FWRI INHOUSE REPORT IHR 2009-002

Florida Fish and Wildlife Conservation Commission

Fish & Wildlife Research Institute

# Fisheries-Independent Monitoring Program 2008 Annual Data Summary Report

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## *Overview*

This report provides a summary of the data collected in 2008 by the Florida Fish and Wildlife Conservation Commission (FWC) Fish and Wildlife Research Institute's (FWRI) Fisheries-Independent Monitoring (FIM) program. Monitoring was conducted monthly using a stratified-random sampling (SRS) design in Tampa Bay, Charlotte Harbor, the northern Indian River Lagoon, Cedar Key, the southern Indian River Lagoon, Apalachicola Bay, and northeast Florida. Gears used for routine monitoring in the various areas included 21.3-m seines, 6.1-m otter trawls, and 183-m haul seines (Table OV08-01).

There were 1,863,506 animals collected or observed in 6,420 samples from all study areas (Figure OV08-01). The majority of samples were collected with 21.3-m seines (n=3,188), followed by 6.1-m otter trawls (n=1,788), and 183-m haul seines (n=1,444). Total sampling effort in the study areas ranged from 172 hauls made in southern Indian River Lagoon to 1,356 hauls made in Northeast Florida. The total number of animals collected ranged from 27,802 in southern Indian River Lagoon to 518,281 in Tampa Bay (Table OV08-02). The majority of animals were collected in 21.3-m seines (n=1,279,101; 68.6% of the total catch).

Samples were dominated by small fishes such as *Anchoa mitchilli*, *Lagodon rhomboides*, *Leiostomus xanthurus*, *Menidia* spp., and *Eucinostomus* spp. in all study areas. Recreationally and commercially important animals (i.e., Selected Taxa; see Table FIM08-02) accounted for 12.3% (n=229,474) of the overall catch in these areas and comprised between 5.4% (Tampa Bay) and 36.5% (Northeast Florida) of the total SRS catches from each study area. Selected Taxa were among the 10 most abundant taxa in some areas: *Elops saurus* in Tampa Bay; *Farfantepenaeus duorarum* in Charlotte Harbor; *L*. *xanthurus* and *Mugil cephalus* in Cedar Key; *Mugil curema*, *Centropomus undecimalis*, and *M. cephalus* in the southern Indian River Lagoon; *Micropogonias undulatus*, *Litopenaeus setiferus*, and *L. xanthurus* in Apalachicola Bay; and *M. undulatus, L. xanthurus*, *L. setiferus*, and *M*. *cephalus* in northeast Florida (Tables OV08-03 and –04).

Seasonal directed sampling with trammel nets for *M. cephalus* was conducted during the winter (January through March) and fall (September through December) of 2008 in Tampa Bay and Charlotte Harbor. A total of 4,289 *M. cephalus* were collected (76 net sets) in Tampa Bay and 1,915 *M. cephalus* were collected (40 net sets) in Charlotte Harbor (see Directed Sampling section).

A total of 567 fish and select invertebrates were culled for fish health analyses of gross external abnormalities (including external parasites). Numbers of reported abnormalities from each study area ranged from 6 (southern Indian River Lagoon) to 223 (Tampa Bay; see Fish Health section).

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

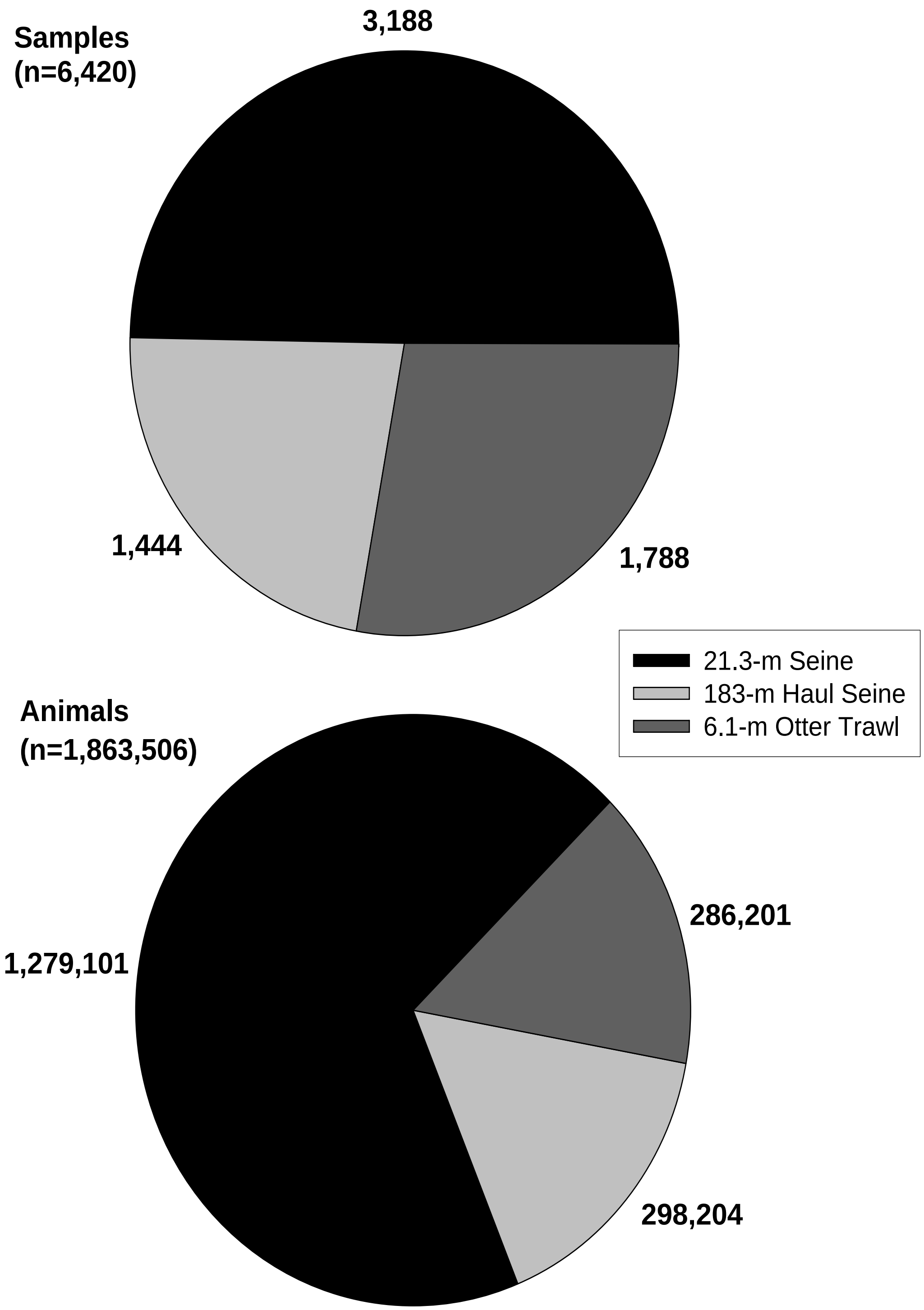


Figure OV08-01. Summary of 2008 FIM program catch and effort data. 'Samples' are the total number of deployments by gear (or number of visual surveys), and 'Animals' are the total number of animals collected by each sampling method.

Table OV08-01. Gear usage by field laboratory for FIM program stratified-random sampling, 2008.

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

Table OV08-02. Summary of catch and effort data by area for FIM program stratified-random sampling, 2008. 'Hauls' are the total number of net deployments by each gear, and 'Animals' are the total number of animals collected by each sampling method.

| Gear | Tampa Bay | | Charlotte Harbor | |
|---|---|---|---|---|
| | **Hauls** | **Animals** | **Hauls** | **Animals** |
| 21.3-m seine | 696 | 376,475 | 504 | 177,593 |
| 183-m haul seine | 240 | 93,672 | 204 | 39,667 |
| 6.1-m otter trawl | 336 | 48,134 | 360 | 38,441 |
| **Totals** | **1,272** | **518,281** | **1,068** | **255,701** |

| Gear | N. Indian River Lagoon | | Cedar Key | |
|---|---|---|---|---|
| | **Hauls** | **Animals** | **Hauls** | **Animals** |
| 21.3-m seine | 596 | 369,619 | 420 | 138,892 |
| 183-m haul seine | 228 | 58,985 | 192 | 22,530 |
| 6.1-m otter trawl | 96 | 8,050 | 180 | 13,528 |
| **Totals** | **920** | **436,654** | **792** | **174,950** |

| Gear | S. Indian River Lagoon | | Apalachicola Bay | |
|---|---|---|---|---|
| | **Hauls** | **Animals** | **Hauls** | **Animals** |
| 21.3-m seine | . | . | 396 | 90,446 |
| 183-m haul seine | 172 | 27,802 | 216 | 35,952 |
| 6.1-m otter trawl | . | . | 228 | 123,278 |
| **Totals** | **172** | **27,802** | **840** | **249,676** |

| Gear | Northeast Florida | |
|---|---|---|
| | **Hauls** | **Animals** |
| 21.3-m seine | 576 | 126,076 |
| 183-m haul seine | 192 | 19,596 |
| 6.1-m otter trawl | 588 | 54,770 |
| **Totals** | **1,356** | **200,442** |

Table OV08-03. Top 10 numerically dominant taxa collected in FIM program stratified-random sample areas, 2008.

| Tampa Bay | | Charlotte Harbor | |
|---|---|---|---|
| **Scientific Name** | **Number** | **Scientific Name** | **Number** |
| *Anchoa mitchilli* | 259,158 | *Anchoa mitchilli* | 78,467 |
| *Lagodon rhomboides* | 64,931 | *Lagodon rhomboides* | 66,867 |
| *Harengula jaguana* | 25,770 | *Eucinostomus* spp. | 31,302 |
| *Menidia* spp. | 25,453 | *Menidia* spp. | 9,142 |
| *Eucinostomus* spp. | 20,326 | *Lucania parva* | 7,673 |
| *Lucania parva* | 15,234 | *Harengula jaguana* | 6,567 |
| *Eucinostomus gula* | 11,998 | *Eucinostomus gula* | 6,312 |
| *Brevoortia* spp. | 11,664 | *Orthopristis chrysoptera* | 4,716 |
| *Eucinostomus harengulus* | 7,341 | *Farfantepenaeus duorarum* | 3,366 |
| *Elops saurus* | 6,458 | *Bairdiella chrysoura* | 3,349 |
| **Σ =** | **448,333** | | **217,761** |
| **Total (Selected Taxa)** | **27,740** | | **15,943** |
| **Grand Total of Animals Collected** | **518,281** | | **255,701** |

| N. Indian River Lagoon | | Cedar Key | |
|---|---|---|---|
| **Scientific Name** | **Number** | **Scientific Name** | **Number** |
| *Anchoa mitchilli* | 254,068 | *Anchoa mitchilli* | 95,951 |
| *Eucinostomus* spp. | 22,788 | *Leiostomus xanthurus* | 15,901 |
| *Lagodon rhomboides* | 21,667 | *Lagodon rhomboides* | 10,144 |
| *Diapterus auratus* | 17,338 | *Membras martinica* | 9,503 |
| *Lucania parva* | 12,325 | *Bairdiella chrysoura* | 6,411 |
| *Bairdiella chrysoura* | 11,690 | *Anchoa hepsetus* | 4,038 |
| *Brevoortia* spp. | 10,859 | *Menidia* spp. | 3,301 |
| *Eucinostomus harengulus* | 6,964 | *Mugil cephalus* | 2,908 |
| *Menidia* spp. | 5,232 | *Orthopristis chrysoptera* | 2,214 |
| *Floridichthys carpio* | 4,917 | *Eucinostomus* spp. | 1,885 |
| **Σ =** | **367,848** | | **152,256** |
| **Total (Selected Taxa)** | **24,927** | | **27,118** |
| **Grand Total of Animals Collected** | **436,654** | | **174,950** |

Table OV08-03. Continued)

| S. Indian River Lagoon | | Apalachicola Bay | |
|---|---|---|---|
| **Scientific Name** | **Number** | **Scientific Name** | **Number** |
| *Lagodon rhomboides* | 7,918 | *Anchoa mitchilli* | 99,209 |
| *Diapterus auratus* | 6,311 | *Lagodon rhomboides* | 19,916 |
| *Ariopsis felis* | 1,456 | *Micropogonias undulatus* | 16,958 |
| *Selene vomer* | 1,193 | *Litopenaeus setiferus* | 11,410 |
| *Harengula jaguana* | 887 | *Brevoortia* spp. | 9,352 |
| *Orthopristis chrysoptera* | 855 | *Leiostomus xanthurus* | 9,142 |
| *Mugil curema* | 843 | *Bairdiella chrysoura* | 7,789 |
| *Eucinostomus gula* | 743 | *Anchoa cubana* | 6,627 |
| *Centropomus undecimalis* | 673 | *Anchoa lyolepis* | 5,877 |
| *Mugil cephalus* | 549 | *Menidia* spp. | 5,860 |
| **Σ =** | **21,428** | | **192,140** |
| **Total (Selected Taxa)** | **4,464** | | **56,220** |
| **Grand Total of Animals Collected** | **27,802** | | **249,676** |

| Northeast Florida | |
|---|---|
| **Scientific Name** | **Number** |
| *Anchoa mitchilli* | 70,129 |
| *Micropogonias undulatus* | 27,148 |
| *Leiostomus xanthurus* | 20,686 |
| *Litopenaeus setiferus* | 8,753 |
| *Menidia menidia* | 7,364 |
| *Lucania parva* | 7,260 |
| *Mugil cephalus* | 6,718 |
| *Menidia* spp. | 5,613 |
| *Lagodon rhomboides* | 5,172 |
| *Bairdiella chrysoura* | 2,420 |
| **Σ =** | **161,263** |
| **Total (Selected Taxa)** | **73,062** |
| **Grand Total of Animals Collected** | **200,442** |

Table OV08-04. Number of recreational or commercially important species (Selected Taxa) collected in the FIM program stratified-random sample areas, 2008

| **Tampa Bay** | | **Charlotte Harbor** | |
|---|---|---|---|
| **Scientific Name** | **Number** | **Scientific Name** | **Number** |
| *Elops saurus* | 6,458 | *Farfantepenaeus duorarum* | 3,366 |
| *Mugil cephalus* | 5,433 | *Mugil cephalus* | 3,089 |
| *Farfantepenaeus duorarum* | 2,179 | *Leiostomus xanthurus* | 1,877 |
| *Cynoscion arenarius* | 2,119 | *Archosargus probatocephalus* | 1,025 |
| *Menticirrhus americanus* | 1,702 | *Cynoscion arenarius* | 974 |
| *Centropomus undecimalis* | 1,610 | *Cynoscion nebulosus* | 673 |
| *Archosargus probatocephalus* | 1,400 | *Centropomus undecimalis* | 659 |
| *Mugil gyrans* | 1,332 | *Menticirrhus americanus* | 654 |
| *Mugil curema* | 1,285 | *Lutjanus synagris* | 608 |
| *Cynoscion nebulosus* | 1,137 | *Elops saurus* | 489 |
| *Leiostomus xanthurus* | 997 | *Lutjanus griseus* | 475 |
| *Sciaenops ocellatus* | 604 | *Callinectes sapidus* | 450 |
| *Callinectes sapidus* | 592 | *Mugil gyrans* | 410 |
| *Lutjanus griseus* | 168 | *Menippe* spp. | 395 |
| *Paralichthys albigutta* | 146 | *Sciaenops ocellatus* | 282 |
| *Menippe* spp. | 143 | *Paralichthys albigutta* | 192 |
| *Lutjanus synagris* | 119 | *Mycteroperca microlepis* | 106 |
| *Trachinotus falcatus* | 112 | *Mugil curema* | 104 |
| *Mycteroperca microlepis* | 76 | *Trachinotus carolinus* | 33 |
| *Pogonias cromis* | 58 | *Menticirrhus saxatilis* | 23 |
| *Menticirrhus saxatilis* | 22 | *Epinephelus morio* | 14 |
| *Scomberomorus maculatus* | 21 | *Pogonias cromis* | 12 |
| *Menticirrhus littoralis* | 18 | *Pomatomus saltatrix* | 12 |
| *Trachinotus carolinus* | 7 | *Trachinotus falcatus* | 8 |
| *Epinephelus itajara* | 1 | *Scomberomorus maculatus* | 6 |
| *Micropogonias undulatus* | 1 | *Menticirrhus littoralis* | 3 |
| | | *Rachycentron canadum* | 3 |
| | | *Epinephelus itajara* | 1 |
| **Total** | **27,740** | **Total** | **15,943** |

Table OV08-04. (Continued)

| N. Indian River Lagoon Scientific Name | Number | Cedar Key Scientific Name | Number |
|---|---|---|---|
| *Mugil cephalus* | 4,672 | *Leiostomus xanthurus* | 15,901 |
| *Micropogonias undulatus* | 2,908 | *Mugil cephalus* | 2,908 |
| *Mugil curema* | 2,661 | *Cynoscion arenarius* | 1,502 |
| *Leiostomus xanthurus* | 2,657 | *Menticirrhus americanus* | 870 |
| *Farfantepenaeus spp.* | 2,637 | *Menippe* spp. | 791 |
| *Sciaenops ocellatus* | 1,826 | *Callinectes sapidus* | 733 |
| *Centropomus undecimalis* | 1,581 | *Mugil gyrans* | 694 |
| *Archosargus probatocephalus* | 1,399 | *Mugil curema* | 687 |
| *Elops saurus* | 1,085 | *Micropogonias undulatus* | 617 |
| *Cynoscion nebulosus* | 1,017 | *Farfantepenaeus duorarum* | 605 |
| *Callinectes sapidus* | 829 | *Elops saurus* | 417 |
| *Menticirrhus americanus* | 394 | *Sciaenops ocellatus* | 372 |
| *Lutjanus griseus* | 235 | *Paralichthys albigutta* | 259 |
| *Farfantepenaeus duorarum* | 188 | *Cynoscion nebulosus* | 213 |
| *Pogonias cromis* | 147 | *Pogonias cromis* | 189 |
| *Trachinotus falcatus* | 145 | *Archosargus probatocephalus* | 146 |
| *Cynoscion* complex | 135 | *Lutjanus griseus* | 55 |
| *Litopenaeus setiferus* | 99 | *Scomberomorus maculatus* | 48 |
| *Lutjanus analis* | 94 | *Lutjanus synagris* | 36 |
| *Lutjanus synagris* | 38 | *Trachinotus falcatus* | 24 |
| *Scomberomorus maculatus* | 35 | *Menticirrhus saxatilis* | 15 |
| *Albula vulpes* | 32 | *Pomatomus saltatrix* | 11 |
| *Trachinotus carolinus* | 30 | *Centropomus undecimalis* | 10 |
| *Farfantepenaeus aztecus* | 22 | *Mycteroperca microlepis* | 5 |
| *Paralichthys albigutta* | 18 | *Paralichthys lethostigma* | 4 |
| *Mycteroperca microlepis* | 16 | *Trachinotus carolinus* | 4 |
| *Megalops atlanticus* | 7 | *Megalops atlanticus* | 1 |
| *Lutjanus jocu* | 4 | *Mycteroperca* sp. | 1 |
| *Pomatomus saltatrix* | 4 | | |
| *Mycteroperca bonaci* | 3 | | |
| *Mugil gyrans* | 2 | | |
| *Paralichthys lethostigma* | 2 | | |
| *Scomberomorus regalis* | 2 | | |
| *Lutjanus cyanopterus* | 1 | | |
| *Menippe* sp. | 1 | | |
| *Panulirus argus* | 1 | | |
| **Total** | **24,927** | **Total** | **27,118** |

Table OV08-04. (Continued)

| S. Indian River Lagoon | | Apalachicola Bay | |
|---|---|---|---|
| **Scientific Name** | **Number** | **Scientific Name** | **Number** |
| *Mugil curema* | 843 | *Micropogonias undulatus* | 16,958 |
| *Centropomus undecimalis* | 673 | *Litopenaeus setiferus* | 11,410 |
| *Mugil cephalus* | 549 | *Leiostomus xanthurus* | 9,142 |
| *Archosargus probatocephalus* | 527 | *Mugil cephalus* | 5,574 |
| *Elops saurus* | 453 | *Cynoscion arenarius* | 5,402 |
| *Micropogonias undulatus* | 370 | *Callinectes sapidus* | 1,634 |
| *Lutjanus griseus* | 289 | *Farfantepenaeus* spp. | 1,438 |
| *Pogonias cromis* | 205 | *Mugil curema* | 643 |
| *Lutjanus analis* | 161 | *Menticirrhus americanus* | 612 |
| *Lutjanus synagris* | 93 | *Cynoscion nebulosus* | 567 |
| *Callinectes sapidus* | 65 | *Farfantepenaeus aztecus* | 450 |
| *Albula vulpes* | 46 | *Elops saurus* | 445 |
| *Leiostomus xanthurus* | 36 | *Sciaenops ocellatus* | 445 |
| *Sciaenops ocellatus* | 30 | *Paralichthys albigutta* | 391 |
| *Scomberomorus maculatus* | 28 | *Farfantepenaeus duorarum* | 248 |
| *Epinephelus itajara* | 13 | *Archosargus probatocephalus* | 192 |
| *Cynoscion nebulosus* | 10 | *Lutjanus synagris* | 128 |
| *Mycteroperca microlepis* | 10 | *Mycteroperca microlepis* | 107 |
| *Paralichthys albigutta* | 10 | *Pogonias cromis* | 102 |
| *Menticirrhus americanus* | 9 | *Menippe* spp. | 70 |
| *Panulirus argus* | 8 | *Scomberomorus maculatus* | 48 |
| *Pomatomus saltatrix* | 8 | *Paralichthys lethostigma* | 41 |
| *Farfantepenaeus duorarum* | 7 | *Trachinotus falcatus* | 39 |
| *Paralichthys lethostigma* | 6 | *Lutjanus griseus* | 32 |
| *Scomberomorus regalis* | 4 | *Menticirrhus saxatilis* | 31 |
| *Cynoscion* complex | 2 | *Menticirrhus littoralis* | 17 |
| *Trachinotus carolinus* | 2 | *Paralichthys squamilentus* | 13 |
| *Epinephelus morio* | 1 | *Pomatomus saltatrix* | 12 |
| *Megalops atlanticus* | 1 | *Cynoscion nothus* | 2 |
| *Trachinotus falcatus* | 1 | *Rachycentron canadum* | 2 |
| *Lutjanus jocu* | 1 | *Albula vulpes* | 1 |
| | | *Lutjanus campechanus* | 1 |
| | | *Megalops atlanticus* | 1 |
| **Total** | **4,464** | **Total** | **56,220** |

Table OV08-04. (Continued)

**Northeast Florida**

| Scientific Name | Number |
|---|---|
| *Micropogonias undulatus* | 27,148 |
| *Leiostomus xanthurus* | 20,686 |
| *Litopenaeus setiferus* | 8,753 |
| *Mugil cephalus* | 6,718 |
| *Callinectes sapidus* | 2,129 |
| *Mugil curema* | 1,406 |
| *Farfantepenaeus spp.* | 1,332 |
| *Cynoscion* complex | 1,049 |
| *Elops saurus* | 590 |
| *Menticirrhus americanus* | 465 |
| *Trachinotus carolinus* | 441 |
| *Trachinotus falcatus* | 439 |
| *Cynoscion nebulosus* | 319 |
| *Farfantepenaeus aztecus* | 296 |
| *Farfantepenaeus duorarum* | 286 |
| *Paralichthys lethostigma* | 235 |
| *Sciaenops ocellatus* | 211 |
| *Archosargus probatocephalus* | 139 |
| *Paralichthys albigutta* | 102 |
| *Pomatomus saltatrix* | 66 |
| *Lutjanus griseus* | 65 |
| *Pogonias cromis* | 50 |
| *Scomberomorus maculatus* | 31 |
| *Menticirrhus saxatilis* | 25 |
| *Paralichthys dentatus* | 25 |
| *Menippe* spp. | 17 |
| *Cynoscion nothus* | 12 |
| *Lutjanus synagris* | 10 |
| *Menticirrhus littoralis* | 9 |
| *Paralichthys squamilentus* | 3 |
| *Rachycentron canadum* | 2 |
| *Centropomus undecimalis* | 1 |
| *Megalops atlanticus* | 1 |
| *Scomberomorus cavalla* | 1 |
| **Total** | **73,062** |

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# *Fisheries-Independent Monitoring*

## Introduction

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

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

The Fish and Wildlife Research Institute initiated the FIM program in 1985 with funding provided by a Federal Sport Fish Restoration (SFR) grant. In 1988, additional funding became available from special appropriations. The FIM program is now partially supported by funds from the sale of Florida saltwater fishing licenses as well as the SFR grant. Fisheries-Independent Monitoring program sampling began in Tampa Bay and Charlotte Harbor during 1989, in the northern Indian River Lagoon during 1990, in Cedar Key during 1996, in the southern Indian River Lagoon during 1997, in Apalachicola Bay during 1998, and in northeast Florida during 2001. Sampling has been ongoing in the Florida Keys National Marine Sanctuary since 1998, but 2008 results will not be summarized in this report. Sampling was also conducted in Choctawhatchee Bay/Santa Rosa Sound between 1992 and 1997 and in Florida Bay between 1993 and 1997 (Figure FIM08-01).

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

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

## Methods

The FIM program uses a stratified-random sampling design in all study areas. Each study area was divided into sampling zones based upon geographic and logistical criteria, and each zone was further subdivided into 1-nm$^2$ grids that were randomly selected for sampling. 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 FIM08-01). A 21.3-m center bag seine targeted YOY and juvenile fishes in shallow water (≤ 1.8-m); a 6.1-m otter trawl targeted YOY, juvenile, and adult fish in deep water (1.0 – 7.6-m); a 183-m haul seine targeted sub-adult and adult fish along shorelines in water depths ≤ 2.5-m. Several different techniques were used, depending upon habitat, to stratify the samples collected with the various gears. The 21.3-m center bag seine was used in Tampa Bay, Charlotte Harbor, the northern Indian River Lagoon, Cedar Key, Apalachicola Bay, and northeast Florida. Two deployment techniques were used. The bay seine technique was used in all estuaries except northeast Florida to sample shallow areas, and was pre-stratified by the presence or absence of bottom vegetation (except in the Cedar Key area) or the presence of a shoreline. The river seine technique was used in all estuaries to sample the shorelines of creeks and rivers. River seine deployments in Tampa Bay and Charlotte Harbor were pre-stratified by the presence or absence of overhanging shoreline vegetation. River seine deployments in the northern Indian River Lagoon, Cedar Key, Apalachicola Bay, and northeast Florida were not pre-stratified by habitat type. Samples collected with 183-m haul seines in Tampa Bay and Charlotte Harbor were pre-stratified by the presence or absence of overhanging shoreline vegetation. Samples collected with 183-m haul seines in the northern and southern Indian River Lagoon were post-stratified by the presence or absence of overhanging shoreline vegetation. Samples collected with this gear were not stratified by habitat type in Cedar Key, Apalachicola Bay, and northeast Florida. All sampling was conducted during daytime hours (one hour after sunrise to one hour before sunset). Additional sampling details are described in the FIM program's Procedure Manual (FWC-FWRI 2008).

The sample work-up technique was similar for all samples, regardless of gear type or sampling regime. Environmental data consisting of water chemistry, habitat characteristics, and physical parameters such as current and tidal conditions were recorded for each sample. All fish and selected invertebrate species captured were identified to the lowest practical taxonomic level, counted, and a random sample of at least 10 individuals was measured (standard length for teleosts, precaudal length for sharks, disc width for rays, carapace width for crabs, and post-orbital head length for shrimp). A detailed explanation of the standard sample work-up and visual survey methodology for data collection is described in the FIM program's Procedure Manual (FWC-FWRI 2008).

Certain taxa were not identified to species because of the possibility of hybridization (e.g., *Brevoortia* spp., *Menidia* spp.; Dahlberg 1970, Middaugh et al. 1986) or because they were morphologically or meristically indistinguishable at small juvenile sizes (e.g., *Eucinostomus* spp. <40 mm SL; Matheson 1983). In northeast Florida and northern Indian River Lagoon sections, species accounts of *Cynoscion regalis* (weakfish) and *Cynoscion arenarius* (sand seatrout) will be referred to collectively as *Cynoscion* complex. These two species mix and hybridize along the Atlantic coast of Florida and identification can only be determined with certainty by genetic testing (Tringali et al. 2004). Animals were released except for representative samples of each taxon (for laboratory confirmation of field identifications) and samples required for specific research projects. The taxonomic nomenclature in this report follows the American Fisheries Society's Common and Scientific Names of Fishes (Nelson et al. 2004). A detailed explanation of the standard sample work-up for data collection is described in the FIM program's Procedure Manual (FWC-FWRI 2008).

The data for this report were summarized separately for each estuarine system and for each gear type. Data were also summarized separately for all taxa and for taxa of recreational or commercial importance ('Selected Taxa'; Table FIM08-02). Abundance estimates were calculated for 21.3-m seines and trawls as the number of individuals/100 $m^2$ of area sampled. Catch-per-unit-effort (CPUE) was calculated for 183-m haul seine samples as the number of animals/set. The appendices for each study area describe the catch by month, gear, stratum, and zone.

## Study Areas

The FIM program conducted sampling in Tampa Bay, Charlotte Harbor, the northern Indian River Lagoon, Cedar Key, the southern Indian River Lagoon, Apalachicola Bay, northeast Florida, and the Florida Keys (Figure FIM08-01). Sampling was conducted over a wide range of habitats encompassing different bottom types, shoreline types, and offshore areas. In addition to sampling in major estuaries, tidally-influenced portions of rivers that flow into Tampa Bay (Alafia, Braden, Little Manatee, and Manatee rivers), Charlotte Harbor (Peace, Myakka, and Caloosahatchee rivers), the Indian River Lagoon (Sebastian and St. Lucie rivers), the Cedar Key area (Suwannee River), Apalachicola Bay (Apalachicola River), and northeast Florida (St. Marys, Nassau, and St. Johns rivers) were sampled. The Tampa Bay, Charlotte Harbor, and northern Indian River Lagoon study areas were described in the FIM Program 1994 Annual Data Summary Report (FDEP-FMRI 1995). The Cedar Key study area was described in the FIM Program 1996 Annual Data Summary Report (FDEP-FMRI 1997); the southern Indian River Lagoon study area was described in the FIM Program 1997 Annual Data Summary Report (FDEP-FMRI 1998); the Apalachicola Bay study area and changes to the southern Indian River Lagoon study area were described in the FIM Program 1998 Annual Data Summary Report (FWC-FMRI 1999); and the northeast Florida study area was described in the FIM Program 2001 Annual Data Summary Report (FWC-FMRI 2002). Data collected in the Florida Keys during 2008 are not presented in this report.

## References


Coull, B.C. 1985. The use of long-term biological data to generate testable hypotheses. Estuaries 8:84-92.

Dahlberg, M.D.1970. Atlantic and Gulf of Mexico menhadens, Genus *Brevoortia* (Pisces: Clupeidae). Bulletin of the Florida State Museum 15(3):91-162.

FDEP-FMRI. 1995. Fisheries-Independent Monitoring Program 1994 Annual Data Summary Report. Florida Marine Research Institute. St. Petersburg, Florida.

FDEP-FMRI. 1997. Fisheries-Independent Monitoring Program 1996 Annual Data Summary Report. Florida Marine Research Institute. St. Petersburg, Florida.

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

FWC-FMRI. 1999. Fisheries-Independent Monitoring Program 1998 Annual Data Summary Report. Florida Marine Research Institute. St. Petersburg, Florida.

FWC-FMRI. 2002. Fisheries-Independent Monitoring Program 2001 Annual Data Summary Report. Florida Marine Research Institute. St. Petersburg, Florida.

FWC-FWRI. 2008. Fisheries-Independent Monitoring Program Procedure Manual. Florida Fish and Wildlife Research Institute. St. Petersburg, Florida.

Goodyear, C.P. 1985. Relationship between reported commercial landings and and abundance of young striped bass in Chesapeake Bay, Maryland. Transactions of the American Fisheries Society 114:92-96.

Lindall, W.N. and C.H. Saloman. 1997. Alteration and destruction of estuaries affecting fisheries resources in the Gulf of Mexico. Marine Fisheries Review 399:1-7.

Matheson, R.E., Jr. 1983. Taxonomic studies of the *Eucinostomus argenteus* complex (Pisces: Gerreidae). Ph.D. Dissertation, Texas A&M University, College Station. 195 p.

Middaugh, D.P., M.J. Hemmer, and Y.L. Rose. 1986. Laboratory spawning cues in *Menidia beryllina* and *Menidia peninsulae* (Pisces: Atherinidae) with notes on survival and growth of larvae at different salinities. Environmental Biology of Fishes 15:107-117.

Myers, R.A. and N.G. Cadigan. 1993. Is juvenile mortality in marine demersal fish variable? Canadian Journal of Fisheries and Aquatic Sciences 50:1591-1598.

Nelson, J.S., E.J. Crossman, H. Espinosa-Perez, L.T. Findley, C.R. Gilbert, R.N. Lea, and J.D. Williams. 2004. Common and scientific names of fishes from the United States, Canada and Mexico. Sixth Edition. American Fisheries Society Special Publication 29. 386 pp.

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

Ultang, O. 1977. Methods of measuring stock abundance other than by use of commercial catch and effort data. (FAO Fisheries Technical Paper No. 176).

Wolfe, D.A., M.A. Champ, D.A. Flemer, and A.J. Mearns. 1987. Long-term biological data sets: their role in research, monitoring, and management of estuarine and coastal marine systems. Estuaries 10(3):181-193.

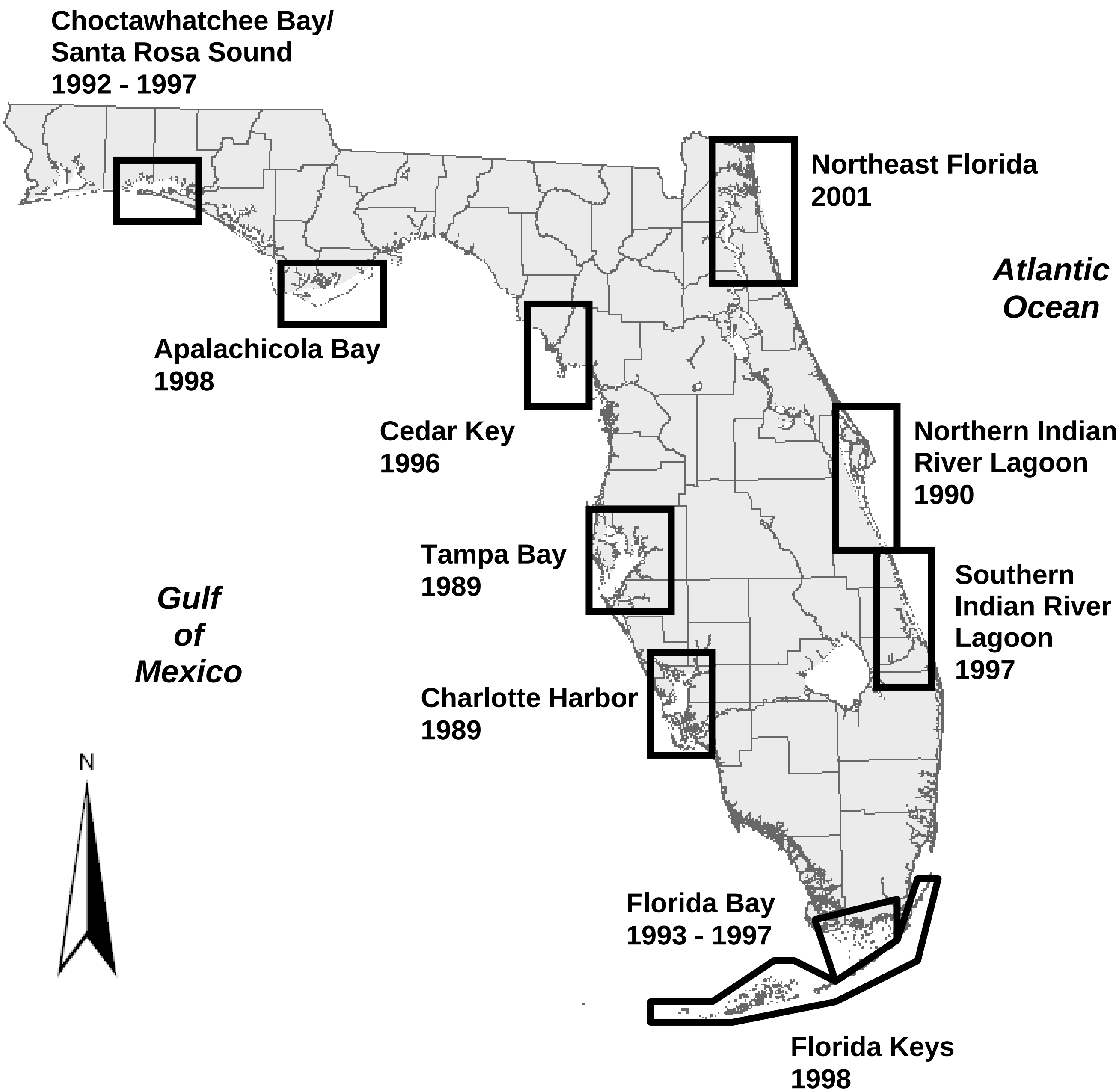


Figure FIM08-01. Locations of Fisheries-Independent Monitoring program field laboratories. Years indicate initiation of sampling. If sampling was discontinued at a field lab, the last year of sampling is also provided.

Table FIM08-01. Description of monthly monitoring sampling gears used in 2008. A more detailed description of each gear can be found in the FIM program's Procedure Manual.

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

Table FIM08-02. Animals designated as Selected Taxa because of their commercial or recreational importance.

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

Table FIM08-02. (Continued)

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

## *Tampa Bay*

Tampa Bay is a drowned river estuary located on the western, central coast of Florida. The bay is connected to the Gulf of Mexico through two main channels located on either side of Egmont Key and several smaller passes and channels to the north of Mullet and Long Keys and to the south of Anna Marie 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 Rivers; Schmidt and Luther 2002). Shoreline vegetation consists largely of mangroves and marsh grasses, and bottom substrates are typically characterized as sand, mud, oysters, or a combination thereof (Flannery 1989). Seagrass meadows are the dominant vegetative cover in Tampa Bay and are widely distributed throughout the bay (Haddad 1989).

The Fisheries-Independent Monitoring (FIM) program has conducted intensive sampling of fish and selected invertebrates in Tampa Bay since 1989. The area sampled was divided into five geographically-defined bay zones (A-E) and four riverine zones (K-N; Figure TB08-01). The riverine zones were defined by the Alafia (K), Little Manatee (L), Manatee (M), and Braden (N) rivers. Monthly stratified-random sampling (SRS) was conducted in Zones A-E using 21.3-m bay seines, 183-m haul seines, and 6.1-m bay otter trawls. Monthly SRS was conducted in Zones K-N with 21.3-m river seines and 6.1-m river otter trawls. All methods were the same as those described in the Methods section of this report. This section summarizes data collected by the FIM program during 2008 in Tampa Bay.

### Stratified-Random Sampling

A total of 518,281 fishes (136 taxa) and selected invertebrates (11 taxa) were collected from 1,272 Tampa Bay SRS samples in 2008 (Table TB08-01, Appendices TB08-01, -02, and -03). *Anchoa mitchilli* (n=259,158) was the most numerous taxon collected, representing 50.0% of the total catch. *Lagodon rhomboides* (n=64,931) was the next most abundant taxon collected, accounting for an additional 12.5% of the total catch. Twenty-six Selected Taxa (n=27,740 animals) composed 5.4% of the total catch. *Elops saurus* (n=6,458) was the most abundant Selected Taxon, representing 1.2% of the total catch. *Mugil cephalus* (n=5,433) was the second most abundant Selected Taxon, comprising 1.0% of the total catch. Collections in 2008 included two species new to the

Tampa Bay FIM collection: *Hemiramphus balao* (balao halfbeak) and *Diplogrammus pauciradiatus* (spotted dragonet).

## Bay Sampling

*21.3-m Bay Seines*. A total of 97,595 animals were collected in 408 21.3-m bay seines, representing 18.8% of the overall SRS catch (Table TB08-01). *Anchoa mitchilli* (n=24,096) was the most abundant taxon, accounting for 24.7% of the 21.3-m bay seine catch (Table TB08-02). The taxa most frequently caught in 21.3-m bay seines were *Lagodon rhomboides* (50.7% occurrence) and *Eucinostomus* spp. (40.4% occurrence).

A total of 3,802 animals from 22 Selected Taxa were collected, representing 3.9% of the entire 21.3-m bay seine catch (Table TB08-03). *Farfantepenaeus duorarum* (n=736) was the most abundant Selected Taxon, accounting for 19.4% of the Selected Taxa collected by this gear. The Selected Taxon most frequently caught in 21.3-m bay seines was *F. duorarum* (26.2% occurrence).

*183-m Haul Seines.* A total of 93,672 animals were collected in 240 183-m haul seines, representing 18.1% of the overall SRS catch (Table TB08-01). *Lagodon rhomboides* (n=45,533) was the most abundant taxon, accounting for 48.6% of the 183-m haul seine catch (Table TB08-04). The taxon most frequently caught in 183-m haul seines was *L. rhomboides* (68.8% occurrence).

A total of 13,946 animals from 23 Selected Taxa were collected, representing 14.9% of the entire 183-m haul seine catch (Table TB08-05). *Elops saurus* (n=6,432) was the most abundant Selected Taxon, accounting for 46.1% of the Selected Taxa collected by this gear. The Selected Taxon most frequently caught in 183-m haul seines was *M. cephalus* (55.0% occurrence).

*6.1-m Bay Otter Trawls.* A total of 18,642 animals were collected in 180 6.1-m bay otter trawls, representing 3.6% of the overall SRS catch (Table TB08-01). *Lagodon rhomboides* (n=4,648) and *A. mitchilli* (n=2,638) were the most abundant taxa collected, accounting for 39.1% of the 6.1-m bay otter trawl catch (Table TB08-06). The taxon most frequently caught in 6.1-m bay otter trawls was *Prionotus scitulus* (71.1% occurrence).

A total of 2,554 animals from 14 Selected Taxa were collected, representing 13.7% of the entire 6.1-m bay otter trawl catch (Table TB08-07). *Cynoscion arenarius* (n=888), *Menticirrhus americanus* (n=726), and *F. duorarum* (n=460) were the most abundant Selected Taxa, accounting for 81.2% of the Selected Taxa collected by this gear. The

Selected Taxon most frequently caught in 6.1-m bay otter trawls was *F. duorarum* (37.8% occurrence).

## River Sampling

*21.3-m River Seines.* A total of 278,880 animals were collected in 288 21.3-m river seines, representing 53.8% of the overall SRS catch (Table TB08-01). *Anchoa mitchilli* (n=212,259) was the most abundant species collected, accounting for 76.1% of the 21.3-m river seine catch (Table TB08-08). The taxa most frequently caught in 21.3-m river seines were *Menidia* spp. (78.1% occurrence), *Eucinostomus* spp. (75.0% occurrence), and *Eucinostomus harengulus* (70.1% occurrence).

A total of 5,276 animals from 17 Selected Taxa were collected, representing 1.9% of the entire 21.3-m river seine catch (Table TB08-09). *Mugil cephalus* (n=3,739) was the most abundant Selected Taxon, accounting for 70.9% of the Selected Taxa collected by this gear. The Selected Taxon most frequently caught in 21.3-m river seines were *F. duorarum* (30.6% occurrence).

*6.1-m River Otter Trawls.* A total of 29,510 animals were collected in 156 6.1-m river otter trawls, representing 5.7% of the overall SRS catch (Table TB08-01). *Anchoa mitchilli* (n=20,164) was the most abundant taxon collected, accounting for 68.3% of the 6.1-m river trawl catch (Table TB08-10). The taxon most frequently caught in 6.1-m river otter trawls was *F. duorarum* (50.6% occurrence).

A total of 2,162 animals from 16 Selected Taxa were collected, representing 7.3% of the entire 6.1-m river otter trawl catch (Table TB08-11). *Cynoscion arenarius* (n=925), *F. duorarum* (n=589), and *M. americanus* (n=353) 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 *F. duorarum* (50.6% occurrence) and *C. sapidus* (42.3% occurrence).

## References

Flannery, M. 1989. Tampa and Sarasota Bays: Watersheds and Tributaries. Pp 18-48 In: E.D. Estevez, (ed.), Tampa and Sarasota Bays: Issues, Resources, Status, and Management. U.S. Department of Commerce. Washington, D.C.

Haddad, K. 1989. Habitat Trends and Fisheries in Tampa and Sarasota Bays. Pp 113-128 In: E.D. Estevez, (ed.), Tampa and Sarasota Bays: Issues, Resources, Status, and Management. U.S. Department of Commerce. Washington, D.C.

Schmidt, N. and M.E. Luther. 2002. ENSO Impacts on Salinity in Tampa Bay, Florida. Estuaries 25:976–984.

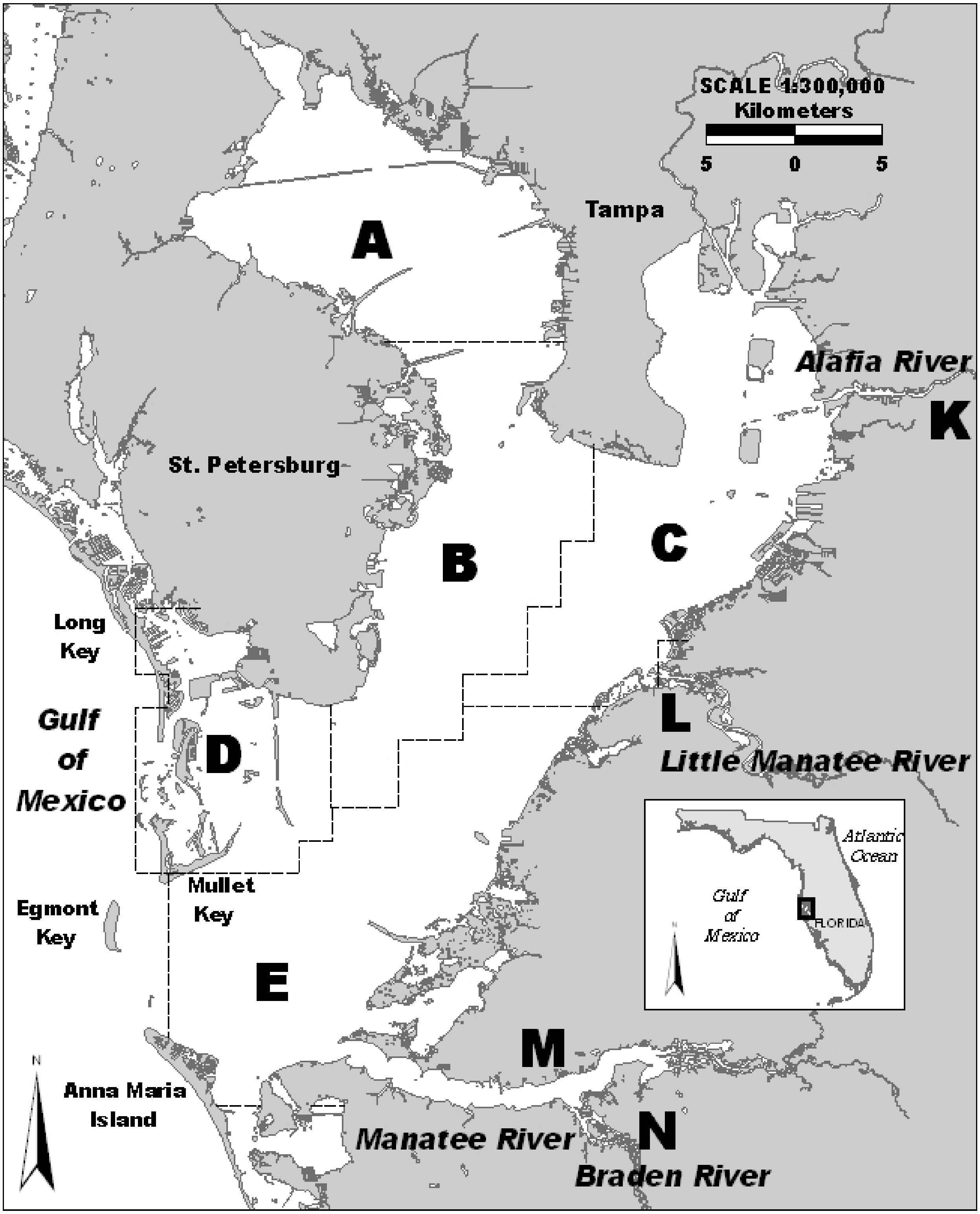


Figure TB08-01. Map of Tampa Bay sampling area. Zones are labeled A-E and K-N.

Table TB08-01. Summary of catch and effort data for Tampa Bay stratified-random sampling, 2008.

| **Zone** | **21.3-m bay seine** | | **21.3-m river seine** | | **183-m haul seine** | | **6.1-m otter trawl** | | **Totals** | |
|---|---|---|---|---|---|---|---|---|---|---|
| | **Animals** | **Hauls** | **Animals** | **Hauls** | **Animals** | **Hauls** | **Animals** | **Hauls** | **Animals** | **Hauls** |
| A | 14,957 | 84 | . | . | 18,806 | 48 | 2,408 | 36 | 36,170 | 168 |
| B | 16,520 | 72 | . | . | 13,619 | 48 | 2,755 | 36 | 32,894 | 156 |
| C | 18,043 | 108 | . | . | 14,256 | 48 | 3,996 | 48 | 36,294 | 204 |
| D | 17,317 | 60 | . | . | 27,001 | 36 | 6,909 | 24 | 51,227 | 120 |
| E | 30,758 | 84 | . | . | 19,990 | 60 | 2,556 | 36 | 53,304 | 180 |
| K | . | . | 93,834 | 48 | . | . | 1,892 | 24 | 95,726 | 72 |
| L | . | . | 63,397 | 108 | . | . | 23,809 | 72 | 87,206 | 180 |
| M | . | . | 26,724 | 72 | . | . | 1,540 | 36 | 28,264 | 108 |
| N | . | . | 94,925 | 60 | . | . | 2,269 | 24 | 97,194 | 84 |
| **Totals** | **97,595** | **408** | **278,880** | **288** | **93,672** | **240** | **48,134** | **336** | **518,281** | **1,272** |

Table TB08-02. Catch statistics for 10 dominant taxa collected in 408 21.3-m bay seine samples during Tampa Bay stratified-random sampling, 2008. Percent (%) is the percent of the total catch represented by that taxon; percent occurrence (% Occur) is the percentage of samples in which that taxon was collected; CV is the coefficient of variation of the mean. Taxa are ranked in order of decreasing mean density.

| **Species** | **Number** | | **% Occur** | **Density Estimate (animals/100m$^2$)** | | | | **Standard Length (mm)** | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | **No.** | **%** | | **Mean** | **Stderr** | **CV** | **Max** | **Mean** | **Stderr** | **Min** | **Max** |
| *Anchoa mitchilli* | 24,096 | 24.7 | 18.9 | 42.18 | 13.73 | 657.61 | 4,122.86 | 32 | 0.04 | 17 | 58 |
| *Lagodon rhomboides* | 14,074 | 14.4 | 50.7 | 24.64 | 3.66 | 299.75 | 590.71 | 38 | 0.15 | 11 | 163 |
| *Lucania parva* | 11,881 | 12.2 | 21.1 | 20.80 | 7.84 | 761.25 | 2,455.00 | 23 | 0.04 | 13 | 38 |
| *Menidia* spp. | 9,978 | 10.2 | 23.8 | 17.47 | 3.98 | 460.67 | 1,015.00 | 40 | 0.12 | 18 | 81 |
| *Eucinostomus* spp. | 8,001 | 8.2 | 40.4 | 14.01 | 1.84 | 265.58 | 238.57 | 27 | 0.07 | 10 | 39 |
| *Harengula jaguana* | 5,493 | 5.6 | 12.7 | 9.62 | 4.09 | 858.18 | 1,527.14 | 45 | 0.18 | 22 | 130 |
| *Floridichthys carpio* | 3,737 | 3.8 | 19.6 | 6.54 | 1.58 | 487.41 | 442.14 | 36 | 0.16 | 11 | 62 |
| *Eucinostomus gula* | 3,103 | 3.2 | 34.1 | 5.43 | 0.87 | 324.21 | 207.14 | 56 | 0.19 | 40 | 119 |
| *Bairdiella chrysoura* | 1,732 | 1.8 | 16.9 | 3.03 | 0.77 | 510.71 | 235.00 | 44 | 0.47 | 11 | 135 |
| *Anchoa cubana* | 1,653 | 1.7 | 1.2 | 2.89 | 2.83 | 1,974.76 | 1,154.29 | 36 | 0.11 | 21 | 44 |
| Subtotal | 83,748 | 85.8 | . | . | . | . | . | . | . | 10 | 163 |
| **Totals** | **97,595** | **100.0** | **.** | **170.86** | **20.16** | **238.34** | **4,412.14** | **.** | **.** | **2** | **573** |

Table TB08-03. Catch statistics for Selected Taxa collected in 408 21.3-m bay seine samples during Tampa Bay stratified-random sampling, 2008. Percent (%) is the percent of the total catch represented by that taxon; percent occurrence (% Occur) is the percentage of samples in which that taxon was collected; CV is the coefficient of variation of the mean. Taxa are ranked in order of decreasing mean density.

| Species | Number | | % Occur | Density Estimate (animals/100m$^2$) | | | | Standard Length (mm) | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | No. | % | | Mean | Stderr | CV | Max | Mean | Stderr | Min | Max |
| *Farfantepenaeus duorarum* | 736 | 0.8 | 26.2 | 1.29 | 0.34 | 536.01 | 125.71 | 11 | 0.15 | 2 | 25 |
| *Cynoscion nebulosus* | 555 | 0.6 | 19.9 | 0.97 | 0.18 | 375.80 | 48.57 | 36 | 0.72 | 15 | 122 |
| *Menticirrhus americanus* | 539 | 0.6 | 5.1 | 0.94 | 0.57 | 1,211.33 | 211.43 | 31 | 0.40 | 10 | 75 |
| *Mugil cephalus* | 523 | 0.5 | 4.4 | 0.92 | 0.41 | 905.53 | 130.71 | 24 | 0.34 | 17 | 114 |
| *Archosargus probatocephalus* | 433 | 0.4 | 13.7 | 0.76 | 0.21 | 572.40 | 50.71 | 31 | 1.37 | 11 | 314 |
| *Sciaenops ocellatus* | 267 | 0.3 | 4.9 | 0.47 | 0.22 | 952.34 | 70.71 | 32 | 1.86 | 12 | 392 |
| *Leiostomus xanthurus* | 259 | 0.3 | 7.4 | 0.45 | 0.23 | 1,014.99 | 77.86 | 39 | 1.20 | 14 | 121 |
| *Cynoscion arenarius* | 124 | 0.1 | 2.0 | 0.22 | 0.18 | 1,644.30 | 71.43 | 25 | 0.45 | 16 | 46 |
| *Mugil gyrans* | 107 | 0.1 | 4.4 | 0.19 | 0.08 | 816.67 | 25.00 | 54 | 2.06 | 18 | 158 |
| *Callinectes sapidus* | 65 | 0.1 | 8.1 | 0.11 | 0.02 | 401.65 | 3.57 | 38 | 4.49 | 8 | 151 |
| *Lutjanus synagris* | 62 | 0.1 | 2.7 | 0.11 | 0.07 | 1,256.82 | 26.43 | 39 | 2.12 | 22 | 79 |
| *Mugil curema* | 35 | 0.0 | 2.5 | 0.06 | 0.03 | 942.40 | 10.00 | 56 | 7.22 | 10 | 156 |
| *Lutjanus griseus* | 30 | 0.0 | 3.9 | 0.05 | 0.02 | 617.09 | 4.29 | 56 | 7.62 | 15 | 171 |
| *Paralichthys albigutta* | 20 | 0.0 | 3.9 | 0.04 | 0.01 | 581.06 | 2.86 | 70 | 11.45 | 15 | 175 |
| *Menticirrhus saxatilis* | 18 | 0.0 | 3.2 | 0.03 | 0.01 | 586.03 | 1.43 | 35 | 3.92 | 14 | 71 |
| *Centropomus undecimalis* | 7 | 0.0 | 1.2 | 0.01 | 0.01 | 1,036.86 | 2.14 | 385 | 68.23 | 44 | 535 |
| *Mycteroperca microlepis* | 6 | 0.0 | 1.0 | 0.01 | 0.01 | 1,061.18 | 1.43 | 271 | 53.70 | 170 | 520 |

Table TB08-03. (Continued)

| Species | Number No. | Number % | % Occur | Density Estimate (animals/100m$^2$) Mean | Stderr | CV | Max | Standard Length (mm) Mean | Stderr | Min | Max |
|---|---|---|---|---|---|---|---|---|---|---|---|
| *Elops saurus* | 5 | 0.0 | 0.7 | 0.01 | 0.01 | 1,337.75 | 2.14 | 174 | 4.90 | 162 | 190 |
| *Trachinotus falcatus* | 4 | 0.0 | 0.2 | 0.01 | 0.01 | 2,019.90 | 2.86 | 38 | 1.44 | 34 | 41 |
| *Menippe* spp. | 3 | 0.0 | 0.7 | 0.01 | 0.00 | 1,163.32 | 0.71 | 31 | 23.84 | 7 | 79 |
| *Pogonias cromis* | 2 | 0.0 | 0.5 | 0.00 | 0.00 | 1,426.53 | 0.71 | 120 | 10.50 | 109 | 130 |
| *Scomberomorus maculatus* | 2 | 0.0 | 0.2 | 0.00 | 0.00 | 2,019.90 | 1.43 | 41 | 4.00 | 37 | 45 |
| **Totals** | **3,802** | **3.9** | **57.8** | **6.66** | **1.14** | **346.72** | **342.86** | **.** | **.** | **2** | **535** |

Table TB08-04. Catch statistics for 10 dominant taxa collected in 240 183-m haul seine samples during Tampa Bay stratified-random sampling, 2008. Percent (%) is the percent of the total catch represented by that taxon; percent occurrence (% Occur) is the percentage of samples in which that taxon was collected; CV is the coefficient of variation of the mean. Taxa are ranked in order of decreasing mean catch-per-unit-effort.

| **Species** | **Number** | | **% Occur** | **Catch-per-unit-effort (animals/set)** | | | | **Standard Length (mm)** | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | **No.** | **%** | | **Mean** | **Stderr** | **CV** | **Max** | **Mean** | **Stderr** | **Min** | **Max** |
| *Lagodon rhomboides* | 43,533 | 46.5 | 68.8 | 181.39 | 25.45 | 217.35 | 3,882.00 | 97 | 0.13 | 40 | 196 |
| *Harengula jaguana* | 12,761 | 13.6 | 22.9 | 53.17 | 28.20 | 821.68 | 6,236.00 | 101 | 0.11 | 46 | 153 |
| *Elops saurus* | 6,432 | 6.9 | 42.5 | 26.80 | 17.83 | 1,030.39 | 4,217.00 | 268 | 0.59 | 103 | 475 |
| *Eucinostomus gula* | 5,572 | 5.9 | 51.7 | 23.22 | 4.45 | 297.20 | 548.00 | 85 | 0.22 | 40 | 169 |
| *Brevoortia* spp. | 4,483 | 4.8 | 12.5 | 18.68 | 11.17 | 926.33 | 2,376.00 | 94 | 0.28 | 54 | 220 |
| *Orthopristis chrysoptera* | 2,355 | 2.5 | 27.9 | 9.81 | 2.35 | 370.40 | 365.00 | 105 | 0.54 | 57 | 202 |
| *Ariopsis felis* | 2,353 | 2.5 | 40.4 | 9.80 | 3.02 | 477.89 | 447.00 | 284 | 1.08 | 123 | 398 |
| *Bairdiella chrysoura* | 2,328 | 2.5 | 23.3 | 9.70 | 3.08 | 492.38 | 420.00 | 122 | 0.45 | 40 | 193 |
| *Eucinostomus harengulus* | 1,526 | 1.6 | 45.8 | 6.36 | 0.92 | 223.41 | 77.00 | 92 | 0.27 | 45 | 181 |
| *Centropomus undecimalis* | 1,504 | 1.6 | 44.2 | 6.27 | 1.28 | 315.68 | 171.00 | 442 | 2.54 | 156 | 909 |
| Subtotal | 82,847 | 88.4 | . | . | . | . | . | . | . | 40 | 909 |
| **Totals** | **93,672** | **100.0** | **.** | **390.30** | **50.88** | **201.97** | **7,853.00** | **.** | **.** | **10** | **909** |

Table TB08-05. Catch statistics for Selected Taxa collected in 240 183-m haul seine samples during Tampa Bay stratified-random sampling, 2008. Percent (%) is the percent of the total catch represented by that taxon; percent occurrence (% Occur) is the percentage of samples in which that taxon was collected; CV is the coefficient of variation of the mean. Taxa are ranked in order of decreasing mean catch-per-unit-effort.

| Species | Number | | % Occur | Catch-per-unit-effort (animals/set) | | | | Standard Length (mm) | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | No. | % | | Mean | Stderr | CV | Max | Mean | Stderr | Min | Max |
| *Elops saurus* | 6,432 | 6.9 | 42.5 | 26.80 | 17.83 | 1,030.39 | 4,217.00 | 268 | 0.59 | 103 | 475 |
| *Centropomus undecimalis* | 1,504 | 1.6 | 44.2 | 6.27 | 1.28 | 315.68 | 171.00 | 442 | 2.54 | 156 | 909 |
| *Mugil curema* | 1,190 | 1.3 | 47.5 | 4.96 | 1.96 | 612.73 | 450.00 | 169 | 1.13 | 86 | 368 |
| *Mugil cephalus* | 1,171 | 1.3 | 55.0 | 4.88 | 0.97 | 307.97 | 155.00 | 306 | 2.41 | 82 | 485 |
| *Mugil gyrans* | 1,142 | 1.2 | 27.9 | 4.76 | 2.58 | 840.15 | 609.00 | 150 | 1.14 | 50 | 274 |
| *Archosargus probatocephalus* | 736 | 0.8 | 44.6 | 3.07 | 0.46 | 230.34 | 51.00 | 192 | 3.28 | 31 | 471 |
| *Leiostomus xanthurus* | 391 | 0.4 | 15.8 | 1.63 | 0.38 | 360.59 | 50.00 | 119 | 1.84 | 47 | 204 |
| *Cynoscion nebulosus* | 360 | 0.4 | 25.8 | 1.50 | 0.34 | 348.36 | 59.00 | 209 | 4.45 | 43 | 462 |
| *Sciaenops ocellatus* | 244 | 0.3 | 21.3 | 1.02 | 0.40 | 609.99 | 73.00 | 456 | 7.80 | 132 | 721 |
| *Callinectes sapidus* | 143 | 0.2 | 21.3 | 0.60 | 0.12 | 317.96 | 18.00 | 93 | 3.06 | 33 | 214 |
| *Farfantepenaeus duorarum* | 117 | 0.1 | 13.3 | 0.49 | 0.19 | 600.46 | 41.00 | 19 | 0.43 | 10 | 31 |
| *Lutjanus griseus* | 108 | 0.1 | 17.5 | 0.45 | 0.09 | 314.07 | 14.00 | 159 | 4.58 | 73 | 278 |
| *Trachinotus falcatus* | 108 | 0.1 | 7.5 | 0.45 | 0.14 | 465.21 | 20.00 | 123 | 4.61 | 40 | 305 |
| *Mycteroperca microlepis* | 69 | 0.1 | 6.3 | 0.29 | 0.09 | 491.47 | 12.00 | 195 | 5.41 | 98 | 311 |
| *Paralichthys albigutta* | 64 | 0.1 | 13.8 | 0.27 | 0.07 | 384.25 | 10.00 | 163 | 8.92 | 72 | 347 |
| *Pogonias cromis* | 47 | 0.1 | 10.4 | 0.20 | 0.07 | 568.08 | 16.00 | 243 | 8.54 | 102 | 362 |
| *Lutjanus synagris* | 27 | 0.0 | 3.3 | 0.11 | 0.07 | 951.69 | 16.00 | 95 | 3.89 | 40 | 124 |

Table TB08-05. (Continued)

| Species | Number | | % Occur | Catch-per-unit-effort (animals/set) | | | | Standard Length (mm) | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | No. | % | | Mean | Stderr | CV | Max | Mean | Stderr | Min | Max |
| *Cynoscion arenarius* | 25 | 0.0 | 1.3 | 0.10 | 0.10 | 1,427.42 | 23.00 | 229 | 3.64 | 204 | 268 |
| *Menticirrhus americanus* | 22 | 0.0 | 2.9 | 0.09 | 0.04 | 746.73 | 9.00 | 234 | 4.86 | 187 | 300 |
| *Scomberomorus maculatus* | 19 | 0.0 | 5.8 | 0.08 | 0.02 | 458.55 | 3.00 | 273 | 24.88 | 94 | 497 |
| *Menticirrhus littoralis* | 18 | 0.0 | 0.8 | 0.08 | 0.07 | 1,465.30 | 17.00 | 217 | 9.44 | 150 | 303 |
| *Trachinotus carolinus* | 7 | 0.0 | 1.7 | 0.03 | 0.02 | 961.49 | 4.00 | 213 | 30.99 | 136 | 343 |
| *Menippe* spp. | 2 | 0.0 | 0.8 | 0.01 | 0.01 | 1,093.15 | 1.00 | 71 | 8.00 | 63 | 79 |
| **Totals** | **13,946** | **14.9** | **96.3** | **58.11** | **18.24** | **486.23** | **4,222.00** | **.** | **.** | **10** | **909** |

Table TB08-06. Catch statistics for 10 dominant taxa collected in 180 bay 6.1-m otter trawl samples during Tampa Bay stratified-random sampling, 2008. Percent (%) is the percent of the total catch represented by that taxon; percent occurrence (% Occur) is the percentage of samples in which that taxon was collected; CV is the coefficient of variation of the mean. Taxa are ranked in order of decreasing mean density.

| Species | Number | | % Occur | Density Estimate (animals/100m$^2$) | | | | Standard Length (mm) | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | **No.** | **%** | | **Mean** | **Stderr** | **CV** | **Max** | **Mean** | **Stderr** | **Min** | **Max** |
| *Lagodon rhomboides* | 4,648 | 25.0 | 43.3 | 1.75 | 0.98 | 756.48 | 170.80 | 57 | 0.52 | 11 | 148 |
| *Anchoa mitchilli* | 2,638 | 14.2 | 11.7 | 0.99 | 0.52 | 698.13 | 74.54 | 41 | 0.11 | 20 | 58 |
| *Eucinostomus gula* | 1,822 | 9.8 | 41.1 | 0.68 | 0.19 | 370.48 | 25.18 | 70 | 0.44 | 40 | 130 |
| *Eucinostomus* spp. | 1,393 | 7.5 | 10.6 | 0.50 | 0.41 | 1,109.81 | 74.27 | 31 | 0.13 | 13 | 39 |
| *Prionotus scitulus* | 1,099 | 5.9 | 71.1 | 0.42 | 0.05 | 163.86 | 3.91 | 84 | 0.99 | 12 | 190 |
| *Portunus* spp. | 1,028 | 5.5 | 45.6 | 0.39 | 0.11 | 391.65 | 13.15 | 44 | 0.46 | 4 | 123 |
| *Cynoscion arenarius* | 888 | 4.8 | 13.3 | 0.35 | 0.14 | 555.00 | 17.18 | 38 | 1.07 | 9 | 179 |
| *Orthopristis chrysoptera* | 850 | 4.6 | 28.3 | 0.32 | 0.12 | 488.03 | 17.74 | 68 | 1.23 | 14 | 185 |
| *Menticirrhus americanus* | 726 | 3.9 | 18.9 | 0.29 | 0.20 | 918.23 | 34.37 | 37 | 1.42 | 7 | 285 |
| *Farfantepenaeus duorarum* | 460 | 2.5 | 37.8 | 0.17 | 0.06 | 456.53 | 9.85 | 17 | 0.27 | 3 | 37 |
| Subtotal | 15,552 | 83.7 | . | . | . | . | . | . | . | 3 | 285 |
| **Totals** | **18,624** | **100.0** | **.** | **7.02** | **1.50** | **286.47** | **199.47** | **.** | **.** | **3** | **712** |

Table TB08-07. Catch statistics for Selected Taxa collected in 180 bay 6.1-m otter trawl samples during Tampa Bay stratified-random sampling, 2008. Percent (%) is the percent of the total catch represented by that taxon; percent occurrence (% Occur) is the percentage of samples in which that taxon was collected; CV is the coefficient of variation of the mean. Taxa are ranked in order of decreasing mean density.

| Species | Number | | % Occur | Density Estimate (animals/100m$^2$) | | | | Standard Length (mm) | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | No. | % | | Mean | Stderr | CV | Max | Mean | Stderr | Min | Max |
| *Cynoscion arenarius* | 888 | 4.8 | 13.3 | 0.35 | 0.14 | 555.00 | 17.18 | 38 | 1.07 | 9 | 179 |
| *Menticirrhus americanus* | 726 | 3.9 | 18.9 | 0.29 | 0.20 | 918.23 | 34.37 | 37 | 1.42 | 7 | 285 |
| *Farfantepenaeus duorarum* | 460 | 2.5 | 37.8 | 0.17 | 0.06 | 456.53 | 9.85 | 17 | 0.27 | 3 | 37 |
| *Menippe* spp. | 137 | 0.7 | 26.1 | 0.05 | 0.02 | 431.51 | 2.77 | 25 | 1.33 | 4 | 92 |
| *Callinectes sapidus* | 96 | 0.5 | 16.7 | 0.04 | 0.01 | 344.97 | 0.81 | 81 | 3.66 | 15 | 159 |
| *Cynoscion nebulosus* | 77 | 0.4 | 3.9 | 0.03 | 0.02 | 1,006.62 | 3.98 | 37 | 3.64 | 16 | 190 |
| *Paralichthys albigutta* | 52 | 0.3 | 19.4 | 0.02 | 0.00 | 236.32 | 0.27 | 185 | 8.02 | 34 | 332 |
| *Archosargus probatocephalus* | 37 | 0.2 | 7.2 | 0.01 | 0.01 | 504.47 | 0.67 | 55 | 6.70 | 11 | 176 |
| *Leiostomus xanthurus* | 38 | 0.2 | 1.7 | 0.01 | 0.01 | 933.52 | 1.41 | 117 | 2.44 | 85 | 154 |
| *Lutjanus synagris* | 30 | 0.2 | 8.3 | 0.01 | 0.00 | 397.13 | 0.37 | 83 | 5.50 | 29 | 140 |
| *Lutjanus griseus* | 9 | 0.0 | 1.1 | 0.00 | 0.00 | 1,206.59 | 0.54 | 94 | 19.21 | 19 | 165 |
| *Mugil curema* | 2 | 0.0 | 0.6 | 0.00 | 0.00 | 1,341.64 | 0.15 | 163 | 11.50 | 151 | 174 |
| *Menticirrhus saxatilis* | 1 | 0.0 | 0.6 | 0.00 | 0.00 | 1,341.64 | 0.07 | 34 | . | 34 | 34 |
| *Mycteroperca microlepis* | 1 | 0.0 | 0.6 | 0.00 | 0.00 | 1,341.64 | 0.07 | 180 | . | 180 | 180 |
| **Totals** | **2,554** | **13.7** | **75.0** | **0.99** | **0.35** | **474.35** | **55.67** | **.** | **.** | **3** | **332** |

Table TB08-08. Catch statistics for 10 dominant taxa collected in 288 21.3-m river seine samples during Tampa Bay stratified-random sampling, 2008. Percent (%) is the percent of the total catch represented by that taxon; percent occurrence (% Occur) is the percentage of samples in which that taxon was collected; CV is the coefficient of variation of the mean. Taxa are ranked in order of decreasing mean density.

| Species | Number | | % Occur | Density Estimate (animals/100m$^2$) | | | | Standard Length (mm) | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | **No.** | **%** | | **Mean** | **Stderr** | **CV** | **Max** | **Mean** | **Stderr** | **Min** | **Max** |
| *Anchoa mitchilli* | 212,259 | 76.1 | 51.7 | 1,083.84 | 337.57 | 528.56 | 80,023.53 | 31 | 0.01 | 13 | 55 |
| *Menidia* spp. | 15,428 | 5.5 | 78.1 | 78.78 | 8.66 | 186.62 | 1,113.24 | 37 | 0.08 | 12 | 83 |
| *Eucinostomus* spp. | 9,463 | 3.4 | 75.0 | 48.32 | 7.07 | 248.36 | 1,248.53 | 27 | 0.07 | 9 | 54 |
| *Harengula jaguana* | 7,461 | 2.7 | 6.9 | 38.10 | 20.39 | 908.45 | 5,480.88 | 31 | 0.10 | 21 | 80 |
| *Brevoortia* spp. | 7,116 | 2.6 | 11.5 | 36.34 | 21.61 | 1,009.25 | 5,751.47 | 36 | 0.16 | 17 | 111 |
| *Eucinostomus harengulus* | 4,424 | 1.6 | 70.1 | 22.59 | 2.53 | 190.27 | 330.88 | 62 | 0.23 | 40 | 120 |
| *Mugil cephalus* | 3,739 | 1.3 | 14.6 | 19.09 | 11.26 | 1,000.83 | 3,066.18 | 30 | 0.19 | 19 | 255 |
| *Lucania parva* | 3,188 | 1.1 | 26.4 | 16.28 | 5.01 | 522.69 | 1,013.24 | 25 | 0.09 | 12 | 44 |
| *Lagodon rhomboides* | 2,041 | 0.7 | 50.7 | 10.42 | 1.80 | 293.89 | 373.53 | 40 | 0.37 | 9 | 192 |
| *Anchoa cubana* | 2,041 | 0.7 | 0.7 | 10.42 | 9.56 | 1,556.35 | 2,741.18 | 42 | 0.06 | 30 | 47 |
| Subtotal | 267,160 | 95.7 | . | . | . | . | . | . | . | 9 | 255 |
| **Totals** | **278,880** | **100.0** | **.** | **1,424.02** | **346.44** | **412.87** | **80,501.47** | **.** | **.** | **2** | **655** |

Table TB08-09. Catch statistics for Selected Taxa collected in 288 21.3-m river seine samples during Tampa Bay stratified-random sampling, 2008. Percent (%) is the percent of the total catch represented by that taxon; percent occurrence (% Occur) is the percentage of samples in which that taxon was collected; CV is the coefficient of variation of the mean. Taxa are ranked in order of decreasing mean density.

| Species | Number | | % Occur | Density Estimate (animals/100m$^2$) | | | | Standard Length (mm) | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | No. | % | | Mean | Stderr | CV | Max | Mean | Stderr | Min | Max |
| *Mugil cephalus* | 3,739 | 1.3 | 14.6 | 19.09 | 11.26 | 1,000.83 | 3,066.18 | 30 | 0.19 | 19 | 255 |
| *Leiostomus xanthurus* | 288 | 0.1 | 6.9 | 1.47 | 0.63 | 723.52 | 132.35 | 51 | 1.08 | 13 | 90 |
| *Farfantepenaeus duorarum* | 277 | 0.1 | 30.6 | 1.41 | 0.19 | 232.94 | 27.94 | 9 | 0.24 | 2 | 23 |
| *Cynoscion arenarius* | 157 | 0.1 | 5.2 | 0.80 | 0.69 | 1,460.12 | 198.53 | 34 | 0.72 | 7 | 78 |
| *Archosargus probatocephalus* | 150 | 0.1 | 22.6 | 0.77 | 0.14 | 311.59 | 25.00 | 49 | 3.20 | 12 | 331 |
| *Callinectes sapidus* | 135 | 0.0 | 22.2 | 0.69 | 0.13 | 324.91 | 29.41 | 29 | 2.18 | 8 | 154 |
| *Centropomus undecimalis* | 98 | 0.0 | 13.9 | 0.50 | 0.11 | 364.14 | 17.65 | 168 | 12.30 | 18 | 412 |
| *Cynoscion nebulosus* | 98 | 0.0 | 12.5 | 0.50 | 0.12 | 397.34 | 22.06 | 52 | 3.23 | 16 | 178 |
| *Sciaenops ocellatus* | 84 | 0.0 | 12.2 | 0.43 | 0.12 | 455.92 | 26.47 | 54 | 7.80 | 10 | 436 |
| *Mugil gyrans* | 83 | 0.0 | 4.9 | 0.42 | 0.16 | 644.80 | 26.47 | 38 | 2.46 | 13 | 176 |
| *Menticirrhus americanus* | 62 | 0.0 | 4.2 | 0.32 | 0.13 | 711.14 | 27.94 | 46 | 2.65 | 22 | 91 |
| *Mugil curema* | 58 | 0.0 | 3.8 | 0.30 | 0.15 | 883.37 | 39.71 | 88 | 6.31 | 42 | 293 |
| *Elops saurus* | 21 | 0.0 | 1.4 | 0.11 | 0.08 | 1,247.49 | 22.06 | 80 | 5.10 | 36 | 115 |
| *Lutjanus griseus* | 16 | 0.0 | 4.2 | 0.08 | 0.03 | 532.43 | 4.41 | 117 | 15.41 | 38 | 233 |
| *Pogonias cromis* | 7 | 0.0 | 2.1 | 0.04 | 0.02 | 721.66 | 2.94 | 109 | 37.93 | 10 | 301 |
| *Paralichthys albigutta* | 2 | 0.0 | 0.7 | 0.01 | 0.01 | 1,197.91 | 1.47 | 77 | 39.00 | 38 | 116 |
| *Menticirrhus saxatilis* | 1 | 0.0 | 0.3 | 0.01 | 0.01 | 1,697.06 | 1.47 | 14 | . | 14 | 14 |
| **Totals** | **5,276** | **1.9** | **74.7** | **26.94** | **11.45** | **721.13** | **3,108.82** | **.** | **.** | **2** | **436** |

Table TB08-10. Catch statistics for 10 dominant taxa collected in 156 river 6.1-m otter trawl samples during Tampa Bay stratified-random sampling, 2008. Percent (%) is the percent of the total catch represented by that taxon; percent occurrence (% Occur) is the percentage of samples in which that taxon was collected; CV is the coefficient of variation of the mean. Taxa are ranked in order of decreasing mean density.

| **Species** | **Number** | | **% Occur** | **Density Estimate (animals/100m²)** | | | | **Standard Length (mm)** | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | **No.** | **%** | | **Mean** | **Stderr** | **CV** | **Max** | **Mean** | **Stderr** | **Min** | **Max** |
| *Anchoa mitchilli* | 20,164 | 68.3 | 29.5 | 19.29 | 17.03 | 1,102.38 | 2,654.55 | 28 | 0.06 | 14 | 54 |
| *Trinectes maculatus* | 2,417 | 8.2 | 29.5 | 2.13 | 1.01 | 594.65 | 134.24 | 27 | 0.23 | 9 | 98 |
| *Eucinostomus* spp. | 1,459 | 4.9 | 33.3 | 1.29 | 0.36 | 346.75 | 41.22 | 25 | 0.19 | 8 | 39 |
| *Cynoscion arenarius* | 925 | 3.1 | 15.4 | 0.80 | 0.37 | 580.69 | 52.08 | 50 | 0.75 | 8 | 165 |
| *Ariopsis felis* | 871 | 3.0 | 34.6 | 0.77 | 0.44 | 716.32 | 67.05 | 237 | 3.05 | 33 | 362 |
| *Lagodon rhomboides* | 635 | 2.2 | 37.8 | 0.57 | 0.13 | 278.51 | 12.44 | 34 | 0.92 | 10 | 108 |
| *Farfantepenaeus duorarum* | 589 | 2.0 | 50.6 | 0.53 | 0.12 | 293.52 | 15.52 | 11 | 0.20 | 3 | 31 |
| *Eucinostomus gula* | 352 | 1.2 | 17.9 | 0.31 | 0.09 | 374.89 | 8.90 | 66 | 0.68 | 41 | 105 |
| *Menticirrhus americanus* | 353 | 1.2 | 24.4 | 0.30 | 0.16 | 658.26 | 24.28 | 72 | 1.88 | 11 | 285 |
| *Microgobius gulosus* | 249 | 0.8 | 31.4 | 0.22 | 0.05 | 263.29 | 3.24 | 24 | 0.51 | 10 | 52 |
| Subtotal | 28,014 | 94.9 | . | . | . | . | . | . | . | 3 | 362 |
| **Totals** | **29,510** | **100.0** | **.** | **27.56** | **17.30** | **784.01** | **2,697.13** | **.** | **.** | **3** | **1023** |

Table TB08-11. Catch statistics for Selected Taxa collected in 156 river 6.1-m otter trawl samples during Tampa Bay stratified-random sampling, 2008. Percent (%) is the percent of the total catch represented by that taxon; percent occurrence (% Occur) is the percentage of samples in which that taxon was collected; CV is the coefficient of variation of the mean. Taxa are ranked in order of decreasing mean density.

| Species | Number | | % Occur | Density Estimate (animals/100m$^2$) | | | | Standard Length (mm) | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | No. | % | | Mean | Stderr | CV | Max | Mean | Stderr | Min | Max |
| *Cynoscion arenarius* | 925 | 3.1 | 15.4 | 0.80 | 0.37 | 580.69 | 52.08 | 50 | 0.75 | 8 | 165 |
| *Farfantepenaeus duorarum* | 589 | 2.0 | 50.6 | 0.53 | 0.12 | 293.52 | 15.52 | 11 | 0.20 | 3 | 31 |
| *Menticirrhus americanus* | 353 | 1.2 | 24.4 | 0.30 | 0.16 | 658.26 | 24.28 | 72 | 1.88 | 11 | 285 |
| *Callinectes sapidus* | 153 | 0.5 | 42.3 | 0.14 | 0.02 | 199.68 | 2.16 | 95 | 3.69 | 10 | 194 |
| *Cynoscion nebulosus* | 47 | 0.2 | 12.2 | 0.04 | 0.02 | 604.33 | 3.15 | 23 | 1.20 | 11 | 49 |
| *Archosargus probatocephalus* | 44 | 0.1 | 21.2 | 0.04 | 0.01 | 224.27 | 0.54 | 77 | 9.21 | 12 | 277 |
| *Leiostomus xanthurus* | 21 | 0.1 | 5.1 | 0.02 | 0.01 | 656.60 | 1.35 | 107 | 6.47 | 24 | 166 |
| *Sciaenops ocellatus* | 9 | 0.0 | 3.8 | 0.01 | 0.00 | 554.94 | 0.37 | 54 | 30.17 | 15 | 292 |
| *Paralichthys albigutta* | 8 | 0.0 | 4.5 | 0.01 | 0.00 | 476.79 | 0.25 | 210 | 24.92 | 73 | 296 |
| *Lutjanus griseus* | 5 | 0.0 | 2.6 | 0.00 | 0.00 | 677.36 | 0.30 | 113 | 25.51 | 49 | 185 |
| *Menticirrhus saxatilis* | 2 | 0.0 | 1.3 | 0.00 | 0.00 | 881.56 | 0.15 | 72 | 33.00 | 39 | 105 |
| *Pogonias cromis* | 2 | 0.0 | 1.3 | 0.00 | 0.00 | 880.32 | 0.13 | 200 | 55.50 | 144 | 255 |
| *Menippe* spp. | 1 | 0.0 | 0.6 | 0.00 | 0.00 | 1,249.00 | 0.15 | 22 | . | 22 | 22 |
| *Centropomus undecimalis* | 1 | 0.0 | 0.6 | 0.00 | 0.00 | 1,249.00 | 0.15 | 321 | . | 321 | 321 |
| *Epinephelus itajara* | 1 | 0.0 | 0.6 | 0.00 | 0.00 | 1,249.00 | 0.13 | 367 | . | 367 | 367 |
| *Micropogonias undulatus* | 1 | 0.0 | 0.6 | 0.00 | 0.00 | 1,249.00 | 0.13 | 136 | . | 136 | 136 |
| **Totals** | **2,162** | **7.3** | **80.1** | **1.90** | **0.44** | **290.54** | **52.75** | **.** | **.** | **3** | **367** |

Appendix TB08-01. Monthly summary of species collected during Tampa Bay stratified-random sampling, 2008. Effort, or total number of hauls, is labeled 'E'. Taxa are arranged alphabetically.

| Species | Month | | | | | | | | | | | | Totals |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | |
| | E=106 | E=106 | E=106 | E=106 | E=106 | E=106 | E=106 | E=106 | E=106 | E=106 | E=106 | E=106 | E=1,272 |
| *Acanthostracion quadricornis* | 9 | 10 | 26 | 17 | 12 | 6 | 19 | 15 | 23 | 17 | 55 | 34 | 243 |
| *Achirus lineatus* | 15 | 5 | 5 | 8 | 6 | 10 | 47 | 35 | 39 | 188 | 9 | 4 | 371 |
| *Adinia xenica* | 14 | . | . | . | . | . | . | . | . | . | 10 | . | 24 |
| *Aetobatus narinari* | . | . | . | . | . | . | . | . | 1 | 2 | . | . | 3 |
| *Aluterus schoepfii* | . | 3 | 2 | . | 1 | 4 | 4 | 1 | 1 | . | 1 | 1 | 18 |
| *Ameiurus catus* | . | . | . | . | . | . | . | 9 | . | . | . | . | 9 |
| *Anarchopterus criniger* | . | . | 1 | . | . | . | . | . | . | . | . | 2 | 3 |
| *Anchoa cubana* | . | 1 | . | . | 14 | 1,864 | 195 | 20 | 1,627 | 182 | 4 | . | 3,907 |
| *Anchoa hepsetus* | . | 1 | . | 1 | 300 | 297 | 8 | 24 | 2 | 15 | 1 | 2 | 651 |
| *Anchoa lyolepis* | . | . | . | . | . | . | . | . | 8 | . | . | . | 8 |
| *Anchoa mitchilli* | 10,129 | 21,800 | 9,027 | 22,384 | 19,380 | 38,482 | 9,366 | 31,320 | 14,482 | 69,258 | 11,962 | 1,568 | 259,158 |
| *Ancylopsetta quadrocellata* | . | . | 1 | 1 | . | . | . | . | . | . | . | . | 2 |
| *Archosargus probatocephalus* | 100 | 58 | 71 | 49 | 236 | 230 | 119 | 110 | 103 | 79 | 143 | 102 | 1,400 |
| *Argopecten* spp. | . | . | 2 | 2 | 2 | 1 | . | 2 | 3 | . | . | 1 | 13 |
| *Ariopsis felis* | 1,013 | 45 | 123 | 155 | 173 | 504 | 222 | 256 | 237 | 148 | 584 | 61 | 3,521 |
| *Bagre marinus* | 14 | . | 1 | 3 | 34 | 9 | . | 5 | 12 | 57 | 6 | 2 | 143 |
| *Bairdiella chrysoura* | 837 | 2 | 138 | 374 | 226 | 482 | 921 | 421 | 346 | 237 | 676 | 89 | 4,749 |
| *Bathygobius soporator* | 11 | 1 | 2 | . | . | . | . | 2 | . | 8 | 10 | 9 | 43 |
| *Belonesox belizanus* | 2 | . | . | . | . | . | . | . | . | 2 | 1 | . | 5 |
| *Brevoortia* spp. | 15 | 2 | 25 | 76 | 5,914 | 1,114 | 73 | 1,578 | 2,827 | 16 | 22 | 2 | 11,664 |
| *Calamus arctifrons* | 1 | 1 | . | 2 | 5 | 1 | . | 1 | 82 | 7 | 1 | . | 101 |
| *Callinectes ornatus* | . | . | . | . | . | 1 | . | . | . | . | . | . | 1 |
| *Callinectes sapidus* | 97 | 43 | 68 | 49 | 45 | 52 | 31 | 37 | 37 | 64 | 19 | 50 | 592 |
| *Callinectes similis* | . | 1 | . | . | . | . | . | . | 1 | . | . | . | 2 |

Appendix TB08-01. (Continued)

| Species | Month | | | | | | | | | | | | Totals |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | |
| | E=106 | E=106 | E=106 | E=106 | E=106 | E=106 | E=106 | E=106 | E=106 | E=106 | E=106 | E=106 | E=1,272 |
| *Caranx crysos* | 1 | . | . | . | . | . | . | . | . | . | . | . | 1 |
| *Caranx hippos* | 12 | 129 | 8 | 87 | . | 5 | 14 | 5 | 16 | 20 | 10 | 4 | 310 |
| *Caranx latus* | . | . | . | . | . | . | . | 1 | 1 | . | . | . | 2 |
| *Carcharhinus leucas* | . | . | . | . | . | . | . | 1 | . | . | . | . | 1 |
| *Carcharhinus limbatus* | . | . | . | . | . | . | . | 1 | . | . | . | . | 1 |
| *Centropomus undecimalis* | 93 | 88 | 187 | 186 | 47 | 78 | 52 | 246 | 70 | 81 | 263 | 219 | 1,610 |
| *Centropristis striata* | . | . | . | . | . | . | . | 3 | 1 | 3 | 1 | 2 | 10 |
| *Chaetodipterus faber* | 7 | 6 | 34 | 35 | 11 | 24 | 30 | 83 | 62 | 47 | 28 | . | 367 |
| *Chasmodes saburrae* | 1 | . | 1 | 1 | 3 | 4 | 7 | 3 | 7 | 17 | 8 | 17 | 69 |
| *Chilomycterus schoepfii* | 25 | 24 | 66 | 41 | 39 | 15 | 16 | 38 | 31 | 45 | 66 | 49 | 455 |
| *Chloroscombrus chrysurus* | 1 | . | . | 2 | . | 2 | 1 | 87 | 170 | 62 | 1 | . | 326 |
| *Citharichthys macrops* | . | 1 | . | . | 2 | 2 | . | 1 | 1 | . | 1 | . | 8 |
| *Ctenogobius smaragdus* | . | . | . | . | . | . | . | 1 | . | 4 | 1 | 4 | 10 |
| *Cynoscion arenarius* | 24 | . | . | 1 | 637 | 144 | 308 | 361 | 473 | 159 | 8 | 4 | 2,119 |
| *Cynoscion nebulosus* | 65 | 9 | 31 | 15 | 17 | 51 | 174 | 211 | 266 | 110 | 124 | 64 | 1,137 |
| *Cyprinodon variegatus* | 422 | 93 | 99 | 262 | 64 | 75 | 114 | 56 | 33 | 6 | 96 | 126 | 1,446 |
| *Dasyatis americana* | . | 1 | . | 1 | . | . | . | . | . | 1 | 1 | . | 4 |
| *Dasyatis sabina* | 56 | 35 | 53 | 50 | 38 | 65 | 151 | 67 | 40 | 47 | 66 | 84 | 752 |
| *Dasyatis say* | . | . | 2 | 1 | 1 | 7 | 13 | 15 | 2 | 1 | . | 1 | 43 |
| *Diplectrum formosum* | 4 | . | 1 | . | 6 | . | 1 | 4 | 2 | . | 2 | 5 | 25 |
| *Diplodus holbrookii* | . | . | . | . | . | . | . | 11 | 1 | 29 | 1 | . | 42 |
| *Diplogrammus pauciradiatus* | . | . | . | . | . | . | . | . | . | . | . | 1 | 1 |
| *Dorosoma petenense* | . | . | . | . | . | . | . | 1 | . | . | . | . | 1 |
| *Echeneis neucratoides* | 1 | 1 | . | 1 | . | . | . | . | 1 | . | . | 1 | 5 |
| *Elacatinus macrodon* | . | . | . | . | . | . | . | . | . | . | 2 | 1 | 3 |
| *Elops saurus* | 160 | 4,301 | 116 | 290 | 50 | 31 | 25 | 97 | 96 | 82 | 885 | 325 | 6,458 |

Appendix TB08-01. (Continued)

| Species | Month | | | | | | | | | | | | Totals |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | |
| | E=106 | E=106 | E=106 | E=106 | E=106 | E=106 | E=106 | E=106 | E=106 | E=106 | E=106 | E=106 | E=1,272 |
| *Epinephelus itajara* | . | . | . | . | . | . | 1 | . | . | . | . | . | 1 |
| *Etropus crossotus* | . | . | . | . | . | . | 2 | . | . | . | . | . | 2 |
| *Eucinostomus gula* | 1,271 | 455 | 394 | 154 | 362 | 342 | 1,573 | 813 | 1,053 | 2,135 | 2,377 | 1,069 | 11,998 |
| *Eucinostomus harengulus* | 571 | 259 | 501 | 421 | 626 | 628 | 790 | 732 | 613 | 975 | 822 | 403 | 7,341 |
| *Eucinostomus* spp. | 2,070 | 1,065 | 914 | 462 | 260 | 1,239 | 2,967 | 1,618 | 2,183 | 3,368 | 2,404 | 1,776 | 20,326 |
| *Eugerres plumieri* | 18 | . | 15 | 4 | 1 | 22 | 125 | 76 | 50 | 89 | 20 | 4 | 424 |
| *Farfantepenaeus duorarum* | 158 | 43 | 28 | 49 | 38 | 64 | 394 | 464 | 475 | 305 | 81 | 80 | 2,179 |
| *Floridichthys carpio* | 217 | 894 | 165 | 379 | 37 | 287 | 402 | 307 | 305 | 101 | 501 | 482 | 4,077 |
| *Fundulus confluentus* | 1 | . | . | 4 | . | . | . | . | . | . | 1 | . | 6 |
| *Fundulus grandis* | 333 | 57 | 74 | 33 | 6 | 25 | 254 | 48 | 99 | 33 | 195 | 111 | 1,268 |
| *Fundulus seminolis* | . | . | . | . | . | . | 3 | 1 | . | 6 | . | . | 10 |
| *Fundulus similis* | 14 | 57 | 72 | 58 | 12 | 91 | 110 | 120 | 37 | 145 | 33 | 83 | 832 |
| *Gambusia holbrooki* | 131 | 2 | 3 | 327 | . | . | . | 30 | 8 | 72 | 1 | 1 | 575 |
| *Gobiesox strumosus* | 2 | 1 | . | 2 | . | 1 | 1 | . | 2 | . | . | 1 | 10 |
| *Gobiosoma bosc* | 33 | 4 | 11 | 44 | 1 | 6 | 34 | 9 | 8 | 40 | 23 | 51 | 264 |
| *Gobiosoma longipala* | 2 | . | 6 | . | . | . | . | 1 | 4 | . | 1 | 1 | 15 |
| *Gobiosoma robustum* | 28 | 27 | 41 | 21 | 5 | 4 | 6 | 16 | 3 | 17 | 6 | 7 | 181 |
| *Gobiosoma* spp. | 17 | 7 | 2 | . | 9 | 16 | 122 | 24 | 13 | 61 | 19 | 31 | 321 |
| *Gymnura micrura* | . | . | 2 | 1 | 4 | 2 | 8 | . | . | 4 | 1 | . | 22 |
| *Haemulon plumierii* | . | . | . | . | . | . | 5 | 1 | 12 | 7 | 8 | 11 | 44 |
| *Haemulon* spp. | . | . | . | . | . | . | . | . | . | . | 1 | . | 1 |
| *Halichoeres bivittatus* | . | . | . | . | . | . | 5 | . | 1 | . | . | . | 6 |
| *Harengula jaguana* | 270 | 8 | 16 | 73 | 301 | 9,623 | 1,468 | 8,541 | 701 | 737 | 1,941 | 2,091 | 25,770 |
| *Hemiramphus balao* | . | . | . | . | . | . | . | 1 | . | . | . | . | 1 |
| *Hippocampus erectus* | 2 | 2 | 5 | 12 | 4 | 3 | 2 | 4 | 3 | 1 | 3 | 5 | 46 |
| *Hippocampus zosterae* | . | 3 | . | 4 | 1 | . | 4 | 1 | . | 10 | 1 | 3 | 27 |

Appendix TB08-01. (Continued)

| Species | Month | | | | | | | | | | | | Totals |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | |
| | E=106 | E=106 | E=106 | E=106 | E=106 | E=106 | E=106 | E=106 | E=106 | E=106 | E=106 | E=106 | E=1,272 |
| *Hypleurochilus caudovittatus* | . | . | 1 | . | . | 1 | 1 | 1 | . | . | . | 1 | 5 |
| *Hyporhamphus meeki* | . | 35 | . | . | . | . | 3 | 2 | 9 | 28 | 12 | 6 | 95 |
| *Hyporhamphus* spp. | . | 1 | . | . | 1 | . | 20 | . | . | . | 2 | . | 24 |
| *Hyporhamphus unifasciatus* | . | . | . | . | . | . | 11 | . | . | . | . | . | 11 |
| *Hypsoblennius hentz* | . | . | . | 1 | . | 2 | 1 | . | . | . | 1 | . | 5 |
| *Labidesthes sicculus* | . | . | . | . | . | . | . | . | . | . | 2 | . | 2 |
| *Lagodon rhomboides* | 6,012 | 3,573 | 3,684 | 8,350 | 5,801 | 4,845 | 3,994 | 9,796 | 6,708 | 4,792 | 6,194 | 1,182 | 64,931 |
| *Leiostomus xanthurus* | 27 | 115 | 81 | 315 | 194 | 41 | 118 | 29 | 32 | 1 | 42 | 2 | 997 |
| *Lepisosteus osseus* | 1 | 7 | . | 2 | . | . | . | 3 | . | 3 | 3 | . | 19 |
| *Lepisosteus platyrhincus* | . | . | . | . | . | . | . | . | 1 | 1 | 1 | 1 | 4 |
| *Limulus polyphemus* | 8 | 4 | 14 | 1 | 17 | 20 | 17 | 2 | 6 | 3 | 2 | 1 | 95 |
| *Lophogobius cyprinoides* | . | . | . | . | . | . | . | . | 11 | 1 | . | 2 | 14 |
| *Lucania parva* | 2,453 | 562 | 609 | 257 | 497 | 4,014 | 5,094 | 423 | 340 | 447 | 103 | 435 | 15,234 |
| *Lupinoblennius nicholsi* | 1 | . | . | . | . | . | . | . | . | . | . | . | 1 |
| *Lutjanus griseus* | 6 | 4 | 1 | 1 | 6 | 16 | 16 | 27 | 39 | 31 | 6 | 15 | 168 |
| *Lutjanus synagris* | 1 | . | 2 | . | 1 | 6 | 7 | 6 | 58 | 13 | 18 | 7 | 119 |
| *Malaclemys terrapin* | . | . | . | . | . | 1 | . | 1 | . | . | . | . | 2 |
| *Membras martinica* | 1 | . | 1 | . | 40 | 265 | 91 | 24 | 3 | 1 | 1 | . | 427 |
| *Menidia* spp. | 1,140 | 943 | 1,784 | 2,088 | 2,240 | 4,745 | 3,980 | 1,853 | 1,626 | 2,505 | 1,580 | 969 | 25,453 |
| *Menippe* spp. | 19 | 8 | 10 | 47 | 6 | 11 | 6 | 12 | 9 | 1 | 9 | 5 | 143 |
| *Menticirrhus americanus* | 16 | 1 | 3 | 3 | 55 | 15 | 47 | 725 | 567 | 154 | 107 | 9 | 1,702 |
| *Menticirrhus littoralis* | . | . | . | . | . | . | 17 | . | . | 1 | . | . | 18 |
| *Menticirrhus saxatilis* | 4 | 3 | 2 | 4 | 6 | 1 | 1 | . | 1 | . | . | . | 22 |
| *Menticirrhus* spp. | . | . | . | . | . | . | . | . | . | 1 | . | . | 1 |
| *Microgobius gulosus* | 96 | 65 | 59 | 45 | 73 | 288 | 405 | 246 | 136 | 336 | 131 | 96 | 1,976 |
| *Microgobius* spp. | . | . | . | . | . | 1 | . | . | . | . | . | . | 1 |

Appendix TB08-01. (Continued)

| Species | Month | | | | | | | | | | | | Totals |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | |
| | E=106 | E=106 | E=106 | E=106 | E=106 | E=106 | E=106 | E=106 | E=106 | E=106 | E=106 | E=106 | E=1,272 |
| *Microgobius thalassinus* | 3 | 1 | 1 | 3 | . | 20 | 7 | 2 | . | 23 | . | 1 | 61 |
| *Micropogonias undulatus* | . | . | . | . | . | . | 1 | . | . | . | . | . | 1 |
| *Micropterus salmoides* | . | . | . | . | . | . | . | . | . | . | 1 | . | 1 |
| *Monacanthus ciliatus* | . | . | 1 | 1 | . | . | . | . | . | . | 2 | 7 | 11 |
| *Mugil cephalus* | 790 | 3,038 | 717 | 273 | 65 | 82 | 130 | 43 | 29 | 36 | 137 | 93 | 5,433 |
| *Mugil curema* | 533 | 60 | 189 | 45 | 21 | 73 | 32 | 78 | 35 | 29 | 51 | 139 | 1,285 |
| *Mugil gyrans* | 708 | 11 | 15 | 15 | 76 | 46 | 56 | 22 | 28 | 30 | 132 | 193 | 1,332 |
| *Mugil* spp. | . | . | . | . | 1 | . | . | . | . | . | . | . | 1 |
| *Mycteroperca microlepis* | . | . | . | 2 | . | 3 | 11 | 23 | 6 | 27 | 4 | . | 76 |
| *Nicholsina usta* | . | . | 2 | 3 | 8 | 3 | 1 | 2 | 3 | . | 4 | 13 | 39 |
| *Notropis petersoni* | . | . | . | . | . | . | . | . | 4 | . | . | . | 4 |
| *Ocyurus chrysurus* | . | . | . | . | . | . | 1 | . | . | . | . | . | 1 |
| *Ogcocephalus cubifrons* | . | . | . | . | 1 | 1 | . | . | . | . | . | 3 | 5 |
| *Oligoplites saurus* | . | 1 | . | 6 | 10 | 47 | 102 | 96 | 88 | 53 | 24 | 2 | 429 |
| *Opisthonema oglinum* | 29 | 41 | . | 41 | 10 | 986 | 211 | 177 | 106 | 139 | 261 | 4 | 2,005 |
| *Opsanus beta* | 3 | 5 | 15 | 26 | 4 | 26 | 12 | 23 | 20 | 8 | 9 | 11 | 162 |
| *Orthopristis chrysoptera* | 191 | 70 | 177 | 523 | 788 | 398 | 410 | 713 | 561 | 414 | 459 | 31 | 4,735 |
| *Ostraciidae* spp. | . | . | . | . | . | . | . | . | . | . | . | 1 | 1 |
| *Paraclinus fasciatus* | 1 | . | . | . | . | . | . | . | . | . | . | . | 1 |
| *Paralichthys albigutta* | 8 | 5 | 12 | 13 | 13 | 11 | 11 | 20 | 12 | 21 | 10 | 10 | 146 |
| *Poecilia latipinna* | 730 | 13 | 28 | 245 | 23 | 25 | 49 | 14 | 28 | 35 | 61 | 7 | 1,258 |
| *Pogonias cromis* | 1 | 3 | 3 | . | 18 | 3 | 3 | 6 | 7 | 10 | 3 | 1 | 58 |
| *Portunus* spp. | 8 | 9 | 5 | 53 | 89 | 435 | 138 | 219 | 30 | 13 | 25 | 33 | 1,057 |
| *Prionotus scitulus* | 54 | 30 | 37 | 73 | 45 | 134 | 113 | 106 | 141 | 232 | 111 | 186 | 1,262 |
| *Prionotus tribulus* | 11 | 12 | 8 | 5 | 5 | 4 | . | 2 | 2 | 10 | 9 | 14 | 82 |
| *Rhinobatos lentiginosus* | . | . | . | . | . | . | . | . | . | . | 1 | . | 1 |

Appendix TB08-01. (Continued)

| Species | Month | | | | | | | | | | | | Totals |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | |
| | E=106 | E=106 | E=106 | E=106 | E=106 | E=106 | E=106 | E=106 | E=106 | E=106 | E=106 | E=106 | E=1,272 |
| *Rhinoptera bonasus* | . | 128 | 12 | 26 | 24 | 8 | 9 | 107 | 40 | 18 | 11 | 6 | 389 |
| *Rimapenaeus constrictus* | . | . | . | . | . | . | . | . | . | 8 | . | 4 | 12 |
| *Sardinella aurita* | . | . | . | . | . | 1,147 | 27 | 95 | . | . | . | . | 1,269 |
| *Sarotherodon melanotheron* | . | . | 1 | . | . | 2 | . | 1 | 22 | 2 | . | 2 | 30 |
| *Sciaenops ocellatus* | 22 | 143 | 8 | 9 | 18 | 10 | 5 | 13 | 18 | 128 | 75 | 155 | 604 |
| *Scomberomorus maculatus* | . | 1 | . | 2 | 1 | 3 | 4 | 4 | 3 | 2 | . | 1 | 21 |
| *Selene vomer* | 11 | . | 5 | 11 | 2 | . | 1 | 20 | 31 | 26 | 9 | 1 | 117 |
| *Serranus subligarius* | . | . | . | . | . | . | . | . | . | . | 1 | . | 1 |
| *Sicyonia laevigata* | . | . | . | . | . | . | 1 | . | . | . | . | . | 1 |
| *Sicyonia* spp. | . | . | . | 1 | . | . | . | . | . | . | . | . | 1 |
| *Sicyonia typica* | . | . | . | 2 | . | . | . | . | . | . | . | . | 2 |
| *Sphoeroides nephelus* | 19 | 11 | 10 | 37 | 129 | 30 | 23 | 21 | 25 | 16 | 31 | 28 | 380 |
| *Sphoeroides spengleri* | . | . | . | . | . | . | . | . | . | 1 | 1 | . | 2 |
| *Sphyraena barracuda* | . | . | . | . | . | 1 | . | 21 | 14 | 17 | 6 | 4 | 63 |
| *Sphyraena borealis* | . | . | . | . | 3 | 1 | . | . | . | . | . | . | 4 |
| *Sphyrna tiburo* | . | 1 | 1 | 1 | 1 | 3 | . | 3 | 1 | 11 | 3 | . | 25 |
| *Stephanolepis hispidus* | 14 | 4 | 6 | 9 | 65 | 23 | 42 | 117 | 44 | 22 | 72 | 55 | 473 |
| *Strongylura marina* | 6 | 6 | 5 | 1 | 9 | 11 | 3 | 3 | 2 | 46 | 29 | 7 | 128 |
| *Strongylura notata* | 55 | 34 | 75 | 89 | 41 | 46 | 89 | 206 | 270 | 128 | 146 | 66 | 1,245 |
| *Strongylura* spp. | . | . | . | 8 | 16 | . | . | 1 | . | . | . | . | 25 |
| *Strongylura timucu* | . | 3 | . | . | . | . | 2 | . | . | 2 | 7 | . | 14 |
| *Symphurus plagiusa* | 6 | 12 | 2 | 3 | 3 | 30 | 28 | 4 | 7 | 40 | 12 | 12 | 159 |
| *Syngnathus floridae* | 6 | 2 | . | 4 | 3 | 15 | 5 | 3 | 1 | 4 | 12 | 21 | 76 |
| *Syngnathus louisianae* | 5 | 5 | 3 | 16 | 19 | 18 | 52 | 11 | 14 | 18 | 9 | 13 | 183 |
| *Syngnathus scovelli* | 19 | 13 | 9 | 36 | 58 | 26 | 69 | 28 | 85 | 47 | 14 | 31 | 435 |
| *Synodus foetens* | 33 | 35 | 28 | 93 | 83 | 53 | 75 | 60 | 73 | 66 | 67 | 52 | 718 |

Appendix TB08-01. (Continued)

| Species | Month | | | | | | | | | | | | Totals |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | |
| | E=106 | E=106 | E=106 | E=106 | E=106 | E=106 | E=106 | E=106 | E=106 | E=106 | E=106 | E=106 | E=1,272 |
| *Tilapia* spp. | . | . | . | . | . | 4 | . | 1 | 4 | . | . | . | 9 |
| *Trachinotus carolinus* | 1 | . | . | . | . | 1 | 4 | . | . | 1 | . | . | 7 |
| *Trachinotus falcatus* | 22 | . | . | . | . | . | 3 | 12 | 21 | 41 | . | 13 | 112 |
| *Trinectes maculatus* | 122 | 323 | 66 | 60 | 45 | 93 | 1,134 | 633 | 225 | 251 | 143 | 169 | 3,264 |
| *Urophycis floridana* | 1 | 6 | 5 | . | . | . | . | . | . | . | . | . | 12 |
| **Totals** | **31,464** | **38,892** | **20,036** | **38,991** | **39,564** | **74,007** | **36,880** | **63,996** | **38,220** | **89,394** | **33,673** | **13,164** | **518,281** |

Appendix TB08-02. Summary by gear, stratum, and zone of species collected during Tampa Bay stratified-random sampling, 2008. Sampling with 21.3-m bay seine was stratified by the presence or absence of a shoreline ('Shore' or offshore) within 5-m. Offshore sets were further stratified by the presence or absence of bottom vegetation ('Veg' or 'Unveg'). Sampling with 21.3-m river seine and 183-m haul seine was stratified by the presence or absence of overhanging vegetation ('Over' or 'Nonover'). Sampling with 6.1-m otter trawl was not stratified. Effort, or the total number of hauls, is labeled 'E'. Taxa are arranged alphabetically.

