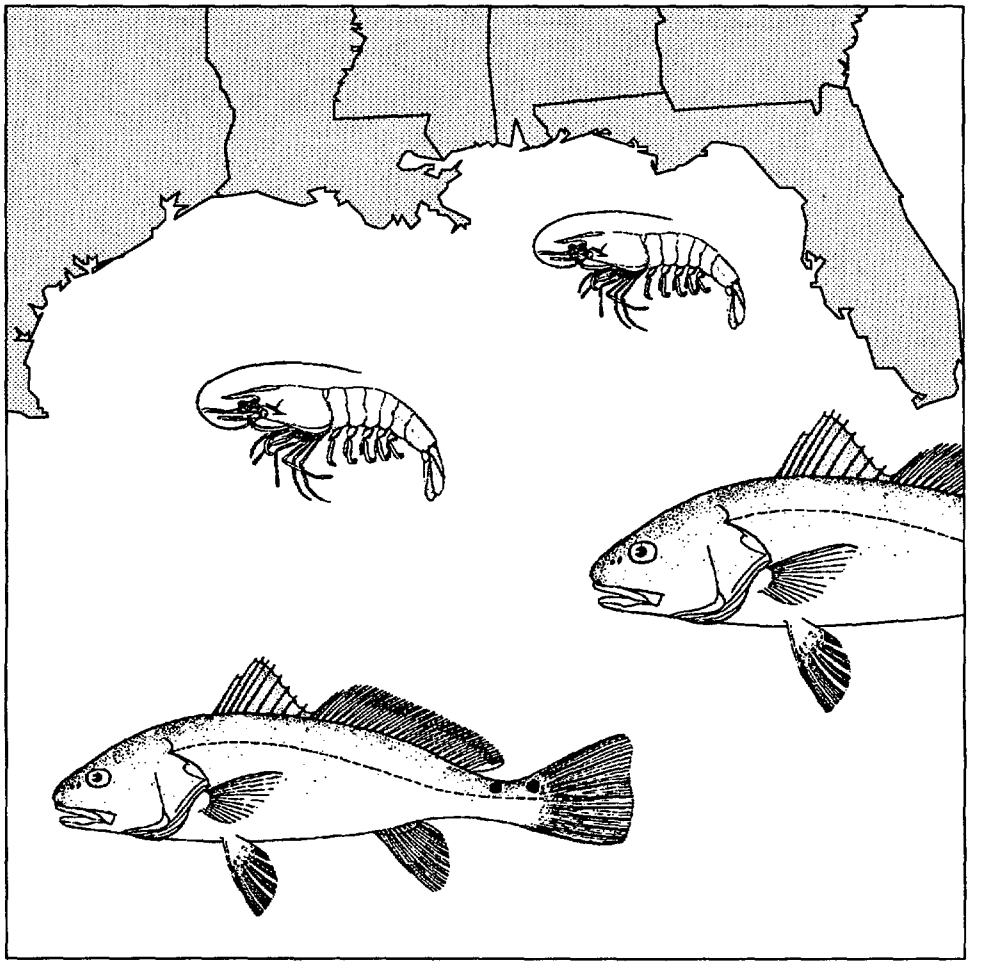
NOAA's Estuarine Living Marine Resources Program

# *Distribution and Abundance of Fishes and Invertebrates in Gulf of Mexico Estuaries Volume I: Data Summaries*



September 1992

*U.S. Department of Commerce*
*National Oceanic and Atmospheric Administration*
*National Ocean Service*

# NOAA's Estuarine Living Marine Resources Program

The Strategic Environmental Assessments (SEA) Division of NOAA's Office of Ocean Resources Conservation and Assessment (ORCA) was created in response to the need for comprehensive information on the effects of human activities on the Nation's coastal ocean. The SEA Division performs assessments of the estuarine and coastal environments and of the resources of the U.S. Exclusive Economic Zone (EEZ).

In June 1985, NOAA began a program to develop a comprehensive information base on the life history, relative abundance and distribution of fishes and invertebrates in estuaries throughout the Nation (Monaco 1986). The Estuarine Living Marine Resources (ELMR) program is conducted jointly by the SEA Division and laboratories of the National Marine Fisheries Service (NMFS). The Pt. Adams (Hammond), OR; Galveston, TX; and Beaufort, NC laboratories have compiled information for the contiguous West Coast, Gulf of Mexico, and Southeast regions. Data for the Northeast are being compiled by NOAA's SEA Division, NMFS (Annapolis, MD), the Virginia Institute of Marine Sciences, and the University of Massachusetts. To date, the program has compiled data for 115 species found in 83 estuaries. Six reports are now available free upon request (see below). This report, *Distribution and Abundance of Fishes and Invertebrates in Gulf of Mexico Estuaries, Volume I: Data Summaries*, revises and replaces earlier reports for Texas (Monaco et al. 1989), the Eastern Gulf of Mexico (Williams et al. 1990), and Central Gulf of Mexico (Czapla et al. 1991).

Three salinity zones as defined in Volume 1 of NOAA's *National Estuarine Inventory Data Atlas* (NOAA 1985) provided the spatial framework for organizing information on species distribution and abundance within each estuary. These salinity zones are tidal fresh (0.0 to 0.5 ppt), mixing (0.5 to 25 ppt), and seawater (>25 ppt). The primary data developed for each species include spatial distribution by salinity zone, temporal distribution by month, and relative abundance by life stage, e.g., adult, spawning, juvenile, larva, and egg. In addition, a detailed estuarine life history summary is written for each species.

Additional information on this or other programs of NOAA's Strategic Environmental Assessments Division is available from:

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Office of Ocean Resources Conservation and Assessment
National Oceanic and Atmospheric Administration
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Reports and reprints available from NOAA's Estuarine Living Marine Resources program include:

Monaco, M.E., et al. 1990. Distribution and abundance of fishes and invertebrates in west coast estuaries, Vol. I: data summaries. ELMR Rep. No. 4. Strategic Assessment Branch, NOS/NOAA, Rockville, MD. 240 p.

Bulger, A.J., et al. 1990. A proposed estuarine classification: analysis of species salinity ranges. ELMR Rep. No. 5. Strategic Assessment Branch, NOS/NOAA, Rockville, MD. 28 p.

Emmett, R.L., et al. 1991. Distribution and abundance of fishes and invertebrates in west coast estuaries, Vol. II: species life history summaries. ELMR Rep. No. 8. NOAA/NOS Strategic Environmental Assessments Division, Rockville, MD. 329 p.

Nelson, D.M., et al. 1991. Distribution and abundance of fishes and invertebrates in southeast estuaries. ELMR Rep. No. 9. NOAA/NOS Strategic Environmental Assessments Division, Rockville, MD. 177 p.

Monaco, M.E., et al. 1992. Assemblages of U.S. west coast estuaries based on the distribution of fishes. Journal of Biogeography 19: 251-267.

Nelson, D.M. (editor). 1992. Distribution and abundance of fishes and invertebrates in Gulf of Mexico estuaries, Vol. I: data summaries. ELMR Rep. No. 10. NOAA/NOS Strategic Environmental Assessments Division, Rockville, MD. 273 p.

Pattillo, M.E., et al. In prep. Distribution and abundance of fishes and invertebrates in Gulf of Mexico estuaries, Vol. II: species life history summaries. ELMR Rep. No. 11. NOAA/NOS Strategic Environmental Assessments Division, Rockville, MD.

# *Distribution and Abundance of Fishes and Invertebrates in Gulf of Mexico Estuaries Volume I: Data Summaries*

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## Introduction

This report presents information on the spatial and temporal distribution, and relative abundance of 44 fish and invertebrate species in 31 estuaries along the Gulf of Mexico coast of Florida, Alabama, Mississippi, Louisiana, and Texas. Its purpose is to disseminate data developed in the National Oceanic and Atmospheric Administration's (NOAA) Estuarine Living Marine Resources (ELMR) program (see inside front cover). The ELMR program is conducted through a series of joint regional studies by the National Ocean Service (NOS) and National Marine Fisheries Service (NMFS). The presence, distribution, and relative abundance of each species and the time period it utilizes each estuary are the primary data compiled. The data and framework presented are illustrative of the nationwide ELMR program.

This report, *Volume I*, combines information presented in earlier reports for nine estuaries in Texas (Monaco et al. 1989), 13 estuaries in Florida and Alabama (Williams et al. 1990), and nine estuaries in Louisiana and Mississippi (Czapla et al. 1991). However, several species have been added, and the graphic depiction of relative abundance has been improved. *Volume II* (Pattillo et al., in prep.), to be published in 1993, will present life history summaries for 44 fish and invertebrate species, and focus on how these individual species utilize Gulf of Mexico estuaries.

The objective of the ELMR program is to develop a consistent data base on the distribution, abundance, and life history characteristics of important fishes and invertebrates in the Nation's estuaries. The Nationwide data base is divided into four study regions (Figure 1). The data base contains the relative abundance and monthly occurrence of each species' life stage by estuary for three salinity zones (seawater, mixing, and tidal fresh) identified in NOAA's National Estuarine Inventory (NEI) Data Atlas-Volume I (NOAA 1985). When completed, the entire data base will contain information for 135 fish and invertebrate species found in 118 U.S. estuaries.

## Rationale

Estuaries are among the most productive natural systems and are important nursery areas that provide food, refuge from predation, and valuable habitat for many species (Gunter 1967, Joseph 1973, Weinstein 1979, Mann 1982). Estuarine organisms that support important commercial and recreational fisheries include shrimp, crabs, and sciaenids. In spite of the well-documented importance of estuaries to fishes and invertebrates, few consistent and comprehensive data bases exist which allow examinations of the relationships between estuarine species found in or among groups of estuaries. Furthermore, much of the distribution and abundance information for estuarine-dependent species (i.e., species that require estuaries during

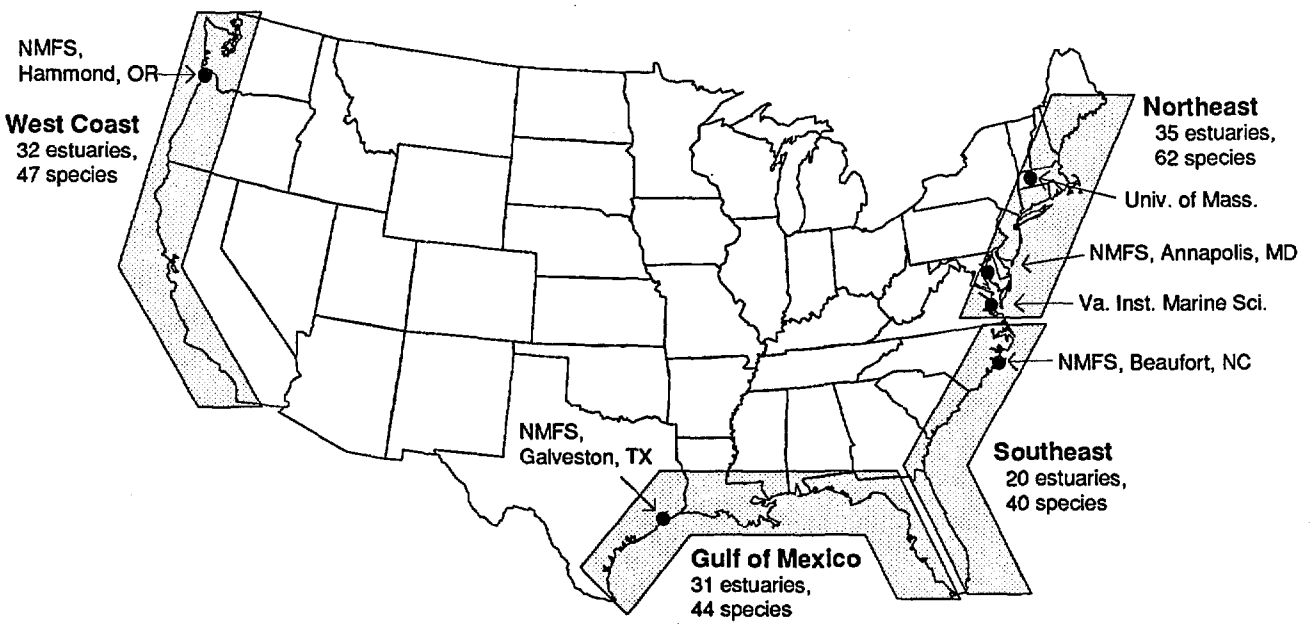


Figure 1. ELMR study regions and regional research laboratories.

their life cycle) is for offshore life stages and does not adequately describe estuarine distributions (Darnell et al. 1983, NOAA 1988).

Only a few comprehensive sampling programs (e.g., states of Louisiana and Texas) collect fishes and invertebrates with identical methods across groups of estuaries within a region (Barrett et al. 1978, Hammerschmidt and McEachron 1986). Therefore, most existing estuarine fisheries data cannot be compared among estuaries because of the variable sampling strategies. In addition, existing research programs do not focus on how groups of estuaries may be important for regional fishery management, and few compile information for species having little or no economic value.

Because life stages of many species use both estuarine and marine habitats, information on distribution, abundance, temporal utilization, and life history characteristics are needed to understand the coupling of estuarine, nearshore, and offshore habitats. To date, a national, comprehensive, and consistent data base of this type does not exist. Consequently, there is a need to develop a program that integrates fragments of information on marine and estuarine species and their associated habitats into a useful, comprehensive, and consistent format. The ELMR program was designed to help fulfill this need by developing a uniform nationwide data base on selected estuarine species. Results will complement NOAA efforts to develop a national estuarine assessment capability (NOAA 1985), identify information gaps, and assess the content and quality of existing estuarine fisheries data. In addition, the ELMR program provides the estuarine distribution data for NOAA's recently initiated East Coast of North America Strategic Assessment project (NOAA 1991).

An objective of this project is to map species distributions from the head-of-tide in estuaries to the far reaches of the continental shelf.

## Data Collection and Organization

Figure 2 summarizes the major steps taken to collect and organize information on the distribution and abundance of fishes and invertebrates in Gulf of Mexico estuaries. The initial steps were selecting the estuaries and the species to be studied.

***Selection of estuaries.*** Gulf of Mexico estuaries were selected from the National Estuarine Inventory (NEI) Data Atlas-Volume I (NOAA 1985) and NEI Supplement 3 (Shirzad et al. 1989). The 31 estuaries selected are listed in Table 1, and their locations shown in Figure 3.

Data on spatial and temporal distributions of species were developed and organized by the tidal fresh (0.0 to 0.5 parts per thousand (ppt)), mixing (0.5 to 25.0 ppt), and seawater (>25.0 ppt) zones delineated for each estuary in the NEI. Each salinity zone is represented in 17 of the Gulf of Mexico estuaries, but 14 estuaries are missing at least one zone (Table 1). A representative map and data table for Mobile Bay from the NEI Data Atlas is shown in Appendix 1.

Compiling consistent data nationwide limits the amount of information that may be compiled for each species and estuary. Also, it would be time- and cost-prohibitive to map each species by life stage for each estuary (Monaco 1986). The NOAA framework allows for a consistent compilation and organization of available information on the distribution of fishes and invertebrates in estuaries.

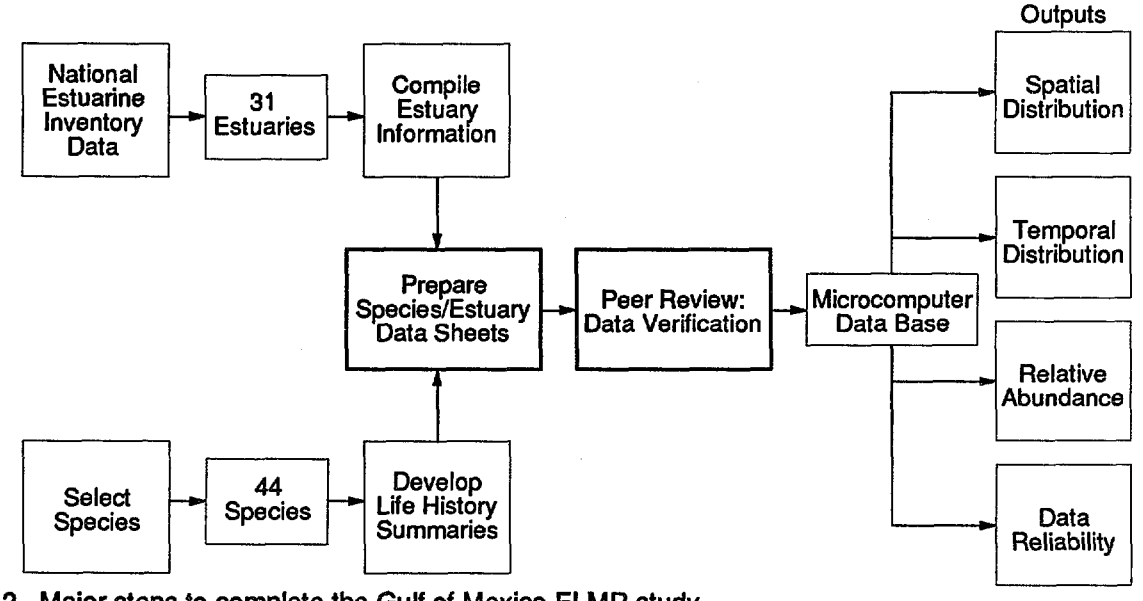


Figure 2. Major steps to complete the Gulf of Mexico ELMR study.

Table 1. ELMR Gulf of Mexico estuaries (n=31) and associated salinity zones.

| Estuary, State | Zones present |
|---|---|
| Florida Bay, FL | T M S |
| Ten Thousand Islands, FL | T M S |
| Caloosahatchee River, FL | T M * |
| Charlotte Harbor, FL | T M S |
| Tampa Bay, FL | T M S |
| Suwannee River, FL | T M S |
| Apalachee Bay, FL | T M S |
| Apalachicola Bay, FL | T M S |
| St. Andrew Bay, FL | T M S |
| Choctawhatchee Bay, FL | T M S |
| Pensacola Bay, FL | T M S |
| Perdido Bay, FL/AL | T M S |
| Mobile Bay, AL | T M S |
| Mississippi Sound, MS/AL/LA | T M S |
| Lake Borgne, LA | T M * |
| Lake Pontchartrain, LA | * M * |
| Breton/Chandeleur Sounds, LA | * M S |
| Mississippi River, LA | T M * |
| Barataria Bay, LA | T M S |
| Terrebonne/Timbalier Bays, LA | T M S |
| Atchafalaya/Vermilion Bays, LA | T M * |
| Calcasieu Lake, LA | T M * |
| Sabine Lake, LA/TX | T M * |
| Galveston Bay, TX | T M S |
| Brazos River, TX | T M * |
| Matagorda Bay, TX | T M S |
| San Antonio Bay, TX | * M S |
| Aransas Bay, TX | * M S |
| Corpus Christi Bay, TX | T M S |
| Laguna Madre, TX | * * S |
| Baffin Bay, TX | * * S |

T - Tidal fresh zone
M - Mixing zone
S - Seawater zone
* - salinity zone not present

Table 2. ELMR Gulf of Mexico species (n=44).

| Common Name | Scientific Name |
|---|---|
| Bay scallop | *Argopecten irradians* |
| American oyster | *Crassostrea virginica** |
| Common rangia | *Rangia cuneata** |
| Hard clam | *Mercenaria* species* |
| Bay squid | *Lolliguncula brevis** |
| Brown shrimp | *Penaeus aztecus* |
| Pink shrimp | *Penaeus duorarum* |
| White shrimp | *Penaeus setiferus* |
| Grass shrimp | *Palaemonetes pugio** |
| Spiny lobster | *Panulirus argus** |
| Blue crab | *Callinectes sapidus* |
| Gulf stone crab | *Menippe adina* |
| Stone crab | *Menippe mercenaria** |
| Bull shark | *Carcharhinus leucas* |
| Tarpon | *Megalops atlanticus* |
| Alabama shad | *Alosa alabamae* |
| Gulf menhaden | *Brevoortia patronus* |
| Yellowfin menhaden | *Brevoortia smithi* |
| Gizzard shad | *Dorosoma cepedianum* |
| Bay anchovy | *Anchoa mitchilli* |
| Hardhead catfish | *Arius felis* |
| Sheepshead minnow | *Cyprinodon variegatus* |
| Gulf killifish | *Fundulus grandis* |
| Silversides | *Menidia* species* |
| Snook | *Centropomus undecimalis** |
| Bluefish | *Pomatomus saltatrix* |
| Blue runner | *Caranx crysos* |
| Crevalle jack | *Caranx hippos* |
| Florida pompano | *Trachinotus carolinus* |
| Gray snapper | *Lutjanus griseus* |
| Sheepshead | *Archosargus probatocephalus* |
| Pinfish | *Lagodon rhomboides* |
| Silver perch | *Bairdiella chrysoura* |
| Sand seatrout | *Cynoscion arenarius* |
| Spotted seatrout | *Cynoscion nebulosus* |
| Spot | *Leiostomus xanthurus* |
| Atlantic croaker | *Micropogonias undulatus* |
| Black drum | *Pogonias cromis* |
| Red drum | *Sciaenops ocellatus* |
| Striped mullet | *Mugil cephalus* |
| Code goby | *Gobiosoma robustum* |
| Spanish mackerel | *Scomberomorus maculatus* |
| Gulf flounder | *Paralichthys albigutta* |
| Southern flounder | *Paralichthys lethostigma* |

*See Life History Notes, pp. 8-10.

***Selection of species.*** Four criteria were used to identify 44 species that had sufficient available information for inclusion in the ELMR data base (Table 2). The four criteria were:

1) Commercial value - determined by review of catch data and value statistics from NMFS and state agencies, e.g., Gulf menhaden (*Brevoortia patronus*) and penaeid shrimp (*Penaeus* sp.).

2) Recreational value - defined as a species that recreational fishermen specifically try to catch, that may or may not be of commercial importance. Recreational species were determined by consulting regional experts and NMFS reports, e.g., spotted seatrout (*Cynoscion nebulosus*) and red drum (*Sciaenops ocellatus*).

3) Indicator species of environmental stress - identified from the literature, discussions with fisheries experts, and from monitoring programs such as NOAA's National Status and Trends Program (O'Connor 1990). These species (e.g., American oyster, *Crassostrea virginica*, and Atlantic croaker, *Micropogonias undulatus*) are molluscs or demersal fishes that consume benthic invertebrates or have a strong association with bottom sediments. Their physiological disorders, morphological abnormalities, and bioaccumulation of contaminants, such as heavy metals, indicate episodes of environmental pollution and/or stress.

4) Ecological value - based on several attributes, including trophic level, relative abundance and importance as a key predator or prey species, e.g., bay anchovy, *Anchoa mitchilli*.

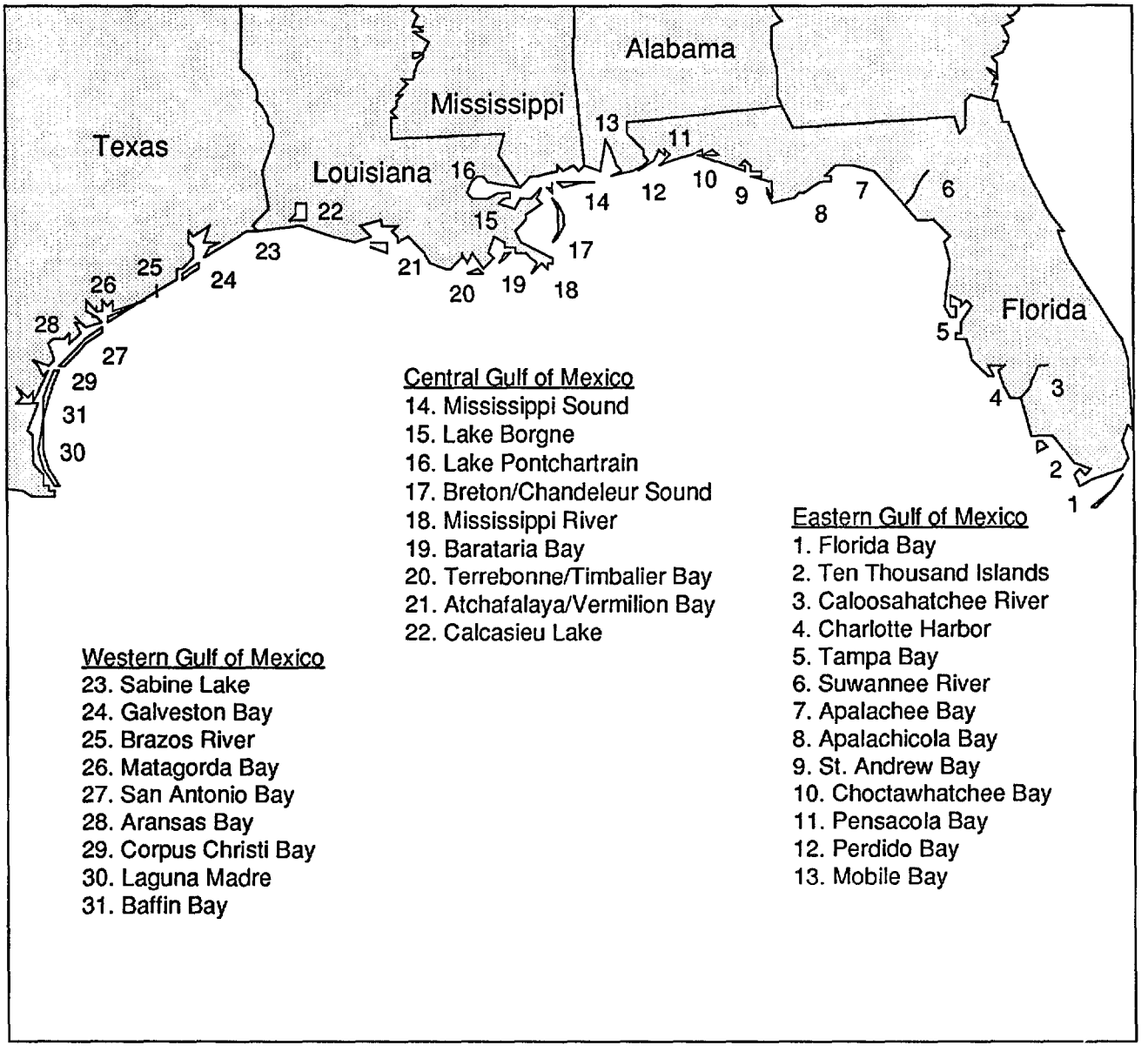


Figure 3. ELMR Gulf of Mexico estuaries.

***Data sheets.*** A data sheet was developed for each species in each estuary to enable quick data compilation and presentation. Figure 4 depicts the data sheet for spotted seatrout (*Cynoscion nebulosus*) in Mobile Bay. Data sheets were developed by project staff and reviewed by local experts. Data compiled for each species/life stage included: 1) the salinity zone it occupies (seawater, mixing, tidal fresh), 2) its monthly distribution in those zones, and 3) its relative abundance in the zones. The ELMR data sheets were entered into a microcomputer data base management system.

The relative abundance of a species was classified using the following categories:

- Not present: species or life history stage not found, questionable data as to identification of species, and/or recent loss of habitat or environmental degradation suggests absence.
- No information available: no existing data available, and after expert review it was determined that not even an educated guess would be appropriate.
- Rare: species is definitely present but not frequently encountered.
- Common: species is frequently encountered but not in large numbers; does not imply a uniform distribution over a specific salinity zone.
- Abundant: species is often encountered in substantial numbers relative to other species.
- Highly abundant: species is numerically dominant relative to other species.

Adults were defined as reproductively mature individuals, juveniles as immature but otherwise similar to adults, and spawning adults as those releasing eggs and sperm. There were a few exceptions to these defined life stages, such as mating in crabs.

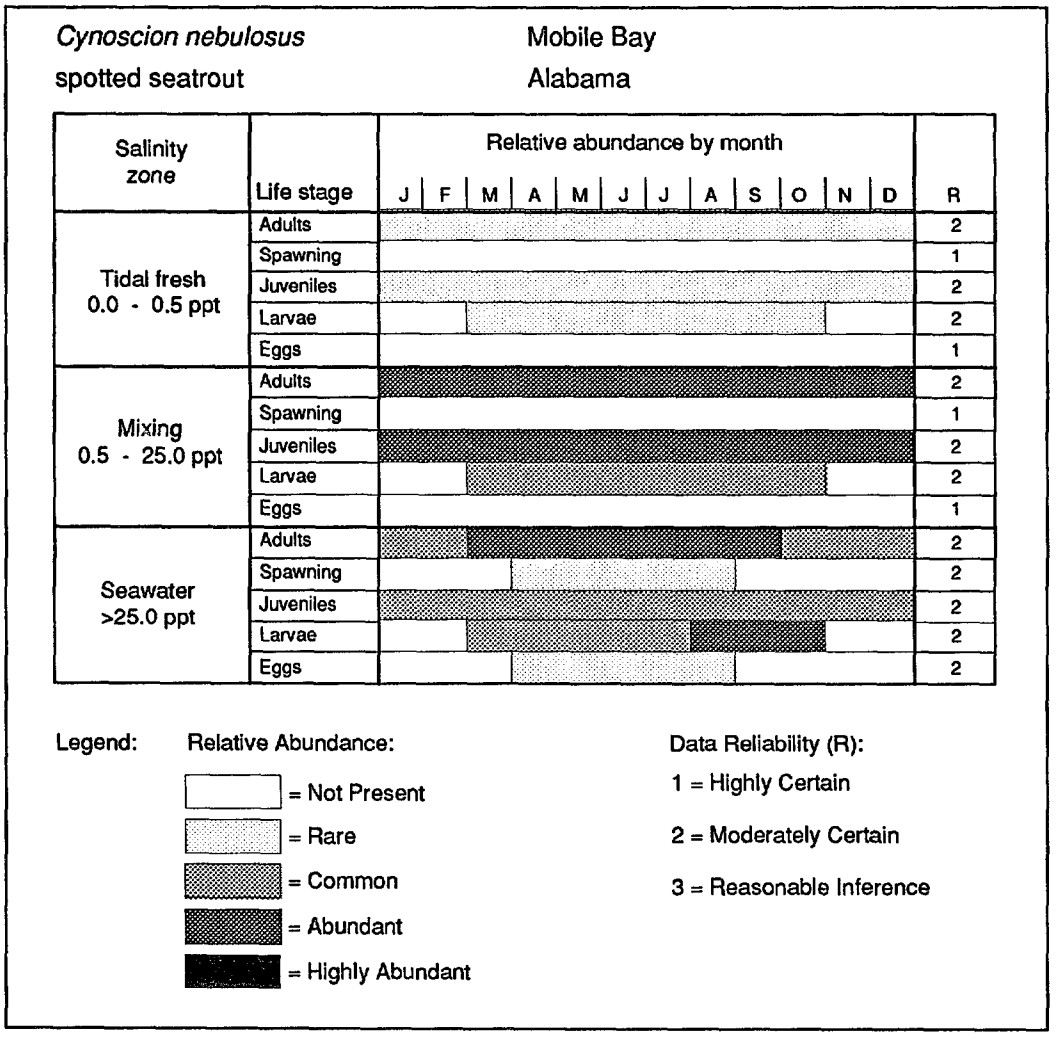


Figure 4. Example of a species/estuary data sheet: spotted seatrout in Mobile Bay.

For well-studied species such as penaeid shrimp, quantitative data were used to estimate abundance levels. For many species, however, reliable quantitative data were limited. Therefore, regional and local experts were consulted to estimate relative abundances based on the above criteria. Several reference or "guide" species with abundance levels corresponding to the above criteria were identified for each estuary. These guide species typified fishes and invertebrates belonging to a particular life mode (e.g., pelagic, demersal) or occupying similar habitats. Once guide species were selected, other species were then placed into the appropriate abundance categories relative to them. These data represent relative abundance levels within a specific estuary only; relative abundance levels across Gulf of Mexico estuaries could not be determined.

The final level of abundance assigned to a species was determined by asking regional and local biologists for expert opinions based on their knowledge of individual species within an estuary. This effort complemented quantitative studies, the ELMR relative abundance categories, and greatly increased reliability of abundance information. The quality of relative abundance information varied between estuaries as well as species. As a result, temporal resolution was greater in well-studied estuaries. Nevertheless, the relative abundance data shown in the data summaries are the best that could be synthesized from agency reports, academic studies, and expert reviews.

***Data verification.*** Approximately two years were required to develop the 1,364 data sheets (Figure 4) and consult with regional and local experts for the 31 estuaries studied. Nearly all of the data sheets were carefully reviewed during consultations or by mail. These consultations complemented the literature and published data sets compiled by NOAA. Ninety-four scientists and managers at 44 institutions were consulted. Local experts were especially helpful in providing estuary/species-specific information. They also provided additional references and contacts, and identified additional species to be included in the ELMR data base. The names and affiliations of these experts are listed in Appendix 3.

## Results

***Presence/absence.*** Table 3 (pp. 16-17) was developed to readily convey the occurrence of each of the 44 ELMR species in each of the 31 Gulf of Mexico estuaries. The highest level of abundance during the year for the adult or juvenile life stages is depicted. The spawning, egg, and larval categories are not considered. This table suggests the zoogeographic distribution of species between Gulf of Mexico estuaries.

***Data summary tables.*** The information compiled for each species and estuary (1,364 data sheets) was organized in three data summaries (pp. 19-191). Tables 4 and 5 provide graphic presentations of the spatial and temporal distribution and relative abundance by life stage for each species and estuary. The information shown represents the usual spatial and temporal distribution of a species in a particular estuary. Table 6 ranks the relative reliability of the information presented for each species and estuary.

*Spatial distribution and relative abundance.* Table 4 (pp. 19-59) summarizes the distribution and relative abundance for each species by life stage, in each estuary by salinity zone. The highest level of abundance during the year in each estuary is depicted.

*Temporal distribution.* Table 5 (pp. 61-149) summarizes the temporal distribution of each species by month and life stage for each estuary. This table combines data over the three salinity zones, showing the highest level of abundance for a particular life stage by month.

## Data Content and Quality

An important aspect of the ELMR program, especially since it is based primarily on published and unpublished literature and consultations, is to determine the quality of available data. For many species, gear selectivity, difficulty in identifying larvae, and difficulty in sampling various habitats has limited the amount of reliable information. Therefore, a deliberate effort was made to assess the overall reliability of the data base so that it could be used appropriately.

Estimates of the reliability of the distribution and abundance information organized by species, life stage, and estuary are presented in Table 6 (pp. 151-190) of the *Data Summary Tables* section. Data reliability was classified using the following categories:

- Highly certain: Considerable sampling data available. Distribution, behavior, and preferred habitats well documented within an estuary.

- Moderately certain: Some sampling data available for an estuary. Distribution, preferred habitat, and behavior well documented in similar estuaries.

- Reasonable inference: Little or no sampling data available. Information on distributions, ecology, and preferred habitats documented in similar estuaries.

The quality and quantity of available data vary by species, life stage, and estuary. For example, a large amount of information is available on the blue crab

because it is highly valued both commercially and recreationally. The least amount of information available and poorest quality of data occur for the spawning, egg, and larval life stages. Except for a few species (e.g., blue crab), very little data has been generated on specific habitat preferences and *in situ* environmental ranges. This is particularly true for the smaller forage and/or non-commercial fishes and invertebrates. Gear selectivity, inability to correctly identify larval stages, and difficulty of sampling various habitats limits the development and reliability of this information. In addition, life history data are lacking on some of the commercially important sciaenid and pelagic species.

Data reliability was also based on experimental design and whether the studies were relatively recent. In the case of limited studies, information was occasionally inferred. An opportunity exists to refine the data presented based on additional reviews.

Given that the amount and quality of available information vary by species, by life stage, between estuaries, and even within an estuary, considerable scientific judgment is required to derive or infer spatial and temporal distributions from existing data and available literature. Unfortunately, even the most informed judgment is far from perfect due to the complexity of estuarine systems. Consequently, information on the level of certainty associated with each data element must be presented when synthesizing multiple data sets (Table 6). Appendices 2, 3, and 4 provide a complete summary of the personal communications and primary references used so that readers can track and obtain additional information efficiently.

***Analysis of data content and quality.*** To assess the overall certainty of the ELMR Gulf of Mexico data, mean data reliability was calculated by estuary, salinity zone, species, and life stage. In this analysis, "highly certain" = 3, "moderately certain" = 2, and "reasonable inference" = 1. Mean data reliability was calculated using values for only those species and life stages known to occur within an estuary, i.e., those with a relative abundance of at least "rare" during some part of the year. This was because species and life stages known to be absent were typically scored as highly certain.

This analysis identified estuaries, species, and life stages that have the most reliable information, and those with the least. This information suggests species, life stages, and estuaries that could be the focus of research efforts. Future research should include a comprehensive and consistent sampling program to quantify species distributions and abundances within and across estuaries. In addition, life history requirements need to be determined, especially for those species that may not have economic value, but are ecologically important.

Mean data reliability of fish and invertebrate data ranged from a high of 2.08 for Florida Bay to a low of 1.00 for Brazos River, with an overall average of 1.86 (Figure 5). In general, the reliability scores reflect the amount of fisheries research that has been conducted within an estuary. Reliability scores were especially high for Florida Bay, Tampa Bay, Barataria Bay, and Galveston Bay, all of which are fairly large coastal embayments. They were especially low for the Suwannee and Brazos Rivers, both of which are fairly small tidal rivers.

When averaged across estuaries and analyzed by salinity zone, data reliability scores were lower in the tidal fresh zone than in the mixing and seawater zones (Figure 6). This may occur because the selected species are primarily estuarine, not freshwater, and may also be indicative of fewer studies of tidal fresh waters.

When averaged across estuaries and analyzed by species, mean data reliability scores ranged from a high of 2.49 for brown shrimp to a low of 1.46 for gulf stone crab (Figure 7). Of the invertebrate species, reliability scores were highest for penaeid shrimp and blue crab. They were fairly low for gulf stone crab, spiny lobster, bay squid, and hard clam. Of the fish species, reliability scores were fairly high for gulf and yellowfin menhaden, bay anchovy, pinfish, spotted seatrout, and Atlantic croaker. They were fairly low for bull shark, sheepshead minnow, silversides, and code goby. In general, the reliability scores reflect the amount of fisheries research directed towards different species. Reliabilities were especially high for species with high commercial value (e.g., penaeid shrimp, menhaden), recreational value (e.g., spotted seatrout), or ecological value (e.g., bay anchovy). Reliabilities tended to be lower for species with low commercial and recreational value (e.g., bay squid, silversides, sheepshead minnow, code goby), even though these species are ecologically important and fairly abundant. Low data reliability scores for gulf stone crab may also be because of its relatively recent recognition as a separate species (Williams and Felder 1986).

When analyzed by life stage, data for juvenile and adult life stages were most reliable, while data for spawning, larvae, and eggs were less certain (Figure 8). This reflects the number of research studies that have focused on adult and juvenile life stages. Species-specific studies of spawning, eggs, and larvae have not been conducted in most estuaries. Thus, some of the information for these life stages was inferred from life history studies and data from similar estuaries.

***Variability in space and time.*** Species data were organized according to the salinity zone boundaries developed for each estuary in the NEI data atlas-Volume 1 (NOAA 1985). However, division of an estuary on the basis of salinity is highly variable due to the many interacting factors that affect salinity, such as variations in freshwater inflow, wind, and tides. To compile information on species distribution according to these zones, it is assumed that if a particular salinity zone expands or contracts, the distribution of a mobile species in that zone will correspond to the shift. For example, if increased freshwater inflow shifts the tidal fresh zone further down the estuary, the distribution of a species confined to that zone increases to include the new area. If a species exhibits a wide range of salinity tolerance, a shift may or may not occur. The placement of species in a salinity zone was ultimately determined by where they have been observed or captured.

Species temporal distributions are often dependent on annual climatic conditions and water currents. Monthly distributional patterns were derived based on the consistent presence of a life stage within a particular month. If a species is only present in an estuary in unusual years (e.g., drought), this was not portrayed as part of that species' spatial or temporal distribution. However, if a species usually occurs, even during a restricted time period, it was considered present for the specific month(s). Greater temporal resolution, such as on a biweekly rather than on a monthly basis, was not possible.

***Life history notes.*** Because of the complex life histories of some species, the following comments are provided below to clarify and supplement information presented in the data summary tables.

*Invertebrates.* Sessile invertebrates, such as clams and oysters, usually have a patchy rather than a uniform distribution. Therefore, the ELMR framework may overestimate the areal distribution of these organisms, but identify the salinity zones of colonization. Specific areas may contain acceptable salinity regimes, but suitable bottom habitat for colonization may not exist. Specific habitat requirements and life history characteristics of a number of invertebrate species are provided below:

• Bay scallop: Usually associated with seagrass beds and salinities greater than 25 ppt.

• American oyster: Also known as eastern oyster (Turgeon et al. 1988). Prefers hard substrate in intertidal and subtidal estuarine waters.

• Common rangia: Also known as Atlantic rangia (Turgeon et al. 1988). All life stages occur in salinities below 25 ppt. Not common in the south Florida and south Texas estuaries, which have relatively high salinities.

• Hard clam: Also known as quahog (Turgeon et al. 1988). Most life stages occur in salinities above 20 ppt. Two species occur in the Gulf of Mexico, and hybridization may occur. The northern quahog (*Mercenaria mercenaria*) is generally found in intertidal and subtidal waters to 15 m, and the southern quahog (*Mercenaria campechiensis*) in deeper, more saline waters. The two species are considered together in this report because most fisheries data do not distinguish between them.

• Bay squid: Also known as Atlantic brief squid (Turgeon et al. 1988). The lower lethal salinity limit is approximately 17 ppt, and bay squid actively avoid salinities that are lower than this. Therefore, the distribution of juveniles and adults will only be from the lower mixing zone to the seawater zone, and out to the nearshore waters of the Gulf of Mexico.

• Penaeid shrimp: Postlarvae and juveniles are the main life stages utilizing the estuaries. Adults generally move to nearshore spawning grounds, where spawning, egg development, and most of the larval development occur. Brown and white shrimp are generally more abundant in the central and western Gulf of Mexico, whereas pink shrimp are generally more abundant in the eastern Gulf of Mexico.

• Grass shrimp: Also known as daggerblade grass shrimp (Williams et al. 1989). Most abundant in vegetated or oyster reef habitat. Fertilized eggs are held on the female's pleopods until hatching. In higher salinities, *Palaemonetes pugio* is often replaced by brackish grass shrimp (*P. intermedius*) and/or marsh grass shrimp (*P. vulgaris*).

• Spiny lobster: Also known as Caribbean spiny lobster (Williams et al. 1989). Found in the Gulf of Mexico estuaries of southern Florida and southern Texas. Juveniles do not mature into adults until 6-8 years of age. Life stages considered in this report are adults, mating (instead of spawning), juveniles, larvae, and eggs.

• Blue crab: Mating usually takes place in the low salinities of the tidal fresh to the upper region of the mixing zone. After mating, females move to the seawater zone, while males often remain in the upper reaches of the estuary. Females brood the eggs (sponge females), and larvae are released in higher salinities. Development through the late zoeal stages occurs offshore. Megalopae are transported back into the estuary and disperse throughout the salinity zones. As

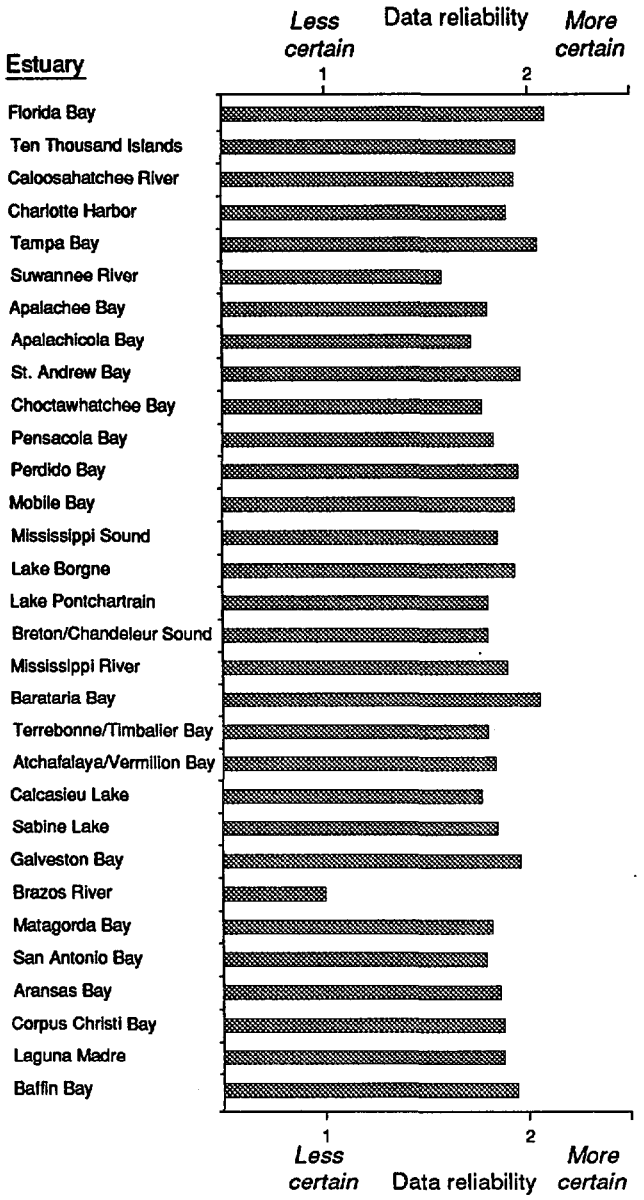


Figure 5. Mean data reliability by estuary.

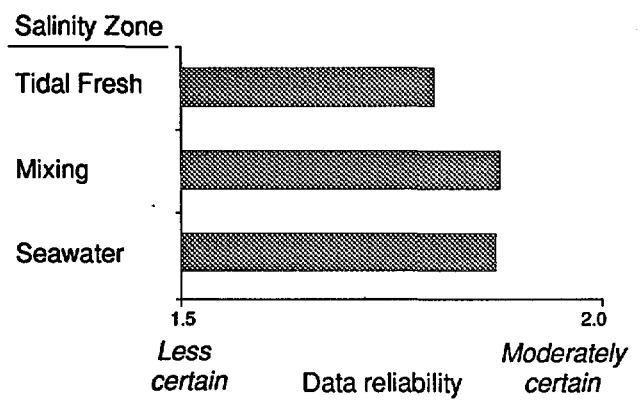


Figure 6. Mean data reliability by salinity zone.

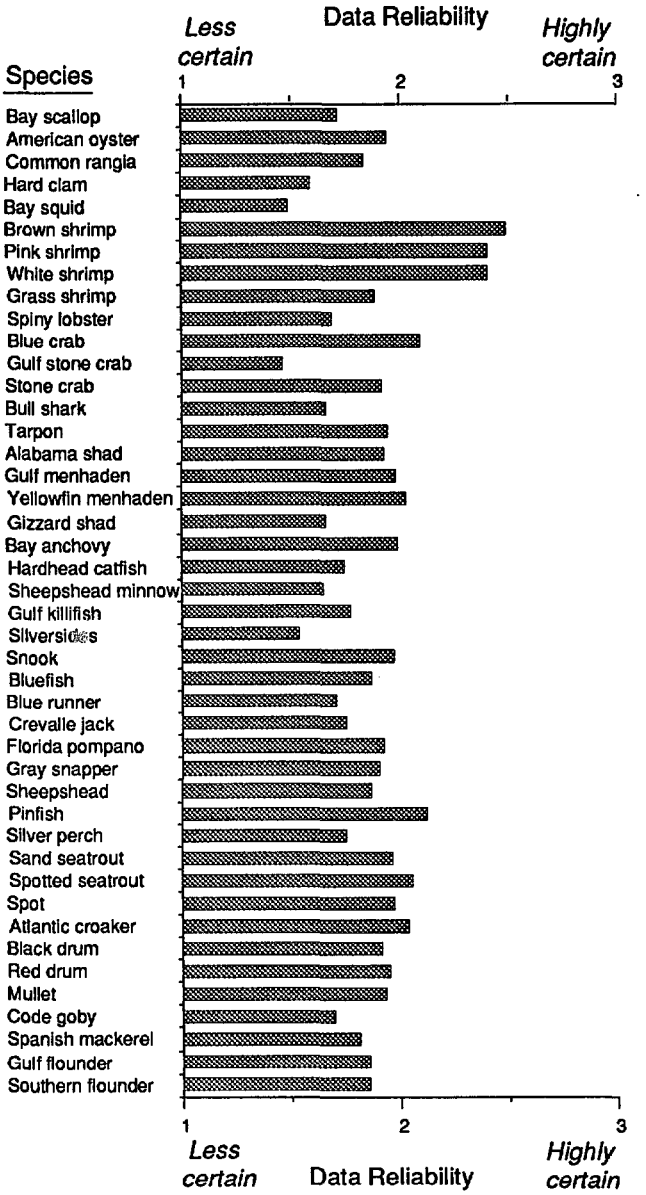


Figure 7. Mean data reliability by species.

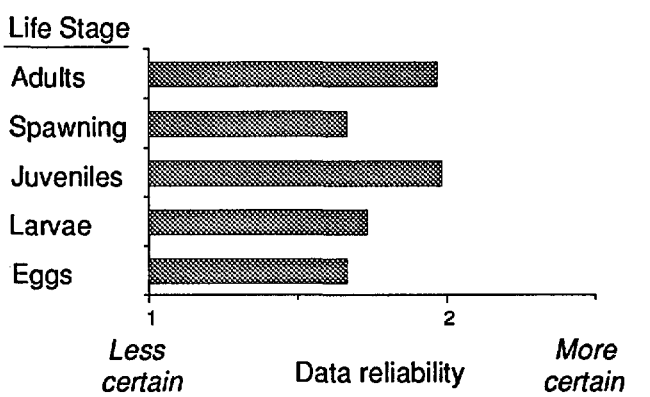


Figure 8. Mean data reliability by life stage.

they approach maturity, blue crabs seek lower salinities. Life stages considered in this report are adults, mating (instead of spawning), juveniles, larvae, and eggs.

• Stone crabs: Usually found in salinities greater than 20 ppt. Males are typically in nearshore waters, but migrate into the estuaries for mating. Life stages considered in this report are adults, mating, juveniles, larvae, and eggs. Williams and Felder (1986) have distinguished two separate species in the Gulf of Mexico. The stone crab (*Menippe mercenaria*) occurs from Florida Bay to Apalachicola Bay, and the Gulf stone crab (*M. adina*) is found from Suwannee River to the Yucatan peninsula. *M. mercenaria* is also known as Florida stone crab (Williams et al. 1989).

*Fishes.* Aggregating species by salinity zone uses a single fundamental habitat parameter. However, a combination of habitat characteristics, such as bottom type, water temperature, and bathymetry, would more accurately indicate species' spatial and temporal distributions. Specific habitat requirements and life history characteristics of a number of fishes are presented here:

• Bull shark: Development of eggs and larvae are internal, and parturition results in pups of juvenile size (75 cm TL). Therefore, only juveniles and adults are found in the estuaries. Fishing gear usually limits the ability to take large sharks. Based on the sizes of sharks captured, it may be inferred that parturition is occurring within the estuaries. Life stages considered in this report are adults, mating, juveniles, and parturition.

• Tarpon: Spawning, egg, and larval stages occur well off shore. Juveniles use the estuaries as a nursery ground, often seeking waters of low dissolved oxygen and low salinity.

• Alabama shad: Not found west of the Barataria Bay barrier islands in Louisiana, nor in south Florida.

• Menhaden: Juveniles are the predominant life stage utilizing the estuaries. Spawning generally occurs from the coastline to six miles offshore. Gulf menhaden (*Brevoortia patronus*) are generally not common south of Tampa Bay, and yellowfin menhaden (*Brevoortia smithi*) are generally not common north and west of Tampa Bay. The two species may hybridize where their ranges overlap.

• Gizzard shad: Large juveniles and adults are found in estuaries, but adults must return to freshwater to spawn. In large rivers there is an upstream migration or "spring run." Juveniles that are washed into bays with floods can mature to adulthood, but their upstream migration may be impeded by dams, weirs, and other waterway restrictions. Not common in south Florida estuaries.

• Bay anchovy: All life stages occur in estuaries, although adults may move offshore. This is a key forage species that is one of the most abundant fishes in Gulf of Mexico estuarine waters.

• Hardhead catfish: Eggs and larvae are brooded in the mouths of adult males; therefore, their distribution is determined by the adult population.

• Sheepshead minnow: The entire life cycle is completed within the estuary, and all life stages are euryhaline and eurythermal. This species tends to prefer open bottom to heavily vegetated areas.

• Gulf killifish: All life stages are estuarine, euryhaline, and eurythermal. This species occurs in shallow estuarine waters, including mangrove and flooded marsh habitat.

• Silversides: Two species commonly occur in Gulf of Mexico estuaries: the tidewater silverside, *Menidia peninsulae*, and inland silverside, *M. beryllina* (Chernoff et al. 1981, Robins et al. 1991). The two were formerly considered to be a single species (Robins et al. 1980). Although they do occur together and occasionally hybridize, the tidewater silverside is generally found in moderate to high salinity estuarine waters, and the inland silverside in low salinity estuarine waters and inland freshwater (Johnson 1975). These species are considered together in this report because most fisheries data do not distinguish between them. All life stages are estuarine, euryhaline, and eurythermal. Adults and juveniles form schools, primarily in shallow waters near the surface, and are often abundant.

• Snook: Also known as common snook (Robins et al. 1991). The snook is most common in the southern Florida estuaries, but also occurs in Texas. Adults and juveniles are euryhaline, but are quite sensitive to cold temperatures.

• Bluefish: Spawning, egg and larval development occur offshore. Juveniles and adults are the principal life stages found in estuaries. The bluefish is a primarily visual predator, and often schools. In the Gulf of Mexico, they are generally most common from Mississippi Sound eastward.

• Blue runner and crevalle jack: Juveniles and adults enter estuaries, but other life stages are usually offshore.

• Florida pompano: Typically found in nearshore surf and inlet waters, but juveniles and adults do enter the bays. Spawning, eggs, and larvae are typically offshore.

• Gray snapper: Juveniles are typically associated with vegetation in estuaries, particularly seagrass beds and mangroves. Adults, spawning, eggs, and larvae are usually offshore.

• Sheepshead: Spawning occurs in nearshore and inlet waters. Larvae are transported towards the estuaries, but typically enter as juveniles.

• Pinfish: Juveniles are the predominant life stage within estuaries. Adults, spawning and eggs are typically offshore. Larvae are transported to inlets, but usually attain juvenile size before they enter bays. Subadults and adults may remain in some bays before migrating offshore for spawning.

• Sciaenids: Most sciaenids move to nearshore or offshore waters for spawning, although some may spawn in passes. Larvae may be transported toward estuaries, but typically attain juvenile size before they enter. Juveniles develop in the nursery habitats of the bays, then migrate out as subadults. Since some of these species have rather long life spans, several years may be spent in the estuaries as juveniles. As temperatures drop in the winter, they move into deeper waters.

• Striped mullet: Estuarine habitat is primarily used by juveniles and adults. They spawn offshore or near passes, and larvae move inshore and into estuaries.

• Code goby: This species is usually associated with seagrasses and higher salinities.

• Spanish mackerel: Juveniles and adults enter estuaries, but other life stages are pelagic and primarily offshore.

• Flounders: Spawning, eggs, and larvae are in nearshore waters. Juveniles and larvae migrate into bays for growth and development. Juveniles and adults migrate according to temperature, creating "fall runs" to the offshore waters. Gulf flounder (*Paralichthys albigutta*) appear to be more restricted in their ascent into fresher water, typically remaining in salinities greater than 20 ppt, whereas southern flounder (*P. lethostigma*) often occur in tidal fresh water. Gulf flounder are most common from Mississippi Sound eastward to Florida, whereas southern flounder occur primarily from the Florida panhandle westward to Texas.

***Life history summaries.*** The life history notes above assist in interpreting the data summary tables. However, because of the complex life histories of estuarine-dependent species, a concise life history summary was written for each species. Each summary provides an overview of how and when a species uses estuaries and what specific habitats it uses. The 44 life history summaries will be published as *Volume II* of *Distribution and Abundance of Fishes and Invertebrates in Gulf of Mexico Estuaries* (Pattillo et al., in prep.). They emphasize species-specific life history characteristics that relate directly to estuarine spatial and temporal distribution and abundance. Information for the species life history summaries was gathered primarily from published and unpublished literature, and individuals with species-specific knowledge were consulted. Examples of draft summaries for three Gulf of Mexico species are included in Monaco et al. (1989).

***Life history tables.*** While the species life history summaries provide concise accounts of important life history attributes, they do not permit a direct and simple assessment of characteristics that a species shares with others. Furthermore, many life history attributes are categorical and more readily conveyed in a tabular rather than a textual format. Therefore, information from the species life history summaries has been augmented with additional physical and biological parameters and condensed into three life history tables. Major table headings are: Habitat Associations, Biological Attributes, and Reproduction. These tables present life history characteristics for each species along with behavioral traits and preferred habitats. They reflect the most current information about a species as compiled from published and unpublished literature, and can be used to quickly identify species with similar characteristics. The life history tables will be presented along with the summaries in *Volume II* (Pattillo et al., in prep.).

## Use of ELMR Data

***Classifying and comparing estuaries.*** Although the qualitative nature of the distribution data precludes statistical comparisons of species abundances among estuaries, comparisons can be made using data on the presence/absence of species in salinity zones. This information, combined with the spatial and temporal distribution data, is the strength of the data base. Estuaries can be loosely categorized by their physical and chemical characteristics and their associated species assemblages (Monaco et al. 1992). The relative importance of individual estuaries to specific species may also be determined.

The species found in an estuary are sensitive indicators of both the mean and extreme environmental

conditions within that estuary. Estuaries can be classified by the number of species present and by whether the fauna are primarily marine, estuarine, or freshwater. Species assemblages may correlate with physical characteristics, such as bottom substrate, vegetation, and areal and temporal characteristics of salinity zones. The information on species presence/absence or other attributes can be used to determine the faunal similarities and differences among estuaries.

A comparison of estuaries and associated species can identify differing factors among those estuaries that might account for shifts in species distribution and relative abundance, helping to define ecological variables controlling species distributions. For example, a species may show differing salinity tolerances among estuaries, suggesting that some other factor, such as temperature, competition, or predation may be regulating its distribution.

***Linkages to marine ecosystems.*** Estuaries are home to many aquatic species year-round, however, a large number of species only use estuaries for specific parts of their life histories and spend the rest offshore. Most of these latter species fall into four general categories: 1) diadromous species, which use estuaries as migration corridors and, in some instances, nursery areas; 2) species that use estuaries for spawning, often at specific salinities; 3) species that spawn in marine waters near the mouths of estuaries and depend on tidal- and wind-driven currents to carry eggs, larvae, or early juveniles into estuarine nursery areas; and 4) species that enter estuaries during certain times of year to feed on abundant prey. The importance of an estuary can be assessed by the intensity with which species use estuarine habitats. Importance can be estimated both by the number of species present as well as the density of specific life stages in estuaries relative to offshore habitats. These data may assist in identifying adverse effects of estuarine degradation on offshore populations.

***East Coast Strategic Assessment.*** Development of a capability to define and interpret the effects of anthropogenic and natural phenomena on living marine resources will be a component of the Strategic Environmental Assessments Division's *East Coast of North America Strategic Assessment Project* begun in FY 92 (NOAA 1991). This project will characterize the biological, physical, chemical, and economic characteristics of the east coast of North America to address multiple resource use conflicts. The data compiled for the ELMR southeast and northeast study regions will be major components of this project. The new initiative will include electronic mapping of the distribution and relative abundance of living marine resources. The study area begins at the head-of-tide in estuaries and encompasses the continental shelf as defined by the 200-m isobath. Beyond the shelf, the study area contains epipelagic waters. The areal coverage will extend from the Straits of Belle Isle, Newfoundland, to Tampa Bay, Florida. The ELMR distribution and abundance data will be the primary source of fish and invertebrate information for east coast estuaries. These data will be integrated with the coastal and offshore living resource information to develop a consistent data base on species found from the head-of-tide to past the continental shelf. This will enhance NOAA's capability to define and understand the coupling of estuarine and marine habitats based on species' spatial and temporal distributions and life history characteristics.

Additional data sets developed or under development (e.g., National Status and Trends, O'Connor 1990) in NOAA programs will enable regional environmental assessments of anthropogenic effects on living marine resources. The integration of biological and physical data will significantly improve our ability to identify and define the biological linkages and physical interchanges between estuarine and shelf habitats. As it becomes apparent that the cumulative effects of small alterations in many estuaries have a total systemic impact on coastal ocean resources, it is more important than ever to compile consistent information on the Nation's estuarine fishes and invertebrates. Although the knowledge available to effectively conserve and manage living resources is limited, the ELMR data base provides an important tool for assessing the status of estuarine fauna and examining their relationships with other species and their environment. The ELMR data base provides baseline information on the zoogeography and ecology of estuarine fishes and invertebrates, and identifies gaps in our knowledge of these resources. When combined with data sets under development in the *East Coast of North America Strategic Assessment Project*, our ability to conduct interdisciplinary assessments that identify strategies to balance resource development and conservation efforts will be significantly enhanced.

## Acknowledgments

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# *Data Summary Tables*

Table 3. Presence/absence of ELMR species in Gulf of Mexico estuaries

Table 4. Spatial distribution and relative abundance

Table 5. Temporal distribution

Table 6. Data reliability

In each data summary table, species are listed in a phylogenetic order, as in Table 2, p. 3. Estuaries are listed in an east to west order, as in Table 1, p. 3. At the beginning of each data summary is an index table showing the page location of each species and estuary within the data summary.

## Table 3. Presence/absence* of ELMR species in Gulf of Mexico estuaries

*highest relative abundance of adults or juveniles in any salinity zone, in any month.

| Species | Florida Bay | Ten Thousand Islands | Caloosahatchee River | Charlotte Harbor | Tampa Bay | Suwannee River | Apalachee Bay | Apalachicola Bay | St. Andrew Bay | Choctawhatchee Bay | Pensacola Bay | Perdido Bay | Mobile Bay | Mississippi Sound | Lake Borgne | Lake Pontchartrain | Breton/Chandeleur Sound | Mississippi River | Barataria Bay | Terrebonne/Timbalier Bay | Atchafalaya/Vermilion Bay | Calcasieu Lake | Sabine Lake | Galveston Bay | Brazos River | Matagorda Bay | San Antonio Bay | Aransas Bay | Corpus Christi Bay | Laguna Madre | Baffin Bay |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Estuary | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Bay scallop | √ | √ | ○ | √ | √ | | ○ | √ | ○ | | ○ | | | ○ | | | √ | | | | | | | √ | | √ | √ | √ | √ | √ | |
| American oyster | | ○ | ◉ | ○ | ○ | ◉ | ◉ | ◉ | ○ | ○ | ○ | √ | ○ | ○ | ○ | ○ | ◉ | √ | ◉ | ◉ | ◉ | ○ | ○ | ● | na | ○ | ◉ | ○ | ○ | √ | |
| Common rangia | | | ● | ● | ● | ◉ | ○ | ◉ | ○ | ○ | ○ | ◉ | ◉ | ○ | ◉ | ◉ | ○ | ○ | ◉ | ◉ | ○ | ○ | ● | ◉ | na | ○ | √ | √ | √ | | |
| Hard clam | | | | ○ | ◉ | ○ | ○ | | ○ | ○ | | ○ | √ | ○ | | | ○ | | ○ | √ | | | | ○ | na | ○ | ○ | ○ | ○ | | |
| Bay squid | √ | √ | ○ | ○ | ◉ | ○ | ○ | ◉ | ◉ | ○ | ○ | ○ | ○ | ● | ◉ | ○ | ○ | | ○ | ○ | ○ | ○ | √ | ○ | ○ | ◉ | ◉ | ○ | ○ | ○ | ○ |
| Brown shrimp | √ | √ | √ | √ | | | | ◉ | ◉ | ◉ | ● | ● | ● | ● | ● | ◉ | ◉ | ○ | ● | ● | ● | ● | ◉ | ● | ◉ | ● | ● | ● | ● | ◉ | ● |
| Pink shrimp | ● | ● | ◉ | ◉ | ● | ● | ◉ | ◉ | ◉ | ◉ | ○ | ○ | ○ | ○ | √ | √ | ◉ | | ○ | √ | √ | | | √ | ○ | ○ | ○ | ○ | ○ | ◉ | ○ |
| White shrimp | | | | | | √ | ● | ● | ○ | ◉ | ◉ | ○ | ● | ● | ● | ● | ○ | ○ | ● | ◉ | ● | ● | ● | ● | ● | ● | ● | ◉ | ◉ | ◉ | √ |
| Grass shrimp | ● | ○ | ● | ● | ● | ● | ● | ● | ◉ | ◉ | ● | | ● | ◉ | ● | ○ | ◉ | ○ | ◉ | ◉ | ● | ● | ● | ● | ◉ | ● | ◉ | ◉ | ● | ● | ● |
| Spiny lobster | ○ | √ | | √ | √ | | | | ○ | | | | | √ | | | | | | | | | | | | | | | | √ | |
| Blue crab | ◉ | ◉ | ● | ◉ | ◉ | ● | ● | ● | ● | ◉ | ◉ | ◉ | ● | ● | ● | ◉ | ◉ | ○ | ◉ | ◉ | ◉ | ● | ● | ◉ | ○ | ◉ | ● | ● | ● | ◉ | ◉ |
| Gulf stone crab | | | | | | √ | ○ | ○ | √ | √ | √ | √ | ○ | ○ | √ | √ | ○ | ○ | ○ | ○ | √ | ○ | √ | ○ | na | ○ | ○ | ○ | ○ | √ | ○ |
| Stone crab | ○ | ○ | √ | ○ | ○ | ○ | ○ | √ | | | | | | | | | | | | | | | | | | | | | | | |
| Bull shark | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | √ | ○ | ○ | ○ | ○ | ◉ | √ | ○ | ○ | ○ | √ | √ | ○ | na | ○ | ○ | ○ | ○ | √ | √ |
| Tarpon | ○ | ○ | ◉ | ◉ | ◉ | ○ | ○ | ○ | ○ | ○ | ○ | √ | ○ | ○ | ○ | ○ | | ○ | √ | √ | √ | | √ | √ | na | ○ | ○ | √ | √ | √ | √ |
| Alabama shad | | | | | | ○ | | ○ | ○ | ○ | | | √ | ◉ | ○ | √ | √ | | | | | | | | | | | | | | |
| Gulf menhaden | √ | √ | √ | √ | ● | ○ | ◉ | ◉ | ● | ● | ● | ◉ | ● | ● | ● | ● | ● | ◉ | ● | ◉ | ● | ● | ● | ● | ◉ | ● | ◉ | ◉ | ◉ | ◉ | ● |
| Yellowfin menhaden | ◉ | ● | ○ | ○ | ◉ | | √ | | | | | | | √ | √ | √ | | | | | | | | | | | | | | | |
| Gizzard shad | | | | | | ○ | ○ | ○ | | ○ | ○ | √ | ○ | ◉ | ● | ○ | ○ | ◉ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ◉ | ○ | √ | ○ | √ | ◉ |
| Bay anchovy | ● | ● | ● | ● | ● | ● | ● | ● | ◉ | ● | ● | ◉ | ● | ● | ● | ● | ◉ | ● | ● | ● | ● | ● | ◉ | ● | ● | ● | ● | ● | ● | ● | ● |
| Hardhead catfish | ◉ | ○ | ◉ | ● | ○ | ● | ◉ | ● | ● | ◉ | ◉ | ◉ | ◉ | ● | ● | ◉ | ◉ | ● | ● | ◉ | ◉ | ◉ | ○ | ◉ | ○ | ◉ | ● | ◉ | ◉ | ● | ● |
| Sheepshead minnow | ◉ | ○ | ○ | ○ | ● | ● | ● | ◉ | ◉ | ◉ | ◉ | ○ | ◉ | ◉ | ○ | ○ | ○ | ◉ | ● | ○ | ◉ | ◉ | ◉ | ◉ | ◉ | ◉ | ◉ | ◉ | ◉ | ● | ● |

Relative abundance:

● - Highly Abundant ◉ - Abundant ○ - Common √ - Rare Blank - Not present na - No data available

Table 3, continued.

| Species | Florida Bay | Ten Thousand Islands | Caloosahatchee River | Charlotte Harbor | Tampa Bay | Suwannee River | Apalachee Bay | Apalachicola Bay | St. Andrew Bay | Choctawhatchee Bay | Pensacola Bay | Perdido Bay | Mobile Bay | Mississippi Sound | Lake Borgne | Lake Pontchartrain | Breton/Chandeleur Sound | Mississippi River | Barataria Bay | Terrebonne/Timbalier Bay | Atchafalaya/Vermilion Bay | Calcasieu Lake | Sabine Lake | Galveston Bay | Brazos River | Matagorda Bay | San Antonio Bay | Aransas Bay | Corpus Christi Bay | Laguna Madre | Baffin Bay |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Estuary | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Gulf killifish | ○ | ◉ | ○ | ◉ | ○ | ◉ | ◉ | ○ | ○ | ○ | ○ | | ◉ | ○ | ◉ | ○ | ○ | ◉ | ● | ● | ◉ | ◉ | ◉ | ◉ | ◉ | ◉ | ◉ | ○ | ◉ | ◉ |
| Silversides | ● | ◉ | ● | ● | ● | ◉ | ● | ● | ◉ | ◉ | ◉ | ◉ | ◉ | ● | ◉ | ◉ | ○ | ◉ | ● | ◉ | ◉ | ◉ | ◉ | ◉ | ◉ | ◉ | ◉ | ◉ | ● | ● |
| Snook | ○ | ◉ | ◉ | ◉ | ○ | ○ | ○ | ○ | | | | | | | | | | | √ | | | | | √ | | √ | | √ | √ | ○ | |
| Bluefish | ○ | ○ | | ○ | ○ | ○ | ○ | ○ | ◉ | ◉ | ○ | ○ | ○ | ○ | | | √ | √ | ○ | √ | √ | √ | √ | ○ | ○ | √ | √ | √ | √ | | |
| Blue runner | √ | ○ | | ○ | ○ | ○ | ○ | ○ | ◉ | ○ | ○ | ○ | ○ | ◉ | | | | | ○ | √ | | | | √ | | | | | | | |
| Crevalle jack | ◉ | ○ | ○ | ◉ | ◉ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | √ | ○ | ○ | ○ | ○ | ○ | ○ | ◉ | ○ |
| Florida pompano | ● | ○ | | ◉ | ○ | √ | ○ | | ○ | ○ | ○ | ○ | ○ | ◉ | | | ○ | ○ | ○ | ○ | √ | ○ | | ○ | | ○ | ○ | ○ | ○ | ◉ | √ |
| Gray snapper | ◉ | ○ | √ | ○ | ○ | ○ | ○ | √ | ○ | ○ | ◉ | ○ | ○ | | | | ○ | | ○ | √ | | √ | | √ | | √ | √ | √ | √ | ○ | √ |
| Sheepshead | ○ | ○ | √ | √ | ○ | ○ | √ | ○ | ○ | ○ | ○ | ◉ | ◉ | ○ | ◉ | ○ | ○ | ○ | ◉ | ◉ | ○ | ○ | ○ | ○ | ○ | ◉ | ◉ | ○ | ○ | ◉ | ○ |
| Pinfish | ● | ● | ● | ● | ● | ● | ◉ | ◉ | ● | ◉ | ● | ◉ | ◉ | ● | ◉ | ◉ | ○ | ○ | ◉ | ◉ | ○ | ○ | ○ | ◉ | ◉ | ● | ◉ | ◉ | ◉ | ● | ◉ |
| Silver perch | ◉ | ◉ | ◉ | ◉ | ◉ | ◉ | ○ | ◉ | ◉ | ○ | ○ | ○ | ○ | ● | ● | ○ | ○ | ○ | ◉ | ◉ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ◉ | ◉ |
| Sand seatrout | √ | ◉ | ● | ● | ◉ | ● | ● | ● | ◉ | ◉ | ○ | ○ | ● | ● | ● | ◉ | ○ | ● | ◉ | ◉ | ◉ | ◉ | √ | ◉ | ○ | ○ | ○ | ○ | ◉ | √ | ○ |
| Spotted seatrout | ◉ | ○ | ○ | ◉ | ○ | ◉ | ○ | ○ | ◉ | ◉ | ○ | ○ | ◉ | ◉ | ◉ | ○ | ◉ | ◉ | ○ | ◉ | ◉ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| Spot | ○ | ○ | ○ | ○ | ● | ◉ | ● | ◉ | ◉ | ● | ● | ◉ | ● | ● | ● | ○ | ◉ | ◉ | ● | ◉ | ◉ | ○ | ◉ | ◉ | ◉ | ◉ | ◉ | ◉ | ◉ | ● | ● |
| Atlantic croaker | √ | √ | √ | ○ | √ | ○ | ○ | ● | ◉ | ◉ | ● | ○ | ● | ● | ● | ● | ◉ | ● | ● | ● | ● | ● | ◉ | ● | ● | ● | ● | ◉ | ◉ | ◉ | ◉ |
| Black drum | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ◉ | ○ | ◉ | ◉ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ◉ |
| Red drum | ○ | √ | ◉ | ◉ | ● | ○ | ○ | ○ | ◉ | ○ | ○ | ○ | ○ | ○ | ◉ | ○ | ◉ | ○ | ○ | ○ | ○ | ◉ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| Striped mullet | ● | ● | ● | ● | ● | ◉ | ● | ◉ | ● | ◉ | ◉ | ◉ | ◉ | ● | ● | ◉ | ◉ | ◉ | ◉ | ◉ | ◉ | ◉ | ○ | ◉ | ○ | ◉ | ◉ | ◉ | ◉ | ◉ | ◉ |
| Code goby | ● | ● | ◉ | ● | ◉ | ○ | ○ | ○ | ◉ | ○ | ○ | √ | | ○ | ◉ | ○ | | | √ | | | | | √ | na | ○ | √ | ○ | ○ | ◉ | ◉ |
| Spanish mackerel | ○ | ○ | √ | ○ | ○ | ○ | √ | √ | ◉ | ○ | ○ | ◉ | ○ | ◉ | √ | √ | ○ | √ | ○ | ○ | ○ | ○ | ○ | ○ | √ | √ | √ | √ | √ | √ | |
| Gulf flounder | ○ | ○ | √ | ○ | ○ | ○ | ○ | ○ | ◉ | ○ | ○ | ○ | ○ | ○ | | | | | | | | | | √ | | √ | √ | √ | √ | √ | √ |
| Southern flounder | √ | √ | | √ | √ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ◉ | ○ | ○ | ◉ | ◉ | ◉ | ◉ | ○ | ◉ | ● | ● | ○ | ◉ | ◉ | ○ | ○ | ◉ | ○ |

Relative abundance:
● - Highly Abundant ◉ - Abundant ○ - Common √ - Rare Blank - Not present na - No data available

## Table 4. Spatial distribution and relative abundance

Index to Table 4. Page location of spatial distribution table for each species and estuary.

| Common and Scientific Name | Estuary: Florida Bay, Ten Thousand Islands, Caloosahatchee River, Charlotte Harbor, Tampa Bay, Suwannee River, Apalachee Bay | Apalachicola Bay, St. Andrew Bay, Choctawhatchee Bay, Pensacola Bay, Perdido Bay, Mobile Bay, Mississippi Sound | Lake Borgne, Breton/Chandeleur Sound, Lake Pontchartrain, Mississippi River, Barataria Bay, Terrebonne/Timbalier Bay, Atchafalaya/Vermilion Bay | Calcasieu Lake, Sabine Lake, Galveston Bay, Brazos River, Matagorda Bay, San Antonio Bay, Aransas Bay | Corpus Christi Bay, Laguna Madre, Baffin Bay |
|---|---|---|---|---|---|
| Bay scallop (*Argopecten irradians*)<br>American oyster (*Crassostrea virginica*)<br>Common rangia (*Rangia cuneata*)<br>Hard clam (*Mercenaria* species)<br>Bay squid (*Lolliguncula brevis*)<br>Brown shrimp (*Penaeus aztecus*) | 20 | 21 | 22 | 23 | 24 |
| Pink shrimp (*Penaeus duorarum*)<br>White shrimp (*Penaeus setiferus*)<br>Grass shrimp (*Palaemonetes pugio*)<br>Spiny lobster (*Panulirus argus*)<br>Blue crab (*Callinectes sapidus*)<br>Gulf stone crab (*Menippe adina*) | 25 | 26 | 27 | 28 | 29 |
| Stone crab (*Menippe mercenaria*)<br>Bull shark (*Carcharhinus leucas*)<br>Tarpon (*Megalops atlanticus*)<br>Alabama shad (*Alosa alabamae*)<br>Gulf menhaden (*Brevoortia patronus*)<br>Yellowfin menhaden (*Brevoortia smithi*) | 30 | 31 | 32 | 33 | 34 |
| Gizzard shad (*Dorosoma cepedianum*)<br>Bay anchovy (*Anchoa mitchilli*)<br>Hardhead catfish (*Arius felis*)<br>Sheepshead minnow (*Cyprinodon variegatus*)<br>Gulf killifish (*Fundulus grandis*)<br>Silversides (*Menidia* species) | 35 | 36 | 37 | 38 | 39 |
| Snook (*Centropomus undecimalis*)<br>Bluefish (*Pomatomus saltatrix*)<br>Blue runner (*Caranx crysos*)<br>Crevalle jack (*Caranx hippos*)<br>Florida pompano (*Trachinotus carolinus*)<br>Gray snapper (*Lutjanus griseus*) | 40 | 41 | 42 | 43 | 44 |
| Sheepshead (*Archosargus probatocephalus*)<br>Pinfish (*Lagodon rhomboides*)<br>Silver perch (*Bairdiella chrysoura*)<br>Sand seatrout (*Cynoscion arenarius*)<br>Spotted seatrout (*Cynoscion nebulosus*)<br>Spot (*Leiostomus xanthurus*) | 45 | 46 | 47 | 48 | 49 |
| Atlantic croaker (*Micropogonias undulatus*)<br>Black drum (*Pogonias cromis*)<br>Red drum (*Sciaenops ocellatus*)<br>Striped mullet (*Mugil cephalus*)<br>Code goby (*Gobiosoma robustum*)<br>Spanish mackerel (*Scomberomorus maculatus*) | 50 | 51 | 52 | 53 | 54 |
| Gulf flounder (*Paralichthys albigutta*)<br>Southern flounder (*Paralichthys lethostigma*) | 55 | 56 | 57 | 58 | 59 |

Table 4. Spatial distribution and relative abundance

| | | Gulf of Mexico Estuaries | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Florida Bay | | | Ten Thousand Islands | | | Caloosa-hatchee River | | | Charlotte Harbor | | | Tampa Bay | | | Suwannee River | | | Apalachee Bay | | |
| Species/Life Stage | | T | M | S | T | M | S | T | M | * | T | M | S | T | M | S | T | M | S | T | M | S |
| Bay scallop | A | | √ | √ | | √ | √ | | ○ | | | √ | √ | | √ | √ | | | | | √ | ○ |
| | S | | √ | √ | | √ | √ | | ○ | | | √ | √ | | √ | √ | | | | | √ | ○ |
| *Argopecten irradians* | J | | √ | √ | | √ | √ | | ○ | | | √ | √ | | √ | √ | | | | | √ | ○ |
| | L | | √ | √ | | √ | √ | | ○ | | | √ | √ | | √ | √ | | | | | √ | ○ |
| | E | | √ | √ | | √ | √ | | ○ | | | √ | √ | | √ | √ | | | | | √ | ○ |
| American oyster | A | | | | | ○ | ○ | √ | ◉ | | | ○ | ○ | | ○ | ○ | | ◉ | ◉ | | ◉ | ◉ |
| | S | | | | | ○ | ○ | | ○ | | | ○ | ○ | | ○ | ○ | | ◉ | ◉ | | ◉ | ◉ |
| *Crassostrea virginica* | J | | | | | ○ | ○ | √ | ○ | | | ○ | ○ | | ○ | ○ | | ◉ | ◉ | | ◉ | ◉ |
| | L | | | | | ○ | ○ | | ○ | | | ○ | ○ | | ○ | ○ | | ◉ | ◉ | | ◉ | ◉ |
| | E | | | | | ○ | ○ | | ○ | | | ○ | ○ | | ○ | ○ | | ◉ | ◉ | | ◉ | ◉ |
| Common rangia | A | | | | | | | ● | ● | | ● | ● | | ● | ● | | ○ | ◉ | | ○ | ○ | |
| | S | | | | | | | ● | ● | | ● | ● | | ● | ● | | | ◉ | | | ○ | |
| *Rangia cuneata* | J | | | | | | | ● | ● | | ● | ● | | ● | ● | | ○ | ◉ | | ○ | ○ | |
| | L | | | | | | | ● | ● | | ● | ● | | ● | ● | | | ◉ | | ○ | ○ | |
| | E | | | | | | | ● | ● | | ● | ● | | ● | ● | | | ◉ | | | ○ | |
| Hard clam | A | | | | | | | | | | | | ○ | | | ○ | | | ○ | | | ○ |
| | S | | | | | | | | | | | | ○ | | | ○ | | | ○ | | | ○ |
| *Mercenaria* species | J | | | | | | | | | | | | ○ | | | ◉ | | | ○ | | | ○ |
| | L | | | | | | | | | | | | ○ | | | ○ | | | ○ | | | ○ |
| | E | | | | | | | | | | | | ○ | | | ○ | | | ○ | | | ○ |
| Bay squid | A | | √ | √ | | √ | √ | | ○ | | | ○ | ○ | | ◉ | ◉ | | ○ | ○ | | ○ | ○ |
| | S | | √ | √ | | √ | √ | | ○ | | | ○ | ○ | | ◉ | ◉ | | ○ | ○ | | ○ | ○ |
| *Lolliguncula brevis* | J | | √ | √ | | √ | √ | | ○ | | | ○ | ○ | | ◉ | ◉ | | ○ | ○ | | ○ | ○ |
| | L | | √ | √ | | √ | √ | | ○ | | | ○ | ○ | | ◉ | ◉ | | ○ | ○ | | ○ | ○ |
| | E | | √ | √ | | √ | √ | | ○ | | | ○ | ○ | | ◉ | ◉ | | ○ | ○ | | ○ | ○ |
| Brown shrimp | A | | √ | √ | | √ | √ | | | | | √ | √ | | | | | | | | | |
| | S | | | | | | | | | | | | | | | | | | | | | |
| *Penaeus aztecus* | J | | √ | √ | | √ | √ | | √ | | | √ | √ | | | | | | | | | |
| | L | | √ | √ | | √ | √ | | | | | √ | √ | | | | | | | | | |
| | E | | | | | | | | | | | | | | | | | | | | | |
| | | T | M | S | T | M | S | T | M | * | T | M | S | T | M | S | T | M | S | T | M | S |
| | | Florida Bay | | | Ten Thousand Islands | | | Caloosa-hatchee River | | | Charlotte Harbor | | | Tampa Bay | | | Suwannee River | | | Apalachee Bay | | |
| | | Gulf of Mexico Estuaries | | | | | | | | | | | | | | | | | | | | |

**Relative Abundance**

- ● Highly Abundant
- ◉ Abundant
- ○ Common
- √ Rare
- Blank Not Present

**Salinity Zone**

- T - Tidal Fresh
- M - Mixing
- S - Seawater
- * - Salinity zone not present

**Life Stage**

- A - Adults
- S - Spawning adults
- J - Juveniles
- L - Larvae
- E - Eggs

Table 4, continued. Spatial distribution and relative abundance

| | | Gulf of Mexico Estuaries | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Apalachicola Bay | | | St. Andrew Bay | | | Choctawhatchee Bay | | | Pensacola Bay | | | Perdido Bay | | | Mobile Bay | | | Mississippi Sound | | |
| Species/Life Stage | | T | M | S | T | M | S | T | M | S | T | M | S | T | M | S | T | M | S | T | M | S |
| Bay scallop | A | | √ | √ | | ○ | ○ | | | | | ○ | ○ | | | | | | | | ○ | ○ |
| | S | | √ | √ | | ○ | ○ | | | | | | | | | | | | | | ○ | ○ |
| *Argopecten irradians* | J | | √ | √ | | ○ | ○ | | | | | ○ | | | | | | | | | ○ | ○ |
| | L | | √ | √ | | ○ | ○ | | | | | | | | | | | | | | ○ | ○ |
| | E | | √ | √ | | ○ | ○ | | | | | | | | | | | | | | ○ | ○ |
| American oyster | A | | ◉ | ◉ | | ○ | √ | | ○ | √ | | ○ | √ | | | √ | | ○ | ○ | | ○ | √ |
| | S | | ◉ | ◉ | | ○ | √ | | ○ | √ | | ○ | √ | | | √ | | ○ | ○ | | ● | ● |
| *Crassostrea virginica* | J | | ◉ | ◉ | | ○ | √ | | ○ | √ | | ○ | √ | | | √ | | ○ | ○ | | ○ | √ |
| | L | | ◉ | ◉ | | ○ | √ | | ○ | √ | | ○ | √ | | | √ | | ○ | ○ | | ● | √ |
| | E | | ◉ | ◉ | | ○ | √ | | ○ | √ | | ○ | √ | | | √ | | ○ | ○ | | ● | ○ |
| Common rangia | A | ○ | ◉ | | ○ | ○ | | √ | ○ | | ○ | ○ | | ○ | ◉ | | ◉ | ◉ | | | ○ | |
| | S | | ◉ | | | ○ | | | ○ | | | ○ | | | ◉ | | | ◉ | | | ○ | |
| *Rangia cuneata* | J | ○ | ◉ | | ○ | ○ | | √ | ○ | | ○ | ○ | | ○ | ◉ | | √ | ◉ | | | ○ | |
| | L | ○ | ◉ | | √ | ○ | | √ | ○ | | ○ | ○ | | | ◉ | | √ | ◉ | | | ○ | |
| | E | | ◉ | | | ○ | | | ○ | | | ○ | | | ◉ | | | ◉ | | | ○ | |
| Hard clam | A | | | | | | ○ | | | ○ | | | | | ○ | ○ | | √ | √ | | √ | ○ |
| | S | | | | | | ○ | | | ○ | | | | | √ | √ | | √ | √ | | √ | ○ |
| *Mercenaria* species | J | | | | | | ○ | | | ○ | | | | | √ | √ | | √ | √ | | √ | ○ |
| | L | | | | | | ○ | | | ○ | | | | | √ | √ | | √ | √ | | √ | ○ |
| | E | | | | | | ○ | | | ○ | | | | | √ | √ | | √ | √ | | √ | ○ |
| Bay squid | A | | ◉ | ◉ | | ○ | ◉ | | ○ | ○ | | ○ | ○ | | ○ | ○ | | ○ | ○ | | ● | ● |
| | S | | ◉ | ◉ | | ○ | ○ | | ○ | ○ | | ○ | ○ | | ○ | ○ | | ○ | ○ | | ◉ | ● |
| *Lolliguncula brevis* | J | | ◉ | ◉ | | ○ | ◉ | | ○ | ○ | | ○ | ○ | | ○ | ○ | | ○ | ○ | | ● | ● |
| | L | | ◉ | ◉ | | ○ | ○ | | ○ | ○ | | ○ | ○ | | ○ | ○ | | ○ | ○ | | ○ | ● |
| | E | | ◉ | ◉ | | ○ | ○ | | ○ | ○ | | ○ | ○ | | ○ | ○ | | ○ | ○ | | ○ | ◉ |
| Brown shrimp | A | | ◉ | ◉ | | ◉ | ◉ | | ◉ | ◉ | | ● | ● | | ● | ● | | ● | ● | √ | ● | ● |
| | S | | | | | | | | | | | | | | | | | | | | | ○ |
| *Penaeus aztecus* | J | ◉ | ◉ | ◉ | | ◉ | ◉ | ◉ | ◉ | ◉ | ● | ● | ● | ● | ● | ● | ● | ● | ● | √ | ● | ● |
| | L | | ◉ | ◉ | | ◉ | ◉ | | ◉ | ◉ | | ● | ● | | √ | √ | | ● | ● | ○ | ● | ● |
| | E | | | | | | | | | | | | | | | | | | | | | ◉ |
| | | T | M | S | T | M | S | T | M | S | T | M | S | T | M | S | T | M | S | T | M | S |
| | | Apalachicola Bay | | | St. Andrew Bay | | | Choctawhatchee Bay | | | Pensacola Bay | | | Perdido Bay | | | Mobile Bay | | | Mississippi Sound | | |
| | | Gulf of Mexico Estuaries | | | | | | | | | | | | | | | | | | | | |

**Relative Abundance**

- ● Highly Abundant
- ◉ Abundant
- ○ Common
- √ Rare
- Blank Not Present

**Salinity Zone**

- T - Tidal Fresh
- M - Mixing
- S - Seawater

**Life Stage**

- A - Adults
- S - Spawning adults
- J - Juveniles
- L - Larvae
- E - Eggs

Table 4, continued. Spatial distribution and relative abundance

| | | Gulf of Mexico Estuaries | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Lake Borgne | | | Lake Pontchar-train | | | Breton/ Chandeleur Sounds | | | Mississippi River | | | Barataria Bay | | | Terrebonne/ Timbalier Bays | | | Atchafalaya/ Vermilion Bays | | |
| Species/Life Stage | | T | M | * | * | M | * | * | M | S | T | M | * | T | M | S | T | M | S | T | M | * |
| Bay scallop | A | | | | | | | | | √ | | | | | | | | | | | | |
| | S | | | | | | | | | √ | | | | | | | | | | | | |
| *Argopecten irradians* | J | | | | | | | | | √ | | | | | | | | | | | | |
| | L | | | | | | | | | √ | | | | | | | | | | | | |
| | E | | | | | | | | | √ | | | | | | | | | | | | |
| American oyster | A | | ○ | | | ○ | | | ◉ | ◉ | | √ | | √ | ◉ | ○ | √ | ◉ | ○ | | ◉ | |
| | S | | ○ | | | ○ | | | ◉ | ◉ | | √ | | | ◉ | ○ | | ◉ | ○ | | ◉ | |
| *Crassostrea virginica* | J | | ○ | | | ○ | | | ◉ | ◉ | | √ | | √ | ◉ | ○ | √ | ◉ | ○ | | ◉ | |
| | L | | ○ | | | ○ | | | ◉ | ◉ | | √ | | | ◉ | ○ | | ◉ | ○ | | ● | |
| | E | | ○ | | | ○ | | | ◉ | ◉ | | √ | | | ◉ | ○ | | ◉ | ○ | | ◉ | |
| Common rangia | A | ◉ | ◉ | | | ◉ | | | ○ | | ○ | ○ | | ◉ | ◉ | | ◉ | ○ | | | ○ | |
| | S | ◉ | ◉ | | | ◉ | | | ○ | | ○ | ○ | | ◉ | ○ | | ◉ | ○ | | | ○ | |
| *Rangia cuneata* | J | ◉ | ◉ | | | ◉ | | | ○ | | ○ | ○ | | ◉ | ◉ | | ◉ | ○ | | | ○ | |
| | L | ◉ | ◉ | | | ◉ | | | ○ | | ○ | ○ | | ◉ | ○ | | ◉ | ○ | | | ○ | |
| | E | ◉ | ◉ | | | ◉ | | | ○ | | ○ | ○ | | ◉ | ○ | | ◉ | ○ | | | ○ | |
| Hard clam | A | | | | | | | | ○ | ○ | | | | | ○ | ○ | | √ | √ | | | |
| | S | | | | | | | | | ○ | | | | | ○ | ○ | | | √ | | | |
| *Mercenaria* species | J | | | | | | | | ○ | ○ | | | | | ○ | ○ | | √ | √ | | | |
| | L | | | | | | | | | ○ | | | | | ○ | ○ | | | √ | | | |
| | E | | | | | | | | | ○ | | | | | ○ | ○ | | | √ | | | |
| Bay squid | A | | ◉ | | | ○ | | | ○ | ○ | | | | | ○ | ○ | | ○ | ○ | | ○ | |
| | S | | | | | | | | | | | | | | | | | | | | | |
| *Lolliguncula brevis* | J | | ◉ | | | ○ | | | ○ | ○ | | | | | ○ | ○ | | ○ | ○ | | ○ | |
| | L | | | | | | | | | | | | | | | | | | | | | |
| | E | | | | | | | | | | | | | | | | | | | | | |
| Brown shrimp | A | | ◉ | | | ○ | | | | | | | | | | | | | | | | |
| | S | | | | | | | | | | | | | | | | | | | | | |
| *Penaeus aztecus* | J | √ | ● | | | ◉ | | | ◉ | ○ | | ○ | | ○ | ● | ● | ○ | ● | ● | √ | ● | |
| | L | | ● | | | ○ | | | | | | | | | ● | ● | | | | | ◉ | |
| | E | | | | | | | | | | | | | | | | | | | | | |
| | | T | M | * | * | M | * | * | M | S | T | M | * | T | M | S | T | M | S | T | M | * |
| | | Lake Borgne | | | Lake Pontchar-train | | | Breton/ Chandeleur Sounds | | | Mississippi River | | | Barataria Bay | | | Terrebonne/ Timbalier Bays | | | Atchafalaya/ Vermilion Bays | | |
| | | Gulf of Mexico Estuaries | | | | | | | | | | | | | | | | | | | | |

**Relative Abundance**

- ● Highly Abundant
- ◉ Abundant
- ○ Common
- √ Rare
- Blank Not Present

**Salinity Zone**

- T - Tidal Fresh
- M - Mixing
- S - Seawater
- * - Salinity zone not present

**Life Stage**

- A - Adults
- S - Spawning adults
- J - Juveniles
- L - Larvae
- E - Eggs

Table 4, continued. Spatial distribution and relative abundance

| | | Gulf of Mexico Estuaries | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Calcasieu Lake | | | Sabine Lake | | | Galveston Bay | | | Brazos River | | | Matagorda Bay | | | San Antonio Bay | | | Aransas Bay | | |
| Species/Life Stage | | T | M | * | T | M | * | T | M | S | T | M | * | T | M | S | * | M | S | * | M | S |
| Bay scallop | A | | | | | | | | | √ | | | | | √ | √ | | √ | √ | | √ | √ |
| | S | | | | | | | | | √ | | | | | | √ | | | √ | | √ | √ |
| *Argopecten irradians* | J | | | | | | | | | √ | | | | | √ | √ | | √ | √ | | √ | √ |
| | L | | | | | | | | | √ | | | | | | √ | | | √ | | √ | √ |
| | E | | | | | | | | | √ | | | | | | √ | | | √ | | √ | √ |
| American oyster | A | | ○ | | √ | ○ | | √ | ◉ | √ | na | na | | √ | ○ | √ | | ◉ | √ | | ○ | √ |
| | S | | ○ | | | ○ | | | ◉ | √ | na | na | | | ○ | | | ◉ | √ | | ○ | √ |
| *Crassostrea virginica* | J | | ○ | | √ | ○ | | √ | ● | √ | na | na | | √ | ○ | √ | | ◉ | √ | | ○ | √ |
| | L | | ○ | | √ | ○ | | √ | ◉ | √ | na | na | | √ | ○ | √ | | ◉ | √ | | ○ | √ |
| | E | | ○ | | | ○ | | | ◉ | √ | na | na | | | ○ | | | ◉ | √ | | ○ | √ |
| Common rangia | A | √ | ○ | | √ | ● | | ◉ | ○ | | na | na | | ○ | ○ | | | √ | | | √ | |
| | S | √ | ○ | | √ | ● | | ◉ | ○ | | na | na | | ○ | ○ | | | √ | | | √ | |
| *Rangia cuneata* | J | √ | ○ | | √ | ● | | ◉ | ○ | | na | na | | ○ | ○ | | | √ | | | √ | |
| | L | √ | ○ | | √ | ● | | ◉ | ○ | | na | na | | ○ | ○ | | | √ | | | √ | |
| | E | √ | ○ | | √ | ● | | | ○ | | na | na | | ○ | ○ | | | √ | | | √ | |
| Hard clam | A | | | | | | | | √ | ○ | | na | | | √ | ○ | | √ | ○ | | ○ | ○ |
| | S | | | | | | | | √ | ○ | | na | | | √ | ○ | | √ | ○ | | ○ | ○ |
| *Mercenaria* species | J | | | | | | | | √ | ○ | | na | | | √ | ○ | | √ | ○ | | ○ | ○ |
| | L | | | | | | | | √ | ○ | | na | | | √ | ○ | | √ | ○ | | ○ | ○ |
| | E | | | | | | | | √ | ○ | | na | | | √ | ○ | | √ | ○ | | ○ | ○ |
| Bay squid | A | | ○ | | | √ | | | ○ | ○ | | ○ | | | ○ | ◉ | | ○ | ◉ | | ○ | ○ |
| | S | | | | | | | | ○ | ○ | | na | | | ○ | ◉ | | ○ | ◉ | | ○ | ○ |
| *Lolliguncula brevis* | J | | ○ | | | √ | | | ○ | ○ | | ○ | | | ○ | ◉ | | ○ | ◉ | | ○ | ○ |
| | L | | | | | | | | ○ | ○ | | na | | | ○ | ◉ | | ○ | ◉ | | ○ | ○ |
| | E | | | | | | | | ○ | ○ | | na | | | ○ | ◉ | | ○ | ◉ | | ○ | ○ |
| Brown shrimp | A | | | | √ | √ | | | | | | | | | ○ | ● | | ○ | ◉ | | | |
| | S | | | | | | | | | | | | | | | | | | | | | |
| *Penaeus aztecus* | J | ○ | ● | | ○ | ◉ | | ◉ | ● | ◉ | na | ◉ | | ○ | ● | ○ | | ● | ○ | | ● | ◉ |
| | L | | ◉ | | | ◉ | | | ○ | ● | na | ◉ | | ○ | ● | ● | | ● | ● | | ◉ | ◉ |
| | E | | | | | | | | | | | | | | | | | | | | | |
| | | T | M | * | T | M | * | T | M | S | T | M | * | T | M | S | * | M | S | * | M | S |
| | | Calcasieu Lake | | | Sabine Lake | | | Galveston Bay | | | Brazos River | | | Matagorda Bay | | | San Antonio Bay | | | Aransas Bay | | |
| | | Gulf of Mexico Estuaries | | | | | | | | | | | | | | | | | | | | |

