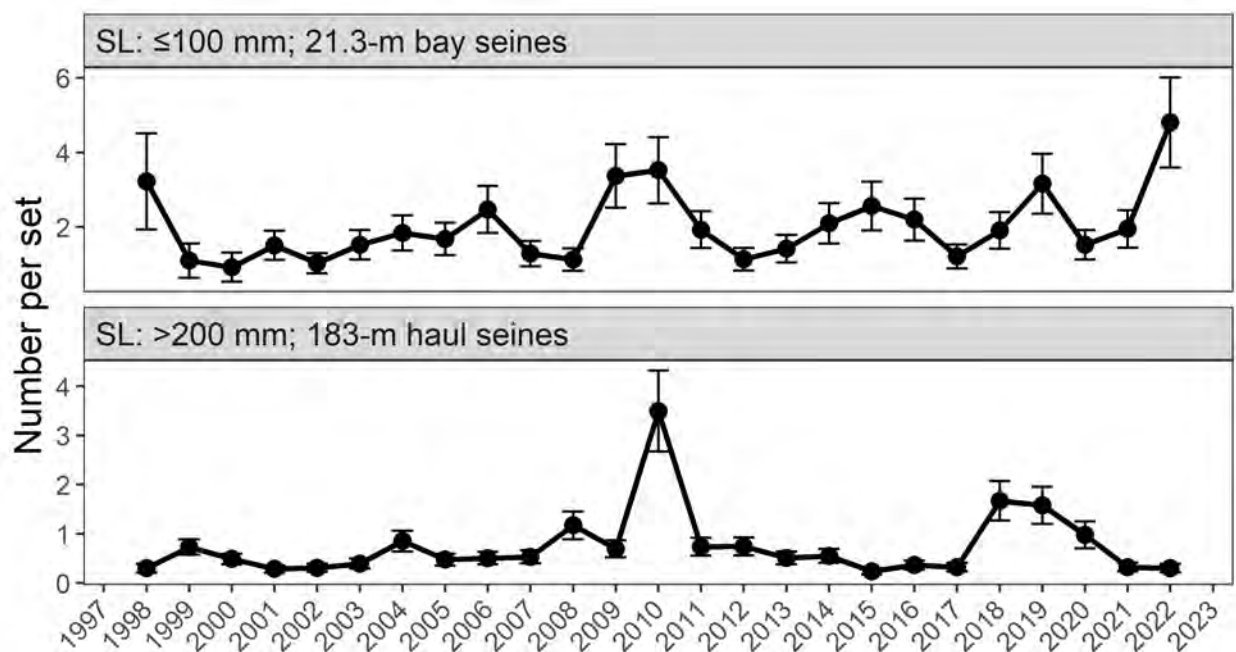
## Indices of Abundance

The following figures show relative abundance of young-of-the-year Spotted Seatrout ( $\leq 100$  mm SL) collected in 21.3-m seines and of adult Spotted Seatrout ( $>200$  mm SL) collected in 183-m haul seines during stratified-random sampling across all estuaries. Points represent the median estimate while the vertical bars represent the 25th-75th percentiles. Note different scales for estimates from 21.3-m and 183-m seines.

### Apalachicola Bay

Annual IOAs of YOY Spotted Seatrout in bay habitats of Apalachicola Bay have generally remained stable since sampling began in 1998 (Figure 5.17). Relative abundance of YOY Spotted Seatrout in bay habitats in 2022 did not differ significantly from the previous year.

Annual IOAs of adult Spotted Seatrout in Apalachicola Bay have generally remained stable since sampling began in 1998 (Figure 5.17). Relative abundance of adult Spotted Seatrout in 2022 did not differ significantly from the previous year.



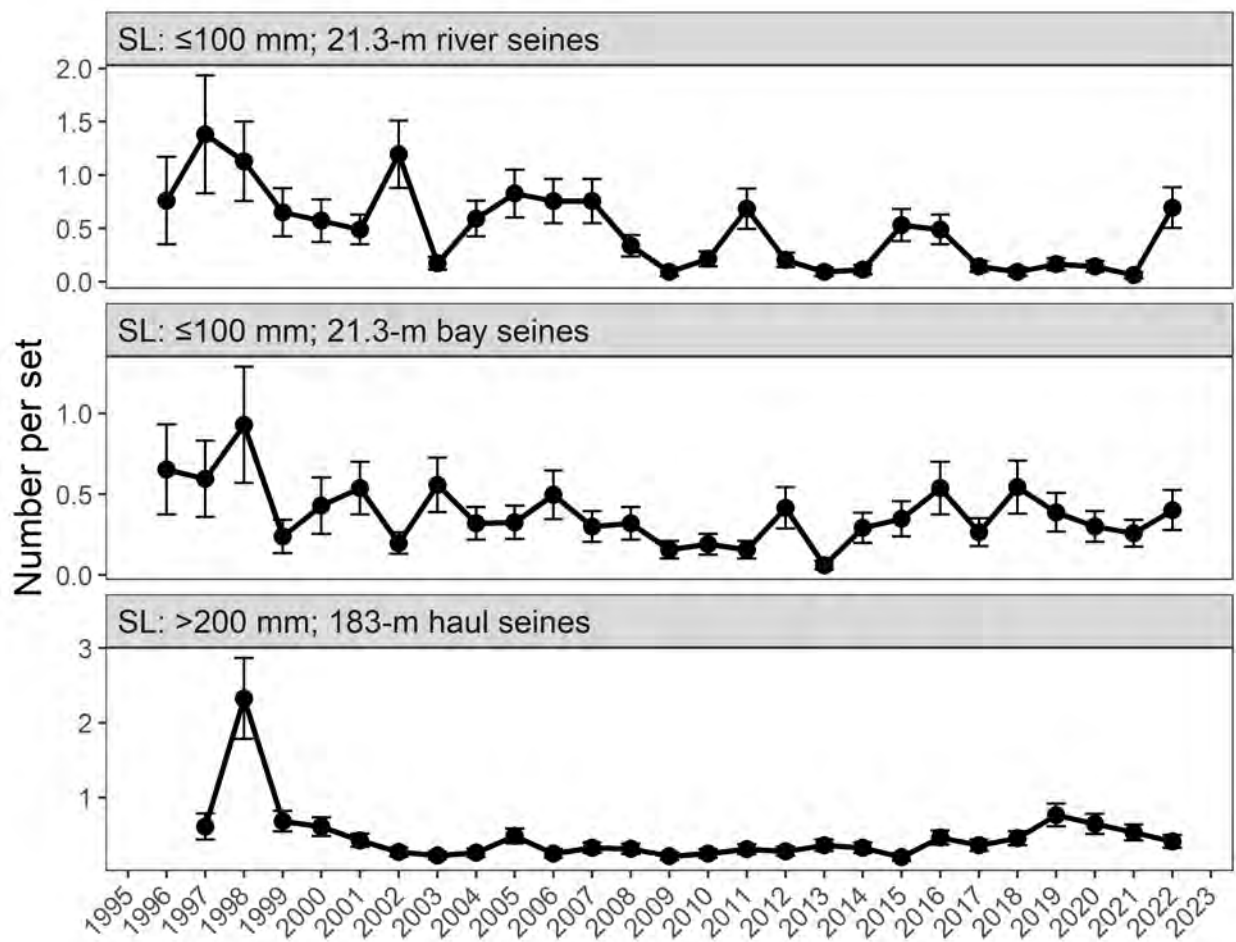
**Figure 5.17:** Relative abundance of young-of-the-year and adult Spotted Seatrout collected between 1998 and 2022 during stratified-random sampling of Apalachicola Bay.

## Cedar Key

Annual IOAs of YOY Spotted Seatrout in river habitats of Cedar Key have generally decreased since sampling began in 1996 (Figure 5.18). Relative abundance of YOY Spotted Seatrout in bay habitats in 2022 decreased from the previous year.

Annual IOAs of YOY Spotted Seatrout in bay habitats of Cedar Key have generally decreased since sampling began in 1996 (Figure 5.18). Relative abundance of YOY Spotted Seatrout in river habitats in 2022 did not differ significantly from the previous year.

Annual IOAs of adult Spotted Seatrout in Cedar Key have generally decreased since sampling began in 1997 (Figure 5.18). Relative abundance of adult Spotted Seatrout in 2022 did not differ significantly from the previous year.



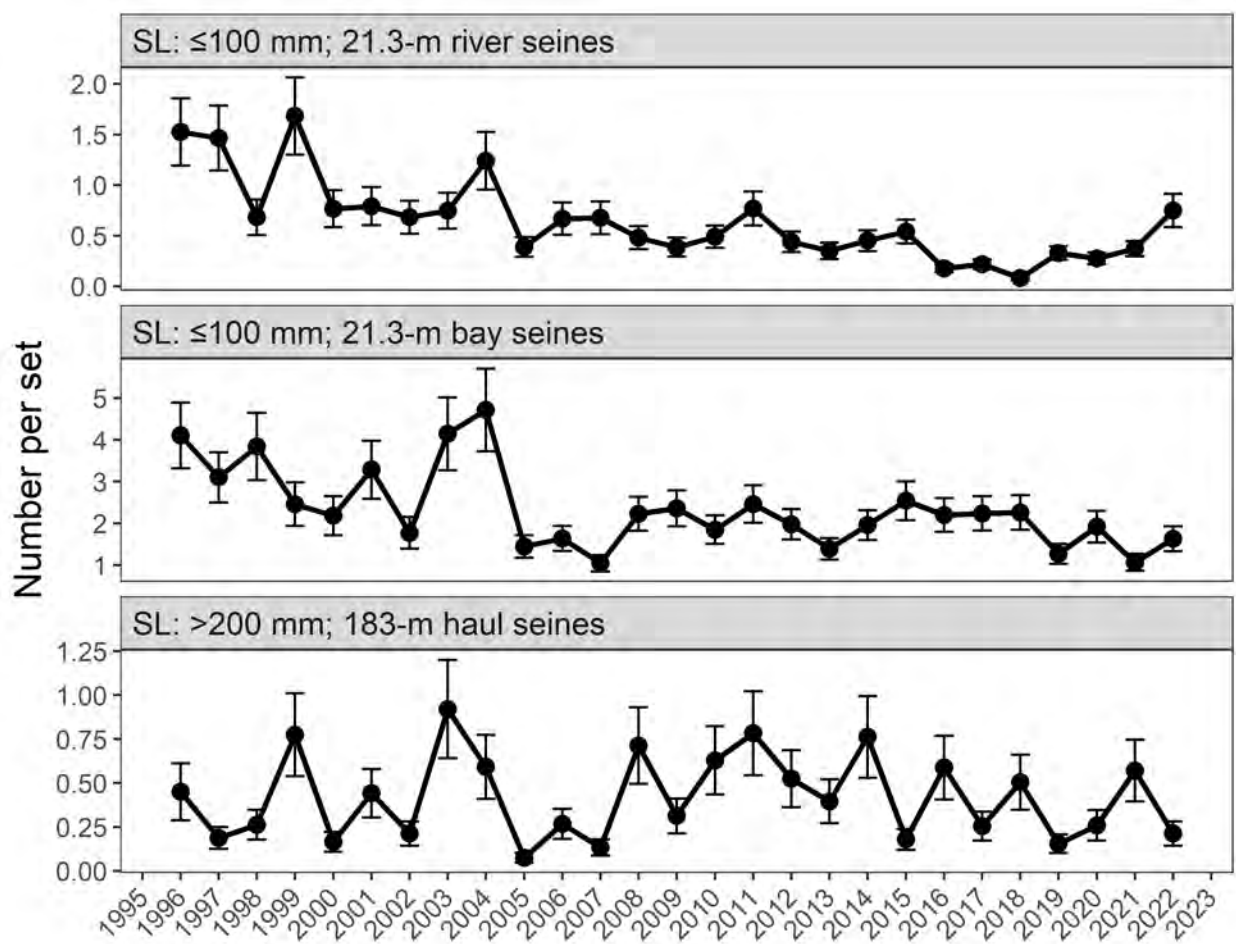
**Figure 5.18:** Relative abundance of young-of-the-year and adult Spotted Seatrout collected between 1996 and 2022 during stratified-random sampling of Cedar Key.

## Tampa Bay

Annual IOAs of YOY Spotted Seatrout in river habitats of Tampa Bay have generally decreased since sampling began in 1996 (Figure 5.19). Relative abundance of YOY Spotted Seatrout in river habitats in 2022 did not differ significantly from the previous year.

Annual IOAs of YOY Spotted Seatrout in bay habitats of Tampa Bay have generally decreased since sampling began in 1996 (Figure 5.19). Relative abundance of YOY Spotted Seatrout in bay habitats in 2022 did not differ significantly from the previous year.

Annual IOAs of adult Spotted Seatrout in Tampa Bay have generally remained stable since sampling began in 1996 (Figure 5.19). Relative abundance of adult Spotted Seatrout in 2022 did not differ significantly from the previous year.

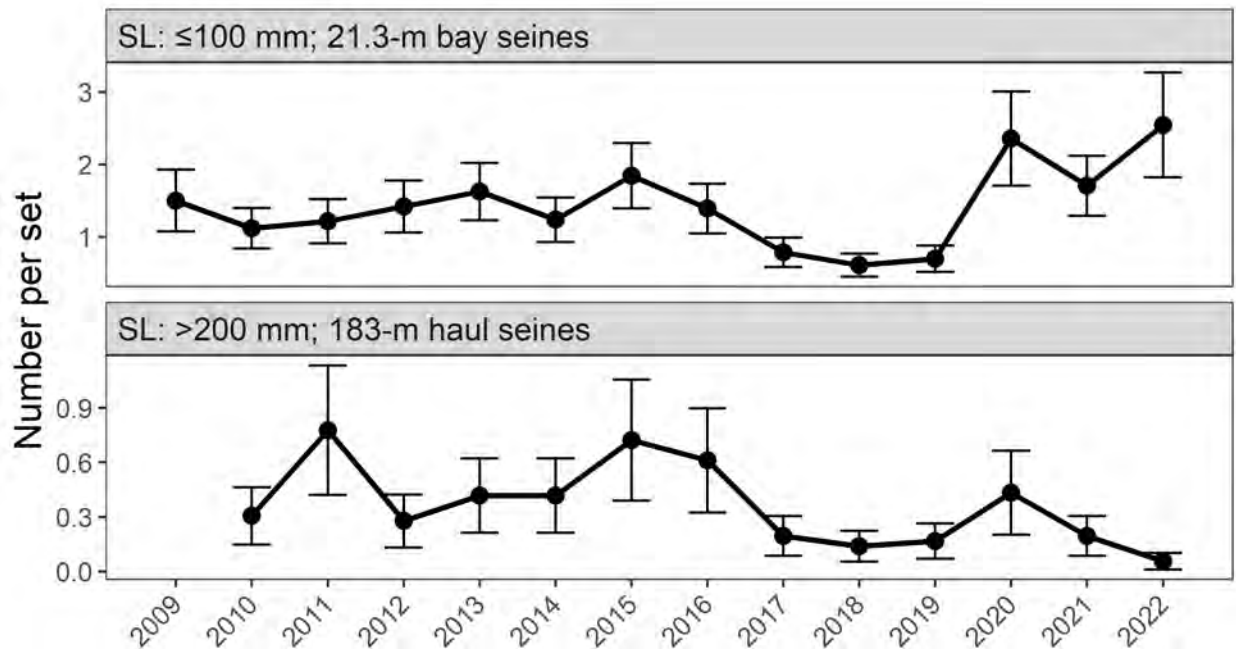


**Figure 5.19:** Relative abundance of young-of-the-year and adult Spotted Seatrout collected between 1996 and 2022 during stratified-random sampling of Tampa Bay.

### Sarasota Bay

Annual IOAs of YOY Spotted Seatrout in bay habitats of Sarasota Bay have generally increased since sampling began in 2009 (Figure 5.20). Relative abundance of YOY Spotted Seatrout in bay habitats in 2022 did not differ significantly from the previous year.

Annual IOAs of adult Spotted Seatrout in Sarasota Bay have generally remained stable since sampling began in 2010 (Figure 5.20). Relative abundance of adult Spotted Seatrout in 2022 did not differ significantly from the previous year.



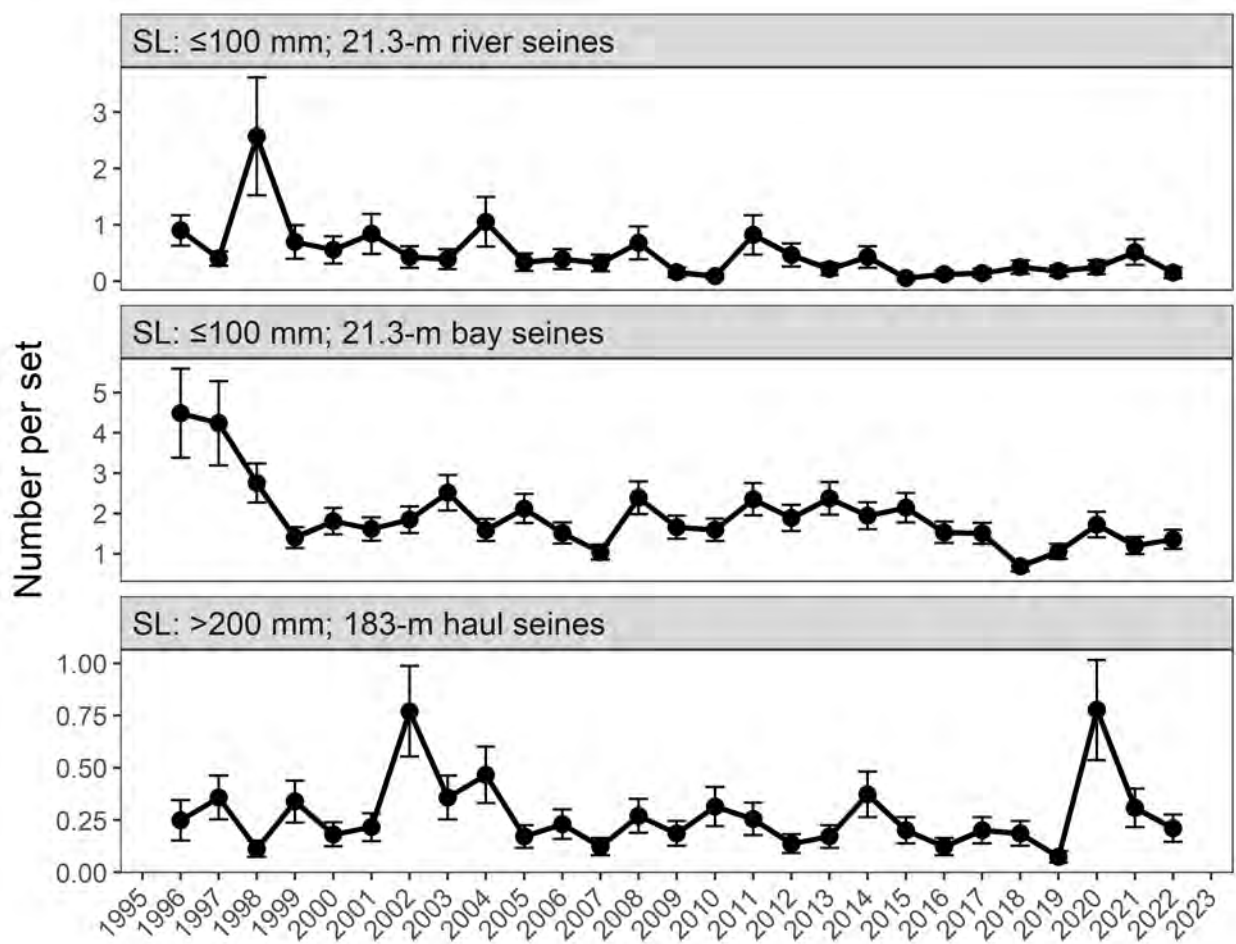
**Figure 5.20:** Relative abundance of young-of-the-year and adult Spotted Seatrout collected between 2009 and 2022 during stratified-random sampling of Sarasota Bay.

## Charlotte Harbor

Annual IOAs of YOY Spotted Seatrout in river and creek habitats of Charlotte Harbor have generally decreased since sampling began in 1996 (Figure 5.21). Relative abundance of YOY Spotted Seatrout in river and creek habitats in 2022 did not differ significantly from the previous year.

Annual IOAs of YOY Spotted Seatrout in bay habitats of Charlotte Harbor have generally decreased since sampling began in 1996 (Figure 5.21). Relative abundance of YOY Spotted Seatrout in bay habitats in 2022 did not differ significantly from the previous year.

Annual IOAs of adult Spotted Seatrout in Charlotte Harbor have generally remained stable since sampling began in 1996 (Figure 5.18). Relative abundance of adult Spotted Seatrout in 2022 did not differ significantly from the previous year.

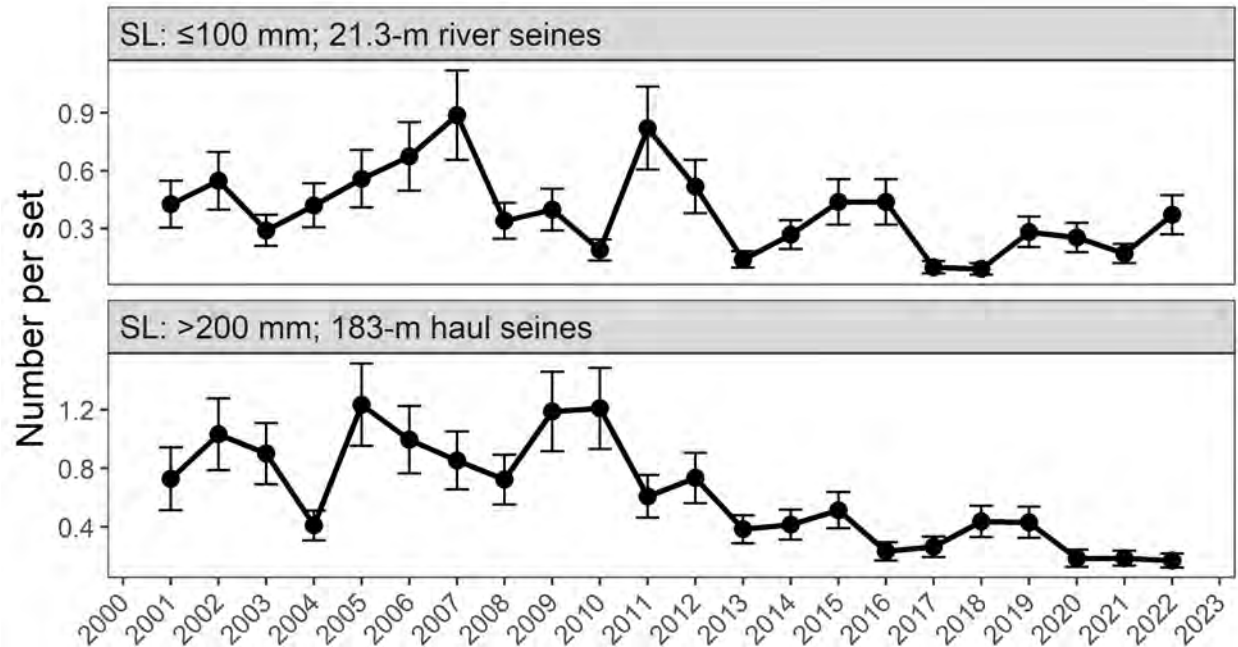


**Figure 5.21:** Relative abundance of young-of-the-year and adult Spotted Seatrout collected between 1996 and 2022 during stratified-random sampling of Charlotte Harbor.

### Northeast Florida

Annual IOAs of YOY Spotted Seatrout in river habitats of Northeast Florida have generally remained stable since sampling began in 2001 (Figure 5.22). Relative abundance of YOY Spotted Seatrout in river habitats in 2022 did not differ significantly from the previous year.

Annual IOAs of adult Spotted Seatrout in Northeast Florida have generally decreased since sampling began in 2001 (Figure 5.22). Relative abundance of adult Spotted Seatrout in 2022 did not differ significantly from the previous year.



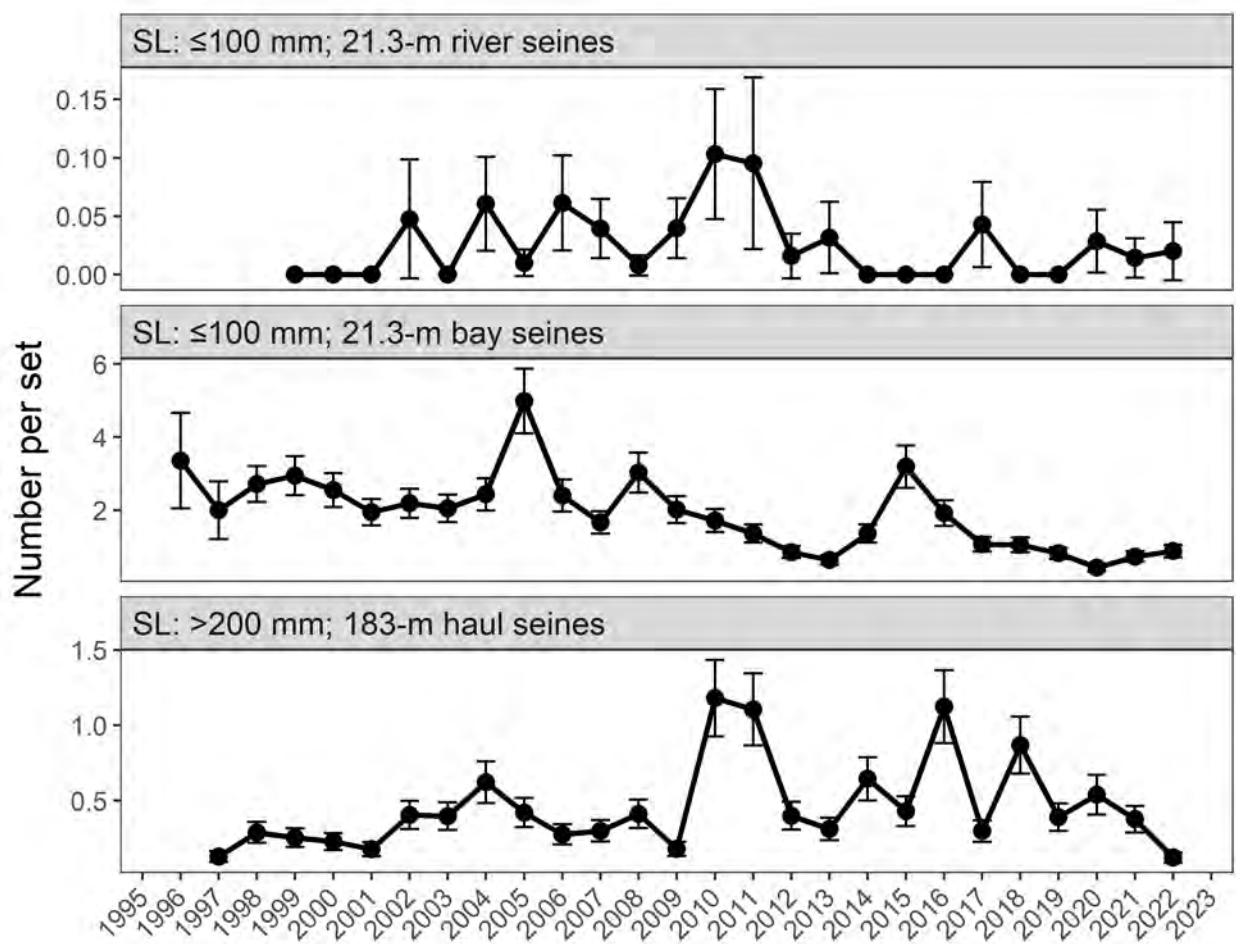
**Figure 5.22:** Relative abundance of young-of-the-year and adult Spotted Seatrout collected between 2001 and 2022 during stratified-random sampling of northeast Florida. Note that river sampling began in 2016 to improve abundance estimates for juvenile Common Snook; juvenile Spotted Seatrout generally do not recruit to river habitats as evidenced by the high variances shown in the plot.

### Northern Indian River Lagoon

Annual IOAs of YOY Spotted Seatrout in river habitats of the Northern Indian River Lagoon have generally remained stable since sampling began in 1999 (Figure 5.23). Relative abundance of YOY Spotted Seatrout in river habitats in 2022 did not differ significantly from the previous year.

Annual IOAs of YOY Spotted Seatrout in bay habitats of the Northern Indian River Lagoon have generally decreased since sampling began in 1996 (Figure 5.23). Relative abundance of YOY Spotted Seatrout in bay habitats in 2022 did not differ significantly from the previous year.

Annual IOAs of adult Spotted Seatrout in the Northern Indian River Lagoon have generally remained stable since sampling began in 1997 (Figure 5.23). Relative abundance of adult Spotted Seatrout in 2022 increased from the previous year.

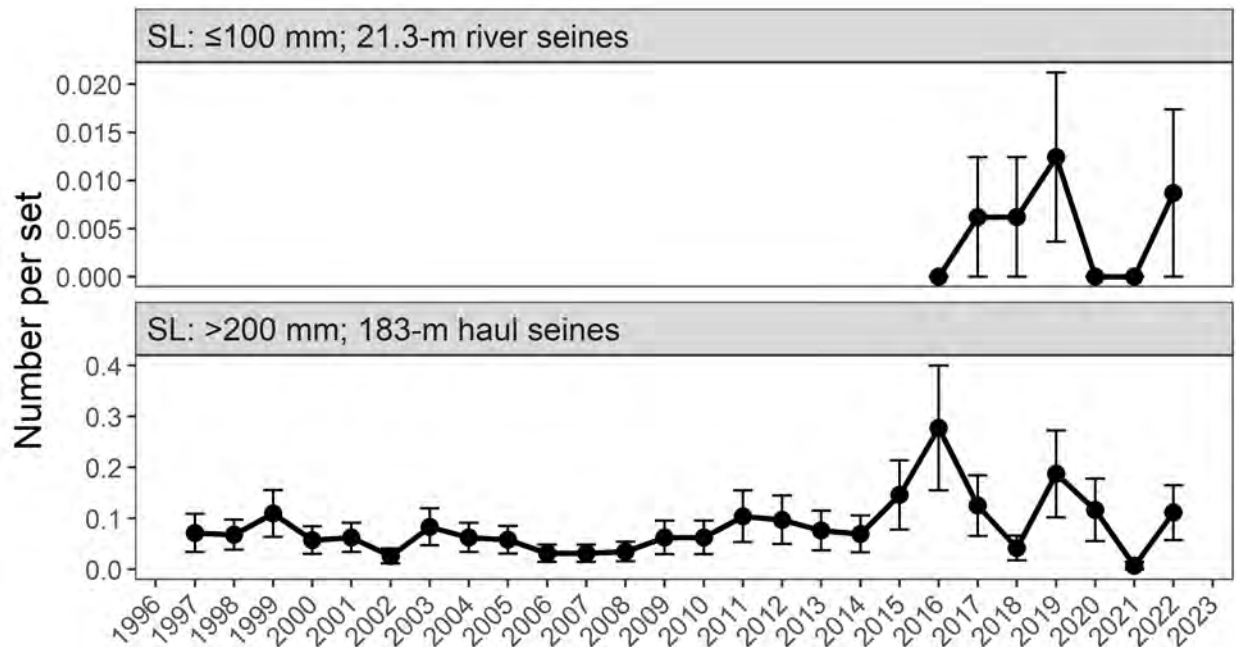


**Figure 5.23:** Relative abundance of young-of-the-year and adult Spotted Seatrout collected between 1996 and 2022 during stratified-random sampling of the northern portion of the Indian River Lagoon.

### Southern Indian River Lagoon

Annual IOAs of YOY Spotted Seatrout in river habitats of the Southern Indian River Lagoon have generally remained stable since sampling began in 2016 (Figure 5.24). Relative abundance of YOY Spotted Seatrout in river habitats in 2022 did not differ significantly from the previous year.