| ***Species*** | **Gear and Strata** | | | | | | | | **Totals** |
|---|---|---|---|---|---|---|---|---|---|
| | **21.3-m bay seine** | | | **21.3-m river seine** | | **183-m haul seine** | | **6.1-m otter trawl** | |
| | **Veg** | **Unveg** | **Shore** | **Over** | **Nonover** | **Over** | **Nonover** | | |
| | **E=115** | **E=125** | **E=168** | **E=168** | **E=120** | **E=183** | **E=57** | **E=336** | **E=1,272** |
| *Acanthostracion quadricornis* | 14 | 1 | 18 | . | . | 80 | 30 | 100 | 243 |
| *Achirus lineatus* | 6 | 19 | 53 | 119 | 120 | 8 | . | 46 | 371 |
| *Adinia xenica* | . | . | 12 | 10 | 2 | . | . | . | 24 |
| *Aetobatus narinari* | . | . | . | . | . | 3 | . | . | 3 |
| *Aluterus schoepfii* | . | 1 | . | . | 1 | 4 | 1 | 11 | 18 |
| *Ameiurus catus* | . | . | . | . | . | . | . | 9 | 9 |
| *Anarchopterus criniger* | . | . | 1 | . | . | 2 | . | . | 3 |
| *Anchoa cubana* | 1,645 | . | 8 | 177 | 1,864 | . | . | 213 | 3,907 |
| *Anchoa hepsetus* | 30 | 88 | 2 | 210 | 305 | . | . | 16 | 651 |
| *Anchoa lyolepis* | 8 | . | . | . | . | . | . | . | 8 |
| *Anchoa mitchilli* | 7,709 | 1,074 | 15,313 | 49,118 | 163,141 | 1 | . | 22,802 | 259,158 |
| *Ancylopsetta quadrocellata* | . | . | . | . | . | . | . | 2 | 2 |
| *Archosargus probatocephalus* | 354 | 18 | 61 | 85 | 65 | 590 | 146 | 81 | 1,400 |
| *Argopecten* spp. | 1 | . | . | . | . | 7 | . | 5 | 13 |
| *Ariopsis felis* | 14 | 88 | 13 | 4 | 12 | 1,698 | 655 | 1,037 | 3,521 |
| *Bagre marinus* | . | . | . | . | . | 96 | 23 | 24 | 143 |
| *Bairdiella chrysoura* | 1,053 | 6 | 673 | 80 | 50 | 1,084 | 1,244 | 559 | 4,749 |
| *Bathygobius soporator* | . | . | . | 24 | 10 | . | . | 9 | 43 |
| *Belonesox belizanus* | . | . | . | 4 | 1 | . | . | . | 5 |
| *Brevoortia* spp. | . | 52 | 12 | 1,141 | 5,975 | 4,446 | 37 | 1 | 11,664 |
| *Calamus arctifrons* | 7 | 1 | 2 | . | . | 83 | 5 | 3 | 101 |
| *Callinectes ornatus* | . | . | . | . | . | . | . | 1 | 1 |
| *Callinectes sapidus* | 21 | 9 | 35 | 85 | 50 | 102 | 41 | 249 | 592 |
| *Callinectes similis* | . | . | . | . | . | . | 1 | 1 | 2 |
| *Caranx crysos* | . | . | . | . | . | 1 | . | . | 1 |

Appendix TB08-02. (Continued)

| Species | Gear and Strata | | | | | | | | Totals |
|---|---|---|---|---|---|---|---|---|---|
| | 21.3-m bay seine | | | 21.3-m river seine | | 183-m haul seine | | 6.1-m otter trawl | |
| | Veg | Unveg | Shore | Over | Nonover | Over | Nonover | | |
| | E=115 | E=125 | E=168 | E=168 | E=120 | E=183 | E=57 | E=336 | E=1,272 |
| *Caranx hippos* | . | . | . | . | 1 | 133 | 175 | 1 | 310 |
| *Caranx latus* | . | . | . | . | . | 1 | 1 | . | 2 |
| *Carcharhinus leucas* | . | . | . | . | . | 1 | . | . | 1 |
| *Carcharhinus limbatus* | . | . | . | . | . | . | 1 | . | 1 |
| *Centropomus undecimalis* | 3 | . | 4 | 50 | 48 | 1,185 | 319 | 1 | 1,610 |
| *Centropristis striata* | . | . | 1 | . | . | 3 | 4 | 2 | 10 |
| *Chaetodipterus faber* | 8 | 3 | 17 | 1 | 1 | 246 | 29 | 62 | 367 |
| *Chasmodes saburrae* | 31 | 1 | 17 | 5 | 2 | 5 | . | 8 | 69 |
| *Chilomycterus schoepfii* | 34 | 2 | 3 | . | . | 126 | 28 | 262 | 455 |
| *Chloroscombrus chrysurus* | 33 | 2 | 5 | . | . | 267 | 2 | 17 | 326 |
| *Citharichthys macrops* | . | 1 | . | . | . | . | . | 7 | 8 |
| *Ctenogobius smaragdus* | . | 1 | 1 | . | 8 | . | . | . | 10 |
| *Cynoscion arenarius* | 1 | 3 | 120 | 15 | 142 | 24 | 1 | 1,813 | 2,119 |
| *Cynoscion nebulosus* | 307 | 29 | 219 | 65 | 33 | 257 | 103 | 124 | 1,137 |
| *Cyprinodon variegatus* | 7 | 3 | 636 | 237 | 562 | . | 1 | . | 1,446 |
| *Dasyatis americana* | . | 1 | . | . | . | 1 | . | 2 | 4 |
| *Dasyatis sabina* | 6 | 5 | 3 | 6 | . | 325 | 162 | 245 | 752 |
| *Dasyatis say* | 1 | . | . | . | . | 22 | 13 | 7 | 43 |
| *Diplectrum formosum* | 1 | . | . | . | . | 1 | . | 23 | 25 |
| *Diplodus holbrookii* | . | . | . | . | . | 31 | 10 | 1 | 42 |
| *Diplogrammus pauciradiatus* | . | . | . | . | . | . | . | 1 | 1 |
| *Dorosoma petenense* | . | . | . | . | . | 1 | . | . | 1 |
| *Echeneis neucratoides* | . | . | . | . | . | 2 | . | 3 | 5 |
| *Elacatinus macrodon* | . | . | . | . | . | . | . | 3 | 3 |
| *Elops saurus* | . | . | 5 | 15 | 6 | 5,947 | 485 | . | 6,458 |
| *Epinephelus itajara* | . | . | . | . | . | . | . | 1 | 1 |
| *Etropus crossotus* | . | . | . | . | . | . | . | 2 | 2 |
| *Eucinostomus gula* | 857 | 275 | 1,971 | 824 | 325 | 3,250 | 2,322 | 2,174 | 11,998 |
| *Eucinostomus harengulus* | 79 | 112 | 963 | 2,624 | 1,800 | 1,177 | 349 | 237 | 7,341 |
| *Eucinostomus* spp. | 2,664 | 319 | 5,018 | 5,841 | 3,622 | 10 | . | 2,852 | 20,326 |
| *Eugerres plumieri* | 41 | . | 39 | 99 | 92 | 143 | 2 | 8 | 424 |
| *Farfantepenaeus duorarum* | 370 | 44 | 322 | 165 | 112 | 101 | 16 | 1,049 | 2,179 |
| *Floridichthys carpio* | 61 | 19 | 3,657 | 152 | 184 | 3 | 1 | . | 4,077 |

Appendix TB08-02. (Continued)

| Species | Gear and Strata | | | | | | | | Totals |
|---|---|---|---|---|---|---|---|---|---|
| | 21.3-m bay seine | | | 21.3-m river seine | | 183-m haul seine | | 6.1-m otter trawl | |
| | Veg | Unveg | Shore | Over | Nonover | Over | Nonover | | |
| | E=115 | E=125 | E=168 | E=168 | E=120 | E=183 | E=57 | E=336 | E=1,272 |
| *Fundulus confluentus* | . | . | 1 | 1 | 4 | . | . | . | 6 |
| *Fundulus grandis* | 1 | . | 377 | 198 | 669 | 23 | . | . | 1,268 |
| *Fundulus seminolis* | . | . | . | 4 | 6 | . | . | . | 10 |
| *Fundulus similis* | . | 1 | 406 | 89 | 325 | 4 | 7 | . | 832 |
| *Gambusia holbrooki* | . | . | 1 | 22 | 552 | . | . | . | 575 |
| *Gobiesox strumosus* | . | . | 1 | 2 | 2 | . | . | 5 | 10 |
| *Gobiosoma bosc* | 2 | 1 | 1 | 117 | 125 | 1 | . | 17 | 264 |
| *Gobiosoma longipala* | . | . | 1 | . | . | . | . | 14 | 15 |
| *Gobiosoma robustum* | 87 | 22 | 32 | 9 | 7 | . | . | 24 | 181 |
| *Gobiosoma* spp. | 30 | 3 | 8 | 95 | 80 | . | . | 105 | 321 |
| *Gymnura micrura* | . | . | . | . | . | 8 | 7 | 7 | 22 |
| *Haemulon plumierii* | 14 | . | 3 | . | . | 5 | 4 | 18 | 44 |
| *Haemulon* spp. | . | . | . | . | . | . | . | 1 | 1 |
| *Halichoeres bivittatus* | 5 | . | . | . | . | . | . | 1 | 6 |
| *Harengula jaguana* | 3,955 | 577 | 961 | 1,998 | 5,463 | 11,837 | 924 | 55 | 25,770 |
| *Hemiramphus balao* | . | 1 | . | . | . | . | . | . | 1 |
| *Hippocampus erectus* | 5 | 5 | 4 | . | . | 2 | 1 | 29 | 46 |
| *Hippocampus zosterae* | 10 | 1 | 15 | . | . | . | . | 1 | 27 |
| *Hypleurochilus caudovittatus* | . | . | . | . | . | . | . | 5 | 5 |
| *Hyporhamphus meeki* | 47 | 8 | . | . | . | 37 | 3 | . | 95 |
| *Hyporhamphus* spp. | 18 | 1 | 2 | . | . | 2 | 1 | . | 24 |
| *Hyporhamphus unifasciatus* | 11 | . | . | . | . | . | . | . | 11 |
| *Hypsoblennius hentz* | 1 | . | 1 | . | . | . | . | 3 | 5 |
| *Labidesthes sicculus* | . | . | . | 2 | . | . | . | . | 2 |
| *Lagodon rhomboides* | 8,166 | 610 | 5,298 | 970 | 1,071 | 31,452 | 12,081 | 5,283 | 64,931 |
| *Leiostomus xanthurus* | 57 | 6 | 196 | 37 | 251 | 236 | 155 | 59 | 997 |
| *Lepisosteus osseus* | . | . | . | 4 | . | 1 | . | 14 | 19 |
| *Lepisosteus platyrhincus* | . | . | . | 3 | . | . | . | 1 | 4 |
| *Limulus polyphemus* | . | 2 | 2 | . | 1 | 34 | 14 | 42 | 95 |
| *Lophogobius cyprinoides* | . | . | . | . | 14 | . | . | . | 14 |
| *Lucania parva* | 3,037 | 43 | 8,801 | 1,184 | 2,004 | 1 | . | 164 | 15,234 |
| *Lupinoblennius nicholsi* | . | . | . | . | 1 | . | . | . | 1 |
| *Lutjanus griseus* | 14 | 1 | 15 | 8 | 8 | 90 | 18 | 14 | 168 |

Appendix TB08-02. (Continued)

| Species | Gear and Strata | | | | | | | | Totals |
|---|---|---|---|---|---|---|---|---|---|
| | 21.3-m bay seine | | | 21.3-m river seine | | 183-m haul seine | | 6.1-m otter trawl | |
| | Veg | Unveg | Shore | Over | Nonover | Over | Nonover | | |
| | E=115 | E=125 | E=168 | E=168 | E=120 | E=183 | E=57 | E=336 | E=1,272 |
| *Lutjanus synagris* | 47 | . | 15 | . | . | 21 | 6 | 30 | 119 |
| *Malaclemys terrapin* | . | . | . | . | . | 2 | . | . | 2 |
| *Membras martinica* | 1 | . | 126 | 265 | 35 | . | . | . | 427 |
| *Menidia* spp. | 740 | 259 | 8,979 | 9,234 | 6,194 | 5 | . | 42 | 25,453 |
| *Menippe* spp. | . | 1 | 2 | . | . | 1 | 1 | 138 | 143 |
| *Menticirrhus americanus* | 20 | 28 | 491 | 22 | 40 | 16 | 6 | 1,079 | 1,702 |
| *Menticirrhus littoralis* | . | . | . | . | . | . | 18 | . | 18 |
| *Menticirrhus saxatilis* | 6 | 5 | 7 | 1 | . | . | . | 3 | 22 |
| *Menticirrhus* spp. | . | . | . | . | . | . | . | 1 | 1 |
| *Microgobius gulosus* | 531 | 217 | 276 | 490 | 197 | . | . | 265 | 1,976 |
| *Microgobius* spp. | . | . | . | . | . | . | . | 1 | 1 |
| *Microgobius thalassinus* | . | . | . | . | . | . | . | 61 | 61 |
| *Micropogonias undulatus* | . | . | . | . | . | . | . | 1 | 1 |
| *Micropterus salmoides* | . | . | . | 1 | . | . | . | . | 1 |
| *Monacanthus ciliatus* | 7 | . | . | . | . | 1 | 1 | 2 | 11 |
| *Mugil cephalus* | . | 1 | 522 | 866 | 2,873 | 884 | 287 | . | 5,433 |
| *Mugil curema* | . | . | 35 | 48 | 10 | 995 | 195 | 2 | 1,285 |
| *Mugil gyrans* | 1 | . | 106 | 42 | 41 | 372 | 770 | . | 1,332 |
| *Mugil* spp. | . | . | . | . | . | 1 | . | . | 1 |
| *Mycteroperca microlepis* | 4 | . | 2 | . | . | 60 | 9 | 1 | 76 |
| *Nicholsina usta* | 7 | . | 1 | . | 1 | 3 | 9 | 18 | 39 |
| *Notropis petersoni* | . | . | . | 4 | . | . | . | . | 4 |
| *Ocyurus chrysurus* | 1 | . | . | . | . | . | . | . | 1 |
| *Ogcocephalus cubifrons* | . | . | . | . | . | . | 1 | 4 | 5 |
| *Oligoplites saurus* | 45 | 24 | 150 | 57 | 47 | 78 | 28 | . | 429 |
| *Opisthonema oglinum* | 734 | 13 | 288 | 219 | 595 | 110 | 37 | 9 | 2,005 |
| *Opsanus beta* | 1 | . | 3 | 3 | 4 | 52 | 18 | 81 | 162 |
| *Orthopristis chrysoptera* | 949 | 103 | 273 | 7 | 80 | 1,502 | 853 | 968 | 4,735 |
| *Ostraciidae* spp. | 1 | . | . | . | . | . | . | . | 1 |
| *Paraclinus fasciatus* | . | . | . | . | . | . | . | 1 | 1 |
| *Paralichthys albigutta* | 4 | 7 | 9 | 1 | 1 | 45 | 19 | 60 | 146 |
| *Poecilia latipinna* | . | 1 | 72 | 170 | 1,015 | . | . | . | 1,258 |
| *Pogonias cromis* | . | . | 2 | 3 | 4 | 46 | 1 | 2 | 58 |

Appendix TB08-02. (Continued)

| Species | Gear and Strata | | | | | | | | Totals |
|---|---|---|---|---|---|---|---|---|---|
| | 21.3-m bay seine | | | 21.3-m river seine | | 183-m haul seine | | 6.1-m otter trawl | |
| | Veg | Unveg | Shore | Over | Nonover | Over | Nonover | | |
| | E=115 | E=125 | E=168 | E=168 | E=120 | E=183 | E=57 | E=336 | E=1,272 |
| *Portunus* spp. | 3 | 10 | 5 | . | . | 2 | 1 | 1,036 | 1,057 |
| *Prionotus scitulus* | 14 | 44 | 12 | 9 | 13 | 29 | 9 | 1,132 | 1,262 |
| *Prionotus tribulus* | 1 | 2 | 2 | 2 | 7 | 3 | 2 | 63 | 82 |
| *Rhinobatos lentiginosus* | . | . | . | . | . | . | . | 1 | 1 |
| *Rhinoptera bonasus* | . | 1 | . | . | . | 353 | 32 | 3 | 389 |
| *Rimapenaeus constrictus* | . | . | . | . | 1 | . | . | 11 | 12 |
| *Sardinella aurita* | 1,173 | 4 | . | 1 | . | 91 | . | . | 1,269 |
| *Sarotherodon melanotheron* | . | . | 1 | . | 22 | 6 | 1 | . | 30 |
| *Sciaenops ocellatus* | 6 | . | 261 | 41 | 43 | 222 | 22 | 9 | 604 |
| *Scomberomorus maculatus* | 2 | . | . | . | . | 12 | 7 | . | 21 |
| *Selene vomer* | 1 | . | . | 1 | . | 82 | 30 | 3 | 117 |
| *Serranus subligarius* | . | . | . | . | . | . | . | 1 | 1 |
| *Sicyonia laevigata* | 1 | . | . | . | . | . | . | . | 1 |
| *Sicyonia* spp. | . | . | . | . | . | . | . | 1 | 1 |
| *Sicyonia typica* | . | . | . | . | . | . | . | 2 | 2 |
| *Sphoeroides nephelus* | 41 | 17 | 124 | 25 | 36 | 81 | 18 | 38 | 380 |
| *Sphoeroides spengleri* | . | . | 1 | . | . | 1 | . | . | 2 |
| *Sphyraena barracuda* | . | 1 | 4 | . | . | 46 | 12 | . | 63 |
| *Sphyraena borealis* | 1 | . | 2 | . | . | . | . | 1 | 4 |
| *Sphyrna tiburo* | . | 2 | . | . | . | 15 | 8 | . | 25 |
| *Stephanolepis hispidus* | 142 | 4 | 26 | . | 17 | 97 | 93 | 94 | 473 |
| *Strongylura marina* | 5 | 1 | 2 | 18 | 25 | 31 | 46 | . | 128 |
| *Strongylura notata* | 9 | 25 | 164 | 44 | 28 | 728 | 247 | . | 1,245 |
| *Strongylura* spp. | . | . | 7 | 6 | 12 | . | . | . | 25 |
| *Strongylura timucu* | 1 | . | 3 | 5 | 3 | 2 | . | . | 14 |
| *Symphurus plagiusa* | . | 2 | 1 | 7 | 19 | . | 3 | 127 | 159 |
| *Syngnathus floridae* | 58 | 1 | 7 | . | . | 3 | . | 7 | 76 |
| *Syngnathus louisianae* | 45 | 6 | 42 | 5 | . | . | 2 | 83 | 183 |
| *Syngnathus scovelli* | 240 | 8 | 96 | 17 | 13 | 3 | 1 | 57 | 435 |
| *Synodus foetens* | 55 | 96 | 71 | 37 | 15 | 102 | 38 | 304 | 718 |
| *Tilapia* spp. | 4 | . | 1 | . | 4 | . | . | . | 9 |
| *Trachinotus carolinus* | . | . | . | . | . | 1 | 6 | . | 7 |
| *Trachinotus falcatus* | . | . | 4 | . | . | 40 | 68 | . | 112 |

Appendix TB08-02. (Continued)

| Species | Gear and Strata | | | | | | | | Totals |
|---|---|---|---|---|---|---|---|---|---|
| | 21.3-m bay seine | | | 21.3-m river seine | | 183-m haul seine | | 6.1-m otter trawl | |
| | Veg | Unveg | Shore | Over | Nonover | Over | Nonover | | |
| | E=115 | E=125 | E=168 | E=168 | E=120 | E=183 | E=57 | E=336 | E=1,272 |
| *Trinectes maculatus* | . | . | . | 489 | 329 | 1 | . | 2,445 | 3,264 |
| *Urophycis floridana* | . | . | 1 | . | . | . | . | 11 | 12 |
| **Totals** | **35,727** | **4,342** | **57,526** | **78,039** | **200,841** | **71,345** | **22,327** | **48,134** | **518,281** |

Appendix TB08-03. Summary by zone of species collected during Tampa Bay stratified-random sampling, 2008. Zones A-E were located in Tampa Bay, while Zones K (Alafia River), L (Little Manatee River), M (Manatee River), and N (Braden River) represent tributaries of Tampa Bay. Effort, or the total number of hauls, is labeled 'E'. Taxa are arranged alphabetically.

| ***Species*** | **Zone** | | | | | | | | | **Totals** |
|---|---|---|---|---|---|---|---|---|---|---|
| | **A** | **B** | **C** | **D** | **E** | **K** | **L** | **M** | **N** | |
| | **E=168** | **E=156** | **E=204** | **E=120** | **E=180** | **E=72** | **E=180** | **E=108** | **E=84** | **E=1,272** |
| *Acanthostracion quadricornis* | 41 | 50 | 28 | 48 | 76 | . | . | . | . | 243 |
| *Achirus lineatus* | 6 | 15 | 71 | 11 | 14 | 209 | 11 | 29 | 5 | 371 |
| *Adinia xenica* | 12 | . | . | . | . | . | . | 3 | 9 | 24 |
| *Aetobatus narinari* | . | . | . | . | 3 | . | . | . | . | 3 |
| *Aluterus schoepfii* | 1 | 3 | 4 | 3 | 5 | . | 2 | . | . | 18 |
| *Ameiurus catus* | . | . | . | . | . | . | 9 | . | . | 9 |
| *Anarchopterus criniger* | 1 | . | . | . | 2 | . | . | . | . | 3 |
| *Anchoa cubana* | 14 | 1,631 | 197 | 22 | 2 | 1,864 | 177 | . | . | 3,907 |
| *Anchoa hepsetus* | 20 | 3 | 94 | 9 | 8 | 500 | 11 | 6 | . | 651 |
| *Anchoa lyolepis* | . | 8 | . | . | . | . | . | . | . | 8 |
| *Anchoa mitchilli* | 3,747 | 6,400 | 10,488 | 1,479 | 4,621 | 75,853 | 60,749 | 13,389 | 82,432 | 259,158 |
| *Ancylopsetta quadrocellata* | . | 1 | . | . | 1 | . | . | . | . | 2 |
| *Archosargus probatocephalus* | 231 | 149 | 195 | 266 | 365 | 23 | 84 | 54 | 33 | 1,400 |
| *Argopecten* spp. | . | . | 2 | 2 | 8 | . | . | 1 | . | 13 |
| *Ariopsis felis* | 782 | 190 | 1,478 | 52 | 132 | 57 | 686 | 115 | 29 | 3,521 |
| *Bagre marinus* | 99 | 2 | 29 | 3 | 2 | 4 | 1 | 2 | 1 | 143 |
| *Bairdiella chrysoura* | 939 | 796 | 564 | 1,539 | 655 | 33 | 66 | 99 | 58 | 4,749 |
| *Bathygobius soporator* | . | . | . | . | . | 13 | 16 | 11 | 3 | 43 |
| *Belonesox belizanus* | . | . | . | . | . | 1 | 4 | . | . | 5 |
| *Brevoortia* spp. | 4,237 | 30 | 84 | 64 | 132 | 152 | 4,398 | 15 | 2,552 | 11,664 |
| *Calamus arctifrons* | 2 | 1 | 6 | 85 | 6 | . | . | 1 | . | 101 |
| *Callinectes ornatus* | . | . | . | . | 1 | . | . | . | . | 1 |
| *Callinectes sapidus* | 64 | 70 | 72 | 30 | 68 | 114 | 55 | 81 | 38 | 592 |
| *Callinectes similis* | . | . | . | . | 2 | . | . | . | . | 2 |
| *Caranx crysos* | . | . | . | 1 | . | . | . | . | . | 1 |
| *Caranx hippos* | 2 | 114 | 18 | 30 | 144 | 1 | 1 | . | . | 310 |
| *Caranx latus* | . | 1 | . | 1 | . | . | . | . | . | 2 |
| *Carcharhinus leucas* | . | . | 1 | . | . | . | . | . | . | 1 |
| *Carcharhinus limbatus* | . | . | 1 | . | . | . | . | . | . | 1 |
| *Centropomus undecimalis* | 146 | 499 | 127 | 175 | 564 | 10 | 44 | 14 | 31 | 1,610 |

Appendix TB08-03. (Continued)

| *Species* | Zone | | | | | | | | | Totals |
|---|---|---|---|---|---|---|---|---|---|---|
| | A | B | C | D | E | K | L | M | N | |
| | E=168 | E=156 | E=204 | E=120 | E=180 | E=72 | E=180 | E=108 | E=84 | E=1,272 |
| *Centropristis striata* | . | . | . | 7 | 3 | . | . | . | . | 10 |
| *Chaetodipterus faber* | 52 | 92 | 59 | 25 | 115 | 10 | 7 | 2 | 5 | 367 |
| *Chasmodes saburrae* | 11 | 24 | 7 | 4 | 12 | . | . | 9 | 2 | 69 |
| *Chilomycterus schoepfii* | 47 | 81 | 109 | 74 | 125 | . | 8 | 10 | 1 | 455 |
| *Chloroscombrus chrysurus* | 5 | 30 | 218 | 69 | 3 | . | 1 | . | . | 326 |
| *Citharichthys macrops* | . | 1 | . | 1 | 6 | . | . | . | . | 8 |
| *Ctenogobius smaragdus* | . | . | 2 | . | . | 8 | . | . | . | 10 |
| *Cynoscion arenarius* | 750 | 98 | 183 | 1 | 5 | 900 | 50 | 10 | 122 | 2,119 |
| *Cynoscion nebulosus* | 329 | 153 | 182 | 200 | 128 | 45 | 33 | 22 | 45 | 1,137 |
| *Cyprinodon variegatus* | 186 | 12 | 18 | 53 | 378 | 546 | 71 | 94 | 88 | 1,446 |
| *Dasyatis americana* | . | . | . | 2 | 1 | . | 1 | . | . | 4 |
| *Dasyatis sabina* | 143 | 175 | 254 | 92 | 32 | 22 | 13 | 13 | 8 | 752 |
| *Dasyatis say* | 13 | 4 | 9 | 10 | 6 | . | 1 | . | . | 43 |
| *Diplectrum formosum* | . | 4 | . | 6 | 15 | . | . | . | . | 25 |
| *Diplodus holbrookii* | . | . | . | 39 | 3 | . | . | . | . | 42 |
| *Diplogrammus pauciradiatus* | . | . | . | . | 1 | . | . | . | . | 1 |
| *Dorosoma petenense* | . | . | . | . | 1 | . | . | . | . | 1 |
| *Echeneis neucratoides* | . | 1 | 1 | . | . | 1 | 1 | . | 1 | 5 |
| *Elacatinus macrodon* | . | . | . | . | 3 | . | . | . | . | 3 |
| *Elops saurus* | 137 | 570 | 5,283 | 269 | 178 | 17 | 4 | . | . | 6,458 |
| *Epinephelus itajara* | . | . | . | . | . | . | 1 | . | . | 1 |
| *Etropus crossotus* | . | . | . | 2 | . | . | . | . | . | 2 |
| *Eucinostomus gula* | 1,302 | 1,888 | 1,131 | 3,513 | 2,663 | 104 | 533 | 816 | 48 | 11,998 |
| *Eucinostomus harengulus* | 614 | 673 | 462 | 231 | 734 | 851 | 1,749 | 539 | 1,488 | 7,341 |
| *Eucinostomus* spp. | 591 | 1,742 | 1,641 | 3,263 | 2,167 | 3,132 | 3,464 | 1,823 | 2,503 | 20,326 |
| *Eugerres plumieri* | 51 | 49 | 22 | 1 | 102 | 5 | 153 | 4 | 37 | 424 |
| *Farfantepenaeus duorarum* | 149 | 134 | 492 | 141 | 397 | 137 | 308 | 140 | 281 | 2,179 |
| *Floridichthys carpio* | 1,942 | 31 | 534 | 357 | 877 | 298 | 37 | 1 | . | 4,077 |
| *Fundulus confluentus* | . | . | . | . | 1 | . | 4 | . | 1 | 6 |
| *Fundulus grandis* | 124 | 6 | 39 | 119 | 113 | 639 | 117 | 35 | 76 | 1,268 |
| *Fundulus seminolis* | . | . | . | . | . | . | 10 | . | . | 10 |
| *Fundulus similis* | 184 | 62 | 22 | 9 | 141 | 368 | . | 45 | 1 | 832 |
| *Gambusia holbrooki* | 1 | . | . | . | . | 1 | 527 | 3 | 43 | 575 |
| *Gobiesox strumosus* | 2 | 1 | 2 | . | . | . | . | 3 | 2 | 10 |

Appendix TB08-03. (Continued)

| Species | Zone | | | | | | | | | Totals |
|---|---|---|---|---|---|---|---|---|---|---|
| | A | B | C | D | E | K | L | M | N | |
| | E=168 | E=156 | E=204 | E=120 | E=180 | E=72 | E=180 | E=108 | E=84 | E=1,272 |
| *Gobiosoma bosc* | 2 | . | 1 | 2 | 1 | 21 | 117 | 18 | 102 | 264 |
| *Gobiosoma longipala* | 2 | 6 | 4 | 1 | 2 | . | . | . | . | 15 |
| *Gobiosoma robustum* | 27 | 23 | 47 | 45 | 13 | 3 | 9 | 14 | . | 181 |
| *Gobiosoma* spp. | 14 | 15 | 7 | 13 | 11 | 2 | 136 | 63 | 60 | 321 |
| *Gymnura micrura* | 3 | 3 | 7 | 7 | 2 | . | . | . | . | 22 |
| *Haemulon plumierii* | . | 1 | 1 | 14 | 28 | . | . | . | . | 44 |
| *Haemulon* spp. | . | . | . | . | 1 | . | . | . | . | 1 |
| *Halichoeres bivittatus* | . | . | . | 5 | 1 | . | . | . | . | 6 |
| *Harengula jaguana* | 8,341 | 2,842 | 2,128 | 1,934 | 3,058 | 511 | 2 | 5,445 | 1,509 | 25,770 |
| *Hemiramphus balao* | . | . | . | . | 1 | . | . | . | . | 1 |
| *Hippocampus erectus* | 6 | 12 | 13 | 7 | 8 | . | . | . | . | 46 |
| *Hippocampus zosterae* | 6 | 5 | 1 | 6 | 9 | . | . | . | . | 27 |
| *Hypleurochilus caudovittatus* | . | 1 | . | 3 | 1 | . | . | . | . | 5 |
| *Hyporhamphus meeki* | 6 | 11 | 45 | 9 | 24 | . | . | . | . | 95 |
| *Hyporhamphus* spp. | . | 20 | 2 | 1 | 1 | . | . | . | . | 24 |
| *Hyporhamphus unifasciatus* | . | 11 | . | . | . | . | . | . | . | 11 |
| *Hypsoblennius hentz* | 1 | 1 | . | 3 | . | . | . | . | . | 5 |
| *Labidesthes sicculus* | . | . | . | . | . | . | 2 | . | . | 2 |
| *Lagodon rhomboides* | 3,729 | 8,732 | 4,523 | 27,164 | 18,107 | 601 | 1,041 | 737 | 297 | 64,931 |
| *Leiostomus xanthurus* | 74 | 48 | 25 | 491 | 50 | 84 | 212 | 12 | 1 | 997 |
| *Lepisosteus osseus* | . | . | 1 | . | 1 | . | 12 | 1 | 4 | 19 |
| *Lepisosteus platyrhincus* | . | . | . | . | . | . | 4 | . | . | 4 |
| *Limulus polyphemus* | 37 | 15 | 13 | 4 | 8 | 17 | 1 | . | . | 95 |
| *Lophogobius cyprinoides* | . | . | . | . | . | . | 14 | . | . | 14 |
| *Lucania parva* | 335 | 412 | 327 | 1,121 | 9,687 | 450 | 2,430 | 126 | 346 | 15,234 |
| *Lupinoblennius nicholsi* | . | . | . | . | . | . | . | . | 1 | 1 |
| *Lutjanus griseus* | 7 | 22 | 10 | 54 | 54 | 2 | 10 | 5 | 4 | 168 |
| *Lutjanus synagris* | 1 | 6 | 5 | 51 | 56 | . | . | . | . | 119 |
| *Malaclemys terrapin* | 1 | . | 1 | . | . | . | . | . | . | 2 |
| *Membras martinica* | 1 | 1 | 31 | 94 | . | 271 | 27 | 2 | . | 427 |
| *Menidia* spp. | 3,227 | 1,232 | 1,578 | 2,280 | 1,667 | 3,407 | 5,432 | 2,855 | 3,775 | 25,453 |
| *Menippe* spp. | 5 | 28 | 60 | 25 | 24 | . | 1 | . | . | 143 |
| *Menticirrhus americanus* | 1,004 | 6 | 255 | 3 | 19 | 108 | 56 | 243 | 8 | 1,702 |
| *Menticirrhus littoralis* | . | . | . | 18 | . | . | . | . | . | 18 |

Appendix TB08-03. (Continued)

| Species | Zone | | | | | | | | | Totals |
|---|---|---|---|---|---|---|---|---|---|---|
| | A | B | C | D | E | K | L | M | N | |
| | E=168 | E=156 | E=204 | E=120 | E=180 | E=72 | E=180 | E=108 | E=84 | E=1,272 |
| *Menticirrhus saxatilis* | . | 5 | 8 | 3 | 3 | 1 | 1 | 1 | . | 22 |
| *Menticirrhus* spp. | . | . | 1 | . | . | . | . | . | . | 1 |
| *Microgobius gulosus* | 328 | 179 | 314 | 58 | 161 | 66 | 469 | 123 | 278 | 1,976 |
| *Microgobius* spp. | . | . | 1 | . | . | . | . | . | . | 1 |
| *Microgobius thalassinus* | 16 | . | 27 | 5 | 1 | 4 | . | 8 | . | 61 |
| *Micropogonias undulatus* | . | . | . | . | . | 1 | . | . | . | 1 |
| *Micropterus salmoides* | . | . | . | . | . | . | 1 | . | . | 1 |
| *Monacanthus ciliatus* | . | . | . | 9 | 2 | . | . | . | . | 11 |
| *Mugil cephalus* | 490 | 170 | 340 | 388 | 306 | 3,194 | 435 | 92 | 18 | 5,433 |
| *Mugil curema* | 52 | 115 | 83 | 622 | 355 | 33 | 3 | 21 | 1 | 1,285 |
| *Mugil gyrans* | 62 | 198 | 55 | 802 | 132 | 57 | 5 | 21 | . | 1,332 |
| *Mugil* spp. | . | . | . | 1 | . | . | . | . | . | 1 |
| *Mycteroperca microlepis* | . | . | . | 39 | 37 | . | . | . | . | 76 |
| *Nicholsina usta* | . | . | . | 24 | 12 | . | . | 3 | . | 39 |
| *Notropis petersoni* | . | . | . | . | . | . | 4 | . | . | 4 |
| *Ocyurus chrysurus* | . | . | . | 1 | . | . | . | . | . | 1 |
| *Ogcocephalus cubifrons* | . | 1 | . | 2 | 2 | . | . | . | . | 5 |
| *Oligoplites saurus* | 77 | 42 | 116 | 39 | 51 | 50 | 26 | 20 | 8 | 429 |
| *Opisthonema oglinum* | 42 | 101 | 124 | 365 | 559 | 200 | 17 | 597 | . | 2,005 |
| *Opsanus beta* | 11 | 13 | 31 | 30 | 55 | 2 | 9 | 8 | 3 | 162 |
| *Orthopristis chrysoptera* | 190 | 824 | 425 | 2,192 | 899 | 21 | 7 | 176 | 1 | 4,735 |
| *Ostraciidae* spp. | . | . | . | 1 | . | . | . | . | . | 1 |
| *Paraclinus fasciatus* | . | . | . | 1 | . | . | . | . | . | 1 |
| *Paralichthys albigutta* | 15 | 26 | 28 | 43 | 24 | 2 | 6 | 2 | . | 146 |
| *Poecilia latipinna* | 3 | . | 1 | 34 | 35 | 51 | 993 | 67 | 74 | 1,258 |
| *Pogonias cromis* | 5 | 2 | 7 | 4 | 31 | 5 | 2 | 2 | . | 58 |
| *Portunus* spp. | 30 | 622 | 148 | 32 | 217 | 2 | . | 6 | . | 1,057 |
| *Prionotus scitulus* | 227 | 319 | 345 | 99 | 217 | 27 | 7 | 21 | . | 1,262 |
| *Prionotus tribulus* | 12 | 5 | 28 | 2 | 4 | 11 | 9 | 7 | 4 | 82 |
| *Rhinobatos lentiginosus* | . | . | . | . | 1 | . | . | . | . | 1 |
| *Rhinoptera bonasus* | 35 | 166 | 164 | 2 | 20 | 2 | . | . | . | 389 |
| *Rimapenaeus constrictus* | . | . | 1 | . | 6 | 1 | . | 4 | . | 12 |
| *Sardinella aurita* | . | . | 1 | 10 | 1,257 | 1 | . | . | . | 1,269 |
| *Sarotherodon melanotheron* | 1 | . | 1 | 1 | 5 | . | 22 | . | . | 30 |

Appendix TB08-03. (Continued)

| Species | Zone | | | | | | | | | Totals |
|---|---|---|---|---|---|---|---|---|---|---|
| | A | B | C | D | E | K | L | M | N | |
| | E=168 | E=156 | E=204 | E=120 | E=180 | E=72 | E=180 | E=108 | E=84 | E=1,272 |
| *Sciaenops ocellatus* | 178 | 18 | 125 | 152 | 38 | 38 | 31 | 5 | 19 | 604 |
| *Scomberomorus maculatus* | 2 | 2 | 9 | 6 | 2 | . | . | . | . | 21 |
| *Selene vomer* | . | 29 | 8 | 35 | 44 | . | 1 | . | . | 117 |
| *Serranus subligarius* | . | . | . | . | 1 | . | . | . | . | 1 |
| *Sicyonia laevigata* | . | . | . | 1 | . | . | . | . | . | 1 |
| *Sicyonia* spp. | . | . | 1 | . | . | . | . | . | . | 1 |
| *Sicyonia typica* | . | . | . | . | 2 | . | . | . | . | 2 |
| *Sphoeroides nephelus* | 36 | 56 | 81 | 32 | 98 | 41 | 11 | 17 | 8 | 380 |
| *Sphoeroides spengleri* | . | . | . | 2 | . | . | . | . | . | 2 |
| *Sphyraena barracuda* | . | 7 | 2 | 16 | 38 | . | . | . | . | 63 |
| *Sphyraena borealis* | . | . | . | 2 | 2 | . | . | . | . | 4 |
| *Sphyrna tiburo* | 10 | 2 | 8 | 3 | 2 | . | . | . | . | 25 |
| *Stephanolepis hispidus* | 6 | 40 | 32 | 217 | 159 | 16 | 2 | . | 1 | 473 |
| *Strongylura marina* | 14 | 6 | 46 | 11 | 8 | 26 | 11 | 2 | 4 | 128 |
| *Strongylura notata* | 260 | 383 | 150 | 33 | 347 | 27 | 14 | 20 | 11 | 1,245 |
| *Strongylura* spp. | 2 | . | 2 | 1 | 2 | 8 | 2 | 4 | 4 | 25 |
| *Strongylura timucu* | 1 | . | 1 | 2 | 2 | 5 | . | 1 | 2 | 14 |
| *Symphurus plagiusa* | 18 | 5 | 61 | 3 | 10 | 44 | 9 | 9 | . | 159 |
| *Syngnathus floridae* | 1 | 4 | 2 | 37 | 32 | . | . | . | . | 76 |
| *Syngnathus louisianae* | 51 | 30 | 33 | 29 | 22 | 5 | 7 | 4 | 2 | 183 |
| *Syngnathus scovelli* | 79 | 64 | 88 | 44 | 106 | 15 | 20 | 13 | 6 | 435 |
| *Synodus foetens* | 100 | 166 | 120 | 97 | 130 | 11 | 32 | 61 | 1 | 718 |
| *Tilapia* spp. | . | 5 | . | . | . | . | 4 | . | . | 9 |
| *Trachinotus carolinus* | 1 | . | 2 | 4 | . | . | . | . | . | 7 |
| *Trachinotus falcatus* | . | 39 | 39 | 27 | 7 | . | . | . | . | 112 |
| *Trinectes maculatus* | 7 | 1 | 18 | . | 3 | 364 | 2,133 | 39 | 699 | 3,264 |
| *Urophycis floridana* | 3 | 2 | 4 | 1 | 2 | . | . | . | . | 12 |
| **Totals** | **36,171** | **32,894** | **36,295** | **51,227** | **53,304** | **95,726** | **87,206** | **28,264** | **97,194** | **518,281** |

## *Charlotte Harbor*

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

The Fisheries-Independent Monitoring (FIM) program has conducted intensive sampling of fish and selected invertebrates in Charlotte Harbor since 1989. The area sampled was divided into four geographically-defined bay zones (A-D) and two riverine zones (M and P; Figure CH08-01). Monthly stratified-random sampling (SRS) was conducted in Zones A – D using 21.3-m bay seines, 183-m haul seines, and 6.1-m bay otter trawls. Monthly SRS was conducted in Zones M and P with 21.3-m river seines and 6.1-m river otter trawls. Note that long-term SRS in the Caloosahatchee River estuary (Zones E, G, and H in previous reports; 2004-2007) was discontinued. 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 2008 in Charlotte Harbor.

### Stratified-Random Sampling

A total of 255,701 fishes (137 taxa) and selected invertebrates (13 taxa) were collected from 1,068 Charlotte Harbor SRS samples in 2008 (Table CH08-01, Appendices CH08-01, -02, and -03). *Anchoa mitchilli* (n=78,467) was the most numerous species collected, representing 30.7% of the total catch. *Lagodon rhomboides* (n=66,867), *Eucinostomus* spp. (n=31,302), *Menidia* spp. (n=9,142), *Lucania parva* (n=7,673), and *Harengula jaguana* (n=6,567) were the next most abundant taxa collected, accounting for an additional 47.5% of the total catch. Twenty-eight Selected Taxa (n=15,943 animals) composed 6.2% of the total catch. *Farfantepenaeus duorarum* (n=3,366) and *Mugil cephalus* (n=3,089) were the most abundant Selected Taxa, representing 2.5% of the total catch. *Leiostomus xanthurus* (n=1,877), *Archosargus probatocephalus* (n=1,025), and *Cynoscion arenarius* (n=974) were the next most abundant Selected Taxa, comprising

1.5% of the total catch. No new species unique to Charlotte Harbor FIM were collected in 2008.

**Bay Sampling**

*21.3-m Bay Seines*. A total of 133,811 animals were collected in 408 21.3-m bay seines, representing 52.3% of the overall SRS catch (Table CH08-01). *Anchoa mitchilli* (n=31,630), *Eucinostomus* spp. (n=29,801), and *L. rhomboides* (n=25,846) were the most abundant taxa, accounting for 65.2% of the 21.3-m bay seine catch (Table CH08-02). The taxon most frequently caught in 21.3-m bay seines was *Eucinostomus* spp*.* (62.3% occurrence).

A total of 8,167 animals from 21 Selected Taxa were collected, representing 6.1% of the entire 21.3-m bay seine catch (Table CH08-03). *Mugil cephalus* (n=2,578), *F. duorarum* (n=2,380), and *L. xanthurus* (n=1,832) were the most abundant Selected Taxa, accounting for 83.1% of the Selected Taxa collected by this gear. The Selected Taxon most frequently caught in 21.3-m bay seines was *F. duorarum* (46.8% occurrence).

*183-m Haul Seines.* A total of 39,667 animals were collected in 204 183-m haul seines, representing 15.5% of the total SRS catch (Table CH08-01). *Lagodon rhomboides* (n=29,457) was the most abundant species, accounting for 74.3% of the 183-m haul seine catch (Table CH08-04). The taxon most frequently caught in 183-m haul seines was *L. rhomboides* (74.0% occurrence).

A total of 3,413 animals from 26 Selected Taxa were collected, representing 8.6% of the entire 183-m haul seine catch (Table CH08-05). *Archosargus probatocephalus* (n=646), *Centropomus undecimalis* (n=644), *Elops saurus* (n=487), *Mugil gyrans* (n=342), and *Lutjanus griseus* (n=312) were the most abundant Selected Taxa, accounting for 71.2% of the Selected Taxa collected by this gear. The Selected Taxa most frequently caught in 183-m haul seines were *A. probatocephalus* (53.4% occurrence), *C. undecimalis* (44.6% occurrence), and *M. cephalus* (33.3% occurrence).

*6.1-m Bay Otter Trawls.* A total of 29,542 animals were collected in 288 6.1-m bay otter trawls, representing 11.6% of the overall SRS catch (Table CH08-01). *Lagodon rhomboides* (n=11,387), *A. mitchilli* (n=3,665), and *Orthopristis chrysoptera* (n=2,677) were the most abundant taxa collected, accounting for 60.0% of the 6.1-m bay otter trawl catch

(Table CH08-06). The taxa most frequently caught in 6.1-m bay otter trawls were *Prionotus scitulus* (61.1% occurrence) and *Portunus* spp. (59.7% occurrence).

A total of 2,283 animals from 15 Selected Taxa were collected, representing 7.7% of the entire 6.1-m bay otter trawl catch (Table CH08-07). *Farfantepenaeus duorarum* (n=581), *Menippe* spp. (n=386), and *Lutjanus synagris* (n=395) were the most abundant Selected Taxa, accounting for 59.7% of the Selected Taxa collected by this gear. The Selected Taxon most frequently caught in 6.1-m bay otter trawls was *F. duorarum* (34.0% occurrence).

## River Sampling

*21.3-m River Seines.* A total of 43,782 animals were collected in 96 21.3-m river seines, representing 17.1% of the overall SRS catch (Table CH08-01). *Anchoa mitchilli* (n=38,108), *Menidia* spp. (n=1,754), and *Eucinostomus* spp. (n=826) were the most abundant taxa collected, accounting for 92.9% of the 21.3-m river seine catch (Table CH08-08). The taxon most frequently caught in 21.3-m river seines was *A. mitchilli* (66.7% occurrence).

A total of 819 animals from 15 Selected Taxa were collected, representing 1.9% of the entire 21.3-m river seine catch (Table CH08-09). *Mugil cephalus* (n=266), *F. duorarum* (n=124), and *Menticirrhus americanus* (n=112) were the most abundant Selected Taxa, accounting for 61.3% of the Selected Taxa collected by this gear. The Selected Taxon most frequently caught in 21.3-m river seines was *F. duorarum* (41.7% occurrence).

*6.1-m River Otter Trawls.* A total of 8,899 animals were collected in 72 6.1-m river otter trawls, representing 3.5% of the overall SRS catch (Table CH08-01). *Anchoa mitchilli* (n=5,064) and *Trinectes maculatus* (n=1,319) were the most abundant taxa collected, accounting for 71.7% of the 6.1-m river trawl catch (Table CH08-10). The taxa most frequently caught in 6.1-m river otter trawls were *C. sapidus* (70.8% occurrence), *F. duorarum* (65.3% occurrence), and *M. americanus* (65.3% occurrence).

A total of 1,261 animals from eight Selected Taxa were collected, representing 14.2% of the entire 6.1-m river otter trawl catch (Table CH08-11). *Cynoscion arenarius* (n=581), *F. duorarum* (n=275), *M. americanus* (n=259), and *C. sapidus* (n=123) were the most abundant Selected Taxa, accounting for 98.2% of the Selected Taxa collected by this gear. The Selected Taxon most frequently caught in the 6.1-m river otter trawls was *C. sapidus* (70.8% occurrence).

## References

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

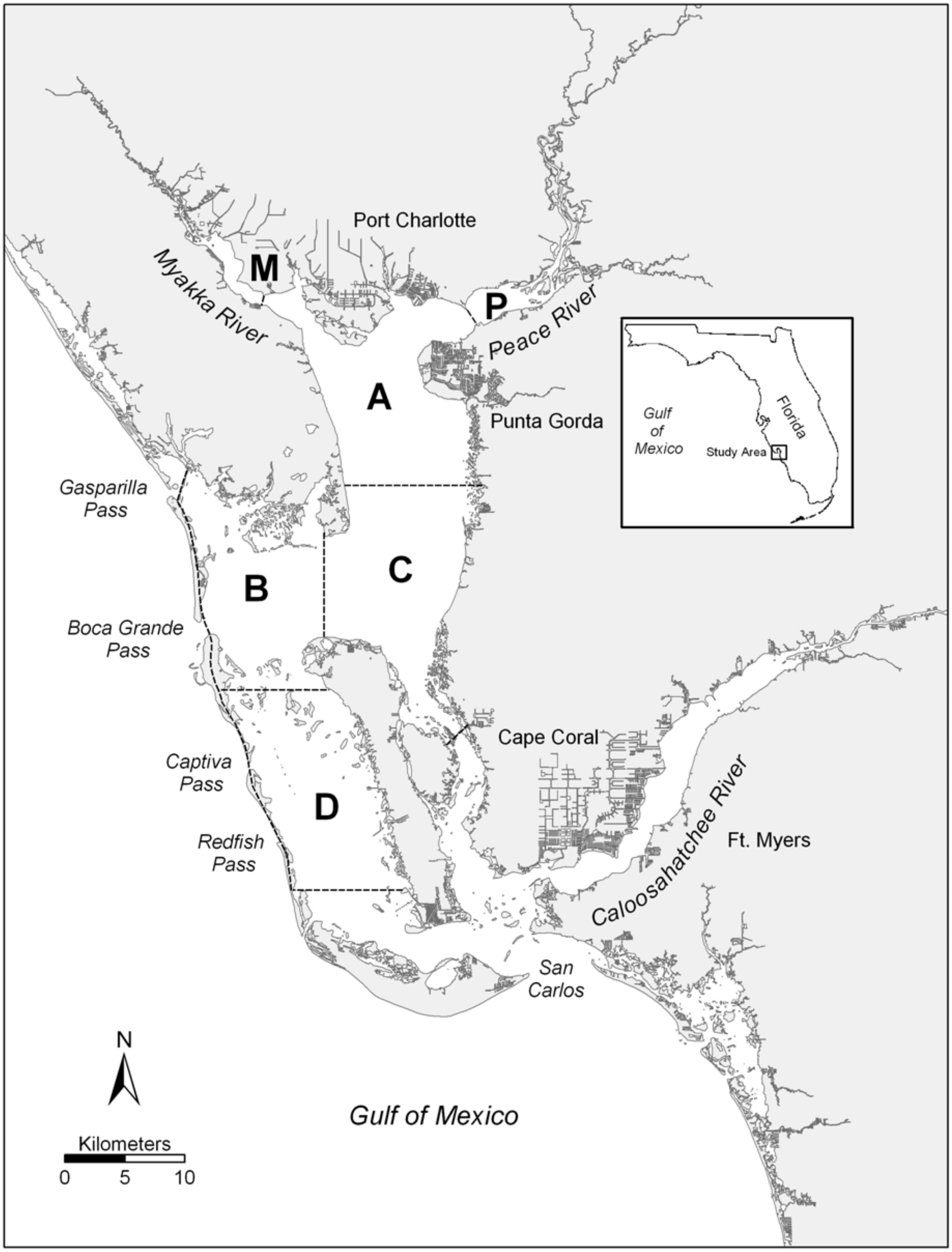


Figure CH08-01. Map of Charlotte Harbor sampling area. Zones are labeled A - D, M and P.

Table CH08-01. Summary of catch and effort data for Charlotte Harbor stratified-random sampling, 2008.

| Zone | 21.3-m bay seine | | 21.3-m river seine | | 183-m haul seine | | 6.1-m otter trawl | | Totals | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Animals | Hauls | Animals | Hauls | Animals | Hauls | Animals | Hauls | Animals | Hauls |
| A | 36,373 | 120 | . | . | 1,702 | 60 | 7,589 | 84 | 45,664 | 264 |
| B | 34,223 | 96 | . | . | 19,537 | 48 | 6,126 | 72 | 59,886 | 216 |
| C | 30,203 | 96 | . | . | 6,195 | 48 | 2,764 | 72 | 39,162 | 216 |
| D | 33,012 | 96 | . | . | 12,233 | 48 | 13,063 | 60 | 58,308 | 204 |
| M | . | . | 12,985 | 48 | . | . | 4,256 | 36 | 17,241 | 84 |
| P | . | . | 30,797 | 48 | . | . | 4,643 | 36 | 35,440 | 84 |
| **Totals** | **133,811** | **408** | **43,782** | **96** | **39,667** | **204** | **38,441** | **360** | **255,701** | **1,068** |

Table CH08-02. Catch statistics for 10 dominant taxa collected in 408 21.3-m bay seine samples during Charlotte Harbor stratified-random sampling, 2008. Percent (%) is the percent of the total catch represented by that taxon; percent occurrence (% Occur) is the percentage of samples in which that taxon was collected; CV is the coefficient of variation of the mean. Taxa are ranked in order of decreasing mean density.

| Species | Number | | % Occur | Density Estimate (animals/100m$^2$) | | | | Standard Length (mm) | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | No. | % | | Mean | Stderr | CV | Max | Mean | Stderr | Min | Max |
| *Anchoa mitchilli* | 31,630 | 23.6 | 16.9 | 55.37 | 21.85 | 796.87 | 6,445.71 | 36 | 0.05 | 16 | 57 |
| *Eucinostomus* spp. | 29,801 | 22.3 | 62.3 | 52.17 | 10.99 | 425.42 | 3,977.14 | 25 | 0.04 | 9 | 39 |
| *Lagodon rhomboides* | 25,846 | 19.3 | 61.5 | 45.25 | 5.96 | 266.17 | 1,652.14 | 40 | 0.11 | 8 | 152 |
| *Lucania parva* | 7,660 | 5.7 | 31.6 | 13.41 | 2.51 | 378.28 | 443.57 | 25 | 0.05 | 11 | 48 |
| *Menidia* spp. | 7,383 | 5.5 | 22.5 | 12.93 | 3.03 | 474.12 | 636.43 | 39 | 0.12 | 16 | 76 |
| *Harengula jaguana* | 6,058 | 4.5 | 13.2 | 10.61 | 2.64 | 502.71 | 512.86 | 40 | 0.15 | 18 | 120 |
| *Floridichthys carpio* | 2,940 | 2.2 | 15.4 | 5.15 | 1.54 | 603.25 | 388.57 | 35 | 0.17 | 6 | 61 |
| *Eucinostomus gula* | 2,670 | 2.0 | 47.1 | 4.67 | 0.52 | 226.29 | 82.14 | 51 | 0.19 | 40 | 100 |
| *Mugil cephalus* | 2,578 | 1.9 | 2.7 | 4.51 | 4.43 | 1,984.71 | 1,809.29 | 25 | 0.20 | 20 | 330 |
| *Farfantepenaeus duorarum* | 2,380 | 1.8 | 46.8 | 4.17 | 0.65 | 315.85 | 149.29 | 10 | 0.09 | 2 | 30 |
| Subtotal | 118,946 | 88.8 | . | . | . | . | . | . | . | 2 | 330 |
| **Totals** | **133,811** | **100.0** | **.** | **234.26** | **27.64** | **238.36** | **6,469.29** | **.** | **.** | **2** | **610** |

Table CH08-03. Catch statistics for Selected Taxa collected in 408 21.3-m bay seine samples during Charlotte Harbor stratified-random sampling, 2008. Percent (%) is the percent of the total catch represented by that taxon; percent occurrence (% Occur) is the percentage of samples in which that taxon was collected; CV is the coefficient of variation of the mean. Taxa are ranked in order of decreasing mean density.

| Species | Number | | % Occur | Density Estimate (animals/100m$^2$) | | | | Standard Length (mm) | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | No. | % | | Mean | Stderr | CV | Max | Mean | Stderr | Min | Max |
| *Mugil cephalus* | 2,578 | 1.9 | 2.7 | 4.51 | 4.43 | 1,984.71 | 1,809.29 | 25 | 0.20 | 20 | 330 |
| *Farfantepenaeus duorarum* | 2,380 | 1.8 | 46.8 | 4.17 | 0.65 | 315.85 | 149.29 | 10 | 0.09 | 2 | 30 |
| *Leiostomus xanthurus* | 1,832 | 1.4 | 4.7 | 3.21 | 2.79 | 1,757.26 | 1,135.71 | 22 | 0.16 | 14 | 91 |
| *Cynoscion nebulosus* | 518 | 0.4 | 23.8 | 0.91 | 0.15 | 324.32 | 32.14 | 36 | 0.70 | 12 | 148 |
| *Archosargus probatocephalus* | 290 | 0.2 | 16.4 | 0.51 | 0.10 | 404.83 | 25.71 | 28 | 1.50 | 10 | 260 |
| *Lutjanus synagris* | 134 | 0.1 | 8.1 | 0.23 | 0.07 | 641.74 | 25.71 | 37 | 1.40 | 16 | 135 |
| *Lutjanus griseus* | 94 | 0.1 | 12.7 | 0.16 | 0.03 | 334.93 | 5.71 | 60 | 4.99 | 12 | 192 |
| *Sciaenops ocellatus* | 88 | 0.1 | 5.9 | 0.15 | 0.05 | 695.18 | 15.00 | 24 | 1.26 | 7 | 59 |
| *Callinectes sapidus* | 60 | 0.0 | 8.6 | 0.11 | 0.02 | 427.92 | 5.00 | 39 | 5.67 | 6 | 178 |
| *Menticirrhus americanus* | 60 | 0.0 | 3.2 | 0.11 | 0.05 | 882.29 | 14.29 | 37 | 2.35 | 12 | 73 |
| *Mugil gyrans* | 50 | 0.0 | 4.7 | 0.09 | 0.03 | 621.20 | 7.14 | 53 | 6.01 | 13 | 183 |
| *Cynoscion arenarius* | 30 | 0.0 | 2.2 | 0.05 | 0.03 | 1,155.48 | 11.43 | 26 | 1.54 | 15 | 50 |
| *Paralichthys albigutta* | 17 | 0.0 | 3.4 | 0.03 | 0.01 | 586.33 | 2.14 | 71 | 16.60 | 29 | 320 |
| *Menticirrhus saxatilis* | 13 | 0.0 | 2.7 | 0.02 | 0.01 | 670.67 | 2.14 | 24 | 2.48 | 9 | 40 |
| *Centropomus undecimalis* | 7 | 0.0 | 1.5 | 0.01 | 0.01 | 860.93 | 1.43 | 268 | 67.31 | 23 | 515 |
| *Mugil curema* | 6 | 0.0 | 0.7 | 0.01 | 0.01 | 1,426.53 | 2.86 | 98 | 22.22 | 19 | 190 |
| *Menippe* spp. | 4 | 0.0 | 1.0 | 0.01 | 0.00 | 1,006.22 | 0.71 | 16 | 5.17 | 5 | 30 |

Table CH08-03. (Continued)

| Species | Number | | % Occur | Density Estimate (animals/100m$^2$) | | | | Standard Length (mm) | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | No. | % | | Mean | Stderr | CV | Max | Mean | Stderr | Min | Max |
| *Mycteroperca microlepis* | 2 | 0.0 | 0.5 | 0.00 | 0.00 | 1,426.53 | 0.71 | 143 | 13.00 | 130 | 156 |
| *Trachinotus falcatus* | 2 | 0.0 | 0.5 | 0.00 | 0.00 | 1,426.53 | 0.71 | 55 | 9.50 | 45 | 64 |
| *Pogonias cromis* | 1 | 0.0 | 0.2 | 0.00 | 0.00 | 2,019.90 | 0.71 | 209 | . | 209 | 209 |
| *Scomberomorus maculatus* | 1 | 0.0 | 0.2 | 0.00 | 0.00 | 2,019.90 | 0.71 | 355 | . | 355 | 355 |
| **Totals** | **8,167** | **6.1** | **70.8** | **14.30** | **5.31** | **749.88** | **1,829.29** | **.** | **.** | **2** | **515** |

Table CH08-04. Catch statistics for 10 dominant taxa collected in 204 183-m haul seine samples during Charlotte Harbor stratified-random sampling, 2008. Percent (%) is the percent of the total catch represented by that taxon; percent occurrence (% Occur) is the percentage of samples in which that taxon was collected; CV is the coefficient of variation of the mean. Taxa are ranked in order of decreasing mean catch-per-unit-effort.

| **Species** | **Number** | | **% Occur** | **Catch-per-unit-effort (animals/set)** | | | | **Standard Length (mm)** | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | **No.** | **%** | | **Mean** | **Stderr** | **CV** | **Max** | **Mean** | **Stderr** | **Min** | **Max** |
| *Lagodon rhomboides* | 29,457 | 74.3 | 74.0 | 144.40 | 21.35 | 211.21 | 3,392.00 | 99 | 0.15 | 32 | 200 |
| *Eucinostomus gula* | 1,837 | 4.6 | 40.7 | 9.00 | 2.20 | 348.17 | 305.00 | 84 | 0.28 | 42 | 120 |
| *Ariopsis felis* | 1,342 | 3.4 | 36.3 | 6.58 | 1.80 | 390.97 | 308.00 | 248 | 1.28 | 90 | 382 |
| *Orthopristis chrysoptera* | 649 | 1.6 | 25.0 | 3.18 | 0.68 | 304.64 | 55.00 | 105 | 1.10 | 45 | 209 |
| *Archosargus probatocephalus* | 646 | 1.6 | 53.4 | 3.17 | 0.68 | 308.44 | 111.00 | 219 | 2.96 | 43 | 423 |
| *Centropomus undecimalis* | 644 | 1.6 | 44.6 | 3.16 | 0.55 | 249.85 | 59.00 | 466 | 4.21 | 216 | 869 |
| *Bairdiella chrysoura* | 634 | 1.6 | 17.6 | 3.11 | 1.04 | 477.33 | 147.00 | 116 | 0.74 | 75 | 173 |
| *Elops saurus* | 487 | 1.2 | 31.4 | 2.39 | 0.74 | 441.44 | 88.00 | 267 | 1.99 | 195 | 469 |
| *Mugil gyrans* | 342 | 0.9 | 31.9 | 1.68 | 0.34 | 286.61 | 35.00 | 193 | 2.75 | 100 | 342 |
| *Lutjanus griseus* | 312 | 0.8 | 27.5 | 1.53 | 0.31 | 291.93 | 35.00 | 166 | 2.27 | 78 | 312 |
| Subtotal | 36,350 | 91.6 | . | . | . | . | . | . | . | 32 | 869 |
| **Totals** | **39,667** | **100.0** | **.** | **194.45** | **23.88** | **175.43** | **3,656.00** | **.** | **.** | **21** | **1800** |

Table CH08-05. Catch statistics for Selected Taxa collected in 204 183-m haul seine samples during Charlotte Harbor stratified-random sampling, 2008. Percent (%) is the percent of the total catch represented by that taxon; percent occurrence (% Occur) is the percentage of samples in which that taxon was collected; CV is the coefficient of variation of the mean. Taxa are ranked in order of decreasing mean catch-per-unit-effort.

| Species | Number | | % Occur | Catch-per-unit-effort (animals/set) | | | | Standard Length (mm) | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | No. | % | | Mean | Stderr | CV | Max | Mean | Stderr | Min | Max |
| *Archosargus probatocephalus* | 646 | 1.6 | 53.4 | 3.17 | 0.68 | 308.44 | 111.00 | 219 | 2.96 | 43 | 423 |
| *Centropomus undecimalis* | 644 | 1.6 | 44.6 | 3.16 | 0.55 | 249.85 | 59.00 | 466 | 4.21 | 216 | 869 |
| *Elops saurus* | 487 | 1.2 | 31.4 | 2.39 | 0.74 | 441.44 | 88.00 | 267 | 1.99 | 195 | 469 |
| *Mugil gyrans* | 342 | 0.9 | 31.9 | 1.68 | 0.34 | 286.61 | 35.00 | 193 | 2.75 | 100 | 342 |
| *Lutjanus griseus* | 312 | 0.8 | 27.5 | 1.53 | 0.31 | 291.93 | 35.00 | 166 | 2.27 | 78 | 312 |
| *Mugil cephalus* | 245 | 0.6 | 33.3 | 1.20 | 0.18 | 218.72 | 18.00 | 319 | 4.69 | 86 | 480 |
| *Sciaenops ocellatus* | 133 | 0.3 | 29.9 | 0.65 | 0.09 | 204.34 | 7.00 | 407 | 8.09 | 160 | 681 |
| *Mugil curema* | 95 | 0.2 | 6.4 | 0.47 | 0.23 | 693.42 | 37.00 | 201 | 5.39 | 120 | 331 |
| *Cynoscion nebulosus* | 86 | 0.2 | 18.6 | 0.42 | 0.09 | 310.47 | 11.00 | 272 | 12.35 | 120 | 467 |
| *Mycteroperca microlepis* | 80 | 0.2 | 9.3 | 0.39 | 0.14 | 498.13 | 22.00 | 190 | 6.67 | 105 | 372 |
| *Lutjanus synagris* | 78 | 0.2 | 7.4 | 0.38 | 0.16 | 589.75 | 24.00 | 95 | 2.67 | 46 | 201 |
| *Paralichthys albigutta* | 73 | 0.2 | 21.1 | 0.36 | 0.06 | 247.22 | 7.00 | 170 | 7.09 | 50 | 309 |
| *Callinectes sapidus* | 60 | 0.2 | 15.7 | 0.29 | 0.07 | 320.47 | 7.00 | 98 | 5.45 | 29 | 181 |
| *Leiostomus xanthurus* | 35 | 0.1 | 4.9 | 0.17 | 0.09 | 755.42 | 17.00 | 150 | 7.32 | 84 | 202 |
| *Trachinotus carolinus* | 33 | 0.1 | 4.4 | 0.16 | 0.07 | 648.88 | 12.00 | 290 | 5.36 | 208 | 348 |
| *Pomatomus saltatrix* | 12 | 0.0 | 1.0 | 0.06 | 0.05 | 1,314.08 | 11.00 | 382 | 14.61 | 230 | 418 |
| *Pogonias cromis* | 11 | 0.0 | 3.4 | 0.05 | 0.03 | 717.75 | 5.00 | 346 | 31.85 | 222 | 521 |

Table CH08-05. (Continued)

| Species | Number No. | Number % | % Occur | CPUE Mean | CPUE Stderr | CPUE CV | CPUE Max | SL Mean | SL Stderr | SL Min | SL Max |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | **Catch-per-unit-effort (animals/set)** | | | | **Standard Length (mm)** | | | |
| *Menticirrhus americanus* | 10 | 0.0 | 1.0 | 0.05 | 0.04 | 1,292.67 | 9.00 | 257 | 9.58 | 182 | 295 |
| *Farfantepenaeus duorarum* | 6 | 0.0 | 2.9 | 0.03 | 0.01 | 575.87 | 1.00 | 25 | 2.01 | 21 | 33 |
| *Trachinotus falcatus* | 6 | 0.0 | 2.0 | 0.03 | 0.02 | 820.55 | 3.00 | 219 | 35.09 | 70 | 292 |
| *Menippe* spp. | 5 | 0.0 | 2.5 | 0.02 | 0.01 | 632.42 | 1.00 | 49 | 9.47 | 30 | 84 |
| *Scomberomorus maculatus* | 5 | 0.0 | 2.5 | 0.02 | 0.01 | 632.42 | 1.00 | 276 | 48.36 | 190 | 451 |
| *Epinephelus morio* | 4 | 0.0 | 1.0 | 0.02 | 0.02 | 1,127.49 | 3.00 | 122 | 3.19 | 113 | 127 |
| *Menticirrhus littoralis* | 3 | 0.0 | 0.5 | 0.01 | 0.01 | 1,428.29 | 3.00 | 221 | 10.69 | 200 | 235 |
| *Epinephelus itajara* | 1 | 0.0 | 0.5 | 0.00 | 0.00 | 1,428.29 | 1.00 | 302 | . | 302 | 302 |
| *Rachycentron canadum* | 1 | 0.0 | 0.5 | 0.00 | 0.00 | 1,428.29 | 1.00 | 515 | . | 515 | 515 |
| **Totals** | **3,413** | **8.6** | **90.2** | **16.73** | **1.80** | **153.65** | **190.00** | **.** | **.** | **21** | **869** |

Table CH08-06. Catch statistics for 10 dominant taxa collected in 288 bay 6.1-m otter trawl samples during Charlotte Harbor stratified-random sampling, 2008. Percent (%) is the percent of the total catch represented by that taxon; percent occurrence (% Occur) is the percentage of samples in which that taxon was collected; CV is the coefficient of variation of the mean. Taxa are ranked in order of decreasing mean density.

| Species | Number | | % Occur | Density Estimate (animals/100m$^2$) | | | | Standard Length (mm) | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | No. | % | | Mean | Stderr | CV | Max | Mean | Stderr | Min | Max |
| *Lagodon rhomboides* | 11,387 | 38.5 | 54.2 | 2.98 | 0.69 | 391.64 | 120.08 | 60 | 0.34 | 11 | 172 |
| *Anchoa mitchilli* | 3,665 | 12.4 | 6.6 | 0.88 | 0.69 | 1,327.80 | 193.54 | 46 | 0.08 | 21 | 58 |
| *Orthopristis chrysoptera* | 2,677 | 9.1 | 31.6 | 0.67 | 0.13 | 328.13 | 17.54 | 73 | 0.73 | 14 | 195 |
| *Prionotus scitulus* | 1,852 | 6.3 | 61.1 | 0.45 | 0.08 | 301.22 | 13.83 | 99 | 0.55 | 21 | 195 |
| *Eucinostomus gula* | 1,642 | 5.6 | 41.7 | 0.41 | 0.07 | 278.20 | 11.72 | 73 | 0.37 | 40 | 119 |
| *Portunus* spp. | 1,363 | 4.6 | 59.7 | 0.34 | 0.05 | 265.76 | 8.09 | 45 | 0.29 | 6 | 81 |
| *Eucinostomus* spp. | 661 | 2.2 | 16.0 | 0.16 | 0.04 | 450.85 | 9.04 | 28 | 0.28 | 12 | 39 |
| *Farfantepenaeus duorarum* | 581 | 2.0 | 34.0 | 0.14 | 0.03 | 396.58 | 6.88 | 16 | 0.35 | 2 | 54 |
| *Bairdiella chrysoura* | 431 | 1.5 | 8.3 | 0.13 | 0.06 | 774.62 | 14.30 | 48 | 1.54 | 12 | 144 |
| *Chilomycterus schoepfii* | 417 | 1.4 | 43.8 | 0.11 | 0.01 | 199.94 | 1.69 | 131 | 1.71 | 13 | 242 |
| Subtotal | 24,676 | 83.6 | . | . | . | . | . | . | . | 2 | 242 |
| **Totals** | **29,542** | **100.0** | **.** | **7.47** | **1.13** | **256.46** | **199.14** | **.** | **.** | **2** | **853** |

Table CH08-07. Catch statistics for Selected Taxa collected in 288 bay 6.1-m otter trawl samples during Charlotte Harbor stratified-random sampling, 2008. Percent (%) is the percent of the total catch represented by that taxon; percent occurrence (% Occur) is the percentage of samples in which that taxon was collected; CV is the coefficient of variation of the mean. Taxa are ranked in order of decreasing mean density.

| Species | Number | | % Occur | Density Estimate (animals/100m$^2$) | | | | Standard Length (mm) | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | No. | % | | Mean | Stderr | CV | Max | Mean | Stderr | Min | Max |
| *Farfantepenaeus duorarum* | 581 | 2.0 | 34.0 | 0.14 | 0.03 | 396.58 | 6.88 | 16 | 0.35 | 2 | 54 |
| *Menippe* spp. | 386 | 1.3 | 29.9 | 0.10 | 0.02 | 307.04 | 3.04 | 24 | 0.82 | 3 | 81 |
| *Lutjanus synagris* | 395 | 1.3 | 21.9 | 0.09 | 0.02 | 437.29 | 4.92 | 79 | 1.40 | 12 | 145 |
| *Cynoscion arenarius* | 269 | 0.9 | 8.0 | 0.06 | 0.02 | 543.18 | 4.11 | 55 | 2.78 | 11 | 197 |
| *Menticirrhus americanus* | 213 | 0.7 | 12.2 | 0.05 | 0.02 | 553.06 | 3.31 | 83 | 4.37 | 13 | 290 |
| *Callinectes sapidus* | 152 | 0.5 | 18.8 | 0.04 | 0.01 | 371.28 | 1.42 | 77 | 2.47 | 11 | 182 |
| *Paralichthys albigutta* | 102 | 0.3 | 20.1 | 0.02 | 0.00 | 273.19 | 0.74 | 154 | 5.74 | 56 | 315 |
| *Lutjanus griseus* | 63 | 0.2 | 5.6 | 0.02 | 0.01 | 845.13 | 2.02 | 166 | 3.48 | 59 | 216 |
| *Archosargus probatocephalus* | 50 | 0.2 | 5.9 | 0.01 | 0.01 | 731.13 | 1.21 | 28 | 5.07 | 11 | 212 |
| *Mycteroperca microlepis* | 24 | 0.1 | 2.4 | 0.01 | 0.00 | 923.88 | 0.88 | 142 | 13.90 | 19 | 281 |
| *Cynoscion nebulosus* | 24 | 0.1 | 4.5 | 0.01 | 0.00 | 677.97 | 0.54 | 58 | 18.59 | 20 | 452 |
| *Epinephelus morio* | 10 | 0.0 | 1.4 | 0.00 | 0.00 | 1,097.17 | 0.40 | 105 | 8.78 | 51 | 135 |
| *Menticirrhus saxatilis* | 10 | 0.0 | 0.7 | 0.00 | 0.00 | 1,398.28 | 0.54 | 125 | 20.82 | 56 | 225 |
| *Leiostomus xanthurus* | 3 | 0.0 | 0.7 | 0.00 | 0.00 | 1,263.15 | 0.13 | 153 | 27.48 | 102 | 196 |
| *Elops saurus* | 1 | 0.0 | 0.3 | 0.00 | 0.00 | 1,697.06 | 0.07 | 223 | . | 223 | 223 |
| **Totals** | **2,283** | **7.7** | **77.1** | **0.56** | **0.06** | **193.78** | **8.84** | **.** | **.** | **2** | **452** |

Table CH08-08. Catch statistics for 11 dominant taxa collected in 96 21.3-m river seine samples during Charlotte Harbor stratified-random sampling, 2008. Percent (%) is the percent of the total catch represented by that taxon; percent occurrence (% Occur) is the percentage of samples in which that taxon was collected; CV is the coefficient of variation of the mean. Taxa are ranked in order of decreasing mean density.

| Species | Number | | % Occur | Density Estimate (animals/100m$^2$) | | | | Standard Length (mm) | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | No. | % | | Mean | Stderr | CV | Max | Mean | Stderr | Min | Max |
| *Anchoa mitchilli* | 38,108 | 87.0 | 66.7 | 583.76 | 267.64 | 449.22 | 21,364.71 | 35 | 0.04 | 10 | 55 |
| *Menidia* spp. | 1,754 | 4.0 | 62.5 | 26.87 | 5.77 | 210.39 | 385.29 | 38 | 0.21 | 12 | 70 |
| *Eucinostomus* spp. | 826 | 1.9 | 59.4 | 12.65 | 2.45 | 189.49 | 122.06 | 28 | 0.24 | 10 | 39 |
| *Eucinostomus harengulus* | 395 | 0.9 | 40.6 | 6.05 | 1.32 | 214.35 | 67.65 | 55 | 0.55 | 40 | 84 |
| *Fundulus grandis* | 269 | 0.6 | 12.5 | 4.12 | 1.48 | 351.56 | 97.06 | 54 | 0.75 | 12 | 80 |
| *Eugerres plumieri* | 267 | 0.6 | 15.6 | 4.09 | 2.79 | 668.34 | 263.24 | 29 | 1.13 | 12 | 191 |
| *Mugil cephalus* | 266 | 0.6 | 18.8 | 4.07 | 2.10 | 504.24 | 148.53 | 45 | 2.62 | 21 | 374 |
| *Anchoa hepsetus* | 241 | 0.6 | 9.4 | 3.69 | 2.47 | 655.69 | 210.29 | 32 | 0.58 | 16 | 105 |
| *Harengula jaguana* | 173 | 0.4 | 4.2 | 2.65 | 2.59 | 957.00 | 248.53 | 58 | 0.39 | 40 | 65 |
| *Eucinostomus gula* | 124 | 0.3 | 18.8 | 1.90 | 0.66 | 340.15 | 39.71 | 48 | 0.52 | 40 | 74 |
| *Farfantepenaeus duorarum* | 124 | 0.3 | 41.7 | 1.90 | 0.32 | 166.96 | 14.71 | 7 | 0.29 | 2 | 18 |
| Subtotal | 42,547 | 97.2 | . | . | . | . | . | . | . | 2 | 374 |
| **Totals** | **43,782** | **100.0** | **.** | **670.68** | **268.57** | **392.36** | **21,366.18** | **.** | **.** | **2** | **830** |

Table CH08-09. Catch statistics for Selected Taxa collected in 96 21.3-m river seine samples during Charlotte Harbor stratified-random sampling, 2008. Percent (%) is the percent of the total catch represented by that taxon; percent occurrence (% Occur) is the percentage of samples in which that taxon was collected; CV is the coefficient of variation of the mean. Taxa are ranked in order of decreasing mean density.

| Species | Number | | % Occur | Density Estimate (animals/100m$^2$) | | | | Standard Length (mm) | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | No. | % | | Mean | Stderr | CV | Max | Mean | Stderr | Min | Max |
| *Mugil cephalus* | 266 | 0.6 | 18.8 | 4.07 | 2.10 | 504.24 | 148.53 | 45 | 2.62 | 21 | 374 |
| *Farfantepenaeus duorarum* | 124 | 0.3 | 41.7 | 1.90 | 0.32 | 166.96 | 14.71 | 7 | 0.29 | 2 | 18 |
| *Menticirrhus americanus* | 112 | 0.3 | 13.5 | 1.72 | 1.20 | 686.69 | 113.24 | 38 | 1.07 | 20 | 67 |
| *Cynoscion arenarius* | 94 | 0.2 | 17.7 | 1.44 | 1.04 | 709.73 | 100.00 | 27 | 0.84 | 12 | 57 |
| *Sciaenops ocellatus* | 61 | 0.1 | 16.7 | 0.93 | 0.36 | 378.75 | 26.47 | 45 | 10.60 | 11 | 621 |
| *Callinectes sapidus* | 55 | 0.1 | 18.8 | 0.84 | 0.24 | 277.13 | 13.24 | 18 | 2.52 | 7 | 135 |
| *Cynoscion nebulosus* | 42 | 0.1 | 14.6 | 0.64 | 0.20 | 305.43 | 10.29 | 40 | 3.90 | 13 | 126 |
| *Archosargus probatocephalus* | 23 | 0.1 | 8.3 | 0.35 | 0.18 | 502.13 | 16.18 | 59 | 5.78 | 27 | 170 |
| *Mugil gyrans* | 18 | 0.0 | 9.4 | 0.28 | 0.10 | 357.25 | 5.88 | 25 | 2.84 | 15 | 52 |
| *Centropomus undecimalis* | 8 | 0.0 | 7.3 | 0.12 | 0.05 | 376.13 | 2.94 | 389 | 23.74 | 255 | 480 |
| *Leiostomus xanthurus* | 7 | 0.0 | 4.2 | 0.11 | 0.07 | 605.03 | 5.88 | 30 | 8.98 | 19 | 84 |
| *Lutjanus griseus* | 4 | 0.0 | 4.2 | 0.06 | 0.03 | 482.10 | 1.47 | 128 | 60.41 | 16 | 234 |
| *Mugil curema* | 3 | 0.0 | 1.0 | 0.05 | 0.05 | 979.80 | 4.41 | 71 | 2.91 | 66 | 76 |
| *Elops saurus* | 1 | 0.0 | 1.0 | 0.02 | 0.02 | 979.80 | 1.47 | 150 | . | 150 | 150 |
| *Lutjanus synagris* | 1 | 0.0 | 1.0 | 0.02 | 0.02 | 979.80 | 1.47 | 25 | . | 25 | 25 |
| **Totals** | **819** | **1.9** | **74.0** | **12.55** | **3.24** | **253.40** | **236.76** | **.** | **.** | **2** | **621** |

Table CH08-10. Catch statistics for 10 dominant taxa collected in 72 river 6.1-m otter trawl samples during Charlotte Harbor stratified-random sampling, 2008. Percent (%) is the percent of the total catch represented by that taxon; percent occurrence (% Occur) is the percentage of samples in which that taxon was collected; CV is the coefficient of variation of the mean. Taxa are ranked in order of decreasing mean density.

| **Species** | **Number** | | **% Occur** | **Density Estimate (animals/100m$^2$)** | | | | **Standard Length (mm)** | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | **No.** | **%** | | **Mean** | **Stderr** | **CV** | **Max** | **Mean** | **Stderr** | **Min** | **Max** |
| *Anchoa mitchilli* | 5,064 | 56.9 | 50.0 | 9.49 | 2.84 | 253.94 | 132.89 | 36 | 0.10 | 20 | 61 |
| *Trinectes maculatus* | 1,319 | 14.8 | 59.7 | 2.35 | 1.21 | 435.68 | 77.39 | 43 | 0.33 | 12 | 125 |
| *Cynoscion arenarius* | 581 | 6.5 | 44.4 | 1.06 | 0.30 | 239.71 | 14.60 | 44 | 1.01 | 14 | 179 |
| *Bairdiella chrysoura* | 554 | 6.2 | 26.4 | 1.01 | 0.54 | 453.72 | 28.74 | 61 | 0.75 | 16 | 125 |
| *Farfantepenaeus duorarum* | 275 | 3.1 | 65.3 | 0.51 | 0.11 | 190.94 | 5.40 | 15 | 0.51 | 3 | 57 |
| *Menticirrhus americanus* | 259 | 2.9 | 65.3 | 0.49 | 0.09 | 159.55 | 3.64 | 80 | 3.56 | 13 | 267 |
| *Ariopsis felis* | 174 | 2.0 | 33.3 | 0.32 | 0.09 | 247.00 | 3.92 | 103 | 5.71 | 42 | 361 |
| *Callinectes sapidus* | 123 | 1.4 | 70.8 | 0.23 | 0.03 | 111.87 | 1.35 | 104 | 4.35 | 7 | 204 |
| *Lagodon rhomboides* | 81 | 0.9 | 25.0 | 0.15 | 0.05 | 255.34 | 2.43 | 47 | 2.30 | 14 | 91 |
| *Dasyatis sabina* | 76 | 0.9 | 29.2 | 0.14 | 0.04 | 234.29 | 1.48 | 245 | 3.47 | 175 | 319 |
| Subtotal | 8,506 | 95.6 | . | . | . | . | . | . | . | 3 | 361 |
| **Totals** | **8,899** | **100.0** | **.** | **16.48** | **3.29** | **169.52** | **134.11** | **.** | **.** | **3** | **890** |

Table CH08-11. Catch statistics for Selected Taxa collected in 72 river 6.1-m otter trawl samples during Charlotte Harbor stratified-random sampling, 2008. Percent (%) is the percent of the total catch represented by that taxon; percent occurrence (% Occur) is the percentage of samples in which that taxon was collected; CV is the coefficient of variation of the mean. Taxa are ranked in order of decreasing mean density.

| Species | Number | | % Occur | Density Estimate (animals/100m$^2$) | | | | Standard Length (mm) | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | No. | % | | Mean | Stderr | CV | Max | Mean | Stderr | Min | Max |
| *Cynoscion arenarius* | 581 | 6.5 | 44.4 | 1.06 | 0.30 | 239.71 | 14.60 | 44 | 1.01 | 14 | 179 |
| *Farfantepenaeus duorarum* | 275 | 3.1 | 65.3 | 0.51 | 0.11 | 190.94 | 5.40 | 15 | 0.51 | 3 | 57 |
| *Menticirrhus americanus* | 259 | 2.9 | 65.3 | 0.49 | 0.09 | 159.55 | 3.64 | 80 | 3.56 | 13 | 267 |
| *Callinectes sapidus* | 123 | 1.4 | 70.8 | 0.23 | 0.03 | 111.87 | 1.35 | 104 | 4.35 | 7 | 204 |
| *Archosargus probatocephalus* | 16 | 0.2 | 6.9 | 0.03 | 0.02 | 641.16 | 1.62 | 35 | 8.48 | 12 | 119 |
| *Cynoscion nebulosus* | 3 | 0.0 | 2.8 | 0.01 | 0.00 | 621.05 | 0.25 | 135 | 24.97 | 106 | 185 |
| *Rachycentron canadum* | 2 | 0.0 | 2.8 | 0.00 | 0.00 | 595.76 | 0.13 | 633 | 77.50 | 555 | 710 |
| *Lutjanus griseus* | 2 | 0.0 | 2.8 | 0.00 | 0.00 | 595.76 | 0.13 | 153 | 0.00 | 153 | 153 |
| **Totals** | **1,261** | **14.2** | **97.2** | **2.33** | **0.41** | **150.89** | **20.24** | **.** | **.** | **3** | **710** |

Appendix CH08-01. Monthly summary of species collected during Charlotte Harbor stratified-random sampling, 2008. Effort, or total number of hauls, is labeled 'E'. Taxa are arranged alphabetically.

| Species | Month | | | | | | | | | | | | Totals |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | |
| | E=89 | E=89 | E=89 | E=89 | E=89 | E=89 | E=89 | E=89 | E=89 | E=89 | E=89 | E=89 | E=1,068 |
| *Acanthostracion quadricornis* | 7 | 14 | 1 | 4 | 26 | 20 | 10 | 4 | 18 | 7 | 20 | 9 | 140 |
| *Achirus lineatus* | 7 | 5 | 2 | 5 | 12 | 15 | 11 | 15 | 13 | 23 | 12 | 8 | 128 |
| *Adinia xenica* | 132 | 6 | . | . | . | . | . | . | . | 11 | 77 | 19 | 245 |
| *Aetobatus narinari* | . | 1 | . | . | 3 | 1 | . | 1 | 1 | . | . | . | 7 |
| *Albula* spp. | . | . | . | . | . | . | . | . | 1 | . | . | . | 1 |
| *Aluterus schoepfii* | . | 1 | . | . | 8 | 10 | 1 | . | . | . | . | 1 | 21 |
| *Anarchopterus criniger* | 2 | . | 1 | 2 | 1 | . | . | . | . | . | . | . | 6 |
| *Anchoa hepsetus* | . | . | . | . | 77 | 164 | 14 | 2 | . | 1 | 2 | . | 260 |
| *Anchoa mitchilli* | 1,590 | 14,042 | 8,649 | 4,286 | 15,353 | 3,000 | 11,924 | 9,248 | 1,400 | 7,647 | 931 | 397 | 78,467 |
| *Ancylopsetta quadrocellata* | . | . | . | 1 | . | 1 | 1 | 2 | 3 | 1 | . | 1 | 10 |
| *Archosargus probatocephalus* | 35 | 123 | 182 | 80 | 165 | 112 | 59 | 16 | 40 | 54 | 67 | 92 | 1,025 |
| *Argopecten gibbus* | . | . | . | . | . | . | . | 19 | . | . | . | . | 19 |
| *Argopecten irradians* | . | . | . | . | . | . | . | . | . | 1 | . | . | 1 |
| *Ariopsis felis* | 18 | 39 | 27 | 139 | 162 | 169 | 52 | 230 | 584 | 213 | 59 | 57 | 1,749 |
| *Bagre marinus* | 1 | 2 | 1 | 2 | 2 | 5 | 5 | 2 | 12 | 17 | 1 | 4 | 54 |
| *Bairdiella chrysoura* | 15 | 39 | 20 | 278 | 415 | 526 | 344 | 320 | 923 | 325 | 12 | 132 | 3,349 |
| *Bathygobius soporator* | 1 | . | . | . | . | . | . | . | . | 3 | 1 | 2 | 7 |
| *Brevoortia* spp. | . | . | 10 | . | . | . | 4 | . | 1 | 1 | 3 | . | 19 |
| *Calamus arctifrons* | . | . | 2 | 5 | 8 | 1 | 1 | . | 1 | 2 | 5 | 1 | 26 |
| *Calamus* spp. | 1 | . | . | . | . | 3 | 1 | . | . | 1 | . | . | 6 |
| *Callinectes ornatus* | . | . | . | 1 | 6 | 3 | 5 | . | . | 2 | . | 1 | 18 |
| *Callinectes sapidus* | 84 | 51 | 59 | 44 | 70 | 23 | 19 | 5 | 12 | 35 | 25 | 23 | 450 |
| *Callinectes similis* | . | . | . | . | 1 | . | . | . | . | . | . | . | 1 |

Appendix CH08-01. (Continued)

| Species | Month | | | | | | | | | | | | Totals |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | |
| | E=89 | E=89 | E=89 | E=89 | E=89 | E=89 | E=89 | E=89 | E=89 | E=89 | E=89 | E=89 | E=1,068 |
| *Caranx hippos* | 199 | 3 | 1 | 1 | 2 | 3 | 1 | 1 | 2 | 4 | 4 | 9 | 230 |
| *Carcharhinus limbatus* | . | . | . | . | . | . | 2 | . | . | . | . | . | 2 |
| *Centropomus undecimalis* | 7 | 69 | 55 | 62 | 28 | 10 | 49 | 33 | 124 | 63 | 81 | 78 | 659 |
| *Chaetodipterus faber* | 2 | 2 | 3 | 58 | 33 | 12 | 30 | 34 | 30 | 30 | 8 | . | 242 |
| *Chasmodes saburrae* | 3 | 2 | 4 | . | 17 | 14 | 16 | 16 | 5 | 4 | 17 | 8 | 106 |
| *Chilomycterus schoepfii* | 71 | 56 | 33 | 27 | 78 | 40 | 52 | 18 | 78 | 37 | 91 | 127 | 708 |
| *Chloroscombrus chrysurus* | 1 | 2 | 2 | 1 | 1 | . | 1 | 46 | 25 | 109 | . | 1 | 189 |
| *Citharichthys macrops* | 9 | . | 8 | 8 | 17 | 2 | 2 | 2 | 9 | 5 | 3 | 3 | 68 |
| *Cynoscion arenarius* | 36 | 23 | 13 | 11 | 4 | 11 | 126 | 370 | 281 | 86 | 6 | 7 | 974 |
| *Cynoscion nebulosus* | 15 | 3 | 1 | 11 | 27 | 102 | 122 | 135 | 150 | 44 | 32 | 31 | 673 |
| *Cyprinodon variegatus* | 13 | 8 | 3 | 11 | 66 | . | . | 15 | 2 | 20 | 31 | 5 | 174 |
| *Dasyatis americana* | . | . | . | 2 | 3 | 2 | 1 | 1 | 3 | . | . | 2 | 14 |
| *Dasyatis sabina* | 23 | 27 | 28 | 29 | 54 | 8 | 1 | 8 | 3 | 12 | 14 | 6 | 213 |
| *Dasyatis say* | . | 4 | 2 | 4 | 5 | 6 | 1 | 5 | . | 3 | . | 1 | 31 |
| *Diapterus auratus* | . | . | . | . | . | . | . | . | 4 | . | . | . | 4 |
| *Diplectrum formosum* | 11 | 6 | . | . | 1 | 3 | 2 | 9 | 5 | 7 | 12 | 20 | 76 |
| *Diplodus holbrookii* | . | . | . | . | . | . | 1 | . | 1 | . | . | . | 2 |
| *Dormitator maculatus* | . | . | . | . | . | . | 1 | . | . | . | . | . | 1 |
| *Dorosoma petenense* | . | . | . | . | . | . | . | 11 | . | . | . | . | 11 |
| *Echeneis neucratoides* | . | . | . | . | . | . | . | 1 | . | . | . | . | 1 |
| *Elops saurus* | 90 | 47 | 3 | 1 | 11 | 9 | 17 | 25 | 16 | 100 | 123 | 47 | 489 |
| *Epinephelus itajara* | . | . | . | . | . | . | . | . | . | 1 | . | . | 1 |
| *Epinephelus morio* | . | . | . | . | . | 1 | 2 | . | 2 | 9 | . | . | 14 |
| *Etropus crossotus* | 1 | . | . | . | . | 1 | 7 | 11 | 11 | 23 | 15 | 9 | 78 |
| *Eucinostomus gula* | 656 | 580 | 207 | 278 | 369 | 206 | 696 | 768 | 692 | 886 | 533 | 441 | 6,312 |

Appendix CH08-01. (Continued)

| Species | Month | | | | | | | | | | | | Totals |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | |
| | E=89 | E=89 | E=89 | E=89 | E=89 | E=89 | E=89 | E=89 | E=89 | E=89 | E=89 | E=89 | E=1,068 |
| *Eucinostomus harengulus* | 82 | 39 | 46 | 164 | 118 | 126 | 538 | 223 | 159 | 210 | 199 | 26 | 1,930 |
| *Eucinostomus* spp. | 1,328 | 122 | 121 | 8 | 4,349 | 3,775 | 9,259 | 3,212 | 4,093 | 3,227 | 1,215 | 593 | 31,302 |
| *Eugerres plumieri* | 2 | . | 2 | 1 | 4 | 110 | 236 | 104 | 41 | 10 | . | 1 | 511 |
| *Farfantepenaeus duorarum* | 70 | 84 | 80 | 44 | 81 | 450 | 525 | 969 | 496 | 347 | 110 | 110 | 3,366 |
| *Floridichthys carpio* | 451 | 471 | 113 | 60 | 948 | 118 | 16 | 110 | 433 | 149 | 47 | 24 | 2,940 |
| *Fundulus confluentus* | 4 | . | . | . | . | . | 18 | . | . | 1 | . | . | 23 |
| *Fundulus grandis* | 73 | 19 | 2 | 96 | 26 | 2 | . | 71 | 26 | 17 | 50 | 194 | 576 |
| *Fundulus similis* | 6 | 74 | 6 | 141 | . | . | . | 46 | 1 | 13 | 4 | 2 | 293 |
| *Gambusia holbrooki* | 27 | . | 2 | . | . | . | . | . | . | 2 | 4 | 1 | 36 |
| *Ginglymostoma cirratum* | . | . | 1 | . | 1 | . | . | . | . | . | . | . | 2 |
| *Gobiesox strumosus* | . | . | 3 | 2 | . | . | . | . | . | . | . | 1 | 6 |
| *Gobiosoma bosc* | . | 1 | 8 | 2 | . | 1 | 6 | . | . | 5 | . | 6 | 29 |
| *Gobiosoma longipala* | 7 | 1 | 1 | . | . | 1 | 1 | 8 | 2 | . | . | 2 | 23 |
| *Gobiosoma robustum* | 121 | 201 | 167 | 40 | 56 | 37 | 129 | 16 | 12 | 12 | 4 | 19 | 814 |
| *Gobiosoma* spp. | 38 | 31 | 3 | . | 17 | 52 | 113 | 159 | 12 | 61 | 4 | 15 | 505 |
| *Gymnothorax saxicola* | . | . | . | . | . | . | . | . | 1 | . | . | . | 1 |
| *Gymnura micrura* | . | . | 1 | 1 | 4 | . | 1 | . | 1 | 1 | . | . | 9 |
| *Haemulon aurolineatum* | . | . | . | . | . | . | . | . | 31 | . | . | . | 31 |
| *Haemulon plumierii* | . | 2 | . | 10 | 2 | 2 | 2 | . | 2 | 80 | 6 | . | 106 |
| *Harengula jaguana* | 30 | 92 | 13 | 10 | 244 | 3,157 | 2,148 | 384 | 84 | 345 | 2 | 58 | 6,567 |
| *Hippocampus erectus* | 11 | 8 | 13 | 6 | 5 | 5 | 2 | 5 | 2 | 2 | 5 | 8 | 72 |
| *Hippocampus zosterae* | 19 | 3 | 4 | 3 | 1 | 2 | . | 1 | 4 | 1 | 2 | 3 | 43 |
| *Hypleurochilus caudovittatus* | . | 4 | . | . | . | . | . | . | . | . | . | . | 4 |
| *Hypoatherina harringtonensis* | . | . | . | . | . | . | . | 1 | . | . | . | . | 1 |
| *Hyporhamphus meeki* | 1 | . | . | 2 | 6 | . | . | 3 | 7 | 3 | 1 | . | 23 |

Appendix CH08-01. (Continued)

| Species | Month | | | | | | | | | | | | Totals |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | |
| | E=89 | E=89 | E=89 | E=89 | E=89 | E=89 | E=89 | E=89 | E=89 | E=89 | E=89 | E=89 | E=1,068 |
| *Hyporhamphus* spp. | . | . | . | . | . | 6 | . | 1 | . | . | . | . | 7 |
| *Lachnolaimus maximus* | . | . | . | . | . | . | . | . | 2 | . | . | . | 2 |
| *Lagodon rhomboides* | 4,191 | 3,231 | 6,357 | 8,752 | 9,680 | 6,905 | 4,618 | 4,907 | 5,764 | 4,751 | 2,996 | 4,715 | 66,867 |
| *Leiostomus xanthurus* | 1,693 | 122 | 10 | 12 | 19 | 1 | 3 | . | . | 17 | . | . | 1,877 |
| *Lepisosteus osseus* | . | 1 | . | . | . | 1 | 2 | . | 2 | 2 | . | . | 8 |
| *Lepomis macrochirus* | . | . | . | . | . | . | . | . | . | . | . | 2 | 2 |
| *Limulus polyphemus* | . | 1 | . | 6 | 1 | 6 | 1 | 1 | 1 | . | 2 | 5 | 24 |
| *Lobotes surinamensis* | . | . | . | . | . | . | . | . | . | 1 | . | . | 1 |
| *Lophogobius cyprinoides* | . | . | . | . | . | . | 2 | . | . | . | . | . | 2 |
| *Lucania parva* | 529 | 599 | 1,048 | 462 | 631 | 1,423 | 399 | 1,413 | 917 | 86 | 97 | 69 | 7,673 |
| *Lutjanus griseus* | 25 | 14 | 14 | 54 | 63 | 13 | 56 | 43 | 104 | 55 | 33 | 1 | 475 |
| *Lutjanus synagris* | 4 | 3 | . | . | 7 | 21 | 33 | 89 | 186 | 179 | 60 | 26 | 608 |
| *Malaclemys terrapin* | . | . | . | . | . | . | . | . | 1 | . | . | . | 1 |
| *Membras martinica* | 18 | 1 | . | 8 | 69 | 34 | 277 | 4 | 15 | 14 | . | . | 440 |
| *Menidia* spp. | 677 | 280 | 139 | 483 | 742 | 1,575 | 1,576 | 2,330 | 350 | 74 | 682 | 234 | 9,142 |
| *Menippe* spp. | 61 | 67 | 11 | 3 | 35 | 27 | 17 | 33 | 29 | 59 | 16 | 37 | 395 |
| *Menticirrhus americanus* | 54 | 30 | 24 | 45 | 18 | 17 | 98 | 128 | 80 | 70 | 72 | 18 | 654 |
| *Menticirrhus littoralis* | . | . | . | . | . | . | . | . | . | . | 3 | . | 3 |
| *Menticirrhus saxatilis* | 4 | 2 | 5 | 1 | . | . | . | . | . | 9 | 2 | . | 23 |
| *Microgobius gulosus* | 176 | 142 | 169 | 209 | 120 | 341 | 159 | 219 | 156 | 366 | 40 | 18 | 2,115 |
| *Microgobius thalassinus* | . | . | 4 | . | . | . | 3 | . | 1 | . | . | 1 | 9 |
| *Monacanthus ciliatus* | . | 2 | . | . | . | . | 2 | . | . | . | 1 | . | 5 |
| *Mugil cephalus* | 151 | 2,613 | 40 | 101 | 7 | 1 | 32 | 24 | 31 | 31 | 11 | 47 | 3,089 |
| *Mugil curema* | 40 | . | 17 | 7 | 1 | 2 | 3 | 4 | . | 4 | 24 | 2 | 104 |
| *Mugil gyrans* | 37 | 15 | 59 | 25 | 21 | 5 | 18 | 19 | 11 | 23 | 51 | 126 | 410 |
| *Mycteroperca microlepis* | . | . | 1 | 4 | 2 | 4 | 43 | 8 | 27 | 5 | 12 | . | 106 |

Appendix CH08-01. (Continued)

| Species | Month | | | | | | | | | | | | Totals |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | |
| | E=89 | E=89 | E=89 | E=89 | E=89 | E=89 | E=89 | E=89 | E=89 | E=89 | E=89 | E=89 | E=1,068 |
| *Myrophis punctatus* | . | . | . | . | . | . | . | 1 | . | . | . | . | 1 |
| *Nicholsina usta* | 29 | 20 | 39 | 84 | 85 | 34 | 44 | 3 | 38 | 5 | 26 | . | 407 |
| *Ocyurus chrysurus* | . | . | . | . | . | . | . | . | 2 | 1 | 1 | . | 4 |
| *Ogcocephalus cubifrons* | . | . | . | . | 1 | 2 | 1 | 2 | 1 | 1 | 2 | 2 | 12 |
| *Oligoplites saurus* | 3 | . | 2 | 4 | . | 91 | 40 | 21 | 30 | 11 | . | . | 202 |
| *Opisthonema oglinum* | 1 | 35 | 4 | . | 18 | 62 | 302 | 8 | . | . | 3 | . | 433 |
| *Opistognathus robinsi* | . | . | . | . | . | . | 1 | . | . | . | . | . | 1 |
| *Opsanus beta* | 7 | 8 | 9 | 10 | 12 | 10 | 9 | 13 | 17 | 3 | 13 | 8 | 119 |
| *Orthopristis chrysoptera* | 133 | 131 | 439 | 811 | 841 | 676 | 503 | 277 | 429 | 353 | 91 | 32 | 4,716 |
| *Parablennius marmoreus* | . | . | . | . | . | . | . | . | . | 1 | . | . | 1 |
| *Paraclinus marmoratus* | . | . | . | . | . | . | . | . | . | 1 | . | . | 1 |
| *Paralichthys albigutta* | 3 | 12 | 9 | 18 | 31 | 13 | 24 | 18 | 18 | 16 | 16 | 14 | 192 |
| *Peprilus paru* | . | . | . | . | . | . | . | . | . | 2 | . | . | 2 |
| *Poecilia latipinna* | 44 | 4 | 15 | . | 3 | 1 | . | 1 | 7 | . | 124 | 8 | 207 |
| *Pogonias cromis* | . | . | . | . | . | 1 | . | . | 2 | 2 | 2 | 5 | 12 |
| *Pomatomus saltatrix* | . | . | . | . | . | . | . | . | . | . | 1 | 11 | 12 |
| *Portunus* spp. | 133 | 226 | 47 | 80 | 228 | 72 | 230 | 229 | 38 | 16 | 39 | 32 | 1,370 |
| *Prionotus rubio* | . | . | . | . | . | . | . | 1 | . | . | . | . | 1 |
| *Prionotus scitulus* | 93 | 42 | 42 | 35 | 52 | 62 | 103 | 283 | 380 | 160 | 545 | 101 | 1,898 |
| *Prionotus tribulus* | 7 | 8 | 7 | 1 | 7 | . | . | 3 | 2 | 12 | 25 | 23 | 95 |
| *Pristis pectinata* | . | . | . | . | . | 1 | 1 | . | . | . | . | . | 2 |
| *Rachycentron canadum* | . | . | . | 2 | 1 | . | . | . | . | . | . | . | 3 |
| *Rhinoptera bonasus* | . | 3 | . | 2 | 3 | . | . | 3 | . | 3 | 2 | . | 16 |
| *Rimapenaeus constrictus* | 1 | . | . | . | . | 1 | . | . | . | . | . | . | 2 |
| *Sardinella aurita* | . | . | . | . | . | 18 | 136 | . | . | . | . | . | 154 |
| *Sciaenops ocellatus* | 21 | 12 | 16 | 7 | 12 | 14 | 8 | 8 | 19 | 73 | 46 | 46 | 282 |

Appendix CH08-01. (Continued)

| Species | Month | | | | | | | | | | | | Totals |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | |
| | E=89 | E=89 | E=89 | E=89 | E=89 | E=89 | E=89 | E=89 | E=89 | E=89 | E=89 | E=89 | E=1,068 |
| *Scomberomorus maculatus* | 1 | . | . | 1 | . | . | 1 | 1 | . | 1 | 1 | . | 6 |
| *Scorpaena brasiliensis* | . | 1 | . | . | . | 1 | 1 | 5 | . | . | 1 | 2 | 11 |
| *Selene vomer* | . | . | . | . | . | 1 | . | . | 1 | 2 | 4 | 1 | 9 |
| *Serraniculus pumilio* | . | . | . | . | . | . | . | . | 1 | 2 | . | 3 | 6 |
| *Serranus subligarius* | . | 1 | . | . | . | . | . | . | . | . | 1 | 1 | 3 |
| *Sicyonia laevigata* | 2 | . | . | . | . | . | . | . | . | . | . | . | 2 |
| *Sicyonia* spp. | . | . | . | . | 3 | . | . | . | . | . | . | . | 3 |
| *Sicyonia typica* | 2 | 2 | 1 | . | . | . | . | . | . | . | . | . | 5 |
| *Sphoeroides nephelus* | 47 | 32 | 19 | 45 | 98 | 20 | 19 | 22 | 17 | 26 | 23 | 26 | 394 |
| *Sphoeroides spengleri* | . | . | . | . | . | . | 2 | . | 1 | . | . | . | 3 |
| *Sphyraena barracuda* | 2 | 1 | 1 | 11 | . | . | 1 | . | . | 3 | 3 | . | 22 |
| *Sphyraena borealis* | . | . | . | 1 | 2 | 1 | . | . | . | . | . | . | 4 |
| *Sphyrna tiburo* | . | . | . | . | 2 | . | 3 | . | . | . | . | 1 | 6 |
| *Squilla empusa* | . | . | . | . | . | . | . | . | 13 | . | . | . | 13 |
| *Stephanolepis hispidus* | 41 | 34 | 39 | 55 | 113 | 64 | 48 | 22 | 26 | 20 | 38 | 41 | 541 |
| *Strongylura marina* | 4 | . | . | . | 1 | . | . | . | 2 | . | 5 | 7 | 19 |
| *Strongylura notata* | 14 | 15 | 16 | 35 | 46 | 125 | 93 | 51 | 34 | 32 | 40 | 22 | 523 |
| *Strongylura* spp. | . | . | 1 | 4 | 2 | 3 | . | . | . | . | . | . | 10 |
| *Strongylura timucu* | . | . | . | . | . | 2 | . | 2 | . | 2 | . | . | 6 |
| *Syacium papillosum* | . | . | . | . | . | . | 1 | 1 | . | . | . | . | 2 |
| *Symphurus plagiusa* | 5 | 21 | 12 | 5 | 1 | 2 | 7 | 20 | 26 | 32 | 12 | 15 | 158 |
| *Syngnathus floridae* | 10 | 6 | 6 | 32 | 19 | 14 | 11 | 4 | 3 | 3 | 4 | 2 | 114 |
| *Syngnathus louisianae* | 4 | 8 | 10 | 18 | 11 | 27 | 25 | 31 | 23 | 14 | 12 | 10 | 193 |
| *Syngnathus scovelli* | 55 | 23 | 83 | 63 | 99 | 95 | 55 | 84 | 75 | 61 | 72 | 45 | 810 |
| *Syngnathus springeri* | . | . | . | . | . | . | . | . | . | . | . | 1 | 1 |
| *Synodus foetens* | 23 | 28 | 32 | 55 | 57 | 41 | 46 | 29 | 29 | 61 | 47 | 47 | 495 |

Appendix CH08-01. (Continued)

| Species | Month | | | | | | | | | | | | Totals |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | |
| | E=89 | E=89 | E=89 | E=89 | E=89 | E=89 | E=89 | E=89 | E=89 | E=89 | E=89 | E=89 | E=1,068 |
| *Trachinotus carolinus* | . | . | . | . | . | . | 1 | 4 | 6 | . | 12 | 10 | 33 |
| *Trachinotus falcatus* | . | . | . | . | . | . | 2 | 1 | 4 | . | 1 | . | 8 |
| *Trinectes maculatus* | 7 | 17 | 42 | 43 | 35 | 55 | 24 | 1,011 | 233 | 113 | 30 | 7 | 1,617 |
| *Tylosurus crocodilus* | . | . | . | . | . | . | . | . | . | . | 1 | . | 1 |
| *Urophycis floridana* | 1 | . | 1 | . | . | . | . | . | . | . | . | . | 2 |
| **Totals** | **13,653** | **24,120** | **18,693** | **17,535** | **36,086** | **24,212** | **35,660** | **28,067** | **19,013** | **21,052** | **9,183** | **8,429** | **255,701** |

Appendix CH08-02. Summary by gear, stratum, and zone of species collected during Charlotte Harbor stratified-random sampling, 2008. Sampling with 21.3-m bay seine was stratified by the presence or absence of a shoreline ('Shore' or offshore) within 5-m. Offshore sets were further stratified by the presence or absence of bottom vegetation ('Veg' or 'Unveg'). Sampling with 21.3-m river seine and 183-m haul seine was stratified by the presence or absence of overhanging vegetation ('Over' or 'Nonover'). Sampling with 6.1-m otter trawl was not stratified. Effort, or the total number of hauls, is labeled 'E'. Taxa are arranged alphabetically.

| Species | Gear and Strata | | | | | | | | Totals |
|---|---|---|---|---|---|---|---|---|---|
| | 21.3-m bay seine | | | 21.3-m river seine | | 183-m haul seine | | 6.1-m otter trawl | |
| | Veg | Unveg | Shore | Over | Nonover | Over | Nonover | | |
| | E=138 | E=66 | E=204 | E=48 | E=48 | E=157 | E=47 | E=360 | E=1,068 |
| *Acanthostracion quadricornis* | 8 | . | . | . | . | 4 | 10 | 118 | 140 |
| *Achirus lineatus* | 12 | 3 | 13 | 3 | 5 | . | 3 | 89 | 128 |
| *Adinia xenica* | . | . | 173 | 71 | 1 | . | . | . | 245 |
| *Aetobatus narinari* | . | . | . | . | . | 5 | 1 | 1 | 7 |
| *Albula* spp. | . | . | . | . | . | 1 | . | . | 1 |
| *Aluterus schoepfii* | 1 | . | . | . | . | . | . | 20 | 21 |
| *Anarchopterus criniger* | . | . | . | . | . | . | . | 6 | 6 |
| *Anchoa hepsetus* | 8 | 5 | 2 | 150 | 91 | . | . | 4 | 260 |
| *Anchoa mitchilli* | 9,368 | 266 | 21,996 | 18,795 | 19,313 | . | . | 8,729 | 78,467 |
| *Ancylopsetta quadrocellata* | . | . | . | . | . | . | . | 10 | 10 |
| *Archosargus probatocephalus* | 105 | 6 | 179 | 3 | 20 | 550 | 96 | 66 | 1,025 |
| *Argopecten gibbus* | . | . | . | . | . | . | . | 19 | 19 |
| *Argopecten irradians* | . | . | . | . | . | . | 1 | . | 1 |
| *Ariopsis felis* | 5 | 5 | 3 | . | . | 991 | 351 | 394 | 1,749 |
| *Bagre marinus* | . | . | . | . | . | 14 | 2 | 38 | 54 |
| *Bairdiella chrysoura* | 1,049 | 29 | 633 | 6 | 13 | 324 | 310 | 985 | 3,349 |
| *Bathygobius soporator* | . | . | 4 | 3 | . | . | . | . | 7 |
| *Brevoortia* spp. | 2 | . | 1 | 11 | 1 | . | 1 | 3 | 19 |
| *Calamus arctifrons* | 5 | . | 6 | . | . | 2 | 13 | . | 26 |
| *Calamus* spp. | 1 | . | . | . | . | . | . | 5 | 6 |
| *Callinectes ornatus* | . | . | 3 | . | . | 1 | 1 | 13 | 18 |
| *Callinectes sapidus* | 15 | 6 | 39 | 30 | 25 | 40 | 20 | 275 | 450 |
| *Callinectes similis* | . | . | 1 | . | . | . | . | . | 1 |
| *Caranx hippos* | . | . | 1 | 1 | 1 | 215 | 11 | 1 | 230 |
| *Carcharhinus limbatus* | . | . | . | . | . | 1 | . | 1 | 2 |