**Relative Abundance**

- ● Highly Abundant
- ◉ Abundant
- ○ Common
- √ Rare
- Blank Not Present
- na No Data Available

**Salinity Zone**

- T - Tidal Fresh
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- S - Seawater
- * - Salinity zone not present

**Life Stage**

- A - Adults
- S - Spawning adults
- J - Juveniles
- L - Larvae
- E - Eggs

Table 4, continued. Spatial distribution and relative abundance

| | | Gulf of Mexico Estuaries | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | Corpus Christi Bay | | | Laguna Madre | | | Baffin Bay | | |
| Species/Life Stage | | * | M | S | * | * | S | * | * | S |
| Bay scallop | A | | √ | √ | | | √ | | | |
| | S | | √ | √ | | | √ | | | |
| *Argopecten irradians* | J | | √ | √ | | | √ | | | |
| | L | | √ | √ | | | √ | | | |
| | E | | √ | √ | | | √ | | | |
| American oyster | A | | ○ | √ | | | √ | | | |
| | S | | ○ | √ | | | √ | | | |
| *Crassostrea virginica* | J | | ○ | √ | | | √ | | | |
| | L | | ○ | √ | | | √ | | | |
| | E | | ○ | √ | | | √ | | | |
| Common rangia | A | | √ | | | | | | | |
| | S | | √ | | | | | | | |
| *Rangia cuneata* | J | | √ | | | | | | | |
| | L | | √ | | | | | | | |
| | E | | √ | | | | | | | |
| Hard clam | A | | ○ | ○ | | | | | | |
| | S | | ○ | ○ | | | | | | |
| *Mercenaria* species | J | | ○ | ○ | | | | | | |
| | L | | ○ | ○ | | | | | | |
| | E | | ○ | ○ | | | | | | |
| Bay squid | A | | ○ | ○ | | | ○ | | | ○ |
| | S | | ○ | ○ | | | ○ | | | |
| *Lolliguncula brevis* | J | | ○ | ○ | | | ○ | | | ○ |
| | L | | ○ | ○ | | | ○ | | | |
| | E | | ○ | ○ | | | ○ | | | |
| Brown shrimp | A | | | | | | ○ | | | |
| | S | | | | | | | | | |
| *Penaeus aztecus* | J | | ● | ○ | | | ◉ | | | ● |
| | L | | ○ | ○ | | | √ | | | |
| | E | | | | | | | | | |
| | | * | M | S | * | * | S | * | * | S |
| | | Corpus Christi Bay | | | Laguna Madre | | | Baffin Bay | | |
| | | Gulf of Mexico Estuaries | | | | | | | | |

**Relative Abundance**

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**Salinity Zone**

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Table 4, continued. Spatial distribution and relative abundance

| | | Gulf of Mexico Estuaries | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Florida Bay | | | Ten Thousand Islands | | | Caloosa-hatchee River | | | Charlotte Harbor | | | Tampa Bay | | | Suwannee River | | | Apalachee Bay | | |
| Species/Life Stage | | T | M | S | T | M | S | T | M | * | T | M | S | T | M | S | T | M | S | T | M | S |
| Pink shrimp | A | | | | | | | | | | | | | | | √ | | | | | | |
| | S | | | | | | | | | | | | | | | | | | | | | |
| *Penaeus duorarum* | J | | ● | ● | | ◉ | ● | | ◉ | | | ◉ | ◉ | | ● | ● | | ● | ◉ | | ◉ | ◉ |
| | L | | ● | ● | | ◉ | ● | | | | | | | | ● | ● | | | ○ | | | ○ |
| | E | | | | | | | | | | | | | | | | | | | | | |
| White shrimp | A | | | | | | | | | | | | | | | | | √ | √ | | √ | ◉ |
| | S | | | | | | | | | | | | | | | | | | | | | |
| *Penaeus setiferus* | J | | | | | | | | | | | | | | | | | √ | √ | ○ | ● | ◉ |
| | L | | | | | | | | | | | | | | | | | | √ | | | |
| | E | | | | | | | | | | | | | | | | | | | | | |
| Grass shrimp | A | √ | ● | ◉ | √ | ○ | ○ | ○ | ● | | √ | ● | ◉ | | ● | ◉ | √ | ● | ◉ | √ | ● | ◉ |
| | S | | ● | ◉ | | ○ | ○ | | ● | | | ● | ◉ | | ● | ◉ | | ● | ◉ | | ● | ◉ |
| *Palaemonetes pugio* | J | √ | ● | ◉ | √ | ○ | ○ | | ● | | √ | ● | ◉ | | ● | ◉ | √ | ● | ◉ | √ | ● | ◉ |
| | L | | ● | ◉ | | ○ | ○ | | ● | | | ● | ◉ | | ● | ◉ | | ● | ◉ | | ● | ◉ |
| | E | | ● | ◉ | | ○ | ○ | | ● | | | ● | ◉ | | ● | ◉ | | ● | ◉ | | ● | ◉ |
| Spiny lobster | A | | | √ | | | | | | | | | √ | | | √ | | | | | | |
| | M | | | | | | | | | | | | | | | | | | | | | |
| *Panulirus argus* | J | | | ○ | | | √ | | | | | | √ | | | √ | | | | | | |
| | L | | | | | | | | | | | | | | | | | | | | | |
| | E | | | | | | | | | | | | | | | | | | | | | |
| Blue crab | A | ○ | ◉ | ◉ | √ | ◉ | ◉ | √ | ◉ | | | ◉ | ○ | | ◉ | ○ | ○ | ● | ● | ○ | ● | ● |
| | M | ○ | ◉ | | √ | ◉ | | | ◉ | | | ◉ | | | ◉ | | ○ | ● | | ○ | ● | |
| *Callinectes sapidus* | J | ○ | ◉ | ○ | √ | ◉ | ○ | ◉ | ● | | | ◉ | √ | | ◉ | √ | ○ | ● | ○ | ○ | ● | ○ |
| | L | | √ | ◉ | | √ | ◉ | | | | | √ | ◉ | | √ | ◉ | | √ | ● | | √ | ● |
| | E | | | √ | | | √ | | | | | ○ | ◉ | | ○ | ◉ | | ◉ | ◉ | | ◉ | ◉ |
| Gulf stone crab | A | | | | | | | | | | | | | | | | | √ | √ | | ○ | √ |
| | M | | | | | | | | | | | | | | | | | √ | √ | | ○ | √ |
| *Menippe adina* | J | | | | | | | | | | | | | | | | | √ | √ | | ○ | √ |
| | L | | | | | | | | | | | | | | | | | √ | √ | | ○ | √ |
| | E | | | | | | | | | | | | | | | | | √ | √ | | ○ | √ |
| | | T | M | S | T | M | S | T | M | * | T | M | S | T | M | S | T | M | S | T | M | S |
| | | Florida Bay | | | Ten Thousand Islands | | | Caloosa-hatchee River | | | Charlotte Harbor | | | Tampa Bay | | | Suwannee River | | | Apalachee Bay | | |
| | | Gulf of Mexico Estuaries | | | | | | | | | | | | | | | | | | | | |

**Relative Abundance**

- ● Highly Abundant
- ◉ Abundant
- ○ Common
- √ Rare
- Blank Not Present

**Salinity Zone**

- T - Tidal Fresh
- M - Mixing
- S - Seawater
- * - Salinity zone not present

**Life Stage**

- A - Adults
- S - Spawning adults
- J - Juveniles
- L - Larvae
- E - Eggs
- M - Mating

Table 4, continued. Spatial distribution and relative abundance

| | | Gulf of Mexico Estuaries | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Apalachicola Bay | | | St. Andrew Bay | | | Choctawhatchee Bay | | | Pensacola Bay | | | Perdido Bay | | | Mobile Bay | | | Mississippi Sound | | |
| Species/Life Stage | | T | M | S | T | M | S | T | M | S | T | M | S | T | M | S | T | M | S | T | M | S |
| Pink shrimp | A | | √ | √ | √ | ◉ | ◉ | | √ | √ | | √ | √ | | ○ | ○ | | √ | √ | | ○ | ○ |
| | S | | | | | | | | | | | | | | | | | | | | | ○ |
| *Penaeus duorarum* | J | | ◉ | ◉ | √ | ◉ | ◉ | √ | ◉ | ◉ | | ○ | ○ | | ○ | ○ | | ○ | ○ | | ○ | ○ |
| | L | | | ○ | | √ | √ | | √ | √ | | √ | ○ | | √ | √ | | √ | √ | | ○ | ○ |
| | E | | | | | | | | | | | | | | | | | | | | | ○ |
| White shrimp | A | | √ | ◉ | √ | ○ | ○ | √ | ○ | ○ | √ | ○ | ○ | | √ | ○ | √ | ○ | ○ | √ | ◉ | ● |
| | S | | | | | | | | | | | | | | | | | | | | | ○ |
| *Penaeus setiferus* | J | ○ | ● | ◉ | √ | ○ | ○ | √ | ◉ | ◉ | √ | ◉ | ○ | | ○ | ○ | ◉ | ● | ● | √ | ● | ● |
| | L | | | √ | | | | | | | | | | | | | | | | √ | ◉ | ○ |
| | E | | | | | | | | | | | | | | | | | | | | | ○ |
| Grass shrimp | A | √ | ● | ◉ | √ | ◉ | ◉ | √ | ◉ | ◉ | √ | ◉ | ● | | | | √ | ● | ● | ○ | ◉ | ○ |
| | S | | ● | ◉ | | ◉ | ◉ | | ◉ | ◉ | | ◉ | ● | | | | | ● | ● | √ | ○ | ○ |
| *Palaemonetes pugio* | J | √ | ● | ◉ | √ | ◉ | ◉ | √ | ◉ | ◉ | √ | ◉ | ● | | | | √ | ● | ● | √ | ○ | ○ |
| | L | | ● | ◉ | | ◉ | ◉ | | ◉ | ◉ | | ◉ | ● | | | | | ● | ● | √ | ○ | ○ |
| | E | | ● | ◉ | | ◉ | ◉ | | ◉ | ◉ | | ◉ | ● | | | | | ● | ● | √ | ○ | ○ |
| Spiny lobster | A | | | | | | ○ | | | | | | | | | | | | | | | |
| | M | | | | | | | | | | | | | | | | | | | | | |
| *Panulirus argus* | J | | | | | | | | | | | | | | | | | | | | | √ |
| | L | | | | | | | | | | | | | | | | | | | | | √ |
| | E | | | | | | | | | | | | | | | | | | | | | √ |
| Blue crab | A | ○ | ● | ● | ○ | ◉ | ● | √ | ◉ | ○ | √ | ◉ | ○ | √ | ◉ | ◉ | √ | ● | ● | √ | ● | ● |
| | M | ○ | ● | | ○ | ◉ | | | ◉ | | | ◉ | | √ | ○ | ○ | √ | ● | | | ◉ | ● |
| *Callinectes sapidus* | J | ○ | ● | ○ | ○ | ● | ● | √ | ◉ | ○ | √ | ◉ | ○ | ○ | ◉ | ◉ | ○ | ● | ● | ○ | ● | ○ |
| | L | | √ | ● | | √ | ◉ | | √ | ◉ | | √ | ◉ | | √ | ○ | | √ | ● | √ | ● | ● |
| | E | | ◉ | ◉ | | | ○ | | | √ | | | √ | | | ○ | | | √ | | ◉ | ● |
| Gulf stone crab | A | | ○ | ○ | | √ | √ | | √ | √ | | √ | √ | | √ | √ | | ○ | ○ | | ○ | ○ |
| | M | | ○ | ○ | | √ | √ | | √ | √ | | √ | √ | | √ | √ | | √ | √ | | ○ | ○ |
| *Menippe adina* | J | | ○ | ○ | | √ | √ | | √ | √ | | √ | √ | | √ | √ | | ○ | ○ | | ○ | ○ |
| | L | | ○ | ○ | | √ | √ | | √ | √ | | √ | √ | | √ | √ | | √ | √ | | ○ | ○ |
| | E | | ○ | ○ | | √ | √ | | √ | √ | | √ | √ | | √ | √ | | √ | √ | | ○ | ○ |
| | | T | M | S | T | M | S | T | M | S | T | M | S | T | M | S | T | M | S | T | M | S |
| | | Apalachicola Bay | | | St. Andrew Bay | | | Choctawhatchee Bay | | | Pensacola Bay | | | Perdido Bay | | | Mobile Bay | | | Mississippi Sound | | |
| | | Gulf of Mexico Estuaries | | | | | | | | | | | | | | | | | | | | |

**Relative Abundance**

- ● Highly Abundant
- ◉ Abundant
- ○ Common
- √ Rare
- Blank Not Present

**Salinity Zone**

- T - Tidal Fresh
- M - Mixing
- S - Seawater

**Life Stage**

- A - Adults
- S - Spawning adults
- J - Juveniles
- L - Larvae
- E - Eggs
- M - Mating

Table 4, continued. Spatial distribution and relative abundance

| | | Gulf of Mexico Estuaries | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Lake Borgne | | | Lake Pontchar-train | | | Breton/ Chandeleur Sounds | | | Mississippi River | | | Barataria Bay | | | Terrebonne/ Timbalier Bays | | | Atchafalaya/ Vermilion Bays | | |
| Species/Life Stage | | T | M | * | * | M | * | * | M | S | T | M | * | T | M | S | T | M | S | T | M | * |
| Pink shrimp | A | | | | | | | | ○ | ○ | | | | | | | | | | | | |
| | S | | | | | | | | | | | | | | | | | | | | | |
| *Penaeus duorarum* | J | | √ | | | √ | | | ○ | ◉ | | | | | ○ | ○ | | √ | √ | | √ | |
| | L | | | | | | | | | | | | | | ○ | ○ | | | | | | |
| | E | | | | | | | | | | | | | | | | | | | | | |
| White shrimp | A | | ◉ | | | ◉ | | | | ○ | | | | | ◉ | ○ | | ○ | ○ | ○ | ◉ | |
| | S | | | | | | | | | ○ | | | | | | | | | | | | |
| *Penaeus setiferus* | J | ◉ | ● | | | ● | | | ○ | | ○ | ○ | | ○ | ● | ● | ○ | ◉ | ◉ | ○ | ● | |
| | L | | | | | | | | | ○ | ○ | ○ | | | ◉ | ● | | | ○ | | ◉ | |
| | E | | | | | | | | | ○ | | | | | | √ | | | | | | |
| Grass shrimp | A | √ | ● | | | ○ | | | ○ | ◉ | ○ | ○ | | ◉ | ◉ | ◉ | ◉ | ◉ | ◉ | ● | ● | |
| | S | | ● | | | ○ | | | ○ | ◉ | ○ | ○ | | ◉ | ◉ | ◉ | ◉ | ◉ | ◉ | ● | ● | |
| *Palaemonetes pugio* | J | √ | ● | | | ○ | | | ○ | ◉ | ○ | ○ | | ◉ | ◉ | ◉ | ◉ | ◉ | ◉ | ● | ● | |
| | L | | ● | | | ○ | | | ○ | ◉ | ○ | ○ | | ◉ | ◉ | ◉ | ◉ | ◉ | ◉ | ● | ● | |
| | E | | ● | | | ○ | | | ○ | ◉ | ○ | ○ | | ◉ | ◉ | ◉ | ◉ | ◉ | ◉ | ● | ● | |
| Spiny lobster | A | | | | | | | | | | | | | | | | | | | | | |
| | M | | | | | | | | | | | | | | | | | | | | | |
| *Panulirus argus* | J | | | | | | | | | | | | | | | | | | | | | |
| | L | | | | | | | | | | | | | | | | | | | | | |
| | E | | | | | | | | | | | | | | | | | | | | | |
| Blue crab | A | ● | ● | | | ◉ | | | ◉ | ◉ | ○ | ○ | | ○ | ◉ | ○ | ○ | ◉ | ◉ | ○ | ◉ | |
| | M | ○ | ● | | | ○ | | | ◉ | ○ | ○ | ○ | | ○ | ○ | | ○ | ◉ | | ○ | ◉ | |
| *Callinectes sapidus* | J | √ | ● | | | ○ | | | ◉ | ◉ | ○ | ○ | | ○ | ◉ | ○ | ○ | ◉ | ○ | ○ | ◉ | |
| | L | | ● | | | √ | | | ◉ | ◉ | | ○ | | | ◉ | ◉ | | ○ | ● | | ◉ | |
| | E | | ● | | | | | | ○ | ◉ | | ○ | | | ○ | ◉ | | ◉ | ◉ | | | |
| Gulf stone crab | A | | √ | | | √ | | | ○ | ○ | | ○ | | | √ | √ | | √ | ○ | | √ | |
| | M | | | | | | | | | ○ | | | | | | | | | | | | |
| *Menippe adina* | J | | √ | | | √ | | | ○ | ○ | | ○ | | | ○ | ○ | | √ | ○ | | √ | |
| | L | | | | | | | | | ○ | | | | | | | | | | | | |
| | E | | | | | | | | | ○ | | | | | | | | | | | | |
| | | T | M | * | * | M | * | * | M | S | T | M | * | T | M | S | T | M | S | T | M | * |
| | | Lake Borgne | | | Lake Pontchar-train | | | Breton/ Chandeleur Sounds | | | Mississippi River | | | Barataria Bay | | | Terrebonne/ Timbalier Bays | | | Atchafalaya/ Vermilion Bays | | |
| | | Gulf of Mexico Estuaries | | | | | | | | | | | | | | | | | | | | |

**Relative Abundance**

- ● Highly Abundant
- ◉ Abundant
- ○ Common
- √ Rare
- Blank Not Present

**Salinity Zone**

- T - Tidal Fresh
- M - Mixing
- S - Seawater
- * - Salinity zone not present

**Life Stage**

- A - Adults
- S - Spawning adults
- J - Juveniles
- L - Larvae
- E - Eggs
- M - Mating

Table 4, continued. Spatial distribution and relative abundance

| | | Gulf of Mexico Estuaries | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Calcasieu Lake | | | Sabine Lake | | | Galveston Bay | | | Brazos River | | | Matagorda Bay | | | San Antonio Bay | | | Aransas Bay | | |
| Species/Life Stage | | T | M | * | T | M | * | T | M | S | T | M | * | T | M | S | * | M | S | * | M | S |
| Pink shrimp | A | | | | | | | | √ | √ | | | | | ○ | ○ | | ○ | ○ | | ○ | |
| | S | | | | | | | | | | | | | | | | | | | | | |
| *Penaeus duorarum* | J | | | | | | | | √ | √ | na | ○ | | | √ | √ | | ○ | ○ | | ○ | ○ |
| | L | | | | | | | | | | | | | | | | | | | | | |
| | E | | | | | | | | | | | | | | | | | | | | | |
| White shrimp | A | ○ | ○ | | ◉ | ● | | | ○ | ○ | na | ○ | | √ | ◉ | ○ | | ● | ● | | ○ | ○ |
| | S | | | | | | | | | | | | | | | | | | | | | |
| *Penaeus setiferus* | J | ○ | ● | | ● | ● | | ● | ● | ◉ | ● | ● | | ● | ◉ | ○ | | ● | ○ | | ◉ | ○ |
| | L | | ● | | | ● | | ○ | ◉ | ● | ◉ | ◉ | | ● | ● | ● | | ● | ● | | | ○ |
| | E | | | | | | | | | | | | | | | | | | | | | |
| Grass shrimp | A | ◉ | ● | | ◉ | ● | | ○ | ● | ◉ | na | ◉ | | ● | ● | ● | | ◉ | ○ | | ◉ | ◉ |
| | S | ◉ | ● | | ◉ | ● | | ○ | ● | ◉ | na | ◉ | | ● | ● | ● | | ◉ | ○ | | ◉ | ◉ |
| *Palaemonetes pugio* | J | ◉ | ● | | ◉ | ● | | ○ | ● | ◉ | na | ◉ | | ● | ● | ● | | ◉ | ○ | | ◉ | ◉ |
| | L | ◉ | ● | | ◉ | ● | | ○ | ● | ◉ | na | ◉ | | ● | ● | ● | | ◉ | ○ | | ◉ | ◉ |
| | E | ◉ | ● | | ◉ | ● | | ○ | ● | ◉ | na | ◉ | | ● | ● | ● | | ◉ | ○ | | ◉ | ◉ |
| Spiny lobster | A | | | | | | | | | | | | | | | | | | | | | |
| | M | | | | | | | | | | | | | | | | | | | | | |
| *Panulirus argus* | J | | | | | | | | | | | | | | | | | | | | | |
| | L | | | | | | | | | | | | | | | | | | | | | |
| | E | | | | | | | | | | | | | | | | | | | | | |
| Blue crab | A | ○ | ● | | ● | ● | | ◉ | ◉ | ◉ | na | ○ | | ○ | ◉ | ○ | | ● | ○ | | ◉ | ○ |
| | M | ○ | ○ | | ◉ | ◉ | | ○ | ○ | | | ○ | | ○ | √ | | | ○ | | | ○ | |
| *Callinectes sapidus* | J | ○ | ● | | ◉ | ◉ | | ◉ | ◉ | ◉ | na | ○ | | ○ | ◉ | ○ | | ● | √ | | ◉ | ● |
| | L | | ○ | | | ◉ | | | ◉ | ◉ | | ○ | | ● | ◉ | ○ | | | ● | | ○ | ○ |
| | E | | | | | | | | ◉ | ◉ | | ○ | | | √ | ○ | | | ● | | | ○ |
| Gulf stone crab | A | | √ | | | √ | | | √ | ○ | | na | | | ○ | ○ | | ○ | ○ | | ○ | ○ |
| | M | | | | | | | | | ○ | | | | | | ○ | | | ○ | | | ○ |
| *Menippe adina* | J | | ○ | | | √ | | | √ | ○ | | na | | | ○ | ○ | | ○ | ○ | | ○ | ○ |
| | L | | | | | | | | | ○ | | | | | | ○ | | | ○ | | | ○ |
| | E | | | | | | | | | ○ | | | | | | ○ | | | ○ | | | ○ |
| | | T | M | * | T | M | * | T | M | S | T | M | * | T | M | S | * | M | S | * | M | S |
| | | Calcasieu Lake | | | Sabine Lake | | | Galveston Bay | | | Brazos River | | | Matagorda Bay | | | San Antonio Bay | | | Aransas Bay | | |
| | | Gulf of Mexico Estuaries | | | | | | | | | | | | | | | | | | | | |

**Relative Abundance**

- ● Highly Abundant
- ◉ Abundant
- ○ Common
- √ Rare
- Blank Not Present
- na No Data Available

**Salinity Zone**

- T - Tidal Fresh
- M - Mixing
- S - Seawater
- * - Salinity zone not present

**Life Stage**

- A - Adults
- S - Spawning adults
- J - Juveniles
- L - Larvae
- E - Eggs
- M - Mating

Table 4, continued. Spatial distribution and relative abundance

| | | Gulf of Mexico Estuaries | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | Corpus Christi Bay | | | Laguna Madre | | | Baffin Bay | | |
| Species/Life Stage | | * | M | S | * | * | S | * | * | S |
| Pink shrimp | A | | | | | | ○ | | | √ |
| | S | | | | | | | | | |
| *Penaeus duorarum* | J | | ○ | ○ | | | ◉ | | | ○ |
| | L | | | | | | | | | |
| | E | | | | | | | | | |
| White shrimp | A | | ○ | ◉ | | | ○ | | | √ |
| | S | | | | | | | | | |
| *Penaeus setiferus* | J | | ◉ | ◉ | | | ◉ | | | √ |
| | L | | | | | | √ | | | |
| | E | | | | | | | | | |
| Grass shrimp | A | | ● | ◉ | | | ● | | | ● |
| | S | | ● | ◉ | | | ● | | | ● |
| *Palaemonetes pugio* | J | | ● | ◉ | | | ● | | | ● |
| | L | | ● | ◉ | | | ● | | | ● |
| | E | | ● | ◉ | | | ● | | | ● |
| Spiny lobster | A | | | | | | √ | | | |
| | M | | | | | | | | | |
| *Panulirus argus* | J | | | | | | √ | | | |
| | L | | | | | | | | | |
| | E | | | | | | | | | |
| Blue crab | A | | ○ | ◉ | | | ◉ | | | ◉ |
| | M | | ○ | | | | ○ | | | |
| *Callinectes sapidus* | J | | ○ | ● | | | ◉ | | | ◉ |
| | L | | ○ | ◉ | | | ◉ | | | ○ |
| | E | | | ◉ | | | ◉ | | | ○ |
| Gulf stone crab | A | | ○ | ○ | | | √ | | | ○ |
| | M | | | ○ | | | √ | | | ○ |
| *Menippe adina* | J | | ○ | ○ | | | √ | | | ○ |
| | L | | | ○ | | | √ | | | ○ |
| | E | | | ○ | | | √ | | | ○ |
| | | * | M | S | * | * | S | * | * | S |
| | | Corpus Christi Bay | | | Laguna Madre | | | Baffin Bay | | |
| | | Gulf of Mexico Estuaries | | | | | | | | |

**Relative Abundance**

- ● Highly Abundant
- ◉ Abundant
- ○ Common
- √ Rare
- Blank Not Present

**Salinity Zone**

- T - Tidal Fresh
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**Life Stage**

- A - Adults
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Table 4, continued. Spatial distribution and relative abundance

| | | Gulf of Mexico Estuaries | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Florida Bay | | | Ten Thousand Islands | | | Caloosa-hatchee River | | | Charlotte Harbor | | | Tampa Bay | | | Suwannee River | | | Apalachee Bay | | |
| Species/Life Stage | | T | M | S | T | M | S | T | M | * | T | M | S | T | M | S | T | M | S | T | M | S |
| Stone crab | A | | √ | ○ | | ○ | ○ | | | | | ○ | ○ | | √ | ○ | | √ | ○ | | √ | ○ |
| | M | | √ | ○ | | ○ | ○ | | | | | ○ | ○ | | √ | ○ | | √ | ○ | | √ | ○ |
| *Menippe mercenaria* | J | | √ | √ | | √ | ○ | | √ | | | ○ | ○ | | √ | ○ | | √ | ○ | | √ | ○ |
| | L | | √ | √ | | √ | ○ | | √ | | | ○ | ○ | | √ | ○ | | √ | ○ | | √ | ○ |
| | E | | √ | ○ | | ○ | ○ | | | | | ○ | ○ | | √ | ○ | | √ | ○ | | √ | ○ |
| Bull shark | A | √ | √ | √ | ○ | ○ | ○ | ○ | ○ | | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| | M | | | √ | | | √ | | | | | | √ | | | √ | | | √ | | | √ |
| *Carcharhinus leucas* | J | √ | ○ | √ | ○ | ○ | √ | ○ | ○ | | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| | P | √ | √ | √ | ○ | ○ | ○ | √ | ○ | | √ | ○ | ○ | √ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| Tarpon | A | √ | ○ | ○ | √ | ○ | ○ | ◉ | ◉ | | ○ | ◉ | ◉ | √ | ○ | ◉ | √ | √ | ○ | ○ | | ○ |
| | S | | | | | | | | | | | | ◉ | | | | | | | | | |
| *Megalops atlanticus* | J | ○ | ○ | ○ | ○ | ○ | ○ | ◉ | ◉ | | ◉ | ◉ | ◉ | √ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| | L | | | | | | | √ | √ | | | | ○ | | | √ | | | ○ | | | ○ |
| | E | | | | | | | | | | | | | | | | | | | | | |
| Alabama shad | A | | | | | | | | | | | | | | | | ○ | ○ | ○ | | | |
| | S | | | | | | | | | | | | | | | | ○ | | | | | |
| *Alosa alabamae* | J | | | | | | | | | | | | | | | | ○ | ○ | ○ | | | |
| | L | | | | | | | | | | | | | | | | ○ | ○ | | | | |
| | E | | | | | | | | | | | | | | | | ○ | | | | | |
| Gulf menhaden | A | | | | | | | | | | | | | | ● | ● | | √ | √ | | ◉ | ◉ |
| | S | | | | | | | | | | | | | | | | | | | | | |
| *Brevoortia patronus* | J | | | √ | | √ | √ | | √ | | | √ | √ | | ● | ● | √ | ○ | ○ | ○ | ◉ | ○ |
| | L | | | | | | | | | | | | | | | √ | | | ○ | | | ◉ |
| | E | | | | | | | | | | | | | | | | | | | | | |
| Yellowfin menhaden | A | | | | | | | | | | | ○ | ○ | | ◉ | ◉ | | | | | √ | √ |
| | S | | | | | | | | | | | | | | | | | | | | | |
| *Brevoortia smithi* | J | ○ | ◉ | ◉ | | ◉ | ● | ○ | ○ | | ○ | ○ | ○ | ○ | ◉ | ◉ | | | | | √ | √ |
| | L | | ○ | ◉ | | ◉ | ◉ | | √ | | | √ | ○ | | | | | | | | | √ |
| | E | | | | | | | | | | | | | | | | | | | | | |
| | | T | M | S | T | M | S | T | M | * | T | M | S | T | M | S | T | M | S | T | M | S |
| | | Florida Bay | | | Ten Thousand Islands | | | Caloosa-hatchee River | | | Charlotte Harbor | | | Tampa Bay | | | Suwannee River | | | Apalachee Bay | | |
| | | Gulf of Mexico Estuaries | | | | | | | | | | | | | | | | | | | | |

**Relative Abundance**

- ● Highly Abundant
- ◉ Abundant
- ○ Common
- √ Rare
- Blank Not Present

**Salinity Zone**

- T - Tidal Fresh
- M - Mixing
- S - Seawater
- * - Salinity zone not present

**Life Stage**

- A - Adults
- S - Spawning adults
- J - Juveniles
- L - Larvae
- E - Eggs
- M - Mating
- P - Parturition

Table 4, continued. Spatial distribution and relative abundance

| | | Gulf of Mexico Estuaries | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Apalachicola Bay | | | St. Andrew Bay | | | Choctawhatchee Bay | | | Pensacola Bay | | | Perdido Bay | | | Mobile Bay | | | Mississippi Sound | | |
| Species/Life Stage | | T | M | S | T | M | S | T | M | S | T | M | S | T | M | S | T | M | S | T | M | S |
| Stone crab | A | | √ | √ | | | | | | | | | | | | | | | | | | |
| | M | | √ | √ | | | | | | | | | | | | | | | | | | |
| *Menippe mercenaria* | J | | √ | √ | | | | | | | | | | | | | | | | | | |
| | L | | √ | √ | | | | | | | | | | | | | | | | | | |
| | E | | √ | √ | | | | | | | | | | | | | | | | | | |
| Bull shark | A | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | √ | √ | √ | ○ | ○ | ○ | ○ | ○ | ○ |
| | M | | | √ | | | √ | | | √ | | | √ | | | √ | | | √ | | | ○ |
| *Carcharhinus leucas* | J | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | √ | √ | √ | ○ | ○ | ○ | ○ | ○ | ○ |
| | P | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | √ | √ | √ | ○ | ○ | ○ | | | |
| Tarpon | A | ○ | ○ | ○ | | ○ | ○ | ○ | ○ | ○ | | ○ | ○ | | | √ | | ○ | ○ | | √ | ○ |
| | S | | | | | | | | | | | | | | | | | | | | | ○ |
| *Megalops atlanticus* | J | ○ | ○ | ○ | √ | √ | √ | ○ | ○ | ○ | √ | ○ | ○ | | | √ | | ○ | ○ | √ | √ | ○ |
| | L | | | ○ | | | ○ | | | ○ | | ○ | ○ | | | | | | ○ | | √ | ○ |
| | E | | | | | | | | | | | | | | | | | | | | | ○ |
| Alabama shad | A | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | | | | | | | √ | √ | | ◉ | ○ | √ |
| | S | ○ | | | | | | | | | | | | | | | | | | ◉ | | |
| *Alosa alabamae* | J | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | | | | | | | √ | √ | | ◉ | ○ | √ |
| | L | ○ | | | | | | | | | | | | | | | | | | ◉ | | |
| | E | ○ | | | | | | | | | | | | | | | | | | ◉ | | |
| Gulf menhaden | A | | ◉ | ◉ | √ | ◉ | ◉ | | ◉ | ◉ | √ | ◉ | ◉ | √ | ○ | ○ | √ | ● | ● | | ● | ● |
| | S | | | | | | | | | | | | | | | | | | | | | ◉ |
| *Brevoortia patronus* | J | ○ | ◉ | ○ | ○ | ● | ◉ | ○ | ● | ○ | ◉ | ● | ◉ | ○ | ◉ | ◉ | ◉ | ● | ● | ● | ● | ◉ |
| | L | | | ◉ | | ○ | ○ | | ◉ | ● | | ○ | ○ | | ○ | ○ | | ● | ● | | ● | ◉ |
| | E | | | | | | | | | | | | | | | √ | | | ● | | | ◉ |
| Yellowfin menhaden | A | | | | | | | | | | | | | | | | | | | | | √ |
| | S | | | | | | | | | | | | | | | | | | | | | |
| *Brevoortia smithi* | J | | | | | | | | | | | | | | | | | | | | | |
| | L | | | | | | | | | | | | | | | | | | | | | |
| | E | | | | | | | | | | | | | | | | | | | | | |
| | | T | M | S | T | M | S | T | M | S | T | M | S | T | M | S | T | M | S | T | M | S |
| | | Apalachicola Bay | | | St. Andrew Bay | | | Choctawhatchee Bay | | | Pensacola Bay | | | Perdido Bay | | | Mobile Bay | | | Mississippi Sound | | |
| | | Gulf of Mexico Estuaries | | | | | | | | | | | | | | | | | | | | |

**Relative Abundance**

- ● Highly Abundant
- ◉ Abundant
- ○ Common
- √ Rare
- Blank Not Present

**Salinity Zone**

- T - Tidal Fresh
- M - Mixing
- S - Seawater

**Life Stage**

- A - Adults
- S - Spawning adults
- J - Juveniles
- L - Larvae
- E - Eggs
- M - Mating
- P - Parturition

Table 4, continued. Spatial distribution and relative abundance

| | | Gulf of Mexico Estuaries | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Lake Borgne | | | Lake Pontchar-train | | | Breton/ Chandeleur Sounds | | | Mississippi River | | | Barataria Bay | | | Terrebonne/ Timbalier Bays | | | Atchafalaya/ Vermilion Bays | | |
| Species/Life Stage | | T | M | * | * | M | * | * | M | S | T | M | * | T | M | S | T | M | S | T | M | * |
| Stone crab | A | | | | | | | | | | | | | | | | | | | | | |
| | M | | | | | | | | | | | | | | | | | | | | | |
| *Menippe mercenaria* | J | | | | | | | | | | | | | | | | | | | | | |
| | L | | | | | | | | | | | | | | | | | | | | | |
| | E | | | | | | | | | | | | | | | | | | | | | |
| Bull shark | A | ○ | ○ | | | ○ | | | ○ | ◉ | √ | √ | | √ | √ | ○ | √ | ○ | ○ | | | |
| | M | | | | | | | | | | | | | | | | | | | | | |
| *Carcharhinus leucas* | J | ○ | ○ | | | ○ | | | ○ | ○ | √ | √ | | √ | √ | √ | √ | ○ | ○ | √ | ○ | |
| | P | | | | | | | | ○ | ○ | | | | √ | √ | √ | √ | √ | √ | | | |
| Tarpon | A | √ | ○ | | | ○ | | | | | | ○ | | | | √ | | √ | √ | | √ | |
| | S | | | | | | | | | | | | | | | | | | | | | |
| *Megalops atlanticus* | J | √ | ○ | | | ○ | | | | | | | | | | √ | | | | | | |
| | L | √ | √ | | | | | | | | | | | | | | | | | | | |
| | E | | | | | | | | | | | | | | | | | | | | | |
| Alabama shad | A | ○ | ○ | | | | | | √ | | | | | | | | | | | | | |
| | S | | | | | | | | | | | | | | | | | | | | | |
| *Alosa alabamae* | J | ○ | ○ | | | √ | | | | | | | | | | | | | | | | |
| | L | | | | | | | | | | | | | | | | | | | | | |
| | E | | | | | | | | | | | | | | | | | | | | | |
| Gulf menhaden | A | ◉ | ● | | | | | | | | | | | | | | | ◉ | ◉ | | | |
| | S | | | | | | | | | | | | | | | | | | | | | |
| *Brevoortia patronus* | J | ◉ | ● | | | ● | | | ● | ◉ | | ◉ | | ○ | ◉ | ● | ○ | ◉ | ◉ | ● | ● | |
| | L | | ● | | | ◉ | | | | | | | | | ○ | ○ | | | | ○ | ○ | |
| | E | | | | | | | | | | | | | | | | | | | | | |
| Yellowfin menhaden | A | | √ | | | √ | | | | | | | | | | | | | | | | |
| | S | | | | | | | | | | | | | | | | | | | | | |
| *Brevoortia smithi* | J | | √ | | | √ | | | | | | | | | | | | | | | | |
| | L | | | | | | | | | | | | | | | | | | | | | |
| | E | | | | | | | | | | | | | | | | | | | | | |
| | | T | M | * | * | M | * | * | M | S | T | M | * | T | M | S | T | M | S | T | M | * |
| | | Lake Borgne | | | Lake Pontchar-train | | | Breton/ Chandeleur Sounds | | | Mississippi River | | | Barataria Bay | | | Terrebonne/ Timbalier Bays | | | Atchafalaya/ Vermilion Bays | | |
| | | Gulf of Mexico Estuaries | | | | | | | | | | | | | | | | | | | | |

**Relative Abundance**

- ● Highly Abundant
- ◉ Abundant
- ○ Common
- √ Rare
- Blank Not Present

**Salinity Zone**

- T - Tidal Fresh
- M - Mixing
- S - Seawater
- * - Salinity zone not present

**Life Stage**

- A - Adults
- S - Spawning adults
- J - Juveniles
- L - Larvae
- E - Eggs
- M - Mating
- P - Parturition

Table 4, continued. Spatial distribution and relative abundance

| | | Gulf of Mexico Estuaries | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Calcasieu Lake | | | Sabine Lake | | | Galveston Bay | | | Brazos River | | | Matagorda Bay | | | San Antonio Bay | | | Aransas Bay | | |
| Species/Life Stage | | T | M | * | T | M | * | T | M | S | T | M | * | T | M | S | * | M | S | * | M | S |
| Stone crab | A | | | | | | | | | | | | | | | | | | | | | |
| | M | | | | | | | | | | | | | | | | | | | | | |
| *Menippe mercenaria* | J | | | | | | | | | | | | | | | | | | | | | |
| | L | | | | | | | | | | | | | | | | | | | | | |
| | E | | | | | | | | | | | | | | | | | | | | | |
| Bull shark | A | √ | √ | | | | | | | √ | | | | | | | | | | | | |
| | M | | | | | | | | | | | | | | | | | | | | | |
| *Carcharhinus leucas* | J | √ | √ | | √ | √ | | √ | ○ | √ | na | na | | ○ | ○ | ○ | | ○ | ○ | | ○ | ○ |
| | P | √ | √ | | | | | | | | | | | | | | | | | | | |
| Tarpon | A | | | | | | | | √ | √ | | | | | | ○ | | √ | ○ | | √ | √ |
| | S | | | | | | | | | | | | | | | | | | | | | |
| *Megalops atlanticus* | J | | | | | √ | | | √ | √ | na | na | | √ | √ | ○ | | √ | ○ | | √ | √ |
| | L | | | | | | | | | | | | | | | | | | | | | √ |
| | E | | | | | | | | | | | | | | | | | | | | | |
| Alabama shad | A | | | | | | | | | | | | | | | | | | | | | |
| | S | | | | | | | | | | | | | | | | | | | | | |
| *Alosa alabamae* | J | | | | | | | | | | | | | | | | | | | | | |
| | L | | | | | | | | | | | | | | | | | | | | | |
| | E | | | | | | | | | | | | | | | | | | | | | |
| Gulf menhaden | A | | | | ○ | ○ | | | | | | | | | ◉ | ● | | ○ | ○ | | | |
| | S | | | | | | | | | | | | | | | | | | | | | |
| *Brevoortia patronus* | J | ○ | ● | | ● | ● | | ○ | ● | ◉ | na | ◉ | | ● | ● | ● | | ◉ | ○ | | ◉ | ◉ |
| | L | ○ | ◉ | | | | | | | | | | | | | | | | | | | ◉ |
| | E | | | | | | | | | | | | | | | | | | | | | |
| Yellowfin menhaden | A | | | | | | | | | | | | | | | | | | | | | |
| | S | | | | | | | | | | | | | | | | | | | | | |
| *Brevoortia smithi* | J | | | | | | | | | | | | | | | | | | | | | |
| | L | | | | | | | | | | | | | | | | | | | | | |
| | E | | | | | | | | | | | | | | | | | | | | | |
| | | T | M | * | T | M | * | T | M | S | T | M | * | T | M | S | * | M | S | * | M | S |
| | | Calcasieu Lake | | | Sabine Lake | | | Galveston Bay | | | Brazos River | | | Matagorda Bay | | | San Antonio Bay | | | Aransas Bay | | |
| | | Gulf of Mexico Estuaries | | | | | | | | | | | | | | | | | | | | |

**Relative Abundance**

- ● Highly Abundant
- ◉ Abundant
- ○ Common
- √ Rare
- Blank Not Present
- na No Data Available

**Salinity Zone**

- T - Tidal Fresh
- M - Mixing
- S - Seawater
- * - Salinity zone not present

**Life Stage**

- A - Adults
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- J - Juveniles
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- E - Eggs
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- P - Parturition

Table 4, continued. Spatial distribution and relative abundance

| | | Gulf of Mexico Estuaries | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | Corpus Christi Bay | | | Laguna Madre | | | Baffin Bay | | |
| Species/Life Stage | | * | M | S | * | * | S | * | * | S |
| Stone crab | A | | | | | | | | | |
| | M | | | | | | | | | |
| *Menippe mercenaria* | J | | | | | | | | | |
| | L | | | | | | | | | |
| | E | | | | | | | | | |
| Bull shark | A | | | | | | | | | |
| | M | | | | | | | | | |
| *Carcharhinus leucas* | J | | ○ | ○ | | | √ | | | √ |
| | P | | | | | | | | | |
| Tarpon | A | | √ | √ | | | √ | | | |
| | S | | | | | | | | | |
| *Megalops atlanticus* | J | | √ | √ | | | √ | | | √ |
| | L | | | √ | | | | | | |
| | E | | | | | | | | | |
| Alabama shad | A | | | | | | | | | |
| | S | | | | | | | | | |
| *Alosa alabamae* | J | | | | | | | | | |
| | L | | | | | | | | | |
| | E | | | | | | | | | |
| Gulf menhaden | A | | ○ | ○ | | | ○ | | | √ |
| | S | | | | | | | | | |
| *Brevoortia patronus* | J | | ◉ | ◉ | | | ◉ | | | ● |
| | L | | | ○ | | | | | | √ |
| | E | | | | | | | | | |
| Yellowfin menhaden | A | | | | | | | | | |
| | S | | | | | | | | | |
| *Brevoortia smithi* | J | | | | | | | | | |
| | L | | | | | | | | | |
| | E | | | | | | | | | |
| | | * | M | S | * | * | S | * | * | S |
| | | Corpus Christi Bay | | | Laguna Madre | | | Baffin Bay | | |
| | | Gulf of Mexico Estuaries | | | | | | | | |

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Table 4, continued. Spatial distribution and relative abundance

| | | Gulf of Mexico Estuaries | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Florida Bay | | | Ten Thousand Islands | | | Caloosa-hatchee River | | | Charlotte Harbor | | | Tampa Bay | | | Suwannee River | | | Apalachee Bay | | |
| Species/Life Stage | | T | M | S | T | M | S | T | M | * | T | M | S | T | M | S | T | M | S | T | M | S |
| Gizzard shad | A | | | | | | | | | | | | | | | | ○ | √ | | ○ | √ | |
| | S | | | | | | | | | | | | | | | | ○ | | | ○ | | |
| *Dorosoma cepedianum* | J | | | | | | | | | | | | | | | | ○ | √ | | ○ | √ | |
| | L | | | | | | | | | | | | | | | | ○ | | | ○ | | |
| | E | | | | | | | | | | | | | | | | ○ | | | ○ | | |
| Bay anchovy | A | ◉ | ● | ● | ○ | ● | ● | ◉ | ● | | ◉ | ● | ● | ◉ | ● | ● | ○ | ◉ | ● | ○ | ● | ◉ |
| | S | | ● | ● | | ● | ● | | ● | | | ● | ● | | ● | ● | | ◉ | ● | | ● | ◉ |
| *Anchoa mitchilli* | J | ◉ | ● | ● | ○ | ● | ● | ◉ | ● | | ◉ | ● | ● | ◉ | ● | ● | ○ | ◉ | ● | ○ | ● | ◉ |
| | L | | ● | ● | | ● | ● | √ | ● | | | ● | ● | | ● | ● | | ◉ | ● | | ● | ◉ |
| | E | | ● | ● | | ● | ● | | ● | | | ● | ● | | ● | ● | | ◉ | ● | | ● | ◉ |
| Hardhead catfish | A | ○ | ○ | ◉ | ○ | ○ | ○ | ○ | ◉ | | ○ | ◉ | ◉ | ○ | ○ | ○ | ● | ● | ○ | ○ | ◉ | ◉ |
| | S | | ○ | ◉ | | ○ | ○ | | ◉ | | | ◉ | ◉ | | ○ | ○ | | ○ | ○ | | ◉ | ◉ |
| *Arius felis* | J | ○ | ○ | ◉ | ○ | ○ | ○ | ○ | ◉ | | ○ | ● | ◉ | ○ | ○ | ○ | ◉ | ◉ | ○ | ○ | ◉ | ◉ |
| | L | | ○ | ◉ | | ○ | ○ | | ◉ | | | ◉ | ◉ | | ○ | ○ | | ○ | ○ | | ◉ | ◉ |
| | E | | ◉ | ◉ | | ○ | ○ | | ◉ | | | ◉ | ◉ | | ○ | ○ | | ○ | ○ | | ◉ | ◉ |
| Sheepshead minnow | A | ◉ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | | ○ | ○ | ○ | ○ | ● | ◉ | ○ | ● | ◉ | ○ | ● | ◉ |
| | S | | ○ | ○ | | ○ | ○ | √ | ○ | | √ | ○ | ○ | √ | ○ | ◉ | √ | ● | ◉ | | ● | ◉ |
| *Cyprinodon variegatus* | J | ◉ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | | ○ | ○ | ○ | ○ | ● | ◉ | ○ | ● | ◉ | ○ | ● | ◉ |
| | L | | ○ | ○ | | ○ | ○ | √ | ○ | | √ | ○ | ○ | √ | ○ | ◉ | √ | ● | ◉ | | ● | ◉ |
| | E | | ○ | ○ | | ○ | ○ | √ | ○ | | √ | ○ | ○ | √ | ○ | ◉ | √ | ● | ◉ | | ● | ◉ |
| Gulf killifish | A | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | | ◉ | ◉ | ◉ | √ | ○ | ○ | √ | ◉ | ○ | √ | ◉ | ○ |
| | S | ○ | ○ | ○ | ○ | ◉ | ○ | ○ | ○ | | ◉ | ◉ | ◉ | √ | ○ | ○ | √ | ◉ | ○ | √ | ◉ | ○ |
| *Fundulus grandis* | J | ○ | ○ | ○ | ○ | ◉ | ○ | ○ | ○ | | ◉ | ◉ | ◉ | √ | ○ | ○ | √ | ◉ | ○ | √ | ◉ | ○ |
| | L | ○ | ○ | ○ | ○ | ◉ | ○ | ○ | ○ | | ◉ | ◉ | ◉ | √ | ○ | ○ | √ | ◉ | ○ | √ | ◉ | ○ |
| | E | ○ | ○ | ○ | ○ | ◉ | ○ | ○ | ○ | | ◉ | ◉ | ◉ | √ | ○ | ○ | √ | ◉ | ○ | √ | ◉ | ○ |
| Silversides | A | ● | ● | ◉ | ◉ | ◉ | ○ | ◉ | ● | | ◉ | ● | ● | ◉ | ● | ◉ | ◉ | ◉ | ◉ | ◉ | ● | ● |
| | S | ◉ | ● | ○ | ◉ | ◉ | ○ | ◉ | ● | | ◉ | ● | ● | ◉ | ● | ● | ◉ | ◉ | ◉ | ◉ | ● | ● |
| *Menidia* species | J | ● | ● | ○ | ◉ | ◉ | ○ | ◉ | ● | | ◉ | ● | ● | ◉ | ● | ● | ◉ | ◉ | ◉ | ◉ | ● | ● |
| | L | ◉ | ● | ○ | ◉ | ◉ | ○ | ◉ | ● | | ◉ | ● | ● | ◉ | ● | ● | ◉ | ◉ | ◉ | ◉ | ● | ● |
| | E | ◉ | ● | ○ | ◉ | ◉ | ○ | ◉ | ● | | ◉ | ● | ● | ◉ | ● | ● | ◉ | ◉ | ◉ | ◉ | ● | ● |
| | | T | M | S | T | M | S | T | M | * | T | M | S | T | M | S | T | M | S | T | M | S |
| | | Florida Bay | | | Ten Thousand Islands | | | Caloosa-hatchee River | | | Charlotte Harbor | | | Tampa Bay | | | Suwannee River | | | Apalachee Bay | | |
| | | Gulf of Mexico Estuaries | | | | | | | | | | | | | | | | | | | | |

**Relative Abundance**

- ● Highly Abundant
- ◉ Abundant
- ○ Common
- √ Rare
- Blank Not Present

**Salinity Zone**

- T - Tidal Fresh
- M - Mixing
- S - Seawater
- * - Salinity zone not present

**Life Stage**

- A - Adults
- S - Spawning adults
- J - Juveniles
- L - Larvae
- E - Eggs

Table 4, continued. Spatial distribution and relative abundance

| | | Gulf of Mexico Estuaries | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Apalachicola Bay | | | St. Andrew Bay | | | Choctawhatchee Bay | | | Pensacola Bay | | | Perdido Bay | | | Mobile Bay | | | Mississippi Sound | | |
| Species/Life Stage | | T | M | S | T | M | S | T | M | S | T | M | S | T | M | S | T | M | S | T | M | S |
| Gizzard shad | A | ○ | √ | | | | | ○ | √ | | ○ | ○ | | √ | √ | | ○ | √ | | ◉ | ○ | √ |
| | S | ○ | | | | | | ○ | | | ○ | | | √ | | | ○ | | | ◉ | | |
| *Dorosoma cepedianum* | J | ○ | √ | | | | | ○ | √ | | ○ | ○ | | √ | √ | | ○ | √ | | ○ | ○ | √ |
| | L | ○ | | | | | | ○ | | | ○ | | | √ | | | ○ | | | ○ | | |
| | E | ○ | | | | | | ○ | | | ○ | | | √ | | | ○ | | | ○ | | |
| Bay anchovy | A | ○ | ● | ◉ | ○ | ◉ | ◉ | ○ | ● | ● | ○ | ● | ● | ○ | ◉ | ◉ | ○ | ● | ● | ● | ● | ◉ |
| | S | | ● | ◉ | | ◉ | ◉ | | ● | ● | | ● | ● | | ○ | ○ | | ● | ● | ◉ | ● | ● |
| *Anchoa mitchilli* | J | ○ | ● | ◉ | ○ | ◉ | ◉ | ○ | ● | ● | ◉ | ● | ● | ◉ | ◉ | ◉ | ◉ | ● | ● | ○ | ◉ | ◉ |
| | L | | ● | ◉ | | ◉ | ◉ | | ● | ● | | ● | ● | | ○ | ○ | | ● | ● | √ | ○ | ○ |
| | E | | ● | ◉ | | ◉ | ◉ | | ● | ● | | ○ | ○ | | ○ | ○ | | ● | ● | ○ | ● | ○ |
| Hardhead catfish | A | ○ | ● | ● | ○ | ● | ● | ○ | ◉ | ◉ | ○ | ◉ | ◉ | ○ | ◉ | ◉ | ○ | ◉ | ◉ | ● | ● | ○ |
| | S | | ● | ● | | ● | ● | | ◉ | ◉ | | ◉ | ◉ | | ○ | ○ | | ◉ | ◉ | ◉ | ◉ | √ |
| *Arius felis* | J | ○ | ● | ● | ○ | ● | ● | ○ | ◉ | ◉ | ○ | ◉ | ◉ | ○ | ◉ | ◉ | ○ | ◉ | ◉ | ◉ | ◉ | ○ |
| | L | | ● | ● | | ● | ● | | ◉ | ◉ | | ◉ | ◉ | | ○ | ○ | | ◉ | ◉ | ○ | ○ | √ |
| | E | | ● | ● | | ● | ● | | ◉ | ◉ | | ◉ | ◉ | | ○ | ○ | | ◉ | ◉ | ○ | ○ | √ |
| Sheepshead minnow | A | ○ | ◉ | ◉ | ○ | ◉ | ◉ | ○ | ◉ | ◉ | ○ | ◉ | ◉ | ○ | ○ | ○ | ○ | ◉ | ◉ | ○ | ◉ | ○ |
| | S | √ | ◉ | ◉ | √ | ◉ | ◉ | √ | ◉ | ◉ | √ | ◉ | ◉ | √ | ○ | ○ | √ | ◉ | ◉ | √ | ○ | ○ |
| *Cyprinodon variegatus* | J | ○ | ◉ | ◉ | ○ | ◉ | ◉ | ○ | ◉ | ◉ | ○ | ◉ | ◉ | ○ | ○ | ○ | ○ | ◉ | ◉ | √ | ○ | ○ |
| | L | √ | ◉ | ◉ | √ | ◉ | ◉ | √ | ◉ | ◉ | √ | ◉ | ◉ | √ | ○ | ○ | √ | ◉ | ◉ | √ | ○ | ○ |
| | E | √ | ◉ | ◉ | √ | ◉ | ◉ | √ | ◉ | ◉ | √ | ◉ | ◉ | √ | ○ | ○ | √ | ◉ | ◉ | √ | ○ | ○ |
| Gulf killifish | A | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | | | | ○ | ◉ | ○ | ○ | ○ | ○ |
| | S | | ○ | ○ | √ | ○ | ○ | √ | ○ | ○ | √ | ○ | ○ | | | | √ | ◉ | ○ | | ◉ | ○ |
| *Fundulus grandis* | J | ○ | ○ | ○ | √ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | | | | ○ | ◉ | ○ | √ | ○ | ○ |
| | L | | ○ | ○ | √ | ○ | ○ | √ | ○ | ○ | √ | ○ | ○ | | | | √ | ◉ | ○ | | ○ | √ |
| | E | | ○ | ○ | √ | ○ | ○ | √ | ○ | ○ | √ | ○ | ○ | | | | √ | ◉ | ○ | | ○ | √ |
| Silversides | A | ◉ | ● | ● | ○ | ◉ | ◉ | ○ | ◉ | ◉ | ○ | ◉ | ◉ | ◉ | ◉ | ◉ | ○ | ◉ | ◉ | ◉ | ● | ◉ |
| | S | ◉ | ● | ● | ○ | ◉ | ◉ | ○ | ◉ | ◉ | ○ | ◉ | ◉ | ○ | ◉ | ◉ | ○ | ◉ | ◉ | ● | ● | ● |
| *Menidia* species | J | ◉ | ● | ● | ○ | ◉ | ◉ | ○ | ◉ | ◉ | ○ | ◉ | ◉ | ○ | ◉ | ◉ | ○ | ◉ | ◉ | ◉ | ○ | ○ |
| | L | ◉ | ● | ● | ○ | ◉ | ◉ | ○ | ◉ | ◉ | ○ | ◉ | ◉ | ○ | ◉ | ◉ | ○ | ◉ | ◉ | ○ | ○ | ○ |
| | E | ◉ | ● | ● | ○ | ◉ | ◉ | ○ | ◉ | ◉ | ○ | ◉ | ◉ | ○ | ◉ | ◉ | ○ | ◉ | ◉ | ○ | ○ | ○ |
| | | T | M | S | T | M | S | T | M | S | T | M | S | T | M | S | T | M | S | T | M | S |
| | | Apalachicola Bay | | | St. Andrew Bay | | | Choctawhatchee Bay | | | Pensacola Bay | | | Perdido Bay | | | Mobile Bay | | | Mississippi Sound | | |
| | | Gulf of Mexico Estuaries | | | | | | | | | | | | | | | | | | | | |

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Table 4, continued. Spatial distribution and relative abundance

| | | Gulf of Mexico Estuaries | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Lake Borgne | | | Lake Pontchar-train | | | Breton/ Chandeleur Sounds | | | Mississippi River | | | Barataria Bay | | | Terrebonne/ Timbalier Bays | | | Atchafalaya/ Vermilion Bays | | |
| Species/Life Stage | | T | M | * | * | M | * | * | M | S | T | M | * | T | M | S | T | M | S | T | M | * |
| Gizzard shad | A | ● | ○ | | | ○ | | | ○ | ○ | ○ | ○ | | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | |
| | S | ○ | | | | | | | | | | | | | | | | | | | | |
| *Dorosoma cepedianum* | J | ● | ● | | | ○ | | | | | ○ | ◉ | | ○ | ○ | | ○ | ○ | | ○ | ○ | |
| | L | ○ | | | | | | | | | ○ | | | | | | | | | | | |
| | E | ○ | | | | | | | | | | | | | | | | | | | | |
| Bay anchovy | A | ● | ● | | | ● | | | ◉ | ○ | ○ | ● | | ○ | ● | ● | ○ | ● | ● | ● | ● | |
| | S | | ● | | | ● | | | ◉ | ○ | | ◉ | | | ● | ● | | ● | ● | | ● | |
| *Anchoa mitchilli* | J | ● | ● | | | ● | | | ◉ | ○ | ○ | ● | | ○ | ● | ● | ○ | ● | ● | ● | ● | |
| | L | ● | ● | | | ● | | | ◉ | ○ | | ◉ | | | ● | ● | | ● | ● | ○ | ● | |
| | E | | ● | | | ● | | | ◉ | ○ | | ◉ | | | ● | ● | | ● | ● | | ● | |
| Hardhead catfish | A | ○ | ● | | | ◉ | | | ○ | ○ | | ● | | | ● | ● | ○ | ◉ | ◉ | ○ | ◉ | |
| | S | | ○ | | | ○ | | | ○ | ○ | | ◉ | | | ◉ | ○ | | ◉ | ○ | | ○ | |
| *Arius felis* | J | ○ | ◉ | | | ◉ | | | ◉ | ○ | | ◉ | | | ● | ● | ○ | ◉ | ◉ | ○ | ○ | |
| | L | | ○ | | | ○ | | | ○ | ○ | | ◉ | | | ◉ | ○ | | ◉ | ○ | | ○ | |
| | E | | ○ | | | ○ | | | ○ | ○ | | ◉ | | | ◉ | ○ | | ◉ | ○ | | ○ | |
| Sheepshead minnow | A | ○ | ○ | | | ○ | | | ○ | ○ | ○ | ◉ | | ○ | ◉ | ● | ○ | ○ | ○ | ○ | ○ | |
| | S | ○ | ○ | | | ○ | | | ○ | ○ | ○ | ◉ | | | ◉ | ◉ | ○ | ○ | ○ | ○ | ○ | |
| *Cyprinodon variegatus* | J | ○ | ○ | | | ○ | | | ○ | ○ | ○ | ◉ | | ○ | ◉ | ◉ | ○ | ○ | ○ | ○ | ◉ | |
| | L | ○ | ○ | | | ○ | | | ○ | ○ | ○ | ◉ | | | ◉ | ◉ | ○ | ○ | ○ | ○ | ○ | |
| | E | ○ | ○ | | | ○ | | | ○ | ○ | ○ | ◉ | | | ◉ | ◉ | ○ | ○ | ○ | ○ | ○ | |
| Gulf killifish | A | ○ | ◉ | | | ○ | | | ○ | | √ | ◉ | | ○ | ● | ◉ | ○ | ● | ○ | ○ | ◉ | |
| | S | | ○ | | | ○ | | | ○ | | | ◉ | | | ● | | | ● | | | ◉ | |
| *Fundulus grandis* | J | ○ | ○ | | | ○ | | | ○ | | √ | ◉ | | ○ | ● | ○ | ○ | ● | ○ | ○ | ◉ | |
| | L | | ○ | | | ○ | | | ○ | | | ◉ | | | ● | | | ● | | √ | ◉ | |
| | E | | ○ | | | ○ | | | ○ | | | ◉ | | | ● | | | ● | | | ◉ | |
| Silversides | A | ◉ | ◉ | | | ◉ | | | ○ | ○ | √ | ◉ | | | ◉ | ◉ | ○ | ◉ | ◉ | ◉ | ◉ | |
| | S | ◉ | ◉ | | | ◉ | | | ○ | ○ | | ◉ | | | ◉ | ◉ | | ◉ | ◉ | ○ | ○ | |
| *Menidia* species | J | ◉ | ◉ | | | ◉ | | | ○ | ○ | √ | ◉ | | | ● | ● | ○ | ◉ | ◉ | ◉ | ◉ | |
| | L | ◉ | ◉ | | | ◉ | | | ○ | ○ | | ◉ | | | ◉ | ◉ | | ◉ | ◉ | ○ | ○ | |
| | E | ◉ | ◉ | | | ◉ | | | ○ | ○ | | ◉ | | | ◉ | ◉ | | ◉ | ◉ | ○ | ○ | |
| | | T | M | * | * | M | * | * | M | S | T | M | * | T | M | S | T | M | S | T | M | * |
| | | Lake Borgne | | | Lake Pontchar-train | | | Breton/ Chandeleur Sounds | | | Mississippi River | | | Barataria Bay | | | Terrebonne/ Timbalier Bays | | | Atchafalaya/ Vermilion Bays | | |
| | | Gulf of Mexico Estuaries | | | | | | | | | | | | | | | | | | | | |

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Table 4, continued. Spatial distribution and relative abundance

| | | Gulf of Mexico Estuaries | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Calcasieu Lake | | | Sabine Lake | | | Galveston Bay | | | Brazos River | | | Matagorda Bay | | | San Antonio Bay | | | Aransas Bay | | |
| Species/Life Stage | | T | M | * | T | M | * | T | M | S | T | M | * | T | M | S | * | M | S | * | M | S |
| Gizzard shad | A | ○ | ○ | | ○ | ○ | | ○ | ○ | ○ | ○ | ○ | | ◉ | ○ | √ | | ○ | √ | | √ | √ |
| | S | | | | | | | | | | | | | | | | | | | | | |
| *Dorosoma cepedianum* | J | ○ | ○ | | | | | | | | na | na | | ◉ | ○ | √ | | ○ | | | √ | |
| | L | | | | | | | | | | | | | | | | | | | | | |
| | E | | | | | | | | | | | | | | | | | | | | | |
| Bay anchovy | A | ○ | ● | | ◉ | ◉ | | ◉ | ● | ◉ | na | ● | | ◉ | ● | ○ | | ● | ○ | | ● | ○ |
| | S | | ● | | | ○ | | | ● | ◉ | | ● | | ○ | ● | ○ | | ● | ○ | | ● | ○ |
| *Anchoa mitchilli* | J | ○ | ● | | ◉ | ◉ | | ◉ | ● | ◉ | na | ● | | ◉ | ◉ | ○ | | ◉ | ○ | | ● | ○ |
| | L | ○ | ● | | ○ | ○ | | ○ | ● | ◉ | | ● | | ◉ | ○ | ○ | | ● | ○ | | ● | ○ |
| | E | | ● | | | ○ | | | ● | ◉ | | ● | | ○ | ○ | ○ | | ● | ○ | | ● | ○ |
| Hardhead catfish | A | ○ | ◉ | | √ | ○ | | ○ | ◉ | ◉ | ○ | ○ | | | ◉ | ◉ | | ◉ | ● | | ◉ | ○ |
| | S | | ○ | | | ○ | | | ◉ | ◉ | | na | | | ◉ | ◉ | | ◉ | ● | | ◉ | ○ |
| *Arius felis* | J | ○ | ◉ | | √ | ○ | | √ | ◉ | ◉ | ○ | na | | | ◉ | ◉ | | ◉ | ● | | ◉ | ○ |
| | L | | ○ | | | ○ | | | ◉ | ◉ | | na | | | ◉ | ◉ | | ◉ | ● | | ◉ | ○ |
| | E | | ○ | | | ○ | | | ◉ | ◉ | | na | | | ◉ | ◉ | | ◉ | ● | | ◉ | ○ |
| Sheepshead minnow | A | ○ | ○ | | ◉ | ◉ | | ○ | ◉ | ◉ | ◉ | ○ | | ◉ | ◉ | ◉ | | ◉ | ◉ | | ◉ | ◉ |
| | S | ○ | ○ | | ◉ | ◉ | | ○ | ◉ | ◉ | ◉ | ○ | | ◉ | ◉ | ◉ | | ◉ | ◉ | | ◉ | ◉ |
| *Cyprinodon variegatus* | J | ○ | ◉ | | ◉ | ◉ | | ○ | ◉ | ◉ | ◉ | ○ | | ◉ | ◉ | ◉ | | ◉ | ◉ | | ◉ | ◉ |
| | L | ○ | ○ | | ◉ | ◉ | | ○ | ◉ | ◉ | ◉ | ○ | | ◉ | ◉ | ◉ | | ◉ | ◉ | | ◉ | ◉ |
| | E | ○ | ○ | | ◉ | ◉ | | ○ | ◉ | ◉ | ◉ | ○ | | ◉ | ◉ | ◉ | | ◉ | ◉ | | ◉ | ◉ |
| Gulf killifish | A | ○ | ○ | | ○ | ◉ | | ○ | ◉ | ◉ | ◉ | ◉ | | ◉ | ◉ | ◉ | | ◉ | ◉ | | ◉ | ○ |
| | S | | ○ | | | ◉ | | | ◉ | ◉ | | ○ | | | ◉ | ◉ | | ◉ | ◉ | | ◉ | ○ |
| *Fundulus grandis* | J | ○ | ◉ | | ○ | ◉ | | ○ | ◉ | ◉ | ◉ | ◉ | | ◉ | ◉ | ◉ | | ◉ | ◉ | | ◉ | ○ |
| | L | √ | ○ | | √ | ◉ | | √ | ◉ | ◉ | √ | ○ | | | ◉ | ◉ | | ◉ | ◉ | | ◉ | ○ |
| | E | | ○ | | | ◉ | | | ◉ | ◉ | | ○ | | | ◉ | ◉ | | ◉ | ◉ | | ◉ | ○ |
| Silversides | A | ○ | ◉ | | ○ | ◉ | | ◉ | ◉ | ○ | ◉ | ◉ | | ◉ | ◉ | √ | | ◉ | √ | | ◉ | ○ |
| | S | ○ | ◉ | | ○ | ◉ | | ◉ | ◉ | | ◉ | ◉ | | ◉ | ◉ | | | ◉ | | | ◉ | √ |
| *Menidia* species | J | ○ | ◉ | | ○ | ◉ | | ◉ | ◉ | ○ | ◉ | ◉ | | ◉ | ◉ | √ | | ◉ | √ | | ◉ | ○ |
| | L | ○ | ◉ | | ○ | ◉ | | ◉ | ◉ | | ◉ | ◉ | | ◉ | ◉ | | | ◉ | | | ◉ | √ |
| | E | ○ | ◉ | | ○ | ◉ | | ◉ | ◉ | | ◉ | ◉ | | ◉ | ◉ | | | ◉ | | | ◉ | √ |
| | | T | M | * | T | M | * | T | M | S | T | M | * | T | M | S | * | M | S | * | M | S |
| | | Calcasieu Lake | | | Sabine Lake | | | Galveston Bay | | | Brazos River | | | Matagorda Bay | | | San Antonio Bay | | | Aransas Bay | | |
| | | Gulf of Mexico Estuaries | | | | | | | | | | | | | | | | | | | | |

**Relative Abundance**

- ● Highly Abundant
- ◉ Abundant
- ○ Common
- √ Rare
- Blank Not Present
- na No Data Available

**Salinity Zone**

- T - Tidal Fresh
- M - Mixing
- S - Seawater
- * - Salinity zone not present

**Life Stage**

- A - Adults
- S - Spawning adults
- J - Juveniles
- L - Larvae
- E - Eggs

Table 4, continued. Spatial distribution and relative abundance

| | | Gulf of Mexico Estuaries | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | Corpus Christi Bay | | | Laguna Madre | | | Baffin Bay | | |
| Species/Life Stage | | * | M | S | * | * | S | * | * | S |
| Gizzard shad | A | | ○ | √ | | | √ | | | ◉ |
| | S | | | | | | | | | |
| *Dorosoma cepedianum* | J | | ○ | | | | | | | ◉ |
| | L | | | | | | | | | |
| | E | | | | | | | | | |
| Bay anchovy | A | | ● | ○ | | | ● | | | ● |
| | S | | ● | ○ | | | ● | | | ● |
| *Anchoa mitchilli* | J | | ● | ○ | | | ● | | | ● |
| | L | | ● | ○ | | | ● | | | ● |
| | E | | ● | ○ | | | ● | | | ● |
| Hardhead catfish | A | | ◉ | ○ | | | ◉ | | | ● |
| | S | | ◉ | ○ | | | ◉ | | | ● |
| *Arius felis* | J | | ◉ | ○ | | | ● | | | ● |
| | L | | ◉ | ○ | | | ◉ | | | ● |
| | E | | ◉ | ○ | | | ◉ | | | ● |
| Sheepshead minnow | A | | ◉ | ◉ | | | ● | | | ◉ |
| | S | | ◉ | ◉ | | | ● | | | ◉ |
| *Cyprinodon variegatus* | J | | ◉ | ◉ | | | ● | | | ● |
| | L | | ◉ | ◉ | | | ● | | | ◉ |
| | E | | ◉ | ◉ | | | ● | | | ◉ |
| Gulf killifish | A | | ○ | ○ | | | ◉ | | | ◉ |
| | S | | ○ | ○ | | | ◉ | | | ◉ |
| *Fundulus grandis* | J | | ○ | ○ | | | ◉ | | | ◉ |
| | L | | ○ | ○ | | | ◉ | | | ◉ |
| | E | | ○ | ○ | | | ◉ | | | ◉ |
| Silversides | A | | ◉ | ○ | | | ● | | | ● |
| | S | | ◉ | ○ | | | ● | | | ● |
| *Menidia* species | J | | ◉ | ○ | | | ● | | | ● |
| | L | | ◉ | ○ | | | ● | | | ● |
| | E | | ◉ | ○ | | | ● | | | ● |
| | | * | M | S | * | * | S | * | * | S |
| | | Corpus Christi Bay | | | Laguna Madre | | | Baffin Bay | | |
| | | Gulf of Mexico Estuaries | | | | | | | | |

**Relative Abundance**

- ● Highly Abundant
- ◉ Abundant
- ○ Common
- √ Rare
- Blank Not Present

**Salinity Zone**

- T - Tidal Fresh
- M - Mixing
- S - Seawater
- * - Salinity zone not present

**Life Stage**

- A - Adults
- S - Spawning adults
- J - Juveniles
- L - Larvae
- E - Eggs

Table 4, continued. Spatial distribution and relative abundance

| | | Gulf of Mexico Estuaries | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Florida Bay | | | Ten Thousand Islands | | | Caloosa-hatchee River | | | Charlotte Harbor | | | Tampa Bay | | | Suwannee River | | | Apalachee Bay | | |
| Species/Life Stage | | T | M | S | T | M | S | T | M | * | T | M | S | T | M | S | T | M | S | T | M | S |
| Snook | A | √ | ○ | ○ | ○ | ◉ | ◉ | ○ | ○ | | ○ | ◉ | ◉ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| | S | | | | | | ◉ | | | | | √ | ○ | | √ | ◉ | | | | | | |
| *Centropomus undecimalis* | J | ○ | ○ | ○ | ◉ | ◉ | ○ | ◉ | ◉ | | ◉ | ◉ | ◉ | ○ | ○ | ○ | | | | | | |
| | L | | | | ○ | ○ | ◉ | ○ | ○ | | ○ | √ | ○ | | ◉ | ◉ | | | | | | |
| | E | | | | | | ◉ | | | | | √ | ○ | | ◉ | ◉ | | | | | | |
| Bluefish | A | | ○ | ○ | | ○ | ○ | | | | | √ | ○ | | | ○ | | ○ | ○ | | ○ | ○ |
| | S | | | | | | | | | | | | | | | | | | | | | |
| *Pomatomus saltatrix* | J | | √ | √ | | √ | √ | | | | | ○ | ○ | | | √ | | ○ | ○ | | ○ | ○ |
| | L | | | | | | | | | | | | | | | | | | | | | |
| | E | | | | | | | | | | | | | | | | | | | | | |
| Blue runner | A | | | √ | | | ○ | | | | | √ | ○ | | | ○ | | | ○ | | | ○ |
| | S | | | | | | | | | | | | | | | | | | | | | |
| *Caranx crysos* | J | | | √ | | | ○ | | | | | √ | ○ | | | ○ | | | ○ | | | ○ |
| | L | | | | | | | | | | | | | | | | | | | | | |
| | E | | | | | | | | | | | | | | | | | | | | | |
| Crevalle jack | A | | ◉ | ◉ | | ○ | ○ | √ | ○ | | | ◉ | ◉ | | √ | ◉ | √ | ○ | ○ | | ○ | ○ |
| | S | | | | | | | | | | | | | | | | | | | | | |
| *Caranx hippos* | J | √ | ◉ | ◉ | √ | ○ | ○ | √ | ○ | | | ○ | ○ | | ○ | ◉ | √ | ○ | ○ | | ○ | ○ |
| | L | | | | | | | | | | | | | | | | | | | | | |
| | E | | | | | | | | | | | | | | | | | | | | | |
| Florida pompano | A | | | ● | | | ○ | | | | | | ◉ | | | ○ | | | √ | | | ○ |
| | S | | | | | | | | | | | | | | | | | | | | | |
| *Trachinotus carolinus* | J | | | ◉ | | | ○ | | | | | | ◉ | | ○ | ○ | | | √ | | | ○ |
| | L | | | | | | | | | | | | | | | | | | | | | |
| | E | | | | | | | | | | | | | | | | | | | | | |
| Gray snapper | A | | | | | | | | | | | | ○ | | | | √ | ○ | ○ | √ | ○ | ○ |
| | S | | | | | | | | | | | | | | | | | | | | | |
| *Lutjanus griseus* | J | √ | ◉ | ◉ | ○ | ○ | ○ | | √ | | √ | √ | ○ | | √ | ○ | √ | ○ | ○ | √ | ○ | ○ |
| | L | | | | | | | | | | | | | | | | | | | | | |
| | E | | | | | | | | | | | | | | | | | | | | | |
| | | T | M | S | T | M | S | T | M | * | T | M | S | T | M | S | T | M | S | T | M | S |
| | | Florida Bay | | | Ten Thousand Islands | | | Caloosa-hatchee River | | | Charlotte Harbor | | | Tampa Bay | | | Suwannee River | | | Apalachee Bay | | |
| | | Gulf of Mexico Estuaries | | | | | | | | | | | | | | | | | | | | |

**Relative Abundance**

- ● Highly Abundant
- ◉ Abundant
- ○ Common
- √ Rare
- Blank Not Present

**Salinity Zone**

- T - Tidal Fresh
- M - Mixing
- S - Seawater
- * - Salinity zone not present

**Life Stage**

- A - Adults
- S - Spawning adults
- J - Juveniles
- L - Larvae
- E - Eggs

Table 4, continued. Spatial distribution and relative abundance

| | | Gulf of Mexico Estuaries | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Apalachicola Bay | | | St. Andrew Bay | | | Choctawhatchee Bay | | | Pensacola Bay | | | Perdido Bay | | | Mobile Bay | | | Mississippi Sound | | |
| Species/Life Stage | | T | M | S | T | M | S | T | M | S | T | M | S | T | M | S | T | M | S | T | M | S |
| Snook | A | ○ | ○ | ○ | | | | | | | | | | | | | | | | | | |
| | S | | | | | | | | | | | | | | | | | | | | | |
| *Centropomus undecimalis* | J | | | | | | | | | | | | | | | | | | | | | |
| | L | | | | | | | | | | | | | | | | | | | | | |
| | E | | | | | | | | | | | | | | | | | | | | | |
| Bluefish | A | | ○ | ○ | | ◉ | ◉ | | ◉ | ◉ | | ○ | ○ | | ○ | ○ | | ○ | ○ | | | ○ |
| | S | | | | | | | | | | | | | | | | | | | | | |
| *Pomatomus saltatrix* | J | | ○ | ○ | | ○ | ○ | | ○ | ○ | | ○ | ○ | | ○ | ○ | | ○ | ○ | | | ○ |
| | L | | | | | | | | | | | | | | | | | | | | | |
| | E | | | | | | | | | | | | | | | | | | | | | |
| Blue runner | A | | | ○ | | | ◉ | | | ○ | | | ○ | | | ○ | | | ○ | | ○ | ○ |
| | S | | | | | | | | | | | | | | | | | | | | | ◉ |
| *Caranx crysos* | J | | | ○ | | | ○ | | | ○ | | | ○ | | | ○ | | | ○ | | ○ | ◉ |
| | L | | | | | | | | | | | | | | | | | | | | ○ | ◉ |
| | E | | | | | | | | | | | | | | | | | | | | | ◉ |
| Crevalle jack | A | | ○ | ○ | | ○ | ○ | | ○ | ○ | | ○ | ○ | | | ○ | | | ○ | | √ | ○ |
| | S | | | | | | | | | | | | | | | | | | | | | ○ |
| *Caranx hippos* | J | | ○ | ○ | | ○ | ○ | | ○ | ○ | | ○ | ○ | √ | ○ | ○ | | ○ | ○ | √ | ○ | ○ |
| | L | | | | | | | | | | | | | | | | | | | | | ○ |
| | E | | | | | | | | | | | | | | | | | | | | | ○ |
| Florida pompano | A | | | | | | ○ | | | ○ | | √ | √ | | | | | √ | ○ | | | √ |
| | S | | | | | | | | | | | | | | | | | | √ | | | ○ |
| *Trachinotus carolinus* | J | | | | | | ○ | | | | | √ | ○ | | ○ | ○ | | √ | ○ | | √ | ◉ |
| | L | | | | | | | | | | | | | | | | | | √ | | | ○ |
| | E | | | | | | | | | | | | | | | | | | √ | | | ○ |
| Gray snapper | A | | √ | √ | | √ | ○ | √ | ○ | ○ | | ◉ | ○ | | | | √ | √ | √ | | | |
| | S | | | | | | | | | | | | | | | | | | | | | |
| *Lutjanus griseus* | J | | √ | √ | √ | ○ | ○ | ○ | ○ | ○ | | ○ | ○ | √ | ○ | ○ | √ | ○ | ○ | | | |
| | L | | | | | | | | | | | | | | | | | | | | | |
| | E | | | | | | | | | | | | | | | | | | | | | |
| | | T | M | S | T | M | S | T | M | S | T | M | S | T | M | S | T | M | S | T | M | S |
| | | Apalachicola Bay | | | St. Andrew Bay | | | Choctawhatchee Bay | | | Pensacola Bay | | | Perdido Bay | | | Mobile Bay | | | Mississippi Sound | | |
| | | Gulf of Mexico Estuaries | | | | | | | | | | | | | | | | | | | | |

**Relative Abundance**

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- ◉ Abundant
- ○ Common
- √ Rare
- Blank Not Present

**Salinity Zone**

- T - Tidal Fresh
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**Life Stage**

- A - Adults
- S - Spawning adults
- J - Juveniles
- L - Larvae
- E - Eggs

Table 4, continued. Spatial distribution and relative abundance

| | | Gulf of Mexico Estuaries | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Lake Borgne | | | Lake Pontchar-train | | | Breton/ Chandeleur Sounds | | | Mississippi River | | | Barataria Bay | | | Terrebonne/ Timbalier Bays | | | Atchafalaya/ Vermilion Bays | | |
| Species/Life Stage | | T | M | * | * | M | * | * | M | S | T | M | * | T | M | S | T | M | S | T | M | * |
| Snook | A | | | | | | | | | | | | | | | √ | | | | | | |
| | S | | | | | | | | | | | | | | | | | | | | | |
| *Centropomus undecimalis* | J | | | | | | | | | | | | | | | | | | | | | |
| | L | | | | | | | | | | | | | | | | | | | | | |
| | E | | | | | | | | | | | | | | | | | | | | | |
| Bluefish | A | | | | | | | | | | | √ | | | | | | | | | | |
| | S | | | | | | | | | | | | | | | | | | | | | |
| *Pomatomus saltatrix* | J | | | | | | | | √ | √ | | √ | | | √ | O | | √ | √ | | √ | |
| | L | | | | | | | | | | | | | | | | | | | | | |
| | E | | | | | | | | | | | | | | | | | | | | | |
| Blue runner | A | | | | | | | | | | | | | | | | | | | | | |
| | S | | | | | | | | | | | | | | | | | | | | | |
| *Caranx crysos* | J | | | | | | | | | | | | | | | O | | | √ | | | |
| | L | | | | | | | | | | | | | | | | | | | | | |
| | E | | | | | | | | | | | | | | | | | | | | | |
| Crevalle jack | A | | | | | | | | O | O | | | | | O | O | | | √ | | | |
| | S | | | | | | | | | | | | | | | | | | | | | |
| *Caranx hippos* | J | O | O | | | O | | | O | O | | O | | | O | O | | O | O | O | O | |
| | L | | | | | | | | | | | | | | | | | | | | | |
| | E | | | | | | | | | | | | | | | | | | | | | |
| Florida pompano | A | | | | | | | | | O | | | | | | | | | √ | | | |
| | S | | | | | | | | | O | | | | | | | | | | | | |
| *Trachinotus carolinus* | J | | | | | | | | | O | | O | | | O | O | | √ | O | | √ | |
| | L | | | | | | | | | O | | | | | | | | | | | | |
| | E | | | | | | | | | O | | | | | | | | | | | | |
| Gray snapper | A | | | | | | | | | | | | | | | | | | | | | |
| | S | | | | | | | | | | | | | | | | | | | | | |
| *Lutjanus griseus* | J | | | | | | | | O | O | | | | | O | O | | √ | √ | | | |
| | L | | | | | | | | | | | | | | | | | | | | | |
| | E | | | | | | | | | | | | | | | | | | | | | |
| | | T | M | * | * | M | * | * | M | S | T | M | * | T | M | S | T | M | S | T | M | * |
| | | Lake Borgne | | | Lake Pontchar-train | | | Breton/ Chandeleur Sounds | | | Mississippi River | | | Barataria Bay | | | Terrebonne/ Timbalier Bays | | | Atchafalaya/ Vermilion Bays | | |
| | | Gulf of Mexico Estuaries | | | | | | | | | | | | | | | | | | | | |

**Relative Abundance**

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- O Common
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- A - Adults
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Table 4, continued. Spatial distribution and relative abundance

| | | Gulf of Mexico Estuaries | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Calcasieu Lake | | | Sabine Lake | | | Galveston Bay | | | Brazos River | | | Matagorda Bay | | | San Antonio Bay | | | Aransas Bay | | |
| Species/Life Stage | | T | M | * | T | M | * | T | M | S | T | M | * | T | M | S | * | M | S | * | M | S |
| Snook | A | | | | | | | | | √ | | | | √ | √ | √ | | | | | √ | √ |
| | S | | | | | | | | | | | | | | | | | | | | | √ |
| *Centropomus undecimalis* | J | | | | | | | | | √ | | | | √ | √ | √ | | | | | √ | √ |
| | L | | | | | | | | | | | | | | | | | | | | | √ |
| | E | | | | | | | | | | | | | | | | | | | | | √ |
| Bluefish | A | | | | | | | | | | | | | | | | | | √ | | √ | √ |
| | S | | | | | | | | | | | | | | | | | | | | | |
| *Pomatomus saltatrix* | J | | √ | | | √ | | √ | √ | ○ | na | ○ | | | √ | √ | | | | | √ | √ |
| | L | | | | | | | | | | | | | | | | | | | | | |
| | E | | | | | | | | | | | | | | | | | | | | | |
| Blue runner | A | | | | | | | | | √ | | | | | | | | | | | | |
| | S | | | | | | | | | | | | | | | | | | | | | |
| *Caranx crysos* | J | | | | | | | | | √ | | | | | | | | | | | | |
| | L | | | | | | | | | | | | | | | | | | | | | |
| | E | | | | | | | | | | | | | | | | | | | | | |
| Crevalle jack | A | | | | √ | √ | | √ | √ | √ | | | | | ○ | ○ | | ○ | ○ | | ○ | ○ |
| | S | | | | | | | | | | | | | | | | | | | | | |
| *Caranx hippos* | J | | ○ | | | √ | | | ○ | ○ | | ○ | | | ○ | ○ | | ○ | ○ | | ○ | ○ |
| | L | | | | | | | | | | | | | | | | | | | | | |
| | E | | | | | | | | | | | | | | | | | | | | | |
| Florida pompano | A | | | | | | | | | | | | | | | | | | ○ | | √ | √ |
| | S | | | | | | | | | | | | | | | | | | | | | |
| *Trachinotus carolinus* | J | | ○ | | | | | | | ○ | | | | | | ○ | | | ○ | | √ | ○ |
| | L | | | | | | | | | | | | | | | | | | | | | |
| | E | | | | | | | | | | | | | | | | | | | | | |
| Gray snapper | A | | | | | | | | | | | | | | | √ | | | | | √ | √ |
| | S | | | | | | | | | | | | | | | | | | | | | |
| *Lutjanus griseus* | J | | √ | | | | | | | √ | | | | | | √ | | | √ | | √ | √ |
| | L | | | | | | | | | | | | | | | | | | | | | |
| | E | | | | | | | | | | | | | | | | | | | | | |
| | | T | M | * | T | M | * | T | M | S | T | M | * | T | M | S | * | M | S | * | M | S |
| | | Calcasieu Lake | | | Sabine Lake | | | Galveston Bay | | | Brazos River | | | Matagorda Bay | | | San Antonio Bay | | | Aransas Bay | | |
| | | Gulf of Mexico Estuaries | | | | | | | | | | | | | | | | | | | | |

**Relative Abundance**

- ● Highly Abundant
- ◉ Abundant
- ○ Common
- √ Rare
- Blank Not Present
- na No Data Available

**Salinity Zone**

- T - Tidal Fresh
- M - Mixing
- S - Seawater
- * - Salinity zone not present

**Life Stage**

- A - Adults
- S - Spawning adults
- J - Juveniles
- L - Larvae
- E - Eggs

Table 4, continued. Spatial distribution and relative abundance

| | | Gulf of Mexico Estuaries | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | Corpus Christi Bay | | | Laguna Madre | | | Baffin Bay | | |
| Species/Life Stage | | * | M | S | * | * | S | * | * | S |
| Snook | A | | √ | √ | | | √ | | | |
| | S | | | √ | | | √ | | | |
| *Centropomus undecimalis* | J | | √ | √ | | | ○ | | | |
| | L | | | √ | | | √ | | | |
| | E | | | √ | | | √ | | | |
| Bluefish | A | | √ | √ | | | | | | |
| | S | | | | | | | | | |
| *Pomatomus saltatrix* | J | | √ | √ | | | | | | |
| | L | | | | | | | | | |
| | E | | | | | | | | | |
| Blue runner | A | | | | | | | | | |
| | S | | | | | | | | | |
| *Caranx crysos* | J | | | | | | | | | |
| | L | | | | | | | | | |
| | E | | | | | | | | | |
| Crevalle jack | A | | ○ | ○ | | | ○ | | | ○ |
| | S | | | | | | | | | |
| *Caranx hippos* | J | | ○ | ○ | | | ◉ | | | ○ |
| | L | | | | | | | | | |
| | E | | | | | | | | | |
| Florida pompano | A | | √ | √ | | | ○ | | | √ |
| | S | | | | | | | | | |
| *Trachinotus carolinus* | J | | √ | ○ | | | ◉ | | | √ |
| | L | | | | | | | | | |
| | E | | | | | | | | | |
| Gray snapper | A | | √ | √ | | | √ | | | √ |
| | S | | | | | | | | | |
| *Lutjanus griseus* | J | | √ | √ | | | ○ | | | √ |
| | L | | | | | | | | | |
| | E | | | | | | | | | |
| | | * | M | S | * | * | S | * | * | S |
| | | Corpus Christi Bay | | | Laguna Madre | | | Baffin Bay | | |
| | | Gulf of Mexico Estuaries | | | | | | | | |

**Relative Abundance**

- ● Highly Abundant
- ◉ Abundant
- ○ Common
- √ Rare
- Blank Not Present

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- T - Tidal Fresh
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- A - Adults
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- L - Larvae
- E - Eggs

Table 4, continued. Spatial distribution and relative abundance

| | | Gulf of Mexico Estuaries | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Florida Bay | | | Ten Thousand Islands | | | Caloosa-hatchee River | | | Charlotte Harbor | | | Tampa Bay | | | Suwannee River | | | Apalachee Bay | | |
| Species/Life Stage | | T | M | S | T | M | S | T | M | * | T | M | S | T | M | S | T | M | S | T | M | S |
| Sheepshead | A | √ | ○ | ○ | √ | ○ | ○ | | √ | | | √ | √ | | ○ | ○ | | ○ | ○ | | √ | √ |
| | S | | | | | | | | | | | | | | | √ | | | | | | |
| *Archosargus probatocephalus* | J | √ | ○ | ○ | ○ | ○ | ○ | √ | √ | | √ | √ | √ | ○ | ○ | ○ | ○ | ○ | ○ | √ | √ | √ |
| | L | | √ | ○ | | √ | ○ | | √ | | | √ | √ | | ○ | ○ | | ○ | ○ | | √ | √ |
| | E | | | | | | | | | | | | | | | √ | | | | | | |
| Pinfish | A | √ | ● | ● | | ● | ● | √ | ○ | | √ | ◉ | ● | | ● | ● | √ | ● | ● | | ◉ | ◉ |
| | S | | | | | | | | | | | | | | | | | | | | | |
| *Lagodon rhomboides* | J | √ | ◉ | ● | ○ | ◉ | ○ | ○ | ● | | √ | ● | ● | | ● | ● | √ | ● | ● | ○ | ◉ | ◉ |
| | L | | | √ | | ◉ | ◉ | | | | | ○ | ● | | | ○ | | √ | ○ | | | ○ |
| | E | | | | | | | | | | | | | | | | | | | | | |
| Silver perch | A | √ | ○ | ○ | √ | ○ | ○ | √ | ◉ | | √ | ◉ | ◉ | √ | ◉ | ◉ | √ | ◉ | ◉ | √ | ○ | ○ |
| | S | | | ○ | | ◉ | ◉ | | ◉ | | | ● | ● | | ● | ◉ | | ◉ | ◉ | | ○ | ○ |
| *Bairdiella chrysoura* | J | √ | ○ | ◉ | √ | ○ | ◉ | √ | ◉ | | √ | ◉ | ◉ | √ | ◉ | ◉ | √ | ○ | ○ | √ | ○ | ○ |
| | L | | √ | ○ | | ◉ | ◉ | | ◉ | | | ● | ● | | ◉ | ◉ | | ◉ | ◉ | | ○ | ○ |
| | E | | | ○ | | ◉ | ◉ | | ◉ | | | ● | ● | | ◉ | ◉ | | ◉ | ◉ | | ○ | ○ |
| Sand seatrout | A | | | | | ○ | ○ | √ | √ | | ○ | ◉ | ● | √ | ◉ | ◉ | √ | ○ | ◉ | √ | ○ | ◉ |
| | S | | | | | | | | √ | | | √ | ◉ | | ◉ | ◉ | | | ○ | | | ○ |
| *Cynoscion arenarius* | J | | | √ | | ◉ | ○ | ◉ | ● | | ○ | ◉ | ● | √ | ◉ | ◉ | √ | ● | ● | √ | ● | ● |
| | L | | | | | | ◉ | | √ | | | √ | ◉ | | ◉ | ◉ | | √ | ○ | | √ | ○ |
| | E | | | | | | | | √ | | | √ | ◉ | | ◉ | ◉ | | | ○ | | | ○ |
| Spotted seatrout | A | | ◉ | ◉ | | ○ | ○ | | ○ | | | ◉ | ◉ | | ○ | ○ | √ | ◉ | ◉ | √ | ○ | ○ |
| | S | | ◉ | ◉ | | ○ | ○ | | ○ | | | ◉ | ◉ | | ○ | ○ | | ◉ | ◉ | | √ | ○ |
| *Cynoscion nebulosus* | J | | ◉ | ◉ | | ○ | ○ | √ | ○ | | | ◉ | ◉ | | ○ | ○ | √ | ◉ | ◉ | √ | ○ | ○ |
| | L | | ◉ | ◉ | | ○ | ○ | √ | ○ | | | ◉ | ◉ | | ○ | ○ | | ◉ | ◉ | | ○ | ○ |
| | E | | ◉ | ◉ | | ○ | ○ | | ○ | | | ◉ | ◉ | | ○ | ○ | | ◉ | ◉ | | √ | ○ |
| Spot | A | | | | | | | √ | √ | | | √ | √ | | ◉ | ◉ | √ | ○ | ○ | √ | ◉ | ◉ |
| | S | | | | | | | | | | | | | | | | | | | | | |
| *Leiostomus xanthurus* | J | | | ○ | | ○ | ○ | ○ | ○ | | ○ | ○ | ○ | ◉ | ● | ● | ○ | ◉ | ○ | ○ | ● | ● |
| | L | | | | | | ◉ | | | | | | √ | | ○ | ● | | | ○ | | | ○ |
| | E | | | | | | | | | | | | | | | | | | | | | |
| | | T | M | S | T | M | S | T | M | * | T | M | S | T | M | S | T | M | S | T | M | S |
| | | Florida Bay | | | Ten Thousand Islands | | | Caloosa-hatchee River | | | Charlotte Harbor | | | Tampa Bay | | | Suwannee River | | | Apalachee Bay | | |
| | | Gulf of Mexico Estuaries | | | | | | | | | | | | | | | | | | | | |

**Relative Abundance**

- ● Highly Abundant
- ◉ Abundant
- ○ Common
- √ Rare
- Blank Not Present

**Salinity Zone**

- T - Tidal Fresh
- M - Mixing
- S - Seawater
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**Life Stage**