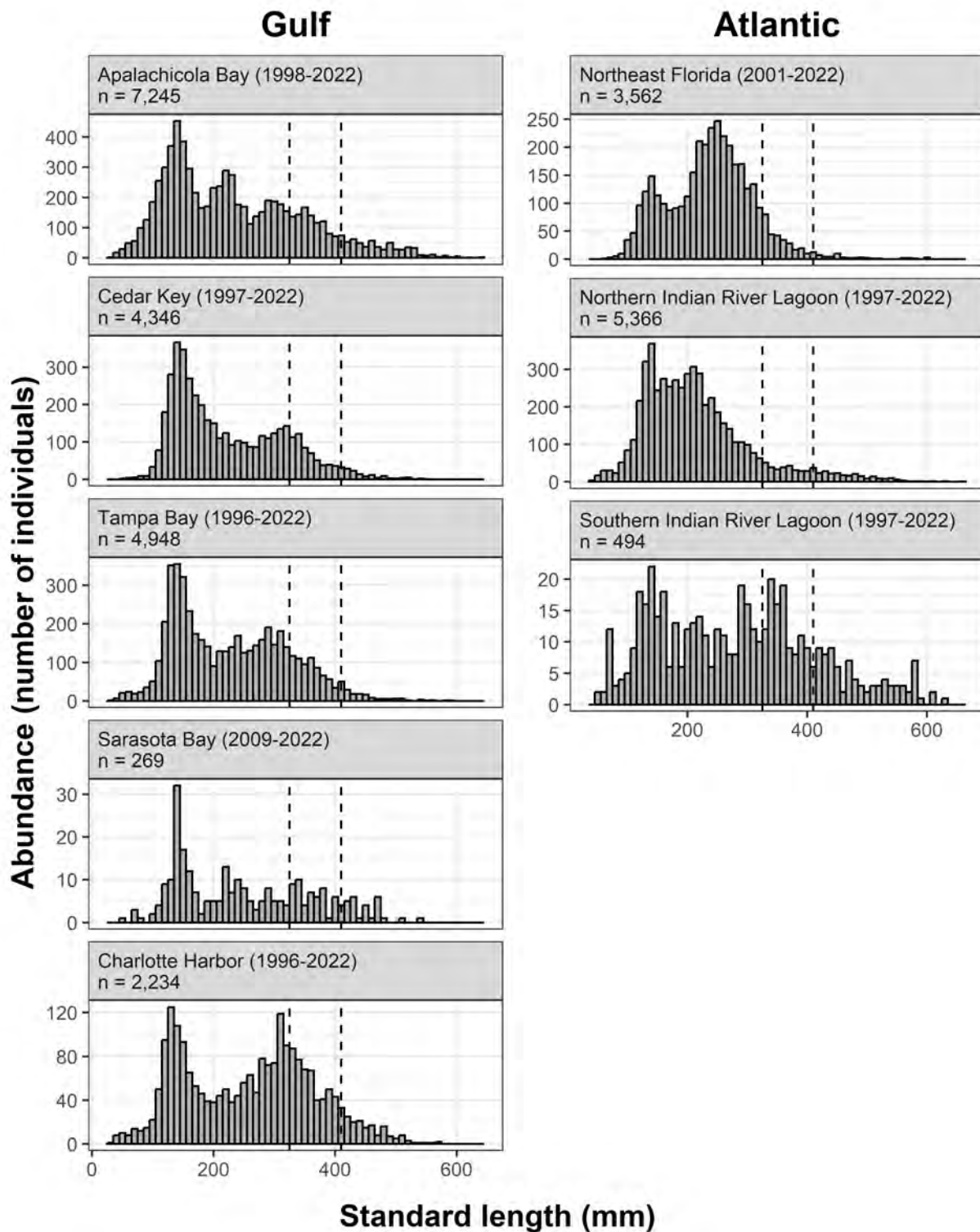
Annual IOAs of adult Spotted Seatrout in the Southern Indian River Lagoon have generally increased since sampling began in 1997 (Figure 5.24). Relative abundance of adult Spotted Seatrout in 2022 did not differ significantly from the previous year.



**Figure 5.24:** Relative abundance of young-of-the-year and adult Spotted Seatrout collected between 1996 and 2022 during stratified-random sampling of the southern portion of the Indian River Lagoon. Note that river sampling began in 2016 to include previously underrepresented habitats (i.e., tidal creeks and tributaries).

## Length-Frequency Diagrams

The following figure shows length frequency diagrams of Spotted Seatrout collected in 183-m haul seines. All lengths are standard length (SL). Note different scales and years of collection for each estuary. Length-frequency data collected with 183-m haul seines indicate that this gear provides valuable information on multiple life histories of Spotted Seatrout in Florida estuaries (Figure 5.25). Spotted Seatrout length frequency distributions generally followed a bimodal or polymodal distribution across estuaries.



**Figure 5.25:** Length frequency diagrams of Spotted Seatrout collected in 183-m haul seines. Vertical dashed lines indicate the lower and upper recreational size limits for Spotted Seatrout in each estuary.

## 5.5 Sheepshead, *Archosargus probatocephalus*

The Sheepshead (*Archosargus probatocephalus*) occurs from Nova Scotia (Gilhen et al. 1976) to Brazil (Caldwell 1965) and is common in coastal waters from the Chesapeake Bay to Texas in the United States (Bigelow and Schroeder 1953). Historically, more Sheepshead have been landed by recreational fishers than by commercial fishers (82–99% of the combined annual landings during 2000–2015) along Florida’s Gulf coast (Munyandorero et al. 2017). Sheepshead in Florida waters are currently regulated by minimum size (305 mm total length) and a bag limit (8 fish/day). The most recent stock assessment for Sheepshead used Fisheries-Independent Monitoring (FIM) program data to derive annual indices of abundance (IOAs) during different life history stages to guide coast-specific catch-at-age models (Munyandorero et al. 2017). This stock assessment determined that Sheepshead stocks on the Gulf and Atlantic coasts appeared abundant enough to supply adequate numbers of new recruits while maintaining current harvest rates.

The reproductive season for adult Sheepshead is February through April in Florida waters and the newly recruited young-of-the-year (YOY) are most abundant in shallow estuarine areas between April and June. Regression analyses conducted by FIM for YOY Sheepshead show they reach 40 mm standard length (SL) at approximately 90 days and 130 mm SL at one year of age. Sheepshead in Florida waters enter the fishery at 242 mm SL, which typically corresponds to an age of 3 to 6 years (Dutka-Gianelli and Murie 2001).

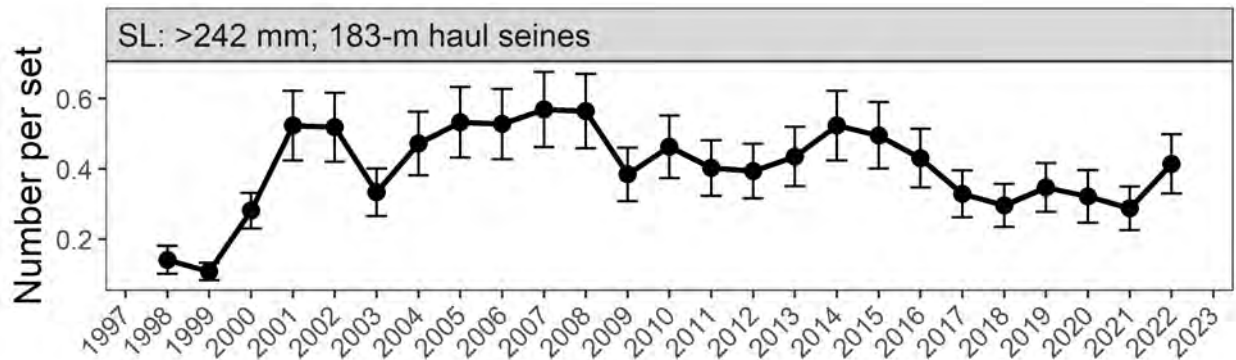
To monitor year-class strength and improve the ability to predict future adult Sheepshead abundance, the FIM program developed annual IOAs for two life history stages: YOY and fully recruited to the fishery. Abundance data for YOY ( $\leq 40$  mm SL) collected in stratified-random 21.3-m seines were examined to assess recruitment in four Florida estuaries: Tampa Bay, Sarasota Bay, Charlotte Harbor, and the northern Indian River Lagoon (IRL). This life history stage was not examined for Apalachicola Bay, Cedar Key, northeast Florida, or southern IRL due to small sample sizes. Young-of-the-year Sheepshead recruited to habitats sampled with 21.3-m seines primarily from April through June. These months were used to define the respective recruitment seasons for each estuary in subsequent analyses. Abundance indices were also calculated for Sheepshead fully recruited to the fishery ( $\geq 242$  mm SL) for nine Florida estuarine areas: Apalachicola Bay, Cedar Key, Tampa Bay, Sarasota Bay, Charlotte Harbor, northeast Florida, northern Indian River Lagoon, and southern Indian River Lagoon. Data from stratified-random 183-m haul seines were used to develop IOAs for fully recruited Sheepshead from January through December of each year. Due to historical changes in sampling design and available habitat, only consistently sampled zones and habitats (bay or river) in each estuary were included to generate annual IOAs.

## Indices of Abundance

The following figures show relative abundance of young-of-the-year Sheepshead ( $\leq 40$  mm SL) collected in 21.3-m seines and of legal-sized Sheepshead ( $\geq 242$  mm SL) collected in 183-m haul seines during stratified-random sampling across all estuaries. Points represent the median estimate while the vertical bars represent the 25th-75th percentiles. Note different scales for estimates from 21.3-m and 183-m seines.

### Apalachicola Bay

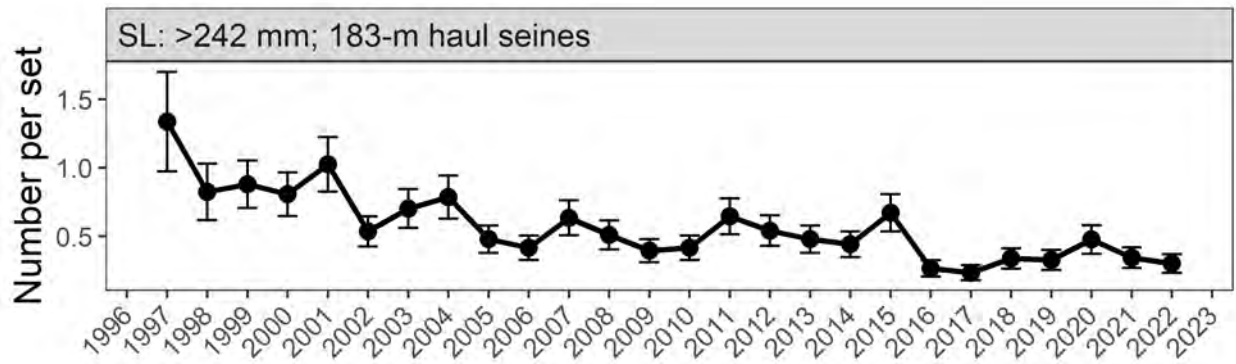
Annual IOAs of fully recruited Sheepshead in Apalachicola Bay have generally remained stable since sampling began in 1998 (Figure 5.26). Relative of abundance of fully recruited Sheepshead in 2022 did not differ significantly from the previous year.



**Figure 5.26:** Relative abundance of young-of-the-year and legal-sized Sheepshead collected between 1998 and 2022 during stratified-random sampling of Apalachicola Bay.

### Cedar Key

Annual IOAs of fully recruited Sheepshead in Cedar Key have generally decreased since sampling began in 1997 (Figure 5.27). Relative abundance of fully recruited Sheepshead in 2022 did not differ significantly from the previous year.



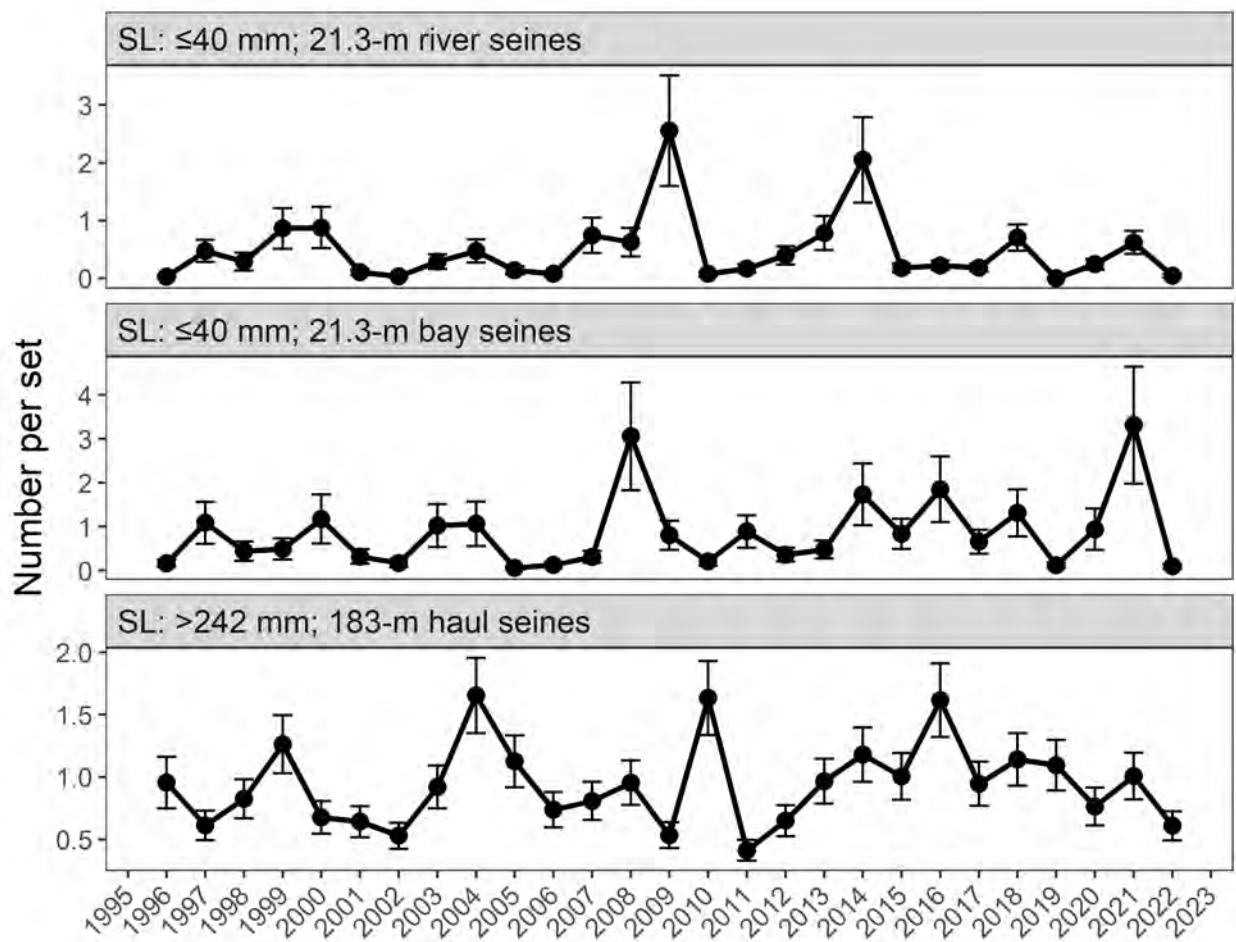
**Figure 5.27:** Relative abundance of young-of-the-year and legal-sized Sheepshead collected between 1996 and 2022 during stratified-random sampling of Cedar Key.

## Tampa Bay

Annual IOAs of YOY Sheepshead in river habitats of Tampa Bay have generally remained stable since sampling began in 1996 (Figure 5.28). Relative abundance of YOY Sheepshead in river habitats in 2022 increased from the previous year.

Annual IOAs of YOY Sheepshead in bay habitats of Tampa Bay have generally increased since sampling began in 1996 (Figure 5.28). Relative abundance of YOY Sheepshead in bay habitats in 2022 increased from the previous year.

Annual IOAs of fully recruited Sheepshead in Tampa Bay have generally remained stable since sampling began in 1996 (Figure 5.28). Relative abundance of fully recruited Sheepshead in 2022 did not differ significantly from the previous year.

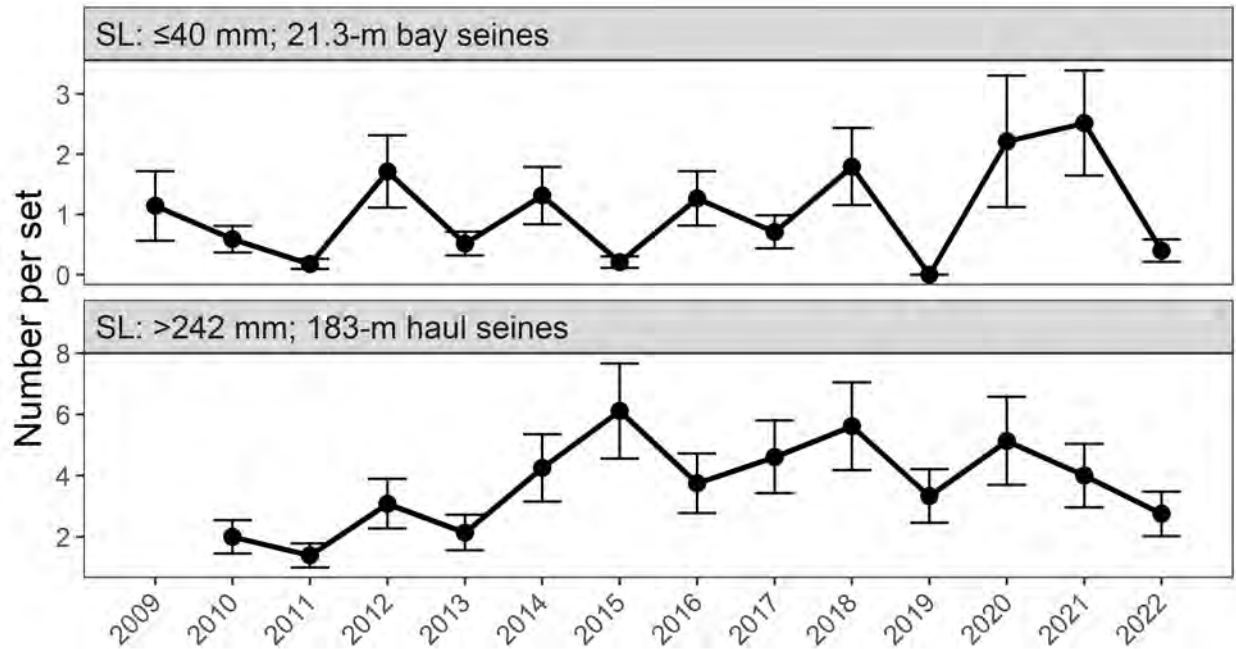


**Figure 5.28:** Relative abundance of young-of-the-year and legal-sized Sheepshead collected between 1996 and 2022 during stratified-random sampling of Tampa Bay.

### Sarasota Bay

Annual IOAs of YOY Sheepshead in bay habitats of Sarasota Bay have generally increased since sampling began in 2009 (Figure 5.29). Relative abundance of YOY Sheepshead in bay habitats in 2022 increased from the previous year.

Annual IOAs of fully recruited Sheepshead in Sarasota Bay have generally remained stable since sampling began in 2010 (Figure 5.29). Relative abundance of fully recruited Sheepshead in 2022 did not differ significantly from the previous year.



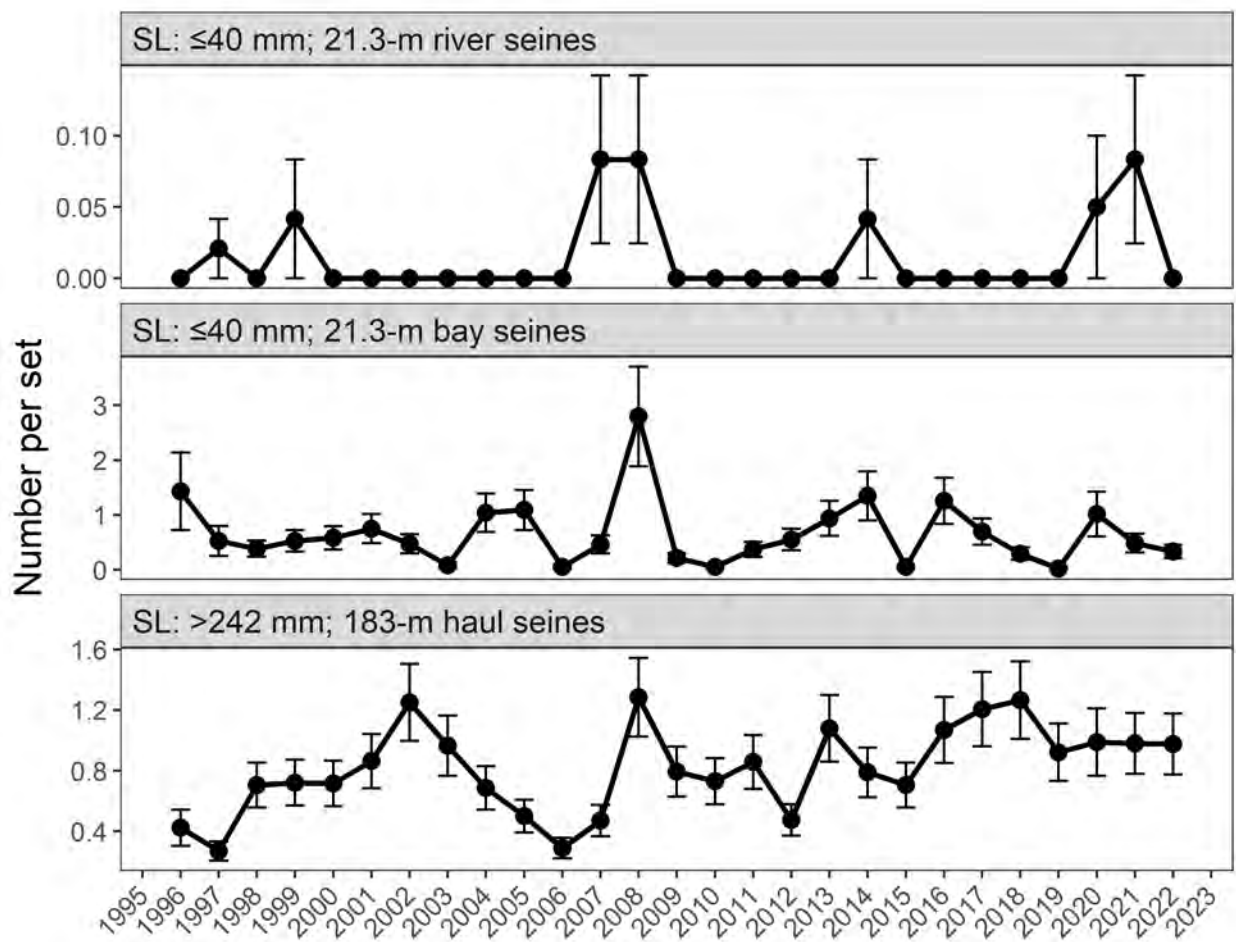
**Figure 5.29:** Relative abundance of young-of-the-year and legal-sized Sheepshead collected between 2010 and 2022 during stratified-random sampling of Sarasota Bay.

## Charlotte Harbor

Annual IOAs of YOY Sheepshead in river and creek habitats of Charlotte Harbor have generally remained stable since sampling began in 1996 (Figure 5.30). Relative abundance of YOY Sheepshead in river and creek habitats in 2022 did not differ significantly from the previous year.

Annual IOAs of YOY Sheepshead in river and creek habitats of Charlotte Harbor have generally remained stable since sampling began in 1996 (Figure 5.30). Relative abundance of YOY Sheepshead in bay habitats in 2022 did not differ significantly from the previous year.

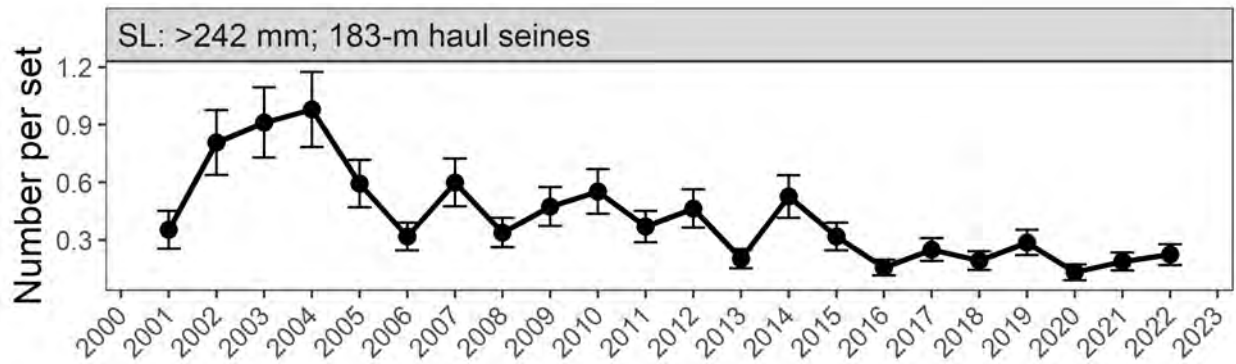
Annual IOAs of fully recruited Sheepshead in Charlotte Harbor have generally increased since sampling began in 1996 (Figure 5.30). Relative abundance of fully recruited Sheepshead in 2022 did not differ significantly from the previous year.



**Figure 5.30:** Relative abundance of young-of-the-year and legal-sized Sheepshead collected between 1996 and 2022 during stratified-random sampling of Charlotte Harbor.

***Northeast Florida***

Annual IOAs of fully recruited Sheepshead in Northeast Florida have generally decreased since sampling began in 2001 (Figure 5.31). Relative abundance of fully recruited Sheepshead in 2022 did not differ significantly from the previous year.



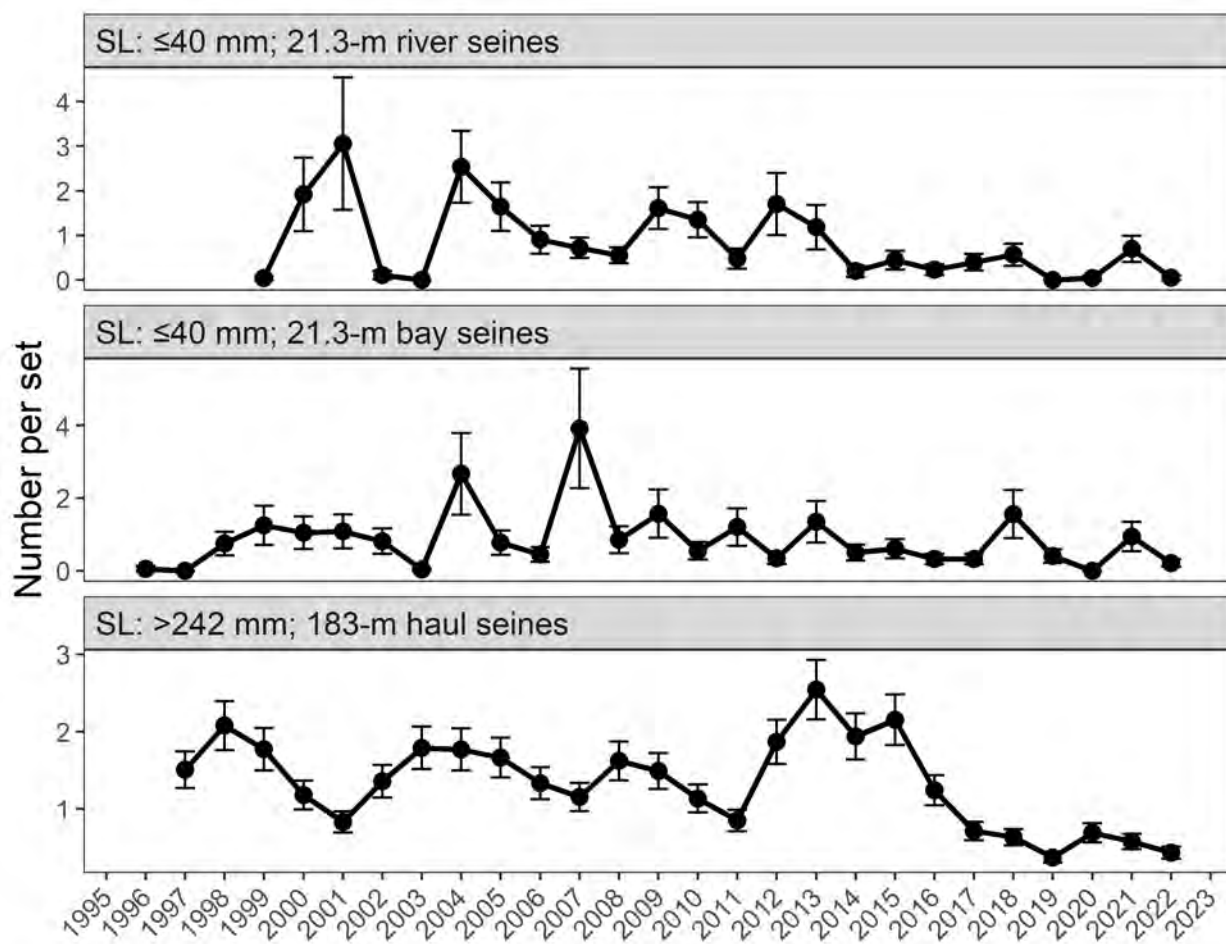
**Figure 5.31:** Relative abundance of young-of-the-year and legal-sized Sheepshead collected between 2001 and 2022 during stratified-random sampling of northeast Florida.

### Northern Indian River Lagoon

Annual IOAs of YOY Sheepshead in river habitats of the Northern Indian River Lagoon have generally decreased since sampling began in 1999 (Figure 5.32). Relative abundance of YOY Sheepshead in river habitats in 2022 did not differ significantly from the previous year.

Annual IOAs of YOY Sheepshead in bay habitats of the Northern Indian River Lagoon have generally remained stable since sampling began in 1996 (Figure 5.32). Relative abundance of YOY Sheepshead in bay habitats in 2022 did not differ significantly from the previous year.

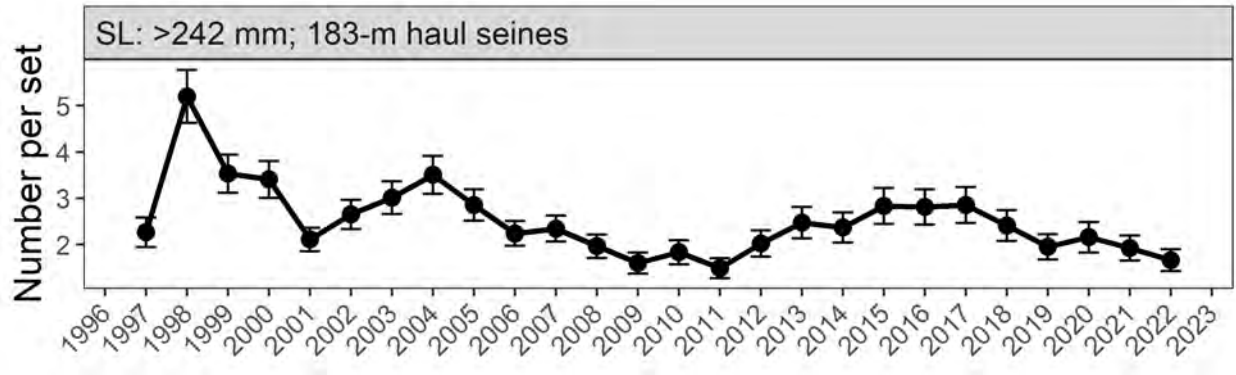
Annual IOAs of fully recruited Sheepshead in the Northern Indian River Lagoon have generally remained stable since sampling began in 1997 (Figure 5.32). Relative abundance of fully recruited Sheepshead abundance in 2022 did not differ significantly from the previous year.



**Figure 5.32:** Relative abundance of young-of-the-year and legal-sized Sheepshead collected between 1996 and 2022 during stratified-random sampling of the northern portion of the Indian River Lagoon.