Appendix CH08-02. (Continued)

| Species | Gear and Strata | | | | | | | | Totals |
|---|---|---|---|---|---|---|---|---|---|
| | 21.3-m bay seine | | | 21.3-m river seine | | 183-m haul seine | | 6.1-m otter trawl | |
| | Veg | Unveg | Shore | Over | Nonover | Over | Nonover | | |
| | E=138 | E=66 | E=204 | E=48 | E=48 | E=157 | E=47 | E=360 | E=1,068 |
| *Centropomus undecimalis* | . | . | 7 | 8 | . | 593 | 51 | . | 659 |
| *Chaetodipterus faber* | 2 | . | 1 | . | . | 77 | 11 | 151 | 242 |
| *Chasmodes saburrae* | 49 | 3 | 50 | . | . | . | . | 4 | 106 |
| *Chilomycterus schoepfii* | 17 | 5 | 2 | . | . | 111 | 154 | 419 | 708 |
| *Chloroscombrus chrysurus* | 32 | . | 2 | . | . | . | . | 155 | 189 |
| *Citharichthys macrops* | . | 3 | . | . | . | . | . | 65 | 68 |
| *Cynoscion arenarius* | 4 | 3 | 23 | 13 | 81 | . | . | 850 | 974 |
| *Cynoscion nebulosus* | 324 | 5 | 189 | 23 | 19 | 47 | 39 | 27 | 673 |
| *Cyprinodon variegatus* | . | 39 | 127 | 7 | 1 | . | . | . | 174 |
| *Dasyatis americana* | . | . | 1 | . | . | 2 | 10 | 1 | 14 |
| *Dasyatis sabina* | 2 | 1 | 7 | 1 | . | 58 | 49 | 95 | 213 |
| *Dasyatis say* | . | . | 1 | . | . | 10 | 17 | 3 | 31 |
| *Diapterus auratus* | . | . | . | . | . | 4 | . | . | 4 |
| *Diplectrum formosum* | . | . | . | . | . | . | 1 | 75 | 76 |
| *Diplodus holbrookii* | . | . | . | . | . | 1 | 1 | . | 2 |
| *Dormitator maculatus* | 1 | . | . | . | . | . | . | . | 1 |
| *Dorosoma petenense* | . | . | . | 11 | . | . | . | . | 11 |
| *Echeneis neucratoides* | . | . | . | . | . | . | 1 | . | 1 |
| *Elops saurus* | . | . | . | . | 1 | 365 | 122 | 1 | 489 |
| *Epinephelus itajara* | . | . | . | . | . | 1 | . | . | 1 |
| *Epinephelus morio* | . | . | . | . | . | . | 4 | 10 | 14 |
| *Etropus crossotus* | . | . | . | . | . | . | 1 | 77 | 78 |
| *Eucinostomus gula* | 1,046 | 137 | 1,487 | 59 | 65 | 1,601 | 236 | 1,681 | 6,312 |
| *Eucinostomus harengulus* | 100 | 113 | 947 | 218 | 177 | 269 | 18 | 88 | 1,930 |
| *Eucinostomus* spp. | 5,641 | 1,662 | 22,498 | 486 | 340 | . | . | 675 | 31,302 |
| *Eugerres plumieri* | 1 | 4 | 111 | 68 | 199 | 59 | . | 69 | 511 |
| *Farfantepenaeus duorarum* | 843 | 150 | 1,387 | 67 | 57 | 6 | . | 856 | 3,366 |
| *Floridichthys carpio* | 318 | 394 | 2,228 | . | . | . | . | . | 2,940 |
| *Fundulus confluentus* | . | . | 4 | 19 | . | . | . | . | 23 |
| *Fundulus grandis* | 1 | 10 | 296 | 140 | 129 | . | . | . | 576 |
| *Fundulus similis* | . | . | 184 | 61 | 47 | . | 1 | . | 293 |

Appendix CH08-02.    (Continued)

| Species | Gear and Strata | | | | | | | | Totals |
|---|---|---|---|---|---|---|---|---|---|
| | 21.3-m bay seine | | | 21.3-m river seine | | 183-m haul seine | | 6.1-m otter trawl | |
| | Veg | Unveg | Shore | Over | Nonover | Over | Nonover | | |
| | E=138 | E=66 | E=204 | E=48 | E=48 | E=157 | E=47 | E=360 | E=1,068 |
| *Gambusia holbrooki* | . | . | 4 | 30 | 2 | . | . | . | 36 |
| *Ginglymostoma cirratum* | . | . | . | . | . | . | . | 2 | 2 |
| *Gobiesox strumosus* | . | . | 5 | . | 1 | . | . | . | 6 |
| *Gobiosoma bosc* | . | . | . | 20 | 9 | . | . | . | 29 |
| *Gobiosoma longipala* | . | . | . | . | . | . | . | 23 | 23 |
| *Gobiosoma robustum* | 278 | 34 | 375 | 5 | 1 | . | . | 121 | 814 |
| *Gobiosoma* spp. | 223 | 48 | 132 | 19 | 20 | . | . | 63 | 505 |
| *Gymnothorax saxicola* | . | . | . | . | . | . | . | 1 | 1 |
| *Gymnura micrura* | . | . | . | . | . | 1 | 3 | 5 | 9 |
| *Haemulon aurolineatum* | . | . | . | . | . | . | . | 31 | 31 |
| *Haemulon plumierii* | 80 | . | . | . | . | 9 | 15 | 2 | 106 |
| *Harengula jaguana* | 2,638 | 1 | 3,419 | 172 | 1 | 133 | 155 | 48 | 6,567 |
| *Hippocampus erectus* | 2 | . | . | . | . | 2 | . | 68 | 72 |
| *Hippocampus zosterae* | 28 | . | 12 | . | . | . | . | 3 | 43 |
| *Hypleurochilus caudovittatus* | . | . | . | . | . | . | . | 4 | 4 |
| *Hypoatherina harringtonensis* | . | . | 1 | . | . | . | . | . | 1 |
| *Hyporhamphus meeki* | 10 | 1 | . | . | . | 1 | 11 | . | 23 |
| *Hyporhamphus* spp. | 5 | 1 | 1 | . | . | . | . | . | 7 |
| *Lachnolaimus maximus* | . | . | . | . | . | 1 | 1 | . | 2 |
| *Lagodon rhomboides* | 16,017 | 196 | 9,633 | 26 | 70 | 19,799 | 9,658 | 11,468 | 66,867 |
| *Leiostomus xanthurus* | 2 | . | 1,830 | 6 | 1 | 17 | 18 | 3 | 1,877 |
| *Lepisosteus osseus* | . | . | . | . | . | . | . | 8 | 8 |
| *Lepomis macrochirus* | . | . | . | . | 2 | . | . | . | 2 |
| *Limulus polyphemus* | . | 1 | . | 1 | 1 | 10 | . | 11 | 24 |
| *Lobotes surinamensis* | . | . | . | . | . | 1 | . | . | 1 |
| *Lophogobius cyprinoides* | . | . | . | . | 2 | . | . | . | 2 |
| *Lucania parva* | 2,144 | 6 | 5,510 | 6 | 7 | . | . | . | 7,673 |
| *Lutjanus griseus* | 41 | . | 53 | 2 | 2 | 161 | 151 | 65 | 475 |
| *Lutjanus synagris* | 119 | . | 15 | . | 1 | 42 | 36 | 395 | 608 |
| *Malaclemys terrapin* | . | . | . | . | . | 1 | . | . | 1 |
| *Membras martinica* | 17 | 18 | 314 | 52 | 39 | . | . | . | 440 |

Appendix CH08-02. (Continued)

| Species | Gear and Strata | | | | | | | | Totals |
|---|---|---|---|---|---|---|---|---|---|
| | 21.3-m bay seine | | | 21.3-m river seine | | 183-m haul seine | | 6.1-m otter trawl | |
| | Veg | Unveg | Shore | Over | Nonover | Over | Nonover | | |
| | E=138 | E=66 | E=204 | E=48 | E=48 | E=157 | E=47 | E=360 | E=1,068 |
| *Menidia* spp. | 646 | 16 | 6,721 | 858 | 896 | . | . | 5 | 9,142 |
| *Menippe* spp. | 2 | 1 | 1 | . | . | 2 | 3 | 386 | 395 |
| *Menticirrhus americanus* | 10 | 6 | 44 | 26 | 86 | 10 | . | 472 | 654 |
| *Menticirrhus littoralis* | . | . | . | . | . | 3 | . | . | 3 |
| *Menticirrhus saxatilis* | 7 | 1 | 5 | . | . | . | . | 10 | 23 |
| *Microgobius gulosus* | 449 | 124 | 1,458 | 47 | 24 | . | . | 13 | 2,115 |
| *Microgobius thalassinus* | . | 1 | . | . | . | . | . | 8 | 9 |
| *Monacanthus ciliatus* | 1 | . | . | . | . | . | 1 | 3 | 5 |
| *Mugil cephalus* | . | 1 | 2,577 | 128 | 138 | 197 | 48 | . | 3,089 |
| *Mugil curema* | . | . | 6 | 3 | . | 95 | . | . | 104 |
| *Mugil gyrans* | 3 | 1 | 46 | 9 | 9 | 266 | 76 | . | 410 |
| *Mycteroperca microlepis* | 2 | . | . | . | . | 63 | 17 | 24 | 106 |
| *Myrophis punctatus* | . | . | . | . | . | . | . | 1 | 1 |
| *Nicholsina usta* | 29 | . | 3 | . | . | 102 | 54 | 219 | 407 |
| *Ocyurus chrysurus* | . | . | . | . | . | 1 | 2 | 1 | 4 |
| *Ogcocephalus cubifrons* | . | . | . | . | . | . | . | 12 | 12 |
| *Oligoplites saurus* | 23 | 6 | 118 | 16 | 16 | 15 | 8 | . | 202 |
| *Opisthonema oglinum* | 328 | . | 37 | 1 | 2 | 56 | 3 | 6 | 433 |
| *Opistognathus robinsi* | . | . | . | . | . | . | . | 1 | 1 |
| *Opsanus beta* | 7 | . | 4 | . | . | 36 | 9 | 63 | 119 |
| *Orthopristis chrysoptera* | 940 | 13 | 417 | . | 1 | 397 | 252 | 2,696 | 4,716 |
| *Parablennius marmoreus* | 1 | . | . | . | . | . | . | . | 1 |
| *Paraclinus marmoratus* | 1 | . | . | . | . | . | . | . | 1 |
| *Paralichthys albigutta* | 4 | 5 | 8 | . | . | 39 | 34 | 102 | 192 |
| *Peprilus paru* | . | . | . | . | . | . | . | 2 | 2 |
| *Poecilia latipinna* | . | 1 | 156 | 49 | 1 | . | . | . | 207 |
| *Pogonias cromis* | . | . | 1 | . | . | 6 | 5 | . | 12 |
| *Pomatomus saltatrix* | . | . | . | . | . | 1 | 11 | . | 12 |
| *Portunus* spp. | 1 | . | . | . | . | . | . | 1,369 | 1,370 |
| *Prionotus rubio* | . | . | . | . | . | . | . | 1 | 1 |
| *Prionotus scitulus* | 6 | 15 | 6 | . | . | 2 | 5 | 1,864 | 1,898 |
| *Prionotus tribulus* | 1 | 1 | 6 | . | . | 2 | 2 | 83 | 95 |

Appendix CH08-02. (Continued)

| Species | Gear and Strata | | | | | | | | Totals |
|---|---|---|---|---|---|---|---|---|---|
| | 21.3-m bay seine | | | 21.3-m river seine | | 183-m haul seine | | 6.1-m otter trawl | |
| | Veg | Unveg | Shore | Over | Nonover | Over | Nonover | | |
| | E=138 | E=66 | E=204 | E=48 | E=48 | E=157 | E=47 | E=360 | E=1,068 |
| *Pristis pectinata* | . | . | . | 1 | . | 1 | . | . | 2 |
| *Rachycentron canadum* | . | . | . | . | . | . | 1 | 2 | 3 |
| *Rhinoptera bonasus* | . | 1 | 1 | . | . | 8 | 4 | 2 | 16 |
| *Rimapenaeus constrictus* | . | . | . | . | . | . | . | 2 | 2 |
| *Sardinella aurita* | 142 | . | 12 | . | . | . | . | . | 154 |
| *Sciaenops ocellatus* | 6 | 2 | 80 | 48 | 13 | 126 | 7 | . | 282 |
| *Scomberomorus maculatus* | . | 1 | . | . | . | 3 | 2 | . | 6 |
| *Scorpaena brasiliensis* | . | . | . | . | . | . | . | 11 | 11 |
| *Selene vomer* | . | . | 1 | . | . | 5 | 3 | . | 9 |
| *Serraniculus pumilio* | 3 | . | . | . | . | . | . | 3 | 6 |
| *Serranus subligarius* | . | . | . | . | . | . | . | 3 | 3 |
| *Sicyonia laevigata* | . | . | . | . | . | . | . | 2 | 2 |
| *Sicyonia* spp. | . | . | . | . | . | . | . | 3 | 3 |
| *Sicyonia typica* | . | . | . | . | . | . | . | 5 | 5 |
| *Sphoeroides nephelus* | 48 | 5 | 109 | 1 | 4 | 81 | 68 | 78 | 394 |
| *Sphoeroides spengleri* | . | . | . | . | . | . | . | 3 | 3 |
| *Sphyraena barracuda* | . | . | 1 | . | . | 15 | 6 | . | 22 |
| *Sphyraena borealis* | 1 | . | . | . | . | . | . | 3 | 4 |
| *Sphyrna tiburo* | . | . | . | . | . | 3 | 3 | . | 6 |
| *Squilla empusa* | . | . | . | . | . | . | . | 13 | 13 |
| *Stephanolepis hispidus* | 80 | 2 | 37 | . | . | 8 | 27 | 387 | 541 |
| *Strongylura marina* | . | . | . | . | . | 9 | 10 | . | 19 |
| *Strongylura notata* | 12 | 4 | 275 | 13 | 9 | 175 | 35 | . | 523 |
| *Strongylura* spp. | 2 | . | 3 | 2 | 3 | . | . | . | 10 |
| *Strongylura timucu* | . | . | 3 | . | . | . | 3 | . | 6 |
| *Syacium papillosum* | . | . | . | . | . | . | . | 2 | 2 |
| *Symphurus plagiusa* | 3 | 3 | 8 | 5 | 6 | 1 | 3 | 129 | 158 |
| *Syngnathus floridae* | 43 | 2 | 5 | . | . | . | . | 64 | 114 |
| *Syngnathus louisianae* | 32 | 4 | 25 | . | . | . | . | 132 | 193 |
| *Syngnathus scovelli* | 395 | 32 | 304 | 4 | . | . | . | 75 | 810 |
| *Syngnathus springeri* | . | . | 1 | . | . | . | . | . | 1 |
| *Synodus foetens* | 68 | 36 | 108 | 3 | 4 | 34 | 41 | 201 | 495 |

Appendix CH08-02. (Continued)

| Species | Gear and Strata | | | | | | | | Totals |
|---|---|---|---|---|---|---|---|---|---|
| | 21.3-m bay seine | | | 21.3-m river seine | | 183-m haul seine | | 6.1-m otter trawl | |
| | Veg | Unveg | Shore | Over | Nonover | Over | Nonover | | |
| | E=138 | E=66 | E=204 | E=48 | E=48 | E=157 | E=47 | E=360 | E=1,068 |
| *Trachinotus carolinus* | . | . | . | . | . | 24 | 9 | . | 33 |
| *Trachinotus falcatus* | . | . | 2 | . | . | 5 | 1 | . | 8 |
| *Trinectes maculatus* | 1 | 5 | 6 | 9 | 9 | 3 | 5 | 1,579 | 1,617 |
| *Tylosurus crocodilus* | . | . | . | . | . | 1 | . | . | 1 |
| *Urophycis floridana* | . | 1 | . | . | . | . | . | 1 | 2 |
| **Totals** | **43,861** | **3,445** | **86,505** | **21,816** | **21,966** | **27,326** | **12,342** | **38,442** | **255,701** |

Appendix CH08-03. Summary by zone of species collected during Charlotte Harbor stratified-random sampling, 2008. Zones A-D were located in Charlotte Harbor, while M (Myakka River), and P (Peace River) represent tributaries of Charlotte Harbor. Effort, or the total number of hauls, is labeled 'E'. Taxa are arranged alphabetically.

| Species | Zone | | | | | | Totals |
|---|---|---|---|---|---|---|---|
| | A | B | C | D | M | P | |
| | E=264 | E=216 | E=216 | E=204 | E=84 | E=84 | E=1,068 |
| *Acanthostracion quadricornis* | 5 | 50 | 28 | 57 | . | . | 140 |
| *Achirus lineatus* | 11 | 49 | 20 | 40 | 2 | 6 | 128 |
| *Adinia xenica* | 92 | 75 | . | 6 | . | 72 | 245 |
| *Aetobatus narinari* | 3 | 4 | . | . | . | . | 7 |
| *Albula spp.* | . | . | . | 1 | . | . | 1 |
| *Aluterus schoepfii* | 2 | 10 | 7 | 2 | . | . | 21 |
| *Anarchopterus criniger* | . | . | . | 6 | . | . | 6 |
| *Anchoa hepsetus* | 6 | 8 | 2 | 2 | 77 | 165 | 260 |
| *Anchoa mitchilli* | 23,082 | 6,789 | 3,304 | 2,120 | 14,081 | 29,091 | 78,467 |
| *Ancylopsetta quadrocellata* | . | 4 | 3 | 3 | . | . | 10 |
| *Archosargus probatocephalus* | 174 | 277 | 141 | 394 | 16 | 23 | 1,025 |
| *Argopecten gibbus* | . | 18 | . | 1 | . | . | 19 |
| *Argopecten irradians* | . | 1 | . | . | . | . | 1 |
| *Ariopsis felis* | 423 | 208 | 473 | 471 | 92 | 82 | 1,749 |
| *Bagre marinus* | 28 | 5 | 3 | 5 | 8 | 5 | 54 |
| *Bairdiella chrysoura* | 565 | 889 | 782 | 540 | 249 | 324 | 3,349 |
| *Bathygobius soporator* | 4 | . | . | . | . | 3 | 7 |
| *Brevoortia* spp. | . | 1 | 4 | 2 | 11 | 1 | 19 |
| *Calamus arctifrons* | . | 12 | 2 | 12 | . | . | 26 |
| *Calamus* spp. | . | 2 | . | 4 | . | . | 6 |
| *Callinectes ornatus* | 3 | 3 | 5 | 6 | . | 1 | 18 |
| *Callinectes sapidus* | 161 | 28 | 30 | 53 | 100 | 78 | 450 |
| *Callinectes similis* | . | . | . | 1 | . | . | 1 |
| *Caranx hippos* | 202 | 18 | 4 | 4 | . | 2 | 230 |
| *Carcharhinus limbatus* | . | 1 | 1 | . | . | . | 2 |
| *Centropomus undecimalis* | 62 | 291 | 72 | 226 | 3 | 5 | 659 |
| *Chaetodipterus faber* | 77 | 85 | 36 | 7 | 10 | 27 | 242 |
| *Chasmodes saburrae* | 29 | 31 | 35 | 11 | . | . | 106 |

Appendix CH08-03. (Continued)

| Species | Zone A | Zone B | Zone C | Zone D | Zone M | Zone P | Totals |
|---|---|---|---|---|---|---|---|
| | E=264 | E=216 | E=216 | E=204 | E=84 | E=84 | E=1,068 |
| *Chilomycterus schoepfii* | 47 | 324 | 97 | 238 | 1 | 1 | 708 |
| *Chloroscombrus chrysurus* | 150 | 3 | 13 | 22 | . | 1 | 189 |
| *Citharichthys macrops* | . | 41 | 8 | 19 | . | . | 68 |
| *Cynoscion arenarius* | 299 | . | . | . | 261 | 414 | 974 |
| *Cynoscion nebulosus* | 236 | 108 | 187 | 97 | 19 | 26 | 673 |
| *Cyprinodon variegatus* | 16 | 32 | 44 | 74 | 8 | . | 174 |
| *Dasyatis americana* | 1 | 1 | 7 | 5 | . | . | 14 |
| *Dasyatis sabina* | 94 | 14 | 20 | 8 | 17 | 60 | 213 |
| *Dasyatis say* | 12 | 3 | 8 | 8 | . | . | 31 |
| *Diapterus auratus* | . | . | . | 4 | . | . | 4 |
| *Diplectrum formosum* | 1 | 48 | 18 | 9 | . | . | 76 |
| *Diplodus holbrookii* | . | 2 | . | . | . | . | 2 |
| *Dormitator maculatus* | . | . | 1 | . | . | . | 1 |
| *Dorosoma petenense* | . | . | . | . | 10 | 1 | 11 |
| *Echeneis neucratoides* | . | . | 1 | . | . | . | 1 |
| *Elops saurus* | 220 | 60 | 148 | 60 | . | 1 | 489 |
| *Epinephelus itajara* | . | . | 1 | . | . | . | 1 |
| *Epinephelus morio* | . | 4 | . | 10 | . | . | 14 |
| *Etropus crossotus* | 5 | 24 | 28 | 21 | . | . | 78 |
| *Eucinostomus gula* | 1,015 | 2,111 | 1,240 | 1,783 | 90 | 73 | 6,312 |
| *Eucinostomus harengulus* | 384 | 382 | 408 | 337 | 184 | 235 | 1,930 |
| *Eucinostomus* spp. | 3,282 | 7,564 | 9,634 | 9,982 | 289 | 551 | 31,302 |
| *Eugerres plumieri* | 129 | 2 | 42 | 3 | 86 | 249 | 511 |
| *Farfantepenaeus duorarum* | 1,366 | 782 | 602 | 217 | 136 | 263 | 3,366 |
| *Floridichthys carpio* | 19 | 610 | 277 | 2,034 | . | . | 2,940 |
| *Fundulus confluentus* | 4 | . | . | . | . | 19 | 23 |
| *Fundulus grandis* | 141 | 22 | 77 | 67 | 41 | 228 | 576 |
| *Fundulus similis* | 30 | 7 | 146 | 2 | 88 | 20 | 293 |
| *Gambusia holbrooki* | 1 | 2 | 1 | . | 3 | 29 | 36 |
| *Ginglymostoma cirratum* | . | . | . | 2 | . | . | 2 |
| *Gobiesox strumosus* | 5 | . | . | . | . | 1 | 6 |
| *Gobiosoma bosc* | . | . | . | . | 9 | 20 | 29 |
| *Gobiosoma longipala* | . | 16 | 4 | 3 | . | . | 23 |
| *Gobiosoma robustum* | 175 | 124 | 248 | 258 | 7 | 2 | 814 |

Appendix CH08-03. (Continued)

| Species | Zone | | | | | | Totals |
|---|---|---|---|---|---|---|---|
| | A | B | C | D | M | P | |
| | E=264 | E=216 | E=216 | E=204 | E=84 | E=84 | E=1,068 |
| *Gobiosoma* spp. | 266 | 76 | 82 | 42 | 14 | 25 | 505 |
| *Gymnothorax saxicola* | . | 1 | . | . | . | . | 1 |
| *Gymnura micrura* | 4 | 3 | 1 | . | . | 1 | 9 |
| *Haemulon aurolineatum* | . | 31 | . | . | . | . | 31 |
| *Haemulon plumierii* | . | 21 | 2 | 83 | . | . | 106 |
| *Harengula jaguana* | 776 | 726 | 445 | 4,447 | 169 | 4 | 6,567 |
| *Hippocampus erectus* | 15 | 15 | 21 | 17 | 3 | 1 | 72 |
| *Hippocampus zosterae* | 18 | 7 | 11 | 7 | . | . | 43 |
| *Hypleurochilus caudovittatus* | . | 4 | . | . | . | . | 4 |
| *Hypoatherina harringtonensis* | . | . | . | 1 | . | . | 1 |
| *Hyporhamphus meeki* | . | 6 | 8 | 9 | . | . | 23 |
| *Hyporhamphus* spp. | . | 3 | . | 4 | . | . | 7 |
| *Lachnolaimus maximus* | . | 1 | . | 1 | . | . | 2 |
| *Lagodon rhomboides* | 6,770 | 24,647 | 10,567 | 24,706 | 84 | 93 | 66,867 |
| *Leiostomus xanthurus* | 106 | 79 | 49 | 1,636 | 4 | 3 | 1,877 |
| *Lepisosteus osseus* | 6 | . | 1 | . | 1 | . | 8 |
| *Lepomis macrochirus* | . | . | . | . | 2 | . | 2 |
| *Limulus polyphemus* | 6 | 2 | . | 9 | 7 | . | 24 |
| *Lobotes surinamensis* | . | . | . | 1 | . | . | 1 |
| *Lophogobius cyprinoides* | . | . | . | . | . | 2 | 2 |
| *Lucania parva* | 908 | 3,141 | 2,236 | 1,375 | 5 | 8 | 7,673 |
| *Lutjanus griseus* | 38 | 168 | 53 | 210 | 4 | 2 | 475 |
| *Lutjanus synagris* | 24 | 242 | 86 | 255 | . | 1 | 608 |
| *Malaclemys terrapin* | 1 | . | . | . | . | . | 1 |
| *Membras martinica* | 31 | . | 14 | 304 | 60 | 31 | 440 |
| *Menidia* spp. | 1,149 | 1,734 | 3,404 | 1,101 | 527 | 1,227 | 9,142 |
| *Menippe* spp. | 3 | 150 | 39 | 203 | . | . | 395 |
| *Menticirrhus americanus* | 265 | 14 | 1 | 3 | 129 | 242 | 654 |
| *Menticirrhus littoralis* | . | 3 | . | . | . | . | 3 |
| *Menticirrhus saxatilis* | 11 | 3 | 7 | 2 | . | . | 23 |
| *Microgobius gulosus* | 638 | 416 | 806 | 181 | 44 | 30 | 2,115 |
| *Microgobius thalassinus* | 5 | . | . | . | . | 4 | 9 |
| *Monacanthus ciliatus* | . | 2 | . | 3 | . | . | 5 |

Appendix CH08-03. (Continued)

| Species | Zone | | | | | | Totals |
|---|---|---|---|---|---|---|---|
| | A | B | C | D | M | P | |
| | E=264 | E=216 | E=216 | E=204 | E=84 | E=84 | E=1,068 |
| *Mugil cephalus* | 124 | 2,610 | 49 | 40 | 20 | 246 | 3,089 |
| *Mugil curema* | 7 | 34 | 19 | 41 | . | 3 | 104 |
| *Mugil gyrans* | 96 | 86 | 77 | 133 | 7 | 11 | 410 |
| *Mycteroperca microlepis* | . | 86 | 2 | 18 | . | . | 106 |
| *Myrophis punctatus* | . | . | . | 1 | . | . | 1 |
| *Nicholsina usta* | . | 135 | 59 | 213 | . | . | 407 |
| *Ocyurus chrysurus* | . | 1 | . | 3 | . | . | 4 |
| *Ogcocephalus cubifrons* | . | 10 | . | 2 | . | . | 12 |
| *Oligoplites saurus* | 46 | 39 | 19 | 66 | 20 | 12 | 202 |
| *Opisthonema oglinum* | 41 | 38 | 91 | 260 | 1 | 2 | 433 |
| *Opistognathus robinsi* | . | . | 1 | . | . | . | 1 |
| *Opsanus beta* | 9 | 35 | 21 | 50 | 4 | . | 119 |
| *Orthopristis chrysoptera* | 305 | 1,469 | 726 | 2,196 | 15 | 5 | 4,716 |
| *Parablennius marmoreus* | . | . | . | 1 | . | . | 1 |
| *Paraclinus marmoratus* | . | . | . | 1 | . | . | 1 |
| *Paralichthys albigutta* | 32 | 37 | 54 | 69 | . | . | 192 |
| *Peprilus paru* | . | . | . | 2 | . | . | 2 |
| *Poecilia latipinna* | 19 | 80 | 3 | 55 | 17 | 33 | 207 |
| *Pogonias cromis* | 3 | 1 | . | 8 | . | . | 12 |
| *Pomatomus saltatrix* | . | 1 | . | 11 | . | . | 12 |
| *Portunus* spp. | 104 | 406 | 679 | 175 | . | 6 | 1,370 |
| *Prionotus rubio* | . | 1 | . | . | . | . | 1 |
| *Prionotus scitulus* | 149 | 1,243 | 399 | 95 | 4 | 8 | 1,898 |
| *Prionotus tribulus* | 43 | 5 | 5 | 2 | 16 | 24 | 95 |
| *Pristis pectinata* | 1 | . | . | . | . | 1 | 2 |
| *Rachycentron canadum* | . | . | 1 | . | 1 | 1 | 3 |
| *Rhinoptera bonasus* | 11 | 1 | 3 | . | 1 | . | 16 |
| *Rimapenaeus constrictus* | . | . | 2 | . | . | . | 2 |
| *Sardinella aurita* | 8 | 2 | . | 144 | . | . | 154 |
| *Sciaenops ocellatus* | 118 | 34 | 43 | 26 | 35 | 26 | 282 |
| *Scomberomorus maculatus* | 1 | 3 | 1 | 1 | . | . | 6 |
| *Scorpaena brasiliensis* | . | 8 | 1 | 2 | . | . | 11 |
| *Selene vomer* | . | 8 | . | 1 | . | . | 9 |
| *Serraniculus pumilio* | . | 1 | . | 5 | . | . | 6 |

Appendix CH08-03.    (Continued)

| Species | Zone | | | | | | Totals |
|---|---|---|---|---|---|---|---|
| | A | B | C | D | M | P | |
| | E=264 | E=216 | E=216 | E=204 | E=84 | E=84 | E=1,068 |
| *Serranus subligarius* | . | 2 | . | 1 | . | . | 3 |
| *Sicyonia laevigata* | . | . | . | 2 | . | . | 2 |
| *Sicyonia* spp. | 2 | . | 1 | . | . | . | 3 |
| *Sicyonia typica* | 2 | . | 2 | 1 | . | . | 5 |
| *Sphoeroides nephelus* | 70 | 106 | 124 | 86 | 4 | 4 | 394 |
| *Sphoeroides spengleri* | . | 1 | 1 | 1 | . | . | 3 |
| *Sphyraena barracuda* | . | 20 | 1 | 1 | . | . | 22 |
| *Sphyraena borealis* | . | 1 | . | 3 | . | . | 4 |
| *Sphyrna tiburo* | 5 | . | 1 | . | . | . | 6 |
| *Squilla empusa* | . | . | 13 | . | . | . | 13 |
| *Stephanolepis hispidus* | 22 | 186 | 72 | 260 | 1 | . | 541 |
| *Strongylura marina* | 1 | 9 | . | 9 | . | . | 19 |
| *Strongylura notata* | 67 | 163 | 126 | 145 | 17 | 5 | 523 |
| *Strongylura* spp. | . | 3 | 1 | 1 | 1 | 4 | 10 |
| *Strongylura timucu* | . | . | 2 | 4 | . | . | 6 |
| *Syacium papillosum* | . | 2 | . | . | . | . | 2 |
| *Symphurus plagiusa* | 61 | 6 | 29 | 7 | 8 | 47 | 158 |
| *Syngnathus floridae* | 7 | 32 | 16 | 59 | . | . | 114 |
| *Syngnathus louisianae* | 50 | 55 | 46 | 37 | 4 | 1 | 193 |
| *Syngnathus scovelli* | 307 | 146 | 248 | 98 | 11 | . | 810 |
| *Syngnathus springeri* | . | . | . | 1 | . | . | 1 |
| *Synodus foetens* | 123 | 119 | 125 | 114 | 8 | 6 | 495 |
| *Trachinotus carolinus* | 4 | 12 | 2 | 15 | . | . | 33 |
| *Trachinotus falcatus* | . | 2 | 1 | 5 | . | . | 8 |
| *Trinectes maculatus* | 225 | 5 | 50 | . | 95 | 1,242 | 1,617 |
| *Tylosurus crocodilus* | . | 1 | . | . | . | . | 1 |
| *Urophycis floridana* | . | 1 | 1 | . | . | . | 2 |
| **Totals** | **45,664** | **59,887** | **39,162** | **58,308** | **17,241** | **35,441** | **255,701** |

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## *Northern Indian River Lagoon*

The sampling area identified as the northern Indian River Lagoon (IRL) system is a narrow estuary located along the eastern central coast of Florida which extends from the northern terminus of the Indian River Lagoon proper south to Vero Beach. The northern IRL is connected to the Atlantic Ocean by one permanent inlet (Sebastian Inlet) and one intermittently open conduit via the Canaveral Locks that links the Banana River to the Atlantic Ocean just south of Cape Canaveral. Freshwater inflow primarily comes from the St. Sebastian River and from numerous creeks located mainly along the western shoreline (Paperno and Brodie 2004). Shoreline vegetation consists largely of fringing 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 two riverine zones (F and O; Figure IR08-01). Monthly stratified-random sampling (SRS) was conducted in Zones C, D, and H using 21.3-m bay and 183-m haul seines. Zone H was also sampled monthly with 6.1-m bay otter trawls. Monthly SRS was conducted in Zone E with only 183-m haul seines. Zones F and O were sampled monthly with 21.3-m river seines. Zones A, B, and E were sampled seasonally (October and November) with 21.3-m bay seines. All methods were the same as those described in the Methods section of this report. This section summarizes data collected by the FIM program during 2008 in the northern IRL.

### Stratified-Random Sampling

A total of 436,654 fishes (162 taxa) and selected invertebrates (13 taxa) were collected from 920 northern IRL samples in 2008 (Table IR08-01; Appendices IR08-01, -02, and -03). *Anchoa mitchilli* (n=254,068) was the most numerous species collected, representing 58.2% of the total catch. The five next most abundant taxa, *Eucinostomus* spp. (n=22,788), *Lagodon rhomboides* (21,667), *Diapterus auratus* (n=17,338), *Lucania parva* (n=12,325), and *Bairdiella chrysoura* (n=11,690) accounted for an additional 19.7% of the total catch. Thirty-five Selected Taxa (n=24,927 animals) composed 5.7% of the total catch. *Mugil cephalus* (n=4,672) was the most abundant Selected Taxon, representing 1.1% of the total catch. *Micropogonias undulatus* (2,908), *Mugil curema* (n=2,661) and *Farfantepenaeus* spp. (n=2,637) were the next most abundant Selected Taxa, accounting for an additional 1.9% of the total catch. Collections in 2008 included three species new to the northern IRL FIM collection: *Erotelis smaragdus* (emerald sleeper), *Lutjanus cyanopterus* (cubera snapper), and *Enneacanthus gloriousus* (bluespotted sunfish).

## Bay Sampling

*21.3-m Bay Seines*. A total of 161,406 animals were collected in 380 21.3-m bay seines, representing 37.0% of the overall SRS catch (Table IR08-01). *Anchoa mitchilli* (n=108,516), *L. parva* (n=11,985), and *Eucinostomus* spp. (n=7,068) were the most abundant species, accounting for 79.0% of the animals collected in 21.3-m bay seine catch (Table IR08-02). The taxa most frequently caught in the 21.3-m bay seines were *A. mitchilli* (52.1% occurrence), *Microgobius gulosus* (49.7% occurrence), *Eucinostomus* spp. (44.2% occurrence), and *Syngnathus scovelli* (40.5% occurrence).

A total of 6,342 animals from 26 Selected Taxa were collected, representing 3.9% of the entire 21.3-m bay seine catch (Table IR08-03). *Mugil cephalus* (n=1,376), *Farfantepenaeus* spp. (n=908), *Leiostomus xanthurus,* (n=863), and *Sciaenops ocellatus* (n=825) were the most abundant Selected Taxa, accounting for 62.6% of the Selected Taxa collected by this gear. The Selected Taxa most frequently caught in 21.3-m bay seines were *Cynoscion nebulosus* (30.3% occurrence) and *Farfantepenaeus* spp. (27.4% occurrence).

*183-m Haul Seines.* A total of 58,985 animals were collected in 228 183-m haul seines, representing 13.5% of the overall SRS catch (Table IR08-01). *Lagodon rhomboides* (n=16,977) and *B. chrysoura* (n=9,654) were the most abundant species, accounting for 45.1% of the 183-m haul seine catch (Table IR08-04). The taxa most frequently caught in the 183-m haul seines were *M. cephalus* (81.1% occurrence), *Ariopsis felis* (75.9% occurrence), *Dasyatis sabina* (75.4% occurrence), *Sphoeroides nephelus* (75.0% occurrence), and *M. curema* (74.6% occurrence).

A total of 9,025 animals from 29 Selected Taxa were collected, representing 15.3% of the entire 183-m haul seine catch (Table IR08-05). *Mugil cephalus* (n=2,620) and *M. curema* (n=2,290) 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 the 183-m haul seines were *M. cephalus* (81.1% occurrence) and *M. curema* (74.6% occurrence).

*6.1-m Bay Otter Trawls.* A total of 8,050 animals were collected in 96 6.1-m bay otter trawls, representing 1.8% of the overall SRS catch (Table IR08-01). *Lagodon rhomboides* (n=1,373) and *Gobiosoma robustum* (n=1,096) were the most abundant species, accounting for 30.7% of the 6.1-m bay otter trawl catch (Table IR08-06). The taxa most frequently caught in 6.1-m bay otter trawls were *L. rhomboides* (62.5% occurrence) and *G. robustum* (61.5% occurrence).

A total of 1,025 animals from 18 Selected Taxa were collected, representing 12.7% of the entire 6.1-m bay otter trawl catch (Table IR08-07). *Farfantepenaeus* spp. (n=327) and *Callinectes sapidus* (n=285) were the most abundant Selected Taxa, accounting for 59.7% of the Selected Taxa collected by this gear. The Selected Taxa most frequently caught in the 6.1-m bay otter trawl were *C. sapidus* (53.1% occurrence) and *Farfantepenaeus* spp. (51.0% occurrence).

## River Sampling

*21.3-m River Seines*. A total of 208,213 animals were collected in 216 21.3-m river seines, representing 47.7% of the overall SRS collections (Table IR08-01). *Anchoa mitchilli* (n=144,781) was the most abundant species collected, accounting for 69.5% of the 21.3-m river seine catch (Table IR08-08). The taxa most frequently caught in 21.3-m river seines were *Eucinostomus* spp. (86.1% occurrence) and *D. auratus* (82.4% occurrence).

A total of 8,535 animals from 20 Selected Taxa were collected, representing 4.1% of the entire 21.3-m river seine catch (Table IR08-09). *Micropogonias undulatus* (n=2,329), *Farfantepenaeus* spp. (n=1,402), *L. xanthurus* (n=1,332), and *Centropomus* *undecimalis* (n=1,170) were the most abundant Selected Taxa, accounting for 73.0% of the Selected Taxa collected by this gear. The Selected Taxa most frequently caught in 21.3-m river seines were *C. undecimalis* (50.5% occurrence), and *Farfantepenaeus* spp. (47.2% occurrence).

## References

Paperno, R. and R.B. Brodie. 2004. Effects of environmental variables upon the spatial and temporal structure of a fish community in a small, freshwater tributary of the Indian River Lagoon, Florida. Estuarine Coastal and Shelf Science 61/2:229-241.

Steward, J.S., R.W. Virnstein, M.A. Lasi, L.J. Morris, J.D. Miller, L.M. Hall, and W.A. Tweedale. 2006. The impacts of the 2004 hurricanes on hydrology, water quality, and seagrass in the central Indian River Lagoon, Florida. Estuaries and Coasts 29:954-965.


Figure IR08-01. Map of the northern Indian River Lagoon sampling area. Zones are labeled A – F, H and O.

Table IR08-01. Summary of catch and effort data for northern Indian River Lagoon stratified-random sampling, 2008.

| Zone | 21.3-m bay seine | | 21.3-m river seine | | 183-m haul seine | | 6.1-m otter trawl | | Totals | |
|---|---|---|---|---|---|---|---|---|---|---|
| | **Animals** | **Hauls** | **Animals** | **Hauls** | **Animals** | **Hauls** | **Animals** | **Hauls** | **Animals** | **Hauls** |
| A | 2,942 | 16 | . | . | . | . | . | . | 2,942 | 16 |
| B | 1,579 | 14 | . | . | . | . | . | . | 1,579 | 14 |
| C | 46,616 | 120 | . | . | 16,476 | 48 | . | . | 63,092 | 168 |
| D | 29,379 | 96 | . | . | 8,338 | 72 | . | . | 37,717 | 168 |
| E | 5,636 | 14 | . | . | 7,599 | 48 | . | . | 13,235 | 62 |
| F | . | . | 173,889 | 168 | . | . | . | . | 173,889 | 168 |
| H | 75,254 | 120 | . | . | 26,572 | 60 | 8,050 | 96 | 109,876 | 276 |
| O | . | . | 34,324 | 48 | . | . | . | . | 34,324 | 48 |
| **Totals** | **161,406** | **380** | **208,213** | **216** | **58,985** | **228** | **8,050** | **96** | **436,654** | **920** |

Table IR08-02. Catch statistics for 10 dominant taxa collected in 380 21.3-m bay seine samples during northern Indian River Lagoon stratified-random sampling, 2008. Percent (%) is the percent of the total catch represented by that taxon; percent occurrence (% Occur) is the percentage of samples in which that taxon was collected; CV is the coefficient of variation of the mean. Taxa are ranked in order of decreasing mean density.

| **Species** | **Number** | | **% Occur** | **Density Estimate (animals/100m$^2$)** | | | | **Standard Length (mm)** | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | **No.** | **%** | | **Mean** | **Stderr** | **CV** | **Max** | **Mean** | **Stderr** | **Min** | **Max** |
| *Anchoa mitchilli* | 108,516 | 67.2 | 52.1 | 203.98 | 50.71 | 484.58 | 13,680.00 | 34 | 0.02 | 17 | 72 |
| *Lucania parva* | 11,985 | 7.4 | 36.8 | 22.53 | 3.49 | 301.91 | 477.14 | 25 | 0.05 | 12 | 52 |
| *Eucinostomus* spp. | 7,068 | 4.4 | 44.2 | 13.29 | 2.08 | 305.72 | 446.43 | 26 | 0.08 | 10 | 48 |
| *Floridichthys carpio* | 4,906 | 3.0 | 25.3 | 9.22 | 2.45 | 518.12 | 768.57 | 29 | 0.15 | 10 | 62 |
| *Menidia* spp. | 3,941 | 2.4 | 38.7 | 7.41 | 1.54 | 405.74 | 435.71 | 40 | 0.20 | 14 | 89 |
| *Microgobius gulosus* | 2,985 | 1.8 | 49.7 | 5.61 | 0.93 | 321.83 | 252.86 | 28 | 0.12 | 14 | 54 |
| *Lagodon rhomboides* | 2,407 | 1.5 | 26.1 | 4.52 | 0.79 | 338.84 | 121.43 | 44 | 0.38 | 11 | 150 |
| *Bairdiella chrysoura* | 1,996 | 1.2 | 19.5 | 3.75 | 1.55 | 804.49 | 550.00 | 41 | 0.44 | 9 | 151 |
| *Diapterus auratus* | 1,716 | 1.1 | 27.6 | 3.23 | 0.73 | 439.17 | 162.86 | 34 | 0.35 | 11 | 122 |
| *Harengula jaguana* | 1,449 | 0.9 | 4.5 | 2.72 | 1.84 | 1,318.54 | 642.86 | 38 | 0.28 | 19 | 88 |
| Subtotal | 146,969 | 90.9 | . | . | . | . | . | . | . | 9 | 151 |
| **Totals** | **161,406** | **100.0** | **.** | **303.39** | **51.28** | **329.47** | **13,822.14** | **.** | **.** | **3** | **616** |

Table IR08-03. Catch statistics for Selected Taxa collected in 380 21.3-m bay seine samples during northern Indian River Lagoon stratified-random sampling, 2008. Percent (%) is the percent of the total catch represented by that taxon; percent occurrence (% Occur) is the percentage of samples in which that taxon was collected; CV is the coefficient of variation of the mean. Taxa are ranked in order of decreasing mean density.

| Species | Number | | % Occur | Density Estimate (animals/100m$^2$) | | | | Standard Length (mm) | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | No. | % | | Mean | Stderr | CV | Max | Mean | Stderr | Min | Max |
| *Mugil cephalus* | 1,376 | 0.9 | 12.1 | 2.59 | 1.31 | 987.59 | 411.43 | 26 | 0.72 | 15 | 372 |
| *Farfantepenaeus* spp. | 908 | 0.6 | 27.4 | 1.71 | 0.25 | 289.92 | 40.71 | 9 | 0.09 | 3 | 15 |
| *Leiostomus xanthurus* | 863 | 0.5 | 11.8 | 1.62 | 0.72 | 868.94 | 257.86 | 32 | 0.41 | 12 | 90 |
| *Sciaenops ocellatus* | 825 | 0.5 | 13.2 | 1.55 | 0.47 | 591.25 | 137.14 | 32 | 0.57 | 8 | 285 |
| *Cynoscion nebulosus* | 779 | 0.5 | 30.3 | 1.46 | 0.23 | 301.79 | 41.43 | 34 | 0.44 | 12 | 99 |
| *Micropogonias undulatus* | 438 | 0.3 | 8.9 | 0.82 | 0.26 | 604.65 | 64.29 | 23 | 0.35 | 11 | 56 |
| *Archosargus probatocephalus* | 297 | 0.2 | 12.4 | 0.56 | 0.28 | 966.24 | 102.86 | 43 | 1.90 | 12 | 234 |
| *Mugil curema* | 205 | 0.1 | 12.4 | 0.39 | 0.13 | 661.90 | 41.43 | 47 | 2.78 | 12 | 204 |
| *Menticirrhus americanus* | 193 | 0.1 | 11.3 | 0.36 | 0.09 | 490.79 | 20.71 | 34 | 1.45 | 13 | 177 |
| *Trachinotus falcatus* | 102 | 0.1 | 3.9 | 0.19 | 0.14 | 1,406.32 | 52.14 | 28 | 0.88 | 11 | 74 |
| *Cynoscion* complex | 77 | 0.0 | 3.9 | 0.14 | 0.07 | 893.88 | 18.57 | 27 | 0.78 | 15 | 45 |
| *Farfantepenaeus duorarum* | 69 | 0.0 | 8.4 | 0.13 | 0.03 | 470.37 | 6.43 | 17 | 0.26 | 15 | 24 |
| *Lutjanus griseus* | 69 | 0.0 | 7.1 | 0.13 | 0.03 | 461.79 | 5.00 | 56 | 7.43 | 13 | 315 |
| *Callinectes sapidus* | 29 | 0.0 | 6.1 | 0.05 | 0.01 | 440.27 | 2.14 | 40 | 7.71 | 9 | 156 |
| *Lutjanus analis* | 24 | 0.0 | 2.1 | 0.05 | 0.02 | 807.12 | 4.29 | 35 | 2.11 | 20 | 60 |
| *Centropomus undecimalis* | 22 | 0.0 | 3.7 | 0.04 | 0.01 | 593.37 | 2.86 | 184 | 30.34 | 15 | 616 |
| *Elops saurus* | 16 | 0.0 | 2.4 | 0.03 | 0.01 | 745.34 | 2.86 | 90 | 20.33 | 30 | 262 |

Table IR08-03. (Continued)

| Species | Number No. | Number % | % Occur | Density Estimate (animals/100m$^2$) Mean | Stderr | CV | Max | Standard Length (mm) Mean | Stderr | Min | Max |
|---|---|---|---|---|---|---|---|---|---|---|---|
| *Lutjanus synagris* | 13 | 0.0 | 1.1 | 0.02 | 0.01 | 979.48 | 2.86 | 39 | 2.34 | 27 | 59 |
| *Albula vulpes* | 12 | 0.0 | 2.4 | 0.02 | 0.01 | 720.52 | 2.14 | 50 | 4.14 | 24 | 71 |
| *Litopenaeus setiferus* | 9 | 0.0 | 1.8 | 0.02 | 0.01 | 833.99 | 2.14 | 14 | 1.29 | 9 | 20 |
| *Pogonias cromis* | 5 | 0.0 | 0.5 | 0.01 | 0.01 | 1,606.48 | 2.86 | 51 | 30.06 | 19 | 171 |
| *Trachinotus carolinus* | 5 | 0.0 | 0.8 | 0.01 | 0.01 | 1,166.87 | 1.43 | 41 | 12.56 | 12 | 75 |
| *Paralichthys albigutta* | 2 | 0.0 | 0.5 | 0.00 | 0.00 | 1,376.59 | 0.71 | 17 | 2.00 | 15 | 19 |
| *Panulirus argus* | 1 | 0.0 | 0.3 | 0.00 | 0.00 | 1,949.36 | 0.71 | 65 | . | 65 | 65 |
| *Lutjanus cyanopterus* | 1 | 0.0 | 0.3 | 0.00 | 0.00 | 1,949.36 | 0.71 | 12 | . | 12 | 12 |
| *Mugil gyrans* | 1 | 0.0 | 0.3 | 0.00 | 0.00 | 1,949.36 | 0.71 | 14 | . | 14 | 14 |
| *Paralichthys lethostigma* | 1 | 0.0 | 0.3 | 0.00 | 0.00 | 1,949.36 | 0.71 | 442 | . | 442 | 442 |
| **Totals** | **6,342** | **3.9** | **69.2** | **11.92** | **1.77** | **289.41** | **412.14** | **.** | **.** | **3** | **616** |

Table IR08-04. Catch statistics for 10 dominant taxa collected in 228 183-m haul seine samples during northern Indian River Lagoon stratified-random sampling, 2008. Percent (%) is the percent of the total catch represented by that taxon; percent occurrence (% Occur) is the percentage of samples in which that taxon was collected; CV is the coefficient of variation of the mean. Taxa are ranked in order of decreasing mean catch-per-unit-effort.

| **Species** | **Number** | | **% Occur** | **Catch-per-unit-effort (animals/set)** | | | | **Standard Length (mm)** | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | **No.** | **%** | | **Mean** | **Stderr** | **CV** | **Max** | **Mean** | **Stderr** | **Min** | **Max** |
| *Lagodon rhomboides* | 16,977 | 28.8 | 63.2 | 74.46 | 15.04 | 305.08 | 2,374.00 | 104 | 0.22 | 46 | 270 |
| *Bairdiella chrysoura* | 9,654 | 16.4 | 28.9 | 42.34 | 35.11 | 1,252.13 | 7,994.00 | 106 | 0.11 | 32 | 201 |
| *Diapterus auratus* | 5,097 | 8.6 | 50.4 | 22.36 | 4.27 | 288.44 | 669.00 | 109 | 0.40 | 43 | 199 |
| *Eucinostomus harengulus* | 3,328 | 5.6 | 43.9 | 14.60 | 8.60 | 890.14 | 1,945.00 | 103 | 0.22 | 40 | 162 |
| *Ariopsis felis* | 2,972 | 5.0 | 75.9 | 13.04 | 1.92 | 221.83 | 308.00 | 285 | 0.78 | 107 | 415 |
| *Mugil cephalus* | 2,620 | 4.4 | 81.1 | 11.49 | 3.36 | 441.43 | 740.00 | 254 | 0.97 | 78 | 435 |
| *Orthopristis chrysoptera* | 2,576 | 4.4 | 21.1 | 11.30 | 5.16 | 689.41 | 872.00 | 112 | 0.53 | 32 | 211 |
| *Mugil curema* | 2,290 | 3.9 | 74.6 | 10.04 | 1.35 | 203.33 | 150.00 | 156 | 0.88 | 52 | 300 |
| *Sphoeroides nephelus* | 1,953 | 3.3 | 75.0 | 8.57 | 1.13 | 200.07 | 132.00 | 170 | 0.59 | 25 | 255 |
| *Eucinostomus gula* | 1,588 | 2.7 | 27.6 | 6.96 | 1.63 | 353.75 | 178.00 | 86 | 0.32 | 48 | 131 |
| Subtotal | 49,055 | 83.1 | . | . | . | . | . | . | . | 25 | 435 |
| **Totals** | **58,985** | **100.0** | **.** | **258.71** | **43.60** | **254.48** | **8,138.00** | **.** | **.** | **15** | **1341** |

Table IR08-05. Catch statistics for Selected Taxa collected in 228 183-m haul seine samples during northern Indian River Lagoon stratified-random sampling, 2008. Percent (%) is the percent of the total catch represented by that taxon; percent occurrence (% Occur) is the percentage of samples in which that taxon was collected; CV is the coefficient of variation of the mean. Taxa are ranked in order of decreasing mean catch-per-unit-effort.

| Species | Number | | % Occur | Catch-per-unit-effort (animals/set) | | | | Standard Length (mm) | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | No. | % | | Mean | Stderr | CV | Max | Mean | Stderr | Min | Max |
| *Mugil cephalus* | 2,620 | 4.4 | 81.1 | 11.49 | 3.36 | 441.43 | 740.00 | 254 | 0.97 | 78 | 435 |
| *Mugil curema* | 2,290 | 3.9 | 74.6 | 10.04 | 1.35 | 203.33 | 150.00 | 156 | 0.88 | 52 | 300 |
| *Elops saurus* | 988 | 1.7 | 42.1 | 4.33 | 1.17 | 409.31 | 227.00 | 278 | 2.03 | 125 | 550 |
| *Archosargus probatocephalus* | 894 | 1.5 | 52.2 | 3.92 | 0.72 | 276.04 | 117.00 | 209 | 2.98 | 34 | 483 |
| *Leiostomus xanthurus* | 459 | 0.8 | 27.6 | 2.01 | 0.46 | 342.04 | 55.00 | 114 | 2.19 | 39 | 284 |
| *Centropomus undecimalis* | 389 | 0.7 | 35.5 | 1.71 | 0.38 | 336.89 | 61.00 | 433 | 6.87 | 137 | 937 |
| *Sciaenops ocellatus* | 342 | 0.6 | 47.4 | 1.50 | 0.29 | 291.13 | 53.00 | 427 | 6.62 | 74 | 952 |
| *Cynoscion nebulosus* | 210 | 0.4 | 30.7 | 0.92 | 0.16 | 266.20 | 21.00 | 194 | 5.65 | 35 | 537 |
| *Menticirrhus americanus* | 179 | 0.3 | 15.4 | 0.79 | 0.18 | 343.87 | 20.00 | 195 | 3.12 | 63 | 308 |
| *Pogonias cromis* | 141 | 0.2 | 16.7 | 0.62 | 0.18 | 428.74 | 34.00 | 425 | 19.13 | 65 | 939 |
| *Lutjanus griseus* | 111 | 0.2 | 13.6 | 0.49 | 0.16 | 487.18 | 30.00 | 190 | 4.10 | 83 | 306 |
| *Callinectes sapidus* | 107 | 0.2 | 18.4 | 0.47 | 0.10 | 332.52 | 17.00 | 130 | 3.79 | 35 | 214 |
| *Lutjanus analis* | 54 | 0.1 | 3.9 | 0.24 | 0.11 | 707.41 | 20.00 | 152 | 5.10 | 81 | 294 |
| *Trachinotus falcatus* | 42 | 0.1 | 4.4 | 0.18 | 0.07 | 570.00 | 10.00 | 97 | 10.55 | 32 | 322 |
| *Scomberomorus maculatus* | 35 | 0.1 | 5.3 | 0.15 | 0.07 | 677.63 | 14.00 | 190 | 12.68 | 103 | 457 |
| *Farfantepenaeus duorarum* | 32 | 0.1 | 9.6 | 0.14 | 0.03 | 364.81 | 5.00 | 24 | 1.39 | 16 | 41 |
| *Trachinotus carolinus* | 25 | 0.0 | 3.5 | 0.11 | 0.07 | 938.26 | 15.00 | 299 | 8.14 | 253 | 384 |

Table IR08-05. (Continued)

| Species | Number | | % Occur | Catch-per-unit-effort (animals/set) | | | | Standard Length (mm) | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | No. | % | | Mean | Stderr | CV | Max | Mean | Stderr | Min | Max |
| *Micropogonias undulatus* | 23 | 0.0 | 3.9 | 0.10 | 0.04 | 605.46 | 6.00 | 164 | 13.27 | 50 | 237 |
| *Mycteroperca microlepis* | 16 | 0.0 | 2.2 | 0.07 | 0.04 | 840.00 | 7.00 | 177 | 11.59 | 133 | 315 |
| *Paralichthys albigutta* | 14 | 0.0 | 4.4 | 0.06 | 0.02 | 519.97 | 3.00 | 172 | 15.97 | 64 | 234 |
| *Cynoscion* complex | 16 | 0.0 | 2.2 | 0.07 | 0.04 | 871.36 | 8.00 | 218 | 9.11 | 181 | 252 |
| *Albula vulpes* | 11 | 0.0 | 1.8 | 0.05 | 0.03 | 783.91 | 4.00 | 177 | 8.95 | 129 | 211 |
| *Lutjanus synagris* | 10 | 0.0 | 1.3 | 0.04 | 0.03 | 1,021.46 | 6.00 | 99 | 6.55 | 79 | 135 |
| *Megalops atlanticus* | 7 | 0.0 | 1.3 | 0.03 | 0.02 | 936.98 | 3.00 | 649 | 121.63 | 402 | 1341 |
| *Mycteroperca bonaci* | 3 | 0.0 | 0.9 | 0.01 | 0.01 | 1,123.48 | 2.00 | 172 | 20.58 | 135 | 206 |
| *Scomberomorus regalis* | 3 | 0.0 | 0.9 | 0.01 | 0.01 | 1,123.48 | 2.00 | 249 | 36.33 | 178 | 297 |
| *Farfantepenaeus aztecus* | 2 | 0.0 | 0.9 | 0.01 | 0.01 | 1,065.35 | 1.00 | 17 | 1.50 | 15 | 18 |
| *Pomatomus saltatrix* | 2 | 0.0 | 0.9 | 0.01 | 0.01 | 1,065.35 | 1.00 | 373 | 43.00 | 330 | 416 |
| *Paralichthys lethostigma* | 1 | 0.0 | 0.4 | 0.00 | 0.00 | 1,509.97 | 1.00 | 465 | . | 465 | 465 |
| **Totals** | **9,026** | **15.3** | **99.6** | **39.59** | **4.16** | **158.63** | **770.00** | **.** | **.** | **15** | **1341** |

Table IR08-06. Catch statistics for 10 dominant taxa collected in 96 6.1-m bay otter trawl samples during northern Indian River Lagoon stratified-random sampling, 2008. Percent (%) is the percent of the total catch represented by that taxon; percent occurrence (% Occur) is the percentage of samples in which that taxon was collected; CV is the coefficient of variation of the mean. Taxa are ranked in order of decreasing mean density.

| Species | Number | | % Occur | Density Estimate (animals/100m$^2$) | | | | Standard Length (mm) | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | No. | % | | Mean | Stderr | CV | Max | Mean | Stderr | Min | Max |
| *Lagodon rhomboides* | 1,373 | 17.1 | 62.5 | 2.82 | 0.95 | 331.89 | 85.67 | 40 | 0.67 | 12 | 142 |
| *Gobiosoma robustum* | 1,096 | 13.6 | 61.5 | 2.58 | 0.56 | 211.06 | 28.14 | 24 | 0.10 | 20 | 35 |
| *Eucinostomus* spp. | 926 | 11.5 | 51.0 | 1.96 | 0.72 | 360.51 | 64.18 | 20 | 0.20 | 11 | 47 |
| *Gobiosoma* spp. | 826 | 10.3 | 50.0 | 1.84 | 0.44 | 236.41 | 24.86 | 17 | 0.06 | 12 | 19 |
| *Anchoa mitchilli* | 770 | 9.6 | 22.9 | 1.47 | 0.54 | 357.39 | 30.45 | 37 | 0.39 | 16 | 55 |
| *Syngnathus scovelli* | 468 | 5.8 | 53.1 | 1.11 | 0.22 | 195.67 | 11.81 | 69 | 0.55 | 17 | 161 |
| *Farfantepenaeus* spp. | 327 | 4.1 | 51.0 | 0.71 | 0.16 | 218.45 | 9.61 | 10 | 0.13 | 4 | 14 |
| *Callinectes similis* | 288 | 3.6 | 43.8 | 0.67 | 0.17 | 242.00 | 9.67 | 36 | 1.25 | 10 | 149 |
| *Orthopristis chrysoptera* | 346 | 4.3 | 38.5 | 0.65 | 0.25 | 381.68 | 23.61 | 74 | 2.54 | 15 | 163 |
| *Callinectes sapidus* | 285 | 3.5 | 53.1 | 0.61 | 0.17 | 270.89 | 13.68 | 55 | 2.66 | 11 | 171 |
| Subtotal | 6,705 | 83.4 | . | . | . | . | . | . | . | 4 | 171 |
| **Totals** | **8,050** | **100.0** | **.** | **17.31** | **2.12** | **119.77** | **139.13** | **.** | **.** | **4** | **439** |

Table IR08-07. Catch statistics for Selected Taxa collected in 96 6.1-m bay otter trawl samples during northern Indian River Lagoon stratified-random sampling, 2008. Percent (%) is the percent of the total catch represented by that taxon; percent occurrence (% Occur) is the percentage of samples in which that taxon was collected; CV is the coefficient of variation of the mean. Taxa are ranked in order of decreasing mean density.

| Species | Number | | % Occur | Density Estimate (animals/100m$^2$) | | | | Standard Length (mm) | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | No. | % | | Mean | Stderr | CV | Max | Mean | Stderr | Min | Max |
| *Farfantepenaeus* spp. | 327 | 4.1 | 51.0 | 0.71 | 0.16 | 218.45 | 9.61 | 10 | 0.13 | 4 | 14 |
| *Callinectes sapidus* | 285 | 3.5 | 53.1 | 0.61 | 0.17 | 270.89 | 13.68 | 55 | 2.66 | 11 | 171 |
| *Micropogonias undulatus* | 118 | 1.5 | 13.5 | 0.23 | 0.09 | 366.46 | 6.36 | 21 | 0.86 | 12 | 68 |
| *Archosargus probatocephalus* | 93 | 1.2 | 28.1 | 0.22 | 0.07 | 285.81 | 3.71 | 31 | 3.66 | 12 | 192 |
| *Farfantepenaeus duorarum* | 59 | 0.7 | 25.0 | 0.13 | 0.04 | 302.79 | 3.20 | 18 | 0.56 | 15 | 34 |
| *Cynoscion nebulosus* | 27 | 0.3 | 10.4 | 0.06 | 0.03 | 514.55 | 2.70 | 31 | 8.45 | 15 | 248 |
| *Farfantepenaeus aztecus* | 18 | 0.2 | 10.4 | 0.05 | 0.02 | 370.56 | 1.35 | 18 | 0.57 | 15 | 24 |
| *Menticirrhus americanus* | 22 | 0.3 | 13.5 | 0.05 | 0.02 | 351.10 | 1.35 | 81 | 20.63 | 16 | 307 |
| *Lutjanus analis* | 16 | 0.2 | 8.3 | 0.04 | 0.02 | 401.49 | 1.01 | 69 | 12.56 | 20 | 158 |
| *Cynoscion* complex | 20 | 0.2 | 2.1 | 0.04 | 0.04 | 931.58 | 3.66 | 28 | 2.34 | 13 | 50 |
| *Lutjanus synagris* | 15 | 0.2 | 6.3 | 0.03 | 0.02 | 519.33 | 1.35 | 49 | 9.71 | 20 | 155 |
| *Lutjanus griseus* | 12 | 0.1 | 8.3 | 0.03 | 0.01 | 367.56 | 0.54 | 108 | 23.64 | 15 | 277 |
| *Leiostomus xanthurus* | 3 | 0.0 | 2.1 | 0.01 | 0.00 | 703.10 | 0.34 | 119 | 44.77 | 30 | 172 |
| *Albula vulpes* | 2 | 0.0 | 2.1 | 0.00 | 0.00 | 689.16 | 0.19 | 38 | 11.00 | 27 | 49 |
| *Elops saurus* | 2 | 0.0 | 1.0 | 0.00 | 0.00 | 979.80 | 0.39 | 45 | 0.50 | 44 | 45 |
| *Sciaenops ocellatus* | 2 | 0.0 | 1.0 | 0.00 | 0.00 | 979.80 | 0.39 | 65 | 14.00 | 51 | 79 |
| *Paralichthys albigutta* | 2 | 0.0 | 2.1 | 0.00 | 0.00 | 690.73 | 0.19 | 123 | 54.00 | 69 | 177 |

Table IR08-07. (Continued)

| Species | Number | | % Occur | Density Estimate (animals/100m$^2$) | | | | Standard Length (mm) | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | No. | % | | Mean | Stderr | CV | Max | Mean | Stderr | Min | Max |
| *Pogonias cromis* | 1 | 0.0 | 1.0 | 0.00 | 0.00 | 979.80 | 0.27 | 289 | . | 289 | 289 |
| *Menippe* sp. | 1 | 0.0 | 1.0 | 0.00 | 0.00 | 979.80 | 0.22 | 27 | . | 27 | 27 |
| **Totals** | **1,025** | **12.7** | **84.4** | **2.23** | **0.35** | **152.98** | **19.27** | **.** | **.** | **4** | **307** |

Table IR08-08. Catch statistics for 10 dominant taxa collected in 216 21.3-m river seine samples during northern Indian River Lagoon stratified-random sampling, 2008. Percent (%) is the percent of the total catch represented by that taxon; percent occurrence (% Occur) is the percentage of samples in which that taxon was collected; CV is the coefficient of variation of the mean. Taxa are ranked in order of decreasing mean density.

| Species | Number | | % Occur | Density Estimate (animals/100m$^2$) | | | | Standard Length (mm) | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | No. | % | | Mean | Stderr | CV | Max | Mean | Stderr | Min | Max |
| *Anchoa mitchilli* | 144,781 | 69.5 | 63.9 | 985.71 | 197.32 | 294.20 | 26,741.18 | 30 | 0.02 | 19 | 64 |
| *Eucinostomus* spp. | 14,794 | 7.1 | 86.1 | 100.72 | 13.00 | 189.68 | 1,191.18 | 26 | 0.05 | 10 | 47 |
| *Diapterus auratus* | 10,438 | 5.0 | 82.4 | 71.06 | 13.99 | 289.26 | 2,167.65 | 35 | 0.19 | 13 | 177 |
| *Brevoortia* spp. | 10,152 | 4.9 | 26.4 | 69.12 | 32.85 | 698.45 | 6,254.41 | 31 | 0.11 | 16 | 104 |
| *Gambusia holbrooki* | 4,433 | 2.1 | 38.9 | 30.18 | 9.91 | 482.56 | 1,933.82 | 23 | 0.07 | 9 | 42 |
| *Eucinostomus harengulus* | 2,929 | 1.4 | 62.5 | 19.94 | 3.47 | 255.48 | 398.53 | 55 | 0.17 | 40 | 96 |
| *Micropogonias undulatus* | 2,329 | 1.1 | 22.2 | 15.86 | 12.02 | 1,114.44 | 2,589.71 | 24 | 0.11 | 13 | 68 |
| *Eugerres plumieri* | 1,938 | 0.9 | 46.8 | 13.19 | 2.75 | 306.07 | 373.53 | 34 | 0.58 | 11 | 197 |
| *Farfantepenaeus* spp. | 1,402 | 0.7 | 47.2 | 9.55 | 2.49 | 384.03 | 311.76 | 9 | 0.08 | 3 | 14 |
| *Leiostomus xanthurus* | 1,332 | 0.6 | 12.5 | 9.07 | 5.42 | 878.25 | 1,135.29 | 23 | 0.22 | 14 | 101 |
| Subtotal | 194,528 | 93.3 | . | . | . | . | . | . | . | 3 | 197 |
| **Totals** | **208,213** | **100.0** | **.** | **1,417.57** | **208.71** | **216.38** | **27,148.53** | **.** | **.** | **3** | **542** |

Table IR08-09. Catch statistics for Selected Taxa collected in 216 21.3-m river seine samples during northern Indian River Lagoon stratified-random sampling, 2008. Percent (%) is the percent of the total catch represented by that taxon; percent occurrence (% Occur) is the percentage of samples in which that taxon was collected; CV is the coefficient of variation of the mean. Taxa are ranked in order of decreasing mean density.

| Species | Number | | % Occur | Density Estimate (animals/100m$^2$) | | | | Standard Length (mm) | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | No. | % | | Mean | Stderr | CV | Max | Mean | Stderr | Min | Max |
| *Micropogonias undulatus* | 2,329 | 1.1 | 22.2 | 15.86 | 12.02 | 1,114.44 | 2,589.71 | 24 | 0.11 | 13 | 68 |
| *Farfantepenaeus* spp. | 1,402 | 0.7 | 47.2 | 9.55 | 2.49 | 384.03 | 311.76 | 9 | 0.08 | 3 | 14 |
| *Leiostomus xanthurus* | 1,332 | 0.6 | 12.5 | 9.07 | 5.42 | 878.25 | 1,135.29 | 23 | 0.22 | 14 | 101 |
| *Centropomus undecimalis* | 1,170 | 0.6 | 50.5 | 7.97 | 1.62 | 299.62 | 204.41 | 50 | 1.84 | 11 | 542 |
| *Mugil cephalus* | 676 | 0.3 | 20.4 | 4.60 | 2.56 | 816.13 | 536.76 | 38 | 1.68 | 13 | 366 |
| *Sciaenops ocellatus* | 657 | 0.3 | 10.6 | 4.47 | 2.13 | 699.88 | 323.53 | 37 | 0.45 | 13 | 78 |
| *Callinectes sapidus* | 408 | 0.2 | 35.6 | 2.78 | 0.67 | 352.20 | 86.76 | 23 | 1.38 | 5 | 156 |
| *Mugil curema* | 166 | 0.1 | 14.8 | 1.13 | 0.28 | 363.34 | 39.71 | 73 | 3.37 | 16 | 235 |
| *Archosargus probatocephalus* | 115 | 0.1 | 28.2 | 0.78 | 0.11 | 210.40 | 10.29 | 92 | 6.15 | 10 | 369 |
| *Litopenaeus setiferus* | 90 | 0.0 | 8.3 | 0.61 | 0.26 | 629.79 | 42.65 | 9 | 0.35 | 3 | 19 |
| *Elops saurus* | 79 | 0.0 | 10.2 | 0.54 | 0.17 | 458.32 | 17.65 | 46 | 2.25 | 18 | 101 |
| *Lutjanus griseus* | 43 | 0.0 | 12.5 | 0.29 | 0.06 | 325.80 | 8.82 | 130 | 7.84 | 33 | 238 |
| *Farfantepenaeus duorarum* | 28 | 0.0 | 6.0 | 0.19 | 0.08 | 596.09 | 14.71 | 17 | 0.32 | 15 | 22 |
| *Cynoscion* complex | 22 | 0.0 | 2.3 | 0.15 | 0.08 | 768.60 | 11.76 | 27 | 1.05 | 20 | 43 |
| *Albula vulpes* | 7 | 0.0 | 2.8 | 0.05 | 0.02 | 623.32 | 2.94 | 44 | 7.50 | 25 | 78 |
| *Lutjanus jocu* | 4 | 0.0 | 1.9 | 0.03 | 0.01 | 729.70 | 1.47 | 90 | 11.47 | 69 | 121 |
| *Farfantepenaeus aztecus* | 2 | 0.0 | 0.5 | 0.01 | 0.01 | 1,469.69 | 2.94 | 18 | 0.50 | 17 | 18 |

Table IR08-09. (Continued)

| Species | Number | | % Occur | Density Estimate (animals/100m$^2$) | | | | Standard Length (mm) | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | No. | % | | Mean | Stderr | CV | Max | Mean | Stderr | Min | Max |
| *Pomatomus saltatrix* | 2 | 0.0 | 0.5 | 0.01 | 0.01 | 1,469.69 | 2.94 | 49 | 2.00 | 47 | 51 |
| *Trachinotus falcatus* | 1 | 0.0 | 0.5 | 0.01 | 0.01 | 1,469.69 | 1.47 | 18 | . | 18 | 18 |
| *Cynoscion nebulosus* | 1 | 0.0 | 0.5 | 0.01 | 0.01 | 1,469.69 | 1.47 | 40 | . | 40 | 40 |
| *Mugil gyrans* | 1 | 0.0 | 0.5 | 0.01 | 0.01 | 1,469.69 | 1.47 | 46 | . | 46 | 46 |
| **Totals** | **8,535** | **4.1** | **90.3** | **58.11** | **15.62** | **395.02** | **2,764.71** | **.** | **.** | **3** | **542** |

Appendix IR08-01. Monthly summary of species collected during northern Indian River Lagoon stratified-random sampling, 2008. Effort, or total number of hauls, is labeled 'E'. Taxa are arranged alphabetically.

| Species | Month | | | | | | | | | | | | Totals |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | |
| | E=73 | E=73 | E=73 | E=73 | E=73 | E=73 | E=73 | E=73 | E=73 | E=95 | E=95 | E=73 | E=920 |
| *Acanthostracion quadricornis* | . | . | . | . | . | 1 | 1 | . | 1 | . | . | . | 3 |
| *Achirus lineatus* | 39 | 26 | 14 | 3 | 13 | 9 | 6 | 8 | 41 | 35 | 23 | 28 | 245 |
| *Agonostomus monticola* | . | . | . | . | . | . | . | . | . | 1 | . | 3 | 4 |
| *Albula vulpes* | 1 | 2 | 2 | 3 | 7 | 4 | 4 | 1 | 4 | . | . | 4 | 32 |
| *Aluterus schoepfii* | . | . | . | . | . | 2 | 4 | . | 1 | . | 1 | 1 | 9 |
| *Ameiurus catus* | . | . | . | . | . | . | . | . | . | 2 | . | . | 2 |
| *Anchoa hepsetus* | . | . | 12 | 37 | 371 | 12 | 3 | . | 3 | 10 | 1 | 3 | 452 |
| *Anchoa mitchilli* | 44,584 | 26,346 | 25,425 | 10,729 | 25,366 | 6,040 | 14,452 | 10,796 | 23,751 | 46,543 | 8,319 | 11,717 | 254,068 |
| *Anisotremus virginicus* | . | . | . | . | . | . | . | . | . | 2 | . | . | 2 |
| *Apalone ferox* | 1 | . | . | . | . | . | . | 1 | 1 | . | . | . | 3 |
| *Archosargus probatocephalus* | 65 | 34 | 76 | 164 | 94 | 98 | 255 | 289 | 128 | 102 | 35 | 59 | 1,399 |
| *Archosargus rhomboidalis* | 1 | 1 | . | 5 | . | 5 | 11 | . | . | 1 | . | 15 | 39 |
| *Archosargus* spp. | . | . | . | 1 | . | 1 | . | . | 1 | 1 | . | . | 4 |
| *Ariopsis felis* | 224 | 176 | 510 | 113 | 234 | 305 | 312 | 260 | 745 | 242 | 81 | 55 | 3,257 |
| *Astroscopus y-graecum* | . | 1 | . | . | . | . | . | . | . | . | . | . | 1 |
| *Bagre marinus* | . | 1 | . | 1 | . | . | . | . | 2 | . | . | . | 4 |
| *Bairdiella chrysoura* | 464 | 150 | 7 | 133 | 318 | 354 | 159 | 275 | 376 | 1,242 | 76 | 8,136 | 11,690 |
| *Bathygobius soporator* | . | 2 | . | 1 | . | 1 | 1 | 2 | 1 | 3 | 4 | 1 | 16 |
| *Brevoortia* spp. | 145 | 310 | 1,322 | 6,689 | 1,552 | 62 | 383 | 14 | 186 | 77 | 3 | 116 | 10,859 |
| *Calamus arctifrons* | 1 | . | . | . | 2 | . | . | . | . | . | . | . | 3 |
| *Callinectes bocourti* | 1 | 2 | . | 4 | . | . | . | . | . | . | . | . | 7 |
| *Callinectes ornatus* | . | . | . | . | . | . | 6 | . | . | . | . | . | 6 |
| *Callinectes sapidus* | 187 | 155 | 45 | 36 | 16 | 28 | 53 | 87 | 44 | 40 | 35 | 103 | 829 |
| *Callinectes similis* | 9 | 41 | 91 | 66 | 25 | 43 | 48 | 16 | 17 | 11 | 8 | 3 | 378 |
| *Callinectes* spp. | . | . | 9 | . | . | . | 1 | . | 1 | . | . | . | 11 |

Appendix IR08-01. (Continued)

| Species | Month | | | | | | | | | | | | Totals |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | |
| | E=73 | E=73 | E=73 | E=73 | E=73 | E=73 | E=73 | E=73 | E=73 | E=95 | E=95 | E=73 | E=920 |
| *Canthidermis sufflamen* | . | . | . | . | . | . | . | . | 1 | . | . | . | 1 |
| *Caranx hippos* | 9 | 59 | 11 | 8 | 39 | 24 | 17 | 15 | 22 | 86 | 19 | 50 | 359 |
| *Caranx latus* | 2 | . | . | 1 | 1 | . | 5 | 1 | 3 | 2 | 9 | 4 | 28 |
| *Centropomus ensiferus* | . | 1 | . | . | . | . | . | . | . | . | . | . | 1 |
| *Centropomus parallelus* | 22 | 67 | 7 | 11 | 2 | 1 | 4 | 1 | 9 | 4 | . | . | 128 |
| *Centropomus pectinatus* | 2 | . | . | . | . | . | . | . | . | 2 | . | . | 4 |
| *Centropomus* spp. | . | 9 | 4 | . | . | . | . | . | 9 | . | . | 4 | 26 |
| *Centropomus undecimalis* | 72 | 122 | 99 | 76 | 62 | 109 | 149 | 61 | 197 | 371 | 118 | 145 | 1,581 |
| *Chaetodipterus faber* | . | . | . | 1 | 1 | 49 | 16 | . | 28 | 37 | . | 1 | 133 |
| *Chasmodes saburrae* | 1 | 2 | 8 | 1 | 4 | 9 | 24 | 37 | 5 | 2 | 6 | 6 | 105 |
| *Chilomycterus schoepfii* | 15 | 13 | 29 | 24 | 37 | 37 | 28 | 23 | 41 | 37 | 7 | 21 | 312 |
| *Chloroscombrus chrysurus* | . | 3 | 2 | . | . | 2 | 4 | . | 1 | 250 | 16 | 5 | 283 |
| *Cichlasoma urophthalmus* | . | . | . | 1 | . | . | . | 1 | 2 | . | . | 1 | 5 |
| *Citharichthys spilopterus* | 7 | 5 | 18 | 54 | 6 | 4 | 5 | 4 | 3 | 2 | . | 1 | 109 |
| *Clupeidae* spp. | . | . | . | 69 | . | . | . | . | . | . | 1 | . | 70 |
| *Ctenogobius boleosoma* | 24 | 2 | 164 | 2 | 1 | 1 | . | . | . | 4 | 1 | 17 | 216 |
| *Ctenogobius pseudofasciatus* | . | . | 1 | 1 | 4 | 1 | . | . | . | 1 | . | . | 8 |
| *Ctenogobius shufeldti* | . | 1 | 1 | . | . | . | . | . | . | . | . | 2 | 4 |
| *Ctenogobius smaragdus* | 3 | . | 2 | . | . | . | . | . | . | . | . | . | 5 |
| *Cynoscion* complex | 1 | . | 1 | . | . | . | 1 | . | 80 | 34 | 4 | 14 | 135 |
| *Cynoscion nebulosus* | 31 | 5 | 24 | 9 | 13 | 18 | 96 | 87 | 214 | 371 | 102 | 47 | 1,017 |
| *Cyprinodon variegatus* | 467 | 27 | . | 42 | 240 | 6 | . | 76 | 3 | 41 | 31 | 143 | 1,076 |
| *Dasyatis sabina* | 82 | 92 | 128 | 81 | 197 | 114 | 76 | 195 | 283 | 215 | 65 | 59 | 1,587 |
| *Dasyatis say* | 6 | 13 | 13 | 15 | 19 | 13 | 14 | 8 | 13 | 5 | 16 | 21 | 156 |
| *Diapterus auratus* | 1,539 | 719 | 792 | 897 | 518 | 949 | 1,896 | 1,743 | 975 | 2,757 | 1,728 | 2,825 | 17,338 |

Appendix IR08-01. (Continued)

| Species | Month | | | | | | | | | | | | Totals |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | |
| | E=73 | E=73 | E=73 | E=73 | E=73 | E=73 | E=73 | E=73 | E=73 | E=95 | E=95 | E=73 | E=920 |
| *Dormitator maculatus* | 2 | 15 | . | 1 | . | 2 | 6 | 2 | . | 1 | 2 | 2 | 33 |
| *Dorosoma cepedianum* | . | . | . | . | . | . | . | 97 | 1 | . | 1 | 45 | 144 |
| *Dorosoma petenense* | . | . | . | . | . | . | . | 809 | 378 | 3 | . | 2 | 1,192 |
| *Echeneis neucratoides* | . | . | . | . | . | 1 | . | . | . | 1 | 1 | . | 3 |
| *Elops saurus* | 66 | 21 | 97 | 29 | 30 | 33 | 29 | 88 | 140 | 166 | 112 | 274 | 1,085 |
| *Enneacanthus gloriosus* | . | . | . | . | . | . | . | . | . | . | . | 6 | 6 |
| *Erimyzon sucetta* | . | . | . | . | . | . | . | 3 | . | . | . | . | 3 |
| *Erotelis smaragdus* | . | . | . | . | . | . | . | . | . | . | . | 1 | 1 |
| *Etheostoma fusiforme* | . | . | . | . | . | . | . | 10 | . | 2 | . | . | 12 |
| *Etropus crossotus* | . | . | . | . | . | . | . | . | . | . | . | 3 | 3 |
| *Eucinostomus argenteus* | 1 | . | 1 | . | . | . | . | . | . | 20 | . | . | 22 |
| *Eucinostomus gula* | 180 | 64 | 90 | 87 | 94 | 210 | 747 | 584 | 167 | 248 | 121 | 251 | 2,843 |
| *Eucinostomus harengulus* | 333 | 183 | 276 | 902 | 1,161 | 702 | 2,550 | 374 | 126 | 134 | 174 | 55 | 6,970 |
| *Eucinostomus jonesii* | 3 | 1 | 1 | 1 | . | 2 | 7 | 1 | . | . | . | 1 | 17 |
| *Eucinostomus* spp. | 3,204 | 2,613 | 1,530 | 2,744 | 1,574 | 913 | 718 | 579 | 468 | 2,657 | 3,132 | 2,656 | 22,788 |
| *Eugerres plumieri* | 9 | 16 | 24 | 13 | 628 | 541 | 590 | 115 | 59 | 46 | 14 | 23 | 2,078 |
| *Evorthodus lyricus* | 2 | 40 | 5 | 1 | 30 | 9 | 1 | 4 | 2 | 18 | 3 | 2 | 117 |
| *Farfantepenaeus aztecus* | . | . | 3 | 7 | 2 | . | 8 | 2 | . | . | . | . | 22 |
| *Farfantepenaeus duorarum* | 17 | 28 | 40 | 10 | 33 | 17 | 7 | 14 | 6 | 4 | 5 | 7 | 188 |
| *Farfantepenaeus* spp. | 150 | 868 | 498 | 238 | 253 | 65 | 47 | 80 | 137 | 109 | 43 | 149 | 2,637 |
| *Floridichthys carpio* | 1,274 | 560 | 5 | 149 | 433 | 455 | 517 | 524 | 287 | 188 | 407 | 118 | 4,917 |
| *Fundulus chrysotus* | . | . | . | . | . | . | 1 | 3 | . | 1 | 1 | 2 | 8 |
| *Fundulus grandis* | . | 4 | 1 | . | 2 | 9 | . | . | 2 | . | 3 | . | 21 |
| *Fundulus seminolis* | 3 | 1 | . | . | . | . | . | 59 | 12 | 4 | 5 | 39 | 123 |
| *Gambusia holbrooki* | 64 | 278 | 29 | 366 | 38 | 208 | 78 | 359 | 60 | 215 | 1,550 | 1,236 | 4,481 |

Appendix IR08-01. (Continued)

| Species | Month | | | | | | | | | | | | Totals |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | |
| | E=73 | E=73 | E=73 | E=73 | E=73 | E=73 | E=73 | E=73 | E=73 | E=95 | E=95 | E=73 | E=920 |
| *Gerreidae* spp. | . | . | . | . | . | 3 | . | . | . | . | . | . | 3 |
| *Gerres cinereus* | 6 | 2 | 5 | 1 | 4 | 1 | 2 | 6 | 3 | . | 2 | 27 | 59 |
| *Gobiesox strumosus* | . | . | . | . | . | . | 1 | 1 | . | . | 1 | . | 3 |
| *Gobiomorus dormitor* | . | . | . | 2 | 1 | . | 2 | . | . | 1 | . | 1 | 7 |
| *Gobionellus oceanicus* | 82 | 1 | 1 | 1 | 1 | . | 1 | 4 | . | 10 | 2 | 10 | 113 |
| *Gobiosoma bosc* | 8 | 21 | 49 | 13 | 7 | 7 | 5 | 3 | 2 | 2 | 6 | 31 | 154 |
| *Gobiosoma robustum* | 93 | 222 | 335 | 78 | 60 | 162 | 405 | 425 | 32 | 25 | 39 | 19 | 1,895 |
| *Gobiosoma* spp. | 119 | 125 | 179 | 39 | 52 | 79 | 324 | 522 | 171 | 111 | 51 | 29 | 1,801 |
| *Gymnura micrura* | . | 1 | . | 1 | 1 | . | . | 1 | . | 2 | . | 1 | 7 |
| *Haemulon parra* | . | . | . | . | . | 12 | 1 | 8 | . | 4 | 2 | . | 27 |
| *Haemulon plumierii* | . | . | 1 | . | . | 1 | . | . | . | 13 | . | . | 15 |
| *Haemulon sciurus* | . | . | . | . | . | 1 | . | . | . | . | . | . | 1 |
| *Haemulon* sp. | . | . | . | 1 | . | . | . | . | . | . | . | . | 1 |
| *Harengula jaguana* | . | 23 | . | 35 | 40 | 72 | 41 | 3 | 35 | 1,421 | 50 | 169 | 1,889 |
| *Heterandria formosa* | 1 | 13 | . | . | 1 | . | 3 | 69 | 1 | 4 | 1 | 1 | 94 |
| *Hippocampus erectus* | 1 | . | . | 2 | . | 5 | 3 | . | 1 | . | . | . | 12 |
| *Hippocampus zosterae* | 3 | . | 1 | 1 | 1 | 2 | 4 | 9 | 1 | 3 | . | . | 25 |
| *Hyporhamphus meeki* | 20 | 4 | 12 | 8 | 5 | 4 | 2 | 12 | 2 | 3 | 2 | . | 74 |
| *Hyporhamphus* spp. | . | . | . | . | . | 1 | . | 1 | . | 1 | . | . | 3 |
| *Hyporhamphus unifasciatus* | . | . | . | 1 | . | . | . | . | . | . | . | . | 1 |
| *Jordanella floridae* | . | . | . | . | . | . | . | 2 | . | 1 | . | . | 3 |
| *Labidesthes sicculus* | 86 | 60 | 33 | 6 | 3 | 10 | 5 | 785 | 60 | 84 | 64 | 5 | 1,201 |
| *Lachnolaimus maximus* | . | . | . | . | . | . | 1 | 2 | . | 2 | . | . | 5 |
| *Lactophrys trigonus* | 1 | . | 1 | . | . | . | . | . | . | 1 | 1 | . | 4 |
| *Lactophrys triqueter* | . | . | . | . | . | . | 1 | . | . | . | . | . | 1 |
| *Lagodon rhomboides* | 135 | 510 | 670 | 1,060 | 2,023 | 2,469 | 5,329 | 3,023 | 894 | 2,629 | 1,315 | 1,610 | 21,667 |

Appendix IR08-01. (Continued)

| Species | Month | | | | | | | | | | | | Totals |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | |
| | E=73 | E=73 | E=73 | E=73 | E=73 | E=73 | E=73 | E=73 | E=73 | E=95 | E=95 | E=73 | E=920 |
| *Leiostomus xanthurus* | 1,301 | 716 | 222 | 89 | 112 | 68 | 32 | 24 | 56 | 24 | 3 | 10 | 2,657 |
| *Lepisosteus osseus* | . | 1 | . | . | . | . | . | . | . | . | . | . | 1 |
| *Lepisosteus platyrhincus* | . | 1 | . | 2 | 1 | 1 | 2 | 3 | 1 | 1 | 1 | 3 | 16 |
| *Lepomis auritus* | . | 1 | . | . | . | 1 | . | . | 6 | 3 | 6 | 1 | 18 |
| *Lepomis gulosus* | . | . | . | . | . | . | . | 2 | . | 3 | . | 1 | 6 |
| *Lepomis macrochirus* | 10 | 1 | 7 | 1 | 4 | . | 2 | 714 | 11 | 129 | 28 | 90 | 997 |
| *Lepomis marginatus* | . | . | . | . | . | . | . | . | . | 2 | . | 1 | 3 |
| *Lepomis microlophus* | 10 | . | . | . | . | 1 | . | 16 | 6 | 5 | 2 | 4 | 44 |
| *Lepomis punctatus* | 4 | . | . | . | . | . | . | . | . | 11 | 2 | . | 17 |
| *Lepomis* spp. | . | . | . | . | . | . | 1 | 320 | 28 | 52 | 3 | 3 | 407 |
| *Limulus polyphemus* | . | 3 | 4 | 7 | 1 | 1 | 2 | . | . | . | . | 8 | 26 |
| *Litopenaeus setiferus* | 1 | 1 | 1 | 3 | 2 | 40 | 1 | . | . | 1 | 36 | 13 | 99 |
| *Lobotes surinamensis* | . | . | . | . | . | . | . | . | . | 2 | . | . | 2 |
| *Lophogobius cyprinoides* | 1 | 28 | 3 | 2 | 7 | 79 | 60 | 25 | 20 | 14 | 28 | 49 | 316 |
| *Lucania goodei* | 1 | 55 | . | 1 | . | 5 | . | 34 | 1 | 13 | 12 | 7 | 129 |
| *Lucania parva* | 928 | 640 | 650 | 1,227 | 1,128 | 806 | 1,084 | 944 | 1,714 | 1,855 | 809 | 540 | 12,325 |
| *Lupinoblennius nicholsi* | . | . | . | . | . | . | 3 | 3 | . | . | 2 | . | 8 |
| *Lutjanus analis* | 1 | . | 23 | 2 | . | 8 | 7 | 1 | 7 | 30 | 7 | 8 | 94 |
| *Lutjanus cyanopterus* | . | . | . | . | . | . | . | . | . | . | 1 | . | 1 |
| *Lutjanus griseus* | 9 | 8 | 13 | 2 | 8 | 41 | 18 | 40 | 52 | 27 | 12 | 5 | 235 |
| *Lutjanus jocu* | 2 | . | . | . | . | . | . | 1 | . | 1 | . | . | 4 |
| *Lutjanus* sp. | . | . | . | . | . | . | . | . | . | 1 | . | . | 1 |
| *Lutjanus synagris* | . | 1 | . | . | . | 9 | . | 4 | 4 | 15 | 4 | 1 | 38 |
| *Malaclemys terrapin* | . | . | 4 | . | . | . | . | . | 2 | . | 1 | 1 | 8 |
| *Megalops atlanticus* | . | . | . | . | . | . | . | 1 | 6 | . | . | . | 7 |
| *Membras martinica* | . | . | . | . | 19 | 42 | 1 | 17 | . | 8 | 9 | . | 96 |

Appendix IR08-01. (Continued)

| Species | Month | | | | | | | | | | | | Totals |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | |
| | E=73 | E=73 | E=73 | E=73 | E=73 | E=73 | E=73 | E=73 | E=73 | E=95 | E=95 | E=73 | E=920 |
| *Menidia* spp. | 239 | 350 | 70 | 858 | 886 | 202 | 606 | 939 | 370 | 275 | 289 | 148 | 5,232 |
| *Menippe* sp. | . | . | . | . | . | . | . | . | 1 | . | . | . | 1 |
| *Menticirrhus americanus* | 17 | 29 | 6 | 6 | 14 | 22 | 9 | 28 | 101 | 40 | 88 | 34 | 394 |
| *Microgobius gulosus* | 250 | 152 | 157 | 60 | 265 | 176 | 241 | 418 | 649 | 562 | 204 | 152 | 3,286 |
| *Microgobius microlepis* | . | . | . | . | . | . | . | . | 6 | . | . | . | 6 |
| *Microgobius thalassinus* | . | . | . | 1 | . | 2 | . | . | 22 | . | . | 1 | 26 |
| *Microphis brachyurus* | . | 3 | . | 2 | . | . | 1 | 2 | . | 1 | . | 8 | 17 |
| *Micropogonias undulatus* | 484 | 221 | 32 | 21 | 28 | . | 1 | 10 | 11 | 10 | 1,875 | 215 | 2,908 |
| *Micropterus salmoides* | . | . | . | 2 | 1 | 1 | 1 | 12 | 3 | . | 1 | 1 | 22 |
| *Mugil cephalus* | 1,521 | 1,109 | 468 | 194 | 214 | 133 | 109 | 91 | 452 | 86 | 101 | 194 | 4,672 |
| *Mugil curema* | 405 | 75 | 250 | 238 | 257 | 116 | 94 | 39 | 81 | 144 | 639 | 323 | 2,661 |
| *Mugil gyrans* | . | 1 | 1 | . | . | 1 | . | . | . | . | . | . | 3 |
| *Mugil* spp. | . | . | . | . | . | 1 | . | . | . | . | . | . | 1 |
| *Mycteroperca bonaci* | . | . | . | . | . | . | 1 | . | . | 2 | . | . | 3 |
| *Mycteroperca microlepis* | . | . | . | . | . | . | 6 | 7 | . | 2 | . | 1 | 16 |
| *Nicholsina usta* | . | . | . | . | . | . | 3 | . | . | . | . | . | 3 |
| *Notemigonus crysoleucas* | . | . | . | . | . | . | . | . | 1 | . | . | . | 1 |
| *Notropis maculatus* | . | . | . | . | . | . | . | 126 | 4 | 3 | 3 | . | 136 |
| *Notropis petersoni* | . | . | . | . | . | . | . | 10 | . | . | . | . | 10 |
| *Notropis* spp. | . | . | . | . | . | . | . | . | . | 1 | 1 | . | 2 |
| *Ocyurus chrysurus* | . | . | . | . | . | 3 | . | . | . | . | . | . | 3 |
| *Oligoplites saurus* | 1 | 23 | 1 | 4 | 9 | 37 | 102 | 72 | 35 | 30 | 6 | 21 | 341 |
| *Opisthonema oglinum* | . | 11 | 9 | 132 | 43 | 18 | 59 | 57 | 79 | 916 | 4 | 38 | 1,366 |
| *Opsanus tau* | 6 | . | 3 | . | . | 4 | 3 | 4 | 3 | . | . | 2 | 25 |
| *Oreochromis aureus* | . | . | . | . | . | . | . | . | . | 1 | . | . | 1 |

Appendix IR08-01. (Continued)

| Species | Month | | | | | | | | | | | | Totals |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | |
| | E=73 | E=73 | E=73 | E=73 | E=73 | E=73 | E=73 | E=73 | E=73 | E=95 | E=95 | E=73 | E=920 |
| *Oreochromis* sp. | . | . | . | . | . | . | . | . | 1 | . | . | . | 1 |
| *Orthopristis chrysoptera* | 2 | 8 | 117 | 41 | 469 | 164 | 1,182 | 239 | 60 | 883 | 92 | 105 | 3,362 |
| *Ostraciidae* spp. | . | . | . | . | 2 | . | . | . | . | . | . | . | 2 |
| *Panulirus argus* | . | . | . | . | . | 1 | . | . | . | . | . | . | 1 |
| *Paralichthys albigutta* | . | 2 | 1 | . | 2 | 2 | 2 | . | 4 | 1 | 4 | . | 18 |
| *Paralichthys lethostigma* | . | . | . | . | . | . | 1 | . | . | . | . | 1 | 2 |
| *Poecilia latipinna* | 6 | 22 | 5 | 12 | 43 | 25 | 61 | 77 | 33 | 35 | 83 | 28 | 430 |
| *Pogonias cromis* | 5 | 10 | 2 | 5 | 5 | 44 | 14 | 11 | 14 | 26 | 11 | . | 147 |
| *Pomatomus saltatrix* | . | . | 2 | . | . | . | 1 | . | . | . | . | 1 | 4 |
| *Pomoxis nigromaculatus* | . | . | . | . | . | . | . | 33 | . | . | . | . | 33 |
| *Portunus* spp. | . | . | 7 | . | 4 | . | . | . | . | . | . | . | 11 |
| *Prionotus scitulus* | 3 | 9 | 3 | . | 8 | 2 | 1 | 3 | 8 | . | . | . | 37 |
| *Prionotus tribulus* | . | 1 | . | . | . | . | 1 | . | 1 | 2 | 2 | 1 | 8 |
| *Pseudemys peninsularis* | 3 | . | . | . | . | . | . | . | . | . | . | . | 3 |
| *Pterygoplichthys* spp. | . | . | . | . | . | . | 1 | 6 | . | 1 | . | 2 | 10 |
| *Rhinoptera bonasus* | . | . | . | . | . | . | . | . | . | 18 | . | . | 18 |
| *Sardinella aurita* | . | . | . | . | . | . | . | . | . | 2 | . | . | 2 |
| *Sarotherodon melanotheron* | . | . | . | . | . | . | 1 | 19 | 1 | 1 | 1 | . | 23 |
| *Sciaenops ocellatus* | 338 | 30 | 56 | 75 | 23 | 19 | 67 | 15 | 129 | 187 | 442 | 445 | 1,826 |
| *Scomberomorus maculatus* | . | 1 | . | . | . | 2 | 2 | 1 | 1 | 21 | 1 | 6 | 35 |
| *Scomberomorus regalis* | . | . | . | . | . | . | 1 | . | . | . | . | 2 | 3 |
| *Scorpaena grandicornis* | . | . | . | . | . | . | . | 1 | . | . | . | . | 1 |
| *Selene vomer* | 2 | 14 | . | 6 | 5 | 2 | 12 | 20 | 6 | 9 | 2 | 22 | 100 |
| *Sicyonia* | . | . | 1 | . | . | . | . | . | . | . | . | . | 1 |
| *Sicyonia parri* | . | . | . | . | . | 1 | . | 1 | . | . | . | . | 2 |

Appendix IR08-01. (Continued)

| Species | Month | | | | | | | | | | | | Totals |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | |
| | E=73 | E=73 | E=73 | E=73 | E=73 | E=73 | E=73 | E=73 | E=73 | E=95 | E=95 | E=73 | E=920 |
| *Sparisoma rubripinne* | . | . | . | . | . | . | . | 1 | . | . | . | . | 1 |
| *Sphoeroides nephelus* | 233 | 226 | 92 | 188 | 131 | 105 | 70 | 95 | 363 | 311 | 155 | 138 | 2,107 |
| *Sphoeroides spengleri* | . | 1 | . | 2 | . | 1 | 2 | 3 | 1 | 2 | 2 | 3 | 17 |
| *Sphoeroides* spp. | . | . | 1 | . | . | . | . | . | . | 1 | . | . | 2 |
| *Sphoeroides testudineus* | 19 | 20 | 32 | 29 | 29 | 18 | 102 | 11 | 35 | 9 | 18 | 6 | 328 |
| *Sphyraena barracuda* | . | 4 | 1 | . | . | 5 | 6 | 3 | 9 | 12 | 10 | 8 | 58 |
| *Stephanolepis hispidus* | . | 2 | . | . | 2 | . | 2 | . | . | 10 | . | 1 | 17 |
| *Strongylura marina* | 9 | . | 6 | 4 | 7 | 2 | . | 2 | 1 | 4 | . | 1 | 36 |
| *Strongylura notata* | 26 | 9 | 26 | 17 | 62 | 155 | 129 | 95 | 38 | 66 | 31 | 16 | 670 |
| *Strongylura* spp. | . | 1 | 1 | 1 | 1 | 1 | 1 | . | . | 6 | 2 | . | 14 |
| *Strongylura timucu* | . | . | . | . | . | . | 2 | . | . | . | 3 | . | 5 |
| *Symphurus plagiusa* | . | . | . | 1 | . | . | . | 1 | . | 1 | . | 1 | 4 |
| *Syngnathus louisianae* | 5 | 8 | 2 | 1 | 5 | 5 | 2 | 5 | 2 | 8 | 9 | 10 | 62 |
| *Syngnathus scovelli* | 91 | 58 | 161 | 70 | 103 | 141 | 128 | 80 | 75 | 82 | 25 | 36 | 1,050 |
| *Synodus foetens* | 3 | 2 | 12 | 10 | 6 | 4 | 1 | 7 | 3 | 5 | 2 | 8 | 63 |
| *Tilapia mariae* | 2 | 1 | . | . | . | . | 2 | . | 4 | 20 | 10 | 6 | 45 |
| *Tilapia* spp. | . | . | . | 7 | 4 | . | 11 | 17 | 1 | 10 | 2 | 16 | 68 |
| *Trachinotus carolinus* | . | 1 | 1 | 1 | . | 1 | 6 | 1 | 2 | 15 | . | 2 | 30 |
| *Trachinotus falcatus* | . | . | . | 4 | 2 | 2 | 14 | 5 | 12 | 87 | 3 | 16 | 145 |
| *Trinectes maculatus* | 6 | 65 | 12 | 19 | 3 | 28 | 3 | 112 | 21 | 12 | 41 | 50 | 372 |
| **Totals** | **59,812** | **37,986** | **35,169** | **28,422** | **39,534** | **16,846** | **33,747** | **27,412** | **34,796** | **66,784** | **22,947** | **33,199** | **436,654** |

Appendix IR08-02. Summary by gear, stratum, and zone of species collected during northern Indian River Lagoon stratified-random sampling, 2008. Sampling with 21.3-m bay seine was stratified by the presence or absence of a shoreline ('Shore' or offshore) within 5-m. Offshore sets were further stratified by the presence or absence of bottom vegetation ('Veg' or 'Unveg'). Sampling with 21.3-m river seine and 183-m haul seine was stratified by the presence or absence of overhanging vegetation ('Over' or 'Nonover'). Sampling with 6.1-m otter trawl was not stratified. Effort, or the total number of hauls, is labeled 'E'. Taxa are arranged alphabetically.

| *Species* | **Gear and Strata** | | | | | | | | **Totals** |
|---|---|---|---|---|---|---|---|---|---|
| | **21.3-m bay seine** | | | **21.3-m river seine** | | **183-m haul seine** | | **6.1-m otter trawl** | |
| | **Veg** | **Unveg** | **Shore** | **Over** | **Nonover** | **Over** | **Nonover** | | |
| | **E=113** | **E=51** | **E=216** | **E=152** | **E=64** | **E=151** | **E=77** | **E=96** | **E=920** |
| *Acanthostracion quadricornis* | . | . | . | . | . | . | . | 3 | 3 |
| *Achirus lineatus* | 11 | 6 | 54 | 38 | 15 | 63 | 43 | 15 | 245 |
| *Agonostomus monticola* | . | . | . | 1 | 3 | . | . | . | 4 |
| *Albula vulpes* | 1 | 1 | 10 | 3 | 4 | 7 | 4 | 2 | 32 |
| *Aluterus schoepfii* | . | . | . | . | . | 2 | 2 | 5 | 9 |
| *Ameiurus catus* | . | . | . | 2 | , | , | , | , | 2 |
| *Anchoa hepsetus* | 31 | 25 | 18 | 44 | 323 | . | . | 11 | 452 |
| *Anchoa mitchilli* | 18,622 | 1,239 | 88,655 | 108,905 | 35,876 | 1 | . | 770 | 254,068 |
| *Anisotremus virginicus* | . | . | . | . | . | 1 | 1 | . | 2 |
| *Apalone ferox* | . | . | . | 1 | 1 | 1 | . | . | 3 |
| *Archosargus probatocephalus* | 47 | 2 | 248 | 80 | 35 | 547 | 347 | 93 | 1,399 |
| *Archosargus rhomboidalis* | . | . | 1 | . | . | 10 | 28 | . | 39 |
| *Archosargus* spp. | 1 | . | . | . | . | 2 | 1 | . | 4 |
| *Ariopsis felis* | 11 | 33 | 199 | 8 | . | 2,426 | 546 | 34 | 3,257 |
| *Astroscopus y-graecum* | . | . | . | . | . | . | 1 | . | 1 |
| *Bagre marinus* | . | . | . | . | . | 3 | 1 | . | 4 |
| *Bairdiella chrysoura* | 1,345 | 8 | 643 | 5 | . | 1,363 | 8,291 | 35 | 11,690 |
| *Bathygobius soporator* | . | . | 3 | 1 | 12 | . | . | . | 16 |
| *Brevoortia* spp. | 52 | . | 83 | 8,903 | 1,249 | 487 | 85 | . | 10,859 |
| *Calamus arctifrons* | 1 | . | . | . | . | . | . | 2 | 3 |
| *Callinectes bocourti* | . | . | . | 6 | 1 | . | . | . | 7 |
| *Callinectes ornatus* | . | . | . | . | . | . | 1 | 5 | 6 |
| *Callinectes sapidus* | 3 | 1 | 25 | 266 | 142 | 42 | 65 | 285 | 829 |

Appendix IR08-02. (Continued)

| Species | Gear and Strata | | | | | | | | Totals |
|---|---|---|---|---|---|---|---|---|---|
| | 21.3-m bay seine | | | 21.3-m river seine | | 183-m haul seine | | 6.1-m otter trawl | |
| | Veg | Unveg | Shore | Over | Nonover | Over | Nonover | | |
| | E=113 | E=51 | E=216 | E=152 | E=64 | E=151 | E=77 | E=96 | E=920 |
| *Callinectes similis* | 5 | . | 35 | 1 | 31 | 11 | 7 | 288 | 378 |
| *Callinectes* spp. | . | . | . | . | 1 | . | . | 10 | 11 |
| *Canthidermis sufflamen* | 1 | . | . | . | . | . | . | . | 1 |
| *Caranx hippos* | 4 | . | 4 | 20 | 27 | 127 | 175 | 2 | 359 |
| *Caranx latus* | . | . | . | 2 | 2 | 23 | 1 | . | 28 |
| *Centropomus ensiferus* | . | . | . | 1 | . | . | . | . | 1 |
| *Centropomus parallelus* | . | . | . | 111 | 17 | . | . | . | 128 |
| *Centropomus pectinatus* | . | . | . | 3 | 1 | . | . | . | 4 |
| *Centropomus* spp. | . | . | . | 17 | 9 | . | . | . | 26 |
| *Centropomus undecimalis* | 6 | . | 16 | 1,017 | 153 | 160 | 229 | . | 1,581 |
| *Chaetodipterus faber* | . | 3 | 4 | . | . | 101 | 21 | 4 | 133 |
| *Chasmodes saburrae* | 15 | . | 37 | . | . | 4 | 1 | 48 | 105 |
| *Chilomycterus schoepfii* | 9 | . | 2 | . | . | 128 | 93 | 80 | 312 |
| *Chloroscombrus chrysurus* | . | . | 1 | . | . | 147 | 130 | 5 | 283 |
| *Cichlasoma urophthalmus* | . | . | 2 | 2 | 1 | . | . | . | 5 |
| *Citharichthys spilopterus* | 3 | . | 11 | 52 | 15 | 12 | 7 | 9 | 109 |
| *Clupeidae* spp. | 69 | . | . | 1 | . | . | . | . | 70 |
| *Ctenogobius boleosoma* | 16 | . | 192 | . | 3 | . | . | 5 | 216 |
| *Ctenogobius pseudofasciatus* | . | . | . | 5 | 3 | . | . | . | 8 |
| *Ctenogobius shufeldti* | . | . | . | 3 | 1 | . | . | . | 4 |
| *Ctenogobius smaragdus* | . | . | 5 | . | . | . | . | . | 5 |
| *Cynoscion* complex | 8 | 20 | 49 | 19 | 3 | 10 | 6 | 20 | 135 |
| *Cynoscion nebulosus* | 425 | 22 | 332 | . | 1 | 125 | 85 | 27 | 1,017 |
| *Cyprinodon variegatus* | 6 | 396 | 674 | . | . | . | . | . | 1,076 |
| *Dasyatis sabina* | 8 | 18 | 28 | 2 | 4 | 1,007 | 486 | 34 | 1,587 |
| *Dasyatis say* | . | 1 | . | . | . | 88 | 64 | 3 | 156 |
| *Diapterus auratus* | 706 | 28 | 982 | 6,728 | 3,710 | 3,348 | 1,749 | 87 | 17,338 |
| *Dormitator maculatus* | . | . | . | 23 | 10 | . | . | . | 33 |
| *Dorosoma cepedianum* | . | . | . | 13 | 90 | 2 | 39 | . | 144 |
| *Dorosoma petenense* | . | . | . | 529 | 661 | 1 | 1 | . | 1,192 |
| *Echeneis neucratoides* | . | . | . | . | . | 2 | 1 | . | 3 |
| *Elops saurus* | . | . | 16 | 71 | 8 | 795 | 193 | 2 | 1,085 |
| *Enneacanthus gloriosus* | . | . | . | 2 | 4 | . | . | . | 6 |