- A - Adults
- S - Spawning adults
- J - Juveniles
- L - Larvae
- E - Eggs

Table 4, continued. Spatial distribution and relative abundance

| | | Gulf of Mexico Estuaries | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Apalachicola Bay | | | St. Andrew Bay | | | Choctawhatchee Bay | | | Pensacola Bay | | | Perdido Bay | | | Mobile Bay | | | Mississippi Sound | | |
| Species/Life Stage | | T | M | S | T | M | S | T | M | S | T | M | S | T | M | S | T | M | S | T | M | S |
| Sheepshead | A | | ○ | ○ | | ○ | ○ | | ○ | ○ | | ○ | ○ | √ | ○ | ◉ | | ○ | ◉ | ○ | ○ | ○ |
| | S | | | | | | ○ | | | | | | | | | | | | | | | ○ |
| *Archosargus probatocephalus* | J | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ◉ | ○ | √ | ○ | ○ |
| | L | | ○ | ○ | | ○ | ○ | | ○ | ○ | | ○ | ○ | | ○ | ○ | | ○ | ○ | | ○ | ○ |
| | E | | | | | | √ | | | | | | | | | | | | | | √ | ○ |
| Pinfish | A | | ◉ | ◉ | √ | ● | ● | | ○ | ○ | ◉ | ◉ | ◉ | √ | ○ | ○ | √ | ◉ | ◉ | √ | ● | ○ |
| | S | | | | | | | | | | | | | | | | | | | | | ○ |
| *Lagodon rhomboides* | J | ○ | ◉ | ◉ | √ | ● | ● | ○ | ◉ | ◉ | √ | ● | ● | √ | ◉ | ◉ | √ | ◉ | ◉ | √ | ● | ○ |
| | L | | | ○ | | ◉ | ◉ | | ● | ● | | ○ | ◉ | | √ | ○ | | | ◉ | | ◉ | ○ |
| | E | | | | | | | | | | | | | | | | | | | | | ○ |
| Silver perch | A | √ | ◉ | ◉ | √ | ◉ | ◉ | √ | ○ | ○ | √ | ○ | ○ | √ | ○ | ○ | √ | ○ | ○ | √ | ● | √ |
| | S | | ◉ | ◉ | | ◉ | ◉ | | ○ | ○ | | ○ | ○ | | ○ | ○ | | ○ | ○ | | ○ | √ |
| *Bairdiella chrysoura* | J | √ | ◉ | ◉ | √ | ◉ | ◉ | √ | ○ | ○ | √ | ○ | ○ | √ | ○ | ○ | √ | ○ | ○ | ○ | ● | √ |
| | L | | ◉ | ◉ | | ◉ | ◉ | | ○ | ○ | | ○ | ○ | | ○ | ○ | | ○ | ○ | | ○ | √ |
| | E | | ◉ | ◉ | | ◉ | ◉ | | ○ | ○ | | ○ | ○ | | ○ | ○ | | ○ | ○ | | ○ | √ |
| Sand seatrout | A | | ◉ | ◉ | √ | ○ | ○ | ○ | ◉ | ◉ | √ | ○ | ○ | √ | ○ | ○ | ○ | ● | ◉ | ◉ | ● | ● |
| | S | | | | | ○ | ○ | | ◉ | ● | | ○ | ○ | | ○ | ○ | | ◉ | ● | | | ○ |
| *Cynoscion arenarius* | J | | ● | ● | ○ | ◉ | ◉ | ○ | ◉ | ◉ | ○ | ○ | ○ | √ | ○ | ○ | ○ | ◉ | ◉ | ○ | ● | ○ |
| | L | | | ◉ | | ○ | ○ | | ◉ | ● | | ○ | ○ | | ○ | ○ | √ | ◉ | ● | ○ | ● | ○ |
| | E | | | | | ○ | ○ | | ◉ | ● | | ○ | ○ | | ○ | ○ | | ◉ | ● | | | ○ |
| Spotted seatrout | A | √ | ○ | ○ | √ | ◉ | ◉ | √ | ◉ | ◉ | √ | ○ | ○ | √ | ○ | ○ | √ | ◉ | ◉ | | ◉ | ◉ |
| | S | | ○ | ○ | | √ | ○ | | | √ | | √ | ○ | | | √ | | | √ | | ◉ | ◉ |
| *Cynoscion nebulosus* | J | | ○ | ○ | √ | ○ | ○ | √ | ◉ | ◉ | √ | ○ | ○ | √ | ○ | ○ | √ | ◉ | ○ | | ◉ | ◉ |
| | L | | ○ | ○ | | ○ | ○ | | ○ | ◉ | | ○ | ○ | | ○ | ○ | √ | ○ | ◉ | | ◉ | ◉ |
| | E | | ○ | ○ | | √ | ○ | | | √ | | √ | ○ | | | √ | | | √ | | ◉ | ◉ |
| Spot | A | | ○ | ◉ | √ | ◉ | ◉ | √ | ◉ | ◉ | √ | √ | √ | √ | ○ | ○ | √ | ○ | ○ | ○ | ● | ● |
| | S | | | | | | | | | | | | | | | | | | | | | ◉ |
| *Leiostomus xanthurus* | J | ○ | ◉ | ◉ | ○ | ◉ | ◉ | √ | ● | ● | √ | ● | ● | √ | ◉ | ◉ | √ | ● | ● | ◉ | ● | ○ |
| | L | | | ○ | | ○ | ○ | | ◉ | ● | | ○ | ● | | ○ | ◉ | | ○ | ○ | | ● | ● |
| | E | | | | | | | | | | | | | | | | | | | | | ● |
| | | T | M | S | T | M | S | T | M | S | T | M | S | T | M | S | T | M | S | T | M | S |
| | | Apalachicola Bay | | | St. Andrew Bay | | | Choctawhatchee Bay | | | Pensacola Bay | | | Perdido Bay | | | Mobile Bay | | | Mississippi Sound | | |
| | | Gulf of Mexico Estuaries | | | | | | | | | | | | | | | | | | | | |

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- ◉ Abundant
- ○ Common
- √ Rare
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- T - Tidal Fresh
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- S - Seawater

**Life Stage**

- A - Adults
- S - Spawning adults
- J - Juveniles
- L - Larvae
- E - Eggs

Table 4, continued. Spatial distribution and relative abundance

| | | Gulf of Mexico Estuaries | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Lake Borgne | | | Lake Pontchar-train | | | Breton/ Chandeleur Sounds | | | Mississippi River | | | Barataria Bay | | | Terrebonne/ Timbalier Bays | | | Atchafalaya/ Vermilion Bays | | |
| Species/Life Stage | | T | M | * | * | M | * | * | M | S | T | M | * | T | M | S | T | M | S | T | M | * |
| Sheepshead | A | ○ | ○ | | | ○ | | | ○ | ○ | √ | ○ | | ○ | ◉ | ◉ | ○ | ◉ | ◉ | ○ | ○ | |
| | S | | | | | | | | | | | | | | | | | | | | | |
| *Archosargus probatocephalus* | J | | ◉ | | | ○ | | | ○ | ○ | ○ | ○ | | ○ | ○ | ○ | ○ | ◉ | ◉ | ○ | ○ | |
| | L | | | | | | | | | | | | | | | | | | | | | |
| | E | | | | | | | | | | | | | | | | | | | | | |
| Pinfish | A | ○ | ◉ | | | ○ | | | | | | | | | | | | | | | √ | |
| | S | | | | | | | | | | | | | | | | | | | | | |
| *Lagodon rhomboides* | J | ○ | ◉ | | | ◉ | | | ○ | ○ | | ○ | | √ | ○ | ◉ | | ◉ | ◉ | | ○ | |
| | L | | | | | | | | | | | | | | | | | | | | | |
| | E | | | | | | | | | | | | | | | | | | | | | |
| Silver perch | A | √ | ● | | | ○ | | | ○ | ○ | | ○ | | | ○ | ◉ | | ○ | ○ | | | |
| | S | | ○ | | | | | | | | | | | | | ◉ | | | ○ | | | |
| *Bairdiella chrysoura* | J | √ | ● | | | ○ | | | ○ | ○ | | ○ | | | ○ | ◉ | | ◉ | ◉ | ○ | ○ | |
| | L | | ○ | | | | | | | | | | | | | ◉ | | | ○ | | | |
| | E | | ○ | | | | | | | | | | | | | ◉ | | | ○ | | | |
| Sand seatrout | A | ● | ● | | | ○ | | | ○ | ○ | | | | | ○ | ○ | | ○ | ○ | √ | ○ | |
| | S | | ○ | | | | | | | | | | | | | | | | | | | |
| *Cynoscion arenarius* | J | ○ | ◉ | | | ◉ | | | ○ | ○ | | ● | | | ◉ | ◉ | | ◉ | ◉ | ◉ | ◉ | |
| | L | | ○ | | | | | | | | | | | | | | | | | | | |
| | E | | ○ | | | | | | | | | | | | | | | | | | | |
| Spotted seatrout | A | ○ | ◉ | | | ○ | | | ◉ | ◉ | | ◉ | | √ | ○ | ○ | √ | ○ | ◉ | | ◉ | |
| | S | | ◉ | | | ○ | | | ○ | | | | | | ○ | ○ | | ○ | ○ | | ○ | |
| *Cynoscion nebulosus* | J | ○ | ◉ | | | ○ | | | ○ | ○ | | ◉ | | √ | ○ | ○ | √ | ◉ | ○ | | ○ | |
| | L | | ◉ | | | ○ | | | ○ | | | | | | ○ | ○ | | ○ | ○ | | ○ | |
| | E | | ◉ | | | ○ | | | ○ | | | | | | ○ | ○ | | ○ | ○ | | ○ | |
| Spot | A | √ | ○ | | | ○ | | | ○ | ○ | | ◉ | | | | | | ○ | ○ | | | |
| | S | | | | | | | | | | | | | | | | | | | | | |
| *Leiostomus xanthurus* | J | ○ | ● | | | ○ | | | ◉ | ◉ | | ◉ | | ○ | ◉ | ● | ○ | ◉ | ◉ | ◉ | ◉ | |
| | L | √ | ● | | | ○ | | | | | | | | | ◉ | ◉ | | | | | | |
| | E | | | | | | | | | | | | | | | | | | | | | |
| | | T | M | * | * | M | * | * | M | S | T | M | * | T | M | S | T | M | S | T | M | * |
| | | Lake Borgne | | | Lake Pontchar-train | | | Breton/ Chandeleur Sounds | | | Mississippi River | | | Barataria Bay | | | Terrebonne/ Timbalier Bays | | | Atchafalaya/ Vermilion Bays | | |
| | | Gulf of Mexico Estuaries | | | | | | | | | | | | | | | | | | | | |

**Relative Abundance**

- ● Highly Abundant
- ◉ Abundant
- ○ Common
- √ Rare
- Blank Not Present

**Salinity Zone**

- T - Tidal Fresh
- M - Mixing
- S - Seawater
- * - Salinity zone not present

**Life Stage**

- A - Adults
- S - Spawning adults
- J - Juveniles
- L - Larvae
- E - Eggs

Table 4, continued. Spatial distribution and relative abundance

| | | Gulf of Mexico Estuaries | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Calcasieu Lake | | | Sabine Lake | | | Galveston Bay | | | Brazos River | | | Matagorda Bay | | | San Antonio Bay | | | Aransas Bay | | |
| Species/Life Stage | | T | M | * | T | M | * | T | M | S | T | M | * | T | M | S | * | M | S | * | M | S |
| Sheepshead | A | √ | √ | | ○ | ○ | | | ○ | ○ | na | ○ | | ○ | ◉ | ◉ | | ◉ | ○ | | ○ | ○ |
| | S | | | | | | | | | | | | | | | | | | | | ○ | ○ |
| *Archosargus probatocephalus* | J | √ | ○ | | ○ | ○ | | ○ | ○ | ○ | na | ○ | | ○ | ◉ | ○ | | ○ | ○ | | ○ | ○ |
| | L | | | | | | | | | | | | | | | | | | | | ○ | ○ |
| | E | | | | | | | | | | | | | | | | | | | | ○ | ○ |
| Pinfish | A | | ○ | | | | | | | | | | | ○ | ○ | ◉ | | √ | ○ | | ◉ | ◉ |
| | S | | | | | | | | | | | | | | | | | | | | | |
| *Lagodon rhomboides* | J | √ | ○ | | ○ | ○ | | ○ | ◉ | ◉ | na | ◉ | | ○ | ◉ | ● | | ◉ | ◉ | | ◉ | ◉ |
| | L | | | | | | | | | | | | | | | | | | | | | |
| | E | | | | | | | | | | | | | | | | | | | | | |
| Silver perch | A | | | | ○ | ○ | | √ | ○ | ○ | na | ○ | | ○ | ○ | ○ | | ○ | √ | | ○ | ○ |
| | S | | | | | | | | ○ | ○ | | ○ | | | ○ | ○ | | ○ | √ | | ○ | ○ |
| *Bairdiella chrysoura* | J | | ○ | | √ | √ | | √ | ○ | ○ | na | ○ | | | ○ | ○ | | ○ | √ | | ○ | ○ |
| | L | | | | | | | | ○ | ○ | | ○ | | | ○ | ○ | | ○ | √ | | ○ | ○ |
| | E | | | | | | | | ○ | ○ | | ○ | | | ○ | ○ | | ○ | √ | | ○ | ○ |
| Sand seatrout | A | | ○ | | | | | | ◉ | ◉ | | | | | ○ | ○ | | | | | ○ | ○ |
| | S | | | | | | | | | | | | | | | | | | | | | ○ |
| *Cynoscion arenarius* | J | | ◉ | | | √ | | √ | ○ | ○ | na | ○ | | ○ | ○ | ○ | | ○ | ○ | | ○ | ○ |
| | L | | | | | | | | | | | | | | | | | | | | | ○ |
| | E | | | | | | | | | | | | | | | | | | | | | ○ |
| Spotted seatrout | A | √ | ○ | | √ | √ | | √ | ○ | ○ | na | ○ | | √ | ○ | ○ | | ○ | ○ | | ○ | ○ |
| | S | | ○ | | | √ | | | ○ | ○ | | ○ | | | ○ | ○ | | ○ | ○ | | ○ | ○ |
| *Cynoscion nebulosus* | J | √ | ○ | | ○ | ○ | | √ | ○ | ○ | na | ○ | | √ | ○ | ○ | | ○ | ○ | | ○ | ○ |
| | L | | ○ | | ○ | √ | | | ○ | ○ | | ○ | | | ○ | ○ | | ○ | ○ | | ○ | ○ |
| | E | | ○ | | | √ | | | ○ | ○ | | ○ | | | ○ | ○ | | ○ | ○ | | ○ | ○ |
| Spot | A | | | | ◉ | ◉ | | √ | ○ | ○ | na | na | | ○ | ○ | ○ | | ○ | ○ | | ◉ | ◉ |
| | S | | | | | | | | | | | | | | | | | | | | | |
| *Leiostomus xanthurus* | J | √ | ○ | | ○ | ○ | | ○ | ◉ | ○ | ○ | ◉ | | ○ | ◉ | ○ | | ◉ | ○ | | ◉ | ◉ |
| | L | | | | | | | | | | | | | | | | | | | | | |
| | E | | | | | | | | | | | | | | | | | | | | | |
| | | T | M | * | T | M | * | T | M | S | T | M | * | T | M | S | * | M | S | * | M | S |
| | | Calcasieu Lake | | | Sabine Lake | | | Galveston Bay | | | Brazos River | | | Matagorda Bay | | | San Antonio Bay | | | Aransas Bay | | |
| | | Gulf of Mexico Estuaries | | | | | | | | | | | | | | | | | | | | |

**Relative Abundance**

- ● Highly Abundant
- ◉ Abundant
- ○ Common
- √ Rare
- Blank Not Present
- na No Data Available

**Salinity Zone**

- T - Tidal Fresh
- M - Mixing
- S - Seawater
- * - Salinity zone not present

**Life Stage**

- A - Adults
- S - Spawning adults
- J - Juveniles
- L - Larvae
- E - Eggs

Table 4, continued. Spatial distribution and relative abundance

| | | Gulf of Mexico Estuaries | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | Corpus Christi Bay | | | Laguna Madre | | | Baffin Bay | | |
| Species/Life Stage | | * | M | S | * | * | S | * | * | S |
| Sheepshead | A | | ○ | ○ | | | ○ | | | ○ |
| | S | | ○ | ○ | | | | | | √ |
| *Archosargus probatocephalus* | J | | ○ | ○ | | | ◉ | | | ○ |
| | L | | ○ | ○ | | | | | | √ |
| | E | | ○ | ○ | | | | | | √ |
| Pinfish | A | | ◉ | ◉ | | | ◉ | | | ○ |
| | S | | | | | | | | | |
| *Lagodon rhomboides* | J | | ◉ | ◉ | | | ● | | | ◉ |
| | L | | | | | | | | | |
| | E | | | | | | | | | |
| Silver perch | A | | ○ | ○ | | | ○ | | | ◉ |
| | S | | ○ | ○ | | | ○ | | | ◉ |
| *Bairdiella chrysoura* | J | | ○ | ○ | | | ◉ | | | ◉ |
| | L | | ○ | ○ | | | ○ | | | ◉ |
| | E | | ○ | ○ | | | ○ | | | ◉ |
| Sand seatrout | A | | ◉ | ◉ | | | √ | | | ○ |
| | S | | | ○ | | | | | | |
| *Cynoscion arenarius* | J | | ◉ | ○ | | | √ | | | ○ |
| | L | | | ○ | | | | | | |
| | E | | | ○ | | | | | | |
| Spotted seatrout | A | | ○ | ○ | | | ○ | | | ○ |
| | S | | ○ | ○ | | | ○ | | | ○ |
| *Cynoscion nebulosus* | J | | ○ | ○ | | | ○ | | | ○ |
| | L | | ○ | ○ | | | ○ | | | ○ |
| | E | | ○ | ○ | | | ○ | | | ○ |
| Spot | A | | ◉ | ◉ | | | ◉ | | | ○ |
| | S | | | | | | | | | |
| *Leiostomus xanthurus* | J | | ◉ | ◉ | | | ● | | | ● |
| | L | | | | | | | | | |
| | E | | | | | | | | | |
| | | * | M | S | * | * | S | * | * | S |
| | | Corpus Christi Bay | | | Laguna Madre | | | Baffin Bay | | |
| | | Gulf of Mexico Estuaries | | | | | | | | |

**Relative Abundance**

- ● Highly Abundant
- ◉ Abundant
- ○ Common
- √ Rare
- Blank Not Present

**Salinity Zone**

- T - Tidal Fresh
- M - Mixing
- S - Seawater
- * - Salinity zone not present

**Life Stage**

- A - Adults
- S - Spawning adults
- J - Juveniles
- L - Larvae
- E - Eggs

Table 4, continued. Spatial distribution and relative abundance

| | | Gulf of Mexico Estuaries | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Florida Bay | | | Ten Thousand Islands | | | Caloosa-hatchee River | | | Charlotte Harbor | | | Tampa Bay | | | Suwannee River | | | Apalachee Bay | | |
| Species/Life Stage | | T | M | S | T | M | S | T | M | * | T | M | S | T | M | S | T | M | S | T | M | S |
| Atlantic croaker | A | | | | | | | | | | | | | | | | O | O | O | | O | O |
| | S | | | | | | | | | | | | | | | | | | | | | |
| *Micropogonias undulatus* | J | | | √ | | | √ | √ | √ | | O | O | √ | | √ | √ | O | O | O | O | O | O |
| | L | | | | | | | | | | | | | | | | | | O | | | O |
| | E | | | | | | | | | | | | | | | | | | | | | |
| Black drum | A | | O | O | | O | O | | O | | | O | O | | O | O | | O | O | | O | O |
| | S | | | √ | | √ | √ | | | | | | | | O | O | | | | | | |
| *Pogonias cromis* | J | √ | √ | √ | √ | √ | √ | √ | O | | √ | O | O | √ | O | O | √ | O | O | √ | O | O |
| | L | | √ | O | | O | O | | O | | | O | O | | O | O | | O | O | | O | O |
| | E | | | √ | | | √ | | | | | | | | √ | √ | | | | | | |
| Red drum | A | | √ | √ | | √ | √ | √ | √ | | | √ | O | √ | O | O | | O | O | √ | O | O |
| | S | | | | | | | | | | | | √ | | | √ | | | √ | | | √ |
| *Sciaenops ocellatus* | J | √ | O | O | √ | √ | √ | O | ◉ | | O | ◉ | ◉ | O | ● | ● | | O | O | √ | O | O |
| | L | | | √ | | √ | √ | | O | | | O | O | | O | ◉ | | √ | O | | √ | O |
| | E | | | | | | | | | | | √ | √ | | | √ | | | √ | | | √ |
| Striped mullet | A | O | ◉ | ◉ | O | ◉ | ◉ | O | O | | O | ◉ | ◉ | O | O | O | O | ◉ | ◉ | ● | ● | ● |
| | S | | | | | | | | | | | | | | | | | | | | | |
| *Mugil cephalus* | J | O | ● | ◉ | O | ● | ◉ | ● | ● | | ● | ● | ● | ● | ● | ● | O | ◉ | ◉ | ● | ● | ● |
| | L | | | O | | | | | | | | | √ | | | | | | O | | | ◉ |
| | E | | | | | | | | | | | | | | | | | | | | | |
| Code goby | A | √ | ● | ◉ | √ | ● | ● | √ | ◉ | | √ | ◉ | ● | √ | ◉ | ◉ | √ | O | O | | O | O |
| | S | | ● | ◉ | | ● | ◉ | | ◉ | | | ◉ | ● | | O | ◉ | | O | O | | O | O |
| *Gobiosoma robustum* | J | √ | ● | ● | √ | ● | ◉ | √ | ◉ | | √ | ◉ | ● | √ | ◉ | ◉ | √ | O | O | | O | O |
| | L | | ● | ◉ | | ● | ◉ | | ◉ | | | ◉ | ● | | ◉ | ◉ | | O | O | | O | O |
| | E | | ● | ◉ | | ● | ◉ | | ◉ | | | ◉ | ● | | ◉ | ◉ | | O | O | | O | O |
| Spanish mackerel | A | | O | O | | O | O | | √ | | | √ | O | | | O | | √ | √ | | √ | √ |
| | S | | | | | | | | | | | | | | | | | | | | | |
| *Scomberomorus maculatus* | J | | O | O | √ | O | O | | √ | | | O | O | | √ | √ | | √ | O | | √ | √ |
| | L | | | | | | | | | | | | | | | | | | | | | |
| | E | | | | | | | | | | | | | | | | | | | | | |
| | | T | M | S | T | M | S | T | M | * | T | M | S | T | M | S | T | M | S | T | M | S |
| | | Florida Bay | | | Ten Thousand Islands | | | Caloosa-hatchee River | | | Charlotte Harbor | | | Tampa Bay | | | Suwannee River | | | Apalachee Bay | | |
| | | Gulf of Mexico Estuaries | | | | | | | | | | | | | | | | | | | | |

**Relative Abundance**

- ● Highly Abundant
- ◉ Abundant
- O Common
- √ Rare
- Blank Not Present

**Salinity Zone**

- T - Tidal Fresh
- M - Mixing
- S - Seawater
- * - Salinity zone not present

**Life Stage**

- A - Adults
- S - Spawning adults
- J - Juveniles
- L - Larvae
- E - Eggs

Table 4, continued. Spatial distribution and relative abundance

| | | Gulf of Mexico Estuaries | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Apalachicola Bay | | | St. Andrew Bay | | | Choctawhatchee Bay | | | Pensacola Bay | | | Perdido Bay | | | Mobile Bay | | | Mississippi Sound | | |
| Species/Life Stage | | T | M | S | T | M | S | T | M | S | T | M | S | T | M | S | T | M | S | T | M | S |
| Atlantic croaker | A | | ◉ | ◉ | | ◉ | ◉ | | ◉ | ◉ | | ◉ | ◉ | | ○ | ○ | | ◉ | ◉ | ○ | ● | ◉ |
| | S | | | | | | | | | | | | | | | | | | | | ◉ | ◉ |
| *Micropogonias undulatus* | J | ◉ | ● | ● | √ | ◉ | ◉ | ○ | ◉ | ◉ | ◉ | ● | ● | ○ | ○ | ○ | ◉ | ● | ● | ◉ | ● | ○ |
| | L | | ◉ | ◉ | | ○ | ○ | | ◉ | ◉ | | ○ | ● | | √ | ○ | | √ | ◉ | ○ | ● | ○ |
| | E | | | | | | | | | | | | | | | | | | | | ◉ | ○ |
| Black drum | A | | ○ | ○ | | ○ | ○ | | ○ | ○ | | ○ | ○ | | √ | ○ | √ | ○ | ○ | | ○ | ○ |
| | S | | | | | ○ | ○ | | | | | | | | | | | | | | ○ | ○ |
| *Pogonias cromis* | J | √ | ○ | | √ | ○ | ○ | √ | ○ | ○ | √ | ○ | ○ | √ | ○ | ○ | √ | ○ | ○ | | ○ | ○ |
| | L | | ○ | ○ | | ○ | ○ | | ○ | ○ | | ○ | ○ | | ○ | ○ | | ○ | ○ | | ○ | ○ |
| | E | | | | | √ | √ | | | | | | | | | | | | | | ○ | ○ |
| Red drum | A | √ | ○ | ○ | | ○ | ◉ | √ | ○ | ○ | | ○ | ○ | | | √ | √ | ○ | √ | | ○ | ○ |
| | S | | | √ | | | | | | √ | | | | | | √ | | | | | | ○ |
| *Sciaenops ocellatus* | J | √ | ○ | ○ | √ | ○ | ○ | √ | ○ | ○ | √ | ○ | ○ | | ○ | ○ | √ | ○ | ○ | √ | ○ | |
| | L | | √ | ○ | | √ | ○ | | ○ | ○ | | √ | ○ | | | √ | | | ○ | | ◉ | ○ |
| | E | | | √ | | | √ | | | √ | | | √ | | | √ | | | √ | | | ○ |
| Striped mullet | A | ◉ | ◉ | ◉ | ○ | ◉ | ● | ○ | ◉ | ◉ | ◉ | ◉ | ◉ | √ | ○ | ○ | ◉ | ◉ | ◉ | ○ | ● | ● |
| | S | | | | | | | | | | | | | | | | | | | | | ● |
| *Mugil cephalus* | J | ◉ | ◉ | ◉ | ○ | ● | ● | ○ | ◉ | ◉ | ◉ | ◉ | ◉ | √ | ◉ | ◉ | ◉ | ◉ | ◉ | ○ | ◉ | ◉ |
| | L | | | ○ | | ○ | ○ | | ◉ | ◉ | | ◉ | ◉ | | ○ | ○ | | ◉ | ◉ | | ● | ◉ |
| | E | | | | | | | | | | | | | | | | | | | | | ◉ |
| Code goby | A | √ | ○ | ○ | √ | ◉ | ◉ | √ | ○ | ○ | √ | ○ | ○ | | √ | √ | | | | | ○ | ○ |
| | S | | ○ | ○ | | ◉ | ◉ | | ○ | ○ | | ○ | ○ | | √ | √ | | | | | ○ | ○ |
| *Gobiosoma robustum* | J | √ | ○ | ○ | √ | ◉ | ◉ | √ | ○ | ○ | √ | ○ | ○ | | √ | √ | | | | | ○ | ○ |
| | L | | ○ | ○ | | ◉ | ◉ | | ○ | ○ | | ○ | ○ | | √ | √ | | | | | ○ | ○ |
| | E | | ○ | ○ | | ◉ | ◉ | | ○ | ○ | | ○ | ○ | | √ | √ | | | | | ○ | ○ |
| Spanish mackerel | A | | √ | √ | | √ | ◉ | | ○ | ○ | | ○ | ○ | | ○ | ◉ | | ○ | ○ | | | ◉ |
| | S | | | | | | | | | | | | | | | | | | | | | √ |
| *Scomberomorus maculatus* | J | | √ | √ | | √ | ◉ | | ○ | ○ | | ○ | ○ | | | ○ | | ○ | ○ | √ | ○ | ○ |
| | L | | | | | | | | | | | | | | | | | | | | | √ |
| | E | | | | | | | | | | | | | | | | | | | | | √ |
| | | T | M | S | T | M | S | T | M | S | T | M | S | T | M | S | T | M | S | T | M | S |
| | | Apalachicola Bay | | | St. Andrew Bay | | | Choctawhatchee Bay | | | Pensacola Bay | | | Perdido Bay | | | Mobile Bay | | | Mississippi Sound | | |
| | | Gulf of Mexico Estuaries | | | | | | | | | | | | | | | | | | | | |

**Relative Abundance**

- ● Highly Abundant
- ◉ Abundant
- ○ Common
- √ Rare
- Blank Not Present

**Salinity Zone**

- T - Tidal Fresh
- M - Mixing
- S - Seawater

**Life Stage**

- A - Adults
- S - Spawning adults
- J - Juveniles
- L - Larvae
- E - Eggs

Table 4, continued. Spatial distribution and relative abundance

| | | Gulf of Mexico Estuaries | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Lake Borgne | | | Lake Pontchar-train | | | Breton/ Chandeleur Sounds | | | Mississippi River | | | Barataria Bay | | | Terrebonne/ Timbalier Bays | | | Atchafalaya/ Vermilion Bays | | |
| Species/Life Stage | | T | M | * | * | M | * | * | M | S | T | M | * | T | M | S | T | M | S | T | M | * |
| Atlantic croaker | A | ○ | ○ | | | ○ | | | ○ | ○ | | | | | | | | | | | | |
| | S | | | | | | | | | | | | | | | | | | | | | |
| *Micropogonias undulatus* | J | ◉ | ● | | | ● | | | ◉ | ◉ | | ● | | ○ | ● | ● | ○ | ● | ◉ | ● | ● | |
| | L | √ | ◉ | | | | | | | | | | | | ○ | ◉ | | | ◉ | | ○ | |
| | E | | | | | | | | | | | | | | | | | | | | | |
| Black drum | A | √ | ○ | | | ○ | | | ○ | ◉ | √ | ○ | | √ | ○ | ◉ | | ○ | ◉ | | ○ | |
| | S | | | | | | | | | | | | | | | | | | ○ | | | |
| *Pogonias cromis* | J | √ | ○ | | | ○ | | | ○ | ◉ | √ | ○ | | √ | ○ | ○ | | ○ | ○ | √ | ○ | |
| | L | | √ | | | | | | | | | | | | | | | | ○ | | | |
| | E | | | | | | | | | | | | | | | | | | ○ | | | |
| Red drum | A | | ○ | | | | | | ◉ | ◉ | | | | √ | √ | ○ | | √ | √ | | √ | |
| | S | | | | | | | | | | | | | | | √ | | | | | | |
| *Sciaenops ocellatus* | J | ○ | ◉ | | | ○ | | | ◉ | ◉ | ○ | ○ | | ○ | ○ | ○ | √ | ○ | ○ | ○ | ○ | |
| | L | | | | | | | | | | | | | | ○ | ○ | | | | | | |
| | E | | | | | | | | | | | | | | | √ | | | | | | |
| Striped mullet | A | ○ | ● | | | ○ | | | ◉ | ◉ | ○ | ◉ | | √ | ○ | ○ | ○ | ○ | ○ | ◉ | ○ | |
| | S | | | | | | | | | | | | | | | | | | | | | |
| *Mugil cephalus* | J | ○ | ◉ | | | ◉ | | | ○ | ○ | ○ | ◉ | | √ | ○ | ◉ | ○ | ◉ | ◉ | ◉ | ◉ | |
| | L | | √ | | | | | | | | | | | | ○ | ○ | | | | | | |
| | E | | | | | | | | | | | | | | | | | | | | | |
| Code goby | A | | ○ | | | ○ | | | | | | | | | | √ | | | | | | |
| | S | | ● | | | ○ | | | | | | | | | | | | | | | | |
| *Gobiosoma robustum* | J | | ◉ | | | ○ | | | | | | | | | | √ | | | | | | |
| | L | | ● | | | ○ | | | | | | | | | | | | | | | | |
| | E | | ● | | | ○ | | | | | | | | | | | | | | | | |
| Spanish mackerel | A | | | | | | | | | ○ | | | | | | ○ | | √ | √ | | | |
| | S | | | | | | | | | | | | | | | | | | | | | |
| *Scomberomorus maculatus* | J | | √ | | | √ | | | ○ | ○ | | √ | | | ○ | ○ | | ○ | ○ | ○ | ○ | |
| | L | | | | | | | | | | | | | | | | | | | | | |
| | E | | | | | | | | | | | | | | | | | | | | | |
| | | T | M | * | * | M | * | * | M | S | T | M | * | T | M | S | T | M | S | T | M | * |
| | | Lake Borgne | | | Lake Pontchar-train | | | Breton/ Chandeleur Sounds | | | Mississippi River | | | Barataria Bay | | | Terrebonne/ Timbalier Bays | | | Atchafalaya/ Vermilion Bays | | |
| | | Gulf of Mexico Estuaries | | | | | | | | | | | | | | | | | | | | |

**Relative Abundance**

- ● Highly Abundant
- ◉ Abundant
- ○ Common
- √ Rare
- Blank Not Present

**Salinity Zone**

- T - Tidal Fresh
- M - Mixing
- S - Seawater
- * - Salinity zone not present

**Life Stage**

- A - Adults
- S - Spawning adults
- J - Juveniles
- L - Larvae
- E - Eggs

Table 4, continued. Spatial distribution and relative abundance

| | | Gulf of Mexico Estuaries | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Calcasieu Lake | | | Sabine Lake | | | Galveston Bay | | | Brazos River | | | Matagorda Bay | | | San Antonio Bay | | | Aransas Bay | | |
| Species/Life Stage | | T | M | * | T | M | * | T | M | S | T | M | * | T | M | S | * | M | S | * | M | S |
| Atlantic croaker | A | | | | ◉ | ◉ | | √ | ○ | ○ | na | na | | ◉ | ◉ | ◉ | | ◉ | ◉ | | ◉ | ○ |
| | S | | | | | | | | | | | | | | | | | | | | | |
| *Micropogonias undulatus* | J | ○ | ● | | ○ | ◉ | | ◉ | ● | ● | ○ | ● | | ◉ | ● | ◉ | | ● | ◉ | | ◉ | ◉ |
| | L | | | | | | | | | | | | | | | | | | | | | ◉ |
| | E | | | | | | | | | | | | | | | | | | | | | |
| Black drum | A | | ○ | | | √ | | | ○ | ○ | | ○ | | | ○ | ○ | | ○ | ○ | | ○ | ○ |
| | S | | | | | | | | | ○ | | | | | | ○ | | | | | | ○ |
| *Pogonias cromis* | J | | ○ | | ○ | ○ | | √ | ○ | ○ | ○ | ○ | | ○ | ○ | ○ | | ○ | ○ | | ○ | ○ |
| | L | | | | | | | | | ○ | | | | | | ○ | | | | | | ○ |
| | E | | | | | | | | | ○ | | | | | | ○ | | | | | | ○ |
| Red drum | A | | | | √ | √ | | √ | ○ | ○ | na | na | | √ | √ | ○ | | √ | √ | | √ | √ |
| | S | | | | | | | | | | | | | | | ○ | | | | | | |
| *Sciaenops ocellatus* | J | | ◉ | | ○ | ○ | | ○ | ○ | ○ | na | ○ | | ○ | ○ | ○ | | ○ | ○ | | ○ | ○ |
| | L | | | | | | | | ○ | ○ | | | | | | ○ | | | | | | |
| | E | | | | | | | | | | | | | | | ○ | | | | | | |
| Striped mullet | A | | | | ○ | ○ | | ○ | ○ | ○ | na | ○ | | ○ | ◉ | ◉ | | ○ | ○ | | ○ | ○ |
| | S | | | | | | | | | | | | | | | ◉ | | | | | | |
| *Mugil cephalus* | J | √ | ◉ | | ○ | ○ | | ○ | ◉ | ◉ | na | ○ | | ◉ | ◉ | ◉ | | ◉ | ○ | | ◉ | ◉ |
| | L | | | | | | | | | | | | | | | ◉ | | | | | | |
| | E | | | | | | | | | | | | | | | ◉ | | | | | | |
| Code goby | A | | | | | | | | | √ | | na | | | ○ | ○ | | √ | √ | | ○ | ○ |
| | S | | | | | | | | | √ | | na | | | ○ | ○ | | √ | √ | | ○ | ○ |
| *Gobiosoma robustum* | J | | | | | | | | | √ | | na | | | ○ | ○ | | √ | √ | | ○ | ○ |
| | L | | | | | | | | | √ | | na | | | ○ | ○ | | √ | √ | | ○ | ○ |
| | E | | | | | | | | | √ | | na | | | ○ | ○ | | √ | √ | | ○ | ○ |
| Spanish mackerel | A | | | | | ○ | | | | | | | | | | | | | √ | | | √ |
| | S | | | | | | | | | | | | | | | | | | | | | |
| *Scomberomorus maculatus* | J | | ○ | | | √ | | | ○ | ○ | | √ | | | √ | √ | | | √ | | √ | √ |
| | L | | | | | | | | | | | | | | | | | | | | | |
| | E | | | | | | | | | | | | | | | | | | | | | |
| | | T | M | * | T | M | * | T | M | S | T | M | * | T | M | S | * | M | S | * | M | S |
| | | Calcasieu Lake | | | Sabine Lake | | | Galveston Bay | | | Brazos River | | | Matagorda Bay | | | San Antonio Bay | | | Aransas Bay | | |
| | | Gulf of Mexico Estuaries | | | | | | | | | | | | | | | | | | | | |

**Relative Abundance**

- ● Highly Abundant
- ◉ Abundant
- ○ Common
- √ Rare
- Blank Not Present
- na No Data Available

**Salinity Zone**

- T - Tidal Fresh
- M - Mixing
- S - Seawater
- * - Salinity zone not present

**Life Stage**

- A - Adults
- S - Spawning adults
- J - Juveniles
- L - Larvae
- E - Eggs

Table 4, continued. Spatial distribution and relative abundance

| | | Gulf of Mexico Estuaries | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | Corpus Christi Bay | | | Laguna Madre | | | Baffin Bay | | |
| Species/Life Stage | | * | M | S | * | * | S | * | * | S |
| Atlantic croaker | A | | ◉ | ○ | | | ◉ | | | ◉ |
| | S | | | | | | | | | |
| *Micropogonias undulatus* | J | | ◉ | ◉ | | | ◉ | | | ◉ |
| | L | | ○ | ◉ | | | ◉ | | | |
| | E | | | | | | | | | |
| Black drum | A | | ○ | ○ | | | ○ | | | ◉ |
| | S | | | ○ | | | ○ | | | ◉ |
| *Pogonias cromis* | J | | ○ | ○ | | | ○ | | | ◉ |
| | L | | | ○ | | | ○ | | | ◉ |
| | E | | | ○ | | | ○ | | | ◉ |
| Red drum | A | | √ | √ | | | √ | | | √ |
| | S | | | | | | | | | |
| *Sciaenops ocellatus* | J | | ○ | ○ | | | ○ | | | ○ |
| | L | | | | | | | | | |
| | E | | | | | | | | | |
| Striped mullet | A | | ○ | ○ | | | ○ | | | ◉ |
| | S | | | | | | ○ | | | |
| *Mugil cephalus* | J | | ◉ | ◉ | | | ◉ | | | ◉ |
| | L | | | | | | ○ | | | |
| | E | | | | | | ○ | | | |
| Code goby | A | | ○ | ○ | | | ◉ | | | ◉ |
| | S | | ○ | ○ | | | ◉ | | | ◉ |
| *Gobiosoma robustum* | J | | ○ | ○ | | | ◉ | | | ◉ |
| | L | | ○ | ○ | | | ◉ | | | ◉ |
| | E | | ○ | ○ | | | ◉ | | | ◉ |
| Spanish mackerel | A | | √ | √ | | | | | | |
| | S | | | | | | | | | |
| *Scomberomorus maculatus* | J | | √ | √ | | | √ | | | |
| | L | | | | | | | | | |
| | E | | | | | | | | | |
| | | * | M | S | * | * | S | * | * | S |
| | | Corpus Christi Bay | | | Laguna Madre | | | Baffin Bay | | |
| | | Gulf of Mexico Estuaries | | | | | | | | |

**Relative Abundance**

- ● Highly Abundant
- ◉ Abundant
- ○ Common
- √ Rare
- Blank Not Present

**Salinity Zone**

- T - Tidal Fresh
- M - Mixing
- S - Seawater
- * - Salinity zone not present

**Life Stage**

- A - Adults
- S - Spawning adults
- J - Juveniles
- L - Larvae
- E - Eggs

Table 4, continued. Spatial distribution and relative abundance

| | | Gulf of Mexico Estuaries | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Florida Bay | | | Ten Thousand Islands | | | Caloosa-hatchee River | | | Charlotte Harbor | | | Tampa Bay | | | Suwannee River | | | Apalachee Bay | | |
| Species/Life Stage | | T | M | S | T | M | S | T | M | * | T | M | S | T | M | S | T | M | S | T | M | S |
| Gulf flounder | A | | O | O | | O | O | | √ | | | O | O | | O | O | | O | O | | O | O |
| | S | | | | | | | | | | | | | | | | | | | | | |
| *Paralichthys albigutta* | J | | O | O | | O | O | | √ | | | O | O | | O | O | | O | O | | O | O |
| | L | | O | O | | | | | | | | √ | O | | | | | √ | O | | √ | O |
| | E | | | | | | | | | | | | | | | | | | | | | |
| Southern flounder | A | | | √ | | | √ | | | | √ | √ | √ | √ | √ | √ | O | O | O | O | O | O |
| | S | | | | | | | | | | | | | | | | | | | | | |
| *Paralichthys lethostigma* | J | | | √ | | | √ | | | | √ | √ | √ | √ | √ | | O | O | √ | O | O | √ |
| | L | | | | | | | | | | | √ | √ | | | √ | | | O | | O | O |
| | E | | | | | | | | | | | | | | | | | | | | | |
| | | T | M | S | T | M | S | T | M | * | T | M | S | T | M | S | T | M | S | T | M | S |
| | | Florida Bay | | | Ten Thousand Islands | | | Caloosa-hatchee River | | | Charlotte Harbor | | | Tampa Bay | | | Suwannee River | | | Apalachee Bay | | |
| | | Gulf of Mexico Estuaries | | | | | | | | | | | | | | | | | | | | |

**Relative Abundance**

- ● Highly Abundant
- ◉ Abundant
- O Common
- √ Rare
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**Salinity Zone**

- T - Tidal Fresh
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**Life Stage**

- A - Adults
- S - Spawning adults
- J - Juveniles
- L - Larvae
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Table 4, continued. Spatial distribution and relative abundance

| | | Gulf of Mexico Estuaries | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Apalachicola Bay | | | St. Andrew Bay | | | Choctawhatchee Bay | | | Pensacola Bay | | | Perdido Bay | | | Mobile Bay | | | Mississippi Sound | | |
| Species/Life Stage | | T | M | S | T | M | S | T | M | S | T | M | S | T | M | S | T | M | S | T | M | S |
| Gulf flounder | A | | √ | ○ | | ○ | ◉ | | ○ | ○ | | ○ | ○ | | √ | ○ | | √ | √ | | √ | ○ |
| | S | | | | | | | | | | | | | | | | | | | | | ○ |
| *Paralichthys albigutta* | J | | √ | ○ | | ○ | ◉ | | ○ | ○ | | ○ | ○ | | ○ | ○ | | √ | ○ | | √ | ○ |
| | L | | √ | ○ | | | ○ | | | ○ | | | ○ | | | ○ | | | ○ | | √ | ○ |
| | E | | | | | | | | | | | | | | | | | | | | | ○ |
| Southern flounder | A | ○ | ○ | ○ | ○ | ○ | ○ | √ | ○ | ○ | ○ | ○ | ○ | √ | ○ | ○ | ○ | ○ | ○ | √ | ◉ | ◉ |
| | S | | | | | | | | | | | | | | | | | | | | | ◉ |
| *Paralichthys lethostigma* | J | ○ | ○ | √ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | √ | ○ | ○ | ○ | ○ | ○ | ○ | √ | ◉ | ○ |
| | L | | ○ | ○ | | ○ | ○ | | ○ | ○ | | ○ | ○ | | ○ | ○ | | ○ | ○ | | ◉ | ◉ |
| | E | | | | | | | | | | | | | | | | | | | | | ○ |
| | | T | M | S | T | M | S | T | M | S | T | M | S | T | M | S | T | M | S | T | M | S |
| | | Apalachicola Bay | | | St. Andrew Bay | | | Choctawhatchee Bay | | | Pensacola Bay | | | Perdido Bay | | | Mobile Bay | | | Mississippi Sound | | |
| | | Gulf of Mexico Estuaries | | | | | | | | | | | | | | | | | | | | |

**Relative Abundance**

- ● Highly Abundant
- ◉ Abundant
- ○ Common
- √ Rare
- Blank Not Present

**Salinity Zone**

- T - Tidal Fresh
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**Life Stage**

- A - Adults
- S - Spawning adults
- J - Juveniles
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Table 4, continued. Spatial distribution and relative abundance

| | | Gulf of Mexico Estuaries | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Lake Borgne | | | Lake Pontchar-train | | | Breton/ Chandeleur Sounds | | | Mississippi River | | | Barataria Bay | | | Terrebonne/ Timbalier Bays | | | Atchafalaya/ Vermilion Bays | | |
| Species/Life Stage | | T | M | * | * | M | * | * | M | S | T | M | * | T | M | S | T | M | S | T | M | * |
| Gulf flounder | A | | | | | | | | | | | | | | | | | | | | | |
| | S | | | | | | | | | | | | | | | | | | | | | |
| *Paralichthys albigutta* | J | | | | | | | | | | | | | | | | | | | | | |
| | L | | | | | | | | | | | | | | | | | | | | | |
| | E | | | | | | | | | | | | | | | | | | | | | |
| Southern flounder | A | √ | ○ | | | ○ | | | ◉ | ◉ | | ◉ | | | ○ | ◉ | | ○ | ◉ | ○ | ○ | |
| | S | | | | | | | | | | | | | | | | | | | | | |
| *Paralichthys lethostigma* | J | √ | ○ | | | ○ | | | ○ | ○ | | ◉ | | | ○ | ◉ | | ○ | ○ | ○ | ○ | |
| | L | | | | | | | | | | | | | | | ○ | | | | | | |
| | E | | | | | | | | | | | | | | | | | | | | | |
| | | T | M | * | * | M | * | * | M | S | T | M | * | T | M | S | T | M | S | T | M | * |
| | | Lake Borgne | | | Lake Pontchar-train | | | Breton/ Chandeleur Sounds | | | Mississippi River | | | Barataria Bay | | | Terrebonne/ Timbalier Bays | | | Atchafalaya/ Vermilion Bays | | |
| | | Gulf of Mexico Estuaries | | | | | | | | | | | | | | | | | | | | |

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Table 4, continued. Spatial distribution and relative abundance

| | | Gulf of Mexico Estuaries | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Calcasieu Lake | | | Sabine Lake | | | Galveston Bay | | | Brazos River | | | Matagorda Bay | | | San Antonio Bay | | | Aransas Bay | | |
| Species/Life Stage | | T | M | * | T | M | * | T | M | S | T | M | * | T | M | S | * | M | S | * | M | S |
| Gulf flounder | A | | | | | | | | | √ | | | | | √ | √ | | | √ | | √ | √ |
| | S | | | | | | | | | | | | | | | | | | | | | |
| *Paralichthys albigutta* | J | | | | | | | | | √ | | | | | √ | √ | | √ | √ | | √ | √ |
| | L | | | | | | | | | | | | | | | | | | | | | |
| | E | | | | | | | | | | | | | | | | | | | | | |
| Southern flounder | A | | ○ | | ● | ● | | ○ | ◉ | ● | na | ○ | | ○ | ◉ | ○ | | ○ | ◉ | | ○ | ○ |
| | S | | | | | | | | | | | | | | | | | | | | | |
| *Paralichthys lethostigma* | J | | ◉ | | ○ | ○ | | ○ | ○ | ○ | na | ○ | | ○ | ○ | ○ | | ○ | ○ | | ○ | ○ |
| | L | | | | | | | | | | | | | | | | | | | | | |
| | E | | | | | | | | | | | | | | | | | | | | | |
| | | T | M | * | T | M | * | T | M | S | T | M | * | T | M | S | * | M | S | * | M | S |
| | | Calcasieu Lake | | | Sabine Lake | | | Galveston Bay | | | Brazos River | | | Matagorda Bay | | | San Antonio Bay | | | Aransas Bay | | |
| | | Gulf of Mexico Estuaries | | | | | | | | | | | | | | | | | | | | |

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Table 4, continued. Spatial distribution and relative abundance

| | | Gulf of Mexico Estuaries | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | Corpus Christi Bay | | | Laguna Madre | | | Baffin Bay | | |
| Species/Life Stage | | * | M | S | * | * | S | * | * | S |
| Gulf flounder | A | | √ | √ | | | √ | | | |
| | S | | | | | | | | | |
| *Paralichthys albigutta* | J | | √ | √ | | | √ | | | √ |
| | L | | | | | | | | | |
| | E | | | | | | | | | |
| Southern flounder | A | | ○ | ○ | | | ○ | | | ○ |
| | S | | | | | | | | | |
| *Paralichthys lethostigma* | J | | ○ | ○ | | | ◉ | | | ○ |
| | L | | | | | | | | | |
| | E | | | | | | | | | |
| | | * | M | S | * | * | S | * | * | S |
| | | Corpus Christi Bay | | | Laguna Madre | | | Baffin Bay | | |
| | | Gulf of Mexico Estuaries | | | | | | | | |

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**Life Stage**

- A - Adults
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- J - Juveniles
- L - Larvae
- E - Eggs

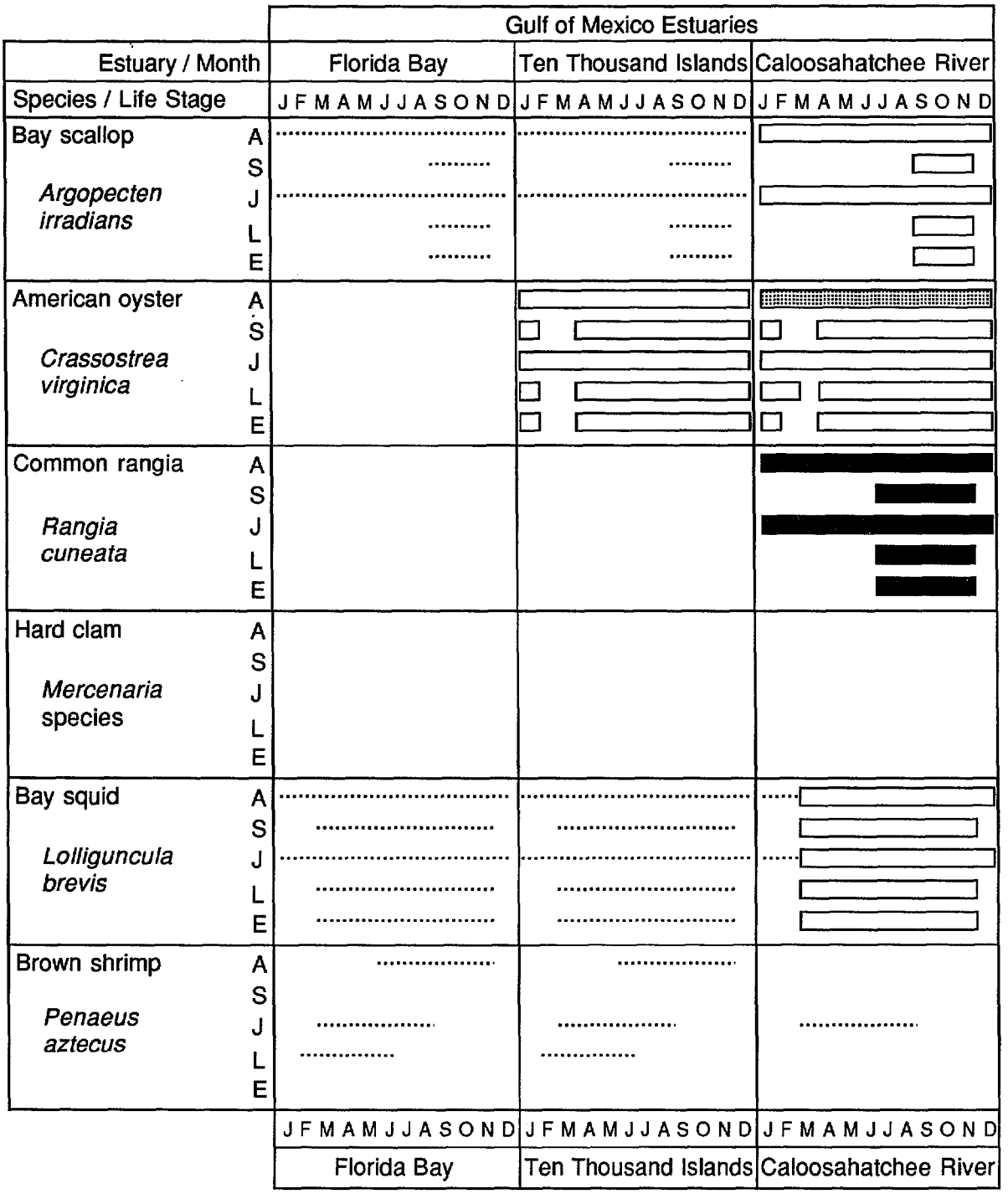
## Table 5. Temporal distribution

Index to Table 5. Page location of temporal distribution table for each species and estuary.

| Common and Scientific Name | Estuary | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Florida Bay / Ten Thousand Islands | Caloosahatchee River | Charlotte Harbor / Tampa Bay | Suwannee River | Apalachee Bay / Apalachicola Bay | St. Andrew Bay | Choctawhatchee Bay / Pensacola Bay | Perdido Bay | Mobile Bay / Mississippi Sound | Lake Borgne | Breton/Chandeleur Sound / Lake Pontchartrain |
| Bay scallop (*Argopecten irradians*)<br>American oyster (*Crassostrea virginica*)<br>Common rangia (*Rangia cuneata*)<br>Hard clam (*Mercenaria* species)<br>Bay squid (*Lolliguncula brevis*)<br>Brown shrimp (*Penaeus aztecus*) | 62 | 63 | 64 | 65 | 66 | 67 | 68 | 69 | 70 | 71 | 72 |
| Pink shrimp (*Penaeus duorarum*)<br>White shrimp (*Penaeus setiferus*)<br>Grass shrimp (*Palaemonetes pugio*)<br>Spiny lobster (*Panulirus argus*)<br>Blue crab (*Callinectes sapidus*)<br>Gulf stone crab (*Menippe adina*) | 73 | 74 | 75 | 76 | 77 | 78 | 79 | 80 | 81 | 82 | 83 |
| Stone crab (*Menippe mercenaria*)<br>Bull shark (*Carcharhinus leucas*)<br>Tarpon (*Megalops atlanticus*)<br>Alabama shad (*Alosa alabamae*)<br>Gulf menhaden (*Brevoortia patronus*)<br>Yellowfin menhaden (*Brevoortia smithi*) | 84 | 85 | 86 | 87 | 88 | 89 | 90 | 91 | 92 | 93 | 94 |
| Gizzard shad (*Dorosoma cepedianum*)<br>Bay anchovy (*Anchoa mitchilli*)<br>Hardhead catfish (*Arius felis*)<br>Sheepshead minnow (*Cyprinodon variegatus*)<br>Gulf killifish (*Fundulus grandis*)<br>Silversides (*Menidia* species) | 95 | 96 | 97 | 98 | 99 | 100 | 101 | 102 | 103 | 104 | 105 |
| Snook (*Centropomus undecimalis*)<br>Bluefish (*Pomatomus saltatrix*)<br>Blue runner (*Caranx crysos*)<br>Crevalle jack (*Caranx hippos*)<br>Florida pompano (*Trachinotus carolinus*)<br>Gray snapper (*Lutjanus griseus*) | 106 | 107 | 108 | 109 | 110 | 111 | 112 | 113 | 114 | 115 | 116 |
| Sheepshead (*Archosargus probatocephalus*)<br>Pinfish (*Lagodon rhomboides*)<br>Silver perch (*Bairdiella chrysoura*)<br>Sand seatrout (*Cynoscion arenarius*)<br>Spotted seatrout (*Cynoscion nebulosus*)<br>Spot (*Leiostomus xanthurus*) | 117 | 118 | 119 | 120 | 121 | 122 | 123 | 124 | 125 | 126 | 127 |
| Atlantic croaker (*Micropogonias undulatus*)<br>Black drum (*Pogonias cromis*)<br>Red drum (*Sciaenops ocellatus*)<br>Striped mullet (*Mugil cephalus*)<br>Code goby (*Gobiosoma robustum*)<br>Spanish mackerel (*Scomberomorus maculatus*) | 128 | 129 | 130 | 131 | 132 | 133 | 134 | 135 | 136 | 137 | 138 |
| Gulf flounder (*Paralichthys albigutta*)<br>Southern flounder (*Paralichthys lethostigma*) | 139 | 140 | 141 | 142 | 143 | 144 | 145 | 146 | 147 | 148 | 149 |

| Common and Scientific Name | Estuary | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Barataria Bay / Terrebonne/Timbalier Bay | Atchafalaya/Vermilion Bay | Calcasieu Lake | Sabine Lake | Galveston Bay | Brazos River | Matagorda Bay | San Antonio Bay | Aransas Bay | Corpus Christi Bay | Laguna Madre / Baffin Bay |
| Bay scallop (*Argopecten irradians*)<br>American oyster (*Crassostrea virginica*)<br>Common rangia (*Rangia cuneata*)<br>Hard clam (*Mercenaria* species)<br>Bay squid (*Lolliguncula brevis*)<br>Brown shrimp (*Penaeus aztecus*) | 68 | 69 | 70 | 71 | 72 | 73 | 74 | 75 | 76 | 77 | 78 |
| Pink shrimp (*Penaeus duorarum*)<br>White shrimp (*Penaeus setiferus*)<br>Grass shrimp (*Palaemonetes pugio*)<br>Spiny lobster (*Panulirus argus*)<br>Blue crab (*Callinectes sapidus*)<br>Gulf stone crab (*Menippe adina*) | 79 | 80 | 81 | 82 | 83 | 84 | 85 | 86 | 87 | 88 | 89 |
| Stone crab (*Menippe mercenaria*)<br>Bull shark (*Carcharhinus leucas*)<br>Tarpon (*Megalops atlanticus*)<br>Alabama shad (*Alosa alabamae*)<br>Gulf menhaden (*Brevoortia patronus*)<br>Yellowfin menhaden (*Brevoortia smithi*) | 90 | 91 | 92 | 93 | 94 | 95 | 96 | 97 | 98 | 99 | 100 |
| Gizzard shad (*Dorosoma cepedianum*)<br>Bay anchovy (*Anchoa mitchilli*)<br>Hardhead catfish (*Arius felis*)<br>Sheepshead minnow (*Cyprinodon variegatus*)<br>Gulf killifish (*Fundulus grandis*)<br>Silversides (*Menidia* species) | 101 | 102 | 103 | 104 | 105 | 106 | 107 | 108 | 109 | 110 | 111 |
| Snook (*Centropomus undecimalis*)<br>Bluefish (*Pomatomus saltatrix*)<br>Blue runner (*Caranx crysos*)<br>Crevalle jack (*Caranx hippos*)<br>Florida pompano (*Trachinotus carolinus*)<br>Gray snapper (*Lutjanus griseus*) | 112 | 113 | 114 | 115 | 116 | 117 | 118 | 119 | 120 | 121 | 122 |
| Sheepshead (*Archosargus probatocephalus*)<br>Pinfish (*Lagodon rhomboides*)<br>Silver perch (*Bairdiella chrysoura*)<br>Sand seatrout (*Cynoscion arenarius*)<br>Spotted seatrout (*Cynoscion nebulosus*)<br>Spot (*Leiostomus xanthurus*) | 123 | 124 | 125 | 126 | 127 | 128 | 129 | 130 | 131 | 132 | 133 |
| Atlantic croaker (*Micropogonias undulatus*)<br>Black drum (*Pogonias cromis*)<br>Red drum (*Sciaenops ocellatus*)<br>Striped mullet (*Mugil cephalus*)<br>Code goby (*Gobiosoma robustum*)<br>Spanish mackerel (*Scomberomorus maculatus*) | 134 | 135 | 136 | 137 | 138 | 139 | 140 | 141 | 142 | 143 | 144 |
| Gulf flounder (*Paralichthys albigutta*)<br>Southern flounder (*Paralichthys lethostigma*) | 145 | 146 | 147 | 148 | 149 | | | | | | |

Table 5. Temporal distribution



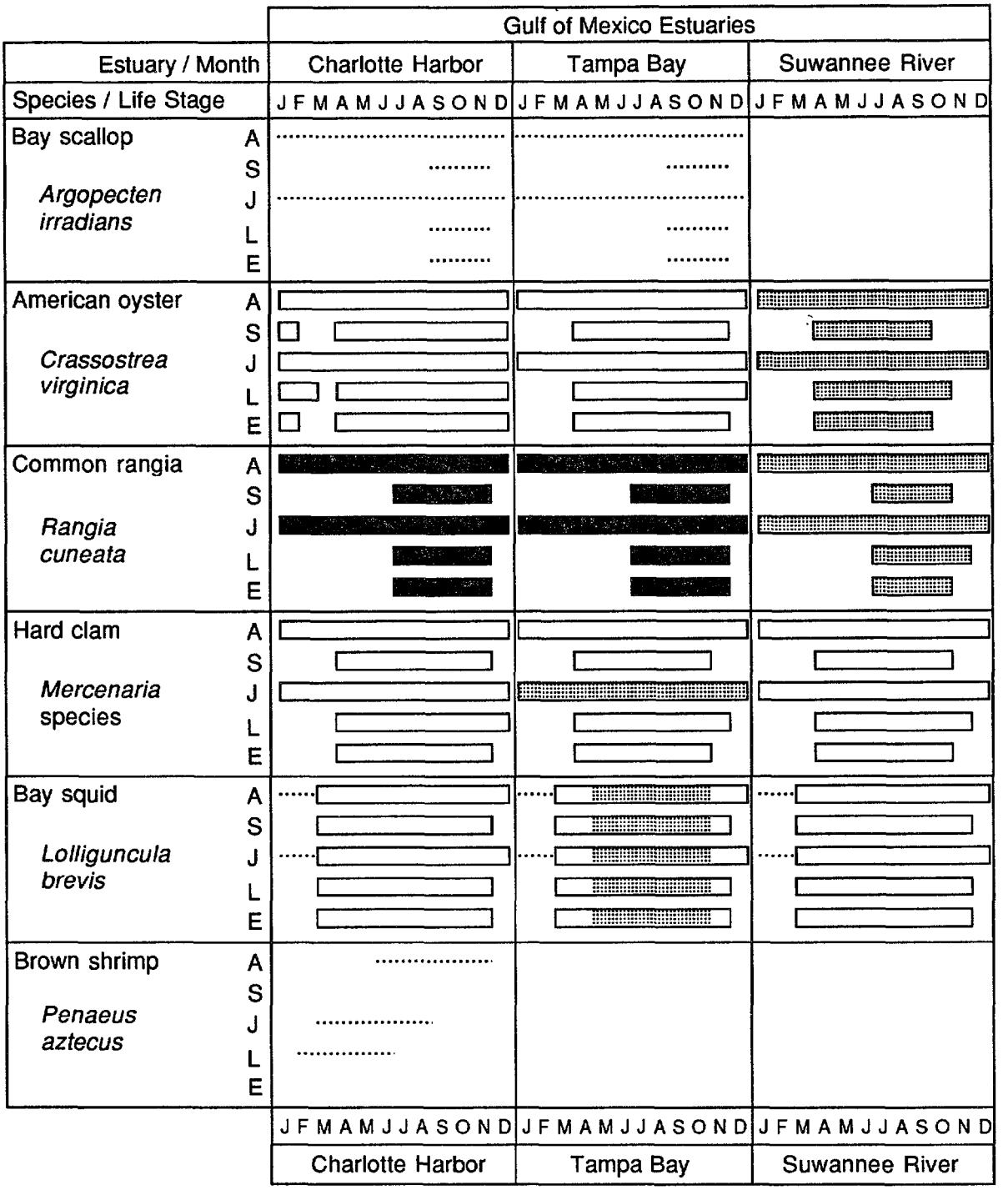

Relative Abundance

- Highly Abundant
- Abundant
- Common
- Rare
- Blank — Not Present

Life Stage

A - Adults
S - Spawning adults
J - Juveniles
L - Larvae
E - Eggs

Table 5, continued. Temporal distribution

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S - Spawning adults
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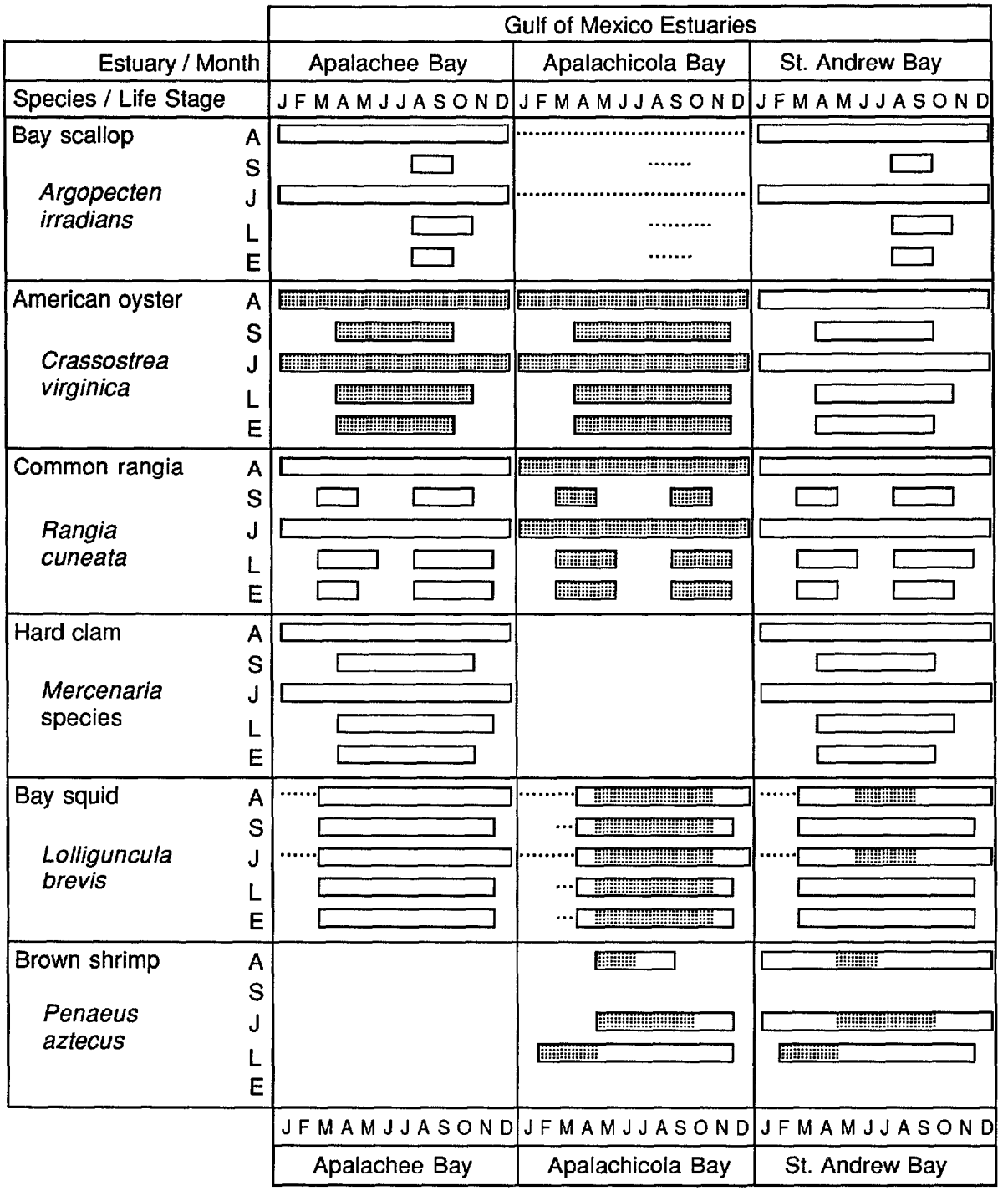
Table 5, continued. Temporal distribution

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- Rare
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Life Stage

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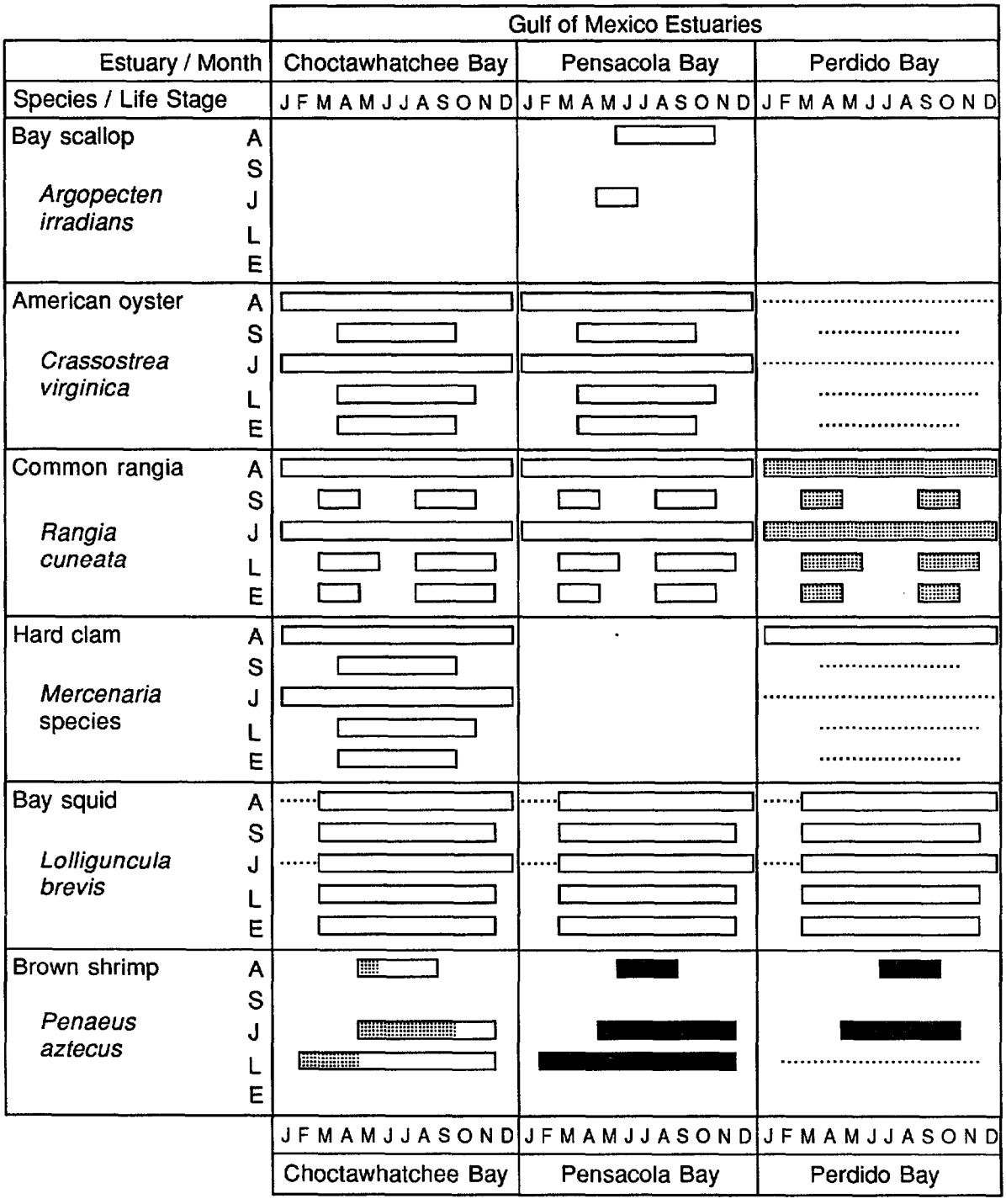
S - Spawning adults
J - Juveniles
L - Larvae
E - Eggs

Table 5, continued. Temporal distribution

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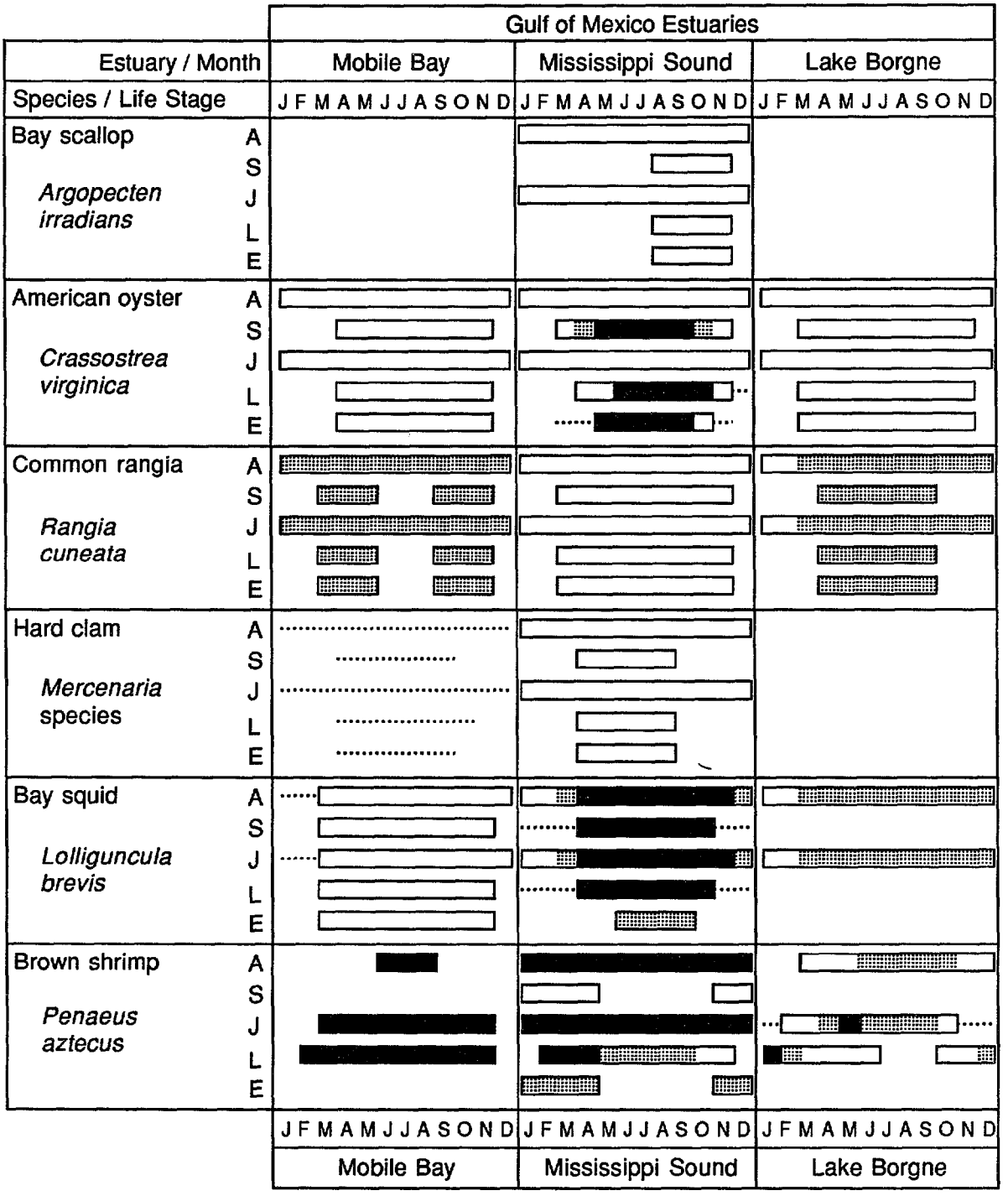
- Abundant
- Common
- Rare
- Blank — Not Present

Life Stage

A - Adults
S - Spawning adults
J - Juveniles
L - Larvae
E - Eggs

Table 5, continued. Temporal distribution

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- Abundant
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- Rare
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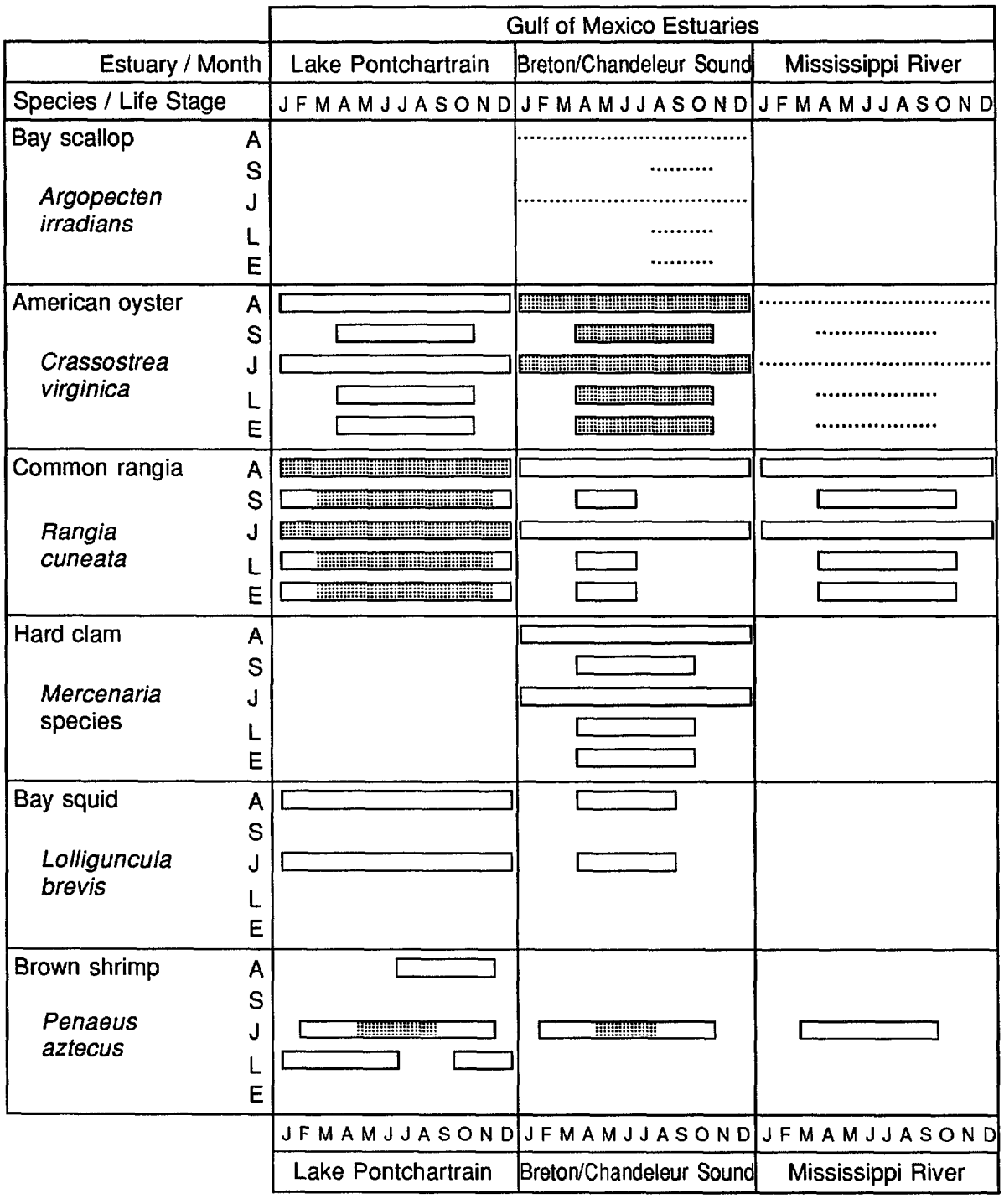
Life Stage

A - Adults
S - Spawning adults
J - Juveniles
L - Larvae
E - Eggs

Table 5, continued. Temporal distribution

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- Abundant
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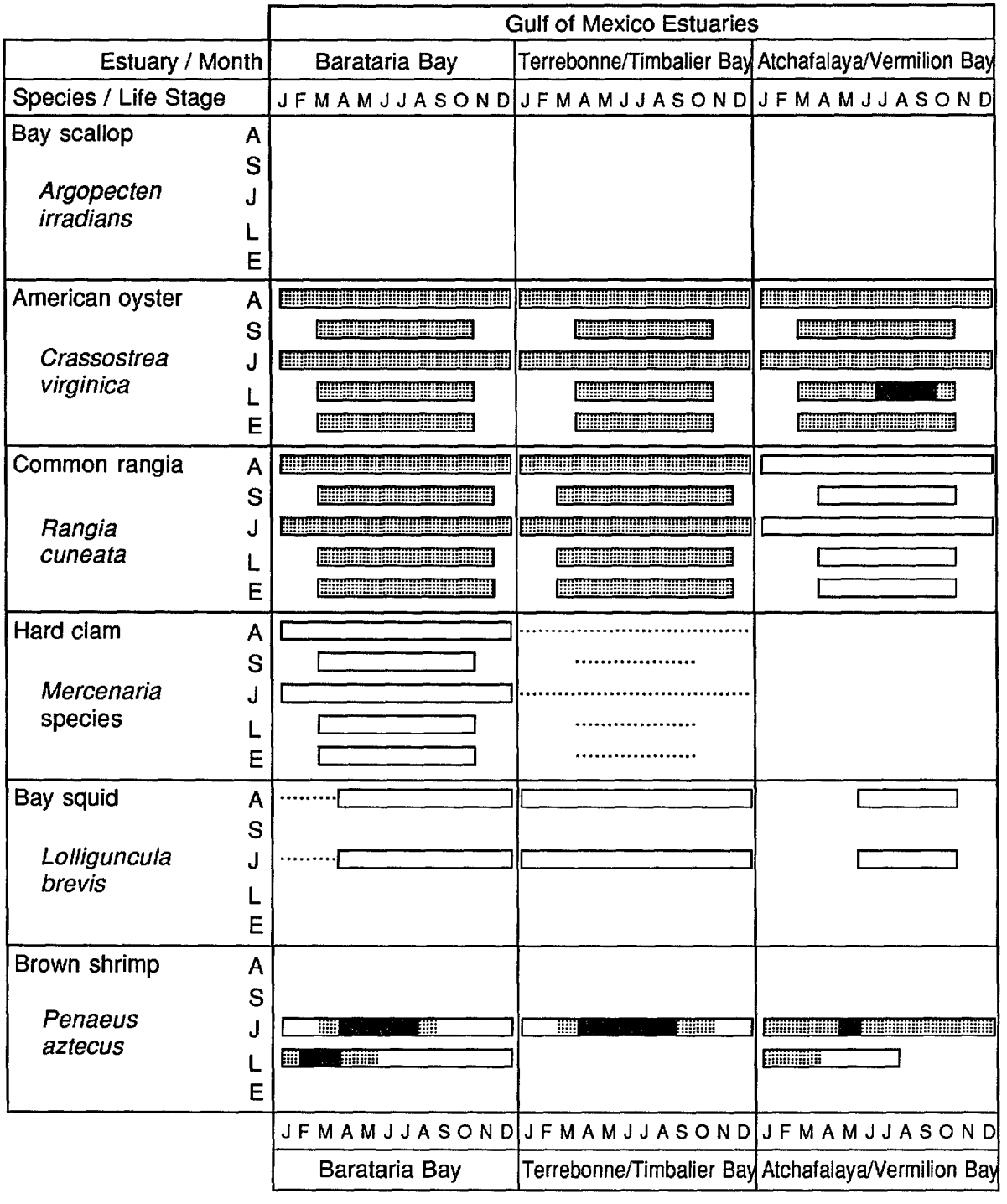
Life Stage

A - Adults
S - Spawning adults
J - Juveniles
L - Larvae
E - Eggs

Table 5, continued. Temporal distribution




Relative Abundance

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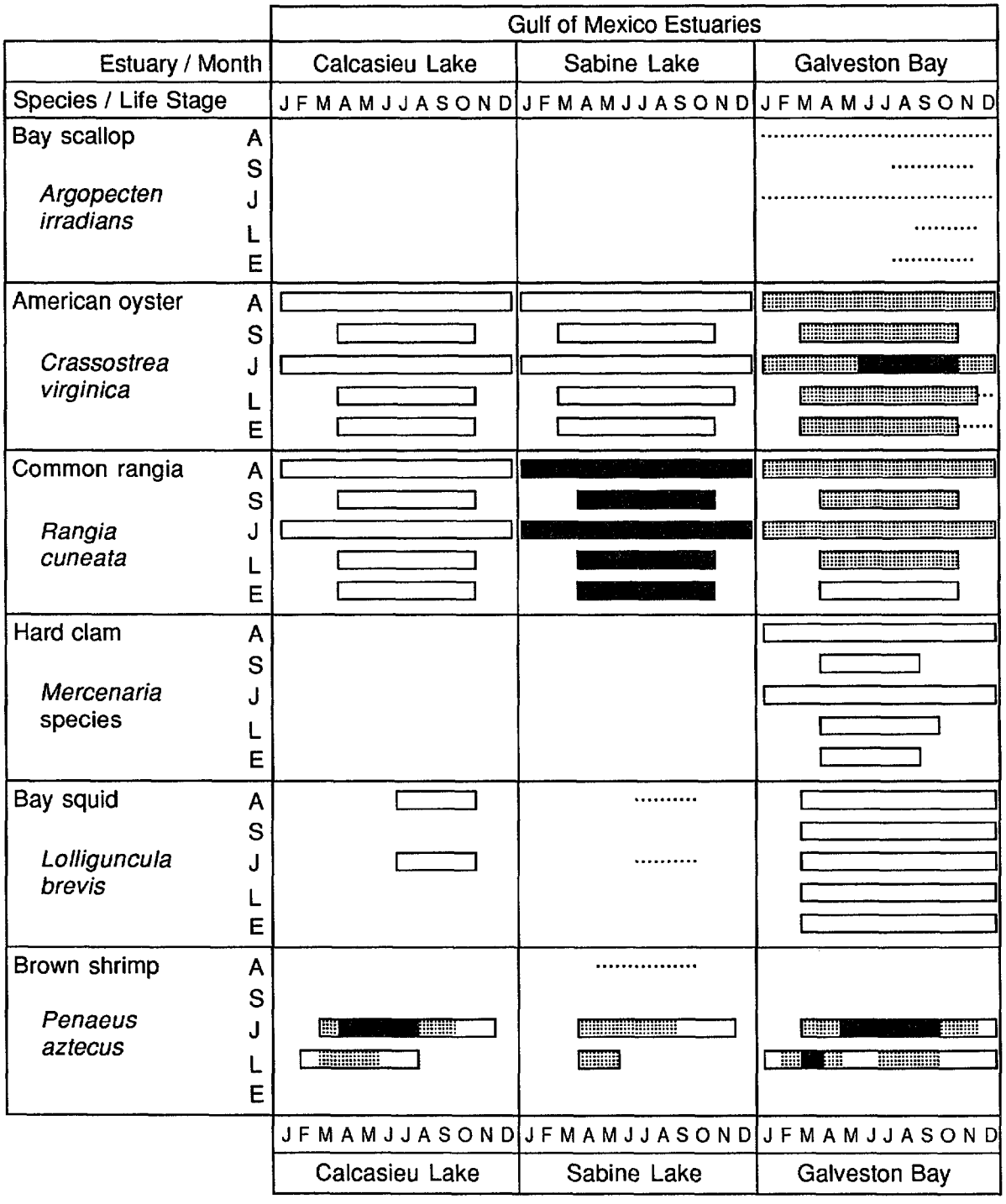
Life Stage

A - Adults
S - Spawning adults
J - Juveniles
L - Larvae
E - Eggs

Table 5, continued. Temporal distribution




Relative Abundance

- Highly Abundant
- Abundant
- Common
- Rare
- Blank — Not Present

Life Stage

A - Adults
S - Spawning adults
J - Juveniles
L - Larvae
E - Eggs

Table 5, continued. Temporal distribution

| | | Gulf of Mexico Estuaries | | |
|---|---|---|---|---|
| Estuary / Month | | Brazos River | Matagorda Bay | San Antonio Bay |
| Species / Life Stage | | J F M A M J J A S O N D | J F M A M J J A S O N D | J F M A M J J A S O N D |
| Bay scallop | A | | ..... | ..... |
| | S | | ..... | ..... |
| *Argopecten irradians* | J | | ..... | ..... |
| | L | | ..... | ..... |
| | E | | ..... | ..... |
| American oyster | A | na | ▭ | ▒ |
| | S | na | ▭ | ▒ |
| *Crassostrea virginica* | J | na | ▭ | ▭ ▒ |
| | L | na | ▭ | ▒ |
| | E | na | ▭ | ▒ |
| Common rangia | A | na | ▭ | ..... |
| | S | na | ▭ | ..... |
| *Rangia cuneata* | J | na | ▭ | ..... |
| | L | na | ▭ | ..... |
| | E | na | ▭ | ..... |
| Hard clam | A | na | ▭ | ▭ |
| | S | na | ▭ | ▭ |
| *Mercenaria* species | J | na | ▭ | ▭ |
| | L | na | ▭ | ▭ |
| | E | na | ▭ | ▭ |
| Bay squid | A | ▭ | ▒ | ▒ |
| | S | na | ▒ | ▒ |
| *Lolliguncula brevis* | J | ▭ | ▒ | ▒ |
| | L | na | ▒ | ▒ |
| | E | na | ▒ | ▒ |
| Brown shrimp | A | | ..... ▒ ■ ..... | ..... ▭ ▒ ... |
| | S | | | |
| *Penaeus aztecus* | J | ▒ | ■ ▒ | ▭ ▒ ■ ▒ |
| | L | ▒ | ■ ▒ .. ▭ .. | ▒ ■ ▒ ▭ ... |
| | E | | | |
| | | J F M A M J J A S O N D | J F M A M J J A S O N D | J F M A M J J A S O N D |
| | | Brazos River | Matagorda Bay | San Antonio Bay |

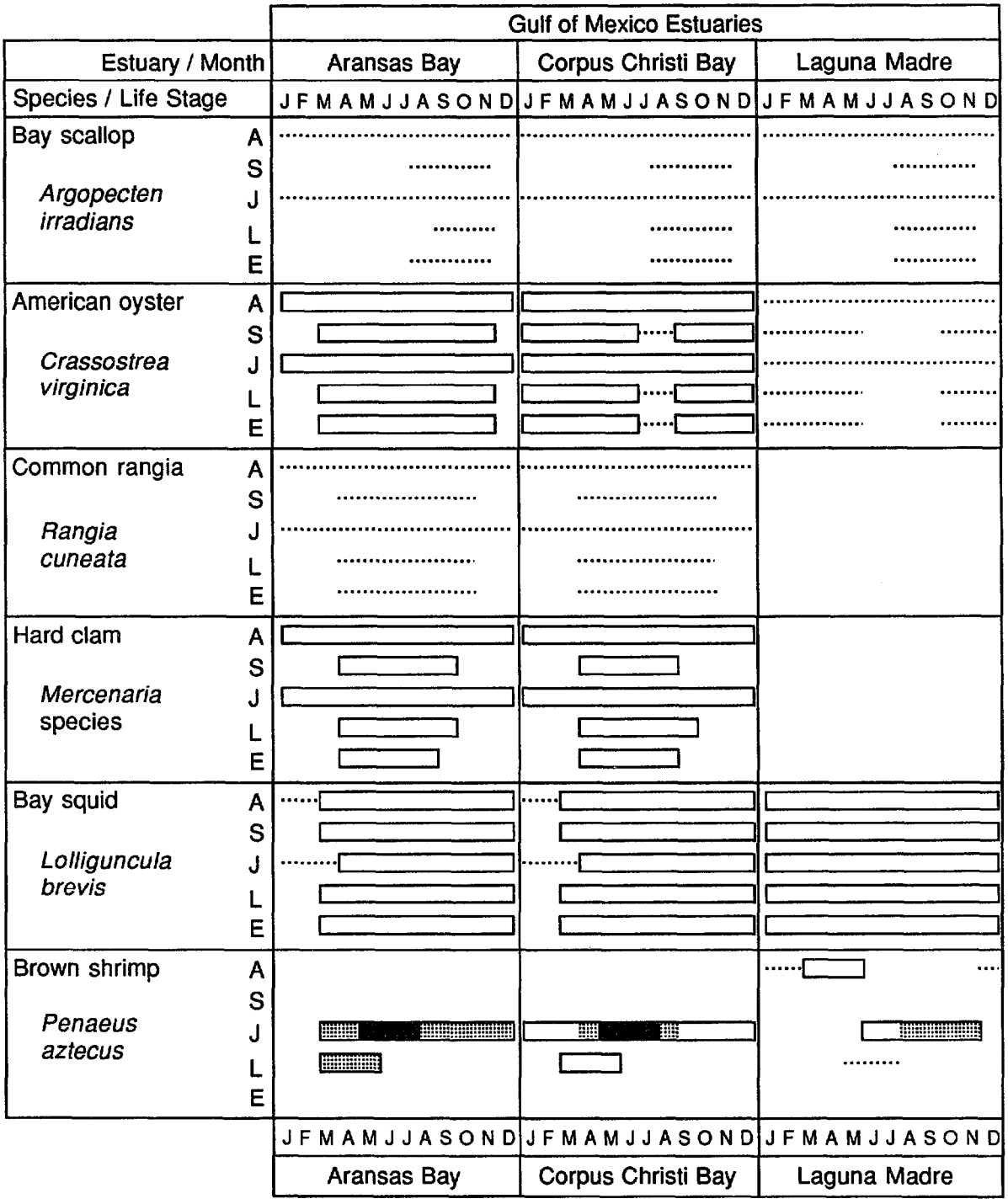
## Relative Abundance

- ■ Highly Abundant
- ▒ Abundant
- ▭ Common
- ..... Rare
- Blank Not Present
- na No Data Available

## Life Stage

A - Adults
S - Spawning adults
J - Juveniles
L - Larvae
E - Eggs

Table 5, continued. Temporal distribution




Relative Abundance

- Highly Abundant
- Abundant
- Common
- Rare
- Blank — Not Present

Life Stage

A - Adults
S - Spawning adults
J - Juveniles
L - Larvae
E - Eggs

Table 5, continued. Temporal distribution

| Estuary / Month | | Gulf of Mexico Estuaries: Baffin Bay | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Species / Life Stage | | J | F | M | A | M | J | J | A | S | O | N | D |
| Bay scallop *Argopecten irradians* | A | | | | | | | | | | | | |
| | S | | | | | | | | | | | | |
| | J | | | | | | | | | | | | |
| | L | | | | | | | | | | | | |
| | E | | | | | | | | | | | | |
| American oyster *Crassostrea virginica* | A | | | | | | | | | | | | |
| | S | | | | | | | | | | | | |
| | J | | | | | | | | | | | | |
| | L | | | | | | | | | | | | |
| | E | | | | | | | | | | | | |
| Common rangia *Rangia cuneata* | A | | | | | | | | | | | | |
| | S | | | | | | | | | | | | |
| | J | | | | | | | | | | | | |
| | L | | | | | | | | | | | | |
| | E | | | | | | | | | | | | |
| Hard clam *Mercenaria* species | A | | | | | | | | | | | | |
| | S | | | | | | | | | | | | |
| | J | | | | | | | | | | | | |
| | L | | | | | | | | | | | | |
| | E | | | | | | | | | | | | |
| Bay squid *Lolliguncula brevis* | A | | | | | | | | | | | | |
| | S | | | | | | | | | | | | |
| | J | | | | | | | | | | | | |
| | L | | | | | | | | | | | | |
| | E | | | | | | | | | | | | |
| Brown shrimp *Penaeus aztecus* | A | | | | | | | | | | | | |
| | S | | | | | | | | | | | | |
| | J | | | | | | | | | | | | |
| | L | | | | | | | | | | | | |
| | E | | | | | | | | | | | | |
| | | J | F | M | A | M | J | J | A | S | O | N | D |
| | | Baffin Bay | | | | | | | | | | | |