### Southern Indian River Lagoon

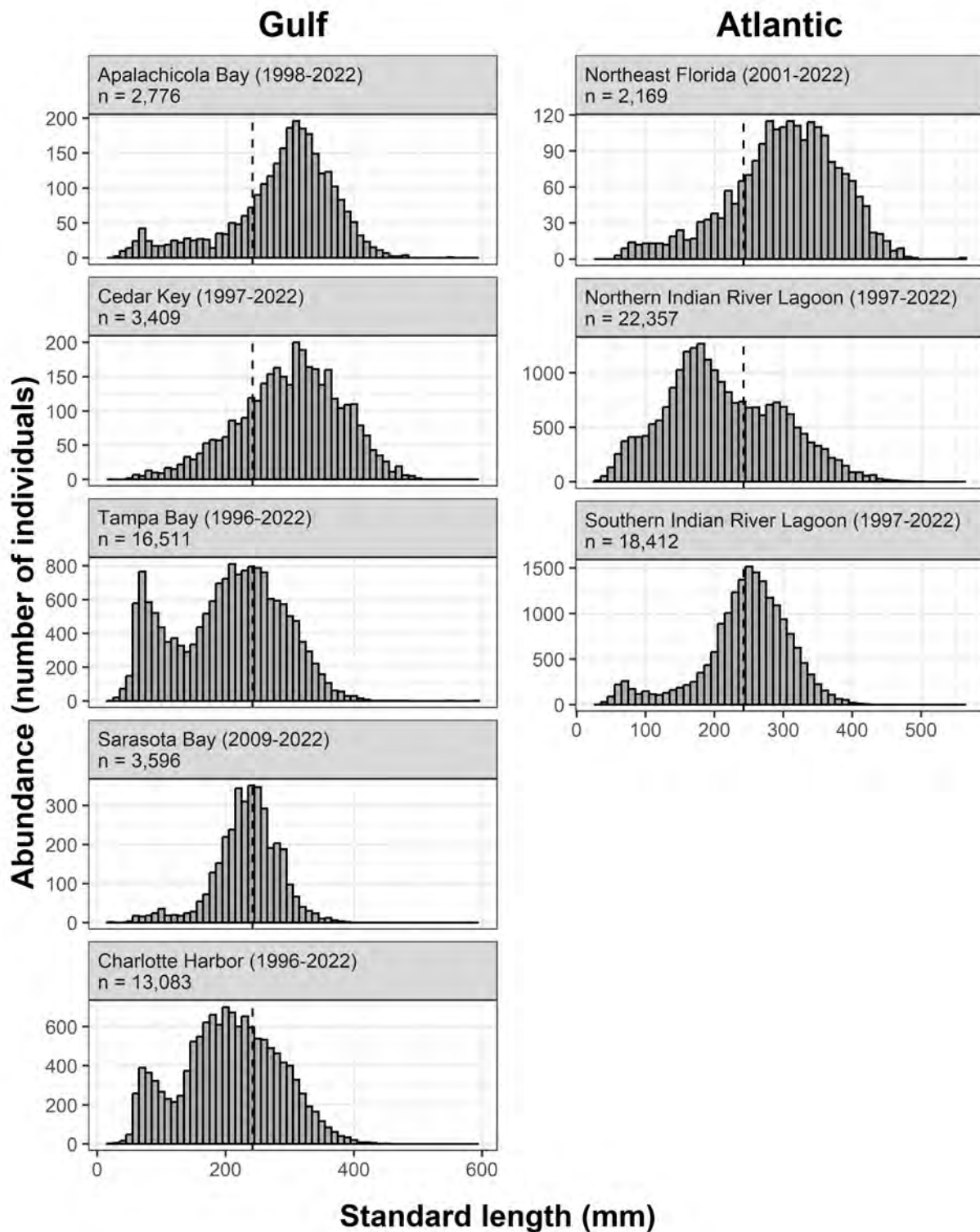
Annual IOAs of fully recruited Sheepshead in the Southern Indian River Lagoon have generally decreased since sampling began in 1997 (Figure 5.33). Relative abundance of fully recruited Sheepshead in 2022 did not differ significantly from the previous year.



**Figure 5.33:** Relative abundance of young-of-the-year and legal-sized Sheepshead collected between 1996 and 2022 during stratified-random sampling of the southern portion of the Indian River Lagoon.

## Length-Frequency Diagrams

The following figure shows length frequency diagrams of Sheepshead collected in 183-m haul seines. All lengths are standard length (SL). Note different scales and years of collection for each estuary. Length-frequency data collected with 183-m haul seines indicate that this gear provides valuable information on multiple life histories of Sheepshead in Florida estuaries (Figure 5.34). Sheepshead length-frequency distributions varied between unimodal and bimodal among estuaries.



**Figure 5.34:** Length frequency diagrams of Sheephead collected in 183-m haul seines. Vertical dashed lines indicate the lower recreational size limits for Sheephead in each estuary

## 5.6 Pinfish, *Lagodon rhomboides*

Pinfish, *Lagodon rhomboides*, is an ecologically and recreationally important sparid found in marine and estuarine waters from Massachusetts to Texas (Bigelow and Schroeder 1953; Caldwell 1957). It is one of the most abundant resident species in estuaries of the northeastern Gulf of Mexico (Hoese and Jones 1963; Hansen 1969; Ogren and Brusher 1977). Densities of Pinfish have been found to be positively correlated to seagrass and drift algae cover (Rydene and Matheson 2003; Faletti et al. 2019). Studies have shown that predation by Pinfish plays a role in the organization of seagrass macro benthic faunal assemblages (Young et al. 1976; Young and Young 1977). Pinfish are a major link between primary and secondary production as individuals >60 mm standard length (SL) consume and digest seagrasses and encrusting epiphytes (Stoner 1980; Weinstein et al. 1982; Montgomery and Targett 1992). Pinfish represent a large percentage of the offshore movement of nearshore nutrients and carbon to reef fish stocks in the Gulf of Mexico (Nelson et al. 2013). Pinfish of all sizes are commonly targeted by anglers for use as bait for recreationally important species such as Sailfish (*Istiophorus platypterus*), Red Drum (*Sciaenops ocellatus*), Spotted Seatrout (*Cynoscion nebulosus*), Southern Flounder (*Paralichthys lethostigma*), Common Snook (*Centropomus undecimalis*), and Gag Grouper (*Mycteroperca microlepis*).

To monitor year-class strength and improve the ability to predict future Pinfish abundances, indices of relative abundance (IOAs) were developed for young-of-the-year (YOY) Pinfish recruitment into selected Florida estuaries. Abundance data for YOY Pinfish  $\leq 80$  mm SL that were collected in stratified-random 21.3-m seine samples were examined to assess recruitment into eight Florida estuaries: Apalachicola Bay, Cedar Key, Tampa Bay, Sarasota Bay, Charlotte Harbor, northeast Florida, northern Indian River Lagoon, and southern Indian River Lagoon. Young-of-the-year Pinfish recruited to habitats sampled with 21.3-m seines primarily from January through June and IOAs were calculated using catch data from these months only. This time period coincides with the published recruitment period for this species (Nelson 1998). The maximum size that individuals of YOY cohorts attain by June is 80 mm SL (Nelson 1998). Data from stratified-random 183-m haul seines were used to develop IOAs for subadult/adult fish ( $\geq 100$  mm SL) collected throughout the year for eight Florida estuaries: Apalachicola Bay, Cedar Key, Tampa Bay, Sarasota Bay, Charlotte Harbor, northeast Florida, northern Indian River Lagoon, and southern Indian River Lagoon. All IOAs were calculated using data beginning in 1996, however estuaries varied in the specific time period sampled. Due to historical changes in sampling design and available habitat, only consistently sampled zones and habitats (bay or river) in each estuary were included to generate annual IOAs.

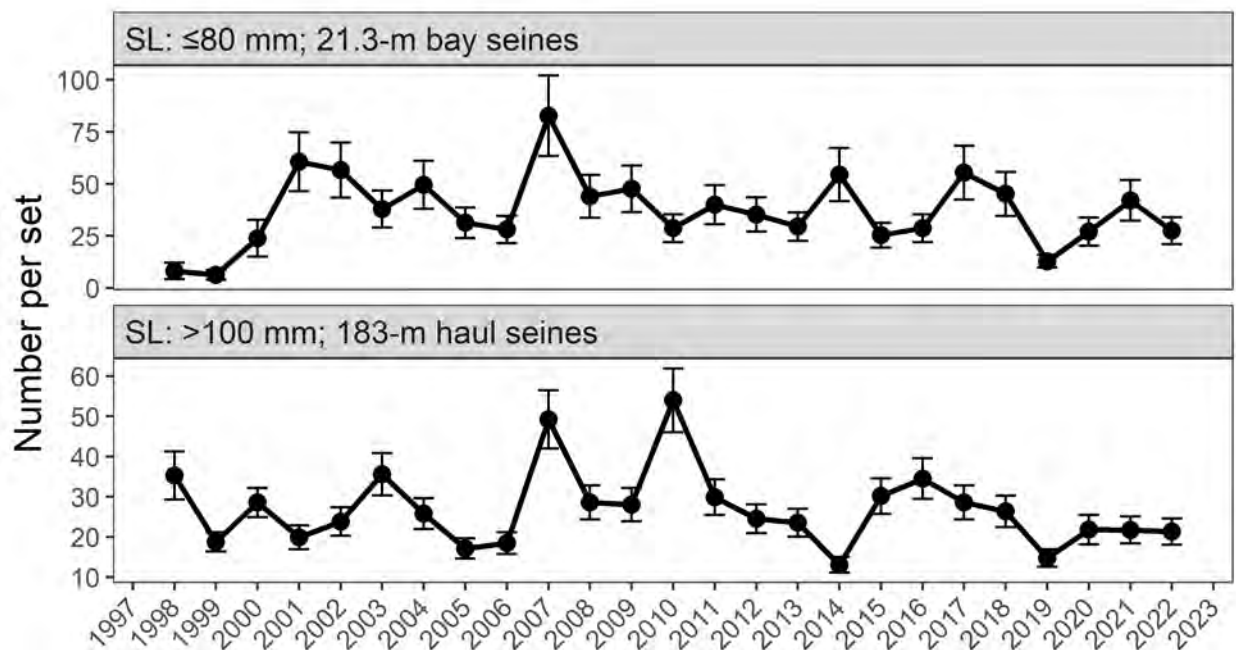
## Indices of Abundance

The following figures show relative abundance of young-of-the-year Pinfish ( $\leq 80$  mm SL) collected in 21.3-m seines and of subadult and adult Pinfish ( $>100$  mm SL) collected in 183-m haul seines during stratified-random sampling across all estuaries. Points represent the median estimate while the vertical bars represent the 25th-75th percentiles. Note different scales for estimates from 21.3-m and 183-m seines.

### Apalachicola Bay

Annual IOAs of YOY Pinfish in bay habitats of Apalachicola Bay have generally remained stable since sampling began in 1998 (Figure 5.35). Relative abundance of YOY Pinfish in bay habitats in 2022 did not differ significantly from the previous year.

Annual IOAs of subadult and adult Pinfish in Apalachicola Bay have generally remained stable since sampling began in 1998 (Figure 5.35). Relative abundance of subadult and adult Pinfish in 2022 did not differ significantly from the previous year.



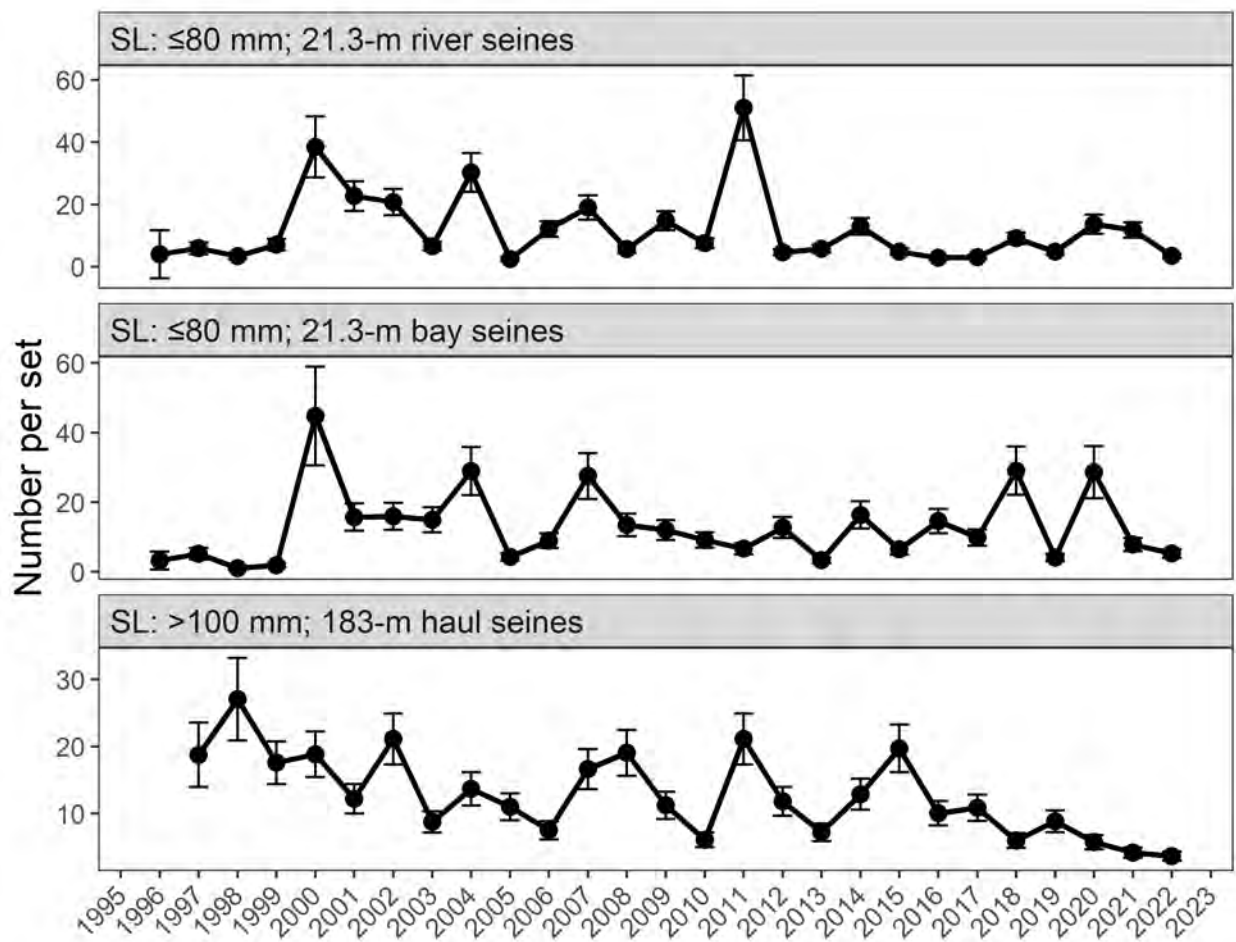
**Figure 5.35:** Relative abundance of young-of-the-year and subadult/adult Pinfish collected between 1998 and 2022 during stratified-random sampling of Apalachicola Bay.

## Cedar Key

Annual IOAs of YOY Pinfish in river habitats of Cedar Key have generally remained stable since sampling began in 1996 (Figure 5.36). Relative abundance of YOY Pinfish in river habitats in 2022 did not differ significantly from the previous year.

Annual IOAs of YOY Pinfish in bay habitats of Cedar Key have generally remained stable since sampling began in 1996 (Figure 5.36). Relative abundance of YOY Pinfish in bay habitats in 2022 increased from the previous year.

Annual IOAs of subadult and adult Pinfish in Cedar Key have generally decreased since sampling began in 1997 (Figure 5.36). Relative abundance of subadult and adult Pinfish in 2022 did not differ significantly from the previous year.



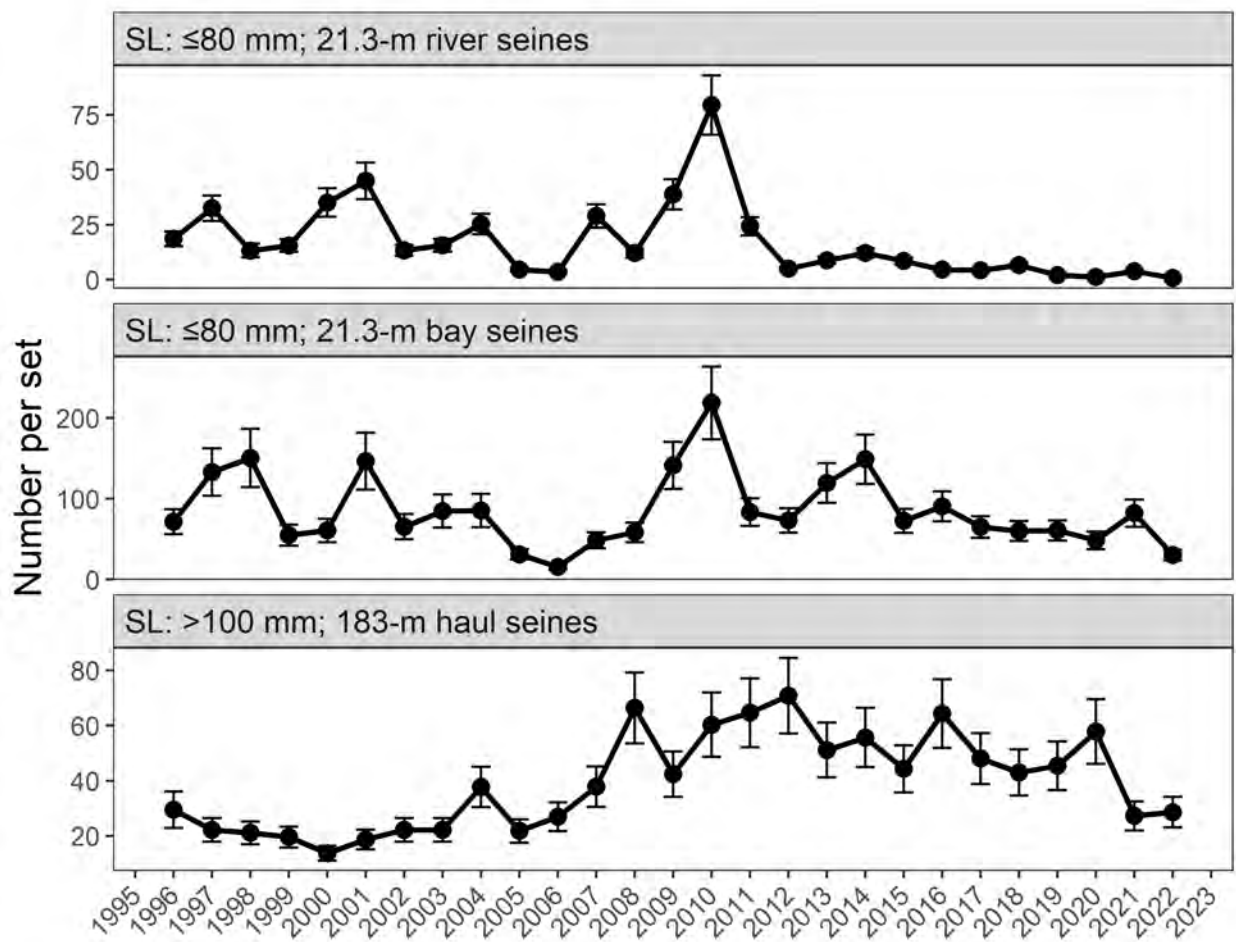
**Figure 5.36:** Relative abundance of young-of-the-year and subadult/adult Pinfish collected between 1996 and 2022 during stratified-random sampling of Cedar Key.

## Tampa Bay

Annual IOAs of YOY Pinfish in river habitats of Tampa Bay have generally remained stable since sampling began in 1996 (Figure 5.37). Relative abundance of YOY Pinfish in river habitats in 2022 increased from the previous year.

Annual IOAs of YOY Pinfish in bay habitats of Tampa Bay have generally remained stable since sampling began in 1996 (Figure 5.37). Relative abundance of YOY Pinfish in bay habitats in 2022 increased from the previous year.

Annual IOAs of subadult and adult Pinfish in Tampa Bay have generally increased since sampling began in 1996 (Figure 5.37). Relative abundance of subadult and adult Pinfish in 2022 did not differ significantly from the previous year.

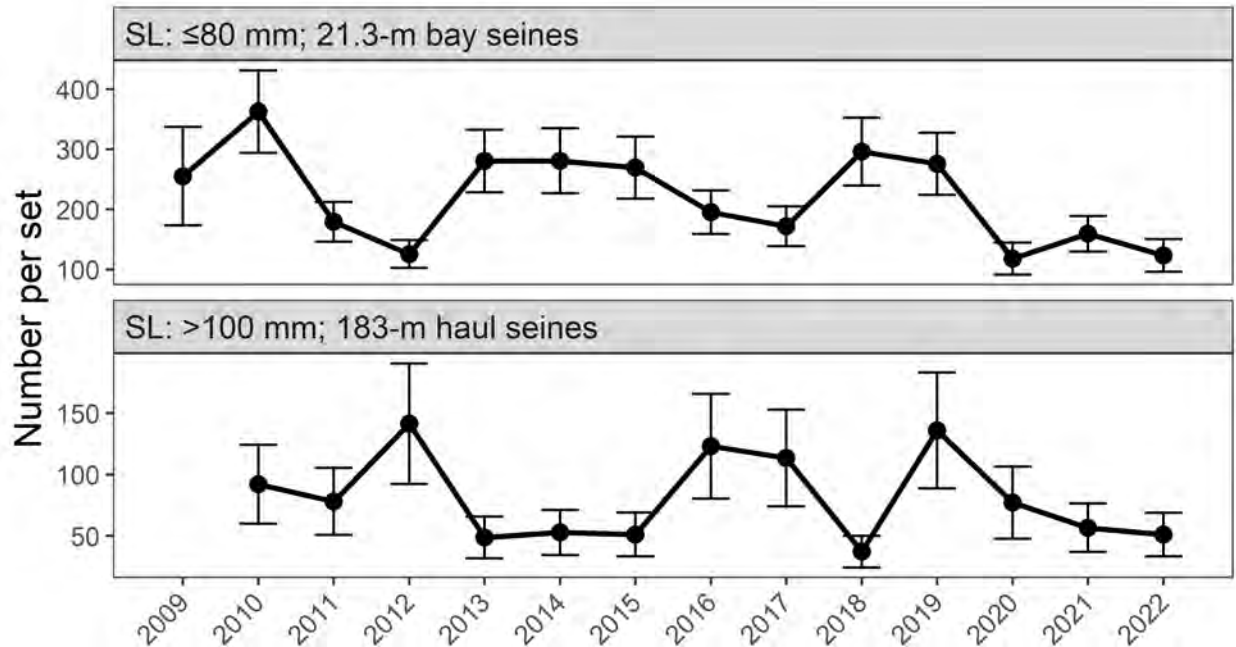


**Figure 5.37:** Relative abundance of young-of-the-year and subadult/adult Pinfish collected between 1996 and 2022 during stratified-random sampling of Tampa Bay.

### Sarasota Bay

Annual IOAs of YOY Pinfish in bay habitats of Sarasota Bay have generally remained stable since sampling began in 2009 (Figure 5.38). Relative abundance of YOY Pinfish in bay habitats in 2022 did not differ significantly from the previous year.

Annual IOAs of subadult and adult Pinfish in Sarasota Bay have generally remained stable since sampling began in 2010 (Figure 5.38). Relative abundance of subadult and adult Pinfish in 2022 did not differ significantly from the previous year.



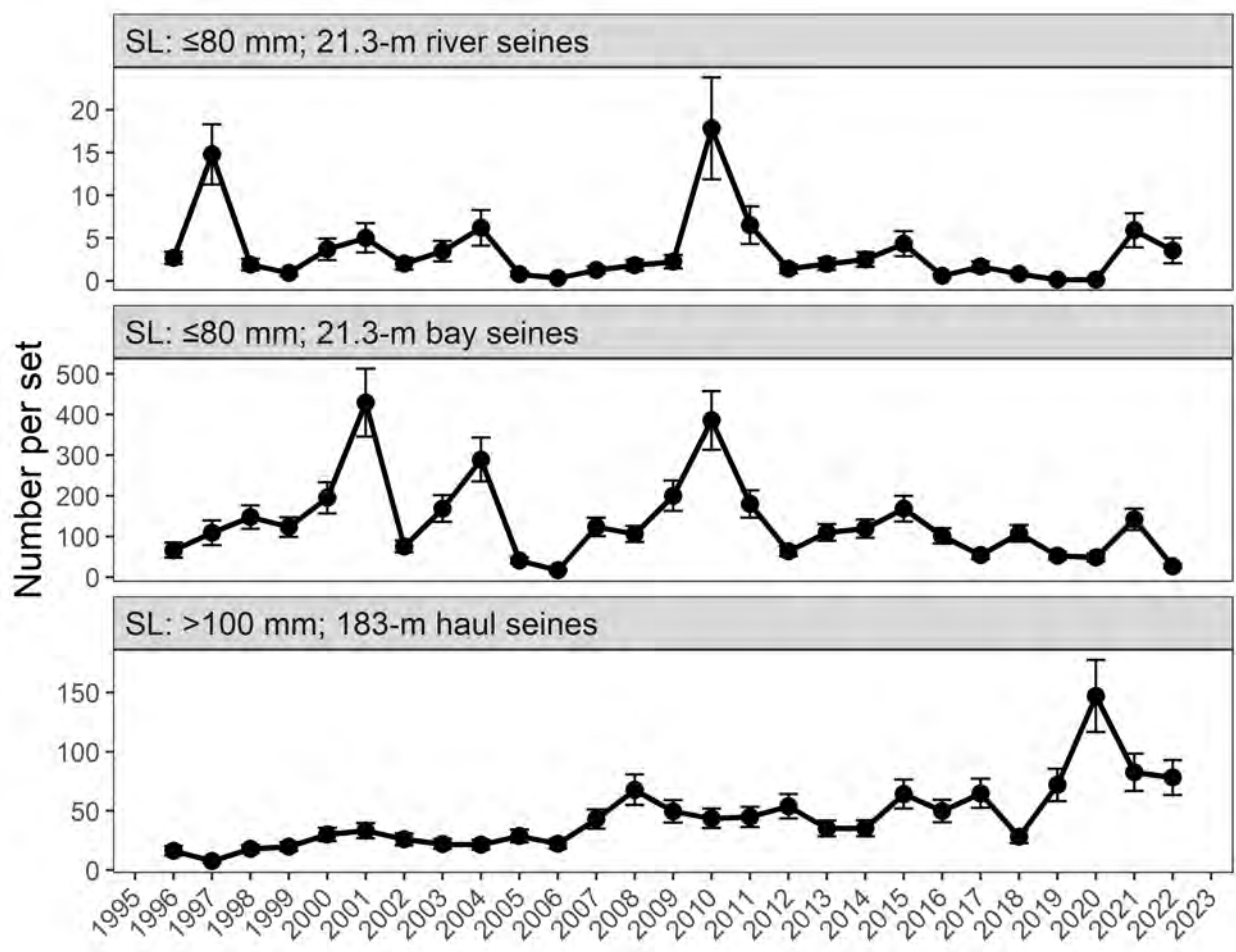
**Figure 5.38:** Relative abundance of young-of-the-year and subadult/adult Pinfish collected between 2010 and 2022 during stratified-random sampling of Sarasota Bay.

## Charlotte Harbor

Annual IOAs of YOY Pinfish in river and creek habitats of Charlotte Harbor have generally remained stable since sampling began in 1996 (Figure 5.39). Relative abundance of YOY Pinfish in river and creek habitats in 2022 increased from the previous year.

Annual IOAs of YOY Pinfish in bay habitats of Charlotte Harbor have generally remained stable since sampling began in 1996 (Figure 5.39). Relative abundance of YOY Pinfish in bay habitats in 2022 did not differ significantly from the previous year.

Annual IOAs of subadult and adult Pinfish in Charlotte Harbor have generally increased since sampling began in 1996 (Figure 5.39). Relative abundance of subadult and adult Pinfish in 2022 did not differ significantly from the previous year.

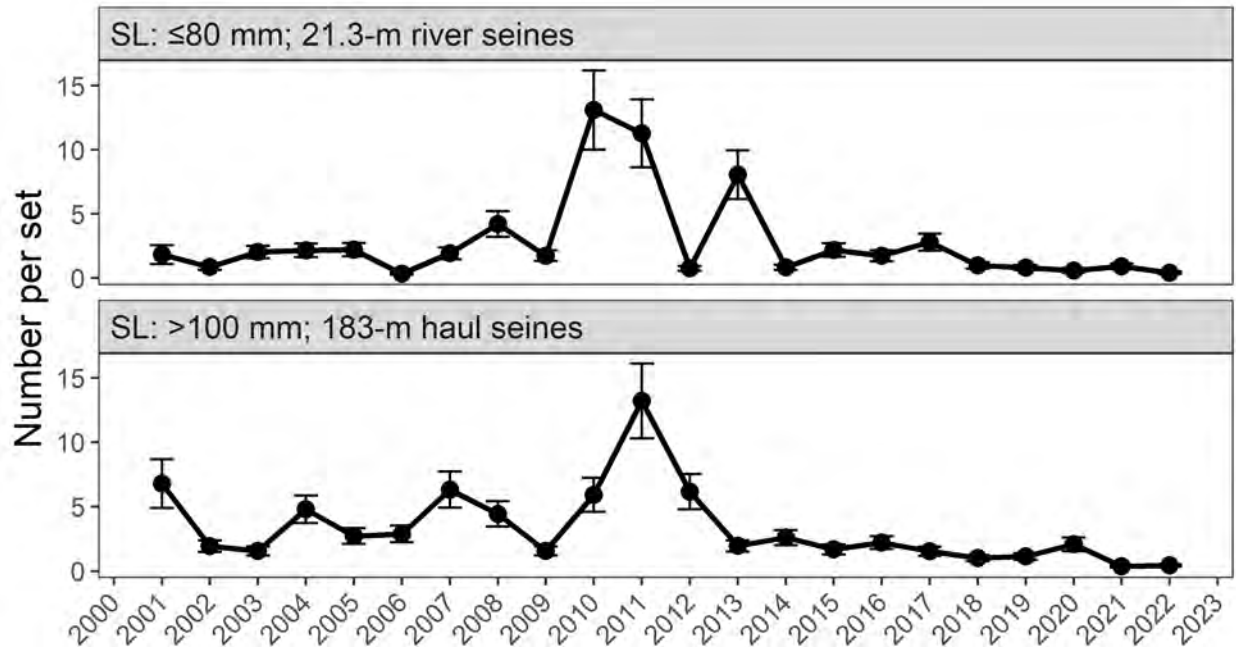


**Figure 5.39:** Relative abundance of young-of-the-year and subadult/adult Pinfish collected between 1996 and 2022 during stratified-random sampling of Charlotte Harbor.

### Northeast Florida

Annual IOAs of YOY Pinfish in river habitats of Northeast Florida have generally remained stable since sampling began in 2001 (Figure 5.40). Relative abundance of YOY Pinfish in river habitats in 2022 did not differ significantly from the previous year.

Annual IOAs of subadult and adult Pinfish in Northeast Florida have generally remained stable since sampling began in 2001 (Figure 5.40). Relative abundance of subadult and adult Pinfish in 2022 did not differ significantly from the previous year.