Appendix IR08-02. (Continued)

| Species | Gear and Strata | | | | | | | | Totals |
|---|---|---|---|---|---|---|---|---|---|
| | 21.3-m bay seine | | | 21.3-m river seine | | 183-m haul seine | | 6.1-m otter trawl | |
| | Veg | Unveg | Shore | Over | Nonover | Over | Nonover | | |
| | E=113 | E=51 | E=216 | E=152 | E=64 | E=151 | E=77 | E=96 | E=920 |
| *Erimyzon sucetta* | . | . | . | 1 | 2 | . | . | . | 3 |
| *Erotelis smaragdus* | . | . | . | . | 1 | . | . | . | 1 |
| *Etheostoma fusiforme* | . | . | . | . | 12 | . | . | . | 12 |
| *Etropus crossotus* | . | . | . | . | . | . | . | 3 | 3 |
| *Eucinostomus argenteus* | . | . | 21 | . | . | . | . | 1 | 22 |
| *Eucinostomus gula* | 313 | 1 | 567 | 24 | 76 | 660 | 928 | 274 | 2,843 |
| *Eucinostomus harengulus* | 75 | 55 | 564 | 1,796 | 1,138 | 883 | 2,445 | 14 | 6,970 |
| *Eucinostomus jonesii* | 1 | 2 | 14 | . | . | . | . | . | 17 |
| *Eucinostomus* spp. | 2,216 | 314 | 4,538 | 9,607 | 5,187 | . | . | 926 | 22,788 |
| *Eugerres plumieri* | 114 | . | 13 | 1,642 | 296 | 9 | 4 | . | 2,078 |
| *Evorthodus lyricus* | . | . | 1 | 76 | 40 | . | . | . | 117 |
| *Farfantepenaeus aztecus* | . | . | . | 2 | . | 1 | 1 | 18 | 22 |
| *Farfantepenaeus duorarum* | 16 | 1 | 52 | 8 | 20 | 26 | 6 | 59 | 188 |
| *Farfantepenaeus* spp. | 240 | 15 | 653 | 646 | 756 | . | . | 327 | 2,637 |
| *Floridichthys carpio* | 597 | 1,096 | 3,213 | . | 1 | 9 | 1 | . | 4,917 |
| *Fundulus chrysotus* | . | . | . | 2 | 6 | . | . | . | 8 |
| *Fundulus grandis* | . | . | 9 | 7 | 1 | 3 | 1 | . | 21 |
| *Fundulus seminolis* | . | . | . | 13 | 110 | . | . | . | 123 |
| *Gambusia holbrooki* | 1 | . | 47 | 2,158 | 2,275 | . | . | . | 4,481 |
| *Gerreidae* spp. | . | . | . | 3 | . | . | . | . | 3 |
| *Gerres cinereus* | . | . | 1 | 33 | 1 | 13 | 11 | . | 59 |
| *Gobiesox strumosus* | . | 1 | 1 | . | . | 1 | . | . | 3 |
| *Gobiomorus dormitor* | . | . | . | 7 | . | . | . | . | 7 |
| *Gobionellus oceanicus* | . | . | 79 | 23 | 7 | . | . | 4 | 113 |
| *Gobiosoma bosc* | . | 2 | 8 | 83 | 61 | . | . | . | 154 |
| *Gobiosoma robustum* | 402 | 23 | 344 | 5 | 25 | . | . | 1,096 | 1,895 |
| *Gobiosoma* spp. | 322 | 35 | 449 | 157 | 12 | . | . | 826 | 1,801 |
| *Gymnura micrura* | . | . | . | . | . | 2 | 4 | 1 | 7 |
| *Haemulon parra* | 7 | . | 6 | . | . | 2 | 1 | 11 | 27 |
| *Haemulon plumierii* | 1 | . | . | . | . | . | 13 | 1 | 15 |
| *Haemulon sciurus* | . | . | . | . | . | . | . | 1 | 1 |
| *Haemulon* sp. | 1 | . | . | . | . | . | . | . | 1 |

Appendix IR08-02. (Continued)

| Species | Gear and Strata | | | | | | | | Totals |
|---|---|---|---|---|---|---|---|---|---|
| | 21.3-m bay seine | | | 21.3-m river seine | | 183-m haul seine | | 6.1-m otter trawl | |
| | Veg | Unveg | Shore | Over | Nonover | Over | Nonover | | |
| | E=113 | E=51 | E=216 | E=152 | E=64 | E=151 | E=77 | E=96 | E=920 |
| *Harengula jaguana* | 61 | 18 | 1,370 | 61 | 24 | 62 | 274 | 19 | 1,889 |
| *Heterandria formosa* | . | . | . | 3 | 91 | . | . | . | 94 |
| *Hippocampus erectus* | 2 | . | 3 | . | . | 1 | 2 | 4 | 12 |
| *Hippocampus zosterae* | 16 | . | 5 | . | . | . | . | 4 | 25 |
| *Hyporhamphus meeki* | 4 | 17 | . | . | . | 36 | 17 | . | 74 |
| *Hyporhamphus* spp. | 1 | . | 1 | . | . | 1 | . | . | 3 |
| *Hyporhamphus unifasciatus* | . | . | . | . | . | . | 1 | . | 1 |
| *Jordanella floridae* | . | . | . | 2 | 1 | . | . | . | 3 |
| *Labidesthes sicculus* | . | . | . | 412 | 789 | . | . | . | 1,201 |
| *Lachnolaimus maximus* | . | . | . | . | . | . | 5 | . | 5 |
| *Lactophrys trigonus* | . | . | . | . | . | 1 | 2 | 1 | 4 |
| *Lactophrys triqueter* | . | . | . | . | . | . | 1 | . | 1 |
| *Lagodon rhomboides* | 857 | 11 | 1,539 | 417 | 493 | 8,853 | 8,124 | 1,373 | 21,667 |
| *Leiostomus xanthurus* | 183 | . | 680 | 1,161 | 171 | 256 | 203 | 3 | 2,657 |
| *Lepisosteus osseus* | . | . | . | 1 | . | . | . | . | 1 |
| *Lepisosteus platyrhincus* | . | . | . | 14 | 1 | 1 | . | . | 16 |
| *Lepomis auritus* | . | . | . | 12 | 6 | . | . | . | 18 |
| *Lepomis gulosus* | . | . | . | 2 | 4 | . | . | . | 6 |
| *Lepomis macrochirus* | . | . | . | 345 | 652 | . | . | . | 997 |
| *Lepomis marginatus* | . | . | . | 1 | 2 | . | . | . | 3 |
| *Lepomis microlophus* | . | . | . | 22 | 22 | . | . | . | 44 |
| *Lepomis punctatus* | . | . | . | 6 | 11 | . | . | . | 17 |
| *Lepomis* spp. | . | . | . | 157 | 250 | . | . | . | 407 |
| *Limulus polyphemus* | . | . | 2 | . | . | 14 | 10 | . | 26 |
| *Litopenaeus setiferus* | 3 | . | 6 | 88 | 2 | . | . | . | 99 |
| *Lobotes surinamensis* | . | . | 1 | . | . | 1 | . | . | 2 |
| *Lophogobius cyprinoides* | . | . | . | 259 | 57 | . | . | . | 316 |
| *Lucania goodei* | . | . | . | 10 | 119 | . | . | . | 129 |
| *Lucania parva* | 4,937 | 259 | 6,789 | 195 | 140 | . | . | 5 | 12,325 |
| *Lupinoblennius nicholsi* | . | . | . | 2 | 6 | . | . | . | 8 |
| *Lutjanus analis* | 18 | . | 6 | . | . | 10 | 44 | 16 | 94 |
| *Lutjanus cyanopterus* | 1 | . | . | . | . | . | . | . | 1 |
| *Lutjanus griseus* | 19 | . | 50 | 34 | 9 | 32 | 79 | 12 | 235 |

Appendix IR08-02.  (Continued)

| Species | Gear and Strata | | | | | | | | Totals |
|---|---|---|---|---|---|---|---|---|---|
| | 21.3-m bay seine | | | 21.3-m river seine | | 183-m haul seine | | 6.1-m otter trawl | |
| | Veg | Unveg | Shore | Over | Nonover | Over | Nonover | | |
| | E=113 | E=51 | E=216 | E=152 | E=64 | E=151 | E=77 | E=96 | E=920 |
| *Lutjanus jocu* | . | . | . | 3 | 1 | . | . | . | 4 |
| *Lutjanus* sp. | . | . | 1 | . | . | . | . | . | 1 |
| *Lutjanus synagris* | 6 | . | 7 | . | . | . | 10 | 15 | 38 |
| *Malaclemys terrapin* | . | . | . | . | . | 8 | . | . | 8 |
| *Megalops atlanticus* | . | . | . | . | . | 4 | 3 | . | 7 |
| *Membras martinica* | 35 | . | 60 | . | 1 | . | . | . | 96 |
| *Menidia* spp. | 659 | 102 | 3,180 | 638 | 653 | . | . | . | 5,232 |
| *Menippe* sp. | . | . | . | . | . | . | . | 1 | 1 |
| *Menticirrhus americanus* | 16 | 53 | 124 | . | . | 116 | 63 | 22 | 394 |
| *Microgobius gulosus* | 1,325 | 121 | 1,539 | 218 | 70 | . | . | 13 | 3,286 |
| *Microgobius microlepis* | 1 | . | 1 | . | . | . | . | 4 | 6 |
| *Microgobius thalassinus* | 1 | 20 | . | 4 | . | . | . | 1 | 26 |
| *Microphis brachyurus* | . | . | . | 15 | 2 | . | . | . | 17 |
| *Micropogonias undulatus* | 24 | 7 | 407 | 2,281 | 48 | 20 | 3 | 118 | 2,908 |
| *Micropterus salmoides* | . | . | . | 10 | 12 | . | . | . | 22 |
| *Mugil cephalus* | 27 | 3 | 1,346 | 222 | 454 | 1,845 | 775 | . | 4,672 |
| *Mugil curema* | 9 | 3 | 193 | 87 | 79 | 1,526 | 764 | . | 2,661 |
| *Mugil gyrans* | . | . | 1 | 1 | 1 | . | . | . | 3 |
| *Mugil* spp. | . | . | 1 | . | . | . | . | . | 1 |
| *Mycteroperca bonaci* | . | . | . | . | . | . | 3 | . | 3 |
| *Mycteroperca microlepis* | . | . | . | . | . | . | 16 | . | 16 |
| *Nicholsina usta* | . | . | . | . | . | . | 3 | . | 3 |
| *Notemigonus crysoleucas* | . | . | . | 1 | . | . | . | . | 1 |
| *Notropis maculatus* | . | . | . | 20 | 116 | . | . | . | 136 |
| *Notropis petersoni* | . | . | . | . | 10 | . | . | . | 10 |
| *Notropis* spp. | . | . | . | . | 2 | . | . | . | 2 |
| *Ocyurus chrysurus* | . | . | . | . | . | . | . | 3 | 3 |
| *Oligoplites saurus* | 73 | 18 | 128 | 5 | 7 | 44 | 65 | 1 | 341 |
| *Opisthonema oglinum* | 18 | 165 | 12 | 59 | 14 | 136 | 960 | 2 | 1,366 |
| *Opsanus tau* | . | 1 | 1 | . | . | 7 | 4 | 12 | 25 |
| *Oreochromis aureus* | . | . | . | 1 | . | . | . | . | 1 |
| *Oreochromis* sp. | . | . | . | . | 1 | . | . | . | 1 |

Appendix IR08-02. (Continued)

| *Species* | Gear and Strata | | | | | | | | Totals |
|---|---|---|---|---|---|---|---|---|---|
| | 21.3-m bay seine | | | 21.3-m river seine | | 183-m haul seine | | 6.1-m otter trawl | |
| | Veg | Unveg | Shore | Over | Nonover | Over | Nonover | | |
| | E=113 | E=51 | E=216 | E=152 | E=64 | E=151 | E=77 | E=96 | E=920 |
| *Orthopristis chrysoptera* | 415 | . | 24 | . | 1 | 365 | 2,211 | 346 | 3,362 |
| *Ostraciidae* spp. | . | . | . | . | . | . | . | 2 | 2 |
| *Panulirus argus* | 1 | . | . | . | . | . | . | . | 1 |
| *Paralichthys albigutta* | 1 | . | 1 | . | . | 6 | 8 | 2 | 18 |
| *Paralichthys lethostigma* | . | . | 1 | . | . | 1 | . | . | 2 |
| *Poecilia latipinna* | 9 | . | 221 | 70 | 130 | . | . | . | 430 |
| *Pogonias cromis* | . | . | 5 | . | . | 64 | 77 | 1 | 147 |
| *Pomatomus saltatrix* | . | . | . | . | 2 | . | 2 | . | 4 |
| *Pomoxis nigromaculatus* | . | . | . | 4 | 29 | . | . | . | 33 |
| *Portunus* spp. | . | . | . | . | . | . | . | 11 | 11 |
| *Prionotus scitulus* | . | . | . | . | . | 15 | 14 | 8 | 37 |
| *Prionotus tribulus* | . | . | . | 2 | . | 1 | 1 | 4 | 8 |
| *Pseudemys peninsularis* | . | . | . | 1 | 2 | . | . | . | 3 |
| *Pterygoplichthys* spp. | . | . | . | 7 | 3 | . | . | . | 10 |
| *Rhinoptera bonasus* | . | . | . | . | . | . | 18 | . | 18 |
| *Sardinella aurita* | . | . | . | . | . | . | 2 | . | 2 |
| *Sarotherodon melanotheron* | . | . | 1 | . | . | 19 | 3 | . | 23 |
| *Sciaenops ocellatus* | 8 | 1 | 816 | 326 | 331 | 240 | 102 | 2 | 1,826 |
| *Scomberomorus maculatus* | . | . | . | . | . | 21 | 14 | . | 35 |
| *Scomberomorus regalis* | . | . | . | . | . | . | 3 | . | 3 |
| *Scorpaena grandicornis* | . | . | . | . | . | . | 1 | . | 1 |
| *Selene vomer* | 1 | . | 1 | . | . | 45 | 51 | 2 | 100 |
| *Sicyonia laevigata* | . | . | . | . | . | . | . | 1 | 1 |
| *Sicyonia parri* | . | . | . | . | . | . | . | 2 | 2 |
| *Sparisoma rubripinne* | . | . | . | . | . | . | 1 | . | 1 |
| *Sphoeroides nephelus* | 44 | 12 | 50 | . | 3 | 1,142 | 811 | 45 | 2,107 |
| *Sphoeroides spengleri* | 3 | 1 | . | . | . | 4 | 6 | 3 | 17 |
| *Sphoeroides* spp. | 1 | . | 1 | . | . | . | . | . | 2 |
| *Sphoeroides testudineus* | 2 | . | 33 | 7 | 18 | 68 | 175 | 25 | 328 |
| *Sphyraena barracuda* | 4 | 1 | 11 | 3 | 1 | 15 | 23 | . | 58 |
| *Stephanolepis hispidus* | 2 | . | 1 | . | . | . | 9 | 5 | 17 |

Appendix IR08-02. (Continued)

| Species | Gear and Strata | | | | | | | | Totals |
|---|---|---|---|---|---|---|---|---|---|
| | 21.3-m bay seine | | | 21.3-m river seine | | 183-m haul seine | | 6.1-m otter trawl | |
| | Veg | Unveg | Shore | Over | Nonover | Over | Nonover | | |
| | E=113 | E=51 | E=216 | E=152 | E=64 | E=151 | E=77 | E=96 | E=920 |
| *Strongylura marina* | . | 3 | 1 | 5 | 4 | 12 | 11 | . | 36 |
| *Strongylura notata* | 56 | 14 | 402 | 15 | 26 | 115 | 42 | . | 670 |
| *Strongylura* spp. | 1 | 1 | 5 | 4 | 3 | . | . | . | 14 |
| *Strongylura timucu* | . | . | . | 4 | 1 | . | . | . | 5 |
| *Symphurus plagiusa* | . | . | . | . | . | 1 | 1 | 2 | 4 |
| *Syngnathus louisianae* | 11 | 3 | 23 | 2 | . | . | . | 23 | 62 |
| *Syngnathus scovelli* | 283 | 8 | 264 | 5 | 22 | . | . | 468 | 1,050 |
| *Synodus foetens* | 4 | 1 | 13 | 1 | 5 | 7 | 11 | 21 | 63 |
| *Tilapia mariae* | . | . | . | 22 | 23 | . | . | . | 45 |
| *Tilapia* spp. | . | . | 13 | 15 | 40 | . | . | . | 68 |
| *Trachinotus carolinus* | . | . | 5 | . | . | 1 | 24 | . | 30 |
| *Trachinotus falcatus* | . | . | 102 | . | 1 | 5 | 37 | . | 145 |
| *Trinectes maculatus* | . | . | 5 | 175 | 189 | . | 2 | 1 | 372 |
| **Totals** | **34,854** | **4,191** | **122,361** | **150,615** | **57,598** | **27,776** | **31,210** | **8,049** | **436,654** |

Appendix IR08-03 Summary by zone of species collected during northern Indian River Lagoon stratified-random sampling, 2008. Zones A-C and H were located in the Indian River; Zones D-E encompassed the Banana River; and Zones F and O encompassed the Sebastian River and Turkey Creek, respectively. Effort, or the total number of hauls, is labeled 'E'. Taxa are arranged alphabetically.

| ***Species*** | **Zone** | | | | | | | | **Totals** |
|---|---|---|---|---|---|---|---|---|---|
| | **A** | **B** | **C** | **D** | **E** | **H** | **F** | **O** | |
| | **E=16** | **E=14** | **E=168** | **E=168** | **E=62** | **E=276** | **E=168** | **E=48** | **E=920** |
| *Acanthostracion quadricornis* | . | . | . | . | . | 3 | . | . | 3 |
| *Achirus lineatus* | 2 | . | 90 | 22 | 17 | 61 | 37 | 16 | 245 |
| *Agonostomus monticola* | . | . | . | . | . | . | 4 | . | 4 |
| *Albula vulpes* | . | . | 12 | 4 | . | 9 | 7 | . | 32 |
| *Aluterus schoepfii* | . | . | 2 | 1 | . | 6 | . | . | 9 |
| *Ameiurus catus* | . | . | . | . | . | . | 2 | . | 2 |
| *Anchoa hepsetus* | . | . | 4 | . | . | 81 | 364 | 3 | 452 |
| *Anchoa mitchilli* | 1,640 | 818 | 39,320 | 5,660 | 4,472 | 57,377 | 118,866 | 25,915 | 254,068 |
| *Anisotremus virginicus* | . | . | 1 | . | . | 1 | . | . | 2 |
| *Apalone ferox* | . | . | . | 1 | . | . | . | 2 | 3 |
| *Archosargus probatocephalus* | 4 | . | 182 | 156 | 36 | 906 | 103 | 12 | 1,399 |
| *Archosargus rhomboidalis* | . | . | . | . | . | 39 | . | . | 39 |
| *Archosargus* spp. | . | . | . | . | . | 4 | . | . | 4 |
| *Ariopsis felis* | 1 | 8 | 616 | 930 | 1,090 | 604 | 8 | . | 3,257 |
| *Astroscopus y-graecum* | . | . | . | . | . | 1 | . | . | 1 |
| *Bagre marinus* | . | . | 3 | 1 | . | . | . | . | 4 |
| *Bairdiella chrysoura* | 31 | 237 | 9,679 | 736 | 759 | 243 | 1 | 4 | 11,690 |
| *Bathygobius soporator* | . | . | . | . | . | 3 | 13 | . | 16 |
| *Brevoortia* spp. | . | . | 439 | 39 | 176 | 53 | 9,592 | 560 | 10,859 |
| *Calamus arctifrons* | . | . | . | . | . | 3 | . | . | 3 |
| *Callinectes bocourti* | . | . | . | . | . | . | 7 | . | 7 |
| *Callinectes ornatus* | . | . | . | . | . | 6 | . | . | 6 |
| *Callinectes sapidus* | 2 | . | 29 | 13 | 8 | 369 | 398 | 10 | 829 |
| *Callinectes similis* | . | . | 1 | 1 | . | 344 | 32 | . | 378 |
| *Callinectes* spp. | . | . | . | . | . | 10 | 1 | . | 11 |
| *Canthidermis sufflamen* | . | . | . | . | . | 1 | . | . | 1 |
| *Caranx hippos* | . | . | 116 | 32 | 12 | 152 | 46 | 1 | 359 |

Appendix IR08-03 (Continued)

| Species | Zone | | | | | | | | Totals |
|---|---|---|---|---|---|---|---|---|---|
| | A | B | C | D | E | H | F | O | |
| | E=16 | E=14 | E=168 | E=168 | E=62 | E=276 | E=168 | E=48 | E=920 |
| *Caranx latus* | . | . | 2 | 4 | . | 18 | 4 | . | 28 |
| *Centropomus ensiferus* | . | . | . | . | . | . | 1 | . | 1 |
| *Centropomus parallelus* | . | . | . | . | . | . | 119 | 9 | 128 |
| *Centropomus pectinatus* | . | . | . | . | . | . | 4 | . | 4 |
| *Centropomus* spp. | . | . | . | . | . | . | 26 | . | 26 |
| *Centropomus undecimalis* | . | . | 56 | 53 | 18 | 284 | 896 | 274 | 1,581 |
| *Chaetodipterus faber* | . | . | 90 | 8 | 4 | 31 | . | . | 133 |
| *Chasmodes saburrae* | 1 | 1 | 22 | 17 | 2 | 62 | . | . | 105 |
| *Chilomycterus schoepfii* | . | 1 | 90 | 38 | 31 | 152 | . | . | 312 |
| *Chloroscombrus chrysurus* | . | . | 157 | 2 | . | 124 | . | . | 283 |
| *Cichlasoma urophthalmus* | . | . | . | . | . | 2 | 1 | 2 | 5 |
| *Citharichthys spilopterus* | . | . | 4 | . | . | 38 | 67 | . | 109 |
| *Clupeidae* spp. | . | . | . | 69 | . | . | 1 | . | 70 |
| *Ctenogobius boleosoma* | . | . | . | . | . | 213 | 3 | . | 216 |
| *Ctenogobius pseudofasciatus* | . | . | . | . | . | . | 8 | . | 8 |
| *Ctenogobius shufeldti* | . | . | . | . | . | . | 4 | . | 4 |
| *Ctenogobius smaragdus* | . | . | . | . | . | 5 | . | . | 5 |
| *Cynoscion* complex | 5 | 28 | 33 | . | 2 | 45 | 22 | . | 135 |
| *Cynoscion nebulosus* | 98 | 36 | 329 | 166 | 101 | 286 | 1 | . | 1,017 |
| *Cyprinodon variegatus* | 6 | . | 60 | 947 | 61 | 2 | . | . | 1,076 |
| *Dasyatis sabina* | 3 | . | 520 | 308 | 585 | 165 | 6 | . | 1,587 |
| *Dasyatis say* | . | . | 34 | 41 | 51 | 30 | . | . | 156 |
| *Diapterus auratus* | 16 | 4 | 3,162 | 428 | 1,148 | 2,142 | 8,987 | 1,451 | 17,338 |
| *Dormitator maculatus* | . | . | . | . | . | . | 29 | 4 | 33 |
| *Dorosoma cepedianum* | . | . | 2 | 1 | . | 38 | 101 | 2 | 144 |
| *Dorosoma petenense* | . | . | 2 | . | . | . | 1,190 | . | 1,192 |
| *Echeneis neucratoides* | . | . | . | 3 | . | . | . | . | 3 |
| *Elops saurus* | . | . | 210 | 240 | 170 | 386 | 43 | 36 | 1,085 |
| *Enneacanthus gloriosus* | . | . | . | . | . | . | . | 6 | 6 |
| *Erimyzon sucetta* | . | . | . | . | . | . | 3 | . | 3 |
| *Erotelis smaragdus* | . | . | . | . | . | . | 1 | . | 1 |
| *Etheostoma fusiforme* | . | . | . | . | . | . | 10 | 2 | 12 |
| *Etropus crossotus* | . | . | . | . | . | 3 | . | . | 3 |

Appendix IR08-03 (Continued)

| Species | Zone | | | | | | | | Totals |
|---|---|---|---|---|---|---|---|---|---|
| | A | B | C | D | E | H | F | O | |
| | E=16 | E=14 | E=168 | E=168 | E=62 | E=276 | E=168 | E=48 | E=920 |
| *Eucinostomus argenteus* | . | . | . | . | . | 22 | . | . | 22 |
| *Eucinostomus gula* | . | . | 109 | 27 | 87 | 2,520 | 100 | . | 2,843 |
| *Eucinostomus harengulus* | 1 | . | 241 | 286 | 464 | 3,044 | 2,738 | 196 | 6,970 |
| *Eucinostomus jonesii* | . | . | . | . | . | 17 | . | . | 17 |
| *Eucinostomus* spp. | 30 | 5 | 920 | 221 | 20 | 6,798 | 14,206 | 588 | 22,788 |
| *Eugerres plumieri* | . | . | 129 | 2 | 6 | 3 | 1,717 | 221 | 2,078 |
| *Evorthodus lyricus* | . | . | . | . | . | 1 | 116 | . | 117 |
| *Farfantepenaeus aztecus* | . | . | . | . | . | 20 | 2 | . | 22 |
| *Farfantepenaeus duorarum* | 1 | . | 11 | 6 | 4 | 138 | 28 | . | 188 |
| *Farfantepenaeus* spp. | 1 | . | 64 | . | 1 | 1,169 | 1,401 | 1 | 2,637 |
| *Floridichthys carpio* | 84 | 117 | 44 | 4,429 | 199 | 43 | 1 | . | 4,917 |
| *Fundulus chrysotus* | . | . | . | . | . | . | . | 8 | 8 |
| *Fundulus grandis* | 1 | 2 | 2 | 7 | . | 1 | 8 | . | 21 |
| *Fundulus seminolis* | . | . | . | . | . | . | 60 | 63 | 123 |
| *Gambusia holbrooki* | . | . | 8 | 40 | . | . | 1,786 | 2,647 | 4,481 |
| *Gerreidae* spp. | . | . | . | . | . | . | 3 | . | 3 |
| *Gerres cinereus* | . | . | 1 | . | 3 | 21 | 34 | . | 59 |
| *Gobiesox strumosus* | . | . | 2 | . | 1 | . | . | . | 3 |
| *Gobiomorus dormitor* | . | . | . | . | . | . | 7 | . | 7 |
| *Gobionellus oceanicus* | . | . | . | . | . | 83 | 30 | . | 113 |
| *Gobiosoma bosc* | . | . | 6 | . | . | 4 | 47 | 97 | 154 |
| *Gobiosoma robustum* | 14 | 1 | 184 | 326 | 6 | 1,334 | 10 | 20 | 1,895 |
| *Gobiosoma* spp. | 10 | 10 | 195 | 247 | 2 | 1,168 | 101 | 68 | 1,801 |
| *Gymnura micrura* | . | . | 2 | 1 | . | 4 | . | . | 7 |
| *Haemulon parra* | . | . | 1 | . | . | 26 | . | . | 27 |
| *Haemulon plumierii* | . | . | . | . | . | 15 | . | . | 15 |
| *Haemulon sciurus* | . | . | . | . | . | 1 | . | . | 1 |
| *Haemulon* sp. | . | . | . | . | . | 1 | . | . | 1 |
| *Harengula jaguana* | . | . | 107 | 1 | 24 | 1,672 | 85 | . | 1,889 |
| *Heterandria formosa* | . | . | . | . | . | . | 12 | 82 | 94 |
| *Hippocampus erectus* | . | . | 3 | 1 | 1 | 7 | . | . | 12 |
| *Hippocampus zosterae* | . | 1 | . | 12 | 2 | 10 | . | . | 25 |
| *Hyporhamphus meeki* | 1 | 1 | 23 | 9 | 2 | 38 | . | . | 74 |

Appendix IR08-03 (Continued)

| Species | Zone | | | | | | | | Totals |
|---|---|---|---|---|---|---|---|---|---|
| | A | B | C | D | E | H | F | O | |
| | E=16 | E=14 | E=168 | E=168 | E=62 | E=276 | E=168 | E=48 | E=920 |
| *Hyporhamphus* spp. | . | . | 1 | 1 | . | 1 | . | . | 3 |
| *Hyporhamphus unifasciatus* | . | . | . | 1 | . | . | . | . | 1 |
| *Jordanella floridae* | . | . | . | . | . | . | 2 | 1 | 3 |
| *Labidesthes sicculus* | . | . | . | . | . | . | 906 | 295 | 1,201 |
| *Lachnolaimus maximus* | . | . | . | . | . | 5 | . | . | 5 |
| *Lactophrys trigonus* | . | . | 1 | . | 1 | 2 | . | . | 4 |
| *Lactophrys triqueter* | . | . | . | . | . | 1 | . | . | 1 |
| *Lagodon rhomboides* | 2 | . | 1,218 | 2,572 | 1,626 | 15,339 | 908 | 2 | 21,667 |
| *Leiostomus xanthurus* | . | . | 608 | 270 | 27 | 420 | 1,328 | 4 | 2,657 |
| *Lepisosteus osseus* | . | . | . | . | . | . | 1 | . | 1 |
| *Lepisosteus platyrhincus* | . | . | . | 1 | . | . | 12 | 3 | 16 |
| *Lepomis auritus* | . | . | . | . | . | . | . | 18 | 18 |
| *Lepomis gulosus* | . | . | . | . | . | . | 3 | 3 | 6 |
| *Lepomis macrochirus* | . | . | . | . | . | . | 776 | 221 | 997 |
| *Lepomis marginatus* | . | . | . | . | . | . | . | 3 | 3 |
| *Lepomis microlophus* | . | . | . | . | . | . | 22 | 22 | 44 |
| *Lepomis punctatus* | . | . | . | . | . | . | 1 | 16 | 17 |
| *Lepomis* spp. | . | . | . | . | . | . | 314 | 93 | 407 |
| *Limulus polyphemus* | . | . | 2 | 7 | 17 | . | . | . | 26 |
| *Litopenaeus setiferus* | 1 | 1 | 5 | . | . | 2 | 54 | 36 | 99 |
| *Lobotes surinamensis* | . | . | . | . | . | 2 | . | . | 2 |
| *Lophogobius cyprinoides* | . | . | . | . | . | . | 180 | 136 | 316 |
| *Lucania goodei* | . | . | . | . | . | . | 29 | 100 | 129 |
| *Lucania parva* | 758 | 103 | 106 | 10,460 | 376 | 187 | 98 | 237 | 12,325 |
| *Lupinoblennius nicholsi* | . | . | . | . | . | . | 8 | . | 8 |
| *Lutjanus analis* | . | . | . | . | . | 94 | . | . | 94 |
| *Lutjanus cyanopterus* | . | . | . | . | . | 1 | . | . | 1 |
| *Lutjanus griseus* | . | . | 24 | 7 | 8 | 153 | 42 | 1 | 235 |
| *Lutjanus jocu* | . | . | . | . | . | . | 4 | . | 4 |
| *Lutjanus* sp. | . | . | . | . | . | 1 | . | . | 1 |
| *Lutjanus synagris* | . | . | . | . | . | 38 | . | . | 38 |
| *Malaclemys terrapin* | . | . | . | . | 3 | 5 | . | . | 8 |
| *Megalops atlanticus* | . | . | . | . | 4 | 3 | . | . | 7 |
| *Membras martinica* | 7 | 7 | 56 | 22 | 3 | . | 1 | . | 96 |

Appendix IR08-03 (Continued)

| Species | Zone | | | | | | | | Totals |
|---|---|---|---|---|---|---|---|---|---|
| | A | B | C | D | E | H | F | O | |
| | E=16 | E=14 | E=168 | E=168 | E=62 | E=276 | E=168 | E=48 | E=920 |
| *Menidia* spp. | 38 | 63 | 735 | 2,381 | 122 | 602 | 1,164 | 127 | 5,232 |
| *Menippe* sp. | . | . | . | . | . | 1 | . | . | 1 |
| *Menticirrhus americanus* | 47 | 10 | 210 | 11 | 64 | 52 | . | . | 394 |
| *Microgobius gulosus* | 59 | 29 | 408 | 1,857 | 155 | 490 | 159 | 129 | 3,286 |
| *Microgobius microlepis* | . | . | . | . | . | 6 | . | . | 6 |
| *Microgobius thalassinus* | . | . | 21 | . | . | 1 | 3 | 1 | 26 |
| *Microphis brachyurus* | . | . | . | . | . | . | 11 | 6 | 17 |
| *Micropogonias undulatus* | 11 | 2 | 73 | 2 | 3 | 488 | 2,329 | . | 2,908 |
| *Micropterus salmoides* | . | . | . | . | . | . | 17 | 5 | 22 |
| *Mugil cephalus* | 2 | 1 | 436 | 1,786 | 194 | 1,577 | 639 | 37 | 4,672 |
| *Mugil curema* | 9 | 2 | 439 | 580 | 512 | 953 | 164 | 2 | 2,661 |
| *Mugil gyrans* | . | . | . | . | . | 1 | 2 | . | 3 |
| *Mugil* spp. | . | . | . | . | . | 1 | . | . | 1 |
| *Mycteroperca bonaci* | . | . | . | . | . | 3 | . | . | 3 |
| *Mycteroperca microlepis* | . | . | . | . | . | 16 | . | . | 16 |
| *Nicholsina usta* | . | . | . | . | . | 3 | . | . | 3 |
| *Notemigonus crysoleucas* | . | . | . | . | . | . | 1 | . | 1 |
| *Notropis maculatus* | . | . | . | . | . | . | 131 | 5 | 136 |
| *Notropis petersoni* | . | . | . | . | . | . | 10 | . | 10 |
| *Notropis* spp. | . | . | . | . | . | . | . | 2 | 2 |
| *Ocyurus chrysurus* | . | . | . | . | . | 3 | . | . | 3 |
| *Oligoplites saurus* | 8 | 6 | 193 | 57 | 8 | 57 | 12 | . | 341 |
| *Opisthonema oglinum* | . | . | 107 | 27 | 70 | 1,089 | 38 | 35 | 1,366 |
| *Opsanus tau* | . | . | 9 | . | 1 | 15 | . | . | 25 |
| *Oreochromis aureus* | . | . | . | . | . | . | . | 1 | 1 |
| *Oreochromis* sp. | . | . | . | . | . | . | . | 1 | 1 |
| *Orthopristis chrysoptera* | . | . | 164 | 19 | 5 | 3,173 | 1 | . | 3,362 |
| *Ostraciidae* spp. | . | . | . | . | . | 2 | . | . | 2 |
| *Panulirus argus* | . | . | . | . | . | 1 | . | . | 1 |
| *Paralichthys albigutta* | . | . | . | . | . | 18 | . | . | 18 |
| *Paralichthys lethostigma* | . | . | . | 1 | . | 1 | . | . | 2 |
| *Poecilia latipinna* | 4 | 66 | 20 | 139 | . | 1 | 27 | 173 | 430 |
| *Pogonias cromis* | . | . | 29 | 55 | 4 | 59 | . | . | 147 |

Appendix IR08-03 (Continued)

| *Species* | Zone | | | | | | | | Totals |
|---|---|---|---|---|---|---|---|---|---|
| | A | B | C | D | E | H | F | O | |
| | E=16 | E=14 | E=168 | E=168 | E=62 | E=276 | E=168 | E=48 | E=920 |
| *Pomatomus saltatrix* | . | . | . | . | . | 2 | 2 | . | 4 |
| *Pomoxis nigromaculatus* | . | . | . | . | . | . | 33 | . | 33 |
| *Portunus* spp. | . | . | . | . | . | 11 | . | . | 11 |
| *Prionotus scitulus* | . | . | 13 | 5 | 9 | 10 | . | . | 37 |
| *Prionotus tribulus* | . | . | . | . | . | 6 | 2 | . | 8 |
| *Pseudemys peninsularis* | . | . | . | . | . | . | 2 | 1 | 3 |
| *Pterygoplichthys* spp. | . | . | . | . | . | . | 4 | 6 | 10 |
| *Rhinoptera bonasus* | . | . | . | . | . | 18 | . | . | 18 |
| *Sardinella aurita* | . | . | . | . | . | 2 | . | . | 2 |
| *Sarotherodon melanotheron* | . | . | 1 | 20 | 2 | . | . | . | 23 |
| *Sciaenops ocellatus* | 10 | 2 | 111 | 172 | 39 | 835 | 657 | . | 1,826 |
| *Scomberomorus maculatus* | . | . | 18 | . | . | 17 | . | . | 35 |
| *Scomberomorus regalis* | . | . | . | . | . | 3 | . | . | 3 |
| *Scorpaena grandicornis* | . | . | . | . | . | 1 | . | . | 1 |
| *Selene vomer* | . | . | . | 1 | 2 | 97 | . | . | 100 |
| *Sicyonia laevigata* | . | . | . | . | . | 1 | . | . | 1 |
| *Sicyonia parri* | . | . | . | . | . | 2 | . | . | 2 |
| *Sparisoma rubripinne* | . | . | . | . | . | 1 | . | . | 1 |
| *Sphoeroides nephelus* | 1 | 1 | 465 | 1,064 | 327 | 246 | 3 | . | 2,107 |
| *Sphoeroides spengleri* | . | . | 5 | 1 | . | 11 | . | . | 17 |
| *Sphoeroides* spp. | . | . | . | . | . | 2 | . | . | 2 |
| *Sphoeroides testudineus* | . | . | 6 | . | . | 297 | 25 | . | 328 |
| *Sphyraena barracuda* | . | . | 8 | . | . | 46 | 4 | . | 58 |
| *Stephanolepis hispidus* | . | . | . | . | . | 17 | . | . | 17 |
| *Strongylura marina* | . | . | 10 | 3 | 4 | 10 | 8 | 1 | 36 |
| *Strongylura notata* | 23 | 5 | 82 | 339 | 73 | 107 | 36 | 5 | 670 |
| *Strongylura* spp. | 1 | . | 2 | 4 | . | . | 7 | . | 14 |
| *Strongylura timucu* | . | . | . | . | . | . | 5 | . | 5 |
| *Symphurus plagiusa* | . | . | 1 | . | . | 3 | . | . | 4 |
| *Syngnathus louisianae* | 2 | 4 | 13 | 4 | 3 | 34 | 2 | . | 62 |
| *Syngnathus scovelli* | 5 | 7 | 120 | 294 | 7 | 590 | 6 | 21 | 1,050 |
| *Synodus foetens* | . | . | 2 | 1 | . | 54 | 6 | . | 63 |

Appendix IR08-03 (Continued)

| Species | Zone | | | | | | | | Totals |
|---|---|---|---|---|---|---|---|---|---|
| | A | B | C | D | E | H | F | O | |
| | E=16 | E=14 | E=168 | E=168 | E=62 | E=276 | E=168 | E=48 | E=920 |
| *Tilapia mariae* | . | . | . | . | . | . | 3 | 42 | 45 |
| *Tilapia* spp. | . | . | . | 2 | . | 11 | 15 | 40 | 68 |
| *Trachinotus carolinus* | . | . | 23 | . | 1 | 6 | . | . | 30 |
| *Trachinotus falcatus* | . | . | 27 | 11 | . | 106 | 1 | . | 145 |
| *Trinectes maculatus* | 2 | . | 1 | 4 | . | 1 | 171 | 193 | 372 |
| Totals | 2,942 | 1,579 | 63,092 | 37,717 | 13,235 | 109,876 | 173,889 | 34,324 | 436,654 |

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## *Cedar Key*

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

The Fisheries-Independent Monitoring (FIM) program has conducted intensive sampling in the Cedar Key area since 1996. The area sampled was divided into two geographically-defined bay zones (B and C) and one riverine zone (F; Figure CK08-01). Monthly stratified-random sampling (SRS) was conducted in Zones B and C using 21.3-m bay seines, 183-m haul seines, and 6.1-m bay otter trawls. Zone B was also sampled using 21.3-m river seines. Monthly SRS was conducted in Zone F with 21.3-m river seines and 6.1-m river otter trawls. All methods were the same as those described in the Methods section of this report. This section summarizes data collected by the FIM program during 2008 in the Cedar Key area.

### Stratified-Random Sampling

A total of 174,950 fishes (139 taxa) and selected invertebrates (seven taxa) were collected from 792 Cedar Key SRS samples in 2008 (Table CK08-01; Appendices CK08-01 and -02). *Anchoa mitchilli* (n=95,951) was the most numerous species collected, representing 54.8% of the total catch. *Leiostomus xanthurus* (n=15,901) and *Lagodon rhomboides* (n=10,144) were the second- and third-most abundant taxa collected, accounting for an additional 14.9% of the total catch. Twenty-seven Selected Taxa (n=27,118 animals) composed 15.5% of the total catch. *Leiostomus xanthurus* (n=15,901) was the most abundant Selected Taxon, representing 9.1% of the annual catch. Collections in 2008 included two species new to the Cedar Key FIM collection: *Sicyonia laevigata* (hardback rock shrimp) and *Sicyonia typica* (kinglet rock shrimp).

## Bay Sampling

*21.3-m Bay Seine.* A total of 49,550 animals were collected in 252 21.3-m bay seines, representing 28.3% of the overall SRS catch (Table CK08-01). *Anchoa mitchilli* (n=19,080) was the most abundant taxon, accounting for 38.5% of the 21.3-m bay seine catch (Table CK08-02). The taxa most frequently caught in 21.3-m bay seines were *A. mitchilli* (41.7% occurrence) and *L. rhomboides* (40.9% occurrence).

A total of 10,501 animals from 22 Selected Taxa were collected, representing 21.2% of the entire 21.3-m bay seine catch (Table CK08-03). *Leiostomus xanthurus* (n=8,071) was the most abundant Selected Taxon, accounting for 76.9% of the Selected Taxa collected by this gear. The Selected Taxon most frequently caught in 21.3-m bay seines was *L. xanthurus* (28.2% occurrence).

*183-m Haul Seine.* A total of 22,530 animals were collected in 192 183-m haul seines, representing 12.9% of the overall SRS catch (Table CK08-01). *Lagodon rhomboides* (n=6,590), *Bairdiella chrysoura* (n=3,468) and *L. xanthurus* (n=2,144) were the most abundant taxa, accounting for 54.2% of the 183-m haul seine catch (Table CK08-04). The taxa most frequently caught in 183-m haul seines were *Dasyatis sabina* (76.0% occurrence) and *L. rhomboides* (70.8% occurrence).

A total of 6,464 animals from 24 Selected Taxa were collected, representing 28.7% of the entire 183-m haul seine catch (Table CK08-05). *Leiostomus xanthurus* (n=2,144) and *Mugil cephalus* (n=2,094) were the most abundant Selected Taxa, accounting for 65.6% of the Selected Taxa collected by this gear. The Selected Taxon most frequently caught in 183-m haul seines was *M. cephalus* (68.8% occurrence).

*6.1-m Bay Otter Trawl.* A total of 10,102 animals were collected in 120 6.1-m bay otter trawls, representing 5.8% of the overall SRS catch (Table CK08-01). *Anchoa mitchilli* (n=1,654), was the most abundant taxon, accounting for 16.4% of the 6.1-m bay otter trawl catch (Table CK08-06). The taxon most frequently caught in 6.1-m bay otter trawls was *Etropus crossotus* (65.0% occurrence).

A total of 2,850 animals from 14 Selected Taxa were collected, representing 28.2% of the entire 6.1-m bay otter trawl catch (Table CK08-07). *Cynoscion arenarius* (n=1,136) and *Menippe* spp. (n=786) were the most abundant Selected Taxa, accounting for 67.4% of the Selected Taxa collected by this gear. The Selected Taxon most frequently caught in 6.1-m bay otter trawls was *Menippe* spp. (62.5% occurrence).

## River Sampling

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

### Tidal Creeks

*21.3-m River Seines.* A total of 71,446 animals were collected in 108 21.3-m river seines conducted in tidal creeks, representing 40.8% of the overall SRS catch (Table CK08-01). *Anchoa mitchilli* (n=60,598) was the most abundant taxon collected, accounting for 84.8% of the total 21.3-m river seine catch in tidal creeks (Table CK08-08). The taxa most frequently caught in 21.3-m river seines conducted in tidal creeks were *Menidia* spp. (76.9% occurrence) and *A. mitchilli* (71.3% occurrence).

A total of 4,984 animals from 16 Selected Taxa were collected, representing 7.0% of the entire 21.3-m river seine catch in tidal creeks (Table CK08-09). *Leiostomus xanthurus* (n=4,326) was the most abundant Selected Taxon, accounting for 86.8% of the Selected Taxa collected by this gear. The Selected Taxon most frequently caught in 21.3-m river seines conducted in tidal creeks was *L. xanthurus* (47.2% occurrence).

### Lower Suwannee River

*21.3-m River Seines.* A total of 17,896 animals were collected in 60 21.3-m river seine samples conducted in the lower Suwannee River (LSR), representing 10.2% of the overall SRS catch (Table CK08-01). *Anchoa mitchilli* (n=13,615) and *Membras martinica* (n=927) were the most abundant taxa collected, accounting for 81.3% of the total 21.3-m river seine catch in the LSR (Table CK08-10). The taxa most frequently caught in 21.3-m river seines conducted in the LSR were *A. mitchilli* (53.3% occurrence) and *Eucinostomus* spp. (50.0% occurrence).

A total of 803 animals from 12 Selected Taxa were collected, representing 4.5% of the entire 21.3-m river seine catch in the LSR (Table CK08-11). *Leiostomus* *xanthurus* (n=649), was the most abundant Selected Taxon, accounting for 80.8% of the Selected Taxa collected by this gear. The Selected Taxon most frequently caught in 21.3-m river seines conducted in the LSR was *Callinectes sapidus* (36.7% occurrence).

*6.1-m River Otter Trawl.* A total of 3,426 animals were collected in 60 6.1-m river otter trawls, representing 2.0% of the overall SRS catch (Table CK08-01). *Anchoa mitchilli* (n=1,004) was the most abundant taxon collected, accounting for 29.3% of the 6.1-m river otter trawl catch (Table CK08-12). The taxon most frequently caught in 6.1-m river otter trawls was *C. sapidus* (56.7% occurrence).

A total of 1,516 animals from 14 Selected Taxa were collected, representing 44.2% of the entire 6.1-m river otter trawl catch (Table CK08-13). *Micropogonias undulatus* (n=601), *L. xanthurus* (n=539), and *C. sapidus* (n=215) were the most abundant Selected Taxa, accounting for 89.4% of the Selected Taxa captured by this gear. The Selected Taxon most frequently caught in 6.1-m river otter trawls was *C. sapidus* (56.7% occurrence).

## References

Lindberg, W.J., T.M. Bert, and G.P. Genoni. 1992. Alternative hypotheses for low landings in the Cedar Key stone crab (genus *Menippe*) fishery, 1984-85, pp. 50-57. *In* Proceedings of a workshop on stone crab (genus *Menippe*) biology and fisheries. Fla. Mar. Res. Publ. No. 50.

Tuckey, T. D. and M. Dehaven. 2006. Fish assemblages found in tidal-creek and Seagrass habitats in the Suwannee River Estuary. Fish. Bull. 104(1):102-117.

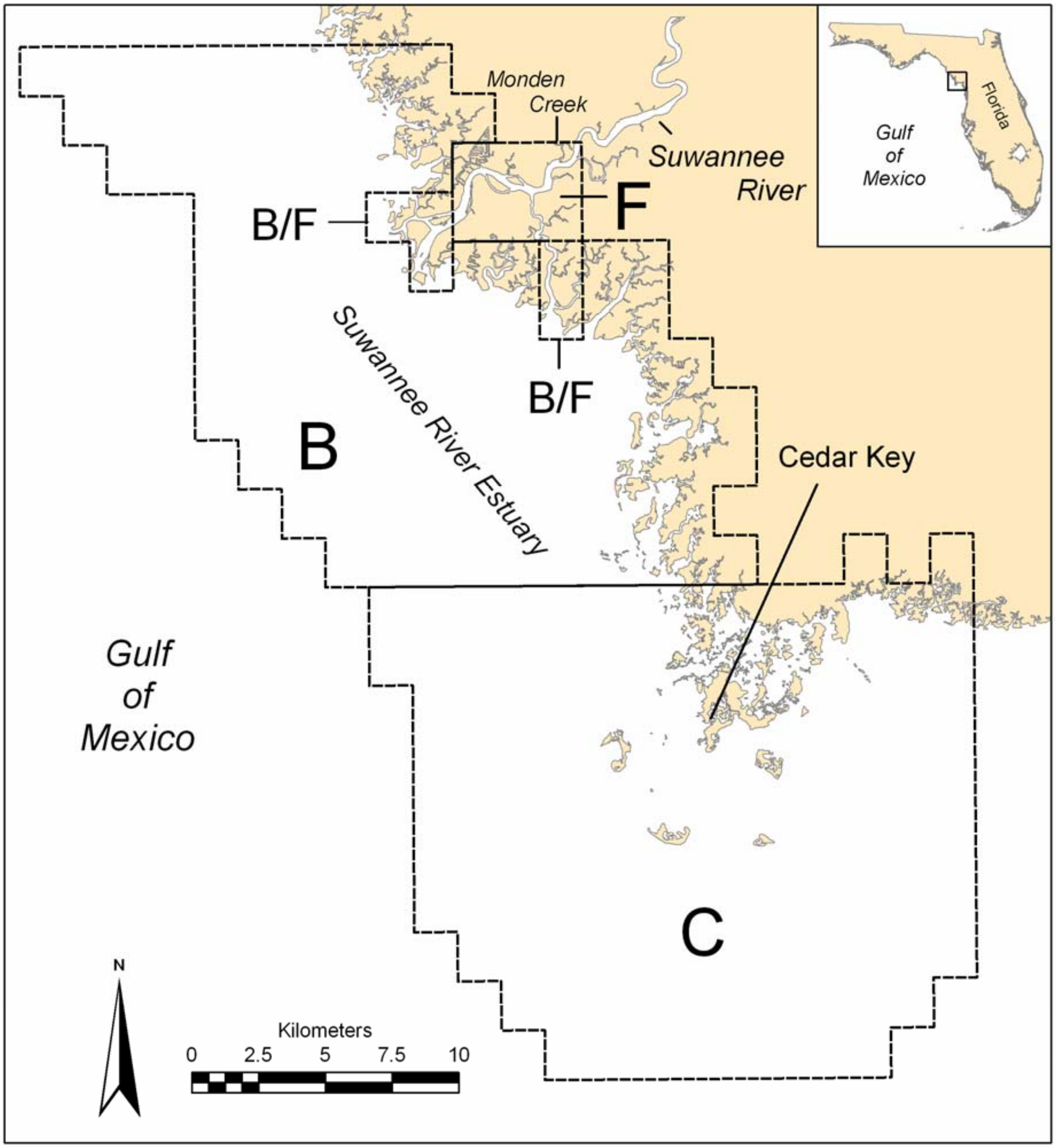


Figure CK08-01. Map of Cedar Key sampling area. Zones are labeled B, C, and F. Grids containing portions of Zones B and F are labeled B/F.

Table CK08-01. Summary of catch and effort data for Cedar Key stratified-random sampling, 2008.

| 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 | 27,304 | 120 | 71,446 | 108 | 6,952 | 96 | 4,245 | 60 | 109,947 | 384 |
| C | 22,246 | 132 | . | . | 15,578 | 96 | 5,857 | 60 | 43,682 | 288 |
| F | . | . | 17,896 | 60 | . | . | 3,426 | 60 | 21,322 | 120 |
| **Totals** | **49,550** | **252** | **89,342** | **168** | **22,530** | **192** | **13,528** | **180** | **174,950** | **792** |

Table CK08-02. Catch statistics for 10 dominant taxa collected in 252 21.3-m bay seine samples during Cedar Key stratified-random sampling, 2008. Percent (%) is the percent of the total catch represented by that taxon; percent occurrence (% Occur) is the percentage of samples in which that taxon was collected; CV is the coefficient of variation of the mean. Taxa are ranked in order of decreasing mean density.

| Species | Number | | % Occur | Density Estimate (animals/100m$^2$) | | | | Standard Length (mm) | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | No. | % | | Mean | Stderr | CV | Max | Mean | Stderr | Min | Max |
| *Anchoa mitchilli* | 19,080 | 38.5 | 41.7 | 54.08 | 16.03 | 470.49 | 2,607.86 | 33 | 0.05 | 15 | 74 |
| *Leiostomus xanthurus* | 8,071 | 16.3 | 28.2 | 22.88 | 8.47 | 587.61 | 1,328.57 | 23 | 0.10 | 11 | 175 |
| *Membras martinica* | 7,803 | 15.7 | 33.3 | 22.12 | 10.80 | 775.30 | 2,605.71 | 38 | 0.15 | 19 | 112 |
| *Anchoa hepsetus* | 3,156 | 6.4 | 19.8 | 8.95 | 3.43 | 607.86 | 468.57 | 40 | 0.17 | 16 | 111 |
| *Lagodon rhomboides* | 2,138 | 4.3 | 40.9 | 6.06 | 1.50 | 392.04 | 272.86 | 38 | 0.50 | 11 | 150 |
| *Bairdiella chrysoura* | 1,316 | 2.7 | 9.9 | 3.73 | 1.57 | 668.80 | 273.57 | 40 | 0.59 | 11 | 157 |
| *Menidia* spp. | 1,059 | 2.1 | 29.8 | 3.00 | 0.90 | 475.22 | 195.00 | 66 | 0.46 | 22 | 99 |
| *Eucinostomus* spp. | 944 | 1.9 | 19.8 | 2.68 | 1.02 | 602.70 | 227.14 | 26 | 0.23 | 10 | 39 |
| *Orthopristis chrysoptera* | 863 | 1.7 | 12.3 | 2.45 | 1.22 | 791.18 | 278.57 | 40 | 0.83 | 10 | 172 |
| *Mugil cephalus* | 700 | 1.4 | 11.1 | 1.98 | 1.05 | 836.24 | 225.00 | 26 | 0.83 | 17 | 242 |
| Subtotal | 45,130 | 91.0 | . | . | . | . | . | . | . | 10 | 242 |
| **Totals** | **49,550** | **100.0** | **.** | **140.45** | **23.66** | **267.38** | **3,049.29** | **.** | **.** | **2** | **785** |

Table CK08-03. Catch statistics for Selected Taxa collected in 252 21.3-m bay seine samples during Cedar Key stratified-random sampling, 2008. Percent (%) is the percent of the total catch represented by that taxon; percent occurrence (% Occur) is the percentage of samples in which that taxon was collected; CV is the coefficient of variation of the mean. Taxa are ranked in order of decreasing mean density.

| **Species** | **Number** | | **% Occur** | **Density Estimate (animals/100m$^2$)** | | | | **Standard Length (mm)** | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | **No.** | **%** | | **Mean** | **Stderr** | **CV** | **Max** | **Mean** | **Stderr** | **Min** | **Max** |
| *Leiostomus xanthurus* | 8,071 | 16.3 | 28.2 | 22.88 | 8.47 | 587.61 | 1,328.57 | 23 | 0.10 | 11 | 175 |
| *Mugil cephalus* | 700 | 1.4 | 11.1 | 1.98 | 1.05 | 836.24 | 225.00 | 26 | 0.83 | 17 | 242 |
| *Mugil gyrans* | 641 | 1.3 | 0.8 | 1.82 | 1.81 | 1,584.97 | 457.14 | 17 | 0.12 | 16 | 94 |
| *Farfantepenaeus duorarum* | 272 | 0.5 | 19.4 | 0.77 | 0.23 | 469.08 | 35.00 | 8 | 0.25 | 2 | 29 |
| *Menticirrhus americanus* | 237 | 0.5 | 14.7 | 0.67 | 0.14 | 336.78 | 20.71 | 46 | 1.67 | 14 | 245 |
| *Cynoscion arenarius* | 176 | 0.4 | 9.9 | 0.50 | 0.18 | 562.88 | 32.86 | 27 | 0.99 | 10 | 88 |
| *Callinectes sapidus* | 139 | 0.3 | 20.6 | 0.39 | 0.08 | 332.51 | 12.86 | 21 | 1.16 | 5 | 95 |
| *Mugil curema* | 90 | 0.2 | 4.0 | 0.26 | 0.20 | 1,257.41 | 50.71 | 45 | 4.56 | 26 | 205 |
| *Cynoscion nebulosus* | 51 | 0.1 | 6.7 | 0.14 | 0.06 | 696.47 | 12.86 | 45 | 4.02 | 16 | 140 |
| *Paralichthys albigutta* | 34 | 0.1 | 9.1 | 0.10 | 0.02 | 406.26 | 3.57 | 70 | 16.69 | 11 | 462 |
| *Sciaenops ocellatus* | 28 | 0.1 | 6.3 | 0.08 | 0.03 | 510.92 | 5.00 | 83 | 23.18 | 10 | 425 |
| *Menticirrhus saxatilis* | 13 | 0.0 | 3.6 | 0.04 | 0.01 | 627.83 | 2.86 | 45 | 6.39 | 19 | 100 |
| *Trachinotus falcatus* | 13 | 0.0 | 2.8 | 0.04 | 0.02 | 737.48 | 2.86 | 43 | 8.46 | 19 | 121 |
| *Pogonias cromis* | 9 | 0.0 | 3.2 | 0.03 | 0.01 | 577.53 | 1.43 | 195 | 74.23 | 98 | 785 |
| *Lutjanus synagris* | 6 | 0.0 | 1.6 | 0.02 | 0.01 | 912.86 | 2.14 | 26 | 5.59 | 19 | 54 |
| *Menippe* spp. | 5 | 0.0 | 1.2 | 0.01 | 0.01 | 1,050.32 | 2.14 | 12 | 5.09 | 5 | 32 |
| *Elops saurus* | 4 | 0.0 | 1.2 | 0.01 | 0.01 | 968.88 | 1.43 | 250 | 21.12 | 220 | 312 |

Table CK08-03. (Continued)

| Species | Number No. | Number % | % Occur | Density Estimate (animals/100m$^2$) Mean | Stderr | CV | Max | Standard Length (mm) Mean | Stderr | Min | Max |
|---|---|---|---|---|---|---|---|---|---|---|---|
| *Trachinotus carolinus* | 4 | 0.0 | 0.4 | 0.01 | 0.01 | 1,587.45 | 2.86 | 43 | 3.94 | 34 | 52 |
| *Pomatomus saltatrix* | 2 | 0.0 | 0.8 | 0.01 | 0.00 | 1,120.26 | 0.71 | 76 | 39.50 | 36 | 115 |
| *Micropogonias undulatus* | 2 | 0.0 | 0.8 | 0.01 | 0.00 | 1,120.26 | 0.71 | 50 | 24.50 | 25 | 74 |
| *Scomberomorus maculatus* | 2 | 0.0 | 0.8 | 0.01 | 0.00 | 1,120.26 | 0.71 | 38 | 14.00 | 24 | 52 |
| *Mycteroperca* sp. | 1 | 0.0 | 0.4 | 0.00 | 0.00 | 1,587.45 | 0.71 | 16 | . | 16 | 16 |
| *Lutjanus griseus* | 1 | 0.0 | 0.4 | 0.00 | 0.00 | 1,587.45 | 0.71 | 15 | . | 15 | 15 |
| **Totals** | **10,501** | **21.2** | **72.6** | **29.76** | **9.03** | **481.57** | **1,368.57** | **.** | **.** | **2** | **785** |

Table CK08-04. Catch statistics for 10 dominant taxa collected in 192 183-m haul seine samples during Cedar Key stratified-random sampling, 2008. Percent (%) is the percent of the total catch represented by that taxon; percent occurrence (% Occur) is the percentage of samples in which that taxon was collected; CV is the coefficient of variation of the mean. Taxa are ranked in order of decreasing mean catch-per-unit-effort.

| Species | Number | | % Occur | Catch-per-unit-effort (animals/set) | | | | Standard Length (mm) | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | No. | % | | Mean | Stderr | CV | Max | Mean | Stderr | Min | Max |
| *Lagodon rhomboides* | 6,590 | 29.2 | 70.8 | 34.32 | 5.49 | 221.46 | 582.00 | 104 | 0.28 | 32 | 199 |
| *Bairdiella chrysoura* | 3,468 | 15.4 | 39.1 | 18.06 | 5.02 | 385.39 | 584.00 | 132 | 0.30 | 66 | 186 |
| *Leiostomus xanthurus* | 2,144 | 9.5 | 45.8 | 11.17 | 2.01 | 248.93 | 178.00 | 126 | 0.67 | 52 | 205 |
| *Mugil cephalus* | 2,094 | 9.3 | 68.8 | 10.91 | 2.38 | 302.98 | 356.00 | 217 | 1.12 | 82 | 448 |
| *Dasyatis sabina* | 1,607 | 7.1 | 76.0 | 8.37 | 1.03 | 171.07 | 126.00 | 221 | 1.16 | 86 | 554 |
| *Ariopsis felis* | 590 | 2.6 | 43.2 | 3.07 | 0.58 | 263.55 | 81.00 | 247 | 2.49 | 48 | 391 |
| *Mugil curema* | 587 | 2.6 | 44.3 | 3.06 | 0.62 | 282.49 | 61.00 | 155 | 1.29 | 87 | 276 |
| *Brevoortia* spp. | 517 | 2.3 | 17.7 | 2.69 | 1.08 | 558.13 | 170.00 | 101 | 1.07 | 33 | 235 |
| *Harengula jaguana* | 492 | 2.2 | 19.3 | 2.56 | 0.75 | 404.21 | 92.00 | 98 | 0.66 | 71 | 142 |
| *Etropus crossotus* | 430 | 1.9 | 13.0 | 2.24 | 0.91 | 561.12 | 127.00 | 80 | 0.70 | 47 | 127 |
| Subtotal | 18,519 | 82.1 | . | . | . | . | . | . | . | 32 | 554 |
| **Totals** | **22,530** | **100.0** | **.** | **117.35** | **9.78** | **115.49** | **732.00** | **.** | **.** | **12** | **1180** |

Table CK08-05. Catch statistics for Selected Taxa collected in 192 183-m haul seine samples during Cedar Key stratified-random sampling, 2008. Percent (%) is the percent of the total catch represented by that taxon; percent occurrence (% Occur) is the percentage of samples in which that taxon was collected; CV is the coefficient of variation of the mean. Taxa are ranked in order of decreasing mean catch-per-unit-effort.

| Species | Number | | % Occur | Catch-per-unit-effort (animals/set) | | | | Standard Length (mm) | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | No. | % | | Mean | Stderr | CV | Max | Mean | Stderr | Min | Max |
| *Leiostomus xanthurus* | 2,144 | 9.5 | 45.8 | 11.17 | 2.01 | 248.93 | 178.00 | 126 | 0.67 | 52 | 205 |
| *Mugil cephalus* | 2,094 | 9.3 | 68.8 | 10.91 | 2.38 | 302.98 | 356.00 | 217 | 1.12 | 82 | 448 |
| *Mugil curema* | 587 | 2.6 | 44.3 | 3.06 | 0.62 | 282.49 | 61.00 | 155 | 1.29 | 87 | 276 |
| *Elops saurus* | 411 | 1.8 | 48.4 | 2.14 | 0.39 | 252.30 | 56.00 | 265 | 2.55 | 91 | 465 |
| *Sciaenops ocellatus* | 255 | 1.1 | 37.0 | 1.33 | 0.26 | 267.92 | 39.00 | 333 | 7.87 | 59 | 642 |
| *Pogonias cromis* | 172 | 0.8 | 28.1 | 0.90 | 0.25 | 390.71 | 42.00 | 391 | 22.22 | 104 | 910 |
| *Paralichthys albigutta* | 160 | 0.7 | 28.6 | 0.83 | 0.14 | 237.90 | 13.00 | 150 | 4.85 | 53 | 332 |
| *Archosargus probatocephalus* | 137 | 0.6 | 19.8 | 0.71 | 0.19 | 374.41 | 27.00 | 290 | 7.33 | 68 | 467 |
| *Cynoscion nebulosus* | 118 | 0.5 | 30.2 | 0.61 | 0.10 | 220.73 | 11.00 | 224 | 9.01 | 55 | 510 |
| *Menticirrhus americanus* | 116 | 0.5 | 16.7 | 0.60 | 0.20 | 449.06 | 31.00 | 166 | 4.74 | 74 | 300 |
| *Callinectes sapidus* | 55 | 0.2 | 19.8 | 0.29 | 0.06 | 289.38 | 9.00 | 78 | 5.37 | 28 | 187 |
| *Mugil gyrans* | 52 | 0.2 | 12.0 | 0.27 | 0.07 | 346.20 | 7.00 | 161 | 4.53 | 115 | 245 |
| *Farfantepenaeus duorarum* | 44 | 0.2 | 9.9 | 0.23 | 0.07 | 399.28 | 7.00 | 23 | 0.91 | 12 | 35 |
| *Scomberomorus maculatus* | 43 | 0.2 | 8.9 | 0.22 | 0.07 | 458.47 | 11.00 | 200 | 16.63 | 105 | 572 |
| *Cynoscion arenarius* | 18 | 0.1 | 4.2 | 0.09 | 0.05 | 691.68 | 8.00 | 197 | 12.17 | 128 | 292 |
| *Trachinotus falcatus* | 11 | 0.0 | 3.6 | 0.06 | 0.02 | 541.31 | 2.00 | 100 | 26.39 | 50 | 360 |
| *Micropogonias undulatus* | 10 | 0.0 | 3.6 | 0.05 | 0.02 | 580.82 | 3.00 | 171 | 7.52 | 128 | 202 |

Table CK08-05. (Continued)

| Species | Number No. | Number % | % Occur | Catch-per-unit-effort (animals/set) Mean | Stderr | CV | Max | Standard Length (mm) Mean | Stderr | Min | Max |
|---|---|---|---|---|---|---|---|---|---|---|---|
| *Centropomus undecimalis* | 10 | 0.0 | 2.1 | 0.05 | 0.03 | 803.84 | 4.00 | 709 | 46.28 | 360 | 872 |
| *Lutjanus griseus* | 9 | 0.0 | 3.6 | 0.05 | 0.02 | 547.46 | 2.00 | 158 | 22.01 | 42 | 211 |
| *Pomatomus saltatrix* | 8 | 0.0 | 2.6 | 0.04 | 0.02 | 687.36 | 3.00 | 124 | 5.40 | 103 | 146 |
| *Mycteroperca microlepis* | 4 | 0.0 | 1.0 | 0.02 | 0.02 | 1,093.72 | 3.00 | 196 | 29.02 | 160 | 282 |
| *Lutjanus synagris* | 4 | 0.0 | 1.0 | 0.02 | 0.02 | 1,093.72 | 3.00 | 66 | 15.02 | 28 | 95 |
| *Megalops atlanticus* | 1 | 0.0 | 0.5 | 0.01 | 0.01 | 1,385.64 | 1.00 | 850 | . | 850 | 850 |
| *Paralichthys lethostigma* | 1 | 0.0 | 0.5 | 0.01 | 0.01 | 1,385.64 | 1.00 | 390 | . | 390 | 390 |
| **Totals** | **6,464** | **28.7** | **98.4** | **33.67** | **3.67** | **151.19** | **370.00** | **.** | **.** | **12** | **910** |

Table CK08-06. Catch statistics for 10 dominant taxa collected in 120 bay 6.1-m otter trawl samples during Cedar Key stratified-random sampling, 2008. Percent (%) is the percent of the total catch represented by that taxon; percent occurrence (% Occur) is the percentage of samples in which that taxon was collected; CV is the coefficient of variation of the mean. Taxa are ranked in order of decreasing mean density.

| Species | Number | | % Occur | Density Estimate (animals/100m$^2$) | | | | Standard Length (mm) | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | No. | % | | Mean | Stderr | CV | Max | Mean | Stderr | Min | Max |
| *Anchoa mitchilli* | 1,654 | 16.4 | 15.8 | 0.95 | 0.44 | 504.49 | 33.86 | 47 | 0.38 | 19 | 75 |
| *Cynoscion arenarius* | 1,136 | 11.2 | 15.0 | 0.64 | 0.55 | 945.83 | 66.31 | 28 | 0.80 | 11 | 251 |
| *Orthopristis chrysoptera* | 1,031 | 10.2 | 36.7 | 0.58 | 0.37 | 699.53 | 44.32 | 102 | 0.82 | 15 | 191 |
| *Bairdiella chrysoura* | 992 | 9.8 | 22.5 | 0.56 | 0.29 | 564.18 | 32.99 | 112 | 0.83 | 34 | 162 |
| *Menippe* spp. | 786 | 7.8 | 62.5 | 0.45 | 0.08 | 199.61 | 5.33 | 17 | 0.40 | 2 | 85 |
| *Lagodon rhomboides* | 557 | 5.5 | 43.3 | 0.32 | 0.08 | 272.70 | 6.81 | 96 | 1.03 | 13 | 152 |
| *Etropus crossotus* | 519 | 5.1 | 65.0 | 0.30 | 0.04 | 155.57 | 2.77 | 80 | 0.92 | 23 | 130 |
| *Menticirrhus americanus* | 481 | 4.8 | 24.2 | 0.27 | 0.14 | 565.65 | 16.19 | 72 | 2.12 | 11 | 303 |
| *Ariopsis felis* | 354 | 3.5 | 19.2 | 0.21 | 0.08 | 449.57 | 7.12 | 107 | 2.58 | 46 | 295 |
| *Prionotus scitulus* | 282 | 2.8 | 63.3 | 0.16 | 0.02 | 126.16 | 0.94 | 84 | 1.95 | 18 | 161 |
| Subtotal | 7,791 | 77.1 | . | . | . | . | . | . | . | 2 | 303 |
| **Totals** | **10,102** | **100.0** | **.** | **5.76** | **1.12** | **212.82** | **85.06** | **.** | **.** | **2** | **660** |

Table CK08-07. Catch statistics for Selected Taxa collected in 120 bay 6.1-m otter trawl samples during Cedar Key stratified-random sampling, 2008. Percent (%) is the percent of the total catch represented by that taxon; percent occurrence (% Occur) is the percentage of samples in which that taxon was collected; CV is the coefficient of variation of the mean. Taxa are ranked in order of decreasing mean density.

| Species | Number | | % Occur | Density Estimate (animals/100m$^2$) | | | | Standard Length (mm) | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | No. | % | | Mean | Stderr | CV | Max | Mean | Stderr | Min | Max |
| *Cynoscion arenarius* | 1,136 | 11.2 | 15.0 | 0.64 | 0.55 | 945.83 | 66.31 | 28 | 0.80 | 11 | 251 |
| *Menippe* spp. | 786 | 7.8 | 62.5 | 0.45 | 0.08 | 199.61 | 5.33 | 17 | 0.40 | 2 | 85 |
| *Menticirrhus americanus* | 481 | 4.8 | 24.2 | 0.27 | 0.14 | 565.65 | 16.19 | 72 | 2.12 | 11 | 303 |
| *Leiostomus xanthurus* | 172 | 1.7 | 20.0 | 0.10 | 0.03 | 304.61 | 1.75 | 46 | 3.60 | 11 | 161 |
| *Farfantepenaeus duorarum* | 97 | 1.0 | 27.5 | 0.06 | 0.01 | 253.55 | 0.74 | 20 | 0.78 | 5 | 38 |
| *Callinectes sapidus* | 75 | 0.7 | 17.5 | 0.04 | 0.02 | 407.29 | 1.35 | 66 | 5.24 | 10 | 178 |
| *Paralichthys albigutta* | 58 | 0.6 | 30.0 | 0.03 | 0.01 | 185.45 | 0.36 | 145 | 9.31 | 42 | 364 |
| *Lutjanus synagris* | 26 | 0.3 | 9.2 | 0.02 | 0.01 | 403.92 | 0.40 | 36 | 3.74 | 16 | 79 |
| *Lutjanus griseus* | 7 | 0.1 | 2.5 | 0.00 | 0.00 | 713.11 | 0.27 | 114 | 22.08 | 62 | 187 |
| *Cynoscion nebulosus* | 4 | 0.0 | 2.5 | 0.00 | 0.00 | 691.29 | 0.17 | 86 | 39.80 | 16 | 165 |
| *Micropogonias undulatus* | 4 | 0.0 | 1.7 | 0.00 | 0.00 | 863.84 | 0.20 | 152 | 8.44 | 127 | 165 |
| *Menticirrhus saxatilis* | 2 | 0.0 | 1.7 | 0.00 | 0.00 | 771.59 | 0.07 | 70 | 9.00 | 61 | 79 |
| *Mycteroperca microlepis* | 1 | 0.0 | 0.8 | 0.00 | 0.00 | 1,095.45 | 0.07 | 136 | . | 136 | 136 |
| *Pogonias cromis* | 1 | 0.0 | 0.8 | 0.00 | 0.00 | 1,095.45 | 0.07 | 121 | . | 121 | 121 |
| **Totals** | **2,850** | **28.2** | **89.2** | **1.62** | **0.70** | **472.48** | **83.65** | **.** | **.** | **2** | **364** |

Table CK08-08. Catch statistics for 10 dominant taxa collected in 108 21.3-m river seine samples during Cedar Key stratified-random sampling, 2008. Percent (%) is the percent of the total catch represented by that taxon; percent occurrence (% Occur) is the percentage of samples in which that taxon was collected; CV is the coefficient of variation of the mean. Taxa are ranked in order of decreasing mean density.

| **Species** | **Number** | | **% Occur** | **Density Estimate (animals/100m$^2$)** | | | | **Standard Length (mm)** | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | **No.** | **%** | | **Mean** | **Stderr** | **CV** | **Max** | **Mean** | **Stderr** | **Min** | **Max** |
| *Anchoa mitchilli* | 60,598 | 84.8 | 71.3 | 825.14 | 453.64 | 571.34 | 47,811.76 | 29 | 0.03 | 16 | 72 |
| *Leiostomus xanthurus* | 4,326 | 6.1 | 47.2 | 58.91 | 21.74 | 383.54 | 1,900.00 | 24 | 0.17 | 11 | 157 |
| *Menidia* spp. | 1,771 | 2.5 | 76.9 | 24.11 | 4.73 | 203.92 | 282.35 | 49 | 0.24 | 22 | 84 |
| *Membras martinica* | 772 | 1.1 | 19.4 | 10.51 | 4.13 | 408.00 | 310.29 | 47 | 0.51 | 17 | 96 |
| *Brevoortia* spp. | 675 | 0.9 | 22.2 | 9.19 | 4.38 | 495.57 | 351.47 | 24 | 0.14 | 16 | 45 |
| *Lagodon rhomboides* | 584 | 0.8 | 61.1 | 7.95 | 1.46 | 190.47 | 107.35 | 36 | 1.04 | 12 | 151 |
| *Eucinostomus* spp. | 484 | 0.7 | 38.0 | 6.59 | 1.76 | 277.24 | 132.35 | 29 | 0.33 | 10 | 39 |
| *Anchoa hepsetus* | 436 | 0.6 | 25.0 | 5.94 | 1.82 | 318.03 | 123.53 | 48 | 0.47 | 28 | 91 |
| *Fundulus grandis* | 274 | 0.4 | 26.9 | 3.73 | 1.00 | 277.95 | 64.71 | 53 | 1.23 | 16 | 124 |
| *Bairdiella chrysoura* | 264 | 0.4 | 16.7 | 3.59 | 1.72 | 496.75 | 152.94 | 36 | 1.56 | 10 | 105 |
| Subtotal | 70,184 | 98.3 | . | . | . | . | . | . | . | 10 | 157 |
| **Totals** | **71,446** | **100.0** | **.** | **972.85** | **453.95** | **484.93** | **47,858.82** | **.** | **.** | **3** | **600** |

Table CK08-09. Catch statistics for Selected Taxa collected in 108 21.3-m river seine samples during Cedar Key stratified-random sampling, 2008. Percent (%) is the percent of the total catch represented by that taxon; percent occurrence (% Occur) is the percentage of samples in which that taxon was collected; CV is the coefficient of variation of the mean. Taxa are ranked in order of decreasing mean density.

| Species | Number | | % Occur | Density Estimate (animals/100m$^2$) | | | | Standard Length (mm) | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | No. | % | | Mean | Stderr | CV | Max | Mean | Stderr | Min | Max |
| *Leiostomus xanthurus* | 4,326 | 6.1 | 47.2 | 58.91 | 21.74 | 383.54 | 1,900.00 | 24 | 0.17 | 11 | 157 |
| *Callinectes sapidus* | 177 | 0.2 | 26.9 | 2.41 | 1.42 | 611.28 | 151.47 | 16 | 0.55 | 6 | 76 |
| *Farfantepenaeus duorarum* | 121 | 0.2 | 24.1 | 1.65 | 0.54 | 338.77 | 45.59 | 10 | 0.31 | 3 | 20 |
| *Cynoscion arenarius* | 118 | 0.2 | 19.4 | 1.61 | 0.59 | 381.91 | 52.94 | 40 | 1.26 | 13 | 73 |
| *Mugil cephalus* | 98 | 0.1 | 24.1 | 1.33 | 0.33 | 255.93 | 22.06 | 51 | 6.16 | 18 | 327 |
| *Sciaenops ocellatus* | 54 | 0.1 | 14.8 | 0.74 | 0.24 | 339.87 | 14.71 | 102 | 19.47 | 16 | 600 |
| *Cynoscion nebulosus* | 30 | 0.0 | 12.0 | 0.41 | 0.15 | 377.52 | 13.24 | 60 | 7.27 | 25 | 181 |
| *Menticirrhus americanus* | 29 | 0.0 | 9.3 | 0.39 | 0.22 | 566.07 | 22.06 | 47 | 4.26 | 27 | 115 |
| *Lutjanus griseus* | 8 | 0.0 | 5.6 | 0.11 | 0.05 | 477.87 | 4.41 | 81 | 22.29 | 14 | 184 |
| *Mugil curema* | 8 | 0.0 | 4.6 | 0.11 | 0.06 | 574.94 | 5.88 | 53 | 18.47 | 22 | 143 |
| *Archosargus probatocephalus* | 4 | 0.0 | 3.7 | 0.05 | 0.03 | 512.28 | 1.47 | 280 | 40.66 | 212 | 391 |
| *Paralichthys albigutta* | 4 | 0.0 | 2.8 | 0.05 | 0.03 | 631.42 | 2.94 | 70 | 42.68 | 26 | 198 |
| *Pogonias cromis* | 3 | 0.0 | 2.8 | 0.04 | 0.02 | 594.37 | 1.47 | 141 | 11.98 | 122 | 163 |
| *Scomberomorus maculatus* | 2 | 0.0 | 1.9 | 0.03 | 0.02 | 731.40 | 1.47 | 55 | 16.00 | 39 | 71 |
| *Mugil gyrans* | 1 | 0.0 | 0.9 | 0.01 | 0.01 | 1,039.23 | 1.47 | 23 | . | 23 | 23 |
| *Elops saurus* | 1 | 0.0 | 0.9 | 0.01 | 0.01 | 1,039.23 | 1.47 | 244 | . | 244 | 244 |
| **Totals** | **4,984** | **7.0** | **86.1** | **67.86** | **21.75** | **333.05** | **1,900.00** | **.** | **.** | **3** | **600** |

Table CK08-10. Catch statistics for 10 dominant taxa collected in 60 21.3-m river seine samples during Cedar Key stratified-random sampling, 2008. Percent (%) is the percent of the total catch represented by that taxon; percent occurrence (% Occur) is the percentage of samples in which that taxon was collected; CV is the coefficient of variation of the mean. Taxa are ranked in order of decreasing mean density.

| Species | Number | | % Occur | Density Estimate (animals/100m$^2$) | | | | Standard Length (mm) | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | No. | % | | Mean | Stderr | CV | Max | Mean | Stderr | Min | Max |
| *Anchoa mitchilli* | 13,615 | 76.1 | 53.3 | 333.70 | 172.05 | 399.37 | 9,670.59 | 28 | 0.05 | 18 | 57 |
| *Membras martinica* | 927 | 5.2 | 8.3 | 22.72 | 20.80 | 709.16 | 1,247.06 | 42 | 0.29 | 19 | 89 |
| *Leiostomus xanthurus* | 649 | 3.6 | 25.0 | 15.91 | 9.06 | 441.07 | 454.41 | 20 | 0.20 | 12 | 80 |
| *Menidia* spp. | 470 | 2.6 | 46.7 | 11.52 | 2.74 | 184.21 | 98.53 | 52 | 0.48 | 24 | 78 |
| *Anchoa hepsetus* | 435 | 2.4 | 15.0 | 10.66 | 5.17 | 375.89 | 264.71 | 47 | 0.34 | 20 | 61 |
| *Notropis petersoni* | 375 | 2.1 | 21.7 | 9.19 | 4.47 | 376.38 | 244.12 | 44 | 0.36 | 24 | 62 |
| *Eucinostomus* spp. | 312 | 1.7 | 50.0 | 7.65 | 2.02 | 204.59 | 70.59 | 30 | 0.37 | 12 | 39 |
| *Bairdiella chrysoura* | 253 | 1.4 | 8.3 | 6.20 | 5.73 | 716.34 | 344.12 | 55 | 0.67 | 9 | 86 |
| *Eucinostomus harengulus* | 121 | 0.7 | 35.0 | 2.97 | 0.85 | 221.48 | 39.71 | 56 | 0.96 | 40 | 84 |
| *Lagodon rhomboides* | 95 | 0.5 | 33.3 | 2.33 | 0.86 | 287.50 | 47.06 | 48 | 2.33 | 13 | 90 |
| Subtotal | 17,252 | 96.3 | . | . | . | . | . | . | . | 9 | 90 |
| **Totals** | **17,896** | **100.0** | **.** | **438.63** | **192.67** | **340.25** | **11,010.29** | **.** | **.** | **4** | **421** |

Table CK08-11. Catch statistics for Selected Taxa collected in 60 21.3-m river seine samples during Cedar Key stratified-random sampling, 2008. Percent (%) is the percent of the total catch represented by that taxon; percent occurrence (% Occur) is the percentage of samples in which that taxon was collected; CV is the coefficient of variation of the mean. Taxa are ranked in order of decreasing mean density.

| Species | Number | | % Occur | Density Estimate (animals/100m$^2$) | | | | Standard Length (mm) | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | No. | % | | Mean | Stderr | CV | Max | Mean | Stderr | Min | Max |
| *Leiostomus xanthurus* | 649 | 3.6 | 25.0 | 15.91 | 9.06 | 441.07 | 454.41 | 20 | 0.20 | 12 | 80 |
| *Callinectes sapidus* | 72 | 0.4 | 36.7 | 1.76 | 0.45 | 199.34 | 17.65 | 20 | 1.67 | 8 | 113 |
| *Sciaenops ocellatus* | 24 | 0.1 | 11.7 | 0.59 | 0.28 | 363.01 | 13.24 | 52 | 16.32 | 17 | 421 |
| *Farfantepenaeus duorarum* | 16 | 0.1 | 5.0 | 0.39 | 0.27 | 538.65 | 14.71 | 9 | 0.62 | 4 | 14 |
| *Mugil cephalus* | 16 | 0.1 | 3.3 | 0.39 | 0.37 | 726.98 | 22.06 | 41 | 13.74 | 20 | 232 |
| *Cynoscion nebulosus* | 8 | 0.0 | 6.7 | 0.20 | 0.11 | 424.86 | 4.41 | 44 | 8.09 | 28 | 99 |
| *Cynoscion arenarius* | 7 | 0.0 | 8.3 | 0.17 | 0.09 | 389.50 | 4.41 | 40 | 7.59 | 25 | 83 |
| *Lutjanus griseus* | 6 | 0.0 | 6.7 | 0.15 | 0.08 | 439.57 | 4.41 | 106 | 18.68 | 64 | 171 |
| *Mugil curema* | 2 | 0.0 | 3.3 | 0.05 | 0.03 | 543.06 | 1.47 | 17 | 5.00 | 12 | 22 |
| *Elops saurus* | 1 | 0.0 | 1.7 | 0.02 | 0.02 | 774.60 | 1.47 | 21 | . | 21 | 21 |
| *Pogonias cromis* | 1 | 0.0 | 1.7 | 0.02 | 0.02 | 774.60 | 1.47 | 144 | . | 144 | 144 |
| *Scomberomorus maculatus* | 1 | 0.0 | 1.7 | 0.02 | 0.02 | 774.60 | 1.47 | 36 | . | 36 | 36 |
| **Totals** | **803** | **4.5** | **65.0** | **19.68** | **9.49** | **373.32** | **466.18** | **.** | **.** | **4** | **421** |

Table CK08-12. Catch statistics for 10 dominant taxa collected in 60 river 6.1-m otter trawl samples during Cedar Key stratified-random sampling, 2008. Percent (%) is the percent of the total catch represented by that taxon; percent occurrence (% Occur) is the percentage of samples in which that taxon was collected; CV is the coefficient of variation of the mean. Taxa are ranked in order of decreasing mean density.

| Species | Number | | % Occur | Density Estimate (animals/100m$^2$) | | | | Standard Length (mm) | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | No. | % | | Mean | Stderr | CV | Max | Mean | Stderr | Min | Max |
| *Anchoa mitchilli* | 1,004 | 29.3 | 25.0 | 2.50 | 1.78 | 552.19 | 99.84 | 31 | 0.13 | 18 | 62 |
| *Micropogonias undulatus* | 601 | 17.5 | 16.7 | 1.37 | 1.05 | 597.62 | 62.87 | 21 | 0.60 | 11 | 225 |
| *Leiostomus xanthurus* | 539 | 15.7 | 28.3 | 1.25 | 0.74 | 460.19 | 42.63 | 25 | 0.69 | 11 | 141 |
| *Callinectes sapidus* | 215 | 6.3 | 56.7 | 0.52 | 0.14 | 203.99 | 4.95 | 45 | 2.55 | 5 | 184 |
| *Trinectes maculatus* | 190 | 5.5 | 28.3 | 0.44 | 0.22 | 382.18 | 12.28 | 47 | 0.74 | 11 | 72 |
| *Lagodon rhomboides* | 180 | 5.3 | 16.7 | 0.41 | 0.35 | 670.14 | 21.18 | 20 | 1.35 | 13 | 122 |
| *Eucinostomus* spp. | 141 | 4.1 | 21.7 | 0.37 | 0.23 | 478.68 | 13.66 | 34 | 0.45 | 17 | 39 |
| *Bairdiella chrysoura* | 118 | 3.4 | 15.0 | 0.29 | 0.19 | 507.63 | 10.34 | 127 | 3.84 | 14 | 174 |
| *Eucinostomus harengulus* | 85 | 2.5 | 28.3 | 0.22 | 0.08 | 286.99 | 3.71 | 53 | 1.15 | 40 | 80 |
| *Ameiurus catus* | 58 | 1.7 | 20.0 | 0.13 | 0.05 | 275.25 | 2.16 | 69 | 5.58 | 23 | 283 |
| Subtotal | 3,131 | 91.3 | . | . | . | . | . | . | . | 5 | 283 |
| **Totals** | **3,426** | **100.0** | **.** | **8.19** | **2.85** | **269.65** | **131.95** | **.** | **.** | **4** | **1060** |

Table CK08-13. Catch statistics for Selected Taxa collected in 60 river 6.1-m otter trawl samples during Cedar Key stratified-random sampling, 2008. Percent (%) is the percent of the total catch represented by that taxon; percent occurrence (% Occur) is the percentage of samples in which that taxon was collected; CV is the coefficient of variation of the mean. Taxa are ranked in order of decreasing mean density.

| Species | Number | | % Occur | Density Estimate (animals/100m$^2$) | | | | Standard Length (mm) | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | No. | % | | Mean | Stderr | CV | Max | Mean | Stderr | Min | Max |
| *Micropogonias undulatus* | 601 | 17.5 | 16.7 | 1.37 | 1.05 | 597.62 | 62.87 | 21 | 0.60 | 11 | 225 |
| *Leiostomus xanthurus* | 539 | 15.7 | 28.3 | 1.25 | 0.74 | 460.19 | 42.63 | 25 | 0.69 | 11 | 141 |
| *Callinectes sapidus* | 215 | 6.3 | 56.7 | 0.52 | 0.14 | 203.99 | 4.95 | 45 | 2.55 | 5 | 184 |
| *Farfantepenaeus duorarum* | 55 | 1.6 | 18.3 | 0.13 | 0.05 | 313.38 | 2.56 | 11 | 0.56 | 4 | 21 |
| *Cynoscion arenarius* | 47 | 1.4 | 25.0 | 0.11 | 0.03 | 233.87 | 1.35 | 31 | 2.65 | 15 | 91 |
| *Lutjanus griseus* | 24 | 0.7 | 18.3 | 0.06 | 0.02 | 300.80 | 1.08 | 131 | 8.72 | 21 | 180 |
| *Sciaenops ocellatus* | 11 | 0.3 | 10.0 | 0.03 | 0.01 | 347.14 | 0.54 | 35 | 4.27 | 14 | 61 |
| *Menticirrhus americanus* | 7 | 0.2 | 8.3 | 0.02 | 0.01 | 381.04 | 0.40 | 35 | 6.85 | 22 | 75 |
| *Archosargus probatocephalus* | 5 | 0.1 | 8.3 | 0.01 | 0.01 | 334.96 | 0.15 | 159 | 20.34 | 114 | 236 |
| *Paralichthys albigutta* | 3 | 0.1 | 5.0 | 0.01 | 0.00 | 442.30 | 0.17 | 151 | 13.69 | 125 | 171 |
| *Pogonias cromis* | 3 | 0.1 | 5.0 | 0.01 | 0.00 | 439.57 | 0.13 | 154 | 11.39 | 141 | 177 |
| *Paralichthys lethostigma* | 3 | 0.1 | 5.0 | 0.01 | 0.00 | 440.02 | 0.13 | 283 | 23.71 | 241 | 323 |
| *Cynoscion nebulosus* | 2 | 0.1 | 3.3 | 0.01 | 0.00 | 547.43 | 0.19 | 69 | 47.50 | 21 | 116 |
| *Pomatomus saltatrix* | 1 | 0.0 | 1.7 | 0.00 | 0.00 | 774.60 | 0.13 | 58 | . | 58 | 58 |
| **Totals** | **1,516** | **44.3** | **85.0** | **3.51** | **1.83** | **404.45** | **109.01** | **.** | **.** | **4** | **323** |

Appendix CK08-01. Monthly summary of species collected during Cedar Key stratified-random sampling, 2008. Effort, or total number of hauls, is labeled 'E'. Taxa are arranged alphabetically.

| Species | Month | | | | | | | | | | | | Totals |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | |
| | E=66 | E=66 | E=66 | E=66 | E=66 | E=66 | E=66 | E=66 | E=66 | E=66 | E=66 | E=66 | E=792 |
| *Acanthostracion quadricornis* | 1 | 5 | 3 | 5 | 3 | 1 | 3 | 6 | 1 | 1 | 4 | 3 | 36 |
| *Achirus lineatus* | . | . | . | . | . | . | 4 | 2 | 4 | . | 2 | 1 | 13 |
| *Acipenser oxyrinchus* | . | . | . | 1 | . | . | . | . | . | . | . | . | 1 |
| *Adinia xenica* | . | 2 | . | . | . | . | . | 24 | . | 7 | 13 | 1 | 47 |
| *Alosa alabamae* | . | . | 1 | . | . | . | . | . | . | . | . | . | 1 |
| *Aluterus schoepfii* | . | . | . | . | . | . | 2 | 4 | 1 | . | . | . | 7 |
| *Ameiurus catus* | . | . | 10 | 23 | . | . | . | . | 26 | . | . | . | 59 |
| *Anarchopterus criniger* | . | . | . | . | . | . | . | . | 1 | . | . | . | 1 |
| *Anchoa hepsetus* | . | 1 | . | 2 | 715 | 1,713 | 1,493 | 15 | 25 | 31 | 43 | . | 4,038 |
| *Anchoa mitchilli* | 802 | 1,288 | 1,879 | 549 | 643 | 12,444 | 32,081 | 36,219 | 3,517 | 4,697 | 1,644 | 188 | 95,951 |
| *Ancylopsetta quadrocellata* | 1 | . | 5 | 7 | 3 | 6 | 3 | 1 | 3 | . | 1 | 1 | 31 |
| *Archosargus probatocephalus* | 6 | 7 | 6 | 5 | 4 | 7 | 7 | 36 | 43 | 8 | 6 | 11 | 146 |
| *Argopecten* sp. | . | . | . | . | . | . | . | . | . | . | 1 | . | 1 |
| *Ariopsis felis* | 59 | 13 | 159 | 65 | 101 | 72 | 90 | 158 | 217 | 130 | 141 | 41 | 1,246 |
| *Astroscopus y-graecum* | 1 | 1 | . | . | . | . | . | . | . | . | . | 1 | 3 |
| *Bagre marinus* | . | . | . | . | 2 | 20 | 46 | 40 | 21 | 124 | . | . | 253 |
| *Bairdiella chrysoura* | 104 | 391 | 927 | 225 | 1,096 | 950 | 483 | 1,015 | 230 | 632 | 165 | 193 | 6,411 |
| *Bathygobius soporator* | 2 | . | . | . | . | . | 1 | 20 | . | . | 3 | 1 | 27 |
| *Brevoortia* spp. | . | 37 | 2 | 84 | 766 | 331 | 244 | 6 | 73 | 178 | 1 | 46 | 1,768 |
| *Calamus arctifrons* | . | . | . | . | 4 | 3 | 1 | 5 | 14 | 3 | . | . | 30 |
| *Callinectes sapidus* | 84 | 44 | 138 | 57 | 21 | 16 | 7 | 39 | 67 | 40 | 198 | 22 | 733 |
| *Caranx hippos* | . | . | 1 | . | . | . | 1 | 8 | 4 | 20 | . | . | 34 |
| *Centropomus undecimalis* | . | . | . | . | . | 4 | . | 1 | 1 | 4 | . | . | 10 |
| *Centropristis striata* | 1 | 3 | 1 | 4 | 11 | 6 | . | 31 | 4 | 9 | 5 | 19 | 94 |
| *Chaetodipterus faber* | . | . | 1 | 2 | 16 | 12 | 13 | 42 | 17 | 38 | 4 | . | 145 |

Appendix CK08-01. (Continued)

| Species | Month | | | | | | | | | | | | Totals |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | |
| | E=66 | E=66 | E=66 | E=66 | E=66 | E=66 | E=66 | E=66 | E=66 | E=66 | E=66 | E=66 | E=792 |
| *Chasmodes saburrae* | . | 5 | . | . | . | . | 3 | . | . | . | 1 | 2 | 11 |
| *Chilomycterus schoepfii* | 4 | 15 | 5 | 1 | 3 | 3 | 8 | 20 | 28 | 31 | 10 | 9 | 137 |
| *Chloroscombrus chrysurus* | . | . | . | . | . | . | 7 | 43 | 20 | 18 | 6 | . | 94 |
| *Citharichthys macrops* | 1 | 2 | 10 | 11 | 9 | 18 | 7 | 4 | 3 | 2 | . | 2 | 69 |
| *Ctenogobius boleosoma* | . | . | . | . | 1 | . | . | . | . | 2 | . | . | 3 |
| *Cynoscion arenarius* | . | 1 | . | 7 | 1,027 | 165 | 21 | 149 | 74 | 47 | 9 | 2 | 1,502 |
| *Cynoscion nebulosus* | 17 | 13 | 5 | 11 | 21 | 4 | 7 | 74 | 12 | 27 | 13 | 9 | 213 |
| *Cyprinodon variegatus* | 1 | 4 | 18 | . | . | . | . | . | . | . | . | 3 | 26 |
| *Dasyatis americana* | . | . | . | 1 | . | 1 | . | . | 1 | . | . | . | 3 |
| *Dasyatis sabina* | 233 | 107 | 104 | 225 | 172 | 124 | 163 | 199 | 125 | 201 | 90 | 91 | 1,834 |
| *Dasyatis say* | . | . | . | 5 | 33 | 32 | 16 | 3 | 1 | 16 | 1 | . | 107 |
| *Diplectrum formosum* | 2 | 2 | 2 | 2 | 4 | 3 | 9 | 2 | 2 | . | 1 | . | 29 |
| *Diplodus holbrookii* | . | 8 | . | . | 1 | 1 | . | . | 2 | 5 | . | . | 17 |
| *Dorosoma cepedianum* | . | . | . | . | . | . | . | . | . | 1 | 3 | . | 4 |
| *Dorosoma petenense* | . | . | . | . | . | . | . | . | . | 133 | 18 | . | 151 |
| *Echeneis neucratoides* | . | . | . | 1 | 9 | 9 | 3 | . | 4 | 7 | . | 1 | 34 |
| *Elops saurus* | . | 69 | 10 | 46 | 40 | 41 | 45 | 33 | 30 | 72 | 23 | 8 | 417 |
| *Etropus crossotus* | 18 | 5 | 38 | 13 | 7 | 6 | 73 | 177 | 64 | 367 | 155 | 55 | 978 |
| *Etropus* spp. | . | . | . | . | . | 3 | . | . | . | . | . | . | 3 |
| *Eucinostomus gula* | 3 | 3 | . | . | . | . | . | 290 | 131 | 206 | 36 | 89 | 758 |
| *Eucinostomus harengulus* | 8 | 40 | 7 | 1 | 1 | . | 66 | 80 | 109 | 103 | 103 | 84 | 602 |
| *Eucinostomus* spp. | 15 | 17 | 35 | 3 | . | 129 | 631 | 316 | 366 | 149 | 136 | 88 | 1,885 |
| *Farfantepenaeus duorarum* | 21 | 27 | 31 | 17 | 19 | 3 | 119 | 186 | 116 | 29 | 30 | 7 | 605 |
| *Floridichthys carpio* | . | . | 11 | . | . | . | . | . | . | . | . | . | 11 |
| *Fundulus grandis* | 9 | 46 | 14 | 1 | . | 1 | 17 | 144 | 11 | 31 | 104 | 18 | 396 |

Appendix CK08-01. (Continued)

| Species | Month | | | | | | | | | | | | Totals |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | |
| | E=66 | E=66 | E=66 | E=66 | E=66 | E=66 | E=66 | E=66 | E=66 | E=66 | E=66 | E=66 | E=792 |
| *Fundulus seminolis* | 1 | 1 | . | . | . | . | 12 | 8 | 24 | . | 8 | . | 54 |
| *Fundulus similis* | 73 | 146 | 70 | . | . | 80 | 5 | 17 | 3 | 44 | 2 | 2 | 442 |
| *Gambusia holbrooki* | 2 | . | 3 | . | . | . | 3 | 1 | 4 | . | . | 3 | 16 |
| *Gobiesox strumosus* | 1 | . | . | . | 1 | . | . | 4 | 1 | 1 | 7 | 1 | 16 |
| *Gobionellus oceanicus* | 1 | . | . | . | . | . | . | . | . | . | . | . | 1 |
| *Gobiosoma bosc* | 6 | 1 | 2 | 1 | 1 | . | 11 | 12 | 6 | 1 | 4 | 1 | 46 |
| *Gobiosoma longipala* | 7 | 2 | 3 | . | . | . | . | . | . | . | 1 | . | 13 |
| *Gobiosoma robustum* | . | 2 | . | . | 1 | 1 | 1 | 1 | . | . | . | . | 6 |
| *Gobiosoma* spp. | 4 | . | 6 | . | . | 3 | 6 | 9 | . | 2 | 3 | . | 33 |
| *Gymnura micrura* | . | . | . | 1 | 4 | 1 | 3 | 8 | 1 | 21 | . | . | 39 |
| *Haemulon plumierii* | . | . | . | . | . | . | 1 | 3 | 3 | . | . | 2 | 9 |
| *Halichoeres bivittatus* | . | . | . | . | . | . | . | . | . | 1 | . | . | 1 |
| *Harengula jaguana* | 38 | 33 | . | 63 | 34 | 127 | 52 | 25 | 110 | 200 | 4 | . | 686 |
| *Hemicaranx amblyrhynchus* | . | . | . | . | . | . | . | . | 1 | . | . | . | 1 |
| *Hippocampus erectus* | . | 2 | 2 | 1 | 2 | . | . | 1 | . | 3 | 5 | 1 | 17 |
| *Hypleurochilus caudovittatus* | 1 | . | . | . | . | 1 | . | . | 4 | . | 2 | 2 | 10 |
| *Hyporhamphus meeki* | . | . | . | . | 2 | 28 | 3 | 1 | 1 | . | . | . | 35 |
| *Hypsoblennius hentz* | . | . | . | . | . | . | 2 | . | 2 | . | 3 | . | 7 |
| *Ictalurus punctatus* | . | 3 | . | 8 | . | . | . | . | 17 | . | . | 4 | 32 |
| *Labidesthes sicculus* | . | . | . | . | . | . | 1 | . | 2 | . | . | . | 3 |
| *Lachnolaimus maximus* | . | . | . | . | . | . | . | 1 | . | . | . | . | 1 |
| *Lagodon rhomboides* | 917 | 1,522 | 705 | 506 | 595 | 620 | 355 | 1,404 | 1,477 | 803 | 1,036 | 204 | 10,144 |
| *Leiostomus xanthurus* | 2,474 | 8,909 | 1,851 | 273 | 905 | 306 | 118 | 345 | 205 | 317 | 19 | 179 | 15,901 |
| *Lepisosteus osseus* | . | . | 2 | 9 | 1 | 2 | 4 | 2 | 11 | . | 2 | . | 33 |

Appendix CK08-01. (Continued)

| Species | Month | | | | | | | | | | | | Totals |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | |
| | E=66 | E=66 | E=66 | E=66 | E=66 | E=66 | E=66 | E=66 | E=66 | E=66 | E=66 | E=66 | E=792 |
| *Lepisosteus platyrhincus* | . | . | 1 | . | 1 | . | 1 | 1 | . | . | . | . | 4 |
| *Lepomis auritus* | . | . | . | . | . | . | . | 12 | 13 | . | . | . | 25 |
| *Lepomis macrochirus* | . | . | . | 8 | . | . | 1 | 1 | 15 | . | 1 | . | 26 |
| *Lepomis microlophus* | . | . | 1 | . | . | . | . | . | 2 | . | . | . | 3 |
| *Lepomis punctatus* | 1 | 7 | . | 29 | . | . | 1 | 1 | 39 | . | . | . | 78 |
| *Lepomis* spp. | . | . | . | . | . | . | 3 | . | 23 | . | . | . | 26 |
| *Limulus polyphemus* | 2 | 3 | 2 | 7 | . | 2 | 1 | 2 | 1 | 2 | . | . | 22 |
| *Lucania goodei* | . | . | . | . | . | . | . | . | 2 | . | . | . | 2 |
| *Lucania parva* | . | . | . | . | . | . | 5 | 1 | . | 5 | . | . | 11 |
| *Lutjanus griseus* | 9 | 5 | 5 | . | 3 | 2 | 1 | 6 | 3 | 13 | 8 | . | 55 |
| *Lutjanus synagris* | . | . | . | . | . | . | 6 | 10 | 11 | 6 | 2 | 1 | 36 |
| *Malaclemys terrapin* | . | . | . | 1 | 2 | 1 | 3 | . | . | 1 | . | . | 8 |
| *Megalops atlanticus* | . | 1 | . | . | . | . | . | . | . | . | . | . | 1 |
| *Membras martinica* | . | 16 | 3 | 193 | 101 | 5,732 | 1,994 | 989 | 131 | 339 | 5 | . | 9,503 |
| *Menidia* spp. | 136 | 267 | 172 | 235 | 37 | 83 | 198 | 405 | 520 | 408 | 477 | 363 | 3,301 |
| *Menippe* spp. | 73 | 84 | 137 | 50 | 142 | 16 | 45 | 70 | 60 | 6 | 65 | 43 | 791 |
| *Menticirrhus americanus* | 3 | 6 | 59 | 12 | 303 | 115 | 60 | 115 | 41 | 123 | 26 | 7 | 870 |
| *Menticirrhus saxatilis* | 1 | . | 1 | . | 3 | 4 | 1 | 2 | 1 | . | 2 | . | 15 |
| *Microgobius gulosus* | 4 | . | 4 | 5 | . | . | 2 | . | 1 | 4 | 2 | . | 22 |
| *Microgobius thalassinus* | . | . | . | . | 1 | 1 | . | . | . | 5 | 1 | . | 8 |
| *Micropogonias undulatus* | 468 | 11 | 46 | 26 | 50 | 1 | 4 | 5 | 3 | 2 | . | 1 | 617 |
| *Micropterus salmoides* | 2 | 2 | . | 2 | . | . | 9 | 4 | 6 | 1 | . | 4 | 30 |
| *Monacanthus ciliatus* | 1 | 1 | . | . | . | . | . | 2 | . | 7 | . | . | 11 |
| *Mugil cephalus* | 126 | 773 | 360 | 206 | 272 | 71 | 202 | 186 | 110 | 50 | 487 | 65 | 2,908 |
| *Mugil curema* | 8 | 54 | 120 | 90 | 69 | 94 | 20 | 45 | 85 | 63 | 34 | 5 | 687 |
| *Mugil gyrans* | 1 | 14 | 7 | 4 | 1 | 647 | 3 | 5 | 5 | 1 | 4 | 2 | 694 |

Appendix CK08-01. (Continued)

| Species | Month | | | | | | | | | | | | Totals |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | |
| | E=66 | E=66 | E=66 | E=66 | E=66 | E=66 | E=66 | E=66 | E=66 | E=66 | E=66 | E=66 | E=792 |
| *Mycteroperca microlepis* | . | . | . | . | . | . | . | 4 | . | 1 | . | . | 5 |
| *Mycteroperca* sp. | . | . | . | . | 1 | . | . | . | . | . | . | . | 1 |
| *Myrophis punctatus* | . | . | . | . | . | 1 | . | . | . | . | . | 1 | 2 |
| *Narcine bancroftii* | . | . | . | . | . | . | . | . | . | 1 | . | . | 1 |
| *Nicholsina usta* | . | . | . | . | . | . | . | 2 | . | . | . | 1 | 3 |
| *Notropis petersoni* | . | . | 57 | 52 | . | . | 205 | 17 | 37 | 7 | . | 1 | 376 |
| *Ogcocephalus cubifrons* | 3 | 45 | 51 | 127 | 97 | 25 | 40 | 37 | 28 | 52 | 17 | 36 | 558 |
| *Oligoplites saurus* | . | . | . | . | 1 | . | 51 | 25 | 14 | 13 | 1 | . | 105 |
| *Opisthonema oglinum* | . | 1 | . | . | 32 | 4 | 12 | 9 | 3 | 36 | . | . | 97 |
| *Opsanus beta* | . | 3 | . | 1 | 3 | . | . | 7 | 2 | 4 | 2 | 1 | 23 |
| *Orthopristis chrysoptera* | 2 | 17 | 2 | 57 | 592 | 175 | 148 | 200 | 758 | 119 | 124 | 20 | 2,214 |
| *Parablennius marmoreus* | . | . | . | . | . | . | . | . | 1 | . | . | . | 1 |
| *Paralichthys albigutta* | 15 | 22 | 14 | 44 | 25 | 19 | 19 | 36 | 21 | 28 | 6 | 10 | 259 |
| *Paralichthys lethostigma* | 1 | . | . | . | 2 | 1 | . | . | . | . | . | . | 4 |
| *Peprilus burti* | . | 1 | . | . | . | . | . | . | . | . | . | . | 1 |
| *Peprilus paru* | . | . | . | . | 8 | 4 | 105 | . | . | . | . | . | 117 |
| *Poecilia latipinna* | . | . | . | . | . | . | . | 3 | . | 1 | 1 | . | 5 |
| *Pogonias cromis* | 2 | 4 | 14 | 7 | 21 | 15 | 10 | 10 | 62 | 25 | 12 | 7 | 189 |
| *Pomatomus saltatrix* | . | . | . | 5 | 3 | 2 | 1 | . | . | . | . | . | 11 |
| *Pomoxis nigromaculatus* | . | . | . | . | 1 | . | 1 | 1 | 6 | . | . | . | 9 |
| *Portunus* spp. | 8 | 12 | 9 | 10 | 9 | 20 | 27 | 8 | 3 | 1 | 11 | 4 | 122 |
| *Prionotus scitulus* | 12 | 43 | 60 | 29 | 15 | 10 | 20 | 10 | 22 | 10 | 32 | 36 | 299 |
| *Prionotus tribulus* | 12 | 13 | 14 | 18 | 4 | 3 | 3 | 6 | 4 | 26 | 28 | 16 | 147 |
| *Rhinoptera bonasus* | . | . | 3 | 32 | 25 | 11 | 13 | 9 | 11 | 6 | 3 | 3 | 116 |
| *Rhizoprionodon terraenovae* | . | . | . | . | . | . | 8 | 1 | . | . | . | . | 9 |
| *Sardinella aurita* | . | . | . | . | . | . | 2 | . | . | . | . | . | 2 |

Appendix CK08-01. (Continued)

| Species | Month | | | | | | | | | | | | Totals |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | |
| | E=66 | E=66 | E=66 | E=66 | E=66 | E=66 | E=66 | E=66 | E=66 | E=66 | E=66 | E=66 | E=792 |
| *Sciaenops ocellatus* | 38 | 29 | 33 | 32 | 10 | 13 | 4 | 70 | 35 | 39 | 44 | 25 | 372 |
| *Scomberomorus maculatus* | . | . | . | . | 1 | 2 | 16 | 1 | 2 | 26 | . | . | 48 |
| *Scorpaena brasiliensis* | . | . | 1 | . | 1 | 1 | . | 1 | 2 | . | . | . | 6 |
| *Selene vomer* | . | . | . | . | . | . | 1 | 10 | 8 | 18 | 1 | . | 38 |
| *Serraniculus pumilio* | 1 | 1 | . | . | . | . | . | 2 | . | . | 1 | 3 | 8 |
| *Serranus subligarius* | . | 1 | . | . | . | . | . | . | . | . | . | . | 1 |
| *Sicyonia laevigata* | . | . | . | . | . | . | . | . | . | . | . | 1 | 1 |
| *Sicyonia typica* | 1 | . | . | . | . | . | . | . | . | . | . | . | 1 |
| *Sphoeroides nephelus* | . | 1 | 1 | 2 | 37 | 10 | 5 | 19 | 7 | 28 | 10 | 1 | 121 |
| *Sphyraena borealis* | . | . | . | . | 1 | 1 | . | . | . | . | . | . | 2 |
| *Sphyrna tiburo* | . | . | . | . | 4 | 1 | 5 | 2 | 6 | 7 | . | . | 25 |
| *Starksia ocellata* | . | 1 | . | . | . | . | . | . | . | . | . | . | 1 |
| *Stephanolepis hispidus* | 2 | 1 | . | . | 18 | 32 | 15 | 141 | 14 | 27 | 11 | 3 | 264 |
| *Strongylura marina* | 8 | 3 | 7 | 7 | 4 | 3 | 16 | 6 | 8 | 8 | . | 3 | 73 |
| *Strongylura notata* | . | 2 | 3 | 1 | 1 | . | . | . | 5 | 2 | . | 1 | 15 |
| *Strongylura* spp. | . | . | . | . | 10 | 4 | 2 | 3 | . | . | . | . | 19 |
| *Strongylura timucu* | . | . | . | . | . | 10 | 8 | 5 | 2 | . | . | . | 25 |
| *Symphurus plagiusa* | 5 | 8 | 18 | 4 | 3 | 3 | 13 | 21 | 27 | 43 | 28 | 7 | 180 |
| *Syngnathus floridae* | . | 1 | . | . | 7 | 12 | 14 | 18 | 8 | 15 | 3 | 6 | 84 |
| *Syngnathus louisianae* | 3 | 2 | 3 | 2 | 2 | 4 | 11 | 3 | 1 | 1 | 4 | 1 | 37 |
| *Syngnathus scovelli* | 3 | 3 | 1 | 4 | 1 | 8 | 10 | 34 | 9 | 2 | 5 | 7 | 87 |
| *Syngnathus springeri* | . | 1 | . | . | . | . | . | . | . | . | . | . | 1 |
| *Synodus foetens* | 1 | 3 | 2 | 2 | 19 | 23 | 19 | 12 | 16 | 14 | 6 | 5 | 122 |
| *Trachemys scripta scripta* | . | . | . | 1 | . | . | . | . | . | . | . | . | 1 |
| *Trachinotus carolinus* | . | . | . | . | . | . | . | . | 4 | . | . | . | 4 |
| *Trachinotus falcatus* | . | . | . | . | . | . | 1 | 2 | 11 | 8 | 2 | . | 24 |