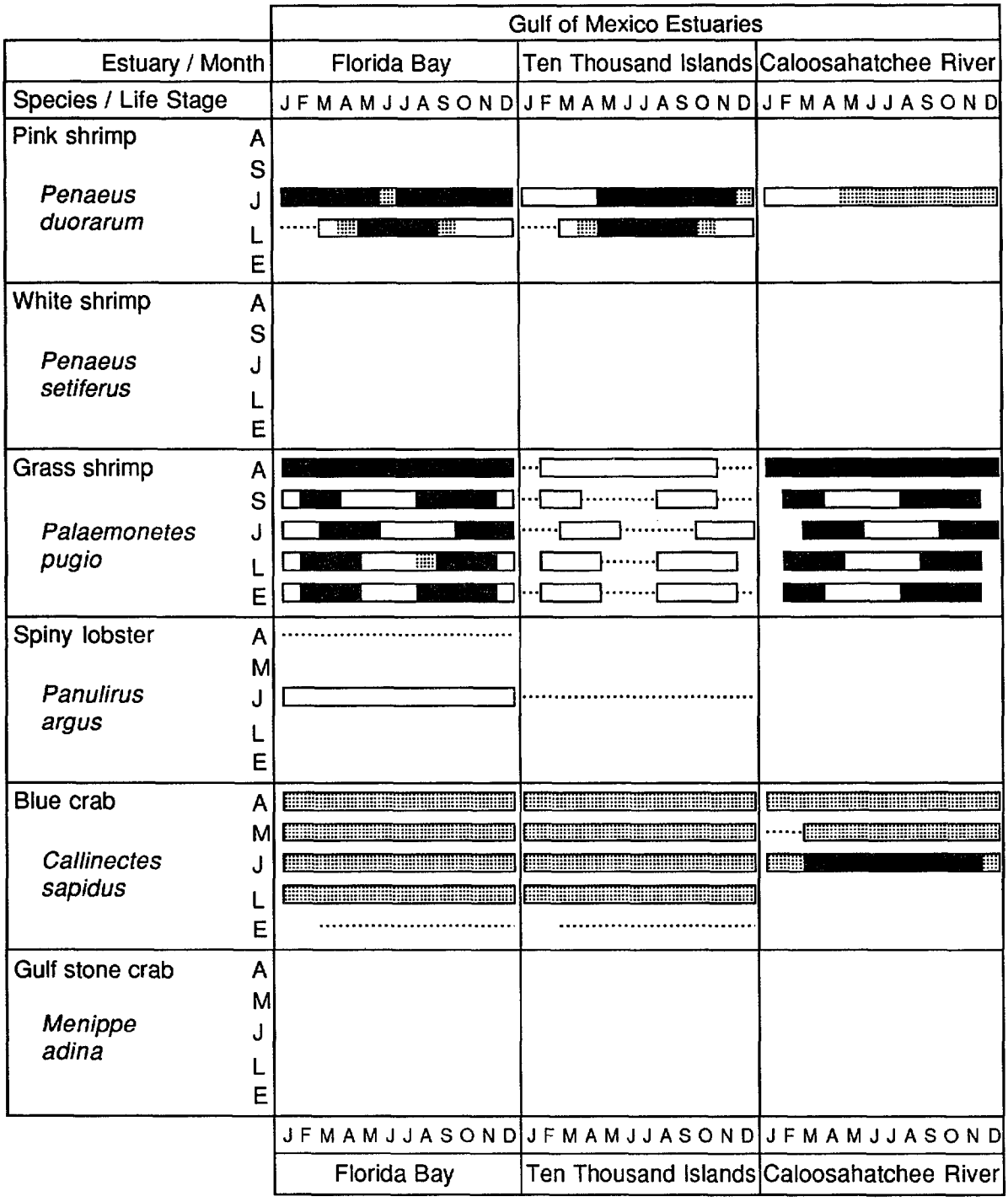
Relative Abundance

- Highly Abundant
- Abundant
- Common
- Rare
- Blank — Not Present

Life Stage

A - Adults
S - Spawning adults
J - Juveniles
L - Larvae
E - Eggs

Table 5, continued. Temporal distribution



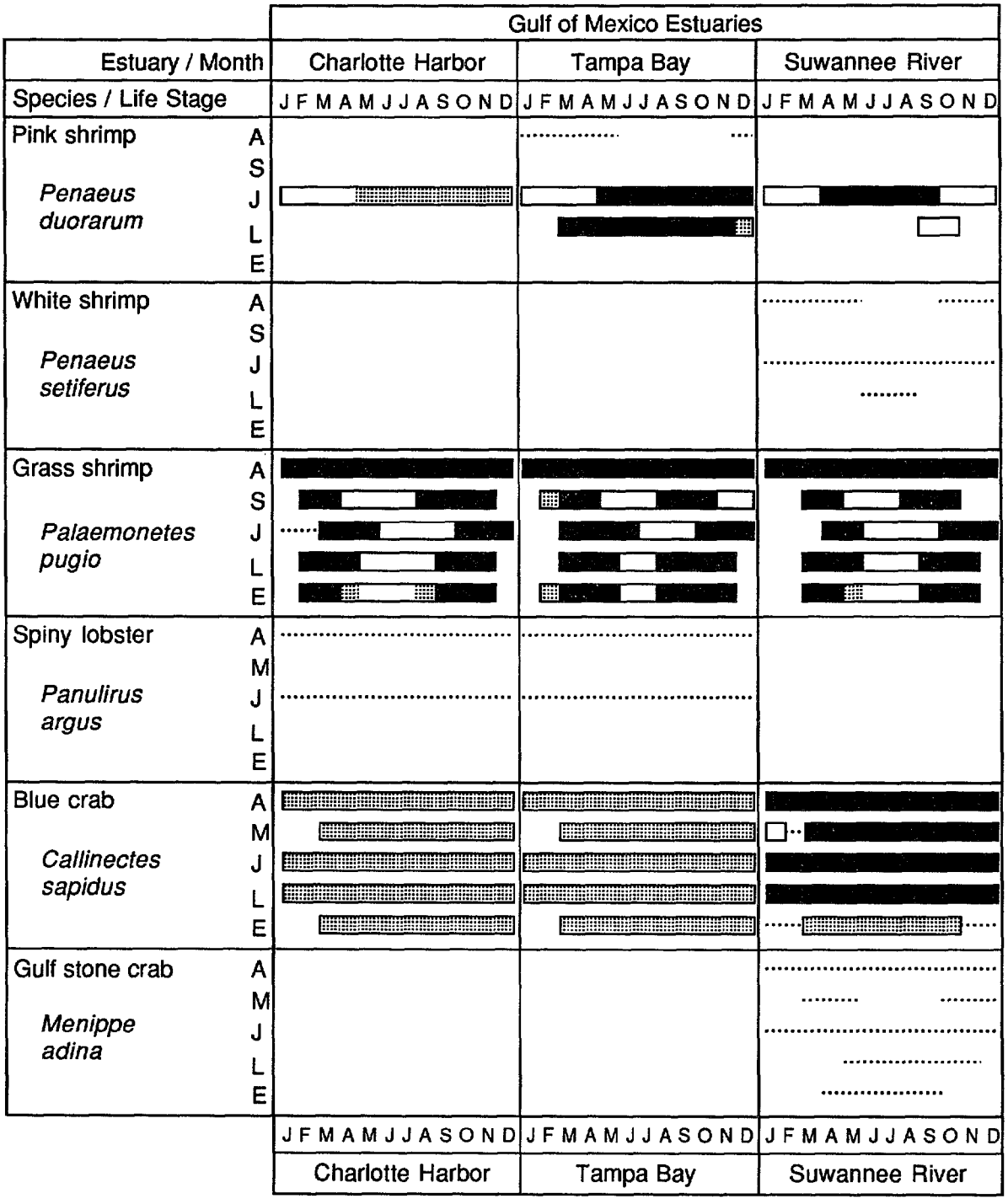

## Relative Abundance

- Highly Abundant
- Abundant
- Common
- Rare
- Blank — Not Present

## Life Stage

A - Adults
S - Spawning adults
J - Juveniles
L - Larvae
E - Eggs
M - Mating

Table 5, continued. Temporal distribution




Relative Abundance

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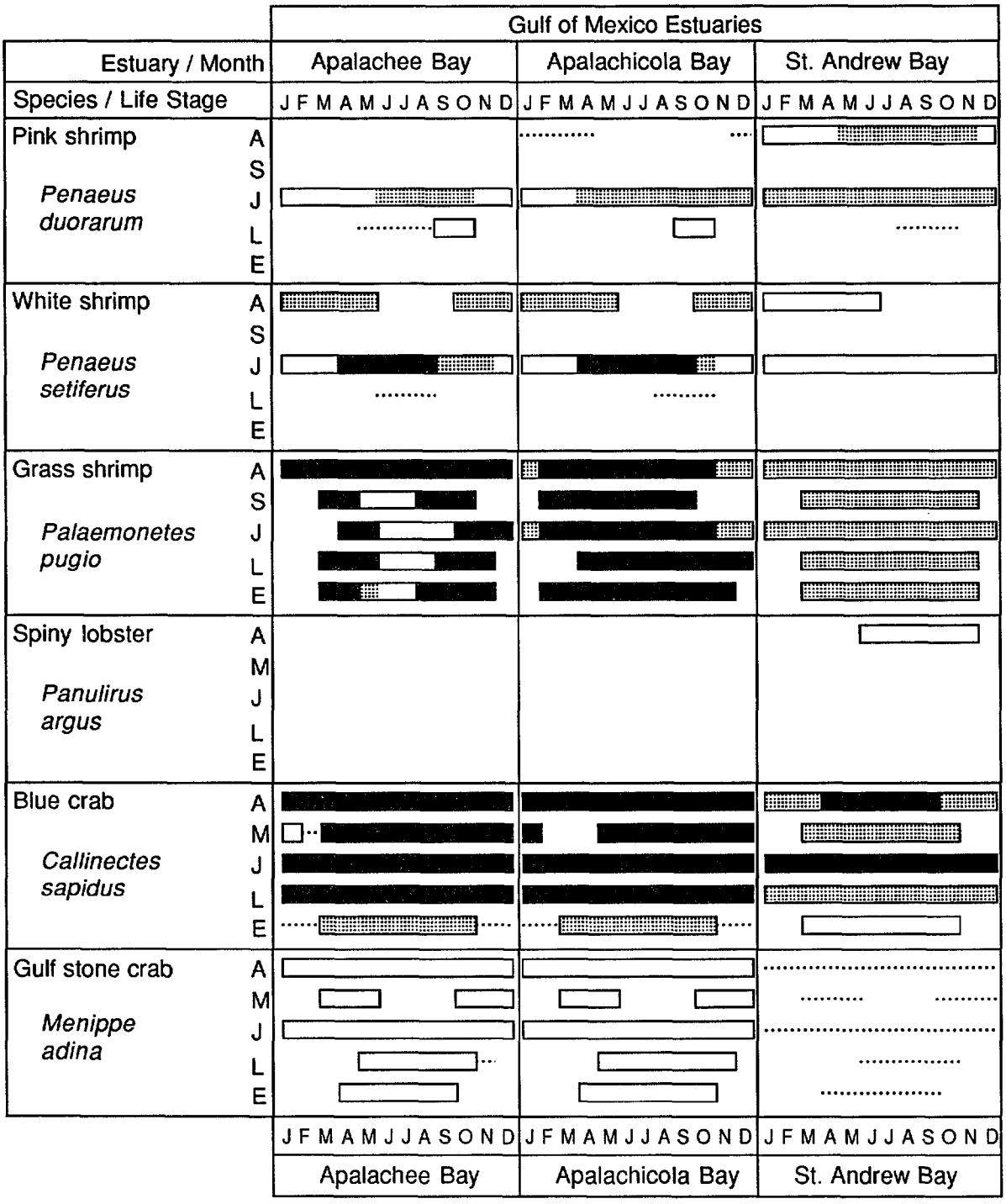
- Abundant
- Common
- Rare
- Blank — Not Present

Life Stage

A - Adults
S - Spawning adults
J - Juveniles
L - Larvae
E - Eggs
M - Mating

Table 5, continued. Temporal distribution



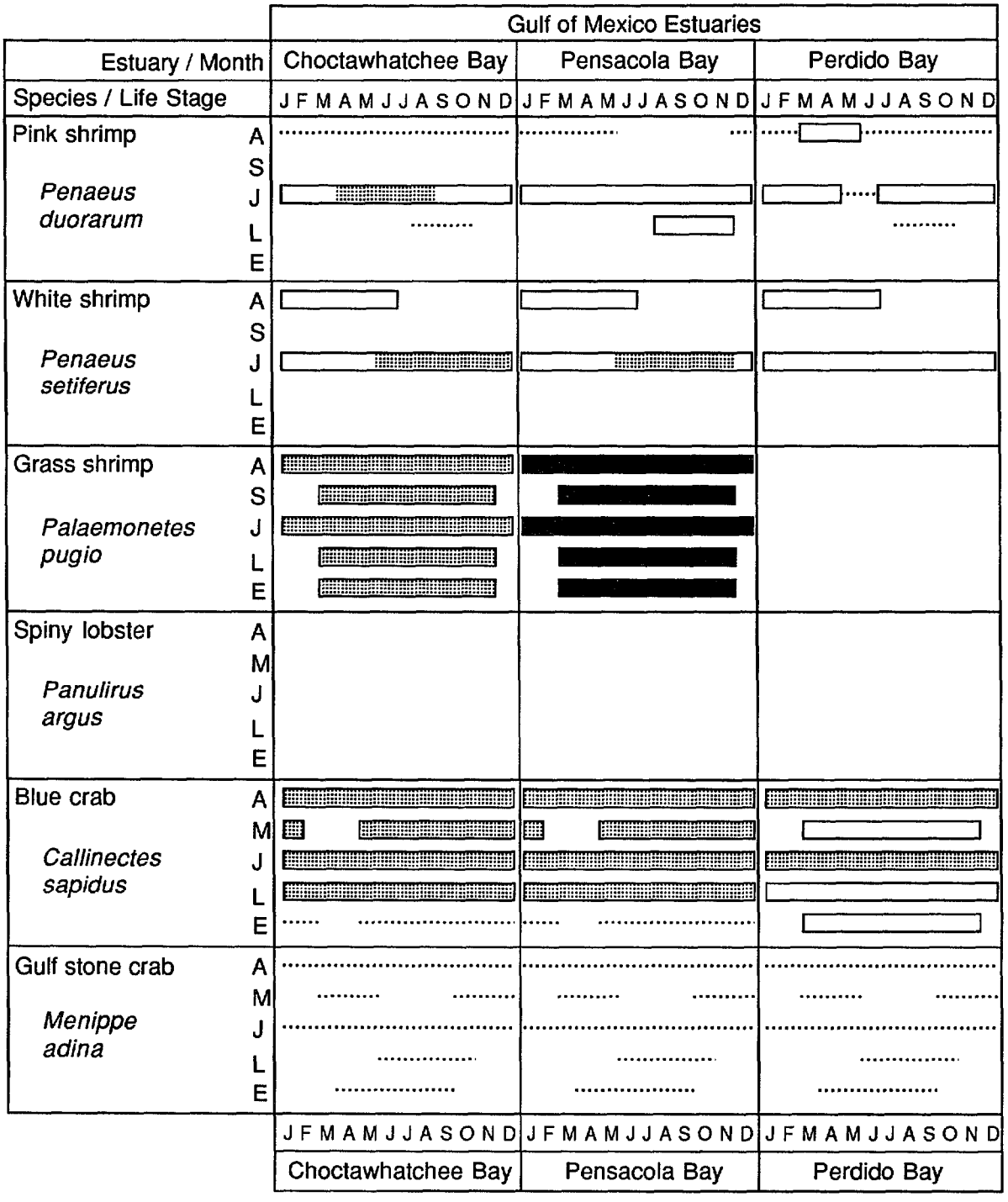

## Relative Abundance

- Highly Abundant
- Abundant
- Common
- Rare
- Blank — Not Present

## Life Stage

A - Adults
S - Spawning adults
J - Juveniles
L - Larvae
E - Eggs
M - Mating

Table 5, continued. Temporal distribution



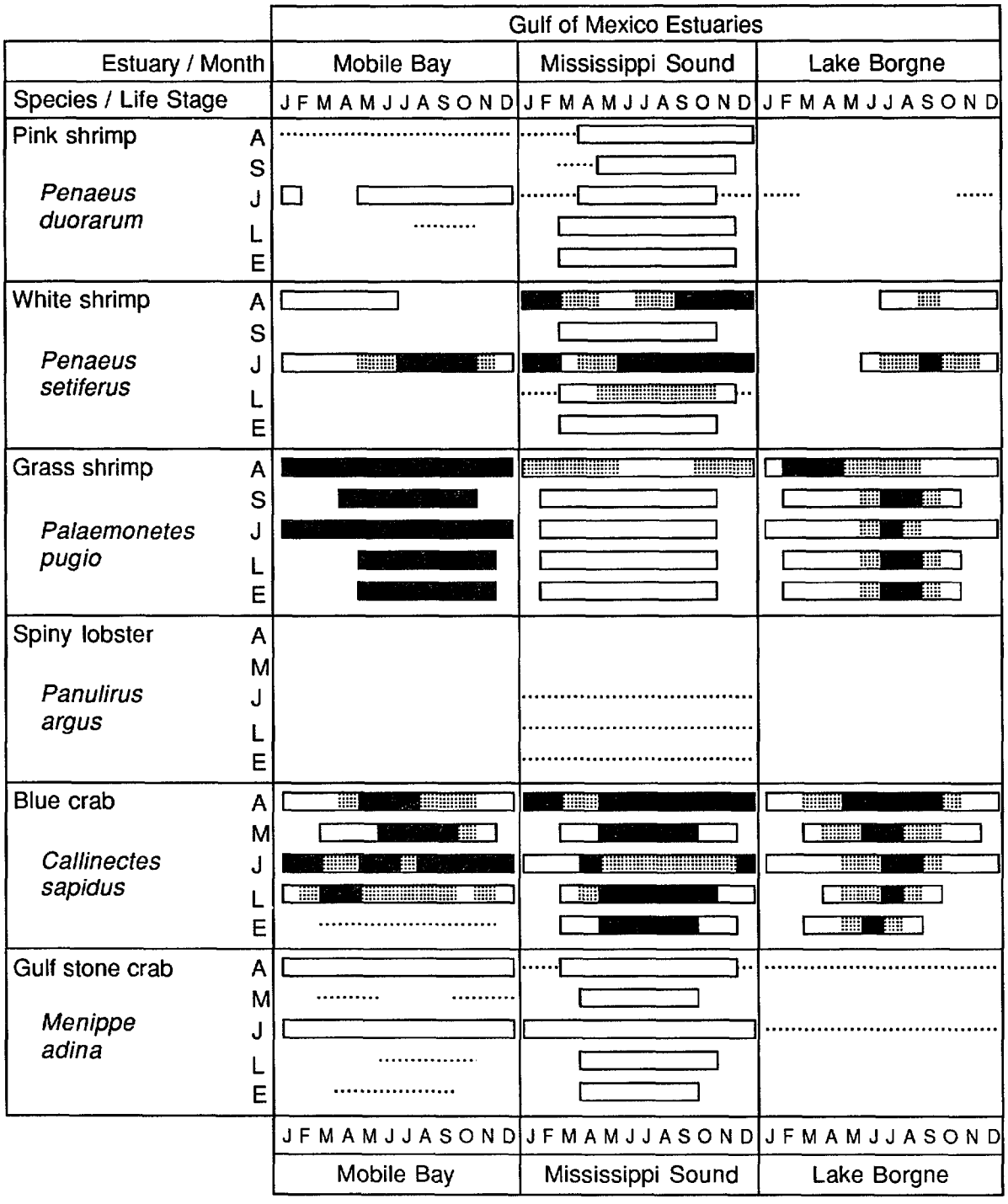

Relative Abundance

- Highly Abundant
- Abundant
- Common
- Rare
- Blank — Not Present

Life Stage

A - Adults
S - Spawning adults
J - Juveniles
L - Larvae
E - Eggs
M - Mating

Table 5, continued. Temporal distribution




Relative Abundance

- Highly Abundant
- Abundant
- Common
- Rare
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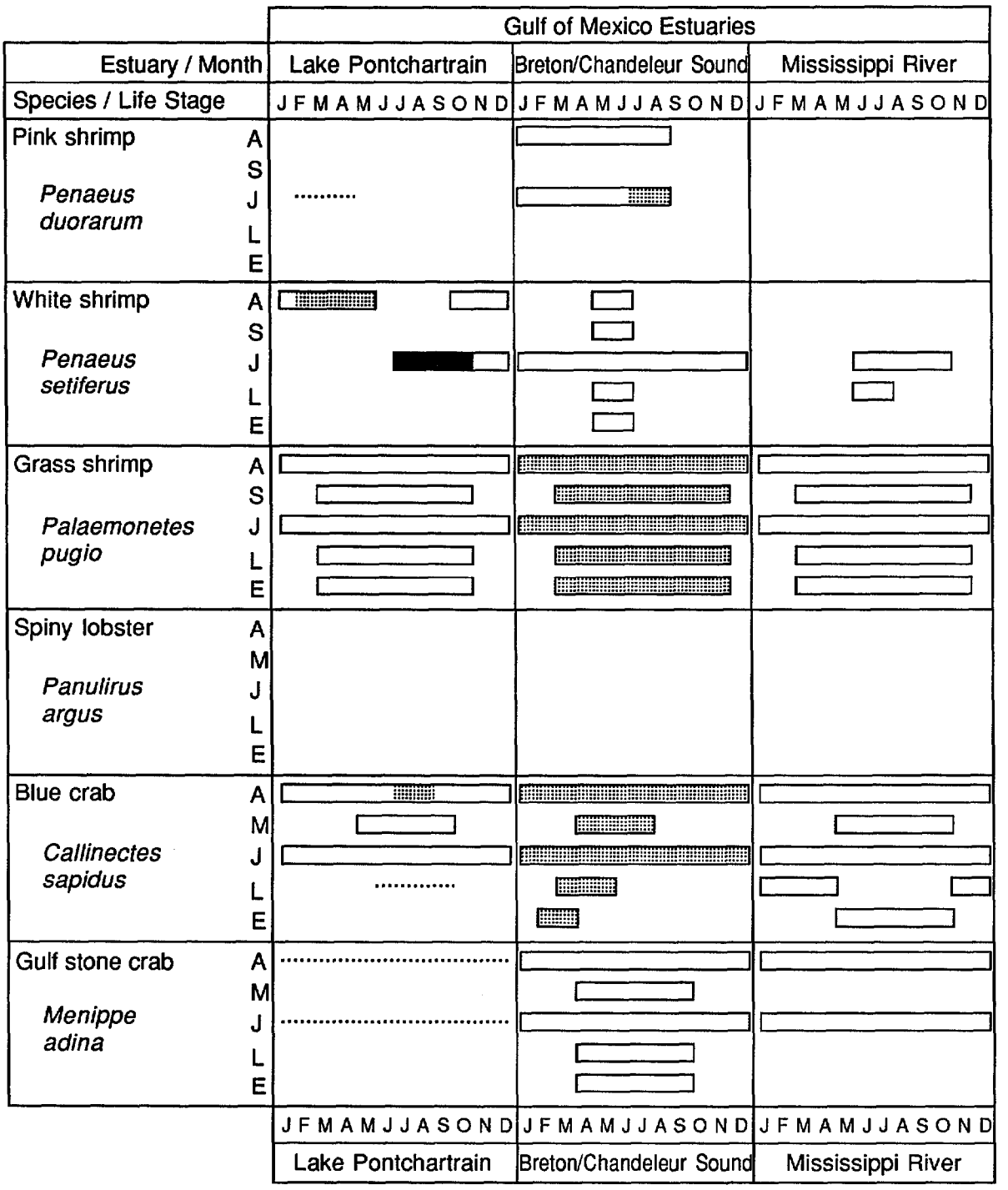
Life Stage

A - Adults
S - Spawning adults
J - Juveniles
L - Larvae
E - Eggs
M - Mating

Table 5, continued. Temporal distribution



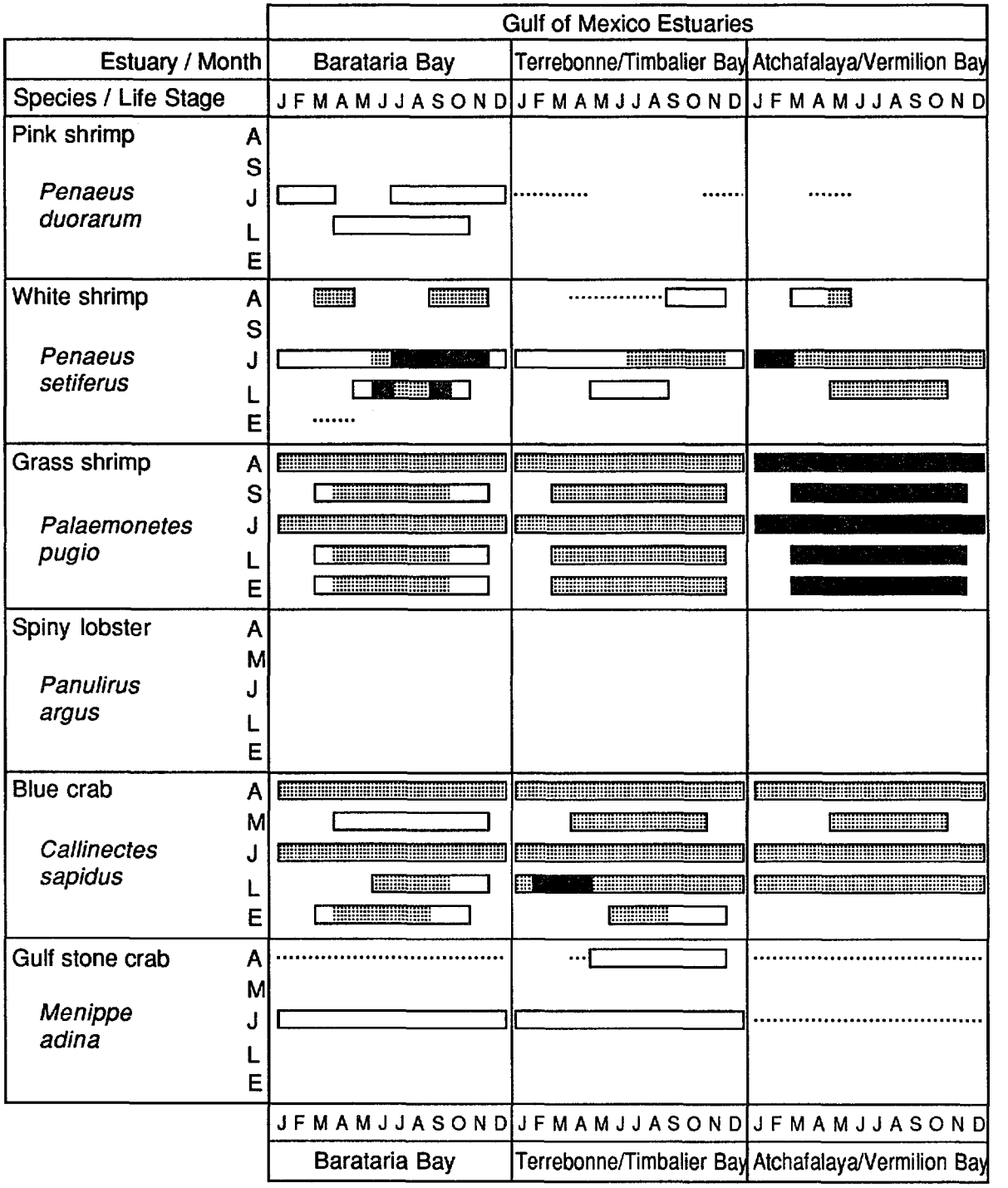

Relative Abundance

- Highly Abundant
- Abundant
- Common
- Rare
- Blank — Not Present

Life Stage

A - Adults
S - Spawning adults
J - Juveniles
L - Larvae
E - Eggs
M - Mating

Table 5, continued. Temporal distribution




## Relative Abundance

- Highly Abundant
- Abundant
- Common
- Rare
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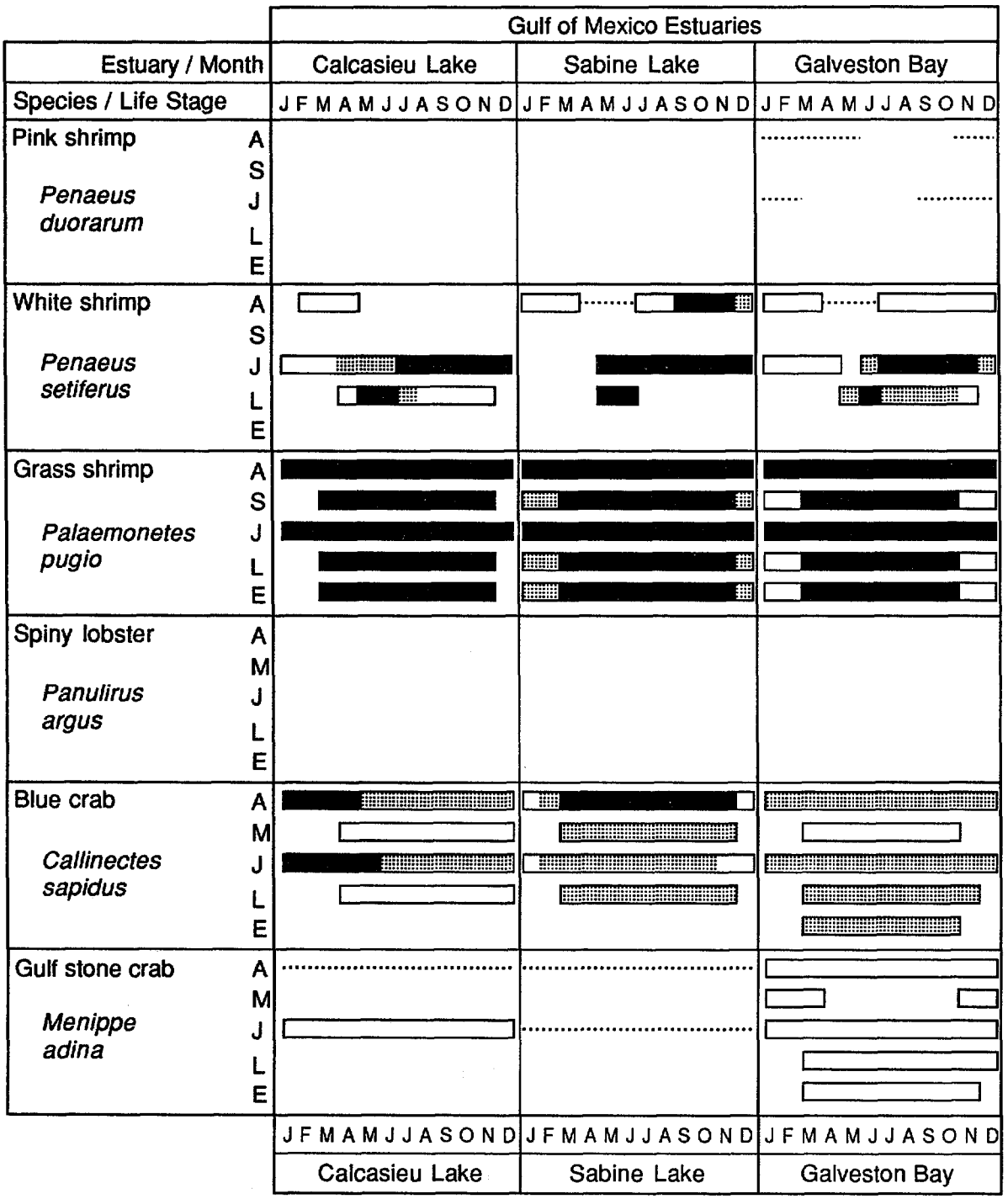
## Life Stage

A - Adults
S - Spawning adults
J - Juveniles
L - Larvae
E - Eggs
M - Mating

Table 5, continued. Temporal distribution




Relative Abundance

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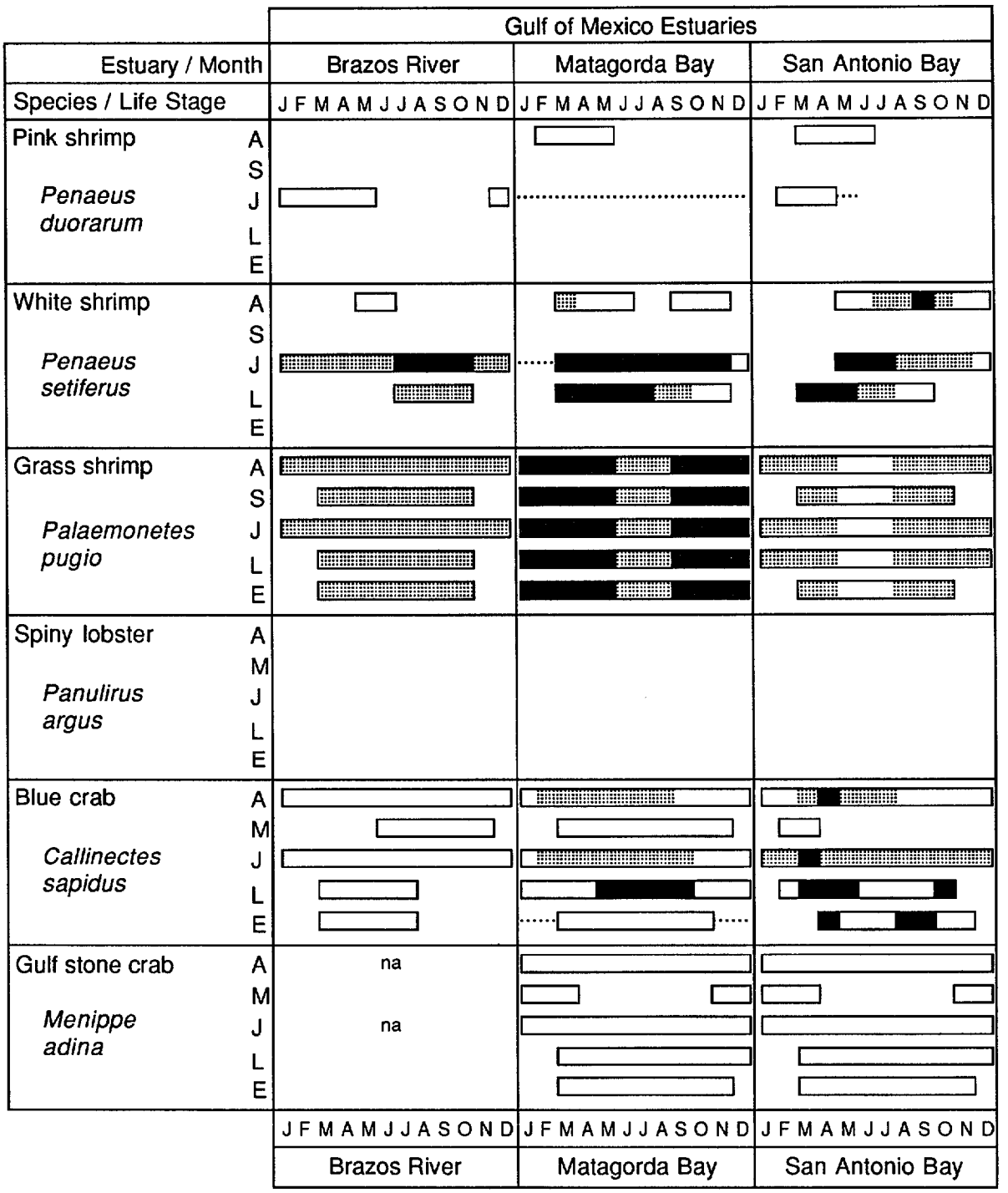
- Abundant
- Common
- Rare
- Blank — Not Present

Life Stage

A - Adults
S - Spawning adults
J - Juveniles
L - Larvae
E - Eggs
M - Mating

Table 5, continued. Temporal distribution



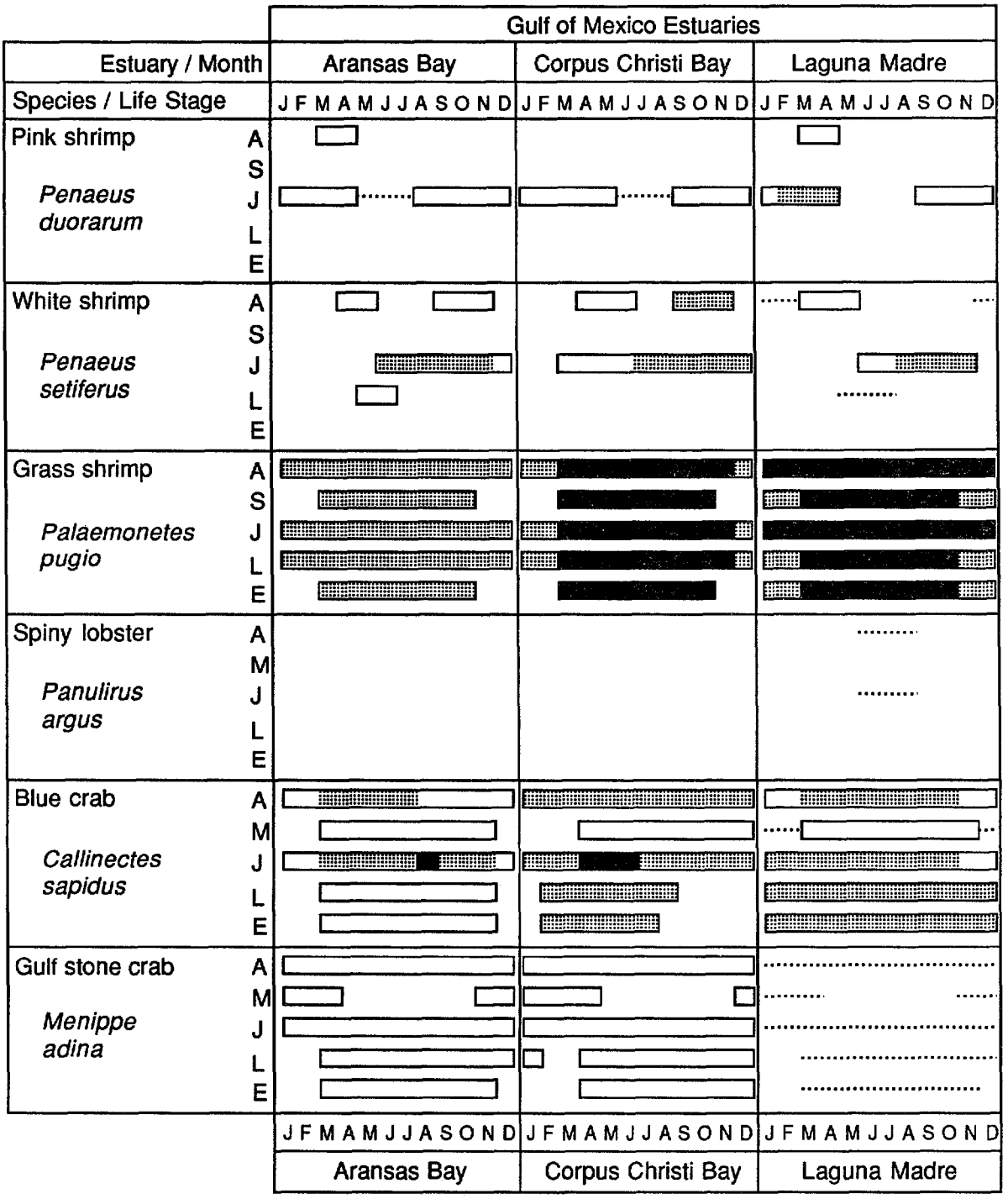

Relative Abundance

- Highly Abundant
- Abundant
- Common
- Rare
- Blank — Not Present
- na — No Data Available

Life Stage

A - Adults
S - Spawning adults
J - Juveniles
L - Larvae
E - Eggs
M - Mating

Table 5, continued. Temporal distribution

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Life Stage

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S - Spawning adults
J - Juveniles
L - Larvae
E - Eggs
M - Mating

Table 5, continued. Temporal distribution

| | | Gulf of Mexico Estuaries |
|---|---|---|
| Estuary / Month | | Baffin Bay |
| Species / Life Stage | | J F M A M J J A S O N D |
| Pink shrimp | A | ····· |
| | S | |
| *Penaeus duorarum* | J | ···▭····· |
| | L | |
| | E | |
| White shrimp | A | ····· |
| | S | |
| *Penaeus setiferus* | J | ····· |
| | L | |
| | E | |
| Grass shrimp | A | ■ |
| | S | ▦■▦ |
| *Palaemonetes pugio* | J | ▦■▦ |
| | L | ▦■▦ |
| | E | ▦■▦ |
| Spiny lobster | A | |
| | M | |
| *Panulirus argus* | J | |
| | L | |
| | E | |
| Blue crab | A | ▦ |
| | M | |
| *Callinectes sapidus* | J | ▦▭ |
| | L | ▭ |
| | E | ▭ |
| Gulf stone crab | A | ▭ |
| | M | ▭ ▭ |
| *Menippe adina* | J | ▭ |
| | L | ▭ |
| | E | ▭ |
| | | J F M A M J J A S O N D |
| | | Baffin Bay |

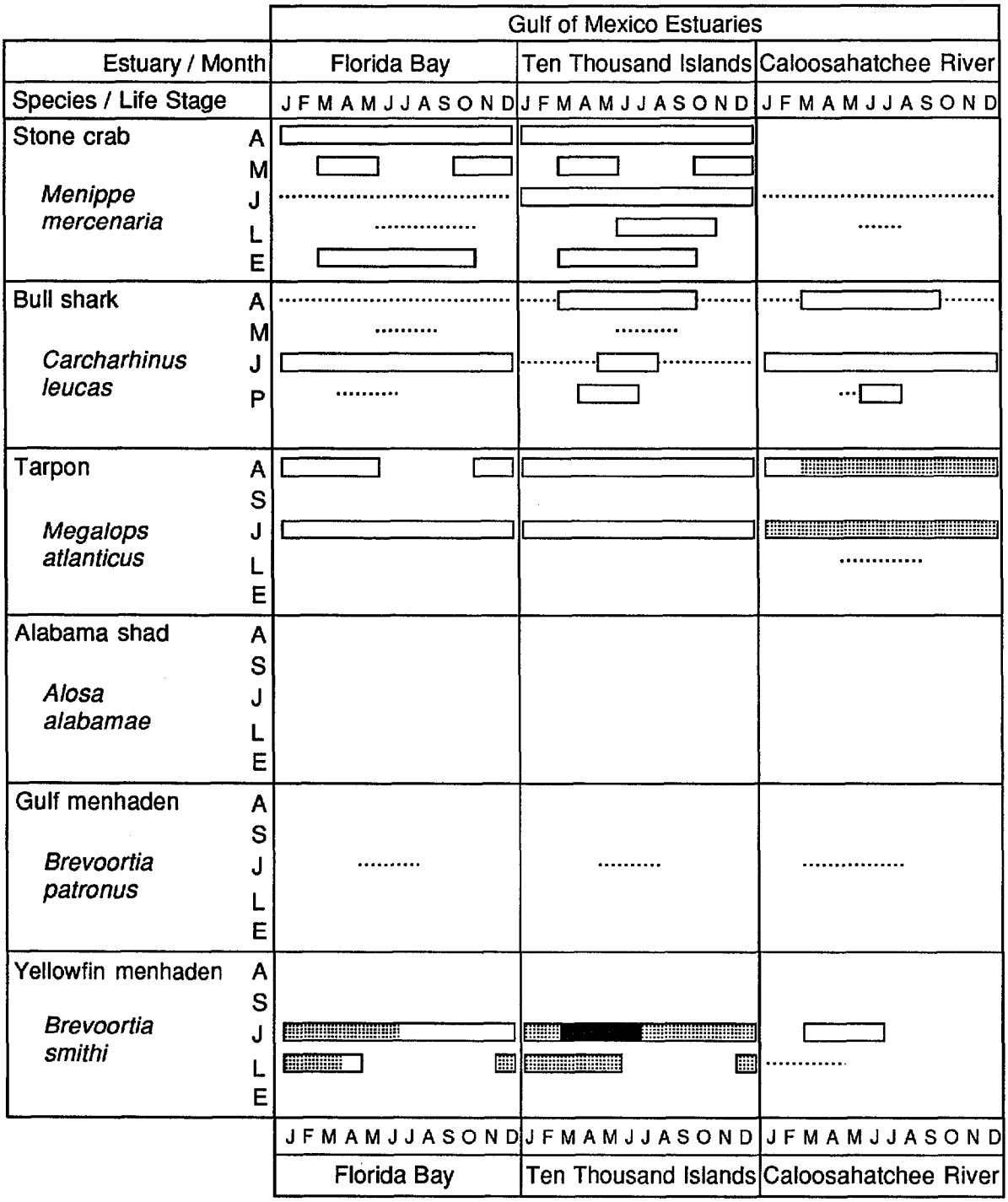
## Relative Abundance

- ■ Highly Abundant
- ▦ Abundant
- ▭ Common
- ····· Rare
- Blank Not Present

## Life Stage

A - Adults
S - Spawning adults
J - Juveniles
L - Larvae
E - Eggs
M - Mating

Table 5, continued. Temporal distribution

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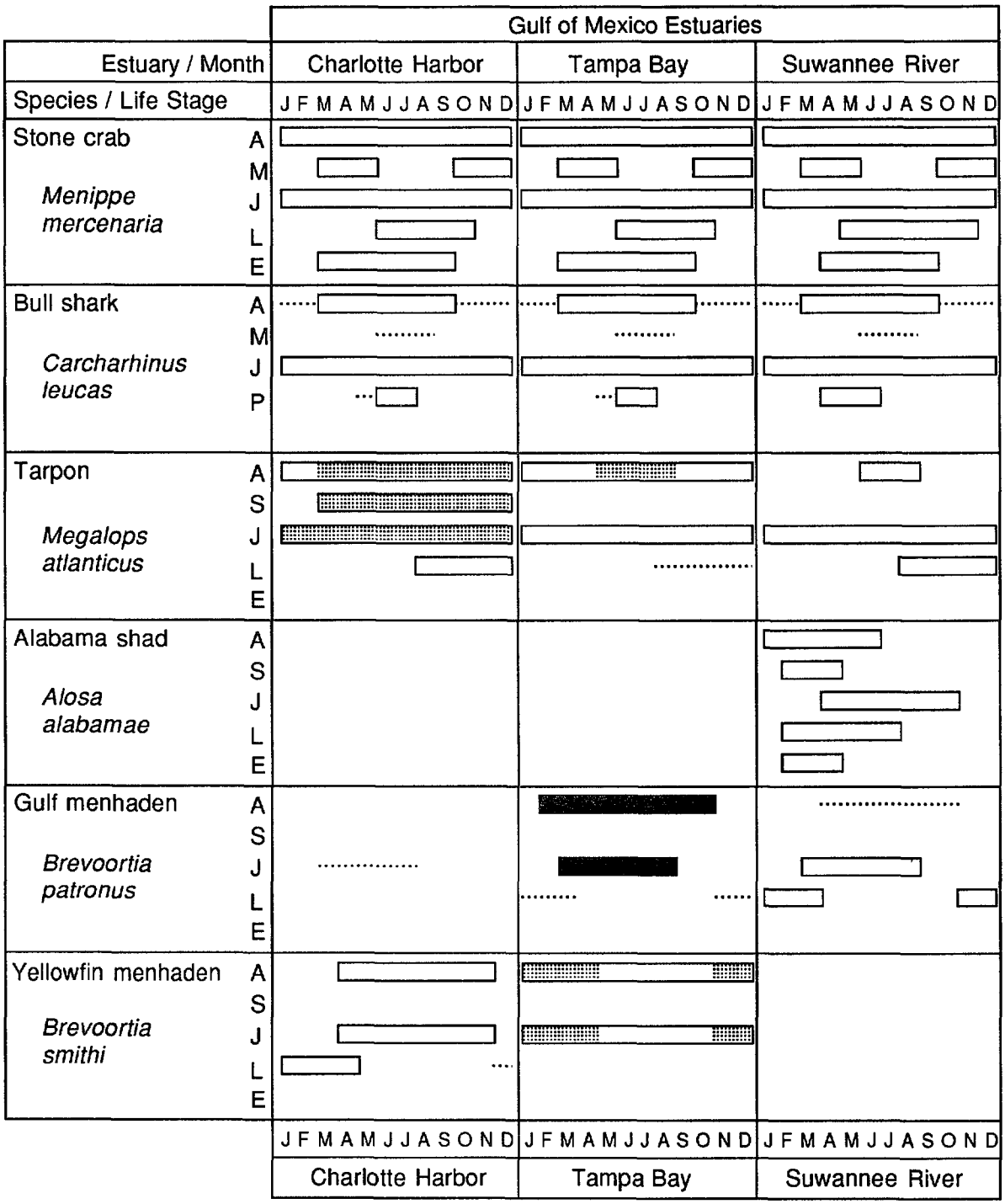
- Common
- Rare
- Blank — Not Present

## Life Stage

A - Adults
S - Spawning adults
J - Juveniles
L - Larvae
E - Eggs
M - Mating
P - Parturition

Table 5, continued. Temporal distribution



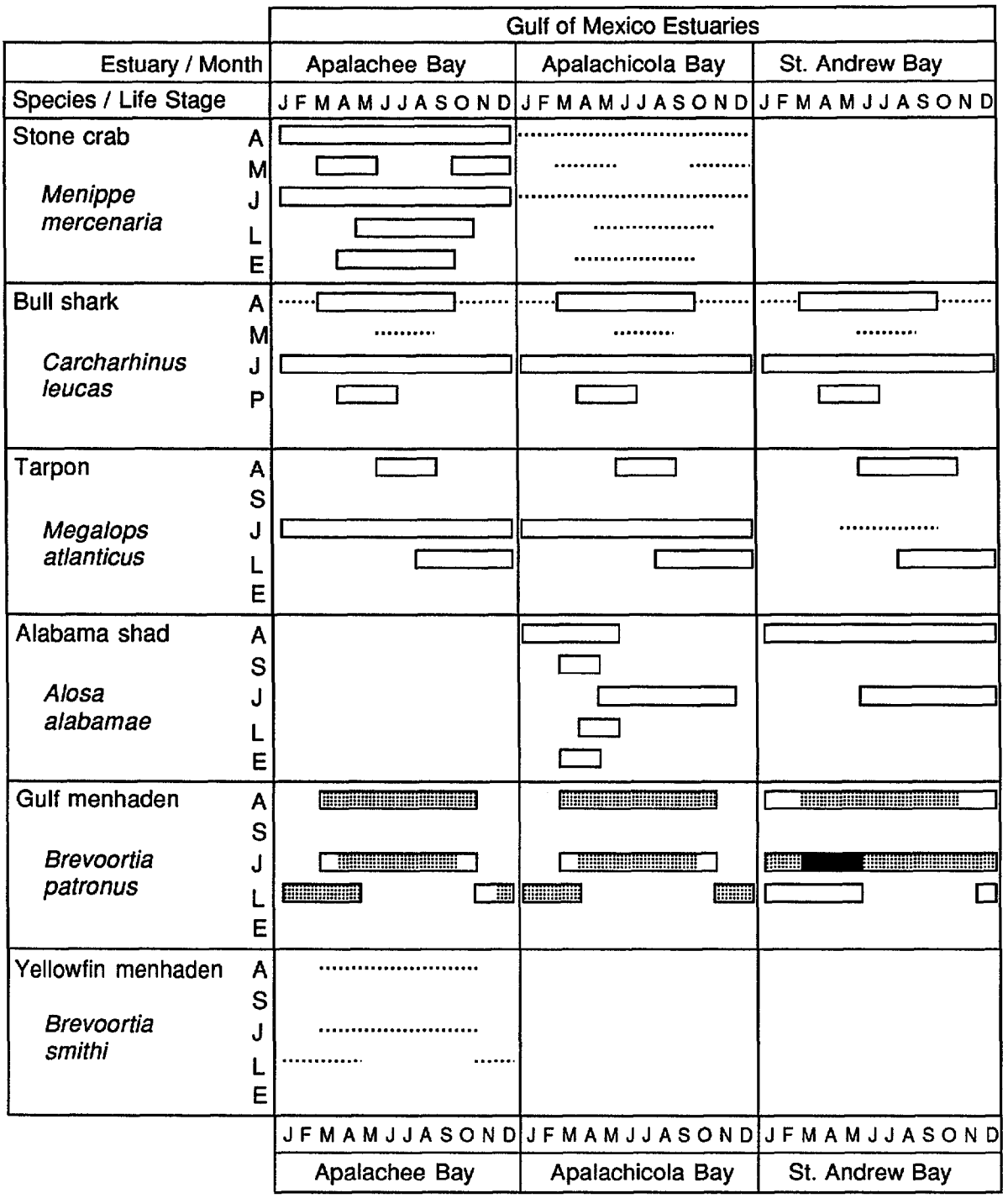

Relative Abundance

- Highly Abundant
- Abundant
- Common
- Rare
- Blank — Not Present

Life Stage

- A - Adults
- S - Spawning adults
- J - Juveniles
- L - Larvae
- E - Eggs
- M - Mating
- P - Parturition

Table 5, continued. Temporal distribution



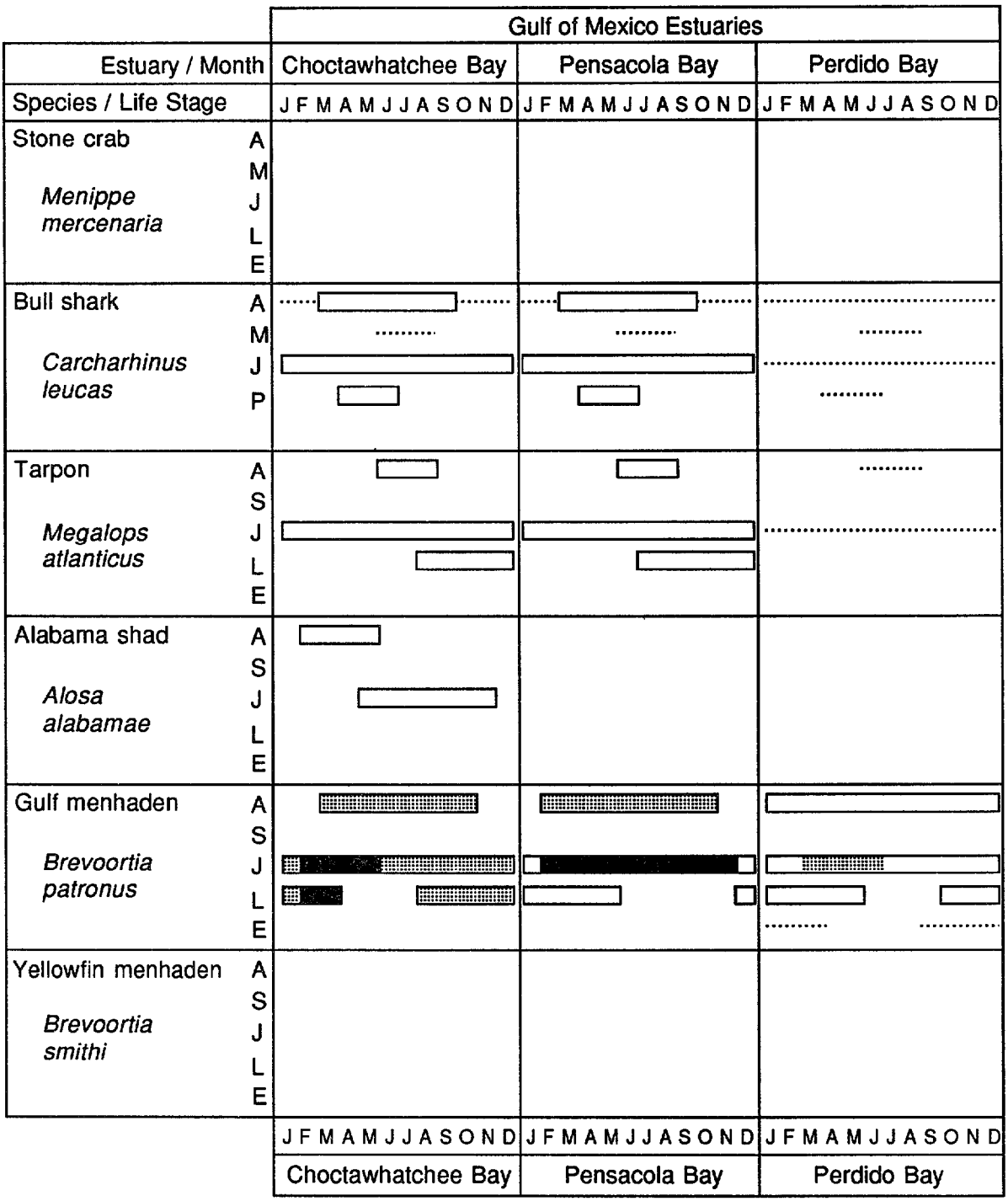

## Relative Abundance

- Highly Abundant
- Abundant
- Common
- Rare
- Blank — Not Present

## Life Stage

A - Adults
S - Spawning adults
J - Juveniles
L - Larvae
E - Eggs
M - Mating
P - Parturition

Table 5, continued. Temporal distribution




Relative Abundance

- Highly Abundant
- Abundant
- Common
- Rare
- Blank — Not Present

Life Stage

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S - Spawning adults
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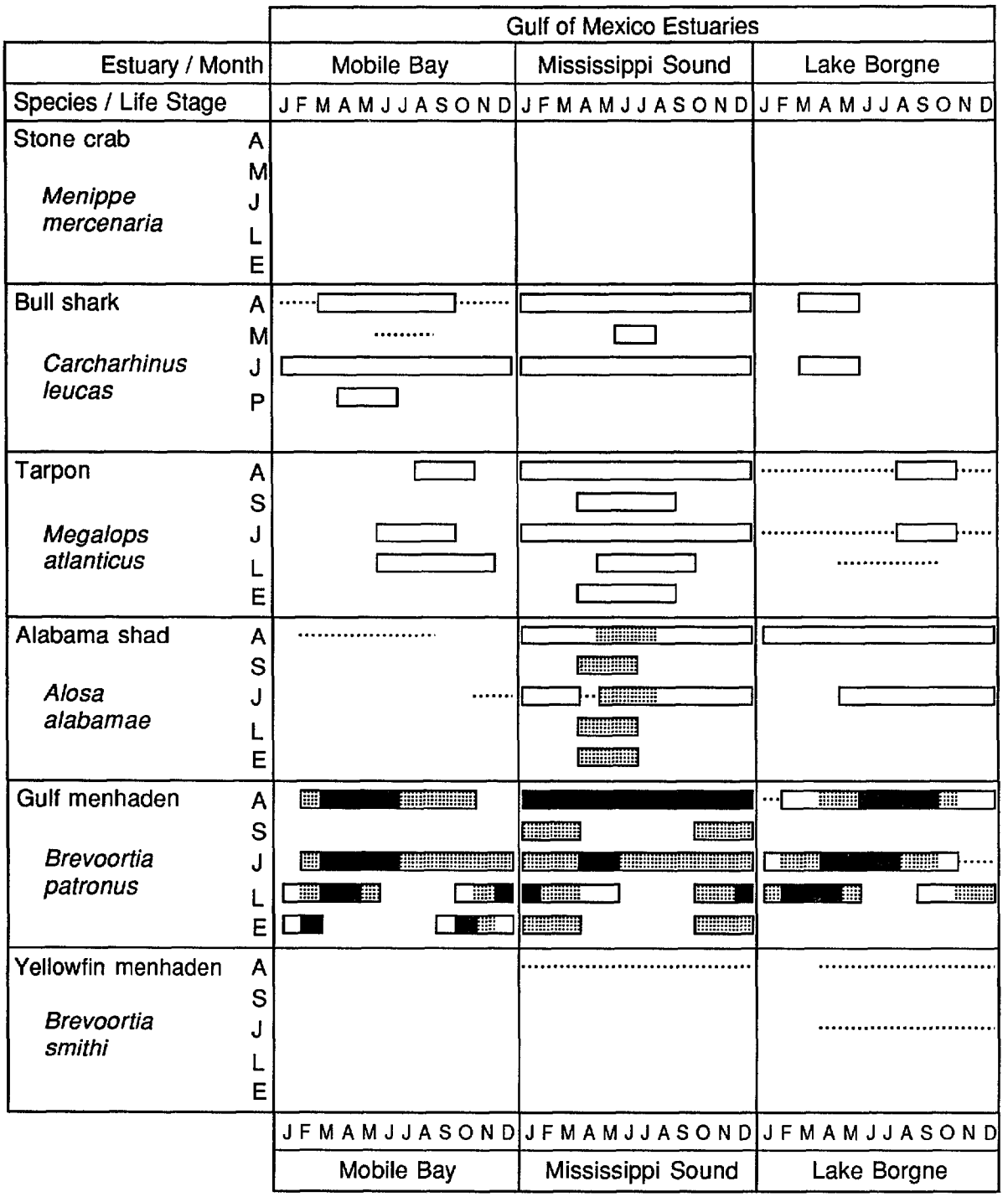
Table 5, continued. Temporal distribution




## Relative Abundance

- Highly Abundant
- Abundant
- Common
- Rare
- Blank — Not Present

## Life Stage

A - Adults
S - Spawning adults
J - Juveniles
L - Larvae
E - Eggs
M - Mating
P - Parturition

Table 5, continued. Temporal distribution

| | | Gulf of Mexico Estuaries | | |
|---|---|---|---|---|
| Estuary / Month | | Lake Pontchartrain | Breton/Chandeleur Sound | Mississippi River |
| Species / Life Stage | | J F M A M J J A S O N D | J F M A M J J A S O N D | J F M A M J J A S O N D |
| Stone crab *Menippe mercenaria* | A M J L E | | | |
| Bull shark *Carcharhinus leucas* | A M J P | | | |
| Tarpon *Megalops atlanticus* | A S J L E | | | |
| Alabama shad *Alosa alabamae* | A S J L E | | | |
| Gulf menhaden *Brevoortia patronus* | A S J L E | | | |
| Yellowfin menhaden *Brevoortia smithi* | A S J L E | | | |
| | | J F M A M J J A S O N D | J F M A M J J A S O N D | J F M A M J J A S O N D |
| | | Lake Pontchartrain | Breton/Chandeleur Sound | Mississippi River |

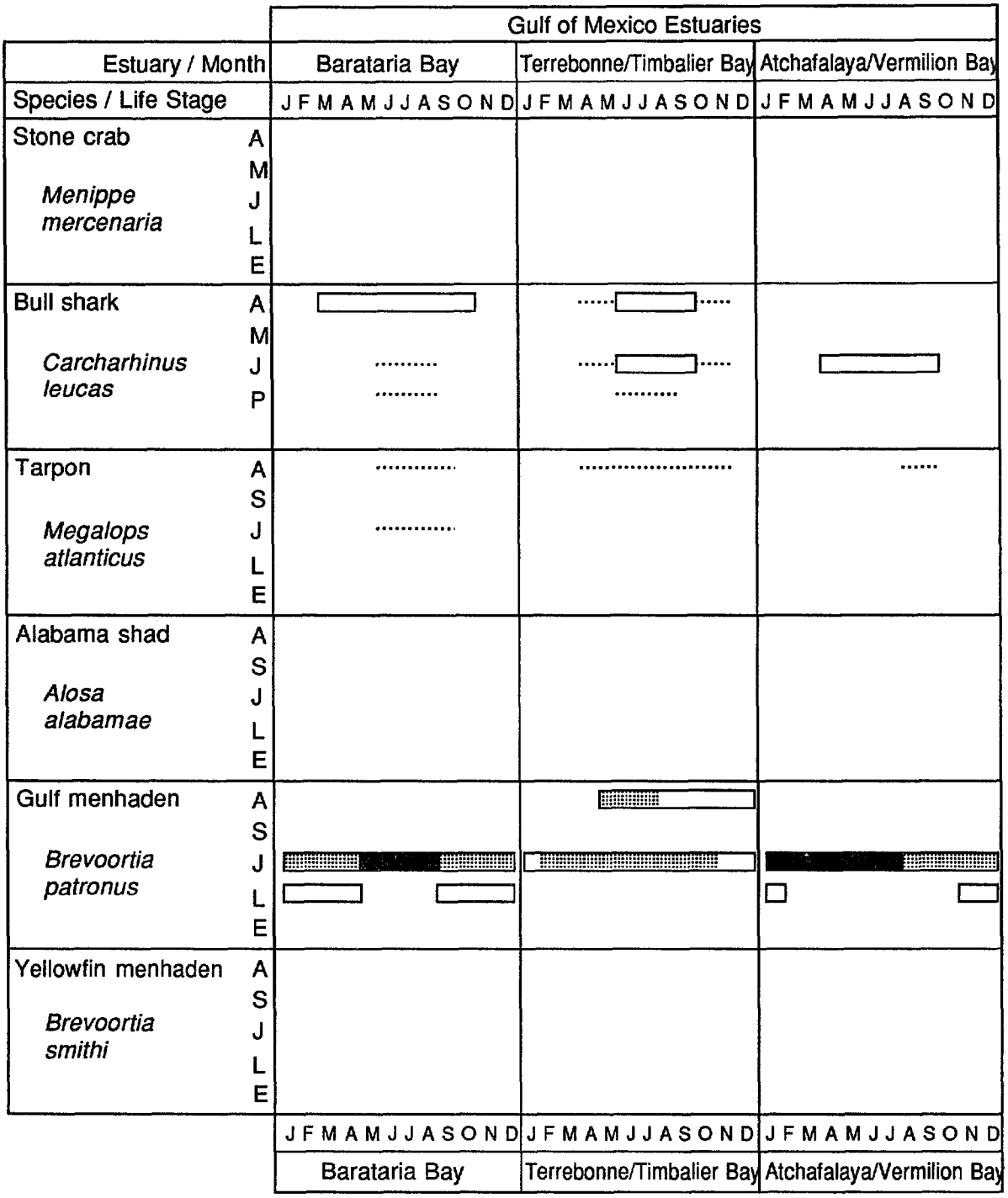
## Relative Abundance

- Highly Abundant
- Abundant
- Common
- Rare
- Blank — Not Present

## Life Stage

A - Adults
S - Spawning adults
J - Juveniles
L - Larvae
E - Eggs
M - Mating
P - Parturition

Table 5, continued. Temporal distribution



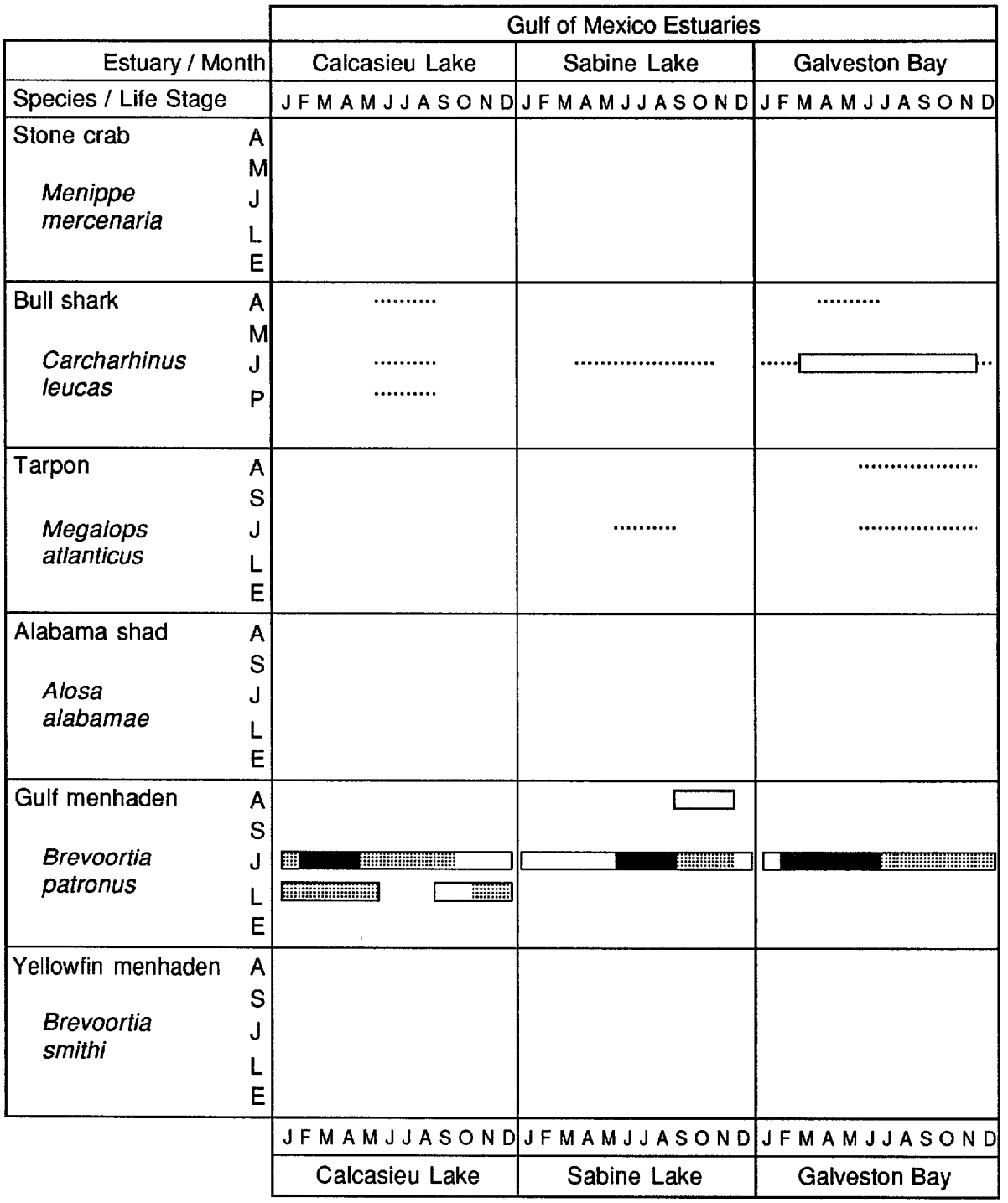

Relative Abundance

- Highly Abundant
- Abundant
- Common
- Rare
- Blank — Not Present

Life Stage

A - Adults
S - Spawning adults
J - Juveniles
L - Larvae
E - Eggs
M - Mating
P - Parturition

Table 5, continued. Temporal distribution




Relative Abundance

- Highly Abundant
- Abundant
- Common
- ..... Rare
- Blank Not Present

Life Stage

A - Adults
S - Spawning adults
J - Juveniles
L - Larvae
E - Eggs
M - Mating
P - Parturition

Table 5, continued. Temporal distribution

| | | Gulf of Mexico Estuaries | | |
|---|---|---|---|---|
| Estuary / Month | | Brazos River | Matagorda Bay | San Antonio Bay |
| Species / Life Stage | | J F M A M J J A S O N D | J F M A M J J A S O N D | J F M A M J J A S O N D |
| Stone crab *Menippe mercenaria* | A M J L E | | | |
| Bull shark *Carcharhinus leucas* | A M J P | na | ▭ | ▭ |
| Tarpon *Megalops atlanticus* | A S J L E | na | ▭ ···▭ | ▭ ▭ |
| Alabama shad *Alosa alabamae* | A S J L E | | | |
| Gulf menhaden *Brevoortia patronus* | A S J L E | ▒ ▒ | ■ ■ | ▭ ▒ |
| Yellowfin menhaden *Brevoortia smithi* | A S J L E | | | |
| | | J F M A M J J A S O N D | J F M A M J J A S O N D | J F M A M J J A S O N D |
| | | Brazos River | Matagorda Bay | San Antonio Bay |

Relative Abundance

- ■ Highly Abundant
- ▒ Abundant
- ▭ Common
- ····· Rare
- Blank Not Present
- na No Data Available

Life Stage

- A - Adults
- S - Spawning adults
- J - Juveniles
- L - Larvae
- E - Eggs
- M - Mating
- P - Parturition

Table 5, continued. Temporal distribution

| | | Gulf of Mexico Estuaries | | |
|---|---|---|---|---|
| Estuary / Month | | Aransas Bay | Corpus Christi Bay | Laguna Madre |
| Species / Life Stage | | J F M A M J J A S O N D | J F M A M J J A S O N D | J F M A M J J A S O N D |
| Stone crab *Menippe mercenaria* | A | | | |
| | M | | | |
| | J | | | |
| | L | | | |
| | E | | | |
| Bull shark *Carcharhinus leucas* | A | | | |
| | M | | | |
| | J | ▭ | ▭ | ····· |
| | P | | | |
| Tarpon *Megalops atlanticus* | A | ····· | ····· | ····· |
| | S | | | |
| | J | ····· | ····· | ····· |
| | L | ····· | ····· | |
| | E | | | |
| Alabama shad *Alosa alabamae* | A | | | |
| | S | | | |
| | J | | | |
| | L | | | |
| | E | | | |
| Gulf menhaden *Brevoortia patronus* | A | | ····· ▭ | ▭ |
| | S | | | |
| | J | ▭ | ▭ | ▭ |
| | L | ▭ | ▭ | |
| | E | | | |
| Yellowfin menhaden *Brevoortia smithi* | A | | | |
| | S | | | |
| | J | | | |
| | L | | | |
| | E | | | |
| | | J F M A M J J A S O N D | J F M A M J J A S O N D | J F M A M J J A S O N D |
| | | Aransas Bay | Corpus Christi Bay | Laguna Madre |

Relative Abundance

- ■ Highly Abundant
- ▭ Abundant
- ▭ Common
- ····· Rare
- Blank Not Present

Life Stage

A - Adults
S - Spawning adults
J - Juveniles
L - Larvae
E - Eggs
M - Mating
P - Parturition

Table 5, continued. Temporal distribution

| | | Gulf of Mexico Estuaries | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Estuary / Month | | Baffin Bay | | | | | | | | | | | |
| Species / Life Stage | | J | F | M | A | M | J | J | A | S | O | N | D |
| Stone crab *Menippe mercenaria* | A | | | | | | | | | | | | |
| | M | | | | | | | | | | | | |
| | J | | | | | | | | | | | | |
| | L | | | | | | | | | | | | |
| | E | | | | | | | | | | | | |
| Bull shark *Carcharhinus leucas* | A | | | | | | | | | | | | |
| | M | | | | | | | | | | | | |
| | J | Rare | Rare | Rare | Rare | Rare | Rare | Rare | Rare | Rare | Rare | Rare | Rare |
| | P | | | | | | | | | | | | |
| Tarpon *Megalops atlanticus* | A | | | | | | | | | | | | |
| | S | | | | | | | | | | | | |
| | J | | | Rare | Rare | Rare | Rare | Rare | Rare | Rare | Rare | Rare | |
| | L | | | | | | | | | | | | |
| | E | | | | | | | | | | | | |
| Alabama shad *Alosa alabamae* | A | | | | | | | | | | | | |
| | S | | | | | | | | | | | | |
| | J | | | | | | | | | | | | |
| | L | | | | | | | | | | | | |
| | E | | | | | | | | | | | | |
| Gulf menhaden *Brevoortia patronus* | A | | | | | | | | | Rare | Rare | | |
| | S | | | | | | | | | | | | |
| | J | Abundant | Abundant | Highly Abundant | Highly Abundant | Highly Abundant | Highly Abundant | Highly Abundant | Highly Abundant | Abundant | Abundant | Abundant | Abundant |
| | L | | Rare | Rare | Rare | Rare | | | | | | | |
| | E | | | | | | | | | | | | |
| Yellowfin menhaden *Brevoortia smithi* | A | | | | | | | | | | | | |
| | S | | | | | | | | | | | | |
| | J | | | | | | | | | | | | |
| | L | | | | | | | | | | | | |
| | E | | | | | | | | | | | | |
| | | J | F | M | A | M | J | J | A | S | O | N | D |
| | | Baffin Bay | | | | | | | | | | | |

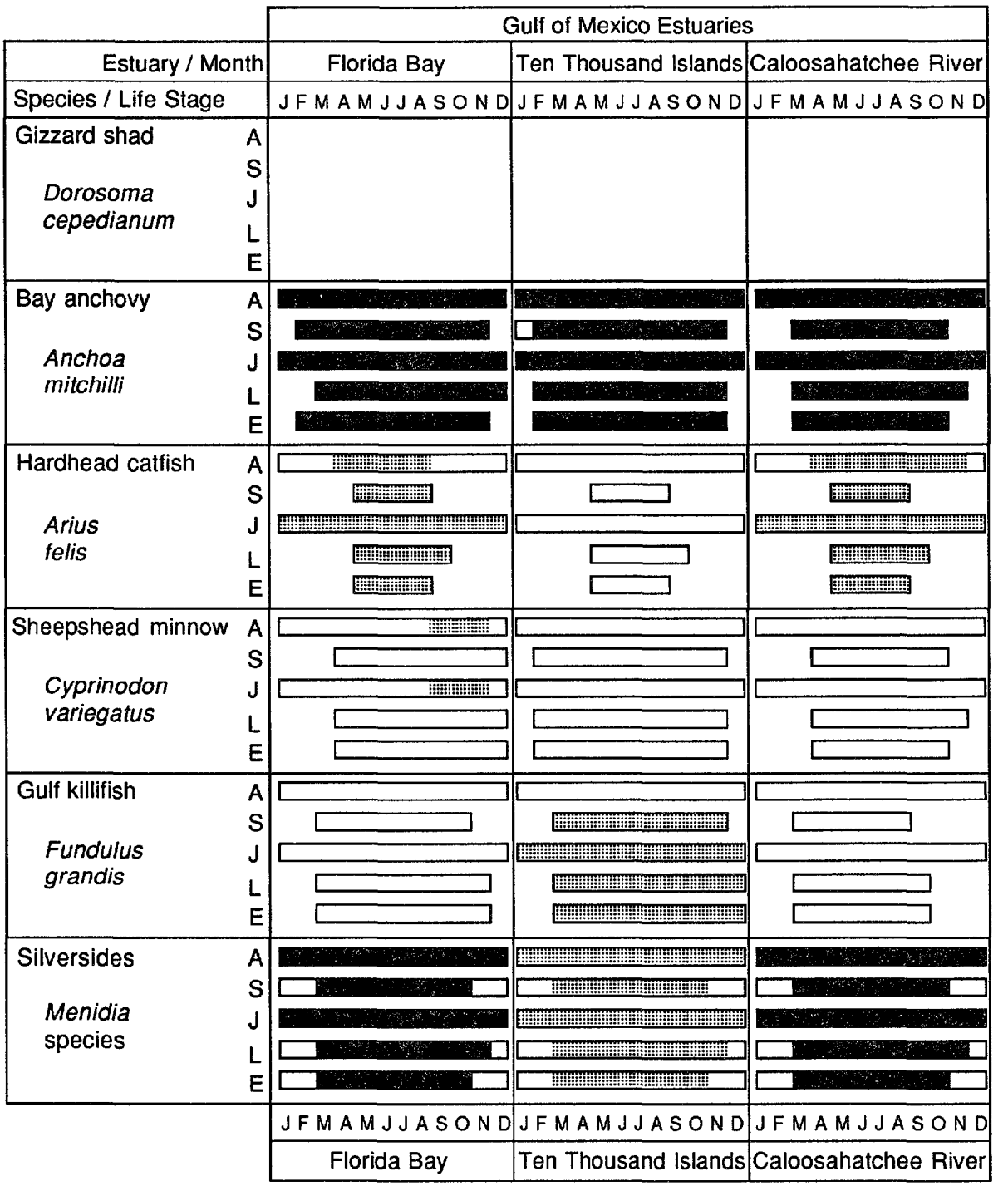
Relative Abundance

- (solid black bar) Highly Abundant
- (stippled bar) Abundant
- (open bar) Common
- ......... Rare
- Blank Not Present

Life Stage

A - Adults
S - Spawning adults
J - Juveniles
L - Larvae
E - Eggs
M - Mating
P - Parturition