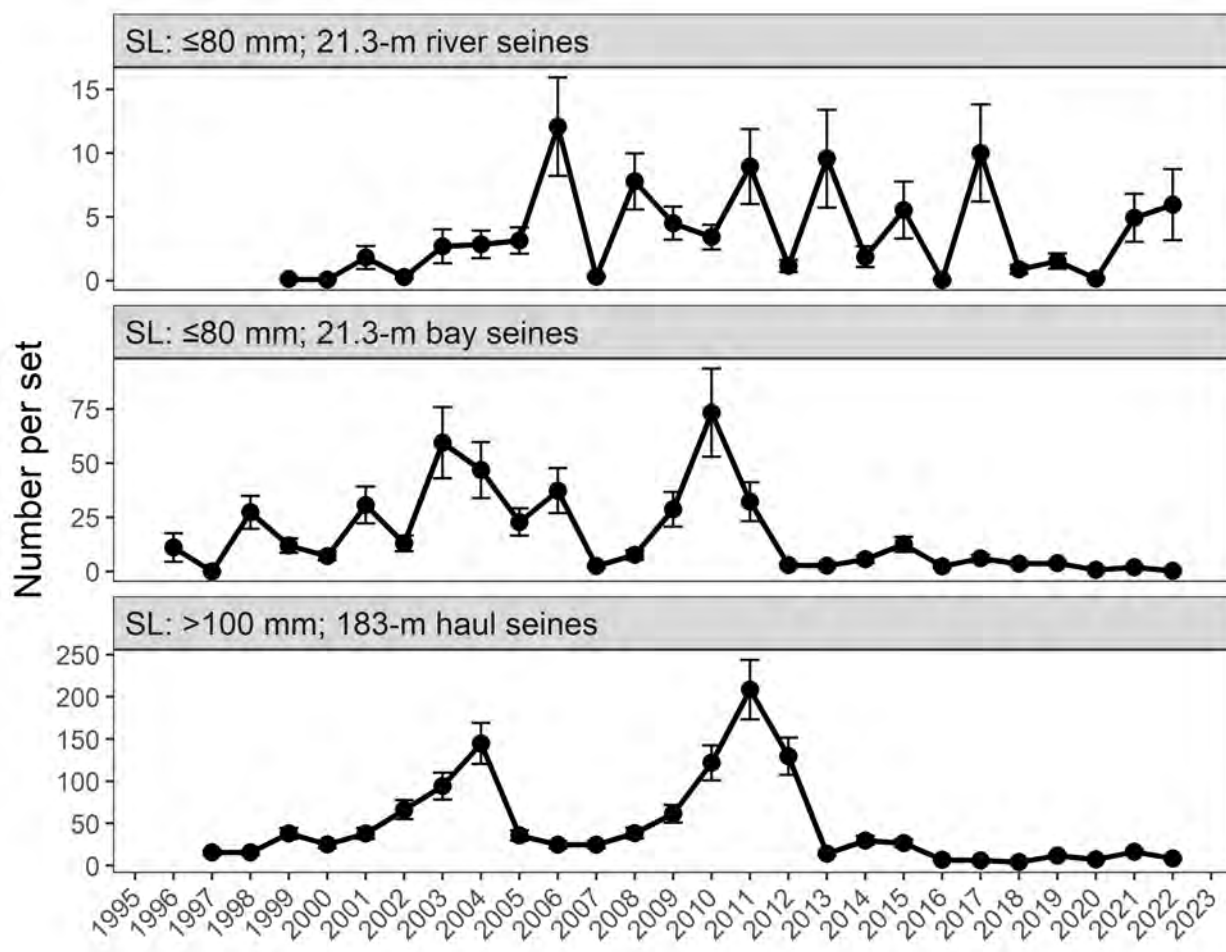
**Figure 5.40:** Relative abundance of young-of-the-year and subadult/adult Pinfish collected between 2001 and 2022 during stratified-random sampling of northeast Florida.

### Northern Indian River Lagoon

Annual IOAs of YOY Pinfish in river habitats of the Northern Indian River Lagoon have generally remained stable since sampling began in 1996 (Figure 5.41). Relative abundance of YOY Pinfish in river habitats in 2022 increased from the previous year.

Annual IOAs of YOY Pinfish in bay habitats of the Northern Indian River Lagoon have generally remained stable since sampling began in 1999 (Figure 5.41). Relative abundance of YOY Pinfish in bay habitats in 2022 did not differ significantly from the previous year.

Annual IOAs of subadult and adult Pinfish in the Northern Indian River Lagoon have generally remained stable since sampling began in 1997 (Figure 5.41). Relative abundance of subadult and adult Pinfish in 2022 did not differ significantly from the previous year.

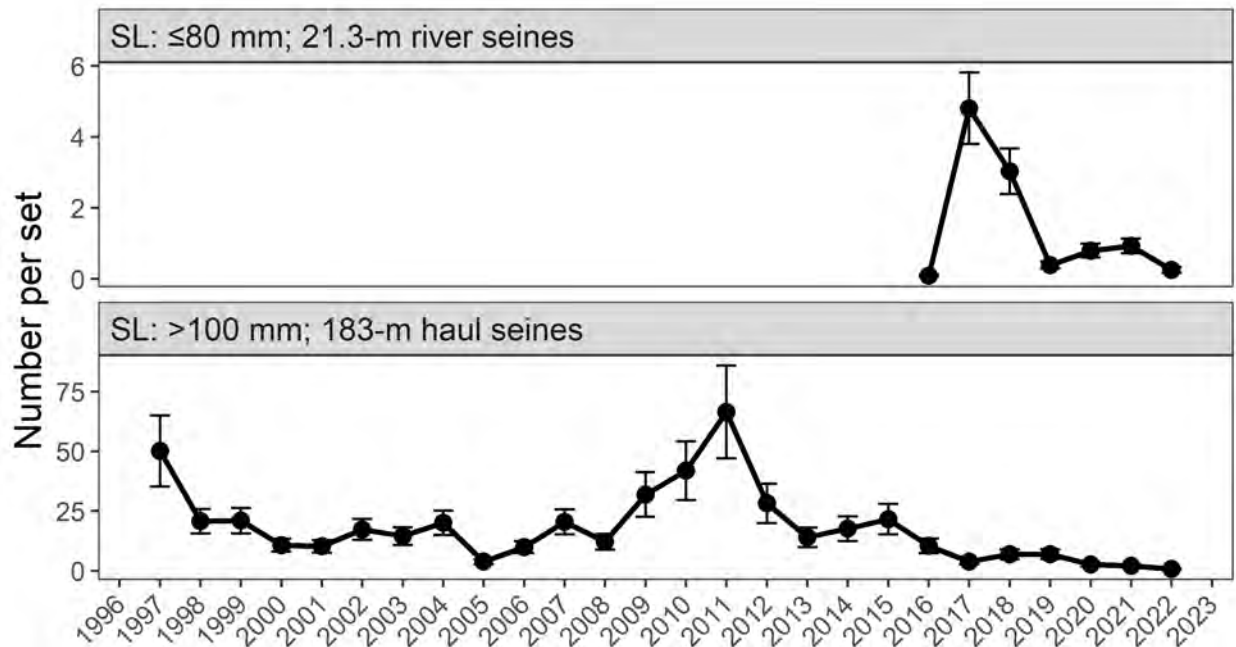


**Figure 5.41:** Relative abundance of young-of-the-year and subadult/adult Pinfish collected between 1996 and 2022 during stratified-random sampling of the northern portion of the Indian River Lagoon.

### Southern Indian River Lagoon

Annual IOAs of YOY Pinfish in river habitats of the Southern Indian River Lagoon have generally decreased since sampling began in 2016 (Figure 5.42). Relative abundance of YOY Pinfish in river habitats in 2022 increased from the previous year.

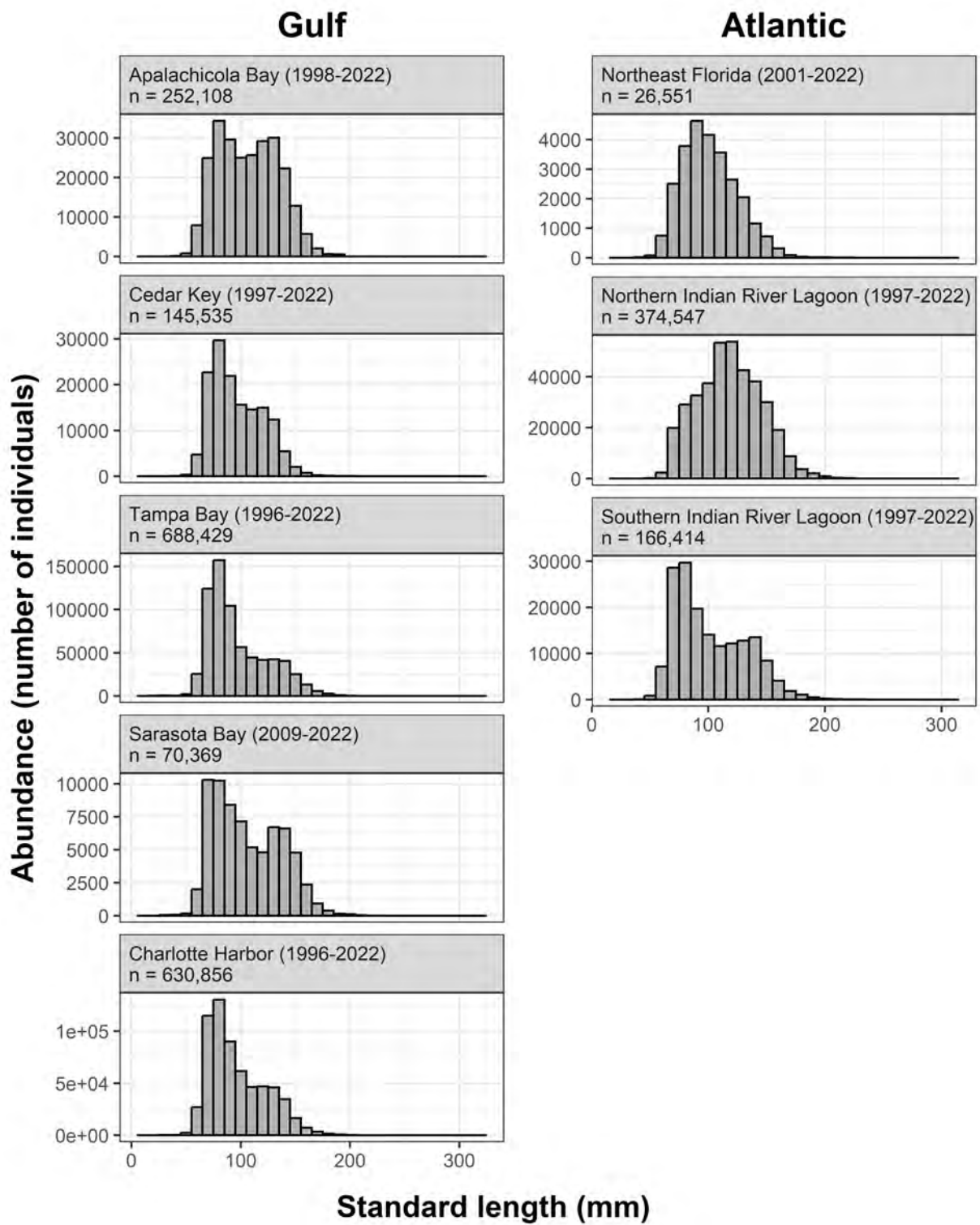
Annual IOAs of subadult and adult Pinfish in the Southern Indian River Lagoon have generally remained stable since sampling began in 1997 (Figure 5.42). Relative abundance of subadult and adult Pinfish in 2022 did not differ significantly from the previous year.



**Figure 5.42:** Relative abundance of young-of-the-year and subadult/adult Pinfish collected between 1997 and 2022 during stratified-random sampling of the southern portion of the Indian River Lagoon. Note that river sampling began in 2016 to include previously underrepresented habitats (i.e., tidal creeks and tributaries).

## Length-Frequency Diagrams

The following figure shows length frequency diagrams of Pinfish collected in 183-m haul seines. All lengths are standard length (SL). Note different scales and years of collection for each estuary. Length-frequency data collected with 183-m haul seines indicate that this gear provides valuable information on subadult and adult Pinfish in Florida estuaries (Figure 5.43). Pinfish length-frequency distributions generally followed a unimodal-to-bimodal distribution across estuaries.



**Figure 5.43:** Length frequency diagrams of Pinfish collected in 183-m haul seines.

## 5.7 Striped Mullet, *Mugil cephalus*

Striped Mullet, *Mugil cephalus*, are one of Florida's most abundant and widespread estuarine-dependent fishes (Odum 1970; Leard et al. 1995). Striped Mullet supported a valuable commercial fishery from the early 1960s through the early 1990s, with approximately 90% of all U.S. landings occurring in the Gulf of Mexico (Gulf) and over 80% of all commercial landings occurring in Florida waters (Rivas 1980; Leard et al. 1995; Mahmoudi 1997). From 1930 to 1993 Florida Gulf coast landings averaged 26 million pounds annually (Chagaris et al. 2014). Changes were documented from 1991 to 1994 when commercial Striped Mullet landings in Florida severely declined from 79% to 46% of the total Gulf production (Leard et al. 1995). Following the implementation of the Florida net limitation referendum (July 1, 1995), which eliminated the use of entangling nets within three miles of the Atlantic coast and nine miles of the Gulf coast, Striped Mullet commercial landings were further reduced to approximately 5 million pounds (Mahmoudi 2005). After an initial decline in fishing effort and landings following the net limitation referendum, fishing effort and landings in Florida waters have gradually increased to approximately 8 million pounds annually. Due to substantial declines in fishing mortality rates since the net limitation, overall stock size and spawning stock biomass have increased significantly. Stocks throughout the state of Florida are healthy, and current levels of fishing effort appear to be sustainable (Chagaris et al. 2014).

Striped Mullet form large schools in estuarine and nearshore waters from October to December. These schools then migrate to offshore spawning areas over the outer continental shelf and slope during the passage of weather fronts from October through February. Typically, young-of-the-year (YOY) Striped Mullet recruit to Florida's estuaries at 20 to 35 mm standard length (SL, Kilby 1948; Futch 1966). Recruitment usually begins in January and continues through April, with peaks in abundance during February and March; however, previous analyses of length-frequency data indicated that recruitment has occurred in Florida's estuaries as early as the end of December.

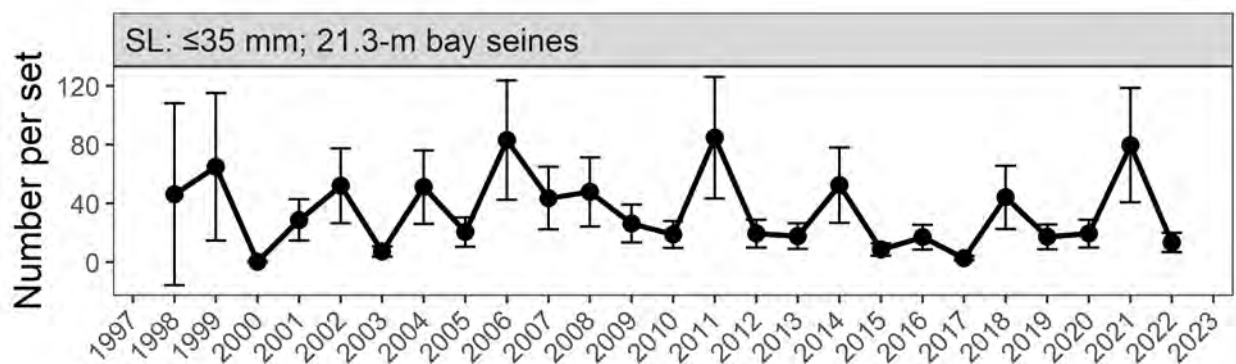
To monitor year-class strength and to improve the ability to predict future adult Striped Mullet abundances, relative indices of abundance (IOAs) were developed for YOY Striped Mullet recruitment into selected Florida estuaries. Abundance data for YOY Striped Mullet ( $\leq 35$  mm SL) that were collected in stratified-random 21.3-m seine samples were examined to assess recruitment into six Florida estuaries: Apalachicola Bay, Cedar Key, Tampa Bay, Charlotte Harbor, northeast Florida, the northern Indian River Lagoon, and southern Indian River Lagoon. Young-of-the-year Striped Mullet recruited to habitats sampled with 21.3-m seines primarily from January to March. Therefore, these specific months were used to define the respective recruitment seasons for each estuary in subsequent analyses. Separate analyses for river and bay sets were conducted when possible to examine differences in recruitment between the two habitats. Indices were not calculated for estuaries where 21.3-m seines were not deployed or where limited data were available. Subadult and adult Striped Mullet are occasionally caught in 183-m seines; however, due to the unique behavior of these fish, we do not report IOAs for this life stage here as catches are not indicative of a representative sample. Due to historical changes in sampling design and available habitat, only consistently sampled zones and habitats (bay or river) in each estuary were included to generate annual IOAs.

## Indices of Abundance

The following figures show relative abundance of young-of-the-year Striped Mullet ( $\leq 35$  mm SL) collected in 21.3-m seines during stratified-random sampling across all estuaries. Points represent the median estimate while the vertical bars represent the 25th-75th percentiles.

### Apalachicola Bay

Annual IOAs of YOY Striped Mullet in bay habitats of Apalachicola Bay have generally remained stable since sampling began in 1998 (Figure 5.44). Relative abundance of YOY Striped Mullet in bay habitats in 2022 did not differ significantly from the previous year.

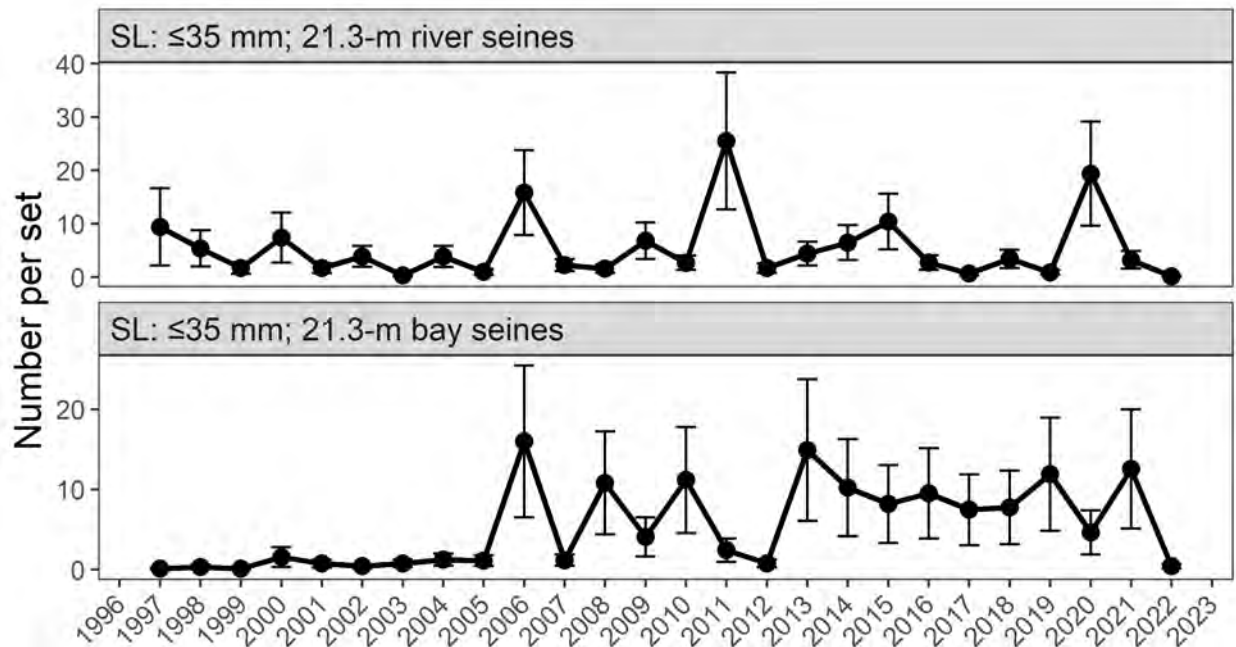


**Figure 5.44:** Relative abundance of young-of-the-year Striped Mullet collected between 1998 and 2022 during stratified-random sampling of Apalachicola Bay.

## Cedar Key

Annual IOAs of YOY Striped Mullet in river habitats of Cedar Key have generally remained stable since sampling began in 1997 (Figure 5.45). Relative abundance of YOY Striped Mullet in river habitats in 2022 did not differ significantly from the previous year.

Annual IOAs of YOY Striped Mullet in bay habitats of Cedar Key have generally remained stable since sampling began in 1997 (Figure 5.45). Relative abundance of YOY Striped Mullet in bay habitats in 2022 did not differ significantly from the previous year.

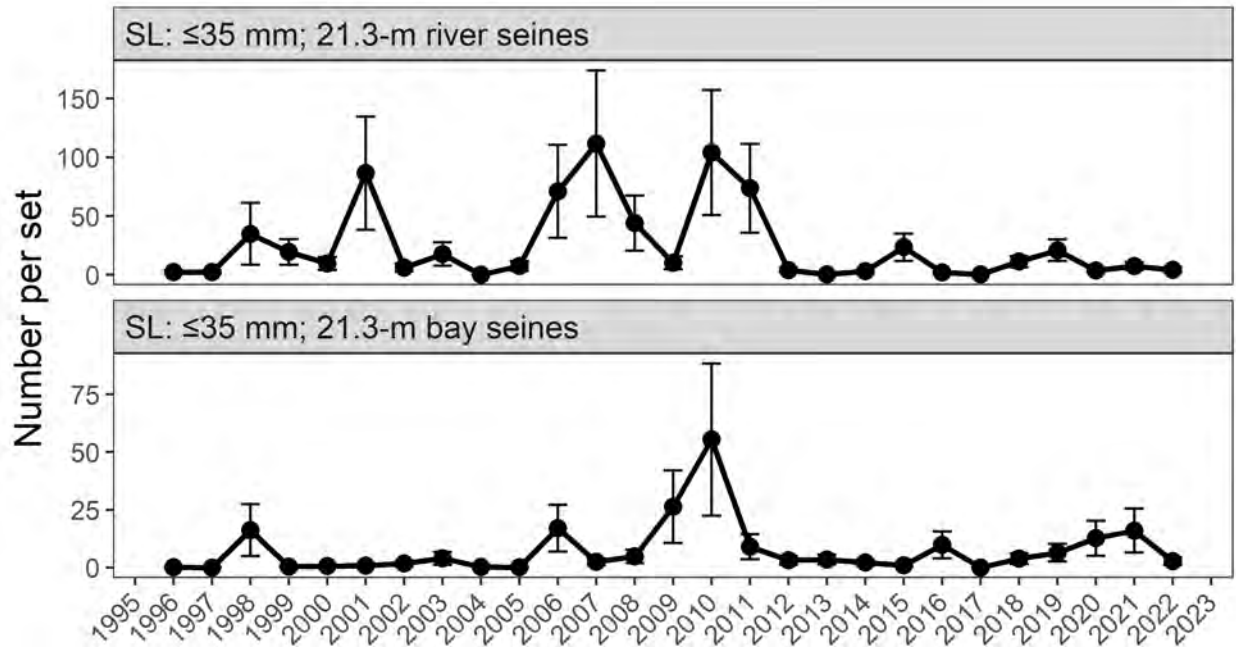


**Figure 5.45:** Relative abundance of young-of-the-year Striped Mullet collected between 1997 and 2022 during stratified-random sampling of Cedar Key.

## Tampa Bay

Annual IOAs of YOY Striped Mullet in river habitats of Tampa Bay have generally remained stable since sampling began in 1996 (Figure 5.46). Relative abundance of YOY Striped Mullet in river habitats in 2022 did not differ significantly from the previous year.

Annual IOAs of YOY Striped Mullet in bay habitats of Tampa Bay have generally remained stable since sampling began in 1996. (Figure 5.46). Relative abundance of YOY Striped Mullet in bay habitats in 2022 did not differ significantly from the previous year.

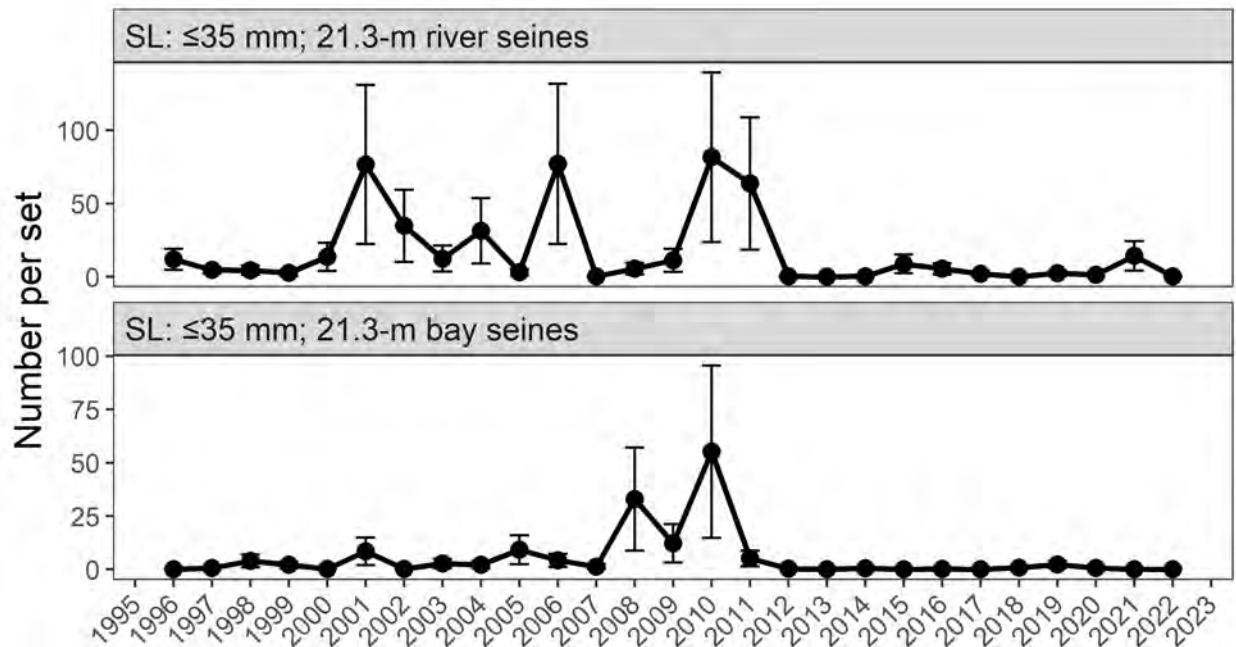


**Figure 5.46:** Relative abundance of young-of-the-year Striped Mullet collected between 1996 and 2022 during stratified-random sampling of Tampa Bay.

### Charlotte Harbor

Annual IOAs of YOY Striped Mullet in river and tidal creek habitats of Charlotte Harbor have generally increased since sampling began in 1996 (Figure 5.47). Relative abundance of YOY Striped Mullet in river and tidal creek habitats in 2022 did not differ significantly from the previous year.

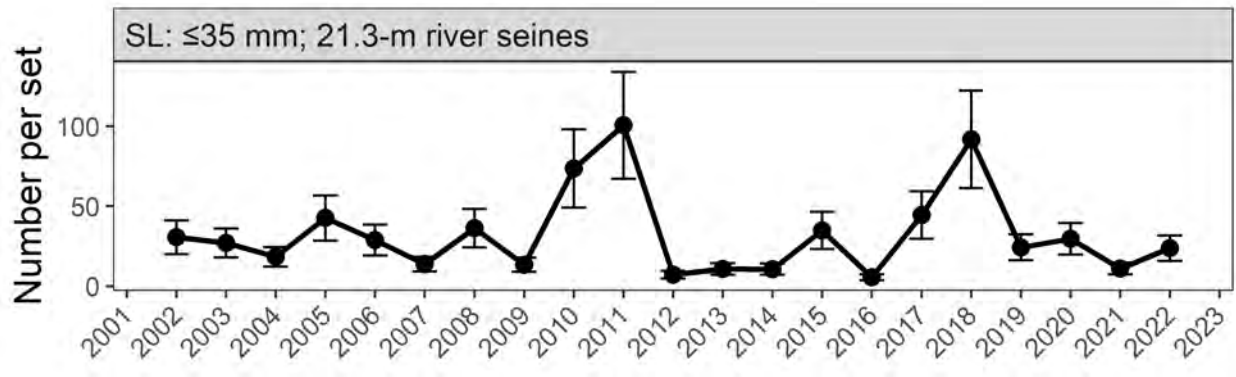
Annual IOAs of YOY Striped Mullet in bay habitats of Charlotte Harbor have generally remained stable since sampling began in 1996 (Figure 5.47). Relative abundance of YOY Striped Mullet in bay habitats in 2022 did not differ significantly from the previous year.



**Figure 5.47:** Relative abundance of young-of-the-year Striped Mullet collected between 1996 and 2022 during stratified-random sampling of Charlotte Harbor.

***Northeast Florida***

Annual IOAs of YOY Striped Mullet in river habitats of Northeast Florida have generally remained stable since sampling began in 2002 (Figure 5.48). Relative abundance of YOY Striped Mullet in river habitats in 2022 did not differ significantly from the previous year.

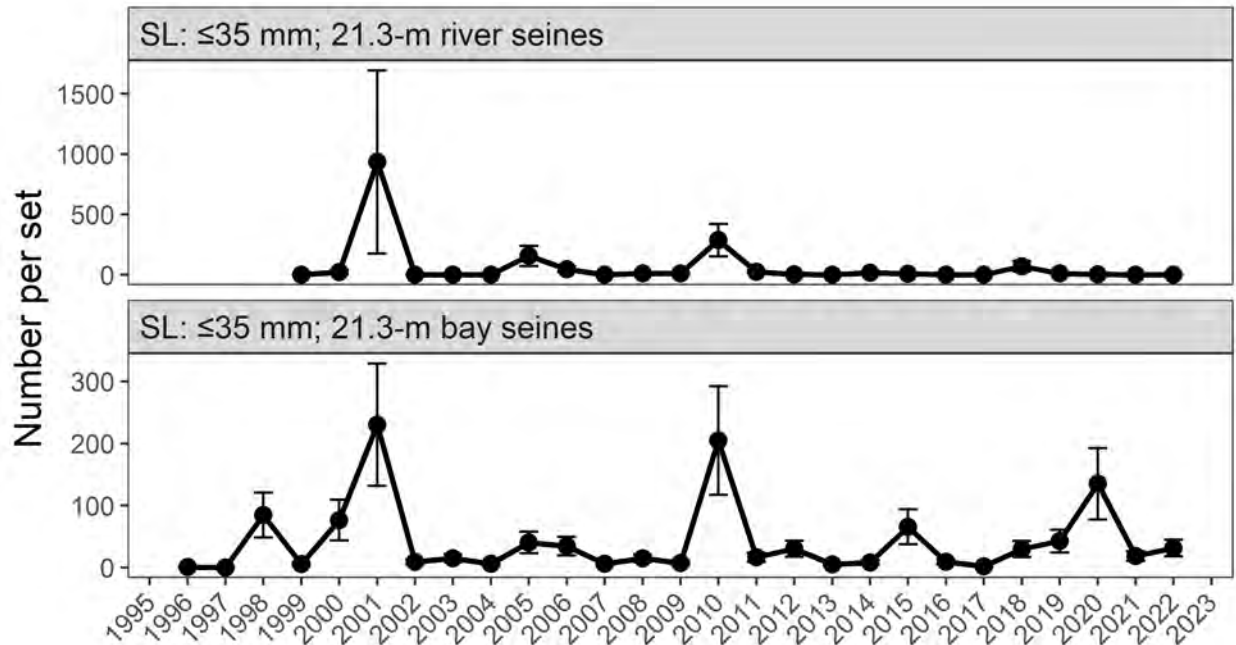


**Figure 5.48:** Relative abundance of young-of-the-year Striped Mullet collected between 2002 and 2022 during stratified-random sampling of northeast Florida.

### Northern Indian River Lagoon

Annual IOAs of YOY Striped Mullet in river habitats of the Northern Indian River Lagoon have generally remained stable since sampling began in 1996 (Figure 5.49). Relative abundance of YOY Striped Mullet in river habitats in 2022 did not differ significantly from the previous year.

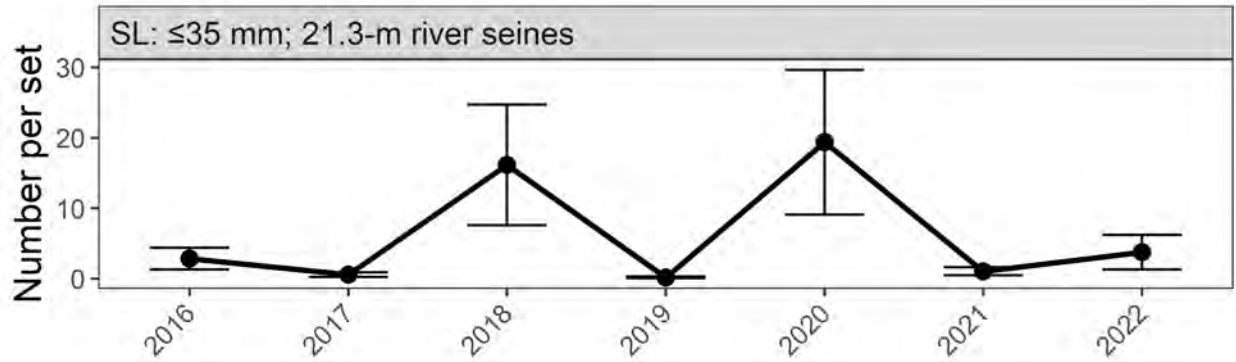
Annual IOAs of YOY Striped Mullet in bay habitats of the Northern Indian River Lagoon have generally decreased since sampling began in 1999 (Figure 5.49). Relative abundance of YOY Striped Mullet in bay habitats in 2022 did not differ significantly from the previous year.