Appendix CK08-01. (Continued)

| Species | Month | | | | | | | | | | | | Totals |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | |
| | E=66 | E=66 | E=66 | E=66 | E=66 | E=66 | E=66 | E=66 | E=66 | E=66 | E=66 | E=66 | E=792 |
| *Trinectes maculatus* | 5 | 5 | 47 | 99 | 6 | 12 | 7 | 15 | 47 | 147 | 2 | 6 | 398 |
| *Urophycis floridana* | 6 | 14 | 13 | 2 | . | . | . | . | . | . | . | 3 | 38 |
| *Urophycis regia* | . | 1 | 2 | . | . | . | . | . | . | . | . | . | 3 |
| **Totals** | **5,881** | **14,259** | **7,340** | **3,642** | **8,227** | **24,495** | **39,623** | **43,846** | **9,496** | **10,513** | **5,534** | **2,094** | **174,951** |

Appendix CK08-02. Summary by gear, stratum, and zone of species collected during Cedar Key stratified-random sampling, 2008. Sampling with 21.3-m bay seine was stratified by the presence or absence of a shoreline ('Shore' or offshore) within 5-m. Offshore sets were post-stratified by the presence or absence of bottom vegetation ('Veg' or 'Unveg'). Sampling with 21.3-m river seine, 183-m haul seine, and 6.1-m otter trawl were not stratified. Zone B encompassed the northern portion of the universe and included all tidal creeks; Zone C encompassed the southern portion of the universe; and Zone F encompassed the lower Suwannee River. Effort, or the total number of hauls, is labeled 'E'. Taxa are arranged alphabetically.

| Species | Gear and Strata | | | | | | Zone | | | Totals |
|---|---|---|---|---|---|---|---|---|---|---|
| | 21.3-m bay seine | | | 21.3-m river seine | 183-m haul seine | 6.1-m otter trawl | | | | |
| | Veg | Unveg | Shore | | | | B | C | F | |
| | E=33 | E=111 | E=108 | E=168 | E=192 | E=180 | E=384 | E=288 | E=120 | E=792 |
| *Acanthostracion quadricornis* | 1 | . | . | . | 1 | 34 | 10 | 26 | . | 36 |
| *Achirus lineatus* | . | 2 | 6 | 2 | . | 3 | 6 | 6 | 1 | 13 |
| *Acipenser oxyrinchus* | . | . | . | . | . | 1 | . | . | 1 | 1 |
| *Adinia xenica* | . | . | . | 47 | . | . | 47 | . | . | 47 |
| *Alosa alabamae* | . | . | . | . | 1 | . | 1 | . | . | 1 |
| *Aluterus schoepfii* | 3 | . | . | . | 1 | 3 | 1 | 6 | . | 7 |
| *Ameiurus catus* | . | . | 1 | . | . | 58 | 1 | . | 58 | 59 |
| *Anarchopterus criniger* | . | . | 1 | . | . | . | . | 1 | . | 1 |
| *Anchoa hepsetus* | 112 | 1,361 | 1,683 | 871 | 1 | 10 | 3,080 | 522 | 436 | 4,038 |
| *Anchoa mitchilli* | 647 | 7,626 | 10,807 | 74,213 | . | 2,658 | 77,666 | 3,666 | 14,619 | 95,951 |
| *Ancylopsetta quadrocellata* | . | . | . | . | 4 | 27 | 15 | 16 | . | 31 |
| *Archosargus probatocephalus* | . | . | . | 4 | 137 | 5 | 122 | 19 | 5 | 146 |
| *Argopecten* sp. | 1 | . | . | . | . | . | . | 1 | . | 1 |
| *Ariopsis felis* | 1 | 75 | 199 | 1 | 590 | 380 | 258 | 962 | 26 | 1,246 |
| *Astroscopus y-graecum* | . | . | . | . | 1 | 2 | 1 | 2 | . | 2 |
| *Bagre marinus* | . | 3 | 9 | . | 219 | 22 | 21 | 230 | 2 | 253 |
| *Bairdiella chrysoura* | 1,277 | 11 | 28 | 517 | 3,468 | 1,110 | 1,145 | 4,895 | 371 | 6,411 |
| *Bathygobius soporator* | . | . | 4 | 21 | . | 2 | 13 | . | 14 | 27 |
| *Brevoortia* spp. | . | 291 | 209 | 750 | 517 | 1 | 1,199 | 493 | 76 | 1,768 |
| *Calamus arctifrons* | 4 | . | . | . | . | 26 | 2 | 28 | . | 30 |
| *Callinectes sapidus* | 7 | 58 | 74 | 249 | 55 | 290 | 313 | 133 | 287 | 733 |
| *Caranx hippos* | . | . | . | 1 | 32 | 1 | 16 | 17 | 1 | 34 |
| *Centropomus undecimalis* | . | . | . | . | 10 | . | . | 10 | . | 10 |
| *Centropristis striata* | 5 | . | . | . | . | 89 | 20 | 74 | . | 94 |
| *Chaetodipterus faber* | 2 | 1 | 2 | 9 | 82 | 49 | 80 | 65 | . | 145 |
| *Chasmodes saburrae* | 5 | . | 2 | . | 1 | 3 | 1 | 10 | . | 11 |

Appendix CK08-02. (Continued)

| *Species* | Gear and Strata | | | | | | Zone | | | Totals |
|---|---|---|---|---|---|---|---|---|---|---|
| | 21.3-m bay seine | | | 21.3-m river seine | 183-m haul seine | 6.1-m otter trawl | | | | |
| | Veg | Unveg | Shore | | | | B | C | F | |
| | E=33 | E=111 | E=108 | E=168 | E=192 | E=180 | E=384 | E=288 | E=120 | E=792 |
| *Chilomycterus schoepfii* | 9 | 5 | 1 | . | 41 | 81 | 58 | 79 | . | 137 |
| *Chloroscombrus chrysurus* | 8 | 19 | 8 | 3 | 14 | 42 | 62 | 32 | . | 94 |
| *Citharichthys macrops* | . | . | . | . | . | 69 | 43 | 26 | . | 69 |
| *Ctenogobius boleosoma* | . | 1 | . | 2 | . | . | 1 | . | 2 | 3 |
| *Cynoscion arenarius* | . | 100 | 76 | 125 | 18 | 1,183 | 267 | 1,181 | 54 | 1,502 |
| *Cynoscion nebulosus* | 37 | 3 | 11 | 38 | 118 | 6 | 94 | 109 | 10 | 213 |
| *Cyprinodon variegatus* | . | . | 20 | 6 | . | . | 6 | 20 | . | 26 |
| *Dasyatis americana* | . | 1 | . | . | 1 | 1 | 1 | 2 | . | 3 |
| *Dasyatis sabina* | 1 | 20 | 19 | 3 | 1,607 | 184 | 989 | 831 | 14 | 1,834 |
| *Dasyatis say* | . | . | 1 | . | 105 | 1 | 42 | 65 | . | 107 |
| *Diplectrum formosum* | . | . | . | . | . | 29 | 11 | 18 | . | 29 |
| *Diplodus holbrookii* | 3 | . | . | . | . | 14 | 5 | 12 | . | 17 |
| *Dorosoma cepedianum* | . | . | . | . | 4 | . | 3 | 1 | . | 4 |
| *Dorosoma petenense* | . | . | . | . | 151 | . | 30 | 121 | . | 151 |
| *Echeneis neucratoides* | . | 1 | . | . | 32 | 1 | 7 | 26 | 1 | 34 |
| *Elops saurus* | . | 2 | 2 | 2 | 411 | . | 234 | 182 | 1 | 417 |
| *Etropus crossotus* | 1 | 11 | 12 | 2 | 430 | 522 | 337 | 638 | 3 | 978 |
| *Etropus* spp. | . | . | . | . | . | 3 | 3 | . | . | 3 |
| *Eucinostomus gula* | 155 | 61 | 161 | 101 | 195 | 85 | 275 | 482 | 1 | 758 |
| *Eucinostomus harengulus* | 2 | 29 | 90 | 305 | 85 | 91 | 319 | 77 | 206 | 602 |
| *Eucinostomus* spp. | 187 | 58 | 699 | 796 | . | 145 | 610 | 822 | 453 | 1,885 |
| *Farfantepenaeus duorarum* | 92 | 53 | 127 | 137 | 44 | 152 | 304 | 230 | 71 | 605 |
| *Floridichthys carpio* | . | . | 11 | . | . | . | . | 11 | . | 11 |
| *Fundulus grandis* | . | 5 | 64 | 314 | 13 | . | 343 | 13 | 40 | 396 |
| *Fundulus seminolis* | . | . | 6 | 47 | 1 | . | 1 | 6 | 47 | 54 |
| *Fundulus similis* | . | 19 | 314 | 72 | 37 | . | 152 | 290 | . | 442 |
| *Gambusia holbrooki* | . | . | . | 16 | . | . | 3 | . | 13 | 16 |
| *Gobiesox strumosus* | . | 1 | 3 | 4 | . | 8 | 15 | . | 1 | 16 |
| *Gobionellus oceanicus* | . | . | . | . | . | 1 | . | . | 1 | 1 |
| *Gobiosoma bosc* | . | 4 | 3 | 32 | . | 7 | 19 | 2 | 25 | 46 |
| *Gobiosoma longipala* | . | 1 | . | . | . | 12 | 11 | 2 | . | 13 |
| *Gobiosoma robustum* | 3 | . | 2 | . | . | 1 | 1 | 5 | . | 6 |

Appendix CK08-02. (Continued)

| Species | Gear and Strata | | | | | | Zone | | | Totals |
|---|---|---|---|---|---|---|---|---|---|---|
| | 21.3-m bay seine | | | 21.3-m river seine | 183-m haul seine | 6.1-m otter trawl | | | | |
| | Veg | Unveg | Shore | | | | B | C | F | |
| | E=33 | E=111 | E=108 | E=168 | E=192 | E=180 | E=384 | E=288 | E=120 | E=792 |
| *Gobiosoma* spp. | . | 2 | 2 | 23 | . | 6 | 17 | 2 | 14 | 33 |
| *Gymnura micrura* | . | . | . | . | 29 | 10 | 5 | 34 | . | 39 |
| *Haemulon plumierii* | 5 | . | . | . | . | 4 | 1 | 8 | . | 9 |
| *Halichoeres bivittatus* | . | . | . | . | . | 1 | 1 | . | . | 1 |
| *Harengula jaguana* | 31 | 8 | 109 | 41 | 492 | 5 | 362 | 324 | . | 686 |
| *Hemicaranx amblyrhynchus* | . | . | . | . | . | 1 | 1 | . | . | 1 |
| *Hippocampus erectus* | 1 | 3 | . | . | . | 13 | 4 | 13 | . | 17 |
| *Hypleurochilus caudovittatus* | . | 1 | . | . | . | 9 | 5 | 5 | . | 10 |
| *Hyporhamphus meeki* | 7 | 4 | 22 | . | 2 | . | 3 | 32 | . | 35 |
| *Hypsoblennius hentz* | 2 | 2 | 1 | . | . | 2 | 4 | 3 | . | 7 |
| *Ictalurus punctatus* | . | . | . | . | . | 32 | . | . | 32 | 32 |
| *Labidesthes sicculus* | . | . | . | 3 | . | . | . | . | 3 | 3 |
| *Lachnolaimus maximus* | . | . | . | . | . | 1 | . | 1 | . | 1 |
| *Lagodon rhomboides* | 1,049 | 77 | 1,012 | 679 | 6,590 | 737 | 2,188 | 7,681 | 275 | 10,144 |
| *Leiostomus xanthurus* | 935 | 578 | 6,558 | 4,975 | 2,144 | 711 | 5,466 | 9,247 | 1,188 | 15,901 |
| *Lepisosteus osseus* | . | . | . | 1 | 27 | 5 | 24 | 3 | 6 | 33 |
| *Lepisosteus platyrhincus* | . | . | . | 4 | . | . | 3 | . | 1 | 4 |
| *Lepomis auritus* | . | . | . | 25 | . | . | . | . | 25 | 25 |
| *Lepomis macrochirus* | . | . | . | 26 | . | . | . | . | 26 | 26 |
| *Lepomis microlophus* | . | . | . | 3 | . | . | . | . | 3 | 3 |
| *Lepomis punctatus* | . | . | . | 78 | . | . | 1 | . | 77 | 78 |
| *Lepomis* spp. | . | . | . | 26 | . | . | . | . | 26 | 26 |
| *Limulus polyphemus* | . | 2 | 3 | . | 15 | 2 | 10 | 12 | . | 22 |
| *Lucania goodei* | . | . | . | 2 | . | . | . | . | 2 | 2 |
| *Lucania parva* | . | . | . | 11 | . | . | 2 | . | 9 | 11 |
| *Lutjanus griseus* | . | . | 1 | 14 | 9 | 31 | 20 | 5 | 30 | 55 |
| *Lutjanus synagris* | 4 | 1 | 1 | . | 4 | 26 | 25 | 11 | . | 36 |
| *Malaclemys terrapin* | . | . | . | . | 8 | . | 2 | 6 | . | 8 |
| *Megalops atlanticus* | . | . | . | . | 1 | . | 1 | . | . | 1 |
| *Membras martinica* | 54 | 5,895 | 1,854 | 1,699 | . | 1 | 6,304 | 2,272 | 927 | 9,503 |
| *Menidia* spp. | 3 | 99 | 957 | 2,241 | 1 | . | 2,149 | 682 | 470 | 3,301 |

Appendix CK08-02. (Continued)

| *Species* | Gear and Strata | | | | | | Zone | | | Totals |
|---|---|---|---|---|---|---|---|---|---|---|
| | 21.3-m bay seine | | | 21.3-m river seine | 183-m haul seine | 6.1-m otter trawl | | | | |
| | Veg | Unveg | Shore | | | | B | C | F | |
| | E=33 | E=111 | E=108 | E=168 | E=192 | E=180 | E=384 | E=288 | E=120 | E=792 |
| *Menippe* spp. | . | 5 | . | . | . | 786 | 543 | 248 | . | 791 |
| *Menticirrhus americanus* | . | 99 | 138 | 29 | 116 | 488 | 239 | 624 | 7 | 870 |
| *Menticirrhus saxatilis* | . | 10 | 3 | . | . | 2 | 10 | 5 | . | 15 |
| *Microgobius gulosus* | 1 | 1 | 1 | 10 | . | 9 | 4 | 1 | 17 | 22 |
| *Microgobius thalassinus* | . | 6 | 1 | . | . | 1 | 5 | 2 | 1 | 8 |
| *Micropogonias undulatus* | . | 1 | 1 | . | 10 | 605 | 1 | 15 | 601 | 617 |
| *Micropterus salmoides* | . | . | . | 30 | . | . | 4 | . | 26 | 30 |
| *Monacanthus ciliatus* | 3 | . | . | . | 1 | 7 | 8 | 3 | . | 11 |
| *Mugil cephalus* | 6 | 16 | 678 | 114 | 2,094 | . | 1,825 | 1,067 | 16 | 2,908 |
| *Mugil curema* | . | 7 | 83 | 10 | 587 | . | 314 | 371 | 2 | 687 |
| *Mugil gyrans* | . | . | 641 | 1 | 52 | . | 25 | 669 | . | 694 |
| *Mycteroperca microlepis* | . | . | . | . | 4 | 1 | . | | . | 5 |
| *Mycteroperca* sp. | . | . | 1 | . | . | . | . | 5 | . | 1 |
| *Myrophis punctatus* | 1 | . | . | 1 | . | . | . | 1 | 1 | 2 |
| *Narcine bancroftii* | . | . | . | . | . | 1 | . | 1 | . | 1 |
| *Nicholsina usta* | . | . | . | . | . | 3 | 1 | 2 | . | 3 |
| *Notropis petersoni* | . | . | . | 375 | . | 1 | . | . | 376 | 376 |
| *Ogcocephalus cubifrons* | . | 6 | 8 | . | 419 | 125 | 35 | 523 | . | 558 |
| *Oligoplites saurus* | 5 | 24 | 46 | 26 | 4 | . | 52 | 50 | 3 | 105 |
| *Opisthonema oglinum* | . | 3 | 3 | 1 | 88 | 2 | 40 | 57 | . | 97 |
| *Opsanus beta* | 2 | . | . | . | 9 | 12 | 5 | 17 | 1 | 23 |
| *Orthopristis chrysoptera* | 797 | 12 | 54 | . | 320 | 1,031 | 811 | 1,403 | . | 2,214 |
| *Parablennius marmoreus* | . | . | . | . | . | 1 | . | 1 | . | 1 |
| *Paralichthys albigutta* | 3 | 11 | 20 | 4 | 160 | 61 | 86 | 170 | 3 | 259 |
| *Paralichthys lethostigma* | . | . | . | . | 1 | 3 | 1 | . | 3 | 4 |
| *Peprilus burti* | . | . | . | . | . | 1 | 1 | . | . | 1 |
| *Peprilus paru* | . | . | . | . | 117 | . | 29 | 88 | . | 117 |
| *Poecilia latipinna* | . | 1 | . | 4 | . | . | 5 | . | . | 5 |
| *Pogonias cromis* | . | 3 | 6 | 4 | 172 | 4 | 113 | 72 | 4 | 189 |
| *Pomatomus saltatrix* | . | 1 | 1 | . | 8 | 1 | 6 | 4 | 1 | 11 |
| *Pomoxis nigromaculatus* | . | . | . | 8 | . | 1 | . | . | 9 | 9 |
| *Portunus* spp. | 3 | 20 | 2 | . | 4 | 93 | 43 | 79 | . | 122 |
| *Prionotus scitulus* | 6 | 4 | 6 | . | 1 | 282 | 134 | 165 | . | 299 |

Appendix CK08-02. (Continued)

| *Species* | Gear and Strata | | | | | | Zone | | | Totals |
|---|---|---|---|---|---|---|---|---|---|---|
| | 21.3-m bay seine | | | 21.3-m river seine | 183-m haul seine | 6.1-m otter trawl | | | | |
| | Veg | Unveg | Shore | | | | B | C | F | |
| | E=33 | E=111 | E=108 | E=168 | E=192 | E=180 | E=384 | E=288 | E=120 | E=792 |
| *Prionotus tribulus* | . | 11 | 5 | 7 | 29 | 95 | 85 | 60 | 2 | 147 |
| *Rhinoptera bonasus* | . | 1 | 1 | . | 114 | . | 31 | 85 | . | 116 |
| *Rhizoprionodon terraenovae* | . | . | . | . | 9 | . | . | 9 | . | 9 |
| *Sardinella aurita* | . | 2 | . | . | . | . | 2 | . | . | 2 |
| *Sciaenops ocellatus* | . | 2 | 26 | 78 | 255 | 11 | 261 | 76 | 35 | 372 |
| *Scomberomorus maculatus* | . | 1 | 1 | 3 | 43 | . | 8 | 39 | 1 | 48 |
| *Scorpaena brasiliensis* | 1 | . | . | . | . | 5 | 2 | 4 | . | 6 |
| *Selene vomer* | . | . | . | . | 33 | 5 | 6 | 32 | . | 38 |
| *Serraniculus pumilio* | . | . | . | . | . | 8 | 5 | 3 | . | 8 |
| *Serranus subligarius* | . | . | . | . | . | 1 | . | 1 | . | 1 |
| *Sicyonia laevigata* | . | . | . | . | . | 1 | 1 | . | . | 1 |
| *Sicyonia typica* | . | . | . | . | . | 1 | . | 1 | . | 1 |
| *Sphoeroides nephelus* | 16 | 21 | 30 | 1 | 30 | 23 | 29 | 92 | . | 121 |
| *Sphyraena borealis* | 2 | . | . | . | . | . | . | 2 | . | 2 |
| *Sphyrna tiburo* | . | 1 | . | . | 23 | 1 | 1 | 24 | . | 25 |
| *Starksia ocellata* | . | . | . | . | . | 1 | . | 1 | . | 1 |
| *Stephanolepis hispidus* | 34 | 10 | . | . | 1 | 219 | 34 | 230 | . | 264 |
| *Strongylura marina* | 1 | 12 | 4 | 5 | 51 | . | 56 | 16 | 1 | 73 |
| *Strongylura notata* | . | . | 6 | 2 | 7 | . | 5 | 10 | . | 15 |
| *Strongylura* spp. | 1 | 1 | 5 | 12 | . | . | 11 | 4 | 4 | 19 |
| *Strongylura timucu* | . | 7 | 10 | 8 | . | . | 17 | 5 | 3 | 25 |
| *Symphurus plagiusa* | . | 25 | 16 | 7 | 2 | 130 | 43 | 120 | 17 | 180 |
| *Syngnathus floridae* | 52 | . | . | . | 1 | 31 | 10 | 74 | . | 84 |
| *Syngnathus louisianae* | 17 | . | 1 | . | . | 19 | 4 | 30 | 3 | 37 |
| *Syngnathus scovelli* | 51 | 3 | 3 | 18 | . | 12 | 15 | 59 | 13 | 87 |
| *Syngnathus springeri* | . | . | . | . | . | 1 | . | 1 | . | 1 |
| *Synodus foetens* | 5 | 27 | 35 | 10 | 3 | 42 | 62 | 60 | . | 122 |
| *Trachemys scripta scripta* | . | . | . | . | . | 1 | . | . | 1 | 1 |
| *Trachinotus carolinus* | . | . | 4 | . | . | . | . | 4 | . | 4 |
| *Trachinotus falcatus* | . | 3 | 10 | . | 11 | . | 11 | 13 | . | 24 |
| *Trinectes maculatus* | . | 5 | 1 | 33 | 2 | 357 | 23 | 158 | 217 | 398 |
| *Urophycis floridana* | 3 | 1 | 3 | . | . | 31 | 20 | 18 | . | 38 |
| *Urophycis regia* | . | . | . | . | . | 3 | 3 | . | . | 3 |
| **Totals** | **5,664** | **16,857** | **27,029** | **89,342** | **22,530** | **13,528** | **109,947** | **43,681** | **21,322** | **174,951** |

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# *Apalachicola Bay*

Apalachicola Bay is a shallow, semi-enclosed estuary, located on the northwestern coast of Florida. The estuary is bounded by a barrier island complex (St. Vincent Island, Little St. George Island, St. George Island, and Dog Island) and connected to the Gulf of Mexico through four passes (Indian Pass, West Pass, East Pass, and Sikes Cut). East of Dog Island, St. George Sound is open to the Gulf (Figure AP08-01). Freshwater inflow to Apalachicola Bay primarily comes from the Apalachicola River and to a lesser extent the Carrabelle River (Livingston 1983). Shoreline vegetation consists largely of marsh grasses and bottom substrates are typically characterized as sand or mud with oyster beds scattered throughout the bay (Ingle and Dawson 1953). Less than 7% of the substrate is covered by seagrass (Continental Shelf Associates, Inc. 1985).

The Fisheries-Independent Monitoring (FIM) program has conducted intensive sampling of fish and selected invertebrates in Apalachicola Bay since 1998. The area sampled was divided into two geographically-defined bay zones (A and B) and one riverine zone (C; Figure AP08-01). Monthly stratified-random sampling (SRS) was conducted in Zones A and B using 21.3-m bay seines, 183-m haul seines, and 6.1-m bay otter trawls. Monthly SRS was conducted in Zone C with 21.3-m river seines and 6.1-m river otter trawls. All methods were the same as those described in the Methods section of this report. This section summarizes data collected by the FIM program during 2008 in Apalachicola Bay.

## Stratified-Random Sampling

A total of 249,676 fishes (174 taxa) and selected invertebrates (17 taxa) were collected from 840 Apalachicola Bay SRS samples in 2008 (Table AP08-01; Appendices AP08-01 and -02). *Anchoa mitchilli* (n=99,209) was the most numerous taxon collected, representing 39.7% of the total catch. *Lagodon rhomboides* (n=19,916), *Micropogonias undulatus* (n=16,958), and *Litopenaeus setiferus* (n=11,410) were the next most abundant taxa collected, accounting for an additional 19.3% of the total catch. Thirty-three Selected Taxa (n=56,220) composed 22.5% of the total catch. *Micropogonias undulatus* (n=16,958), *L. setiferus* (n=11,410), and *Leiostomus xanthurus* (n=9,142) were the most abundant Selected Taxa, representing 15.0% of the annual catch. Collections in 2008 included five species new to the Apalachicola Bay FIM collection: *Albula vulpes* (bonefish), *Ctenopharyngodon idella* (grass carp), *Microgobius carri* (Seminole goby), *Parablennius marmoreus* (seaweed blenny), and *Sicyonia parri* (a rock shrimp).

## Bay Sampling

*21.3-m Bay Seines*. A total of 62,620 animals were collected in 240 21.3-m bay seines, representing 25.1% of the overall SRS catch (Table AP08-01). *Anchoa mitchilli* (n=10,069) and *L. rhomboides* (n=7,747) were the most abundant taxa, accounting for 28.5% of the 21.3-m bay seine catch (Table AP08-02). The taxon most frequently caught in 21.3-m bay seines was *L. rhomboides* (60.0% occurrence).

A total of 14,708 animals from 25 Selected Taxa were collected, representing 23.5% of the entire 21.3-m bay seine catch (Table AP08-03). *Leiostomus xanthurus* (n=4,437) and *Mugil cephalus* (n=3,296) were the most abundant Selected Taxa, accounting for 52.6% of the Selected Taxa collected by this gear. The Selected Taxa most frequently caught in 21.3-m bay seines were *Farfantepenaeus* spp. (36.3% occurrence) and *L. xanthurus* (32.9% occurrence).

*183-m Haul Seines.* A total of 35,952 animals were collected in 216 183-m haul seines, representing 14.4% of the overall SRS catch (Table AP08-01). *Lagodon rhomboides* (n=11,028) was the most abundant taxon, accounting for 30.7% of the 183-m haul seine catch (Table AP08-04). The taxon most frequently caught in 183-m haul seines was *L. rhomboides* (81.0% occurrence).

A total of 8,898 animals from 30 Selected Taxa were collected, representing 24.7% of the entire 183-m haul seine catch (Table AP08-05). *Leiostomus xanthurus* (n=2,453), *M. undulatus* (n=2,426), and *M. cephalus* (n=1,012) were the most abundant Selected Taxa, accounting for 66.2% of the Selected Taxa collected by this gear. The Selected Taxon most frequently caught in 183-m haul seines was *M. cephalus* (64.8% occurrence).

*6.1-m Bay Otter Trawls.* A total of 25,750 animals were collected in 144 6.1-m bay otter trawls, representing 10.3% of the overall SRS catch (Table AP08-01). *Anchoa mitchilli* (n=8,586) was the most abundant taxon collected, accounting for 33.3% of the 6.1-m bay otter trawl catch (Table AP08-06). The taxa most frequently caught in 6.1-m bay otter trawls were *Etropus crossotus* (61.8% occurrence) and *M. undulatus* (60.4% occurrence).

A total of 8,986 animals from 18 Selected Taxa were collected, representing 34.9% of the entire 6.1-m bay otter trawl catch (Table AP08-07). *Micropogonias undulatus* (n=5,564) and *Cynoscion arenarius* (n=1,541) were the most abundant Selected Taxa, accounting for 79.1% of the Selected Taxa collected by this gear. The Selected Taxon most frequently caught in 6.1-m bay otter trawls was *M. undulatus* (60.4% occurrence).

## River Sampling

*21.3-m River Seines.* A total of 27,826 animals were collected in 156 21.3-m river seines, representing 11.1% of the overall SRS catch (Table AP08-01). *Anchoa mitchilli* (n=7,940) was the most abundant taxon collected, accounting for 28.5% of the 21.3-m river seine catch (Table AP08-08). The taxa most frequently caught in 21.3-m river seines were *Trinetes maculatus* (48.7% occurrence), *Menidia* spp. (44.9% occurrence), and *A. mitchilli* (41.0% occurrence).

A total of 2,439 animals from 14 Selected Taxa were collected, representing 8.8% of the entire 21.3-m river seine catch (Table AP08-09). *Mugil cephalus* (n=1,257) was the most abundant Selected Taxon, accounting for 51.5% of the Selected Taxa collected by this gear. The Selected Taxon most frequently caught in 21.3-m river seines was *Callinectes sapidus* (58.3% occurrence).

*6.1-m River Otter Trawls.* A total of 97,528 animals were collected in 84 6.1-m river otter trawls, representing 39.1% of the overall SRS catch (Table AP08-01). *Anchoa mitchilli* (n=72,614) was the most abundant taxon collected, accounting for 74.5% of the 6.1-m river otter trawl catch (Table AP08-10). The taxon most frequently caught in 6.1-m river otter trawls was *C. sapidus* (65.5% occurrence).

A total of 21,189 animals from 17 Selected Taxa were collected, representing 21.7% of the entire 6.1-m river otter trawl catch (Table AP08-11). *Litopenaeus setiferus* (n=8,362) and *M. undulatus* (n=7,728) were the most abundant Selected Taxa, accounting for 75.9% of the Selected Taxa collected by this gear. The Selected Taxon most frequently caught in 6.1-m river otter trawls was *C. sapidus* (65.5% occurrence).

## References

Continental Shelf Associates, Inc. 1985. Apalachicola Bay study; Submersed vegetation assessment of the Apalachicola Bay system. Prepared for the U.S. Army Corps of Engineers, Mobile District, Sea Grant Publication No. MASGP 84 020.

Ingle, R.M. and C.E. Dawson, Jr. 1953. A survey of Apalachicola Bay. Fla. State Board Conserv. Mar. Lab. Tech. Ser. No. 10. 38 p.

Livingston, R. J. 1983. Resource Atlas of the Apalachicola Estuary. Florida Sea Grant College Program. Report 55. 64 pp.

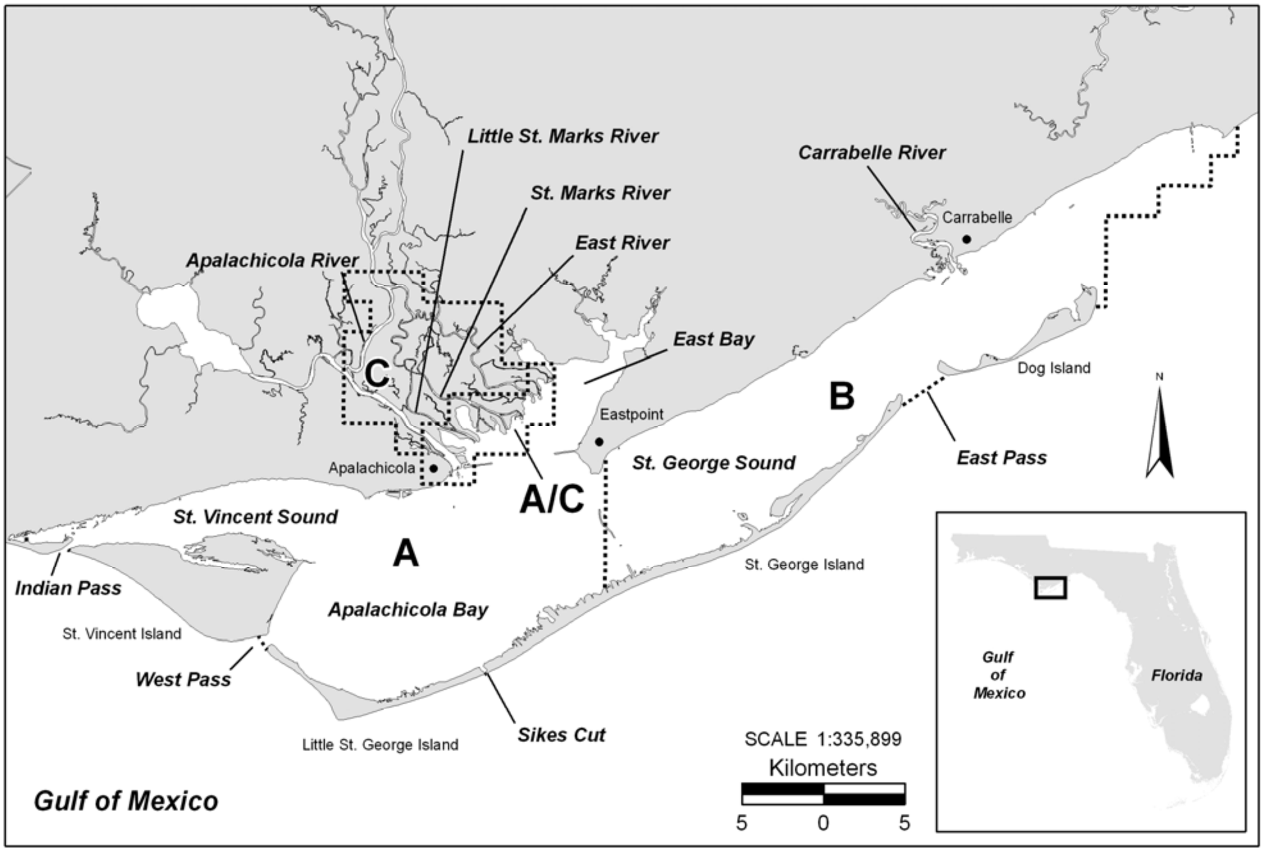


Figure AP08-01. Map of Apalachicola Bay sampling area. Zones are labeled A - C. Grids containing portions of Zone A and C are labeled A/C.

Table AP08-01. Summary of catch and effort data for Apalachicola Bay stratified-random sampling, 2008.

| Zone | 21.3-m bay seine | | 21.3-m river seine | | 183-m haul seine | | 6.1-m otter trawl | | Totals | |
|---|---|---|---|---|---|---|---|---|---|---|
| | **Animals** | **Hauls** | **Animals** | **Hauls** | **Animals** | **Hauls** | **Animals** | **Hauls** | **Animals** | **Hauls** |
| A | 47,512 | 120 | . | . | 14,875 | 108 | 15,337 | 72 | 77,724 | 300 |
| B | 15,108 | 120 | . | . | 21,077 | 108 | 10,413 | 72 | 46,599 | 300 |
| C | . | . | 27,826 | 156 | . | . | 97,528 | 84 | 125,354 | 240 |
| **Totals** | **62,620** | **240** | **27,826** | **156** | **35,952** | **216** | **123,278** | **228** | **249,676** | **840** |

Table AP08-02. Catch statistics for 10 dominant taxa collected in 240 21.3-m bay seine samples during Apalachicola Bay stratified-random sampling, 2008. Percent (%) is the percent of the total catch represented by that taxon; percent occurrence (% Occur) is the percentage of samples in which that taxon was collected; CV is the coefficient of variation of the mean. Taxa are ranked in order of decreasing mean density.

| Species | Number | | % Occur | Density Estimate (animals/100m$^2$) | | | | Standard Length (mm) | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | No. | % | | Mean | Stderr | CV | Max | Mean | Stderr | Min | Max |
| *Anchoa mitchilli* | 10,069 | 16.1 | 28.3 | 29.97 | 11.42 | 590.19 | 2,434.29 | 32 | 0.07 | 19 | 64 |
| *Lagodon rhomboides* | 7,747 | 12.4 | 60.0 | 23.06 | 4.72 | 317.37 | 656.43 | 38 | 0.19 | 10 | 155 |
| *Anchoa lyolepis* | 5,823 | 9.3 | 3.8 | 17.33 | 16.61 | 1,485.15 | 3,985.71 | 30 | 0.06 | 25 | 58 |
| *Anchoa cubana* | 5,821 | 9.3 | 2.5 | 17.32 | 16.52 | 1,477.39 | 3,962.14 | 29 | 0.04 | 25 | 47 |
| *Anchoa hepsetus* | 4,582 | 7.3 | 19.6 | 13.64 | 5.29 | 600.73 | 787.14 | 33 | 0.11 | 20 | 101 |
| *Leiostomus xanthurus* | 4,437 | 7.1 | 32.9 | 13.21 | 3.40 | 398.57 | 398.57 | 29 | 0.19 | 10 | 178 |
| *Mugil cephalus* | 3,296 | 5.3 | 20.4 | 9.81 | 4.00 | 631.27 | 738.57 | 26 | 0.18 | 18 | 343 |
| *Litopenaeus setiferus* | 2,430 | 3.9 | 12.1 | 7.23 | 3.34 | 714.68 | 697.14 | 10 | 0.11 | 3 | 27 |
| *Orthopristis chrysoptera* | 2,369 | 3.8 | 25.0 | 7.05 | 2.04 | 447.49 | 257.86 | 39 | 0.31 | 10 | 172 |
| *Brevoortia* spp. | 2,092 | 3.3 | 9.2 | 6.23 | 2.49 | 620.54 | 422.14 | 32 | 0.26 | 20 | 112 |
| Subtotal | 48,666 | 77.8 | . | . | . | . | . | . | . | 3 | 343 |
| **Totals** | **62,620** | **100.0** | **.** | **186.37** | **38.05** | **316.30** | **8,112.14** | **.** | **.** | **2** | **396** |

Table AP08-03. Catch statistics for Selected Taxa collected in 240 21.3-m bay seine samples during Apalachicola Bay stratified-random sampling, 2008. Percent (%) is the percent of the total catch represented by that taxon; percent occurrence (% Occur) is the percentage of samples in which that taxon was collected; CV is the coefficient of variation of the mean. Taxa are ranked in order of decreasing mean density.

| Species | Number | | % Occur | Density Estimate (animals/100m$^2$) | | | | Standard Length (mm) | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | No. | % | | Mean | Stderr | CV | Max | Mean | Stderr | Min | Max |
| *Leiostomus xanthurus* | 4,437 | 7.1 | 32.9 | 13.21 | 3.40 | 398.57 | 398.57 | 29 | 0.19 | 10 | 178 |
| *Mugil cephalus* | 3,296 | 5.3 | 20.4 | 9.81 | 4.00 | 631.27 | 738.57 | 26 | 0.18 | 18 | 343 |
| *Litopenaeus setiferus* | 2,430 | 3.9 | 12.1 | 7.23 | 3.34 | 714.68 | 697.14 | 10 | 0.11 | 3 | 27 |
| *Cynoscion arenarius* | 1,247 | 2.0 | 11.7 | 3.71 | 1.21 | 506.39 | 182.86 | 30 | 0.31 | 12 | 64 |
| *Micropogonias undulatus* | 1,225 | 2.0 | 17.5 | 3.65 | 1.12 | 475.22 | 136.43 | 29 | 0.44 | 8 | 194 |
| *Farfantepenaeus* spp. | 903 | 1.4 | 36.3 | 2.69 | 0.65 | 377.56 | 94.29 | 8 | 0.09 | 3 | 14 |
| *Callinectes sapidus* | 448 | 0.7 | 29.2 | 1.33 | 0.41 | 472.14 | 68.57 | 13 | 0.55 | 5 | 135 |
| *Menticirrhus americanus* | 332 | 0.5 | 10.0 | 0.99 | 0.66 | 1,028.28 | 155.71 | 39 | 2.17 | 15 | 330 |
| *Cynoscion nebulosus* | 123 | 0.2 | 14.6 | 0.37 | 0.08 | 351.58 | 8.57 | 42 | 2.12 | 12 | 147 |
| *Mugil curema* | 55 | 0.1 | 5.0 | 0.16 | 0.08 | 771.14 | 13.57 | 62 | 3.97 | 24 | 115 |
| *Lutjanus synagris* | 47 | 0.1 | 5.4 | 0.14 | 0.06 | 683.18 | 12.14 | 31 | 1.83 | 17 | 72 |
| *Sciaenops ocellatus* | 43 | 0.1 | 7.1 | 0.13 | 0.05 | 581.36 | 8.57 | 54 | 9.02 | 9 | 348 |
| *Paralichthys albigutta* | 33 | 0.1 | 9.2 | 0.10 | 0.02 | 389.25 | 3.57 | 65 | 9.90 | 13 | 281 |
| *Menticirrhus saxatilis* | 27 | 0.0 | 2.5 | 0.08 | 0.06 | 1,214.22 | 15.00 | 32 | 5.24 | 14 | 139 |
| *Mycteroperca microlepis* | 14 | 0.0 | 3.3 | 0.04 | 0.02 | 599.03 | 2.14 | 131 | 13.15 | 52 | 200 |
| *Lutjanus griseus* | 14 | 0.0 | 2.9 | 0.04 | 0.02 | 657.74 | 2.86 | 47 | 5.62 | 15 | 97 |
| *Paralichthys squamilentus* | 7 | 0.0 | 0.4 | 0.02 | 0.02 | 1,549.19 | 5.00 | 28 | 3.19 | 20 | 45 |

Table AP08-03. (Continued)

| Species | Number No. | Number % | % Occur | Density Estimate (animals/100m$^2$) Mean | Stderr | CV | Max | Standard Length (mm) Mean | Stderr | Min | Max |
|---|---|---|---|---|---|---|---|---|---|---|---|
| *Elops saurus* | 6 | 0.0 | 2.1 | 0.02 | 0.01 | 724.93 | 1.43 | 94 | 25.06 | 38 | 180 |
| *Archosargus probatocephalus* | 6 | 0.0 | 1.3 | 0.02 | 0.01 | 962.91 | 2.14 | 80 | 63.24 | 13 | 396 |
| *Farfantepenaeus aztecus* | 4 | 0.0 | 1.3 | 0.01 | 0.01 | 945.37 | 1.43 | 16 | 0.71 | 15 | 18 |
| *Farfantepenaeus duorarum* | 3 | 0.0 | 1.3 | 0.01 | 0.01 | 890.68 | 0.71 | 16 | 0.67 | 15 | 17 |
| *Menticirrhus littoralis* | 2 | 0.0 | 0.8 | 0.01 | 0.00 | 1,093.15 | 0.71 | 85 | 43.50 | 41 | 128 |
| *Scomberomorus maculatus* | 2 | 0.0 | 0.8 | 0.01 | 0.00 | 1,093.15 | 0.71 | 78 | 7.50 | 70 | 85 |
| *Paralichthys lethostigma* | 2 | 0.0 | 0.4 | 0.01 | 0.01 | 1,549.19 | 1.43 | 22 | 2.00 | 20 | 24 |
| *Albula vulpes* | 1 | 0.0 | 0.4 | 0.00 | 0.00 | 1,549.19 | 0.71 | 65 | . | 65 | 65 |
| *Trachinotus falcatus* | 1 | 0.0 | 0.4 | 0.00 | 0.00 | 1,549.19 | 0.71 | 15 | . | 15 | 15 |
| **Totals** | **14,708** | **23.5** | **80.8** | **43.77** | **7.35** | **260.03** | **898.57** | **.** | **.** | **3** | **396** |

Table AP08-04. Catch statistics for 10 dominant taxa collected in 216 183-m haul seine samples during Apalachicola Bay stratified-random sampling, 2008. Percent (%) is the percent of the total catch represented by that taxon; percent occurrence (% Occur) is the percentage of samples in which that taxon was collected; CV is the coefficient of variation of the mean. Taxa are ranked in order of decreasing mean catch-per-unit-effort.

| Species | Number | | % Occur | Catch-per-unit-effort (animals/set) | | | | Standard Length (mm) | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | No. | % | | Mean | Stderr | CV | Max | Mean | Stderr | Min | Max |
| *Lagodon rhomboides* | 11,028 | 30.7 | 81.0 | 51.06 | 5.39 | 155.24 | 454.00 | 106 | 0.26 | 31 | 238 |
| *Bairdiella chrysoura* | 5,972 | 16.6 | 29.6 | 27.65 | 8.23 | 437.50 | 1,285.00 | 127 | 0.27 | 37 | 197 |
| *Brevoortia* spp. | 3,173 | 8.8 | 15.3 | 14.69 | 9.08 | 907.96 | 1,906.00 | 86 | 0.41 | 61 | 215 |
| *Leiostomus xanthurus* | 2,453 | 6.8 | 53.7 | 11.36 | 2.08 | 268.91 | 285.00 | 141 | 0.99 | 57 | 1755 |
| *Micropogonias undulatus* | 2,426 | 6.7 | 26.9 | 11.23 | 2.34 | 306.48 | 238.00 | 161 | 0.70 | 87 | 289 |
| *Orthopristis chrysoptera* | 2,120 | 5.9 | 32.9 | 9.81 | 3.23 | 483.21 | 604.00 | 153 | 0.77 | 64 | 204 |
| *Mugil cephalus* | 1,012 | 2.8 | 64.8 | 4.69 | 0.60 | 187.28 | 89.00 | 236 | 2.32 | 37 | 430 |
| *Ariopsis felis* | 957 | 2.7 | 37.0 | 4.43 | 1.62 | 536.42 | 338.00 | 239 | 2.27 | 70 | 398 |
| *Harengula jaguana* | 901 | 2.5 | 19.0 | 4.17 | 1.18 | 416.65 | 140.00 | 97 | 0.36 | 68 | 134 |
| *Dasyatis sabina* | 685 | 1.9 | 49.1 | 3.17 | 0.45 | 206.41 | 61.00 | 227 | 1.92 | 99 | 441 |
| Subtotal | 30,727 | 85.4 | . | . | . | . | . | . | . | 31 | 1755 |
| **Totals** | **35,952** | **100.0** | **.** | **166.45** | **18.99** | **167.64** | **2,482.00** | **.** | **.** | **11** | **1755** |

Table AP08-05. Catch statistics for Selected Taxa collected in 216 183-m haul seine samples during Apalachicola Bay stratified-random sampling, 2008. Percent (%) is the percent of the total catch represented by that taxon; percent occurrence (% Occur) is the percentage of samples in which that taxon was collected; CV is the coefficient of variation of the mean. Taxa are ranked in order of decreasing mean catch-per-unit-effort.

| Species | Number | | % Occur | Catch-per-unit-effort (animals/set) | | | | Standard Length (mm) | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | No. | % | | Mean | Stderr | CV | Max | Mean | Stderr | Min | Max |
| *Leiostomus xanthurus* | 2,453 | 6.8 | 53.7 | 11.36 | 2.08 | 268.91 | 285.00 | 141 | 0.99 | 57 | 275 |
| *Micropogonias undulatus* | 2,426 | 6.7 | 26.9 | 11.23 | 2.34 | 306.48 | 238.00 | 161 | 0.70 | 87 | 289 |
| *Mugil cephalus* | 1,012 | 2.8 | 64.8 | 4.69 | 0.60 | 187.28 | 89.00 | 236 | 2.32 | 37 | 430 |
| *Mugil curema* | 588 | 1.6 | 45.8 | 2.72 | 0.44 | 237.77 | 60.00 | 162 | 1.79 | 84 | 293 |
| *Elops saurus* | 437 | 1.2 | 32.9 | 2.02 | 0.42 | 303.37 | 53.00 | 299 | 2.81 | 83 | 495 |
| *Cynoscion nebulosus* | 410 | 1.1 | 33.3 | 1.90 | 0.36 | 277.75 | 47.00 | 252 | 4.96 | 45 | 548 |
| *Sciaenops ocellatus* | 397 | 1.1 | 39.8 | 1.84 | 0.38 | 305.47 | 45.00 | 372 | 5.68 | 81 | 617 |
| *Paralichthys albigutta* | 282 | 0.8 | 41.7 | 1.31 | 0.20 | 226.61 | 24.00 | 170 | 3.78 | 62 | 397 |
| *Litopenaeus setiferus* | 166 | 0.5 | 6.5 | 0.77 | 0.32 | 614.59 | 49.00 | 20 | 0.37 | 11 | 35 |
| *Archosargus probatocephalus* | 139 | 0.4 | 24.5 | 0.64 | 0.10 | 235.44 | 10.00 | 315 | 5.50 | 113 | 427 |
| *Callinectes sapidus* | 102 | 0.3 | 24.1 | 0.47 | 0.09 | 273.20 | 14.00 | 104 | 4.33 | 28 | 204 |
| *Pogonias cromis* | 100 | 0.3 | 16.7 | 0.46 | 0.10 | 317.90 | 11.00 | 205 | 5.06 | 97 | 303 |
| *Mycteroperca microlepis* | 93 | 0.3 | 7.4 | 0.43 | 0.15 | 501.64 | 19.00 | 157 | 4.43 | 65 | 278 |
| *Menticirrhus americanus* | 87 | 0.2 | 15.3 | 0.40 | 0.10 | 367.07 | 13.00 | 162 | 4.47 | 85 | 287 |
| *Scomberomorus maculatus* | 45 | 0.1 | 6.0 | 0.21 | 0.08 | 539.52 | 10.00 | 200 | 17.52 | 114 | 498 |
| *Trachinotus falcatus* | 38 | 0.1 | 3.2 | 0.18 | 0.14 | 1,133.74 | 29.00 | 54 | 2.54 | 35 | 102 |
| *Trachinotus carolinus* | 22 | 0.1 | 4.6 | 0.10 | 0.04 | 575.07 | 6.00 | 99 | 9.42 | 62 | 280 |

Table AP08-05. (Continued)

| Species | Number | | % Occur | Catch-per-unit-effort (animals/set) | | | | Standard Length (mm) | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | No. | % | | Mean | Stderr | CV | Max | Mean | Stderr | Min | Max |
| *Paralichthys lethostigma* | 18 | 0.1 | 7.4 | 0.08 | 0.02 | 388.20 | 3.00 | 275 | 30.31 | 58 | 478 |
| *Cynoscion arenarius* | 17 | 0.0 | 1.9 | 0.08 | 0.06 | 1,141.93 | 13.00 | 230 | 8.66 | 150 | 305 |
| *Menticirrhus littoralis* | 14 | 0.0 | 3.7 | 0.06 | 0.02 | 547.69 | 3.00 | 211 | 14.49 | 123 | 278 |
| *Pomatomus saltatrix* | 12 | 0.0 | 4.2 | 0.06 | 0.02 | 511.09 | 2.00 | 224 | 33.53 | 118 | 417 |
| *Farfantepenaeus duorarum* | 10 | 0.0 | 2.8 | 0.05 | 0.02 | 651.12 | 3.00 | 20 | 0.66 | 17 | 24 |
| *Paralichthys squamilentus* | 6 | 0.0 | 1.4 | 0.03 | 0.02 | 1,036.81 | 4.00 | 65 | 10.12 | 48 | 113 |
| *Menippe* spp. | 5 | 0.0 | 1.9 | 0.02 | 0.01 | 773.02 | 2.00 | 92 | 18.57 | 18 | 116 |
| *Lutjanus synagris* | 5 | 0.0 | 0.9 | 0.02 | 0.02 | 1,210.61 | 4.00 | 71 | 1.21 | 68 | 75 |
| *Lutjanus griseus* | 4 | 0.0 | 1.9 | 0.02 | 0.01 | 729.70 | 1.00 | 141 | 23.64 | 77 | 187 |
| *Menticirrhus saxatilis* | 4 | 0.0 | 1.4 | 0.02 | 0.01 | 896.50 | 2.00 | 143 | 14.56 | 122 | 185 |
| *Farfantepenaeus aztecus* | 3 | 0.0 | 1.4 | 0.01 | 0.01 | 844.57 | 1.00 | 18 | 1.76 | 15 | 21 |
| *Rachycentron canadum* | 2 | 0.0 | 0.9 | 0.01 | 0.01 | 1,036.81 | 1.00 | 213 | 45.50 | 167 | 258 |
| *Megalops atlanticus* | 1 | 0.0 | 0.5 | 0.00 | 0.00 | 1,469.69 | 1.00 | 930 | . | 930 | 930 |
| **Totals** | **8,898** | **24.8** | **95.8** | **41.19** | **4.27** | **152.17** | **373.00** | **.** | **.** | **11** | **1755** |

Table AP08-06. Catch statistics for 10 dominant taxa collected in 144 bay 6.1-m otter trawl samples during Apalachicola Bay stratified-random sampling, 2008. Percent (%) is the percent of the total catch represented by that taxon; percent occurrence (% Occur) is the percentage of samples in which that taxon was collected; CV is the coefficient of variation of the mean. Taxa are ranked in order of decreasing mean density.

| **Species** | **Number** | | **% Occur** | **Density Estimate (animals/100m$^2$)** | | | | **Standard Length (mm)** | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | **No.** | **%** | | **Mean** | **Stderr** | **CV** | **Max** | **Mean** | **Stderr** | **Min** | **Max** |
| *Anchoa mitchilli* | 8,586 | 33.3 | 45.1 | 3.96 | 0.94 | 283.63 | 64.89 | 46 | 0.12 | 9 | 70 |
| *Micropogonias undulatus* | 5,564 | 21.6 | 60.4 | 2.56 | 0.58 | 272.16 | 65.34 | 33 | 0.41 | 7 | 180 |
| *Cynoscion arenarius* | 1,541 | 6.0 | 27.8 | 0.72 | 0.33 | 548.62 | 42.90 | 60 | 0.96 | 7 | 224 |
| *Rimapenaeus constrictus* | 1,412 | 5.5 | 46.5 | 0.66 | 0.18 | 333.31 | 14.44 | 5 | 0.07 | 2 | 36 |
| *Etropus crossotus* | 907 | 3.5 | 61.8 | 0.42 | 0.06 | 167.04 | 4.65 | 76 | 0.61 | 15 | 114 |
| *Anchoa cubana* | 806 | 3.1 | 7.6 | 0.36 | 0.27 | 878.43 | 37.07 | 36 | 0.13 | 28 | 57 |
| *Lagodon rhomboides* | 753 | 2.9 | 47.2 | 0.35 | 0.10 | 356.50 | 12.28 | 69 | 1.15 | 13 | 184 |
| *Orthopristis chrysoptera* | 690 | 2.7 | 43.1 | 0.32 | 0.09 | 336.80 | 8.84 | 80 | 1.57 | 10 | 187 |
| *Leiostomus xanthurus* | 466 | 1.8 | 44.4 | 0.21 | 0.05 | 262.73 | 3.91 | 107 | 1.54 | 6 | 184 |
| *Farfantepenaeus aztecus* | 435 | 1.7 | 26.4 | 0.20 | 0.06 | 392.08 | 7.26 | 20 | 0.15 | 15 | 40 |
| Subtotal | 21,160 | 82.1 | . | . | . | . | . | . | . | 2 | 224 |
| **Totals** | **25,750** | **100.0** | **.** | **11.86** | **1.40** | **141.49** | **89.72** | **.** | **.** | **2** | **607** |

Table AP08-07. Catch statistics for Selected Taxa collected in 144 bay 6.1-m otter trawl samples during Apalachicola Bay stratified-random sampling, 2008. Percent (%) is the percent of the total catch represented by that taxon; percent occurrence (% Occur) is the percentage of samples in which that taxon was collected; CV is the coefficient of variation of the mean. Taxa are ranked in order of decreasing mean density.

| Species | Number | | % Occur | Density Estimate (animals/100m$^2$) | | | | Standard Length (mm) | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | No. | % | | Mean | Stderr | CV | Max | Mean | Stderr | Min | Max |
| *Micropogonias undulatus* | 5,564 | 21.6 | 60.4 | 2.56 | 0.58 | 272.16 | 65.34 | 33 | 0.41 | 7 | 180 |
| *Cynoscion arenarius* | 1,541 | 6.0 | 27.8 | 0.72 | 0.33 | 548.62 | 42.90 | 60 | 0.96 | 7 | 224 |
| *Leiostomus xanthurus* | 466 | 1.8 | 44.4 | 0.21 | 0.05 | 262.73 | 3.91 | 107 | 1.54 | 6 | 184 |
| *Farfantepenaeus aztecus* | 435 | 1.7 | 26.4 | 0.20 | 0.06 | 392.08 | 7.26 | 20 | 0.15 | 15 | 40 |
| *Farfantepenaeus duorarum* | 229 | 0.9 | 41.7 | 0.11 | 0.02 | 192.55 | 1.28 | 20 | 0.28 | 15 | 34 |
| *Farfantepenaeus* spp. | 179 | 0.7 | 33.3 | 0.08 | 0.02 | 231.95 | 1.35 | 11 | 0.19 | 3 | 15 |
| *Menticirrhus americanus* | 131 | 0.5 | 20.1 | 0.06 | 0.03 | 508.67 | 2.90 | 45 | 2.79 | 9 | 186 |
| *Callinectes sapidus* | 109 | 0.4 | 27.8 | 0.05 | 0.02 | 357.27 | 1.85 | 55 | 4.20 | 9 | 179 |
| *Litopenaeus setiferus* | 92 | 0.4 | 19.4 | 0.04 | 0.01 | 316.06 | 1.08 | 25 | 0.78 | 9 | 39 |
| *Paralichthys albigutta* | 76 | 0.3 | 25.7 | 0.04 | 0.01 | 222.46 | 0.47 | 155 | 7.27 | 52 | 350 |
| *Lutjanus synagris* | 75 | 0.3 | 13.9 | 0.03 | 0.01 | 371.10 | 0.96 | 53 | 3.74 | 15 | 120 |
| *Menippe* spp. | 65 | 0.3 | 15.3 | 0.03 | 0.01 | 346.02 | 0.81 | 17 | 1.34 | 3 | 48 |
| *Mugil cephalus* | 8 | 0.0 | 1.4 | 0.00 | 0.00 | 871.94 | 0.36 | 23 | 0.73 | 21 | 26 |
| *Cynoscion nebulosus* | 6 | 0.0 | 4.2 | 0.00 | 0.00 | 481.55 | 0.07 | 130 | 20.30 | 66 | 175 |
| *Archosargus probatocephalus* | 3 | 0.0 | 1.4 | 0.00 | 0.00 | 891.92 | 0.13 | 95 | 10.67 | 84 | 116 |
| *Paralichthys lethostigma* | 3 | 0.0 | 1.4 | 0.00 | 0.00 | 891.92 | 0.13 | 239 | 73.04 | 136 | 380 |
| *Cynoscion nothus* | 2 | 0.0 | 1.4 | 0.00 | 0.00 | 845.56 | 0.07 | 28 | 14.50 | 13 | 42 |
| *Menticirrhus littoralis* | 1 | 0.0 | 0.7 | 0.00 | 0.00 | 1,200.00 | 0.07 | 89 | . | 89 | 89 |
| *Lutjanus campechanus* | 1 | 0.0 | 0.7 | 0.00 | 0.00 | 1,200.00 | 0.07 | 27 | . | 27 | 27 |
| **Totals** | **8,986** | **34.9** | **94.4** | **4.15** | **0.71** | **205.54** | **66.94** | **.** | **.** | **3** | **380** |

Table AP08-08. Catch statistics for 10 dominant taxa collected in 156 21.3-m river seine samples during Apalachicola Bay stratified-random sampling, 2008. Percent (%) is the percent of the total catch represented by that taxon; percent occurrence (% Occur) is the percentage of samples in which that taxon was collected; CV is the coefficient of variation of the mean. Taxa are ranked in order of decreasing mean density.

| Species | Number | | % Occur | Density Estimate (animals/100m$^2$) | | | | Standard Length (mm) | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | No. | % | | Mean | Stderr | CV | Max | Mean | Stderr | Min | Max |
| *Anchoa mitchilli* | 7,940 | 28.5 | 41.0 | 74.85 | 22.14 | 369.49 | 2,204.41 | 27 | 0.09 | 13 | 65 |
| *Brevoortia* spp. | 3,953 | 14.2 | 16.7 | 37.26 | 26.06 | 873.46 | 3,925.00 | 25 | 0.06 | 19 | 92 |
| *Menidia* spp. | 3,916 | 14.1 | 44.9 | 36.92 | 9.49 | 321.16 | 1,072.06 | 43 | 0.15 | 17 | 85 |
| *Lucania goodei* | 1,430 | 5.1 | 6.4 | 13.48 | 6.85 | 634.79 | 854.41 | 24 | 0.09 | 15 | 33 |
| *Mugil cephalus* | 1,257 | 4.5 | 7.7 | 11.85 | 9.42 | 993.40 | 1,450.00 | 21 | 0.26 | 17 | 285 |
| *Trinectes maculatus* | 935 | 3.4 | 48.7 | 8.81 | 2.45 | 347.53 | 338.24 | 19 | 0.24 | 7 | 61 |
| *Notropis petersoni* | 824 | 3.0 | 25.6 | 7.77 | 2.09 | 336.79 | 180.88 | 37 | 0.22 | 17 | 57 |
| *Lucania parva* | 700 | 2.5 | 26.3 | 6.60 | 1.89 | 356.85 | 202.94 | 25 | 0.16 | 12 | 37 |
| *Eucinostomus* spp. | 601 | 2.2 | 30.8 | 5.67 | 1.41 | 309.78 | 142.65 | 26 | 0.27 | 12 | 39 |
| *Notemigonus crysoleucas* | 520 | 1.9 | 12.8 | 4.90 | 1.72 | 437.91 | 154.41 | 53 | 0.82 | 17 | 200 |
| Subtotal | 22,076 | 79.4 | . | . | . | . | . | . | . | 7 | 285 |
| **Totals** | **27,826** | **100.0** | **.** | **262.31** | **37.52** | **178.66** | **3,989.71** | **.** | **.** | **2** | **606** |

Table AP08-09. Catch statistics for Selected Taxa collected in 156 21.3-m river seine samples during Apalachicola Bay stratified-random sampling, 2008. Percent (%) is the percent of the total catch represented by that taxon; percent occurrence (% Occur) is the percentage of samples in which that taxon was collected; CV is the coefficient of variation of the mean. Taxa are ranked in order of decreasing mean density.

| Species | Number | | % Occur | Density Estimate (animals/100m$^2$) | | | | Standard Length (mm) | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | No. | % | | Mean | Stderr | CV | Max | Mean | Stderr | Min | Max |
| *Mugil cephalus* | 1,257 | 4.5 | 7.7 | 11.85 | 9.42 | 993.40 | 1,450.00 | 21 | 0.26 | 17 | 285 |
| *Callinectes sapidus* | 497 | 1.8 | 58.3 | 4.69 | 0.68 | 181.80 | 58.82 | 20 | 0.90 | 4 | 142 |
| *Litopenaeus setiferus* | 360 | 1.3 | 18.6 | 3.39 | 1.18 | 435.69 | 116.18 | 5 | 0.11 | 2 | 17 |
| *Leiostomus xanthurus* | 141 | 0.5 | 6.4 | 1.33 | 0.91 | 852.45 | 135.29 | 37 | 1.07 | 13 | 105 |
| *Farfantepenaeus* spp. | 90 | 0.3 | 13.5 | 0.85 | 0.22 | 327.72 | 19.12 | 7 | 0.27 | 2 | 14 |
| *Cynoscion arenarius* | 39 | 0.1 | 5.1 | 0.37 | 0.15 | 513.31 | 13.24 | 31 | 1.78 | 18 | 57 |
| *Micropogonias undulatus* | 15 | 0.1 | 4.5 | 0.14 | 0.07 | 644.67 | 10.29 | 17 | 0.55 | 14 | 22 |
| *Cynoscion nebulosus* | 12 | 0.0 | 5.1 | 0.11 | 0.05 | 522.90 | 5.88 | 48 | 4.53 | 28 | 71 |
| *Archosargus probatocephalus* | 10 | 0.0 | 4.5 | 0.09 | 0.04 | 522.06 | 4.41 | 111 | 33.98 | 11 | 324 |
| *Lutjanus griseus* | 8 | 0.0 | 3.8 | 0.08 | 0.03 | 577.40 | 4.41 | 48 | 9.57 | 15 | 104 |
| *Paralichthys lethostigma* | 5 | 0.0 | 1.9 | 0.05 | 0.03 | 745.09 | 2.94 | 209 | 63.95 | 52 | 380 |
| *Sciaenops ocellatus* | 2 | 0.0 | 0.6 | 0.02 | 0.02 | 1,249.00 | 2.94 | 32 | 10.00 | 22 | 42 |
| *Farfantepenaeus aztecus* | 1 | 0.0 | 0.6 | 0.01 | 0.01 | 1,249.00 | 1.47 | 18 | . | 18 | 18 |
| *Elops saurus* | 1 | 0.0 | 0.6 | 0.01 | 0.01 | 1,249.00 | 1.47 | 229 | . | 229 | 229 |
| *Scomberomorus maculatus* | 1 | 0.0 | 0.6 | 0.01 | 0.01 | 1,249.00 | 1.47 | 24 | . | 24 | 24 |
| **Totals** | **2,439** | **8.8** | **72.4** | **22.99** | **9.58** | **520.26** | **1,452.94** | **.** | **.** | **2** | **380** |

Table AP08-10. Catch statistics for 10 dominant taxa collected in 84 river 6.1-m otter trawl samples during Apalachicola Bay stratified-random sampling, 2008. Percent (%) is the percent of the total catch represented by that taxon; percent occurrence (% Occur) is the percentage of samples in which that taxon was collected; CV is the coefficient of variation of the mean. Taxa are ranked in order of decreasing mean density.

| Species | Number | | % Occur | Density Estimate (animals/100m$^2$) | | | | Standard Length (mm) | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | No. | % | | Mean | Stderr | CV | Max | Mean | Stderr | Min | Max |
| *Anchoa mitchilli* | 72,614 | 74.5 | 53.6 | 118.00 | 51.89 | 403.03 | 3,618.61 | 26 | 0.02 | 16 | 55 |
| *Litopenaeus setiferus* | 8,362 | 8.6 | 31.0 | 13.66 | 6.91 | 463.63 | 537.57 | 7 | 0.03 | 3 | 17 |
| *Micropogonias undulatus* | 7,728 | 7.9 | 56.0 | 11.58 | 3.19 | 252.72 | 135.82 | 26 | 0.16 | 10 | 208 |
| *Cynoscion arenarius* | 2,558 | 2.6 | 35.7 | 3.90 | 1.03 | 242.98 | 48.97 | 38 | 0.29 | 7 | 82 |
| *Leiostomus xanthurus* | 1,645 | 1.7 | 33.3 | 2.56 | 1.44 | 514.42 | 115.62 | 43 | 0.65 | 13 | 215 |
| *Trinectes maculatus* | 927 | 1.0 | 51.2 | 1.56 | 0.56 | 331.07 | 34.18 | 23 | 0.42 | 8 | 70 |
| *Eucinostomus* spp. | 842 | 0.9 | 29.8 | 1.34 | 0.68 | 464.28 | 53.83 | 30 | 0.20 | 12 | 39 |
| *Callinectes sapidus* | 478 | 0.5 | 65.5 | 0.77 | 0.21 | 250.00 | 10.64 | 35 | 2.05 | 5 | 194 |
| *Notropis texanus* | 417 | 0.4 | 10.7 | 0.68 | 0.43 | 580.56 | 34.67 | 23 | 0.35 | 12 | 55 |
| *Symphurus plagiusa* | 327 | 0.3 | 16.7 | 0.52 | 0.23 | 407.63 | 15.92 | 30 | 0.48 | 15 | 57 |
| Subtotal | 95,898 | 98.4 | . | . | . | . | . | . | . | 3 | 215 |
| **Totals** | **97,528** | **100.0** | **.** | **157.09** | **58.06** | **338.73** | **4,214.19** | **.** | **.** | **3** | **653** |

Table AP08-11. Catch statistics for Selected Taxa collected in 84 river 6.1-m otter trawl samples during Apalachicola Bay stratified-random sampling, 2008. Percent (%) is the percent of the total catch represented by that taxon; percent occurrence (% Occur) is the percentage of samples in which that taxon was collected; CV is the coefficient of variation of the mean. Taxa are ranked in order of decreasing mean density.

| Species | Number | | % Occur | Density Estimate (animals/100m$^2$) | | | | Standard Length (mm) | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | No. | % | | Mean | Stderr | CV | Max | Mean | Stderr | Min | Max |
| *Litopenaeus setiferus* | 8,362 | 8.6 | 31.0 | 13.66 | 6.91 | 463.63 | 537.57 | 7 | 0.03 | 3 | 17 |
| *Micropogonias undulatus* | 7,728 | 7.9 | 56.0 | 11.58 | 3.19 | 252.72 | 135.82 | 26 | 0.16 | 10 | 208 |
| *Cynoscion arenarius* | 2,558 | 2.6 | 35.7 | 3.90 | 1.03 | 242.98 | 48.97 | 38 | 0.29 | 7 | 82 |
| *Leiostomus xanthurus* | 1,645 | 1.7 | 33.3 | 2.56 | 1.44 | 514.42 | 115.62 | 43 | 0.65 | 13 | 215 |
| *Callinectes sapidus* | 478 | 0.5 | 65.5 | 0.77 | 0.21 | 250.00 | 10.64 | 35 | 2.05 | 5 | 194 |
| *Farfantepenaeus* spp. | 266 | 0.3 | 28.6 | 0.41 | 0.14 | 307.69 | 8.84 | 9 | 0.18 | 3 | 15 |
| *Menticirrhus americanus* | 62 | 0.1 | 9.5 | 0.09 | 0.05 | 521.70 | 3.64 | 32 | 1.46 | 10 | 71 |
| *Archosargus probatocephalus* | 34 | 0.0 | 15.5 | 0.05 | 0.02 | 315.73 | 0.98 | 115 | 9.33 | 63 | 285 |
| *Cynoscion nebulosus* | 16 | 0.0 | 10.7 | 0.02 | 0.01 | 386.44 | 0.74 | 72 | 22.29 | 26 | 377 |
| *Paralichthys lethostigma* | 13 | 0.0 | 8.3 | 0.02 | 0.01 | 480.73 | 0.81 | 129 | 32.32 | 33 | 373 |
| *Farfantepenaeus aztecus* | 7 | 0.0 | 6.0 | 0.01 | 0.00 | 424.52 | 0.25 | 18 | 0.61 | 16 | 21 |
| *Lutjanus griseus* | 6 | 0.0 | 6.0 | 0.01 | 0.00 | 418.00 | 0.25 | 67 | 2.73 | 59 | 78 |
| *Farfantepenaeus duorarum* | 6 | 0.0 | 1.2 | 0.01 | 0.01 | 916.52 | 0.74 | 16 | 0.49 | 15 | 18 |
| *Sciaenops ocellatus* | 3 | 0.0 | 3.6 | 0.00 | 0.00 | 523.30 | 0.13 | 206 | 77.45 | 52 | 295 |
| *Pogonias cromis* | 2 | 0.0 | 2.4 | 0.00 | 0.00 | 644.91 | 0.13 | 183 | 1.50 | 181 | 184 |
| *Lutjanus synagris* | 1 | 0.0 | 1.2 | 0.00 | 0.00 | 916.52 | 0.15 | 24 | . | 24 | 24 |
| *Mugil cephalus* | 1 | 0.0 | 1.2 | 0.00 | 0.00 | 916.52 | 0.13 | 22 | . | 22 | 22 |
| *Elops saurus* | 1 | 0.0 | 1.2 | 0.00 | 0.00 | 916.52 | 0.13 | 228 | . | 228 | 228 |
| **Totals** | **21,189** | **21.7** | **85.7** | **33.11** | **8.18** | **226.41** | **554.36** | **.** | **.** | **3** | **377** |

Appendix AP08-01. Monthly summary of species collected during Apalachicola Bay stratified-random sampling, 2008. Effort, or total number of hauls, is labeled 'E'. Taxa are arranged alphabetically.

| Species | Month | | | | | | | | | | | | Totals |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | |
| | E=70 | E=70 | E=70 | E=70 | E=70 | E=70 | E=70 | E=70 | E=70 | E=70 | E=70 | E=70 | E=840 |
| *Acanthostracion quadricornis* | 2 | . | . | 2 | 1 | 1 | . | 3 | 1 | 3 | 5 | 3 | 21 |
| *Acipenser oxyrinchus* | . | . | . | . | . | . | . | . | . | . | 1 | . | 1 |
| *Adinia xenica* | 2 | 1 | . | . | . | . | . | 2 | . | 18 | . | 1 | 24 |
| *Albula vulpes* | . | . | . | 1 | . | . | . | . | . | . | . | . | 1 |
| *Aluterus schoepfii* | . | . | . | . | . | . | . | . | 4 | 2 | . | . | 6 |
| *Ameiurus catus* | 1 | . | . | . | 1 | 4 | . | . | 4 | . | 2 | . | 12 |
| *Amia calva* | . | . | . | . | 1 | . | . | . | . | 1 | 1 | 2 | 5 |
| *Anchoa cubana* | . | . | . | . | 22 | 146 | 5,591 | 7 | 262 | 594 | 5 | . | 6,627 |
| *Anchoa hepsetus* | . | . | . | 4 | 176 | 2,730 | 606 | 69 | 1,116 | 11 | 42 | . | 4,754 |
| *Anchoa lyolepis* | . | . | . | . | 6 | 46 | 5,580 | 10 | 215 | 9 | 11 | . | 5,877 |
| *Anchoa mitchilli* | 2,097 | 1,852 | 4,006 | 3,150 | 13,858 | 41,718 | 7,272 | 5,387 | 3,764 | 13,293 | 2,636 | 176 | 99,209 |
| *Ancylopsetta quadrocellata* | 6 | 7 | 7 | 14 | 15 | 1 | 3 | 4 | 4 | 6 | 7 | 3 | 77 |
| *Aphredoderus sayanus* | . | . | . | 1 | . | 1 | . | . | . | . | . | . | 2 |
| *Archosargus probatocephalus* | 11 | 12 | 11 | 18 | 21 | 12 | 12 | 15 | 32 | 16 | 16 | 16 | 192 |
| *Argopecten irradians* | 1 | . | . | . | . | 2 | . | 1 | 1 | . | 2 | . | 7 |
| *Ariopsis felis* | 7 | 34 | 19 | 75 | 450 | 186 | 80 | 186 | 233 | 140 | 110 | . | 1,520 |
| *Astroscopus y-graecum* | . | 1 | 1 | 1 | . | . | . | . | . | . | . | 1 | 4 |
| *Bagre marinus* | . | . | . | 1 | 2 | 11 | 1 | 12 | 19 | 25 | . | . | 71 |
| *Bairdiella chrysoura* | 50 | 24 | 194 | 61 | 428 | 368 | 923 | 1,339 | 1,135 | 1,780 | 1,480 | 7 | 7,789 |
| *Brevoortia* spp. | . | 252 | 3,835 | 561 | 1,387 | 144 | 420 | 288 | 2,457 | 7 | . | 1 | 9,352 |
| *Calamus arctifrons* | . | . | . | . | . | . | . | . | . | 1 | . | . | 1 |
| *Callinectes sapidus* | 125 | 80 | 134 | 117 | 56 | 294 | 220 | 164 | 85 | 97 | 49 | 213 | 1,634 |
| *Callinectes similis* | 2 | 4 | 3 | 8 | 16 | 14 | 4 | 18 | 5 | 2 | 3 | 2 | 81 |
| *Caranx crysos* | . | . | . | . | . | . | . | 11 | 1 | . | . | . | 12 |

Appendix AP08-01. (Continued)

| Species | Month | | | | | | | | | | | | Totals |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | |
| | E=70 | E=70 | E=70 | E=70 | E=70 | E=70 | E=70 | E=70 | E=70 | E=70 | E=70 | E=70 | E=840 |
| *Caranx hippos* | . | . | . | . | . | 1 | 12 | 11 | 57 | 6 | 2 | . | 89 |
| *Caranx latus* | . | . | . | . | . | . | . | 1 | 1 | 3 | . | . | 5 |
| *Carcharhinus isodon* | . | . | . | . | . | 1 | . | . | . | . | . | . | 1 |
| *Carcharhinus limbatus* | . | . | . | . | . | 2 | 1 | . | 1 | . | . | . | 4 |
| *Carpiodes cyprinus* | . | . | . | 1 | . | . | . | . | . | . | . | . | 1 |
| *Centropristis philadelphica* | . | . | . | . | 2 | . | 2 | 1 | 4 | 2 | 5 | . | 16 |
| *Centropristis striata* | . | . | . | . | 4 | . | 1 | 10 | 1 | 18 | 9 | 15 | 58 |
| *Chaetodipterus faber* | . | . | . | 1 | . | 3 | 9 | 17 | 7 | 9 | 4 | . | 50 |
| *Chasmodes saburrae* | . | . | . | . | . | . | 2 | . | 3 | 1 | 2 | 1 | 9 |
| *Chilomycterus schoepfii* | . | 8 | 14 | 1 | 2 | 5 | . | 11 | 25 | 38 | 30 | 37 | 171 |
| *Chloroscombrus chrysurus* | . | . | . | 3 | 10 | . | 1 | 13 | 119 | 26 | 4 | . | 176 |
| *Citharichthys macrops* | 3 | 2 | 1 | 7 | 23 | 6 | 4 | 10 | 7 | 25 | 16 | 3 | 107 |
| *Citharichthys spilopterus* | . | 3 | . | 7 | 14 | 25 | 8 | 25 | 5 | 4 | . | . | 91 |
| *Ctenogobius boleosoma* | 7 | 10 | 38 | 66 | 68 | 14 | 5 | 40 | 210 | 242 | 94 | 40 | 834 |
| *Ctenopharyngodon idella* | . | 1 | . | . | . | . | . | . | . | . | . | . | 1 |
| *Cynoscion arenarius* | . | . | 1 | 24 | 529 | 920 | 1,246 | 1,542 | 601 | 504 | 35 | . | 5,402 |
| *Cynoscion nebulosus* | 31 | 25 | 32 | 13 | 9 | 28 | 45 | 98 | 103 | 94 | 78 | 11 | 567 |
| *Cynoscion nothus* | . | . | . | . | . | . | . | . | 1 | . | 1 | . | 2 |
| *Cyprinella venusta* | 50 | . | 2 | 50 | 27 | 14 | . | . | 72 | 44 | 94 | 1 | 354 |
| *Cyprinidae* spp. | . | . | . | 3 | . | . | . | 1 | . | . | . | . | 4 |
| *Cyprinodon variegatus* | 61 | . | . | . | 1 | . | . | . | . | . | . | 4 | 66 |
| *Cyprinus carpio* | . | . | 1 | . | . | . | . | . | . | . | . | . | 1 |
| *Dasyatis sabina* | 7 | 8 | 26 | 143 | 36 | 43 | 77 | 56 | 171 | 152 | 40 | 28 | 787 |
| *Dasyatis say* | . | . | . | 8 | 1 | 3 | 8 | 14 | 28 | 3 | . | . | 65 |
| *Diplectrum bivittatum* | . | . | . | . | . | . | . | 2 | . | . | 1 | . | 3 |

Appendix AP08-01. (Continued)

| Species | Month | | | | | | | | | | | | Totals |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | |
| | E=70 | E=70 | E=70 | E=70 | E=70 | E=70 | E=70 | E=70 | E=70 | E=70 | E=70 | E=70 | E=840 |
| *Diplectrum formosum* | 1 | . | . | . | 3 | 5 | 2 | 5 | 1 | 2 | 3 | . | 22 |
| *Diplodus holbrookii* | . | . | . | . | . | . | . | . | 1 | . | . | . | 1 |
| *Dorosoma cepedianum* | . | 1 | . | . | . | . | 1 | 1 | 63 | 1 | . | . | 67 |
| *Dorosoma petenense* | . | . | 1 | 1 | . | 177 | 16 | 78 | 309 | 33 | 3 | 3 | 621 |
| *Elassoma zonatum* | . | . | . | 1 | . | . | . | . | . | 1 | 2 | . | 4 |
| *Elops saurus* | 2 | . | 3 | 17 | 85 | 77 | 34 | 67 | 79 | 41 | 40 | . | 445 |
| *Enneacanthus gloriosus* | 3 | . | . | . | . | . | 2 | 4 | . | . | . | 2 | 11 |
| *Esox niger* | . | . | . | . | 2 | . | . | 1 | . | . | . | . | 3 |
| *Etheostoma edwini* | . | . | . | . | . | 2 | . | . | . | 3 | 1 | 1 | 7 |
| *Etheostoma fusiforme* | . | . | . | . | 1 | 26 | . | . | . | 1 | 4 | 1 | 33 |
| *Etropus crossotus* | 15 | 19 | 31 | 22 | 3 | 23 | 96 | 246 | 172 | 358 | 255 | 49 | 1,289 |
| *Etropus cyclosquamus* | . | . | . | 3 | 24 | 2 | . | . | . | 2 | 6 | . | 37 |
| *Eucinostomus argenteus* | . | . | . | . | . | . | 1 | 12 | . | 1 | 2 | 4 | 20 |
| *Eucinostomus gula* | 1 | . | . | 1 | . | . | 16 | 58 | 22 | 53 | 83 | 10 | 244 |
| *Eucinostomus harengulus* | 1 | . | . | . | . | . | 34 | 70 | 51 | 46 | 84 | 33 | 319 |
| *Eucinostomus* spp. | 7 | 4 | . | . | . | 59 | 472 | 404 | 294 | 364 | 731 | 157 | 2,492 |
| *Farfantepenaeus aztecus* | . | . | . | . | 237 | 161 | 28 | 10 | 5 | 4 | 4 | 1 | 450 |
| *Farfantepenaeus duorarum* | 8 | 15 | 45 | 46 | 2 | 6 | 23 | 23 | 29 | 9 | 30 | 12 | 248 |
| *Farfantepenaeus* spp. | 11 | 8 | 23 | 122 | 142 | 177 | 175 | 216 | 134 | 259 | 145 | 26 | 1,438 |
| *Fundulus chrysotus* | 1 | . | . | 2 | . | 2 | . | 1 | . | . | . | . | 6 |
| *Fundulus confluentus* | 1 | . | . | 1 | . | . | . | . | . | 2 | . | 10 | 14 |
| *Fundulus grandis* | 11 | 2 | 3 | 5 | . | . | . | . | 11 | 7 | 1 | 7 | 47 |
| *Fundulus similis* | 28 | . | 1 | 5 | 18 | 177 | . | . | 29 | 2 | . | 19 | 279 |
| *Gambusia holbrooki* | 19 | 4 | 3 | 87 | 1 | 1 | . | . | 1 | 57 | 2 | 182 | 357 |
| *Gobiesox strumosus* | 1 | . | 1 | . | . | . | . | . | 1 | . | . | 1 | 4 |
| *Gobionellus oceanicus* | . | . | . | 1 | . | . | . | . | 1 | 3 | 4 | 1 | 10 |

Appendix AP08-01. (Continued)

| Species | Month | | | | | | | | | | | | Totals |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | |
| | E=70 | E=70 | E=70 | E=70 | E=70 | E=70 | E=70 | E=70 | E=70 | E=70 | E=70 | E=70 | E=840 |
| *Gobiosoma bosc* | 5 | 30 | 18 | 16 | 5 | 45 | 11 | 23 | 7 | 19 | 8 | 13 | 200 |
| *Gobiosoma longipala* | . | 1 | 13 | 1 | . | . | . | . | . | . | . | . | 15 |
| *Gobiosoma robustum* | 1 | . | 6 | 9 | 3 | . | . | . | 4 | 4 | . | 4 | 31 |
| *Gobiosoma* spp. | 5 | 10 | 5 | . | . | 27 | 46 | 13 | 11 | 5 | 3 | 6 | 131 |
| *Graptemys barbouri* | . | 1 | . | . | . | . | . | . | . | . | . | . | 1 |
| *Gymnothorax saxicola* | . | . | . | . | . | . | . | . | 1 | . | . | . | 1 |
| *Gymnura micrura* | . | . | . | 7 | 7 | 5 | . | 8 | 9 | 1 | 1 | . | 38 |
| *Haemulon aurolineatum* | . | . | . | . | . | . | . | . | 1 | . | . | . | 1 |
| *Halichoeres bivittatus* | . | . | . | . | . | . | 2 | 1 | . | 5 | 1 | . | 9 |
| *Harengula jaguana* | . | . | 3 | 215 | . | 68 | 74 | 346 | 236 | 263 | . | . | 1,205 |
| *Hemicaranx amblyrhynchus* | . | . | . | . | . | . | . | 20 | 3 | 4 | 1 | . | 28 |
| *Heterandria formosa* | 16 | . | 4 | 13 | . | . | 5 | . | . | 1 | . | 27 | 66 |
| *Hippocampus erectus* | . | 3 | 1 | 3 | 5 | 3 | . | . | 2 | . | 1 | 1 | 19 |
| *Hyporhamphus meeki* | . | 13 | 1 | . | 3 | 5 | 14 | 4 | 56 | 14 | 57 | 2 | 169 |
| *Hypsoblennius hentz* | 1 | 1 | . | . | . | . | . | 1 | . | . | 1 | 5 | 9 |
| *Ictalurus furcatus* | . | . | 2 | . | 4 | . | . | . | . | . | . | . | 6 |
| *Ictalurus punctatus* | . | 5 | 3 | 7 | 4 | . | . | 12 | 18 | 24 | . | 2 | 75 |
| *Labidesthes sicculus* | 6 | 2 | 2 | 2 | . | 87 | 2 | 2 | 7 | 66 | 7 | 5 | 188 |
| *Lagodon rhomboides* | 116 | 478 | 992 | 2,364 | 3,480 | 2,370 | 2,479 | 1,770 | 1,827 | 1,793 | 2,080 | 167 | 19,916 |
| *Larimus fasciatus* | . | . | . | . | . | . | . | 1 | . | . | . | . | 1 |
| *Leiostomus xanthurus* | 107 | 893 | 2,516 | 2,221 | 615 | 603 | 389 | 254 | 908 | 521 | 87 | 28 | 9,142 |
| *Lepisosteus oculatus* | . | . | 1 | 2 | . | 2 | 2 | . | 1 | 4 | . | . | 12 |
| *Lepisosteus osseus* | . | . | 9 | 2 | . | 2 | 2 | 5 | 16 | 2 | . | 3 | 41 |
| *Lepomis auritus* | 2 | . | 1 | 6 | 2 | 2 | . | 2 | . | 12 | 9 | 4 | 40 |
| *Lepomis gulosus* | . | 2 | . | . | . | 3 | . | . | . | . | . | . | 5 |
| *Lepomis macrochirus* | 1 | 43 | 1 | 10 | 12 | 147 | 12 | 68 | 4 | 72 | 40 | 15 | 425 |

Appendix AP08-01. (Continued)

| Species | Month | | | | | | | | | | | | Totals |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | |
| | E=70 | E=70 | E=70 | E=70 | E=70 | E=70 | E=70 | E=70 | E=70 | E=70 | E=70 | E=70 | E=840 |
| *Lepomis microlophus* | 1 | 11 | 17 | 22 | 6 | 10 | 64 | 8 | 2 | 37 | 21 | 13 | 212 |
| *Lepomis punctatus* | . | 2 | 2 | 1 | . | 10 | 24 | 12 | . | 11 | 4 | 4 | 70 |
| *Lepomis* spp. | . | . | . | . | 34 | 108 | . | 2 | 2 | 10 | . | 1 | 157 |
| *Limulus polyphemus* | 2 | 5 | . | 4 | 1 | . | . | . | 2 | . | . | . | 14 |
| *Litopenaeus setiferus* | . | 2 | 6 | 9 | 1 | 4,979 | 2,732 | 1,383 | 1,353 | 694 | 245 | 6 | 11,410 |
| *Lucania goodei* | 9 | . | 311 | 204 | 1 | . | . | 244 | 12 | 581 | 48 | 20 | 1,430 |
| *Lucania parva* | 35 | 4 | 25 | 126 | 35 | 166 | 34 | 488 | 3 | 98 | 81 | 219 | 1,314 |
| *Lutjanus campechanus* | . | . | . | . | . | . | 1 | . | . | . | . | . | 1 |
| *Lutjanus griseus* | . | . | . | . | . | . | 1 | 7 | 7 | 10 | 4 | 3 | 32 |
| *Lutjanus synagris* | . | . | . | . | . | 1 | 74 | 25 | 4 | 16 | 2 | 6 | 128 |
| *Megalops atlanticus* | . | . | . | . | . | . | . | . | 1 | . | . | . | 1 |
| *Membras martinica* | . | . | . | 1 | 47 | 523 | 222 | 34 | 48 | . | . | . | 875 |
| *Menidia* spp. | 14 | 54 | 164 | 87 | 370 | 1,154 | 1,764 | 1,070 | 430 | 167 | 506 | 80 | 5,860 |
| *Menippe* spp. | 5 | 5 | 9 | 12 | 4 | 6 | . | 5 | 13 | 5 | 6 | . | 70 |
| *Menticirrhus americanus* | 1 | . | 3 | 6 | 58 | 73 | 49 | 241 | 77 | 78 | 23 | 3 | 612 |
| *Menticirrhus littoralis* | . | 2 | . | . | . | 1 | 4 | . | 3 | 2 | 4 | 1 | 17 |
| *Menticirrhus saxatilis* | . | . | . | 24 | 1 | 2 | 4 | . | . | . | . | . | 31 |
| *Microgobius carri* | . | . | . | . | . | . | . | . | . | . | 1 | . | 1 |
| *Microgobius gulosus* | . | 1 | 4 | 22 | 7 | 11 | 2 | 1 | 37 | 68 | 69 | 6 | 228 |
| *Microgobius thalassinus* | 15 | 2 | 44 | 89 | 1 | 25 | 122 | 58 | 7 | 3 | 5 | 4 | 375 |
| *Micropogonias undulatus* | 1,997 | 1,175 | 2,996 | 3,372 | 1,746 | 735 | 499 | 698 | 723 | 636 | 1,218 | 1,163 | 16,958 |
| *Micropterus salmoides* | 5 | 5 | 12 | 9 | 154 | 85 | 58 | 51 | 5 | 26 | 7 | 4 | 421 |
| *Minytrema melanops* | . | . | . | . | 1 | 2 | . | 4 | . | . | . | . | 7 |
| *Monacanthus ciliatus* | 4 | 2 | . | . | . | . | . | . | . | . | . | 1 | 7 |
| *Moxostoma* spp. | . | . | . | . | . | . | . | 5 | . | . | . | . | 5 |
| *Mugil cephalus* | 659 | 1,082 | 1,567 | 338 | 56 | 98 | 128 | 134 | 81 | 53 | 39 | 1,339 | 5,574 |

Appendix AP08-01. (Continued)

| Species | Month | | | | | | | | | | | | Totals |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | |
| | E=70 | E=70 | E=70 | E=70 | E=70 | E=70 | E=70 | E=70 | E=70 | E=70 | E=70 | E=70 | E=840 |
| *Mugil curema* | 12 | 104 | 84 | 56 | 87 | 60 | 54 | 19 | 68 | 46 | 45 | 8 | 643 |
| *Mycteroperca microlepis* | . | . | . | . | . | 2 | 39 | 41 | 13 | 12 | . | . | 107 |
| *Myrophis punctatus* | . | . | 1 | . | 1 | . | . | . | . | . | . | 2 | 4 |
| *Narcine bancroftii* | . | . | . | 1 | . | . | . | . | . | . | . | . | 1 |
| *Nicholsina usta* | . | . | . | . | . | . | . | . | . | 1 | . | . | 1 |
| *Notemigonus crysoleucas* | . | . | 3 | . | 9 | 143 | 150 | 75 | 110 | 28 | 2 | . | 520 |
| *Notropis maculatus* | . | 1 | . | . | . | 65 | . | . | . | 1 | . | . | 67 |
| *Notropis petersoni* | 58 | 3 | 2 | 17 | 7 | 193 | 99 | 36 | 181 | 148 | 67 | 15 | 826 |
| *Notropis* spp. | . | . | . | . | 293 | . | . | . | . | . | . | . | 293 |
| *Notropis texanus* | 7 | 1 | . | . | 350 | 223 | 92 | 9 | . | 9 | . | . | 691 |
| *Ogcocephalus cubifrons* | . | 1 | . | . | 1 | 1 | 1 | . | . | 1 | 2 | 1 | 8 |
| *Oligoplites saurus* | . | . | . | 5 | 1 | . | 33 | 37 | 60 | 8 | 1 | . | 145 |
| *Ophichthus gomesii* | . | . | . | . | . | 1 | 1 | . | . | . | . | . | 2 |
| *Opisthonema oglinum* | . | . | . | 5 | 2 | 6 | 6 | 162 | 18 | 15 | . | . | 214 |
| *Opsanus beta* | . | . | 2 | . | 5 | 2 | 3 | 12 | 15 | 7 | . | . | 46 |
| *Opsopoeodus emiliae* | . | . | . | . | . | . | . | . | . | 3 | 2 | . | 5 |
| *Orthopristis chrysoptera* | . | 31 | 10 | 67 | 1,014 | 1,021 | 716 | 336 | 568 | 679 | 724 | 18 | 5,184 |
| *Parablennius marmoreus* | . | 1 | . | . | . | . | . | . | . | . | . | . | 1 |
| *Paralichthys albigutta* | 16 | 21 | 9 | 34 | 42 | 28 | 27 | 35 | 84 | 51 | 25 | 19 | 391 |
| *Paralichthys lethostigma* | 1 | 3 | 5 | 11 | 5 | 2 | . | 3 | 2 | 5 | 2 | 2 | 41 |
| *Paralichthys squamilentus* | . | . | 7 | 5 | 1 | . | . | . | . | . | . | . | 13 |
| *Peprilus burti* | . | 1 | 12 | 7 | . | . | . | 3 | . | . | . | . | 23 |
| *Peprilus paru* | . | 14 | 4 | 20 | 34 | 51 | 1 | 28 | 27 | 101 | 7 | . | 287 |
| *Percina nigrofasciata* | . | . | . | . | 4 | . | . | . | 1 | . | . | . | 5 |
| *Platybelone argalus* | . | . | . | . | . | . | . | 1 | 2 | . | . | . | 3 |
| *Poecilia latipinna* | 12 | 1 | . | . | . | . | 1 | . | . | 7 | . | 7 | 28 |

Appendix AP08-01. (Continued)

| Species | Month | | | | | | | | | | | | Totals |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | |
| | E=70 | E=70 | E=70 | E=70 | E=70 | E=70 | E=70 | E=70 | E=70 | E=70 | E=70 | E=70 | E=840 |
| *Pogonias cromis* | 7 | 14 | 4 | 8 | . | 12 | 9 | 20 | 8 | 3 | 6 | 11 | 102 |
| *Pomatomus saltatrix* | . | . | . | 2 | 1 | . | 3 | 3 | 2 | 1 | . | . | 12 |
| *Porichthys plectrodon* | . | . | . | 1 | 3 | 32 | 16 | 8 | . | . | . | . | 60 |
| *Portunus* spp. | 6 | 3 | 9 | 6 | 15 | 27 | 41 | 43 | 10 | 11 | 20 | 19 | 210 |
| *Prionotus longispinosus* | . | . | 2 | 9 | 12 | 1 | 1 | 2 | 4 | . | . | 3 | 34 |
| *Prionotus rubio* | . | . | . | . | 4 | . | . | 1 | 2 | 1 | 3 | . | 11 |
| *Prionotus scitulus* | 12 | 17 | 17 | 5 | 24 | 43 | 12 | 19 | 23 | 54 | 40 | 8 | 274 |
| *Prionotus spp.* | . | . | . | . | . | . | . | . | . | . | 8 | . | 8 |
| *Prionotus tribulus* | 18 | 6 | 17 | 32 | 8 | 4 | 7 | 25 | 7 | 37 | 39 | 20 | 220 |
| *Pseudemys nelsoni* | 1 | . | 1 | . | . | 1 | . | . | . | . | 2 | . | 5 |
| *Pseudemys peninsularis* | . | . | . | . | . | . | . | 1 | . | . | . | . | 1 |
| *Pseudemys suwanniensis* | 1 | . | . | . | . | . | . | . | . | . | . | 1 | 2 |
| *Rachycentron canadum* | . | . | . | . | . | . | . | 1 | 1 | . | . | . | 2 |
| *Rhizoprionodon terraenovae* | . | . | . | . | 1 | 2 | . | . | . | . | . | . | 3 |
| *Rimapenaeus constrictus* | 19 | 8 | 11 | 4 | 243 | 4 | 51 | 36 | 202 | 33 | 749 | 77 | 1,437 |
| *Sciaenops ocellatus* | 98 | 41 | 42 | 26 | 7 | 40 | 34 | 32 | 33 | 32 | 22 | 38 | 445 |
| *Scomberomorus maculatus* | . | . | . | 1 | 1 | . | . | 6 | 24 | 16 | . | . | 48 |
| *Selene setapinnis* | . | . | . | . | . | . | 9 | 3 | 6 | 1 | . | . | 19 |
| *Selene vomer* | . | . | . | . | . | 1 | 4 | 11 | 12 | 2 | . | . | 30 |
| *Serraniculus pumilio* | 3 | 2 | . | . | . | . | . | 1 | 2 | 4 | 1 | 1 | 14 |
| *Serranus subligarius* | 3 | 3 | . | . | . | . | . | . | . | . | . | 1 | 7 |
| *Sicyonia brevirostris* | . | . | . | . | . | . | . | . | . | . | 1 | . | 1 |
| *Sicyonia dorsalis* | . | . | . | . | 1 | . | . | 1 | . | 2 | . | . | 4 |
| *Sicyonia laevigata* | 1 | . | . | . | . | . | . | . | . | 1 | . | 1 | 3 |
| *Sicyonia parri* | 1 | 1 | . | . | . | . | . | . | . | . | . | . | 2 |
| *Sicyonia typica* | 1 | . | . | . | . | . | . | . | . | . | . | . | 1 |

Appendix AP08-01. (Continued)

| Species | Month | | | | | | | | | | | | Totals |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | |
| | E=70 | E=70 | E=70 | E=70 | E=70 | E=70 | E=70 | E=70 | E=70 | E=70 | E=70 | E=70 | E=840 |
| *Sphoeroides nephelus* | . | . | . | . | 4 | 5 | 2 | 15 | 2 | 10 | 6 | 3 | 47 |
| *Sphoeroides parvus* | . | . | . | . | . | . | 1 | 1 | . | . | . | . | 2 |
| *Sphoeroides* spp. | . | . | . | 8 | 22 | 5 | 1 | . | . | 5 | 13 | . | 54 |
| *Sphyraena barracuda* | . | . | . | . | . | . | . | . | . | . | 2 | . | 2 |
| *Sphyraena borealis* | . | . | 1 | . | . | 3 | 1 | 1 | . | . | . | . | 6 |
| *Sphyraena guachancho* | . | . | . | . | . | . | 1 | . | . | . | . | . | 1 |
| *Sphyrna tiburo* | . | . | . | . | . | 1 | 1 | 1 | . | 2 | . | . | 5 |
| *Stellifer lanceolatus* | . | . | . | . | 8 | 3 | . | 3 | 52 | 1 | . | . | 67 |
| *Stenotomus caprinus* | . | . | . | . | 8 | . | . | . | . | . | . | . | 8 |
| *Stephanolepis hispidus* | 3 | . | . | . | 17 | 22 | 14 | 76 | 3 | 25 | 13 | 2 | 175 |
| *Stomolophus meleagris* | . | . | . | . | . | . | . | 16 | 2 | 9 | . | . | 27 |
| *Strongylura marina* | 5 | 15 | 33 | 1 | 1 | 3 | 6 | 4 | 3 | 4 | 2 | 10 | 87 |
| *Strongylura notata* | . | . | . | . | . | . | . | . | 1 | . | 1 | . | 2 |
| *Strongylura* spp. | . | . | . | . | 4 | . | . | . | 1 | 1 | . | . | 6 |
| *Symphurus civitatium* | . | 2 | . | . | . | . | . | . | . | . | . | . | 2 |
| *Symphurus plagiusa* | 24 | 8 | 30 | 29 | 11 | 21 | 97 | 238 | 18 | 75 | 55 | 15 | 621 |
| *Syngnathus floridae* | 4 | . | 6 | 3 | 1 | 4 | 3 | . | 4 | 10 | 5 | 1 | 41 |
| *Syngnathus louisianae* | . | 1 | 5 | 1 | 12 | 6 | 15 | 24 | 5 | 3 | 6 | 1 | 79 |
| *Syngnathus scovelli* | 9 | 4 | 7 | 3 | 8 | 24 | 18 | 23 | 7 | 12 | 9 | 12 | 136 |
| *Synodus foetens* | 3 | 2 | 3 | 16 | 69 | 109 | 33 | 48 | 20 | 44 | 28 | 3 | 378 |
| *Trachemys scripta scripta* | . | . | 1 | . | . | . | . | . | . | . | . | . | 1 |
| *Trachinotus carolinus* | . | . | . | 1 | . | . | 3 | 4 | 6 | 4 | 4 | . | 22 |
| *Trachinotus falcatus* | . | . | . | . | . | . | 4 | . | 2 | . | 32 | 1 | 39 |
| *Trinectes maculatus* | 81 | 185 | 67 | 236 | 149 | 305 | 70 | 339 | 122 | 70 | 293 | 116 | 2,033 |
| *Urophycis floridana* | 7 | 5 | 4 | 4 | . | . | . | . | . | . | . | 3 | 23 |
| *Xiphopenaeus kroyeri* | . | . | . | . | 1 | 5 | . | 1 | 1,106 | . | . | . | 1,113 |
| **Totals** | **5,993** | **6,710** | **17,573** | **14,483** | **26,838** | **61,477** | **33,534** | **19,368** | **20,717** | **25,325** | **13,001** | **4,658** | **249,677** |

Appendix AP08-02. Summary by gear, stratum, and zone of species collected during Apalachicola Bay stratified-random sampling, 2008. Sampling with 21.3-m bay seine was stratified by the presence or absence of a shoreline ('Shore' or offshore) within 5-m. Offshore sets were post-stratified by the presence or absence of bottom vegetation ('Veg' or 'Unveg'). Sampling with 21.3-m river seine, 183-m haul seine, and 6.1-m otter trawl were not stratified. Zones A and B were located in Apalachicola Bay, and Zone C encompassed the lower Apalachicola River. Effort, or the total number of hauls, is labeled 'E'. Taxa are arranged alphabetically.

| Species | Gear and Strata | | | | | | Zone | | | Totals |
|---|---|---|---|---|---|---|---|---|---|---|
| | 21.3-m bay seine | | | 21.3-m river seine | 183-m haul seine | 6.1-m otter trawl | | | | |
| | Veg | Unveg | Shore | | | | A | B | C | |
| | E=69 | E=63 | E=108 | E=156 | E=216 | E=228 | E=300 | E=300 | E=240 | E=840 |
| *Acanthostracion quadricornis* | 1 | . | . | . | 6 | 14 | . | 21 | . | 21 |
| *Acipenser oxyrinchus* | . | . | . | . | . | 1 | . | . | 1 | 1 |
| *Adinia xenica* | . | . | 4 | 20 | . | . | 4 | . | 20 | 24 |
| *Albula vulpes* | . | 1 | . | . | . | . | . | 1 | . | 1 |
| *Aluterus schoepfii* | . | 4 | . | . | 2 | . | 4 | 2 | . | 6 |
| *Ameiurus catus* | . | . | . | 4 | . | 8 | . | . | 12 | 12 |
| *Amia calva* | . | . | . | 5 | . | . | . | . | 5 | 5 |
| *Anchoa cubana* | 5,803 | 18 | . | . | . | 806 | 5,587 | 1,040 | . | 6,627 |
| *Anchoa hepsetus* | 2,588 | 263 | 1,731 | 72 | 3 | 97 | 1,426 | 3,255 | 73 | 4,754 |
| *Anchoa lyolepis* | 5,785 | 36 | 2 | . | . | 54 | 5,660 | 217 | . | 5,877 |
| *Anchoa mitchilli* | 372 | 1,431 | 8,266 | 7,940 | . | 81,200 | 14,680 | 3,975 | 80,554 | 99,209 |
| *Ancylopsetta quadrocellata* | . | . | . | . | 21 | 56 | 31 | 46 | . | 77 |
| *Aphredoderus sayanus* | . | . | . | 2 | . | . | . | . | 2 | 2 |
| *Archosargus probatocephalus* | 2 | 1 | 3 | 10 | 139 | 37 | 60 | 88 | 44 | 192 |
| *Argopecten irradians* | . | . | . | . | 4 | 3 | . | 7 | . | 7 |
| *Ariopsis felis* | 2 | 136 | 28 | 1 | 957 | 396 | 1,182 | 296 | 42 | 1,520 |
| *Astroscopus y-graecum* | 1 | . | . | . | 2 | 1 | . | 4 | . | 4 |
| *Bagre marinus* | . | 4 | . | . | 52 | 15 | 55 | 14 | 2 | 71 |
| *Bairdiella chrysoura* | 1,244 | 3 | 185 | 151 | 5,972 | 234 | 1,844 | 5,778 | 167 | 7,789 |
| *Brevoortia* spp. | 1 | 642 | 1,449 | 3,953 | 3,173 | 134 | 5,159 | 110 | 4,083 | 9,352 |
| *Calamus arctifrons* | . | . | . | . | . | 1 | . | 1 | . | 1 |
| *Callinectes sapidus* | 18 | 79 | 351 | 497 | 102 | 587 | 565 | 94 | 975 | 1,634 |
| *Callinectes similis* | . | . | 4 | . | 1 | 76 | 56 | 25 | . | 81 |
| *Caranx crysos* | . | 1 | . | . | 11 | . | . | 12 | . | 12 |
| *Caranx hippos* | . | 5 | 1 | . | 83 | . | 26 | 63 | . | 89 |
| *Caranx latus* | . | . | . | . | 5 | . | 2 | 3 | . | 5 |

Appendix AP08-02. (Continued)

| Species | Gear and Strata | | | | | | Zone | | | Totals |
|---|---|---|---|---|---|---|---|---|---|---|
| | 21.3-m bay seine | | | 21.3-m river seine | 183-m haul seine | 6.1-m otter trawl | A | B | C | |
| | Veg | Unveg | Shore | | | | | | | |
| | E=69 | E=63 | E=108 | E=156 | E=216 | E=228 | E=300 | E=300 | E=240 | E=840 |
| *Carcharhinus isodon* | . | . | . | . | 1 | . | 1 | . | . | 1 |
| *Carcharhinus limbatus* | . | . | . | . | 4 | . | 2 | 2 | . | 4 |
| *Carpiodes cyprinus* | . | . | . | 1 | . | . | . | . | 1 | 1 |
| *Centropristis philadelphica* | . | . | . | . | . | 16 | 6 | 10 | . | 16 |
| *Centropristis striata* | 7 | 1 | . | . | 9 | 41 | . | 58 | . | 58 |
| *Chaetodipterus faber* | . | . | . | . | 17 | 33 | 31 | 16 | 3 | 50 |
| *Chasmodes saburrae* | 3 | . | 4 | . | 2 | . | 2 | 7 | . | 9 |
| *Chilomycterus schoepfii* | 10 | 2 | 1 | . | 129 | 29 | 7 | 164 | . | 171 |
| *Chloroscombrus chrysurus* | 2 | . | . | . | 25 | 149 | 132 | 43 | 1 | 176 |
| *Citharichthys macrops* | . | 3 | 1 | . | 20 | 83 | 19 | 88 | . | 107 |
| *Citharichthys spilopterus* | . | 4 | 1 | . | 46 | 40 | 64 | 17 | 10 | 91 |
| *Ctenogobius boleosoma* | 181 | 41 | 185 | 345 | . | 82 | 390 | 36 | 408 | 834 |
| *Ctenopharyngodon idella* | . | . | . | . | 1 | . | 1 | . | . | 1 |
| *Cynoscion arenarius* | 2 | 72 | 1,173 | 39 | 17 | 4,099 | 2,019 | 786 | 2,597 | 5,402 |
| *Cynoscion nebulosus* | 83 | . | 40 | 12 | 410 | 22 | 260 | 279 | 28 | 567 |
| *Cynoscion nothus* | . | . | . | . | . | 2 | 1 | 1 | . | 2 |
| *Cyprinella venusta* | . | . | . | 338 | . | 16 | . | . | 354 | 354 |
| *Cyprinidae* spp. | . | . | . | 3 | . | 1 | . | . | 4 | 4 |
| *Cyprinodon variegatus* | . | . | 66 | . | . | . | 57 | 9 | . | 66 |
| *Cyprinus carpio* | . | . | . | 1 | . | . | . | . | 1 | 1 |
| *Dasyatis sabina* | 1 | 4 | 37 | . | 685 | 60 | 484 | 294 | 9 | 787 |
| *Dasyatis say* | 1 | . | . | . | 60 | 4 | 10 | 55 | . | 65 |
| *Diplectrum bivittatum* | . | . | . | . | . | 3 | 3 | . | . | 3 |
| *Diplectrum formosum* | 1 | . | 2 | . | 1 | 18 | 3 | 19 | . | 22 |
| *Diplodus holbrookii* | . | . | . | . | 1 | . | . | 1 | . | 1 |
| *Dorosoma cepedianum* | . | . | 2 | 5 | 60 | . | 59 | 3 | 5 | 67 |
| *Dorosoma petenense* | . | 12 | 35 | 440 | 41 | 93 | 68 | 24 | 529 | 621 |
| *Elassoma zonatum* | . | . | . | 4 | . | . | . | . | 4 | 4 |
| *Elops saurus* | 2 | 1 | 3 | 1 | 437 | 1 | 312 | 131 | 2 | 445 |
| *Enneacanthus gloriosus* | . | . | . | 11 | . | . | . | . | 11 | 11 |
| *Esox niger* | . | . | . | 3 | . | . | . | . | 3 | 3 |
| *Etheostoma edwini* | . | . | . | 7 | . | . | . | . | 7 | 7 |