Table 5, continued. Temporal distribution



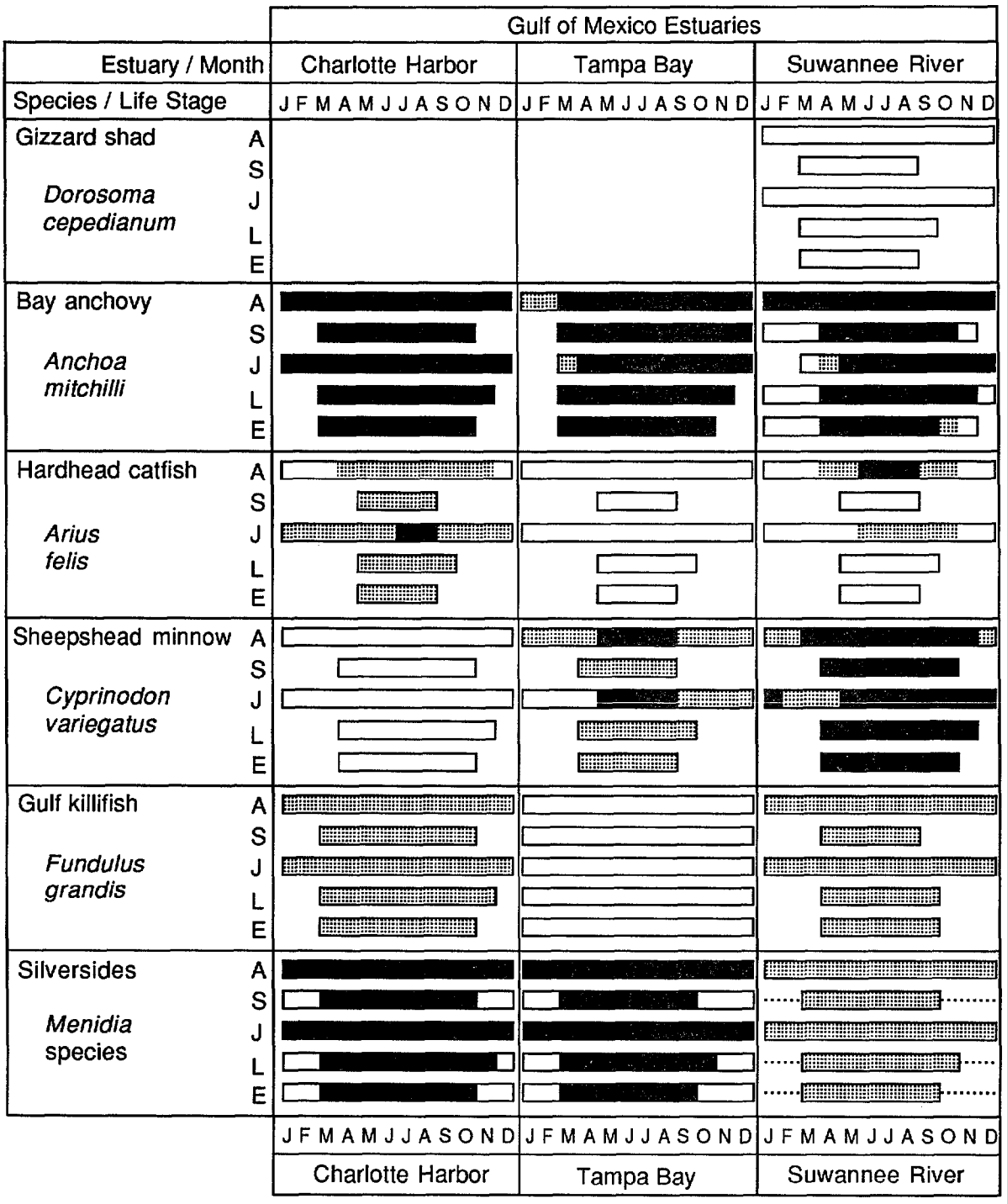

Relative Abundance

- Highly Abundant
- Abundant
- Common
- Rare
- Blank — Not Present

Life Stage

A - Adults
S - Spawning adults
J - Juveniles
L - Larvae
E - Eggs

Table 5, continued. Temporal distribution



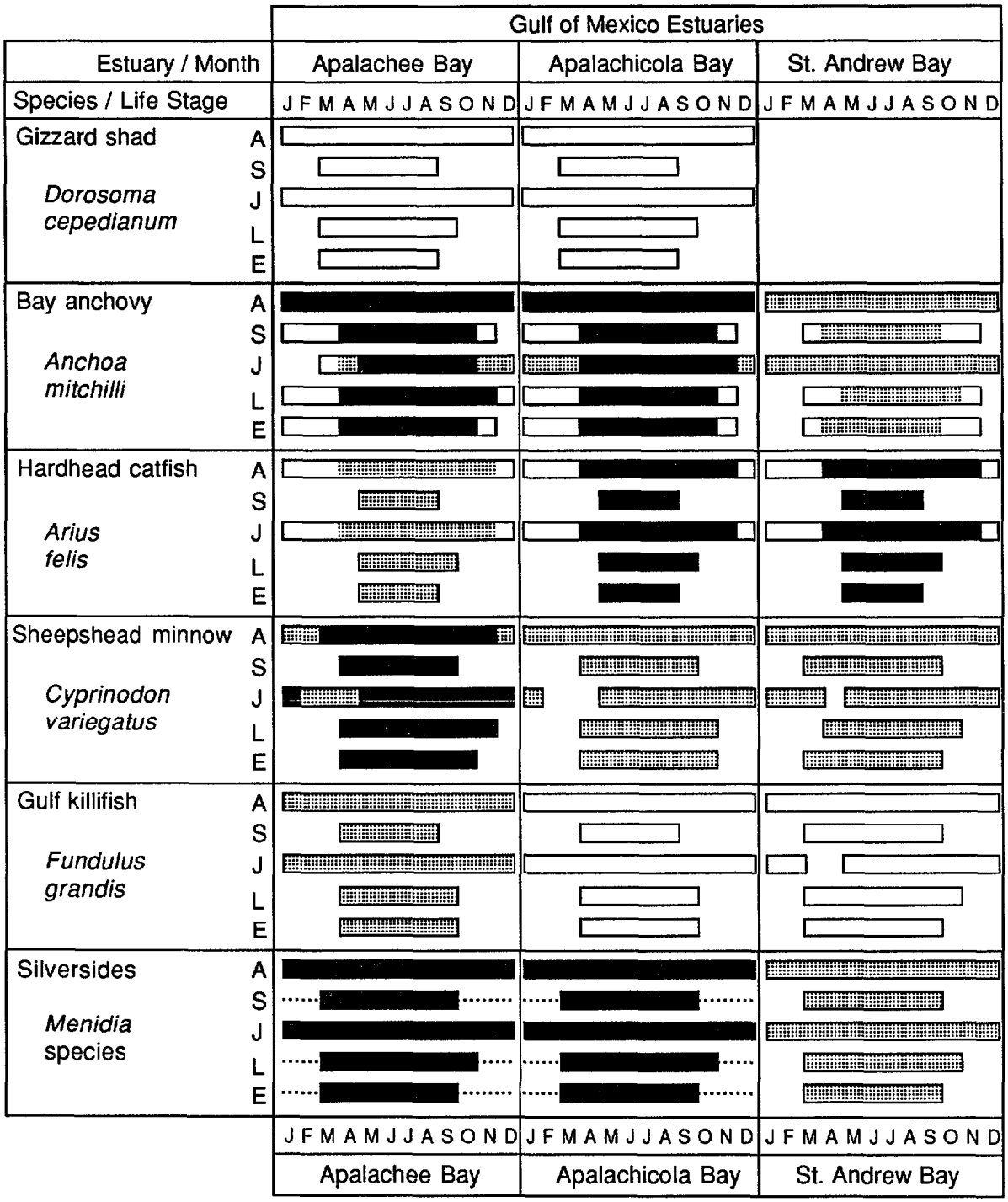

## Relative Abundance

- Highly Abundant
- Abundant
- Common
- Rare
- Blank — Not Present

## Life Stage

A - Adults
S - Spawning adults
J - Juveniles
L - Larvae
E - Eggs

Table 5, continued. Temporal distribution



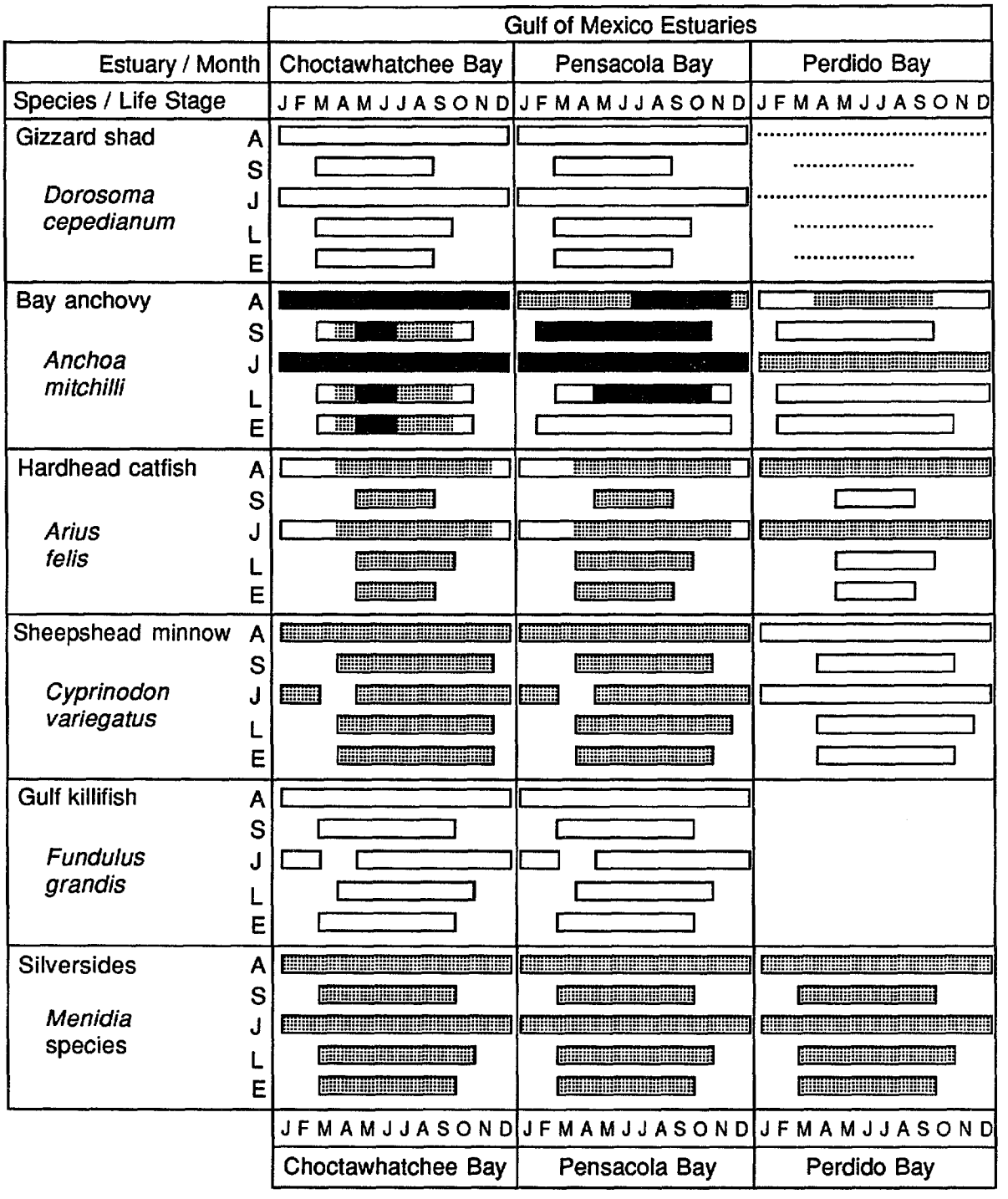

Relative Abundance

- Highly Abundant
- Abundant
- Common
- Rare
- Blank — Not Present

Life Stage

A - Adults
S - Spawning adults
J - Juveniles
L - Larvae
E - Eggs

Table 5, continued. Temporal distribution



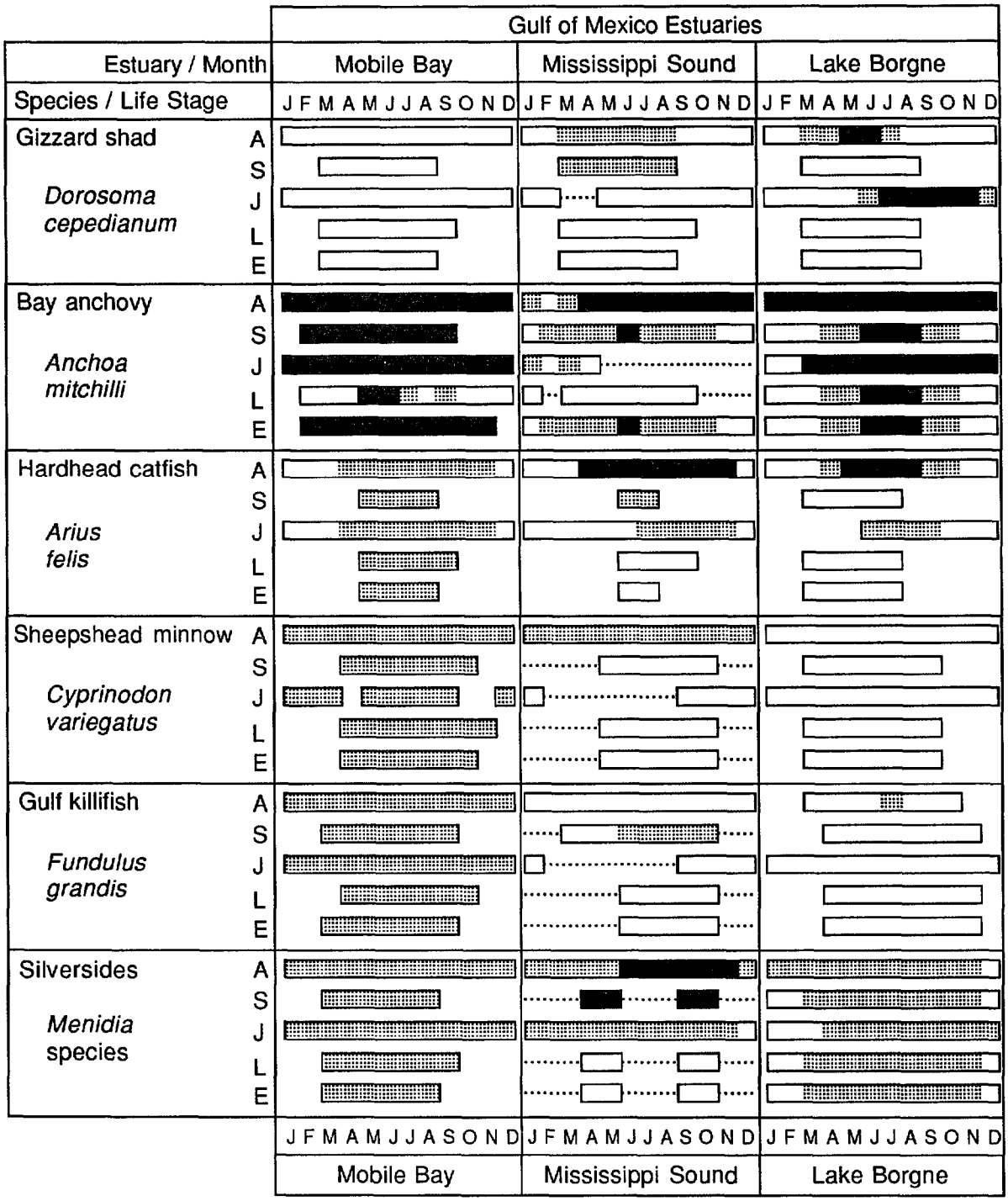

## Relative Abundance

- Highly Abundant
- Abundant
- Common
- Rare
- Blank — Not Present

## Life Stage

A - Adults
S - Spawning adults
J - Juveniles
L - Larvae
E - Eggs

Table 5, continued. Temporal distribution



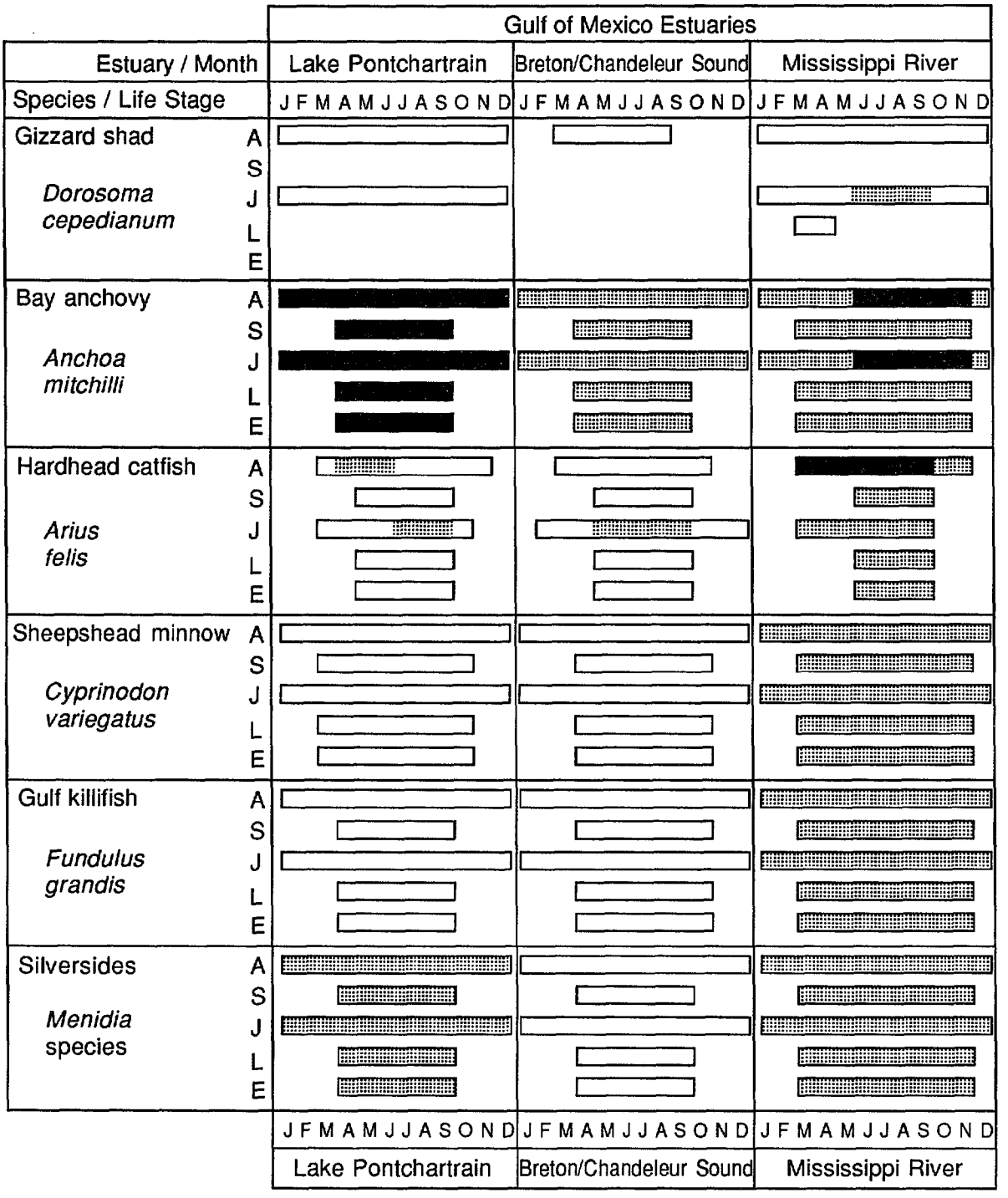

Relative Abundance

- Highly Abundant
- Abundant
- Common
- Rare
- Blank — Not Present

Life Stage

A - Adults
S - Spawning adults
J - Juveniles
L - Larvae
E - Eggs

Table 5, continued. Temporal distribution



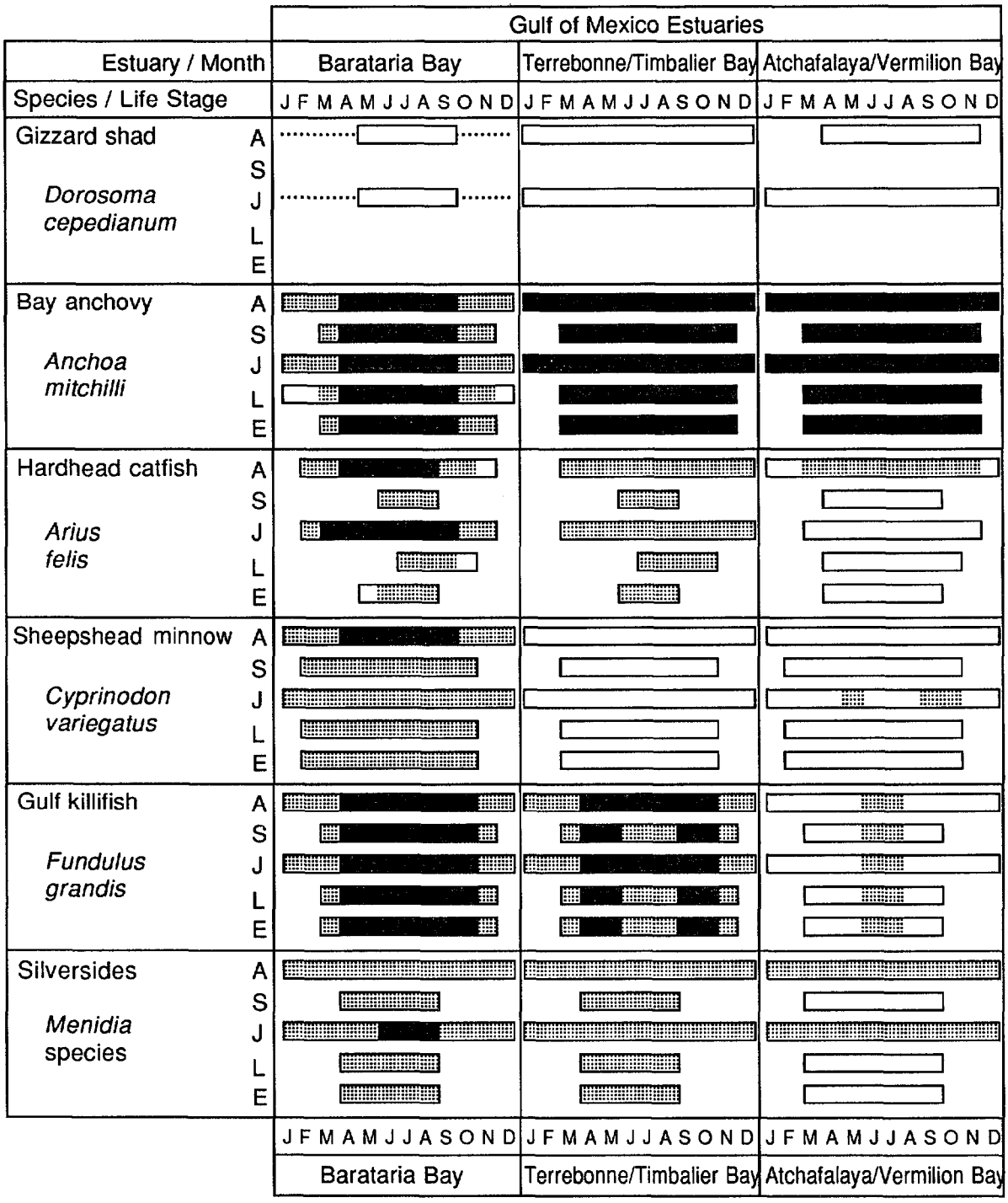

Relative Abundance

- Highly Abundant
- Abundant
- Common
- Rare
- Blank — Not Present

Life Stage

A - Adults
S - Spawning adults
J - Juveniles
L - Larvae
E - Eggs

Table 5, continued. Temporal distribution



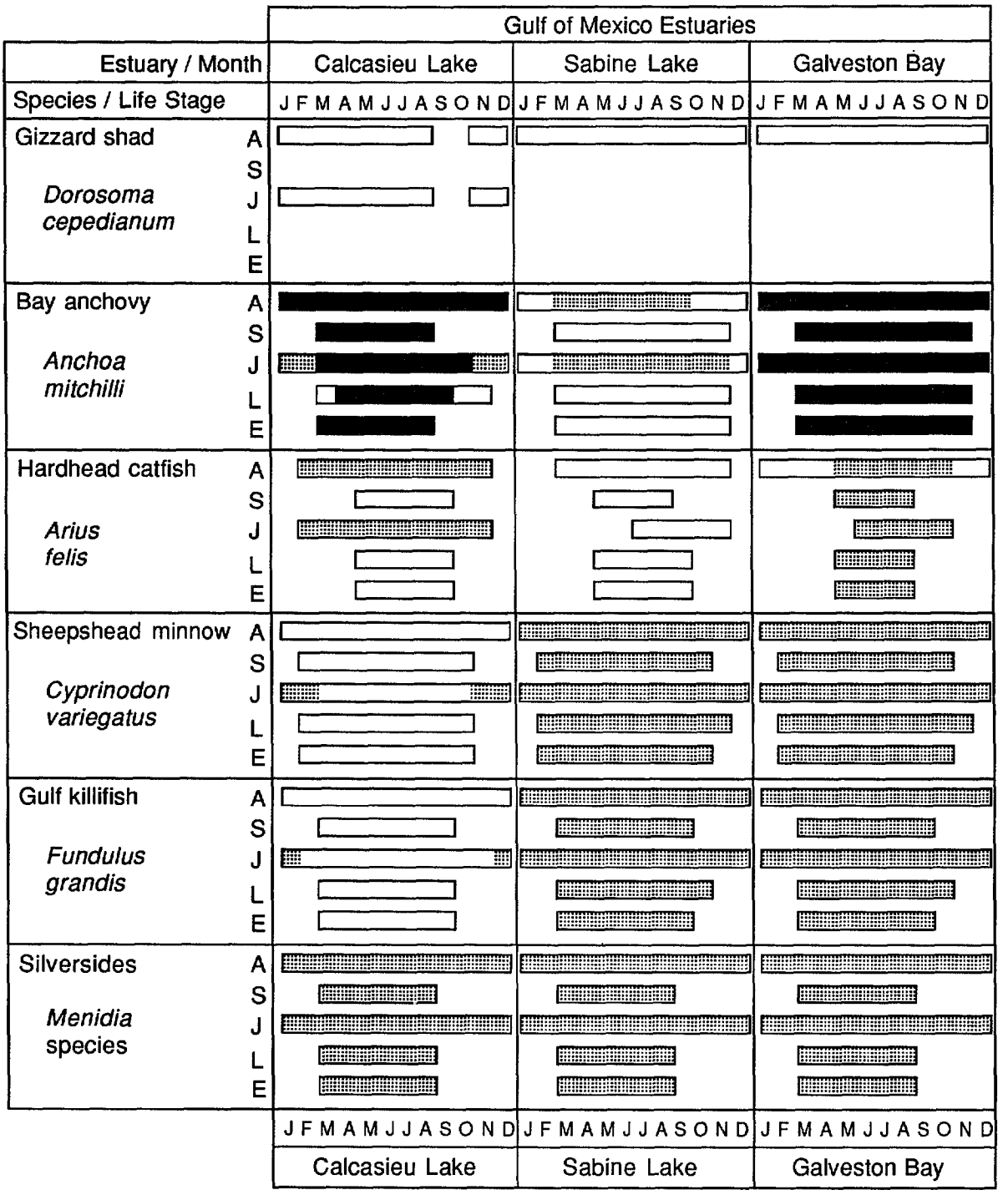

Relative Abundance

- Highly Abundant
- Abundant
- Common
- Rare
- Blank — Not Present

Life Stage

A - Adults
S - Spawning adults
J - Juveniles
L - Larvae
E - Eggs

Table 5, continued. Temporal distribution



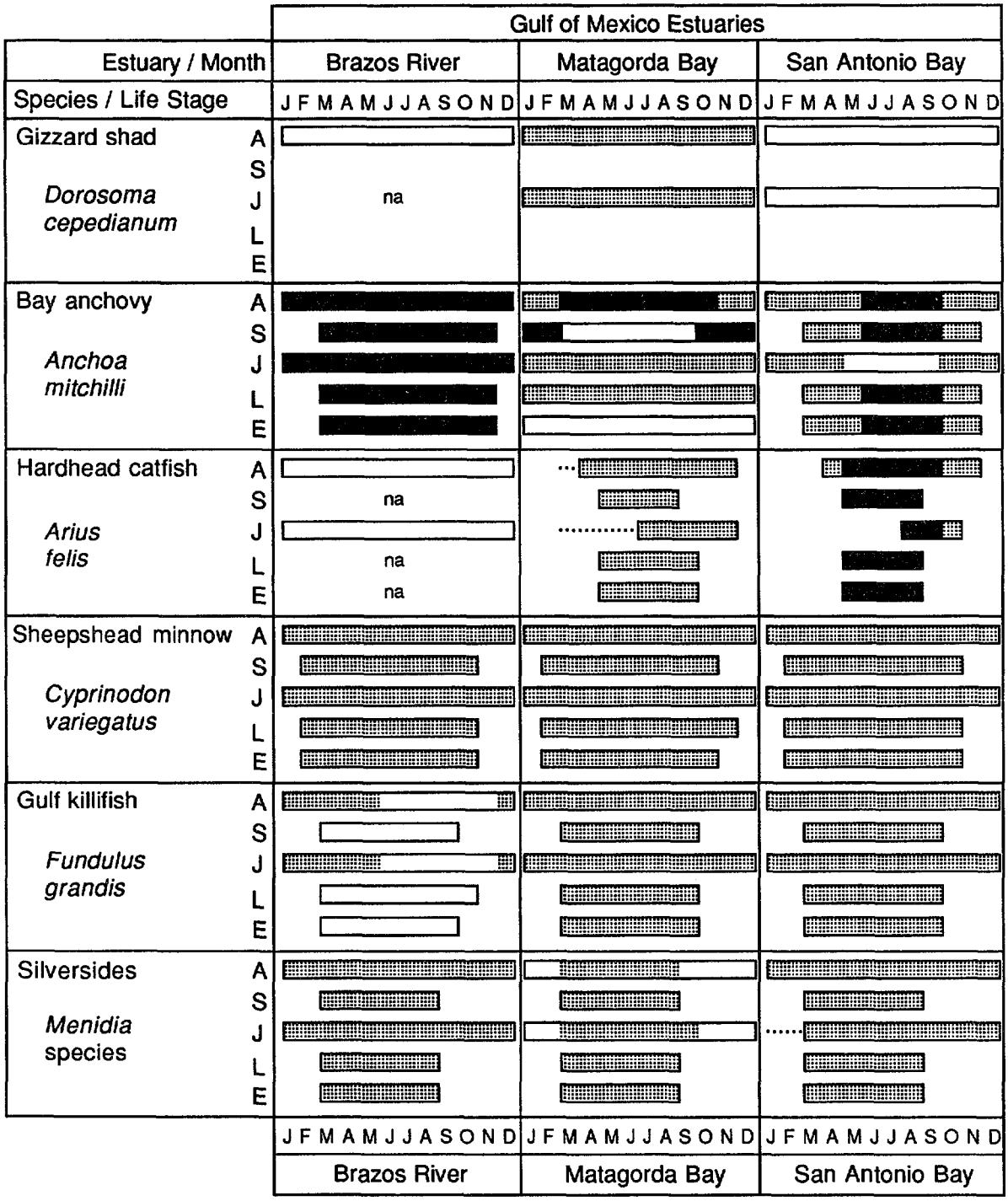

Relative Abundance

- Highly Abundant
- Abundant
- Common
- Rare
- Blank — Not Present

Life Stage

A - Adults
S - Spawning adults
J - Juveniles
L - Larvae
E - Eggs

Table 5, continued. Temporal distribution



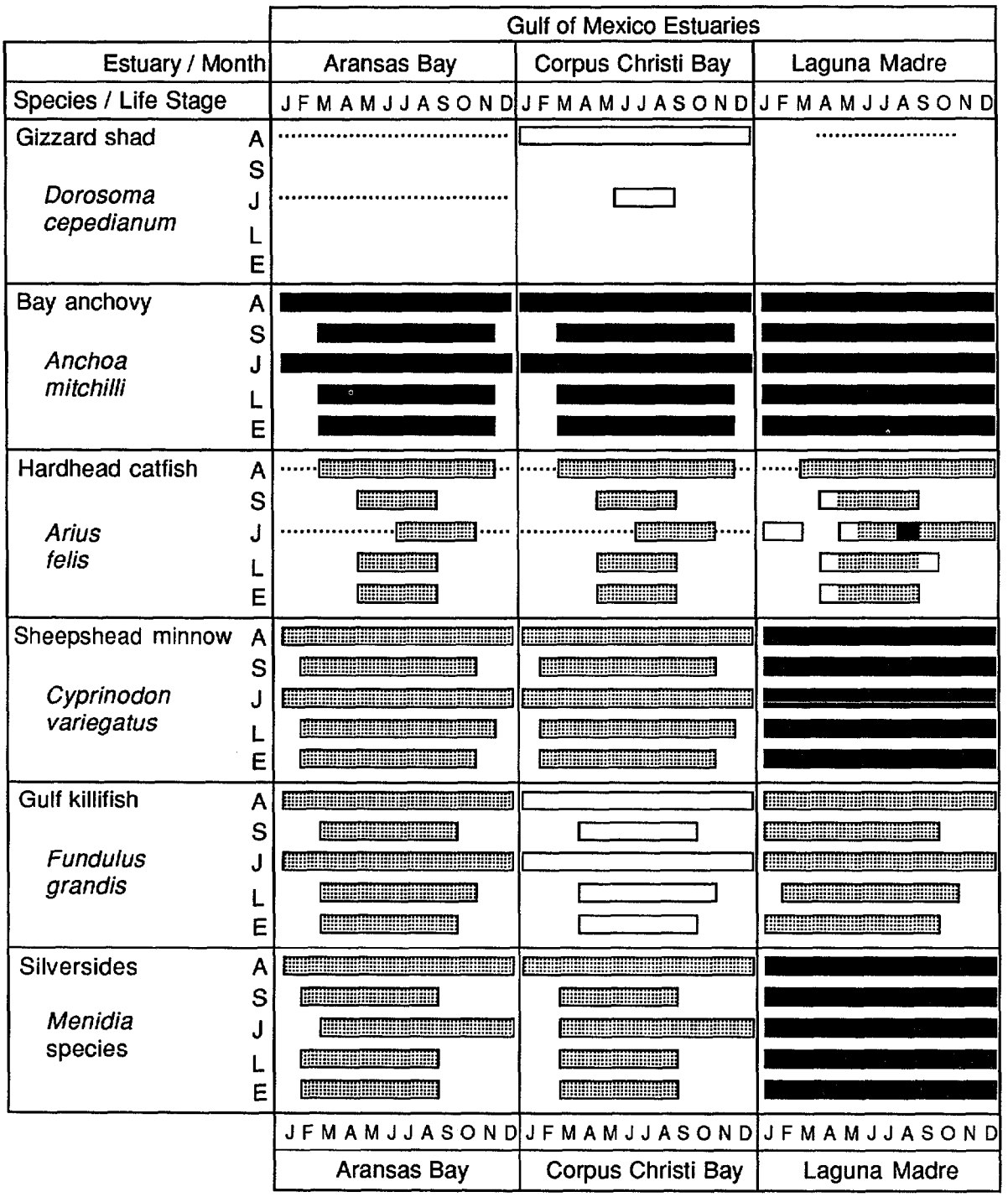

## Relative Abundance

- Highly Abundant
- Abundant
- Common
- Rare
- Blank — Not Present
- na — No Data Available

## Life Stage

A - Adults
S - Spawning adults
J - Juveniles
L - Larvae
E - Eggs

Table 5, continued. Temporal distribution



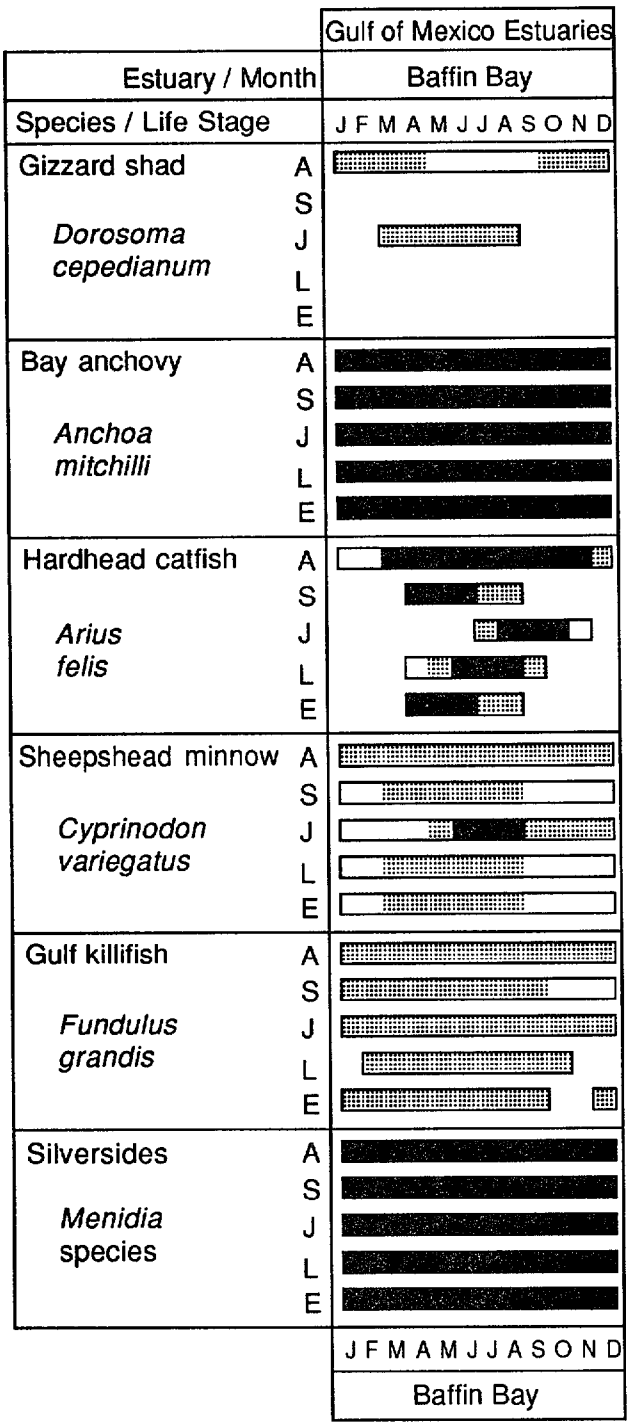

Relative Abundance

- Highly Abundant
- Abundant
- Common
- Rare
- Blank — Not Present

Life Stage

A - Adults
S - Spawning adults
J - Juveniles
L - Larvae
E - Eggs

Table 5, continued. Temporal distribution



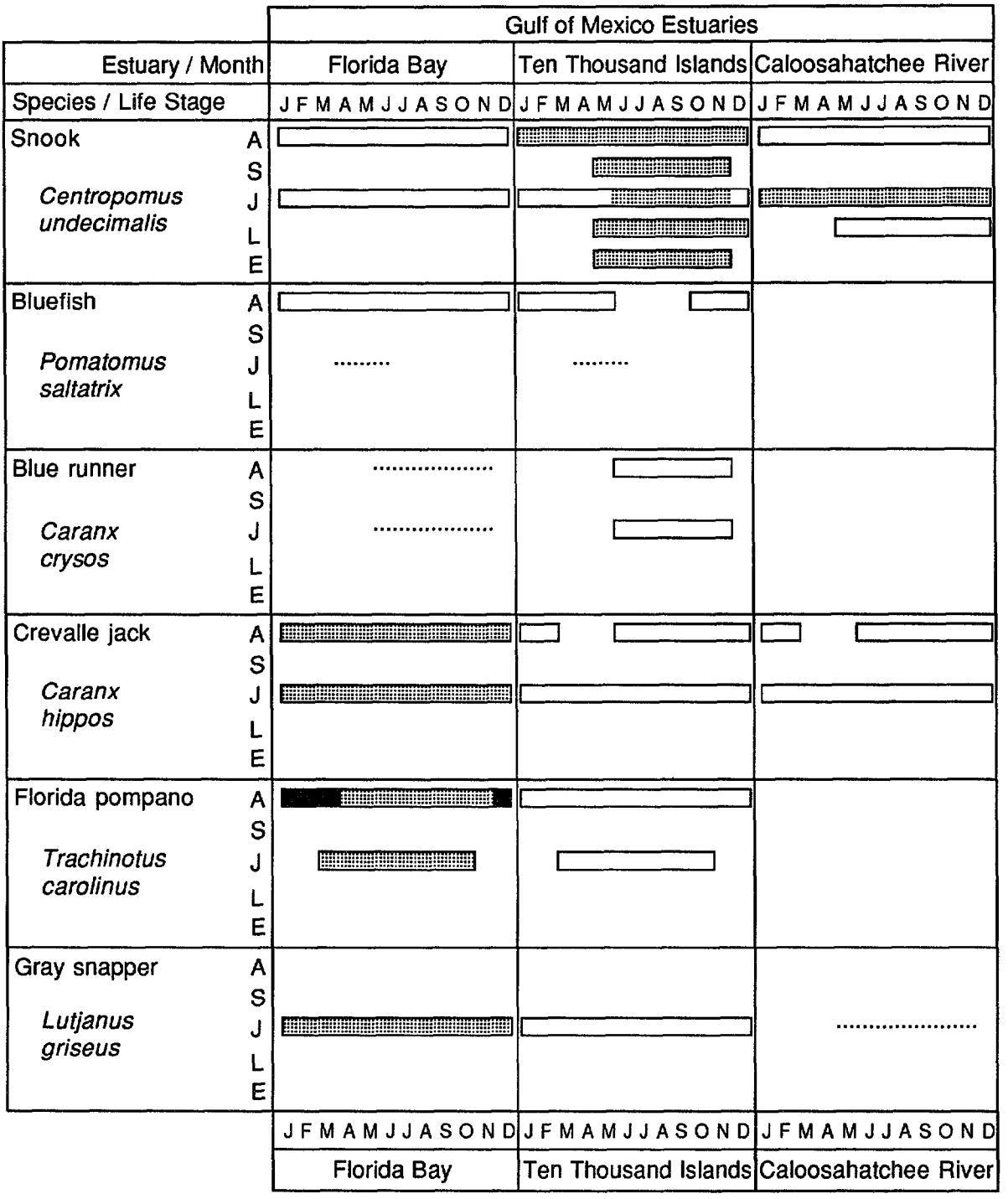

Relative Abundance

- Highly Abundant
- Abundant
- Common
- Rare
- Blank — Not Present

Life Stage

A - Adults
S - Spawning adults
J - Juveniles
L - Larvae
E - Eggs

Table 5, continued. Temporal distribution



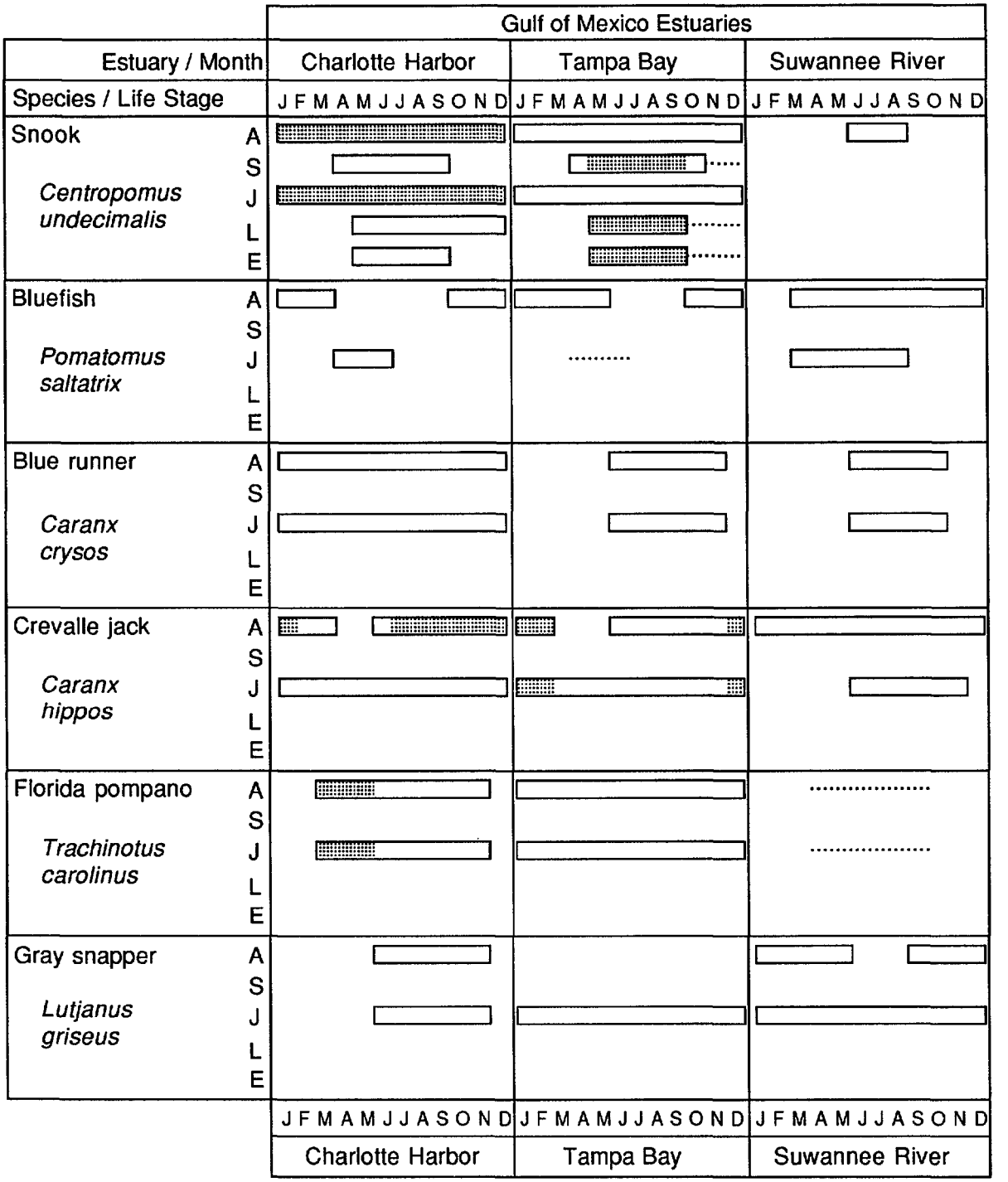

## Relative Abundance

- Highly Abundant
- Abundant
- Common
- Rare
- Blank — Not Present

## Life Stage

A - Adults
S - Spawning adults
J - Juveniles
L - Larvae
E - Eggs

Table 5, continued. Temporal distribution



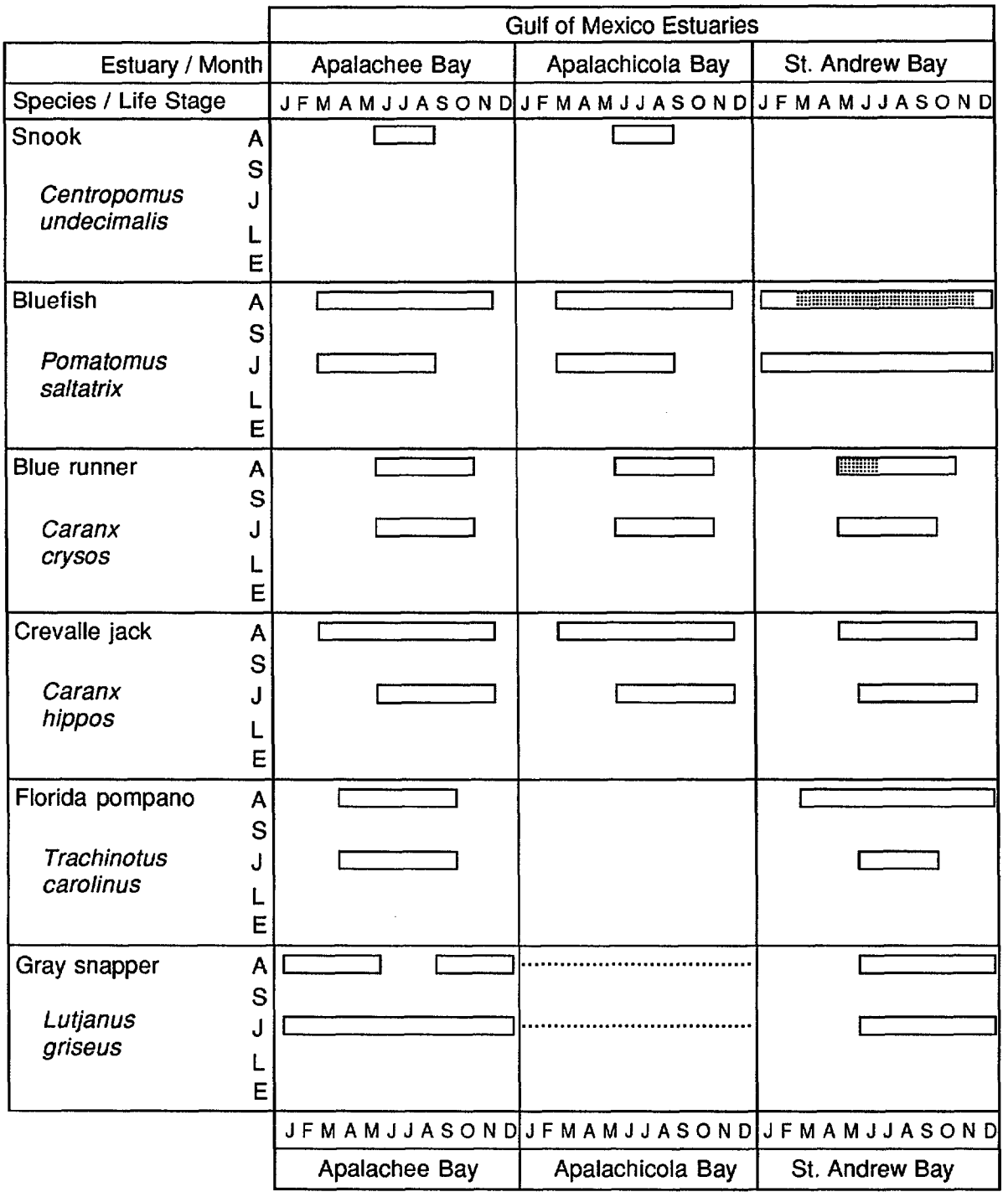

## Relative Abundance

- Highly Abundant
- Abundant
- Common
- Rare
- Blank — Not Present

## Life Stage

A - Adults
S - Spawning adults
J - Juveniles
L - Larvae
E - Eggs

Table 5, continued. Temporal distribution



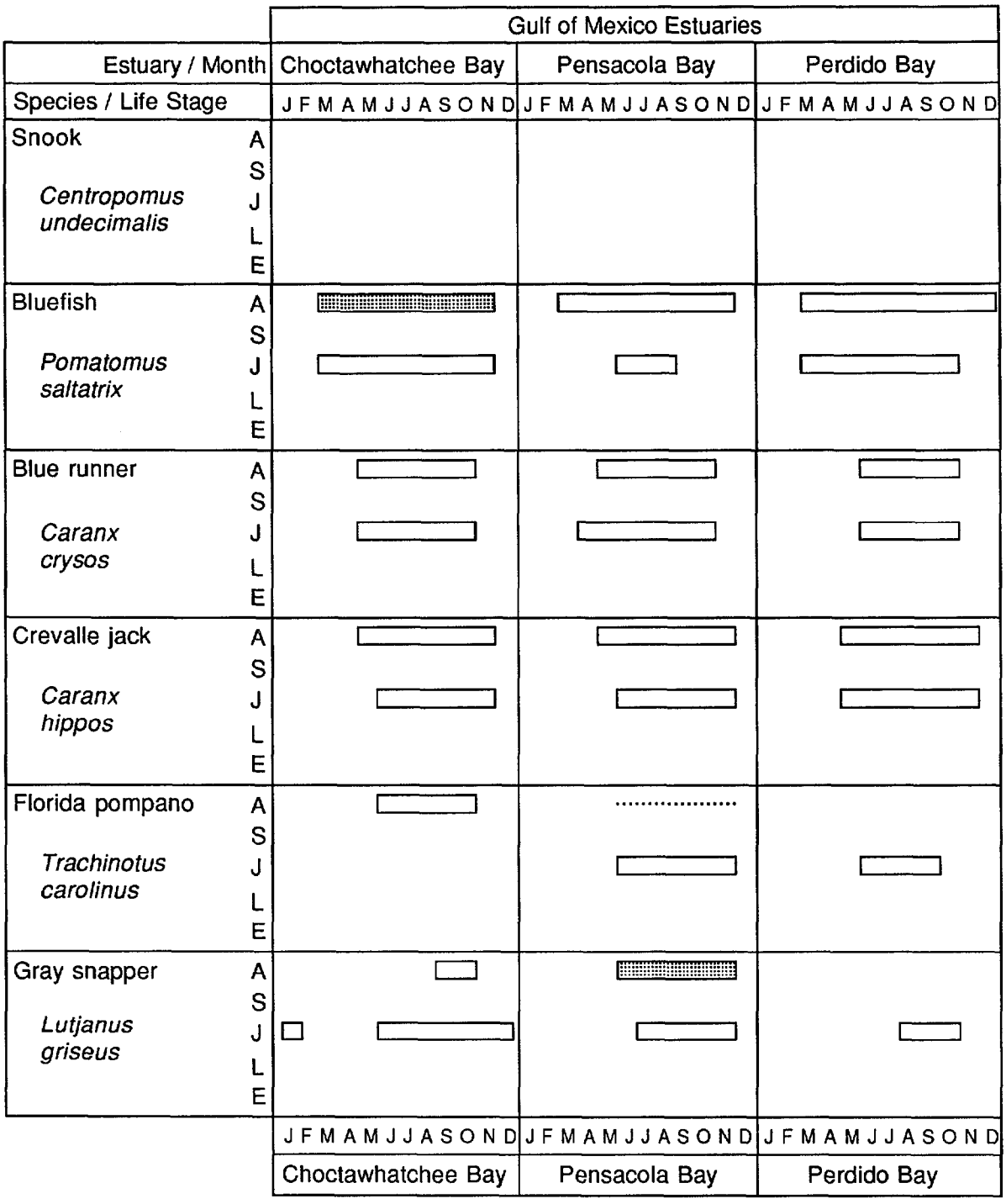

Relative Abundance

- Highly Abundant
- Abundant
- Common
- Rare
- Blank — Not Present

Life Stage

A - Adults
S - Spawning adults
J - Juveniles
L - Larvae
E - Eggs

Table 5, continued. Temporal distribution



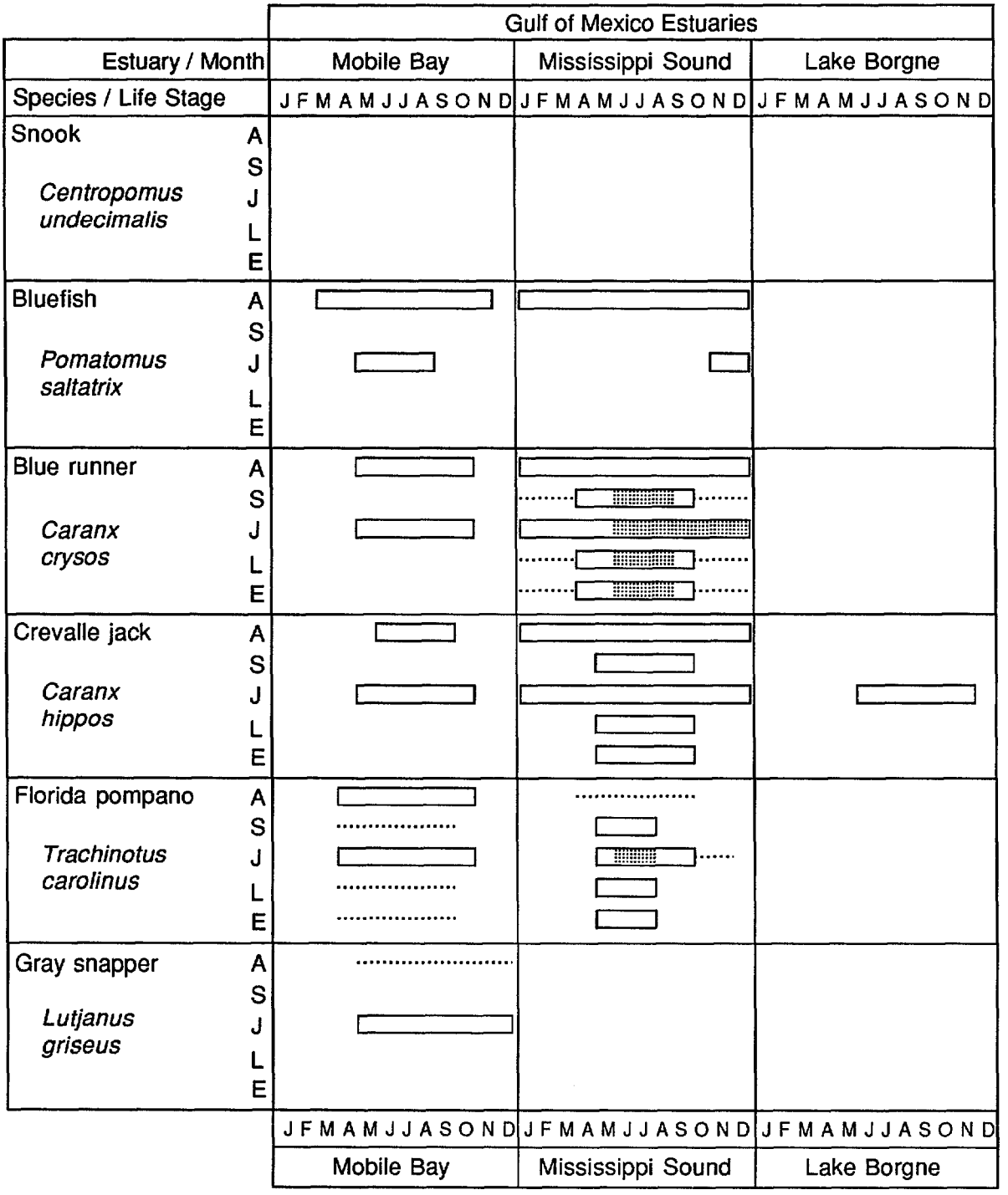

Relative Abundance

- Highly Abundant
- Abundant
- Common
- Rare
- Blank — Not Present

Life Stage

A - Adults
S - Spawning adults
J - Juveniles
L - Larvae
E - Eggs

Table 5, continued. Temporal distribution




Relative Abundance

- Highly Abundant
- Abundant
- Common
- Rare
- Blank — Not Present

Life Stage

A - Adults
S - Spawning adults
J - Juveniles
L - Larvae
E - Eggs

Table 5, continued. Temporal distribution

| | | Gulf of Mexico Estuaries | | |
|---|---|---|---|---|
| Estuary / Month | | Lake Pontchartrain | Breton/Chandeleur Sound | Mississippi River |
| Species / Life Stage | | J F M A M J J A S O N D | J F M A M J J A S O N D | J F M A M J J A S O N D |
| Snook | A | | | |
| | S | | | |
| *Centropomus undecimalis* | J | | | |
| | L | | | |
| | E | | | |
| Bluefish | A | | | ..... |
| | S | | | |
| *Pomatomus saltatrix* | J | | ..... | ..... |
| | L | | | |
| | E | | | |
| Blue runner | A | | | |
| | S | | | |
| *Caranx crysos* | J | | | |
| | L | | | |
| | E | | | |
| Crevalle jack | A | | ▭ | |
| | S | | | |
| *Caranx hippos* | J | ▭ | ▭ | ▭ |
| | L | | | |
| | E | | | |
| Florida pompano | A | | ▭ | |
| | S | | ▭ | |
| *Trachinotus carolinus* | J | | ▭ | ▭ |
| | L | | ▭ | |
| | E | | ▭ | |
| Gray snapper | A | | | |
| | S | | | |
| *Lutjanus griseus* | J | | ▭ | |
| | L | | | |
| | E | | | |
| | | J F M A M J J A S O N D | J F M A M J J A S O N D | J F M A M J J A S O N D |
| | | Lake Pontchartrain | Breton/Chandeleur Sound | Mississippi River |

## Relative Abundance

- ■ Highly Abundant
- ▦ Abundant
- ▭ Common
- ..... Rare
- Blank Not Present

## Life Stage

A - Adults
S - Spawning adults
J - Juveniles
L - Larvae
E - Eggs

Table 5, continued. Temporal distribution

| | | Gulf of Mexico Estuaries | | |
|---|---|---|---|---|
| Estuary / Month | | Barataria Bay | Terrebonne/Timbalier Bay | Atchafalaya/Vermilion Bay |
| Species / Life Stage | | J F M A M J J A S O N D | J F M A M J J A S O N D | J F M A M J J A S O N D |
| Snook | A | ····· | | |
| | S | | | |
| *Centropomus undecimalis* | J | | | |
| | L | | | |
| | E | | | |
| Bluefish | A | | | |
| | S | | | |
| *Pomatomus saltatrix* | J | ···▭ | ····· | ····· |
| | L | | | |
| | E | | | |
| Blue runner | A | | | |
| | S | | | |
| *Caranx crysos* | J | ▭ | ···· | |
| | L | | | |
| | E | | | |
| Crevalle jack | A | ▭ | ····· | |
| | S | | | |
| *Caranx hippos* | J | ▭ | ▭ | ▭ |
| | L | | | |
| | E | | | |
| Florida pompano | A | | ····· | |
| | S | | | |
| *Trachinotus carolinus* | J | ▭ | ▭····· | ····· |
| | L | | | |
| | E | | | |
| Gray snapper | A | | | |
| | S | | | |
| *Lutjanus griseus* | J | ▭ | ····· | |
| | L | | | |
| | E | | | |
| | | J F M A M J J A S O N D | J F M A M J J A S O N D | J F M A M J J A S O N D |
| | | Barataria Bay | Terrebonne/Timbalier Bay | Atchafalaya/Vermilion Bay |

Relative Abundance

- ■ Highly Abundant
- ▒ Abundant
- ▭ Common
- ····· Rare
- Blank Not Present

Life Stage

A - Adults
S - Spawning adults
J - Juveniles
L - Larvae
E - Eggs

Table 5, continued. Temporal distribution

| | | Gulf of Mexico Estuaries | | |
|---|---|---|---|---|
| Estuary / Month | | Calcasieu Lake | Sabine Lake | Galveston Bay |
| Species / Life Stage | | J F M A M J J A S O N D | J F M A M J J A S O N D | J F M A M J J A S O N D |
| Snook *Centropomus undecimalis* | A | | | ..... |
| | S | | | |
| | J | | | ..... |
| | L | | | |
| | E | | | |
| Bluefish *Pomatomus saltatrix* | A | | | |
| | S | | | |
| | J | .... | ..... | ▭ |
| | L | | | |
| | E | | | |
| Blue runner *Caranx crysos* | A | | | ..... |
| | S | | | |
| | J | | | ..... |
| | L | | | |
| | E | | | |
| Crevalle jack *Caranx hippos* | A | | ..... | ..... |
| | S | | | |
| | J | ▭ | ..... | ▭ |
| | L | | | |
| | E | | | |
| Florida pompano *Trachinotus carolinus* | A | | | |
| | S | | | |
| | J | ▭ | | ▭ |
| | L | | | |
| | E | | | |
| Gray snapper *Lutjanus griseus* | A | | | |
| | S | | | |
| | J | ..... | | ..... |
| | L | | | |
| | E | | | |
| | | J F M A M J J A S O N D | J F M A M J J A S O N D | J F M A M J J A S O N D |
| | | Calcasieu Lake | Sabine Lake | Galveston Bay |

Relative Abundance

- ■ Highly Abundant
- ▦ Abundant
- ▭ Common
- ..... Rare
- Blank Not Present

Life Stage

A - Adults
S - Spawning adults
J - Juveniles
L - Larvae
E - Eggs

Table 5, continued. Temporal distribution

| | | Gulf of Mexico Estuaries | | |
|---|---|---|---|---|
| Estuary / Month | | Brazos River | Matagorda Bay | San Antonio Bay |
| Species / Life Stage | | J F M A M J J A S O N D | J F M A M J J A S O N D | J F M A M J J A S O N D |
| Snook | A | | ····· | |
| | S | | | |
| *Centropomus undecimalis* | J | | ····· | |
| | L | | | |
| | E | | | |
| Bluefish | A | | | ····· |
| | S | | | |
| *Pomatomus saltatrix* | J | ▭ | ····· | |
| | L | | | |
| | E | | | |
| Blue runner | A | | | |
| | S | | | |
| *Caranx crysos* | J | | | |
| | L | | | |
| | E | | | |
| Crevalle jack | A | | ▭ | ▭ |
| | S | | | |
| *Caranx hippos* | J | ▭ | ▭ | ▭ |
| | L | | | |
| | E | | | |
| Florida pompano | A | | | ▭ |
| | S | | | |
| *Trachinotus carolinus* | J | | ▭ | ▭ |
| | L | | | |
| | E | | | |
| Gray snapper | A | | ····· | |
| | S | | | |
| *Lutjanus griseus* | J | | ····· | ····· |
| | L | | | |
| | E | | | |
| | | J F M A M J J A S O N D | J F M A M J J A S O N D | J F M A M J J A S O N D |
| | | Brazos River | Matagorda Bay | San Antonio Bay |

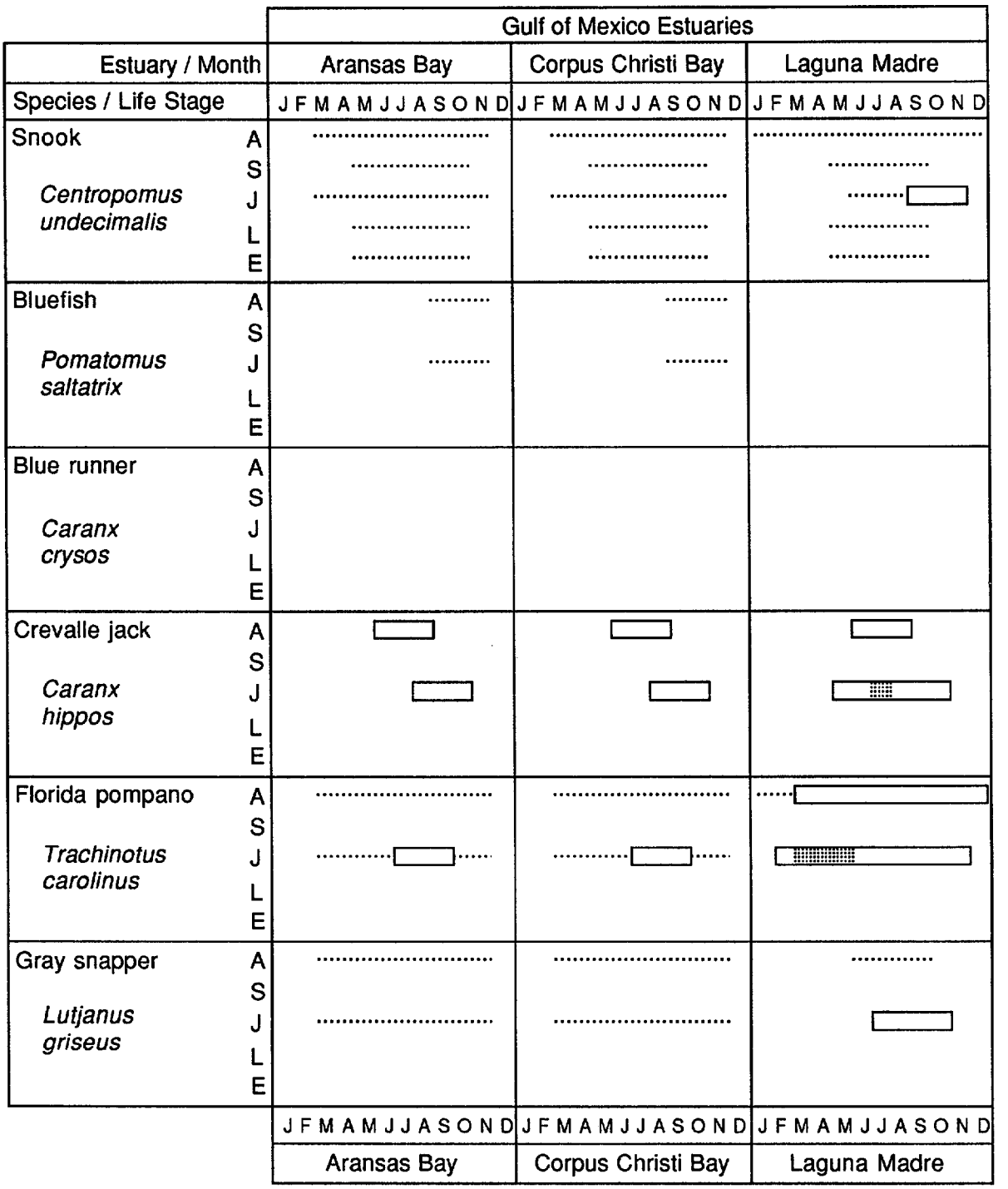
Relative Abundance

- ■ Highly Abundant
- ▦ Abundant
- ▭ Common
- ····· Rare
- Blank Not Present

Life Stage

A - Adults
S - Spawning adults
J - Juveniles
L - Larvae
E - Eggs

Table 5, continued. Temporal distribution




Relative Abundance

- Highly Abundant
- Abundant
- Common
- Rare
- Blank — Not Present

Life Stage

A - Adults
S - Spawning adults
J - Juveniles
L - Larvae
E - Eggs

Table 5, continued. Temporal distribution

| | | Gulf of Mexico Estuaries |
|---|---|---|
| Estuary / Month | | Baffin Bay |
| Species / Life Stage | | J F M A M J J A S O N D |
| Snook | A | |
| | S | |
| *Centropomus undecimalis* | J | |
| | L | |
| | E | |
| Bluefish | A | |
| | S | |
| *Pomatomus saltatrix* | J | |
| | L | |
| | E | |
| Blue runner | A | |
| | S | |
| *Caranx crysos* | J | |
| | L | |
| | E | |
| Crevalle jack | A | ▭ |
| | S | |
| *Caranx hippos* | J | ▭ |
| | L | |
| | E | |
| Florida pompano | A | ····· |
| | S | |
| *Trachinotus carolinus* | J | ····· |
| | L | |
| | E | |
| Gray snapper | A | ····· |
| | S | |
| *Lutjanus griseus* | J | ····· |
| | L | |
| | E | |
| | | J F M A M J J A S O N D |
| | | Baffin Bay |

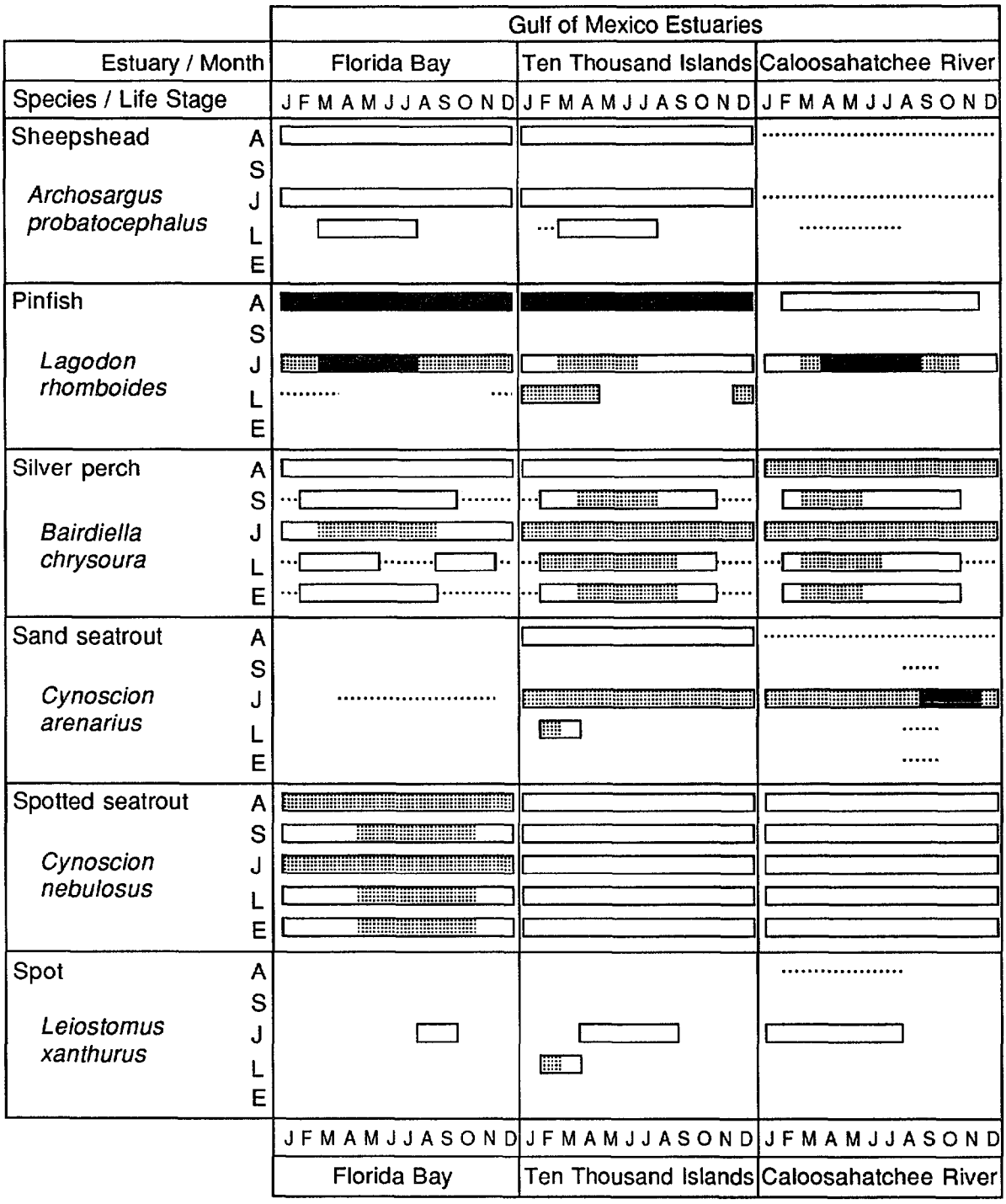
Relative Abundance

- ■ Highly Abundant
- ▒ Abundant
- ▭ Common
- ····· Rare
- Blank Not Present

Life Stage

A - Adults
S - Spawning adults
J - Juveniles
L - Larvae
E - Eggs

Table 5, continued. Temporal distribution



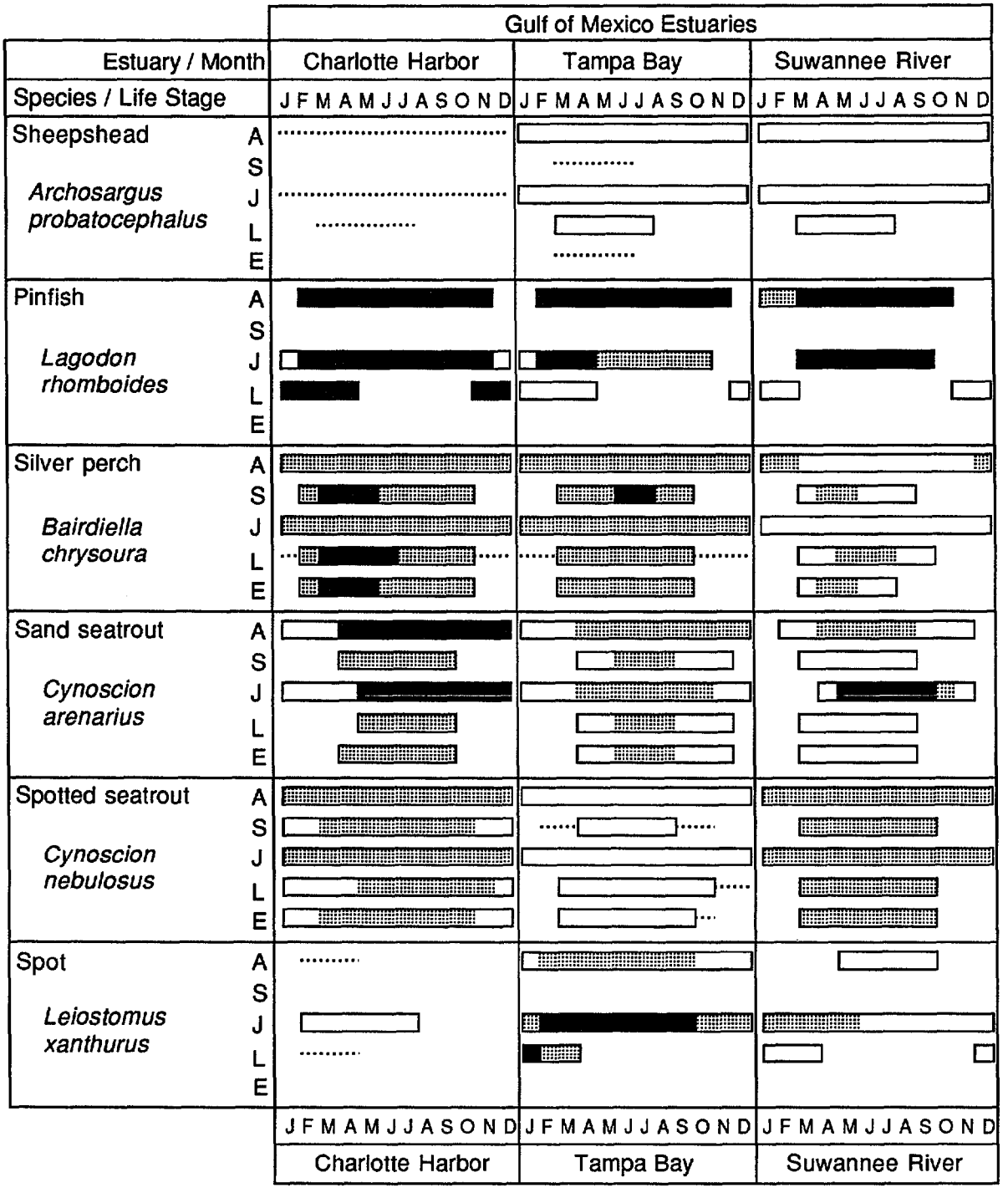

Relative Abundance

- Highly Abundant
- Abundant
- Common
- Rare
- Blank — Not Present

Life Stage

A - Adults
S - Spawning adults
J - Juveniles
L - Larvae
E - Eggs

Table 5, continued. Temporal distribution



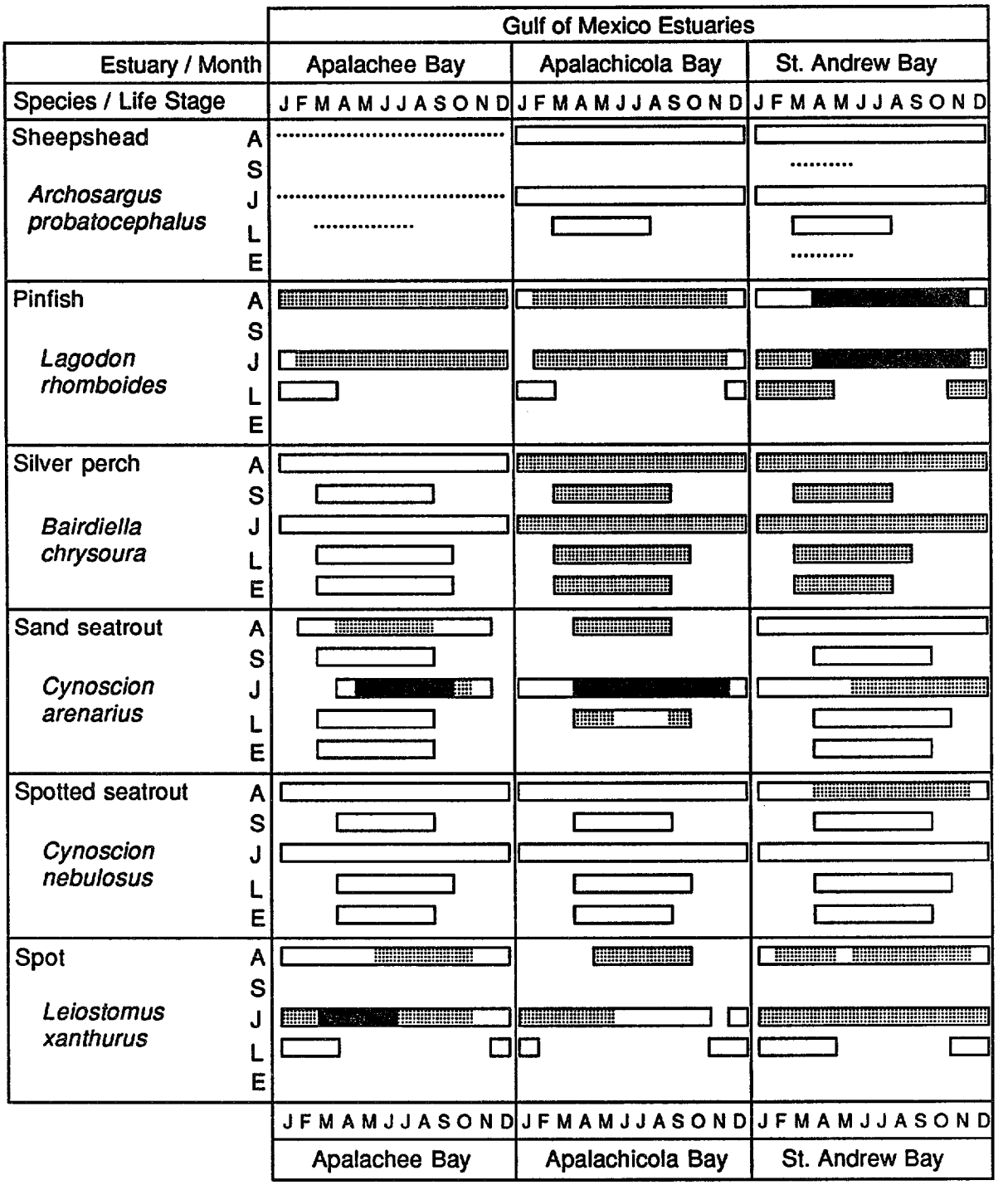

Relative Abundance

- Highly Abundant
- Abundant
- Common
- Rare
- Blank — Not Present

Life Stage

A - Adults
S - Spawning adults
J - Juveniles
L - Larvae
E - Eggs

Table 5, continued. Temporal distribution



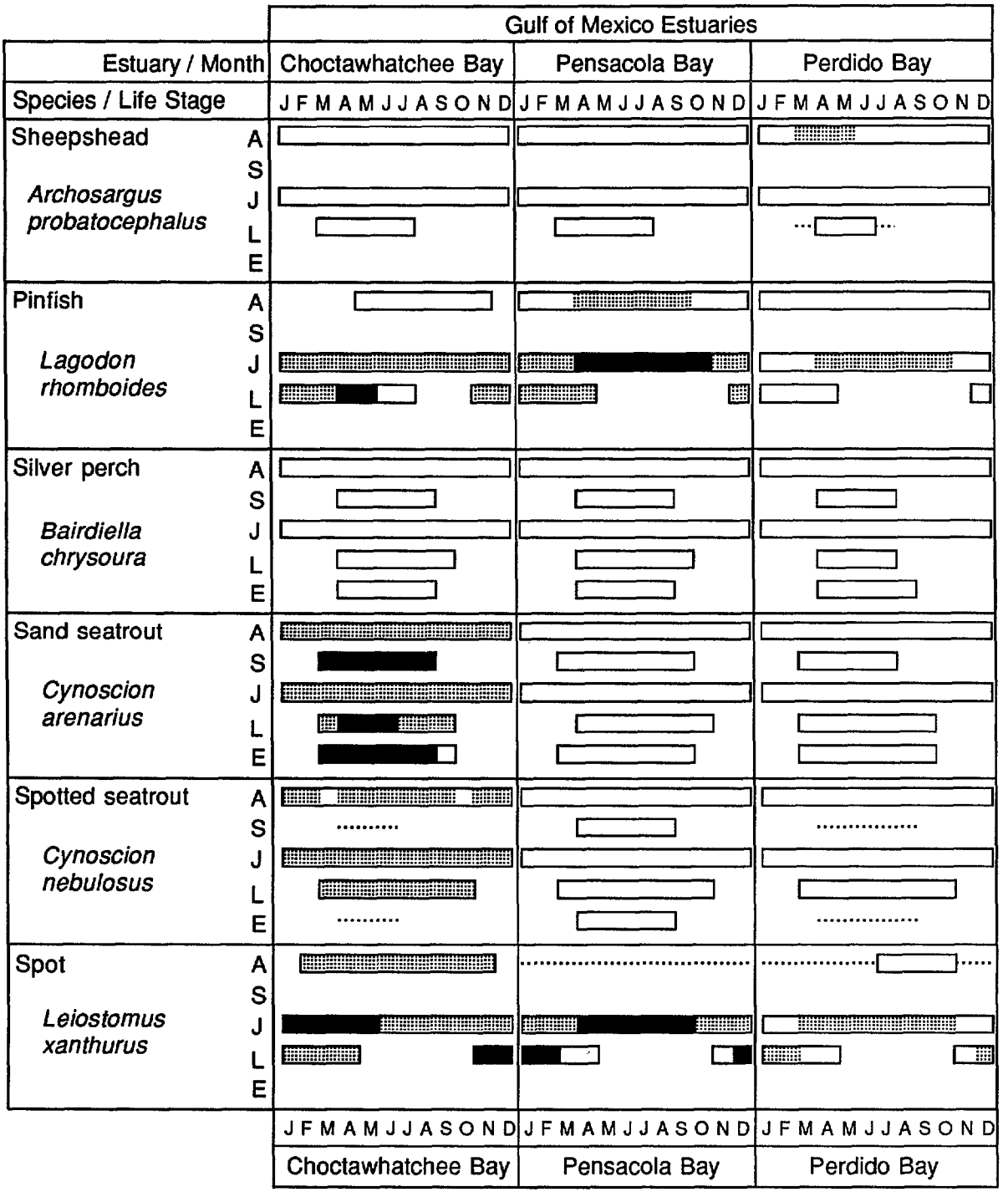

Relative Abundance

- Highly Abundant
- Abundant
- Common
- Rare
- Blank — Not Present

Life Stage

A - Adults
S - Spawning adults
J - Juveniles
L - Larvae
E - Eggs

Table 5, continued. Temporal distribution



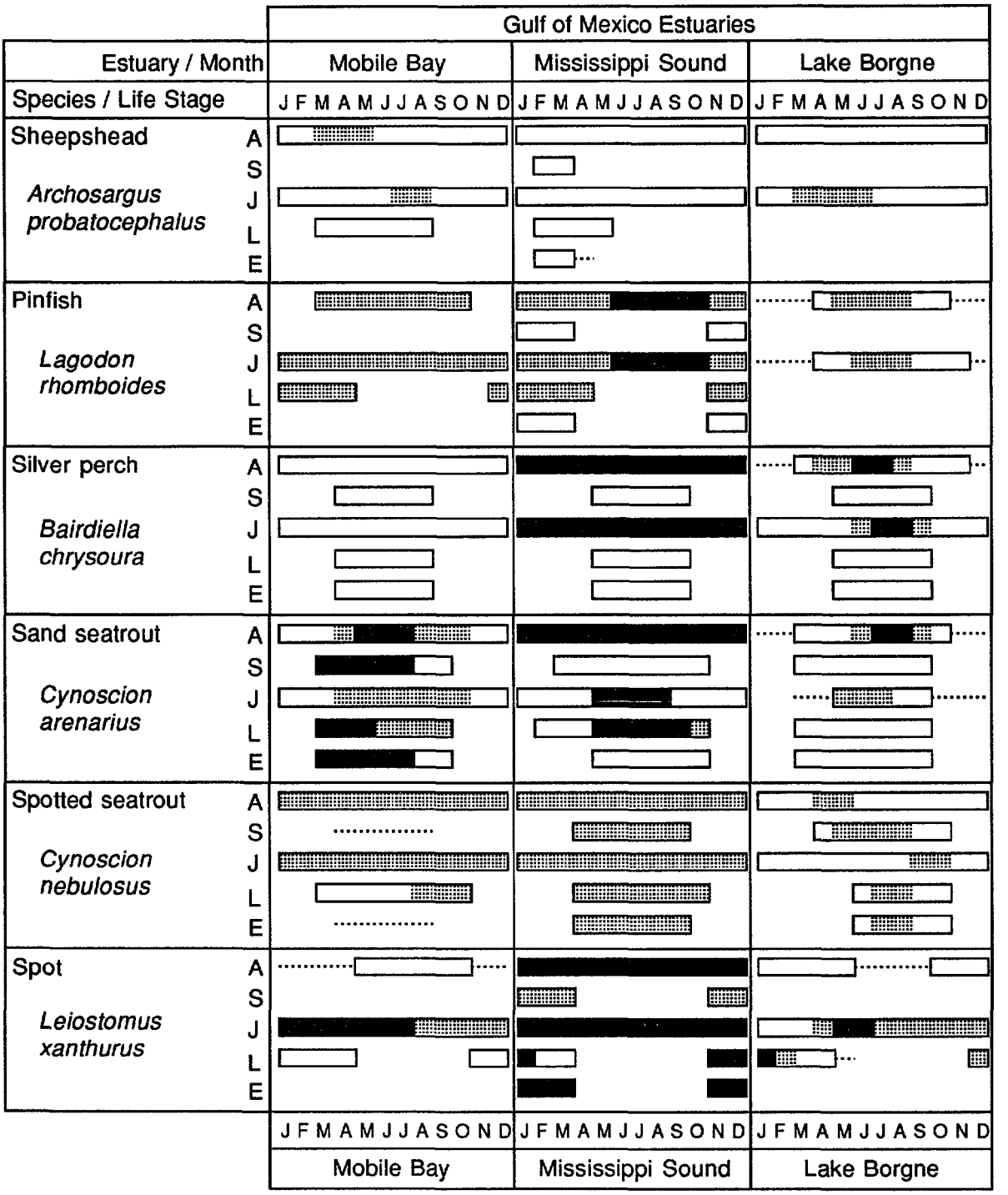

## Relative Abundance

- Highly Abundant
- Abundant
- Common
- Rare
- Blank — Not Present

## Life Stage

A - Adults
S - Spawning adults
J - Juveniles
L - Larvae
E - Eggs

Table 5, continued. Temporal distribution



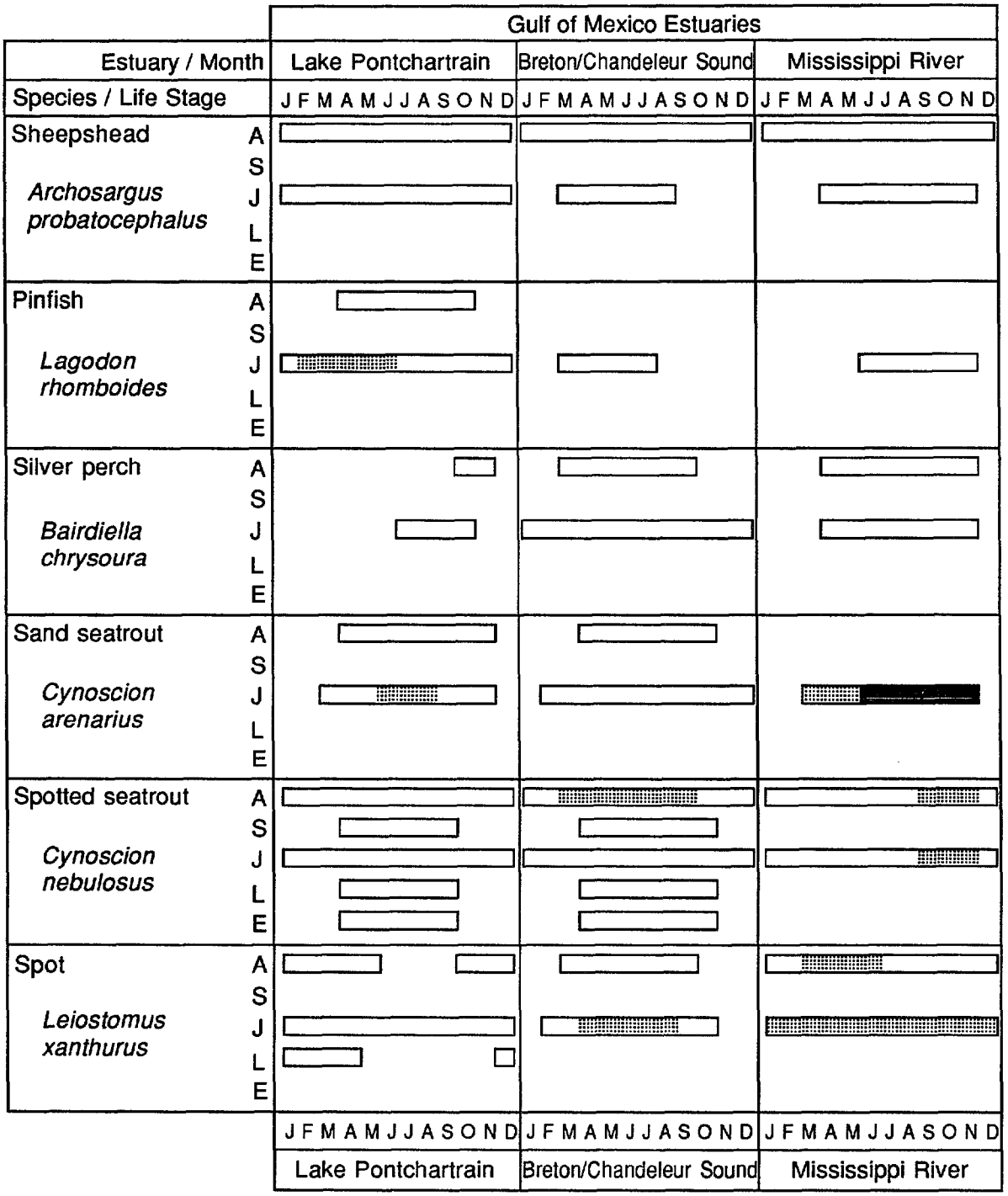

Relative Abundance

- Highly Abundant
- Abundant
- Common
- Rare
- Blank — Not Present

Life Stage

A - Adults
S - Spawning adults
J - Juveniles
L - Larvae
E - Eggs

Table 5, continued. Temporal distribution



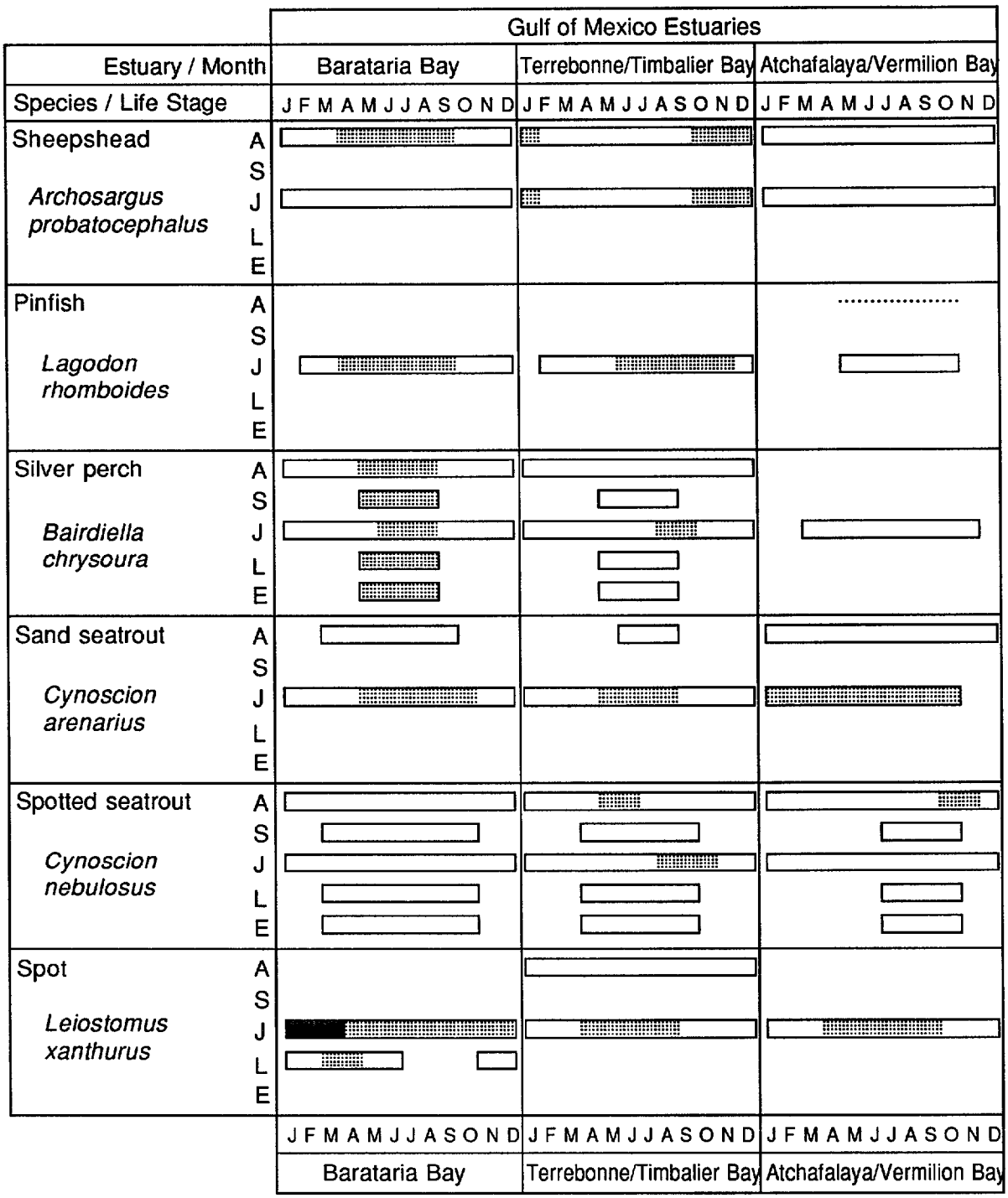

Relative Abundance

- Highly Abundant
- Abundant
- Common
- Rare
- Blank — Not Present

Life Stage

A - Adults
S - Spawning adults
J - Juveniles
L - Larvae
E - Eggs

Table 5, continued. Temporal distribution



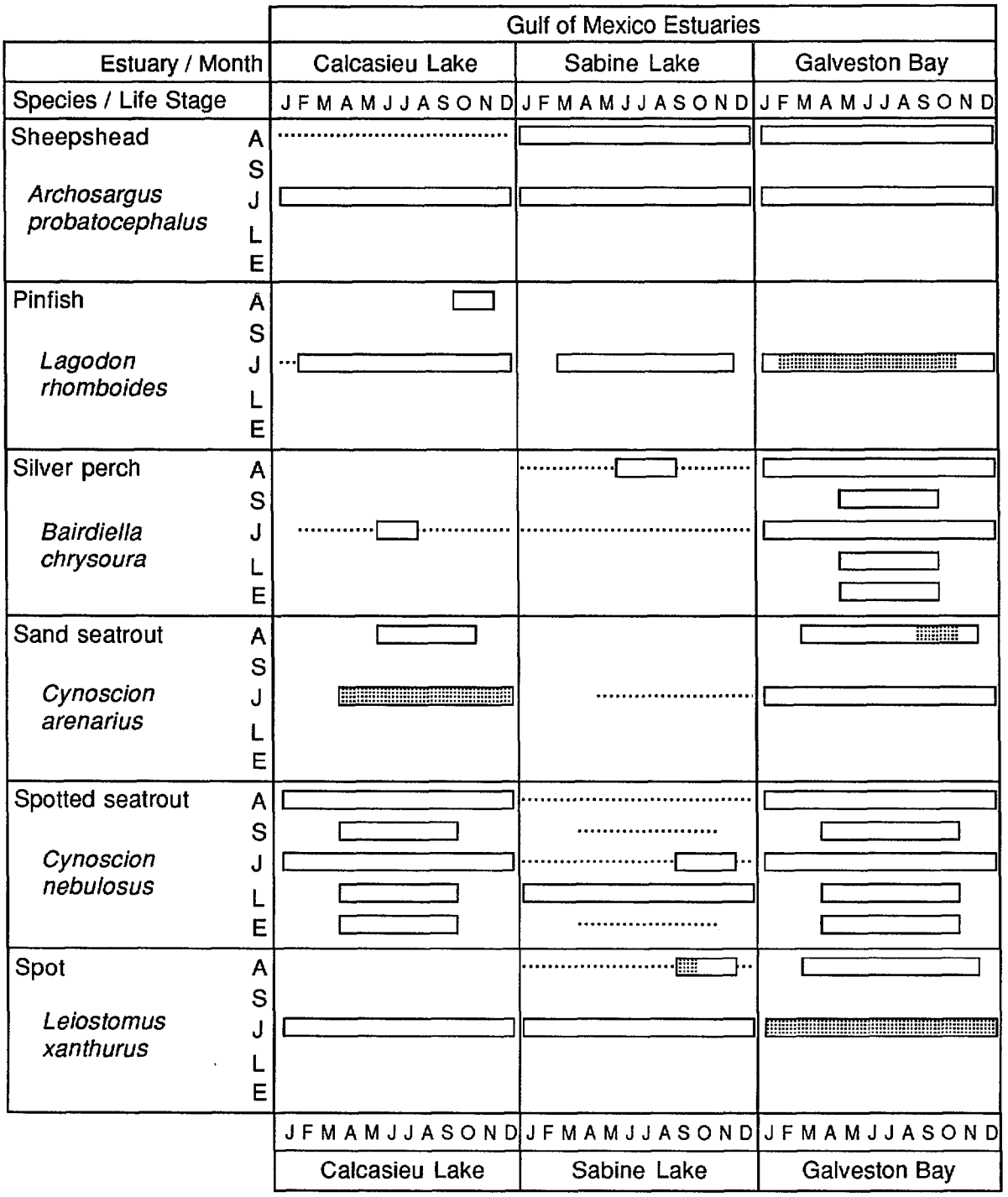

Relative Abundance

- Highly Abundant
- Abundant
- Common
- Rare
- Blank — Not Present

Life Stage

A - Adults
S - Spawning adults
J - Juveniles
L - Larvae
E - Eggs

Table 5, continued. Temporal distribution



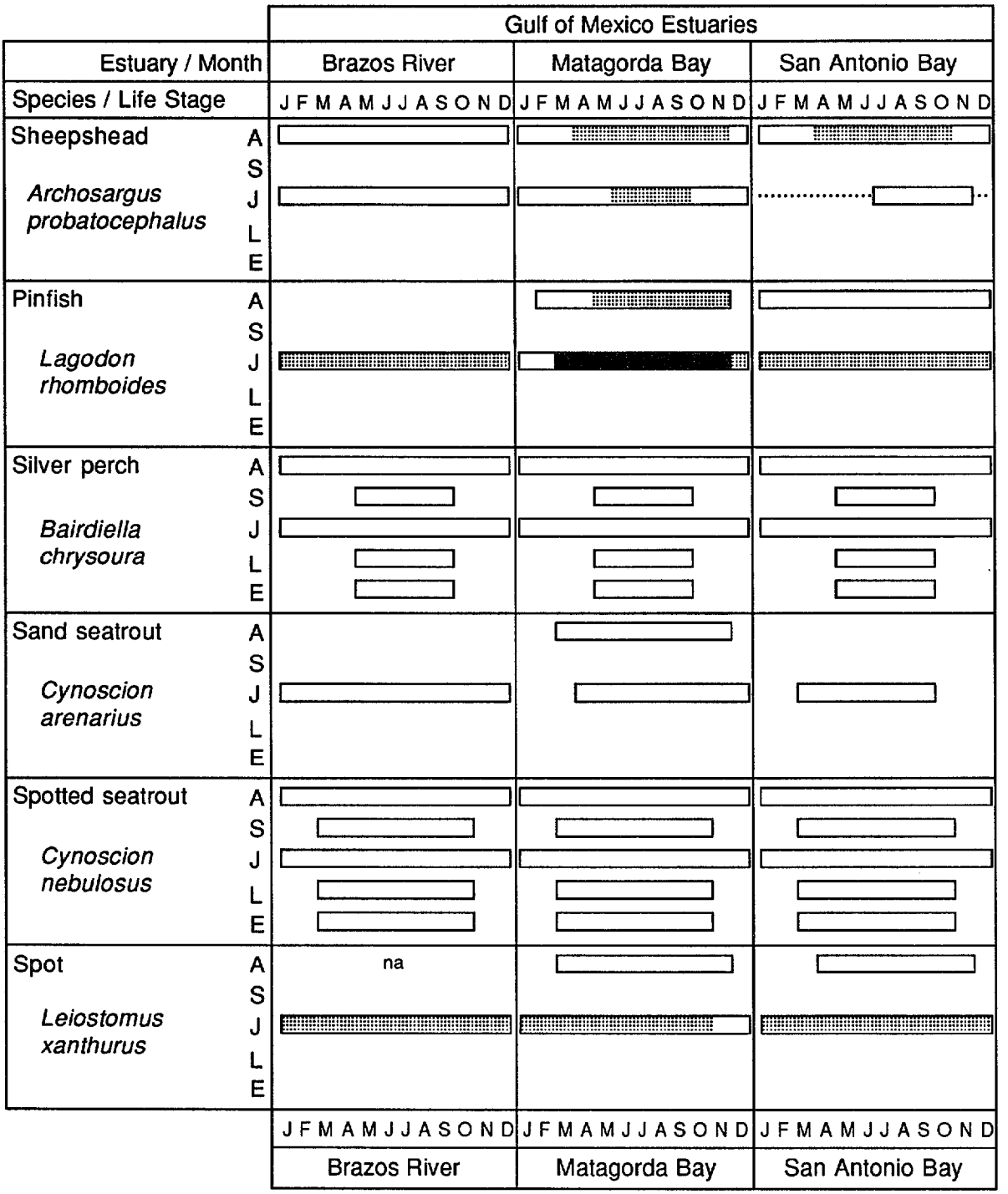

Relative Abundance

- Highly Abundant
- Abundant
- Common
- Rare
- Blank — Not Present

Life Stage

A - Adults
S - Spawning adults
J - Juveniles
L - Larvae
E - Eggs

Table 5, continued. Temporal distribution



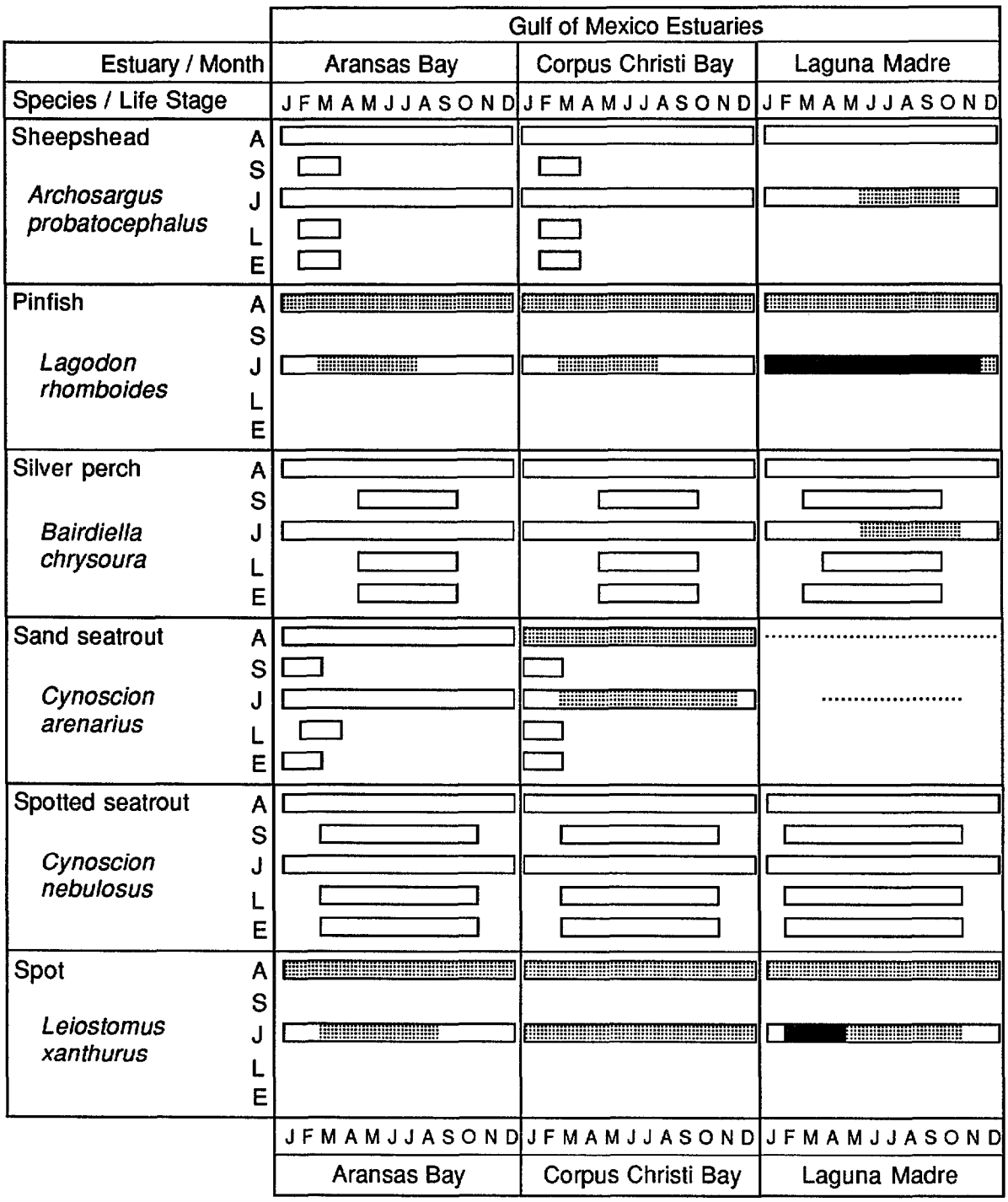

Relative Abundance

- Highly Abundant
- Abundant
- Common
- Rare
- Blank — Not Present
- na — No Data Available

Life Stage

A - Adults
S - Spawning adults
J - Juveniles
L - Larvae
E - Eggs

Table 5, continued. Temporal distribution




Relative Abundance

- Highly Abundant
- Abundant
- Common
- Rare
- Blank — Not Present

Life Stage

A - Adults
S - Spawning adults
J - Juveniles
L - Larvae
E - Eggs

Table 5, continued. Temporal distribution

| | | Gulf of Mexico Estuaries |
|---|---|---|
| Estuary / Month | | Baffin Bay |
| Species / Life Stage | | J F M A M J J A S O N D |
| Sheepshead | A | |
| | S | ····· |
| *Archosargus probatocephalus* | J | |
| | L | ····· |
| | E | ····· |
| Pinfish | A | ····· ·· |
| | S | |
| *Lagodon rhomboides* | J | |
| | L | |
| | E | |
| Silver perch | A | |
| | S | |
| *Bairdiella chrysoura* | J | |
| | L | |
| | E | |
| Sand seatrout | A | |
| | S | |
| *Cynoscion arenarius* | J | |
| | L | |
| | E | |
| Spotted seatrout | A | |
| | S | |
| *Cynoscion nebulosus* | J | |
| | L | |
| | E | |
| Spot | A | |
| | S | |
| *Leiostomus xanthurus* | J | |
| | L | |
| | E | |
| | | J F M A M J J A S O N D |
| | | Baffin Bay |