**Figure 5.49:** Relative abundance of young-of-the-year Striped Mullet collected between 1996 and 2022 during stratified-random sampling of the northern portion of the Indian River Lagoon.

### Southern Indian River Lagoon

Annual IOAs of YOY Striped Mullet in river and tidal creek habitats of the Southern Indian River Lagoon have generally remained stable since sampling began in 2016 (Figure 5.50). Relative abundance of YOY Striped Mullet in river and tidal creek habitats in 2022 did not differ significantly from the previous year.



**Figure 5.50:** Relative abundance of young-of-the-year Striped Mullet collected between 2016 and 2022 during stratified-random sampling of the southern portion of the Indian River Lagoon. Note that river sampling began in 2016 to include previously underrepresented habitats (i.e., tidal creeks and tributaries).

## 5.8 Blue Crab, *Callinectes sapidus*

Blue Crab, *Callinectes sapidus*, support valuable commercial and recreational fisheries along the Gulf of Mexico (Gulf) and Atlantic coasts of Florida. From 1996 to 2022, commercial landings on Florida's Gulf and Atlantic coasts averaged 6.2 and 3.1 million pounds per year and were worth an estimated 7.0 and 4.1 million dollars, respectively (Florida Fish and Wildlife Conservation Commission 2022). Following the implementation of the Florida net limitation referendum (July 1, 1995), which eliminated the use of entangling nets within three miles of the Atlantic coast and nine miles of the Gulf coast, concerns were raised that Blue Crab populations might experience increased fishing pressure from former net fishers. Even though annual commercial landings in the Gulf peaked in 1998 at almost 13 million pounds, catch-per-unit effort was already beginning to decline (Steele and Bert 1998). Landings have decreased over the years, with the lowest commercial landings of Blue Crab occurring in 2008 for the Gulf coast and 2009 for the Atlantic coast (Florida Fish and Wildlife Conservation Commission 2022; Addis et al. 2023). Commercial fishing effort for Blue Crab has been limited in recent years by restricted species permits although there are no quotas for Blue Crab landings. The annual recreational harvest of Blue Crab is not currently known or surveyed, so the total catch may be much higher than the recorded commercial landings. The two most recent Blue Crab stock assessments for Florida indicate that Blue Crabs are highly resilient to fishing pressure and despite a generally decreasing trend in fishing mortality, abundances have remained relatively stable since the 1990's (Murphy et al. 2007; Cooper et al. 2013).

Blue Crabs are an integral part of estuarine ecosystems in Florida, whether scavenging carrion or preying upon young-of-the-year (YOY) fishes, mollusks, and crustaceans. They play a valuable role in controlling populations of other estuarine species. In areas with depleted Blue Crab populations, mollusks that graze on *Spartina alterniflora* can become overpopulated and contribute to salt marsh die-offs (Silliman and Bertness 2002). Blue Crab are prey for important sportfish species such as Black Drum (Simmons and Breuer 1962), Red Drum (Gunter 1945; Scharf and Schlight 2000), Common Snook (Blewett et al. 2006), and Cobia (Meyer and Franks 1996). In addition to predation and harvest by humans, Blue Crab populations are affected by a myriad of other factors such as freshwater inflows (Wilber 1994; Flaherty and Guenther 2011), pollution, disease, and habitat alteration. Spawning in Florida generally occurs from March through October with some limited spawning reported during winter months (Steele and Bert 1994).

To monitor year-class strength and improve the ability to predict future adult Blue Crab abundances, indices of relative abundance (IOAs) were developed for YOY Blue Crab in selected Florida estuaries. Abundance data for YOY Blue Crab ( $\leq 80$  mm carapace width [CW], Archambault et al. 1990; Steele and Bert 1994) collected in stratified-random 21.3-m seine samples were examined to assess recruitment into seven Florida estuaries: Apalachicola Bay, Cedar Key, Tampa Bay, Charlotte Harbor, Northeast Florida, northern Indian River Lagoon (IRL), and southern IRL. Young-of-the-year Blue Crabs were collected with 21.3-m seines during all months, but length-frequency histograms indicate they were primarily collected from August through March. These months were therefore used to define the recruitment seasons for each estuary in subsequent analyses. Data collected from August through December of each year were combined with data from January through March of the following year to create a biological year of data. The IOA for 2022 therefore only included data from August through December 2022. Separate analyses for river and bay sets were conducted when possible to examine differences in recruitment between the two habitats. Although sampling with 21.3-m seines began earlier in northern IRL, YOY Blue Crab IOAs were only calculated for data after 1997 for bay seines and 2000 for river seines, following the addition

of spatial zones that yielded adequate numbers of YOY Blue Crab for analyses. Indices were not calculated for estuaries where 21.3-m seines were not deployed or where limited time series data were available.

The FIM program also monitored the abundance of adult Blue Crab (>80 mm CW) within these same Florida estuaries (including southern IRL) using stratified-random 183-m haul seines. Note, however, that some individuals classified as adults (>80 mm CW) may still have been reproductively immature as a result of individual variation in growth rates and timing of maturity (Archambault et al. 1990; Steele and Bert 1994). Due to historical changes in sampling design and available habitat, only consistently sampled zones and habitats (bay or river) in each estuary were included to generate annual IOAs.

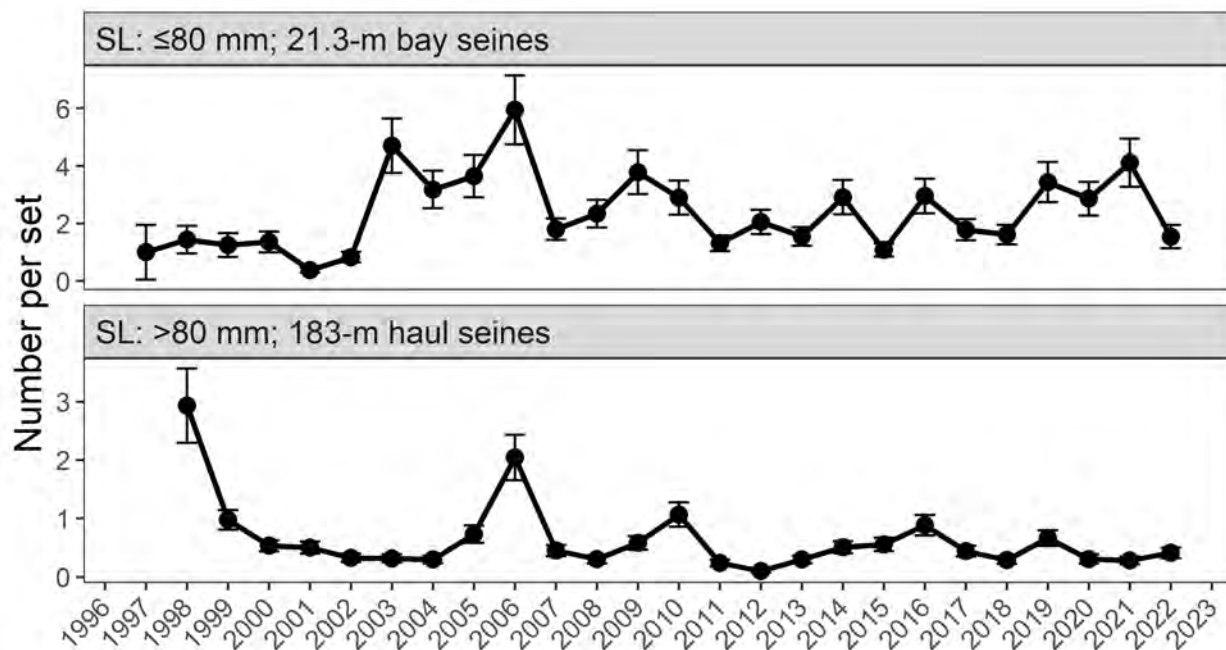
## Indices of Abundance

The following figures show relative abundance of young-of-the-year Blue Crab ( $\leq 80$  mm CW) collected in 21.3-m seines and of adult Blue Crab ( $>80$  mm CW) collected in 183-m haul seines during stratified-random sampling across all estuaries. Points represent the median estimate while the vertical bars represent the 25th-75th percentiles. Note different scales for estimates from 21.3-m and 183-m seines.

### Apalachicola Bay

Annual IOAs of YOY Blue Crab in bay habitats of Apalachicola Bay have generally remained stable since sampling began in 1997 (Figure 5.51). Relative abundance of YOY Blue Crab in bay habitats in 2022 increased from the previous year.

Annual IOAs of adult Blue Crab in Apalachicola Bay have generally decreased since sampling began in 1998 (Figure 5.51). Relative abundance of adult Blue Crab in 2022 did not differ significantly from the previous year.



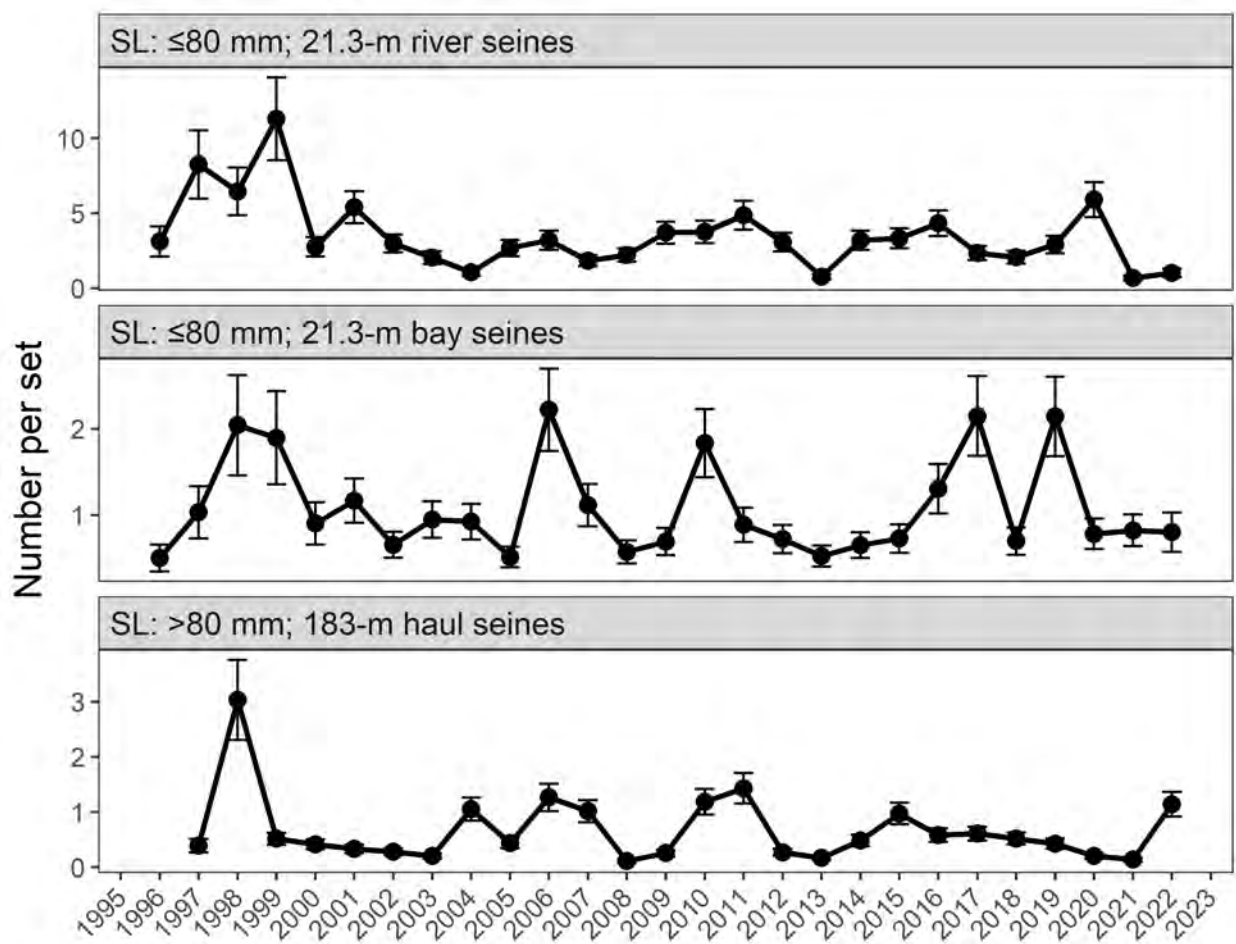
**Figure 5.51:** Relative abundance of young-of-the-year and adult Blue Crab collected between 1996 and 2022 during stratified-random sampling of Apalachicola Bay.

## Cedar Key

Annual IOAs of YOY Blue Crab in river habitats of Cedar Key have generally decreased since sampling began in 1996 (Figure 5.52). Relative abundance of YOY Blue Crab in river habitats in 2022 did not differ significantly from the previous year.

Annual IOAs of YOY Blue Crab in bay habitats of Cedar Key have generally remained stable since sampling began in 1996 (Figure 5.52). Relative abundance of YOY Blue Crab in bay habitats in 2022 did not differ significantly from the previous year.

Annual IOAs of adult Blue Crab in Cedar Key have generally decreased since sampling began in 1997 (Figure 5.52). Relative abundance of adult Blue Crab in 2022 decreased from the previous year.



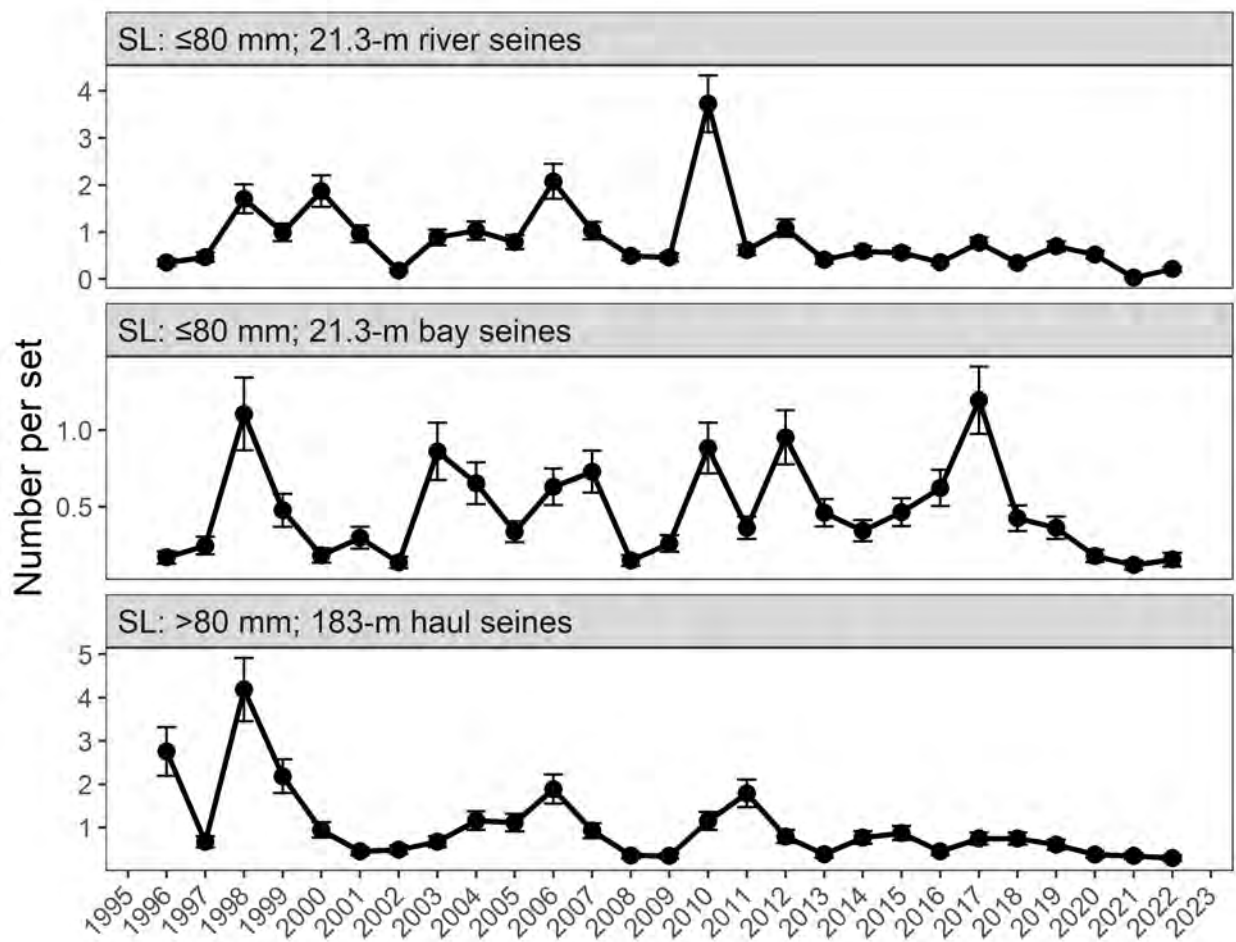
**Figure 5.52:** Relative abundance of young-of-the-year and adult Blue Crab collected between 1996 and 2022 during stratified-random sampling of Cedar Key.

## Tampa Bay

Annual IOAs of YOY Blue Crab in river habitats of Tampa Bay have generally remained stable since sampling began in 1996 (Figure 5.53). Relative abundance of YOY Blue Crab in river habitats in 2022 decreased from the previous year.

Annual IOAs of YOY Blue Crab in bay habitats of Tampa Bay have generally remained stable since sampling began in 1996 (Figure 5.53). Relative abundance of YOY Blue Crab in bay habitats in 2022 did not differ significantly from the previous year.

Annual IOAs of adult Blue Crab in Tampa Bay have generally decreased since sampling began in 1996 (Figure 5.53). Relative abundance of adult Blue Crab in 2022 did not differ significantly from the previous year.



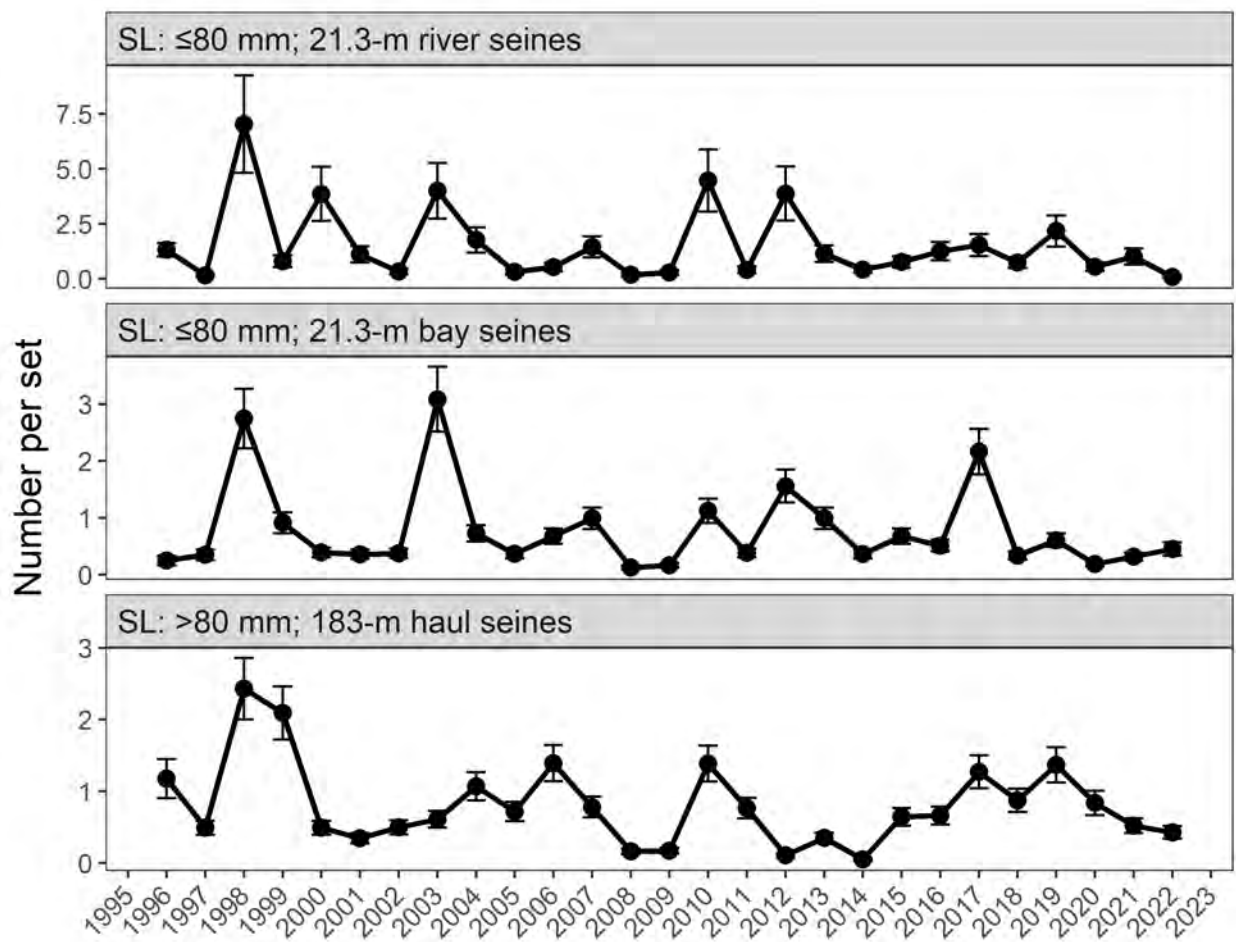
**Figure 5.53:** Relative abundance of young-of-the-year and adult Blue Crab collected between 1996 and 2022 during stratified-random sampling of Tampa Bay.

## Charlotte Harbor

Annual IOAs of YOY Blue Crab in river and creek habitats of Charlotte Harbor have generally decreased since sampling began in 1996 (Figure 5.54). Relative abundance of YOY Blue Crab in river and creek habitats in 2022 increased from the previous year.

Annual IOAs of YOY Blue Crab in bay habitats of Charlotte Harbor have generally remained stable since sampling began in 1996 (Figure 5.54). Relative abundance of YOY Blue Crab in bay habitats in 2022 did not differ significantly from the previous year.

Annual IOAs of adult Blue Crab in Charlotte Harbor have generally decreased since sampling began in 1996 (Figure 5.54). Relative abundance of adult Blue Crab in 2022 did not differ significantly from the previous year.

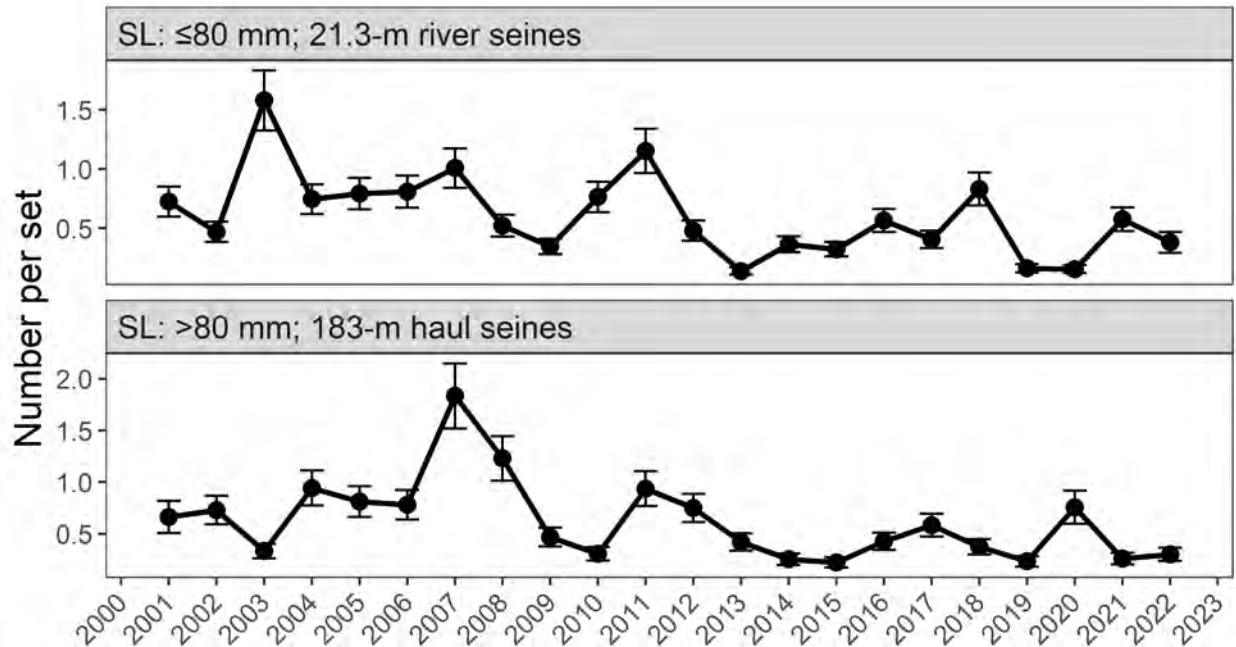


**Figure 5.54:** Relative abundance of young-of-the-year and adult Blue Crab collected between 1996 and 2022 during stratified-random sampling of Charlotte Harbor.

### Northeast Florida

Annual IOAs of YOY Blue Crab in river habitats of Northeast Florida have generally decreased since sampling began in 2001 (Figure 5.56). Relative abundance of YOY Blue Crab in river habitats in 2022 did not differ significantly from the previous year.

Annual IOAs of adult Blue Crab in Northeast Florida have generally remained stable since sampling began in 2001 (Figure 5.56). Relative abundance of adult Blue Crab in 2022 did not differ significantly from the previous year.



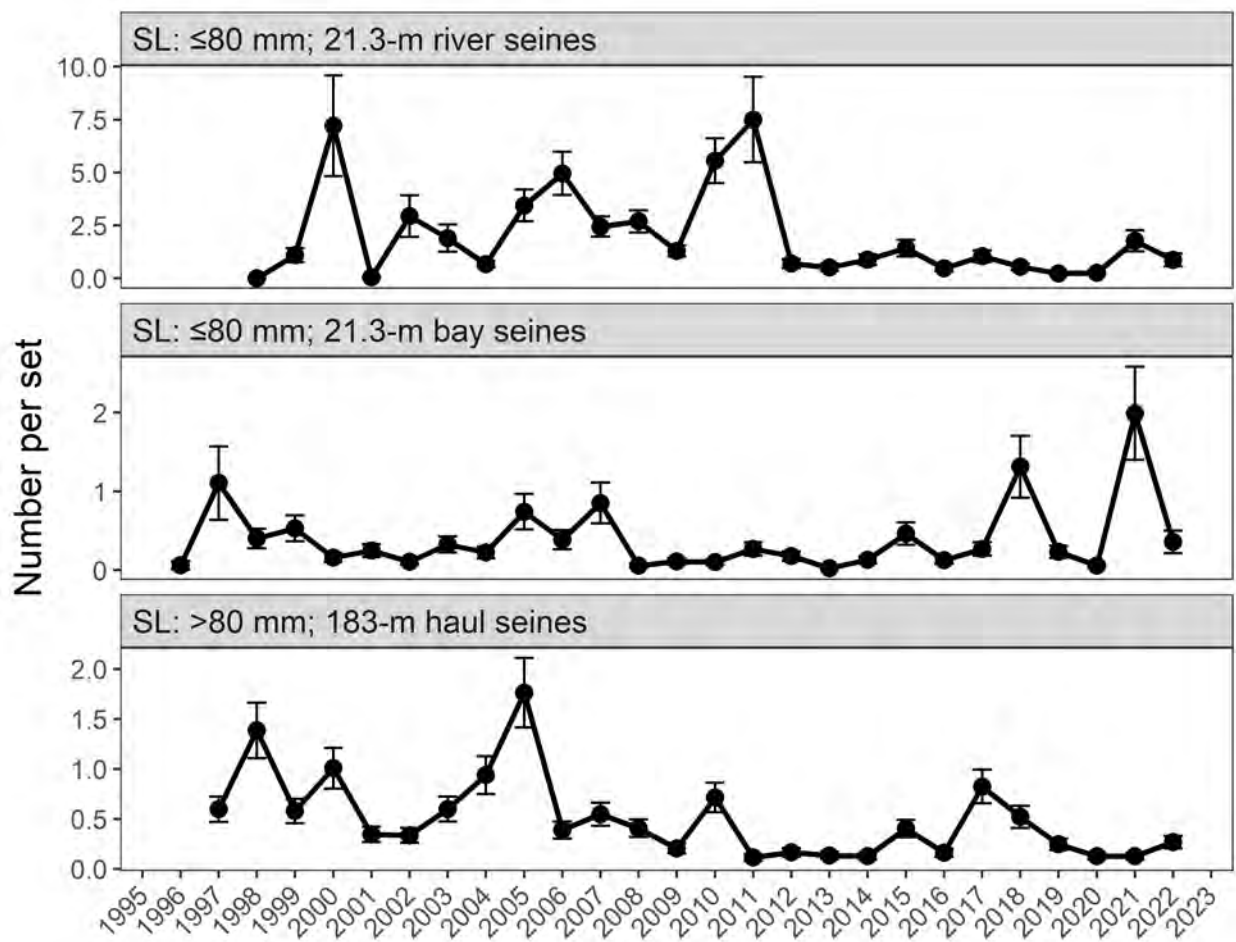
**Figure 5.55:** Relative abundance of young-of-the-year and adult Blue Crab collected between 2001 and 2022 during stratified-random sampling of northeast Florida.

### Northern Indian River Lagoon

Annual IOAs of YOY Blue Crab in river habitats of the Northern Indian River Lagoon have generally remained stable since sampling began in 1998 (Figure 5.56). Relative abundance of YOY Blue Crab in river habitats in 2022 did not differ significantly from the previous year.

Annual IOAs of YOY Blue Crab in bay habitats of the Northern Indian River Lagoon have generally increased since sampling began in 1996 (Figure 5.56). Relative abundance of YOY Blue Crab in bay habitats in 2022 increased from the previous year.

Annual IOAs of adult Blue Crab in the Northern Indian River Lagoon have generally decreased since sampling began in 1997 (Figure 5.56). Relative abundance of adult Blue Crab abundance in 2022 did not differ significantly from the previous year.

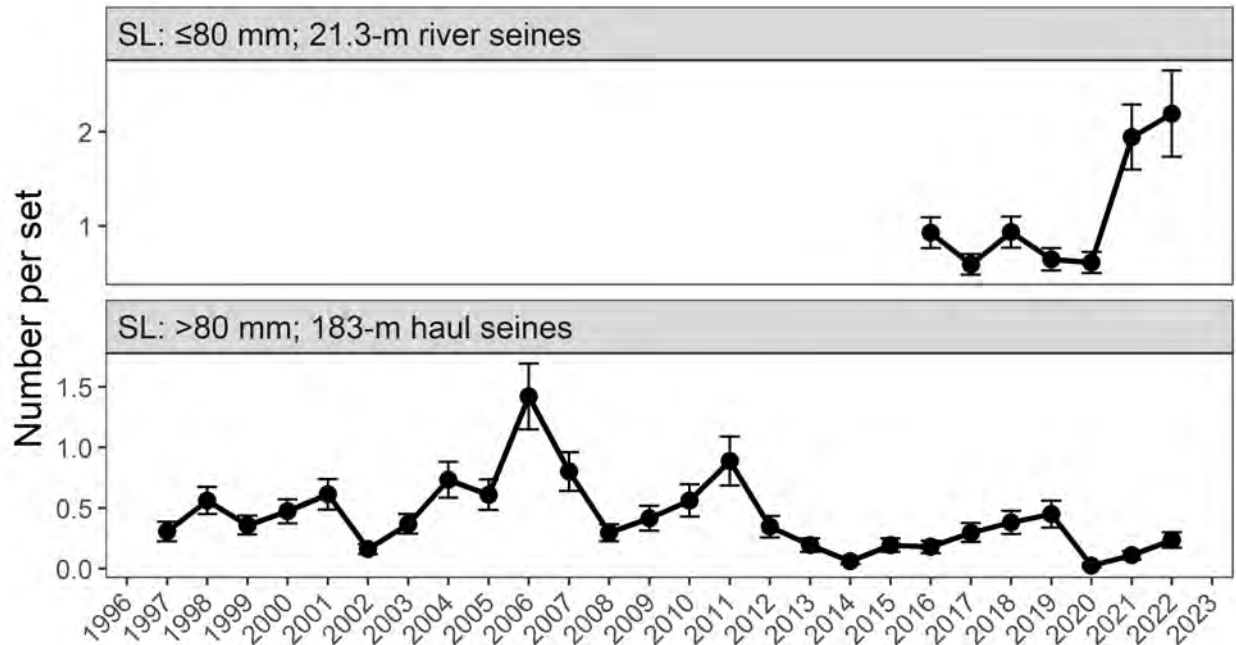


**Figure 5.56:** Relative abundance of young-of-the-year and adult Blue Crab collected between 1996 and 2022 during stratified-random sampling of the northern portion of the Indian River Lagoon.