Appendix AP08-02. (Continued)

| Species | Gear and Strata | | | | | | Zone | | | Totals |
|---|---|---|---|---|---|---|---|---|---|---|
| | 21.3-m bay seine | | | 21.3-m river seine | 183-m haul seine | 6.1-m otter trawl | | | | |
| | Veg | Unveg | Shore | | | | A | B | C | |
| | E=69 | E=63 | E=108 | E=156 | E=216 | E=228 | E=300 | E=300 | E=240 | E=840 |
| *Etheostoma fusiforme* | . | . | . | 33 | . | . | . | . | 33 | 33 |
| *Etropus crossotus* | . | 5 | 10 | . | 363 | 911 | 857 | 428 | 4 | 1,289 |
| *Etropus cyclosquamus* | . | . | . | . | . | 37 | 5 | 32 | . | 37 |
| *Eucinostomus argenteus* | 3 | 4 | . | . | . | 13 | 7 | 13 | . | 20 |
| *Eucinostomus gula* | 14 | 17 | 54 | . | 105 | 54 | 25 | 219 | . | 244 |
| *Eucinostomus harengulus* | . | 8 | 45 | 97 | 53 | 116 | 41 | 77 | 201 | 319 |
| *Eucinostomus* spp. | 590 | 55 | 351 | 601 | . | 895 | 286 | 763 | 1,443 | 2,492 |
| *Farfantepenaeus aztecus* | . | . | 4 | 1 | 3 | 442 | 407 | 35 | 8 | 450 |
| *Farfantepenaeus duorarum* | 1 | . | 2 | . | 10 | 235 | 138 | 104 | 6 | 248 |
| *Farfantepenaeus* spp. | 418 | 85 | 400 | 90 | . | 445 | 741 | 341 | 356 | 1,438 |
| *Fundulus chrysotus* | . | . | . | 6 | . | . | . | . | 6 | 6 |
| *Fundulus confluentus* | . | . | . | 14 | . | . | . | . | 14 | 14 |
| *Fundulus grandis* | . | 2 | 27 | . | 18 | . | 28 | 19 | . | 47 |
| *Fundulus similis* | . | 1 | 262 | . | 16 | . | 185 | 94 | . | 279 |
| *Gambusia holbrooki* | . | . | . | 357 | . | . | . | . | 357 | 357 |
| *Gobiesox strumosus* | . | . | 2 | . | . | 2 | 3 | 1 | . | 4 |
| *Gobionellus oceanicus* | . | . | 2 | 5 | . | 3 | 3 | . | 7 | 10 |
| *Gobiosoma bosc* | . | 9 | 34 | 101 | . | 56 | 42 | 3 | 155 | 200 |
| *Gobiosoma longipala* | . | . | . | . | . | 15 | 1 | 14 | . | 15 |
| *Gobiosoma robustum* | 24 | 1 | 6 | . | . | . | 12 | 19 | . | 31 |
| *Gobiosoma* spp. | 5 | 2 | 15 | 97 | . | 12 | 21 | 6 | 104 | 131 |
| *Graptemys barbouri* | . | . | . | . | . | 1 | . | . | 1 | 1 |
| *Gymnothorax saxicola* | . | . | . | . | . | 1 | . | 1 | . | 1 |
| *Gymnura micrura* | . | . | . | . | 30 | 8 | 19 | 19 | . | 38 |
| *Haemulon aurolineatum* | . | . | . | . | . | 1 | . | 1 | . | 1 |
| *Halichoeres bivittatus* | 6 | . | 2 | . | 1 | . | 2 | 7 | . | 9 |
| *Harengula jaguana* | 75 | 172 | 34 | 3 | 901 | 20 | 360 | 842 | 3 | 1,205 |
| *Hemicaranx amblyrhynchus* | . | . | . | . | . | 28 | 9 | 19 | . | 28 |
| *Heterandria formosa* | . | . | . | 66 | . | . | . | . | 66 | 66 |
| *Hippocampus erectus* | . | 1 | 1 | . | . | 17 | 7 | 12 | . | 19 |
| *Hyporhamphus meeki* | 33 | 2 | 2 | . | 132 | . | 1 | 168 | . | 169 |
| *Hypsoblennius hentz* | 1 | 4 | 1 | . | 1 | 2 | 6 | 3 | . | 9 |
| *Ictalurus furcatus* | . | . | . | . | . | 6 | . | . | 6 | 6 |

Appendix AP08-02. (Continued)

| Species | Gear and Strata | | | | | | Zone | | | Totals |
|---|---|---|---|---|---|---|---|---|---|---|
| | 21.3-m bay seine | | | 21.3-m river seine | 183-m haul seine | 6.1-m otter trawl | A | B | C | |
| | Veg | Unveg | Shore | | | | | | | |
| | E=69 | E=63 | E=108 | E=156 | E=216 | E=228 | E=300 | E=300 | E=240 | E=840 |
| *Ictalurus punctatus* | . | . | . | . | . | 75 | . | . | 75 | 75 |
| *Labidesthes sicculus* | . | . | . | 188 | . | . | . | . | 188 | 188 |
| *Lagodon rhomboides* | 6,115 | 53 | 1,579 | 289 | 11,028 | 852 | 7,111 | 12,417 | 388 | 19,916 |
| *Larimus fasciatus* | . | . | . | . | . | 1 | . | 1 | . | 1 |
| *Leiostomus xanthurus* | 990 | 892 | 2,555 | 141 | 2,453 | 2,111 | 5,182 | 2,174 | 1,786 | 9,142 |
| *Lepisosteus oculatus* | . | . | . | 11 | . | 1 | . | . | 12 | 12 |
| *Lepisosteus osseus* | . | . | . | 3 | 31 | 7 | 22 | 9 | 10 | 41 |
| *Lepomis auritus* | . | . | . | 39 | . | 1 | . | . | 40 | 40 |
| *Lepomis gulosus* | . | . | . | 5 | . | . | . | . | 5 | 5 |
| *Lepomis macrochirus* | . | . | . | 424 | . | 1 | . | . | 425 | 425 |
| *Lepomis microlophus* | . | . | 1 | 204 | . | 7 | 1 | . | 211 | 212 |
| *Lepomis punctatus* | . | . | . | 70 | . | . | . | . | 70 | 70 |
| *Lepomis* spp. | . | . | . | 157 | . | . | . | . | 157 | 157 |
| *Limulus polyphemus* | . | . | . | . | 7 | 7 | . | 14 | . | 14 |
| *Litopenaeus setiferus* | 4 | 78 | 2,348 | 360 | 166 | 8,454 | 2,674 | 14 | 8,722 | 11,410 |
| *Lucania goodei* | . | . | . | 1,430 | . | . | . | . | 1,430 | 1,430 |
| *Lucania parva* | 565 | 2 | 45 | 700 | . | 2 | 516 | 96 | 702 | 1,314 |
| *Lutjanus campechanus* | . | . | . | . | . | 1 | 1 | . | . | 1 |
| *Lutjanus griseus* | 10 | 1 | 3 | 8 | 4 | 6 | 9 | 9 | 14 | 32 |
| *Lutjanus synagris* | 40 | . | 7 | . | 5 | 76 | 52 | 75 | 1 | 128 |
| *Megalops atlanticus* | . | . | . | . | 1 | . | 1 | . | . | 1 |
| *Membras martinica* | 434 | 252 | 186 | 3 | . | . | 250 | 622 | 3 | 875 |
| *Menidia* spp. | 188 | 213 | 1,540 | 3,916 | 1 | 2 | 1,420 | 522 | 3,918 | 5,860 |
| *Menippe* spp. | . | . | . | . | 5 | 65 | 18 | 52 | . | 70 |
| *Menticirrhus americanus* | 1 | 32 | 299 | . | 87 | 193 | 482 | 68 | 62 | 612 |
| *Menticirrhus littoralis* | . | . | 2 | . | 14 | 1 | 3 | 14 | . | 17 |
| *Menticirrhus saxatilis* | . | 3 | 24 | . | 4 | . | . | 31 | . | 31 |
| *Microgobius carri* | . | . | . | . | . | 1 | . | 1 | . | 1 |
| *Microgobius gulosus* | 40 | . | 124 | 63 | . | 1 | 114 | 50 | 64 | 228 |
| *Microgobius thalassinus* | . | 9 | 14 | 5 | . | 347 | 152 | 171 | 52 | 375 |
| *Micropogonias undulatus* | 1 | 758 | 466 | 15 | 2,426 | 13,292 | 7,675 | 1,540 | 7,743 | 16,958 |
| *Micropterus salmoides* | 1 | . | . | 414 | . | 6 | 1 | . | 420 | 421 |
| *Minytrema melanops* | . | . | . | 7 | . | . | . | . | 7 | 7 |

Appendix AP08-02. (Continued)

| Species | Gear and Strata | | | | | | Zone | | | Totals |
|---|---|---|---|---|---|---|---|---|---|---|
| | 21.3-m bay seine | | | 21.3-m river seine | 183-m haul seine | 6.1-m otter trawl | | | | |
| | Veg | Unveg | Shore | | | | A | B | C | |
| | E=69 | E=63 | E=108 | E=156 | E=216 | E=228 | E=300 | E=300 | E=240 | E=840 |
| *Monacanthus ciliatus* | 2 | . | . | . | 2 | 3 | . | 7 | . | 7 |
| *Moxostoma* spp. | . | . | . | 5 | . | . | . | . | 5 | 5 |
| *Mugil cephalus* | 38 | 197 | 3,061 | 1,257 | 1,012 | 9 | 2,995 | 1,321 | 1,258 | 5,574 |
| *Mugil curema* | 2 | 1 | 52 | . | 588 | . | 432 | 211 | . | 643 |
| *Mycteroperca microlepis* | 11 | . | 3 | . | 93 | . | 53 | 54 | . | 107 |
| *Myrophis punctatus* | . | . | 1 | 1 | . | 2 | 2 | 1 | 1 | 4 |
| *Narcine bancroftii* | . | . | . | . | 1 | . | . | 1 | . | 1 |
| *Nicholsina usta* | 1 | . | . | . | . | . | . | 1 | . | 1 |
| *Notemigonus crysoleucas* | . | . | . | 520 | . | . | . | . | 520 | 520 |
| *Notropis maculatus* | . | . | . | 67 | . | . | . | . | 67 | 67 |
| *Notropis petersoni* | . | . | . | 824 | . | 2 | . | . | 826 | 826 |
| *Notropis* spp. | . | . | . | . | . | 293 | . | . | 293 | 293 |
| *Notropis texanus* | . | . | . | 274 | . | 417 | . | . | 691 | 691 |
| *Ogcocephalus cubifrons* | . | . | 1 | . | 2 | 5 | 2 | 6 | . | 8 |
| *Oligoplites saurus* | 5 | 16 | 31 | 27 | 65 | 1 | 29 | 89 | 27 | 145 |
| *Ophichthus gomesii* | . | 1 | . | . | . | 1 | 2 | . | . | 2 |
| *Opisthonema oglinum* | 14 | 6 | . | . | 193 | 1 | 18 | 196 | . | 214 |
| *Opsanus beta* | 2 | . | 1 | . | 29 | 14 | 7 | 39 | . | 46 |
| *Opsopoeodus emiliae* | . | . | . | 4 | . | 1 | . | . | 5 | 5 |
| *Orthopristis chrysoptera* | 2,104 | 5 | 260 | 3 | 2,120 | 692 | 1,155 | 4,024 | 5 | 5,184 |
| *Parablennius marmoreus* | . | . | . | . | . | 1 | . | 1 | . | 1 |
| *Paralichthys albigutta* | 8 | 4 | 21 | . | 282 | 76 | 98 | 293 | . | 391 |
| *Paralichthys lethostigma* | . | 2 | . | 5 | 18 | 16 | 21 | 2 | 18 | 41 |
| *Paralichthys squamilentus* | . | . | 7 | . | 6 | . | 2 | 11 | . | 13 |
| *Peprilus burti* | . | . | . | . | . | 23 | 10 | 13 | . | 23 |
| *Peprilus paru* | . | . | . | . | 215 | 72 | 216 | 71 | . | 287 |
| *Percina nigrofasciata* | . | . | . | 3 | . | 2 | . | . | 5 | 5 |
| *Platybelone argalus* | . | . | . | . | 3 | . | . | 3 | . | 3 |
| *Poecilia latipinna* | . | . | . | 28 | . | . | . | . | 28 | 28 |
| *Pogonias cromis* | . | . | . | . | 100 | 2 | 82 | 18 | 2 | 102 |
| *Pomatomus saltatrix* | . | . | . | . | 12 | . | 6 | 6 | . | 12 |
| *Porichthys plectrodon* | . | . | 1 | . | . | 59 | 37 | 9 | 14 | 60 |
| *Portunus* spp. | . | 1 | 1 | . | 2 | 206 | 133 | 77 | . | 210 |

Appendix AP08-02. (Continued)

| Species | Gear and Strata | | | | | | Zone | | | Totals |
|---|---|---|---|---|---|---|---|---|---|---|
| | 21.3-m bay seine | | | 21.3-m river seine | 183-m haul seine | 6.1-m otter trawl | | | | |
| | Veg | Unveg | Shore | | | | A | B | C | |
| | E=69 | E=63 | E=108 | E=156 | E=216 | E=228 | E=300 | E=300 | E=240 | E=840 |
| *Prionotus longispinosus* | . | . | . | . | . | 34 | 14 | 20 | . | 34 |
| *Prionotus rubio* | . | . | . | . | . | 11 | 6 | 5 | . | 11 |
| *Prionotus scitulus* | . | 3 | 7 | . | 21 | 243 | 43 | 231 | . | 274 |
| *Prionotus* spp. | . | . | 1 | . | . | 7 | 8 | . | . | 8 |
| *Prionotus tribulus* | . | 4 | 17 | 6 | 19 | 174 | 141 | 33 | 46 | 220 |
| *Pseudemys nelsoni* | . | . | . | . | . | 5 | . | . | 5 | 5 |
| *Pseudemys peninsularis* | . | . | . | . | . | 1 | . | . | 1 | 1 |
| *Pseudemys suwanniensis* | . | . | . | . | . | 2 | . | . | 2 | 2 |
| *Rachycentron canadum* | . | . | . | . | 2 | . | . | 2 | . | 2 |
| *Rhizoprionodon terraenovae* | . | . | . | . | 2 | 1 | 2 | 1 | . | 3 |
| *Rimapenaeus constrictus* | . | 5 | 12 | . | . | 1,420 | 962 | 467 | 8 | 1,437 |
| *Sciaenops ocellatus* | 13 | 3 | 27 | 2 | 397 | 3 | 276 | 164 | 5 | 445 |
| *Scomberomorus maculatus* | . | 1 | 1 | 1 | 45 | . | 13 | 34 | 1 | 48 |
| *Selene setapinnis* | . | . | . | . | 3 | 16 | 3 | 16 | . | 19 |
| *Selene vomer* | . | . | . | . | 20 | 10 | 12 | 15 | 3 | 30 |
| *Serraniculus pumilio* | . | . | . | . | . | 14 | 1 | 13 | . | 14 |
| *Serranus subligarius* | . | . | . | . | . | 7 | . | 7 | . | 7 |
| *Sicyonia brevirostris* | . | . | . | . | . | 1 | 1 | . | . | 1 |
| *Sicyonia dorsalis* | . | . | . | . | . | 4 | 2 | 2 | . | 4 |
| *Sicyonia laevigata* | . | . | . | . | . | 3 | . | 3 | . | 3 |
| *Sicyonia parri* | . | . | . | . | . | 2 | 1 | 1 | . | 2 |
| *Sicyonia typica* | . | . | . | . | . | 1 | . | 1 | . | 1 |
| *Sphoeroides nephelus* | 5 | . | 8 | . | 27 | 7 | 7 | 39 | 1 | 47 |
| *Sphoeroides parvus* | . | . | . | . | . | 2 | 2 | . | . | 2 |
| *Sphoeroides* spp. | 11 | 15 | 28 | . | . | . | 9 | 45 | . | 54 |
| *Sphyraena barracuda* | . | . | . | . | 2 | . | . | 2 | . | 2 |
| *Sphyraena borealis* | 4 | 1 | . | . | . | 1 | 4 | 1 | . | 6 |
| *Sphyraena guachancho* | . | . | . | . | . | 1 | 1 | . | . | 1 |
| *Sphyrna tiburo* | . | . | . | . | 4 | 1 | 1 | 4 | . | 5 |
| *Stellifer lanceolatus* | . | . | 51 | . | 1 | 15 | 66 | 1 | . | 67 |
| *Stenotomus caprinus* | . | . | . | . | . | 8 | . | 8 | . | 8 |
| *Stephanolepis hispidus* | 33 | 1 | 6 | . | 63 | 72 | 34 | 141 | . | 175 |
| *Stomolophus meleagris* | . | . | . | . | 22 | 5 | 10 | 17 | . | 27 |

Appendix AP08-02. (Continued)

| *Species* | Gear and Strata | | | | | | Zone | | | Totals |
|---|---|---|---|---|---|---|---|---|---|---|
| | 21.3-m bay seine | | | 21.3-m river seine | 183-m haul seine | 6.1-m otter trawl | | | | |
| | Veg | Unveg | Shore | | | | A | B | C | |
| | E=69 | E=63 | E=108 | E=156 | E=216 | E=228 | E=300 | E=300 | E=240 | E=840 |
| *Strongylura marina* | 2 | 1 | 3 | . | 81 | . | 14 | 73 | . | 87 |
| *Strongylura notata* | . | . | . | . | 2 | . | . | 2 | . | 2 |
| *Strongylura* spp. | . | . | 2 | 4 | . | . | 2 | . | 4 | 6 |
| *Symphurus civitatium* | . | . | . | . | . | 2 | 2 | . | . | 2 |
| *Symphurus plagiusa* | 2 | 14 | 48 | 9 | 1 | 547 | 204 | 81 | 336 | 621 |
| *Syngnathus floridae* | 33 | 1 | . | . | . | 7 | 11 | 30 | . | 41 |
| *Syngnathus louisianae* | 9 | 2 | 2 | 1 | . | 65 | 34 | 33 | 12 | 79 |
| *Syngnathus scovelli* | 39 | 4 | 18 | 58 | . | 17 | 33 | 40 | 63 | 136 |
| *Synodus foetens* | 20 | 31 | 55 | 3 | 58 | 211 | 135 | 236 | 7 | 378 |
| *Trachemys scripta scripta* | . | . | . | 1 | . | . | . | . | 1 | 1 |
| *Trachinotus carolinus* | . | . | . | . | 22 | . | . | 22 | . | 22 |
| *Trachinotus falcatus* | . | . | 1 | . | 38 | . | 8 | 31 | . | 39 |
| *Trinectes maculatus* | . | . | 8 | 935 | 14 | 1,076 | 81 | 90 | 1,862 | 2,033 |
| *Urophycis floridana* | 2 | 1 | . | . | 1 | 19 | 6 | 17 | . | 23 |
| *Xiphopenaeus kroyeri* | 1 | . | 1,089 | . | . | 23 | 1,113 | . | . | 1,113 |
| **Totals** | **28,030** | **5,745** | **28,845** | **27,826** | **35,953** | **123,278** | **77,724** | **46,599** | **125,354** | **249,677** |

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## *Southern Indian River Lagoon*

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

The Fisheries-Independent Monitoring (FIM) program has conducted intensive sampling of fish and selected invertebrates in the southern IRL since 1997. The area sampled was divided into two geographically-defined bay zones (I and J) and one riverine zone (T; Figure TQ08-01). Monthly stratified-random sampling (SRS) was conducted in all zones using the 183-m haul seine. All sampling methods were the same as those described in the Methods section of this report. This section summarizes data collected by the FIM program during 2008 in the southern IRL.

### Stratified-Random Sampling

*183-m Haul Seines.* A total of 27,802 fishes (105 taxa) and selected invertebrates (five taxa) were collected from 172 southern IRL samples in 2008 (Table TQ08-01, Appendices TQ08-01 and -02). *Lagodon rhomboides* (n=7,918) and *Diapterus auratus* (n=6,311) were the most numerous taxa collected, representing 51.2% of the 183-m haul seine catch (Table TQ08-02). *Ariopsis felis* (n=1,456) was the next most abundant taxon collected, accounting for an additional 5.2% of the 183-m haul seine catch. The taxa most frequently collected in the 183-m haul seine were *Archosargus* probatocephalus (69.2% occurrence), *D. auratus* (67.4% occurrence), *Mugil curema* (63.4% occurrence), and *Centropomus undecimalis* (63.4% occurrence). Collections in 2008 included four taxa new to the southern IRL FIM collection: *Antennarius striatus*

(Striated frogfish), *Dormitator maculatus* (Fat sleeper), *Pomacanthus* sp. (Angelfish, not identified to species), and *Selar crumenophthalmus* (Bigeyed scad).

A total of 4,464 animals from 32 Selected Taxa were collected, representing 16.1% of the entire 183-m haul seine catch (Table TQ08-03). *Mugil curema* (n=843) and *C. undecimalis* (n=673) were the most abundant Selected Taxa, accounting for 34.0% of the Selected Taxa collected by this gear. The Selected Taxa most frequently caught were *A. probatocephalus* (69.2% occurrence), *M. curema* (63.4% occurrence) and *C. undecimalis* (63.4% occurrence).

## References

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

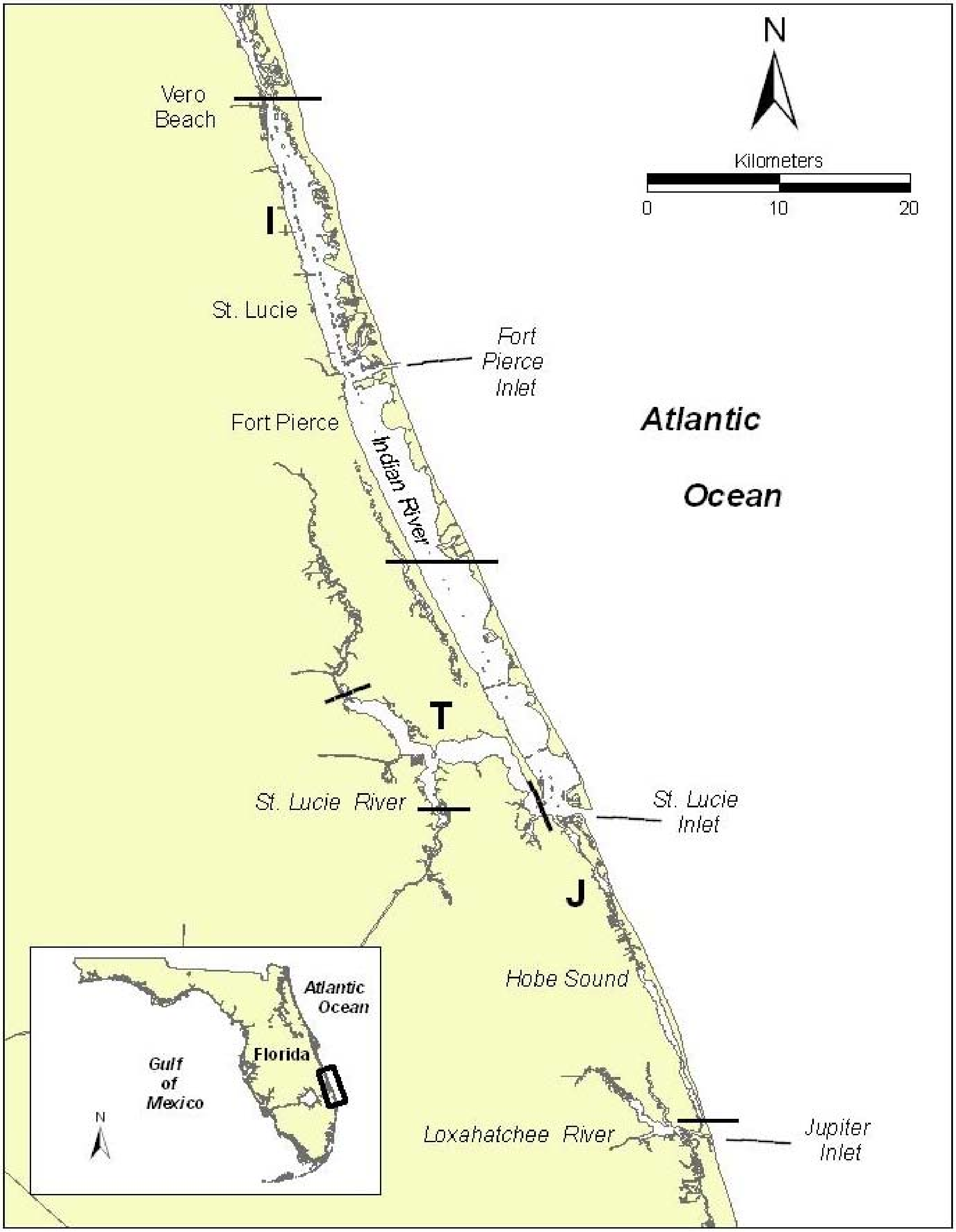


Figure TQ08-01. Map of southern Indian River Lagoon sampling area, separated into stratified three geographic zones; I, J, and T.

Table TQ08-01. Summary of catch and effort data for southern Indian River Lagoon stratified-random sampling, 2008.

| Zone | Totals | |
|---|---|---|
| | Animals | Hauls |
| I | 10,733 | 48 |
| J | 12,768 | 48 |
| T | 4,301 | 76 |
| **Totals** | **27,802** | **172** |

Table TQ08-02. Catch statistics for 10 dominant taxa collected in 172 183-m haul seine samples during southern Indian River Lagoon stratified-random sampling, 2008. Percent (%) is the percent of the total catch represented by that taxon; percent occurrence (% Occur) is the percentage of samples in which that taxon was collected; CV is the coefficient of variation of the mean. Taxa are ranked in order of decreasing mean catch-per-unit-effort.

| **Species** | **Number** | | **% Occur** | **Catch-per-unit-effort (animals/set)** | | | | **Standard Length (mm)** | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | **No.** | **%** | | **Mean** | **Stderr** | **CV** | **Max** | **Mean** | **Stderr** | **Min** | **Max** |
| *Lagodon rhomboides* | 7,918 | 28.5 | 33.7 | 46.03 | 12.26 | 349.38 | 1,605.00 | 94 | 0.33 | 20 | 272 |
| *Diapterus auratus* | 6,311 | 22.7 | 67.4 | 36.69 | 9.11 | 325.60 | 1,386.00 | 156 | 0.53 | 31 | 332 |
| *Ariopsis felis* | 1,456 | 5.2 | 58.1 | 8.47 | 2.85 | 441.20 | 372.00 | 260 | 1.64 | 111 | 405 |
| *Selene vomer* | 1,193 | 4.3 | 48.8 | 6.94 | 2.86 | 540.26 | 471.00 | 169 | 0.84 | 37 | 325 |
| *Harengula jaguana* | 887 | 3.2 | 9.9 | 5.16 | 3.63 | 923.49 | 615.00 | 88 | 0.30 | 53 | 132 |
| *Orthopristis chrysoptera* | 855 | 3.1 | 16.3 | 4.97 | 2.24 | 590.14 | 343.00 | 117 | 0.97 | 64 | 230 |
| *Mugil curema* | 843 | 3.0 | 63.4 | 4.90 | 0.92 | 245.38 | 102.00 | 196 | 1.99 | 79 | 373 |
| *Eucinostomus gula* | 743 | 2.7 | 33.7 | 4.32 | 1.26 | 384.05 | 176.00 | 83 | 0.41 | 45 | 165 |
| *Centropomus undecimalis* | 673 | 2.4 | 63.4 | 3.91 | 0.60 | 202.16 | 66.00 | 412 | 6.15 | 121 | 930 |
| *Mugil cephalus* | 549 | 2.0 | 57.0 | 3.19 | 0.43 | 175.22 | 31.00 | 294 | 3.00 | 106 | 473 |
| Subtotal | 21,428 | 77.1 | . | . | . | . | . | . | . | 20 | 930 |
| **Totals** | **27,802** | **100.0** | **.** | **161.64** | **21.47** | **174.22** | **2,011.00** | **.** | **.** | **14** | **930** |

Table TQ08-03. Catch statistics for Selected Taxa collected in 172 183-m haul seine samples during southern Indian River Lagoon stratified-random sampling, 2008. Percent (%) is the percent of the total catch represented by that taxon; percent occurrence (% Occur) is the percentage of samples in which that taxon was collected; CV is the coefficient of variation of the mean. Taxa are ranked in order of decreasing mean catch-per-unit-effort.

| Species | Number | | % Occur | Catch-per-unit-effort (animals/set) | | | | Standard Length (mm) | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | No. | % | | Mean | Stderr | CV | Max | Mean | Stderr | Min | Max |
| *Mugil curema* | 843 | 3.0 | 63.4 | 4.90 | 0.92 | 245.38 | 102.00 | 196 | 1.99 | 79 | 373 |
| *Centropomus undecimalis* | 673 | 2.4 | 63.4 | 3.91 | 0.60 | 202.16 | 66.00 | 412 | 6.15 | 121 | 930 |
| *Mugil cephalus* | 549 | 2.0 | 57.0 | 3.19 | 0.43 | 175.22 | 31.00 | 294 | 3.00 | 106 | 473 |
| *Archosargus probatocephalus* | 527 | 1.9 | 69.2 | 3.06 | 0.31 | 133.72 | 23.00 | 253 | 2.90 | 45 | 412 |
| *Elops saurus* | 453 | 1.6 | 28.5 | 2.63 | 1.05 | 522.32 | 165.00 | 357 | 4.56 | 134 | 600 |
| *Micropogonias undulatus* | 370 | 1.3 | 23.3 | 2.15 | 0.70 | 426.12 | 83.00 | 250 | 2.99 | 68 | 401 |
| *Lutjanus griseus* | 289 | 1.0 | 29.7 | 1.68 | 0.40 | 309.33 | 39.00 | 154 | 2.59 | 69 | 346 |
| *Pogonias cromis* | 205 | 0.7 | 16.3 | 1.19 | 0.46 | 504.10 | 64.00 | 241 | 3.06 | 151 | 373 |
| *Lutjanus analis* | 161 | 0.6 | 20.3 | 0.94 | 0.20 | 280.43 | 18.00 | 148 | 3.24 | 81 | 275 |
| *Lutjanus synagris* | 93 | 0.3 | 9.3 | 0.54 | 0.18 | 439.29 | 18.00 | 117 | 2.32 | 48 | 185 |
| *Callinectes sapidus* | 65 | 0.2 | 16.3 | 0.38 | 0.08 | 286.49 | 8.00 | 130 | 5.63 | 53 | 254 |
| *Albula vulpes* | 46 | 0.2 | 3.5 | 0.27 | 0.20 | 983.77 | 34.00 | 198 | 6.58 | 135 | 358 |
| *Leiostomus xanthurus* | 36 | 0.1 | 5.8 | 0.21 | 0.11 | 693.68 | 18.00 | 137 | 4.41 | 93 | 195 |
| *Sciaenops ocellatus* | 30 | 0.1 | 8.1 | 0.17 | 0.06 | 453.03 | 8.00 | 408 | 15.56 | 159 | 566 |
| *Scomberomorus maculatus* | 28 | 0.1 | 7.6 | 0.16 | 0.05 | 408.02 | 4.00 | 226 | 14.17 | 72 | 410 |
| *Epinephelus itajara* | 13 | 0.0 | 4.7 | 0.08 | 0.03 | 535.55 | 4.00 | 297 | 17.24 | 198 | 435 |
| *Paralichthys albigutta* | 10 | 0.0 | 4.7 | 0.06 | 0.02 | 481.82 | 2.00 | 246 | 38.89 | 98 | 496 |

Table TQ08-03. (Continued)

| Species | Number No. | Number % | % Occur | Catch-per-unit-effort (animals/set) Mean | Stderr | CV | Max | Standard Length (mm) Mean | Stderr | Min | Max |
|---|---|---|---|---|---|---|---|---|---|---|---|
| *Mycteroperca microlepis* | 10 | 0.0 | 4.1 | 0.06 | 0.02 | 548.96 | 3.00 | 197 | 15.87 | 105 | 270 |
| *Cynoscion nebulosus* | 10 | 0.0 | 4.1 | 0.06 | 0.03 | 608.73 | 4.00 | 211 | 26.96 | 66 | 363 |
| *Menticirrhus americanus* | 9 | 0.0 | 3.5 | 0.05 | 0.02 | 594.17 | 3.00 | 277 | 14.52 | 219 | 329 |
| *Pomatomus saltatrix* | 8 | 0.0 | 2.9 | 0.05 | 0.02 | 649.97 | 3.00 | 451 | 15.03 | 405 | 531 |
| *Panulirus argus* | 8 | 0.0 | 1.7 | 0.05 | 0.03 | 832.33 | 4.00 | 73 | 9.30 | 40 | 104 |
| *Farfantepenaeus duorarum* | 7 | 0.0 | 2.9 | 0.04 | 0.02 | 670.03 | 3.00 | 28 | 5.15 | 17 | 44 |
| *Paralichthys lethostigma* | 6 | 0.0 | 3.5 | 0.03 | 0.01 | 527.53 | 1.00 | 316 | 31.70 | 280 | 474 |
| *Scomberomorus regalis* | 4 | 0.0 | 2.3 | 0.02 | 0.01 | 649.97 | 1.00 | 242 | 26.95 | 184 | 307 |
| *Mycteroperca bonaci* | 3 | 0.0 | 1.2 | 0.02 | 0.01 | 975.24 | 2.00 | 195 | 21.23 | 155 | 227 |
| *Trachinotus carolinus* | 2 | 0.0 | 1.2 | 0.01 | 0.01 | 924.65 | 1.00 | 237 | 147.50 | 89 | 384 |
| *Cynoscion complex* | 2 | 0.0 | 1.2 | 0.01 | 0.01 | 924.65 | 1.00 | 281 | 13.50 | 267 | 294 |
| *Megalops atlanticus* | 1 | 0.0 | 0.6 | 0.01 | 0.01 | 1,311.49 | 1.00 | 481 | . | 481 | 481 |
| *Epinephelus morio* | 1 | 0.0 | 0.6 | 0.01 | 0.01 | 1,311.49 | 1.00 | 175 | . | 175 | 175 |
| *Trachinotus falcatus* | 1 | 0.0 | 0.6 | 0.01 | 0.01 | 1,311.49 | 1.00 | 230 | . | 230 | 230 |
| *Lutjanus jocu* | 1 | 0.0 | 0.6 | 0.01 | 0.01 | 1,311.49 | 1.00 | 131 | . | 131 | 131 |
| **Totals** | **4,464** | **16.1** | **98.3** | **25.95** | **2.45** | **123.63** | **203.00** | **.** | **.** | **17** | **930** |

Appendix TQ08-01. Monthly summary of species collected during southern Indian River Lagoon stratified-random sampling, 2008. Effort, or total number of hauls, is labeled 'E'. Taxa are arranged alphabetically.

| Species | Month | | | | | | | | | | | | Totals |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | |
| | E=16 | E=16 | E=16 | E=16 | E=16 | E=16 | E=16 | E=12 | E=12 | E=12 | E=12 | E=12 | E=172 |
| *Acanthostracion quadricornis* | . | . | 1 | . | . | . | . | 3 | . | . | . | . | 4 |
| *Achirus lineatus* | . | . | . | 1 | . | . | . | . | . | 1 | . | 3 | 5 |
| *Aetobatus narinari* | . | . | 1 | . | . | . | . | . | . | 1 | . | . | 2 |
| *Albula vulpes* | . | . | . | 34 | . | . | 2 | 5 | 3 | 1 | . | 1 | 46 |
| *Anchoa mitchilli* | . | . | . | . | . | . | . | . | . | . | 1 | . | 1 |
| *Anisotremus virginicus* | 1 | . | . | . | . | . | . | . | . | 1 | . | . | 2 |
| *Antennarius striatus* | . | . | . | 1 | . | . | . | . | . | . | . | . | 1 |
| *Archosargus probatocephalus* | 41 | 59 | 37 | 40 | 40 | 45 | 72 | 42 | 39 | 31 | 43 | 38 | 527 |
| *Archosargus rhomboidalis* | 18 | 19 | 2 | 10 | 15 | 74 | 22 | 10 | 26 | 78 | 17 | 3 | 294 |
| *Ariopsis felis* | 34 | 86 | 25 | 118 | 380 | 528 | 63 | 33 | 33 | 103 | 18 | 35 | 1,456 |
| *Bagre marinus* | . | . | . | 1 | 9 | 3 | 15 | 1 | 1 | 1 | . | . | 31 |
| *Bairdiella chrysoura* | . | 3 | 6 | 36 | . | . | 2 | . | . | 5 | 1 | 495 | 548 |
| *Brevoortia* spp. | 1 | . | . | . | 10 | 21 | 12 | . | . | . | . | . | 44 |
| *Callinectes sapidus* | 2 | 2 | 3 | 7 | 8 | 13 | 14 | . | 4 | 8 | 2 | 2 | 65 |
| *Callinectes similis* | . | . | . | . | . | 4 | . | . | . | 1 | . | . | 5 |
| *Caranx crysos* | . | . | . | . | . | . | 32 | . | 1 | 5 | 7 | 2 | 47 |
| *Caranx hippos* | 11 | 18 | 18 | 14 | 19 | 12 | 11 | 2 | 8 | 17 | 11 | 208 | 349 |
| *Caranx latus* | . | . | 2 | . | 5 | 1 | . | . | . | 1 | 2 | . | 11 |
| *Carcharhinus leucas* | . | . | . | . | . | . | . | . | 1 | 1 | . | . | 2 |
| *Centropomus undecimalis* | 32 | 68 | 57 | 44 | 58 | 82 | 65 | 39 | 43 | 55 | 53 | 77 | 673 |
| *Chaetodipterus faber* | . | . | 1 | 54 | 2 | . | 2 | . | . | . | 4 | 1 | 64 |
| *Chilomycterus schoepfii* | 6 | 7 | 15 | 14 | 11 | 9 | 3 | 14 | 9 | 19 | 16 | 2 | 125 |

Appendix TQ08-01. (Continued)

| Species | Month | | | | | | | | | | | | Totals |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | |
| | E=16 | E=16 | E=16 | E=16 | E=16 | E=16 | E=16 | E=12 | E=12 | E=12 | E=12 | E=12 | E=172 |
| *Chloroscombrus chrysurus* | . | . | . | . | . | . | . | . | 8 | . | 2 | . | 10 |
| *Citharichthys spilopterus* | . | . | 1 | 2 | 2 | 11 | 15 | 9 | 2 | 6 | . | 6 | 54 |
| *Ctenopharyngodon idella* | . | . | . | . | . | . | . | . | . | 1 | . | . | 1 |
| *Cynoscion* complex | . | . | . | 1 | 1 | . | . | . | . | . | . | . | 2 |
| *Cynoscion nebulosus* | . | . | 1 | 6 | . | . | . | 1 | . | . | . | 2 | 10 |
| *Dasyatis sabina* | 9 | 56 | 30 | 16 | 22 | 53 | 25 | 6 | 16 | 25 | 5 | 14 | 277 |
| *Dasyatis say* | 6 | 4 | 9 | 6 | 3 | 8 | 16 | . | 3 | 5 | 6 | 2 | 68 |
| *Diapterus auratus* | 193 | 705 | 18 | 543 | 1,023 | 592 | 443 | 224 | 213 | 420 | 229 | 1,708 | 6,311 |
| *Diodon holocanthus* | . | . | . | . | . | . | 2 | . | . | . | . | . | 2 |
| *Diodon hystrix* | . | . | 1 | . | . | . | . | . | . | . | . | . | 1 |
| *Dormitator maculatus* | . | . | . | . | . | . | . | 1 | . | . | . | . | 1 |
| *Echeneis naucrates* | . | 1 | . | . | . | . | . | . | . | . | . | . | 1 |
| *Echeneis* sp. | . | . | . | . | . | . | . | . | . | 1 | . | . | 1 |
| *Elops saurus* | 11 | 189 | 3 | 26 | 92 | 52 | 22 | 3 | 17 | 10 | 14 | 14 | 453 |
| *Epinephelus itajara* | 2 | 2 | 4 | . | 1 | 1 | . | 1 | . | . | 2 | . | 13 |
| *Epinephelus morio* | . | . | . | . | . | 1 | . | . | . | . | . | . | 1 |
| *Eucinostomus gula* | 8 | 15 | 7 | 97 | 22 | 26 | 255 | 95 | 31 | 36 | 61 | 90 | 743 |
| *Eucinostomus harengulus* | . | . | . | 5 | . | 3 | 4 | . | 2 | 1 | 1 | 1 | 17 |
| *Eucinostomus jonesii* | . | . | . | 11 | . | . | 263 | . | . | . | . | . | 274 |
| *Eucinostomus melanopterus* | . | . | . | . | 5 | . | . | . | . | . | . | . | 5 |
| *Eucinostomus* spp. | . | . | 8 | . | . | . | . | 155 | 1 | . | . | 5 | 169 |
| *Eugerres plumieri* | 1 | 8 | . | 3 | 4 | 10 | 1 | 1 | . | 16 | . | . | 44 |
| *Farfantepenaeus duorarum* | . | . | . | . | . | . | . | 4 | . | . | . | 3 | 7 |
| *Gerres cinereus* | 16 | 27 | . | 9 | 2 | 2 | 1 | . | 1 | 1 | 2 | 43 | 104 |
| *Gymnura micrura* | 1 | 2 | 1 | 1 | 4 | 4 | . | . | . | . | . | . | 13 |

Appendix TQ08-01. (Continued)

| Species | Month | | | | | | | | | | | | Totals |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | |
| | E=16 | E=16 | E=16 | E=16 | E=16 | E=16 | E=16 | E=12 | E=12 | E=12 | E=12 | E=12 | E=172 |
| *Haemulon aurolineatum* | . | . | . | 1 | . | 1 | . | 1 | . | . | 3 | . | 6 |
| *Haemulon flavolineatum* | . | . | . | . | . | . | . | . | 6 | . | . | . | 6 |
| *Haemulon parra* | 46 | . | . | . | . | . | . | 1 | 4 | 13 | 8 | . | 72 |
| *Haemulon plumierii* | . | . | . | . | . | . | . | . | 8 | 1 | 21 | . | 30 |
| *Haemulon sciurus* | . | . | . | . | . | . | . | . | . | 8 | 3 | . | 11 |
| *Harengula jaguana* | . | 3 | 18 | . | 15 | 4 | 2 | . | . | 73 | 730 | 42 | 887 |
| *Hemiramphus balao* | . | . | . | . | . | . | . | . | . | 2 | . | . | 2 |
| *Hemiramphus brasiliensis* | . | . | . | . | . | . | . | . | . | . | 4 | . | 4 |
| *Lachnolaimus maximus* | . | . | . | . | . | . | 3 | 2 | 1 | 3 | 9 | . | 18 |
| *Lactophrys trigonus* | 2 | . | 5 | 3 | 2 | 1 | 3 | 1 | 5 | 2 | 1 | . | 25 |
| *Lagodon rhomboides* | 26 | 28 | 32 | 60 | 26 | 313 | 1,334 | 2,687 | 886 | 1,196 | 1,068 | 262 | 7,918 |
| *Leiostomus xanthurus* | 1 | . | . | 2 | 2 | 2 | . | . | 4 | 5 | 2 | 18 | 36 |
| *Lepisosteus osseus* | . | . | . | . | . | . | . | . | . | 2 | 1 | . | 3 |
| *Limulus polyphemus* | . | . | . | 2 | . | . | . | . | . | . | . | . | 2 |
| *Lobotes surinamensis* | . | . | . | . | . | . | . | . | 1 | . | . | . | 1 |
| *Lutjanus analis* | 6 | 8 | 1 | 17 | 19 | 14 | 13 | 22 | 16 | 33 | 8 | 4 | 161 |
| *Lutjanus griseus* | 7 | 8 | 2 | 4 | 20 | 60 | 42 | 39 | 44 | 40 | 20 | 3 | 289 |
| *Lutjanus jocu* | . | . | . | . | . | . | . | . | . | 1 | . | . | 1 |
| *Lutjanus synagris* | 2 | . | . | 1 | 18 | 8 | 19 | 10 | 2 | 9 | 13 | 11 | 93 |
| *Megalops atlanticus* | . | . | . | . | . | . | . | . | . | 1 | . | . | 1 |
| *Menticirrhus americanus* | . | . | . | 2 | 4 | 2 | 1 | . | . | . | . | . | 9 |
| *Micropogonias undulatus* | 15 | 20 | 1 | 18 | 101 | 34 | 29 | 22 | 22 | 98 | 1 | 9 | 370 |
| *Monacanthus ciliatus* | . | . | . | . | . | . | . | . | 3 | 7 | 172 | . | 182 |
| *Mugil cephalus* | 72 | 59 | 47 | 17 | 46 | 59 | 20 | 6 | 30 | 21 | 68 | 104 | 549 |
| *Mugil curema* | 155 | 51 | 97 | 27 | 31 | 24 | 15 | 8 | 33 | 17 | 56 | 329 | 843 |
| *Mycteroperca bonaci* | . | 1 | . | . | . | . | . | . | . | 2 | . | . | 3 |

Appendix TQ08-01. (Continued)

| Species | Month | | | | | | | | | | | | Totals |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | |
| | E=16 | E=16 | E=16 | E=16 | E=16 | E=16 | E=16 | E=12 | E=12 | E=12 | E=12 | E=12 | E=172 |
| *Mycteroperca microlepis* | . | 1 | . | . | . | 1 | 3 | 2 | . | . | 2 | 1 | 10 |
| *Nicholsina usta* | . | . | . | . | . | . | . | . | . | . | 7 | . | 7 |
| *Ocyurus chrysurus* | . | . | . | . | . | . | . | . | . | 1 | 1 | . | 2 |
| *Oligoplites saurus* | . | . | 2 | 1 | . | . | 2 | 1 | 3 | . | . | . | 9 |
| *Opisthonema oglinum* | 1 | . | . | . | 1 | . | . | 1 | 20 | 33 | 1 | . | 57 |
| *Opsanus tau* | . | 2 | . | . | . | 1 | 2 | 2 | . | . | . | . | 7 |
| *Orthopristis chrysoptera* | . | . | . | 10 | . | 2 | 119 | 432 | 33 | 57 | 87 | 115 | 855 |
| *Panulirus argus* | . | . | . | . | . | 1 | 4 | . | . | . | 3 | . | 8 |
| *Paralichthys albigutta* | 2 | 2 | 2 | . | 2 | . | . | . | 1 | 1 | . | . | 10 |
| *Paralichthys lethostigma* | . | 1 | . | . | 3 | 1 | . | . | 1 | . | . | . | 6 |
| *Pleuronectiformes* sp. | . | . | . | . | . | . | . | . | . | . | . | 1 | 1 |
| *Pogonias cromis* | 52 | 45 | 6 | 2 | 6 | 20 | 2 | 2 | 1 | 66 | 3 | . | 205 |
| *Pomacanthus* sp. | . | . | . | . | . | . | . | . | . | . | 1 | . | 1 |
| *Pomatomus saltatrix* | . | 5 | . | . | . | 1 | . | . | . | 2 | . | . | 8 |
| *Prionotus scitulus* | . | . | . | . | . | . | . | . | . | . | 1 | . | 1 |
| *Prionotus tribulus* | . | . | 1 | . | 1 | . | 1 | . | . | . | . | 2 | 5 |
| *Rhinoptera bonasus* | . | 3 | . | . | . | . | . | . | . | . | . | . | 3 |
| *Sciaenops ocellatus* | 2 | 10 | . | . | . | 2 | 1 | 2 | 1 | 4 | 8 | . | 30 |
| *Scomberomorus maculatus* | . | . | . | 1 | 3 | . | 8 | 2 | . | 1 | 9 | 4 | 28 |
| *Scomberomorus regalis* | . | . | . | 1 | . | . | . | . | . | . | 1 | 2 | 4 |
| *Scorpeana brasiliensis* | . | . | . | . | . | . | . | . | . | . | 1 | . | 1 |
| *Scorpaena grandicornis* | . | . | . | . | . | 1 | 1 | . | 2 | . | . | . | 4 |
| *Scorpaena plumieri* | . | . | . | . | . | . | . | . | . | 9 | 6 | . | 15 |
| *Selar crumenophthalmus* | . | . | . | . | . | . | . | . | . | . | 2 | . | 2 |
| *Selene vomer* | 34 | 73 | 28 | 233 | 98 | 494 | 23 | 11 | 23 | 80 | 37 | 59 | 1,193 |
| *Sparisoma chrysopterum* | . | . | . | . | . | . | 1 | . | . | . | . | . | 1 |

Appendix TQ08-01. (Continued)

| Species | Month | | | | | | | | | | | | Totals |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | |
| | E=16 | E=16 | E=16 | E=16 | E=16 | E=16 | E=16 | E=12 | E=12 | E=12 | E=12 | E=12 | E=172 |
| *Sparisoma* sp. | . | . | . | . | . | . | . | 1 | . | . | . | . | 1 |
| *Sphoeroides nephelus* | 15 | 9 | 5 | 4 | . | 2 | 1 | 13 | 4 | 17 | 30 | 6 | 106 |
| *Sphoeroides spengleri* | . | 1 | . | . | 1 | . | . | 2 | . | 1 | . | 1 | 6 |
| *Sphoeroides testudineus* | 10 | 25 | 98 | 64 | 33 | 69 | 31 | 94 | 18 | 12 | 40 | 40 | 534 |
| *Sphyraena barracuda* | 5 | 6 | . | 3 | 4 | 8 | 2 | 20 | 5 | 36 | 9 | 16 | 114 |
| *Sphyrna tiburo* | . | 2 | . | . | . | . | . | . | . | . | . | . | 2 |
| *Stephanolepis hispidus* | . | . | . | . | . | 12 | 7 | 4 | 2 | 11 | 4 | . | 40 |
| *Strongylura marina* | . | 2 | . | 2 | . | . | . | . | . | 2 | . | 3 | 9 |
| *Strongylura notata* | 10 | 1 | 2 | 1 | 5 | . | . | 3 | 6 | 11 | 25 | 8 | 72 |
| *Symphurus plagiusa* | . | . | . | . | . | . | 1 | . | . | . | . | . | 1 |
| *Synodus foetens* | 2 | . | 1 | . | . | . | 3 | 2 | 1 | 2 | 6 | 3 | 20 |
| *Trachinotus carolinus* | . | . | . | 1 | . | . | . | 1 | . | . | . | . | 2 |
| *Trachinotus falcatus* | . | . | . | . | . | . | . | . | . | . | . | 1 | 1 |
| *Trichiurus lepturus* | . | . | . | . | . | . | . | . | . | 3 | . | . | 3 |
| *Trinectes maculatus* | 1 | 1 | . | 1 | . | 2 | 1 | 1 | 2 | 1 | . | 2 | 12 |
| **Totals** | **859** | **1,638** | **599** | **1,578** | **2,179** | **2,694** | **3,056** | **4,044** | **1,650** | **2,735** | **2,969** | **3,801** | **27,802** |

Appendix TQ08-02. Summary by gear, stratum, and zone of species collected during southern Indian River Lagoon stratified-random sampling, 2008. Sampling with 183-m haul seine was post-stratified by the presence or absence of overhanging vegetation ('Over' or 'Nonover'). Zones I and J were located in the Indian River, and Zone T encompassed the lower St. Lucie River. Effort, or the total number of hauls, is labeled 'E'. Taxa are arranged alphabetically.

| ***Species*** | **Gear and Strata** | | **Zone** | | | **Totals** |
|---|---|---|---|---|---|---|
| | **183-m haul seine** | | | | | |
| | **Over** | **Nonover** | **I** | **J** | **T** | |
| | **E=115** | **E=57** | **E=48** | **E=48** | **E=76** | **E=172** |
| *Acanthostracion quadricornis* | 2 | 2 | 1 | 3 | . | 4 |
| *Achirus lineatus* | 2 | 3 | 1 | . | 4 | 5 |
| *Aetobatus narinari* | 1 | 1 | 1 | 1 | . | 2 |
| *Albula vulpes* | 46 | . | 7 | 39 | . | 46 |
| *Anchoa mitchilli* | . | 1 | . | 1 | . | 1 |
| *Anisotremus virginicus* | 2 | . | . | 2 | . | 2 |
| *Antennarius striatus* | . | 1 | . | . | 1 | 1 |
| *Archosargus probatocephalus* | 391 | 136 | 166 | 126 | 235 | 527 |
| *Archosargus rhomboidalis* | 281 | 13 | 59 | 235 | . | 294 |
| *Ariopsis felis* | 806 | 650 | 1,023 | 315 | 118 | 1,456 |
| *Bagre marinus* | 29 | 2 | 9 | . | 22 | 31 |
| *Bairdiella chrysoura* | 534 | 14 | 518 | 30 | . | 548 |
| *Brevoortia* spp. | 44 | . | 22 | 13 | 9 | 44 |
| *Callinectes sapidus* | 52 | 13 | 22 | 17 | 26 | 65 |
| *Callinectes similis* | 5 | . | . | 5 | . | 5 |
| *Caranx crysos* | 47 | . | 5 | 42 | . | 47 |
| *Caranx hippos* | 301 | 48 | 248 | 59 | 42 | 349 |
| *Caranx latus* | 11 | . | 5 | 4 | 2 | 11 |
| *Carcharhinus leucas* | 1 | 1 | . | 1 | 1 | 2 |
| *Centropomus undecimalis* | 450 | 223 | 367 | 167 | 139 | 673 |
| *Chaetodipterus faber* | 59 | 5 | 60 | 4 | . | 64 |
| *Chilomycterus schoepfii* | 95 | 30 | 32 | 89 | 4 | 125 |
| *Chloroscombrus chrysurus* | 10 | . | 10 | . | . | 10 |
| *Citharichthys spilopterus* | 47 | 7 | 7 | 9 | 38 | 54 |
| *Ctenopharyngodon idella* | . | 1 | . | . | 1 | 1 |

Appendix TQ08-02. (Continued)

| Species | Gear and Strata 183-m haul seine Over | Nonover | Zone I | J | T | Totals |
|---|---|---|---|---|---|---|
| | E=115 | E=57 | E=48 | E=48 | E=76 | E=172 |
| *Cynoscion* complex | 1 | 1 | . | 1 | 1 | 2 |
| *Cynoscion nebulosus* | 8 | 2 | 4 | 6 | . | 10 |
| *Dasyatis sabina* | 184 | 93 | 77 | 98 | 102 | 277 |
| *Dasyatis say* | 59 | 9 | 28 | 35 | 5 | 68 |
| *Diapterus auratus* | 4,959 | 1,352 | 1,074 | 2,667 | 2,570 | 6,311 |
| *Diodon holocanthus* | 2 | . | . | 2 | . | 2 |
| *Diodon hystrix* | 1 | . | . | 1 | . | 1 |
| *Dormitator maculates* | 1 | . | 1 | . | . | 1 |
| *Echeneis naucrates* | 1 | . | . | . | 1 | 1 |
| *Echeneis* sp. | . | 1 | . | . | 1 | 1 |
| *Elops saurus* | 376 | 77 | 125 | 271 | 57 | 453 |
| *Epinephelus itajara* | 8 | 5 | 5 | 8 | . | 13 |
| *Epinephelus morio* | 1 | . | . | 1 | . | 1 |
| *Eucinostomus gula* | 569 | 174 | 225 | 503 | 15 | 743 |
| *Eucinostomus harengulus* | 15 | 2 | 4 | 5 | . | 17 |
| *Eucinostomus jonesii* | 274 | . | . | 274 | . | 274 |
| *Eucinostomus melanopterus* | 5 | . | . | 5 | . | 5 |
| *Eucinostomus* spp. | 168 | 1 | 2 | 159 | 8 | 169 |
| *Eugerres plumieri* | 35 | 9 | 16 | 16 | 12 | 44 |
| *Farfantepenaeus duorarum* | 6 | 1 | 3 | 1 | 3 | 7 |
| *Gerres cinereus* | 60 | 44 | 17 | 85 | 2 | 104 |
| *Gymnura micrura* | 5 | 8 | 1 | 2 | 10 | 13 |
| *Haemulon aurolineatum* | 6 | . | 1 | 5 | . | 6 |
| *Haemulon flavolineatum* | 6 | . | . | 6 | . | 6 |
| *Haemulon parra* | 72 | . | 10 | 62 | . | 72 |
| *Haemulon plumierii* | 29 | 1 | . | 29 | 1 | 30 |
| *Haemulon sciurus* | 11 | . | 5 | 6 | . | 11 |
| *Harengula jaguana* | 249 | 638 | 96 | 754 | 37 | 887 |
| *Hemiramphus balao* | 2 | . | 2 | . | . | 2 |
| *Hemiramphus brasiliensis* | 4 | . | 4 | . | . | 4 |
| *Lachnolaimus maximus* | 16 | 2 | . | 18 | . | 18 |
| *Lactophrys trigonus* | 25 | . | 2 | 23 | . | 25 |
| *Lagodon rhomboides* | 6,103 | 1,815 | 3,757 | 4,155 | 6 | 7,918 |

Appendix TQ08-02. (Continued)

| Species | Gear and Strata: 183-m haul seine: Over | | Zone: I | J | T | Totals |
|---|---|---|---|---|---|---|
| | Over | Nonover | I | J | T | |
| | E=115 | E=57 | E=48 | E=48 | E=76 | E=172 |
| *Leiostomus xanthurus* | 29 | 7 | 33 | 3 | . | 36 |
| *Lepisosteus osseus* | . | 3 | . | . | 3 | 3 |
| *Limulus polyphemus* | . | 2 | . | . | 2 | 2 |
| *Lobotes surinamensis* | 1 | . | 1 | . | . | 1 |
| *Lutjanus analis* | 138 | 23 | 79 | 79 | 3 | 161 |
| *Lutjanus griseus* | 255 | 34 | 70 | 205 | 14 | 289 |
| *Lutjanus jocu* | 1 | . | . | . | 1 | 1 |
| *Lutjanus synagris* | 73 | 20 | 27 | 63 | 3 | 93 |
| *Megalops atlanticus* | 1 | . | . | 1 | . | 1 |
| *Menticirrhus americanus* | 2 | 7 | . | . | 9 | 9 |
| *Micropogonias undulatus* | 354 | 16 | 33 | 224 | 113 | 370 |
| *Monacanthus ciliatus* | 182 | . | 1 | 181 | . | 182 |
| *Mugil cephalus* | 320 | 229 | 230 | 136 | 183 | 549 |
| *Mugil curema* | 589 | 254 | 359 | 282 | 202 | 843 |
| *Mycteroperca bonaci* | 3 | . | 3 | . | . | 3 |
| *Mycteroperca microlepis* | 8 | 2 | 4 | 6 | . | 10 |
| *Nicholsina usta* | 7 | . | . | 7 | . | 7 |
| *Ocyurus chrysurus* | 2 | . | . | 2 | . | 2 |
| *Oligoplites saurus* | 9 | . | 3 | 5 | 1 | 9 |
| *Opisthonema oglinum* | 54 | 3 | 34 | 23 | . | 57 |
| *Opsanus tau* | 3 | 4 | 3 | 4 | . | 7 |
| *Orthopristis chrysoptera* | 728 | 127 | 537 | 318 | . | 855 |
| *Panulirus argus* | 8 | . | . | 8 | . | 8 |
| *Paralichthys albigutta* | 8 | 2 | 7 | 2 | 1 | 10 |
| *Paralichthys lethostigma* | 5 | 1 | 1 | 3 | 2 | 6 |
| *Pleuronectiformes* sp. | 1 | . | . | . | 1 | 1 |
| *Pogonias cromis* | 148 | 57 | 62 | 139 | 4 | 205 |
| *Pomacanthus* sp. | 1 | . | . | 1 | . | 1 |
| *Pomatomus saltatrix* | 6 | 2 | . | 7 | 1 | 8 |
| *Prionotus scitulus* | 1 | . | 1 | . | . | 1 |
| *Prionotus tribulus* | 4 | 1 | 2 | 1 | 2 | 5 |
| *Rhinoptera bonasus* | . | 3 | . | . | 3 | 3 |
| *Sciaenops ocellatus* | 18 | 12 | 19 | 9 | 2 | 30 |

Appendix TQ08-02. (Continued)

| Species | Gear and Strata 183-m haul seine | | Zone | | | Totals |
|---|---|---|---|---|---|---|
| | Over | Nonover | I | J | T | |
| | E=115 | E=57 | E=48 | E=48 | E=76 | E=172 |
| *Scomberomorus maculatus* | 22 | 6 | 13 | 6 | 9 | 28 |
| *Scomberomorus regalis* | 2 | 1 | 2 | 1 | 1 | 4 |
| *Scorpaena brasiliensis* | 1 | . | . | 1 | . | 1 |
| *Scorpaena grandicornis* | 4 | . | . | 4 | . | 4 |
| *Scorpaena plumieri* | 15 | . | . | 15 | . | 15 |
| *Selar crumenophthalmus* | 2 | . | . | 2 | . | 2 |
| *Selene vomer* | 612 | 581 | 776 | 280 | 137 | 1,193 |
| *Sparisoma chrysopterum* | 1 | . | . | 1 | . | 1 |
| *Sparisoma* sp. | . | 1 | . | 1 | . | 1 |
| *Sphoeroides nephelus* | 83 | 23 | 69 | 34 | 3 | 106 |
| *Sphoeroides spengleri* | 4 | 2 | 3 | 3 | . | 6 |
| *Sphoeroides testudineus* | 297 | 237 | 214 | 213 | 107 | 534 |
| *Sphyraena barracuda* | 97 | 17 | 53 | 58 | 3 | 114 |
| *Sphyrna tiburo* | 2 | . | 2 | . | . | 2 |
| *Stephanolepis hispidus* | 35 | 5 | 1 | 39 | . | 40 |
| *Strongylura marina* | 5 | 4 | 2 | 7 | . | 9 |
| *Strongylura notata* | 69 | 3 | 48 | 21 | 3 | 72 |
| *Symphurus plagiusa* | 1 | . | . | . | 1 | 1 |
| *Synodus foetens* | 19 | 1 | 8 | 12 | . | 20 |
| *Trachinotus carolinus* | 1 | 1 | 1 | . | 1 | 2 |
| *Trachinotus falcatus* | 1 | . | . | 1 | . | 1 |
| *Trichiurus lepturus* | . | 3 | 3 | . | . | 3 |
| *Trinectes maculatus* | 8 | 4 | 7 | . | 5 | 12 |
| **Totals** | **20,718** | **7,084** | **10,733** | **12,768** | **4,301** | **27,802** |

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## *Northeast Florida*

Northeast Florida encompasses three coastal plain estuaries; each defined by their respective lower river basins (St. Marys River, Nassau River, and St. Johns River) and interconnected via the Intracoastal Waterway (ICW; Figure JX08-01). Shoreline vegetation in the lower St Marys and Nassau rivers are characterized by an expansive saltmarsh system while the lower St. Johns River is characterized by marshes, hardwood forests, and hardwood swamps (St. Johns River Water Management District 1993; St. Johns River Water Management District 2000). Bottom substrates are typically characterized as mud, sand, and occasional oysters (Solomon et al. 2006). Bottom vegetation is only present in the oligohaline reaches of the St. Johns River upriver of downtown Jacksonville (Burns et al. 1997).

The Fisheries-Independent Monitoring (FIM) program has conducted intensive sampling of fish and selected invertebrates in northeast Florida since 2001. The area sampled was divided into six geographically-defined riverine zones (A-F; Figure JX08-01). Monthly stratified-random sampling (SRS) was conducted in Zones A-D using 21.3-m river seines, 183-m haul seines, and 6.1-m river otter trawls. Monthly SRS was conducted in Zone E and F with only 21.3-m river seines and 6.1-m river otter trawls. All methods were the same as those described in the Methods section of this report. This section summarizes data collected by the FIM program during 2008 in Northeast Florida.

### Stratified-Random Sampling

A total of 200,442 fishes (160 taxa) and selected invertebrates (13 taxa) were collected from 1,356 northeast Florida samples in 2008 (Table JX08-01; Appendices JX08-01 and -02). *Anchoa mitchilli* (n=70,129) was the most numerous species collected, representing 35.0% of the total catch. The next three most abundant taxa, *Micropogonias undulatus* (n=27,148), *Leiostomus xanthurus* (n=20,686), and *Litopenaeus setiferus* (n=8,753) accounted for an additional 28.2% of the total catch. Thirty-four Selected Taxa (n=73,062 animals) composed 36.5% of the total catch. *Micropogonias undulatus* (n=27,148) was the most abundant Selected Taxon, representing 13.5% of the annual catch. *Leiostomus xanthurus* (n=20,686) and *Litopenaeus setiferus* (n=8,753) were the next two most abundant Selected Taxa, comprising 14.7% of the total catch. Collections in 2008 included eight species new to the Northeast Flroida FIM collection: *Ameiurus natalis* (yellow bullhead), *Anchoa cubana* (cuban anchovy), *Hoplosternum littorale* (brown hoplo), *Megalops atlanticus* (tarpon), *Scorpaena plumieri* (spotted scorpionfish), *Sicyonia stimpsoni* (eyespot rock shrimp), *Sphoeroides testudineus* (checkered puffer) and *Xiphopenaeus kroyeri* (Atlantic seabob).

*21.3-m River Seines.* A total of 126,076 animals were collected in 576 21.3-m river seine samples, representing 62.9% of the overall SRS collections (Table JX08-01). *Anchoa mitchilli* (n=55,553) was the most abundant species collected, accounting for 44.1% of the 21.3-m river seine catch (Table JX08-02). The taxa most frequently caught in 21.3-m river seines were *A. mitchilli* (42.4% occurrence) and *Menidia* spp. (41.7% occurrence).

A total of 30,148 animals from 28 Selected Taxa were collected, representing 23.9% of the entire 21.3-m river seine catch (Table JX08-03). *Leiostomus xanthurus* (n=13,416), *L. setiferus* (n=6,193), *Mugil cephalus* (n=4,542), and *M. undulatus* (n=2,977) were the most abundant Selected Taxa, accounting for 90.0% of the Selected Taxa collected by this gear. The Selected Taxon most frequently caught in 21.3-m river seines was *L. xanthurus* (38.5% occurrence).

*183-m Haul Seines.* A total of 19,596 animals were collected in 192 183-m haul seines, representing 9.8% of the overall SRS catch (Table JX08-01). *Lagodon rhomboides* (n=3,130), *L. xanthurus* (n=2,242), *Mugil cephalus* (n=2,174), and *M. undulatus* (n=1,832) were the most abundant species, accounting for 47.9% of the 183-m haul seine catch (Table JX08-04). The taxon most frequently caught in the 183-m haul seines was *M. cephalus* (78.6% occurrence).

A total of 9,802 animals from 30 Selected Taxa were collected, representing 50.0% of the entire 183-m haul seine catch (Table JX08-05). *Leiostomus xanthurus* (n=2,242), *M. cephalus* (n=2,174), *M. undulatus* (n=1,832), *M. curema* (n=1,199), and *L. setiferus* (n=1,003) were the most abundant Selected Taxa, accounting for 86.2% of the Selected Taxa collected by this gear. The Selected Taxa most frequently caught in 183-

m haul seines were *M. cephalus* (78.6% occurrence), *M. curema* (54.2% occurrence), and *L. xanthurus* (53.6% occurrence).

*6.1-m River Otter Trawl.* A total of 54,770 animals were collected in 588 6.1-m river otter trawl samples, representing 27.3% of the overall SRS catch (Table JX08-01). *Micropogonias undulatus* (n=22,339), *A. mitchilli* (n=14,572), and *L. xanthurus* (n=5,028) were the most abundant species collected, accounting for 76.6% of the 6.1-m river otter trawl catch (Table JX08-06). The taxa most frequently caught in 6.1-m river otter trawls were *M. undulatus* (60.0% occurrence), *C. sapidus* (53.4% occurrence), and *A. mitchilli* (47.4% occurrence).

A total of 33,112 animals from 24 Selected Taxa were collected, representing 60.5% of the entire 6.1-m river otter trawl catch (Table JX08-07). *Micropogonias undulatus* (n=22,339), *L. xanthurus* (n=5,028), *L. setiferus* (n=1,557), and *C. sapidus* (n=1,384) were the most abundant Selected Taxa, accounting for 91.5% of the Selected Taxa collected by this gear. The Selected Taxa most frequently caught in the 6.1-m river otter trawls were *M. undulatus* (60.0% occurrence) and *C. sapidus* (53.4% occurrence).

## References

Burns, J.W., Jr., A.D. Chapman, E. Messer, and J.Konwinski. 1997. Submerged Aquatic Vegetation of the Lower St. Johns River. Palatka, Fla.: St. Johns River Water Management District.

Solomon, J.J., Brodie, R.B., and G. Ehlinger. 2006. Distribution and abundance of fish assemblages and select macroinvertebrates from the lower St. Marys River Basin in northeast Florida. Florida Scientist Vol 69(1):1-18.

St. Johns River Water Management District. 1993. Lower St. Johns River Basin SWIM Plan. 3 pp.

St. Johns River Water Management District. 2000. St. Marys River Basin: Overview Issues and Strategies. 4 pp.

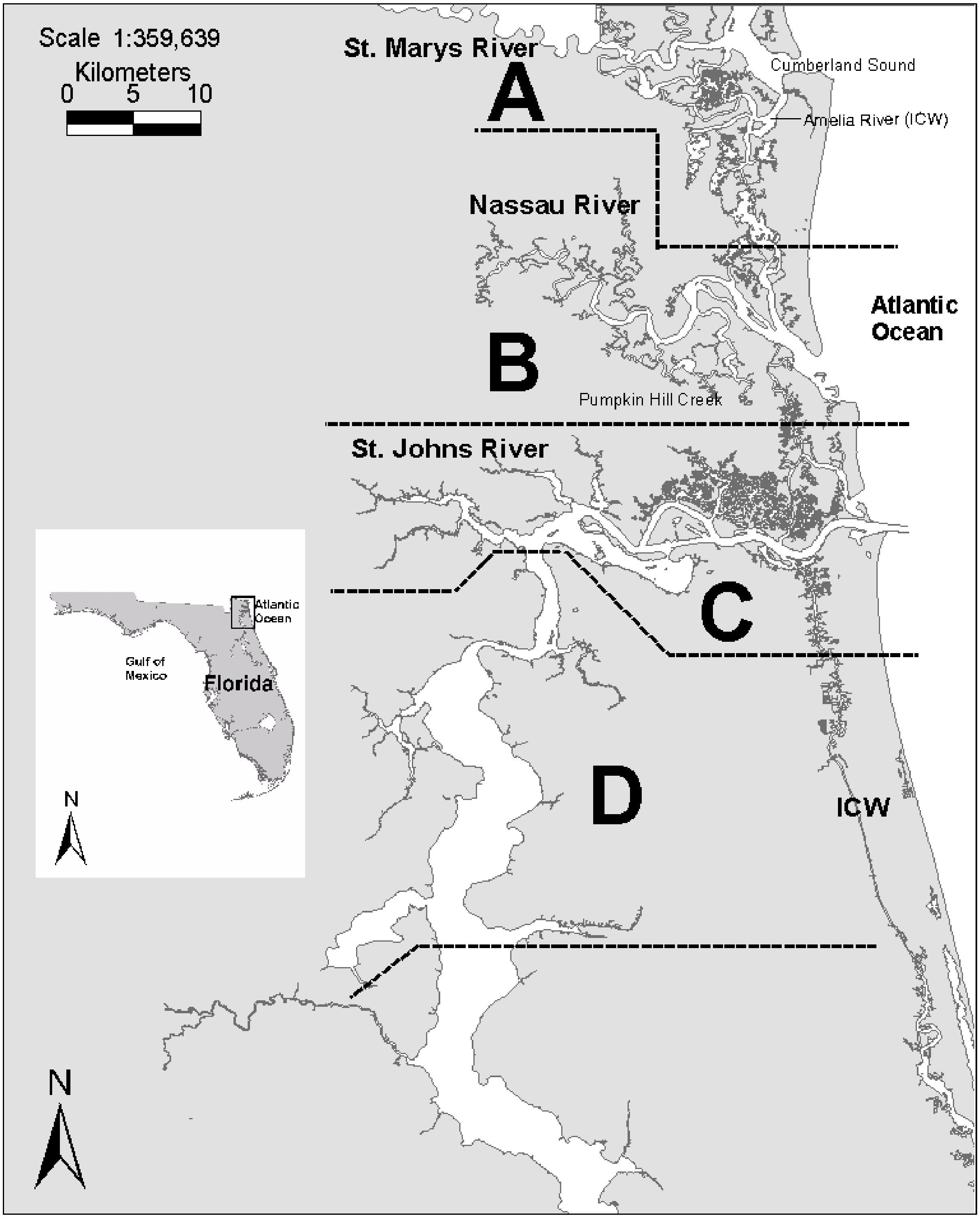


Figure JX08-01. Map of Northeast Florida sampling area. Zones are labeled A – F.

Table JX08-01. Summary of catch and effort data for Northeast Florida stratified-random sampling, 2008.

| Zone | 21.3-m river seine | | 183-m haul seine | | 6.1-m otter trawl | | Totals | |
|---|---|---|---|---|---|---|---|---|
| | Animals | Hauls | Animals | Hauls | Animals | Hauls | Animals | Hauls |
| A | 23,483 | 84 | 3,337 | 36 | 8,642 | 84 | 35,466 | 204 |
| B | 19,357 | 84 | 3,244 | 36 | 8,500 | 84 | 31,106 | 204 |
| C | 23,202 | 109 | 4,395 | 60 | 6,452 | 108 | 34,049 | 277 |
| D | 22,494 | 107 | 8,620 | 60 | 13,464 | 120 | 44,578 | 287 |
| E | 10,772 | 96 | . | . | 6,371 | 96 | 17,143 | 192 |
| F | 26,768 | 96 | . | . | 11,341 | 96 | 38,109 | 192 |
| **Totals** | **126,076** | **576** | **19,596** | **192** | **54,770** | **588** | **200,442** | **1,356** |

Table JX08-02. Catch statistics for 10 dominant taxa collected in 576 21.3-m river seine samples during Northeast Florida stratified-random sampling, 2008. Percent (%) is the percent of the total catch represented by that taxon; percent occurrence (% Occur) is the percentage of samples in which that taxon was collected; CV is the coefficient of variation of the mean. Taxa are ranked in order of decreasing mean density.

| Species | Number | | % Occur | Density Estimate (animals/100m$^2$) | | | | Standard Length (mm) | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | No. | % | | Mean | Stderr | CV | Max | Mean | Stderr | Min | Max |
| *Anchoa mitchilli* | 55,553 | 44.1 | 42.4 | 141.83 | 37.63 | 636.78 | 18,541.18 | 33 | 0.04 | 12 | 72 |
| *Leiostomus xanthurus* | 13,416 | 10.6 | 38.5 | 34.25 | 6.49 | 454.87 | 2,382.35 | 25 | 0.12 | 11 | 184 |
| *Menidia menidia* | 7,361 | 5.8 | 33.2 | 18.79 | 3.12 | 398.19 | 1,113.24 | 47 | 0.15 | 18 | 93 |
| *Lucania parva* | 7,260 | 5.8 | 23.6 | 18.54 | 4.53 | 587.02 | 2,094.12 | 26 | 0.05 | 13 | 45 |
| *Litopenaeus setiferus* | 6,193 | 4.9 | 18.4 | 15.81 | 4.20 | 637.00 | 1,554.41 | 11 | 0.05 | 2 | 29 |
| *Menidia* spp. | 5,611 | 4.5 | 41.7 | 14.33 | 2.07 | 346.32 | 723.53 | 37 | 0.11 | 7 | 68 |
| *Mugil cephalus* | 4,542 | 3.6 | 28.0 | 11.60 | 2.97 | 615.58 | 1,366.18 | 29 | 0.37 | 16 | 407 |
| *Micropogonias undulatus* | 2,977 | 2.4 | 25.3 | 7.60 | 1.53 | 482.58 | 595.59 | 32 | 0.34 | 10 | 230 |
| *Fundulus heteroclitus* | 2,156 | 1.7 | 14.8 | 5.50 | 1.84 | 802.09 | 885.29 | 38 | 0.27 | 14 | 96 |
| *Lagodon rhomboides* | 1,971 | 1.6 | 29.3 | 5.03 | 0.92 | 440.85 | 244.12 | 48 | 0.54 | 11 | 164 |
| Subtotal | 107,040 | 85.0 | . | . | . | . | . | . | . | 2 | 407 |
| **Totals** | **126,076** | **100.0** | **.** | **321.89** | **39.51** | **294.59** | **18,573.53** | **.** | **.** | **2** | **842** |

Table JX08-03. Catch statistics for Selected Taxa collected in 576 21.3-m river seine samples during Northeast Florida stratified-random sampling, 2008. Percent (%) is the percent of the total catch represented by that taxon; percent occurrence (% Occur) is the percentage of samples in which that taxon was collected; CV is the coefficient of variation of the mean. Taxa are ranked in order of decreasing mean density.

| Species | Number | | % Occur | Density Estimate (animals/100m$^2$) | | | | Standard Length (mm) | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | No. | % | | Mean | Stderr | CV | Max | Mean | Stderr | Min | Max |
| *Leiostomus xanthurus* | 13,416 | 10.6 | 38.5 | 34.25 | 6.49 | 454.87 | 2,382.35 | 25 | 0.12 | 11 | 184 |
| *Litopenaeus setiferus* | 6,193 | 4.9 | 18.4 | 15.81 | 4.20 | 637.00 | 1,554.41 | 11 | 0.05 | 2 | 29 |
| *Mugil cephalus* | 4,542 | 3.6 | 28.0 | 11.60 | 2.97 | 615.58 | 1,366.18 | 29 | 0.37 | 16 | 407 |
| *Micropogonias undulatus* | 2,977 | 2.4 | 25.3 | 7.60 | 1.53 | 482.58 | 595.59 | 32 | 0.34 | 10 | 230 |
| *Farfantepenaeus* spp. | 815 | 0.6 | 16.3 | 2.08 | 0.48 | 549.58 | 217.65 | 10 | 0.09 | 3 | 14 |
| *Trachinotus falcatus* | 439 | 0.3 | 3.0 | 1.12 | 0.48 | 1,024.99 | 170.59 | 25 | 0.37 | 11 | 42 |
| *Callinectes sapidus* | 418 | 0.3 | 26.7 | 1.07 | 0.13 | 281.33 | 32.35 | 49 | 1.99 | 8 | 185 |
| *Trachinotus carolinus* | 418 | 0.3 | 2.3 | 1.07 | 0.54 | 1,213.57 | 264.71 | 24 | 0.61 | 12 | 84 |
| *Mugil curema* | 207 | 0.2 | 10.2 | 0.53 | 0.13 | 581.21 | 44.12 | 57 | 2.51 | 17 | 184 |
| *Menticirrhus americanus* | 124 | 0.1 | 3.3 | 0.32 | 0.10 | 783.85 | 38.24 | 44 | 1.59 | 13 | 91 |
| *Sciaenops ocellatus* | 112 | 0.1 | 9.0 | 0.29 | 0.05 | 432.27 | 16.18 | 53 | 4.20 | 13 | 299 |
| *Farfantepenaeus aztecus* | 103 | 0.1 | 3.5 | 0.26 | 0.12 | 1,128.75 | 66.18 | 16 | 0.11 | 15 | 20 |
| *Cynoscion nebulosus* | 99 | 0.1 | 6.8 | 0.25 | 0.06 | 574.17 | 17.65 | 45 | 3.98 | 14 | 225 |
| *Paralichthys lethostigma* | 58 | 0.0 | 5.0 | 0.15 | 0.04 | 571.11 | 11.76 | 97 | 12.76 | 13 | 347 |
| *Elops saurus* | 43 | 0.0 | 1.6 | 0.11 | 0.06 | 1,340.45 | 32.35 | 53 | 5.38 | 30 | 213 |
| *Farfantepenaeus duorarum* | 39 | 0.0 | 2.1 | 0.10 | 0.04 | 863.08 | 11.76 | 17 | 0.25 | 15 | 21 |
| *Lutjanus griseus* | 39 | 0.0 | 2.1 | 0.10 | 0.05 | 1,191.70 | 26.47 | 87 | 9.73 | 12 | 178 |

Table JX08-03. (Continued)

| Species | Number | | % Occur | Density Estimate (animals/100m$^2$) | | | | Standard Length (mm) | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | No. | % | | Mean | Stderr | CV | Max | Mean | Stderr | Min | Max |
| *Menticirrhus saxatilis* | 20 | 0.0 | 0.9 | 0.05 | 0.03 | 1,534.83 | 17.65 | 44 | 3.86 | 21 | 70 |
| *Cynoscion* complex | 16 | 0.0 | 1.7 | 0.04 | 0.02 | 1,035.31 | 8.82 | 39 | 3.65 | 13 | 63 |
| *Paralichthys albigutta* | 16 | 0.0 | 2.6 | 0.04 | 0.01 | 629.04 | 2.94 | 63 | 11.29 | 16 | 193 |
| *Pomatomus saltatrix* | 15 | 0.0 | 1.6 | 0.04 | 0.01 | 914.47 | 5.88 | 78 | 6.00 | 48 | 120 |
| *Archosargus probatocephalus* | 14 | 0.0 | 1.9 | 0.04 | 0.01 | 869.13 | 5.88 | 131 | 22.89 | 25 | 335 |
| *Pogonias cromis* | 7 | 0.0 | 1.2 | 0.02 | 0.01 | 902.37 | 1.47 | 154 | 20.49 | 44 | 209 |
| *Lutjanus synagris* | 7 | 0.0 | 0.9 | 0.02 | 0.01 | 1,233.21 | 4.41 | 44 | 7.39 | 18 | 67 |
| *Menticirrhus littoralis* | 4 | 0.0 | 0.5 | 0.01 | 0.01 | 1,467.56 | 2.94 | 81 | 22.02 | 52 | 146 |
| *Paralichthys dentatus* | 3 | 0.0 | 0.5 | 0.01 | 0.00 | 1,383.23 | 1.47 | 47 | 14.62 | 28 | 76 |
| *Scomberomorus maculatus* | 3 | 0.0 | 0.3 | 0.01 | 0.01 | 1,787.61 | 2.94 | 112 | 15.95 | 90 | 143 |
| *Paralichthys squamilentus* | 1 | 0.0 | 0.2 | 0.00 | 0.00 | 2,400.00 | 1.47 | 45 | . | 45 | 45 |
| **Totals** | **30,148** | **23.9** | **73.1** | **76.97** | **9.06** | **282.53** | **2,470.59** | **.** | **.** | **2** | **407** |

Table JX08-04. Catch statistics for 10 dominant taxa collected in 192 183-m haul seine samples during Northeast Florida stratified-random sampling, 2008. Percent (%) is the percent of the total catch represented by that taxon; percent occurrence (% Occur) is the percentage of samples in which that taxon was collected; CV is the coefficient of variation of the mean. Taxa are ranked in order of decreasing mean catch-per-unit-effort.

| **Species** | **Number** | | **% Occur** | **Catch-per-unit-effort (animals/set)** | | | | **Standard Length (mm)** | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | **No.** | **%** | | **Mean** | **Stderr** | **CV** | **Max** | **Mean** | **Stderr** | **Min** | **Max** |
| *Lagodon rhomboides* | 3,130 | 16.0 | 46.9 | 16.30 | 6.49 | 551.64 | 789.00 | 92 | 0.38 | 36 | 199 |
| *Leiostomus xanthurus* | 2,242 | 11.4 | 53.6 | 11.68 | 3.13 | 371.27 | 512.00 | 97 | 0.58 | 46 | 210 |
| *Mugil cephalus* | 2,174 | 11.1 | 78.6 | 11.32 | 1.74 | 213.23 | 235.00 | 201 | 1.18 | 75 | 406 |
| *Micropogonias undulatus* | 1,832 | 9.3 | 22.4 | 9.54 | 7.42 | 1,078.20 | 1,419.00 | 95 | 0.71 | 33 | 366 |
| *Mugil curema* | 1,199 | 6.1 | 54.2 | 6.24 | 1.34 | 297.04 | 183.00 | 143 | 1.12 | 68 | 279 |
| *Dorosoma cepedianum* | 1,014 | 5.2 | 13.5 | 5.28 | 4.05 | 1,062.86 | 769.00 | 100 | 1.30 | 76 | 400 |
| *Litopenaeus setiferus* | 1,003 | 5.1 | 18.8 | 5.22 | 2.38 | 630.43 | 372.00 | 22 | 0.12 | 10 | 39 |
| *Dasyatis sabina* | 990 | 5.0 | 57.3 | 5.16 | 0.86 | 230.68 | 77.00 | 227 | 1.33 | 74 | 362 |
| *Chloroscombrus chrysurus* | 927 | 4.7 | 17.2 | 4.83 | 1.97 | 564.95 | 322.00 | 85 | 0.71 | 47 | 182 |
| *Bairdiella chrysoura* | 691 | 3.5 | 18.2 | 3.60 | 1.10 | 422.11 | 143.00 | 124 | 0.71 | 73 | 189 |
| Subtotal | 15,202 | 77.4 | . | . | . | . | . | . | . | 10 | 406 |
| **Totals** | **19,596** | **100.0** | **.** | **102.11** | **17.51** | **237.58** | **2,591.00** | **.** | **.** | **10** | **1090** |

Table JX08-05. Catch statistics for Selected Taxa collected in 192 183-m haul seine samples during Northeast Florida stratified-random sampling, 2008. Percent (%) is the percent of the total catch represented by that taxon; percent occurrence (% Occur) is the percentage of samples in which that taxon was collected; CV is the coefficient of variation of the mean. Taxa are ranked in order of decreasing mean catch-per-unit-effort.

| Species | Number | | % Occur | Catch-per-unit-effort (animals/set) | | | | Standard Length (mm) | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | No. | % | | Mean | Stderr | CV | Max | Mean | Stderr | Min | Max |
| *Leiostomus xanthurus* | 2,242 | 11.4 | 53.6 | 11.68 | 3.13 | 371.27 | 512.00 | 97 | 0.58 | 46 | 210 |
| *Mugil cephalus* | 2,174 | 11.1 | 78.6 | 11.32 | 1.74 | 213.23 | 235.00 | 201 | 1.18 | 75 | 406 |
| *Micropogonias undulatus* | 1,832 | 9.3 | 22.4 | 9.54 | 7.42 | 1,078.20 | 1,419.00 | 95 | 0.71 | 33 | 366 |
| *Mugil curema* | 1,199 | 6.1 | 54.2 | 6.24 | 1.34 | 297.04 | 183.00 | 143 | 1.12 | 68 | 279 |
| *Litopenaeus setiferus* | 1,003 | 5.1 | 18.8 | 5.22 | 2.38 | 630.43 | 372.00 | 22 | 0.12 | 10 | 39 |
| *Callinectes sapidus* | 327 | 1.7 | 41.7 | 1.70 | 0.34 | 275.99 | 50.00 | 111 | 2.22 | 28 | 191 |
| *Cynoscion nebulosus* | 201 | 1.0 | 32.3 | 1.05 | 0.20 | 268.63 | 23.00 | 232 | 5.36 | 60 | 442 |
| *Elops saurus* | 139 | 0.7 | 20.3 | 0.72 | 0.15 | 285.22 | 15.00 | 267 | 6.22 | 77 | 495 |
| *Archosargus probatocephalus* | 99 | 0.5 | 25.5 | 0.52 | 0.09 | 251.79 | 10.00 | 294 | 8.56 | 83 | 472 |
| *Farfantepenaeus aztecus* | 89 | 0.5 | 2.1 | 0.46 | 0.43 | 1,277.88 | 82.00 | 22 | 0.27 | 15 | 26 |
| *Sciaenops ocellatus* | 87 | 0.4 | 19.8 | 0.45 | 0.09 | 266.05 | 8.00 | 260 | 16.31 | 47 | 628 |
| *Paralichthys lethostigma* | 81 | 0.4 | 24.0 | 0.42 | 0.07 | 235.69 | 7.00 | 232 | 10.92 | 66 | 543 |
| *Paralichthys albigutta* | 68 | 0.3 | 13.0 | 0.35 | 0.10 | 375.56 | 10.00 | 125 | 4.65 | 54 | 200 |
| *Pomatomus saltatrix* | 51 | 0.3 | 13.0 | 0.27 | 0.07 | 343.98 | 7.00 | 216 | 10.33 | 105 | 411 |
| *Pogonias cromis* | 36 | 0.2 | 6.8 | 0.19 | 0.07 | 525.24 | 10.00 | 228 | 8.67 | 145 | 385 |
| *Menticirrhus americanus* | 34 | 0.2 | 9.9 | 0.18 | 0.05 | 391.88 | 6.00 | 210 | 10.32 | 42 | 309 |
| *Scomberomorus maculatus* | 28 | 0.1 | 6.8 | 0.15 | 0.05 | 454.52 | 5.00 | 229 | 13.69 | 113 | 413 |

Table JX08-05. (Continued)

| Species | Number No. | Number % | % Occur | Catch-per-unit-effort (animals/set) Mean | Stderr | CV | Max | Standard Length (mm) Mean | Stderr | Min | Max |
|---|---|---|---|---|---|---|---|---|---|---|---|
| *Trachinotus carolinus* | 23 | 0.1 | 1.6 | 0.12 | 0.08 | 936.23 | 11.00 | 86 | 5.86 | 61 | 191 |
| *Farfantepenaeus* spp. | 19 | 0.1 | 7.3 | 0.10 | 0.03 | 394.57 | 3.00 | 13 | 0.27 | 10 | 14 |
| *Lutjanus griseus* | 18 | 0.1 | 6.8 | 0.09 | 0.03 | 424.94 | 3.00 | 177 | 8.11 | 84 | 231 |
| *Farfantepenaeus duorarum* | 16 | 0.1 | 6.3 | 0.08 | 0.02 | 413.39 | 2.00 | 19 | 0.71 | 16 | 26 |
| *Paralichthys dentatus* | 14 | 0.1 | 3.1 | 0.07 | 0.04 | 680.16 | 5.00 | 116 | 5.28 | 89 | 148 |
| *Cynoscion* complex | 7 | 0.0 | 3.6 | 0.04 | 0.01 | 515.43 | 1.00 | 166 | 34.90 | 91 | 325 |
| *Menticirrhus littoralis* | 5 | 0.0 | 0.5 | 0.03 | 0.03 | 1,385.64 | 5.00 | 199 | 6.40 | 178 | 213 |
| *Menippe* spp. | 3 | 0.0 | 1.6 | 0.02 | 0.01 | 795.80 | 1.00 | 58 | 16.90 | 39 | 92 |
| *Lutjanus synagris* | 2 | 0.0 | 0.5 | 0.01 | 0.01 | 1,385.64 | 2.00 | 92 | 6.50 | 85 | 98 |
| *Megalops atlanticus* | 1 | 0.0 | 0.5 | 0.01 | 0.01 | 1,385.64 | 1.00 | 560 | . | 560 | 560 |
| *Centropomus undecimalis* | 1 | 0.0 | 0.5 | 0.01 | 0.01 | 1,385.64 | 1.00 | 405 | . | 405 | 405 |
| *Rachycentron canadum* | 1 | 0.0 | 0.5 | 0.01 | 0.01 | 1,385.64 | 1.00 | 305 | . | 305 | 305 |
| *Scomberomorus cavalla* | 1 | 0.0 | 0.5 | 0.01 | 0.01 | 1,385.64 | 1.00 | 119 | . | 119 | 119 |
| *Paralichthys squamilentus* | 1 | 0.0 | 0.5 | 0.01 | 0.01 | 1,385.64 | 1.00 | 110 | . | 110 | 110 |
| **Totals** | **9,802** | **50.0** | **99.0** | **51.05** | **11.02** | **299.03** | **1,965.00** | **.** | **.** | **10** | **628** |

Table JX08-06. Catch statistics for 10 dominant taxa collected in 588 river 6.1-m otter trawl samples during Northeast Florida stratified-random sampling, 2008. Percent (%) is the percent of the total catch represented by that taxon; percent occurrence (% Occur) is the percentage of samples in which that taxon was collected; CV is the coefficient of variation of the mean. Taxa are ranked in order of decreasing mean density.

| Species | Number | | % Occur | Density Estimate (animals/100m$^2$) | | | | Standard Length (mm) | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | No. | % | | Mean | Stderr | CV | Max | Mean | Stderr | Min | Max |
| *Micropogonias undulatus* | 22,339 | 40.8 | 60.0 | 5.17 | 0.67 | 312.07 | 171.94 | 31 | 0.14 | 4 | 182 |
| *Anchoa mitchilli* | 14,572 | 26.6 | 47.4 | 3.41 | 0.56 | 397.71 | 138.42 | 39 | 0.10 | 10 | 76 |
| *Leiostomus xanthurus* | 5,028 | 9.2 | 33.3 | 1.14 | 0.32 | 681.47 | 112.25 | 36 | 0.35 | 10 | 201 |
| *Stellifer lanceolatus* | 1,967 | 3.6 | 8.0 | 0.49 | 0.16 | 812.52 | 68.47 | 38 | 0.32 | 10 | 124 |
| *Litopenaeus setiferus* | 1,557 | 2.8 | 29.4 | 0.37 | 0.06 | 379.54 | 16.86 | 19 | 0.16 | 3 | 41 |
| *Callinectes sapidus* | 1,384 | 2.5 | 53.4 | 0.32 | 0.03 | 228.78 | 10.39 | 105 | 1.23 | 9 | 207 |
| *Cynoscion* complex | 1,026 | 1.9 | 19.9 | 0.24 | 0.06 | 623.14 | 27.12 | 36 | 0.92 | 11 | 300 |
| *Trinectes maculatus* | 917 | 1.7 | 30.4 | 0.22 | 0.03 | 386.00 | 14.10 | 50 | 0.84 | 11 | 136 |
| *Farfantepenaeus* spp. | 498 | 0.9 | 17.9 | 0.12 | 0.02 | 349.73 | 4.32 | 10 | 0.13 | 3 | 14 |
| *Elops saurus* | 408 | 0.7 | 9.7 | 0.09 | 0.03 | 717.49 | 9.04 | 38 | 0.60 | 25 | 205 |
| Subtotal | 49,696 | 90.7 | . | . | . | . | . | . | . | 3 | 300 |
| **Totals** | **54,770** | **100.0** | **.** | **12.79** | **1.04** | **197.56** | **250.82** | **.** | **.** | **2** | **832** |

Table JX08-07. Catch statistics for Selected Taxa collected in 588 river 6.1-m otter trawl samples during Northeast Florida stratified-random sampling, 2008. Percent (%) is the percent of the total catch represented by that taxon; percent occurrence (% Occur) is the percentage of samples in which that taxon was collected; CV is the coefficient of variation of the mean. Taxa are ranked in order of decreasing mean density.

| Species | Number | | % Occur | Density Estimate (animals/100m$^2$) | | | | Standard Length (mm) | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | No. | % | | Mean | Stderr | CV | Max | Mean | Stderr | Min | Max |
| *Micropogonias undulatus* | 22,339 | 40.8 | 60.0 | 5.17 | 0.67 | 312.07 | 171.94 | 31 | 0.14 | 4 | 182 |
| *Leiostomus xanthurus* | 5,028 | 9.2 | 33.3 | 1.14 | 0.32 | 681.47 | 112.25 | 36 | 0.35 | 10 | 201 |
| *Litopenaeus setiferus* | 1,557 | 2.8 | 29.4 | 0.37 | 0.06 | 379.54 | 16.86 | 19 | 0.16 | 3 | 41 |
| *Callinectes sapidus* | 1,384 | 2.5 | 53.4 | 0.32 | 0.03 | 228.78 | 10.39 | 105 | 1.23 | 9 | 207 |
| *Cynoscion* complex | 1,026 | 1.9 | 19.9 | 0.24 | 0.06 | 623.14 | 27.12 | 36 | 0.92 | 11 | 300 |
| *Farfantepenaeus* spp. | 498 | 0.9 | 17.9 | 0.12 | 0.02 | 349.73 | 4.32 | 10 | 0.13 | 3 | 14 |
| *Elops saurus* | 408 | 0.7 | 9.7 | 0.09 | 0.03 | 717.49 | 9.04 | 38 | 0.60 | 25 | 205 |
| *Menticirrhus americanus* | 307 | 0.6 | 12.2 | 0.07 | 0.01 | 459.78 | 4.59 | 38 | 1.28 | 10 | 182 |
| *Farfantepenaeus duorarum* | 231 | 0.4 | 8.2 | 0.06 | 0.01 | 583.68 | 3.51 | 21 | 0.29 | 15 | 44 |
| *Farfantepenaeus aztecus* | 104 | 0.2 | 5.8 | 0.03 | 0.01 | 716.56 | 3.71 | 20 | 0.45 | 15 | 35 |
| *Paralichthys lethostigma* | 96 | 0.2 | 11.9 | 0.02 | 0.00 | 308.98 | 0.49 | 159 | 8.17 | 13 | 426 |
| *Archosargus probatocephalus* | 26 | 0.0 | 3.1 | 0.01 | 0.00 | 727.32 | 0.81 | 197 | 20.11 | 73 | 445 |
| *Cynoscion nebulosus* | 19 | 0.0 | 1.9 | 0.00 | 0.00 | 883.97 | 0.75 | 95 | 29.53 | 13 | 429 |
| *Paralichthys albigutta* | 18 | 0.0 | 2.6 | 0.00 | 0.00 | 643.10 | 0.27 | 149 | 8.41 | 84 | 215 |
| *Menippe* spp. | 14 | 0.0 | 1.7 | 0.00 | 0.00 | 900.49 | 0.45 | 51 | 10.12 | 4 | 111 |
| *Cynoscion nothus* | 12 | 0.0 | 0.7 | 0.00 | 0.00 | 1,358.30 | 0.67 | 31 | 5.38 | 15 | 65 |
| *Sciaenops ocellatus* | 12 | 0.0 | 0.9 | 0.00 | 0.00 | 1,684.47 | 1.08 | 74 | 45.24 | 17 | 570 |

Table JX08-07. (Continued)

| Species | Number No. | Number % | % Occur | Density Estimate (animals/100m$^2$) Mean | Stderr | CV | Max | Standard Length (mm) Mean | Stderr | Min | Max |
|---|---|---|---|---|---|---|---|---|---|---|---|
| *Paralichthys dentatus* | 8 | 0.0 | 1.2 | 0.00 | 0.00 | 935.88 | 0.25 | 171 | 20.97 | 111 | 280 |
| *Lutjanus griseus* | 8 | 0.0 | 0.9 | 0.00 | 0.00 | 1,330.37 | 0.54 | 107 | 15.71 | 60 | 188 |
| *Pogonias cromis* | 7 | 0.0 | 1.0 | 0.00 | 0.00 | 1,032.28 | 0.27 | 242 | 28.73 | 168 | 340 |
| *Menticirrhus saxatilis* | 5 | 0.0 | 0.5 | 0.00 | 0.00 | 1,590.13 | 0.37 | 36 | 6.11 | 12 | 45 |
| *Mugil cephalus* | 2 | 0.0 | 0.3 | 0.00 | 0.00 | 1,713.18 | 0.13 | 116 | 94.50 | 21 | 210 |
| *Paralichthys squamilentus* | 1 | 0.0 | 0.2 | 0.00 | 0.00 | 2,424.87 | 0.17 | 114 | . | 114 | 114 |
| *Rachycentron canadum* | 1 | 0.0 | 0.2 | 0.00 | 0.00 | 2,424.87 | 0.15 | 356 | . | 356 | 356 |
| *Lutjanus synagris* | 1 | 0.0 | 0.2 | 0.00 | 0.00 | 2,424.87 | 0.13 | 66 | . | 66 | 66 |
| **Totals** | **33,112** | **60.5** | **90.8** | **7.66** | **0.84** | **264.68** | **243.95** | **.** | **.** | **3** | **570** |

Appendix JX08-01. Monthly summary of species collected during Northeast Florida stratified-random sampling, 2008. Effort, or total number of hauls, is labeled 'E'. Taxa are arranged alphabetically.

| Species | Month | | | | | | | | | | | | Totals |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | |
| | E=113 | E=113 | E=113 | E=113 | E=113 | E=113 | E=113 | E=113 | E=113 | E=113 | E=113 | E=113 | E=1,356 |
| *Achirus lineatus* | 8 | 21 | 8 | 21 | 15 | 9 | 18 | 34 | 34 | 80 | 17 | 12 | 277 |
| *Alosa mediocris* | . | . | . | . | . | . | . | . | . | . | 1 | . | 1 |
| *Alosa sapidissima* | 1 | . | . | . | . | . | . | . | . | . | . | 1 | 2 |
| *Ameiurus catus* | 24 | 14 | 17 | 4 | 3 | 4 | 38 | 28 | 32 | 71 | 105 | 81 | 421 |
| *Ameiurus natalis* | . | . | . | . | . | . | . | 1 | . | . | . | . | 1 |
| *Ameiurus nebulosus* | . | . | 1 | 1 | . | 2 | 1 | . | . | . | . | . | 5 |
| *Amia calva* | . | . | . | . | 1 | . | 1 | . | . | 1 | . | . | 3 |
| *Anchoa cubana* | . | . | . | . | . | . | 1 | . | . | . | . | . | 1 |
| *Anchoa hepsetus* | 10 | 29 | 22 | 24 | 166 | 698 | 329 | 127 | 6 | 22 | . | . | 1,433 |
| *Anchoa lyolepis* | . | . | . | . | 3 | 21 | 856 | 1 | . | . | . | . | 881 |
| *Anchoa mitchilli* | 19,082 | 1,683 | 3,436 | 3,326 | 4,046 | 5,451 | 980 | 7,614 | 1,265 | 10,254 | 9,351 | 3,641 | 70,129 |
| *Ancylopsetta quadrocellata* | 1 | 2 | 4 | 6 | 5 | . | . | . | . | . | . | . | 18 |
| *Anguilla rostrata* | . | 1 | . | . | . | . | . | . | 2 | . | . | . | 3 |
| *Apalone ferox* | . | . | . | . | . | . | . | . | . | 1 | 1 | . | 2 |
| *Archosargus probatocephalus* | 9 | 3 | 24 | 12 | 9 | 7 | 16 | 17 | 8 | 18 | 10 | 6 | 139 |
| *Ariopsis felis* | . | . | . | 1 | . | . | 4 | 7 | 2 | 1 | 1 | . | 16 |
| *Astroscopus y-graecum* | 2 | 2 | 3 | . | 1 | . | 1 | . | 1 | . | 1 | 2 | 13 |
| *Bagre marinus* | . | . | . | . | 1 | . | 7 | . | . | . | . | . | 8 |
| *Bairdiella chrysoura* | 14 | 253 | 57 | 76 | 526 | 701 | 409 | 51 | 46 | 72 | 143 | 72 | 2,420 |
| *Bathygobius soporator* | 1 | 1 | 1 | . | . | . | . | 1 | . | . | 1 | . | 5 |
| *Brevoortia* spp. | 1 | 27 | 107 | 54 | 27 | 65 | 29 | 2 | 57 | 5 | 78 | 85 | 537 |
| *Callinectes ornatus* | . | . | . | . | 1 | 3 | 3 | 1 | . | . | . | 1 | 9 |
| *Callinectes sapidus* | 131 | 237 | 199 | 214 | 140 | 319 | 193 | 225 | 215 | 88 | 86 | 82 | 2,129 |
| *Callinectes similis* | 1 | 4 | 13 | 49 | 111 | 26 | 101 | 28 | 15 | 14 | 42 | 5 | 409 |

Appendix JX08-01.     (Continued)

| Species | Month | | | | | | | | | | | | Totals |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | |
| | E=113 | E=113 | E=113 | E=113 | E=113 | E=113 | E=113 | E=113 | E=113 | E=113 | E=113 | E=113 | E=1,356 |
| *Callinectes* spp. | . | . | . | . | . | 1 | . | . | . | . | . | . | 1 |
| *Caranx crysos* | . | . | . | . | . | . | . | . | 1 | . | . | . | 1 |
| *Caranx hippos* | 1 | . | . | . | 7 | 44 | 54 | 35 | 33 | 9 | 8 | 5 | 196 |
| *Caranx latus* | . | . | . | . | . | . | . | . | 1 | 2 | . | . | 3 |
| *Carcharhinus isodon* | . | . | . | . | . | . | . | 1 | . | . | . | . | 1 |
| *Carcharhinus limbatus* | . | . | . | . | . | . | 1 | . | . | . | . | . | 1 |
| *Centropomus undecimalis* | . | . | . | . | . | . | . | . | . | 1 | . | . | 1 |
| *Centropristis philadelphica* | 1 | 2 | 2 | 16 | 5 | . | 7 | 8 | 4 | 1 | 2 | 1 | 49 |
| *Centropristis striata* | . | . | . | 1 | . | . | . | 3 | . | . | . | . | 4 |
| *Chaetodipterus faber* | . | . | . | . | 3 | 10 | 15 | 16 | 11 | 4 | . | 1 | 60 |
| *Chasmodes bosquianus* | . | . | 2 | . | . | . | . | 1 | . | . | . | . | 3 |
| *Chelydra serpentina osceola* | . | 1 | . | . | . | . | . | . | . | . | . | . | 1 |
| *Chilomycterus schoepfii* | . | . | 1 | 4 | . | 6 | 4 | 18 | 4 | 5 | 4 | . | 46 |
| *Chloroscombrus chrysurus* | . | . | . | 33 | 4 | 30 | 62 | 46 | 664 | 197 | 1 | 4 | 1,041 |
| *Citharichthys macrops* | . | . | . | . | . | . | 2 | . | . | . | 2 | . | 4 |
| *Citharichthys spilopterus* | 2 | 10 | 42 | 86 | 70 | 165 | 185 | 101 | 86 | 5 | 1 | . | 753 |
| *Ctenogobius boleosoma* | 13 | 3 | 16 | 6 | 23 | 5 | 27 | 1 | 5 | 10 | 4 | 8 | 121 |
| *Ctenogobius shufeldti* | 2 | 6 | 11 | 10 | 7 | . | 1 | 5 | . | 6 | 2 | 1 | 51 |
| *Ctenogobius smaragdus* | . | . | 1 | 2 | . | 1 | 4 | 4 | 4 | 22 | 9 | 2 | 49 |
| *Ctenogobius stigmaticus* | 6 | . | . | . | . | . | 2 | . | . | 1 | . | . | 9 |
| *Cynoscion nebulosus* | 18 | 45 | 38 | 7 | 27 | 32 | 30 | 35 | 36 | 8 | 15 | 28 | 319 |
| *Cynoscion nothus* | . | . | . | . | . | . | . | . | . | 11 | . | 1 | 12 |
| *Cynoscion* complex | 6 | 4 | 3 | 1 | 531 | 196 | 96 | 47 | 110 | 36 | 7 | 12 | 1,049 |
| *Cyprinodon variegatus* | . | 1 | . | . | . | . | . | . | . | . | 2 | . | 3 |

Appendix JX08-01. (Continued)

| Species | Month | | | | | | | | | | | | Totals |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | |
| | E=113 | E=113 | E=113 | E=113 | E=113 | E=113 | E=113 | E=113 | E=113 | E=113 | E=113 | E=113 | E=1,356 |
| *Dasyatis sabina* | 173 | 117 | 67 | 173 | 78 | 120 | 102 | 155 | 58 | 51 | 67 | 45 | 1,206 |
| *Dasyatis say* | . | . | . | 5 | 12 | 9 | 4 | 5 | . | 2 | . | . | 37 |
| *Diapterus auratus* | 6 | 5 | 2 | 4 | 3 | 5 | 3 | 2 | 24 | 101 | 26 | 11 | 192 |
| *Diplectrum formosum* | . | . | . | . | . | . | . | . | 1 | . | . | . | 1 |
| *Dormitator maculatus* | . | . | . | . | . | . | . | 4 | . | . | . | . | 4 |
| *Dorosoma cepedianum* | 3 | 5 | . | 1 | 3 | 799 | 122 | 2 | 15 | 8 | 29 | 59 | 1,046 |
| *Dorosoma petenense* | . | 4 | 2 | 1 | . | . | 53 | 7 | 20 | 5 | 3 | 6 | 101 |
| *Elops saurus* | 9 | 28 | 193 | 178 | 18 | 47 | 15 | 28 | 39 | 27 | 3 | 5 | 590 |
| *Esox niger* | . | . | . | . | . | . | . | 1 | . | . | . | . | 1 |
| *Etropus crossotus* | 2 | 6 | 5 | 5 | 2 | 36 | 116 | 65 | 40 | 32 | 43 | 17 | 369 |
| *Eucinostomus gula* | 12 | 19 | 3 | 3 | . | 46 | 18 | 26 | 21 | 8 | 19 | 7 | 182 |
| *Eucinostomus harengulus* | 72 | 21 | 23 | 15 | 22 | 75 | 55 | 101 | 133 | 98 | 62 | 88 | 765 |
| *Eucinostomus* spp. | 153 | 42 | 5 | 5 | . | 57 | 95 | 24 | 177 | 227 | 317 | 225 | 1,327 |
| *Farfantepenaeus aztecus* | . | 1 | . | 3 | 88 | 67 | 106 | 1 | 22 | 8 | . | . | 296 |
| *Farfantepenaeus duorarum* | . | . | 18 | 9 | 73 | 143 | 32 | 5 | 3 | . | 1 | 2 | 286 |
| *Farfantepenaeus* spp. | 21 | 9 | 4 | 43 | 654 | 177 | 81 | 52 | 86 | 146 | 52 | 7 | 1,332 |
| *Fundulus chrysotus* | . | . | . | . | . | . | . | . | . | 3 | . | . | 3 |
| *Fundulus heteroclitus* | 84 | 40 | 95 | 77 | 152 | 627 | 139 | 284 | 237 | 188 | 87 | 146 | 2,156 |
| *Fundulus majalis* | 1 | 10 | . | 1 | 26 | 31 | 12 | . | 3 | . | 24 | . | 108 |
| *Fundulus seminolis* | 37 | 54 | 35 | 47 | 26 | 141 | 103 | 89 | 83 | 40 | 71 | 29 | 755 |
| *Gambusia holbrooki* | 383 | 107 | 510 | 17 | 547 | 4 | 14 | 38 | 11 | 144 | 10 | 159 | 1,944 |
| *Gobiesox strumosus* | 2 | . | 2 | . | . | 1 | 1 | 1 | . | . | . | 4 | 11 |
| *Gobioides broussonetii* | . | 2 | 1 | 2 | 1 | 4 | 3 | 2 | 2 | 1 | . | . | 18 |
| *Gobionellus oceanicus* | . | 1 | . | 7 | 2 | 1 | 1 | . | . | . | . | 2 | 14 |
| *Gobiosoma bosc* | 3 | 51 | 51 | 12 | 21 | 18 | 10 | 6 | 2 | 10 | 4 | 5 | 193 |
| *Gobiosoma robustum* | 4 | 13 | 22 | 9 | 3 | 5 | 2 | . | 1 | 1 | 4 | 3 | 67 |