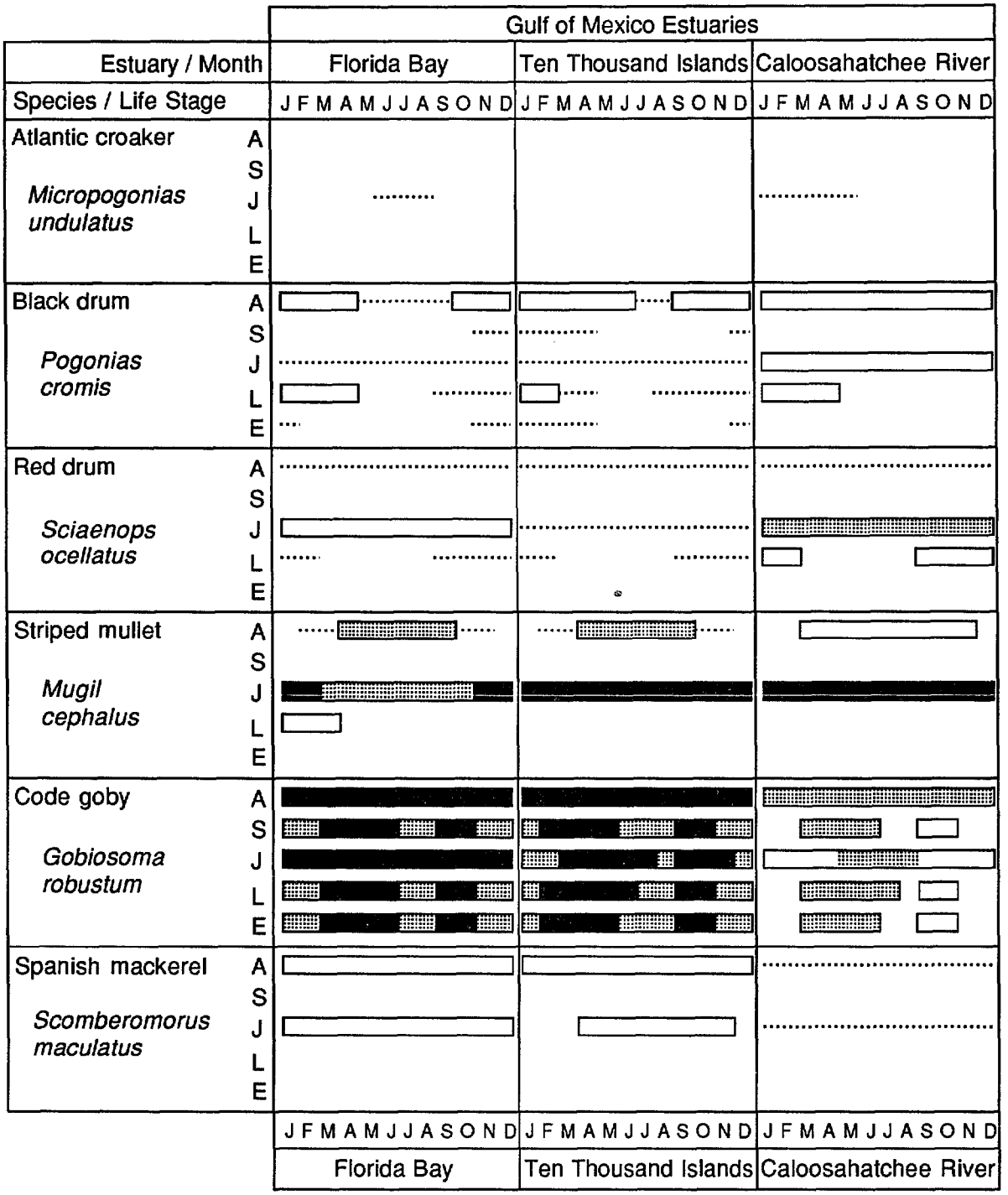
Relative Abundance

- Highly Abundant
- Abundant
- Common
- ····· Rare
- Blank Not Present

Life Stage

A - Adults
S - Spawning adults
J - Juveniles
L - Larvae
E - Eggs

Table 5, continued. Temporal distribution



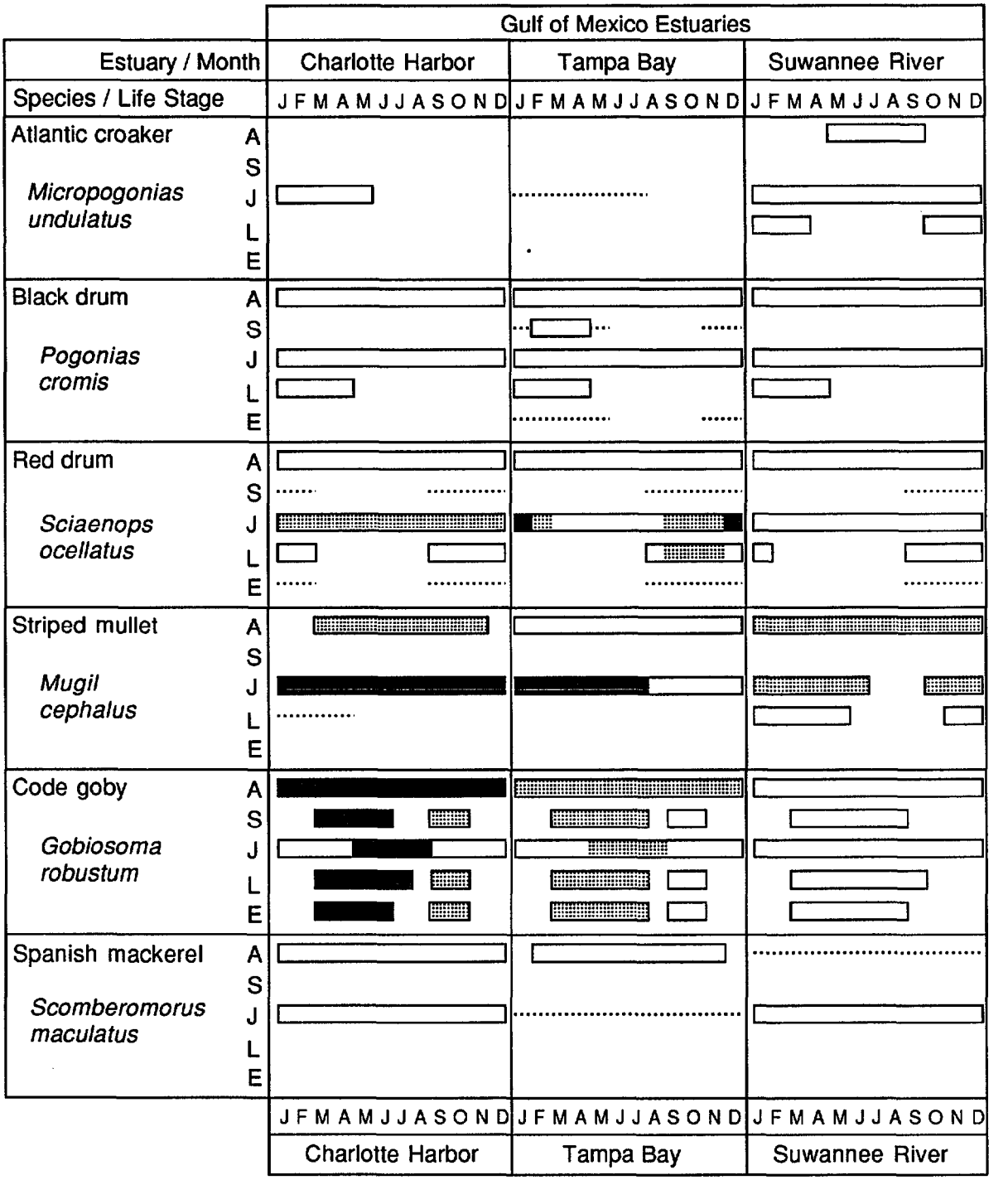

## Relative Abundance

- Highly Abundant
- Abundant
- Common
- Rare
- Blank — Not Present

## Life Stage

A - Adults
S - Spawning adults
J - Juveniles
L - Larvae
E - Eggs

Table 5, continued. Temporal distribution



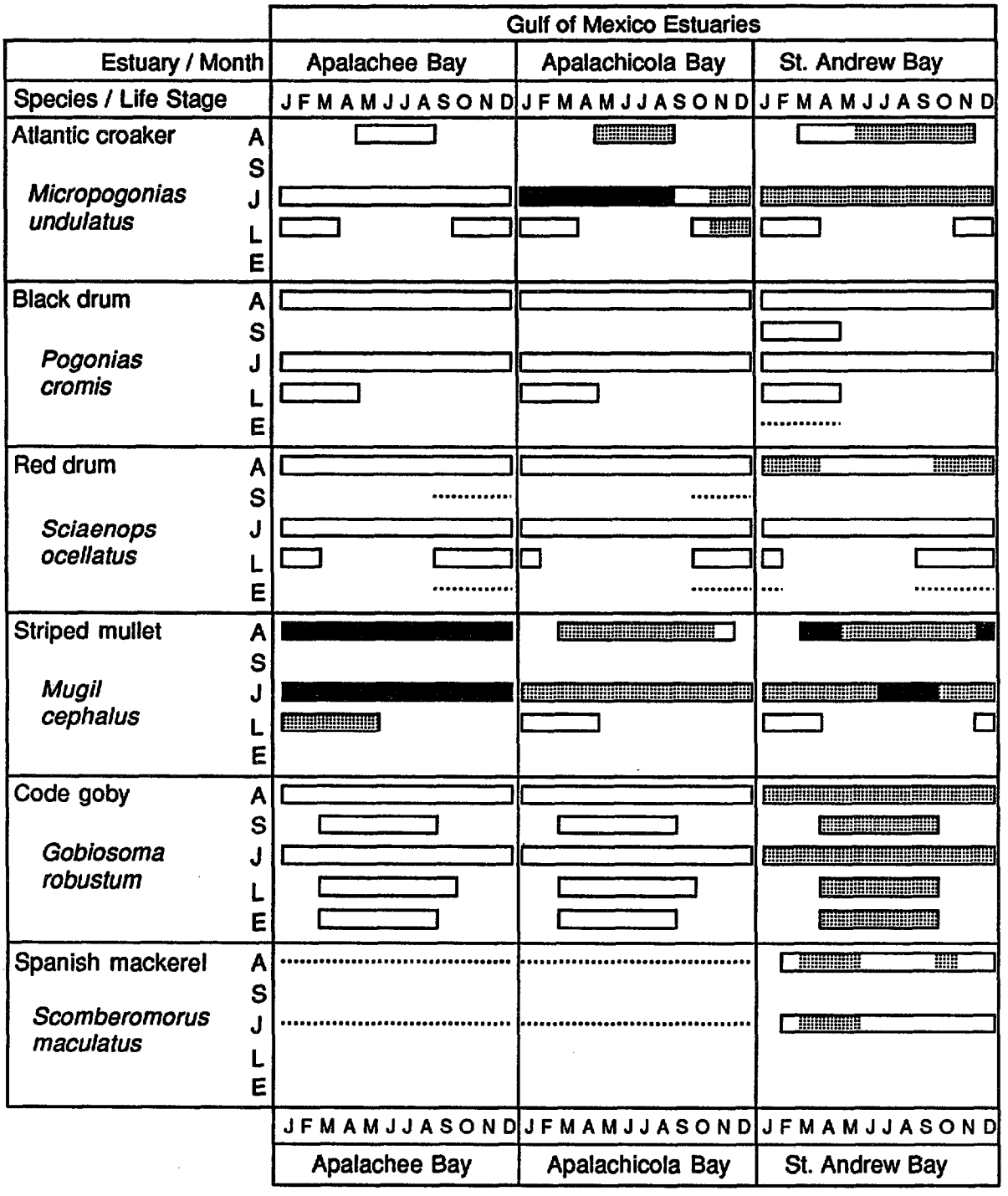

Relative Abundance

- Highly Abundant
- Abundant
- Common
- Rare
- Blank — Not Present

Life Stage

A - Adults
S - Spawning adults
J - Juveniles
L - Larvae
E - Eggs

Table 5, continued. Temporal distribution



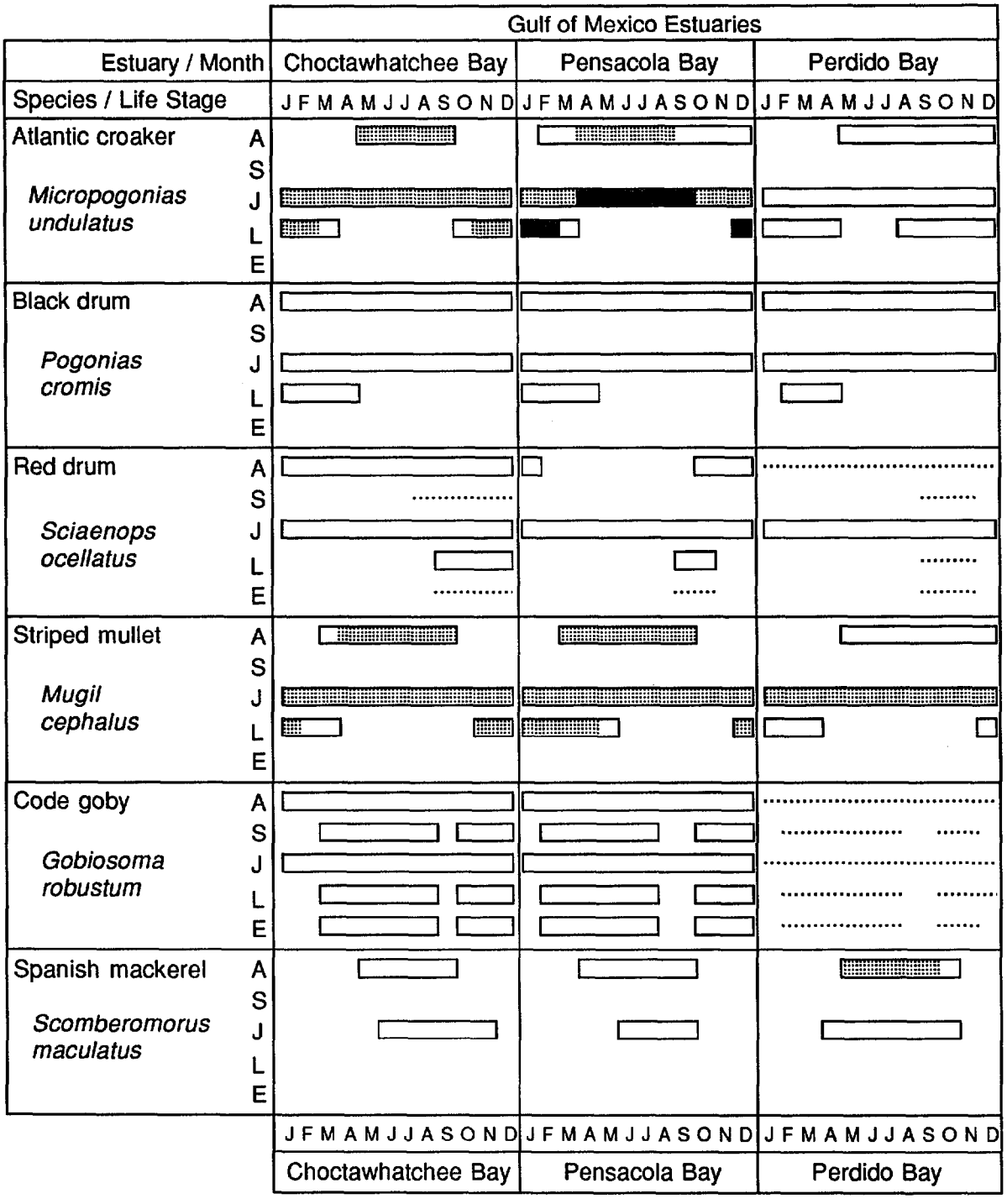

Relative Abundance

- Highly Abundant
- Abundant
- Common
- Rare
- Blank — Not Present

Life Stage

A - Adults
S - Spawning adults
J - Juveniles
L - Larvae
E - Eggs

Table 5, continued. Temporal distribution



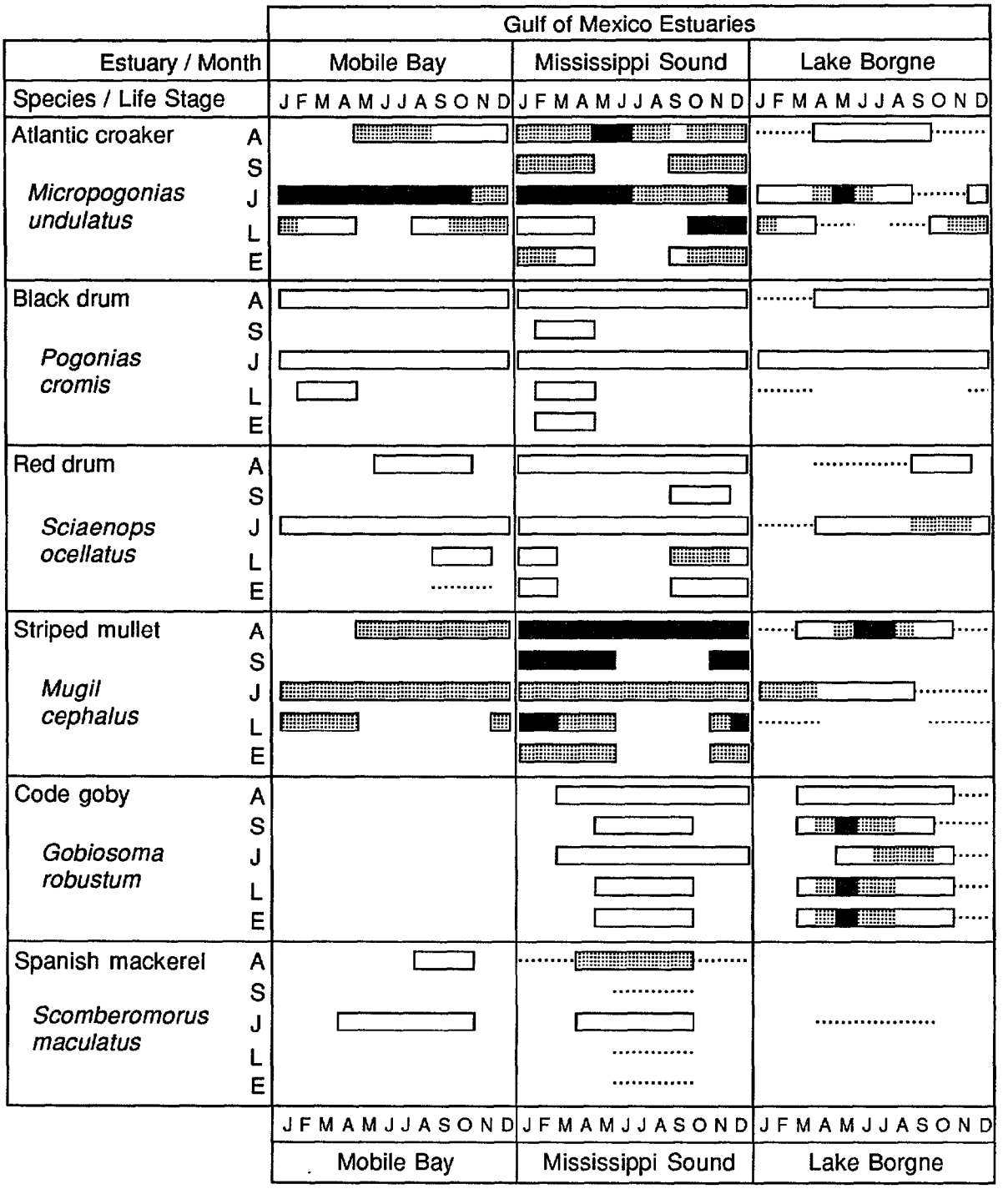

Relative Abundance

- Highly Abundant
- Abundant
- Common
- Rare
- Blank — Not Present

Life Stage

A - Adults
S - Spawning adults
J - Juveniles
L - Larvae
E - Eggs

Table 5, continued. Temporal distribution



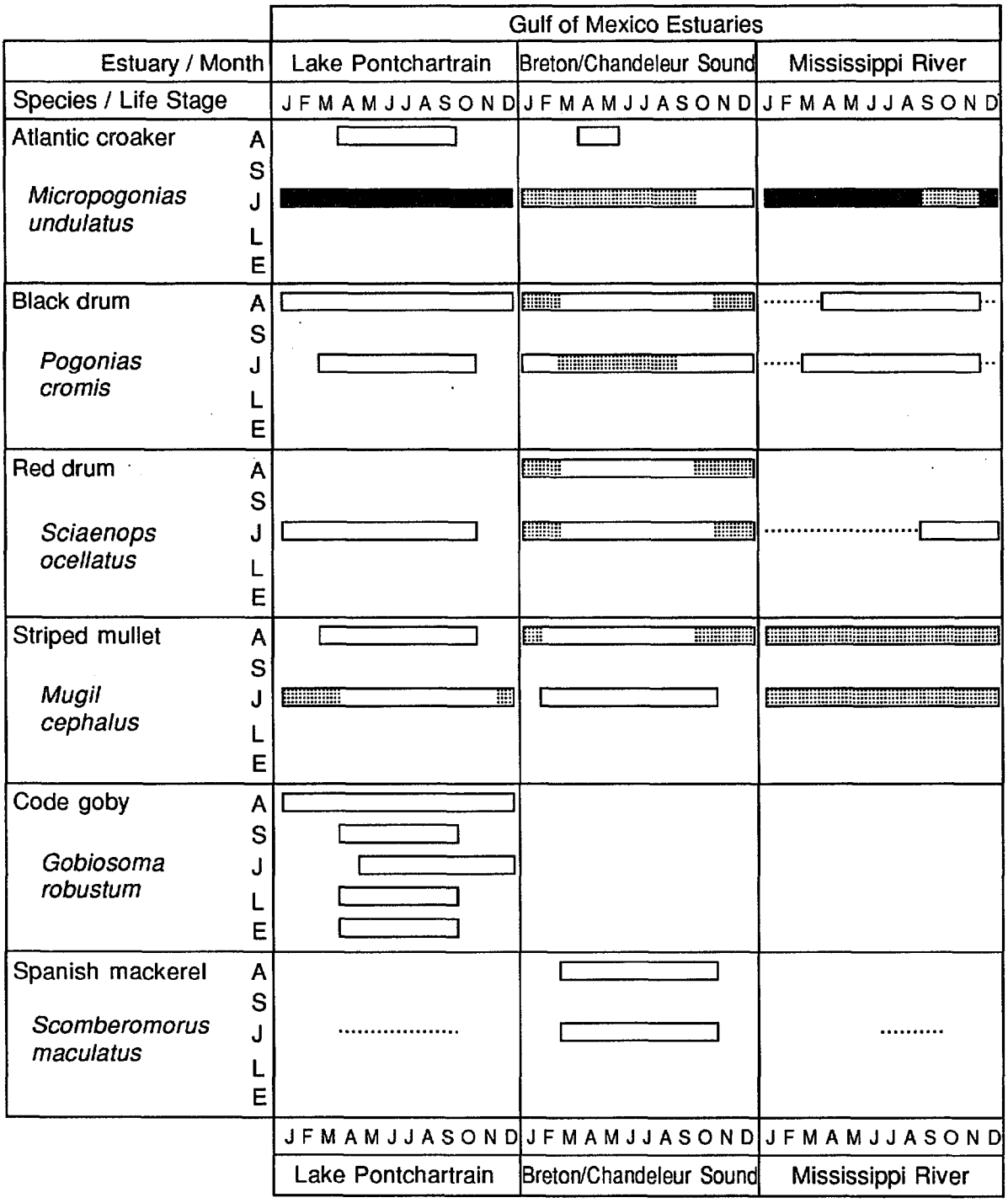

Relative Abundance

- Highly Abundant
- Abundant
- Common
- Rare
- Blank — Not Present

Life Stage

A - Adults
S - Spawning adults
J - Juveniles
L - Larvae
E - Eggs

Table 5, continued. Temporal distribution



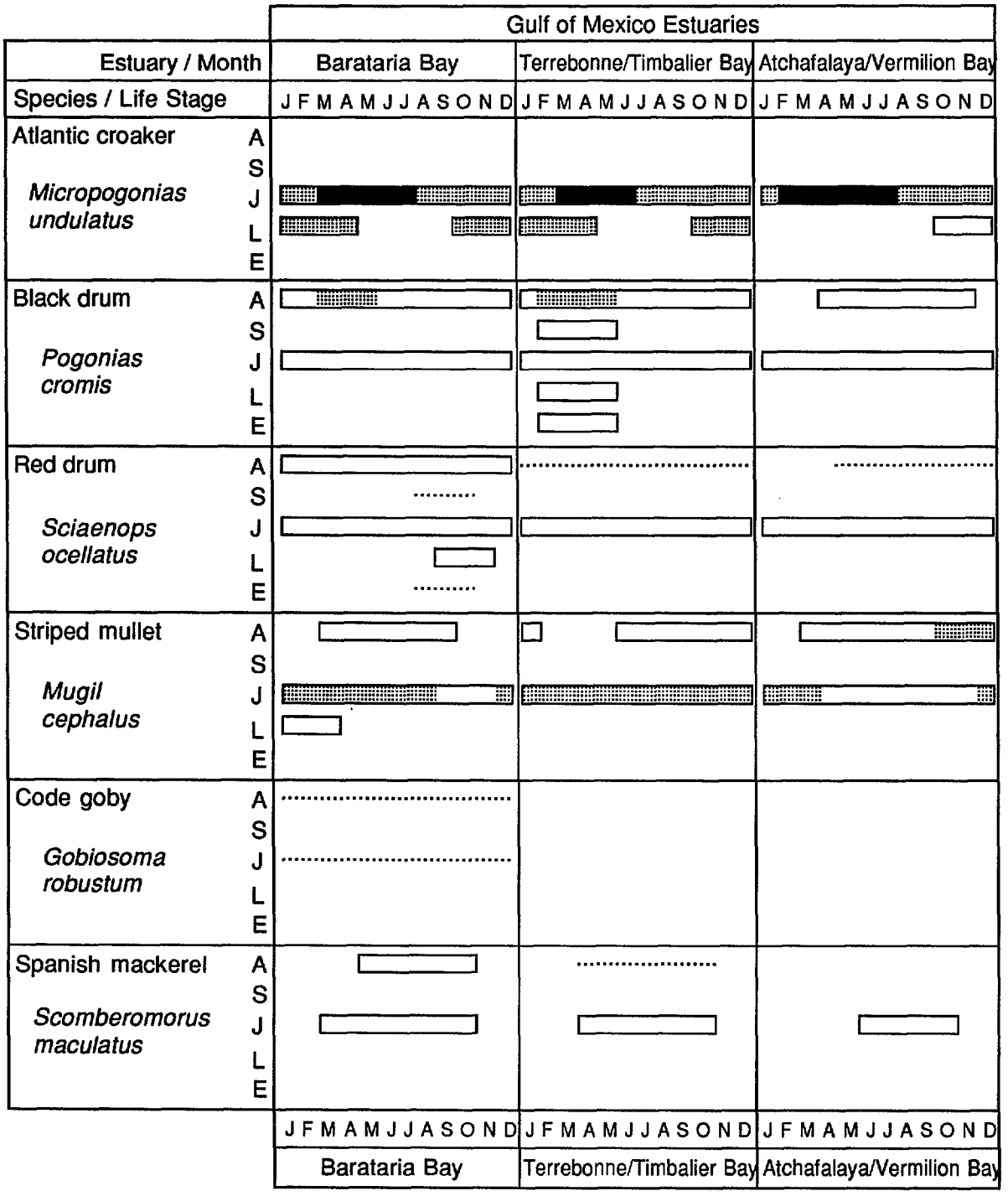

Relative Abundance

- Highly Abundant
- Abundant
- Common
- Rare
- Blank — Not Present

Life Stage

A - Adults
S - Spawning adults
J - Juveniles
L - Larvae
E - Eggs

Table 5, continued. Temporal distribution



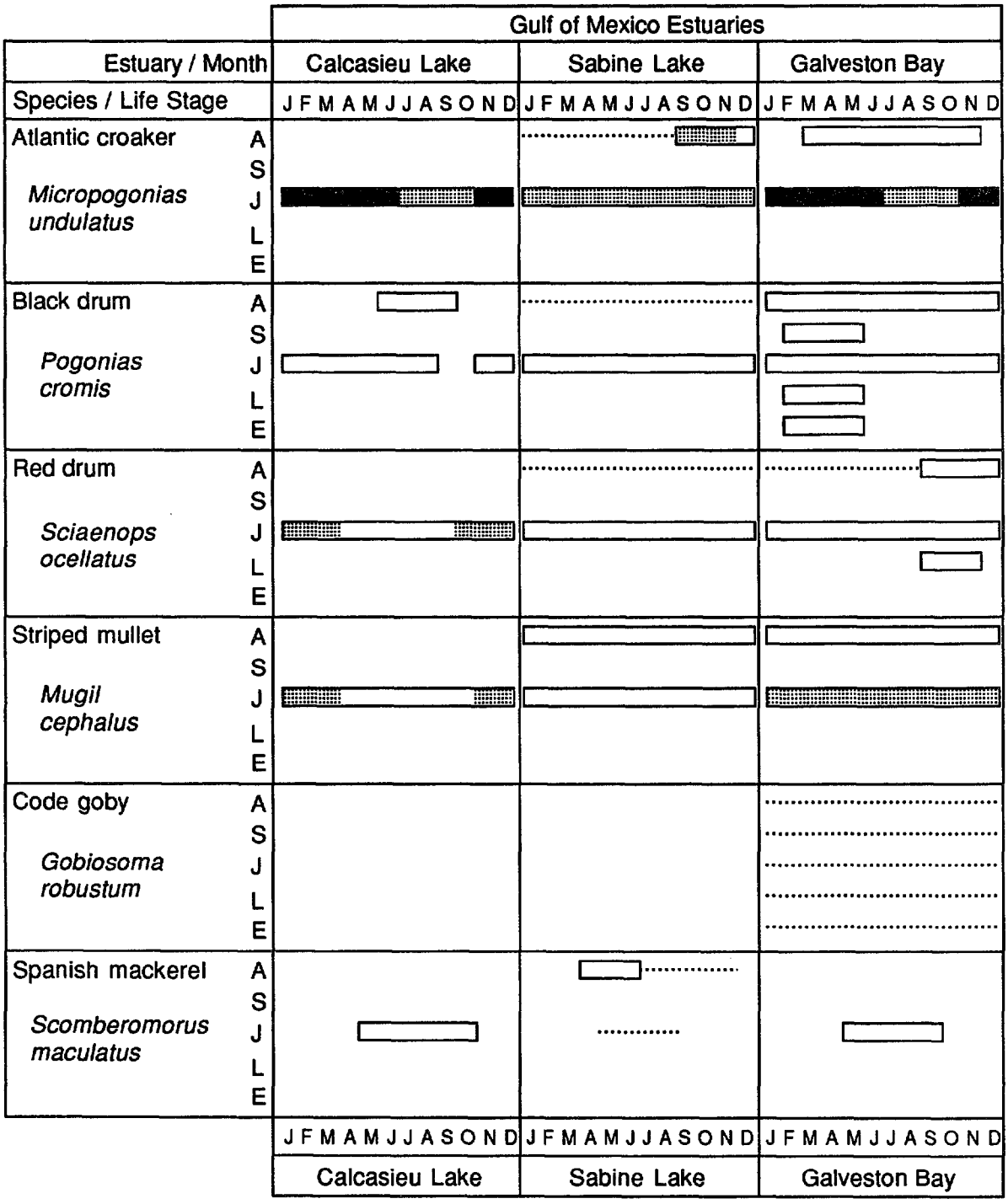

Relative Abundance

- Highly Abundant
- Abundant
- Common
- Rare
- Blank — Not Present

Life Stage

A - Adults
S - Spawning adults
J - Juveniles
L - Larvae
E - Eggs

Table 5, continued. Temporal distribution




Relative Abundance

- Highly Abundant
- Abundant
- Common
- Rare
- Blank — Not Present

Life Stage

A - Adults
S - Spawning adults
J - Juveniles
L - Larvae
E - Eggs

Table 5, continued. Temporal distribution

| | | Gulf of Mexico Estuaries | | |
|---|---|---|---|---|
| Estuary / Month | | Brazos River | Matagorda Bay | San Antonio Bay |
| Species / Life Stage | | J F M A M J J A S O N D | J F M A M J J A S O N D | J F M A M J J A S O N D |
| Atlantic croaker | A | na | ▒ | ▒ |
| | S | | | |
| *Micropogonias undulatus* | J | ■ | ■▒ | ■▒ |
| | L | | | |
| | E | | | |
| Black drum | A | ▭ | ▭ | ▭ |
| | S | | ▭ | |
| *Pogonias cromis* | J | ▭ | ▭ | ▭ |
| | L | | ▭ | |
| | E | | ▭ | |
| Red drum | A | na | ····· ▭ ·· | ····· |
| | S | | ▭ | |
| *Sciaenops ocellatus* | J | ▭ | ▭ | ▭ |
| | L | | ▭ | |
| | E | | ▭ | |
| Striped mullet | A | ▭ | ▒ | ▭ |
| | S | | ▒ ▒ | |
| *Mugil cephalus* | J | ▭ | ▒ | ▒ |
| | L | | ▒ ▒ | |
| | E | | ▒ ▒ | |
| Code goby | A | na | ▭ | ····· |
| | S | na | ▭ | ····· |
| *Gobiosoma robustum* | J | na | ▭ | ····· |
| | L | na | ▭ | ····· |
| | E | na | ▭ | ····· |
| Spanish mackerel | A | | | ····· |
| | S | | | |
| *Scomberomorus maculatus* | J | ····· | ····· | ····· |
| | L | | | |
| | E | | | |
| | | J F M A M J J A S O N D | J F M A M J J A S O N D | J F M A M J J A S O N D |
| | | Brazos River | Matagorda Bay | San Antonio Bay |

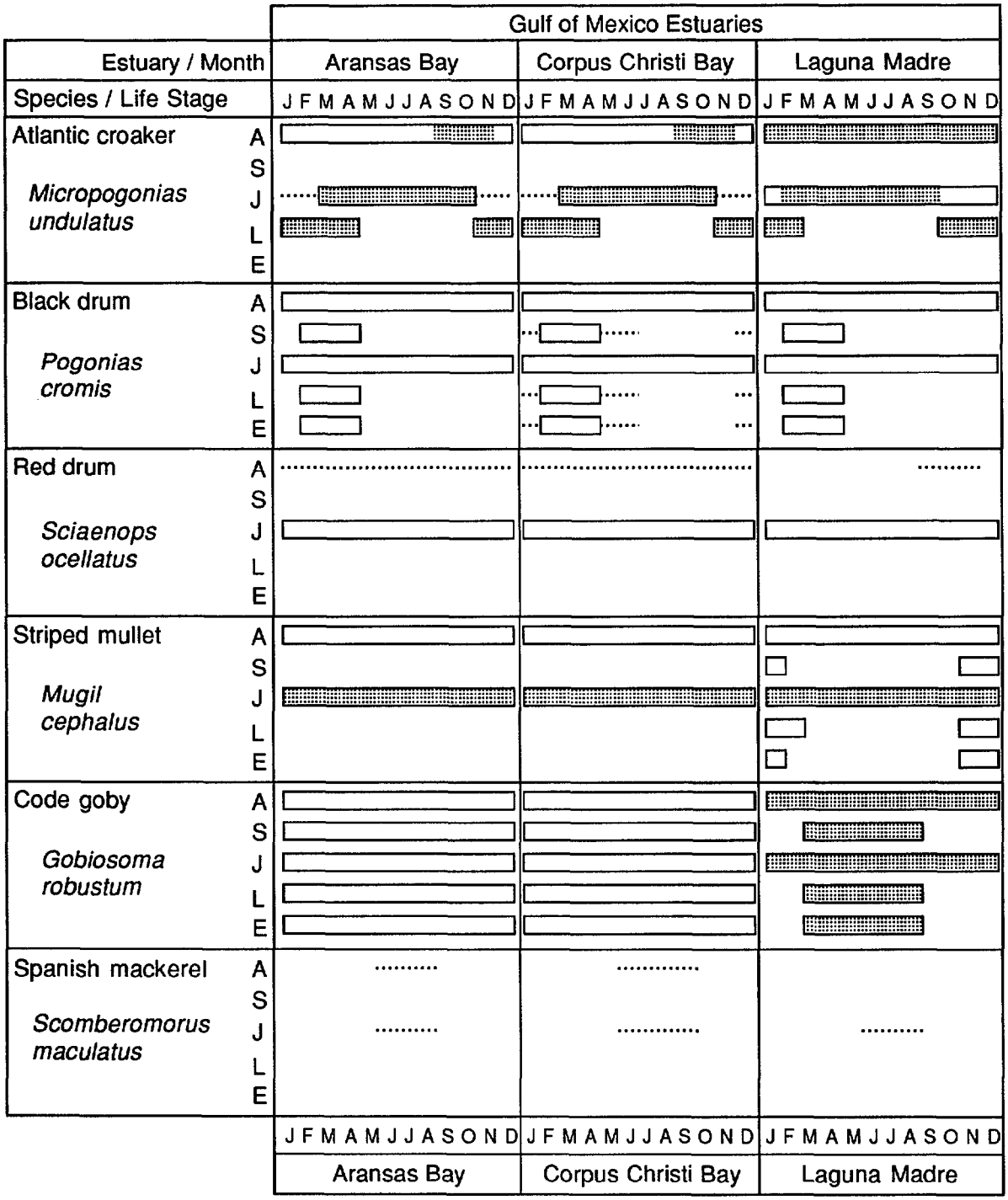
Relative Abundance

- ■ Highly Abundant
- ▒ Abundant
- ▭ Common
- ····· Rare
- Blank Not Present
- na No Data Available

Life Stage

A - Adults
S - Spawning adults
J - Juveniles
L - Larvae
E - Eggs

Table 5, continued. Temporal distribution




Relative Abundance

- Highly Abundant
- Abundant
- Common
- Rare
- Blank — Not Present

Life Stage

A - Adults
S - Spawning adults
J - Juveniles
L - Larvae
E - Eggs

Table 5, continued. Temporal distribution

| | | Gulf of Mexico Estuaries |
|---|---|---|
| Estuary / Month | | Baffin Bay |
| Species / Life Stage | | J F M A M J J A S O N D |
| Atlantic croaker | A | |
| | S | |
| *Micropogonias undulatus* | J | |
| | L | |
| | E | |
| Black drum | A | |
| | S | |
| *Pogonias cromis* | J | |
| | L | |
| | E | |
| Red drum | A | |
| | S | |
| *Sciaenops ocellatus* | J | |
| | L | |
| | E | |
| Striped mullet | A | |
| | S | |
| *Mugil cephalus* | J | |
| | L | |
| | E | |
| Code goby | A | |
| | S | |
| *Gobiosoma robustum* | J | |
| | L | |
| | E | |
| Spanish mackerel | A | |
| | S | |
| *Scomberomorus maculatus* | J | |
| | L | |
| | E | |
| | | J F M A M J J A S O N D |
| | | Baffin Bay |

Relative Abundance

- Highly Abundant
- Abundant
- Common
- Rare
- Blank — Not Present

Life Stage

A - Adults
S - Spawning adults
J - Juveniles
L - Larvae
E - Eggs

Table 5, continued. Temporal distribution

| | | Gulf of Mexico Estuaries | | |
|---|---|---|---|---|
| Estuary / Month | | Florida Bay | Ten Thousand Islands | Caloosahatchee River |
| Species / Life Stage | | J F M A M J J A S O N D | J F M A M J J A S O N D | J F M A M J J A S O N D |
| Gulf flounder | A | ▭ | ▭ | ····· |
| | S | | | |
| *Paralichthys albigutta* | J | ▭ | ▭ | ····· |
| | L | ▭ ▫ | | |
| | E | | | |
| Southern flounder | A | ····· | ····· | |
| | S | | | |
| *Paralichthys lethostigma* | J | ····· | ····· | |
| | L | | | |
| | E | | | |
| | | J F M A M J J A S O N D | J F M A M J J A S O N D | J F M A M J J A S O N D |
| | | Florida Bay | Ten Thousand Islands | Caloosahatchee River |

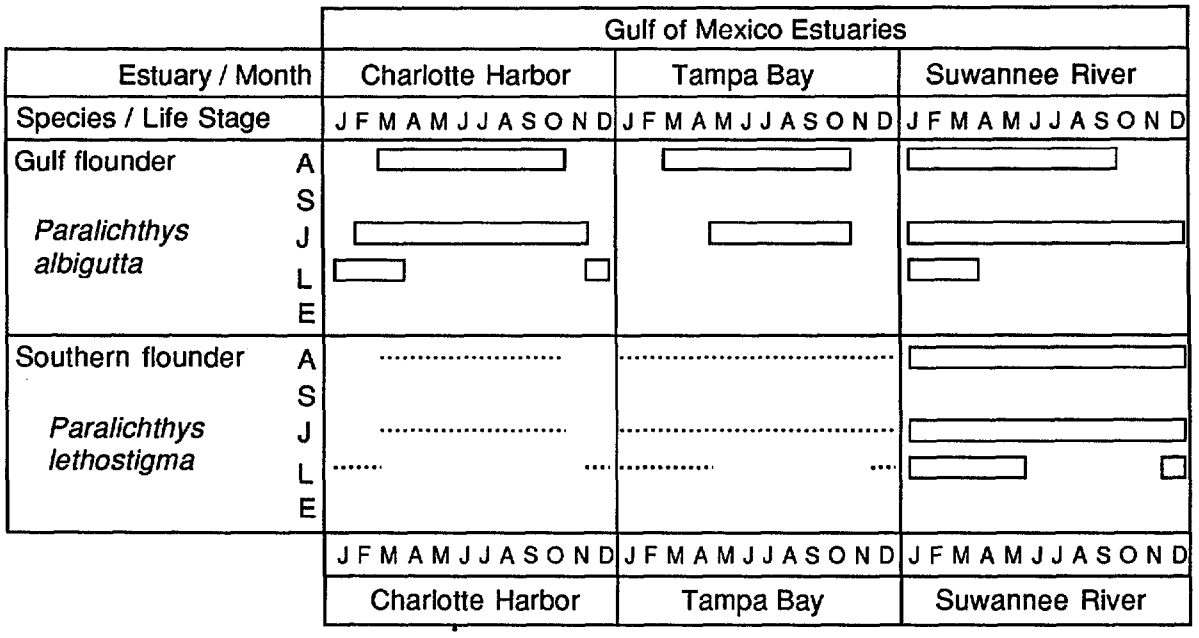
Relative Abundance

- ■ Highly Abundant
- ▦ Abundant
- ▭ Common
- ····· Rare
- Blank Not Present

Life Stage

A - Adults
S - Spawning adults
J - Juveniles
L - Larvae
E - Eggs

Table 5, continued. Temporal distribution



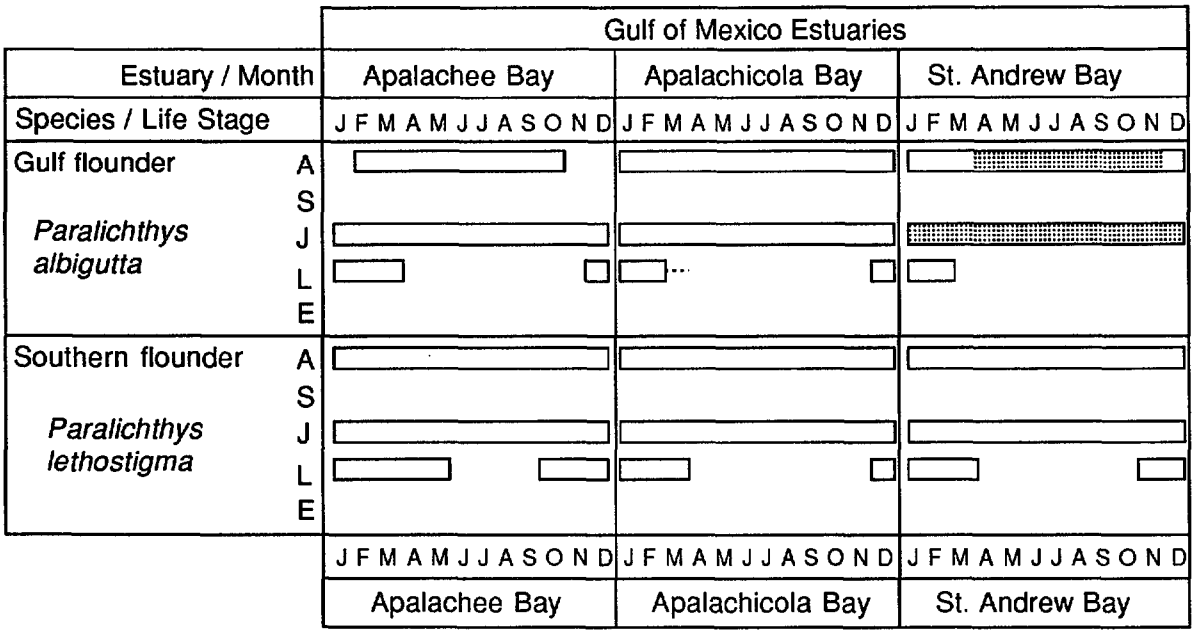

Relative Abundance

- Highly Abundant
- Abundant
- Common
- Rare
- Blank — Not Present

Life Stage

A - Adults
S - Spawning adults
J - Juveniles
L - Larvae
E - Eggs

Table 5, continued. Temporal distribution




Relative Abundance

- Highly Abundant
- Abundant
- Common
- Rare
- Blank — Not Present

Life Stage

A - Adults
S - Spawning adults
J - Juveniles
L - Larvae
E - Eggs

Table 5, continued. Temporal distribution

| | | Gulf of Mexico Estuaries | | |
|---|---|---|---|---|
| Estuary / Month | | Choctawhatchee Bay | Pensacola Bay | Perdido Bay |
| Species / Life Stage | | J F M A M J J A S O N D | J F M A M J J A S O N D | J F M A M J J A S O N D |
| Gulf flounder | A | | | |
| | S | | | |
| *Paralichthys albigutta* | J | | | |
| | L | | | |
| | E | | | |
| Southern flounder | A | | | |
| | S | | | |
| *Paralichthys lethostigma* | J | | | |
| | L | | | |
| | E | | | |
| | | J F M A M J J A S O N D | J F M A M J J A S O N D | J F M A M J J A S O N D |
| | | Choctawhatchee Bay | Pensacola Bay | Perdido Bay |

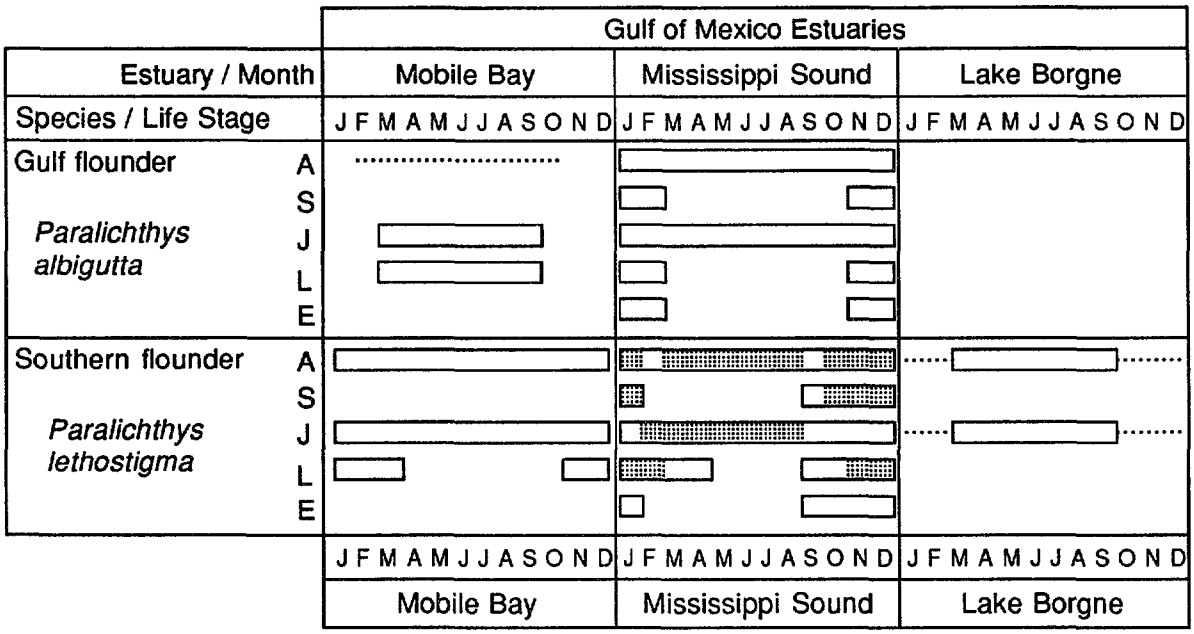
Relative Abundance

- Highly Abundant
- Abundant
- Common
- Rare
- Blank — Not Present

Life Stage

A - Adults
S - Spawning adults
J - Juveniles
L - Larvae
E - Eggs

Table 5, continued. Temporal distribution




Relative Abundance

- Highly Abundant
- Abundant
- Common
- Rare
- Blank — Not Present

Life Stage

A - Adults
S - Spawning adults
J - Juveniles
L - Larvae
E - Eggs

Table 5, continued. Temporal distribution

| | | Gulf of Mexico Estuaries | | |
|---|---|---|---|---|
| Estuary / Month | | Lake Pontchartrain | Breton/Chandeleur Sound | Mississippi River |
| Species / Life Stage | | J F M A M J J A S O N D | J F M A M J J A S O N D | J F M A M J J A S O N D |
| Gulf flounder *Paralichthys albigutta* | A | | | |
| | S | | | |
| | J | | | |
| | L | | | |
| | E | | | |
| Southern flounder *Paralichthys lethostigma* | A | | | |
| | S | | | |
| | J | | | |
| | L | | | |
| | E | | | |
| | | J F M A M J J A S O N D | J F M A M J J A S O N D | J F M A M J J A S O N D |
| | | Lake Pontchartrain | Breton/Chandeleur Sound | Mississippi River |

Relative Abundance

- Highly Abundant
- Abundant
- Common
- Rare
- Blank — Not Present

Life Stage

A - Adults
S - Spawning adults
J - Juveniles
L - Larvae
E - Eggs

Table 5, continued. Temporal distribution

| | | Gulf of Mexico Estuaries | | |
|---|---|---|---|---|
| Estuary / Month | | Barataria Bay | Terrebonne/Timbalier Bay | Atchafalaya/Vermilion Bay |
| Species / Life Stage | | J F M A M J J A S O N D | J F M A M J J A S O N D | J F M A M J J A S O N D |
| Gulf flounder *Paralichthys albigutta* | A | | | |
| | S | | | |
| | J | | | |
| | L | | | |
| | E | | | |
| Southern flounder *Paralichthys lethostigma* | A | | | |
| | S | | | |
| | J | | | |
| | L | | | |
| | E | | | |
| | | J F M A M J J A S O N D | J F M A M J J A S O N D | J F M A M J J A S O N D |
| | | Barataria Bay | Terrebonne/Timbalier Bay | Atchafalaya/Vermilion Bay |

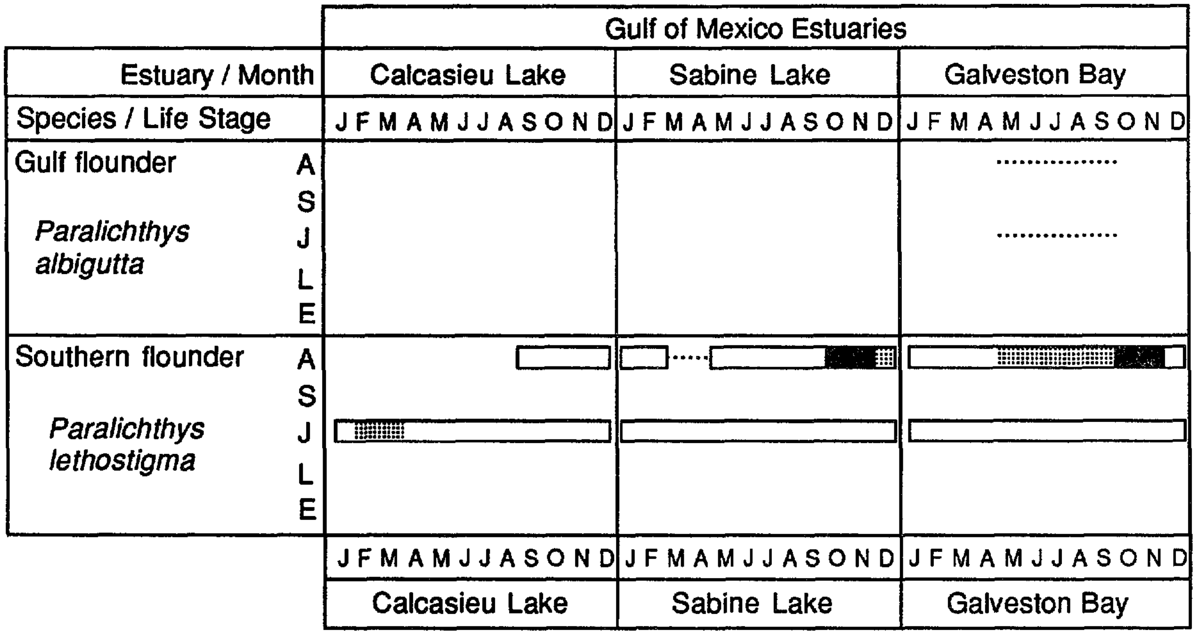
Relative Abundance

- Highly Abundant
- Abundant
- Common
- Rare
- Blank — Not Present

Life Stage

A - Adults
S - Spawning adults
J - Juveniles
L - Larvae
E - Eggs

Table 5, continued. Temporal distribution




Relative Abundance

Highly Abundant

Abundant

Common

Rare

Blank Not Present

Life Stage

A - Adults
S - Spawning adults
J - Juveniles
L - Larvae
E - Eggs

Table 5, continued. Temporal distribution

| | | Gulf of Mexico Estuaries | | |
|---|---|---|---|---|
| Estuary / Month | | Brazos River | Matagorda Bay | San Antonio Bay |
| Species / Life Stage | | J F M A M J J A S O N D | J F M A M J J A S O N D | J F M A M J J A S O N D |
| Gulf flounder *Paralichthys albigutta* | A | | ..... | ..... |
| | S | | | |
| | J | | ..... | ..... |
| | L | | | |
| | E | | | |
| Southern flounder *Paralichthys lethostigma* | A | [ ] | [▒] | [▒] |
| | S | | | |
| | J | [ ] | [ ] | [ ] |
| | L | | | |
| | E | | | |
| | | J F M A M J J A S O N D | J F M A M J J A S O N D | J F M A M J J A S O N D |
| | | Brazos River | Matagorda Bay | San Antonio Bay |

Relative Abundance

- ■ Highly Abundant
- ▒ Abundant
- [ ] Common
- ..... Rare
- Blank Not Present

Life Stage

A - Adults
S - Spawning adults
J - Juveniles
L - Larvae
E - Eggs

Table 5, continued. Temporal distribution

| | | Gulf of Mexico Estuaries | | |
|---|---|---|---|---|
| Estuary / Month | | Aransas Bay | Corpus Christi Bay | Laguna Madre |
| Species / Life Stage | | J F M A M J J A S O N D | J F M A M J J A S O N D | J F M A M J J A S O N D |
| Gulf flounder *Paralichthys albigutta* | A | ····· | ····· | ····· |
| | S | | | |
| | J | ····· | ····· | ····· |
| | L | | | |
| | E | | | |
| Southern flounder *Paralichthys lethostigma* | A | ▭ | ▭ | ····· ▭ |
| | S | | | |
| | J | ▭ | ▭ | ▒ ▭ |
| | L | | | |
| | E | | | |
| | | J F M A M J J A S O N D | J F M A M J J A S O N D | J F M A M J J A S O N D |
| | | Aransas Bay | Corpus Christi Bay | Laguna Madre |

Relative Abundance

- ■ Highly Abundant
- ▒ Abundant
- ▭ Common
- ····· Rare
- Blank Not Present

Life Stage

A - Adults
S - Spawning adults
J - Juveniles
L - Larvae
E - Eggs

Table 5, continued. Temporal distribution

| | | Gulf of Mexico Estuaries |
|---|---|---|
| Estuary / Month | | Baffin Bay |
| Species / Life Stage | | J F M A M J J A S O N D |
| Gulf flounder *Paralichthys albigutta* | A S J L E | ..... |
| Southern flounder *Paralichthys lethostigma* | A S J L E | ▭ ..... ▭ ..... |
| | | J F M A M J J A S O N D |
| | | Baffin Bay |

Relative Abundance

- ■ Highly Abundant
- ▦ Abundant
- ▭ Common
- ····· Rare
- Blank Not Present

Life Stage

A - Adults
S - Spawning adults
J - Juveniles
L - Larvae
E - Eggs

## Table 6. Data reliability

Index to Table 6. Page location of data reliability table for each species and estuary.

| Common and Scientific Name | Estuary: Florida Bay, Ten Thousand Islands, Caloosahatchee River, Charlotte Harbor, Tampa Bay, Suwannee River, Apalachee Bay | Apalachicola Bay, St. Andrew Bay, Choctawhatchee Bay, Pensacola Bay, Perdido Bay, Mobile Bay, Mississippi Sound | Lake Borgne, Breton/Chandeleur Sound, Lake Pontchartrain, Mississippi River, Barataria Bay, Terrebonne/Timbalier Bay, Atchafalaya/Vermilion Bay | Calcasieu Lake, Sabine Lake, Galveston Bay, Brazos River, Matagorda Bay, San Antonio Bay, Aransas Bay | Corpus Christi Bay, Laguna Madre, Baffin Bay |
|---|---|---|---|---|---|
| Bay scallop (*Argopecten irradians*)<br>American oyster (*Crassostrea virginica*)<br>Common rangia (*Rangia cuneata*)<br>Hard clam (*Mercenaria* species)<br>Bay squid (*Lolliguncula brevis*)<br>Brown shrimp (*Penaeus aztecus*) | 152 | 153 | 154 | 155 | 156 |
| Pink shrimp (*Penaeus duorarum*)<br>White shrimp (*Penaeus setiferus*)<br>Grass shrimp (*Palaemonetes pugio*)<br>Spiny lobster (*Panulirus argus*)<br>Blue crab (*Callinectes sapidus*)<br>Gulf stone crab (*Menippe adina*) | 157 | 158 | 159 | 160 | 161 |
| Stone crab (*Menippe mercenaria*)<br>Bull shark (*Carcharhinus leucas*)<br>Tarpon (*Megalops atlanticus*)<br>Alabama shad (*Alosa alabamae*)<br>Gulf menhaden (*Brevoortia patronus*)<br>Yellowfin menhaden (*Brevoortia smithi*) | 162 | 163 | 164 | 165 | 166 |
| Gizzard shad (*Dorosoma cepedianum*)<br>Bay anchovy (*Anchoa mitchilli*)<br>Hardhead catfish (*Arius felis*)<br>Sheepshead minnow (*Cyprinodon variegatus*)<br>Gulf killifish (*Fundulus grandis*)<br>Silversides (*Menidia* species) | 167 | 168 | 169 | 170 | 171 |
| Snook (*Centropomus undecimalis*)<br>Bluefish (*Pomatomus saltatrix*)<br>Blue runner (*Caranx crysos*)<br>Crevalle jack (*Caranx hippos*)<br>Florida pompano (*Trachinotus carolinus*)<br>Gray snapper (*Lutjanus griseus*) | 172 | 173 | 174 | 175 | 176 |
| Sheepshead (*Archosargus probatocephalus*)<br>Pinfish (*Lagodon rhomboides*)<br>Silver perch (*Bairdiella chrysoura*)<br>Sand seatrout (*Cynoscion arenarius*)<br>Spotted seatrout (*Cynoscion nebulosus*)<br>Spot (*Leiostomus xanthurus*) | 177 | 178 | 179 | 180 | 181 |
| Atlantic croaker (*Micropogonias undulatus*)<br>Black drum (*Pogonias cromis*)<br>Red drum (*Sciaenops ocellatus*)<br>Striped mullet (*Mugil cephalus*)<br>Code goby (*Gobiosoma robustum*)<br>Spanish mackerel (*Scomberomorus maculatus*) | 182 | 183 | 184 | 185 | 186 |
| Gulf flounder (*Paralichthys albigutta*)<br>Southern flounder (*Paralichthys lethostigma*) | 187 | 188 | 189 | 190 | 191 |

Table 6. Data reliability

| Species/Life Stage | | Florida Bay | Ten Thousand Islands | Caloosa-hatchee River | Charlotte Harbor | Tampa Bay | Suwannee River | Apalachee Bay |
|---|---|---|---|---|---|---|---|---|
| | | Gulf of Mexico Estuaries | | | | | | |
| Bay scallop | A | ■ | ▣ | ▣ | □ | ▣ | ■ | ▣ |
| | S | ■ | ▣ | ▣ | □ | ▣ | ■ | ▣ |
| *Argopecten irradians* | J | ■ | ▣ | ▣ | □ | ▣ | ■ | ▣ |
| | L | ■ | ▣ | ▣ | □ | ▣ | ■ | ▣ |
| | E | ■ | ▣ | ▣ | □ | ▣ | ■ | ▣ |
| American oyster | A | ■ | ■ | ■ | ■ | ■ | ▣ | ▣ |
| | S | ■ | ▣ | □ | ▣ | ▣ | ▣ | ▣ |
| *Crassostrea virginica* | J | ■ | ▣ | ■ | ■ | ■ | ▣ | ▣ |
| | L | ■ | ▣ | □ | ▣ | ▣ | ▣ | ▣ |
| | E | ■ | ▣ | □ | ▣ | ▣ | ▣ | ▣ |
| Common rangia | A | ■ | ■ | ▣ | ▣ | ▣ | ▣ | ▣ |
| | S | ■ | ■ | ▣ | ▣ | ▣ | ▣ | ▣ |
| *Rangia cuneata* | J | ■ | ■ | ▣ | ▣ | ▣ | ▣ | ▣ |
| | L | ■ | ■ | ▣ | ▣ | ▣ | ▣ | ▣ |
| | E | ■ | ■ | ▣ | ▣ | ▣ | ▣ | ▣ |
| Hard clam | A | ■ | ■ | ■ | ▣ | ▣ | ■ | □ |
| | S | ■ | ■ | ■ | □ | ▣ | ▣ | □ |
| *Mercenaria* species | J | ■ | ■ | ■ | ▣ | ▣ | ■ | □ |
| | L | ■ | ■ | ■ | □ | ▣ | ▣ | □ |
| | E | ■ | ■ | ■ | □ | ▣ | ▣ | □ |
| Bay squid | A | ▣ | ▣ | ▣ | ▣ | ▣ | ▣ | ▣ |
| | S | ▣ | □ | □ | □ | □ | □ | □ |
| *Lolliguncula brevis* | J | ▣ | ▣ | ▣ | ▣ | ▣ | ▣ | ▣ |
| | L | ▣ | □ | □ | □ | □ | □ | □ |
| | E | ▣ | □ | □ | □ | □ | □ | □ |
| Brown shrimp | A | ▣ | ▣ | □ | ▣ | ▣ | ■ | ■ |
| | S | □ | ■ | ■ | ■ | ■ | ■ | ■ |
| *Penaeus aztecus* | J | ▣ | ▣ | □ | ▣ | ▣ | ■ | ■ |
| | L | □ | ▣ | ▣ | ▣ | ▣ | ■ | ■ |
| | E | □ | ■ | ■ | ■ | ■ | ■ | ■ |
| | | Florida Bay | Ten Thousand Islands | Caloosa-hatchee River | Charlotte Harbor | Tampa Bay | Suwannee River | Apalachee Bay |
| | | Gulf of Mexico Estuaries | | | | | | |

Data Reliability

■ Highly Certain

▣ Moderately Certain

□ Reasonable Inference

Life Stage

A - Adults
S - Spawning adults
J - Juveniles
L - Larvae
E - Eggs

Table 6, continued. Data reliability

| Species/Life Stage | | Gulf of Mexico Estuaries | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | Apalachicola Bay | St. Andrew Bay | Choctawhatchee Bay | Pensacola Bay | Perdido Bay | Mobile Bay | Mississippi Sound |
| Bay scallop | A | ▣ | ■ | ■ | ▣ | ■ | ■ | ▣ |
| | S | ▣ | ▣ | ■ | ■ | ■ | ■ | □ |
| *Argopecten irradians* | J | ▣ | ▣ | ■ | ▣ | ■ | ■ | ▣ |
| | L | ▣ | ▣ | ■ | ■ | ■ | ■ | □ |
| | E | ▣ | ▣ | ■ | ■ | ■ | ■ | □ |
| American oyster | A | ▣ | ▣ | ▣ | ▣ | ■ | ▣ | ▣ |
| | S | ▣ | ▣ | ▣ | □ | ■ | ▣ | □ |
| *Crassostrea virginica* | J | ▣ | ▣ | ▣ | ▣ | ■ | ▣ | ▣ |
| | L | ▣ | ▣ | ▣ | □ | ■ | ▣ | □ |
| | E | ▣ | ▣ | ▣ | □ | ■ | ▣ | □ |
| Common rangia | A | ▣ | ▣ | ▣ | ▣ | ▣ | ▣ | □ |
| | S | ▣ | ▣ | ▣ | ▣ | ▣ | ▣ | □ |
| *Rangia cuneata* | J | ▣ | ▣ | ▣ | ▣ | ▣ | ▣ | □ |
| | L | ▣ | ▣ | ▣ | ▣ | ▣ | ▣ | □ |
| | E | ▣ | ▣ | ▣ | ▣ | ▣ | ▣ | □ |
| Hard clam | A | ■ | ▣ | ▣ | ■ | ▣ | ▣ | □ |
| | S | ■ | ▣ | ▣ | ■ | ▣ | ▣ | □ |
| *Mercenaria* species | J | ■ | ▣ | ▣ | ■ | ▣ | ▣ | □ |
| | L | ■ | ▣ | ▣ | ■ | ▣ | ▣ | □ |
| | E | ■ | ▣ | ▣ | ■ | ▣ | ▣ | □ |
| Bay squid | A | ▣ | ▣ | ▣ | ▣ | ▣ | ▣ | ▣ |
| | S | □ | □ | □ | □ | □ | □ | □ |
| *Lolliguncula brevis* | J | ▣ | ▣ | ▣ | ▣ | ▣ | ▣ | □ |
| | L | □ | □ | □ | □ | □ | □ | □ |
| | E | □ | □ | □ | □ | □ | □ | □ |
| Brown shrimp | A | ■ | ■ | ■ | ▣ | ▣ | ■ | □ |
| | S | ■ | ■ | ■ | ■ | ▣ | ■ | ■ |
| *Penaeus aztecus* | J | ■ | ■ | ■ | ■ | ▣ | ■ | □ |
| | L | ■ | ■ | ■ | ■ | ▣ | ■ | □ |
| | E | ■ | ■ | ■ | ■ | ▣ | ■ | ▣ |
| | | Apalachicola Bay | St. Andrew Bay | Choctawhatchee Bay | Pensacola Bay | Perdido Bay | Mobile Bay | Mississippi Sound |
| | | Gulf of Mexico Estuaries | | | | | | |

Data Reliability

■ Highly Certain

▣ Moderately Certain

□ Reasonable Inference

Life Stage

A - Adults
S - Spawning adults
J - Juveniles
L - Larvae
E - Eggs

Table 6, continued. Data reliability

| Species/Life Stage | | Gulf of Mexico Estuaries | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | Lake Borgne | Lake Pontchar-train | Breton/ Chandeleur Sounds | Mississippi River | Barataria Bay | Terrebonne/ Timbalier Bays | Atchafalaya/ Vermilion Bays |
| Bay scallop | A | ■ | ■ | ▣ | ■ | ■ | ■ | ▣ |
| | S | ■ | ■ | ▣ | ■ | ■ | ■ | ■ |
| *Argopecten irradians* | J | ■ | ■ | ▣ | ■ | ■ | ■ | ▣ |
| | L | ■ | ■ | ▣ | ■ | ■ | ■ | ■ |
| | E | ■ | ■ | ▣ | ■ | ■ | ■ | ■ |
| American oyster | A | ▣ | ▣ | ▣ | ▣ | ■ | □ | ▣ |
| | S | ▣ | ▣ | ▣ | ▣ | ■ | ▣ | ▣ |
| *Crassostrea virginica* | J | ▣ | ▣ | ▣ | ▣ | ■ | □ | ▣ |
| | L | ▣ | ▣ | ▣ | ▣ | ■ | ▣ | ▣ |
| | E | ▣ | ▣ | ▣ | ▣ | ■ | ▣ | ▣ |
| Common rangia | A | ▣ | ▣ | ▣ | ▣ | ▣ | ▣ | □ |
| | S | ▣ | ▣ | ▣ | □ | ▣ | ▣ | □ |
| *Rangia cuneata* | J | ▣ | ▣ | ▣ | ▣ | ▣ | ▣ | □ |
| | L | ▣ | ▣ | ▣ | □ | ▣ | ▣ | □ |
| | E | ▣ | ▣ | ▣ | □ | ▣ | ▣ | □ |
| Hard clam | A | ▣ | ■ | ▣ | ■ | □ | □ | □ |
| | S | ▣ | ■ | ▣ | ■ | □ | □ | □ |
| *Mercenaria* species | J | ▣ | ■ | ▣ | ■ | □ | □ | □ |
| | L | ▣ | ■ | ▣ | ■ | □ | □ | □ |
| | E | ▣ | ■ | ▣ | ■ | □ | □ | □ |
| Bay squid | A | ▣ | □ | ▣ | □ | □ | ▣ | ▣ |
| | S | □ | ■ | □ | ■ | □ | □ | ▣ |
| *Lolliguncula brevis* | J | ▣ | □ | ▣ | □ | □ | ▣ | ▣ |
| | L | □ | ■ | □ | ■ | □ | □ | ▣ |
| | E | □ | ■ | □ | ■ | □ | □ | ▣ |
| Brown shrimp | A | ▣ | ▣ | ■ | ■ | ▣ | ■ | ■ |
| | S | ■ | ■ | ■ | ■ | ▣ | ■ | ■ |
| *Penaeus aztecus* | J | ▣ | ▣ | ▣ | ▣ | ▣ | □ | ▣ |
| | L | □ | □ | ▣ | ■ | □ | □ | ■ |
| | E | ■ | ■ | ■ | ■ | ▣ | ■ | ■ |
| | | Lake Borgne | Lake Pontchar-train | Breton/ Chandeleur Sounds | Mississippi River | Barataria Bay | Terrebonne/ Timbalier Bays | Atchafalaya/ Vermilion Bays |
| | | Gulf of Mexico Estuaries | | | | | | |

Data Reliability

■ Highly Certain

▣ Moderately Certain

□ Reasonable Inference

Life Stage

A - Adults
S - Spawning adults
J - Juveniles
L - Larvae
E - Eggs

Table 6, continued. Data reliability

| Species/Life Stage | | Gulf of Mexico Estuaries | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | Calcasieu Lake | Sabine Lake | Galveston Bay | Brazos River | Matagorda Bay | San Antonio Bay | Aransas Bay |
| Bay scallop | A | ■ | ▣ | ▣ | ▣ | □ | □ | □ |
| | S | ■ | ▣ | ▣ | ▣ | □ | □ | □ |
| *Argopecten irradians* | J | ■ | ▣ | ▣ | ▣ | □ | □ | □ |
| | L | ■ | ▣ | ▣ | ▣ | □ | □ | □ |
| | E | ■ | ▣ | ▣ | ▣ | □ | □ | □ |
| American oyster | A | ▣ | ▣ | ▣ | □ | □ | ▣ | ▣ |
| | S | ▣ | □ | □ | □ | □ | □ | □ |
| *Crassostrea virginica* | J | ▣ | ▣ | ▣ | □ | □ | ▣ | ▣ |
| | L | ▣ | □ | □ | □ | □ | □ | □ |
| | E | ▣ | □ | □ | □ | □ | □ | □ |
| Common rangia | A | ▣ | ▣ | ▣ | □ | ▣ | ▣ | ▣ |
| | S | ▣ | □ | □ | □ | □ | □ | □ |
| *Rangia cuneata* | J | ▣ | ▣ | ▣ | □ | ▣ | ▣ | ▣ |
| | L | ▣ | □ | □ | □ | □ | □ | □ |
| | E | ▣ | □ | □ | □ | □ | □ | □ |
| Hard clam | A | ■ | ▣ | ▣ | □ | ▣ | □ | ▣ |
| | S | ■ | ▣ | □ | □ | □ | □ | □ |
| *Mercenaria* species | J | ■ | ▣ | ▣ | □ | ▣ | □ | ▣ |
| | L | ■ | ▣ | □ | □ | □ | □ | □ |
| | E | ■ | ▣ | □ | □ | □ | □ | □ |
| Bay squid | A | ▣ | ▣ | ▣ | □ | ▣ | □ | ▣ |
| | S | ■ | □ | □ | □ | □ | □ | □ |
| *Lolliguncula brevis* | J | ▣ | ▣ | ▣ | □ | ▣ | □ | ▣ |
| | L | ■ | □ | □ | □ | □ | □ | □ |
| | E | ■ | □ | □ | □ | □ | □ | □ |
| Brown shrimp | A | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| | S | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| *Penaeus aztecus* | J | □ | ■ | ■ | □ | ■ | ■ | ■ |
| | L | □ | ■ | ■ | □ | ■ | ■ | ■ |
| | E | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| | | Calcasieu Lake | Sabine Lake | Galveston Bay | Brazos River | Matagorda Bay | San Antonio Bay | Aransas Bay |
| | | Gulf of Mexico Estuaries | | | | | | |

Data Reliability

■ Highly Certain

▣ Moderately Certain

□ Reasonable Inference

Life Stage

A - Adults
S - Spawning adults
J - Juveniles
L - Larvae
E - Eggs

Table 6, continued. Data reliability

| Species/Life Stage | | Gulf of Mexico Estuaries: Corpus Christi Bay | Laguna Madre | Baffin Bay |
|---|---|---|---|---|
| Bay scallop *Argopecten irradians* | A | □ | ▣ | ■ |
| | S | □ | □ | ■ |
| | J | □ | ▣ | ■ |
| | L | □ | □ | ■ |
| | E | □ | □ | ■ |
| American oyster *Crassostrea virginica* | A | ▣ | ▣ | ■ |
| | S | □ | □ | ■ |
| | J | ▣ | ▣ | ■ |
| | L | □ | □ | ■ |
| | E | □ | □ | ■ |
| Common rangia *Rangia cuneata* | A | □ | ■ | ■ |
| | S | □ | ■ | ■ |
| | J | □ | ■ | ■ |
| | L | □ | ■ | ■ |
| | E | □ | ■ | ■ |
| Hard clam *Mercenaria* species | A | ▣ | ▣ | ■ |
| | S | □ | ▣ | ■ |
| | J | ▣ | ▣ | ■ |
| | L | □ | ▣ | ■ |
| | E | □ | ▣ | ■ |
| Bay squid *Lolliguncula brevis* | A | ▣ | ▣ | ▣ |
| | S | □ | □ | □ |
| | J | ▣ | ▣ | ▣ |
| | L | □ | □ | □ |
| | E | □ | □ | □ |
| Brown shrimp *Penaeus aztecus* | A | ■ | ■ | ■ |
| | S | ■ | ■ | ■ |
| | J | ■ | ■ | ■ |
| | L | ■ | ■ | ■ |
| | E | ■ | ■ | ■ |
| | | Corpus Christi Bay | Laguna Madre | Baffin Bay |
| | | Gulf of Mexico Estuaries | | |

Data Reliability

■ Highly Certain

▣ Moderately Certain

□ Reasonable Inference

Life Stage

A - Adults
S - Spawning adults
J - Juveniles
L - Larvae
E - Eggs

Table 6, continued. Data reliability

| Species/Life Stage | | Florida Bay | Ten Thousand Islands | Caloosa-hatchee River | Charlotte Harbor | Tampa Bay | Suwannee River | Apalachee Bay |
|---|---|---|---|---|---|---|---|---|
| | | Gulf of Mexico Estuaries | | | | | | |
| Pink shrimp | A | ■ | ■ | ■ | ■ | ■ | ▣ | ▣ |
| | S | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| *Penaeus duorarum* | J | ■ | ■ | □ | ▣ | ■ | ▣ | ■ |
| | L | ■ | ■ | ■ | ■ | ■ | ▣ | ▣ |
| | E | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| White shrimp | A | ■ | ■ | ■ | ■ | ■ | ■ | ▣ |
| | S | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| *Penaeus setiferus* | J | ■ | ■ | ■ | ■ | ■ | ■ | ▣ |
| | L | ■ | ■ | ■ | ■ | ■ | ■ | ▣ |
| | E | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| Grass shrimp | A | ▣ | ▣ | ▣ | ▣ | ▣ | □ | ▣ |
| | S | ▣ | ▣ | ▣ | ▣ | ▣ | □ | ▣ |
| *Palaemonetes pugio* | J | ▣ | ▣ | ▣ | ▣ | ▣ | □ | ▣ |
| | L | ▣ | ▣ | ▣ | ▣ | ▣ | □ | ▣ |
| | E | ▣ | ▣ | ▣ | ▣ | ▣ | □ | ▣ |
| Spiny lobster | A | ▣ | ▣ | ■ | ▣ | ▣ | ▣ | ▣ |
| | M | ■ | ■ | ■ | ■ | ■ | ▣ | ▣ |
| *Panulirus argus* | J | ▣ | ▣ | ■ | ▣ | ▣ | ▣ | ▣ |
| | L | ■ | ■ | ■ | ■ | ■ | ▣ | ▣ |
| | E | ■ | ■ | ■ | ■ | ■ | ▣ | ▣ |
| Blue crab | A | ▣ | ■ | ■ | ■ | ▣ | □ | ▣ |
| | M | ▣ | ■ | ■ | ■ | ▣ | ▣ | ▣ |
| *Callinectes sapidus* | J | ▣ | ■ | □ | ■ | ▣ | ▣ | ▣ |
| | L | □ | □ | ▣ | □ | □ | □ | □ |
| | E | ▣ | ■ | ■ | ■ | ▣ | ▣ | ▣ |
| Gulf stone crab | A | ■ | ■ | ■ | ■ | ■ | □ | □ |
| | M | ■ | ■ | ■ | ■ | ■ | □ | □ |
| *Menippe adina* | J | ■ | ■ | ■ | ■ | ■ | □ | □ |
| | L | ■ | ■ | ■ | ■ | ■ | □ | □ |
| | E | ■ | ■ | ■ | ■ | ■ | □ | □ |
| | | Florida Bay | Ten Thousand Islands | Caloosa-hatchee River | Charlotte Harbor | Tampa Bay | Suwannee River | Apalachee Bay |
| | | Gulf of Mexico Estuaries | | | | | | |

Data Reliability

■ Highly Certain

▣ Moderately Certain

□ Reasonable Inference

Life Stage

A - Adults
S - Spawning adults
J - Juveniles
L - Larvae
E - Eggs
M - Mating

Table 6, continued. Data reliability

| Species/Life Stage | | Apalachicola Bay | St. Andrew Bay | Choctawhatchee Bay | Pensacola Bay | Perdido Bay | Mobile Bay | Mississippi Sound |
|---|---|---|---|---|---|---|---|---|
| | | Gulf of Mexico Estuaries | | | | | | |
| Pink shrimp | A | ▣ | ■ | ■ | ▣ | ■ | ■ | □ |
| | S | ■ | ■ | ■ | ■ | ■ | ■ | □ |
| *Penaeus duorarum* | J | ■ | ■ | ■ | ■ | ■ | ■ | □ |
| | L | ■ | ■ | ■ | ■ | ■ | ▣ | ▣ |
| | E | ■ | ■ | ■ | ■ | ■ | ■ | □ |
| White shrimp | A | ▣ | ■ | ■ | ▣ | ▣ | ▣ | □ |
| | S | ▣ | ■ | ■ | ■ | ■ | ■ | ▣ |
| *Penaeus setiferus* | J | ▣ | ■ | ■ | ■ | ▣ | ▣ | ▣ |
| | L | ▣ | ■ | ■ | ■ | ■ | ■ | ▣ |
| | E | ▣ | ■ | ■ | ■ | ■ | ■ | ▣ |
| Grass shrimp | A | □ | ▣ | ▣ | ▣ | ▣ | ▣ | □ |
| | S | □ | ▣ | ▣ | ▣ | ▣ | ▣ | □ |
| *Palaemonetes pugio* | J | ▣ | ▣ | ▣ | ▣ | ▣ | ▣ | □ |
| | L | □ | ▣ | ▣ | ▣ | ▣ | ▣ | □ |
| | E | □ | ▣ | ▣ | ▣ | ▣ | ▣ | □ |
| Spiny lobster | A | ▣ | ■ | ■ | ■ | ■ | ■ | ▣ |
| | M | ▣ | ■ | ■ | ■ | ■ | ■ | ▣ |
| *Panulirus argus* | J | ▣ | ■ | ■ | ■ | ■ | □ | □ |
| | L | ▣ | ■ | ■ | ■ | ■ | ■ | □ |
| | E | ▣ | ■ | ■ | ■ | ■ | ■ | □ |
| Blue crab | A | ▣ | ▣ | ▣ | ▣ | ▣ | ▣ | ▣ |
| | M | ▣ | ▣ | ▣ | ▣ | ▣ | ▣ | ■ |
| *Callinectes sapidus* | J | ▣ | ▣ | ▣ | ▣ | ▣ | ▣ | ■ |
| | L | □ | ▣ | □ | □ | □ | □ | ▣ |
| | E | ▣ | ▣ | ▣ | ▣ | ▣ | ▣ | ▣ |
| Gulf stone crab | A | □ | ▣ | □ | □ | □ | □ | ▣ |
| | M | □ | ▣ | □ | □ | □ | □ | ▣ |
| *Menippe adina* | J | □ | ▣ | □ | □ | □ | □ | ▣ |
| | L | □ | ▣ | □ | □ | □ | □ | ▣ |
| | E | □ | ▣ | □ | □ | □ | □ | ▣ |
| | | Apalachicola Bay | St. Andrew Bay | Choctawhatchee Bay | Pensacola Bay | Perdido Bay | Mobile Bay | Mississippi Sound |
| | | Gulf of Mexico Estuaries | | | | | | |

Data Reliability

■ Highly Certain

▣ Moderately Certain

□ Reasonable Inference

Life Stage

A - Adults
S - Spawning adults
J - Juveniles
L - Larvae
E - Eggs
M - Mating

Table 6, continued. Data reliability

| Species/Life Stage | | Lake Borgne | Lake Pontchar-train | Breton/ Chandeleur Sounds | Mississippi River | Barataria Bay | Terrebonne/ Timbalier Bays | Atchafalaya/ Vermilion Bays |
|---|---|---|---|---|---|---|---|---|
| | | Gulf of Mexico Estuaries | | | | | | |
| Pink shrimp | A | ▣ | ■ | ▣ | ■ | □ | ■ | ■ |
| | S | ■ | ■ | ■ | ■ | ▣ | ■ | ■ |
| *Penaeus duorarum* | J | ▣ | ▣ | ▣ | ■ | ▣ | ▣ | ▣ |
| | L | ■ | ■ | ■ | ■ | ▣ | ■ | ■ |
| | E | ■ | ■ | ■ | ■ | □ | ■ | ■ |
| White shrimp | A | ▣ | ▣ | □ | ■ | □ | ▣ | ▣ |
| | S | ■ | ■ | □ | ■ | □ | ■ | ■ |
| *Penaeus setiferus* | J | ▣ | ▣ | □ | ▣ | ▣ | ▣ | ▣ |
| | L | ■ | ■ | □ | ▣ | □ | ▣ | ▣ |
| | E | ■ | ■ | □ | ■ | □ | ■ | ■ |
| Grass shrimp | A | ▣ | ▣ | ▣ | ▣ | ▣ | ▣ | ▣ |
| | S | ▣ | ▣ | ▣ | ▣ | ▣ | ▣ | ▣ |
| *Palaemonetes pugio* | J | ▣ | ▣ | ▣ | ▣ | ▣ | ▣ | ▣ |
| | L | ▣ | ▣ | ▣ | ▣ | ▣ | ▣ | ▣ |
| | E | ▣ | ▣ | ▣ | ▣ | ▣ | ▣ | ▣ |
| Spiny lobster | A | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| | M | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| *Panulirus argus* | J | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| | L | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| | E | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| Blue crab | A | ▣ | ▣ | ▣ | ▣ | □ | □ | ■ |
| | M | □ | ▣ | ▣ | □ | □ | □ | ■ |
| *Callinectes sapidus* | J | ▣ | ▣ | ▣ | ▣ | □ | □ | ■ |
| | L | ▣ | ▣ | ▣ | ▣ | ▣ | □ | ■ |
| | E | ▣ | ▣ | ▣ | □ | ▣ | ▣ | ■ |
| Gulf stone crab | A | ▣ | ▣ | ▣ | ▣ | □ | □ | □ |
| | M | ▣ | ■ | ▣ | □ | □ | □ | □ |
| *Menippe adina* | J | ▣ | ▣ | ▣ | ▣ | □ | □ | □ |
| | L | ▣ | ■ | ▣ | □ | □ | □ | □ |
| | E | ▣ | ■ | ▣ | □ | □ | □ | □ |
| | | Lake Borgne | Lake Pontchar-train | Breton/ Chandeleur Sounds | Mississippi River | Barataria Bay | Terrebonne/ Timbalier Bays | Atchafalaya/ Vermilion Bays |
| | | Gulf of Mexico Estuaries | | | | | | |

Data Reliability

■ Highly Certain

▣ Moderately Certain

□ Reasonable Inference

Life Stage

A - Adults
S - Spawning adults
J - Juveniles
L - Larvae
E - Eggs
M - Mating

Table 6, continued. Data reliability

| Species/Life Stage | | Gulf of Mexico Estuaries | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | Calcasieu Lake | Sabine Lake | Galveston Bay | Brazos River | Matagorda Bay | San Antonio Bay | Aransas Bay |
| Pink shrimp | A | ■ | ■ | ▣ | ■ | ▣ | ▣ | ▣ |
| | S | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| *Penaeus duorarum* | J | ■ | ■ | ▣ | □ | ▣ | ▣ | ▣ |
| | L | ■ | ■ | ■ | ■ | ▣ | ▣ | ▣ |
| | E | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| White shrimp | A | □ | ■ | ■ | □ | ■ | ■ | ■ |
| | S | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| *Penaeus setiferus* | J | □ | ■ | ■ | □ | ■ | ■ | ■ |
| | L | □ | ■ | ■ | □ | ■ | ■ | ■ |
| | E | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| Grass shrimp | A | ▣ | ▣ | ▣ | □ | ▣ | ▣ | ▣ |
| | S | ▣ | □ | ▣ | □ | ▣ | ▣ | ▣ |
| *Palaemonetes pugio* | J | ▣ | ▣ | ▣ | □ | ▣ | ▣ | ▣ |
| | L | ▣ | □ | ▣ | □ | ▣ | ▣ | ▣ |
| | E | ▣ | □ | ▣ | □ | ▣ | ▣ | ▣ |
| Spiny lobster | A | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| | M | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| *Panulirus argus* | J | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| | L | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| | E | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| Blue crab | A | ■ | ▣ | ■ | □ | ▣ | ▣ | ▣ |
| | M | ■ | ▣ | ■ | □ | ▣ | □ | ▣ |
| *Callinectes sapidus* | J | ■ | ▣ | ■ | □ | ▣ | ▣ | ▣ |
| | L | ■ | ▣ | ■ | □ | □ | □ | ▣ |
| | E | ■ | ▣ | ■ | □ | □ | □ | ▣ |
| Gulf stone crab | A | □ | ▣ | ▣ | □ | ▣ | ▣ | ▣ |
| | M | □ | □ | ▣ | ■ | ▣ | □ | ▣ |
| *Menippe adina* | J | □ | ▣ | ▣ | □ | ▣ | ▣ | ▣ |
| | L | □ | □ | ▣ | ■ | ▣ | ▣ | ▣ |
| | E | □ | □ | ▣ | ■ | ▣ | □ | ▣ |
| | | Calcasieu Lake | Sabine Lake | Galveston Bay | Brazos River | Matagorda Bay | San Antonio Bay | Aransas Bay |
| | | Gulf of Mexico Estuaries | | | | | | |

Data Reliability

■ Highly Certain

▣ Moderately Certain

□ Reasonable Inference

Life Stage

A - Adults
S - Spawning adults
J - Juveniles
L - Larvae
E - Eggs
M - Mating

Table 6, continued. Data reliability

| Species/Life Stage | | Gulf of Mexico Estuaries | | |
|---|---|---|---|---|
| | | Corpus Christi Bay | Laguna Madre | Baffin Bay |
| Pink shrimp | A | ■ | ▣ | ▣ |
| | S | ■ | ■ | □ |
| *Penaeus duorarum* | J | ▣ | ▣ | ▣ |
| | L | ▣ | ■ | □ |
| | E | ■ | ■ | □ |
| White shrimp | A | ■ | ■ | ■ |
| | S | ■ | ■ | ■ |
| *Penaeus setiferus* | J | ■ | ■ | ■ |
| | L | ▣ | ■ | ■ |
| | E | ■ | ■ | ■ |
| Grass shrimp | A | ▣ | ▣ | ■ |
| | S | ▣ | ▣ | ■ |
| *Palaemonetes pugio* | J | ▣ | ▣ | ■ |
| | L | ▣ | ▣ | ■ |
| | E | ▣ | ▣ | ■ |
| Spiny lobster | A | ■ | □ | ■ |
| | M | ■ | □ | ■ |
| *Panulirus argus* | J | ■ | □ | ■ |
| | L | ■ | □ | ■ |
| | E | ■ | □ | ■ |
| Blue crab | A | ■ | ▣ | ■ |
| | M | ▣ | ▣ | □ |
| *Callinectes sapidus* | J | ■ | ▣ | ■ |
| | L | ▣ | ▣ | □ |
| | E | ▣ | ▣ | □ |
| Gulf stone crab | A | ▣ | ▣ | ▣ |
| | M | ▣ | ▣ | □ |
| *Menippe adina* | J | ▣ | ▣ | ▣ |
| | L | ▣ | ▣ | □ |
| | E | ▣ | ▣ | □ |
| | | Corpus Christi Bay | Laguna Madre | Baffin Bay |
| | | Gulf of Mexico Estuaries | | |

Data Reliability

■ Highly Certain

▣ Moderately Certain

□ Reasonable Inference

Life Stage

A - Adults
S - Spawning adults
J - Juveniles
L - Larvae
E - Eggs
M - Mating

Table 6, continued. Data reliability

| Species/Life Stage | | Florida Bay | Ten Thousand Islands | Caloosa-hatchee River | Charlotte Harbor | Tampa Bay | Suwannee River | Apalachee Bay |
|---|---|---|---|---|---|---|---|---|
| | | Gulf of Mexico Estuaries | | | | | | |
| Stone crab | A | ■ | ■ | ▣ | □ | ■ | ▣ | □ |
| | M | ■ | ■ | ▣ | □ | ■ | ▣ | □ |
| *Menippe mercenaria* | J | ■ | ■ | ▣ | □ | ■ | ▣ | □ |
| | L | ■ | ▣ | ▣ | □ | ▣ | ▣ | □ |
| | E | ■ | ■ | ▣ | □ | ■ | ▣ | □ |
| Bull shark | A | ▣ | □ | ▣ | ▣ | ▣ | ▣ | ▣ |
| | M | ▣ | □ | □ | □ | □ | □ | □ |
| *Carcharhinus leucas* | J | ▣ | ▣ | ▣ | ▣ | ▣ | ▣ | ▣ |
| | P | ▣ | □ | □ | □ | □ | □ | □ |
| Tarpon | A | ▣ | ▣ | ▣ | ▣ | ▣ | ■ | □ |
| | S | ■ | ■ | ■ | ▣ | ■ | ■ | ■ |
| *Megalops atlanticus* | J | ▣ | ▣ | ■ | ■ | ▣ | ■ | □ |
| | L | □ | □ | ▣ | □ | ▣ | ■ | □ |
| | E | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| Alabama shad | A | ■ | ■ | ■ | ■ | ■ | ▣ | ■ |
| | S | ■ | ■ | ■ | ■ | ■ | ▣ | ■ |
| *Alosa alabamae* | J | ■ | ■ | ■ | ■ | ■ | ▣ | ■ |
| | L | ■ | ■ | ■ | ■ | ■ | ▣ | ■ |
| | E | ■ | ■ | ■ | ■ | ■ | ▣ | ■ |
| Gulf menhaden | A | ▣ | ▣ | ▣ | □ | ■ | □ | ▣ |
| | S | ▣ | ▣ | ■ | ■ | ■ | □ | ■ |
| *Brevoortia patronus* | J | ▣ | ▣ | □ | □ | ■ | □ | ▣ |
| | L | ▣ | ▣ | ▣ | □ | ▣ | □ | ▣ |
| | E | ▣ | ▣ | ■ | ■ | ■ | □ | ■ |
| Yellowfin menhaden | A | □ | □ | ■ | ▣ | ■ | □ | ▣ |
| | S | □ | ■ | ■ | ■ | ■ | □ | ■ |
| *Brevoortia smithi* | J | □ | ▣ | ▣ | ▣ | ■ | □ | ▣ |
| | L | □ | ▣ | ▣ | □ | ■ | □ | ▣ |
| | E | □ | ■ | ■ | ■ | ■ | □ | ■ |
| | | Florida Bay | Ten Thousand Islands | Caloosa-hatchee River | Charlotte Harbor | Tampa Bay | Suwannee River | Apalachee Bay |
| | | Gulf of Mexico Estuaries | | | | | | |

Data Reliability

■ Highly Certain

▣ Moderately Certain

□ Reasonable Inference

Life Stage

A - Adults
S - Spawning adults
J - Juveniles
L - Larvae
E - Eggs
M - Mating
P - Parturition

Table 6, continued. Data reliability

| Species/Life Stage | | Gulf of Mexico Estuaries | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | Apalachicola Bay | St. Andrew Bay | Choctawhatchee Bay | Pensacola Bay | Perdido Bay | Mobile Bay | Mississippi Sound |
| Stone crab | A | □ | ■ | ■ | ■ | ■ | ■ | ■ |
| | M | □ | ■ | ■ | ■ | ■ | ■ | ■ |
| *Menippe mercenaria* | J | □ | ■ | ■ | ■ | ■ | ■ | ■ |
| | L | □ | ■ | ■ | ■ | ■ | ■ | ■ |
| | E | □ | ■ | ■ | ■ | ■ | ■ | ■ |
| Bull shark | A | ▣ | ▣ | ▣ | ▣ | ▣ | ▣ | □ |
| | M | □ | □ | □ | □ | □ | □ | ▣ |
| *Carcharhinus leucas* | J | ▣ | ▣ | ▣ | ▣ | ▣ | ▣ | □ |
| | P | □ | □ | □ | □ | □ | □ | ■ |
| Tarpon | A | ▣ | ▣ | □ | □ | ▣ | ▣ | □ |
| | S | ▣ | ■ | ■ | ■ | ■ | ■ | □ |
| *Megalops atlanticus* | J | ▣ | ▣ | □ | □ | ▣ | ▣ | ▣ |
| | L | ▣ | ▣ | □ | □ | ■ | ▣ | □ |
| | E | ▣ | ■ | ■ | □ | ■ | ■ | □ |
| Alabama shad | A | ▣ | ▣ | ▣ | ■ | ■ | ▣ | □ |
| | S | ▣ | ■ | ■ | ■ | ■ | ■ | ▣ |
| *Alosa alabamae* | J | ▣ | ▣ | ▣ | ■ | ■ | ▣ | □ |
| | L | ▣ | ■ | ■ | ■ | ■ | ■ | ▣ |
| | E | ▣ | ▣ | ■ | ▣ | ■ | ■ | ▣ |
| Gulf menhaden | A | ▣ | ▣ | ▣ | ▣ | ▣ | ▣ | □ |
| | S | ■ | ■ | ▣ | ■ | ■ | ■ | □ |
| *Brevoortia patronus* | J | □ | ▣ | ▣ | ▣ | ▣ | ▣ | □ |
| | L | ▣ | ▣ | ▣ | ▣ | ▣ | ■ | □ |
| | E | ■ | ■ | ▣ | ■ | ▣ | □ | □ |
| Yellowfin menhaden | A | ■ | ■ | ■ | ■ | ■ | ■ | ▣ |
| | S | ■ | ■ | ■ | ■ | ■ | ■ | □ |
| *Brevoortia smithi* | J | ■ | ■ | ■ | ■ | ■ | ■ | □ |
| | L | ■ | ■ | ■ | ■ | ■ | ■ | □ |
| | E | ■ | ■ | ■ | ■ | ■ | ■ | □ |
| | | Apalachicola Bay | St. Andrew Bay | Choctawhatchee Bay | Pensacola Bay | Perdido Bay | Mobile Bay | Mississippi Sound |
| | | Gulf of Mexico Estuaries | | | | | | |

Data Reliability

■ Highly Certain

▣ Moderately Certain

□ Reasonable Inference

Life Stage

A - Adults
S - Spawning adults
J - Juveniles
L - Larvae
E - Eggs
M - Mating
P - Parturition