### Southern Indian River Lagoon

Annual IOAs of YOY Blue Crab in river and creek habitats of the Southern Indian River Lagoon have generally increased since sampling began in 2016 (Figure 5.57). Relative abundance of YOY Blue Crab in river and creek habitats in 2022 did not differ significantly from the previous year.

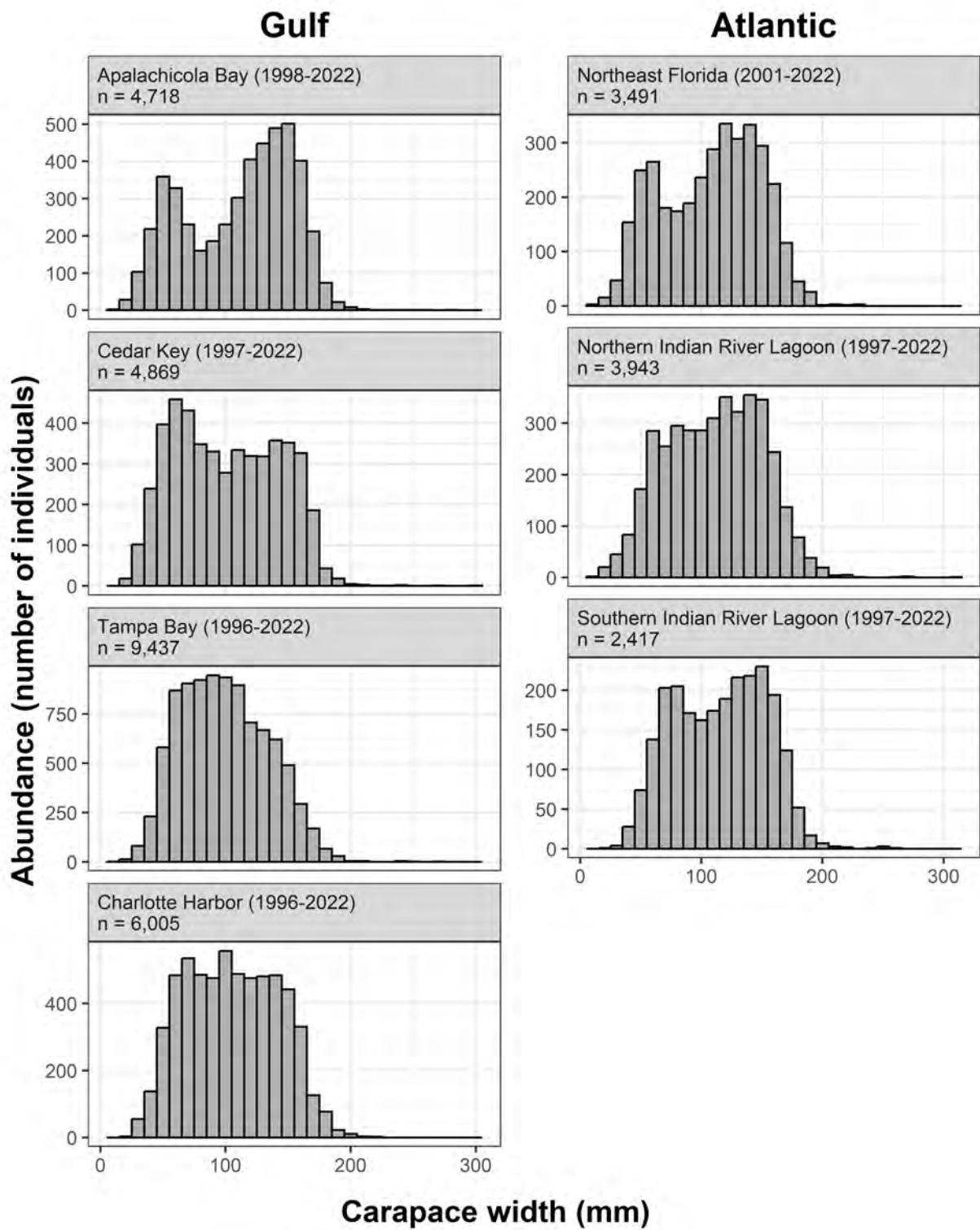
Annual IOAs of adult Blue Crab in the Southern Indian River Lagoon have generally remained stable since sampling began in 1997 (Figure 5.57). Relative abundance of adult Blue Crab in 2022 did not differ significantly from the previous year.



**Figure 5.57:** Relative abundance of young-of-the-year and adult Blue Crab collected between 1997 and 2022 during stratified-random sampling of the southern portion of the Indian River Lagoon. Note that river sampling began in 2016 to include previously underrepresented habitats (i.e., tidal creeks and tributaries).

## Length-Frequency Diagrams

The following figure shows length frequency diagrams of Blue Crab collected in 183-m haul seines. All lengths are carapace width (CW). Note different scales and years of collection for each estuary. Length-frequency data collected with 183-m haul seines indicate that this gear provides valuable information on adult Blue Crab in Florida estuaries (Figure [5.58](#)).



**Figure 5.58:** Length frequency diagrams of Blue Crab collected in 183-m haul seines.

**Part II**

**Polyhaline Seagrass Survey**

## 6 Introduction

The Fisheries-Independent Monitoring (FIM) program has conducted inshore (estuarine) monitoring in various eastern Gulf of Mexico estuaries as early as 1989, but habitats commonly occupied by juvenile reef fish species (i.e., seagrass beds and shoals) were underrepresented. Indeed, the FIM program captured highly variable numbers of juveniles of estuarine-dependent reef species, resulting in highly variable indices of juvenile abundance (Switzer et al. 2012, 2015; Flaherty-Walia et al. 2015). Researchers and managers recommended improving indices of juvenile abundance for reef species (Switzer et al. 2012; Flaherty-Walia et al. 2015) so in 2008, FIM initiated a complementary sampling survey to fulfill the mission of providing timely and accurate data for fishery management. Results from existing FIM data for the eastern Gulf of Mexico were used to inform the design of the complementary survey characterize the abundance of juvenile gag, *Mycteroperca microlepis* (Casey et al. 2007; Switzer et al. 2015), and other estuarine-dependent and seagrass-associated reef fishes by targeting the preferred polyhaline (salinity>8) seagrass habitat. Work in Charlotte Harbor was instrumental in developing the survey, as Casey et al. (2007) documented that juvenile gag were collected mainly between April and December in habitats with  $\geq 50\%$  seagrass cover. In 2008, the FIM program initiated this complementary polyhaline seagrass survey to extend its standard, long-term monitoring survey to deep seagrass habitats found in estuaries already sampled by the FIM program and in adjacent estuaries not sampled by the FIM program. The polyhaline seagrass survey was originally conducted in St. Andrew Bay, Apalachicola Bay, three sub-areas in the Big Bend area (near St. Marks, the Econfina and Steinhatchee rivers), Tampa Bay, and Charlotte Harbor. In 2021, polyhaline seagrass survey methodology was adopted in Choctawhatchee Bay and Santa Rosa Sound near Fort Walton to help provide data for Spotted Seatrout, *Cynoscion nebulosus*, management (Figure 6.1). This survey provides necessary data for improving existing single species assessments as well as furthering the development of a multi-species, ecosystem-based approach to fisheries resource assessment on the west Florida shelf and eastern Gulf waters.



**Figure 6.1:** Locations of Polyhaline Seagrass Survey study areas sampled by the Fisheries-Independent Monitoring program. Years indicate initiation of sampling.

## 7 Methods

The polyhaline seagrass survey was conducted along the eastern Gulf of Mexico between 26° and 31° N latitude within six estuarine systems and the Big Bend area (Figure 6.1). The sampling universe for each area was created using bathymetry and seagrass coverage data from the local water management districts. To ensure sampling effort was allocated spatially within each estuarine system, spatial sampling zones were created. Sampling strata were defined based on bathymetric variability and seagrass coverage: microgrids (0.1-nm<sup>2</sup>) that were in the appropriate depth range for the sampling gear and contained known seagrass were included in the universe. The sampling gear was identical to that used in the standard long-term FIM stratified random sampling survey: the 6.1- m otter trawl. All sample work-up methods were the same as those described in Chapter 2.

Monthly (June–November) surveys were conducted following a stratified-random survey design where microgrids were randomly selected. Trawling was conducted over areas with >50% submerged aquatic vegetation coverage and where water depth ranged between 1.0 and 7.6 m. Additional details regarding 6.1-m otter trawl sampling in the WI survey can be found in Switzer et al. (2012), Flaherty-Walia et al. (2015), and Schrandt et al. (2018; 2021, 2023). Sampling of polyhaline seagrass areas was conducted in Santa Rosa Sound, Choctawhatchee Bay, St. Andrew Bay, Apalachicola Bay, the Big Bend region (in proximity to the Econfinia and Steinhatchee rivers), Tampa Bay, and Charlotte Harbor. This section includes a description of and catch summary from each estuarine system for all taxa sampled as well as for species of interest, which include reef-associated species and managed species (Table 7.1). Catch summaries are combined over all zones within each estuarine system.

**Table 7.1:** Animals designated as species of interest by the Fisheries Independent Monitoring program because of their commercial importance or association with reef structure.

Scientific Name	Common Name
<i>Archosargus probatocephalus</i>	Sheepshead
<i>Centropomus undecimalis</i>	Common Snook
<i>Centropristis striata</i>	Black Sea Bass
<i>Cynoscion nebulosus</i>	Spotted Seatrout
<i>Epinephelus morio</i>	Red Grouper
<i>Haemulon plumieri</i>	White Grunt
<i>Lachnolaimus maximus</i>	Hogfish
<i>Lutjanus griseus</i>	Gray Snapper

Scientific Name	Common Name
<i>Lutjanus synagris</i>	Lane Snapper
<i>Mycteroperca microlepis</i>	Gag
<i>Sciaenops ocellatus</i>	Red Drum

**Table 7.2:** Summary of catch and effort data by estuary for polyhaline seagrass sampling, 2022.

	Animals	Hauls
<b>Apalachicola Bay</b>	24,103	96
<b>Big Bend</b>	26,473	180
<b>Choctawhatchee Bay</b>	14,621	54
<b>Charlotte Harbor</b>	34,812	120
<b>St. Andrew Bay</b>	23,075	72
<b>Santa Rosa Sound</b>	20,776	48
<b>Tampa Bay</b>	34,399	144
<b>Totals</b>	<b>178,259</b>	<b>714</b>

## 8 Data Summary by Estuary

### 8.1 Santa Rosa Sound

Santa Rosa Sound is a 109-km<sup>2</sup> lagoon connecting Pensacola Bay to the west and Choctawhatchee Bay to the east (Northwest Florida Water Management District 2017a). The lagoon has no tidal tributaries for direct freshwater input but is connected to the Gulf of Mexico by a deep pass west of Santa Rosa Island (Figure 8.1). Shoreline vegetation consists primarily of the marsh grasses *Spartina alterniflora* and *Panicum hemitomon* (Miller et al. 2001). Bottom substrate is mostly sand (Miller et al. 2001) and bottom vegetation consists primarily of seagrasses such as *Halodule wrightii* and *Thalassia testudinum* (Bradley and Houser 2009). Seagrass beds covered nearly 25% of the lagoon in 1960, but by 1992 less than half remained because of wastewater discharge, dredging, and beach modifications (Handley et al. 2007). By 2010, seagrass coverage declined by an additional 5% (Yarbro and Carlson 2016).

Monthly sampling in Santa Rosa Sound was completed from June through November with a total of 20,776 individuals collected across 48 samples (Table 7.2). The most abundant taxa collected in Santa Rosa Sound polyhaline seagrass sampling were *Lagodon rhomboides* (n=13,259) and *Bairdiella chrysoura* (n=2,690), accounting for 76.7% of the trawl catch (Table 8.1). The taxa most frequently caught in Santa Rosa Sound polyhaline seagrass sampling were *Lagodon rhomboides* (93.8% occurrence) and *Bairdiella chrysoura* (87.5% occurrence).

A total of 560 animals from 6 species of interest were collected, representing 2.7% of the entire polyhaline seagrass trawl catch (Table 8.2). *Cynoscion nebulosus* (n=520) was the most abundant species of interest, accounting for 92.9% of the species of interest collected in polyhaline seagrass trawls (Table 8.2). The species of interest most frequently caught in Santa Rosa Sound polyhaline seagrass sampling were *Cynoscion nebulosus* (79.2% occurrence) and *Lutjanus griseus* (27.1% occurrence).



**Figure 8.1:** Santa Rosa Sound polyhaline seagrass habitat sampling universe. Micro-grids ( $0.1\text{nm}^2$ ) eligible to be sampled are indicated in green. Adjacent areas that met the sampling requirements, but were not necessarily included in the original universe, could be sampled if necessary.

**Table 8.1:** Catch statistics for 10 dominant taxa collected in 48 6.1-m otter trawl samples during Santa Rosa Sound polyhaline seagrass sampling, June-November, 2022.

Species	Number			Density Estimate (animals/100m <sup>2</sup> )				Standard Length (mm)			
	No.	%	% Occur	Mean	Stderr	CV	Max	Mean	Stderr	Min	Max
<i>Lagodon rhomboides</i>	13,259	63.8	93.8	29.80	4.59	118.24	187.04	59	0.20	20	162
<i>Bairdiella chrysoura</i>	2,690	12.9	87.5	6.85	1.33	141.71	40.88	56	0.45	12	140
<i>Orthopristis chrysoptera</i>	943	4.5	72.9	2.01	0.37	147.37	12.39	96	1.12	42	205
<i>Farfantepenaeus</i> spp.	736	3.5	64.6	2.00	0.57	195.84	19.43	10	0.09	5	14
<i>Syngnathus scovelli</i>	589	2.8	83.3	1.64	0.29	124.48	9.85	100	0.64	33	134
<i>Callinectes sapidus</i>	449	2.2	85.4	1.26	0.27	149.82	8.50	61	1.37	6	164
<i>Cynoscion nebulosus</i>	520	2.5	79.2	1.11	0.22	157.33	8.46	61	1.64	11	254
<i>Eucinostomus</i> spp.	316	1.5	58.3	0.91	0.39	295.21	17.24	24	0.34	12	58
<i>Syngnathus floridae</i>	268	1.3	81.2	0.74	0.11	100.32	2.82	149	2.10	68	211
<i>Chasmodes saburrae</i>	145	0.7	66.7	0.41	0.09	151.19	2.83	43	0.90	15	72
Subtotals	19,915	95.7	.	.	.	.	.	.	.	5	254
<b>Totals</b>	<b>20,776</b>	<b>100.0</b>	.	<b>57.69</b>	<b>7.26</b>	<b>87.14</b>	<b>271.30</b>	.	.	<b>5</b>	<b>377</b>

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.

**Table 8.2:** Catch statistics for species of interest collected in 48 6.1-m otter trawl samples during Santa Rosa Sound polyhaline sea-grass sampling, June-November, 2022.

Species	Number			Density Estimate (animals/100m <sup>2</sup> )				Standard Length (mm)			
	No.	%	% Occur	Mean	Stderr	CV	Max	Mean	Stderr	Min	Max
<i>Cynoscion nebulosus</i>	520	2.5	79.2	1.44	0.31	148.98	9.69	61	1.64	11	254
<i>Lutjanus griseus</i>	31	0.1	27.1	0.09	0.04	270.36	1.50	62	4.25	22	150
<i>Lutjanus synagris</i>	5	<0.1	6.2	0.02	0.01	458.80	0.45	64	5.82	51	80
<i>Archosargus probatocephalus</i>	2	<0.1	4.2	0.01	<0.01	484.66	0.13	60	11.00	49	71
<i>Mycteroperca microlepis</i>	1	<0.1	2.1	<0.01	<0.01	692.82	0.15	.	.	.	.
<i>Sciaenops ocellatus</i>	1	<0.1	2.1	<0.01	<0.01	692.82	0.13	30	.	30	30
<b>Totals</b>	<b>560</b>	<b>2.7</b>	<b>.</b>	<b>1.56</b>	<b>0.31</b>	<b>140.17</b>	<b>9.69</b>	<b>.</b>	<b>.</b>	<b>.</b>	<b>.</b>

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.

## 8.2 Choctawhatchee Bay

Choctawhatchee Bay (Figure 8.2) is a 334-km<sup>2</sup> estuary located in the central Florida Panhandle that is connected to the Gulf of Mexico by a shallow man-made channel, East Pass, near the city of Destin (Handley et al. 2007; Northwest Florida Water Management District 2017b). Tidal influence is minimal and tidal ranges are small, from 0.15 to 0.5 meters (Huguenard et al. 2016). Major habitat types in Choctawhatchee Bay include tidal marshes, seagrass beds, bayous, and oyster beds (Northwest Florida Water Management District 2017b). Shoreline vegetation consists mostly of the marsh grasses *Juncus roemerianus*, *Spartina alterniflora*, and *Scirpus* spp. (Northwest Florida Water Management District 2017b). Choctawhatchee Bay is moderately deep with depths ranging from 3 to 13 meters and bottom substrate that is mostly sand, mud, and shell (Handley et al. 2007; Northwest Florida Water Management District 2017b). Bottom vegetation is predominantly *Halodule wrightii* with patches of *Ruppia maritima* and *Thalassia testudinum* (Handley et al. 2007; Northwest Florida Water Management District 2017b). Choctawhatchee Bay seagrass beds covered 17.2 km<sup>2</sup> in 1992 but had declined by 55% by 2007 (Yarbro and Carlson 2016). Seagrass losses observed in Choctawhatchee Bay are a result of urbanization, especially the construction of seawalls, which reduces the size of intertidal areas and impedes seagrass growth (Handley et al. 2007).

Monthly sampling in Choctawhatchee Bay was completed from June through November with a total of 14,621 individuals collected across 54 samples (Table 7.2). The most abundant taxa collected in Choctawhatchee Bay polyhaline seagrass sampling were *Lagodon rhomboides* (n=4,715) and *Eucinostomus* spp. (n=2,715), accounting for 50.8% of the trawl catch (Table 8.3). The taxa most frequently caught in Choctawhatchee Bay polyhaline seagrass sampling were *Eucinostomus* spp. (94.4% occurrence) and *Lagodon rhomboides* (92.6% occurrence).

A total of 1,369 animals from 6 species of interest were collected, representing 9.4% of the entire polyhaline seagrass trawl catch (Table 8.4). *Cynoscion nebulosus* (n=856) was the most abundant species of interest, accounting for 62.5% of the species of interest collected in polyhaline seagrass trawls (Table 8.4). The species of interest most frequently caught in Choctawhatchee Bay polyhaline seagrass sampling were *Cynoscion nebulosus* (77.8% occurrence) and *Lutjanus griseus* (51.9% occurrence).



**Figure 8.2:** Choctawhatchee Bay polyhaline seagrass habitat sampling universe. Microgrids ( $0.1\text{nm}^2$ ) eligible to be sampled are indicated in green. Adjacent areas that met the sampling requirements, but were not necessarily included in the original universe, could be sampled if necessary.

**Table 8.3:** Catch statistics for 10 dominant taxa collected in 54 6.1-m otter trawl samples during Choctawhatchee Bay polyhaline sea-grass sampling, June-November, 2022.

Species	Number			Density Estimate (animals/100m <sup>2</sup> )				Standard Length (mm)			
	No.	%	% Occur	Mean	Stderr	CV	Max	Mean	Stderr	Min	Max
<i>Lagodon rhomboides</i>	4,715	32.2	92.6	11.27	1.82	122.20	69.05	75	0.39	30	175
<i>Eucinostomus</i> spp.	2,715	18.6	94.4	6.85	1.60	171.77	56.66	26	0.15	10	51
<i>Bairdiella chrysoura</i>	2,085	14.3	64.8	4.93	0.94	145.90	26.98	49	0.50	12	144
<i>Farfantepenaeus</i> spp.	895	6.1	83.3	2.23	0.57	188.44	25.09	10	0.07	4	14
<i>Cynoscion nebulosus</i>	856	5.9	77.8	1.59	0.25	134.31	9.17	60	1.45	15	360
<i>Lutjanus griseus</i>	467	3.2	51.9	1.15	0.48	311.59	24.02	43	0.72	12	197
<i>Callinectes sapidus</i>	419	2.9	83.3	1.06	0.23	160.11	7.65	65	1.68	4	191
<i>Anchoa mitchilli</i>	269	1.8	11.1	0.82	0.72	647.66	38.79	23	0.22	15	31
<i>Syngnathus scovelli</i>	299	2.0	72.2	0.77	0.15	146.43	5.25	87	0.71	41	114
<i>Orthopristis chrysoptera</i>	291	2.0	70.4	0.69	0.16	173.84	6.99	85	1.75	32	209
Subtotals	13,011	89.0	.	.	.	.	.	.	.	4	360
<b>Totals</b>	<b>14,621</b>	<b>100.0</b>	.	<b>36.99</b>	<b>3.65</b>	<b>72.50</b>	<b>108.67</b>	.	.	<b>3</b>	<b>426</b>

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.

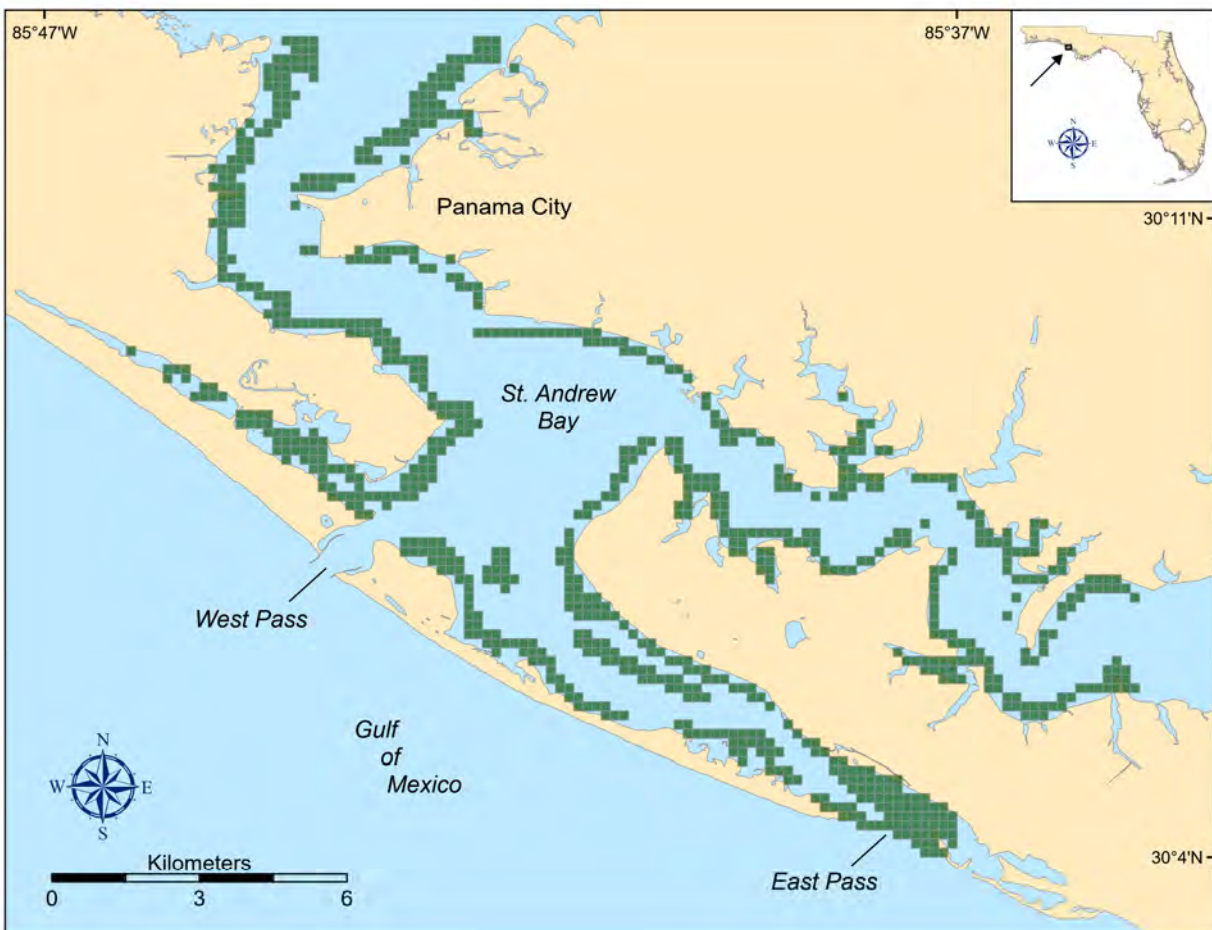
**Table 8.4:** Catch statistics for species of interest collected in 54 6.1-m otter trawl samples during Choctawhatchee Bay polyhaline sea-grass sampling, June-November, 2022.

Species	Number			Density Estimate (animals/100m <sup>2</sup> )				Standard Length (mm)			
	No.	%	% Occur	Mean	Stderr	CV	Max	Mean	Stderr	Min	Max
<i>Cynoscion nebulosus</i>	856	5.9	77.8	2.15	0.33	113.38	9.85	60	1.45	15	360
<i>Lutjanus griseus</i>	467	3.2	51.9	1.17	0.49	308.51	24.02	43	0.72	12	197
<i>Sciaenops ocellatus</i>	28	0.2	3.7	0.07	0.07	672.27	3.51	15	0.63	11	26
<i>Lutjanus synagris</i>	16	0.1	16.7	0.04	0.02	299.56	0.74	58	7.36	13	102
<i>Haemulon plumierii</i>	1	<0.1	1.9	<0.01	<0.01	734.85	0.15	26	.	26	26
<i>Mycteroperca microlepis</i>	1	<0.1	1.9	<0.01	<0.01	734.85	0.15	126	.	126	126
<b>Totals</b>	<b>1,369</b>	<b>9.4</b>	<b>.</b>	<b>3.44</b>	<b>0.68</b>	<b>146.31</b>	<b>29.95</b>	<b>.</b>	<b>.</b>	<b>11</b>	<b>360</b>

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.

### 8.3 St. Andrew Bay

St. Andrew Bay (Figure 8.3) is located adjacent to Panama City, Florida and covers approximately 280 square miles (Keppner and Keppner 2001). The estuary includes several smaller bays and extends almost 50 miles along the Gulf Coast. St. Andrew Bay is unique from other estuaries in the study due to its lack of direct freshwater inflow from a major river system. However, it does receive freshwater flow from numerous creeks, bayous and wastewater treatment plants. This limited amount of freshwater maximizes the influence of Gulf of Mexico water, which is connected to the bay via West Pass. St. Andrew Bay has the largest stock of seagrass in the Florida panhandle. Tidal flats and salt marshes are also prevalent in the bay system (“GulfBase website” 2023).



**Figure 8.3:** St. Andrew Bay polyhaline seagrass habitat sampling universe. Microgrids ( $0.1\text{m}^2$ ) eligible to be sampled are indicated in green. Adjacent areas that met the sampling requirements, but were not necessarily included in the original universe, could be sampled if necessary.

Monthly sampling in St. Andrew Bay was completed from June through November with a total of 23,075 individuals collected across 72 samples (Table 7.2). The most abundant taxa collected in St. Andrew Bay polyhaline seagrass sampling were *Lagodon rhomboides* ( $n=14,203$ ) and *Eucinostomus spp.* ( $n=2,589$ ), accounting for 72.8% of the trawl catch (Table 8.5). The taxa most

frequently caught in St. Andrew Bay polyhaline seagrass sampling were *Lagodon rhomboides* (97.2% occurrence) and *Orthopristis chrysoptera* (87.5% occurrence).

A total of 486 animals from 5 species of interest were collected, representing 2.1% of the entire polyhaline seagrass trawl catch (Table 8.6). *Lutjanus griseus* (n=307) was the most abundant species of interest, accounting for 63.2% of the species of interest collected in polyhaline seagrass trawls (Table 8.6). The species of interest most frequently caught in St. Andrew Bay polyhaline seagrass sampling were *Lutjanus griseus* (45.8% occurrence) and *Cynoscion nebulosus* (40.3% occurrence).

**Table 8.5:** Catch statistics for 10 dominant taxa collected in 72 6.1-m otter trawl samples during St. Andrews Bay polyhaline seagrass sampling, June-November, 2022.

Species	Number			Density Estimate (animals/100m <sup>2</sup> )				Standard Length (mm)			
	No.	%	% Occur	Mean	Stderr	CV	Max	Mean	Stderr	Min	Max
<i>Lagodon rhomboides</i>	14,203	61.6	97.2	17.24	2.34	144.21	116.97	60	0.14	32	170
<i>Eucinostomus</i> spp.	2,589	11.2	75.0	5.45	1.40	218.04	89.04	26	0.15	6	39
<i>Orthopristis chrysoptera</i>	2,291	9.9	87.5	3.84	0.54	126.42	20.69	80	0.46	31	191
<i>Farfantepenaeus</i> spp.	849	3.7	41.7	1.73	0.74	364.70	46.12	8	0.07	3	14
<i>Bairdiella chrysoura</i>	457	2.0	59.7	0.93	0.21	199.32	12.14	64	1.20	16	149
<i>Eucinostomus gula</i>	466	2.0	50.0	0.91	0.23	212.47	10.39	52	0.58	40	105
<i>Lutjanus griseus</i>	307	1.3	45.8	0.65	0.23	296.21	11.60	51	1.17	12	229
<i>Paralichthys albigutta</i>	257	1.1	81.9	0.50	0.07	113.06	2.89	131	3.39	47	319
<i>Callinectes sapidus</i>	225	1.0	59.7	0.44	0.09	182.92	4.59	60	2.65	8	201
<i>Syngnathus scovelli</i>	220	1.0	58.3	0.43	0.09	172.53	3.75	95	1.01	42	127
Subtotals	21,864	94.8	.	.	.	.	.	.	.	3	319
<b>Totals</b>	<b>23,075</b>	<b>100.0</b>	.	<b>44.91</b>	<b>4.43</b>	<b>83.79</b>	<b>164.15</b>	.	.	<b>2</b>	<b>322</b>

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.

**Table 8.6:** Catch statistics for species of interest collected in 72 6.1-m otter trawl samples during St. Andrews Bay polyhaline seagrass sampling, June-November, 2022.

Species	Number			Density Estimate (animals/100m <sup>2</sup> )				Standard Length (mm)			
	No.	%	% Occur	Mean	Stderr	CV	Max	Mean	Stderr	Min	Max
<i>Lutjanus griseus</i>	307	1.3	45.8	0.65	0.23	296.21	11.60	51	1.17	12	229
<i>Cynoscion nebulosus</i>	142	0.6	40.3	0.27	0.06	191.90	2.16	64	3.18	11	230
<i>Lutjanus synagris</i>	30	0.1	23.6	0.06	0.02	228.81	0.74	70	4.38	25	105
<i>Mycteroperca microlepis</i>	5	<0.1	5.6	0.01	<0.01	440.94	0.27	177	23.87	99	223
<i>Centropristis striata</i>	2	<0.1	2.8	<0.01	<0.01	595.76	0.13	63	9.00	54	72
<b>Totals</b>	<b>486</b>	<b>2.1</b>	<b>.</b>	<b>0.99</b>	<b>0.25</b>	<b>210.91</b>	<b>11.92</b>	<b>.</b>	<b>.</b>	<b>11</b>	<b>230</b>

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.