Appendix JX08-01. (Continued)

| Species | Month | | | | | | | | | | | | Totals |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | |
| | E=113 | E=113 | E=113 | E=113 | E=113 | E=113 | E=113 | E=113 | E=113 | E=113 | E=113 | E=113 | E=1,356 |
| *Gobiosoma* spp. | 17 | 24 | 11 | 9 | 5 | 8 | 6 | 8 | 14 | 14 | 19 | 10 | 145 |
| *Gymnura micrura* | . | . | 2 | 1 | 15 | 3 | 10 | 25 | . | 2 | 2 | . | 60 |
| *Harengula jaguana* | . | . | 3 | . | 1 | 2 | 3 | . | 119 | 225 | 1 | . | 354 |
| *Heterandria formosa* | . | . | 1 | . | 3 | . | . | 1 | . | 32 | 1 | 4 | 42 |
| *Hoplosternum littorale* | . | . | . | . | . | . | . | 1 | . | . | 1 | . | 2 |
| *Hyporhamphus meeki* | . | 2 | . | . | . | 14 | . | . | . | . | . | . | 16 |
| *Hypsoblennius hentz* | 1 | 1 | . | . | . | . | . | 1 | . | . | . | . | 3 |
| *Ictalurus punctatus* | 1 | 2 | 1 | 4 | . | . | 2 | 11 | 3 | 9 | 20 | 14 | 67 |
| *Labidesthes sicculus* | 10 | . | 3 | . | 10 | . | . | . | 2 | 13 | 2 | 7 | 47 |
| *Lagodon rhomboides* | 51 | 270 | 282 | 276 | 353 | 1,922 | 1,207 | 245 | 290 | 159 | 77 | 40 | 5,172 |
| *Larimus fasciatus* | . | . | . | . | . | . | 9 | 1 | 12 | . | . | . | 22 |
| *Leiostomus xanthurus* | 948 | 6,234 | 5,963 | 3,703 | 826 | 1,451 | 742 | 257 | 236 | 35 | 95 | 196 | 20,686 |
| *Lepisosteus osseus* | 1 | 1 | 11 | 5 | 4 | . | 1 | 9 | 7 | 9 | 5 | 4 | 57 |
| *Lepisosteus platyrhincus* | . | 3 | 12 | 3 | 3 | 36 | 2 | 4 | 2 | 1 | . | 1 | 67 |
| *Lepomis auritus* | 25 | 6 | 6 | 3 | . | 15 | 9 | 5 | . | 13 | . | 10 | 92 |
| *Lepomis gulosus* | . | 1 | 1 | 1 | 1 | . | 1 | 1 | . | . | . | . | 6 |
| *Lepomis macrochirus* | 34 | 77 | 68 | 20 | 31 | 56 | 92 | 257 | 168 | 215 | 99 | 137 | 1,254 |
| *Lepomis microlophus* | 5 | 13 | 8 | 5 | 4 | 30 | 35 | 47 | 56 | 32 | 27 | 49 | 311 |
| *Lepomis punctatus* | . | . | . | . | . | . | 1 | . | . | 5 | . | . | 6 |
| *Lepomis* spp. | . | 9 | . | . | 2 | 14 | 66 | 231 | 51 | 165 | 62 | 13 | 613 |
| *Limulus polyphemus* | . | . | 1 | 1 | 2 | . | . | 1 | 3 | 1 | . | 1 | 10 |
| *Litopenaeus setiferus* | 40 | 40 | 15 | 45 | 6 | 1,580 | 1,785 | 1,113 | 2,161 | 603 | 1,078 | 287 | 8,753 |
| *Lobotes surinamensis* | . | . | . | . | 2 | 2 | 1 | . | . | . | . | . | 5 |
| *Loricariidae* spp. | . | 1 | . | . | . | . | 2 | 1 | . | . | 3 | . | 7 |
| *Lucania goodei* | . | 43 | . | 2 | 32 | . | 10 | 7 | . | 28 | 7 | 2 | 131 |
| *Lucania parva* | 160 | 1,260 | 221 | 567 | 865 | 2,663 | 841 | 354 | 111 | 50 | 40 | 128 | 7,260 |

Appendix JX08-01. (Continued)

| Species | Month | | | | | | | | | | | | Totals |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | |
| | E=113 | E=113 | E=113 | E=113 | E=113 | E=113 | E=113 | E=113 | E=113 | E=113 | E=113 | E=113 | E=1,356 |
| *Lutjanus griseus* | 3 | . | 5 | 1 | 4 | 2 | 7 | 29 | 3 | 6 | 5 | . | 65 |
| *Lutjanus synagris* | 2 | . | . | . | . | . | 4 | 2 | . | 2 | . | . | 10 |
| *Malaclemys terrapin* | . | . | 1 | 5 | 4 | 1 | 13 | 1 | 5 | 2 | 2 | . | 34 |
| *Megalops atlanticus* | . | . | . | . | . | . | . | . | . | 1 | . | . | 1 |
| *Membras martinica* | . | 21 | 1 | . | . | 6 | 4 | 586 | 7 | 9 | 15 | . | 649 |
| *Menidia menidia* | 548 | 445 | 242 | 58 | 306 | 997 | 1,521 | 1,388 | 682 | 592 | 304 | 281 | 7,364 |
| *Menidia* spp. | 335 | 410 | 451 | 756 | 176 | 698 | 856 | 713 | 144 | 347 | 468 | 259 | 5,613 |
| *Menippe* spp. | 2 | . | . | 5 | 1 | 1 | 1 | 1 | 4 | 1 | 1 | . | 17 |
| *Menticirrhus americanus* | 3 | 2 | . | 5 | 42 | 89 | 69 | 59 | 129 | 53 | 9 | 5 | 465 |
| *Menticirrhus littoralis* | . | . | . | . | 2 | 1 | . | . | 1 | 5 | . | . | 9 |
| *Menticirrhus saxatilis* | . | . | . | 4 | 14 | 6 | 1 | . | . | . | . | . | 25 |
| *Microgobius gulosus* | 15 | 63 | 105 | 90 | 15 | 28 | 27 | 34 | 71 | 64 | 65 | 19 | 596 |
| *Microgobius thalassinus* | 1 | 3 | 8 | 4 | . | 11 | 29 | 4 | 9 | 45 | 17 | 3 | 134 |
| *Microphis brachyurus* | . | . | . | . | . | 1 | . | . | 1 | . | . | . | 2 |
| *Micropogonias undulatus* | 1,972 | 5,697 | 5,882 | 5,921 | 1,613 | 2,349 | 589 | 111 | 53 | 190 | 1,267 | 1,504 | 27,148 |
| *Micropterus salmoides* | 8 | 4 | 2 | 4 | 178 | 42 | 43 | 31 | 9 | 4 | 3 | 7 | 335 |
| *Morone saxatilis* | . | 1 | . | . | . | . | . | . | . | . | . | . | 1 |
| *Mugil cephalus* | 1,343 | 1,004 | 2,007 | 389 | 168 | 348 | 376 | 234 | 211 | 92 | 325 | 221 | 6,718 |
| *Mugil curema* | 173 | 98 | 132 | 54 | 109 | 54 | 44 | 110 | 52 | 244 | 203 | 133 | 1,406 |
| *Mycteroperca* spp. | . | . | . | 2 | . | . | . | . | . | . | . | . | 2 |
| *Myrophis punctatus* | 5 | 1 | . | . | . | . | 4 | 1 | . | . | . | 1 | 12 |
| *Negaprion brevirostris* | . | . | 1 | . | . | 1 | . | . | 1 | . | . | . | 3 |
| *Notemigonus crysoleucas* | . | . | 10 | 2 | 60 | 21 | 86 | 55 | 22 | 4 | 67 | 17 | 344 |
| *Notropis maculatus* | . | . | . | . | . | . | . | . | 1 | . | . | 4 | 5 |
| *Ogcocephalus cubifrons* | . | 1 | 1 | 2 | . | . | . | . | . | . | . | . | 4 |
| *Oligoplites saurus* | . | . | . | . | 1 | . | 5 | 14 | 10 | 4 | 1 | . | 35 |

Appendix JX08-01. (Continued)

| Species | Month | | | | | | | | | | | | Totals |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | |
| | E=113 | E=113 | E=113 | E=113 | E=113 | E=113 | E=113 | E=113 | E=113 | E=113 | E=113 | E=113 | E=1,356 |
| *Ophichthus gomesii* | . | 1 | . | . | . | . | . | . | . | . | . | 1 | 2 |
| *Ophidion marginatum* | . | . | . | . | 1 | 1 | . | . | . | . | . | . | 2 |
| *Ophidion* spp. | . | . | . | 1 | . | . | 3 | . | . | . | . | 1 | 5 |
| *Opisthonema oglinum* | 13 | 126 | 14 | 35 | 7 | 30 | 882 | 124 | 4 | 9 | . | . | 1,244 |
| *Opsanus tau* | 1 | 2 | 10 | 3 | 1 | 6 | 18 | 7 | 8 | 15 | 5 | 6 | 82 |
| *Oreochromis aureus* | . | . | . | . | . | . | . | 12 | . | . | . | . | 12 |
| *Oreochromis* spp. | . | . | . | . | . | 1 | . | . | . | . | . | . | 1 |
| *Orthopristis chrysoptera* | . | . | . | 4 | 8 | 14 | 6 | 5 | . | . | . | . | 37 |
| *Paralichthys albigutta* | 1 | 8 | 10 | 10 | 15 | 9 | 17 | 16 | 6 | 3 | 2 | 5 | 102 |
| *Paralichthys dentatus* | 3 | . | 2 | 2 | 3 | 4 | 5 | 1 | 4 | . | . | 1 | 25 |
| *Paralichthys lethostigma* | 15 | 23 | 18 | 42 | 21 | 31 | 21 | 18 | 22 | 8 | 10 | 6 | 235 |
| *Paralichthys squamilentus* | . | . | . | 2 | . | 1 | . | . | . | . | . | . | 3 |
| *Peprilus paru* | 1 | . | 12 | 3 | 1 | . | . | 5 | . | 7 | . | . | 29 |
| *Peprilus triacanthus* | . | 1 | . | . | . | . | . | . | . | . | . | 1 | 2 |
| *Poecilia latipinna* | 8 | 17 | 2 | 114 | 59 | 18 | 32 | 4 | . | 30 | 1 | 24 | 309 |
| *Pogonias cromis* | 2 | . | 1 | 12 | . | 3 | 4 | 2 | 2 | 3 | 13 | 8 | 50 |
| *Pomatomus saltatrix* | . | 4 | 7 | 20 | 8 | 8 | 4 | 3 | 1 | 4 | 3 | 4 | 66 |
| *Pomoxis nigromaculatus* | . | 1 | . | 1 | . | . | . | 1 | 10 | 5 | 1 | 11 | 30 |
| *Portunus* spp. | 2 | . | . | 4 | 6 | 10 | 13 | 13 | . | . | 14 | . | 62 |
| *Prionotus carolinus* | 1 | . | . | . | . | . | . | . | . | . | . | . | 1 |
| *Prionotus evolans* | . | . | . | . | 2 | . | . | 17 | . | . | . | . | 19 |
| *Prionotus scitulus* | 1 | . | . | 1 | 5 | 7 | 20 | 3 | 13 | 2 | . | . | 52 |
| *Prionotus tribulus* | 6 | 9 | 24 | 27 | 21 | 9 | 6 | 4 | 2 | 5 | . | 5 | 118 |
| *Pseudemys nelsoni* | . | . | . | . | 1 | . | . | . | . | . | . | 2 | 3 |
| *Pseudemys* spp. | . | 2 | . | . | . | . | . | . | . | . | . | . | 2 |
| *Rachycentron canadum* | . | . | . | . | . | . | 1 | 1 | . | . | . | . | 2 |

Appendix JX08-01. (Continued)

| Species | Month | | | | | | | | | | | | Totals |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | |
| | E=113 | E=113 | E=113 | E=113 | E=113 | E=113 | E=113 | E=113 | E=113 | E=113 | E=113 | E=113 | E=1,356 |
| *Raja eglanteria* | . | . | . | . | . | . | . | . | . | . | 1 | . | 1 |
| *Rhinoptera bonasus* | . | . | . | 1 | 1 | 1 | . | . | . | . | . | . | 3 |
| *Rhizoprionodon terraenovae* | . | . | . | . | . | . | 1 | . | . | . | . | . | 1 |
| *Rimapenaeus constrictus* | 1 | 4 | . | 46 | 20 | 21 | 75 | 63 | 87 | 13 | 7 | 43 | 380 |
| *Sardinella aurita* | . | . | . | . | . | . | 443 | . | . | . | . | . | 443 |
| *Sciaenops ocellatus* | 18 | 34 | 20 | 9 | 12 | 16 | 4 | 7 | 10 | 12 | 39 | 30 | 211 |
| *Scomberomorus cavalla* | . | . | . | . | . | . | . | . | . | 1 | . | . | 1 |
| *Scomberomorus maculatus* | . | . | 1 | 9 | 6 | 2 | 3 | 1 | . | 5 | 4 | . | 31 |
| *Scorpaena plumieri* | 1 | . | . | . | . | . | . | . | . | . | . | . | 1 |
| *Selene setapinnis* | . | . | . | . | . | . | . | . | 2 | . | . | . | 2 |
| *Selene vomer* | 2 | . | . | . | . | 4 | 6 | 4 | 5 | 20 | 9 | . | 50 |
| *Sicyonia* spp. | . | . | . | 2 | . | . | . | . | . | . | . | . | 2 |
| *Sicyonia dorsalis* | . | . | . | . | . | . | . | . | . | 1 | . | . | 1 |
| *Sphoeroides nephelus* | 10 | 7 | 5 | 18 | 9 | 17 | 14 | 9 | 16 | 5 | 5 | 2 | 117 |
| *Sphoeroides testudineus* | . | . | . | 1 | . | . | . | . | . | . | . | . | 1 |
| *Sphyraena guachancho* | . | . | . | . | . | . | . | . | . | . | 1 | . | 1 |
| *Sphyrna tiburo* | . | . | . | . | 8 | 2 | . | 7 | . | . | . | . | 17 |
| *Stellifer lanceolatus* | . | . | . | . | 6 | 34 | 111 | 119 | 488 | 607 | 52 | 550 | 1,967 |
| *Stephanolepis hispidus* | . | . | . | 2 | 2 | 3 | . | 1 | . | . | 1 | 1 | 10 |
| *Stomolophus meleagris* | 6 | 1 | . | . | 9 | . | . | . | . | 2 | . | . | 18 |
| *Strongylura marina* | 12 | 10 | 17 | 8 | 31 | 15 | 32 | 26 | 20 | 9 | 16 | 3 | 199 |
| *Strongylura notata* | . | . | . | . | . | . | . | 1 | . | . | . | . | 1 |
| *Strongylura* spp. | . | . | . | 24 | 12 | 11 | 7 | 2 | 10 | 5 | . | . | 71 |
| *Symphurus plagiusa* | 2 | 4 | 10 | 14 | 8 | 39 | 66 | 45 | 109 | 62 | 25 | 13 | 397 |
| *Syngnathus louisianae* | 1 | 6 | 2 | 2 | 16 | 9 | . | 5 | 2 | 6 | 6 | . | 55 |
| *Syngnathus scovelli* | 1 | 2 | 5 | 6 | 13 | 45 | 18 | 18 | 11 | 7 | 1 | 3 | 130 |

Appendix JX08-01. (Continued)

| Species | Month | | | | | | | | | | | | Totals |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | **Jan** | **Feb** | **Mar** | **Apr** | **May** | **Jun** | **Jul** | **Aug** | **Sep** | **Oct** | **Nov** | **Dec** | |
| | **E=113** | **E=113** | **E=113** | **E=113** | **E=113** | **E=113** | **E=113** | **E=113** | **E=113** | **E=113** | **E=113** | **E=113** | **E=1,356** |
| *Synodus foetens* | 1 | 4 | 3 | . | 20 | 13 | 15 | 7 | 1 | . | 3 | 1 | 68 |
| *Tilapia* spp. | . | . | . | . | . | . | 4 | 2 | . | . | . | . | 6 |
| *Trachemys scripta elegans* | . | . | . | . | . | . | 1 | . | . | . | . | . | 1 |
| *Trachemys scripta scripta* | . | . | . | 2 | 1 | . | 4 | 4 | 3 | 1 | . | . | 15 |
| *Trachemys* spp. | . | . | . | . | . | 2 | . | . | . | . | . | . | 2 |
| *Trachinotus carolinus* | . | . | . | 8 | 274 | 25 | 51 | 3 | 67 | 13 | . | . | 441 |
| *Trachinotus falcatus* | . | . | . | 1 | . | 1 | 1 | 8 | 170 | 83 | 175 | . | 439 |
| *Trichiurus lepturus* | . | . | 2 | 1 | 7 | 1 | . | 2 | . | . | 2 | . | 15 |
| *Trinectes maculatus* | 33 | 86 | 96 | 62 | 28 | 40 | 96 | 135 | 73 | 188 | 58 | 92 | 987 |
| *Tylosurus crocodilus* | . | . | . | . | . | . | . | 1 | . | . | . | . | 1 |
| *Urophycis floridana* | 1 | . | . | . | . | . | . | . | . | . | . | . | 1 |
| *Xiphopenaeus kroyeri* | . | . | . | . | . | . | . | . | . | 31 | . | . | 31 |
| **Totals** | **26,146** | **18,973** | **20,764** | **17,015** | **12,963** | **23,114** | **15,052** | **16,019** | **9,418** | **16,485** | **15,461** | **9,041** | **200,451** |

Appendix JX08-02. Summary by gear, stratum, and zone of species collected during Northeast Florida stratified-random sampling, 2008. Effort, or the total number of hauls, is labeled 'E'. Taxa are arranged alphabetically.

| Species | Gear and Strata | | | Zone | | | | | | Totals |
|---|---|---|---|---|---|---|---|---|---|---|
| | 21.3-m river seine | 183-m haul seine | 6.1-m otter trawl | A | B | C | D | E | F | |
| | E=576 | E=192 | E=588 | E=204 | E=204 | E=277 | E=287 | E=192 | E=192 | E=1,356 |
| *Achirus lineatus* | 38 | 36 | 203 | 22 | 28 | 174 | 45 | 7 | 1 | 277 |
| *Alosa mediocris* | 1 | . | . | . | . | . | . | . | 1 | 1 |
| *Alosa sapidissima* | 1 | 1 | . | . | . | . | 1 | 1 | . | 2 |
| *Ameiurus catus* | 8 | 86 | 327 | 29 | 29 | 7 | 148 | 83 | 125 | 421 |
| *Ameiurus natalis* | . | . | 1 | . | . | . | 1 | . | . | 1 |
| *Ameiurus nebulosus* | 4 | 1 | . | . | . | . | 1 | 2 | 2 | 5 |
| *Amia calva* | 3 | . | . | . | . | . | . | 2 | 1 | 3 |
| *Anchoa cubana* | . | 1 | . | . | . | 1 | . | . | . | 1 |
| *Anchoa hepsetus* | 1,122 | 28 | 283 | 460 | 456 | 246 | 158 | 113 | . | 1,433 |
| *Anchoa lyolepis* | 880 | . | 1 | 856 | 21 | 4 | . | . | . | 881 |
| *Anchoa mitchilli* | 55,553 | 4 | 14,572 | 17,091 | 8,600 | 8,806 | 15,542 | 770 | 19,320 | 70,129 |
| *Ancylopsetta quadrocellata* | 1 | 12 | 5 | 8 | 4 | 6 | . | . | . | 18 |
| *Anguilla rostrata* | 1 | 1 | 1 | . | 1 | . | 2 | . | . | 3 |
| *Apalone ferox* | 1 | . | 1 | . | . | . | . | 1 | 1 | 2 |
| *Archosargus probatocephalus* | 14 | 99 | 26 | 16 | 28 | 61 | 30 | 3 | 1 | 139 |
| *Ariopsis felis* | . | 7 | 9 | 3 | 4 | 9 | . | . | . | 16 |
| *Astroscopus y-graecum* | . | 2 | 11 | . | 4 | 8 | 1 | . | . | 13 |
| *Bagre marinus* | . | 2 | 6 | 1 | 7 | . | . | . | . | 8 |
| *Bairdiella chrysoura* | 1,534 | 691 | 195 | 662 | 746 | 223 | 190 | 597 | 2 | 2,420 |
| *Bathygobius soporator* | 4 | . | 1 | 1 | 2 | 1 | 1 | . | . | 5 |
| *Brevoortia* spp. | 107 | 413 | 17 | 134 | 148 | 195 | 58 | 2 | . | 537 |
| *Callinectes ornatus* | . | 1 | 8 | 3 | 2 | 4 | . | . | . | 9 |
| *Callinectes sapidus* | 418 | 327 | 1,384 | 350 | 287 | 615 | 380 | 207 | 290 | 2,129 |
| *Callinectes similis* | 163 | 46 | 200 | 112 | 137 | 137 | 23 | . | . | 409 |
| *Callinectes* spp. | . | . | 1 | 1 | . | . | . | . | . | 1 |
| *Caranx crysos* | . | 1 | . | . | . | 1 | . | . | . | 1 |
| *Caranx hippos* | 64 | 130 | 2 | 23 | 30 | 83 | 57 | 3 | . | 196 |
| *Caranx latus* | 1 | 2 | . | . | 1 | 2 | . | . | . | 3 |
| *Carcharhinus isodon* | . | 1 | . | 1 | . | . | . | . | . | 1 |
| *Carcharhinus limbatus* | . | 1 | . | . | 1 | . | . | . | . | 1 |

Appendix JX08-02. (Continued)

| Species | Gear and Strata | | | Zone | | | | | | Totals |
|---|---|---|---|---|---|---|---|---|---|---|
| | 21.3-m river seine | 183-m haul seine | 6.1-m otter trawl | A | B | C | D | E | F | |
| | E=576 | E=192 | E=588 | E=204 | E=204 | E=277 | E=287 | E=192 | E=192 | E=1,356 |
| *Centropomus undecimalis* | . | 1 | . | . | . | . | 1 | . | . | 1 |
| *Centropristis philadelphica* | 8 | 4 | 37 | 21 | 9 | 18 | 1 | . | . | 49 |
| *Centropristis striata* | . | . | 4 | . | 1 | 3 | . | . | . | 4 |
| *Chaetodipterus faber* | 1 | 20 | 39 | 34 | 21 | 3 | 2 | . | . | 60 |
| *Chasmodes bosquianus* | 3 | . | . | 2 | 1 | . | . | . | . | 3 |
| *Chelydra serpentina osceola* | . | 1 | . | . | . | . | 1 | . | . | 1 |
| *Chilomycterus schoepfii* | 8 | 23 | 15 | 21 | 9 | 15 | 1 | . | . | 46 |
| *Chloroscombrus chrysurus* | 37 | 927 | 77 | 188 | 202 | 619 | 32 | . | . | 1,041 |
| *Citharichthys macrops* | . | 2 | 2 | 2 | . | 2 | . | . | . | 4 |
| *Citharichthys spilopterus* | 183 | 182 | 388 | 135 | 148 | 217 | 126 | 69 | 58 | 753 |
| *Ctenogobius boleosoma* | 114 | . | 7 | 20 | 28 | 60 | 13 | . | . | 121 |
| *Ctenogobius shufeldti* | 36 | . | 15 | 16 | 7 | 8 | 10 | 10 | . | 51 |
| *Ctenogobius smaragdus* | 40 | . | 9 | 18 | 5 | 25 | 1 | . | . | 49 |
| *Ctenogobius stigmaticus* | 6 | . | 3 | . | 6 | 3 | . | . | . | 9 |
| *Cynoscion nebulosus* | 99 | 201 | 19 | 100 | 104 | 76 | 27 | 12 | . | 319 |
| *Cynoscion nothus* | . | . | 12 | . | 12 | . | . | . | . | 12 |
| *Cynoscion* complex | 16 | 7 | 1,026 | 91 | 497 | 61 | 308 | 87 | 5 | 1,049 |
| *Cyprinodon variegatus* | 3 | . | . | . | . | 3 | . | . | . | 3 |
| *Dasyatis sabina* | 22 | 990 | 194 | 443 | 198 | 293 | 177 | 55 | 40 | 1,206 |
| *Dasyatis say* | . | 33 | 4 | 20 | 15 | 2 | . | . | . | 37 |
| *Diapterus auratus* | 87 | 53 | 52 | 8 | 35 | 97 | 50 | . | 2 | 192 |
| *Diplectrum formosum* | . | . | 1 | 1 | . | . | . | . | . | 1 |
| *Dormitator maculatus* | 4 | . | . | . | 1 | . | . | 3 | . | 4 |
| *Dorosoma cepedianum* | 24 | 1,014 | 8 | 3 | 3 | 136 | 879 | 24 | 1 | 1,046 |
| *Dorosoma petenense* | 15 | 82 | 4 | . | 2 | 11 | 75 | . | 13 | 101 |
| *Elops saurus* | 43 | 139 | 408 | 31 | 89 | 87 | 181 | 7 | 195 | 590 |
| *Esox niger* | 1 | . | . | . | . | . | . | 1 | . | 1 |
| *Etropus crossotus* | 44 | 122 | 203 | 164 | 71 | 124 | 10 | . | . | 369 |
| *Eucinostomus gula* | 63 | 101 | 18 | 27 | 30 | 120 | 5 | . | . | 182 |
| *Eucinostomus harengulus* | 547 | 158 | 60 | 75 | 199 | 302 | 85 | 45 | 59 | 765 |
| *Eucinostomus* spp. | 1,296 | . | 31 | 118 | 440 | 578 | 157 | 20 | 14 | 1,327 |

Appendix JX08-02. (Continued)

| Species | Gear and Strata | | | Zone | | | | | | Totals |
|---|---|---|---|---|---|---|---|---|---|---|
| | 21.3-m river seine | 183-m haul seine | 6.1-m otter trawl | A | B | C | D | E | F | |
| | E=576 | E=192 | E=588 | E=204 | E=204 | E=277 | E=287 | E=192 | E=192 | E=1,356 |
| *Farfantepenaeus aztecus* | 103 | 89 | 104 | 140 | 27 | 67 | 40 | 20 | 2 | 296 |
| *Farfantepenaeus duorarum* | 39 | 16 | 231 | 126 | 79 | 23 | 36 | 19 | 3 | 286 |
| *Farfantepenaeus* spp. | 815 | 19 | 498 | 181 | 165 | 547 | 270 | 167 | 2 | 1,332 |
| *Fundulus chrysotus* | 3 | . | . | . | . | . | . | 3 | . | 3 |
| *Fundulus heteroclitus* | 2,156 | . | . | 534 | 1,423 | 197 | 2 | . | . | 2,156 |
| *Fundulus majalis* | 103 | 5 | . | 4 | 61 | 43 | . | . | . | 108 |
| *Fundulus seminolis* | 753 | 2 | . | . | 1 | . | 5 | 221 | 528 | 755 |
| *Gambusia holbrooki* | 1,943 | . | 1 | 10 | 54 | 5 | 542 | 729 | 604 | 1,944 |
| *Gobiesox strumosus* | 2 | . | 9 | 1 | 3 | 5 | 2 | . | . | 11 |
| *Gobioides broussonetii* | . | . | 18 | . | . | 2 | 14 | 2 | . | 18 |
| *Gobionellus oceanicus* | 7 | 1 | 6 | 4 | 1 | 1 | 7 | 1 | . | 14 |
| *Gobiosoma bosc* | 164 | . | 29 | 43 | 7 | 38 | 26 | 51 | 28 | 193 |
| *Gobiosoma robustum* | 59 | . | 8 | 11 | 2 | 8 | 14 | 23 | 9 | 67 |
| *Gobiosoma* spp. | 114 | . | 31 | 4 | 3 | 18 | 36 | 28 | 56 | 145 |
| *Gymnura micrura* | . | 50 | 10 | 23 | 37 | . | . | . | . | 60 |
| *Harengula jaguana* | 100 | 254 | . | 13 | 336 | 5 | . | . | . | 354 |
| *Heterandria formosa* | 42 | . | . | . | . | . | 1 | 35 | 6 | 42 |
| *Hoplosternum littorale* | 2 | . | . | . | 1 | . | . | . | 1 | 2 |
| *Hyporhamphus meeki* | 14 | 2 | . | 1 | 1 | 14 | . | . | . | 16 |
| *Hypsoblennius hentz* | 1 | 1 | 1 | . | 3 | . | . | . | . | 3 |
| *Ictalurus punctatus* | . | 19 | 48 | . | . | . | 19 | 29 | 19 | 67 |
| *Labidesthes sicculus* | 47 | . | . | 6 | . | . | 17 | 24 | . | 47 |
| *Lagodon rhomboides* | 1,971 | 3,130 | 71 | 286 | 134 | 819 | 2,966 | 915 | 52 | 5,172 |
| *Larimus fasciatus* | . | . | 22 | 11 | 11 | . | . | . | . | 22 |
| *Leiostomus xanthurus* | 13,416 | 2,242 | 5,028 | 2,507 | 2,136 | 8,302 | 5,251 | 2,173 | 317 | 20,686 |
| *Lepisosteus osseus* | 5 | 48 | 4 | 21 | 3 | . | 28 | 5 | . | 57 |
| *Lepisosteus platyrhincus* | 17 | 50 | . | . | . | 1 | 50 | 9 | 7 | 67 |
| *Lepomis auritus* | 22 | 67 | 3 | . | . | . | 71 | 1 | 20 | 92 |
| *Lepomis gulosus* | 4 | 1 | 1 | . | 1 | . | 2 | 1 | 2 | 6 |
| *Lepomis macrochirus* | 1,067 | 145 | 42 | . | 2 | 5 | 212 | 193 | 842 | 1,254 |
| *Lepomis microlophus* | 197 | 79 | 35 | . | . | . | 92 | 64 | 155 | 311 |
| *Lepomis punctatus* | 6 | . | . | . | . | . | . | 5 | 1 | 6 |
| *Lepomis* spp. | 612 | . | 1 | . | 22 | 1 | 9 | 124 | 457 | 613 |

Appendix JX08-02. (Continued)

| Species | Gear and Strata | | | Zone | | | | | | Totals |
|---|---|---|---|---|---|---|---|---|---|---|
| | 21.3-m river seine | 183-m haul seine | 6.1-m otter trawl | A | B | C | D | E | F | |
| | E=576 | E=192 | E=588 | E=204 | E=204 | E=277 | E=287 | E=192 | E=192 | E=1,356 |
| *Limulus polyphemus* | 1 | 1 | 8 | 4 | 6 | . | . | . | . | 10 |
| *Litopenaeus setiferus* | 6,193 | 1,003 | 1,557 | 1,939 | 4,205 | 1,599 | 895 | 105 | 10 | 8,753 |
| *Lobotes surinamensis* | . | 5 | . | 2 | 3 | . | . | . | . | 5 |
| *Loricariidae* spp. | 5 | 1 | 1 | . | . | . | 1 | 1 | 5 | 7 |
| *Lucania goodei* | 131 | . | . | . | . | . | . | 67 | 64 | 131 |
| *Lucania parva* | 7,260 | . | . | . | . | . | 357 | 2,522 | 4,381 | 7,260 |
| *Lutjanus griseus* | 39 | 18 | 8 | 2 | 32 | 14 | 17 | . | . | 65 |
| *Lutjanus synagris* | 7 | 2 | 1 | 2 | 6 | 2 | . | . | . | 10 |
| *Malaclemys terrapin* | 3 | 30 | 1 | 10 | 10 | 14 | . | . | . | 34 |
| *Megalops atlanticus* | . | 1 | . | . | . | . | 1 | . | . | 1 |
| *Membras martinica* | 648 | . | 1 | 28 | 25 | 18 | 565 | 6 | 7 | 649 |
| *Menidia menidia* | 7,361 | 1 | 2 | 2,291 | 1,923 | 3,086 | 64 | . | . | 7,364 |
| *Menidia* spp. | 5,611 | . | 2 | 34 | 42 | 173 | 654 | 1,304 | 3,406 | 5,613 |
| *Menippe* spp. | . | 3 | 14 | 1 | 12 | 4 | . | . | . | 17 |
| *Menticirrhus americanus* | 124 | 34 | 307 | 146 | 175 | 96 | 47 | 1 | . | 465 |
| *Menticirrhus littoralis* | 4 | 5 | . | 4 | 5 | . | . | . | . | 9 |
| *Menticirrhus saxatilis* | 20 | . | 5 | 17 | . | 5 | 3 | . | . | 25 |
| *Microgobius gulosus* | 364 | . | 232 | . | . | 3 | 80 | 285 | 228 | 596 |
| *Microgobius thalassinus* | 18 | . | 116 | 7 | 2 | 80 | 35 | 10 | . | 134 |
| *Microphis brachyurus* | 2 | . | . | 1 | . | . | . | 1 | . | 2 |
| *Micropogonias undulatus* | 2,977 | 1,832 | 22,339 | 2,177 | 2,692 | 1,491 | 10,334 | 4,535 | 5,919 | 27,148 |
| *Micropterus salmoides* | 313 | 19 | 3 | . | . | . | 27 | 231 | 77 | 335 |
| *Morone saxatilis* | 1 | . | . | 1 | . | . | . | . | . | 1 |
| *Mugil cephalus* | 4,542 | 2,174 | 2 | 1,319 | 1,030 | 2,069 | 1,830 | 290 | 180 | 6,718 |
| *Mugil curema* | 207 | 1,199 | . | 168 | 349 | 457 | 424 | 8 | . | 1,406 |
| *Mycteroperca* spp. | 2 | . | . | . | 2 | . | . | . | . | 2 |
| *Myrophis punctatus* | 5 | . | 7 | . | 8 | . | 1 | 1 | 2 | 12 |
| *Negaprion brevirostris* | . | 3 | . | 2 | 1 | . | . | . | . | 3 |
| *Notemigonus crysoleucas* | 343 | 1 | . | . | . | . | 22 | 75 | 247 | 344 |
| *Notropis maculatus* | 5 | . | . | . | . | . | . | 5 | . | 5 |
| *Ogcocephalus cubifrons* | . | 3 | 1 | 2 | 2 | . | . | . | . | 4 |
| *Oligoplites saurus* | 24 | 11 | . | 11 | 13 | 7 | 4 | . | . | 35 |
| *Ophichthus gomesii* | . | . | 2 | 2 | . | . | . | . | . | 2 |

Appendix JX08-02. (Continued)

| Species | Gear and Strata | | | Zone | | | | | | Totals |
|---|---|---|---|---|---|---|---|---|---|---|
| | 21.3-m river seine | 183-m haul seine | 6.1-m otter trawl | A | B | C | D | E | F | |
| | E=576 | E=192 | E=588 | E=204 | E=204 | E=277 | E=287 | E=192 | E=192 | E=1,356 |
| *Ophidion marginatum* | . | . | 2 | . | 1 | . | 1 | . | . | 2 |
| *Ophidion* spp. | . | . | 5 | 1 | . | 1 | 3 | . | . | 5 |
| *Opisthonema oglinum* | 996 | 237 | 11 | 200 | 824 | 217 | 3 | . | . | 1,244 |
| *Opsanus tau* | 11 | 6 | 65 | 9 | 11 | 38 | 24 | . | . | 82 |
| *Oreochromis aureus* | 12 | . | . | . | . | . | . | 7 | 5 | 12 |
| *Oreochromis* spp. | 1 | . | . | . | . | . | 1 | . | . | 1 |
| *Orthopristis chrysoptera* | 24 | 2 | 11 | 4 | 6 | 15 | 11 | 1 | . | 37 |
| *Paralichthys albigutta* | 16 | 68 | 18 | 24 | 33 | 36 | 9 | . | . | 102 |
| *Paralichthys dentatus* | 3 | 14 | 8 | 16 | 5 | 3 | 1 | . | . | 25 |
| *Paralichthys lethostigma* | 58 | 81 | 96 | 53 | 45 | 43 | 51 | 30 | 13 | 235 |
| *Paralichthys squamilentus* | 1 | 1 | 1 | . | 1 | 2 | . | . | . | 3 |
| *Peprilus paru* | 3 | 23 | 3 | 20 | 2 | 7 | . | . | . | 29 |
| *Peprilus triacanthus* | . | . | 2 | 2 | . | . | . | . | . | 2 |
| *Poecilia latipinna* | 309 | . | . | . | 8 | 1 | 8 | 200 | 92 | 309 |
| *Pogonias cromis* | 7 | 36 | 7 | 6 | 7 | 32 | 4 | 1 | . | 50 |
| *Pomatomus saltatrix* | 15 | 51 | . | 22 | 17 | 23 | 4 | . | . | 66 |
| *Pomoxis nigromaculatus* | 18 | 3 | 9 | . | . | . | 4 | 2 | 24 | 30 |
| *Portunus* spp. | 1 | 22 | 39 | 42 | 15 | 5 | . | . | . | 62 |
| *Prionotus carolinus* | . | . | 1 | 1 | . | . | . | . | . | 1 |
| *Prionotus evolans* | . | 17 | 2 | 8 | 11 | . | . | . | . | 19 |
| *Prionotus scitulus* | 3 | 3 | 46 | 24 | 4 | 22 | 2 | . | . | 52 |
| *Prionotus tribulus* | 17 | 39 | 62 | 31 | 44 | 38 | 5 | . | . | 118 |
| *Pseudemys nelsoni* | 1 | 2 | . | . | . | . | 2 | 1 | . | 3 |
| *Pseudemys* spp. | . | 2 | . | . | . | . | 2 | . | . | 2 |
| *Rachycentron canadum* | . | 1 | 1 | 1 | . | 1 | . | . | . | 2 |
| *Raja eglanteria* | . | 1 | . | 1 | . | . | . | . | . | 1 |
| *Rhinoptera bonasus* | . | 3 | . | 2 | 1 | . | . | . | . | 3 |
| *Rhizoprionodon terraenovae* | . | . | 1 | 1 | . | . | . | . | . | 1 |
| *Rimapenaeus constrictus* | 2 | . | 378 | 118 | 191 | 15 | 56 | . | . | 380 |
| *Sardinella aurita* | 443 | . | . | 184 | 259 | . | . | . | . | 443 |
| *Sciaenops ocellatus* | 112 | 87 | 12 | 2 | 6 | 80 | 86 | 30 | 7 | 211 |
| *Scomberomorus cavalla* | . | 1 | . | 1 | . | . | . | . | . | 1 |
| *Scomberomorus maculatus* | 3 | 28 | . | 16 | 10 | 5 | . | . | . | 31 |

Appendix JX08-02. (Continued)

| Species | Gear and Strata | | | Zone | | | | | | Totals |
|---|---|---|---|---|---|---|---|---|---|---|
| | 21.3-m river seine | 183-m haul seine | 6.1-m otter trawl | A | B | C | D | E | F | |
| | E=576 | E=192 | E=588 | E=204 | E=204 | E=277 | E=287 | E=192 | E=192 | E=1,356 |
| *Scorpaena plumieri* | . | . | 1 | 1 | . | . | . | . | . | 1 |
| *Selene setapinnis* | . | 1 | 1 | . | 2 | . | . | . | . | 2 |
| *Selene vomer* | 3 | 34 | 13 | 14 | 15 | 20 | 1 | . | . | 50 |
| *Sicyonia* spp. | . | . | 2 | 1 | 1 | . | . | . | . | 2 |
| *Sicyonia dorsalis* | . | . | 1 | 1 | . | . | . | . | . | 1 |
| *Sphoeroides nephelus* | 15 | 46 | 56 | 8 | 12 | 75 | 22 | . | . | 117 |
| *Sphoeroides testudineus* | . | 1 | . | . | . | 1 | . | . | . | 1 |
| *Sphyraena guachancho* | . | . | 1 | 1 | . | . | . | . | . | 1 |
| *Sphyrna tiburo* | . | 17 | . | 15 | 2 | . | . | . | . | 17 |
| *Stellifer lanceolatus* | . | . | 1,967 | 510 | 1,129 | 208 | 120 | . | . | 1,967 |
| *Stephanolepis hispidus* | 5 | . | 5 | 3 | 3 | 4 | . | . | . | 10 |
| *Stomolophus meleagris* | . | 12 | 6 | 13 | 1 | 3 | 1 | . | . | 18 |
| *Strongylura marina* | 52 | 147 | . | 17 | 7 | 72 | 62 | 25 | 16 | 199 |
| *Strongylura notata* | . | 1 | . | . | . | 1 | . | . | . | 1 |
| *Strongylura* spp. | 71 | . | . | 2 | 2 | 8 | 11 | 20 | 28 | 71 |
| *Symphurus plagiusa* | 168 | 1 | 228 | 133 | 157 | 70 | 37 | . | . | 397 |
| *Syngnathus louisianae* | 41 | . | 14 | 21 | 21 | 11 | . | 2 | . | 55 |
| *Syngnathus scovelli* | 123 | . | 7 | 5 | 6 | 2 | 13 | 63 | 41 | 130 |
| *Synodus foetens* | 30 | 14 | 24 | 24 | 18 | 22 | 4 | . | . | 68 |
| *Tilapia* spp. | 6 | . | . | . | . | . | . | . | 6 | 6 |
| *Trachemys scripta elegans* | . | 1 | . | . | . | . | 1 | . | . | 1 |
| *Trachemys scripta scripta* | . | 13 | 2 | . | . | . | 13 | 2 | . | 15 |
| *Trachemys* spp. | . | 2 | . | . | . | . | 2 | . | . | 2 |
| *Trachinotus carolinus* | 418 | 23 | . | 229 | 209 | 3 | . | . | . | 441 |
| *Trachinotus falcatus* | 439 | . | . | . | 169 | 270 | . | . | . | 439 |
| *Trichiurus lepturus* | . | 2 | 13 | 2 | 10 | 1 | 2 | . | . | 15 |
| *Trinectes maculatus* | 37 | 33 | 917 | 233 | 111 | 29 | 159 | 346 | 109 | 987 |
| *Tylosurus crocodilus* | . | 1 | . | 1 | . | . | . | . | . | 1 |
| *Urophycis floridana* | . | . | 1 | 1 | . | . | . | . | . | 1 |
| *Xiphopenaeus kroyeri* | . | . | 31 | 31 | . | . | . | . | . | 31 |
| **Totals** | **126,076** | **19,605** | **54,770** | **35,466** | **31,106** | **34,049** | **44,578** | **17,143** | **38,109** | **200,451** |

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# *Directed Sampling*

## Introduction

The Fisheries-Independent Monitoring program conducted seasonal directed sampling for striped mullet (*Mugil cephalus*) in Tampa Bay and Charlotte Harbor. Data obtained from directed sampling were used cooperatively by a number of Fish and Wildlife Research Institute research groups (i.e., Fisheries Assessment and Fish Biology) to provide stock assessments on this species. The objectives of directed sampling were to determine the size, age, and sex composition of localized populations of striped mullet in two Florida estuaries. This report summarizes data collected from winter 2008 (January 1 – March 14, 2008) and fall 2008 (September 15 – December 31, 2008). For length frequency analyses, striped mullet data collected during winter 2008 were combined with data from fall 2007 (September 15, 2007 – December 31, 2007) to form the 2007/2008 mullet season. Fall 2008 striped mullet data are presented separately.

## Methods

***Tampa Bay*.** Directed sampling for striped mullet during 2008 was conducted in Tampa Bay using a 366-m monofilament trammel net with 308-mm stretch outer mesh and 71-mm stretch inner mesh. The net was set on visually-detected schools of striped mullet in water <3 m deep. Sampling was divided into three winter four-week sampling periods (December 15, 2007 – January 14, 2008; January 15 – February 14, and February 15 – March 14) and three fall four-week sampling periods (September 15 – October 14, October 15 – November 14, November 15 – December 14, 2008), with at least two days of sampling conducted within each period unless the three criteria stated in the proposal were achieved (i.e., the date was later than February 15, at least 1,600 striped mullet were collected, and the number of sampling trips was greater than or equal to six).

The study universe was divided into six sampling areas (Figure DR08-01). Two primary and two secondary sampling areas were selected (one primary and one secondary area on the east and west sides of Tampa Bay) from the six possible sampling areas during each sampling period. Primary sampling areas were searched for a maximum of two hours or until at least 200 striped mullet had been measured and 50 fish were culled for age and sex determination. Secondary areas were sampled only if the minimum number of striped mullet were not collected in the primary areas. Additional sampling days were added as necessary to procure the required amount of culled (100 fish) and measured (400 fish) striped mullet per sampling period. To increase the probability of successful collections, primary areas were non-randomly selected. Striped mullet were generally found in the northern reaches of estuaries prior to the spawning season and moved south to the mouth of the bay as the spawning season progressed. Therefore, sampling was directed toward northern areas of Tampa Bay early in the season and shifted to southern areas later in the season.

Striped mullet data collected during winter 2008 were combined with data from fall 2007 for length frequency analysis on the September – March mullet season. Fall 2008 striped mullet data are presented separately.

***Charlotte Harbor****.* A similar sampling design and collection method was used in Charlotte Harbor. Sampling was divided into two winter four-week sampling periods (December 15, 2007 – January 14, 2008 and January 15 – February 14) and two fall four-week sampling periods (October 15 – November 14, November 15 – December 14, 2008).

The study universe was divided into four sampling areas (Figure DR08-02). Two primary and two secondary sampling areas were selected (one primary and one secondary sampling area on the north and south ends of Charlotte Harbor) from the four possible sampling areas during each sampling period. Additional sampling days were added as necessary to procure the required amount of culled (160 fish) and measured (400 fish) striped mullet per sampling period.

Striped mullet data collected during winter 2008 were combined with data from fall 2007 for length frequency analysis on the September – March mullet season. Fall 2008 striped mullet data are presented separately.

## Results and Discussion

***Tampa Bay*****.** A total of 4,289 striped mullet were collected during 20 sampling trips (76 hauls) in 2008 (Table DR08-01). A total of 1,840 striped mullet were collected from 10 trips and 41 hauls during fall 2008. The greatest number of striped mullet (n=413, 22.4% of total striped mullet caught in fall 2008) were collected in the West/Mid area, and the fewest striped mullet (n=214, 11.6% of total striped mullet caught in fall 2008) were collected in the East/South area (Table DR08-02). Striped mullet lengths during the fall 2008 season ranged from 252 to 518 mm fork length (Figure DR08-03).

***Charlotte Harbor.*** A total of 1,915 striped mullet were collected during 15 sampling trips (40 hauls) in 2008 (Table DR08-01). A total of 1,368 striped mullet were collected from 9 trips and 24 hauls during fall 2008. The greatest number of striped mullet (n=596, 43.6% of total striped mullet caught in fall 2008) were collected in the North/West area and the fewest striped mullet (n=28, 2.0% of total striped mullet caught in fall 2008) were collected in the South/West area (Table DR08-02). Striped mullet lengths during the fall 2008 season ranged from 154 to 511 mm fork length (Figure DR08-03).

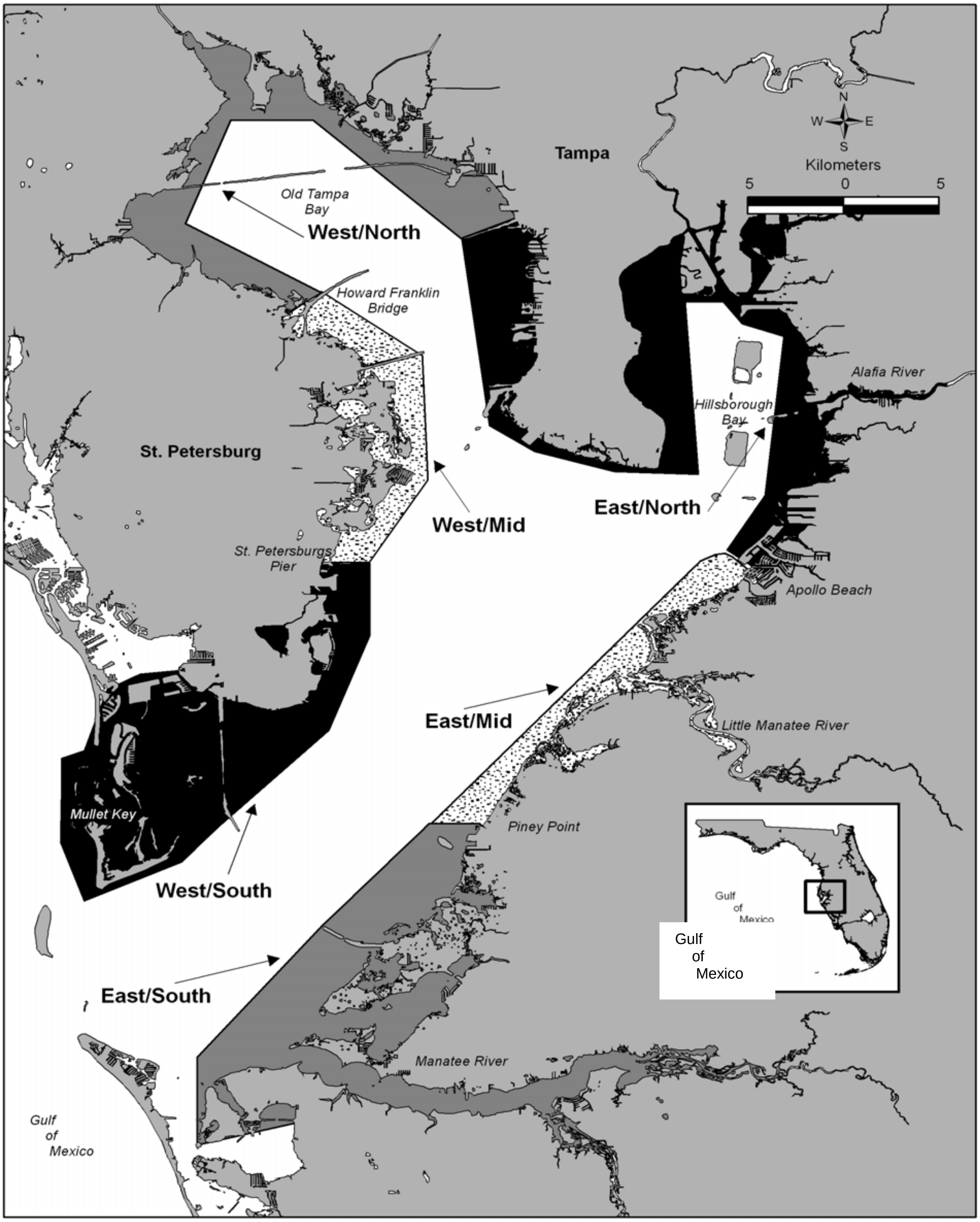


Figure DR08-01. Map of the six striped mullet sampling areas in Tampa Bay.

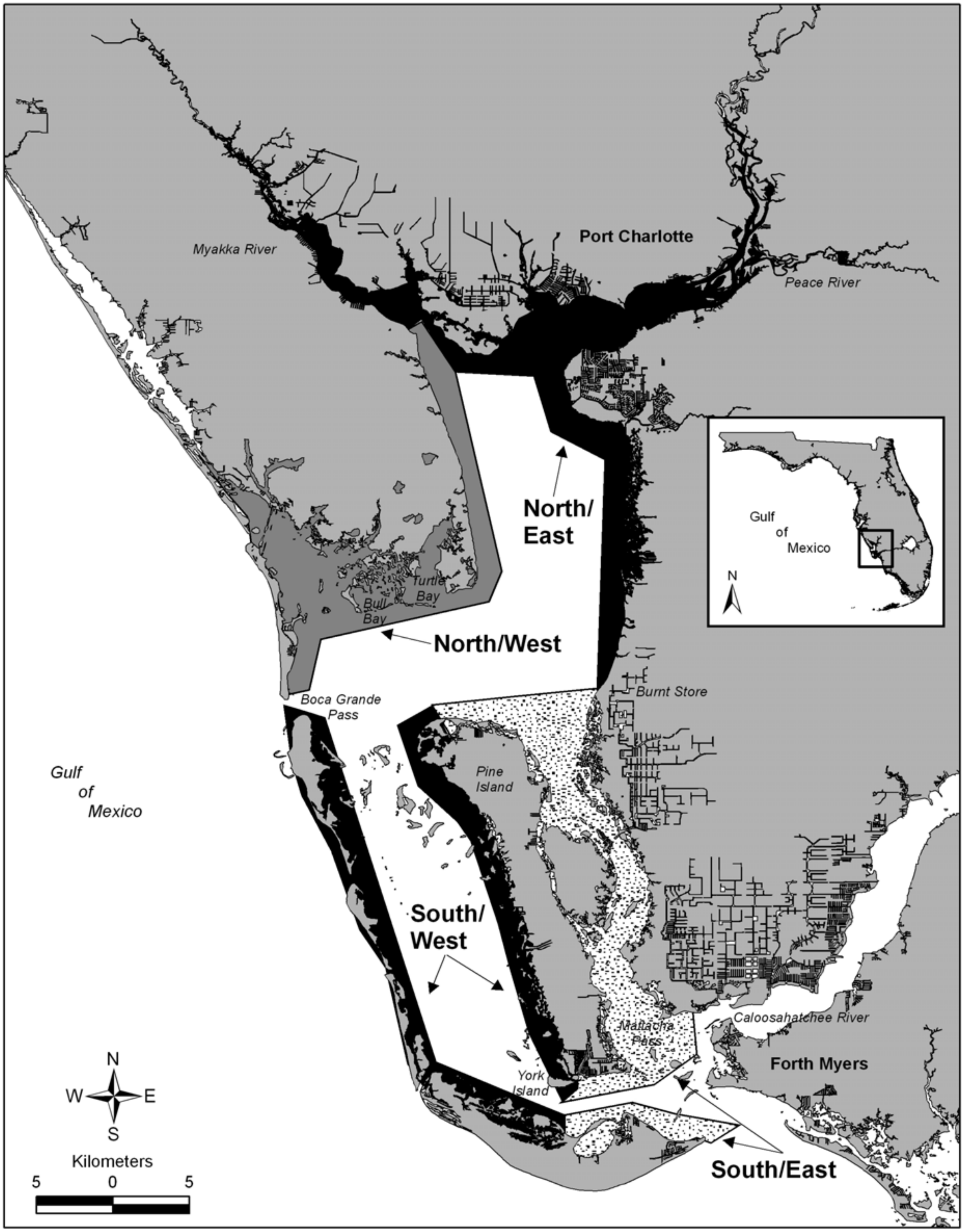


Figure DR08-02. Map of the four striped mullet sampling areas in Charlotte Harbor.

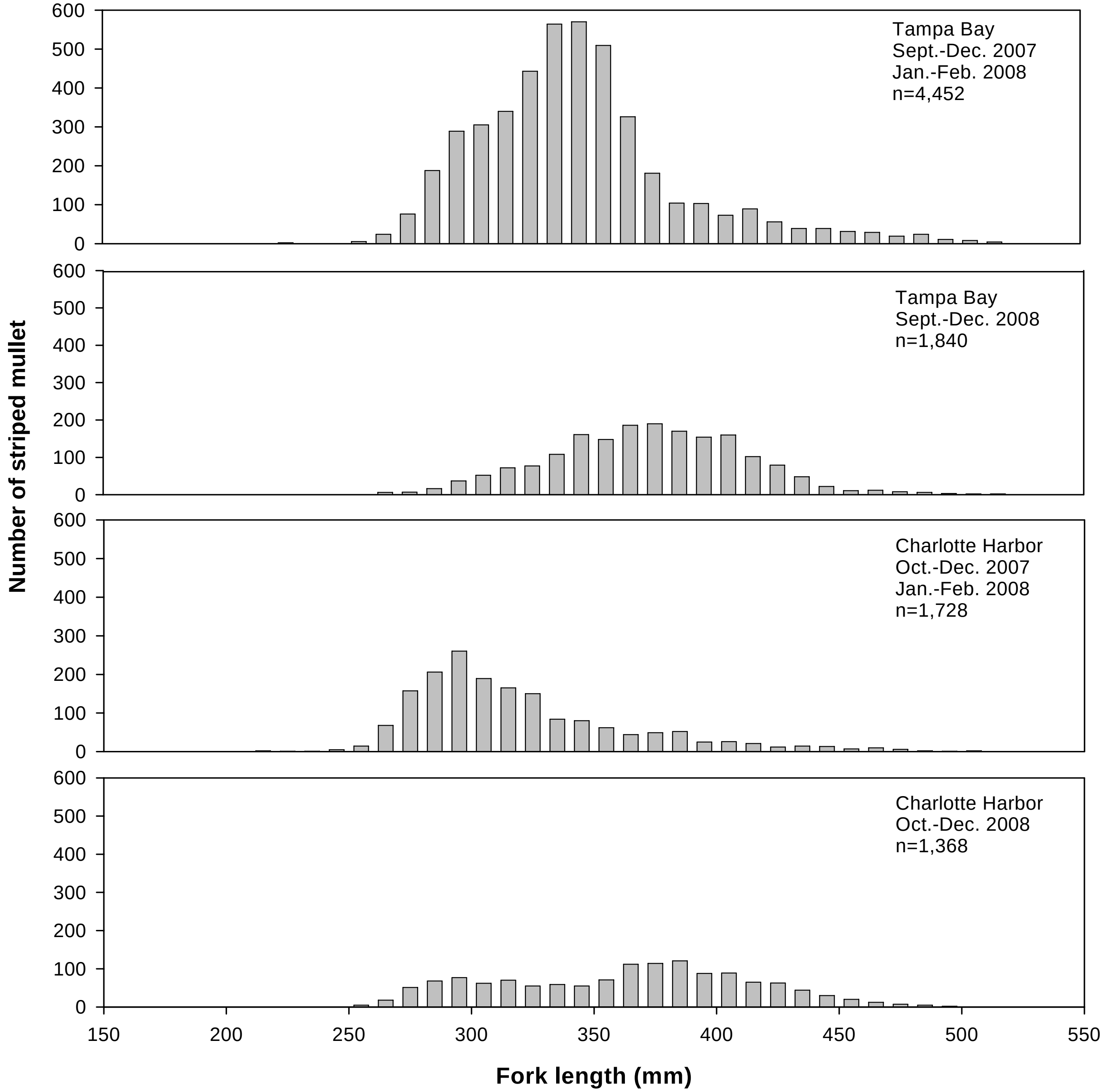


Figure DR08-03. Size distributions of striped mullet collected during directed sampling with trammel nets in Tampa Bay and Charlotte Harbor, 2007-2008. The 2007/08 graphs represent striped mullet collected from September 2007 to February 2008. The 2008 graphs represent striped mullet collected from September 2008 to December 2008 in Tampa Bay, and October 2008 to December 2008 in Charlotte Harbor.

Table DR08-01. Summary of effort and catch data for directed striped mullet sampling in Tampa Bay and Charlotte Harbor, 2008 calendar year. Number of Trips denotes the number of sampling events that occurred in the sampling period.

| Sampling Period | Tampa Bay | | | Charlotte Harbor | | |
|---|---|---|---|---|---|---|
| | **No. of Trips** | **No. of Hauls** | **No. of Mullet** | **No. of Trips** | **No. of Hauls** | **No. of Mullet** |
| January 1 – 14* | 2 | 8 | 267 | 2 | 4 | 122 |
| January 15 – February 14* | 8 | 27 | 2,182 | 4 | 12 | 425 |
| February 15-March 14* | - | - | - | - | - | - |
| September 15 – October 14 | 2 | 6 | 357 | - | - | - |
| October 15 – November 14 | 3 | 13 | 606 | 3 | 10 | 474 |
| November 15 – December 14 | 3 | 10 | 446 | 3 | 8 | 471 |
| December 15 – 31 | 2 | 12 | 431 | 3 | 6 | 423 |
| **Sub-Total (January – February)** | **10** | **35** | **2,449** | **6** | **16** | **547** |
| **Sub-Total (September – December)** | **10** | **41** | **1,840** | **9** | **24** | **1,368** |
| **Grand Total (2008 Calendar Year)** | **20** | **76** | **4,289** | **15** | **40** | **1,915** |

* Fish collected in January – March, 2008 were treated as part of the 2007/2008 sampling season.

Table DR08-02. Striped mullet sampling and capture locations in Tampa Bay and Charlotte Harbor, fall 2008. The six sampling areas in Tampa Bay and the four in Charlotte Harbor are defined below. Number of trips denotes the number of times the sampling areas were visited. On occasion, two sampling areas were visited in one trip (noted by *).

| **Bay** | **Sampling Area** | **No. of Trips** | **No. of Hauls** | **No. of Striped Mullet** |
|---|---|---|---|---|
| Tampa Bay | West/North: Old Tampa Bay south to Howard Franklin Bridge | 2 | 9 | 281 |
| | West/Mid: Howard Franklin Bridge south to St. Petersburg Pier | 2 | 6 | 413 |
| | West/South: St. Petersburg Pier south to Mullet Key | 2 | 4 | 294 |
| | East/North: Hillsborough Bay south to Apollo Beach | 2 | 9 | 406 |
| | East/Mid: Apollo Beach south to Piney Point | 1 | 4 | 232 |
| | East/South: Piney Point south to Manatee River | 1 | 9 | 214 |
| Charlotte Harbor | North/East: Myakka River south to Burnt Store | 3 | 5 | 165 |
| | North/West: Bull Bay/Turtle Bay | 3* | 8 | 596 |
| | South/East: Burnt Store south to Matlacha Pass | 4* | 10 | 579 |
| | South/West: South of Boca Grande Pass, including Pine Island Sound to York Island | 1 | 1 | 28 |

Charlotte Harbor- One sampling trip visited the South/East and South/West sampling areas. Also, one sampling trip visited the North/West and North/East sampling areas.

# *Fish Health Monitoring*

## Introduction

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

The Fish and Wildlife Research Institute's (FWRI) FIM program began to document visually observed GEAs (including parasites) on fish and select invertebrates in Florida's estuaries in April 1998. The main objectives of the fish health monitoring component of the FIM program are to categorize prominent types of GEAs observed, document which species are most susceptible, and document normal background levels of fish health problems. This report summarizes the occurrence of GEAs observed on larger ($\geq$ 75 mm SL) fish and select macro-invertebrates collected during routine stratified-random sampling (SRS) in select Florida estuaries from January through December 2008.

## Methods

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

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

## Results and Discussion

Of the 340,443 fish (≥ 75 mm SL) and select macro-invertebrates that were collected during 2008 FIM SRS, 567 (54 taxa, 0.17%) were observed to have a GEA (Table FH08-01). Statewide, all nine types of GEAs were observed. The most often identified GEAs were bloody areas (n=205), followed by parasitic infestation (n=176) and ulcers/lesions (n=86; Table FH08-02). Northeast Florida had the highest GEA incidence (0.33%), while southern Indian River Lagoon had the lowest incidence (0.02%; Table FH08-01). Six taxa of recreational or commercial importance (i.e., Selected Taxa) were among the top 10 taxa observed with a GEA (Table FH08-02). *Ariopsis felis* was the most common species collected with a GEA. The majority (96%) of the affected *A. felis* culled had bloody lips or other bloody areas. *Callinectes sapidus* and *Brevoortia* spp. were the next two most abundant species collected with a GEA. All affected *Callinectes sapidus* were parasitized by *Loxothylacus texanus*; and all affected *Brevoortia* spp. were parasitized by *Olencira praegustator,* except three fish, of which two had ulcers and one a skeletal deformity.

## Incidence by Lab

Apalachicola Bay: Apalachicola Bay staff examined 38,780 specimens for GEAs. Twenty-two individuals (0.06%) from 14 taxa, six of which were Selected Taxa, had a GEA (Table FH08-03). A diverse number of abnormalities were observed on fish from this region.

Cedar Key: Cedar Key staff examined 28,080 specimens for GEAs. Ten individuals (0.04%) from seven taxa, four of which were Selected Taxa, had a GEA (Table FH08-04). Ulcers were the most common GEA observed (n=4). Other GEAs observed were parasitic infestation, bloody areas, and skeletal abnormalities.

Charlotte Harbor: Charlotte Harbor staff examined 71,368 specimens for GEAs. Seventy-four individuals (0.10%) from 12 taxa, six of which were Selected Taxa, had a GEA. *Callinectes sapidus* (n=54) was the most common species collected with a GEA and all affected crabs were parasitized by *Loxothylacus texanus*. All health codes except tumors/cysts were observed.

Northern Indian River Lagoon: Northern Indian River Lagoon staff examined 61,011 specimens for GEAs. One hundred-fifty-seven individuals (0.26%) from 20 taxa, seven of which were Selected Taxa, had a GEA (Table FH08-06). The most common GEA observed in this region was bloody areas (n=116), primarily observed on *Ariopsis felis* (n=113). Parasitic infestations (n=8), and ulcers (n=6) were also commonly observed.

Northeast Florida: Northeast Florida staff examined 22,745 specimens for GEAs. Seventy-five individuals (0.33%) from 14 taxa, seven of which were Selected Taxa, had a GEA (Table FH08-07). This region had the highest incidence of GEAs in Florida. The most common GEA observed was ulcers (n=64). Ulcers were observed in 10 different species with the majority occurring in *Mugil curema* and *M. cephalus* (n=28 and 26, respectively). Other GEAs observed were parasitic infestation, bloody areas, and fin rot.

Tampa Bay: Tampa Bay staff examined 93,429 specimens for GEAs. Two hundred-twenty-three individuals (0.24%) from 31 taxa, 13 of which were Selected Taxa, had a GEA (Table FH08-08). Bloody areas (n=79) and parasitic infestation (n=79) comprised 83% of the GEAs observed. *Ariopsis felis* was the most common taxa with bloody areas (n=67) and *Brevoortia* spp. was the most common taxa with parasitic infestation (n=68). All health codes were observed in this region except tumors/cysts.

Southern Indian River Lagoon: Southern Indian River Lagoon staff examined 25,030 specimens for GEAs. Six individuals (0.02%) from four taxa, three of which were Selected Taxa, had a GEA (Table FH08-09). This region had the lowest incidence of GEAs from all FIM sampling areas. Bloody areas and fin rot were the only GEAs observed in this region.

## References

Cloern, J. E., C. Grenz, and L. Videgar-Lucas. 1995. An empirical model of the phytoplankton chlorophyll/carbon ratio—the conversion factor between productivity and growth rate. Limnology and Oceanography 40: 1313-1321.

Fournie, J. W., J.K. Summers, and S.B. Weisberg. 1996. Prevalence of gross pathological abnormalities in estuarine fishes. Transactions of the American Fisheries Society 125: 581-590.

Sinderman, C. J. 1979. Pollution-associated diseases and abnormalities of fish and shellfish: a review. Fishery Bulletin 76: 717-749.

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

Table FH08-01. Incidence of external abnormalities in fish and selected invertebrates collected during stratified-random sampling at each FIM field lab during 2008. Data are based only on fish ≥75 mm SL and include total number collected, number affected by abnormalities, and percentage affected by abnormalities.

| **Field Laboratory** | **Number Collected** | **Number Affected** | **Percent Affected** |
|---|---|---|---|
| Apalachicola Bay | 38,780 | 22 | 0.06 |
| Cedar Key | 28,080 | 10 | 0.04 |
| Charlotte Harbor | 71,368 | 74 | 0.10 |
| N. Indian River Lagoon | 61,011 | 157 | 0.26 |
| Northeast Florida | 22,745 | 75 | 0.33 |
| Tampa Bay | 93,429 | 223 | 0.24 |
| S. Indian River Lagoon | 25,030 | 6 | 0.02 |
| **Totals** | **340,443** | **567** | **0.17** |

Table FH08-02. Top 10 taxa having gross external abnormalities collected from all estuaries sampled by the Fisheries-Independent Monitoring program during stratified-random sampling, 2008. Number collected = total number of each species collected. Number affected = total number of individuals with abnormalities by health code. Percent affected = number affected / number collected ∗ 100.

| Scientific Name | Number Collected (≥75-mm SL) | Number Affected (≥75-mm SL) | Health Code | | | | | | | | | Percent Affected |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | P | B | F | U | E | S | T | O | D | |
| *Ariopsis felis* | 12,477 | 188 | . | 180 | 1 | 3 | 2 | . | 1 | . | 1 | 1.51 |
| ***Callinectes sapidus*** | 2,371 | 76 | 76 | . | . | . | . | . | . | . | . | 3.21 |
| *Brevoortia* spp. | 8,311 | 73 | 70 | . | . | 2 | . | 1 | . | . | . | 0.88 |
| ***Mugil curema*** | 7,650 | 41 | 1 | 1 | 5 | 30 | . | . | . | 4 | . | 0.54 |
| ***Mugil cephalus*** | 10,501 | 38 | . | 5 | 1 | 28 | . | 1 | . | 2 | 1 | 0.36 |
| ***Centropomus undecimalis*** | 3,609 | 19 | . | 4 | 2 | 2 | 4 | 1 | . | 6 | . | 0.53 |
| *Lagodon rhomboides* | 123,344 | 18 | . | . | . | 3 | . | 9 | 1 | 2 | 3 | 0.01 |
| ***Archosargus probatocephalus*** | 3,693 | 9 | . | 2 | 2 | 2 | . | 2 | . | 1 | . | 0.24 |
| ***Sciaenops ocellatus*** | 1,602 | 7 | 2 | 1 | . | 3 | . | 1 | . | . | . | 0.44 |
| *Bairdiella chrysoura* | 26,916 | 5 | . | 1 | 1 | 3 | . | . | . | . | . | 0.02 |
| **Totals** | **200,474** | **474** | **149** | **194** | **12** | **76** | **6** | **15** | **2** | **15** | **5** | **0.24** |
| All others | 139,969 | 93 | 27 | 11 | 7 | 10 | 3 | 7 | 3 | 12 | 13 | 0.07 |
| **Totals (all taxa)** | **340,443** | **567** | **176** | **205** | **19** | **86** | **9** | **22** | **5** | **27** | **18** | **0.17** |

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

Table FH08-03. Alphabetical list of taxa having gross external abnormalities collected in Apalachicola Bay during stratified-random sampling, 2008. Number collected = total number of each species collected. Number affected = total number of individuals with abnormalities by health code. Percent affected = number affected / number collected ∗ 100.

| Scientific Name | Number Collected (≥75-mm SL) | Number Affected (≥75-mm SL) | Health Code P | B | F | U | E | S | T | O | D | Percent Affected |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ***Archosargus probatocephalus*** | 179 | 2 | . | 1 | . | . | . | 1 | . | . | . | 1.12 |
| *Ariopsis felis* | 1,375 | 3 | . | . | 1 | 1 | 1 | . | . | . | . | 0.22 |
| *Bairdiella chrysoura* | 6,234 | 1 | . | . | . | 1 | . | . | . | . | . | 0.02 |
| *Brevoortia* spp. | 2,318 | 1 | . | . | . | 1 | . | . | . | . | . | 0.04 |
| *Ctenopharyngodon idella* | 1 | 1 | . | . | . | . | . | 1 | . | . | . | 100.00 |
| *Ictalurus punctatus* | 31 | 1 | 1 | . | . | . | . | . | . | . | . | 3.23 |
| *Lagodon rhomboides* | 10,084 | 1 | . | . | . | . | . | . | 1 | . | . | 0.01 |
| ***Leiostomus xanthurus*** | 2,931 | 1 | . | . | 1 | . | . | . | . | . | . | 0.03 |
| *Lepomis microlophus* | 93 | 2 | . | 1 | . | 1 | . | . | . | . | . | 2.15 |
| ***Micropogonias undulatus*** | 3,073 | 1 | . | . | 1 | . | . | . | . | . | . | 0.03 |
| *Minytrema melanops* | 2 | 1 | . | . | 1 | . | . | . | . | . | . | 50.00 |
| ***Mugil cephalus*** | 1,013 | 1 | . | . | . | . | . | 1 | . | . | . | 0.10 |
| ***Mugil curema*** | 622 | 3 | . | . | . | . | . | . | . | 3 | . | 0.48 |
| ***Sciaenops ocellatus*** | 404 | 3 | 2 | 1 | . | . | . | . | . | . | . | 0.74 |
| **Totals (all taxa)** | **38,780** | **22** | **3** | **3** | **4** | **4** | **1** | **3** | **1** | **3** | **.** | **0.06** |

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

Table FH08-04. Alphabetical list of taxa having gross external abnormalities collected in Cedar Key during stratified-random sampling, 2008. Number collected = total number of each species collected. Number affected = total number of individuals with abnormalities by health code. Percent affected = number affected / number collected ∗ 100.

| Scientific Name | Number Collected (≥75-mm SL) | Number Affected (≥75-mm SL) | Health Code P | B | F | U | E | S | T | O | D | Percent Affected |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| *Brevoortia* spp. | 524 | 1 | . | . | . | . | . | 1 | . | . | . | 0.19 |
| ***Callinectes sapidus*** | 78 | 2 | 2 | . | . | . | . | . | . | . | . | 2.56 |
| *Micropterus salmoides* | 18 | 1 | . | . | . | 1 | . | . | . | . | . | 5.56 |
| ***Mugil curema*** | 613 | 3 | . | 1 | . | 2 | . | . | . | . | . | 0.49 |
| *Ogcocephalus cubifrons* | 538 | 1 | . | . | . | . | . | 1 | . | . | . | 0.19 |
| ***Paralichthys albigutta*** | 207 | 1 | . | . | . | . | . | . | . | . | 1 | 0.48 |
| ***Sciaenops ocellatus*** | 274 | 1 | . | . | . | 1 | . | . | . | . | . | 0.36 |
| **Totals (all taxa)** | **28,080** | **10** | **2** | **1** | **.** | **4** | **.** | **2** | **.** | **.** | **1** | **0.04** |

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

Table FH08-05. Alphabetical list of taxa having gross external abnormalities collected in Charlotte Harbor during stratified-random sampling, 2008. Number collected = total number of each species collected. Number affected = total number of individuals with abnormalities by health code. Percent affected = number affected / number collected ∗ 100.

| Scientific Name | Number Collected (≥75-mm SL) | Number Affected (≥75-mm SL) | Health Code P | B | F | U | E | S | T | O | D | Percent Affected |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ***Archosargus probatocephalus*** | 1,001 | 2 | . | . | 2 | . | . | . | . | . | . | 0.20 |
| *Ariopsis felis* | 2,020 | 2 | . | . | . | 1 | 1 | . | . | . | . | 0.10 |
| ***Callinectes sapidus*** | 259 | 54 | 54 | . | . | . | . | . | . | . | . | 20.85 |
| ***Centropomus undecimalis*** | 813 | 3 | . | . | . | 1 | 1 | 1 | . | . | . | 0.37 |
| *Chaetodipterus faber* | 131 | 1 | . | . | . | . | . | . | . | . | 1 | 0.76 |
| ***Cynoscion nebulosus*** | 196 | 2 | . | . | 1 | 1 | . | . | . | . | . | 1.02 |
| *Eucinostomus gula* | 3,784 | 1 | . | . | . | . | 1 | . | . | . | . | 0.03 |
| *Eugerres plumieri* | 79 | 2 | . | . | . | . | . | . | . | . | 2 | 2.53 |
| *Lagodon rhomboides* | 45,116 | 4 | . | . | . | . | . | 3 | . | 1 | . | 0.01 |
| ***Mugil cephalus*** | 343 | 1 | . | 1 | . | . | . | . | . | . | . | 0.29 |
| ***Mugil curema*** | 607 | 1 | 1 | . | . | . | . | . | . | . | . | 0.16 |
| *Orthopristis chrysoptera* | 2,981 | 1 | . | . | 1 | . | . | . | . | . | . | 0.03 |
| **Totals (all taxa)** | **71,368** | **74** | **55** | **1** | **4** | **3** | **3** | **4** | **.** | **1** | **3** | **0.10** |

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

Table FH08-06. Alphabetical list of taxa having gross external abnormalities collected in the northern Indian River Lagoon during stratified-random sampling, 2008. Number collected = total number of each species collected. Number affected = total number of individuals with abnormalities by health code. Percent affected = number affected / number collected ∗ 100.

| Scientific Name | Number Collected (≥75-mm SL) | Number Affected (≥75-mm SL) | Health Code P | B | F | U | E | S | T | O | D | Percent Affected |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ***Archosargus probatocephalus*** | 1,019 | 3 | . | . | . | 2 | . | . | . | 1 | . | 0.29 |
| *Archosargus rhomboidalis* | 37 | 1 | . | . | . | . | . | . | . | 1 | . | 2.70 |
| *Ariopsis felis* | 3,130 | 116 | . | 113 | . | 1 | . | . | 1 | . | 1 | 3.71 |
| *Callinectes similis* | 19 | 1 | . | . | . | . | . | . | . | 1 | . | 5.26 |
| *Caranx hippos* | 320 | 2 | . | . | . | . | . | . | . | 2 | . | 0.63 |
| ***Centropomus undecimalis*** | 619 | 5 | . | . | . | . | . | . | . | 5 | . | 0.81 |
| *Chilomycterus schoepfii* | 301 | 2 | 1 | . | 1 | . | . | . | . | . | . | 0.66 |
| *Dasyatis sabina* | 1,581 | 1 | . | . | . | . | . | . | . | 1 | . | 0.06 |
| *Diapterus auratus* | 5,419 | 2 | 1 | 1 | . | . | . | . | . | . | . | 0.04 |
| *Hyporhamphus meeki* | 76 | 4 | 4 | . | . | . | . | . | . | . | . | 5.26 |
| *Lagodon rhomboides* | 14,846 | 2 | . | . | . | 1 | . | 1 | . | . | . | 0.01 |
| ***Megalops atlanticus*** | 9 | 1 | 1 | . | . | . | . | . | . | . | . | 11.11 |
| ***Menticirrhus americanus*** | 190 | 1 | . | . | . | . | . | 1 | . | . | . | 0.53 |
| ***Mugil cephalus*** | 2,884 | 3 | . | 1 | 1 | 1 | . | . | . | . | . | 0.10 |
| ***Mugil curema*** | 2,462 | 1 | . | . | 1 | . | . | . | . | . | . | 0.04 |
| *Pterygoplichthys* spp. | 5 | 1 | . | . | . | . | . | . | . | . | 1 | 20.00 |
| ***Sciaenops ocellatus*** | 355 | 1 | . | . | . | . | . | 1 | . | . | . | 0.28 |
| *Sphoeroides nephelus* | 2,020 | 5 | 1 | 1 | . | . | . | . | . | 3 | . | 0.25 |
| *Sphoeroides spengleri* | 13 | 1 | . | . | . | 1 | . | . | . | . | . | 7.69 |
| *Strongylura notata* | 570 | 4 | . | . | . | . | 1 | . | 3 | . | . | 0.70 |
| **Totals (all taxa)** | **61,011** | **157** | **8** | **116** | **3** | **6** | **1** | **3** | **4** | **14** | **2** | **0.26** |

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

Table FH08-07. Alphabetical list of taxa having gross external abnormalities collected in Northeast Florida during stratified-random sampling, 2008. Number collected = total number of each species collected. Number affected = total number of individuals with abnormalities by health code. Percent affected = number affected / number collected ∗ 100.

| Scientific Name | Number Collected (≥75-mm SL) | Number Affected (≥75-mm SL) | Health Code P | B | F | U | E | S | T | O | D | Percent Affected |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| *Bairdiella chrysoura* | 869 | 1 | . | . | . | 1 | . | . | . | . | . | 0.12 |
| *Brevoortia* spp. | 399 | 2 | 2 | . | . | . | . | . | . | . | . | 0.50 |
| ***Cynoscion regalis*** | 68 | 1 | . | . | . | 1 | . | . | . | . | . | 1.47 |
| *Ictalurus punctatus* | 37 | 1 | 1 | . | . | . | . | . | . | . | . | 2.70 |
| *Lagodon rhomboides* | 2,801 | 2 | . | . | . | 2 | . | . | . | . | . | 0.07 |
| ***Leiostomus xanthurus*** | 2,495 | 2 | . | 1 | . | . | . | . | . | 1 | . | 0.08 |
| ***Micropogonias undulatus*** | 2,547 | 1 | . | . | . | 1 | . | . | . | . | . | 0.04 |
| *Micropterus salmoides* | 76 | 1 | . | . | . | 1 | . | . | . | . | . | 1.32 |
| ***Mugil cephalus*** | 2,318 | 28 | . | 1 | . | 26 | . | . | . | 1 | . | 1.21 |
| ***Mugil curema*** | 1,280 | 30 | . | . | 2 | 28 | . | . | . | . | . | 2.34 |
| *Negaprion brevirostris* | 3 | 1 | . | . | . | . | . | . | . | 1 | . | 33.33 |
| ***Paralichthys lethostigma*** | 181 | 2 | . | . | 1 | 1 | . | . | . | . | . | 1.10 |
| ***Sciaenops ocellatus*** | 100 | 2 | . | . | . | 2 | . | . | . | . | . | 2.00 |
| *Strongylura marina* | 199 | 1 | . | . | . | 1 | . | . | . | . | . | 0.50 |
| **Totals (all taxa)** | **22,745** | **75** | **3** | **2** | **3** | **64** | **.** | **.** | **.** | **3** | **.** | **0.33** |

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

Table FH08-08. Alphabetical list of taxa having gross external abnormalities collected in Tampa Bay during stratified-random sampling, 2008. Number collected = total number of each species collected. Number affected = total number of individuals with abnormalities by health code. Percent affected = number affected / number collected ∗ 100.

| Scientific Name | Number Collected (≥75-mm SL) | Number Affected (≥75-mm SL) | Health Code | | | | | | | | | Percent Affected |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | P | B | F | U | E | S | T | O | D | |
| *Aluterus schoepfii* | 12 | 1 | 1 | . | . | . | . | . | . | . | . | 8.33 |
| ***Archosargus probatocephalus*** | 692 | 1 | . | . | . | . | . | 1 | . | . | . | 0.14 |
| *Ariopsis felis* | 3,449 | 67 | . | 67 | . | . | . | . | . | . | . | 1.94 |
| *Bagre marinus* | 150 | 4 | . | 3 | . | . | . | . | . | . | 1 | 2.67 |
| *Bairdiella chrysoura* | 2,621 | 3 | . | 1 | 1 | 1 | . | . | . | . | . | 0.11 |
| *Brevoortia* spp. | 4,242 | 69 | 68 | . | . | 1 | . | . | . | . | . | 1.63 |
| ***Callinectes sapidus*** | 262 | 20 | 20 | . | . | . | . | . | . | . | . | 7.63 |
| *Caranx latus* | 1 | 1 | 1 | . | . | . | . | . | . | . | . | 100.00 |
| ***Centropomus undecimalis*** | 1,493 | 11 | . | 4 | 2 | 1 | 3 | . | . | 1 | . | 0.74 |
| *Chaetodipterus faber* | 268 | 3 | . | 2 | . | . | . | 1 | . | . | . | 1.12 |
| ***Cynoscion arenarius*** | 236 | 1 | . | 1 | . | . | . | . | . | . | . | 0.42 |
| ***Cynoscion nebulosus*** | 400 | 3 | 2 | . | . | . | . | . | . | . | 1 | 0.75 |
| *Echeneis neucratoides* | 5 | 1 | 1 | . | . | . | . | . | . | . | . | 20.00 |
| ***Elops saurus*** | 6,449 | 1 | . | . | . | 1 | . | . | . | . | . | 0.02 |
| *Eucinostomus gula* | 4,996 | 2 | . | . | . | . | 1 | . | . | . | 1 | 0.04 |
| *Eucinostomus harengulus* | 2,431 | 3 | . | . | . | . | . | . | . | . | 3 | 0.12 |
| *Eugerres plumieri* | 183 | 1 | . | . | . | . | . | . | . | . | 1 | 0.55 |
| *Hyporhamphus meeki* | 77 | 1 | . | . | . | . | . | 1 | . | . | . | 1.30 |
| *Hyporhamphus* spp. | 17 | 1 | . | . | . | . | . | . | . | . | 1 | 5.88 |
| *Lagodon rhomboides* | 37,965 | 9 | . | . | . | . | . | 5 | . | 1 | 3 | 0.02 |
| ***Leiostomus xanthurus*** | 477 | 1 | 1 | . | . | . | . | . | . | . | . | 0.21 |

Table FH08-08. (continued)

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| *Lepisosteus osseus* | 19 | 3 | 3 | . | . | . | . | . | . | . | . | 15.79 |
| *Limulus polyphemus* | 91 | 3 | 3 | . | . | . | . | . | . | . | . | 3.30 |
| ***Menticirrhus americanus*** | 272 | 1 | 1 | . | . | . | . | . | . | . | . | 0.37 |
| ***Mugil cephalus*** | 1,260 | 3 | . | . | . | 1 | . | . | . | 1 | 1 | 0.24 |
| ***Mugil curema*** | 1,224 | 2 | . | . | 1 | . | . | . | . | 1 | . | 0.16 |
| ***Mugil gyrans*** | 1,140 | 2 | 1 | 1 | . | . | . | . | . | . | . | 0.18 |
| ***Mycteroperca microlepis*** | 76 | 1 | . | . | . | . | . | 1 | . | . | . | 1.32 |
| *Orthopristis chrysoptera* | 2,716 | 2 | 2 | . | . | . | . | . | . | . | . | 0.07 |
| *Prionotus scitulus* | 718 | 1 | 1 | . | . | . | . | . | . | . | . | 0.14 |
| ***Trachinotus carolinus*** | 7 | 1 | . | . | . | . | . | 1 | . | . | . | 14.29 |
| **Totals (all taxa)** | **93,429** | **223** | **105** | **79** | **4** | **5** | **4** | **10** | **.** | **4** | **12** | **0.24** |

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

Table FH08-09. Alphabetical list of taxa having gross external abnormalities collected in southern Indian River Lagoon during stratified-random sampling, 2008. Number collected = total number of each species collected. Number affected = total number of individuals with abnormalities by health code. Percent affected = number affected / number collected ∗ 100.

| Scientific Name | Number Collected (≥75-mm SL) | Number Affected (≥75-mm SL) | Health Code P | B | F | U | E | S | T | O | D | Percent Affected |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ***Archosargus probatocephalus*** | 523 | 1 | . | 1 | . | . | . | . | . | . | . | 0.19 |
| *Chilomycterus schoepfii* | 113 | 2 | . | . | . | . | . | . | . | 2 | . | 1.77 |
| ***Mugil cephalus*** | 549 | 2 | . | 2 | . | . | . | . | . | . | . | 0.36 |
| ***Mugil curema*** | 842 | 1 | . | . | 1 | . | . | . | . | . | . | 0.12 |
| **Totals (all taxa)** | **25,030** | **6** | **.** | **3** | **1** | **.** | **.** | **.** | **.** | **2** | **.** | **0.02** |

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

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# *Species Profiles*

## Introduction

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

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

The YOY IOAs represented annual recruitment and were computed using an Analysis of Covariance (ANCOVA) (Sokal and Rohlf 1981; Hilborn and Walters 1992) to reduce spatial and temporal variability between sets. Location, time, and environmental variables were treated as either classification variables (zone, year, month, gear, deployment technique, sediment type, and presence / absence of bottom vegetation) or covariates (water temperature, salinity, and depth) in the ANCOVA analyses. The GLM procedure (SAS Institute Inc. 1989) was used to complete all ANCOVA analyses. In order to normalize the data, water temperature, salinity, depth, and number of animals per haul were natural log transformed [ln (X+1)] prior to analysis. With the exception of year, all variables that were not significant ($P>0.05$) were dropped and the analysis was repeated. With the ANCOVA analyses, least squares adjusted means and standard errors were calculated for each year.

Relative abundance was calculated as the median annual number of fish per haul. Median values were determined from the least-squares adjusted means by multiplying the standard error by a random normal deviate ($\mu=0$, $\sigma=1$) and adding it to the least-squares mean. These data were then back-transformed ($e^x-1$). The process was repeated 500 times for each year to create a sampling distribution of back-transformed means. Summary statistics (10, 25, 75, and 90 percentiles) were then calculated (Sokal and Rohlf 1981).

## References

Hilborn, R. and C.J. Walters. 1992. Quantitative fisheries stock assessment: choice dynamics and uncertainty. Routledge, Chapman and Hall, Inc. New York.

SAS Institute, Inc. 1989. SAS/STAT guide for personal computers, version 6, fourth edition. SAS Institute Inc., Cary, North Carolina.

Sokal, R.R. and F.J. Rohlf. 1981. Biometry. Freeman, New York.

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## Red Drum, *Sciaenops ocellatus*

The red drum, *Sciaenops ocellatus*, is an estuarine-dependent species inhabiting coastal waters from Massachusetts to northern Mexico (Yokel 1966; Reagan 1985). This species supports important recreational fisheries throughout the U.S. south Atlantic and Gulf of Mexico coasts. In Florida, dramatic stock reductions in the mid 1980s resulted in a 1986 moratorium on commercial and recreational red drum fisheries. In 1989, the fishery was reopened with strict size and bag limits, as well as a no-sale provision that effectively eliminated the commercial red drum fishery in Florida. Since that time, red drum stocks have shown signs of recovery, and in 1994 abundances were equal to or slightly greater than those observed in the early to mid 1980s (Muller and Murphy 1994). Although fishing mortality estimates have steadily increased since the early 1990s, the most recent model predictions for age-specific indices of red drum (Murphy 2005) indicated that populations in Florida could likely achieve the Commission's management target for red drum of at least a 30% escapement rate through age 4.

Adult red drum in Florida spawn from mid-August through late November (Yokel 1966). Spawning occurs primarily near bay mouths or inlets and over nearshore continental shelf waters (Mercer 1984; Murphy and Taylor 1990), and inside estuaries in some locations (Murphy and Taylor 1990; Johnson and Funicelli 1991). In Florida estuaries, recruitment begins in September and continues through February, with peaks in October and November (Reagan 1985; Peters and McMichael 1987; Daniel 1988). Data collected by the Fisheries-Independent Monitoring (FIM) program indicated that settlement of juvenile red drum typically occurred in the middle or upper reaches of estuaries, and was strongly influenced by the availability of low to moderate salinity habitats (FDEP-FMRI 1996). On both coasts, large juvenile red drum enter the fishery at approximately 15 – 18 months of age, and are fully recruited at 24 months (FWC-FMRI 2004). The legal slot limit (457-686 mm total length [TL]) includes primarily age-1 and age-2 fish. Red drum greater than 700 mm SL are uncommon in the FIM program samples from west Florida estuaries, but are occasionally collected on the east coast in the northern Indian River Lagoon (FWC-FMRI 2004).

To monitor year-class strength and improve ability to predict future adult red drum abundances, the FIM program developed relative abundance indices of juvenile red drum recruitment into selected Florida estuaries. Abundance data for juvenile red drum ≤40 mm standard length (SL) that were collected in stratified-random 21.3-m seine samples were examined to assess recruitment into six Florida estuaries: (in order of inception) Tampa Bay, Charlotte Harbor, northern Indian River Lagoon, Cedar Key, Apalachicola Bay, and Northeast Florida. Juvenile red drum recruited to habitats sampled with our 21.3-m seines primarily from September – December, although in some bays the onset of recruitment was delayed until October (Tampa Bay and Apalachicola) and extended into January (Charlotte Harbor and Cedar Key) or February (northern Indian River Lagoon). These bay-specific months were used to define the respective recruitment seasons for each estuary in subsequent analyses. Indices of abundance (IOAs) for juvenile red drum were not calculated for southern Indian River Lagoon where 21.3-m seines were not used. The FIM program also monitors the abundance of large juvenile and subadult red drum within these same Florida estuarine systems (including southern Indian River Lagoon). Data from stratified-random 183-m haul seines were used to develop IOAs for fish that fall within the permitted 18-27 inch total length (TL) recreational harvest size range (457-686 mm TL; 374-565 mm SL from Murphy and Taylor 1990). These IOAs were derived by including all legal size red drum collected between January and December from 1996 through 2008.

Trends in annual IOAs of juvenile red drum on Florida's southwest coast were similar between Tampa Bay and Charlotte Harbor (Figure SP08-01). Relative abundance estimates generally exhibited only small fluctuations between 1989 and 2008, although there were strong year classes in both of these systems in 1995 and 2002. These peaks were followed by a relatively large decline in 1996 and a steady but gradual decline from 2002 through 2008. The fact that similar patterns in juvenile IOAs have been observed over the past 20 years in these separate estuarine systems suggests that red drum recruitment along this section of Florida's Gulf coast may be influenced by factors that operate over regional scales. Annual IOAs of legal-size red drum in Tampa Bay and Charlotte Harbor also followed similar patterns with increased abundances in 1998, 2003, and 2005. However, the annual IOAs of legal-size red drum has declined steadily from 2005 through 2008 in Tampa Bay while abundance has increased substantially since 2006 in Charlotte Harbor (Figure SP08-01).

Annual IOAs of red drum varied between estuaries on Florida's northwest coast (Figure SP08-01). Annual IOAs of juvenile red drum in Apalachicola Bay indicated strong year classes in 1998 and 2002, but recruitment varied little between 1999 and 2008. Annual IOAs of legal-size red drum in Apalachicola Bay have been relatively consistent since 1998, although there was an observed peak in 2003 and recent increases in 2007 and 2008. Juvenile IOAs in Cedar Key indicated relatively strong year classes in 1996, 1997, and 2003. Indices fluctuated at relatively low levels between 1998 and 2002, increased in 2003, and have remained relatively stable through 2008. Annual IOAs of legal-size red drum in Cedar Key were relatively high from 1998 through 2001, declined steadily through 2006, and slightly increased in 2007 and 2008.

Annual IOAs of red drum varied substantially between estuaries on Florida's east coast (Figure SP08-01). Juvenile red drum IOAs in Northeast Florida were fairly stable from 2001 through 2008 with recruitment in 2004 and 2005 slightly lower than in other years. Annual IOAs of legal-size red drum increased sharply in 2004 but have since exhibited a steady decline to their previously-observed levels. Juvenile IOAs in northern Indian River Lagoon (IRL) were not estimated from 1990 to 1997 due to low incidence of capture. The sampling area was expanded in 1998 to include some more productive juvenile red drum nursery habitats located near the St. Sebastian River. Following a weak year class in 1999, annual IOAs of juvenile red drum in northern IRL increased significantly through 2004. Relative abundances declined considerably from 2005 – 2007, but a strong year class was observed in 2008. Annual IOAs of legal-size red drum in northern IRL fluctuated without trend from 1997 through 2006 followed by the two highest estimates in 2007 and 2008. Annual IOAs of legal-size red drum in southern IRL exhibited a general decline from 1997 through 2001, but have since remained stable through 2008.

There were not consistent relationships between the annual IOAs of juvenile red drum and future IOAs of legal-size red drum. Correlation tests were used to compare juvenile IOAs through 2005 with legal-size IOAs observed the following year. These tests were not statistically significant for any of the estuarine systems sampled

(Spearman rank correlation, $\alpha$ =0.05). This may be partially due to the presence of multiple age-classes (age-1 and age-2) within the legal red drum slot limit. However, in some instances, large increases in juvenile abundances were followed by peaks in legal-size red drum the following year (e.g., Tampa Bay, Charlotte Harbor, and Apalachicola, 2002; Cedar Key, 1997). Similarly, the sharp increase in legal-size red drum abundance in northern IRL in 2007 may reflect increases in age-2 fish resulting from a very strong 2004 year-class. While consistent relationships were not apparent in any estuaries, the data do suggest potential to predict future year class strength of legal-sized red drum based upon the relative abundances of juveniles.

Length-frequency data collected by 183-m haul seines suggest that this gear provides valuable information on age-1 and older red drum in the estuaries (Figure SP08-02). The 183-m haul seines captured large juveniles (100-200 mm), age-1 (300-400 mm), and age-2 red drum (450-600 mm). In Tampa Bay, Charlotte Harbor, and northern IRL, the length-frequency distributions showed abundances of red drum within the legal slot-limit to be roughly equivalent to the abundances of red drum approaching the minimum slot-limit length. In Apalachicola Bay, Cedar Key, Northeast Florida, and the southern Indian River Lagoon, the abundances of red drum within the legal slot-limit declined sharply from the abundances of red drum approaching the legal slot-limit. Most red drum within the legal size slot were age-1 and age-2 individuals. Older red drum emigrate from the estuaries upon reaching sexual maturity and join schools of reproductively mature red drum in coastal waters. This explains the decline in length-frequency distributions beyond the upper slot limit in the estuaries.

## References

Daniel, L. B. 1988. Aspects of the biology of juvenile red drum, *Sciaenops ocellatus*, and spotted seatrout, *Cynoscion nebulosus* (Pisces: Sciaenidae) in South Carolina. M.S. Thesis, College of Charleston. 58 p.

FDEP-FMRI. 1996. Fisheries-Independent Monitoring Program 1996 annual data summary report. Florida Marine Research Institute. St. Petersburg, Florida.

FWC-FMRI. 2004. Fisheries-Independent Monitoring Program 2003 annual data summary report. Florida Marine Research Institute. St. Petersburg, Florida. IHR 2004-003.

Johnson, D. R. and N. A. Funicelli. 1991. Spawning of red drum in Mosquito Lagoon, east-central Florida. Estuaries 14:74-79.

Mercer, L. P. 1984. A biological and fisheries profile of red drum, *Sciaenops ocellatus*. Spec. Sci. Rep. 41, NC Dept. Nat. Resour. Community Dev. Div. Mar. Fish., Raleigh, 89 p.

Muller, R. and M. D. Murphy. 1994. Stock assessment of red drum, *Sciaenops ocellatus*, in Florida. Florida Marine Research Institute Report to Florida Marine Fisheries Commission. 28 p.

Murphy, M. D. 2005. A stock assessment of red drum, *Sciaenops ocellatus*, in Florida: status of the stocks through 2003. Florida Marine Research Institute Report to Florida Marine Fisheries Commission. 35 pages.

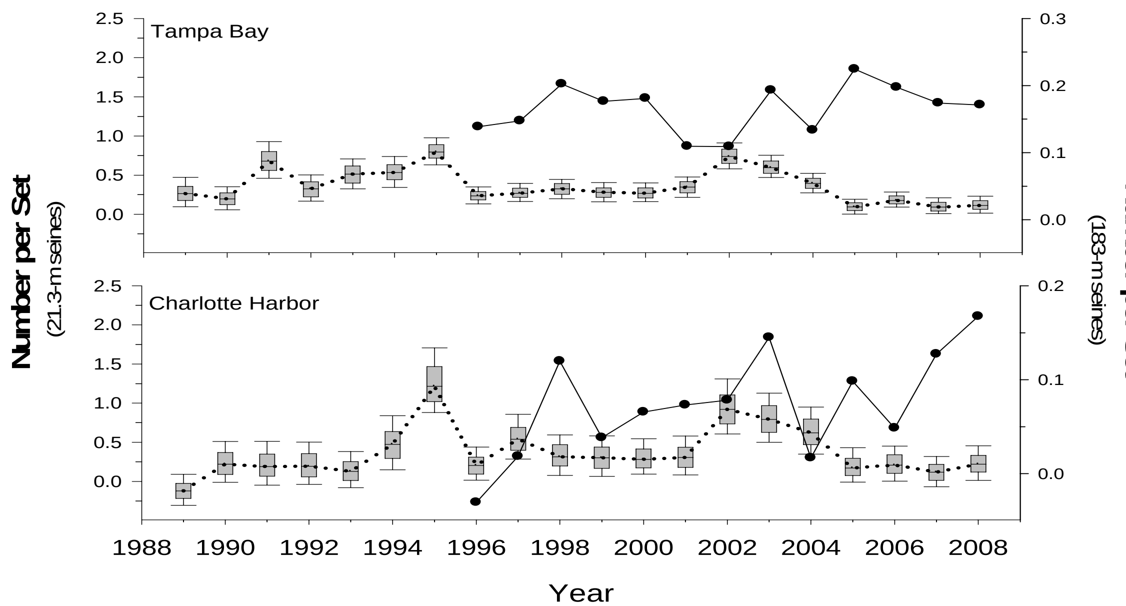
Murphy, M. D. and R. G. Taylor. 1990. Reproduction, growth, and mortality of red drum, *Sciaenops ocellatus*, in Florida. Fishery Bulletin, United States. 88:531-542.

Peters, K. M. and R. H. McMichael. 1987. Early life history of the red drum, *Sciaenops ocellatus* (Pisces: Sciaenidae), in Tampa Bay, Florida. Estuaries 10:92-107.

Reagan, R. E. 1985. Species profiles: life histories and environmental requirements of coastal fishes and invertebrates (Gulf of Mexico). Red drum. FWS/OBS Biol. Rep. 82(11.36 TR EL-82-4):1-16.

Yokel, B. J. 1966. A contribution to the biology and distribution of red drum, *Sciaenops ocellata.* Master's Thesis. University of Miami, Miami, FL. 160 p.

## A) Southwest Coast (Gulf of Mexico)




## B) Northwest Coast (Gulf of Mexico)

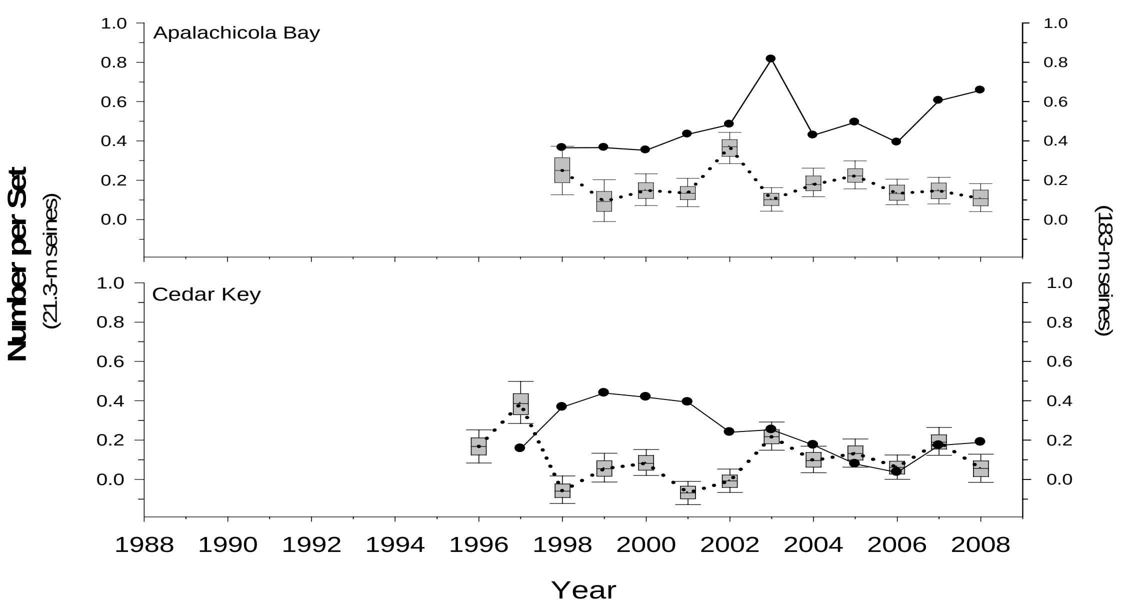



Figure SP08-01. Relative abundance of juvenile red drum (≤ 40 mm SL) collected in 21.3-m seines between 1989 and 2008 (dotted line) and of legal-size red drum (374-565 mm SL) collected in 183-m haul seines between 1996 and 2008 (solid line) during stratified-random sampling in six Florida estuarine systems located on Florida's **(A)** Southwest Coast, **(B)** Northwest Coast, and **(C)** East Coast. Box Plots represent the $25^{th}$ – $75^{th}$ percentiles, the vertical line extends from the $10^{th}$ – $90^{th}$ percentiles, and the horizontal line within each box indicates the median estimate. Note different scales in some cases for estimates from 21.3-m and 183-m seines.

## C) East Coast (Atlantic Ocean)

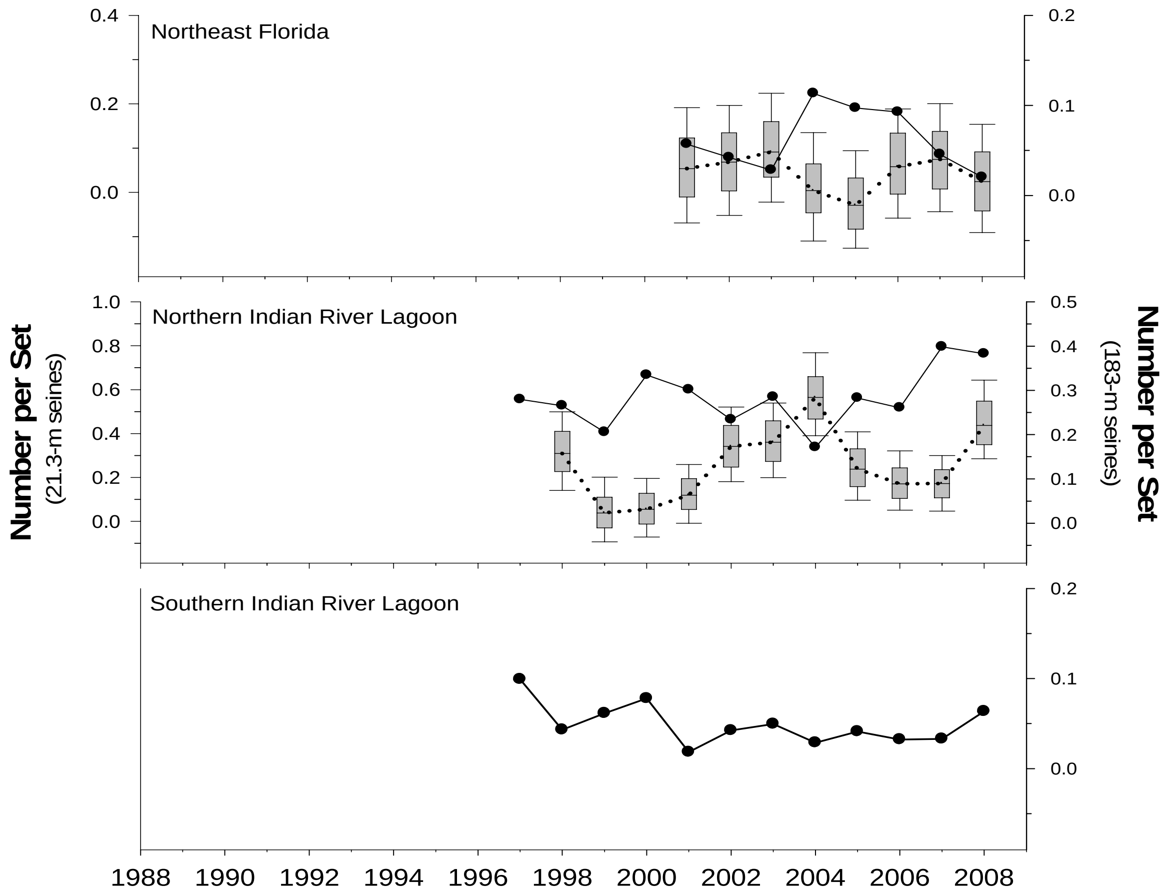



Figure SP08-01. (Continued) Relative abundance of juvenile red drum (≤ 40 mm SL) collected in 21.3-m seines between 1997 and 2008 (dotted line) and of legal-size red drum (374-565 mm SL) collected in 183-m haul seines between 1996 and 2008 (solid line) during stratified-random sampling in six Florida estuarine systems located on Florida's **(A)** Southwest Coast, **(B)** Northwest Coast, and **(C)** East Coast. Box Plots represent the 25$^{th}$ – 75$^{th}$ percentiles, the vertical line extends from the 10$^{th}$ – 90$^{th}$ percentiles, and the horizontal line within each box indicates the median estimate. Juvenile abundances prior to 1997 in the Northern Indian River Lagoon were unestimable and not reported. Note different scales in some cases for estimates from 21.3-m and 183-m seines. (The 21.3-m seine was not utilized in southern Indian River Lagoon).

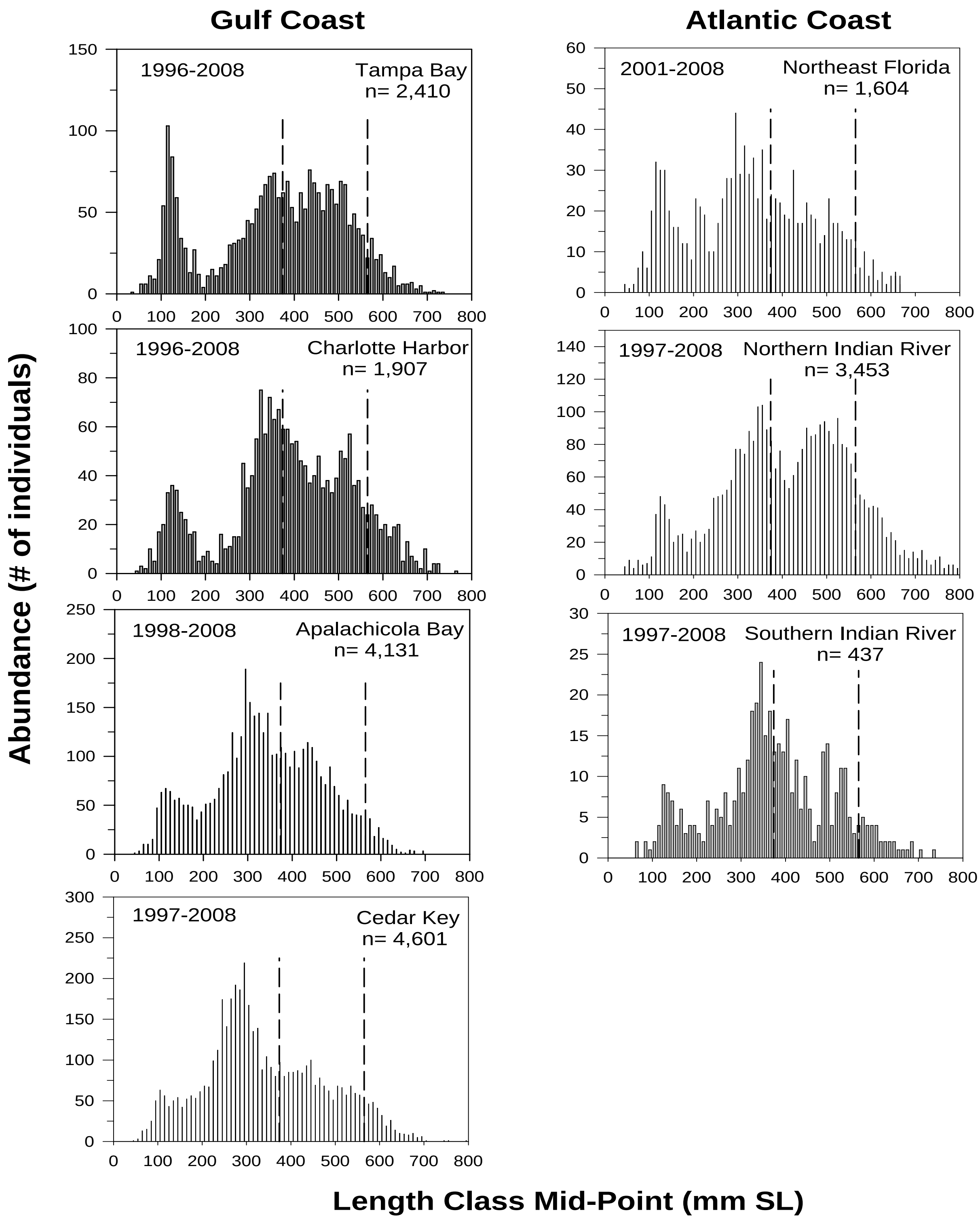



Figure SP08-02. Length frequency diagrams of red drum collected in 183-m haul seines. Area between dashed lines ( - - - ) indicates legal recreational harvest size range. All lengths are standard length (SL). Note different scales and years of collection.

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## Spotted Seatrout, *Cynoscion nebulosus*

Spotted seatrout, *Cynoscion nebulosus*, occur in temperate to tropical estuarine and coastal waters on the Atlantic and Gulf of Mexico (Gulf) coasts of the United States (Bortone 2003). Spotted seatrout have historically supported economically-important recreational and commercial fisheries in Florida. Average commercial landings from 1996 – 2002 were only 7.5% of those from 1990 to 1994, and only 4.5% of those from 1986 – 1989. In 2002, only 266 commercial fishers reported landings of *C. nebulosus*, compared to 2,151 in 1994 (Murphy 2003), and commercial effort levels continue to be significantly less than in the recreational sector (Murphy et al., 2006). Various commercial and recreational fishing regulations have been adopted since the mid-1990's to support the rebuilding of spotted seatrout stocks (Murphy et al. 1999). With these regulatory changes, the spotted seatrout fishery has moved from a mixed–sector fishery, with about 20% of the landings made by commercial fishers, to an almost exclusive recreational fishery (Chagaris et al. 2008). Total estimated landings for this species in Florida during 2007 were 3,080,736 pounds, with 99% of this total from the recreational fishery (FWC-FWRI fisheries landings data 2007).