Table 6, continued. Data reliability

| Species/Life Stage | | Lake Borgne | Lake Pontchar-train | Breton/ Chandeleur Sounds | Mississippi River | Barataria Bay | Terrebonne/ Timbalier Bays | Atchafalaya/ Vermilion Bays |
|---|---|---|---|---|---|---|---|---|
| | | Gulf of Mexico Estuaries | | | | | | |
| Stone crab | A | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| | M | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| *Menippe mercenaria* | J | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| | L | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| | E | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| Bull shark | A | ▣ | ■ | ▣ | ▣ | □ | □ | □ |
| | M | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| *Carcharhinus leucas* | J | ▣ | ■ | ▣ | ▣ | □ | □ | □ |
| | P | □ | ▣ | □ | □ | □ | □ | □ |
| Tarpon | A | ▣ | ▣ | ▣ | ▣ | ▣ | □ | □ |
| | S | ■ | ■ | ■ | ■ | □ | ■ | ■ |
| *Megalops atlanticus* | J | ▣ | ▣ | ■ | ■ | ▣ | □ | ■ |
| | L | ▣ | ■ | ■ | ■ | □ | ■ | ■ |
| | E | ■ | ■ | ■ | ■ | □ | ■ | ■ |
| Alabama shad | A | ▣ | ▣ | ▣ | ■ | ■ | ■ | ■ |
| | S | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| *Alosa alabamae* | J | ▣ | ▣ | ■ | ■ | ■ | ■ | ■ |
| | L | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| | E | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| Gulf menhaden | A | ▣ | ▣ | ■ | ■ | □ | □ | ■ |
| | S | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| *Brevoortia patronus* | J | ▣ | ▣ | ▣ | ▣ | □ | □ | ▣ |
| | L | ▣ | □ | ■ | ■ | ▣ | ■ | ▣ |
| | E | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| Yellowfin menhaden | A | ▣ | □ | ■ | ■ | ■ | ■ | ■ |
| | S | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| *Brevoortia smithi* | J | ▣ | □ | ■ | ■ | ■ | ■ | ■ |
| | L | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| | E | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| | | Lake Borgne | Lake Pontchar-train | Breton/ Chandeleur Sounds | Mississippi River | Barataria Bay | Terrebonne/ Timbalier Bays | Atchafalaya/ Vermilion Bays |
| | | Gulf of Mexico Estuaries | | | | | | |

Data Reliability

■ Highly Certain

▣ Moderately Certain

□ Reasonable Inference

Life Stage

A - Adults
S - Spawning adults
J - Juveniles
L - Larvae
E - Eggs
M - Mating
P - Parturition

Table 6, continued. Data reliability

| Species/Life Stage | | Calcasieu Lake | Sabine Lake | Galveston Bay | Brazos River | Matagorda Bay | San Antonio Bay | Aransas Bay |
|---|---|---|---|---|---|---|---|---|
| | | Gulf of Mexico Estuaries | | | | | | |
| Stone crab | A | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| | M | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| *Menippe mercenaria* | J | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| | L | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| | E | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| Bull shark | A | □ | ▣ | ▣ | □ | ▣ | ▣ | ▣ |
| | M | □ | ▣ | ▣ | □ | ▣ | ▣ | ▣ |
| *Carcharhinus leucas* | J | □ | ▣ | ▣ | □ | ▣ | ▣ | ▣ |
| | P | □ | ■ | ■ | ■ | ■ | ■ | ■ |
| | | | | | | | | ■ |
| Tarpon | A | ■ | □ | ▣ | ▣ | ▣ | ▣ | ▣ |
| | S | ■ | □ | ▣ | ▣ | ▣ | ▣ | ▣ |
| *Megalops atlanticus* | J | ■ | □ | ▣ | □ | ▣ | ▣ | ▣ |
| | L | ■ | □ | ▣ | ▣ | ▣ | ▣ | ▣ |
| | E | ■ | □ | ▣ | ▣ | ▣ | ▣ | ▣ |
| Alabama shad | A | ■ | ■ | ■ | □ | ■ | ■ | ■ |
| | S | ■ | ■ | ■ | □ | ■ | ■ | ■ |
| *Alosa alabamae* | J | ■ | ■ | ■ | □ | ■ | ■ | ■ |
| | L | ■ | ■ | ■ | □ | ■ | ■ | ■ |
| | E | ■ | ■ | ■ | □ | ■ | ■ | ■ |
| Gulf menhaden | A | ■ | ▣ | ▣ | ▣ | ▣ | ▣ | ▣ |
| | S | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| *Brevoortia patronus* | J | □ | ▣ | ▣ | □ | ▣ | ▣ | ■ |
| | L | □ | ▣ | ▣ | ▣ | □ | ▣ | ▣ |
| | E | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| Yellowfin menhaden | A | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| | S | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| *Brevoortia smithi* | J | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| | L | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| | E | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| | | Calcasieu Lake | Sabine Lake | Galveston Bay | Brazos River | Matagorda Bay | San Antonio Bay | Aransas Bay |
| | | Gulf of Mexico Estuaries | | | | | | |

Data Reliability

■ Highly Certain

▣ Moderately Certain

□ Reasonable Inference

Life Stage

A - Adults
S - Spawning adults
J - Juveniles
L - Larvae
E - Eggs
M - Mating
P - Parturition

Table 6, continued. Data reliability

| Species/Life Stage | | Gulf of Mexico Estuaries: Corpus Christi Bay | Laguna Madre | Baffin Bay |
|---|---|---|---|---|
| Stone crab *Menippe mercenaria* | A | ■ | ■ | ■ |
| | M | ■ | ■ | ■ |
| | J | ■ | ■ | ■ |
| | L | ■ | ■ | ■ |
| | E | ■ | ■ | ■ |
| Bull shark *Carcharhinus leucas* | A | ▣ | ▣ | ▣ |
| | M | ▣ | ▣ | ▣ |
| | J | ▣ | ▣ | □ |
| | P | ■ | ■ | ■ |
| Tarpon *Megalops atlanticus* | A | ▣ | ▣ | ■ |
| | S | ▣ | □ | ■ |
| | J | ▣ | ▣ | ▣ |
| | L | ▣ | □ | ■ |
| | E | ▣ | □ | ■ |
| Alabama shad *Alosa alabamae* | A | ■ | ■ | ■ |
| | S | ■ | ■ | ■ |
| | J | ■ | ■ | ■ |
| | L | ■ | ■ | ■ |
| | E | ■ | ■ | ■ |
| Gulf menhaden *Brevoortia patronus* | A | ▣ | ▣ | ▣ |
| | S | ■ | ■ | ■ |
| | J | ▣ | ▣ | ■ |
| | L | ▣ | ▣ | ▣ |
| | E | ■ | ■ | ■ |
| Yellowfin menhaden *Brevoortia smithi* | A | ■ | ■ | ■ |
| | S | ■ | ■ | ■ |
| | J | ■ | ■ | ■ |
| | L | ■ | ■ | ■ |
| | E | ■ | ■ | ■ |
| | | Corpus Christi Bay | Laguna Madre | Baffin Bay |
| | | Gulf of Mexico Estuaries | | |

Data Reliability

■ Highly Certain

▣ Moderately Certain

□ Reasonable Inference

Life Stage

A - Adults
S - Spawning adults
J - Juveniles
L - Larvae
E - Eggs
M - Mating
P - Parturition

Table 6, continued. Data reliability

| Species/Life Stage | | Florida Bay | Ten Thousand Islands | Caloosa-hatchee River | Charlotte Harbor | Tampa Bay | Suwannee River | Apalachee Bay |
|---|---|---|---|---|---|---|---|---|
| | | Gulf of Mexico Estuaries | | | | | | |
| Gizzard shad | A | ▣ | ▣ | ▣ | ▣ | ▣ | ▣ | ▣ |
| | S | ▣ | ▣ | ▣ | ▣ | ▣ | □ | □ |
| *Dorosoma cepedianum* | J | ▣ | ▣ | ▣ | ▣ | ▣ | ▣ | ▣ |
| | L | ▣ | ▣ | ▣ | ▣ | ▣ | □ | □ |
| | E | ▣ | ▣ | ▣ | ▣ | ▣ | □ | □ |
| Bay anchovy | A | ▣ | □ | ▣ | ▣ | ▣ | □ | ▣ |
| | S | ▣ | ▣ | ▣ | ■ | ▣ | □ | ▣ |
| *Anchoa mitchilli* | J | ▣ | □ | ▣ | ▣ | ▣ | □ | ▣ |
| | L | ▣ | ▣ | ▣ | ■ | ▣ | □ | ▣ |
| | E | ▣ | ▣ | ▣ | ■ | ▣ | □ | ▣ |
| Hardhead catfish | A | ▣ | ▣ | ▣ | ▣ | ▣ | ▣ | ▣ |
| | S | □ | □ | □ | □ | □ | □ | □ |
| *Arius felis* | J | ▣ | ▣ | ▣ | ▣ | ▣ | ▣ | ▣ |
| | L | □ | □ | □ | □ | ▣ | □ | □ |
| | E | □ | □ | □ | □ | □ | □ | □ |
| Sheepshead minnow | A | ▣ | ▣ | ▣ | ▣ | ▣ | □ | ▣ |
| | S | ▣ | ▣ | ▣ | ▣ | ▣ | □ | ▣ |
| *Cyprinodon variegatus* | J | ▣ | ▣ | ▣ | ▣ | ▣ | □ | ▣ |
| | L | ▣ | ▣ | ▣ | ▣ | ▣ | □ | ▣ |
| | E | ▣ | ▣ | ▣ | ▣ | ▣ | □ | ▣ |
| Gulf killifish | A | ▣ | □ | ▣ | ▣ | ▣ | □ | ▣ |
| | S | □ | □ | ▣ | ▣ | ▣ | □ | ▣ |
| *Fundulus grandis* | J | ▣ | □ | ▣ | ▣ | ▣ | □ | ▣ |
| | L | □ | □ | ▣ | ▣ | ▣ | □ | ▣ |
| | E | □ | □ | ▣ | ▣ | ▣ | □ | ▣ |
| Silversides | A | ▣ | ▣ | ▣ | ▣ | ▣ | ▣ | ▣ |
| | S | □ | □ | □ | □ | □ | □ | □ |
| *Menidia* species | J | ▣ | ▣ | ▣ | ▣ | ▣ | ▣ | ▣ |
| | L | □ | □ | □ | □ | □ | □ | □ |
| | E | □ | □ | □ | □ | □ | □ | □ |
| | | Florida Bay | Ten Thousand Islands | Caloosa-hatchee River | Charlotte Harbor | Tampa Bay | Suwannee River | Apalachee Bay |
| | | Gulf of Mexico Estuaries | | | | | | |

Data Reliability

■ Highly Certain

▣ Moderately Certain

□ Reasonable Inference

Life Stage

A - Adults
S - Spawning adults
J - Juveniles
L - Larvae
E - Eggs

Table 6, continued. Data reliability

| Species/Life Stage | | Gulf of Mexico Estuaries | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | Apalachicola Bay | St. Andrew Bay | Choctawhatchee Bay | Pensacola Bay | Perdido Bay | Mobile Bay | Mississippi Sound |
| Gizzard shad | A | ▣ | □ | □ | □ | ▣ | ▣ | ▣ |
| | S | □ | □ | □ | □ | □ | □ | ▣ |
| *Dorosoma cepedianum* | J | ▣ | □ | □ | □ | ▣ | ▣ | □ |
| | L | □ | □ | □ | □ | □ | □ | □ |
| | E | □ | □ | □ | □ | □ | □ | □ |
| Bay anchovy | A | □ | ▣ | ▣ | ▣ | □ | ▣ | ▣ |
| | S | ■ | ▣ | ▣ | ▣ | □ | ▣ | ▣ |
| *Anchoa mitchilli* | J | □ | ▣ | ▣ | ▣ | □ | ▣ | □ |
| | L | ■ | ▣ | ▣ | ▣ | □ | ■ | □ |
| | E | ■ | ▣ | ▣ | ▣ | □ | ■ | □ |
| Hardhead catfish | A | ▣ | ▣ | ▣ | ▣ | ▣ | ▣ | ▣ |
| | S | □ | □ | □ | □ | ▣ | □ | □ |
| *Arius felis* | J | ▣ | ▣ | ▣ | ▣ | ▣ | ▣ | □ |
| | L | □ | □ | □ | □ | ▣ | □ | □ |
| | E | □ | □ | □ | □ | ▣ | □ | □ |
| Sheepshead minnow | A | □ | ▣ | ▣ | ▣ | ▣ | ▣ | ▣ |
| | S | □ | ▣ | □ | ▣ | ▣ | ▣ | □ |
| *Cyprinodon variegatus* | J | □ | ▣ | □ | ▣ | ▣ | ▣ | □ |
| | L | □ | ▣ | □ | ▣ | ▣ | ▣ | □ |
| | E | □ | ▣ | □ | ▣ | ▣ | ▣ | □ |
| Gulf killifish | A | □ | ▣ | □ | ▣ | □ | ▣ | □ |
| | S | □ | ▣ | □ | ▣ | □ | ▣ | □ |
| *Fundulus grandis* | J | □ | ▣ | □ | ▣ | □ | ▣ | □ |
| | L | □ | ▣ | □ | ▣ | □ | ▣ | □ |
| | E | □ | ▣ | □ | ▣ | □ | ▣ | □ |
| Silversides | A | ▣ | ▣ | ▣ | ▣ | ▣ | ▣ | ■ |
| | S | □ | □ | □ | □ | ▣ | □ | □ |
| *Menidia* species | J | ▣ | ▣ | ▣ | ▣ | ▣ | ▣ | □ |
| | L | □ | □ | ▣ | □ | ▣ | □ | □ |
| | E | □ | □ | □ | □ | ▣ | □ | □ |
| | | Apalachicola Bay | St. Andrew Bay | Choctawhatchee Bay | Pensacola Bay | Perdido Bay | Mobile Bay | Mississippi Sound |
| | | Gulf of Mexico Estuaries | | | | | | |

Data Reliability

■ Highly Certain

▣ Moderately Certain

□ Reasonable Inference

Life Stage

A - Adults
S - Spawning adults
J - Juveniles
L - Larvae
E - Eggs

Table 6, continued. Data reliability

| Species/Life Stage | | Lake Borgne | Lake Pontchar-train | Breton/ Chandeleur Sounds | Mississippi River | Barataria Bay | Terrebonne/ Timbalier Bays | Atchafalaya/ Vermilion Bays |
|---|---|---|---|---|---|---|---|---|
| | | Gulf of Mexico Estuaries | | | | | | |
| Gizzard shad | A | ▣ | ▣ | ▣ | □ | □ | □ | ▣ |
| | S | ▣ | ■ | ■ | ■ | ■ | ■ | ■ |
| *Dorosoma cepedianum* | J | ▣ | ▣ | ▣ | ▣ | □ | □ | ▣ |
| | L | ▣ | ■ | ■ | ▣ | ■ | ■ | ■ |
| | E | ▣ | ■ | ■ | ■ | ■ | ■ | ■ |
| Bay anchovy | A | ▣ | ▣ | ▣ | ▣ | ▣ | ▣ | ▣ |
| | S | ▣ | ▣ | ▣ | ▣ | ▣ | ▣ | ▣ |
| *Anchoa mitchilli* | J | ▣ | ▣ | ▣ | ▣ | ▣ | ▣ | ▣ |
| | L | ▣ | ▣ | ▣ | ▣ | ▣ | ▣ | ▣ |
| | E | ▣ | ▣ | ▣ | ▣ | ▣ | ▣ | ▣ |
| Hardhead catfish | A | ▣ | ▣ | ▣ | ▣ | □ | □ | □ |
| | S | ▣ | ▣ | ▣ | ▣ | ▣ | ▣ | □ |
| *Arius felis* | J | ▣ | ▣ | ▣ | ▣ | □ | □ | □ |
| | L | ▣ | ▣ | ▣ | ▣ | □ | □ | □ |
| | E | ▣ | ▣ | ▣ | ▣ | □ | □ | □ |
| Sheepshead minnow | A | ▣ | ▣ | □ | ▣ | □ | □ | □ |
| | S | ▣ | ▣ | □ | ▣ | □ | □ | □ |
| *Cyprinodon variegatus* | J | ▣ | ▣ | □ | ▣ | □ | ▣ | □ |
| | L | ▣ | ▣ | □ | ▣ | □ | □ | □ |
| | E | ▣ | ▣ | □ | ▣ | □ | □ | □ |
| Gulf killifish | A | ▣ | ▣ | □ | ▣ | ▣ | ▣ | □ |
| | S | □ | ▣ | □ | ▣ | □ | ▣ | ▣ |
| *Fundulus grandis* | J | ▣ | ▣ | □ | ▣ | ▣ | ▣ | □ |
| | L | □ | ▣ | □ | ▣ | □ | ▣ | □ |
| | E | □ | ▣ | □ | ▣ | □ | ▣ | ▣ |
| Silversides | A | ▣ | ▣ | □ | ▣ | □ | □ | □ |
| | S | ▣ | ▣ | □ | ▣ | ▣ | □ | □ |
| *Menidia* species | J | ▣ | ▣ | □ | ▣ | □ | □ | □ |
| | L | ▣ | ▣ | □ | ▣ | ▣ | □ | □ |
| | E | ▣ | ▣ | □ | ▣ | ▣ | □ | □ |
| | | Lake Borgne | Lake Pontchar-train | Breton/ Chandeleur Sounds | Mississippi River | Barataria Bay | Terrebonne/ Timbalier Bays | Atchafalaya/ Vermilion Bays |
| | | Gulf of Mexico Estuaries | | | | | | |

Data Reliability

■ Highly Certain

▣ Moderately Certain

□ Reasonable Inference

Life Stage

A - Adults
S - Spawning adults
J - Juveniles
L - Larvae
E - Eggs

Table 6, continued. Data reliability

| Species/Life Stage | | Calcasieu Lake | Sabine Lake | Galveston Bay | Brazos River | Matagorda Bay | San Antonio Bay | Aransas Bay |
|---|---|---|---|---|---|---|---|---|
| | | Gulf of Mexico Estuaries | | | | | | |
| Gizzard shad | A | □ | ▣ | ▣ | □ | ▣ | ▣ | ▣ |
| | S | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| *Dorosoma cepedianum* | J | □ | □ | ▣ | □ | ▣ | ▣ | ▣ |
| | L | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| | E | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| Bay anchovy | A | □ | ▣ | ▣ | □ | ▣ | ▣ | ▣ |
| | S | ▣ | □ | ▣ | □ | □ | □ | ▣ |
| *Anchoa mitchilli* | J | □ | ▣ | ▣ | □ | ▣ | ▣ | ▣ |
| | L | □ | □ | ▣ | □ | □ | □ | ▣ |
| | E | ▣ | □ | ▣ | □ | □ | □ | ▣ |
| Hardhead catfish | A | □ | ▣ | ▣ | □ | ▣ | ▣ | ▣ |
| | S | □ | ▣ | ▣ | □ | ▣ | ▣ | ▣ |
| *Arius felis* | J | □ | ▣ | ▣ | □ | ▣ | ▣ | ▣ |
| | L | □ | ▣ | ▣ | □ | ▣ | ▣ | ▣ |
| | E | □ | ▣ | ▣ | □ | ▣ | ▣ | ▣ |
| Sheepshead minnow | A | □ | ▣ | ▣ | □ | ▣ | ▣ | ▣ |
| | S | □ | □ | □ | □ | □ | □ | □ |
| *Cyprinodon variegatus* | J | □ | ▣ | ▣ | □ | ▣ | ▣ | ▣ |
| | L | □ | □ | □ | □ | □ | □ | □ |
| | E | □ | □ | □ | □ | □ | □ | □ |
| Gulf killifish | A | □ | ▣ | ▣ | □ | ▣ | ▣ | ▣ |
| | S | ▣ | ▣ | ▣ | □ | ▣ | ▣ | ▣ |
| *Fundulus grandis* | J | □ | ▣ | ▣ | □ | ▣ | ▣ | ▣ |
| | L | □ | ▣ | ▣ | □ | ▣ | ▣ | ▣ |
| | E | ▣ | ▣ | ▣ | □ | ▣ | ▣ | ▣ |
| Silversides | A | □ | ▣ | ▣ | □ | ▣ | ▣ | ▣ |
| | S | □ | □ | □ | □ | □ | □ | □ |
| *Menidia* species | J | □ | ▣ | ▣ | □ | ▣ | ▣ | ▣ |
| | L | □ | □ | □ | □ | □ | □ | □ |
| | E | □ | □ | □ | □ | □ | □ | □ |
| | | Calcasieu Lake | Sabine Lake | Galveston Bay | Brazos River | Matagorda Bay | San Antonio Bay | Aransas Bay |
| | | Gulf of Mexico Estuaries | | | | | | |

Data Reliability

■ Highly Certain

▣ Moderately Certain

□ Reasonable Inference

Life Stage

A - Adults
S - Spawning adults
J - Juveniles
L - Larvae
E - Eggs

Table 6, continued. Data reliability

| Species/Life Stage | | Gulf of Mexico Estuaries | | |
|---|---|---|---|---|
| | | Corpus Christi Bay | Laguna Madre | Baffin Bay |
| Gizzard shad | A | ▣ | ▣ | ▣ |
| | S | ■ | ■ | ■ |
| *Dorosoma cepedianum* | J | ▣ | ▣ | ▣ |
| | L | ■ | ■ | ■ |
| | E | ■ | ■ | ■ |
| Bay anchovy | A | ■ | ▣ | ▣ |
| | S | ▣ | ▣ | ▣ |
| *Anchoa mitchilli* | J | ■ | ▣ | ▣ |
| | L | ▣ | ▣ | ▣ |
| | E | ▣ | ▣ | ▣ |
| Hardhead catfish | A | ▣ | ▣ | ■ |
| | S | ▣ | ▣ | ▣ |
| *Arius felis* | J | ▣ | ▣ | ▣ |
| | L | ▣ | ▣ | ▣ |
| | E | ▣ | ▣ | ▣ |
| Sheepshead minnow | A | ▣ | ▣ | ▣ |
| | S | □ | □ | □ |
| *Cyprinodon variegatus* | J | ▣ | ▣ | ▣ |
| | L | □ | ▣ | □ |
| | E | □ | □ | □ |
| Gulf killifish | A | ▣ | ▣ | ▣ |
| | S | ▣ | ▣ | □ |
| *Fundulus grandis* | J | ▣ | ▣ | ▣ |
| | L | ▣ | ▣ | □ |
| | E | ▣ | ▣ | □ |
| Silversides | A | ▣ | ▣ | ▣ |
| | S | □ | □ | □ |
| *Menidia* species | J | ▣ | ▣ | ▣ |
| | L | □ | ▣ | □ |
| | E | □ | □ | □ |
| | | Corpus Christi Bay | Laguna Madre | Baffin Bay |
| | | Gulf of Mexico Estuaries | | |

Data Reliability

■ Highly Certain

▣ Moderately Certain

□ Reasonable Inference

Life Stage

A - Adults
S - Spawning adults
J - Juveniles
L - Larvae
E - Eggs

Table 6, continued. Data reliability

| Species/Life Stage | | Florida Bay | Ten Thousand Islands | Caloosa-hatchee River | Charlotte Harbor | Tampa Bay | Suwannee River | Apalachee Bay |
|---|---|---|---|---|---|---|---|---|
| | | Gulf of Mexico Estuaries | | | | | | |
| Snook | A | ▣ | □ | □ | ■ | ▣ | ▣ | ▣ |
| | S | ▣ | ▣ | □ | ▣ | ▣ | □ | ■ |
| *Centropomus undecimalis* | J | ▣ | ▣ | □ | ■ | ■ | □ | ▣ |
| | L | ▣ | □ | □ | □ | ▣ | □ | ▣ |
| | E | ▣ | ▣ | □ | □ | ▣ | □ | ■ |
| Bluefish | A | ▣ | ▣ | ■ | ▣ | ▣ | ▣ | □ |
| | S | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| *Pomatomus saltatrix* | J | ▣ | ▣ | ■ | ▣ | □ | ▣ | □ |
| | L | ▣ | ■ | ■ | ■ | ■ | ▣ | ▣ |
| | E | ■ | ■ | ■ | ■ | ■ | ▣ | ■ |
| Blue runner | A | ▣ | □ | □ | ▣ | □ | ▣ | ▣ |
| | S | ■ | ■ | □ | ■ | ■ | □ | ■ |
| *Caranx crysos* | J | ▣ | □ | □ | ▣ | □ | □ | ▣ |
| | L | ■ | ■ | □ | ■ | □ | □ | ■ |
| | E | ■ | ■ | □ | ■ | ■ | □ | ■ |
| Crevalle jack | A | ▣ | □ | □ | ▣ | ▣ | □ | ▣ |
| | S | ■ | ■ | □ | ■ | ▣ | ■ | ■ |
| *Caranx hippos* | J | ▣ | □ | □ | ▣ | ▣ | □ | ▣ |
| | L | ■ | ■ | □ | ■ | ▣ | □ | ▣ |
| | E | ■ | ■ | □ | ■ | ▣ | □ | ■ |
| Florida pompano | A | ▣ | ▣ | ■ | ▣ | ▣ | ▣ | ▣ |
| | S | ■ | ■ | ■ | ■ | ■ | ▣ | ■ |
| *Trachinotus carolinus* | J | ▣ | ▣ | ■ | ▣ | □ | ▣ | ▣ |
| | L | ■ | ■ | ■ | ■ | ■ | ▣ | ▣ |
| | E | ■ | ■ | ■ | ■ | ■ | ▣ | ■ |
| Gray snapper | A | ■ | ■ | ■ | ▣ | ■ | ▣ | ▣ |
| | S | ■ | ■ | ■ | ■ | ■ | ▣ | ■ |
| *Lutjanus griseus* | J | ▣ | ▣ | □ | ▣ | ▣ | ▣ | ▣ |
| | L | ■ | ▣ | ■ | ■ | ▣ | ▣ | ■ |
| | E | ■ | ■ | ■ | ■ | ■ | ▣ | ■ |
| | | Florida Bay | Ten Thousand Islands | Caloosa-hatchee River | Charlotte Harbor | Tampa Bay | Suwannee River | Apalachee Bay |
| | | Gulf of Mexico Estuaries | | | | | | |

Data Reliability

■ Highly Certain

▣ Moderately Certain

□ Reasonable Inference

Life Stage

A - Adults
S - Spawning adults
J - Juveniles
L - Larvae
E - Eggs

Table 6, continued. Data reliability

| Species/Life Stage | | Gulf of Mexico Estuaries | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | Apalachicola Bay | St. Andrew Bay | Choctawhatchee Bay | Pensacola Bay | Perdido Bay | Mobile Bay | Mississippi Sound |
| Snook | A | ▣ | ■ | ■ | ■ | ■ | ■ | ■ |
| | S | □ | ■ | ■ | ■ | ■ | ■ | ■ |
| *Centropomus undecimalis* | J | □ | ■ | ■ | ■ | ■ | ■ | ■ |
| | L | □ | ■ | ■ | ■ | ■ | ■ | ■ |
| | E | □ | ■ | ■ | ■ | ■ | ■ | ■ |
| Bluefish | A | □ | ▣ | ▣ | ▣ | ▣ | ▣ | □ |
| | S | □ | ■ | ■ | ■ | ■ | ■ | □ |
| *Pomatomus saltatrix* | J | □ | ▣ | ▣ | ▣ | ▣ | ▣ | □ |
| | L | □ | ■ | ■ | ■ | ■ | ■ | □ |
| | E | □ | ■ | ■ | ■ | ■ | ■ | □ |
| Blue runner | A | □ | ▣ | ▣ | ▣ | ▣ | ▣ | ▣ |
| | S | □ | ■ | ■ | ■ | ■ | ■ | ▣ |
| *Caranx crysos* | J | □ | ▣ | ▣ | ▣ | ▣ | ▣ | ▣ |
| | L | □ | ■ | ■ | ■ | ■ | ■ | □ |
| | E | □ | ■ | ■ | ■ | ■ | ■ | □ |
| Crevalle jack | A | □ | ▣ | □ | ▣ | ▣ | ■ | □ |
| | S | □ | ■ | ■ | ■ | ■ | ■ | □ |
| *Caranx hippos* | J | □ | ▣ | □ | ▣ | ▣ | ▣ | ▣ |
| | L | □ | ■ | ■ | ■ | ■ | ■ | □ |
| | E | □ | ■ | ■ | ■ | ■ | ■ | □ |
| Florida pompano | A | ▣ | ▣ | ▣ | ▣ | ■ | ▣ | □ |
| | S | ▣ | ■ | ■ | ■ | ■ | ■ | □ |
| *Trachinotus carolinus* | J | ▣ | ▣ | ■ | ▣ | ▣ | ▣ | ▣ |
| | L | ▣ | ■ | ■ | ■ | ■ | ▣ | □ |
| | E | ▣ | ■ | ■ | ■ | ■ | ▣ | □ |
| Gray snapper | A | □ | ▣ | ▣ | ▣ | ■ | ▣ | ▣ |
| | S | ■ | ■ | ■ | ■ | ■ | ■ | ▣ |
| *Lutjanus griseus* | J | □ | ▣ | ▣ | ▣ | ▣ | ▣ | ▣ |
| | L | ▣ | ■ | ■ | ■ | ■ | ■ | ▣ |
| | E | ▣ | ■ | ■ | ■ | ■ | ■ | ▣ |
| | | Apalachicola Bay | St. Andrew Bay | Choctawhatchee Bay | Pensacola Bay | Perdido Bay | Mobile Bay | Mississippi Sound |
| | | Gulf of Mexico Estuaries | | | | | | |

Data Reliability

■ Highly Certain

▣ Moderately Certain

□ Reasonable Inference

Life Stage

A - Adults
S - Spawning adults
J - Juveniles
L - Larvae
E - Eggs

Table 6, continued. Data reliability

| Species/Life Stage | | Gulf of Mexico Estuaries | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | Lake Borgne | Lake Pontchar-train | Breton/ Chandeleur Sounds | Mississippi River | Barataria Bay | Terrebonne/ Timbalier Bays | Atchafalaya/ Vermilion Bays |
| Snook | A | ■ | ■ | ▣ | ■ | □ | ■ | ■ |
| | S | ■ | ■ | ■ | ■ | □ | ■ | ■ |
| *Centropomus undecimalis* | J | ■ | ■ | ■ | ■ | □ | ■ | ■ |
| | L | ■ | ■ | ■ | ■ | □ | ■ | ■ |
| | E | ■ | ■ | ■ | ■ | □ | ■ | ■ |
| Bluefish | A | ▣ | ■ | ■ | ▣ | ■ | ■ | ■ |
| | S | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| *Pomatomus saltatrix* | J | □ | ■ | ▣ | ▣ | ▣ | ▣ | ▣ |
| | L | ■ | ■ | ■ | ■ | □ | ■ | ■ |
| | E | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| Blue runner | A | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| | S | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| *Caranx crysos* | J | ■ | ■ | □ | ■ | ▣ | □ | ■ |
| | L | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| | E | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| Crevalle jack | A | ■ | ■ | ▣ | ■ | ▣ | ▣ | ■ |
| | S | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| *Caranx hippos* | J | ▣ | ▣ | ▣ | ▣ | ▣ | ▣ | □ |
| | L | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| | E | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| Florida pompano | A | ■ | ■ | ▣ | ■ | ▣ | □ | ■ |
| | S | ■ | ■ | ▣ | ■ | ■ | ■ | ■ |
| *Trachinotus carolinus* | J | ■ | ■ | ▣ | □ | ▣ | □ | □ |
| | L | ■ | ■ | ▣ | ■ | □ | ■ | ■ |
| | E | ■ | ■ | ▣ | ■ | ■ | ■ | ■ |
| Gray snapper | A | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| | S | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| *Lutjanus griseus* | J | ■ | ■ | ▣ | ■ | ▣ | ▣ | □ |
| | L | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| | E | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| | | Lake Borgne | Lake Pontchar-train | Breton/ Chandeleur Sounds | Mississippi River | Barataria Bay | Terrebonne/ Timbalier Bays | Atchafalaya/ Vermilion Bays |
| | | Gulf of Mexico Estuaries | | | | | | |

Data Reliability

■ Highly Certain

▣ Moderately Certain

□ Reasonable Inference

Life Stage

A - Adults
S - Spawning adults
J - Juveniles
L - Larvae
E - Eggs

Table 6, continued. Data reliability

| Species/Life Stage | | Calcasieu Lake | Sabine Lake | Galveston Bay | Brazos River | Matagorda Bay | San Antonio Bay | Aransas Bay |
|---|---|---|---|---|---|---|---|---|
| | | Gulf of Mexico Estuaries | | | | | | |
| Snook | A | ■ | ▣ | ▣ | □ | ▣ | ▣ | ▣ |
| | S | ■ | ■ | ■ | ■ | ▣ | ■ | ▣ |
| *Centropomus undecimalis* | J | ■ | ▣ | ▣ | □ | ▣ | ▣ | ▣ |
| | L | ■ | ■ | ▣ | □ | ▣ | ▣ | ▣ |
| | E | ■ | ■ | ■ | ■ | ▣ | ■ | ▣ |
| Bluefish | A | ■ | ▣ | ▣ | □ | ▣ | ▣ | ▣ |
| | S | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| *Pomatomus saltatrix* | J | □ | ▣ | ▣ | □ | ▣ | ▣ | ▣ |
| | L | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| | E | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| Blue runner | A | ■ | ■ | □ | □ | ■ | ■ | ■ |
| | S | ■ | ■ | ■ | □ | ■ | ■ | ■ |
| *Caranx crysos* | J | ■ | ■ | □ | □ | ■ | ■ | ■ |
| | L | ■ | ■ | ■ | □ | ■ | ■ | ■ |
| | E | ■ | ■ | ■ | □ | ■ | ■ | ■ |
| Crevalle jack | A | ■ | ▣ | ▣ | □ | □ | ▣ | ▣ |
| | S | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| *Caranx hippos* | J | □ | ▣ | ▣ | □ | □ | ▣ | ▣ |
| | L | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| | E | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| Florida pompano | A | ■ | ▣ | ▣ | □ | □ | ▣ | ▣ |
| | S | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| *Trachinotus carolinus* | J | □ | ▣ | ▣ | □ | □ | ▣ | ▣ |
| | L | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| | E | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| Gray snapper | A | ■ | ▣ | ▣ | □ | □ | ▣ | ▣ |
| | S | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| *Lutjanus griseus* | J | □ | ▣ | ▣ | □ | □ | ▣ | ▣ |
| | L | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| | E | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| | | Calcasieu Lake | Sabine Lake | Galveston Bay | Brazos River | Matagorda Bay | San Antonio Bay | Aransas Bay |
| | | Gulf of Mexico Estuaries | | | | | | |

**Data Reliability**

- ■ Highly Certain
- ▣ Moderately Certain
- □ Reasonable Inference

**Life Stage**

A - Adults
S - Spawning adults
J - Juveniles
L - Larvae
E - Eggs

Table 6, continued. Data reliability

| Species/Life Stage | | Gulf of Mexico Estuaries | | |
|---|---|---|---|---|
| | | Corpus Christi Bay | Laguna Madre | Baffin Bay |
| Snook | A | ▣ | ▣ | ▣ |
| | S | ▣ | ■ | ■ |
| *Centropomus undecimalis* | J | ▣ | ▣ | ▣ |
| | L | ▣ | ▣ | ▣ |
| | E | ▣ | ■ | ■ |
| Bluefish | A | ▣ | ▣ | ▣ |
| | S | ■ | ■ | ■ |
| *Pomatomus saltatrix* | J | ▣ | ▣ | ▣ |
| | L | ■ | ■ | ■ |
| | E | ■ | ■ | ■ |
| Blue runner | A | ■ | ■ | ■ |
| | S | ■ | ■ | ■ |
| *Caranx crysos* | J | ■ | ■ | ■ |
| | L | ■ | ■ | ■ |
| | E | ■ | ■ | ■ |
| Crevalle jack | A | ▣ | ▣ | ▣ |
| | S | ■ | ■ | ■ |
| *Caranx hippos* | J | ▣ | ▣ | ▣ |
| | L | ■ | ■ | ■ |
| | E | ■ | ■ | ■ |
| Florida pompano | A | ▣ | ▣ | ▣ |
| | S | ■ | ■ | ■ |
| *Trachinotus carolinus* | J | ▣ | ▣ | ▣ |
| | L | ■ | ■ | ■ |
| | E | ■ | ■ | ■ |
| Gray snapper | A | ▣ | ▣ | ▣ |
| | S | ■ | ■ | ■ |
| *Lutjanus griseus* | J | ▣ | ▣ | ▣ |
| | L | ■ | ■ | ■ |
| | E | ■ | ■ | ■ |
| | | Corpus Christi Bay | Laguna Madre | Baffin Bay |
| | | Gulf of Mexico Estuaries | | |

Data Reliability

■ Highly Certain

▣ Moderately Certain

□ Reasonable Inference

Life Stage

A - Adults
S - Spawning adults
J - Juveniles
L - Larvae
E - Eggs

Table 6, continued. Data reliability

| Species/Life Stage | | Florida Bay | Ten Thousand Islands | Caloosa-hatchee River | Charlotte Harbor | Tampa Bay | Suwannee River | Apalachee Bay |
|---|---|---|---|---|---|---|---|---|
| | | Gulf of Mexico Estuaries | | | | | | |
| Sheepshead | A | ▣ | ▣ | ▣ | ▣ | ▣ | ▣ | ▣ |
| | S | □ | □ | □ | □ | □ | □ | □ |
| *Archosargus probatocephalus* | J | ▣ | ▣ | ▣ | ▣ | ▣ | ▣ | ▣ |
| | L | □ | □ | ▣ | ▣ | ▣ | □ | □ |
| | E | □ | □ | □ | □ | □ | □ | □ |
| Pinfish | A | ■ | ▣ | ▣ | ▣ | ■ | □ | ▣ |
| | S | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| *Lagodon rhomboides* | J | ■ | ▣ | ▣ | ▣ | ■ | ▣ | ▣ |
| | L | ■ | ▣ | ■ | ▣ | ▣ | ▣ | ▣ |
| | E | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| Silver perch | A | ▣ | ▣ | ▣ | ▣ | ▣ | ▣ | ▣ |
| | S | ▣ | □ | □ | □ | □ | □ | □ |
| *Bairdiella chrysoura* | J | ■ | ▣ | ▣ | ▣ | ▣ | ▣ | ▣ |
| | L | ▣ | ▣ | ▣ | ▣ | ▣ | □ | □ |
| | E | ▣ | □ | □ | □ | □ | □ | □ |
| Sand seatrout | A | ■ | ▣ | ▣ | ▣ | ▣ | □ | ▣ |
| | S | ■ | ■ | □ | □ | ▣ | ▣ | ■ |
| *Cynoscion arenarius* | J | ▣ | ▣ | ▣ | ▣ | ▣ | ▣ | ▣ |
| | L | ■ | ▣ | □ | □ | ▣ | ▣ | ■ |
| | E | ■ | ■ | □ | □ | ▣ | ■ | ■ |
| Spotted seatrout | A | ■ | ■ | ■ | ■ | ■ | ▣ | ▣ |
| | S | ▣ | ▣ | ▣ | ▣ | ■ | ▣ | ▣ |
| *Cynoscion nebulosus* | J | ■ | ■ | ■ | ■ | ■ | □ | ▣ |
| | L | ▣ | ▣ | ▣ | ▣ | ■ | ▣ | ▣ |
| | E | ▣ | ▣ | ■ | ▣ | ▣ | ▣ | ▣ |
| Spot | A | ■ | ■ | ▣ | ▣ | ▣ | □ | ▣ |
| | S | ■ | ■ | ■ | ■ | ▣ | ■ | ■ |
| *Leiostomus xanthurus* | J | ▣ | ▣ | ▣ | ▣ | ▣ | ▣ | ▣ |
| | L | ■ | ▣ | ■ | ▣ | ▣ | ▣ | ■ |
| | E | ■ | ■ | ■ | ■ | ▣ | ■ | ■ |
| | | Florida Bay | Ten Thousand Islands | Caloosa-hatchee River | Charlotte Harbor | Tampa Bay | Suwannee River | Apalachee Bay |
| | | Gulf of Mexico Estuaries | | | | | | |

Data Reliability

■ Highly Certain

▣ Moderately Certain

□ Reasonable Inference

Life Stage

A - Adults
S - Spawning adults
J - Juveniles
L - Larvae
E - Eggs

Table 6, continued. Data reliability

| Species/Life Stage | | Gulf of Mexico Estuaries | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | Apalachicola Bay | St. Andrew Bay | Choctawhatchee Bay | Pensacola Bay | Perdido Bay | Mobile Bay | Mississippi Sound |
| Sheepshead | A | ▣ | ▣ | ▣ | ▣ | ▣ | ▣ | ▣ |
| | S | □ | □ | □ | □ | □ | □ | ▣ |
| *Archosargus probatocephalus* | J | ▣ | ▣ | ▣ | ▣ | ▣ | ▣ | □ |
| | L | ▣ | □ | □ | □ | ▣ | ▣ | ■ |
| | E | □ | □ | □ | □ | □ | □ | □ |
| Pinfish | A | ▣ | ▣ | ▣ | ▣ | ▣ | □ | ▣ |
| | S | ■ | ■ | ■ | ■ | ■ | ■ | ▣ |
| *Lagodon rhomboides* | J | ▣ | ▣ | ▣ | ▣ | ▣ | ▣ | ▣ |
| | L | ▣ | ▣ | ▣ | ▣ | ▣ | ▣ | ▣ |
| | E | ■ | ■ | ■ | ■ | ■ | ■ | ▣ |
| Silver perch | A | ▣ | ▣ | ▣ | ▣ | ▣ | ▣ | □ |
| | S | □ | □ | □ | □ | ▣ | □ | ▣ |
| *Bairdiella chrysoura* | J | ▣ | ▣ | ▣ | ▣ | ▣ | ▣ | □ |
| | L | □ | □ | □ | □ | ▣ | ▣ | □ |
| | E | □ | □ | □ | □ | □ | □ | □ |
| Sand seatrout | A | ▣ | ▣ | ▣ | ▣ | ▣ | ▣ | ■ |
| | S | ■ | ▣ | ▣ | ▣ | ▣ | ▣ | ▣ |
| *Cynoscion arenarius* | J | ▣ | ▣ | ▣ | ▣ | ▣ | ▣ | □ |
| | L | ▣ | ▣ | ▣ | ▣ | ▣ | ▣ | ▣ |
| | E | ■ | ▣ | ▣ | □ | ▣ | ▣ | ▣ |
| Spotted seatrout | A | □ | ▣ | ▣ | ▣ | ▣ | ▣ | ▣ |
| | S | ▣ | ▣ | ▣ | ▣ | ▣ | ▣ | ■ |
| *Cynoscion nebulosus* | J | ▣ | ▣ | □ | ▣ | ▣ | ▣ | ■ |
| | L | □ | ▣ | ▣ | ▣ | ▣ | ▣ | ■ |
| | E | □ | ▣ | ▣ | ▣ | ▣ | ▣ | ▣ |
| Spot | A | ▣ | ▣ | ▣ | ▣ | ▣ | ▣ | □ |
| | S | ■ | ■ | ■ | ■ | ▣ | ■ | ▣ |
| *Leiostomus xanthurus* | J | ▣ | ▣ | ▣ | ▣ | ▣ | ▣ | □ |
| | L | ■ | ■ | ▣ | ▣ | ▣ | ▣ | □ |
| | E | ■ | ■ | ■ | ■ | ■ | ■ | ▣ |
| | | Apalachicola Bay | St. Andrew Bay | Choctawhatchee Bay | Pensacola Bay | Perdido Bay | Mobile Bay | Mississippi Sound |
| | | Gulf of Mexico Estuaries | | | | | | |

Data Reliability

■ Highly Certain

▣ Moderately Certain

□ Reasonable Inference

Life Stage

A - Adults
S - Spawning adults
J - Juveniles
L - Larvae
E - Eggs

Table 6, continued. Data reliability

| Species/Life Stage | | Lake Borgne | Lake Pontchar-train | Breton/ Chandeleur Sounds | Mississippi River | Barataria Bay | Terrebonne/ Timbalier Bays | Atchafalaya/ Vermilion Bays |
|---|---|---|---|---|---|---|---|---|
| | | Gulf of Mexico Estuaries | | | | | | |
| Sheepshead | A | ▣ | ▣ | ▣ | ▣ | ▣ | □ | □ |
| | S | ■ | ■ | □ | ■ | □ | □ | ■ |
| *Archosargus probatocephalus* | J | ▣ | ▣ | ▣ | ▣ | ▣ | □ | □ |
| | L | ■ | ■ | □ | ■ | □ | □ | ■ |
| | E | ■ | ■ | □ | ■ | □ | □ | ■ |
| Pinfish | A | ▣ | □ | ■ | ■ | □ | ■ | □ |
| | S | ■ | ■ | ■ | ■ | ▣ | ■ | ■ |
| *Lagodon rhomboides* | J | ▣ | ▣ | ▣ | ▣ | ▣ | ▣ | □ |
| | L | ■ | ■ | ■ | ■ | □ | ■ | ■ |
| | E | ■ | ■ | ■ | ■ | ▣ | ■ | ■ |
| Silver perch | A | ▣ | □ | ▣ | ▣ | ▣ | ▣ | □ |
| | S | □ | □ | □ | ■ | □ | ▣ | ■ |
| *Bairdiella chrysoura* | J | ▣ | □ | ▣ | ▣ | ▣ | ▣ | □ |
| | L | □ | □ | □ | ■ | □ | ▣ | ■ |
| | E | □ | □ | □ | ■ | □ | ▣ | ■ |
| Sand seatrout | A | ▣ | □ | ▣ | ▣ | ▣ | □ | □ |
| | S | □ | □ | □ | ■ | □ | □ | ■ |
| *Cynoscion arenarius* | J | ▣ | □ | ▣ | ▣ | ▣ | □ | □ |
| | L | □ | □ | □ | ■ | □ | □ | ■ |
| | E | □ | □ | □ | ■ | □ | □ | ■ |
| Spotted seatrout | A | ▣ | ▣ | ▣ | ▣ | □ | ▣ | □ |
| | S | ▣ | ▣ | □ | ▣ | □ | ▣ | ▣ |
| *Cynoscion nebulosus* | J | ▣ | ▣ | ▣ | ▣ | □ | ▣ | □ |
| | L | ▣ | ▣ | □ | ▣ | □ | ▣ | ▣ |
| | E | ▣ | ▣ | □ | ▣ | □ | ▣ | ▣ |
| Spot | A | ▣ | □ | □ | ▣ | ▣ | □ | ■ |
| | S | ■ | ■ | ■ | ■ | ▣ | ■ | ■ |
| *Leiostomus xanthurus* | J | ▣ | ▣ | □ | ▣ | ▣ | ▣ | □ |
| | L | ▣ | □ | ■ | ■ | ▣ | ■ | ■ |
| | E | ■ | ■ | ■ | ■ | ▣ | ■ | ■ |
| | | Lake Borgne | Lake Pontchar-train | Breton/ Chandeleur Sounds | Mississippi River | Barataria Bay | Terrebonne/ Timbalier Bays | Atchafalaya/ Vermilion Bays |
| | | Gulf of Mexico Estuaries | | | | | | |

Data Reliability

■ Highly Certain

▣ Moderately Certain

□ Reasonable Inference

Life Stage

A - Adults
S - Spawning adults
J - Juveniles
L - Larvae
E - Eggs

Table 6, continued. Data reliability

| Species/Life Stage | | Calcasieu Lake | Sabine Lake | Galveston Bay | Brazos River | Matagorda Bay | San Antonio Bay | Aransas Bay |
|---|---|---|---|---|---|---|---|---|
| | | Gulf of Mexico Estuaries | | | | | | |
| Sheepshead | A | □ | ▣ | ▣ | □ | ▣ | ▣ | ▣ |
| | S | ▣ | ▣ | ▣ | ▣ | ▣ | ▣ | ▣ |
| *Archosargus probatocephalus* | J | □ | ▣ | ▣ | □ | ▣ | ▣ | ▣ |
| | L | ▣ | ▣ | ▣ | ▣ | ▣ | ▣ | ▣ |
| | E | ▣ | ▣ | ▣ | ▣ | ▣ | ▣ | ▣ |
| Pinfish | A | □ | ▣ | ▣ | □ | ▣ | ▣ | ▣ |
| | S | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| *Lagodon rhomboides* | J | □ | ▣ | ▣ | □ | ▣ | ▣ | ▣ |
| | L | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| | E | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| Silver perch | A | □ | ▣ | ▣ | □ | ▣ | ▣ | ▣ |
| | S | ■ | ▣ | ▣ | □ | ▣ | ▣ | ▣ |
| *Bairdiella chrysoura* | J | □ | ▣ | ▣ | □ | ▣ | ▣ | ▣ |
| | L | ■ | ▣ | ▣ | □ | ▣ | ▣ | ▣ |
| | E | ■ | ▣ | ▣ | □ | ▣ | ▣ | ▣ |
| Sand seatrout | A | □ | ▣ | ▣ | □ | ▣ | ▣ | ▣ |
| | S | ■ | □ | □ | □ | □ | □ | □ |
| *Cynoscion arenarius* | J | □ | ▣ | ▣ | □ | ▣ | ▣ | ▣ |
| | L | ■ | □ | □ | □ | □ | □ | □ |
| | E | ■ | □ | □ | □ | □ | □ | □ |
| Spotted seatrout | A | □ | ▣ | ▣ | □ | ▣ | ▣ | ▣ |
| | S | ▣ | □ | ▣ | □ | □ | ▣ | ▣ |
| *Cynoscion nebulosus* | J | □ | ▣ | ▣ | □ | ▣ | ▣ | ▣ |
| | L | ▣ | ▣ | ▣ | □ | □ | ▣ | ▣ |
| | E | ▣ | □ | ▣ | □ | □ | ▣ | ▣ |
| Spot | A | ■ | ▣ | ▣ | □ | ▣ | ▣ | ▣ |
| | S | ■ | ■ | ▣ | ■ | ▣ | ▣ | ▣ |
| *Leiostomus xanthurus* | J | □ | ▣ | ▣ | □ | ▣ | ▣ | ▣ |
| | L | ■ | ■ | ▣ | ■ | ▣ | ▣ | ▣ |
| | E | ■ | ■ | ▣ | ■ | ▣ | ▣ | ▣ |
| | | Calcasieu Lake | Sabine Lake | Galveston Bay | Brazos River | Matagorda Bay | San Antonio Bay | Aransas Bay |
| | | Gulf of Mexico Estuaries | | | | | | |

Data Reliability

■ Highly Certain

▣ Moderately Certain

□ Reasonable Inference

Life Stage

A - Adults
S - Spawning adults
J - Juveniles
L - Larvae
E - Eggs

Table 6, continued. Data reliability

| Species/Life Stage | | Gulf of Mexico Estuaries | | |
|---|---|---|---|---|
| | | Corpus Christi Bay | Laguna Madre | Baffin Bay |
| Sheepshead | A | ▣ | ▣ | ▣ |
| | S | ▣ | ▣ | ▣ |
| *Archosargus probatocephalus* | J | ▣ | ▣ | ▣ |
| | L | ▣ | ▣ | ▣ |
| | E | ▣ | ▣ | ▣ |
| Pinfish | A | ▣ | ▣ | ▣ |
| | S | ■ | ■ | ■ |
| *Lagodon rhomboides* | J | ▣ | ▣ | ▣ |
| | L | ■ | ■ | ■ |
| | E | ■ | ■ | ■ |
| Silver perch | A | ▣ | ▣ | ▣ |
| | S | ▣ | ▣ | ▣ |
| *Bairdiella chrysoura* | J | ▣ | ▣ | ▣ |
| | L | ▣ | ▣ | ▣ |
| | E | ▣ | ▣ | ▣ |
| Sand seatrout | A | ▣ | ▣ | ▣ |
| | S | □ | □ | □ |
| *Cynoscion arenarius* | J | ▣ | ▣ | ▣ |
| | L | □ | □ | □ |
| | E | □ | □ | □ |
| Spotted seatrout | A | ▣ | ▣ | ▣ |
| | S | ▣ | ▣ | ▣ |
| *Cynoscion nebulosus* | J | ▣ | ▣ | ▣ |
| | L | ▣ | ▣ | ▣ |
| | E | ▣ | ▣ | ▣ |
| Spot | A | ▣ | ▣ | ▣ |
| | S | ▣ | ▣ | ▣ |
| *Leiostomus xanthurus* | J | ▣ | ▣ | ▣ |
| | L | ▣ | ▣ | ▣ |
| | E | ▣ | ▣ | ▣ |
| | | Corpus Christi Bay | Laguna Madre | Baffin Bay |
| | | Gulf of Mexico Estuaries | | |

Data Reliability

■ Highly Certain

▣ Moderately Certain

□ Reasonable Inference

Life Stage

A - Adults
S - Spawning adults
J - Juveniles
L - Larvae
E - Eggs

Table 6, continued. Data reliability

| Species/Life Stage | | Florida Bay | Ten Thousand Islands | Caloosa-hatchee River | Charlotte Harbor | Tampa Bay | Suwannee River | Apalachee Bay |
|---|---|---|---|---|---|---|---|---|
| | | Gulf of Mexico Estuaries | | | | | | |
| Atlantic croaker | A | ■ | ■ | ■ | ■ | ■ | □ | ▣ |
| | S | ■ | ■ | ■ | ■ | □ | ■ | ■ |
| *Micropogonias undulatus* | J | ■ | ▣ | ▣ | ▣ | ▣ | □ | ▣ |
| | L | ■ | ▣ | ■ | ■ | ■ | □ | ▣ |
| | E | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| Black drum | A | ▣ | ▣ | ▣ | ▣ | ■ | ▣ | ▣ |
| | S | ▣ | □ | □ | □ | ■ | □ | □ |
| *Pogonias cromis* | J | ▣ | ▣ | ▣ | ▣ | ■ | ▣ | ▣ |
| | L | □ | ▣ | ▣ | ▣ | ▣ | □ | □ |
| | E | □ | □ | □ | □ | □ | □ | □ |
| Red drum | A | ▣ | ▣ | ▣ | ▣ | ▣ | □ | ▣ |
| | S | ▣ | ▣ | ■ | ▣ | ■ | □ | ▣ |
| *Sciaenops ocellatus* | J | ▣ | ▣ | ■ | ▣ | ■ | □ | ▣ |
| | L | ▣ | ▣ | ▣ | ▣ | ▣ | □ | ▣ |
| | E | ▣ | ▣ | ■ | ▣ | ▣ | □ | ▣ |
| Striped mullet | A | ▣ | ▣ | ▣ | ▣ | ▣ | □ | ▣ |
| | S | ▣ | ■ | ■ | ■ | ■ | ■ | ■ |
| *Mugil cephalus* | J | ▣ | ▣ | ▣ | ▣ | ▣ | □ | ▣ |
| | L | ▣ | ■ | ■ | ▣ | ■ | ▣ | ▣ |
| | E | ▣ | ■ | ■ | ■ | ■ | ■ | ■ |
| Code goby | A | □ | ▣ | ▣ | □ | ▣ | □ | ▣ |
| | S | ▣ | ▣ | ▣ | □ | ▣ | □ | ▣ |
| *Gobiosoma robustum* | J | ▣ | ▣ | ▣ | □ | ▣ | □ | ▣ |
| | L | ▣ | ▣ | ▣ | □ | □ | □ | ▣ |
| | E | ▣ | ▣ | ▣ | □ | ▣ | □ | ▣ |
| Spanish mackerel | A | ▣ | ■ | ▣ | □ | ■ | □ | ▣ |
| | S | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| *Scomberomorus maculatus* | J | ▣ | ▣ | ▣ | □ | ▣ | □ | ▣ |
| | L | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| | E | ■ | ■ | ■ | ■ | □ | ■ | ■ |
| | | Florida Bay | Ten Thousand Islands | Caloosa-hatchee River | Charlotte Harbor | Tampa Bay | Suwannee River | Apalachee Bay |
| | | Gulf of Mexico Estuaries | | | | | | |

Data Reliability

■ Highly Certain

▣ Moderately Certain

□ Reasonable Inference

Life Stage

A - Adults
S - Spawning adults
J - Juveniles
L - Larvae
E - Eggs

Table 6, continued. Data reliability

| Species/Life Stage | | Gulf of Mexico Estuaries | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | Apalachicola Bay | St. Andrew Bay | Choctawhatchee Bay | Pensacola Bay | Perdido Bay | Mobile Bay | Mississippi Sound |
| Atlantic croaker | A | ▣ | ▣ | ▣ | ▣ | ■ | ▣ | ▣ |
| | S | ■ | ■ | ■ | ■ | ■ | ■ | ▣ |
| *Micropogonias undulatus* | J | ▣ | ▣ | ▣ | ▣ | ■ | ▣ | □ |
| | L | ▣ | ▣ | ▣ | ▣ | ■ | ▣ | ▣ |
| | E | ■ | □ | ■ | ■ | ■ | ■ | □ |
| Black drum | A | ▣ | ▣ | ▣ | ▣ | ▣ | ▣ | □ |
| | S | □ | □ | □ | □ | □ | □ | ▣ |
| *Pogonias cromis* | J | ▣ | ▣ | ▣ | ▣ | ▣ | ▣ | ▣ |
| | L | □ | □ | □ | □ | ▣ | ▣ | ▣ |
| | E | □ | □ | □ | □ | □ | □ | ▣ |
| Red drum | A | ▣ | ▣ | □ | ▣ | ▣ | ▣ | □ |
| | S | ▣ | ■ | □ | ■ | ▣ | ▣ | ▣ |
| *Sciaenops ocellatus* | J | ▣ | ▣ | □ | ▣ | ▣ | ▣ | □ |
| | L | ▣ | ▣ | □ | ▣ | ▣ | ▣ | ▣ |
| | E | ▣ | ▣ | □ | ▣ | ▣ | ▣ | ▣ |
| Striped mullet | A | ▣ | ▣ | ▣ | ▣ | ▣ | ▣ | ■ |
| | S | ■ | ■ | ■ | ■ | ■ | ■ | ▣ |
| *Mugil cephalus* | J | ▣ | ▣ | ▣ | ▣ | ▣ | ▣ | ■ |
| | L | ▣ | ▣ | ▣ | ▣ | ▣ | ▣ | ▣ |
| | E | ■ | ■ | ■ | ■ | ■ | ■ | ▣ |
| Code goby | A | ▣ | ▣ | ▣ | ▣ | ▣ | ■ | ▣ |
| | S | ▣ | ▣ | ▣ | ▣ | ▣ | ■ | ▣ |
| *Gobiosoma robustum* | J | ▣ | ▣ | ▣ | ▣ | ▣ | ■ | ▣ |
| | L | ▣ | ▣ | ▣ | ▣ | ▣ | ■ | ▣ |
| | E | ▣ | ▣ | ▣ | ▣ | ▣ | ■ | ▣ |
| Spanish mackerel | A | □ | □ | ▣ | ▣ | ▣ | ▣ | □ |
| | S | ■ | ■ | ■ | ■ | ■ | ■ | □ |
| *Scomberomorus maculatus* | J | □ | □ | ▣ | ▣ | ▣ | ▣ | □ |
| | L | ■ | ■ | ■ | ■ | ■ | ■ | □ |
| | E | ■ | ■ | ■ | ■ | ■ | ■ | □ |
| | | Apalachicola Bay | St. Andrew Bay | Choctawhatchee Bay | Pensacola Bay | Perdido Bay | Mobile Bay | Mississippi Sound |
| | | Gulf of Mexico Estuaries | | | | | | |

Data Reliability

■ Highly Certain

▣ Moderately Certain

□ Reasonable Inference

Life Stage

A - Adults
S - Spawning adults
J - Juveniles
L - Larvae
E - Eggs

Table 6, continued. Data reliability

| Species/Life Stage | | Lake Borgne | Lake Pontchar-train | Breton/ Chandeleur Sounds | Mississippi River | Barataria Bay | Terrebonne/ Timbalier Bays | Atchafalaya/ Vermilion Bays |
|---|---|---|---|---|---|---|---|---|
| | | Gulf of Mexico Estuaries | | | | | | |
| Atlantic croaker | A | ▣ | □ | □ | ■ | ▣ | ■ | ■ |
| | S | ■ | ■ | ■ | ■ | ▣ | ■ | ■ |
| *Micropogonias undulatus* | J | ▣ | ▣ | □ | □ | ▣ | ▣ | □ |
| | L | ▣ | ■ | ■ | ■ | ▣ | ▣ | ▣ |
| | E | ■ | ■ | ■ | ■ | ▣ | ■ | ■ |
| Black drum | A | ▣ | ▣ | ▣ | ▣ | ■ | ▣ | □ |
| | S | ■ | ■ | □ | ■ | □ | ▣ | ■ |
| *Pogonias cromis* | J | ▣ | ▣ | □ | ▣ | ■ | ▣ | □ |
| | L | ▣ | ■ | □ | ■ | □ | ▣ | ■ |
| | E | ■ | ■ | □ | ■ | □ | ▣ | ■ |
| Red drum | A | ▣ | ■ | ▣ | ▣ | □ | □ | □ |
| | S | ■ | ■ | □ | ■ | □ | ■ | ■ |
| *Sciaenops ocellatus* | J | ▣ | ▣ | ▣ | ▣ | □ | ▣ | □ |
| | L | ■ | ■ | □ | ■ | ▣ | ■ | ■ |
| | E | ■ | ■ | □ | ■ | □ | ■ | ■ |
| Striped mullet | A | ▣ | □ | □ | ▣ | □ | □ | □ |
| | S | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| *Mugil cephalus* | J | ▣ | ▣ | □ | □ | □ | □ | □ |
| | L | ▣ | ■ | ■ | ■ | □ | ■ | ■ |
| | E | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| Code goby | A | ▣ | □ | □ | ■ | □ | ■ | □ |
| | S | □ | □ | □ | ■ | □ | ■ | □ |
| *Gobiosoma robustum* | J | ▣ | □ | □ | ■ | □ | ■ | □ |
| | L | □ | □ | □ | ■ | □ | ■ | □ |
| | E | □ | □ | □ | ■ | □ | ■ | □ |
| Spanish mackerel | A | ■ | ■ | ▣ | ■ | ▣ | ▣ | ■ |
| | S | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| *Scomberomorus maculatus* | J | ▣ | ▣ | ▣ | ▣ | □ | ▣ | □ |
| | L | ■ | ■ | ■ | ■ | ▣ | ■ | ■ |
| | E | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| | | Lake Borgne | Lake Pontchar-train | Breton/ Chandeleur Sounds | Mississippi River | Barataria Bay | Terrebonne/ Timbalier Bays | Atchafalaya/ Vermilion Bays |
| | | Gulf of Mexico Estuaries | | | | | | |

Data Reliability

■ Highly Certain

▣ Moderately Certain

□ Reasonable Inference

Life Stage

A - Adults
S - Spawning adults
J - Juveniles
L - Larvae
E - Eggs

Table 6, continued. Data reliability

| Species/Life Stage | | Calcasieu Lake | Sabine Lake | Galveston Bay | Brazos River | Matagorda Bay | San Antonio Bay | Aransas Bay |
|---|---|---|---|---|---|---|---|---|
| | | Gulf of Mexico Estuaries | | | | | | |
| Atlantic croaker | A | ■ | ▣ | ▣ | □ | ▣ | ▣ | ▣ |
| | S | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| *Micropogonias undulatus* | J | □ | ▣ | ▣ | □ | ▣ | ▣ | ▣ |
| | L | ■ | ■ | ▣ | ■ | ▣ | ▣ | ▣ |
| | E | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| Black drum | A | □ | □ | ▣ | □ | ▣ | ▣ | ▣ |
| | S | ■ | ■ | ▣ | ■ | ▣ | ▣ | ▣ |
| *Pogonias cromis* | J | □ | ▣ | ▣ | □ | ▣ | ▣ | ▣ |
| | L | ■ | ■ | ▣ | ■ | ▣ | ▣ | ▣ |
| | E | ■ | ■ | ▣ | ■ | ▣ | ▣ | ▣ |
| Red drum | A | □ | ▣ | ▣ | □ | ▣ | ▣ | ▣ |
| | S | ■ | ■ | □ | ■ | □ | □ | □ |
| *Sciaenops ocellatus* | J | □ | ▣ | ▣ | □ | ▣ | ▣ | ▣ |
| | L | ■ | ■ | ▣ | ■ | ▣ | ▣ | ▣ |
| | E | ■ | ■ | □ | ■ | □ | □ | □ |
| Striped mullet | A | □ | ▣ | ▣ | □ | ▣ | ▣ | ▣ |
| | S | ■ | ■ | ▣ | ■ | ▣ | ▣ | ▣ |
| *Mugil cephalus* | J | □ | ▣ | ▣ | □ | ▣ | ▣ | ▣ |
| | L | ■ | ■ | ▣ | ■ | ▣ | ▣ | ▣ |
| | E | ■ | ■ | ▣ | ■ | ▣ | ▣ | ▣ |
| Code goby | A | ▣ | ▣ | ▣ | □ | □ | □ | ▣ |
| | S | ▣ | ▣ | ▣ | □ | □ | □ | ▣ |
| *Gobiosoma robustum* | J | ▣ | ▣ | ▣ | □ | □ | □ | ▣ |
| | L | ▣ | ▣ | ▣ | □ | □ | □ | ▣ |
| | E | ▣ | ▣ | ▣ | □ | □ | □ | ▣ |
| Spanish mackerel | A | ■ | □ | ▣ | □ | □ | ▣ | ▣ |
| | S | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| *Scomberomorus maculatus* | J | □ | □ | ▣ | □ | □ | ▣ | ▣ |
| | L | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| | E | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| | | Calcasieu Lake | Sabine Lake | Galveston Bay | Brazos River | Matagorda Bay | San Antonio Bay | Aransas Bay |
| | | Gulf of Mexico Estuaries | | | | | | |

Data Reliability

■ Highly Certain

▣ Moderately Certain

□ Reasonable Inference

Life Stage

A - Adults
S - Spawning adults
J - Juveniles
L - Larvae
E - Eggs

Table 6, continued. Data reliability

| Species/Life Stage | | Gulf of Mexico Estuaries | | |
|---|---|---|---|---|
| | | Corpus Christi Bay | Laguna Madre | Baffin Bay |
| Atlantic croaker | A | ▣ | ▣ | ▣ |
| | S | ■ | ■ | ■ |
| *Micropogonias undulatus* | J | ▣ | ▣ | ▣ |
| | L | ▣ | ▣ | ▣ |
| | E | ■ | ■ | ■ |
| Black drum | A | ▣ | ▣ | ▣ |
| | S | ▣ | ▣ | ▣ |
| *Pogonias cromis* | J | ▣ | ▣ | ▣ |
| | L | ▣ | □ | ▣ |
| | E | ▣ | □ | ▣ |
| Red drum | A | ▣ | ▣ | ▣ |
| | S | □ | □ | ■ |
| *Sciaenops ocellatus* | J | ▣ | ▣ | ▣ |
| | L | ▣ | ▣ | ▣ |
| | E | □ | □ | ■ |
| Striped mullet | A | ▣ | ▣ | ▣ |
| | S | ▣ | ▣ | ▣ |
| *Mugil cephalus* | J | ▣ | ▣ | ▣ |
| | L | ▣ | ▣ | ▣ |
| | E | ▣ | ▣ | ▣ |
| Code goby | A | ▣ | □ | ▣ |
| | S | ▣ | □ | □ |
| *Gobiosoma robustum* | J | ▣ | ▣ | ▣ |
| | L | ▣ | □ | □ |
| | E | ▣ | □ | □ |
| Spanish mackerel | A | ▣ | □ | ▣ |
| | S | ■ | ■ | ■ |
| *Scomberomorus maculatus* | J | ▣ | ▣ | ▣ |
| | L | ■ | ■ | ■ |
| | E | ■ | ■ | ■ |
| | | Corpus Christi Bay | Laguna Madre | Baffin Bay |
| | | Gulf of Mexico Estuaries | | |

Data Reliability

■ Highly Certain

▣ Moderately Certain

□ Reasonable Inference

Life Stage

A - Adults
S - Spawning adults
J - Juveniles
L - Larvae
E - Eggs

Table 6, continued. Data reliability

| Species/Life Stage | | Florida Bay | Ten Thousand Islands | Caloosa-hatchee River | Charlotte Harbor | Tampa Bay | Suwannee River | Apalachee Bay |
|---|---|---|---|---|---|---|---|---|
| | | Gulf of Mexico Estuaries | | | | | | |
| Gulf flounder | A | ▣ | ▣ | ▣ | ▣ | ▣ | □ | □ |
| | S | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| *Paralichthys albigutta* | J | ▣ | ▣ | ▣ | ▣ | ▣ | □ | ▣ |
| | L | ▣ | ▣ | ■ | ▣ | ▣ | □ | ▣ |
| | E | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| Southern flounder | A | □ | ■ | ■ | □ | □ | ▣ | ▣ |
| | S | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| *Parlichthys lethostigma* | J | □ | ■ | ■ | □ | □ | ▣ | ▣ |
| | L | ■ | ■ | ■ | □ | □ | ■ | ▣ |
| | E | ■ | ■ | ■ | ■ | □ | ■ | ■ |
| | | Florida Bay | Ten Thousand Islands | Caloosa-hatchee River | Charlotte Harbor | Tampa Bay | Suwannee River | Apalachee Bay |
| | | Gulf of Mexico Estuaries | | | | | | |

Data Reliability

■ Highly Certain

▣ Moderately Certain

□ Reasonable Inference

Life Stage

A - Adults
S - Spawning adults
J - Juveniles
L - Larvae
E - Eggs

Table 6, continued. Data reliability

| Species/Life Stage | | Gulf of Mexico Estuaries | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | Apalachicola Bay | St. Andrew Bay | Choctawhatchee Bay | Pensacola Bay | Perdido Bay | Mobile Bay | Mississippi Sound |
| Gulf flounder | A | ☐ | ▣ | ▣ | ▣ | ▣ | ▣ | ▣ |
| | S | ■ | ■ | ■ | ■ | ■ | ■ | ▣ |
| *Paralichthys albigutta* | J | ☐ | ▣ | ▣ | ▣ | ▣ | ▣ | ▣ |
| | L | ☐ | ▣ | ▣ | ▣ | ▣ | ▣ | ☐ |
| | E | ■ | ■ | ■ | ■ | ■ | ■ | ☐ |
| Southern flounder | A | ☐ | ▣ | ▣ | ▣ | ▣ | ▣ | ☐ |
| | S | ■ | ■ | ■ | ■ | ■ | ■ | ▣ |
| *Parlichthys lethostigma* | J | ☐ | ▣ | ▣ | ▣ | ▣ | ▣ | ☐ |
| | L | ▣ | ▣ | ▣ | ▣ | ▣ | ▣ | ☐ |
| | E | ■ | ■ | ■ | ■ | ■ | ■ | ▣ |
| | | Apalachicola Bay | St. Andrew Bay | Choctawhatchee Bay | Pensacola Bay | Perdido Bay | Mobile Bay | Mississippi Sound |
| | | Gulf of Mexico Estuaries | | | | | | |

Data Reliability

■ Highly Certain

▣ Moderately Certain

☐ Reasonable Inference

Life Stage

A - Adults
S - Spawning adults
J - Juveniles
L - Larvae
E - Eggs

Table 6, continued. Data reliability

| Species/Life Stage | | Gulf of Mexico Estuaries | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | Lake Borgne | Lake Pontchar-train | Breton/ Chandeleur Sounds | Mississippi River | Barataria Bay | Terrebonne/ Timbalier Bays | Atchafalaya/ Vermilion Bays |
| Gulf flounder | A | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| | S | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| *Paralichthys albigutta* | J | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| | L | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| | E | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| Southern flounder | A | ▣ | □ | ▣ | ▣ | ▣ | □ | □ |
| | S | ■ | ■ | ■ | ■ | □ | ■ | ■ |
| *Parlichthys lethostigma* | J | ▣ | ▣ | ▣ | ▣ | ▣ | □ | □ |
| | L | ■ | ■ | ■ | ■ | □ | ■ | ■ |
| | E | ■ | ■ | ■ | ■ | □ | ■ | ■ |
| | | Lake Borgne | Lake Pontchar-train | Breton/ Chandeleur Sounds | Mississippi River | Barataria Bay | Terrebonne/ Timbalier Bays | Atchafalaya/ Vermilion Bays |
| | | Gulf of Mexico Estuaries | | | | | | |

Data Reliability

■ Highly Certain

▣ Moderately Certain

□ Reasonable Inference

Life Stage

A - Adults
S - Spawning adults
J - Juveniles
L - Larvae
E - Eggs

Table 6, continued. Data reliability

| Species/Life Stage | | Gulf of Mexico Estuaries | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | Calcasieu Lake | Sabine Lake | Galveston Bay | Brazos River | Matagorda Bay | San Antonio Bay | Aransas Bay |
| Gulf flounder | A | ■ | ▣ | ▣ | □ | ▣ | ▣ | ▣ |
| | S | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| *Paralichthys albigutta* | J | ■ | ▣ | ▣ | □ | ▣ | ▣ | ▣ |
| | L | ■ | ■ | ▣ | ■ | ■ | ▣ | ▣ |
| | E | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| Southern flounder | A | □ | ▣ | ▣ | □ | ▣ | ▣ | ▣ |
| | S | ■ | ■ | ▣ | ■ | ▣ | ▣ | ▣ |
| *Parlichthys lethostigma* | J | □ | ▣ | ▣ | □ | ▣ | ▣ | ▣ |
| | L | ■ | ■ | ▣ | ■ | ▣ | ▣ | ▣ |
| | E | ■ | ■ | ▣ | ■ | ▣ | ▣ | ▣ |
| | | Calcasieu Lake | Sabine Lake | Galveston Bay | Brazos River | Matagorda Bay | San Antonio Bay | Aransas Bay |
| | | Gulf of Mexico Estuaries | | | | | | |

Data Reliability

■ Highly Certain

▣ Moderately Certain

□ Reasonable Inference

Life Stage

A - Adults
S - Spawning adults
J - Juveniles
L - Larvae
E - Eggs

Table 6, continued. Data reliability

| Species/Life Stage | | Gulf of Mexico Estuaries | | |
|---|---|---|---|---|
| | | Corpus Christi Bay | Laguna Madre | Baffin Bay |
| Gulf flounder *Paralichthys albigutta* | A | ▣ | ▣ | ▣ |
| | S | ■ | ■ | ■ |
| | J | ▣ | ▣ | ▣ |
| | L | ▣ | ▣ | ▣ |
| | E | ■ | ■ | ■ |
| Southern flounder *Parlichthys lethostigma* | A | ▣ | ▣ | ▣ |
| | S | ▣ | ▣ | ▣ |
| | J | ▣ | ▣ | ▣ |
| | L | ▣ | ▣ | ▣ |
| | E | ▣ | ▣ | ▣ |
| | | Corpus Christi Bay | Laguna Madre | Baffin Bay |
| | | Gulf of Mexico Estuaries | | |

Data Reliability

■ Highly Certain

▣ Moderately Certain

□ Reasonable Inference

Life Stage

A - Adults
S - Spawning adults
J - Juveniles
L - Larvae
E - Eggs

# Appendices

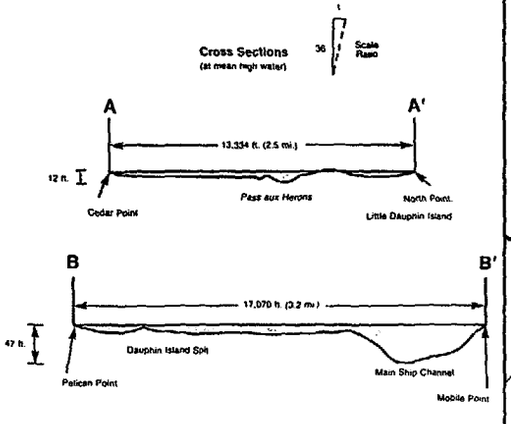
Appendix 1. National Estuarine Inventory Map of Mobile Bay
Appendix 2. Table of references and personal communications
Appendix 3. Reviewers and personal communications
Appendix 4. References

# National Estuarine Atlas

## PHYSICAL AND HYDROLOGIC CHARACTERISTICS

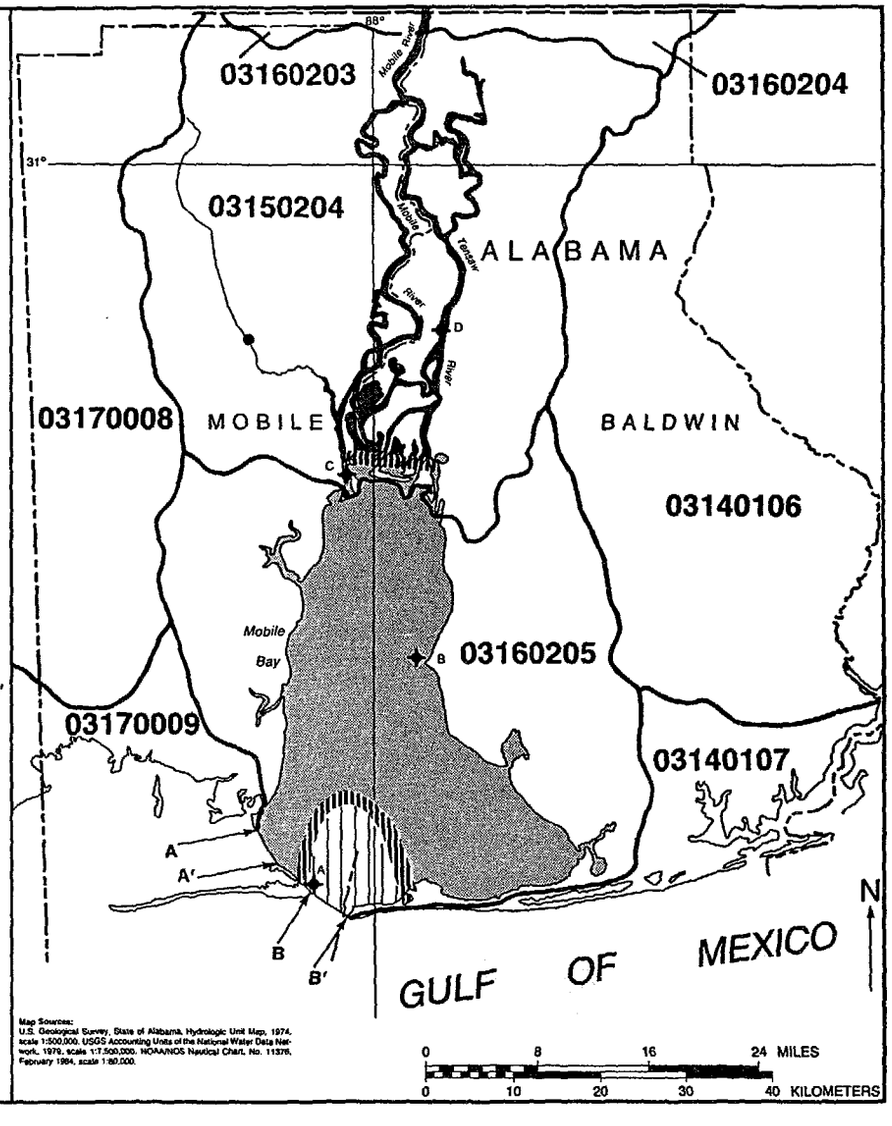
| PHYSICAL | | FRESHWATER INFLOW | | | | TIDAL DATA | | |
|---|---|---|---|---|---|---|---|---|
| *Surface Areas (mi²)* | | *Flow Rates (1000 cfs)* | | | | Prevailing Tide: Diurnal | | |
| Fluvial Drainage | 39,725 | Period of Record | | | 1975-1982 | Tidal Prism (cf) | | $1.58 \times 10^{10}$ |
| Estuarine Drainage | 4,875 | | | | | | | |
| Estuarine Zones | | Long Term Average Daily | | | 78.3 | *Phase Range of Tide (ft.)* | | |
| | | | | | | Map Key | Station | Range |
| Tidal Fresh | 29 | Long Term Average Monthly | J | 129.8 | J 32.3 | A | 3194 | 1.3 |
| Mixing Zone | 327 | | F | 120.7 | A 29.4 | B | 3187 | 1.4 |
| Seawater | 53 | | M | 151.4 | S 29.9 | C | 3198 | 1.4 |
| Total | 409 | | A | 179.4 | O 36.9 | D | 3199 | 0.8 |
| *Dimensions* | | | M | 83.3 | N 43.4 | | | |
| *Length (mi.)* | 128.0 | | J | 44.5 | D 64.0 | | | |
| Width (mi.): Average | 13.8 | 7-Day, 10-Year Low Flow | | | 7.6 | | | |
| Minimum | 8.0 | 50-Year Flood | | | 595.7 | | | |
| Maximum | 23.8 | 100-Year Flood | | | 653.0 | | | |
| Average Depth (ft.) | 9.6 | *Flow Ratios* | | | | | | |
| Average Depth to Width Ratio | $1.2 \times 10^{-4}$ | | | | | | | |
| *Stratification Classification* | | Average Annual | | | 0.449 | | | |
| 3-Month High Flow | HS | High Flow Period | | | 0.870 | | | |
| 3-Month Low Flow | MS | Low Flow Period | | | 0.173 | | | |

Abbreviations: Vertically Homogeneous, VH; Moderately Stratified, MS; Highly Stratified, HS.



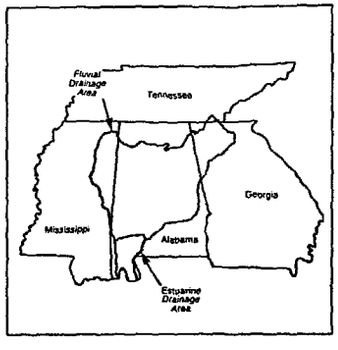

**Notes:**
Approximately 40% of Estuarine Drainage Area is shown on map.

**References:**
April, et al., 1976. April and Rancey, 1979. Bault, 1972. Bingham, 1982. Crane, 1971. Haines, 1973. Ling, 1981. Olin and Bingham, 1977. Rollins, et al., 1983. Schroeder, 1977. Schroeder, 1979. Schroeder and Lysinger, 1979. U.S. Department of Commerce, 1983a.




Map Sources:
U.S. Geological Survey, State of Alabama, Hydrologic Unit Map, 1974, scale 1:500,000. USGS Accounting Units of the National Water Data Network, 1979, scale 1:7,500,000. NOAA/NOS Nautical Chart, No. 11376, February 1984, scale 1:80,000.