## 8.4 Apalachicola Bay

Apalachicola Bay (Figure 8.4) is a shallow, semi-enclosed estuary, located on the northwestern coast of Florida. The estuary is bounded by a barrier island complex (St. Vincent Island, Little St. George Island, St. George Island, and Dog Island) and connected to the Gulf of Mexico through four passes (Indian Pass, West Pass, East Pass, and Sikes Cut). East of Dog Island, St. George Sound is open to the Gulf. Freshwater inflow to Apalachicola Bay primarily comes from the Apalachicola River and to a lesser extent the Carrabelle River (Livingston 1983). Shoreline vegetation consists largely of marsh grasses, and bottom substrates are typically characterized as sand or mud with oyster beds scattered throughout the bay (Ingle and Dawson 1953). Less than 7% of the substrate is covered by seagrass (Continental Shelf Associates, Inc. 1985b).



**Figure 8.4:** Apalachicola Bay polyhaline seagrass habitat sampling universe. Microgrids ( $0.1\text{nm}^2$ ) eligible to be sampled are indicated in green. Adjacent areas that met the sampling requirements, but were not necessarily included in the original universe, could be sampled if necessary.

Monthly sampling in Apalachicola Bay was completed from June through November with a total of 24,103 individuals collected across 96 samples (Table 7.2). The most abundant taxa collected in Apalachicola Bay polyhaline seagrass sampling were *Lagodon rhomboides* ( $n=5,453$ ) and *Ortho-*

*pristis chrysoptera* (n=5,128), accounting for 43.9% of the trawl catch (Table 8.7). The taxa most frequently caught in Apalachicola Bay polyhaline seagrass sampling were *Lagodon rhomboides* (95.8% occurrence) and *Orthopristis chrysoptera* (92.7% occurrence).

A total of 1,155 animals from 7 species of interest were collected, representing 4.8% of the entire polyhaline seagrass trawl catch (Table 8.8). *Cynoscion nebulosus* (n=548) was the most abundant species of interest, accounting for 47.4% of the species of interest collected in polyhaline seagrass trawls (Table 8.8). The species of interest most frequently caught in Apalachicola Bay polyhaline seagrass sampling were *Lutjanus synagris* (61.5% occurrence) and *Cynoscion nebulosus* (59.4% occurrence).

**Table 8.7:** Catch statistics for 10 dominant taxa collected in 96 6.1-m otter trawl samples during Apalachicola Bay polyhaline seagrass sampling, June-November, 2022.

Species	Number			Density Estimate (animals/100m <sup>2</sup> )				Standard Length (mm)			
	No.	%	% Occur	Mean	Stderr	CV	Max	Mean	Stderr	Min	Max
<i>Lagodon rhomboides</i>	5,453	22.6	95.8	6.04	1.02	186.13	102.00	88	0.41	31	192
<i>Orthopristis chrysoptera</i>	5,128	21.3	92.7	4.90	0.65	157.49	53.97	77	0.49	8	205
<i>Bairdiella chrysoura</i>	3,964	16.4	82.3	4.35	0.51	130.12	24.15	68	0.54	6	172
<i>Anchoa mitchilli</i>	1,367	5.7	19.8	1.91	1.52	778.43	145.57	21	0.16	10	56
<i>Eucinostomus</i> spp.	1,137	4.7	68.8	1.60	0.37	223.19	23.39	26	0.22	9	42
<i>Syngnathus scovelli</i>	843	3.5	72.9	1.22	0.44	354.36	39.58	84	0.51	38	129
<i>Syngnathus floridae</i>	864	3.6	56.2	1.20	0.23	189.48	14.71	152	0.84	38	215
<i>Farfantepenaeus</i> spp.	827	3.4	56.2	1.17	0.25	204.34	14.17	9	0.09	3	14
<i>Stephanolepis hispidus</i>	628	2.6	50.0	0.87	0.20	228.71	10.79	58	0.70	12	166
<i>Cynoscion nebulosus</i>	548	2.3	59.4	0.68	0.14	214.54	11.09	53	1.83	11	304
Subtotals	20,759	86.1	.	.	.	.	.	.	.	3	304
<b>Totals</b>	<b>24,103</b>	<b>100.0</b>	.	<b>33.85</b>	<b>3.35</b>	<b>96.86</b>	<b>186.45</b>	.	.	<b>3</b>	<b>493</b>

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.

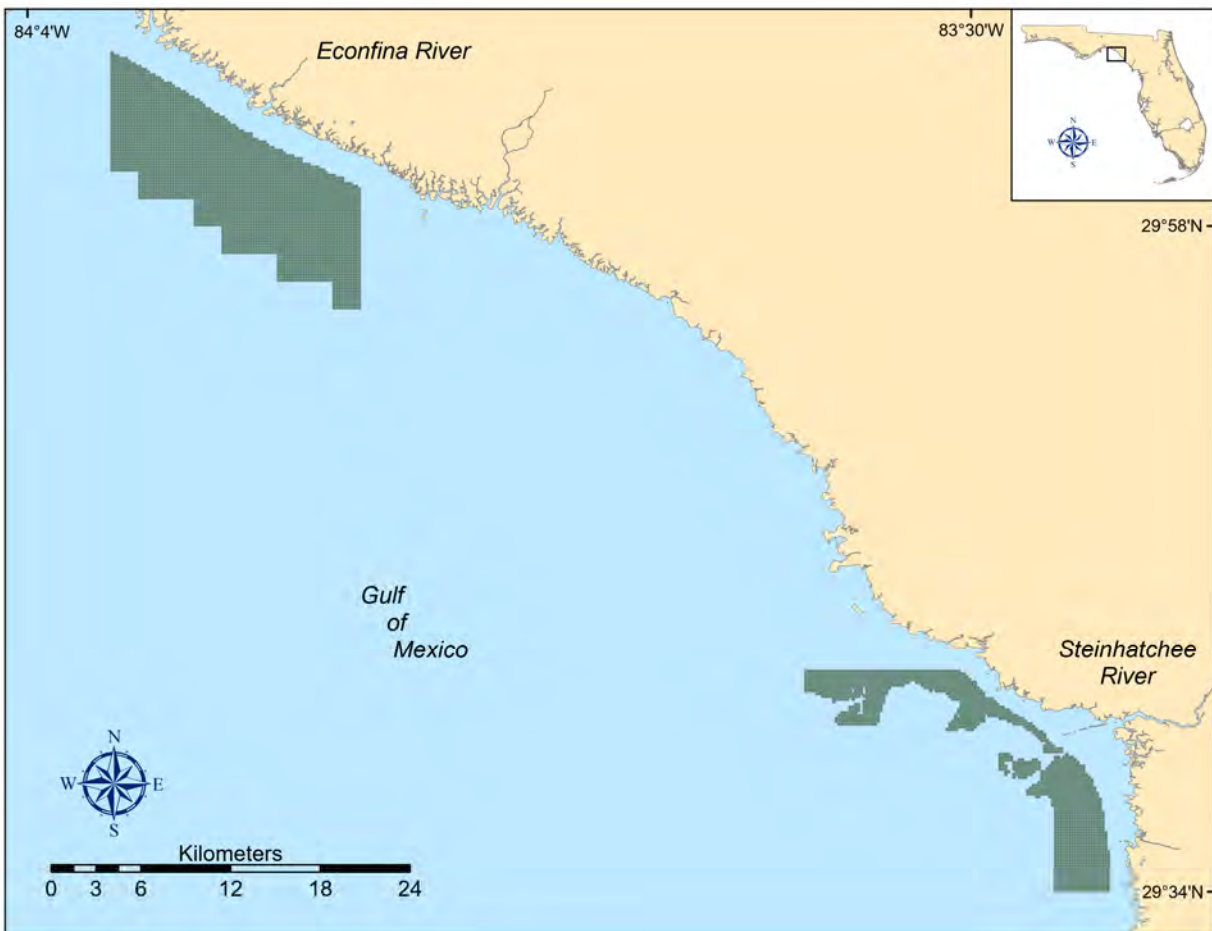
**Table 8.8:** Catch statistics for species of interest collected in 96 6.1-m otter trawl samples during Apalachicola Bay polyhaline seagrass sampling, June-November, 2022.

Species	Number			Density Estimate (animals/100m <sup>2</sup> )				Standard Length (mm)			
	No.	%	% Occur	Mean	Stderr	CV	Max	Mean	Stderr	Min	Max
<i>Cynoscion nebulosus</i>	548	2.3	59.4	0.77	0.16	208.36	11.54	53	1.83	11	304
<i>Lutjanus synagris</i>	357	1.5	61.5	0.50	0.08	166.06	5.26	40	1.09	11	98
<i>Centropristis striata</i>	190	0.8	39.6	0.27	0.05	181.27	1.89	94	2.72	37	204
<i>Lutjanus griseus</i>	26	0.1	14.6	0.04	0.01	282.35	0.54	76	9.45	18	186
<i>Mycteroperca microlepis</i>	15	0.1	10.4	0.02	0.01	325.68	0.40	168	13.06	82	235
<i>Haemulon plumierii</i>	10	<0.1	9.4	0.01	<0.01	327.36	0.27	37	3.06	22	55
<i>Sciaenops ocellatus</i>	9	<0.1	5.2	0.01	0.01	563.48	0.61	126	45.32	11	291
<b>Totals</b>	<b>1,155</b>	<b>4.8</b>	<b>.</b>	<b>1.62</b>	<b>0.20</b>	<b>122.36</b>	<b>12.14</b>	<b>.</b>	<b>.</b>	<b>11</b>	<b>304</b>

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.

## 8.5 Big Bend

The Big Bend is an area along the Gulf Coast of Florida that is considered an open estuary system (Figure 8.5). Freshwater inflow into the estuary comes primarily from the Suwannee River with additional input from many fringing marsh tidal creeks (Lindberg et al. 1992). The shoreline consists largely of marsh grasses, oyster bars, and mud flats. Seagrass meadows primarily occur in the southern portions of the estuary (Tuckey and Dehaven 2006).



**Figure 8.5:** Big Bend polyhaline seagrass habitat sampling universe. Microgrids ( $0.1\text{nm}^2$ ) eligible to be sampled are indicated in green. Adjacent areas that met the sampling requirements, but were not necessarily included in the original universe, could be sampled if necessary.

Monthly sampling in the Big Bend was completed from June to November with a total of 26,473 individuals collected across 180 samples (Table 7.2). The most abundant taxa collected in Big Bend polyhaline seagrass sampling were *Lagodon rhomboides* ( $n=12,387$ ) and *Centropristis striata* ( $n=1,975$ ), accounting for 54.3% of the trawl catch (Table 8.9). The taxa most frequently caught in Big Bend polyhaline seagrass sampling were *Lagodon rhomboides* (97.8% occurrence) and *Syngnathus floridae* (92.8% occurrence).

A total of 3,017 animals from 9 species of interest were collected, representing 11.4% of the entire

polyhaline seagrass trawl catch (Table 8.10). *Centropristis striata* (n=1,975) was the most abundant species of interest, accounting for 65.5% of the species of interest collected in polyhaline seagrass trawls (Table 8.10). The species of interest most frequently caught in Big Bend polyhaline seagrass sampling were *Centropristis striata* (89.4% occurrence) and *Haemulon plumierii* (53.9% occurrence).

**Table 8.9:** Catch statistics for 10 dominant taxa collected in 180 6.1-m otter trawl samples during Big Bend polyhaline seagrass sampling, June-November, 2022.

Species	Number			Density Estimate (animals/100m <sup>2</sup> )				Standard Length (mm)			
	No.	%	% Occur	Mean	Stderr	CV	Max	Mean	Stderr	Min	Max
<i>Lagodon rhomboides</i>	12,387	46.8	97.8	7.30	0.57	128.39	52.48	61	0.17	27	182
<i>Centropristis striata</i>	1,975	7.5	89.4	1.65	0.13	107.10	10.12	74	0.68	11	256
<i>Syngnathus floridae</i>	1,852	7.0	92.8	1.63	0.11	91.34	10.39	160	0.61	58	221
<i>Bairdiella chrysoura</i>	1,559	5.9	81.1	1.34	0.13	140.14	14.17	66	0.69	13	163
<i>Orthopristis chrysoptera</i>	1,502	5.7	76.7	1.18	0.11	131.61	10.62	83	0.77	28	257
<i>Diplodus holbrookii</i>	1,203	4.5	72.8	0.95	0.09	135.90	6.91	60	0.51	24	163
<i>Monacanthus ciliatus</i>	1,113	4.2	71.7	0.91	0.10	150.02	7.15	49	0.33	14	78
<i>Haemulon plumierii</i>	775	2.9	53.9	0.62	0.12	267.21	16.19	42	0.43	15	225
<i>Eucinostomus</i> spp.	564	2.1	58.9	0.51	0.08	197.96	8.34	28	0.31	11	39
<i>Argopecten irradians</i>	546	2.1	46.7	0.47	0.09	269.10	9.29	52	0.33	16	69
Subtotals	23,476	88.7	.	.	.	.	.	.	.	11	257
<b>Totals</b>	<b>26,473</b>	<b>100.0</b>	.	<b>23.26</b>	<b>1.19</b>	<b>68.74</b>	<b>98.32</b>	.	.	<b>7</b>	<b>1,049</b>

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.

**Table 8.10:** Catch statistics for species of interest collected in 180 6.1-m otter trawl samples during Big Bend polyhaline seagrass sampling, June-November, 2022.

Species	Number			Density Estimate (animals/100m <sup>2</sup> )				Standard Length (mm)			
	No.	%	% Occur	Mean	Stderr	CV	Max	Mean	Stderr	Min	Max
<i>Centropristis striata</i>	1,975	7.5	89.4	1.67	0.13	107.15	10.12	74	0.68	11	256
<i>Haemulon plumierii</i>	775	2.9	53.9	0.62	0.12	267.21	16.19	42	0.43	15	225
<i>Cynoscion nebulosus</i>	131	0.5	33.3	0.11	0.02	206.06	1.59	63	3.23	18	181
<i>Lutjanus synagris</i>	102	0.4	31.7	0.08	0.01	193.98	1.18	63	2.50	22	114
<i>Lachnolaimus maximus</i>	21	0.1	7.2	0.02	0.01	427.03	0.67	85	7.56	35	213
<i>Lutjanus griseus</i>	8	<0.1	3.9	0.01	<0.01	522.72	0.30	95	17.18	50	206
<i>Mycteroperca microlepis</i>	3	<0.1	1.7	<0.01	<0.01	774.88	0.17	114	26.39	71	162
<i>Archosargus probatocephalus</i>	1	<0.1	0.6	<0.01	<0.01	1,341.64	0.13	365	.	365	365
<i>Sciaenops ocellatus</i>	1	<0.1	0.6	<0.01	<0.01	1,341.64	0.13	422	.	422	422
<b>Totals</b>	<b>3,017</b>	<b>11.4</b>	<b>.</b>	<b>2.52</b>	<b>0.22</b>	<b>115.32</b>	<b>21.99</b>	<b>.</b>	<b>.</b>	<b>11</b>	<b>422</b>

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.

## 8.6 Tampa Bay

Tampa Bay is a drowned river estuary located on the western central coast of Florida (Figure 8.6). The bay is connected to the Gulf of Mexico through two main channels located on either side of Egmont Key and several smaller passes and channels to the north of Mullet and Long Keys and to the south of Anna Maria Island. Freshwater inflow into the bay comes from over 100 tributaries, although more than 80% enters from four main rivers (Alafia, Hillsborough, Manatee, and Little Manatee, Schmidt and Luther 2002). Shoreline vegetation consists largely of mangroves and marsh grasses, and bottom substrates are typically characterized as sand, mud, oysters, or a combination thereof (Flannery 1989). Seagrass meadows are the dominant vegetative cover in Tampa Bay and are widely distributed throughout the bay (Haddad 1989).

Monthly sampling in Tampa Bay was completed from June through November with a total of 34,399 individuals collected across 144 samples (Table 7.2). The most abundant taxa collected in Tampa Bay polyhaline seagrass sampling were *Lagodon rhomboides* (n=21,717) and *Eucinostomus spp.* (n=3,400), accounting for 73% of the trawl catch (Table 8.11). The taxa most frequently caught in Tampa Bay polyhaline seagrass sampling were *Lagodon rhomboides* (93.8% occurrence) and *Eucinostomus gula* (79.9% occurrence).

A total of 1,400 animals from 8 species of interest were collected, representing 4.1% of the entire polyhaline seagrass trawl catch (Table 8.12). *Haemulon plumierii* (n=402) was the most abundant species of interest, accounting for 28.7% of the species of interest collected in polyhaline seagrass trawls (Table 8.12). The species of interest most frequently caught in Tampa Bay polyhaline seagrass sampling were *Lutjanus griseus* (38.9% occurrence) and *Lutjanus synagris* (36.8% occurrence).



**Figure 8.6:** r paste0(fig\_CapPrefix, 'Tampa Bay polyhaline seagrass habitat sampling universe. Microgrids ( $0.1\text{nm}^2$ ) eligible to be sampled are indicated in green. Adjacent areas that met the sampling requirements, but were not necessarily included in the original universe, could be sampled if necessary.')

**Table 8.11:** Catch statistics for 10 dominant taxa collected in 144 6.1-m otter trawl samples during Tampa Bay polyhaline seagrass sampling, June-November, 2022.

Species	Number			Density Estimate (animals/100m <sup>2</sup> )				Standard Length (mm)			
	No.	%	% Occur	Mean	Stderr	CV	Max	Mean	Stderr	Min	Max
<i>Lagodon rhomboides</i>	21,717	63.1	93.8	18.27	1.65	118.51	109.96	78	0.15	29	170
<i>Eucinostomus</i> spp.	3,400	9.9	70.8	3.37	0.68	243.94	52.08	27	0.12	10	39
<i>Eucinostomus gula</i>	1,771	5.1	79.9	1.78	0.21	139.53	18.59	64	0.37	40	115
<i>Orthopristis chrysoptera</i>	1,106	3.2	77.8	1.09	0.16	179.78	12.14	96	0.87	38	203
<i>Bairdiella chrysoura</i>	690	2.0	49.3	0.68	0.12	204.75	8.95	57	0.97	13	146
<i>Farfantepenaeus duorarum</i>	546	1.6	40.3	0.53	0.15	330.37	16.73	12	0.17	3	31
<i>Chilomycterus schoepfii</i>	487	1.4	72.9	0.48	0.05	131.40	3.75	97	1.86	7	274
<i>Lucania parva</i>	437	1.3	24.3	0.44	0.11	302.65	9.58	21	0.18	11	35
<i>Syngnathus floridae</i>	426	1.2	61.8	0.43	0.05	152.11	4.20	167	1.53	83	251
<i>Haemulon plumierii</i>	402	1.2	31.9	0.39	0.12	377.60	14.57	64	1.06	28	186
Subtotals	30,982	90.0	.	.	.	.	.	.	.	3	274
<b>Totals</b>	<b>34,399</b>	<b>100.0</b>	.	<b>34.46</b>	<b>2.23</b>	<b>77.79</b>	<b>130.87</b>	.	.	<b>3</b>	<b>459</b>

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.

**Table 8.12:** Catch statistics for species of interest collected in 144 6.1-m otter trawl samples during Tampa Bay polyhaline seagrass sampling, June-November, 2022.

Species	Number			Density Estimate (animals/100m <sup>2</sup> )				Standard Length (mm)			
	No.	%	% Occur	Mean	Stderr	CV	Max	Mean	Stderr	Min	Max
<i>Haemulon plumierii</i>	402	1.2	31.9	0.39	0.12	377.60	14.57	64	1.06	28	186
<i>Centropristis striata</i>	281	0.8	34.7	0.28	0.06	273.69	5.80	99	0.88	53	160
<i>Cynoscion nebulosus</i>	210	0.6	36.1	0.20	0.05	302.46	5.26	47	2.99	15	315
<i>Lutjanus synagris</i>	195	0.6	36.8	0.19	0.04	247.33	2.55	69	2.09	17	125
<i>Lutjanus griseus</i>	154	0.4	38.9	0.16	0.03	200.49	1.89	136	2.73	15	224
<i>Archosargus probatocephalus</i>	137	0.4	29.2	0.15	0.05	391.05	5.40	105	5.68	22	256
<i>Mycteroperca microlepis</i>	11	<0.1	4.9	0.01	<0.01	522.92	0.54	168	9.75	100	205
<i>Epinephelus morio</i>	10	<0.1	4.2	0.01	<0.01	569.98	0.54	104	7.02	63	126
<b>Totals</b>	<b>1,400</b>	<b>4.1</b>	<b>.</b>	<b>1.40</b>	<b>0.19</b>	<b>161.79</b>	<b>20.24</b>	<b>.</b>	<b>.</b>	<b>15</b>	<b>315</b>

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.

## 8.7 Charlotte Harbor

Charlotte Harbor (Figure 8.7) is a drowned river estuary located on the southwestern coast of Florida (Charlotte Harbor National Estuary program 2000). The bay is connected to the Gulf of Mexico by passes at Boca Grande, San Carlos, and several smaller inlets. Freshwater inflow principally comes from the Peace, Caloosahatchee, and Myakka rivers. Shoreline vegetation consists largely of fringing mangroves, and seagrasses are the dominant bottom vegetation in shallow waters.

Monthly sampling in Charlotte Harbor was completed from June through November with a total of 34,812 individuals collected across 120 samples (Table 7.2). The most abundant taxa collected in Charlotte Harbor polyhaline seagrass sampling were *Lagodon rhomboides* (n=13,721) and *Eucinostomus spp.* (n=7,223), accounting for 60.1% of the trawl catch (Table 8.13). The taxa most frequently caught in Charlotte Harbor polyhaline seagrass sampling were *Lagodon rhomboides* (90.8% occurrence) and *Chilomycterus schoepfii* (89.2% occurrence).

A total of 1,122 animals from 8 species of interest were collected, representing 3.2% of the entire polyhaline seagrass trawl catch (Table 8.14). *Lutjanus synagris* (n=500) was the most abundant species of interest, accounting for 44.6% of the species of interest collected in polyhaline seagrass trawls (Table 8.14). The species of interest most frequently caught in Charlotte Harbor polyhaline seagrass sampling were *Lutjanus synagris* (69.2% occurrence) and *Lutjanus griseus* (45% occurrence).



**Figure 8.7:** Charlotte Harbor polyhaline seagrass habitat sampling universe. Microgrids ( $0.1\text{nm}^2$ ) eligible to be sampled are indicated in green. Adjacent areas that met the sampling requirements, but were not necessarily included in the original universe, could be sampled if necessary.

**Table 8.13:** Catch statistics for 10 dominant taxa collected in 120 6.1-m otter trawl samples during Charlotte Harbor polyhaline seagrass sampling, 2022.

Species	Number			Density Estimate (animals/100m <sup>2</sup> )				Standard Length (mm)			
	No.	%	% Occur	Mean	Stderr	CV	Max	Mean	Stderr	Min	Max
<i>Lagodon rhomboides</i>	13,721	39.4	90.8	15.60	1.68	117.77	85.94	82	0.22	34	184
<i>Eucinostomus</i> spp.	7,223	20.7	84.2	8.15	3.13	420.30	348.49	28	0.08	11	39
<i>Bairdiella chrysoura</i>	2,494	7.2	60.8	2.83	0.52	202.01	36.83	69	0.50	18	152
<i>Orthopristis chrysoptera</i>	2,336	6.7	70.0	2.72	0.41	165.87	25.18	92	0.48	39	201
<i>Eucinostomus gula</i>	2,129	6.1	87.5	2.41	0.31	139.98	21.05	57	0.27	40	112
<i>Clupeidae</i> spp.	1,324	3.8	0.8	1.49	1.49	1,095.45	178.63	23	0.05	18	27
<i>Chilomycterus schoepfii</i>	596	1.7	89.2	0.68	0.06	104.51	4.86	101	1.65	14	226
<i>Lutjanus synagris</i>	500	1.4	69.2	0.56	0.10	186.17	9.71	60	1.14	15	148
<i>Syngnathus floridae</i>	451	1.3	55.8	0.52	0.13	275.08	13.49	172	1.71	81	283
<i>Anchoa mitchilli</i>	440	1.3	4.2	0.49	0.28	609.05	24.42	33	0.52	19	56
Subtotals	31,214	89.6	.	.	.	.	.	.	.	11	283
<b>Totals</b>	<b>34,812</b>	<b>100.0</b>	.	<b>39.53</b>	<b>4.22</b>	<b>116.89</b>	<b>377.23</b>	.	.	<b>3</b>	<b>660</b>

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.

**Table 8.14:** Catch statistics for species of interest collected in 120 6.1-m otter trawl samples during Charlotte Harbor polyhaline sea-grass sampling, 2022.

Species	Number			Density Estimate (animals/100m <sup>2</sup> )				Standard Length (mm)			
	No.	%	% Occur	Mean	Stderr	CV	Max	Mean	Stderr	Min	Max
<i>Lutjanus synagris</i>	500	1.4	69.2	0.56	0.10	186.17	9.71	60	1.14	15	148
<i>Lutjanus griseus</i>	209	0.6	45.0	0.24	0.05	219.00	4.59	131	3.46	23	248
<i>Cynoscion nebulosus</i>	185	0.5	39.2	0.21	0.06	320.45	6.88	47	2.04	18	268
<i>Archosargus probatocephalus</i>	123	0.4	42.5	0.14	0.03	219.38	2.29	70	4.18	23	292
<i>Centropristis striata</i>	55	0.2	19.2	0.06	0.02	334.55	1.89	107	5.00	57	236
<i>Haemulon plumierii</i>	41	0.1	16.7	0.05	0.01	264.24	0.67	66	4.66	24	148
<i>Mycteroperca microlepis</i>	5	<0.1	4.2	0.01	<0.01	481.59	0.13	224	28.06	155	290
<i>Epinephelus morio</i>	4	<0.1	2.5	<0.01	<0.01	666.11	0.27	105	6.92	90	123
<b>Totals</b>	<b>1,122</b>	<b>3.2</b>	<b>.</b>	<b>1.27</b>	<b>0.17</b>	<b>150.69</b>	<b>17.81</b>	<b>.</b>	<b>.</b>	<b>15</b>	<b>292</b>

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.

## 9 Appendix

**Table 9.1:** Summary of all species collected in 6.1-m otter trawl polyhaline seagrass sampling in all estuaries in June-November 2022.

Taxa	6.1-m otter trawl							Total
	SR	CB	SA	AP	BB	TB	CH	
	E=48	E=54	E=72	E=96	E=180	E=144	E=120	E=714
<i>Acanthostracion quadricornis</i>	24	13	24	32	40	183	145	461
<i>Achirus lineatus</i>	39	20	27	6	8	28	10	138
<i>Aluterus schoepfii</i>	3	1	18	13	29	9	8	81
<i>Anarchopterus criniger</i>	3	.	.	3	84	37	167	294
<i>Anchoa cubana</i>	.	.	.	1	.	.	.	1
<i>Anchoa hepsetus</i>	4	32	.	141	1	.	7	185
<i>Anchoa lyolepis</i>	.	1	.	3	.	.	.	4
<i>Anchoa mitchilli</i>	10	269	.	1,367	1	23	440	2,110
<i>Anchoa</i> spp.	3	4	.	6	.	.	.	13
<i>Ancylosetta quadrocellata</i>	.	.	.	2	2	2	2	8
<b><i>Archosargus probatocephalus</i></b>	<b>2</b>	.	.	.	<b>1</b>	<b>137</b>	<b>123</b>	<b>263</b>
<i>Argopecten gibbus</i>	.	.	.	.	.	.	3	3
<i>Argopecten irradians</i>	.	.	.	32	546	84	63	725
<i>Ariopsis felis</i>	5	5	5	52	9	31	16	123
<i>Astroscopus y-graecum</i>	.	.	1	.	.	.	1	2
<i>Bairdiella chrysoura</i>	2,690	2,085	457	3,964	1,559	690	2,494	13,939
<i>Bathygobius soporator</i>	1	.	.	.	.	.	.	1
<i>Bothus robinsi</i>	.	.	1	.	.	.	.	1
<i>Calamus arctifrons</i>	.	.	.	6	76	4	.	86
<i>Calamus penna</i>	.	.	.	.	.	11	8	19
<i>Calamus proridens</i>	.	.	.	.	.	2	9	11

Taxa	6.1-m otter trawl							Total
	SR	CB	SA	AP	BB	TB	CH	
	E=48	E=54	E=72	E=96	E=180	E=144	E=120	E=714
<i>Calamus</i> spp.	.	.	.	.	1	1	1	3
<i>Callinectes ornatus</i>	.	.	.	2	.	3	10	15
<i>Callinectes sapidus</i>	449	419	225	441	45	53	66	1,698
<i>Callinectes similis</i>	.	.	1	4	.	.	.	5
<i>Caranx crysos</i>	.	.	.	.	.	1	.	1
<b><i>Centropristis striata</i></b>	.	.	<b>2</b>	<b>190</b>	<b>1,975</b>	<b>281</b>	<b>55</b>	<b>2,503</b>
<i>Chaetodipterus faber</i>	7	1	.	7	1	19	48	83
<i>Chasmodes saburrae</i>	145	61	8	36	11	21	45	327
<i>Chilomycterus schoepfii</i>	103	89	120	182	146	487	596	1,723
<i>Chloroscombrus chrysurus</i>	.	.	.	4	.	.	1	5
<i>Citharichthys macrops</i>	.	.	2	9	5	4	.	20
<i>Citharichthys spilopterus</i>	.	3	.	.	.	.	.	3
<i>Clupeidae</i> spp.	.	.	.	.	.	.	1,324	1,324
<i>Cosmocampus albirostris</i>	.	.	2	.	.	.	.	2
<i>Ctenogobius boleosoma</i>	1	7	4	13	.	.	.	25
<i>Cynoscion arenarius</i>	.	.	.	1	.	.	1	2
<b><i>Cynoscion nebulosus</i></b>	<b>520</b>	<b>856</b>	<b>142</b>	<b>548</b>	<b>131</b>	<b>210</b>	<b>185</b>	<b>2,592</b>
<i>Cynoscion</i> sp.	.	.	.	1	.	.	.	1
<i>Dasyatis americana</i>	.	.	.	.	.	.	2	2
<i>Dasyatis sabina</i>	7	9	9	41	1	7	2	76
<i>Dasyatis say</i>	.	1	5	9	.	4	1	20
<i>Diodon holocanthus</i>	.	.	1	.	.	3	.	4
<i>Diplectrum bivittatum</i>	.	.	.	2	.	.	.	2
<i>Diplectrum formosum</i>	.	.	2	11	11	8	12	44
<i>Diplectrum</i> spp.	.	.	.	3	.	.	.	3
<i>Diplodus holbrookii</i>	.	.	.	10	1,203	14	.	1,227
<i>Echeneis neucratoides</i>	.	.	.	1	.	.	.	1
<i>Elacatinus macrodon</i>	.	.	1	.	1	1	.	3
<i>Elops saurus</i>	.	.	.	.	.	1	.	1

Taxa	6.1-m otter trawl							Total
	SR	CB	SA	AP	BB	TB	CH	
	E=48	E=54	E=72	E=96	E=180	E=144	E=120	E=714
<i>Epinephelus itajara</i>	.	.	.	.	.	.	2	2
<b><i>Epinephelus morio</i></b>	.	.	.	.	.	<b>10</b>	<b>4</b>	<b>14</b>
<i>Etropus crossotus</i>	.	.	.	38	4	.	.	42
<i>Eucinostomus argenteus</i>	6	19	.	10	.	.	.	35
<i>Eucinostomus gula</i>	18	159	466	234	378	1,771	2,129	5,155
<i>Eucinostomus harengulus</i>	4	133	14	10	11	13	12	197
<i>Eucinostomus</i> spp.	316	2,715	2,589	1,137	564	3,400	7,223	17,944
<i>Evermannichthys spongicola</i>	.	.	.	.	1	.	.	1
<i>Farfantepenaeus aztecus</i>	11	7	1	1	.	.	.	20
<i>Farfantepenaeus duorarum</i>	99	86	27	42	91	546	371	1,262
<i>Farfantepenaeus</i> spp.	736	895	849	827	170	.	.	3,477
<i>Gobiesox strumosus</i>	.	.	.	.	1	.	.	1
<i>Gobiidae</i> sp.	.	1	.	.	.	.	.	1
<i>Gobionellus oceanicus</i>	.	1	.	.	.	.	.	1
<i>Gobiosoma longipala</i>	.	.	.	.	.	1	1	2
<i>Gobiosoma robustum</i>	76	34	26	25	15	123	163	462
<i>Gobiosoma</i> spp.	22	45	14	9	13	79	116	298
<i>Gymnura micrura</i>	1	1	.	.	.	.	.	2
<i>Haemulon aurolineatum</i>	.	.	.	.	1	5	1	7
<b><i>Haemulon plumierii</i></b>	.	<b>1</b>	.	<b>10</b>	<b>775</b>	<b>402</b>	<b>41</b>	<b>1,229</b>
<i>Halichoeres bivittatus</i>	.	.	7	40	14	.	.	61
<i>Harengula jaguana</i>	30	5	15	19	5	22	17	113
<i>Hippocampus erectus</i>	1	2	6	1	3	40	29	82
<i>Hippocampus</i> sp.	1	.	.	.	.	.	.	1
<i>Hippocampus zosterae</i>	1	.	.	2	1	9	12	25
<i>Hypoleurochilus caudovittatus</i>	.	.	.	1	.	.	.	1
<i>Hyporhamphus</i> sp.	.	.	.	.	1	.	.	1
<i>Hypsoblennius hentz</i>	9	1	.	25	2	4	2	43
<i>Labridae</i> spp. (parrotfishes)	.	1	3	.	.	.	.	4