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

To monitor year-class strength and improve ability to predict future adult spotted seatrout abundances, the Fisheries-Independent Monitoring (FIM) program developed relative abundance indices of juvenile spotted seatrout recruitment into selected Florida estuaries. Abundance data for juvenile spotted seatrout ≤100 mm SL that were collected in stratified-random 21.3-m seine samples were examined to assess recruitment in six Florida estuaries: (in order of inception) Tampa Bay, Charlotte Harbor, northern Indian River Lagoon, Cedar Key, Apalachicola Bay, and Northeast Florida. Juvenile spotted seatrout recruited to habitats sampled with our 21.3-m seines primarily from April through October in Tampa Bay and Charlotte Harbor, and from May through November in the northern Indian River Lagoon, Northeast Florida, and Cedar Key. Recruitment was evident from June through October in Apalachicola Bay. These recruitment periods coincide with published recruitment and spawning periods of spotted seatrout throughout Florida (Moody 1950; Nelson and Leffler 2001; Devries et al. 2002; Walters et al., 2007). These bay-specific months were therefore used to define the respective recruitment seasons for each estuary in subsequent analyses. Indices of abundance (IOAs) for juvenile spotted seatrout were not calculated for the southern Indian River Lagoon where 21.3-m seines were not included as a sampling gear. The FIM program also monitors the abundance of larger spotted seatrout within these same Florida estuarine systems (including the southern Indian River Lagoon). Data from stratified-random 183-m haul seines were used to develop IOAs for fish >100 mm SL. These IOAs were derived by including all spotted seatrout >100mm SL collected between January and December from 1996 to 2008.

Trends in annual IOAs of juvenile spotted seatrout on Florida's southwest coast have remained fairly stable since the early 1990's (Figure SP08-03). Annual IOAs increased slightly in Tampa Bay from 1994-1996 and 2002-2004, followed by declining trends from 1997-2000 and a period of lower abundance from 2005-2008. Annual IOAs of juvenile spotted seatrout in Charlotte Harbor were highest in 1991 and 1995, and there was a declining trend from 2001 through 2007. Overall, trends in juvenile IOAs in both estuaries were similar and suggest that factors influencing recruitment of spotted seatrout along Florida's southwest coast may operate on regional scales. Trends in annual IOAs for larger spotted seatrout were similar between Tampa Bay and Charlotte Harbor (Figure SP08-03). Periods of increasing IOAs occurred from 2000-2004 and 2005-2008 in Tampa Bay, and from 1998-2004 and 2005-2008 in Charlotte Harbor.

Trends in annual IOAs of juvenile spotted seatrout on Florida's northwest coast were similar between estuaries (Figure SP08-03). The highest juvenile IOAs in

Apalachicola Bay and Cedar Key occurred in 1998, after which they decreased and remained stable through 2008 (Figure SP08-03). Annual IOAs of larger spotted seatrout in Apalachicola Bay remained stable since 1998, but increased sharply in 2008. Annual IOAs of larger spotted seatrout in Cedar Key peaked in 1998, after which there was a large decrease through 2002 followed by a gradual decline through 2008.

Annual IOAs of spotted seatrout on Florida's east coast differed between estuaries in recent years (Figure SP08-03). Annual IOAs of juveniles in Northeast Florida were fairly stable from 2000 through 2004, increased through 2006, and have declined through 2008. Annual IOAs of larger spotted seatrout fluctuated widely from 2001 to 2003 and have since declined through 2008. Annual IOAs of juvenile spotted seatrout in the northern Indian River Lagoon fluctuated between 1992 and 2000 and have since undergone a gradual increasing trend through 2008. Annual IOAs of larger spotted seatrout increased steadily from 1997 through 2004, dropped sharply in 2005 and 2006, and increased through 2008. The trend in annual IOAs of larger spotted seatrout in southern Indian River Lagoon has remained relatively stable since 1997 with a few minor peaks. However, the comparatively small sample size in this area may have influenced these results.

Length-frequency data collected by 183-m haul seines suggest that this gear provides valuable information on adult and larger sub-adult spotted seatrout (Figure SP08-04). Larger spotted seatrout become susceptible to capture in 183-m haul seines at about 120 mm SL. The greatest abundance in most of the length-frequency histograms on the Gulf Coast was ~120 mm SL with a second mode at ~310 mm SL. The greatest abundance in most of the length-frequency histograms on the Atlantic Coast was between 150 and 250 mm SL. In all estuaries, the number of individuals declined sharply upon reaching recreational harvest size.

## References

Bortone, S.A. 2003. Introduction. In: Biology of the Spotted Seatrout (Bortone, S.A., ed.) CRC Press, Boca Raton, pp 1-3.

Chagaris, D., B. Mahmoudi, R.G. Muller, J. Munyandorero, Murphy, M.D., J. O'Hop, M.F.D. Greenwood and T.S. Switzer. 2008. Florida's inshore and nearshore species: 2007 Status and Trends Report. Florida Fish and Wildlife Conservation Commission Fish and Wildlife Research Institute.

Crabtree, R.E. and D.H. Adams. 1998. Spawning and fecundity of spotted seatrout, *Cynoscion nebulosus*, in the Indian River Lagoon, Florida. *in* Investigations into nearshore and estuarine gamefish abundance, ecology, and life history in Florida (Project F-59). FWC-FMRI technical report to U.S. Fish and Wildlife Service, pp. 526-566.

Devries, D.A., C.D. Bedee, C.L. Palmer, and S.A. Bortone. 2002. The demographics and reproductive biology of spotted seatrout, *Cynoscion nebulosus*, in six northwest Florida estuaries. In: Biology of the Spotted Seatrout (Bortone, S.A., ed.). CRC Press, Boca Raton, pp 79-98.

Gray, J.D., T.L. King and R.L. Colura. 1991. Effects of temperature and hypersalinity on hatching success of spotted seatrout eggs. Progressive Fish Culturist 53:81-84.

Helser, T.E., R.E. Condrey, and J.P. Geaghan. 1993. Spotted seatrout distribution in four coastal Louisiana estuaries. Transactions of the American Fisheries Society 122:99-111.

McMichael, R.H. Jr., and K.M. Peters. 1989. Early life history of the spotted seatrout, *Cynoscion nebulosus*, Pisces: Sciaenidae, in Tampa Bay, Florida. Estuaries 122:98-110.

Moody, W.D. 1950. A study of the natural history of the spotted trout, *Cynoscion nebulosus*, in the Cedar Key, Florida, area. Quarterly Journal of the Florida Academy of Sciences 12, 147 – 172.

Murphy, M.D. 2003. A stock assessment of spotted seatrout *Cynoscion nebulosus* in Florida: status of stocks through 2001. FWC-FWRI Report.

Murphy, M.D., G.A. Nelson, and R.G. Muller. 1999. An update of the stock assessment of the spotted seatrout, *Cynoscion nebulosus*. Florida Marine Research Institute Report to the Florida Fish and Wildlife Conservation Commission. 122 pp.

Murphy, M.D., C.B. Guenther, and B. Mahmoudi. 2006. An assessment of the status of spotted seatrout in Florida waters through 2005. Florida Fish and Wildlife Conservation Commission Fish and Wildlife Research Institute In-House Report IHR2006-017.

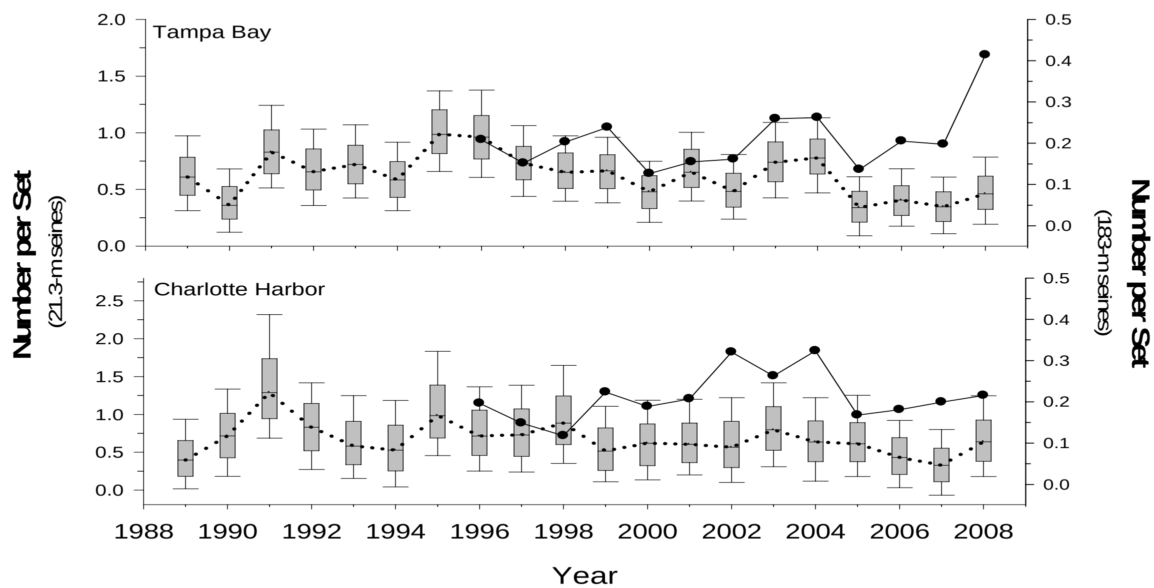
Nelson, G.A. and D.L. Leffler. 2001. Abundance, spatial distribution, and mortality of young-of-the-year spotted seatrout (*Cynoscion nebulosus*) along the Gulf Coast of Florida. Gulf of Mexico Science 19:30-42.

Tabb, D.C. 1961. A contribution to the biology of the spotted seatrout, *Cynoscion nebulosus* (Cuvier), of east-central Florida. Florida Board of Conservation Technical Series 35.

Tabb, D.C. 1966. The estuary as a habitat for spotted seatrout, *Cynoscion nebulosus*. American Fisheries Society Special Publication 3:58-67.

Walters, S., S. Lowerre-Barbieri, J. Bickford, L. Crabtree, and D. Mann. 2007. Preliminary results on seasonal and diel periodicities of a resident *Cynoscion nebulosus* spawning aggregation in Tampa Bay, Florida. Proceedings of the Gulf and Caribbean Fisheries Institute, v.58, p. 295-296.

## A) Southwest Coast (Gulf of Mexico)




## B) Northwest Coast (Gulf of Mexico)

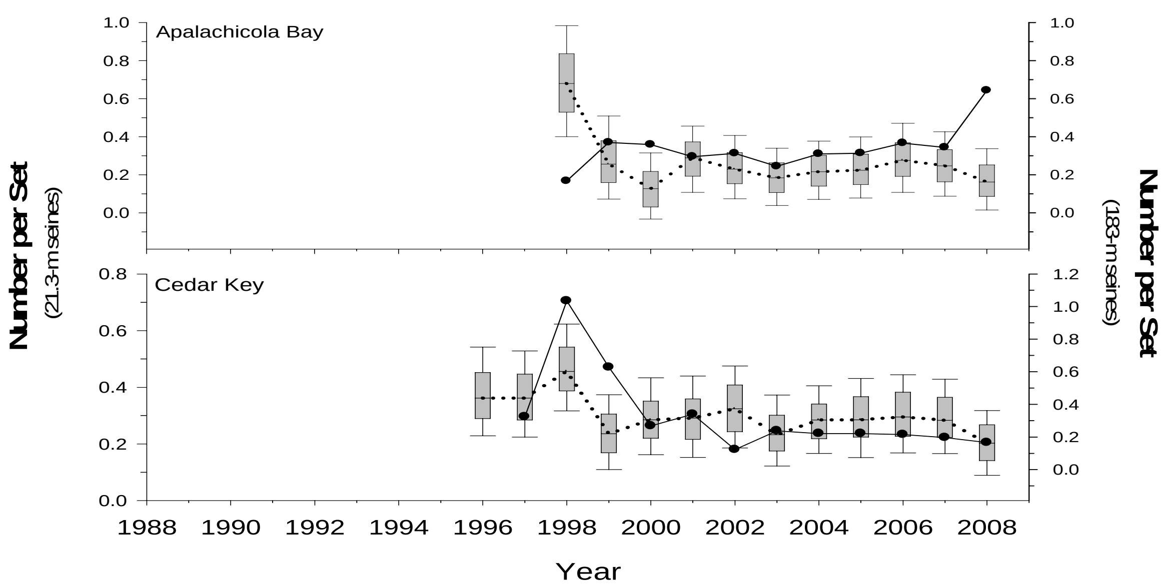



Figure SP08-03. Relative abundance of juvenile spotted seatrout ($\leq$100 mm SL) collected in 21.3-m seines between 1989 and 2008 (dotted line) and of larger spotted seatrout (>100 mm SL) collected in 183-m haul seines between 1996 and 2008 (solid line) during stratified-random sampling in six Florida estuarine systems located on Florida's (A) Southwest Coast, (B) Northwest Coast, and (C) East Coast. Box plots represent the 25$^{th}$ - 75$^{th}$ percentiles, the vertical line extends from the 10$^{th}$ – 90$^{th}$ percentiles, and the horizontal line within each box indicates the median estimate. Note different scales in some cases for estimates from 21.3-m and 183-m seines.

## C) East Coast (Atlantic Ocean)

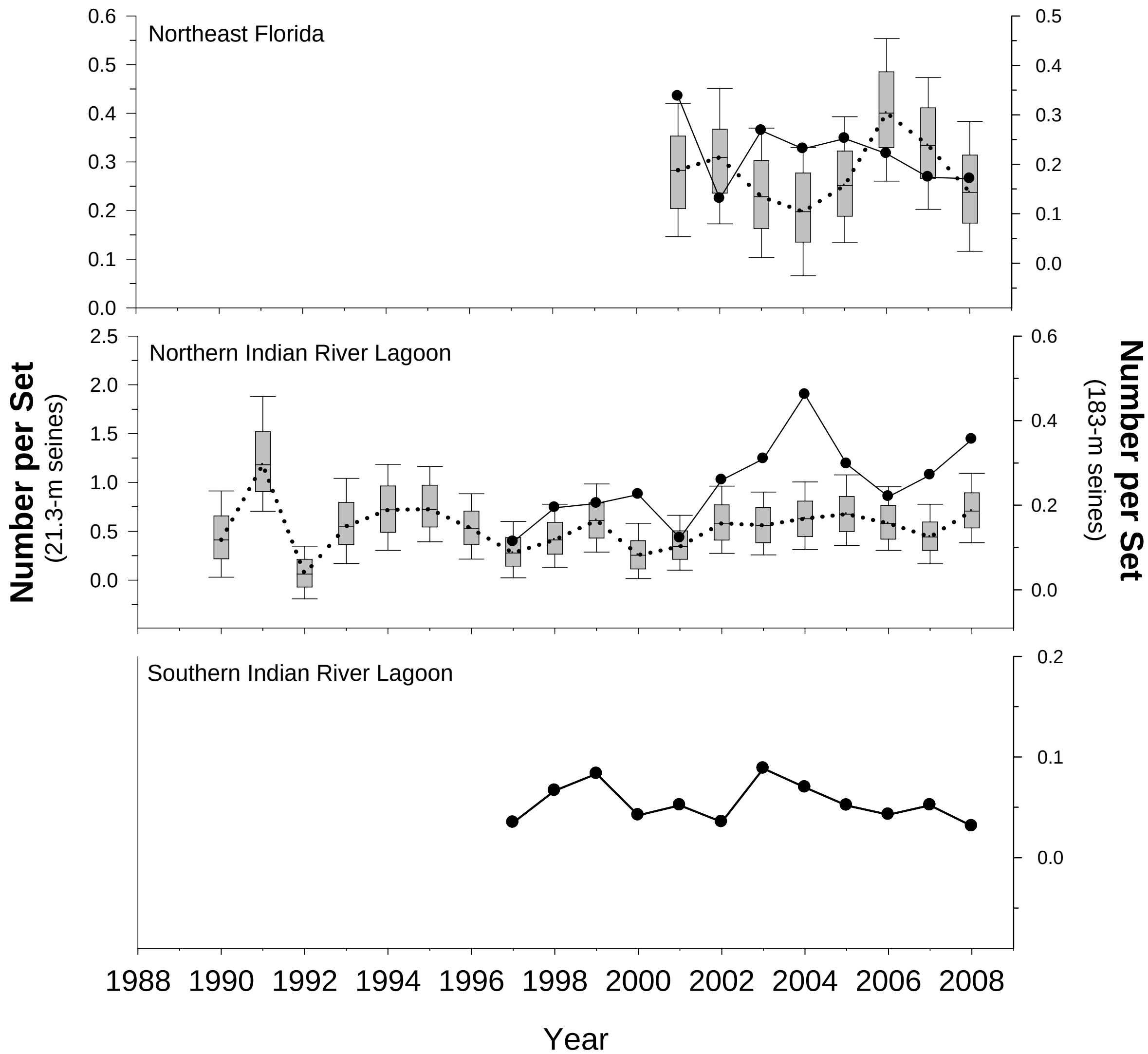



Figure SP08-03. (Continued) Relative abundance of juvenile spotted seatrout ($\leq$100 mm SL) collected in 21.3-m seines between 1989 and 2008 (dotted line) and of larger spotted seatrout (>100 mm SL) collected in 183-m haul seines between 1996 and 2008 (solid line) during stratified-random sampling in six Florida estuarine systems located on Florida's (A) Southwest Coast, (B) Northwest Coast, and (C) East Coast. Box plots represent the 25th - 75th percentiles, the vertical line extends from the 10th – 90th percentiles, and the horizontal line within each box indicates the median estimate. Note different scales in some cases for estimates from 21.3-m and 183-m seines.

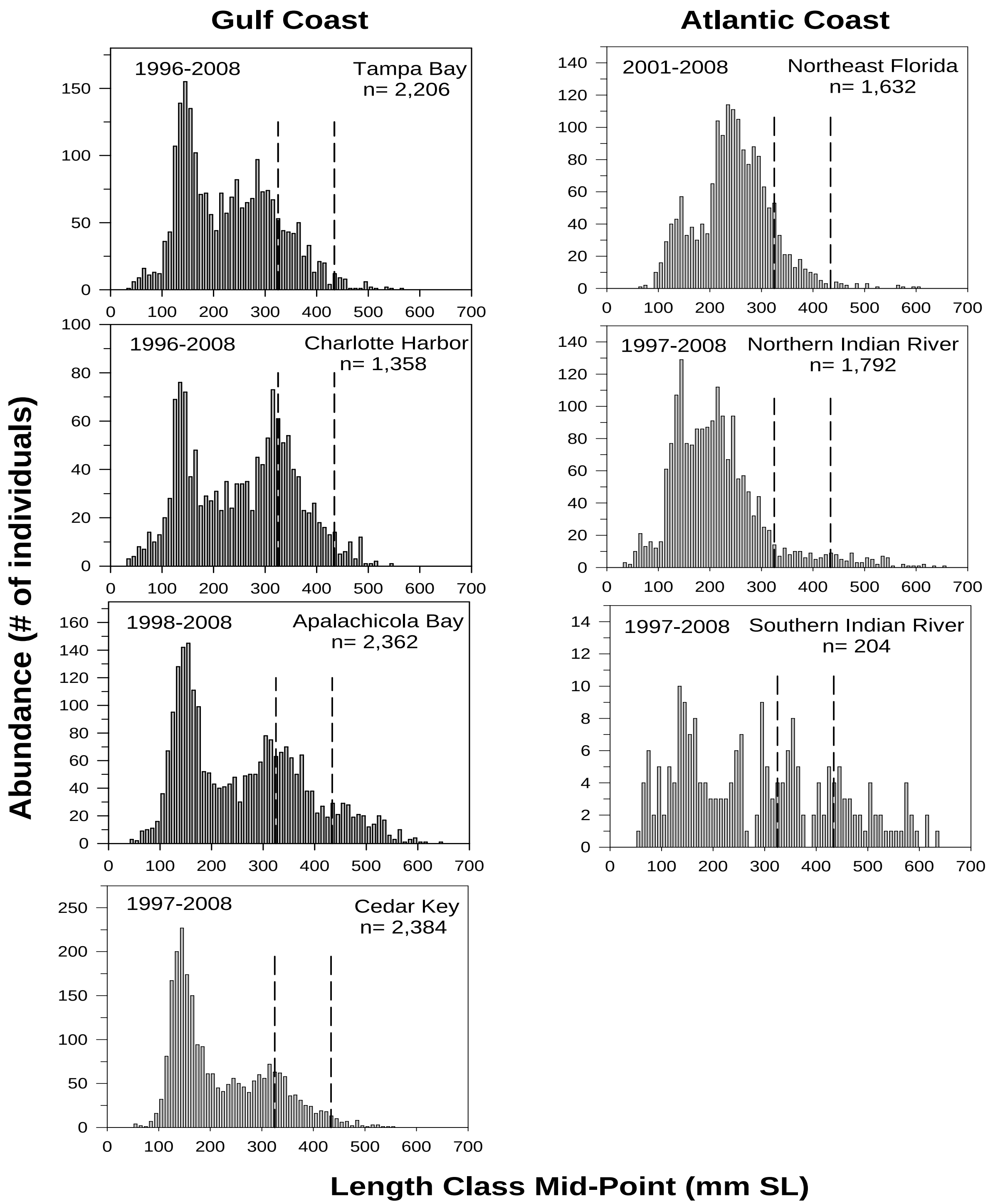



Figure SP08-04. Length frequency diagrams of spotted seatrout collected in 183-m haul seines. Area between dashed lines (- - -) indicates permitted recreational harvest size range (325 to 434 mm SL). All lengths are standard length (SL). Note different scales and years of collection.

## Sheepshead, *Archosargus probatocephalus*

The sheepshead, *Archosargus probatocephalus*, is common in coastal estuarine and inner- to mid-shelf waters from Cape Cod to Brazil (Jennings 1985). Recreational and commercial fishermen commonly harvest sheepshead, with the recreational fishery accounting for almost 90% of the total pounds landed in recent years (Munyandorero et al. 2006). Sheepshead in Florida waters are currently regulated by size (305-mm fork length, 268-mm standard length) and bag limits (15 fish/day). The most recent stock assessment for sheepshead used Fisheries-Independent Monitoring (FIM) program data to derive annual indices of abundance (IOAs) during different life history stages to constrain coast-specific catch-at-age models (Munyandorero et al. 2006). This stock assessment determined that sheepshead stocks on the Gulf and Atlantic coasts appeared abundant enough to supply adequate numbers of new recruits while maintaining current harvest rates.

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

To monitor year-class strength and improve ability to predict future adult sheepshead abundances, the FIM program developed annual IOAs for four life history stages: early YOY, late YOY, pre-fishery, and fully-recruited. Gear types and months used in the analyses varied for each life history stage (Table SP08-01). Abundance data for early YOY ($\leq$40 mm SL) that were collected in stratified-random 21.3-m seines and late YOY (50-95 mm SL) caught in 183-m seines samples were examined to assess recruitment into four Florida estuaries: (in order of inception) Tampa Bay, Charlotte Harbor, northern Indian River Lagoon, and southern Indian River Lagoon. These two life history stages were not examined for Apalachicola Bay, Cedar Key, or Northeast Florida due to relatively small sample sizes. Early YOY IOAs were not calculated for the southern Indian River because sampling with 21.3-m seines was not conducted in that estuary. Early YOY sheepshead recruited to habitats sampled with our 21.3-m seines primarily from April through June and late YOY sheepshead recruited to habitats sampled with our 183-m seine from August through March. These months were used to define the respective recruitment seasons for each estuary in subsequent analyses. Abundance indices were calculated for pre-fishery sheepshead (131-267 mm SL) and those fully recruited to the fishery (>268 mm SL) for six Florida estuaries: Tampa Bay, Charlotte Harbor, northern Indian River Lagoon, southern Indian River Lagoon, Cedar Key, Apalachicola Bay, and Northeast Florida. Data from stratified-random 183-m haul seines were used to develop IOAs for pre-fishery sheepshead and fully-recruited sheepshead from April through March, representing a biological year.

Trends in annual IOAs of sheepshead were largely similar between the two southwest estuaries. The 2008 IOAs of early YOY sheepshead in Tampa Bay and Charlotte Harbor were the highest since 1994 (Figure SP08-05). Trends in annual IOAs of late YOY sheepshead tracked similarly to the trends for early YOY sheepshead in both estuaries. This relationship was interrupted, however, from 2004 through 2006 in Tampa Bay, as the two trends became inverted. The same occurred in Charlotte Harbor from 2001 through 2004 (Figure SP08-05). Annual IOAs of pre-fishery sheepshead exhibited a cyclical pattern in Tampa Bay with peaks in 1999, 2004, and 2008. Annual IOAs of pre-fishery sheepshead in Charlotte Harbor have generally increased since 1996 (Figure SP08-06). Annual IOAs of fully-recruited sheepshead in both estuaries were generally lower since a peak in 2003, although relative abundances have increased again in Charlotte Harbor since 2006 (Figure SP08-06).

Annual IOAs were only calculated for pre-fishery and fully-recruited sheepshead in the two northwest estuaries of Apalachicola Bay and Cedar Key. Trends in annual IOAs of pre-fishery sheepshead in Apalachicola Bay followed a cyclical pattern with peaks in 2000 and 2006. Annual IOAs of pre-fishery sheepshead have remained fairly stable in Cedar Key since 1998 (Figure SP08-06). Annual IOAs of fully-recruited sheepshead in Apalachicola Bay have fluctuated over time but show an overall increasing trend through 2008. This trend is completely inverted in Cedar Key where there was an overall decreasing trend through 2008.

Annual IOAs of pre-fishery and fully-recruited sheepshead in Northeast Florida demonstrated similar trends to each other with peaks in 2002 and 2003, declines through

2006, and increases through 2008. While the trends in annual IOAs of pre-fishery and fully-recruited sheepshead were similar, IOAs of fully-recruited sheepshead have undergone greater inter-annual variation than those of pre-fishery sheepshead (Figure SP08-06).

Annual trends in sheepshead IOAs for northern Indian River Lagoon (IRL) and southern Indian River Lagoon displayed similarities and differences. Early YOY IOAs in northern IRL remained relatively stable from 1990 through 2003 and maintained this stability, but at a higher level, from 2004 through 2008. Annual IOAs were not calculated for this size class in southern IRL (Figure SP08-05). Annual IOAs for late YOY sheepshead followed a similar trend in both estuaries, with peaks in 2000, 2004, and 2007 (Figure SP08-05). Trends in annual IOAs of pre-fishery sheepshead largely reflected the trends of late YOY sheepshead in both estuaries, with peaks during 2000 and 2007 in northern IRL and during 2000, 2004, and 2007 in southern IRL (Figure SP08-06). Annual IOAs of fully-recruited sheepshead in both estuaries followed a similar trend through 2005, with low abundances in 2001 and a general increase in abundance until 2004. However, abundances of fully-recruited sheepshead have increased in northern IRL from 2005 through 2008 while decreasing in southern IRL (Figure SP08-06).

Length-frequency data collected by 183-m haul seines suggest that this gear provides valuable information on late YOY, pre-fishery, and fully-recruited sheepshead (Figure SP08-07). Sheepshead become susceptible to capture in 183-m haul seines at ~70 mm SL. The greatest abundance in length frequency histograms for Tampa Bay, Charlotte Harbor, northern IRL, and southern IRL was between 100 and 200 mm SL. The greatest abundance in length-frequency histograms for Apalachicola Bay, Cedar Key, and Northeast Florida was ~350 mm SL. The histograms did not appear to truncate beyond the legal minimum size.

## References

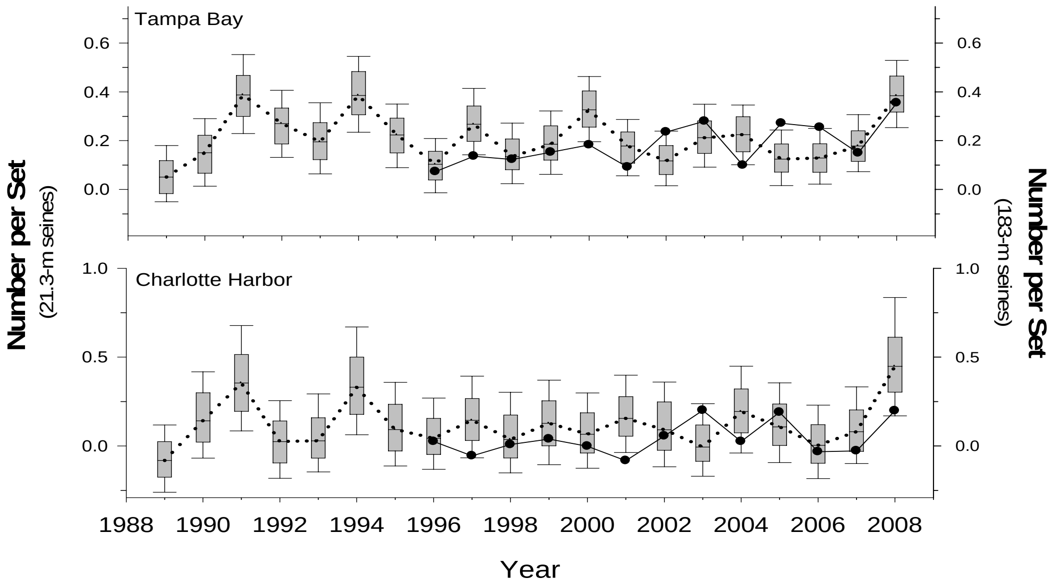

Dutka-Gianelli, J., and D.J. Murie. 2001. Age and growth of the sheepshead, *Archosargus probatocephalus* (Pisces: Sparidae), from the Northwest Coast of Florida. Bulletin of Marine Science 68(1):69-83.

Jennings, C.A. 1985. Species profiles: Life histories and environmental requirements of coastal fishes and invertebrates in the Gulf of Mexico. Sheepshead. U.S. Fish and Wildlife Services Biological Report. 10 pp.

FWC-FMRI. 2001. Fisheries-Independent Monitoring Program 2000 Annual Data Summary Report. Florida Marine Research Institute. St. Petersburg, Florida.

Munyandorero, J., M.D. Murphy, and T.C. MacDonald. 2006. An assessment of the status of sheepshead in Florida waters through 2004. Florida Fish and Wildlife Research Institute In-House Report 2006-009, St. Petersburg, Florida. 110 pp.

## A) Southwest Coast (Gulf of Mexico)




## B) East Coast (Atlantic Ocean)

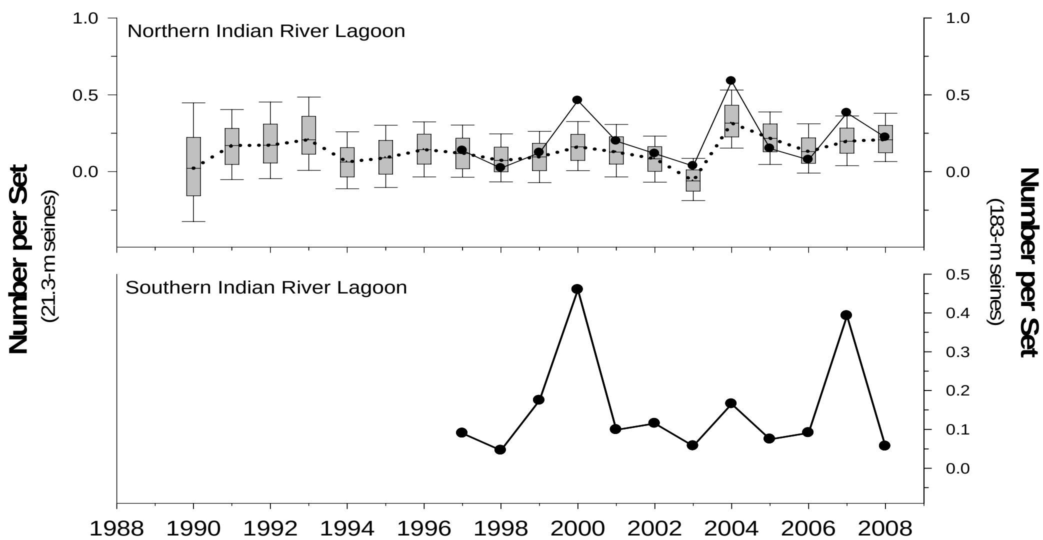
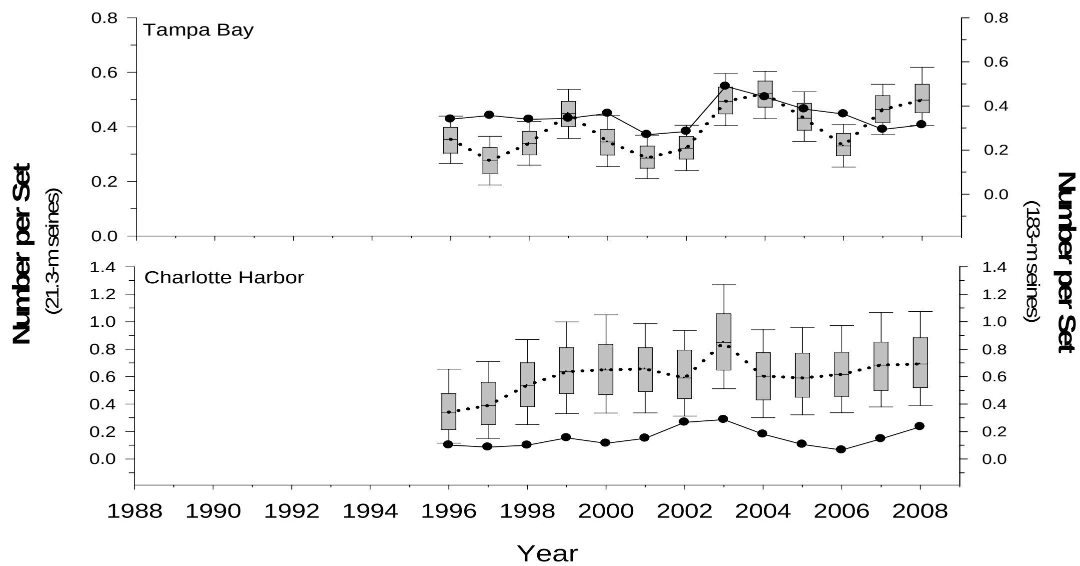



Figure SP08-05. Relative abundance of early young-of-the-year sheepshead ($\leq$40 mm SL) collected in 21.3-m seines between April and July 1989 to 2008 (dotted line) and of late YOY sheepshead (50 – 95 mm SL) collected in 183-m haul seines between August and December 1996 to 2008 (solid line) during stratified-random sampling from four Florida estuarine systems located on Florida's **(A)** Southwest Coast and **(B)** East coast. Box plots represent the 25$^{th}$ - 75$^{th}$ percentiles, the vertical line extends from the 10$^{th}$ – 90$^{th}$ percentiles, and the horizontal line within each box indicates the median estimate. Note different scales in some cases for estimates from 21.3-m and 183-m seines.

## A) Southwest Coast (Gulf of Mexico)




## B) Northwest Coast (Gulf of Mexico)

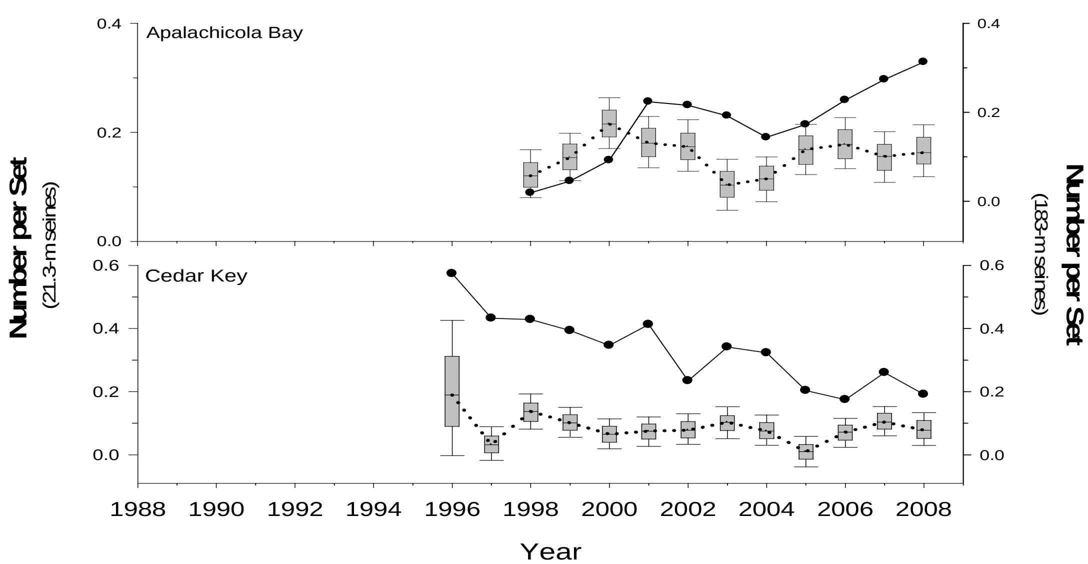



Figure SP08-06. Relative abundance of pre-fishery sheepshead (131-267 mm SL) collected in 183-m seines between April and March 1996 to 2008 (dotted line) and of fully-recruited sheepshead (≥ 268 mm SL) collected in 183-m haul seines between April and March 1996 to 2008 (solid line) during stratified-random sampling from four Florida estuarine systems located on Florida's **(A)** Southwest Coast, **(B)** Northwest Coast, and **(C)** East Coast. Box plots represent the 25th - 75th percentiles, the vertical line extends from the 10th – 90th percentiles, and the horizontal line within each box indicates the median estimate. Note different scales in some cases for estimates from 21.3-m and 183-m seines.

## C) East Coast (Atlantic Ocean)

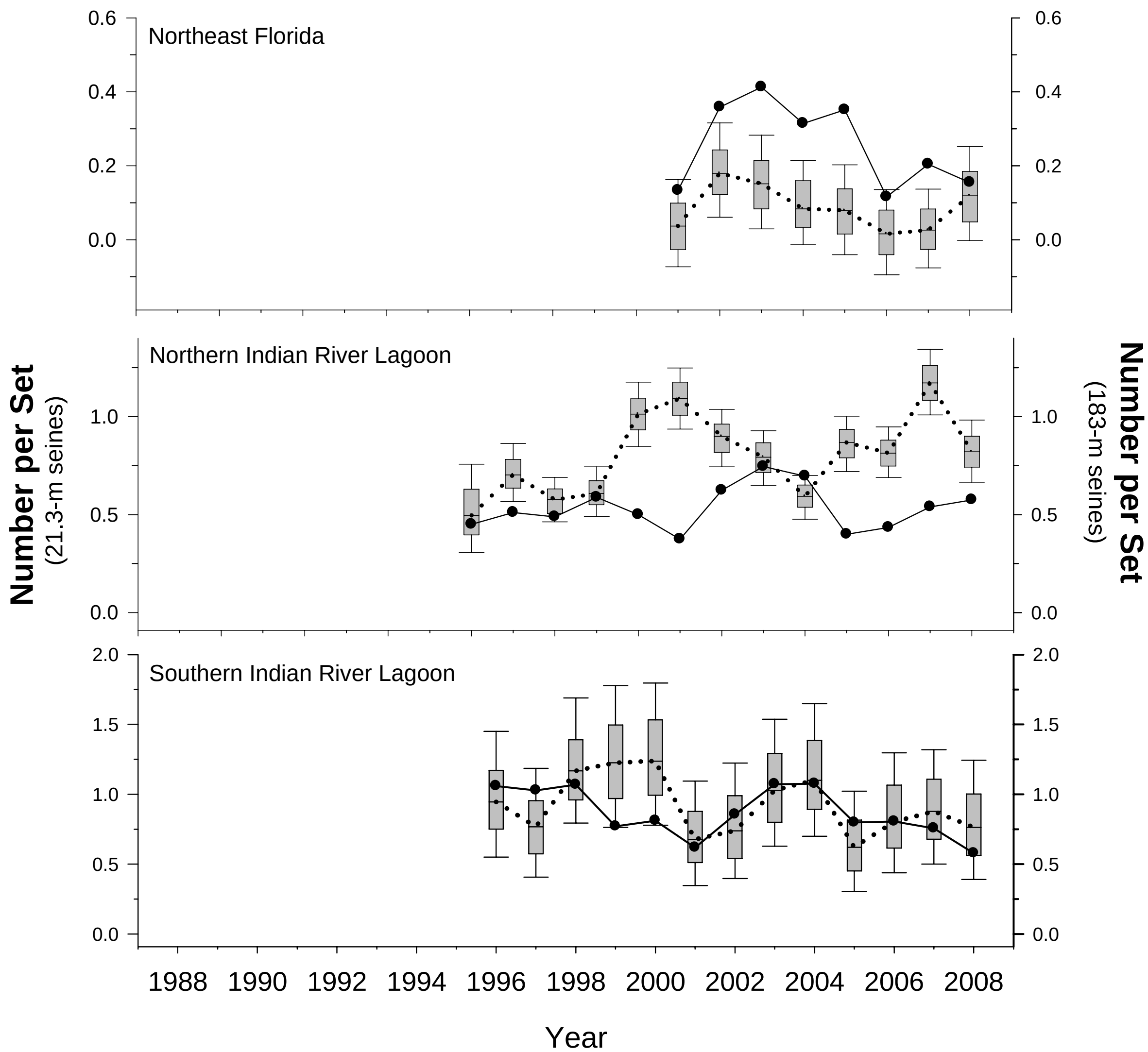



Figure SP08-06. (Continued) Relative abundance of pre-fishery sheepshead (131-267 mm SL) collected in 183-m seines between April and March 1996 to 2008 (dotted line) and of fully-recruited sheepshead ($\geq$ 268 mm SL) collected in 183-m haul seines between April and March 1996 to 2008 (solid line) during stratified-random sampling from four Florida estuarine systems located on Florida's **(A)** Southwest Coast, **(B)** Northwest Coast, and **(C)** East Coast. Box plots represent the 25$^{th}$ - 75$^{th}$ percentiles, the vertical line extends from the 10$^{th}$ – 90$^{th}$ percentiles, and the horizontal line within each box indicates the median estimate. Note different scales in some cases for estimates from 21.3-m and 183-m seines.

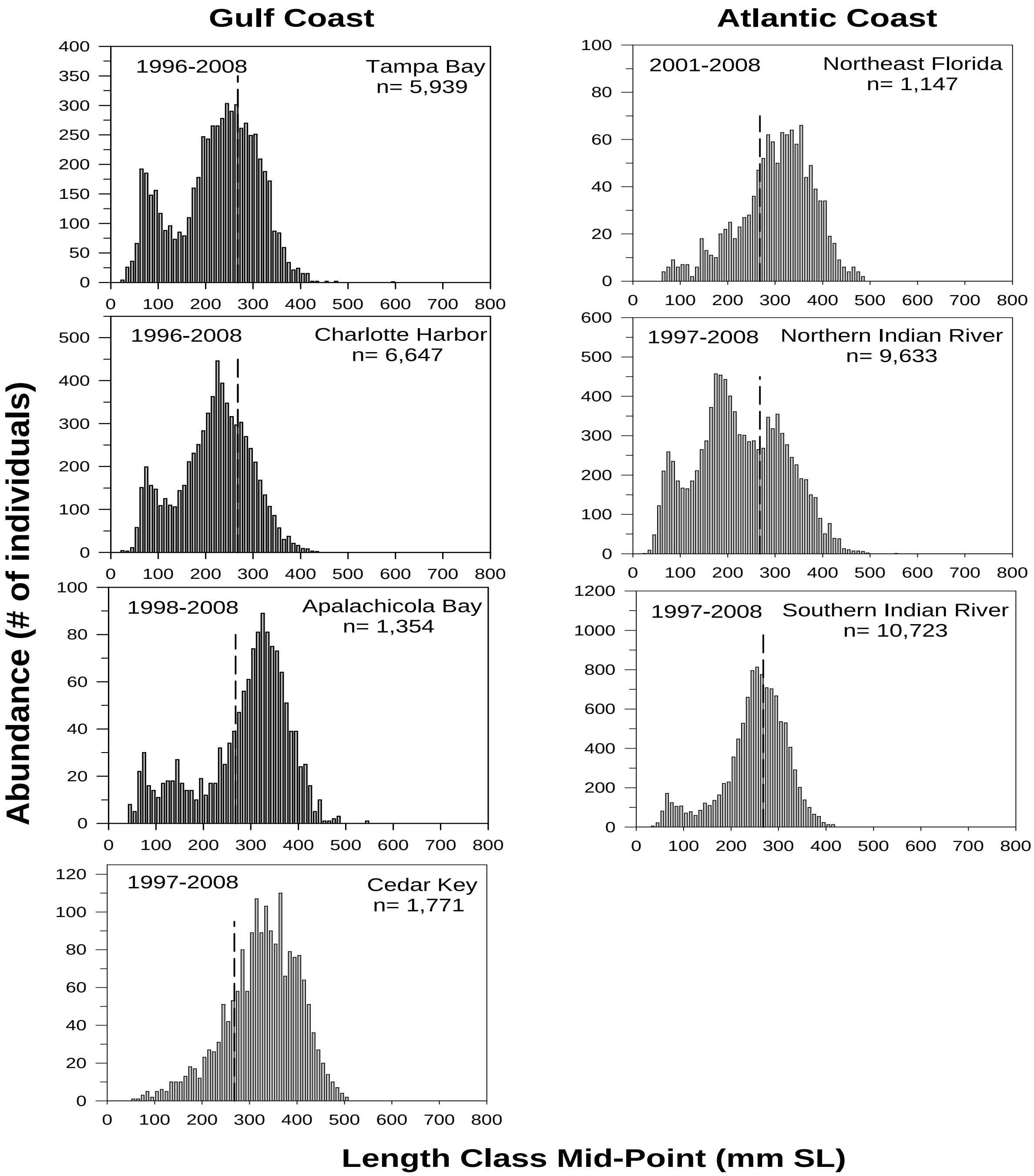



Figure SP08-07. Length frequency diagrams of sheepshead collected in 183-m haul seines. Area after dashed line (- - -) indicates permitted recreational minimum harvest length (242 mm SL). All lengths are standard length (SL). Note different scales and years of collection.

Table SP08-01. Size ranges, gear types, and months examined when calculating annual indices of abundance for each life history stage of sheepshead.

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

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## Striped Mullet, *Mugil cephalus*

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

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

To monitor year-class strength and improve ability to predict future adult striped mullet abundances, the FIM program developed relative abundance indices of YOY striped mullet recruitment into selected Florida estuaries. Abundance data for YOY striped mullet

≤35 mm SL that were collected in stratified-random 21.3-m seine samples were examined to assess recruitment into six Florida estuaries: (in order of inception) Tampa Bay, Charlotte Harbor, northern Indian River Lagoon, Cedar Key, Apalachicola Bay, and Northeast Florida. Young-of-the year striped mullet recruited to habitats sampled with 21.3-m seines primarily from January through April in Tampa Bay, Apalachicola Bay and Northeast Florida and from January through March in Cedar Key, Charlotte Harbor and northern Indian River Lagoon. These bay-specific months were therefore used to define the respective recruitment seasons for each estuary in subsequent analyses. Indices of abundance (IOAs) of YOY striped mullet were not calculated for southern Indian River Lagoon where 21.3-m seines were not included as a sampling gear. Any zones not sampled consistently during the study period in each estuary were excluded from analyses.

Annual IOAs of YOY striped mullet have demonstrated similarities and differences between estuaries (Figure SP07-08). Abundances in all four estuaries on the Gulf coast peaked in 2006. Otherwise, the overall trend has been stable since 1996 in Tampa Bay, Charlotte Harbor, and Cedar Key, although a second peak was evident during 2001 in Charlotte Harbor. Annual IOAs of YOY striped mullet in Apalachicola Bay have fluctuated dramatically but the overall trend since 2000 indicates increasing abundance.

Annual IOAs have differed widely on the Atlantic coast. Annual IOAs of YOY striped mullet in Northeast Florida remained stable from 2002 through 2006 but there was evidence of a poor year class in 2007 followed by a strong year class in 2008. Annual IOAs of YOY striped mullet in northern Indian River Lagoon fluctuated rapidly from strong year classes to poor year classes. Strong year classes were evident in 1996, 1998 and 2001. Poor year classes occurred in 1997, 1999, 2002-2004, and 2007-2008. Annual IOAs of YOY striped mullet in northern Indian River Lagoon have remained relatively low since 2002.

## References

Futch, C.R. 1966. The Florida black mullet. Florida Board of Conservation Marine Laboratory, Salt Water Fisheries Leaflet 6, St. Petersburg, Florida.

Kilby, J.D. 1949. A preliminary report on the young striped mullet (*Mugil cephalus*) in two gulf coastal areas of Florida. Quarterly Journal of the Florida Academy of Sciences 11(1):7-24.

Leard, R., B. Mahmoudi, H. Blanchet, H. Lazauski, K. Spiller, M. Buchanan, C. Dyer, and W. Keithly. 1995. The striped mullet fishery of the Gulf of Mexico, United States: a regional management plan. Gulf States Marine Fisheries Commission, Number 33, Ocean Springs, Mississippi.

Mahmoudi, B. 1997. Status and trends of the Florida mullet fishery and an update on stock assessment. Florida Department of Environmental Protection, Florida Marine Research Institute, St. Petersburg, Florida.

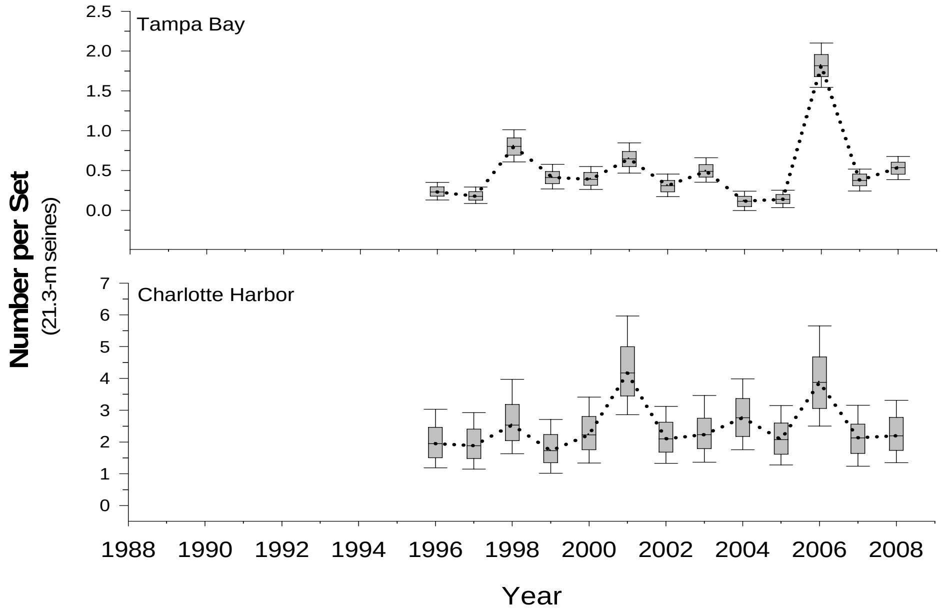
Mahmoudi, B. 2000. Status and trends in the Florida mullet fishery and an updated stock assessment. Florida Fish and Wildlife Conservation Commission, Florida Marine Research Institute, St. Petersburg, Florida.

Mahmoudi, B. 2005. The 2005 update of the stock assessment for striped mullet, *Mugil cephalus*, in Florida. Florida Fish and Wildlife Conservation Commission, Fish and Wildlife Research Institute, St. Petersburg, Florida.

Odum, W.E. 1970. Utilization of the direct grazing and plant detritus food chains by the striped mullet, *Mugil cephalus*. Pages 222-240 *in*: J.J. Steele, editor. Marine food chains. Oliver and Boyd, Ltd., Edinburgh, Scotland.

Rivas, L.R. 1980. Synopsis of knowledge on the taxonomy, biology, distribution, and fishery of the Gulf of Mexico mullets, Pisces: Mugilidae. *In*: M. Flandorfer and L. Skupien editors, Proceedings of a workshop for potential fishery resources of the northern Gulf of Mexico. Mississippi-Alabama Sea Grant Consortium Publication MASGP-80-012.

## A) Southwest Coast (Gulf of Mexico)




## B) Northwest Coast (Gulf of Mexico)

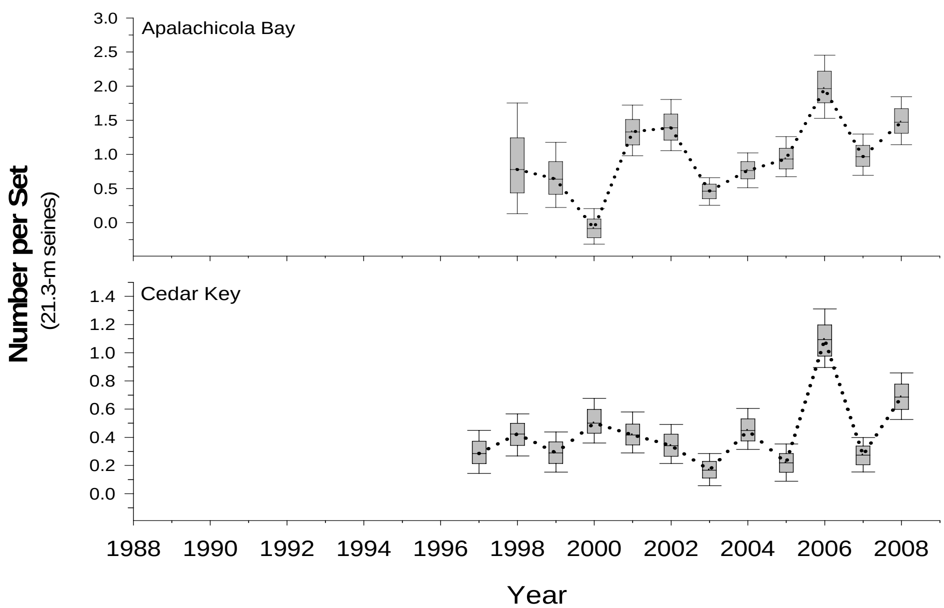



Figure SP08-08. Relative abundance of young-of-the-year striped mullet (<35 mm SL) collected in 21.3-m seines between 1996 and 2008 during stratified-random sampling (January to March) in six Florida estuaries located on Florida's (A) Southwest Coast, (B) Northwest Coast, and (C) East Coast. Box plots represent the 25th to 75th percentiles, the vertical line represents the 10th to 90th percentiles, and the horizontal line represents the median estimate. Note different abundance scales for each system.

## C) East Coast (Atlantic Ocean)

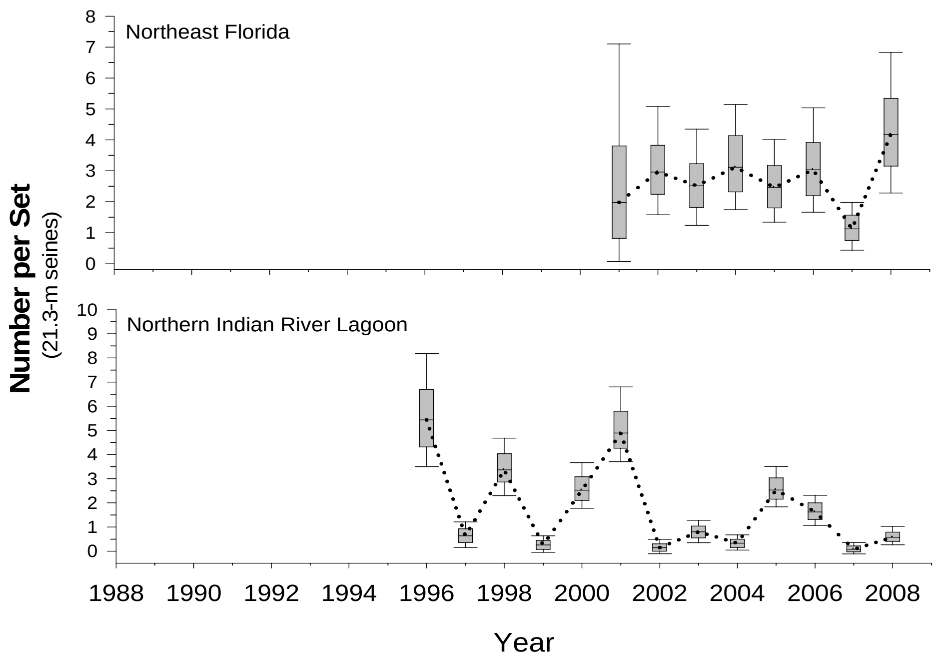



Figure SP08-08. (Continued). Relative abundance of young-of-the-year striped mullet (<35 mm SL) collected in 21.3-m seines between 1996 and 2008 during stratified-random sampling (January to March) in six Florida estuaries located on Florida's (A) Southwest Coast, (B) Northwest Coast, and (C) East Coast. Box plots represent the 25th to 75th percentiles, the vertical line represents the 10th to 90th percentiles, and the horizontal line represents the median estimate. Note different abundance scales for each system.

## Pinfish, *Lagodon rhomboides*

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

To monitor year-class strength and improve ability to predict future pinfish abundances, the FIM program developed relative abundance indices of young-of-the-year (YOY) pinfish recruitment into selected Florida estuaries. Abundance data for YOY pinfish ≤80 mm SL that were collected in stratified-random 21.3-m seine samples were examined to assess recruitment into six Florida estuaries: (in order of inception) Tampa Bay, Charlotte Harbor, northern Indian River Lagoon, Cedar Key, Apalachicola Bay, and Northeast Florida. Young-of-the-year pinfish recruited to habitats sampled with our 21.3-m seines primarily from January through June, coinciding with the published recruitment period for this species (Nelson 1998). The maximum size that individuals of YOY cohorts attain by June is 80 mm SL (Nelson 1998). Indices of abundance (IOAs) for YOY pinfish were not calculated for southern Indian River Lagoon where 21.3-m seines were not included as a sampling gear. Due to historical changes in sampling design, only certain consistently-sampled zones in each estuary were included to generate annual IOAs (Cedar Key = all zones; Apalachicola Bay = Zones A, B, and C; Northeast Florida = Zones A, B, C, and D; Tampa Bay = Zones A, B, C, D, E, K, L, and M; Charlotte Harbor = Zones A, B, C, M, and P; northern Indian River Lagoon = Zones C, D, F, and H). The FIM program also monitors the abundance of sub-adult and adult pinfish (>100 mm SL) within these same Florida estuarine systems (including southern Indian River Lagoon). Data from stratified-random 183-m haul seines during all months from 1996 – 2008 were used to develop IOAs for fish >100 mm SL.

Annual IOAs of pinfish in Tampa Bay and Charlotte Harbor had similar trends but catch rates were much higher in Charlotte Harbor (Figure SP08-09). Annual IOAs of YOY pinfish varied greatly prior to 1996 in both estuaries and have since become more stable. Relatively strong year classes were evident in 2001 and 2004. Sub-adult and adult pinfish IOAs typically tracked those of YOY pinfish in both estuaries. The greatest annual IOAs were observed in 1998, 2003-2005, and 2007-2008 in Tampa Bay and in 2000, 2004, and 2006-2008 in Charlotte Harbor. Annual IOAs of sub-adult and adult pinfish have been increasing since 2006.

Annual IOAs of pinfish on the northwest coast of Florida have fluctuated over time (Figure SP08-09). Annual IOAs of YOY pinfish in Apalachicola Bay were low between 1998 and 2000 and have remained at higher levels since. The two strongest year classes were evident in 2001 and 2007. Annual IOAs of sub-adult and adult pinfish increased steadily from 1998 through 2003 and subsequently tracked very tightly with annual IOAs of YOY pinfish. Annual IOAs of YOY pinfish in Cedar Key were low from 1996 through 1999, peaked in 2000 through 2002, then varied widely through 2008 with high abundances in 2004 and 2007. Annual IOAs of sub-adult and adult pinfish indicated a declining trend in Cedar Key from 1997 through 2006 which has since increased through 2008.

Annual IOAs on the east coast varied by estuary (Figure SP08-09). Annual IOAs of YOY pinfish in northeast Florida have remained fairly stable since 2001 with the exception of two poor year classes in 2002 and 2006. Annual IOAs of sub-adult and adult pinfish in Northeast Florida have tracked very well with YOY abundances since 2004. Annual IOAs of YOY pinfish in northern Indian River Lagoon have alternated between high and low values since 1990. Strong year classes were evident in 1992, 1996, 1998, 2003 and 2004. Annual IOAs of sub-adult and adult pinfish increased from 2000 through 2004 and have since returned to low levels through 2008. Annual IOAs of sub-adult and adult pinfish in southern Indian River Lagoon were extremely high in 1997, dropped in 1998 and have remained at low levels through 2008.

Length-frequency data collected by 183-m haul seines suggest that this gear provides valuable information on adult and larger sub-adult pinfish (Figure SP08-10). Sub-adult and adult pinfish become susceptible to capture in 183-m haul seines at ~ 50 mm SL. The greatest abundance in most of the length frequency histograms was ~75mm SL, except in northern Indian River Lagoon were the largest proportion of fish captured were ~120 mm SL.

## References

Bigelow, H. B. and W. C. Schroeder. 1953. Fishes of the Gulf of Maine. U. S. Fish. Bull. 53: 577 pp.

Caldwell, D. K. 1957. The biology and systematics of the pinfish, *Lagodon rhomboides* (Linnaeus). Bull. Fla. St. Mus. Biol. Sci. 2: 77-173.

Hansen, D. J. 1970. Food, growth, migration, reproduction and abundance of pinfish, *Lagodon rhomboides*, and Atlantic croaker, *Micropogonias undulatus*, near Pensacola, Florida, 1963-65. U. S. Fish. Bull. 68(1): 135-146.

Hoese, H. D. and R. S. Jones. 1963. Seasonality of larger animals in a Texas turtle grass community. Publ. Inst. Mar Sci. Univ. Tex. 9: 37-47.

Montgomery, J. L. M. and T. E. Targett. 1992. The nutritional role of seagrass in the diet of the omnivorous pinfish *Lagodon rhomboides* (L.). J. Exp. Mar. Biol. Ecol. 158: 37-57.

Nelson, G. A. 1998. Abundance, growth, and mortality of young-of-the-year pinfish, *Lagodon rhomboides*, in three estuaries along the gulf coast of Florida. Fish. Bull. 96: 315-328.

Ogren, L. H. and H. A. Brusher. 1977. The distribution and abundance of fishes caught with a trawl in the St. Andrew Bay system. Northeast Gulf Science. 1(2): 83-105.

Rydene, D. A. and R. E. Matheson. 2003. Diurnal fish density in relation to seagrass and drift algae cover in Tampa Bay, Florida. Gulf of Mexico Science 1: 35-58.

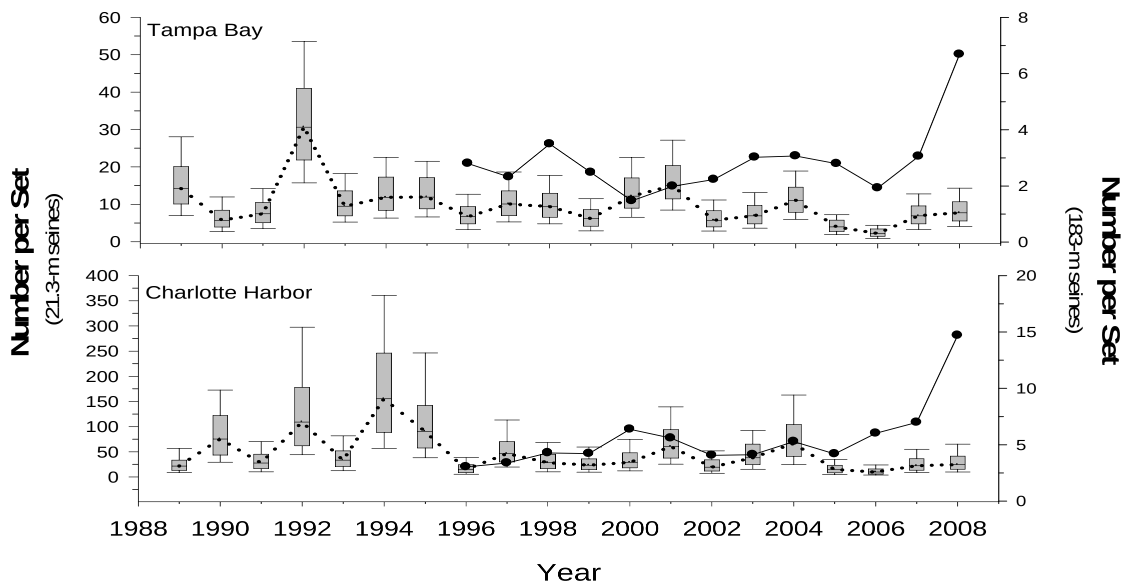
Stoner, A. W. 1980. Feeding ecology of *Lagodon rhomboides* (Pisces: Sparidae): variation and functional responses. U. S. Fish. Bull. 78(2): 337-352.

Weinstein, M. P., K. L. Heck, Jr., P. E. Giebel, and J. E. Gates. 1982. The role of herbivory in pinfish (*Lagodon rhomboides*): a preliminary investigation. Bull. Mar. Sci. 32(3):791-795.

Young, D. K., M. A. Buzas, and M. W. Young. 1976. Species densities of macrobenthos associated with seagrass: a field experimental study of predation. J. Mar. Res. 34: 577-592.

Young, D. K. and M. W. Young. 1977. Community structure of the macrobenthos associated with seagrass of the Indian River estuary, Florida. pp. 359-381. *In*: B. C. Coull (ed.), Ecology of marine benthos. Belle W. Baruch Library in Marine Science 6. Univ. S. C. Press, Columbia.

## A) Southwest Coast (Gulf of Mexico)




## B) Northwest Coast (Gulf of Mexico)

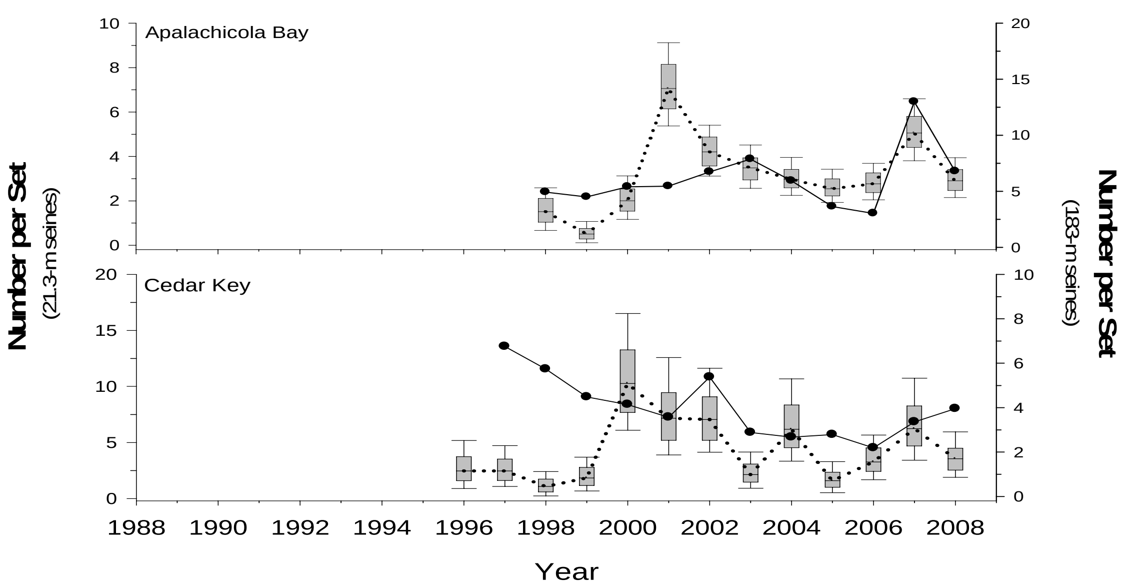



Figure SP08-09. Relative abundance of juvenile pinfish (<u><</u>80 mm SL) collected in 21.3-m seines between 1989 and 2008 (dotted line) and of larger pinfish (>100 mm SL) collected in 183-m haul seines between 1996 and 2008 (solid line) during stratified-random sampling in six Florida estuarine systems located on Florida's **(A)** Southwest Coast, **(B)** Northwest Coast, and **(C)** East Coast. Box plots represent the 25th - 75th percentiles, the vertical line extends from the 10th – 90th percentiles, and the horizontal line within each box indicates the median estimate. Note different scales in some cases for estimates from 21.3-m and 183-m seines.

## C) East Coast (Atlantic Ocean)

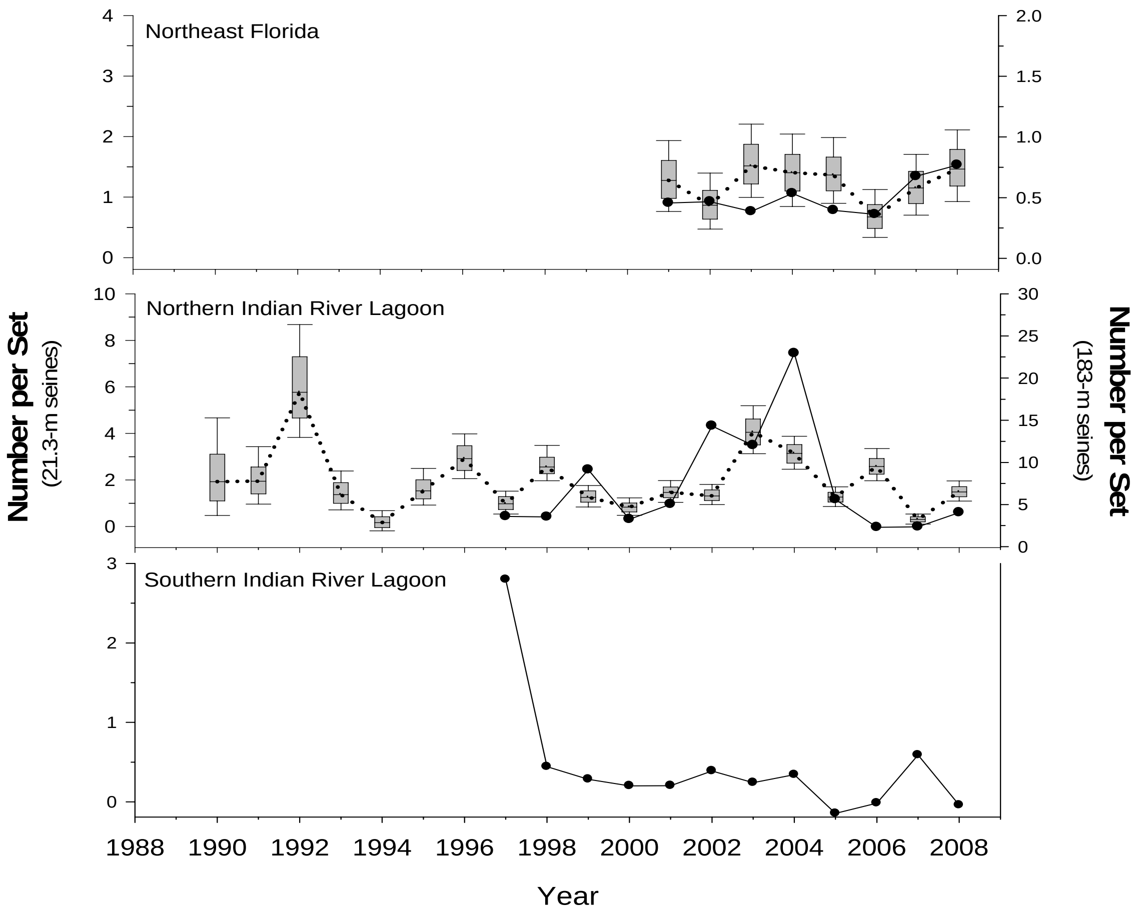



Figure SP08-09. (Continued) Relative abundance of juvenile pinfish (≤80 mm SL) collected in 21.3-m seines between 1989 and 2008 (dotted line) and of larger pinfish (>100 mm SL) collected in 183-m haul seines between 1996 and 2008 (solid line) during stratified-random sampling in six Florida estuarine systems located on Florida's **(A)** Southwest Coast, **(B)** Northwest Coast, and **(C)** East Coast. Box plots represent the 25$^{th}$ - 75$^{th}$ percentiles, the vertical line extends from the 10$^{th}$ – 90$^{th}$ percentiles, and the horizontal line within each box indicates the median estimate. Note different scales in some cases for estimates from 21.3-m and 183-m seines.

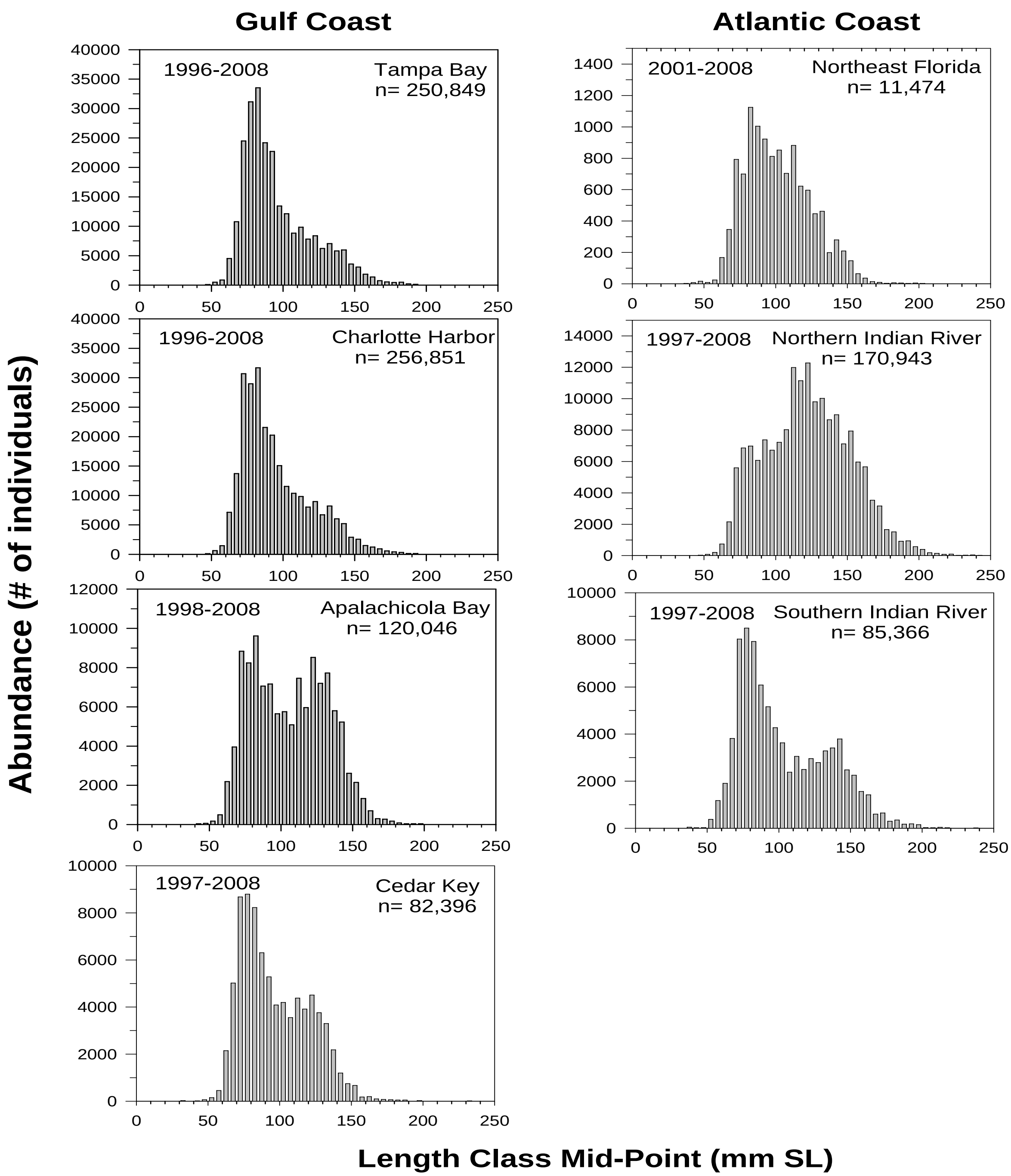



Figure SP08-10. Length frequency diagrams of pinfish collected in 183-m haul seines. All lengths are standard length (SL). Note different scales and years of collection.

# Common Snook, *Centropomus undecimalis*

Common snook, *Centropomus undecimalis*, are found in estuaries, adjacent rivers, and in nearshore waters of the tropical and subtropical western Atlantic (Gilmore et al. 1983; Rivas 1986). This species supports an important recreational fishery in Florida and is one of the most popular gamefish in state waters. There has been no legal commercial harvest of common snook in Florida since the State Legislature declared it a gamefish in 1957 and prohibited its sale. The median total snook harvest on the Atlantic and Gulf of Mexico (Gulf) coasts during the past 20 years has been variable but generally increasing (Muller and Taylor 2006). Recent estimates of transitional spawning potential ratios were below 40% on both coasts and common snook are therefore considered overfished; if current fishing mortality rates continue, this species will remain overfished (Muller and Taylor 2006).

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

To monitor year-class strength and improve ability to predict future adult common snook abundances, the FIM program developed relative abundance indices of young-of-the-year (YOY) common snook in selected Florida estuaries. Indices were not calculated for estuaries where 21.3-m seines were not deployed, where limited data were available, or from estuaries to the north of the typical range of common snook. Abundance data for YOY common snook ≤50 mm SL collected in stratified-random 21.3-m seine samples were examined to assess recruitment into two Florida estuaries: Tampa Bay on the Gulf coast and northern Indian River Lagoon on the Atlantic coast. Young-of-the-year common snook were primarily captured in riverine habitats sampled with our 21.3-m seines from August through November in Tampa Bay and July to February in northern Indian River Lagoon although there is some evidence that recruitment occurs year round. Data from this habitat and these time periods were used in developing indices of abundance (IOAs) for YOY common snook.

The FIM program also monitored the abundances of large juvenile and adult common snook (>100 mm SL) in Florida estuaries within the range of this species. Data from stratified-random 183-m haul seines were used to develop IOAs for large juvenile and adult common snook within Tampa Bay, Charlotte Harbor, northern Indian River Lagoon, and southern Indian River Lagoon. These IOAs were derived by including all large juvenile and adult common snook collected between January and December from 1996 – 2008.

Annual IOAs of YOY common snook in Tampa Bay have been fairly stable between 1989 and 2008 with strong year classes evident in 1999 and 2006 (Figure SP08-11). Annual IOAs of large juvenile and adult common snook on Florida's southwest coast varied by estuary. The trend in Tampa Bay increased from 1996 through 1999 and has since remained stable at higher levels through 2008 with a peak in 2003. Annual IOAs have generally increased in Charlotte Harbor from 1996 through 2008, with a peak in 2001 (Figure SP08-11).

Annual IOAs of YOY common snook in northern Indian River Lagoon have remained fairly stable from 1999 through 2008 (Figure SP08-11). The IOA in 2004 was substantially lower than in other years, but may have resulted from displacement due to multiple hurricanes and not an actual decrease in abundance. Annual IOAs of large juvenile and adult common snook have remained stable from 1997 through 2008 in northern Indian River Lagoon. Annual IOAs of large juvenile and adult common snook in southern Indian River Lagoon declined from 1997 through 2001 and have remained stable from 2002 through 2008 (Figure SP08-11).

Length-frequency data collected by 183-m haul seines suggest that this gear provides valuable information on larger juvenile and adult common snook (Figure SP08-12). Larger snook become susceptible to capture in 183-m haul seines at ~200 mm SL. The greatest abundance in all of the length frequency histograms was ~410mm SL. There was no indication that the number of individuals declined rapidly upon entering the legal slot limit (590 to 699 mm SL on the Gulf Coast and 590 to 677 mm SL on the Atlantic Coast).

## References

Gilmore, R. G., C. J. Donahoe and D. W. Cooke. 1983. Observations on the distribution and biology of the common snook, *Centropomus undecimalis* (Bloch). Florida Scientist 46:313–336.

Muller, R. G. and R. G. Taylor. 2006. The 2005 stock assessment update of common snook, *Centropomus undecimalis*. Florida Fish and Wildlife Conservation Commission, Fish and Wildlife Research Institute. 137 p.

Rivas, L. R. 1986. Systematic review of the perciform fishes of the genus *Centropomus*. Copeia 1986(3):579–611.

Taylor, R. G., J. A. Whittington, and H. J. Grier. 1993. Biology of common snook from the east and west coasts of Florida. Study 3, Sect. 1. In: Investigations into nearshore and estuarine gamefish distributions and abundance, ecology, life history, and population genetics in Florida (R. E. Crabtree, T. M. Bert, and R. G. Taylor, eds.) FDNR/FMRI Rep. No. F0165-F0296-88-93-C. U.S. Department of the Interior, Fish and Wildlife Service, Washington, D.C. pp 1–51.

Taylor, R. G., H. J. Grier, and J. A. Whittington. 1998. Spawning rhythms of common snook in Florida. Journal of Fish Biology. 53:502–520.

Taylor, R. G., J. A. Whittington, H. J. Grier, and R. E. Crabtree. 2000. Age, growth, maturation, and protandric sex reversal in common snook, *Centropomus undecimalis*, from the east and west coasts of South Florida. Fishery Bulletin 98:612-624.

Tringali, M. D., and T. M. Bert. 1996. The genetic stock structure of common snook, *Centropomus undecimalis*. Canadian Journal of Fisheries and Aquatic Sciences 53:974-984.

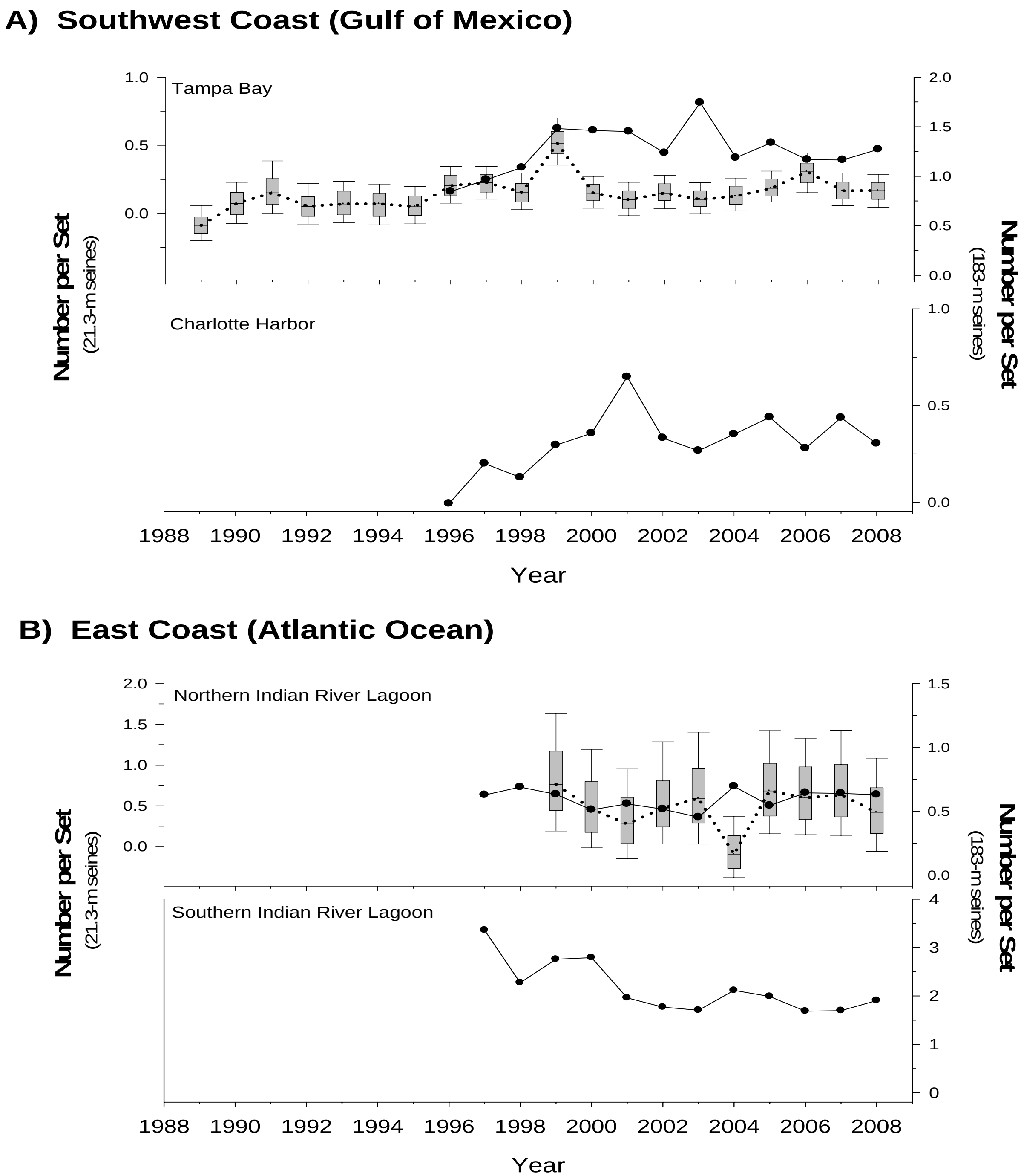



Figure SP08-11. Relative abundance of YOY common snook ($\leq$50 mm SL) collected in 21.3-m seines between 1989 and 2008 (dotted line) and of larger juvenile and adult common snook (>100 mm SL) collected in 183-m haul seines between 1996 and 2008 (solid line) during stratified-random sampling from Florida estuarine systems located on Florida's **(A)** Southwest Coast and **(B)** East Coast. Box plots represent the $25^{th}$ - $75^{th}$ percentiles, the vertical line extends from the $10^{th}$ – $90^{th}$ percentiles, and the horizontal line within each box indicates the median estimate. Note different scales in some cases for estimates from 21.3-m and 183-m seines.

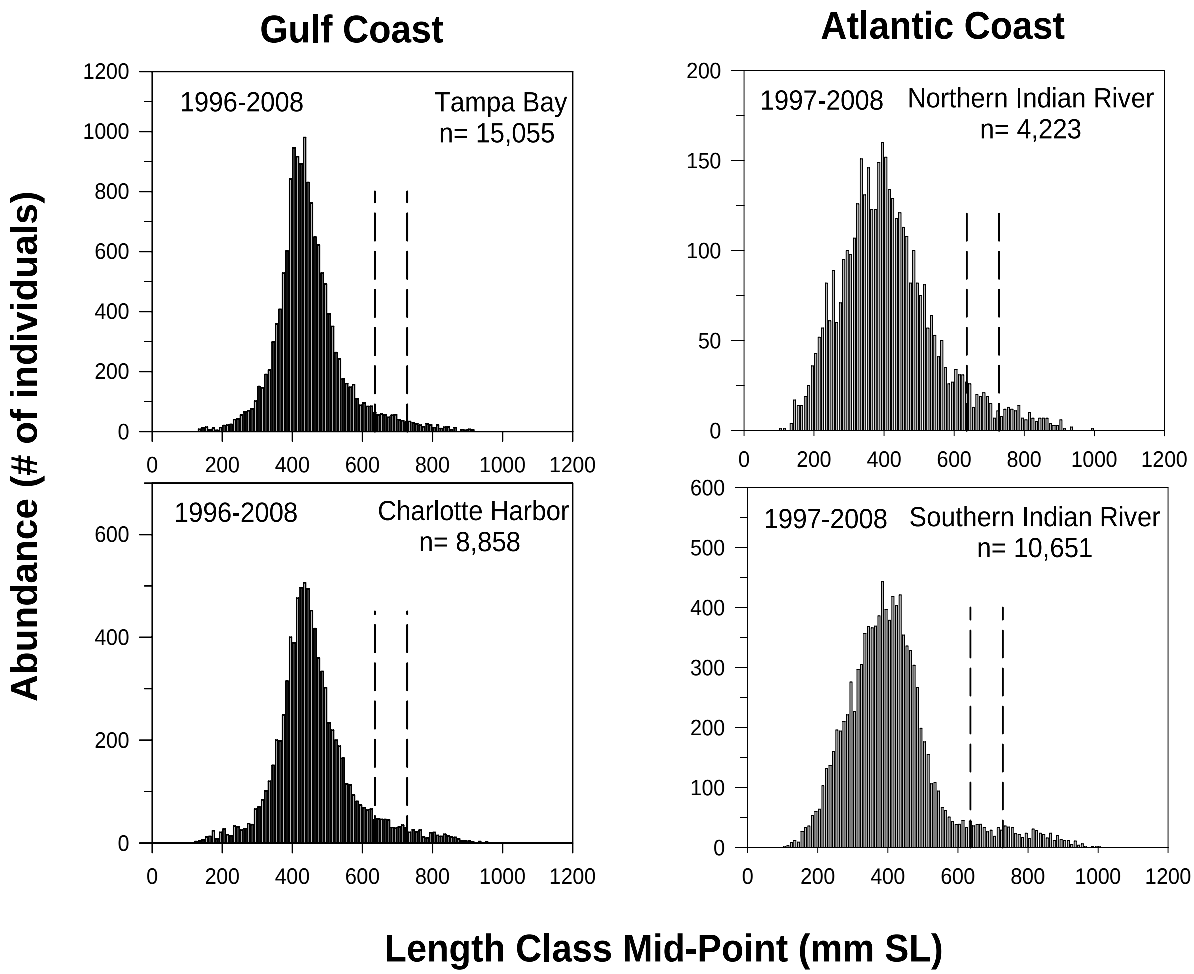



Figure SP08-12. Length frequency diagrams of large juvenile and adult common snook collected in 183-m haul seines. All lengths are standard length (SL). Vertical dashed lines denote the recreational slot limit for this species (590 to 699 mm SL on the Gulf Coast and 590 to 677 mm SL on the Atlantic Coast). Note different scales and years of collection.

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## Blue Crab, *Callinectes sapidus*

Blue crabs, *Callinectes sapidus*, support valuable commercial and recreational fisheries along the Gulf of Mexico (Gulf) and Atlantic coasts of Florida. Commercial landings on Florida's Gulf coast averaged 8.7 million pounds per year from 1996 to 2004 and were worth an estimated 6.9 million dollars annually (NMFS 2004). Florida legislation banned entanglement nets in 1995, raising the concern that blue crab populations might experience increased fishing pressure from former net fishers. Even though annual Gulf commercial landings peaked in 1998 at almost 13 million pounds, catch-per-unit effort was already beginning to decline (Steele and Bert 1998). The lowest commercial landings of blue crab occurred in 2001 for the Gulf coast and 2002 for the Atlantic coast. Fishing effort for blue crabs 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 crabs currently is not known or surveyed, so the total catch may be much higher than the recorded commercial landings. The recent blue crab stock assessment for Florida shows an increase in blue crab abundance in recent years (2003-2005), indicating resiliency to fishing pressure (Murphy et al. 2007).

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

To monitor year-class strength and improve ability to predict future adult blue crab abundances, the FIM program developed relative abundance indices of juvenile blue crab recruitment into selected Florida estuaries. Abundance data for juvenile blue crabs (≤80 mm carapace width [CW]; Archambault et al. 1990; Steele and Bert 1994) collected in stratified-random 21.3-m seine samples were examined to assess recruitment into six Florida estuaries: (in order of inception) Tampa Bay, Charlotte Harbor, northern Indian River Lagoon, Cedar Key, Apalachicola Bay, and Northeast Florida. Juvenile blue crabs were collected with stratified-random 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 respective recruitment seasons for each estuary in subsequent analyses. Indices of abundance (IOAs) of juvenile blue crabs were not calculated for southern Indian River Lagoon where 21.3-m seines were not included as a sampling gear. Although sampling with 21.3-m seines began in northern Indian River Lagoon in 1990, juvenile blue crab IOAs were only calculated for data beginning in 1997, at which time Zones F and H were added and yielded appropriate numbers of juvenile blue crabs for analyses.

The FIM program also monitored the abundance of adult blue crabs (>80mm CW) within these same Florida estuaries (including southern Indian River Lagoon) using stratified-random 183-m haul seines. Note, however, that some individuals classified as adults (>80 mm CW) may still have been reproductively immature as a result of individual variation in growth rates (Archambault et al. 1990; Steele and Bert 1994). 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 2008 therefore does not include 2009 data (January through March). Data prior to 1996 were not used in the analyses for Charlotte Harbor or Tampa Bay because they were collected on a seasonal, rather than monthly, sampling basis. Due to the time lag in the calculation of juvenile and adult crab IOAs, adult crabs from a given year likely were the parents of the juveniles in that year's IOA.

Annual IOAs of blue crabs have been similar between estuaries on Florida's southwest coast (Figure SP08-13). Juvenile blue crab IOAs have varied without trend since 1989 with peaks in 1998 and 2003 in Tampa Bay and 1991, 1998, and 2003 in

Charlotte Harbor. Annual IOAs of adult blue crabs peaked in 1998 and 2005 in Tampa Bay and Charlotte Harbor. Trends in juvenile IOAs appear to correlate well with trends in adult IOAs in both estuaries.

The trends in annual IOAs of blue crabs on Florida's northwest coast varied between estuaries (Figure SP08-13). Annual IOAs of juvenile blue crabs in Apalachicola Bay have gradually increased from 1997 through 2008, with a strong peak in 2006. Annual IOAs of adult blue crabs have gradually increased from 1998 through 2008 with a strong peak 2003. Annual IOAs of juvenile blue crabs in Cedar Key increased from 1996 to a peak in 1999, declined through 2004, increased through 2006, and declined through 2008. Annual IOAs of adult blue crabs in Cedar Key peaked in 1998, immediately declined and remained low from 1998 through 2002, increased through 2005 and declined through 2008. Peaks in adult IOAs appeared to precede peaks in juvenile IOAs by one year in Cedar Key.

Annual IOAs of blue crabs on Florida's east coast have varied without trend (Figure SP08-13). Annual IOAs of juveniles in Northeast Florida peaked in 2003 but otherwise varied without trend. Annual IOAs of adult blue crabs increased from 2002 through 2007 and declined slightly in 2008. Annual IOAs of juveniles in Northern Indian River Lagoon were generally high from 1998 to 2000, lower from 2001 through 2004, and higher again from 2005 through 2008. Trends in adult IOAs generally declined from 1996 through 2001, peaked in 2005, and returned to lower levels from 2006 through 2008. Annual IOAs of adult blue crabs in southern Indian River Lagoon varied without trend since 1996, with greatest abundances occurring between 2004 and 2006.

Length-frequency data collected with 183-m haul seines suggest that this gear provides valuable information on adult blue crabs in Florida estuaries (Figure SP08-14). Adult blue crabs become susceptible to capture in 183-m haul seines at ~40 mm CW. Abundance declined sharply at ~170 mm CW in all estuaries.

## References

Archambault, J. A., E. L. Wenner, and J. D. Whitaker. 1990. Life history and abundance of blue crab, *Callinectes sapidus* Rathbun, at Charleston Harbor, South Carolina. Bull. Mar. Sci. 46:145-158.

Blewett, D.A., R.A. Hensley, and P.W. Stevens. 2006. Feeding habits of common snook, *Centropomus undecimalis*, in Charlotte Harbor, Florida. Gulf and Caribbean Research 18: 1-13.

Gunter, G. 1945. Studies on marine fishes of Texas. Publications of the Institute of Marine Science, University of Texas 1(1):1-190.

Meyer, G.H. and J. S. Franks. 1996. Food of cobia, *Rachycentron canadum*, from the Northcentral Gulf of Mexico. Gulf Research Reports. 9:161-167.

Murphy, M.D., A.L. McMillen-Jackson, and B. Mahmoudi. 2007. A stock assessment for blue crab, *Callinectes sapidus*, in Florida waters. Report to the Florida Fish and Wildlife Commission, Division of Fisheries Management, In House Report 2007-006, June 22, 2007.

NMFS (National Marine Fisheries Service). 2004. Fisheries Statistics and Economics Division. Website: www.nmfs.noaa.gov.

Scharf, F.S. and K.K. Schlicht. 2000. Feeding habits of red drum (*Sciaenops ocellatus*) in Galveston Bay, Texas: Seasonal diet variation and predator-prey size relationships. Estuaries 23:128-139.

Sillman, B.R. and M. D. Bertness. 2002. A trophic cascade regulates salt marsh primary production. Proceedings of the National Academy of Science of the United States of America 99:10500-10505.

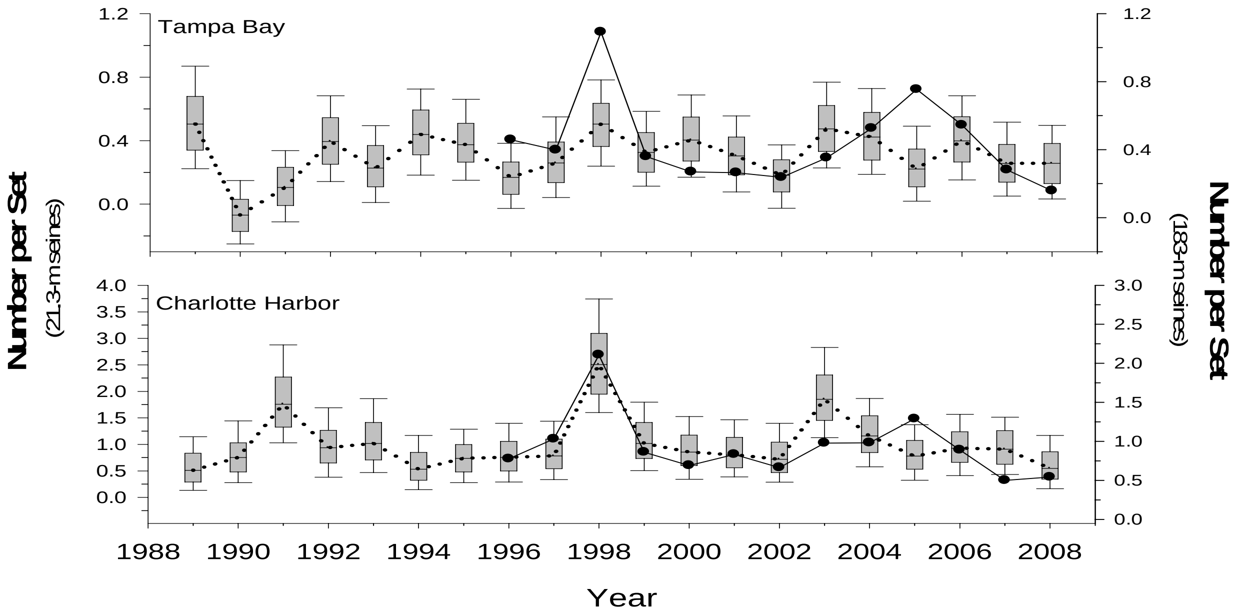
Simmons, E.G. and J.P. Breuer. 1962. A study of redfish, *Sciaenops ocellatus* Linnaeus and black drum, *Pogonius cromis* Linnaeus. Publications of the Institute of Marine Science, University of Texas 8:184-211.

Steele, P. and T.M. Bert. 1994. Population ecology of the blue crab, *Callinectes sapidus* Rathbun, in a subtropical estuary: population structure, aspects of reproduction, and habitat partitioning. Florida Marine Research Publications 54:1-24.

Steele, P., and T. M. Bert. 1998. The Florida blue crab fishery: History, status, and management. J. Shellfish Res. 17:441-449.

Wilber, D.H. 1994. The influence of Apalachicola River flows on blue crab, *Callinectes sapidus*, in north Florida. Fishery Bulletin 92:180-188.

## A) Southwest Coast (Gulf of Mexico)

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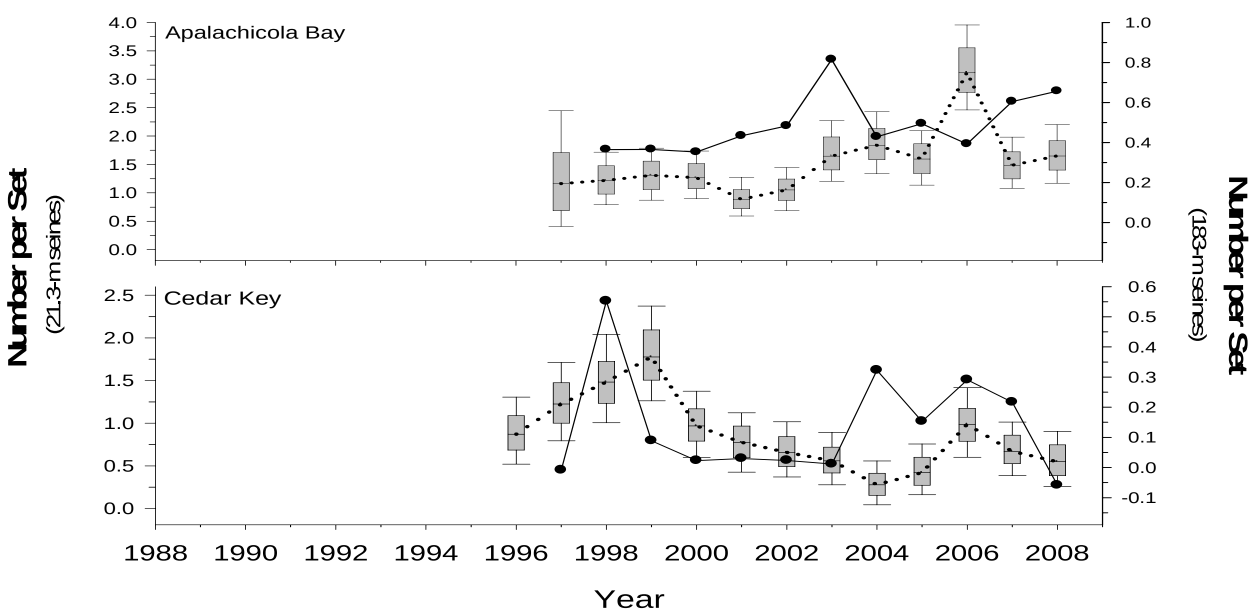


Figure SP08-13. Relative abundance of juvenile blue crab (≤ 80 mm CW) collected in 21.3-m seines between 1989 and 2008 (dotted line) and of adult blue crab (>80 mm CW) collected in 183-m haul seines between 1996 and 2008 (solid line) during stratified-random sampling in six Florida estuarine systems located on Florida's **(A)** Southwest Coast, **(B)** Northwest Coast, and **(C)** East Coast. Box Plots represent the 25$^{th}$ – 75$^{th}$ percentiles, the vertical line extends from the 10$^{th}$ – 90$^{th}$ percentiles, and the horizontal line within each box indicates the median estimate. Note different scales in some cases for estimates from 21.3-m and 183-m seines.

## C) East Coast (Atlantic Ocean)

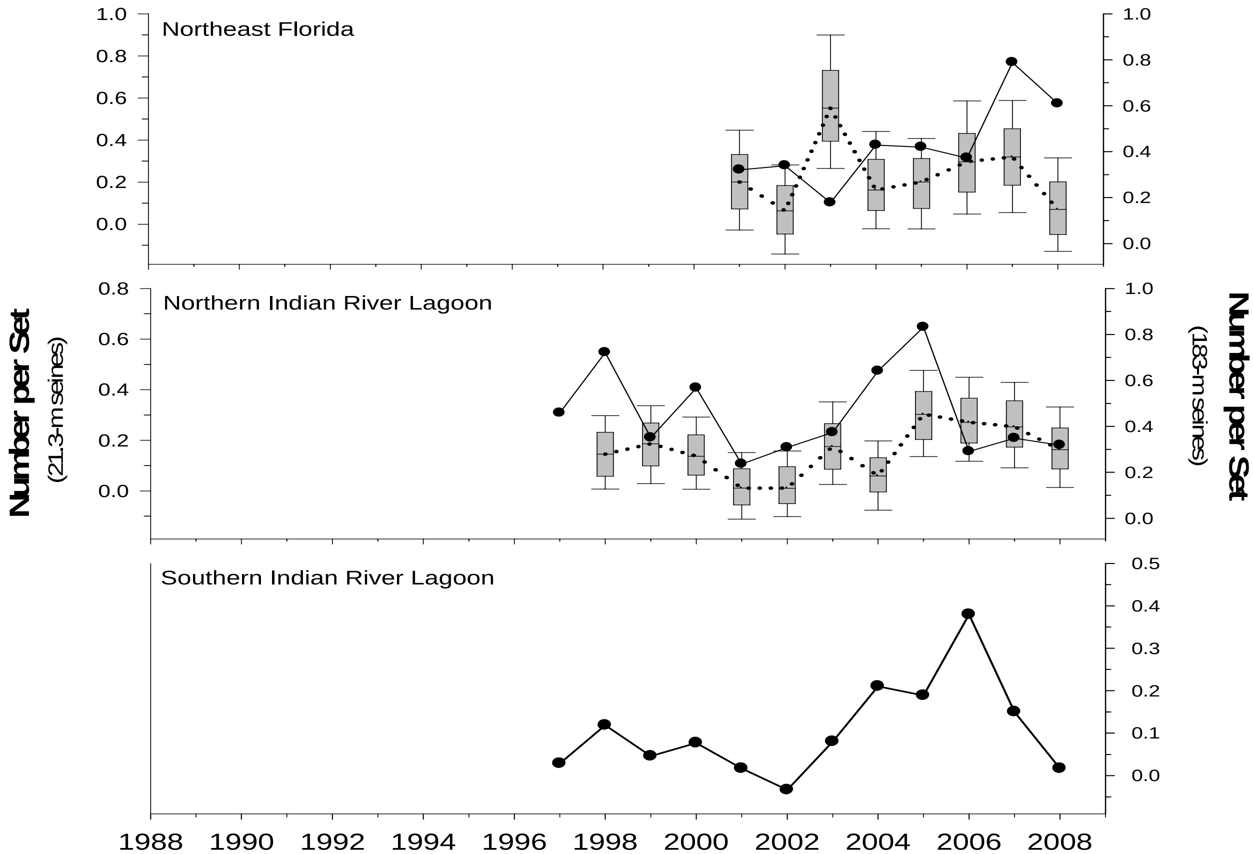


Figure SP08-13. (Continued) Relative abundance of juvenile blue crab (≤ 80 mm CW) collected in 21.3-m seines between 1989 and 2008 (dotted line) and of adult blue crab (>80 mm CW) collected in 183-m haul seines between 1996 and 2008 (solid line) during stratified-random sampling in six Florida estuarine systems located on Florida's **(A)** Southwest Coast, **(B)** Northwest Coast, and **(C)** East Coast. Box Plots represent the 25th – 75th percentiles, the vertical line extends from the 10th – 90th percentiles, and the horizontal line within each box indicates the median estimate. Note different scales in some cases for estimates from 21.3-m and 183-m seines.

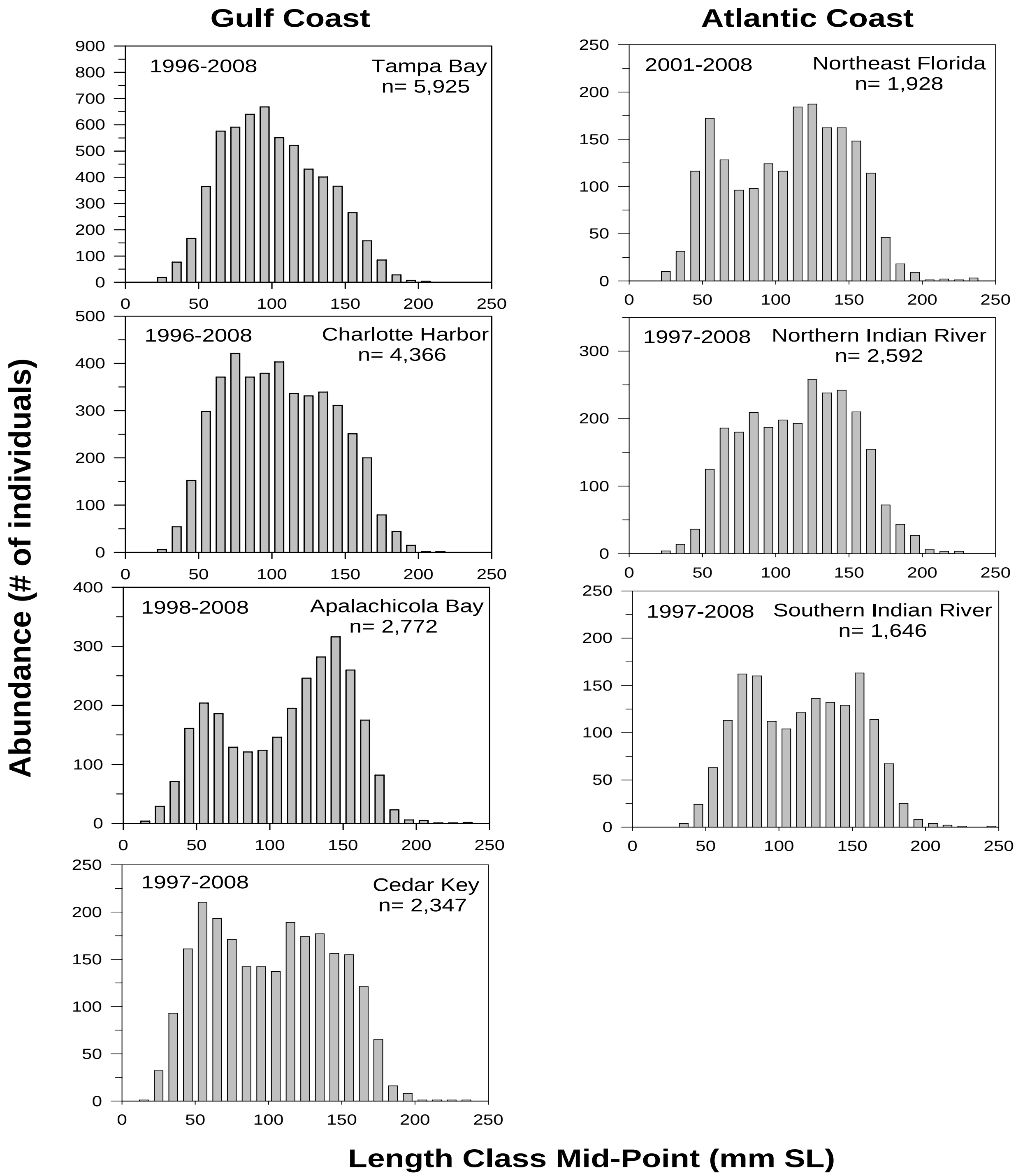


Figure SP08-14. Length frequency diagrams of adult blue crab collected in 183-m haul seines. All lengths are carapace width (CW). Note different scales and years of collection.