Taxa	6.1-m otter trawl							Total
	SR	CB	SA	AP	BB	TB	CH	
	E=48	E=54	E=72	E=96	E=180	E=144	E=120	E=714
<i>Lachnolaimus maximus</i>	.	.	.	.	21	.	.	21
<i>Lactophrys trigonus</i>	2	.	3	10	.	2	1	18
<i>Lagodon rhomboides</i>	13,259	4,715	14,203	5,453	12,387	21,717	13,721	85,455
<i>Leiostomus xanthurus</i>	31	213	57	53	7	3	.	364
<i>Lepisosteus osseus</i>	.	.	.	.	1	.	.	1
<i>Limulus polyphemus</i>	.	.	.	1	.	1	.	2
<i>Litopenaeus setiferus</i>	.	6	.	6	.	.	.	12
<i>Lucania parva</i>	38	39	40	2	5	437	197	758
<i>Lutjanus analis</i>	.	1	1	.	1	2	.	5
<b><i>Lutjanus griseus</i></b>	<b>31</b>	<b>467</b>	<b>307</b>	<b>26</b>	<b>8</b>	<b>154</b>	<b>209</b>	<b>1,202</b>
<i>Lutjanus</i> sp.	.	.	.	.	.	.	1	1
<b><i>Lutjanus synagris</i></b>	<b>5</b>	<b>16</b>	<b>30</b>	<b>357</b>	<b>102</b>	<b>195</b>	<b>500</b>	<b>1,205</b>
<i>Menidia</i> spp.	.	2	1	.	.	.	.	3
<i>Menippe</i> spp.	.	.	.	21	6	31	53	111
<i>Menticirrhus americanus</i>	.	.	.	4	.	4	4	12
<i>Menticirrhus saxatilis</i>	.	.	.	2	1	.	.	3
<i>Microgobius gulosus</i>	39	110	32	57	1	38	27	304
<i>Microgobius</i> sp.	.	.	1	.	.	.	.	1
<i>Microgobius thalassinus</i>	.	.	.	3	.	.	3	6
<i>Micropogonias undulatus</i>	2	6	1	2	.	.	.	11
<i>Monacanthus ciliatus</i>	.	.	1	152	1,113	47	31	1,344
<i>Mycteroperca bonaci</i>	.	.	.	.	.	1	4	5
<b><i>Mycteroperca microlepis</i></b>	<b>1</b>	<b>1</b>	<b>5</b>	<b>15</b>	<b>3</b>	<b>11</b>	<b>5</b>	<b>41</b>
<i>Myrophis punctatus</i>	1	.	.	.	.	.	.	1
<i>Nicholsina usta</i>	.	41	67	12	9	39	45	213
<i>Ocyurus chrysurus</i>	.	.	.	.	.	1	2	3
<i>Ogcocephalus cubifrons</i>	.	.	.	2	.	.	.	2
<i>Ophidion holbrookii</i>	.	.	.	.	4	1	.	5
<i>Opisthonema oglinum</i>	2	.	1	1	.	1	4	9

Taxa	6.1-m otter trawl							Total
	SR	CB	SA	AP	BB	TB	CH	
	E=48	E=54	E=72	E=96	E=180	E=144	E=120	E=714
<i>Opistognathus robinsi</i>	.	.	.	.	.	.	2	2
<i>Opsanus beta</i>	102	17	91	143	416	315	143	1,227
<i>Opsanus beta (red morph)</i>	.	.	.	.	3	.	.	3
<i>Orthopristis chrysoptera</i>	943	291	2,291	5,128	1,502	1,106	2,336	13,597
<i>Paraclinus fasciatus</i>	.	.	.	.	122	.	.	122
<i>Paraclinus marmoratus</i>	.	.	.	.	11	86	96	193
<i>Paralichthys albigutta</i>	24	131	257	191	131	79	64	877
<i>Paralichthys lethostigma</i>	.	.	.	1	1	.	.	2
<i>Penaeidae spp.</i>	.	2	2	.	.	.	.	4
<i>Pogonias cromis</i>	.	.	.	1	.	.	.	1
<i>Portunidae sp.</i>	.	1	.	.	.	.	.	1
<i>Portunus spp.</i>	.	2	11	77	6	67	42	205
<i>Prionotus scitulus</i>	2	3	4	28	22	61	20	140
<i>Prionotus tribulus</i>	.	.	.	8	4	4	3	19
<i>Raja texana</i>	.	.	.	.	.	1	.	1
<i>Rimapenaeus spp.</i>	.	3	1	2	.	.	4	10
<i>Sarotherodon melanotheron</i>	.	.	.	.	.	1	.	1
<i>Sciaenidae sp.</i>	1	.	.	.	.	.	.	1
<b><i>Sciaenops ocellatus</i></b>	<b>1</b>	<b>28</b>	.	<b>9</b>	<b>1</b>	.	.	<b>39</b>
<i>Scorpaena brasiliensis</i>	.	1	11	1	.	11	45	69
<i>Scorpaena grandicornis</i>	.	1	.	.	.	.	.	1
<i>Serraniculus pumilio</i>	.	.	1	30	.	1	15	47
<i>Serranus subligarius</i>	.	.	.	64	1	1	1	67
<i>Sicyonia laevigata</i>	.	1	.	4	.	3	.	8
<i>Sicyonia spp.</i>	.	.	1	1	.	.	.	2
<i>Sparisoma chrysopterygum</i>	.	.	2	.	.	.	.	2
<i>Sparisoma radians</i>	.	.	8	.	.	.	.	8
<i>Sphoeroides nephelus</i>	14	14	18	133	114	152	120	565
<i>Sphoeroides parvus</i>	2	4	.	.	.	.	.	6

Taxa	6.1-m otter trawl							Total
	SR	CB	SA	AP	BB	TB	CH	
	E=48	E=54	E=72	E=96	E=180	E=144	E=120	E=714
<i>Sphoeroides spengleri</i>	.	1	2	4	3	89	55	154
<i>Sphyraena barracuda</i>	.	.	.	.	.	.	1	1
<i>Sphyraena borealis</i>	.	8	6	4	1	1	1	21
<i>Stephanolepis hispidus</i>	17	54	147	628	549	167	265	1,827
<i>Symphurus plagiusa</i>	10	1	3	6	2	3	12	37
<i>Syngnathus floridae</i>	268	14	132	864	1,852	426	451	4,007
<i>Syngnathus louisianae</i>	17	21	17	80	5	60	41	241
<i>Syngnathus scovelli</i>	589	299	220	843	81	222	280	2,534
<i>Syngnathus spp.</i>	1	.	.	1	.	.	.	2
<i>Synodus foetens</i>	27	27	26	73	34	71	39	297
<i>Trinectes maculatus</i>	.	98	.	26	6	3	1	134
<b>Total</b>	<b>20,776</b>	<b>14,621</b>	<b>23,075</b>	<b>24,103</b>	<b>26,473</b>	<b>34,399</b>	<b>34,812</b>	<b>178,259</b>

Effort, or total number of hauls, is labeled 'E'. Taxa are arranged alphabetically. Species of interest are highlighted in bold.

**Part III**

**Fish Health Monitoring**

## Introduction

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

The Fish and Wildlife Research Institute's (FWRI) FIM program began to document visually observed GEAs (including parasites) on fish and selected invertebrates in Florida's estuaries in April 1998. The main objectives of the fish health monitoring component of the FIM program are to categorize prominent types of GEAs observed, identify which species are most susceptible, and document normal background levels of fish health problems<sup>1</sup>. This report summarizes the occurrence of GEAs observed on fish  $\geq 75$  mm standard length (SL) and selected invertebrates collected during routine stratified-random sampling (SRS) in select Florida estuaries in 2022 (Figure 1.1).

## Methods

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

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<sup>1</sup>Prior to 2022, FIM's Annual Report incorrectly documented the total number of individuals collected for each species (Table 9.4), resulting in overestimates of the proportion of unhealthy specimens in any given year. This has been rectified in current and future Annual Reports.

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

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## Results and Discussion

Of the 219,533 fish ( $\geq 75$  mm SL) and selected invertebrates that were collected statewide during FIM SRS in 2022, 615 (37 taxa, 0.3%) were observed to have a GEA (Table 9.3). The northern Indian River Lagoon had the highest incidence of specimens with GEAs (0.3%). Santa Rosa Sound (0%) had the lowest incidence of specimens with observed GEAs. Statewide, 9 categories of GEAs were observed in 2022. The most often identified GEA was parasitic infection (P;  $n=524$ ; Table 9.4) accounting for 85.2% of all GEAs observed from all estuaries. The next most common GEA observed was fin rot (F;  $n=25$ ). Of the top 10 taxa observed to have a GEA, 5 were of recreational or commercial importance (i.e., Selected Taxa). *Ariopsis felis* ( $n=438$ ) was the most affected taxon. The majority of the GEAs for that species were parasitic infection (P;  $n=424$ ).

**Table 9.3:** Incidence of external abnormalities in fish and selected invertebrates collected during stratified-random sampling in each estuary during 2022.

<b>Estuary</b>	<b>Number Collected</b>	<b>Number Affected</b>	<b>Percent Affected</b>
Santa Rosa Sound	3,935	0	0
Choctawhatchee Bay	10,200	1	<0.1
Apalachicola Bay	20,593	19	<0.1
Cedar Key	18,774	12	<0.1
Tampa Bay	44,007	26	<0.1
Sarasota Bay	6,161	3	<0.1
Charlotte Harbor	43,590	5	<0.1
Northeast Florida	12,052	12	<0.1
Northern Indian River Lagoon	42,958	535	1.2
Southern Indian River Lagoon	17,263	2	<0.1
<b>Totals</b>	<b>219,533</b>	<b>615</b>	<b>0.3</b>

Data are based only on fish  $\geq 75$  mm SL and include total number collected, number affected by gross external abnormalities, and percentage affected by gross external abnormalities.

**Table 9.4:** Top 10 taxa having gross external abnormalities, sorted by descending Percent Affected, collected from all estuaries sampled by the Fisheries-Independent Monitoring program during stratified-random sampling, 2022.

Taxa	Number Collected (≥75 mm SL)	Number Affected (≥75 mm SL)	Gross External Abnormality (GEA) code <sup>1</sup>									Percent Affected
			P	B	F	U	E	S	T	O	D	
<i>Lepisosteus osseus</i>	102	7	.	.	.	.	7	.	.	.	.	6.9
<i>Ariopsis felis</i>	11,877	438	9	2	.	2	424	1	.	.	.	3.7
<i>Ictalurus punctatus</i>	302	6	.	4	.	1	1	.	.	.	.	2
<b><i>Mugil curema</i></b>	<b>6,750</b>	<b>79</b>	.	<b>7</b>	<b>1</b>	<b>1</b>	<b>69</b>	.	.	.	<b>1</b>	<b>1.2</b>
<i>Brevoortia</i> spp.	1,710	9	.	.	.	.	9	.	.	.	.	0.5
<b><i>Sciaenops ocellatus</i></b>	<b>1,722</b>	<b>6</b>	.	<b>1</b>	<b>2</b>	.	.	.	.	<b>3</b>	.	<b>0.3</b>
<b><i>Centropomus undecimalis</i></b>	<b>2,833</b>	<b>8</b>	.	.	.	<b>3</b>	<b>1</b>	.	.	<b>4</b>	.	<b>0.3</b>
<b><i>Archosargus probatocephalus</i></b>	<b>1,972</b>	<b>4</b>	.	.	<b>2</b>	<b>2</b>	.	.	.	.	.	<b>0.2</b>
<b><i>Mugil cephalus</i></b>	<b>7,674</b>	<b>14</b>	<b>1</b>	.	.	<b>6</b>	<b>5</b>	<b>1</b>	.	<b>1</b>	.	<b>0.2</b>
<i>Lagodon rhomboides</i>	67,766	4	.	2	.	.	1	.	.	1	.	<0.1
<b>Subtotals (top 10 taxa with GEAs)</b>	<b>102,708</b>	<b>575</b>	<b>10</b>	<b>16</b>	<b>5</b>	<b>15</b>	<b>517</b>	<b>2</b>	.	<b>9</b>	<b>1</b>	<b>0.6</b>
<b>Totals (all taxa)</b>	<b>219,533</b>	<b>615</b>	<b>13</b>	<b>25</b>	<b>16</b>	<b>18</b>	<b>524</b>	<b>3</b>	<b>3</b>	<b>11</b>	<b>2</b>	<b>0.3</b>

<sup>1</sup>P = parasitic infestation; B = red or bloody areas; F = fin rot; U = ulcer or lesion; E = erosion or scale loss; S = skeletal abnormalities; T = tumor/cysts; O = other; D = dead.;

Number collected = total number of each species collected (≥75 mm SL). Number affected = total number of individuals (≥75 mm SL) observed with abnormalities. The number of fish affected is further broken down by specific GEA Code. Percent affected = (number affected / number collected) \* 100. Taxa in bold font are categorized as Selected Taxa by the FIM program.

## Incidence by Bay

For each bay, number collected refers to the total number of each species collected ( $\geq 75$  mm SL). Number affected refers to the total number of individuals ( $\geq 75$  mm SL) observed with abnormalities. The number of fish affected is further broken down by specific GEA Code. Percent affected is calculated as (Number affected / Number collected) \* 100. Taxa in bold font are categorized as Selected Taxa by the FIM program.

Santa Rosa Sound: Apalachicola Bay staff examined 3,935 specimens for GEAs. No GEAs were reported in this estuary.

Choctawhatchee Bay: Apalachicola Bay staff examined 10,200 specimens for GEAs. There was 1 individual ( $<0.1\%$ ) from 1 selected taxon that had a GEA (Table 9.5). Ulcer or lesion (U) was the only GEA observed.

Apalachicola Bay: Apalachicola Bay staff examined 20,593 specimens for GEAs. There were 19 individuals ( $<0.1\%$ ) from 11 taxa, 4 of which were selected taxa, that had a GEA (Table 9.6). Fin rot (F; n=9) was the most common GEA observed and accounted for 47.4% of the affected specimens within Apalachicola Bay.

Cedar Key: Cedar Key staff examined 18,774 specimens for GEAs. There were 12 individuals ( $<0.1\%$ ) from 7 taxa, 2 of which were selected taxa, that had a GEA (Table 9.7). Skeletal abnormalities (S; n=7) was the most common GEA observed and accounted for 58.3% of the affected specimens within Cedar Key.

Tampa Bay: Tampa Bay staff examined 44,007 specimens for GEAs. There were 26 individuals ( $<0.1\%$ ) from 11 taxa, 4 of which were selected taxa, that had a GEA (Table 9.8). Parasitic infection (P; n=14) was the most common GEA observed and accounted for 53.8% of the affected specimens within Tampa Bay.

Sarasota Bay: Tampa Bay staff examined 6,161 specimens for GEAs. There were 3 individuals ( $<0.1\%$ ) from 2 taxa, 1 of which were selected taxa, that had a GEA (Table 9.9). Ulcer or lesion (U; n=2) was the most common GEA observed and accounted for 66.7% of the affected specimens within Sarasota Bay.

Charlotte Harbor: Charlotte Harbor staff examined 43,590 specimens for GEAs. There were 5 individuals ( $<0.1\%$ ) from 4 taxa, 3 of which were selected taxa, that had a GEA (Table 9.10). Other abnormality (O; n=3) was the most common GEA observed and accounted for 60% of the affected specimens within Charlotte Harbor.

Northeast Florida: Northeast Florida staff examined 12,052 specimens for GEAs. There were 12 individuals ( $<0.1\%$ ) from 6 taxa, 4 of which were selected taxa, that had a GEA (Table 9.11). Ulcer or lesion (U; n=8) was the most common GEA observed and accounted for 66.7% of the affected specimens within Northeast Florida.

Northern Indian River Lagoon: Northern Indian River Lagoon staff examined 42,958 specimens for GEAs. There were 535 individuals (1.2%) from 16 taxa, 4 of which were selected taxa, that had a GEA (Table 9.12). Parasitic infection (P; n=502) was the most common GEA observed and accounted for 93.8% of the affected specimens within the northern Indian River Lagoon.

Southern Indian River Lagoon: Southern Indian River Lagoon staff examined 17,263 specimens for GEAs. There were 2 individuals ( $<0.1\%$ ) from 2 taxa, 1 of which were selected taxa, that had a

GEA (Table 9.13). Fin rot (F; n=1) was the most common GEA observed and accounted for 50% of the affected specimens within the southern Indian River Lagoon.

**Table 9.5:** List of taxa, sorted by Percent Affected in descending order, having gross external abnormalities collected in Choctawhatchee Bay during stratified-random sampling, 2022.

Scientific Name	Number Collected (≥75 mm SL)	Number Affected (≥75 mm SL)	Gross External Abnormality (GEA) code <sup>1</sup>								Percent Affected	
			P	B	F	U	E	S	T	O		
<i>Leiostomus xanthurus</i>	2,581	1	.	.	.	1	.	.	.	.	.	<0.1
<b>Totals (all taxa)</b>	<b>10,200</b>	<b>1</b>	.	.	.	<b>1</b>	.	.	.	.	.	<b>&lt;0.1</b>

<sup>1</sup>P = parasitic infestation; B = red or bloody areas; F = fin rot; U = ulcer or lesion; E = erosion or scale loss; S = skeletal abnormalities; T = tumor/cysts; O = other; D = dead.;

**Table 9.6:** List of taxa, sorted by Percent Affected in descending order, having gross external abnormalities collected in Apalachicola Bay during stratified-random sampling, 2022.

Scientific Name	Number Collected (≥75 mm SL)	Number Affected (≥75 mm SL)	Gross External Abnormality (GEA) code <sup>1</sup>								Percent Affected	
			P	B	F	U	E	S	T	O		
<i>Negaprion brevirostris</i>	2	1	.	.	.	.	.	.	1	.	.	50
<i>Ameiurus catus</i>	5	1	.	.	1	.	.	.	.	.	.	20
<i>Ictalurus punctatus</i>	55	5	.	.	4	1	.	.	.	.	.	9.1
<i>Dorosoma cepedianum</i>	41	2	.	.	.	.	.	1	.	1	.	4.9
<i>Chloroscombrus chrysurus</i>	248	1	.	.	1	.	.	.	.	.	.	0.4
<b><i>Sciaenops ocellatus</i></b>	<b>488</b>	<b>1</b>	.	.	.	.	.	.	.	<b>1</b>	.	<b>0.2</b>
<b><i>Micropogonias undulatus</i></b>	<b>1,924</b>	<b>3</b>	.	.	<b>2</b>	.	<b>1</b>	.	.	.	.	<b>0.2</b>
<i>Dasyatis sabina</i>	749	1	1	.	.	.	.	.	.	.	.	0.1
<b><i>Mugil cephalus</i></b>	<b>1,544</b>	<b>2</b>	<b>1</b>	.	.	<b>1</b>	.	.	.	.	.	<b>0.1</b>
<b><i>Leiostomus xanthurus</i></b>	<b>1,869</b>	<b>1</b>	.	.	<b>1</b>	.	.	.	.	.	.	<b>&lt;0.1</b>
<i>Lagodon rhomboides</i>	6,341	1	1	.	.	.	.	.	.	.	.	<0.1
<b>Totals (all taxa)</b>	<b>20,593</b>	<b>19</b>	<b>3</b>	.	<b>9</b>	<b>2</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>2</b>	.	<b>&lt;0.1</b>

<sup>1</sup>P = parasitic infestation; B = red or bloody areas; F = fin rot; U = ulcer or lesion; E = erosion or scale loss; S = skeletal abnormalities; T = tumor/cysts; O = other; D = dead.;

**Table 9.7:** List of taxa, sorted by Percent Affected in descending order, having gross external abnormalities collected in Cedar Key during stratified-random sampling, 2022.

Scientific Name	Number Collected (≥75 mm SL)	Number Affected (≥75 mm SL)	Gross External Abnormality (GEA) code <sup>1</sup>								Percent Affected	
			P	B	F	U	E	S	T	O		D
<i>Gymnura micrura</i>	38	1	1	.	.	.	.	.	.	.	.	2.6
<b><i>Archosargus probatocephalus</i></b>	<b>69</b>	<b>1</b>	.	.	.	.	.	.	<b>1</b>	.	.	<b>1.4</b>
<b><i>Sciaenops ocellatus</i></b>	<b>278</b>	<b>4</b>	.	.	.	.	.	.	<b>2</b>	.	<b>2</b>	<b>1.4</b>
<i>Opisthonema oglinum</i>	89	1	1	.	.	.	.	.	.	.	.	1.1
<i>Ogcocephalus cubifrons</i>	930	3	.	.	.	.	.	.	3	.	.	0.3
<i>Bairdiella chrysoura</i>	1,911	1	.	.	.	.	.	.	1	.	.	<0.1
<i>Dasyatis sabina</i>	2,175	1	1	.	.	.	.	.	.	.	.	<0.1
<b>Totals (all taxa)</b>	<b>18,774</b>	<b>12</b>	<b>3</b>	.	.	.	.	.	<b>7</b>	.	<b>2</b>	<b>&lt;0.1</b>

<sup>1</sup> P = parasitic infestation; B = red or bloody areas; F = fin rot; U = ulcer or lesion; E = erosion or scale loss; S = skeletal abnormalities; T = tumor/cysts; O = other; D = dead.;

**Table 9.8:** List of taxa, sorted by Percent Affected in descending order, having gross external abnormalities collected in Tampa Bay during stratified-random sampling, 2022.

Scientific Name	Number Collected (≥75 mm SL)	Number Affected (≥75 mm SL)	Gross External Abnormality (GEA) code <sup>1</sup>								Percent Affected	
			P	B	F	U	E	S	T	O		D
<i>Lepisosteus osseus</i>	16	7	7	.	.	.	.	.	.	.	.	43.8
<i>Brevoortia</i> spp.	21	6	6	.	.	.	.	.	.	.	.	28.6
<i>Sphyrna tiburo</i>	63	1	.	.	.	1	.	.	.	.	.	1.6
<b><i>Centropomus undecimalis</i></b>	<b>535</b>	<b>5</b>	<b>1</b>	.	.	<b>2</b>	.	.	.	<b>2</b>	.	<b>0.9</b>
<i>Rhinoptera bonasus</i>	131	1	.	.	.	.	.	<b>1</b>	.	.	.	0.8
<b><i>Sciaenops ocellatus</i></b>	<b>201</b>	<b>1</b>	.	.	<b>1</b>	.	.	.	.	.	.	<b>0.5</b>
<i>Prionotus scitulus</i>	275	1	.	.	.	.	.	.	.	.	1	0.4
<b><i>Cynoscion nebulosus</i></b>	<b>283</b>	<b>1</b>	.	.	.	.	.	<b>1</b>	.	.	.	<b>0.4</b>
<b><i>Archosargus probatocephalus</i></b>	<b>390</b>	<b>1</b>	.	.	.	.	.	<b>1</b>	.	.	.	<b>0.3</b>
<i>Strongylura notata</i>	412	1	.	.	.	.	.	<b>1</b>	.	.	.	0.2
<i>Lagodon rhomboides</i>	18,887	1	.	.	.	.	.	.	.	<b>1</b>	.	<0.1
<b>Totals (all taxa)</b>	<b>44,007</b>	<b>26</b>	<b>14</b>	.	<b>1</b>	<b>3</b>	.	<b>4</b>	.	<b>3</b>	<b>1</b>	<b>&lt;0.1</b>

<sup>1</sup>P = parasitic infestation; B = red or bloody areas; F = fin rot; U = ulcer or lesion; E = erosion or scale loss; S = skeletal abnormalities; T = tumor/cysts; O = other; D = dead.;

**Table 9.9:** List of taxa, sorted by Percent Affected in descending order, having gross external abnormalities collected in Sarasota Bay during stratified-random sampling, 2022.

Scientific Name	Number Collected (≥75 mm SL)	Number Affected (≥75 mm SL)	Gross External Abnormality (GEA) code <sup>1</sup>								Percent Affected	
			P	B	F	U	E	S	T	O		D
<i>Archosargus probatocephalus</i>	180	1	.	.	.	1	.	.	.	.	.	0.6
<i>Ariopsis felis</i>	365	2	.	.	.	1	.	.	1	.	.	0.5
<b>Totals (all taxa)</b>	<b>6,161</b>	<b>3</b>	.	.	.	<b>2</b>	.	.	<b>1</b>	.	.	<b>&lt;0.1</b>

<sup>1</sup> P = parasitic infestation; B = red or bloody areas; F = fin rot; U = ulcer or lesion; E = erosion or scale loss; S = skeletal abnormalities; T = tumor/cysts; O = other; D = dead.;

**Table 9.10:** List of taxa, sorted by Percent Affected in descending order, having gross external abnormalities collected in Charlotte Harbor during stratified-random sampling, 2022.

Scientific Name	Number Collected (≥75 mm SL)	Number Affected (≥75 mm SL)	Gross External Abnormality (GEA) code <sup>1</sup>								Percent Affected	
			P	B	F	U	E	S	T	O		
<i>Cynoscion nebulosus</i>	121	1	.	.	.	.	.	.	.	1	.	0.8
<i>Callinectes sapidus</i>	173	1	.	.	.	.	.	.	.	.	1	0.6
<i>Sphoeroides nephelus</i>	437	1	.	.	.	.	.	.	.	.	1	0.2
<i>Centropomus undecimalis</i>	1,363	2	.	.	.	.	.	.	.	2	.	0.1
<b>Totals (all taxa)</b>	<b>43,590</b>	<b>5</b>	.	.	.	.	.	.	.	<b>3</b>	<b>2</b>	<b>&lt;0.1</b>

<sup>1</sup>P = parasitic infestation; B = red or bloody areas; F = fin rot; U = ulcer or lesion; E = erosion or scale loss; S = skeletal abnormalities; T = tumor/cysts; O = other; D = dead.;

**Table 9.11:** List of taxa, sorted by Percent Affected in descending order, having gross external abnormalities collected in northeast Florida during stratified-random sampling, 2022.

Scientific Name	Number Collected (≥75 mm SL)	Number Affected (≥75 mm SL)	Gross External Abnormality (GEA) code <sup>1</sup>								Percent Affected	
			P	B	F	U	E	S	T	O		D
<i>Archosargus probatocephalus</i>	111	1	.	.	.	1	.	.	.	.	.	0.9
<i>Mugil cephalus</i>	1,644	7	.	.	.	5	.	.	1	1	.	0.4
<i>Ictalurus punctatus</i>	247	1	1	.	.	.	.	.	.	.	.	0.4
<i>Brevoortia</i> spp.	263	1	1	.	.	.	.	.	.	.	.	0.4
<i>Mugil curema</i>	846	1	.	.	.	1	.	.	.	.	.	0.1
<i>Leiostomus xanthurus</i>	868	1	.	.	.	1	.	.	.	.	.	0.1
<b>Totals (all taxa)</b>	<b>12,052</b>	<b>12</b>	<b>2</b>	.	.	<b>8</b>	.	.	<b>1</b>	<b>1</b>	.	<b>&lt;0.1</b>

<sup>1</sup>P = parasitic infestation; B = red or bloody areas; F = fin rot; U = ulcer or lesion; E = erosion or scale loss; S = skeletal abnormalities; T = tumor/cysts; O = other; D = dead.;

**Table 9.12:** List of taxa, sorted by Percent Affected in descending order, having gross external abnormalities collected in the northern Indian River Lagoon during stratified-random sampling, 2022.

Scientific Name	Number Collected (≥75 mm SL)	Number Affected (≥75 mm SL)	Gross External Abnormality (GEA) code <sup>1</sup>								Percent Affected	
			P	B	F	U	E	S	T	O		D
<i>Achirus lineatus</i>	6	1	.	1	.	.	.	.	.	.	.	16.7
<i>Ariopsis felis</i>	2,759	436	424	9	2	1	.	.	.	.	.	15.8
<b><i>Megalops atlanticus</i></b>	<b>20</b>	<b>1</b>	.	<b>1</b>	.	.	.	.	.	.	.	<b>5</b>
<b><i>Mugil curema</i></b>	<b>4,081</b>	<b>77</b>	<b>69</b>	.	<b>6</b>	.	<b>1</b>	<b>1</b>	.	.	.	<b>1.9</b>
<i>Brevoortia</i> spp.	114	2	2	.	.	.	.	.	.	.	.	1.8
<i>Strongylura notata</i>	97	1	.	.	.	.	.	1	.	.	.	1
<i>Chilomycterus schoepfii</i>	146	1	.	1	.	.	.	.	.	.	.	0.7
<i>Eugerres plumieri</i>	205	1	1	.	.	.	.	.	.	.	.	0.5
<b><i>Mugil cephalus</i></b>	<b>1,079</b>	<b>5</b>	<b>4</b>	<b>1</b>	.	.	.	.	.	.	.	<b>0.5</b>
<b><i>Centropomus undecimalis</i></b>	<b>249</b>	<b>1</b>	.	.	.	<b>1</b>	.	.	.	.	.	<b>0.4</b>
<i>Dasyatis say</i>	261	1	.	.	.	.	.	1	.	.	.	0.4
<i>Sphoeroides testudineus</i>	294	1	.	.	1	.	.	.	.	.	.	0.3
<i>Opisthonema oglinum</i>	348	1	.	.	1	.	.	.	.	.	.	0.3
<i>Lagodon rhomboides</i>	2,102	2	.	.	2	.	.	.	.	.	.	<0.1
<i>Harengula jaguana</i>	4,418	1	.	.	1	.	.	.	.	.	.	<0.1
<i>Diapterus auratus</i>	14,441	3	2	.	1	.	.	.	.	.	.	<0.1
<b>Totals (all taxa)</b>	<b>42,958</b>	<b>535</b>	<b>502</b>	<b>13</b>	<b>14</b>	<b>2</b>	<b>1</b>	<b>3</b>	.	.	.	<b>1.2</b>

<sup>1</sup>P = parasitic infestation; B = red or bloody areas; F = fin rot; U = ulcer or lesion; E = erosion or scale loss; S = skeletal abnormalities; T = tumor/cysts; O = other; D = dead.;

**Table 9.13:** List of taxa, sorted by Percent Affected in descending order, having gross external abnormalities collected in the southern Indian River Lagoon during stratified-random sampling, 2022.

Scientific Name	Number Collected (≥75 mm SL)	Number Affected (≥75 mm SL)	Gross External Abnormality (GEA) code <sup>1</sup>								Percent Affected		
			P	B	F	U	E	S	T	O		D	
<i>Lactophrys trigonus</i>	26	1	.	.	.	.	.	.	1	.	.	.	3.8
<b><i>Mugil curema</i></b>	<b>804</b>	<b>1</b>	.	.	<b>1</b>	.	.	.	.	.	.	.	<b>0.1</b>
<b>Totals (all taxa)</b>	<b>17,263</b>	<b>2</b>	.	.	<b>1</b>	.	.	.	<b>1</b>	.	.	.	<b>&lt;0.1</b>

<sup>1</sup> P = parasitic infestation; B = red or bloody areas; F = fin rot; U = ulcer or lesion; E = erosion or scale loss; S = skeletal abnormalities; T = tumor/cysts; O = other; D = dead.;

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