## Mobile Bay
## AL




- Tide Gage
- Flow Gage
- Head of Tide
- Estuarine Drainage Area (EDA)
- Tidal Fresh Zone
- Mixing Zone
- Seawater Zone
- Hydrologic Cataloging Unit Boundary
- County Boundary
- Salinity Zone Boundary - Low Variability
- Salinity Zone Boundary - Moderate Variability
- Salinity Zone Boundary - High Variability

Strategic Assessment Branch
Ocean Assessments Division
Office of Oceanography and Marine Assessment
National Ocean Service/NOAA

3.11

# Appendix 2. Table of references and personal communications

| Species | Florida Bay, FL |
|---|---|
| Bay scallop<br>*Argopecten irradians* | 28<br>Fonseca, LaCroix, Tilmant |
| American oyster<br>*Crassostrea virginica* | Tilmant |
| Common rangia<br>*Rangia cuneata* | 491<br>Marelli, Tilmant |
| Hard clam<br>*Mercenaria species* | 296, 297, 429<br>Tilmant |
| Bay squid<br>*Lolliguncula brevis* | 56, 429, 630, 780, 878<br>Schmidt |
| Brown shrimp<br>*Peneaus aztecus* | 11, 658, 692 |
| Pink shrimp<br>*Peneaus duorarum* | 11, 64, 105, 295, 429, 458, 658, 692, 748, 749, 782, 878<br>Schmidt, Tilmant |
| White shrimp<br>*Penaeus setiferus* | 658, 692<br>Tilmant |
| Grass shrimp<br>*Palaemonetes puglo* | 16, 782, 962<br>Tilmant |
| Spiny lobster<br>*Panulirus argus* | 200, 309, 429, 433, 438, 535, 560, 561, 547, 658, 868<br>Hunt, Tilmant |
| Blue crab<br>*Callinectes sapidus* | 392, 429, 892, 898, 962<br>Steele, Tilmant |
| Gulf stone crab<br>*Menippe adina* | 947 |
| Stone crab<br>*Menippe mercenaria* | 61, 106, 226, 241, 242, 429, 511, 658, 898, 946, 947<br>Bert |
| Bull shark<br>*Carcharhinus leucas* | 429, 714, 780, 878<br>Schmidt |
| Tarpon<br>*Megalops atlanticus* | 460, 524, 780, 898 |
| Alabama shad<br>*Alosa alabamae* | 909<br>Tilmant |
| Gulf menhaden<br>*Brevoortia patronus* | 780, 879, 909<br>Schmidt, Tilmant |
| Yellowfin menhaden<br>*Brevoortia smithii* | 152, 162, 524, 780, 892, 909<br>Tilmant |
| Gizzard shad<br>*Dorosoma cepedianum* | 460, 504, 524 |
| Bay anchovy<br>*Anchoa mitchilli* | 460, 524, 750, 780, 832, 878, 879, 890, 892<br>Tilmant |
| Hardhead catfish<br>*Arius felis* | 56, 429, 524, 645, 714, 753, 780, 832, 833, 878, 879, 891, 898<br>Schmidt |
| Sheepshead minow<br>*Cyprinodon variegatus* | 524, 718, 780, 831, 832, 878, 879, 892<br>Tilmant |
| Gulf killifish<br>*Fundulus grandis* | 235, 306, 429, 524, 718, 831, 878, 891<br>Tilmant |
| Silversides<br>*Menidia species* | 524, 753, 780, 831, 878, 879, 891<br>Schmidt |
| Snook<br>*Centropomus undecemalis* | 429, 504, 524, 714, 715, 780, 897, 899, 898, 901 |
| Bluefish<br>*Pomatomus saltatrix* | 342, 539, 779, 780 |
| Blue runner<br>*Caranx crysos* | 301, 302, 429, 753, 779, 780, 841, 877<br>Edwards, Tilmant |
| Crevalle jack<br>*Caranx hippos* | 429, 524, 753, 779, 780, 832, 841, 877, 898<br>Edwards |
| Florida pompano<br>*Trachinotus carolinus* | 290, 658, 780, 892, 898<br>Tilmant |
| Gray snapper<br>*Lutjanus griseus* | 70, 114, 131, 312, 386, 429, 524, 714, 715, 773, 771, 772, 780, 832, 833, 879, 891, 892, 890, 898, 962<br>Powell, Thayer, Tilmant |
| Sheepshead<br>*Archosargus probatocephalus* | 56, 114, 219, 429, 445, 524, 714, 753, 780, 831, 878, 877, 879, 891, 890, 898<br>Schmidt |
| Pinfish<br>*Lagodon rhomboides* | 429, 524, 780, 782, 832, 833, 879, 890, 962<br>Hettler, Powell, Tilmant |
| Silver perch<br>*Bairdiella chysoura* | 219, 524, 714, 780, 831, 832, 833, 878, 879, 891, 890<br>Schmidt |
| Sand seatrout<br>*Cynoscion arenarius* | 218, 443, 658, 782, 863, 879, 891<br>Tilmant |
| Spotted seatrout<br>*Cynoscion nebulosus* | 114, 131, 219, 386, 429, 446, 697, 714, 715, 773, 774, 780, 832, 879, 892, 890, 899, 898, 937 |
| Spot<br>*Leiostomus xanthurus* | 443, 658, 782, 879, 891, 892, 962<br>Tilmant |
| Atlantic croaker<br>*Micropogonias undulatus* | 443, 780, 843<br>Davis, Schmidt |
| Black drum<br>*Pogonias cromis* | 56, 114, 162, 443, 714, 753, 780, 878, 879, 891, 898<br>Schmidt |
| Red drum<br>*Sciaenops ocellatus* | 114, 429, 524, 658, 714, 715, 780, 831, 879, 899, 900, 898, 957<br>Schmidt, Tilmant |
| Striped mullet<br>*Mugil cephalus* | 278, 429, 524, 780, 832, 833, 878, 892, 898<br>Hettler, Powell, Tilmant |
| Code goby<br>*Gobiosoma robustum* | 429, 524, 780, 782, 878, 879, 892, 962<br>Tilmant |
| Spanish mackerel<br>*Scomberomorus maculatus* | 263, 475, 483, 780, 898 |
| Gulf flounder<br>*Paralichthys albigutta* | 753, 780, 832, 879, 892<br>Powell, Tilmant |
| Southern flounder<br>*Paralicthys lethostigma* | 291, 658, 780<br>Tilmant |

Numbers correspond to references in Appendix 4, p. 230-273.
Names correspond to individuals in Appendix 3, p. 226-229.

| Species | Ten Thousand Islands, FL |
|---|---|
| Bay scallop<br>*Argopecten irradians* | 28 |
| American oyster<br>*Crassostrea virginica* | 118, 123, 658, 782, 845<br>Browder, Thoemke |
| Common rangia<br>*Rangia cuneata* | 106, 491<br>Browder, Marelli, Tilmant |
| Hard clam<br>*Mercenaria species* | 106, 297, 936<br>Browder, Tashiro, Tilmant |
| Bay squid<br>*Lolliguncula brevis* | 56, 104, 106, 161, 199, 509, 878, 781<br>Schmidt |
| Brown shrimp<br>*Peneaus aztecus* | 332, 658, 692, 946 |
| Pink shrimp<br>*Peneaus duorarum* | 64, 105, 123, 226, 295, 648, 658, 692, 754, 782, 876<br>Browder, Tilmant, Schmidt |
| White shrimp<br>*Penaeus setiferus* | 106, 658, 692<br>Browder, Tilmant |
| Grass shrimp<br>*Palaemonetes pugio* | 16, 106, 123, 161, 226, 946, 962<br>Browder, Tilmant |
| Spiny lobster<br>*Panulirus argus* | 106, 161, 547, 561, 658<br>Hunt |
| Blue crab<br>*Callinectes sapidus* | 106, 123, 161, 392, 602, 898<br>Browder, Steele |
| Gulf stone crab<br>*Menippe adina* | 947 |
| Stone crab<br>*Menippe mercenaria* | 62, 63, 106, 123, 226, 511, 658, 898, 946, 947<br>Bert, Browder |
| Bull shark<br>*Carcharhinus leucas* | 77, 123, 157, 660, 781, 829<br>Schmidt |
| Tarpon<br>*Megalops atlanticus* | 103, 106, 123, 161, 524, 658, 898 |
| Alabama shad<br>*Alosa alabamae* | 909 |
| Gulf menhaden<br>*Brevoortia patronus* | 106, 123, 161, 879, 909<br>Schmidt |
| Yellowfin menhaden<br>*Brevoortia smithii* | 106, 107, 123, 152, 161, 162, 909<br>Browder |
| Gizzard shad<br>*Dorosoma cepedianum* | 460, 504, 524<br>Schmidt |
| Bay anchovy<br>*Anchoa mitchilli* | 106, 123, 161, 524, 750, 878, 879<br>Browder |
| Hardhead catfish<br>*Arius felis* | 56, 106, 123, 158, 199, 226, 509, 524, 645, 660, 781, 879, 898<br>Schmidt |
| Sheepshead minow<br>*Cyprinodon variegatus* | 103, 106, 107, 123, 161, 524, 878, 879<br>Browder |
| Gulf killifish<br>*Fundulus grandis* | 103, 106, 107, 123, 161, 235, 524<br>Browder |
| Silversides<br>*Menidia species* | 103, 107, 123, 161, 509, 524, 660, 878, 879<br>Schmidt |
| Snook<br>*Centropomus undecemalis* | 103, 123, 269, 504, 524, 794, 897, 898, 899, 901, 903<br>Browder |
| Bluefish<br>*Pomatomus saltatrix* | 106, 269, 342, 539, 658 |
| Blue runner<br>*Caranx crysos* | 106, 107, 301, 302, 509, 878<br>Edwards |
| Crevalle jack<br>*Caranx hippos* | 106, 107, 123, 161, 509, 524, 590, 878, 898<br>Browder |
| Florida pompano<br>*Trachinotus carolinus* | 106, 161, 658, 898 |
| Gray snapper<br>*Lutjanus griseus* | 70, 123, 161, 312, 504, 524, 770, 771, 878, 879, 898<br>Browder, Tilmant |
| Sheepshead<br>*Archosargus probatocephalus* | 56, 106, 107, 123, 158, 161, 162, 219, 445, 509, 524, 660, 878, 879, 898<br>Schmidt |
| Pinfish<br>*Lagodon rhomboides* | Bro86, 123, 162, 161, 524, 643, 782, 879 |
| Silver perch<br>*Bairdiella chysoura* | 106, 108, 107, 123, 158, 161, 162, 219, 443, 509, 524, 660, 753, 781, 878, 879<br>Schmidt |
| Sand seatrout<br>*Cynoscion arenarius* | 106, 107, 123, 161, 218, 808, 863, 879<br>Browder |
| Spotted seatrout<br>*Cynoscion nebulosus* | 123, 161, 219, 690, 697, 774, 879, 898, 899<br>Browder |
| Spot<br>*Leiostomus xanthurus* | 106, 107, 123, 161, 443, 878, 879<br>Browder, Tilmant |
| Atlantic croaker<br>*Micropogonias undulatus* | 106, 161, 878<br>Browder, Tilmant |
| Black drum<br>*Pogonias cromis* | 56, 106, 123, 161, 162, 443, 509, 878, 879, 898<br>Schmidt |
| Red drum<br>*Sciaenops ocellatus* | 106, 123, 158, 162, 443, 524, 714, 770, 879, 898, 899, 900<br>Browder, Schmidt |
| Striped mullet<br>*Mugil cephalus* | 78, 103, 106, 123, 161, 278, 509, 524, 878, 898<br>Browder, Hettler, Tilmant |
| Code goby<br>*Gobiosoma robustum* | 106, 107, 123, 158, 161, 524, 878, 879<br>Browder |
| Spanish mackerel<br>*Scomberomorus maculatus* | 123, 263, 298, 475, 483, 694, 898<br>Browder |
| Gulf flounder<br>*Paralichthys albigutta* | 107, 123, 161, 879<br>Browder |
| Southern flounder<br>*Paralicthys lethostigma* | 106, 107, 123, 291, 658<br>Browder |

Numbers correspond to references in Appendix 4, p. 230-273.
Names correspond to individuals in Appendix 3, p. 226-229.

| Species | Caloosahatchee River, FL |
|---|---|
| Bay scallop<br>*Argopecten irradians* | 28<br>Estevez |
| American oyster<br>*Crassostrea virginica* | 118, 658<br>Chamberlain |
| Common rangia<br>*Rangia cuneata* | 297, 491<br>Marelli |
| Hard clam<br>*Mercenaria species* | 297, 491, 509, 525<br>Chamberlain |
| Bay squid<br>*Lolliguncula brevis* | 56, 224<br>Fraser |
| Brown shrimp<br>*Peneaus aztecus* | 658, 692, 946 |
| Pink shrimp<br>*Peneaus duorarum* | 295, 333, 658, 692 |
| White shrimp<br>*Penaeus setiferus* | 658, 692 |
| Grass shrimp<br>*Palaemonetes pugio* | 16, 333<br>Chamberlain |
| Spiny lobster<br>*Panulirus argus* | 547<br>Hunt |
| Blue crab<br>*Callinectes sapidus* | 602, 910<br>Chamberlain, Steele |
| Gulf stone crab<br>*Menippe adina* | 947 |
| Stone crab<br>*Menippe mercenaria* | 62, 63, 226, 511, 658, 947<br>Bert |
| Bull shark<br>*Carcharhinus leucas* | 77, 157, 829<br>Fraser, Heuter |
| Tarpon<br>*Megalops atlanticus* | Fraser |
| Alabama shad<br>*Alosa alabamae* | 909 |
| Gulf menhaden<br>*Brevoortia patronus* | 909 |
| Yellowfin menhaden<br>*Brevoortia smithii* | 152, 333, 909, 928<br>Chamberlain |
| Gizzard shad<br>*Dorosoma cepedianum* | 460, 504<br>Fraser |
| Bay anchovy<br>*Anchoa mitchilli* | 226, 333<br>Chamberlain, Fraser |
| Hardhead catfish<br>*Arius felis* | 56, 226, 246, 333, 645, 709, 928<br>Fraser |
| Sheepshead minow<br>*Cyprinodon variegatus* | 333, 388, 709, 730<br>Chamberlain, Fraser |
| Gulf killifish<br>*Fundulus grandis* | 333<br>Chamberlain |
| Silversides<br>*Menidia species* | 226, 246, 333, 709, 928<br>Fraser |
| Snook<br>*Centropomus undecemalis* | 333, 504, 542, 923<br>Chamberlain, Fraser |
| Bluefish<br>*Pomatomus saltatrix* | 333, 342, 539, 658, 709, 928<br>Chamberlain |
| Blue runner<br>*Caranx crysos* | 928<br>Chamberlain |
| Crevalle jack<br>*Caranx hippos* | 333, 709<br>Chamberlain |
| Florida pompano<br>*Trachinotus carolinus* | 333, 709, 843, 928<br>Chamberlain |
| Gray snapper<br>*Lutjanus griseus* | 333, 928<br>Chamberlain, Fraser |
| Sheepshead<br>*Archosargus probatocephalus* | 56, 219, 246, 333, 445<br>Fraser |
| Pinfish<br>*Lagodon rhomboides* | 333, 643, 843, 928<br>Chamberlain |
| Silver perch<br>*Bairdiella chysoura* | 219, 226, 246, 333, 709, 928<br>Fraser |
| Sand seatrout<br>*Cynoscion arenarius* | 218, 333<br>Chamberlain, Fraser |
| Spotted seatrout<br>*Cynoscion nebulosus* | 161, 219, 226, 246,114, 697, 928<br>Fraser, Chamberlain |
| Spot<br>*Leiostomus xanthurus* | 333, 928<br>Chamberlain, Fraser |
| Atlantic croaker<br>*Micropogonias undulatus* | 333, 928<br>Chamberlain |
| Black drum<br>*Pogonias cromis* | 56, 333, 928<br>Fraser |
| Red drum<br>*Sciaenops ocellatus* | 333, 843<br>Chamberlain, Fraser |
| Striped mullet<br>*Mugil cephalus* | 78, 333, 658, 896, 928<br>Chamberlain, Fraser |
| Code goby<br>*Gobiosoma robustum* | 79, 274, 333, 843, 928<br>Chamberlain |
| Spanish mackerel<br>*Scomberomorus maculatus* | 298, 694, 709<br>Chamberlain |
| Gulf flounder<br>*Paralichthys albigutta* | 333<br>Chamberlain |
| Southern flounder<br>*Paralicthys lethostigma* | 333<br>Chamberlain |

Numbers correspond to references in Appendix 4, p. 230-273.
Names correspond to individuals in Appendix 3, p. 226-229.

| Species | Charlotte Harbor, FL |
|---|---|
| Bay scallop<br>*Argopecten irradians* | 28<br>Estevez |
| American oyster<br>*Crassostrea virginica* | 118, 658<br>Fraser |
| Common rangia<br>*Rangia cuneata* | 297, 491<br>Estevez, Marelli |
| Hard clam<br>*Mercenaria species* | 297, 459, 491, 509, 525<br>Fraser |
| Bay squid<br>*Lolliguncula brevis* | 56, 224<br>Fraser |
| Brown shrimp<br>*Peneaus aztecus* | 658, 692, 946 |
| Pink shrimp<br>*Peneaus duorarum* | 658, 692<br>Browder |
| White shrimp<br>*Penaeus setiferus* | 658, 692 |
| Grass shrimp<br>*Palaemonetes pugio* | 16, 333 |
| Spiny lobster<br>*Panulirus argus* | 547, 658<br>Fraser, Hunt |
| Blue crab<br>*Callinectes sapidus* | 226, 333, 392, 602, 910<br>Fraser, Steele |
| Gulf stone crab<br>*Menippe adina* | 947 |
| Stone crab<br>*Menippe mercenaria* | 62, 63, 226, 511, 658, 947<br>Bert |
| Bull shark<br>*Carcharhinus leucas* | 77, 157, 246, 829<br>Fraser, Heuter |
| Tarpon<br>*Megalops atlanticus* | 219, 460, 827<br>Fraser |
| Alabama shad<br>*Alosa alabamae* | 909 |
| Gulf menhaden<br>*Brevoortia patronus* | 909 |
| Yellowfin menhaden<br>*Brevoortia smithii* | 152, 333, 909, 928<br>Fraser |
| Gizzard shad<br>*Dorosoma cepedianum* | 460, 504<br>Fraser |
| Bay anchovy<br>*Anchoa mitchilli* | 226, 246, 333, 928 |
| Hardhead catfish<br>*Arius felis* | 56, 226, 246, 333, 645, 709, 928<br>Fraser |
| Sheepshead minow<br>*Cyprinodon variegatus* | 333, 719, 928<br>Fraser |
| Gulf killifish<br>*Fundulus grandis* | 246, 928<br>Fraser |
| Silversides<br>*Menidia species* | 226, 246, 333, 709, 928<br>Fraser |
| Snook<br>*Centropomus undecemalis* | 504, 928<br>Browder, Fraser |
| Bluefish<br>*Pomatomus saltatrix* | 342, 539, 658, 928 |
| Blue runner<br>*Caranx crysos* | 928<br>Fraser |
| Crevalle jack<br>*Caranx hippos* | 333, 509, 928<br>Fraser |
| Florida pompano<br>*Trachinotus carolinus* | 333, 843, 928<br>Fraser |
| Gray snapper<br>*Lutjanus griseus* | 333, 928<br>Fraser |
| Sheepshead<br>*Archosargus probatocephalus* | 56, 219, 246, 333, 445<br>Fraser |
| Pinfish<br>*Lagodon rhomboides* | 219, 226, 643, 928 |
| Silver perch<br>*Bairdiella chysoura* | 219, 226, 246, 333, 709, 928<br>Fraser |
| Sand seatrout<br>*Cynoscion arenarius* | 218, 219, 333, 658, 928<br>Fraser |
| Spotted seatrout<br>*Cynoscion nebulosus* | 161, 219, 226, 246, 446, 697, 928<br>Fraser |
| Spot<br>*Leiostomus xanthurus* | 333, 658, 928<br>Fraser |
| Atlantic croaker<br>*Micropogonias undulatus* | 928 |
| Black drum<br>*Pogonias cromis* | 56, 333, 928<br>Fraser |
| Red drum<br>*Sciaenops ocellatus* | 333, 928<br>Fraser |
| Striped mullet<br>*Mugil cephalus* | 78, 333, 658, 896, 928<br>Fraser |
| Code goby<br>*Gobiosoma robustum* | 246, 274, 843, 928<br>Fraser |
| Spanish mackerel<br>*Scomberomorus maculatus* | 298, 475, 483, 928 |
| Gulf flounder<br>*Paralichthys albigutta* | 219, 928<br>Fraser |
| Southern flounder<br>*Paralicthys lethostigma* | 219, 928<br>Fraser |

Numbers correspond to references in Appendix 4, p. 230-273.
Names correspond to individuals in Appendix 3, p. 226-229.

| Species | Tampa Bay, FL |
|---|---|
| Bay scallop<br>*Argopecten irradians* | 28, 508<br>Fonseca, Estevez |
| American oyster<br>*Crassostrea virginica* | 118, 170, 260, 285, 658, 845<br>Edwards, Estevez, Phillips |
| Common rangia<br>*Rangia cuneata* | 658 |
| Hard clam<br>*Mercenaria species* | 297, 459, 825, 843<br>Edwards |
| Bay squid<br>*Lolliguncula brevis* | 56, 224, 510<br>Comp, Phillips |
| Brown shrimp<br>*Peneaus aztecus* | 244, 510, 692, 875<br>Comp, Camp |
| Pink shrimp<br>*Peneaus duorarum* | 658, 692<br>Comp, Edwards, Estevez |
| White shrimp<br>*Penaeus setiferus* | 658, 692 |
| Grass shrimp<br>*Palaemonetes pugio* | 16, 225, 946<br>Phillips |
| Spiny lobster<br>*Panulirus argus* | 938<br>Hunt, Estevez |
| Blue crab<br>*Callinectes sapidus* | 392, 602, 658, 875, 938, 946<br>Steele |
| Gulf stone crab<br>*Menippe adina* | 947 |
| Stone crab<br>*Menippe mercenaria* | 508, 511, 938, 947<br>Bert |
| Bull shark<br>*Carcharhinus leucas* | 77, 157, 829, 843<br>Comp, Heuter |
| Tarpon<br>*Megalops atlanticus* | 219, 719, 843<br>Edwards |
| Alabama shad<br>*Alosa alabamae* | 909 |
| Gulf menhaden<br>*Brevoortia patronus* | 494, 909<br>Mahmoudi, Edwards, Phillips |
| Yellowfin menhaden<br>*Brevoortia smithii* | 152, 843, 875<br>Mahmoudi, Phillips |
| Gizzard shad<br>*Dorosoma cepedianum* | 460, 504, 839<br>Comp, Phillips |
| Bay anchovy<br>*Anchoa mitchilli* | 165, 750, 938<br>Comp, Edwards, Estevez |
| Hardhead catfish<br>*Arius felis* | 56, 508, 510, 645, 719, 733, 843<br>Comp, Phillips |
| Sheepshead minow<br>*Cyprinodon variegatus* | 165, 342, 719, 733<br>Comp, Phillips |
| Gulf killifish<br>*Fundulus grandis* | 235, 310, 469, 719, 843, 860<br>Comp, Phillips |
| Silversides<br>*Menidia species* | 165, 469, 508, 689, 710, 719, 733, 843, 875<br>Comp, Phillips |
| Snook<br>*Centropomus undecemalis* | 483, 504, 542, 588, 843, 923<br>Edwards |
| Bluefish<br>*Pomatomus saltatrix* | 342, 539, 658, 843 |
| Blue runner<br>*Caranx crysos* | 447, 587, 776, 843, 875<br>Edwards |
| Crevalle jack<br>*Caranx hippos* | 776, 843, 875<br>Edwards |
| Florida pompano<br>*Trachinotus carolinus* | 258, 843<br>Phillips |
| Gray snapper<br>*Lutjanus griseus* | 843<br>Edwards |
| Sheepshead<br>*Archosargus probatocephalus* | 56, 219, 445, 469, 483, 508, 510, 687, 689, 733, 843, 875, 938<br>Comp, Phillips |
| Pinfish<br>*Lagodon rhomboides* | 165, 219, 643, 843<br>Comp, Edwards, Estevez |
| Silver perch<br>*Bairdiella chysoura* | 165, 219, 469, 504, 508, 510, 689, 710, 719, 733, 843<br>Comp, Phillips |
| Sand seatrout<br>*Cynoscion arenarius* | 218, 219, 843, 875<br>Comp, Phillips |
| Spotted seatrout<br>*Cynoscion nebulosus* | 219, 446, 504, 589, 658, 875, 928, 937<br>Comp, Phillips |
| Spot<br>*Leiostomus xanthurus* | 165, 219, 509, 719, 843, 875<br>Comp, Phillips |
| Atlantic croaker<br>*Micropogonias undulatus* | 495, 509, 843, 875<br>Phillips |
| Black drum<br>*Pogonias cromis* | 56, 443, 469, 483, 508, 510, 649, 689, 706, 719, 843<br>Comp, Phillips |
| Red drum<br>*Sciaenops ocellatus* | 650, 658, 705, 711, 719, 752, 875<br>Estevez, Phillips |
| Striped mullet<br>*Mugil cephalus* | 163, 165, 719, 752, 843, 875<br>Edwards, Estevez, Phillips |
| Code goby<br>*Gobiosoma robustum* | 79, 274, 840, 843 |
| Spanish mackerel<br>*Scomberomorus maculatus* | 298, 475, 483, 694, 875<br>Comp |
| Gulf flounder<br>*Paralichthys albigutta* | 165, 219, 719, 843, 875, 904<br>Phillips |
| Southern flounder<br>*Paralicthys lethostigma* | 165, 219, 719, 732, 733, 843, 875 |

Numbers correspond to references in Appendix 4, p. 230-273.
Names correspond to individuals in Appendix 3, p. 226-229.

| Species | Suwannee River, FL |
|---|---|
| Bay scallop<br>*Argopecten irradians* | |
| American oyster<br>*Crassostrea virginica* | 360, 500, 845<br>Lindberg |
| Common rangia<br>*Rangia cuneata* | 491, 952<br>Gilbert, Marelli |
| Hard clam<br>*Mercenaria species* | 249, 459, 525, 825<br>Menzel, Nordlie |
| Bay squid<br>*Lolliguncula brevis* | 56<br>Clugston, Nordlie |
| Brown shrimp<br>*Peneaus aztecus* | 172, 331, 332, 500, 692<br>Sheridan |
| Pink shrimp<br>*Peneaus duorarum* | 64, 435, 500, 658, 692<br>Sheridan |
| White shrimp<br>*Penaeus setiferus* | 500, 644, 658, 692, 946<br>Sheridan |
| Grass shrimp<br>*Palaemonetes pugio* | 16, 361, 946<br>Sheridan |
| Spiny lobster<br>*Panulirus argus* | 658 |
| Blue crab<br>*Callinectes sapidus* | 500, 699, 846, 910<br>Steele |
| Gulf stone crab<br>*Menippe adina* | 500, 947<br>Bert, Lindberg |
| Stone crab<br>*Menippe mercenaria* | 500, 947<br>Bert, Lindberg |
| Bull shark<br>*Carcharhinus leucas* | 77, 157, 829<br>Clugston, Nordlie |
| Tarpon<br>*Megalops atlanticus* | 219, 500, 658 |
| Alabama shad<br>*Alosa alabamae* | 35, 265, 504, 909<br>Clugston, Gilbert |
| Gulf menhaden<br>*Brevoortia patronus* | 152, 217, 219, 493, 909, 913<br>Ahrenholz |
| Yellowfin menhaden<br>*Brevoortia smithii* | 909 |
| Gizzard shad<br>*Dorosoma cepedianum* | 35, 188, 265, 460<br>Clugston, Nordlie, Gilbert |
| Bay anchovy<br>*Anchoa mitchilli* | 469, 733, 750 |
| Hardhead catfish<br>*Arius felis* | 56, 645<br>Clugston, Nordlie |
| Sheepshead minow<br>*Cyprinodon variegatus* | 469, 733 |
| Gulf killifish<br>*Fundulus grandis* | 469 |
| Silversides<br>*Menidia species* | Clugston, Nordlie |
| Snook<br>*Centropomus undecemalis* | 658, 733, 747 |
| Bluefish<br>*Pomatomus saltatrix* | 259, 500, 658, 733 |
| Blue runner<br>*Caranx crysos* | 59, 60, 301, 302, 349, 447, 733 |
| Crevalle jack<br>*Caranx hippos* | 59, 174, 324, 447, 666, 733, 921 |
| Florida pompano<br>*Trachinotus carolinus* | |
| Gray snapper<br>*Lutjanus griseus* | 35, 504, 658 |
| Sheepshead<br>*Archosargus probatocephalus* | 35, 56, 219, 265, 445, 469, 500, 733<br>Clugston, Nordlie |
| Pinfish<br>*Lagodon rhomboides* | 217, 219, 469, 642, 643, 733 |
| Silver perch<br>*Bairdiella chysoura* | 165, 219, 469, 510, 719, 733, 843<br>Clugston, Nordlie |
| Sand seatrout<br>*Cynoscion arenarius* | 218, 219, 658, 816<br>Lindberg |
| Spotted seatrout<br>*Cynoscion nebulosus* | 219, 500, 595, 673<br>Lindberg |
| Spot<br>*Leiostomus xanthurus* | 35, 217, 219, 275, 469, 733 |
| Atlantic croaker<br>*Micropogonias undulatus* | 217, 219, 275, 500<br>Nordlie, Warlen |
| Black drum<br>*Pogonias cromis* | 56<br>Clugston, Nordlie |
| Red drum<br>*Sciaenops ocellatus* | 420, 500, 515, 596, 597, 658, 731 |
| Striped mullet<br>*Mugil cephalus* | 219, 500<br>Clugston, Nordlie |
| Code goby<br>*Gobiosoma robustum* | 469, 733 |
| Spanish mackerel<br>*Scomberomorus maculatus* | 217, 219, 261, 298, 463 |
| Gulf flounder<br>*Paralichthys albigutta* | 35, 219, 265, 311, 313, 469, 642, 733 |
| Southern flounder<br>*Paralicthys lethostigma* | 35, 219, 504, 904<br>Clugston, Nordlie |

Numbers correspond to references in Appendix 4, p. 230-273.
Names correspond to individuals in Appendix 3, p. 226-229.

| Species | Apalachee Bay, FL |
|---|---|
| Bay scallop<br>*Argopecten irradians* | 592, 778<br>Menzel, Subrahmanyam |
| American oyster<br>*Crassostrea virginica* | 360, 594, 592, 845<br>Subrahmanyam |
| Common rangia<br>*Rangia cuneata* | 491, 592<br>Subrahmanyam |
| Hard clam<br>*Mercenaria species* | <br>Menzel, Subrahmanyam |
| Bay squid<br>*Lolliguncula brevis* | 56<br>Subrahmanyam |
| Brown shrimp<br>*Peneaus aztecus* | 1, 151, 172, 234, 308, 331, 332, 425, 426, 692<br>Sheridan, Subrahmanyam |
| Pink shrimp<br>*Peneaus duorarum* | 436, 592, 658, 692, 859, 946<br>Sheridan, Subrahmanyam |
| White shrimp<br>*Penaeus setiferus* | 512, 513, 520, 644, 658, 692, 946<br>Sheridan, Subrahmanyam |
| Grass shrimp<br>*Palaemonetes pugio* | 859, 946<br>Menzel, Sheridan, Subrahmanyam |
| Spiny lobster<br>*Panulirus argus* | 658<br>Subrahmanyam |
| Blue crab<br>*Callinectes sapidus* | 392, 658, 699, 846, 963<br>Steele, Subrahmanyam |
| Gulf stone crab<br>*Menippe adina* | 658, 947<br>Bert, Menzel, Lindberg, Subrahmanyam |
| Stone crab<br>*Menippe mercenaria* | 658, 947<br>Bert, Menzel, Lindberg, Subrahmanyam |
| Bull shark<br>*Carcharhinus leucas* | 77, 157, 463, 512, 592, 829<br>Subrahmanyam |
| Tarpon<br>*Megalops atlanticus* | 219, 462, 463, 592, 658, 685<br>Subrahmanyam |
| Alabama shad<br>*Alosa alabamae* | 504, 766, 767<br>Subrahmanyam |
| Gulf menhaden<br>*Brevoortia patronus* | 66, 463, 493, 685, 909<br>Subrahmanyam |
| Yellowfin menhaden<br>*Brevoortia smithii* | 152, 909<br>Subrahmanyam |
| Gizzard shad<br>*Dorosoma cepedianum* | 460, 592<br>Subrahmanyam |
| Bay anchovy<br>*Anchoa mitchilli* | 76, 750, 860, 859<br>Subrahmanyam |
| Hardhead catfish<br>*Arius felis* | 56, 463, 512, 592, 645, 685, 686, 963<br>Subrahmanyam |
| Sheepshead minow<br>*Cyprinodon variegatus* | 859, 963<br>Subrahmanyam |
| Gulf killifish<br>*Fundulus grandis* | 130, 859, 963<br>Subrahmanyam |
| Silversides<br>*Menidia species* | 463, 512, 592, 685, 686, 963<br>Subrahmanyam |
| Snook<br>*Centropomus undecemalis* | 173, 462, 592, 658, 747, 955<br>Subrahmanyam |
| Bluefish<br>*Pomatomus saltatrix* | 259, 462, 463, 512, 658, 733<br>Subrahmanyam |
| Blue runner<br>*Caranx crysos* | 60, 301, 302, 462, 463, 592<br>Subrahmanyam |
| Crevalle jack<br>*Caranx hippos* | 14, 174, 324, 462, 463, 512, 592, 666, 921<br>Subrahmanyam |
| Florida pompano<br>*Trachinotus carolinus* | 462, 463, 658<br>Subrahmanyam |
| Gray snapper<br>*Lutjanus griseus* | 592<br>Subrahmanyam |
| Sheepshead<br>*Archosargus probatocephalus* | 56, 219, 445, 463, 512, 592<br>Subrahmanyam |
| Pinfish<br>*Lagodon rhomboides* | 66, 76, 219, 463, 643, 685, 860<br>Subrahmanyam |
| Silver perch<br>*Bairdiella chysoura* | 219, 463, 512, 685, 686, 963<br>Subrahmanyam |
| Sand seatrout<br>*Cynoscion arenarius* | 217, 218, 219, 658, 815, 816, 860<br>Menzel, Subrahmanyam |
| Spotted seatrout<br>*Cynoscion nebulosus* | 217, 219, 463, 476, 496, 526, 592, 598, 859, 937<br>Menzel, Subrahmanyam |
| Spot<br>*Leiostomus xanthurus* | 130, 219, 463, 805, 860, 963<br>Menzel, Subrahmanyam |
| Atlantic croaker<br>*Micropogonias undulatus* | 217, 219, 275, 463, 805, 859, 963<br>Subrahmanyam |
| Black drum<br>*Pogonias cromis* | 56, 463, 592<br>Subrahmanyam |
| Red drum<br>*Sciaenops ocellatus* | 420, 515, 596, 597, 657, 658, 731<br>Subrahmanyam |
| Striped mullet<br>*Mugil cephalus* | 163, 219, 463, 685<br>Subrahmanyam |
| Code goby<br>*Gobiosoma robustum* | 76, 502, 592<br>Subrahmanyam |
| Spanish mackerel<br>*Scomberomorus maculatus* | 217, 219, 251, 261, 298<br>Subrahmanyam |
| Gulf flounder<br>*Paralichthys albigutta* | 76, 219, 291, 512, 658, 860, 859<br>Subrahmanyam |
| Southern flounder<br>*Paralicthys lethostigma* | 76, 219, 512, 859, 860<br>Subrahmanyam |

Numbers correspond to references in Appendix 4, p. 230-273.
Names correspond to individuals in Appendix 3, p. 226-229.

| Species | Apalachicola Bay, FL |
|---|---|
| Bay scallop<br>*Argopecten irradians* | Menzel |
| American oyster<br>*Crassostrea virginica* | 13, 57, 58, 514, 515, 593, 845<br>Menzel |
| Common rangia<br>*Rangia cuneata* | 491, 515, 729<br>Menzel |
| Hard clam<br>*Mercenaria species* | Menzel |
| Bay squid<br>*Lolliguncula brevis* | 56, 498, 513, 515, 519, 520 |
| Brown shrimp<br>*Peneaus aztecus* | 1, 7, 172, 177, 332, 435, 437, 506, 514, 515, 517, 519, 520, 538, 592, 692, 933<br>Sheridan |
| Pink shrimp<br>*Peneaus duorarum* | 64, 514, 515, 517, 658, 692, 729, 946<br>Sheridan |
| White shrimp<br>*Penaeus setiferus* | 514, 515, 517, 519, 520, 644, 658, 692<br>Sheridan |
| Grass shrimp<br>*Palaemonetes pugio* | 16, 361, 515, 517, 518, 729<br>Sheridan |
| Spiny lobster<br>*Panulirus argus* | 658 |
| Blue crab<br>*Callinectes sapidus* | 514, 517, 520, 661, 662, 699, 729, 846<br>Steele |
| Gulf stone crab<br>*Menippe adina* | 511, 947<br>Bert, Lindberg |
| Stone crab<br>*Menippe mercenaria* | 511, 947<br>Bert, Lindberg |
| Bull shark<br>*Carcharhinus leucas* | 77, 157, 520, 829 |
| Tarpon<br>*Megalops atlanticus* | 7, 219, 592, 658 |
| Alabama shad<br>*Alosa alabamae* | 47, 499, 504, 603, 956<br>Menzel |
| Gulf menhaden<br>*Brevoortia patronus* | 66, 494, 515, 517, 518, 520, 685, 729, 805, 909 |
| Yellowfin menhaden<br>*Brevoortia smithii* | |
| Gizzard shad<br>*Dorosoma cepedianum* | 47, 115, 188, 460 |
| Bay anchovy<br>*Anchoa mitchilli* | 66, 115, 513, 514, 515, 517, 519, 802, 805 |
| Hardhead catfish<br>*Arius felis* | 56, 115, 518, 513, 519, 520, 515, 645 |
| Sheepshead minow<br>*Cyprinodon variegatus* | 515, 853 |
| Gulf killifish<br>*Fundulus grandis* | 213, 235, 512, 515 |
| Silversides<br>*Menidia species* | 115, 513, 515, 518, 520 |
| Snook<br>*Centropomus undecemalis* | 7, 173, 592, 747, 955 |
| Bluefish<br>*Pomatomus saltatrix* | 7, 259, 513, 515, 518, 520, 592, 599, 658 |
| Blue runner<br>*Caranx crysos* | 7, 60, 301, 302, 348, 349, 518, 592 |
| Crevalle jack<br>*Caranx hippos* | 7, 174, 324, 513, 515, 518, 520, 666, 921 |
| Florida pompano<br>*Trachinotus carolinus* | 463, 518, 539 |
| Gray snapper<br>*Lutjanus griseus* | 518, 539 |
| Sheepshead<br>*Archosargus probatocephalus* | 56, 66, 115, 219, 445, 518, 520, 515 |
| Pinfish<br>*Lagodon rhomboides* | 66, 115, 219, 463, 528, 529, 643 |
| Silver perch<br>*Bairdiella chysoura* | 66, 115, 219, 513, 518, 519, 520, 805 |
| Sand seatrout<br>*Cynoscion arenarius* | 217, 218, 219, 514, 515, 517, 519, 520, 802, 805, 815, 816 |
| Spotted seatrout<br>*Cynoscion nebulosus* | 66, 219, 440, 446, 476, 496, 595, 609, 673 |
| Spot<br>*Leiostomus xanthurus* | 217, 219, 479, 514, 515, 517, 519, 520, 802, 805 |
| Atlantic croaker<br>*Micropogonias undulatus* | 479, 504, 514, 515, 517, 519, 520, 802, 803, 945<br>Sheridan |
| Black drum<br>*Pogonias cromis* | 66, 515 |
| Red drum<br>*Sciaenops ocellatus* | 420, 515, 596, 597, 657, 658 |
| Striped mullet<br>*Mugil cephalus* | 47, 163, 219, 463, 658<br>Menzel |
| Code goby<br>*Gobiosoma robustum* | 66, 115, 274, 512, 840 |
| Spanish mackerel<br>*Scomberomorus maculatus* | 66, 251, 515 |
| Gulf flounder<br>*Paralichthys albigutta* | 219, 291, 513, 658, 686 |
| Southern flounder<br>*Paralicthys lethostigma* | 47, 219, 291, 518, 519, 686 |

Numbers correspond to references in Appendix 4, p. 230-273.
Names correspond to individuals in Appendix 3, p. 226-229.

| Species | St. Andrew Bay, FL |
|---|---|
| Bay scallop<br>*Argopecten irradians* | 254, 777<br>Fable, Fonseca, Menzel |
| American oyster<br>*Crassostrea virginica* | 279, 335, 360, 845, 958<br>Fable, Menzel, Ogren |
| Common rangia<br>*Rangia cuneata* | 491<br>Naughton |
| Hard clam<br>*Mercenaria species* | 249, 279, 335<br>Menzel, Naughton |
| Bay squid<br>*Lolliguncula brevis* | 56<br>Fable, Finucane |
| Brown shrimp<br>*Peneaus aztecus* | 172, 177, 332, 435, 437, 506, 515, 519, 538, 592, 692, 933, 958<br>Fable, Ogren, Sheridan |
| Pink shrimp<br>*Peneaus duorarum* | 110, 692, 777<br>Ogren, Sheridan |
| White shrimp<br>*Penaeus setiferus* | 110, 692, 958<br>Ogren, Sheridan, Young |
| Grass shrimp<br>*Palaemonetes pugio* | 777<br>Fable, Ogren, Sheridan, Young |
| Spiny lobster<br>*Panulirus argus* | <br>Fable |
| Blue crab<br>*Callinectes sapidus* | 658, 662, 699, 777, 846, 958<br>Naughton, Steele |
| Gulf stone crab<br>*Menippe adina* | 62, 320, 511, 946, 947<br>Bert, Lindberg, Naughton |
| Stone crab<br>*Menippe mercenaria* | 947 |
| Bull shark<br>*Carcharhinus leucas* | 77, 157, 829, 921<br>Fable, Finucane |
| Tarpon<br>*Megalops atlanticus* | 219, 349, 584, 658, 862, 921<br>Fable |
| Alabama shad<br>*Alosa alabamae* | 504, 584, 720, 721<br>Finucane |
| Gulf menhaden<br>*Brevoortia patronus* | 14, 584, 665, 720, 721, 906, 921<br>Finucane |
| Yellowfin menhaden<br>*Brevoortia smithii* | <br>Fable |
| Gizzard shad<br>*Dorosoma cepedianum* | 460<br>Fable, Finucane |
| Bay anchovy<br>*Anchoa mitchilli* | 14, 191, 665, 921<br>Finucane |
| Hardhead catfish<br>*Arius felis* | 14, 56, 584, 645, 654, 665, 720, 721, 862, 921<br>Fable, Finucane |
| Sheepshead minow<br>*Cyprinodon variegatus* | 14, 654, 720, 921<br>Finucane |
| Gulf killifish<br>*Fundulus grandis* | 191, 654, 921<br>Finucane |
| Silversides<br>*Menidia species* | 348, 654, 921<br>Fable, Finucane |
| Snook<br>*Centropomus undecemalis* | 173, 349, 658, 747, 862, 921, 955<br>Fable |
| Bluefish<br>*Pomatomus saltatrix* | 111, 250, 259, 463, 584, 658, 665, 721, 862, 906, 921<br>Fable |
| Blue runner<br>*Caranx crysos* | 14, 60, 111, 250, 301, 302, 349, 584, 665, 721, 862, 906, 921<br>Fable |
| Crevalle jack<br>*Caranx hippos* | 14, 111, 191, 349, 584, 654, 665, 721, 862, 921<br>Fable |
| Florida pompano<br>*Trachinotus carolinus* | 14, 349, 584, 721, 862<br>Finucane |
| Gray snapper<br>*Lutjanus griseus* | 14, 191, 584, 654, 665, 721, 862, 921<br>Fable |
| Sheepshead<br>*Archosargus probatocephalus* | 14, 56, 219, 348, 445, 584, 665, 721, 862, 921<br>Fable, Finucane |
| Pinfish<br>*Lagodon rhomboides* | 14, 191, 219, 349, 584, 665, 720, 721, 862, 906, 921<br>Fable |
| Silver perch<br>*Bairdiella chysoura* | 14, 191, 219, 348, 654, 665, 721, 862<br>Fable, Finucane |
| Sand seatrout<br>*Cynoscion arenarius* | 14, 218, 219, 584, 654, 665, 721, 862, 906, 921<br>Fable |
| Spotted seatrout<br>*Cynoscion nebulosus* | 14, 191, 219, 584, 654, 665, 721, 862, 906, 921<br>Fable |
| Spot<br>*Leiostomus xanthurus* | 14, 219, 349, 584, 654, 665, 721, 862, 906, 921<br>Fable |
| Atlantic croaker<br>*Micropogonias undulatus* | 14, 584, 654, 665, 720, 721, 862, 906, 921<br>Fable |
| Black drum<br>*Pogonias cromis* | 191, 584, 721, 862<br>Fable, Finucane |
| Red drum<br>*Sciaenops ocellatus* | 191, 862, 921<br>Fable |
| Striped mullet<br>*Mugil cephalus* | 14, 191, 219, 349, 584, 654, 721, 921<br>Fable |
| Code goby<br>*Gobiosoma robustum* | 654<br>Fable |
| Spanish mackerel<br>*Scomberomorus maculatus* | 251, 349, 584, 653, 665, 720, 721, 862, 906, 921<br>Fable |
| Gulf flounder<br>*Paralichthys albigutta* | 14, 219, 349, 584, 654, 665, 721, 862, 906, 921<br>Naughton |
| Southern flounder<br>*Paralicthys lethostigma* | 14, 219, 721, 862, 921<br>Naughton |

Numbers correspond to references in Appendix 4, p. 230-273.
Names correspond to individuals in Appendix 3, p. 226-229.

| Species | Choctawhatchee Bay, FL |
|---|---|
| Bay scallop<br>*Argopecten irradians* | 67<br>Barkuloo |
| American oyster<br>*Crassostrea virginica* | 116, 360, 845<br>Menzel, Barkuloo |
| Common rangia<br>*Rangia cuneata* | 67<br>Barkuloo |
| Hard clam<br>*Mercenaria species* | 67, 249<br>Menzel, Barkuloo |
| Bay squid<br>*Lolliguncula brevis* | 56, 516<br>Moon |
| Brown shrimp<br>*Peneaus aztecus* | 493, 692<br>Barkuloo, Sheridan |
| Pink shrimp<br>*Peneaus duorarum* | 516, 658, 692, 946<br>Barkuloo, Sheridan |
| White shrimp<br>*Penaeus setiferus* | 516, 658, 692, 946<br>Barkuloo, Sheridan |
| Grass shrimp<br>*Palaemonetes pugio* | 516<br>Barkuloo, Menzel, Sheridan |
| Spiny lobster<br>*Panulirus argus* | Barkuloo |
| Blue crab<br>*Callinectes sapidus* | 516<br>Barkuloo, Steele |
| Gulf stone crab<br>*Menippe adina* | 62, 511, 658, 947<br>Barkuloo, Bert |
| Stone crab<br>*Menippe mercenaria* | 947 |
| Bull shark<br>*Carcharhinus leucas* | 39, 77, 157, 829<br>Moon |
| Tarpon<br>*Megalops atlanticus* | 39, 219, 349, 658<br>Barkuloo |
| Alabama shad<br>*Alosa alabamae* | 29, 39, 47, 67, 119, 439, 504, 516, 895<br>Barkuloo |
| Gulf menhaden<br>*Brevoortia patronus* | 39, 349, 516, 895, 909<br>Barkuloo |
| Yellowfin menhaden<br>*Brevoortia smithii* | Barkuloo |
| Gizzard shad<br>*Dorosoma cepedianum* | 39, 47, 460<br>Moon |
| Bay anchovy<br>*Anchoa mitchilli* | 39, 67, 119, 516, 895<br>Barkuloo |
| Hardhead catfish<br>*Arius felis* | 39, 56, 119, 439, 516, 645<br>Moon |
| Sheepshead minow<br>*Cyprinodon variegatus* | 29, 349<br>Barkuloo |
| Gulf killifish<br>*Fundulus grandis* | 29<br>Barkuloo |
| Silversides<br>*Menidia species* | 39, 67, 119, 349<br>Moon |
| Snook<br>*Centropomus undecemalis* | 173, 658, 746, 747, 955<br>Barkuloo |
| Bluefish<br>*Pomatomus saltatrix* | 259, 348, 349, 439, 516, 658, 733<br>Barkuloo |
| Blue runner<br>*Caranx crysos* | 60, 301, 302, 348, 349, 439<br>Barkuloo |
| Crevalle jack<br>*Caranx hippos* | 39, 324, 348, 349, 439, 516<br>Barkuloo |
| Florida pompano<br>*Trachinotus carolinus* | 29, 349, 439, 516<br>Barkuloo |
| Gray snapper<br>*Lutjanus griseus* | 29, 39, 349, 439, 516, 895<br>Barkuloo |
| Sheepshead<br>*Archosargus probatocephalus* | 39, 56, 119, 219, 349, 439, 445, 516<br>Moon |
| Pinfish<br>*Lagodon rhomboides* | 29, 39, 119, 219, 349, 439, 516, 895<br>Menzel, Barkuloo |
| Silver perch<br>*Bairdiella chysoura* | 39, 349, 219, 516<br>Moon |
| Sand seatrout<br>*Cynoscion arenarius* | 29, 218, 219, 349, 516, 895<br>Barkuloo, Menzel |
| Spotted seatrout<br>*Cynoscion nebulosus* | 39, 119, 219, 349, 439, 516, 895<br>Barkuloo, Menzel |
| Spot<br>*Leiostomus xanthurus* | 29, 39, 119, 219, 349, 516, 895<br>Barkuloo |
| Atlantic croaker<br>*Micropogonias undulatus* | 29, 39, 119, 349, 516, 895<br>Barkuloo |
| Black drum<br>*Pogonias cromis* | 39, 56, 349, 439<br>Moon |
| Red drum<br>*Sciaenops ocellatus* | 29, 39, 349, 439, 516, 674, 697<br>Barkuloo |
| Striped mullet<br>*Mugil cephalus* | 29, 47, 102, 119, 163, 212, 219, 349, 439, 463, 516, 658<br>Barkuloo |
| Code goby<br>*Gobiosoma robustum* | 349, 516, 895<br>Barkuloo |
| Spanish mackerel<br>*Scomberomorus maculatus* | 251, 261, 298, 349, 439, 516<br>Barkuloo |
| Gulf flounder<br>*Paralichthys albigutta* | 29, 219, 349, 439, 516, 895<br>Barkuloo |
| Southern flounder<br>*Paralicthys lethostigma* | 119, 219, 349, 516, 658, 732, 895<br>Barkuloo |

Numbers correspond to references in Appendix 4, p. 230-273.
Names correspond to individuals in Appendix 3, p. 226-229.

| Species | Pensacola Bay, FL |
|---|---|
| Bay scallop<br>*Argopecten irradians* | 174<br>Kruczynski, Flemer, Young |
| American oyster<br>*Crassostrea virginica* | 36, 37, 174<br>Young, Flemer |
| Common rangia<br>*Rangia cuneata* | 174, 491<br>Dardeau, Flemer, Young |
| Hard clam<br>*Mercenaria species* | 174<br>Flemer, Young |
| Bay squid<br>*Lolliguncula brevis* | 56, 174<br>Bortone |
| Brown shrimp<br>*Peneaus aztecus* | 37, 174, 666, 692, 959<br>Flemer, Sheridan, Young |
| Pink shrimp<br>*Peneaus duorarum* | 36, 37, 666, 692<br>Flemer, Sheridan, Young |
| White shrimp<br>*Penaeus setiferus* | 36, 37, 174, 666, 692<br>Flemer, Sheridan, Young |
| Grass shrimp<br>*Palaemonetes pugio* | 666<br>Flemer, Sheridan, Young |
| Spiny lobster<br>*Panulirus argus* | 658<br>Flemer, Young |
| Blue crab<br>*Callinectes sapidus* | 36, 37, 666, 948<br>Flemer, Steele, Young |
| Gulf stone crab<br>*Menippe adina* | 658, 947<br>Bert, Flemer, Young |
| Stone crab<br>*Menippe mercenaria* | 947 |
| Bull shark<br>*Carcharhinus leucas* | 77, 157, 829<br>Bortone |
| Tarpon<br>*Megalops atlanticus* | 219, 658, 881, 882<br>Bortone, Young |
| Alabama shad<br>*Alosa alabamae* | 24, 37, 47, 504<br>Bortone, Young |
| Gulf menhaden<br>*Brevoortia patronus* | 36, 37, 666, 882<br>Bortone, Young |
| Yellowfin menhaden<br>*Brevoortia smithii* | Bortone, Young |
| Gizzard shad<br>*Dorosoma cepedianum* | 24, 36, 37, 460<br>Bortone |
| Bay anchovy<br>*Anchoa mitchilli* | 24, 36, 37, 174, 347, 666, 882<br>Bortone, Young |
| Hardhead catfish<br>*Arius felis* | 24, 36, 37, 56, 174, 347, 645, 666, 882<br>Bortone |
| Sheepshead minow<br>*Cyprinodon variegatus* | 24, 37, 174, 347, 882<br>Bortone, Young |
| Gulf killifish<br>*Fundulus grandis* | 24, 37, 174, 347, 882<br>Bortone, Young |
| Silversides<br>*Menidia species* | 24, 36, 37, 174, 347, 666, 882<br>Bortone |
| Snook<br>*Centropomus undecemalis* | 173, 658, 746, 747, 955<br>Bortone, Young |
| Bluefish<br>*Pomatomus saltatrix* | 174, 259, 348, 347, 733<br>Bortone, Young |
| Blue runner<br>*Caranx crysos* | 60, 174, 301, 302, 348, 347<br>Bortone, Young |
| Crevalle jack<br>*Caranx hippos* | 36, 37, 174, 347, 348, 666, 882<br>Bortone, Young |
| Florida pompano<br>*Trachinotus carolinus* | 174, 347<br>Bortone, Young |
| Gray snapper<br>*Lutjanus griseus* | 174, 347, 666, 882<br>Bortone, Young |
| Sheepshead<br>*Archosargus probatocephalus* | 37, 56, 174, 219, 347, 445, 666<br>Bortone |
| Pinfish<br>*Lagodon rhomboides* | 36, 37, 174, 219, 347, 643, 666, 882<br>Bortone, Young |
| Silver perch<br>*Bairdiella chysoura* | 24, 36, 37, 219, 347, 666, 882<br>Bortone |
| Sand seatrout<br>*Cynoscion arenarius* | 24, 36, 37, 174, 218, 219, 347, 666, 882<br>Bortone, Young |
| Spotted seatrout<br>*Cynoscion nebulosus* | 24, 36, 37, 174, 219, 347, 446, 496, 595, 673, 697, 813, 882<br>Bortone, Young |
| Spot<br>*Leiostomus xanthurus* | 24, 36, 37, 174, 219, 347, 666, 882<br>Bortone, Young |
| Atlantic croaker<br>*Micropogonias undulatus* | 24, 36, 37, 174, 219, 341, 347, 504, 666, 882<br>Bortone, Young |
| Black drum<br>*Pogonias cromis* | 36, 56, 174<br>Bortone |
| Red drum<br>*Sciaenops ocellatus* | 37, 174, 347, 666, 697, 882<br>Bortone, Young |
| Striped mullet<br>*Mugil cephalus* | 24, 36, 37, 47, 163, 219, 658, 666, 882<br>Bortone, Young |
| Code goby<br>*Gobiosoma robustum* | 24, 37, 174, 347<br>Bortone, Young |
| Spanish mackerel<br>*Scomberomorus maculatus* | 174, 251, 666, 882<br>Bortone, Young |
| Gulf flounder<br>*Paralichthys albigutta* | 174, 219, 291<br>Bortone, Young |
| Southern flounder<br>*Paralicthys lethostigma* | 24, 37, 38, 174, 219, 504, 882<br>Bortone, Young |

Numbers correspond to references in Appendix 4, p. 230-273.
Names correspond to individuals in Appendix 3, p. 226-229.

| Species | Perdido Bay, FL/AL |
|---|---|
| Bay scallop<br>*Argopecten irradians* | Flemer, Kruczynski, Young, Heath |
| American oyster<br>*Crassostrea virginica* | 578, 579<br>Flemer, Heath, Menzel, Young, Van Hoose |
| Common rangia<br>*Rangia cuneata* | 489, 490, 491, 872, 959<br>Kruczynski, Heath, Flemer, Young |
| Hard clam<br>*Mercenaria species* | 870<br>Heck, Heath, Flemer, Young |
| Bay squid<br>*Lolliguncula brevis* | 56<br>Van Hoose |
| Brown shrimp<br>*Peneaus aztecus* | 151, 362, 363, 521, 692, 870, 873, 874<br>Heath, Flemer, Sheridan, Young, Van Hoose |
| Pink shrimp<br>*Peneaus duorarum* | 692, 870, 873<br>Heath, Flemer, Sheridan, Young, Van Hoose |
| White shrimp<br>*Penaeus setiferus* | 692, 870, 873<br>Heath, Flemer, Sheridan, Young, Van Hoose |
| Grass shrimp<br>*Palaemonetes pugio* | 870, 873<br>Heath, Flemer, Sheridan, Young |
| Spiny lobster<br>*Panulirus argus* | 658<br>Heath, Flemer, Young |
| Blue crab<br>*Callinectes sapidus* | 870, 873, 948<br>Heath, Flemer, Lane, Steele, Young, Van Hoose |
| Gulf stone crab<br>*Menippe adina* | 870, 947<br>Bert, Heath, Flemer, Young |
| Stone crab<br>*Menippe mercenaria* | 947 |
| Bull shark<br>*Carcharhinus leucas* | 77, 157, 829<br>Van Hoose |
| Tarpon<br>*Megalops atlanticus* | 24, 658, 870<br>Heath, Young |
| Alabama shad<br>*Alosa alabamae* | 504, 870, 873<br>Heath, Young |
| Gulf menhaden<br>*Brevoortia patronus* | 870, 873<br>Heath, Young, Van Hoose |
| Yellowfin menhaden<br>*Brevoortia smithii* | Heath, Young |
| Gizzard shad<br>*Dorosoma cepedianum* | 460<br>Van Hoose |
| Bay anchovy<br>*Anchoa mitchilli* | 870, 873<br>Heath, Young, Van Hoose |
| Hardhead catfish<br>*Arius felis* | 56, 645<br>Van Hoose |
| Sheepshead minow<br>*Cyprinodon variegatus* | 870, 873<br>Heath, Young |
| Gulf killifish<br>*Fundulus grandis* | 870, 873<br>Heath, Young |
| Silversides<br>*Menidia species* | 56<br>Van Hoose |
| Snook<br>*Centropomus undecemalis* | 24, 658, 746, 747, 955<br>Heath, Young |
| Bluefish<br>*Pomatomus saltatrix* | 259, 658, 733<br>Heath, Young |
| Blue runner<br>*Caranx crysos* | 60, 301, 302, 348, 347<br>Heath, Young |
| Crevalle jack<br>*Caranx hippos* | 324, 866, 873<br>Heath, Young |
| Florida pompano<br>*Trachinotus carolinus* | 870<br>Heath, Young |
| Gray snapper<br>*Lutjanus griseus* | 870<br>Heath, Young |
| Sheepshead<br>*Archosargus probatocephalus* | 56, 219, 445<br>Van Hoose |
| Pinfish<br>*Lagodon rhomboides* | 219, 866, 870, 873<br>Heath, Young, Van Hoose |
| Silver perch<br>*Bairdiella chysoura* | 56, 219<br>Van Hoose |
| Sand seatrout<br>*Cynoscion arenarius* | 218, 219, 866, 870<br>Heath, Young |
| Spotted seatrout<br>*Cynoscion nebulosus* | 219, 870<br>Heath, Young |
| Spot<br>*Leiostomus xanthurus* | 219, 866, 870, 873<br>Heath, Young, Van Hoose |
| Atlantic croaker<br>*Micropogonias undulatus* | 866, 870<br>Heath, Young, Van Hoose |
| Black drum<br>*Pogonias cromis* | 56<br>Van Hoose |
| Red drum<br>*Sciaenops ocellatus* | 870<br>Heath, Young, Van Hoose |
| Striped mullet<br>*Mugil cephalus* | 219, 870, 873<br>Heath, Young, Van Hoose |
| Code goby<br>*Gobiosoma robustum* | 811, 870, 873<br>Heath, Young |
| Spanish mackerel<br>*Scomberomorus maculatus* | 870<br>Heath, Young |
| Gulf flounder<br>*Paralichthys albigutta* | 219, 873<br>Heath, Young |
| Southern flounder<br>*Paralicthys lethostigma* | 219, 870<br>Heath, Young |

Numbers correspond to references in Appendix 4, p. 230-273.
Names correspond to individuals in Appendix 3, p. 226-229.

| Species | Mobile Bay, AL |
|---|---|
| Bay scallop<br>*Argopecten irradians* | 870, 873<br>Dardeau, Heath, Shipp |
| American oyster<br>*Crassostrea virginica* | 238, 363, 503, 578, 579, 580, 581, 582, 795<br>Dardeau, Heath, Shipp |
| Common rangia<br>*Rangia cuneata* | 464, 491, 870, 872, 922<br>Dardeau, Heath, Shipp |
| Hard clam<br>*Mercenaria species* | 249, 872<br>Dardeau, Heath, Shipp |
| Bay squid<br>*Lolliguncula brevis* | 56<br>Shipp, Van Hoose |
| Brown shrimp<br>*Peneaus aztecus* | 151, 362, 363, 521, 692, 828, 870, 874<br>Dardeau, Heath, Sheridan, Shipp |
| Pink shrimp<br>*Peneaus duorarum* | 56, 153, 692, 870, 873<br>Dardeau, Heath, Sheridan, Shipp |
| White shrimp<br>*Penaeus setiferus* | 56, 153, 522, 523, 692, 769<br>Dardeau, Heath, Sheridan, Shipp |
| Grass shrimp<br>*Palaemonetes pugio* | 71, 810, 870, 873<br>Dardeau, Heath, Sheridan, Shipp |
| Spiny lobster<br>*Panulirus argus* | Dardeau, Heath, Shipp |
| Blue crab<br>*Callinectes sapidus* | 56, 363, 527, 581, 810, 846, 888, 948<br>Dardeau, Heath, Shipp, Steele |
| Gulf stone crab<br>*Menippe adina* | 870, 947<br>Bert, Dardeau, Heath, Shipp, VanHoose |
| Stone crab<br>*Menippe mercenaria* | 947 |
| Bull shark<br>*Carcharhinus leucas* | 77, 157, 829<br>Shipp, Van Hoose |
| Tarpon<br>*Megalops atlanticus* | 243, 870, 924, 925<br>Heath, Shipp |
| Alabama shad<br>*Alosa alabamae* | 499, 504, 603, 766, 767, 870, 873, 908, 949<br>Heath, Shipp |
| Gulf menhaden<br>*Brevoortia patronus* | 56, 363, 811, 812, 814, 869, 873, 950<br>Heath, Shipp |
| Yellowfin menhaden<br>*Brevoortia smithii* | 56, 812, 814, 869, 870, 873, 950<br>Heath, Shipp |
| Gizzard shad<br>*Dorosoma cepedianum* | 460, 811, 908<br>Shipp, Van Hoose |
| Bay anchovy<br>*Anchoa mitchilli* | 814<br>Heath, Shipp, VanHoose |
| Hardhead catfish<br>*Arius felis* | 56, 645, 811<br>Shipp, Van Hoose |
| Sheepshead minow<br>*Cyprinodon variegatus* | 811, 869, 873<br>Heath, Shipp |
| Gulf killifish<br>*Fundulus grandis* | 811, 869, 873<br>Heath, Shipp |
| Silversides<br>*Menidia species* | 811, 812, 813, 814, 869, 908<br>Shipp, Van Hoose |
| Snook<br>*Centropomus undecemalis* | Heath, Shipp |
| Bluefish<br>*Pomatomus saltatrix* | 56, 259, 263, 870<br>Heath, Shipp |
| Blue runner<br>*Caranx crysos* | 447, 814, 870<br>Heath, Shipp |
| Crevalle jack<br>*Caranx hippos* | 14, 72, 812, 870, 873<br>Heath, Shipp |
| Florida pompano<br>*Trachinotus carolinus* | 56, 869, 870, 924<br>Heath, Shipp |
| Gray snapper<br>*Lutjanus griseus* | 56, 869, 870<br>Heath, Shipp |
| Sheepshead<br>*Archosargus probatocephalus* | 56, 219, 445, 811, 812, 813, 814, 908<br>Shipp, Van Hoose |
| Pinfish<br>*Lagodon rhomboides* | 56, 72, 219, 811, 814, 869, 870, 873, 908<br>Heath, Shipp |
| Silver perch<br>*Bairdiella chysoura* | 219, 504, 811, 812, 813, 869, 950<br>Shipp, Van Hoose |
| Sand seatrout<br>*Cynoscion arenarius* | 56, 72, 218, 219, 363, 811, 812, 813, 814, 869, 870, 873, 908, 924, 950<br>Heath, Shipp |
| Spotted seatrout<br>*Cynoscion nebulosus* | 56, 72, 219, 363, 504, 811, 812, 813, 814, 873, 908, 911, 924, 950<br>Heath, Shipp |
| Spot<br>*Leiostomus xanthurus* | 56, 217, 219, 363, 656, 811, 812, 814, 869, 870, 873, 950<br>Heath, Shipp, Van Hoose |
| Atlantic croaker<br>*Micropogonias undulatus* | 217, 219, 363, 504, 515, 656, 812, 813, 814, 869, 870, 871, 873, 924, 945, 950<br>Heath, Shipp |
| Black drum<br>*Pogonias cromis* | 811, 812, 813, 814, 950<br>Shipp, Van Hoose |
| Red drum<br>*Sciaenops ocellatus* | 56, 72, 363, 634, 811, 812, 813, 814, 869, 870, 908, 911, 924, 950<br>Heath, Shipp |
| Striped mullet<br>*Mugil cephalus* | 56, 72, 219, 363, 811, 812, 869, 870, 873, 908, 924<br>Heath, Shipp |
| Code goby<br>*Gobiosoma robustum* | 811, 812, 813, 870, 873<br>Heath, Shipp |
| Spanish mackerel<br>*Scomberomorus maculatus* | 56, 72, 363, 812, 814, 869, 870, 924<br>Heath, Shipp |
| Gulf flounder<br>*Paralichthys albigutta* | 56, 72, 219, 870, 873, 924, 949<br>Heath, Shipp |
| Southern flounder<br>*Paralicthys lethostigma* | 56, 72, 219, 363, 504, 812, 869, 870, 873, 924<br>Heath, Shipp |

Numbers correspond to references in Appendix 4, p. 230-273.
Names correspond to individuals in Appendix 3, p. 226-229.

| Species | Mississippi Sound, MS/AL/LA |
|---|---|
| Bay scallop<br>*Argopecten irradians* | 155, 631<br>Demoran |
| American oyster<br>*Crassostrea virginica* | 73, 124, 129, 155, 231, 245, 319, 328, 536, 631, 663, 664<br>Demoran |
| Common rangia<br>*Rangia cuneata* | 155, 601, 631<br>Demoran |
| Hard clam<br>*Mercenaria species* | 155, 631<br>Demoran |
| Bay squid<br>*Lolliguncula brevis* | 32, 56, 155, 631, 700, 743, 744, 870, 932<br>Warren |
| Brown shrimp<br>*Peneaus aztecus* | 32, 56, 73, 153, 154, 155, 280, 319, 336, 696, 858, 870, 932, 941, 942<br>Warren |
| Pink shrimp<br>*Peneaus duorarum* | 56, 153, 154, 155, 696, 858, 870, 932<br>Warren |
| White shrimp<br>*Penaeus setiferus* | 32, 56, 73, 153, 154, 155, 280, 319, 696, 858, 870, 932, 942<br>Warren |
| Grass shrimp<br>*Palaemonetes pugio* | 32, 155, 336, 743, 744, 870, 932<br>Warren |
| Spiny lobster<br>*Panulirus argus* | Waller |
| Blue crab<br>*Callinectes sapidus* | 32, 56, 73, 155, 601, 696, 700, 702, 870, 932<br>Warren |
| Gulf stone crab<br>*Menippe adina* | 32, 155, 856, 857, 947 |
| Stone crab<br>*Menippe mercenaria* | 947<br>Czapla |
| Bull shark<br>*Carcharhinus leucas* | 6, 273, 441, 743, 744<br>Waller |
| Tarpon<br>*Megalops atlanticus* | 743, 744<br>Waller |
| Alabama shad<br>*Alosa alabamae* | 504<br>Warren |
| Gulf menhaden<br>*Brevoortia patronus* | 6, 32, 56, 155, 248, 319, 336, 530, 696, 701, 762, 768, 870, 932<br>Warren |
| Yellowfin menhaden<br>*Brevoortia smithii* | 155<br>Warren |
| Gizzard shad<br>*Dorosoma cepedianum* | Warren |
| Bay anchovy<br>*Anchoa mitchilli* | 32, 56, 73, 155, 239, 273, 336, 530, 696, 701, 743, 744, 762, 768, 870, 932<br>Warren |
| Hardhead catfish<br>*Arius felis* | 6, 32, 56, 155, 239, 273, 336, 346, 696, 762, 870, 930<br>Warren |
| Sheepshead minow<br>*Cyprinodon variegatus* | 155, 171, 273, 336, 696, 743, 870<br>Warren |
| Gulf killifish<br>*Fundulus grandis* | 73, 155, 171, 273, 336, 696, 743, 764<br>Warren |
| Silversides<br>*Menidia species* | 32, 56, 155, 171, 273, 286, 696, 743, 762, 768, 870<br>Warren |
| Snook<br>*Centropomus undecemalis* | Waller |
| Bluefish<br>*Pomatomus saltatrix* | 6, 56, 441, 743, 744, 762<br>Waller |
| Blue runner<br>*Caranx crysos* | 155, 219, 273, 743, 744, 798<br>Warren |
| Crevalle jack<br>*Caranx hippos* | 6, 32, 56, 155, 219, 273, 441, 696, 743, 744, 762, 870, 932<br>Warren |
| Florida pompano<br>*Trachinotus carolinus* | 6, 56, 155, 696, 762, 870<br>Warren |
| Gray snapper<br>*Lutjanus griseus* | 56, 762<br>Warren |
| Sheepshead<br>*Archosargus probatocephalus* | 6, 32, 56, 155, 219, 248, 273, 336, 441, 677, 696, 762, 768, 870, 932<br>Warren |
| Pinfish<br>*Lagodon rhomboides* | 6, 56, 155, 219, 273, 441, 530, 696, 762, 768, 870, 932<br>Warren |
| Silver perch<br>*Bairdiella chysoura* | 6, 32, 155, 219, 273, 441, 504, 696, 762, 768, 870, 932<br>Warren |
| Sand seatrout<br>*Cynoscion arenarius* | 6, 32, 56, 73, 155, 218, 219, 248, 273, 336, 441, 530, 677, 696, 743, 744, 768, 870, 932<br>Warren |
| Spotted seatrout<br>*Cynoscion nebulosus* | 6, 32, 56, 73, 155, 195, 219, 248, 273, 319, 336, 441, 504, 677, 696, 768, 870, 932<br>Warren |
| Spot<br>*Leiostomus xanthurus* | 6, 32, 56, 155, 219, 273, 336, 441, 504, 530, 696, 762, 768, 870, 932<br>Warren |
| Atlantic croaker<br>*Micropogonias undulatus* | 6, 32, 56, 73, 155, 219, 248, 273, 319, 441, 504, 530, 675, 696, 768, 870, 932<br>Warren |
| Black drum<br>*Pogonias cromis* | 6, 32, 56, 73, 124, 155, 248, 319, 441, 677, 768<br>Warren |
| Red drum<br>*Sciaenops ocellatus* | 6, 56, 73, 155, 248, 273, 319, 441, 504, 531, 674, 676, 696, 768, 847<br>Warren |
| Striped mullet<br>*Mugil cephalus* | 6, 56, 73, 155, 219, 248, 273, 319, 336, 696, 762, 870<br>Warren |
| Code goby<br>*Gobiosoma robustum* | 743, 744<br>Warren |
| Spanish mackerel<br>*Scomberomorus maculatus* | 6, 32, 56, 155, 219, 441, 696, 743, 744, 762, 870, 932<br>Warren |
| Gulf flounder<br>*Paralichthys albigutta* | 56, 155, 219, 273<br>Warren |
| Southern flounder<br>*Paralicthys lethostigma* | 6, 32, 56, 155, 219, 248, 273, 441, 504, 677, 696, 762, 768, 932<br>Warren |

Numbers correspond to references in Appendix 4, p. 230-273.
Names correspond to individuals in Appendix 3, p. 226-229.

| Species | Lake Borgne, LA |
|---|---|
| Bay scallop<br>*Argopecten irradians* | Savoie, Soniat |
| American oyster<br>*Crassostrea virginica* | 73, 129, 231, 288, 319<br>Savoie, Soniat |
| Common rangia<br>*Rangia cuneata* | 267<br>Savoie, Soniat |
| Hard clam<br>*Mercenaria species* | Savoie |
| Bay squid<br>*Lolliguncula brevis* | 32, 155, 267, 696<br>Savoie, Soniat |
| Brown shrimp<br>*Peneaus aztecus* | 32, 73, 155, 201, 267, 280, 319, 696, 941, 942<br>Savoie, Soniat |
| Pink shrimp<br>*Peneaus duorarum* | 155, 696<br>Savoie, Soniat |
| White shrimp<br>*Penaeus setiferus* | 32, 73, 155, 201, 280, 319, 696, 942<br>Savoie, Soniat |
| Grass shrimp<br>*Palaemonetes pugio* | 32, 155, 267<br>Savoie, Soniat |
| Spiny lobster<br>*Panulirus argus* | Savoie, Soniat |
| Blue crab<br>*Callinectes sapidus* | 32, 73, 155, 201, 267, 696, 700, 702<br>Savoie, Soniat |
| Gulf stone crab<br>*Menippe adina* | 32, 155, 201, 696, 947<br>Savoie, Soniat |
| Stone crab<br>*Menippe mercenaria* | 947<br>Czapla |
| Bull shark<br>*Carcharhinus leucas* | 6, 267<br>Savoie |
| Tarpon<br>*Megalops atlanticus* | Savoie |
| Alabama shad<br>*Alosa alabamae* | 201, 504<br>Savoie |
| Gulf menhaden<br>*Brevoortia patronus* | 6, 32, 73, 155, 201, 267, 319, 696, 763<br>Savoie |
| Yellowfin menhaden<br>*Brevoortia smithii* | Savoie |
| Gizzard shad<br>*Dorosoma cepedianum* | 171, 201, 267, 485<br>Savoie |
| Bay anchovy<br>*Anchoa mitchilli* | 32, 73, 155, 201, 267, 696, 763<br>Savoie |
| Hardhead catfish<br>*Arius felis* | 6, 32, 155, 201, 267, 696, 763<br>Savoie |
| Sheepshead minow<br>*Cyprinodon variegatus* | 155, 267, 696<br>Savoie |
| Gulf killifish<br>*Fundulus grandis* | 155, 267, 696<br>Savoie |
| Silversides<br>*Menidia species* | 32, 155, 201, 267, 696<br>Savoie |
| Snook<br>*Centropomus undecemalis* | Savoie |
| Bluefish<br>*Pomatomus saltatrix* | 6<br>Savoie |
| Blue runner<br>*Caranx crysos* | Savoie |
| Crevalle jack<br>*Caranx hippos* | 6, 32, 155, 201, 267, 696<br>Savoie |
| Florida pompano<br>*Trachinotus carolinus* | 6, 155, 267, 696<br>Savoie |
| Gray snapper<br>*Lutjanus griseus* | 155<br>Savoie |
| Sheepshead<br>*Archosargus probatocephalus* | 5, 6, 32, 46, 155, 201, 267, 696, 763<br>Savoie |
| Pinfish<br>*Lagodon rhomboides* | 6, 155, 201, 267, 696, 763<br>Savoie |
| Silver perch<br>*Bairdiella chysoura* | 6, 155, 201, 219, 267, 696, 763<br>Savoie |
| Sand seatrout<br>*Cynoscion arenarius* | 5, 6, 32, 73, 155, 201, 218, 219, 267, 696, 763<br>Savoie |
| Spotted seatrout<br>*Cynoscion nebulosus* | 5, 6, 32, 73, 155, 201, 219, 275, 696, 763, 861<br>Savoie |
| Spot<br>*Leiostomus xanthurus* | 6, 32, 155, 201, 219, 681, 696, 763<br>Savoie |
| Atlantic croaker<br>*Micropogonias undulatus* | 5, 6, 32, 73, 155, 201, 219, 275, 681, 696, 763<br>Savoie |
| Black drum<br>*Pogonias cromis* | 5, 6, 32, 73, 201, 267<br>Savoie, Soniat |
| Red drum<br>*Sciaenops ocellatus* | 6, 73, 155, 201, 267, 696, 927<br>Savoie |
| Striped mullet<br>*Mugil cephalus* | 5, 6, 73, 155, 201, 219, 266, 486, 696<br>Savoie |
| Code goby<br>*Gobiosoma robustum* | Savoie |
| Spanish mackerel<br>*Scomberomorus maculatus* | 6, 32, 155, 201, 267, 696<br>Savoie |
| Gulf flounder<br>*Paralichthys albigutta* | Thompson |
| Southern flounder<br>*Paralicthys lethostigma* | 5, 6, 32, 155, 201, 267, 696, 763<br>Savoie |

Numbers correspond to references in Appendix 4, p. 230-273.
Names correspond to individuals in Appendix 3, p. 226-229.

| Species | Lake Pontchartrain, LA |
|---|---|
| Bay scallop<br>*Argopecten irradians* | Savoie, Soniat |
| American oyster<br>*Crassostrea virginica* | 231, 233, 467, 867, 886, 887<br>Savoie, Soniat |
| Common rangia<br>*Rangia cuneata* | 73, 196, 198, 233, 252, 315, 467, 507, 867, 884, 885, 887<br>Savoie, Soniat |
| Hard clam<br>*Mercenaria species* | Savoie, Soniat |
| Bay squid<br>*Lolliguncula brevis* | 155, 696<br>Savoie, Soniat |
| Brown shrimp<br>*Peneaus aztecus* | 73, 155, 201, 280, 389, 696, 867, 887, 941, 942<br>Savoie, Soniat |
| Pink shrimp<br>*Peneaus duorarum* | 155, 696, 867<br>Savoie, Soniat |
| White shrimp<br>*Penaeus setiferus* | 73, 155, 196, 198, 201, 280, 389, 486, 696, 867, 915, 944<br>Savoie, Soniat |
| Grass shrimp<br>*Palaemonetes pugio* | 155, 389, 486, 507, 867, 887<br>Savoie, Soniat |
| Spiny lobster<br>*Panulirus argus* | Savoie, Soniat |
| Blue crab<br>*Callinectes sapidus* | 73, 155, 196, 197, 198, 201, 389, 486, 507, 696, 867, 887<br>Savoie, Soniat |
| Gulf stone crab<br>*Menippe adina* | 155, 201, 696, 947<br>Savoie, Soniat |
| Stone crab<br>*Menippe mercenaria* | 947<br>Czapla |
| Bull shark<br>*Carcharhinus leucas* | 6, 196, 198, 210, 867<br>Savoie |
| Tarpon<br>*Megalops atlanticus* | 210, 867<br>Savoie |
| Alabama shad<br>*Alosa alabamae* | 210, 350, 504, 600<br>Savoie |
| Gulf menhaden<br>*Brevoortia patronus* | 6, 155, 196, 201, 210, 315, 350, 389, 696, 864, 867, 887<br>Savoie |
| Yellowfin menhaden<br>*Brevoortia smithii* | Savoie |
| Gizzard shad<br>*Dorosoma cepedianum* | 156, 196, 198, 201, 210, 315, 350, 486, 600, 696, 826, 887<br>Savoie |
| Bay anchovy<br>*Anchoa mitchilli* | 73, 156, 196, 198, 201, 210, 315, 350, 389, 507, 600, 696, 867, 887<br>Savoie |
| Hardhead catfish<br>*Arius felis* | 6, 155, 196, 198, 201, 210, 315, 350, 389, 441, 507, 696, 867, 887<br>Savoie |
| Sheepshead minow<br>*Cyprinodon variegatus* | 155, 196, 210, 507, 696, 867, 887<br>Savoie |
| Gulf killifish<br>*Fundulus grandis* | 73, 155, 210, 350, 507, 696, 867, 887<br>Savoie |
| Silversides<br>*Menidia species* | 155, 196, 198, 201, 210, 315, 350, 507, 600, 696, 867, 887<br>Savoie |
| Snook<br>*Centropomus undecemalis* | Savoie |
| Bluefish<br>*Pomatomus saltatrix* | 6<br>Savoie |
| Blue runner<br>*Caranx crysos* | Savoie |
| Crevalle jack<br>*Caranx hippos* | 6, 155, 196, 198, 201, 210, 350, 600, 696, 867, 887<br>Savoie |
| Florida pompano<br>*Trachinotus carolinus* | 6, 210<br>Savoie |
| Gray snapper<br>*Lutjanus griseus* | 210<br>Savoie |
| Sheepshead<br>*Archosargus probatocephalus* | 5, 6, 46, 156, 196, 198, 201, 210, 315, 350, 507, 600, 696, 887<br>Savoie |
| Pinfish<br>*Lagodon rhomboides* | 6, 155, 196, 198, 201, 210, 507, 696, 867, 887<br>Savoie |
| Silver perch<br>*Bairdiella chysoura* | 6, 155, 196, 198, 201, 210, 696, 867, 887<br>Savoie |
| Sand seatrout<br>*Cynoscion arenarius* | 5, 6, 73, 155, 196, 198, 201, 210, 218, 315, 350, 389, 507, 696, 867, 887<br>Savoie |
| Spotted seatrout<br>*Cynoscion nebulosus* | 5, 6, 73, 155, 196, 198, 201, 210, 219, 315, 319, 507, 696, 867, 887<br>Savoie |
| Spot<br>*Leiostomus xanthurus* | 6, 155, 196, 198, 201, 217, 219, 315, 507, 696, 867, 887<br>Savoie |
| Atlantic croaker<br>*Micropogonias undulatus* | 5, 6, 73, 155, 196, 198, 201, 210, 219, 315, 319, 350, 389, 507, 600, 696, 867, 887<br>Savoie |
| Black drum<br>*Pogonias cromis* | 5, 6, 73, 155, 196, 198, 201, 210, 319, 350, 696, 867, 887<br>Savoie |
| Red drum<br>*Sciaenops ocellatus* | 5, 6, 73, 155, 198, 201, 210, 319, 507, 696, 867, 887<br>Savoie |
| Striped mullet<br>*Mugil cephalus* | 6, 73, 155, 196, 198, 201, 210, 219, 315, 319, 350, 486, 600, 696, 867, 887<br>Savoie |
| Code goby<br>*Gobiosoma robustum* | 202, 210<br>Savoie |
| Spanish mackerel<br>*Scomberomorus maculatus* | 6, 201, 210, 867<br>Savoie |
| Gulf flounder<br>*Paralichthys albigutta* | 887<br>Thompson |
| Southern flounder<br>*Paralicthys lethostigma* | 5, 6, 155, 196, 198, 201, 210, 315, 350, 466, 600, 696, 867, 887<br>Savoie |

Numbers correspond to references in Appendix 4, p. 230-273.
Names correspond to individuals in Appendix 3, p. 226-229.

| Species | Breton/Chandeleur Sounds, LA |
|---|---|
| Bay scallop<br>*Argopecten irradians* | 401, 682<br>Ancelet |
| American oyster<br>*Crassostrea virginica* | 129, 230, 231, 288, 319, 401, 682, 713, 880<br>Ancelet |
| Common rangia<br>*Rangia cuneata* | 682<br>Ancelet |
| Hard clam<br>*Mercenaria species* | 232, 401, 682<br>Ancelet |
| Bay squid<br>*Lolliguncula brevis* | 32, 267, 713<br>Ancelet |
| Brown shrimp<br>*Peneaus aztecus* | 30, 31, 32, 73, 267, 280, 713, 941, 942<br>Ancelet |
| Pink shrimp<br>*Peneaus duorarum* | 401<br>Ancelet |
| White shrimp<br>*Penaeus setiferus* | 30, 31, 32, 73, 267, 280, 713, 942<br>Ancelet |
| Grass shrimp<br>*Palaemonetes pugio* | 267, 401, 713<br>Ancelet |
| Spiny lobster<br>*Panulirus argus* | Ancelet |
| Blue crab<br>*Callinectes sapidus* | 32, 73, 267, 401, 713<br>Ancelet |
| Gulf stone crab<br>*Menippe adina* | 267, 401, 947<br>Ancelet |
| Stone crab<br>*Menippe mercenaria* | 947<br>Czapla |
| Bull shark<br>*Carcharhinus leucas* | 267, 321, 468<br>Ancelet |
| Tarpon<br>*Megalops atlanticus* | Ancelet |
| Alabama shad<br>*Alosa alabamae* | 504<br>Ancelet |
| Gulf menhaden<br>*Brevoortia patronus* | 32, 73, 267, 318, 468, 492, 713, 763<br>Ancelet |
| Yellowfin menhaden<br>*Brevoortia smithii* | Ancelet |
| Gizzard shad<br>*Dorosoma cepedianum* | 32, 267, 468, 485<br>Ancelet |
| Bay anchovy<br>*Anchoa mitchilli* | 32, 73, 267, 468, 492, 713, 763<br>Ancelet |
| Hardhead catfish<br>*Arius felis* | 32, 267, 468, 492, 713, 763<br>Ancelet |
| Sheepshead minow<br>*Cyprinodon variegatus* | 267, 468, 492, 763<br>Ancelet |
| Gulf killifish<br>*Fundulus grandis* | 267, 468, 492, 763<br>Ancelet |
| Silversides<br>*Menidia species* | 267, 468, 492<br>Ancelet |
| Snook<br>*Centropomus undecemalis* | Ancelet |
| Bluefish<br>*Pomatomus saltatrix* | 492<br>Ancelet |
| Blue runner<br>*Caranx crysos* | 293, 301, 302<br>Ancelet |
| Crevalle jack<br>*Caranx hippos* | 32, 267, 293, 302, 468, 492, 713<br>Ancelet |
| Florida pompano<br>*Trachinotus carolinus* | 267, 293, 492<br>Ancelet |
| Gray snapper<br>*Lutjanus griseus* | 492<br>Ancelet |
| Sheepshead<br>*Archosargus probatocephalus* | 32, 46, 267, 468, 492, 713, 763<br>Ancelet |
| Pinfish<br>*Lagodon rhomboides* | 267, 468, 492, 713, 763<br>Ancelet |
| Silver perch<br>*Bairdiella chysoura* | 32, 267, 468, 492, 713, 763<br>Ancelet |
| Sand seatrout<br>*Cynoscion arenarius* | 32, 73, 218, 267, 468, 492, 713<br>Ancelet |
| Spotted seatrout<br>*Cynoscion nebulosus* | 32, 219, 267, 468, 492, 713<br>Ancelet |
| Spot<br>*Leiostomus xanthurus* | 32, 73, 267, 468, 492, 713, 763<br>Ancelet |
| Atlantic croaker<br>*Micropogonias undulatus* | 32, 73, 267, 468, 492, 713, 763<br>Ancelet |
| Black drum<br>*Pogonias cromis* | 32, 267, 468, 492, 713<br>Ancelet |
| Red drum<br>*Sciaenops ocellatus* | 69, 267, 468, 492, 927<br>Ancelet |
| Striped mullet<br>*Mugil cephalus* | 267, 468, 485, 492, 763<br>Ancelet |
| Code goby<br>*Gobiosoma robustum* | 492<br>Ancelet |
| Spanish mackerel<br>*Scomberomorus maculatus* | 267, 468, 492, 713<br>Ancelet |
| Gulf flounder<br>*Paralichthys albigutta* | 492<br>Ancelet, Thompson |
| Southern flounder<br>*Paralicthys lethostigma* | 32, 267, 294, 468, 492, 763<br>Ancelet |

Numbers correspond to references in Appendix 4, p. 230-273.
Names correspond to individuals in Appendix 3, p. 226-229.

| Species | Mississippi River, LA |
|---|---|
| Bay scallop<br>*Argopecten irradians* | Ancelet |
| American oyster<br>*Crassostrea virginica* | 682<br>Ancelet |
| Common rangia<br>*Rangia cuneata* | Ancelet |
| Hard clam<br>*Mercenaria species* | Ancelet |
| Bay squid<br>*Lolliguncula brevis* | Ancelet |
| Brown shrimp<br>*Peneaus aztecus* | 30, 32, 34, 73, 240, 280, 826<br>Ancelet |
| Pink shrimp<br>*Peneaus duorarum* | Ancelet |
| White shrimp<br>*Penaeus setiferus* | 30, 34, 240, 280, 826<br>Ancelet |
| Grass shrimp<br>*Palaemonetes pugio* | Ancelet |
| Spiny lobster<br>*Panulirus argus* | Ancelet |
| Blue crab<br>*Callinectes sapidus* | Ancelet |
| Gulf stone crab<br>*Menippe adina* | 947<br>Ancelet |
| Stone crab<br>*Menippe mercenaria* | 947<br>Czapla |
| Bull shark<br>*Carcharhinus leucas* | 468<br>Ancelet |
| Tarpon<br>*Megalops atlanticus* | Ancelet |
| Alabama shad<br>*Alosa alabamae* | 504<br>Ancelet |
| Gulf menhaden<br>*Brevoortia patronus* | 304, 305, 468, 830, 865, 931<br>Ancelet |
| Yellowfin menhaden<br>*Brevoortia smithii* | Ancelet |
| Gizzard shad<br>*Dorosoma cepedianum* | 281, 468<br>Ancelet |
| Bay anchovy<br>*Anchoa mitchilli* | 468<br>Ancelet |
| Hardhead catfish<br>*Arius felis* | 468, 505<br>Ancelet |
| Sheepshead minow<br>*Cyprinodon variegatus* | 468, 583<br>Ancelet |
| Gulf killifish<br>*Fundulus grandis* | 468, 583<br>Ancelet |
| Silversides<br>*Menidia species* | 281, 468<br>Ancelet |
| Snook<br>*Centropomus undecemalis* | Ancelet |
| Bluefish<br>*Pomatomus saltatrix* | Ancelet |
| Blue runner<br>*Caranx crysos* | Ancelet |
| Crevalle jack<br>*Caranx hippos* | 302, 468<br>Ancelet |
| Florida pompano<br>*Trachinotus carolinus* | Ancelet |
| Gray snapper<br>*Lutjanus griseus* | Ancelet |
| Sheepshead<br>*Archosargus probatocephalus* | 46, 468<br>Ancelet |
| Pinfish<br>*Lagodon rhomboides* | 468<br>Ancelet |
| Silver perch<br>*Bairdiella chysoura* | 468<br>Ancelet |
| Sand seatrout<br>*Cynoscion arenarius* | 218, 468<br>Ancelet |
| Spotted seatrout<br>*Cynoscion nebulosus* | 468, 830<br>Ancelet |
| Spot<br>*Leiostomus xanthurus* | 303, 304, 468<br>Ancelet |
| Atlantic croaker<br>*Micropogonias undulatus* | 304, 468, 830<br>Ancelet |
| Black drum<br>*Pogonias cromis* | 468<br>Ancelet |
| Red drum<br>*Sciaenops ocellatus* | 468<br>Ancelet |
| Striped mullet<br>*Mugil cephalus* | 468<br>Ancelet |
| Code goby<br>*Gobiosoma robustum* | Ancelet |
| Spanish mackerel<br>*Scomberomorus maculatus* | 468<br>Ancelet |
| Gulf flounder<br>*Paralichthys albigutta* | Ancelet, Thompson |
| Southern flounder<br>*Paralicthys lethostigma* | 468<br>Ancelet |

Numbers correspond to references in Appendix 4, p. 230-273.
Names correspond to individuals in Appendix 3, p. 226-229.

| Species | Barataria Bay, LA |
|---|---|
| Bay scallop<br>*Argopecten irradians* | Dameier, Schexnayder |
| American oyster<br>*Crassostrea virginica* | 117, 207, 266, 288, 319, 398, 912<br>Dameier, Schexnayder |
| Common rangia<br>*Rangia cuneata* | 117, 712<br>Dameier, Schexnayder |
| Hard clam<br>*Mercenaria species* | Dameier, Schexnayder |
| Bay squid<br>*Lolliguncula brevis* | 32<br>Dameier, Schexnayder |
| Brown shrimp<br>*Peneaus aztecus* | 30, 31, 32, 33, 34, 65, 73, 126, 168, 207, 280, 316, 319, 442, 826, 844, 941, 942<br>Dameier, Schexnayder |
| Pink shrimp<br>*Peneaus duorarum* | Dameier, Schexnayder |
| White shrimp<br>*Penaeus setiferus* | 30, 31, 32, 33, 34, 65, 73, 126, 168, 207, 280, 319, 826, 942<br>Dameier, Schexnayder |
| Grass shrimp<br>*Palaemonetes pugio* | 32, 126<br>Dameier, Schexnayder |
| Spiny lobster<br>*Panulirus argus* | Dameier, Schexnayder |
| Blue crab<br>*Callinectes sapidus* | 32, 73, 126, 207, 444, 961<br>Dameier, Schexnayder |
| Gulf stone crab<br>*Menippe adina* | 32, 427, 947<br>Dameier, Schexnayder |
| Stone crab<br>*Menippe mercenaria* | 947<br>Czapla |
| Bull shark<br>*Carcharhinus leucas* | 23, 210, 314<br>Dameier, Schexnayder |
| Tarpon<br>*Megalops atlanticus* | 210, 314<br>Dameier, Schexnayder |
| Alabama shad<br>*Alosa alabamae* | 210, 271, 314, 504<br>Dameier, Schexnayder |
| Gulf menhaden<br>*Brevoortia patronus* | 23, 32, 73, 126, 207, 210, 217, 219, 236, 271, 304, 305, 314, 316, 322, 765, 775, 821, 830, 926, 931, 961<br>Dameier, Schexnayder |
| Yellowfin menhaden<br>*Brevoortia smithii* | Dameier, Schexnayder |
| Gizzard shad<br>*Dorosoma cepedianum* | 23, 32, 126, 210, 236, 314, 765, 775, 926, 961<br>Dameier, Schexnayder |
| Bay anchovy<br>*Anchoa mitchilli* | 23, 32, 73, 126, 207, 210, 236, 271, 314, 322, 775, 926<br>Dameier, Schexnayder |
| Hardhead catfish<br>*Arius felis* | 23, 32, 126, 210, 236, 271, 314, 765, 775<br>Dameier, Schexnayder |
| Sheepshead minow<br>*Cyprinodon variegatus* | 23, 126, 207, 210, 236, 270, 271, 314, 765, 775<br>Dameier, Schexnayder |
| Gulf killifish<br>*Fundulus grandis* | 23, 126, 207, 210, 236, 270, 271, 310, 314, 765, 775<br>Dameier, Schexnayder |
| Silversides<br>*Menidia species* | 23, 32, 126, 207, 210, 236, 271, 314, 765, 775, 961<br>Dameier, Schexnayder |
| Snook<br>*Centropomus undecemalis* | 317<br>Dameier, Schexnayder |
| Bluefish<br>*Pomatomus saltatrix* | 126, 210, 236, 271, 314<br>Dameier, Schexnayder |
| Blue runner<br>*Caranx crysos* | 271, 293, 301, 302, 314<br>Dameier, Schexnayder |
| Crevalle jack<br>*Caranx hippos* | 23, 32, 210, 236, 271, 293, 314, 322, 775<br>Dameier, Schexnayder |
| Florida pompano<br>*Trachinotus carolinus* | 12, 23, 32, 48, 49, 210, 236, 271, 293, 314, 775<br>Dameier, Schexnayder |
| Gray snapper<br>*Lutjanus griseus* | 23, 210, 314, 775<br>Dameier, Schexnayder |
| Sheepshead<br>*Archosargus probatocephalus* | 23, 32, 126, 210, 217, 219, 236, 264, 271, 314, 765, 775<br>Dameier, Schexnayder |
| Pinfish<br>*Lagodon rhomboides* | 23, 126, 210, 217, 219, 236, 264, 271, 314, 765, 775<br>Dameier, Schexnayder |
| Silver perch<br>*Bairdiella chysoura* | 23, 32, 126, 210, 219, 236, 271, 314, 322, 775<br>Dameier, Schexnayder |
| Sand seatrout<br>*Cynoscion arenarius* | 23, 32, 73, 126, 207, 210, 217, 218, 219, 236, 271, 314, 322, 775<br>Dameier, Schexnayder |
| Spotted seatrout<br>*Cynoscion nebulosus* | 23, 32, 126, 207, 210, 219, 236, 271, 314, 322, 374, 376, 707, 765, 775, 830<br>Dameier, Schexnayder |
| Spot<br>*Leiostomus xanthurus* | 23, 32, 73, 126, 207, 210, 217, 219, 236, 271, 275, 303, 304, 305, 314, 322, 755, 765, 775, 926<br>Dameier, Schexnayder |
| Atlantic croaker<br>*Micropogonias undulatus* | 23, 32, 73, 126, 207, 210, 217, 219, 236, 271, 275, 304, 303, 305, 314, 322, 755, 758, 775, 830, 926, 961<br>Dameier, Schexnayder |
| Black drum<br>*Pogonias cromis* | 23, 126, 210, 227, 271, 314, 765, 775<br>Dameier, Schexnayder |
| Red drum<br>*Sciaenops ocellatus* | 40, 126, 210, 217, 219, 271, 314, 375, 707, 765, 775, 927<br>Dameier, Schexnayder |
| Striped mullet<br>*Mugil cephalus* | 23, 126, 207, 210, 217, 219, 271, 314, 765, 775, 961<br>Dameier, Schexnayder |
| Code goby<br>*Gobiosoma robustum* | 210, 314<br>Dameier, Schexnayder |
| Spanish mackerel<br>*Scomberomorus maculatus* | 23, 32, 126, 210, 214, 217, 219, 271, 314, 775<br>Dameier, Schexnayder |
| Gulf flounder<br>*Paralichthys albigutta* | 271, 775<br>Dameier, Schexnayder, Thompson |
| Southern flounder<br>*Paralicthys lethostigma* | 23, 32, 126, 210, 236, 271, 272, 314, 322, 775, 801<br>Dameier, Schexnayder |

Numbers correspond to references in Appendix 4, p. 230-273.
Names correspond to individuals in Appendix 3, p. 226-229.

| Species | Terrebonne/Timbalier Bays, LA |
|---|---|
| Bay scallop<br>*Argopecten irradians* | Adkins, Bourgeois, Guillory |
| American oyster<br>*Crassostrea virginica* | 288<br>Adkins, Bourgeois, Guillory |
| Common rangia<br>*Rangia cuneata* | Adkins, Bourgeois, Guillory |
| Hard clam<br>*Mercenaria species* | 253<br>Adkins, Bourgeois, Guillory |
| Bay squid<br>*Lolliguncula brevis* | 4, 32<br>Adkins, Bourgeois, Guillory |
| Brown shrimp<br>*Peneaus aztecus* | 4, 30, 31, 32, 73, 253, 280, 316, 941, 942<br>Adkins, Bourgeois, Guillory |
| Pink shrimp<br>*Peneaus duorarum* | 4, 31, 32<br>Adkins, Bourgeois, Guillory |
| White shrimp<br>*Penaeus setiferus* | 4, 30, 31, 32, 73, 280, 534, 942<br>Adkins, Bourgeois, Guillory |
| Grass shrimp<br>*Palaemonetes pugio* | 4, 32<br>Adkins, Bourgeois, Guillory |
| Spiny lobster<br>*Panulirus argus* | Adkins, Bourgeois, Guillory |
| Blue crab<br>*Callinectes sapidus* | 2, 3, 4, 32, 73, 253 |
| Gulf stone crab<br>*Menippe adina* | 3, 4, 947<br>Adkins, Bourgeois, Guillory |
| Stone crab<br>*Menippe mercenaria* | 947<br>Czapla |
| Bull shark<br>*Carcharhinus leucas* | 3, 5<br>Adkins, Bourgeois, Guillory |
| Tarpon<br>*Megalops atlanticus* | 5<br>Adkins, Bourgeois, Guillory |
| Alabama shad<br>*Alosa alabamae* | Adkins, Bourgeois, Guillory |
| Gulf menhaden<br>*Brevoortia patronus* | 3, 4, 32, 73, 316, 698<br>Adkins, Bourgeois, Guillory |
| Yellowfin menhaden<br>*Brevoortia smithil* | Adkins, Bourgeois, Guillory |
| Gizzard shad<br>*Dorosoma cepedianum* | 3, 4, 32, 698<br>Adkins, Bourgeois, Guillory |
| Bay anchovy<br>*Anchoa mitchilli* | 4, 32, 73, 698<br>Adkins, Bourgeois, Guillory |
| Hardhead catfish<br>*Arius felis* | 3, 4, 5, 32, 698<br>Adkins, Bourgeois, Guillory |
| Sheepshead minow<br>*Cyprinodon variegatus* | 4<br>Adkins, Bourgeois, Guillory |
| Gulf killifish<br>*Fundulus grandis* | 4<br>Adkins, Bourgeois, Guillory |
| Silversides<br>*Menidia species* | 4 |
| Snook<br>*Centropomus undecemalis* | Adkins, Bourgeois, Guillory |
| Bluefish<br>*Pomatomus saltatrix* | 3, 4, 5, 698<br>Adkins, Bourgeois, Guillory |
| Blue runner<br>*Caranx crysos* | 5, 301, 302<br>Adkins, Bourgeois, Guillory |
| Crevalle jack<br>*Caranx hippos* | 3, 4, 5, 32, 698<br>Adkins, Bourgeois, Guillory |
| Florida pompano<br>*Trachinotus carolinus* | 3, 5<br>Adkins, Bourgeois, Guillory |
| Gray snapper<br>*Lutjanus griseus* | 4, 5<br>Adkins, Bourgeois, Guillory |
| Sheepshead<br>*Archosargus probatocephalus* | 3, 4, 5<br>Adkins, Bourgeois, Guillory |
| Pinfish<br>*Lagodon rhomboides* | 3, 4, 5, 32 |
| Silver perch<br>*Bairdiella chysoura* | 3, 4, 32, 219, 698<br>Adkins, Bourgeois, Guillory |
| Sand seatrout<br>*Cynoscion arenarius* | 3, 4, 32, 73, 218, 698 |
| Spotted seatrout<br>*Cynoscion nebulosus* | 3, 4, 5, 32, 219, 698<br>Adkins, Bourgeois, Guillory |
| Spot<br>*Leiostomus xanthurus* | 3, 4, 5, 32, 73, 698<br>Adkins, Bourgeois, Guillory |
| Atlantic croaker<br>*Micropogonias undulatus* | 3, 4, 5, 32, 73, 698<br>Adkins, Bourgeois, Guillory |
| Black drum<br>*Pogonias cromis* | 3, 4<br>Adkins, Bourgeois, Guillory |
| Red drum<br>*Sciaenops ocellatus* | 3, 4, 5, 927<br>Adkins, Bourgeois, Guillory |
| Striped mullet<br>*Mugil cephalus* | 3, 4, 32<br>Adkins, Bourgeois, Guillory |
| Code goby<br>*Gobiosoma robustum* | Adkins, Bourgeois, Guillory |
| Spanish mackerel<br>*Scomberomorus maculatus* | 3, 4, 5, 698<br>Adkins, Bourgeois, Guillory |
| Gulf flounder<br>*Paralichthys albigutta* | Adkins, Bourgeois, Guillory, Thompson |
| Southern flounder<br>*Paralicthys lethostigma* | 3, 4, 5, 32, 698<br>Adkins, Bourgeois, Guillory |

Numbers correspond to references in Appendix 4, p. 230-273.
Names correspond to individuals in Appendix 3, p. 226-229.

| Species | Atchafalaya/Vermillion Bays, LA |
|---|---|
| Bay scallop<br>*Argopecten irradians* | Juneau, D. Rogers |
| American oyster<br>*Crassostrea virginica* | 319<br>Juneau, D. Rogers |
| Common rangia<br>*Rangia cuneata* | 229, 299, 300, 397, 481<br>Juneau, D. Rogers |
| Hard clam<br>*Mercenaria species* | Juneau, D. Rogers |
| Bay squid<br>*Lolliguncula brevis* | 32, 465<br>Juneau, D. Rogers |
| Brown shrimp<br>*Peneaus aztecus* | 30, 31, 32, 73, 228, 229, 280, 364, 380, 385, 465, 466, 481, 760, 934, 935<br>Juneau, D. Rogers |
| Pink shrimp<br>*Peneaus duorarum* | Juneau, D. Rogers |
| White shrimp<br>*Penaeus setiferus* | 30, 31, 32, 73, 228, 229, 280, 364, 380, 465, 466, 481, 534, 760, 934, 935, 942<br>Juneau, D. Rogers |
| Grass shrimp<br>*Palaemonetes pugio* | 32, 380, 418, 465, 481, 760, 934, 935<br>Juneau, D. Rogers |
| Spiny lobster<br>*Panulirus argus* | Juneau, D. Rogers |
| Blue crab<br>*Callinectes sapidus* | 32, 73, 228, 229, 380, 418, 465, 481, 693, 760, 934, 935<br>Juneau, D. Rogers |
| Gulf stone crab<br>*Menippe adina* | 32, 465, 947<br>Juneau, D. Rogers |
| Stone crab<br>*Menippe mercenaria* | 947<br>Czapla |
| Bull shark<br>*Carcharhinus leucas* | 120, 210, 659<br>Juneau, D. Rogers |
| Tarpon<br>*Megalops atlanticus* | 659<br>Juneau, D. Rogers |
| Alabama shad<br>*Alosa alabamae* | Juneau, D. Rogers |
| Gulf menhaden<br>*Brevoortia patronus* | 32, 73, 208, 209, 210, 211, 228, 229, 418, 465, 481, 659, 695, 760, 883, 934, 935<br>Juneau, D. Rogers |
| Yellowfin menhaden<br>*Brevoortia smithii* | 659<br>Juneau, D. Rogers |
| Gizzard shad<br>*Dorosoma cepedianum* | 32, 210, 229, 292, 380, 418, 465, 481, 485, 659, 695, 883, 934, 935<br>Juneau, D. Rogers |
| Bay anchovy<br>*Anchoa mitchilli* | 32, 73, 210, 229, 380, 418, 465, 481, 659, 695, 760, 883, 935<br>Juneau, D. Rogers |
| Hardhead catfish<br>*Arius felis* | 32, 210, 229, 380, 465, 481, 659, 695, 883, 934, 935<br>Juneau, D. Rogers |
| Sheepshead minow<br>*Cyprinodon variegatus* | 210, 380, 418, 465, 659, 760, 883, 934, 935<br>Juneau, D. Rogers |
| Gulf killifish<br>*Fundulus grandis* | 210, 380, 418, 465, 659, 760, 883, 935<br>Juneau, D. Rogers |
| Silversides<br>*Menidia species* | 210, 380, 418, 465, 659, 695, 760, 883, 934, 935<br>Juneau, D. Rogers |
| Snook<br>*Centropomus undecemalis* | Juneau, D. Rogers |
| Bluefish<br>*Pomatomus saltatrix* | 434, 883<br>Juneau, D. Rogers |
| Blue runner<br>*Caranx crysos* | 434<br>Juneau, D. Rogers |
| Crevalle jack<br>*Caranx hippos* | 210, 228, 380, 418, 465, 659, 695, 883, 935<br>Juneau, D. Rogers |
| Florida pompano<br>*Trachinotus carolinus* | 659, 883<br>Juneau, D. Rogers |
| Gray snapper<br>*Lutjanus griseus* | 883<br>Juneau, D. Rogers |
| Sheepshead<br>*Archosargus probatocephalus* | 32, 210, 228, 229, 380, 418, 465, 466, 659, 695, 883, 934, 935<br>Juneau, D. Rogers |
| Pinfish<br>*Lagodon rhomboides* | 210, 229, 380, 418, 465, 481, 659, 695, 883, 934, 935<br>Juneau, D. Rogers |
| Silver perch<br>*Bairdiella chysoura* | 32, 210, 380, 418, 465, 481, 659, 695, 883, 935<br>Juneau, D. Rogers |
| Sand seatrout<br>*Cynoscion arenarius* | 32, 73, 210, 218, 228, 229, 380, 418, 465, 466, 481, 659, 695, 760, 883, 935<br>Juneau, D. Rogers |
| Spotted seatrout<br>*Cynoscion nebulosus* | 32, 210, 219, 228, 229, 380, 383, 465, 481, 659, 695, 883<br>Juneau, D. Rogers |
| Spot<br>*Leiostomus xanthurus* | 32, 73, 210, 228, 229, 380, 418, 465, 466, 481, 659, 695, 760, 883, 934, 935<br>Juneau, D. Rogers |
| Atlantic croaker<br>*Micropogonias undulatus* | 32, 73, 210, 228, 380, 418, 465, 466, 481, 659, 695, 760, 883, 934, 935<br>Juneau, D. Rogers |
| Black drum<br>*Pogonias cromis* | 32, 210, 229, 380, 418, 465, 466, 481, 659, 695, 883, 934, 935<br>Juneau, D. Rogers |
| Red drum<br>*Sciaenops ocellatus* | 210, 465, 481, 659, 883, 927, 934, 935<br>Juneau, D. Rogers |
| Striped mullet<br>*Mugil cephalus* | 210, 228, 229, 292, 380, 418, 465, 485, 659, 695, 760, 883, 934, 935<br>Juneau, D. Rogers |
| Code goby<br>*Gobiosoma robustum* | Juneau, D. Rogers |
| Spanish mackerel<br>*Scomberomorus maculatus* | 32, 228, 465, 659, 695, 883<br>Juneau, D. Rogers |
| Gulf flounder<br>*Paralichthys albigutta* | Juneau, D. Rogers, Thompson |
| Southern flounder<br>*Paralicthys lethostigma* | 32, 210, 228, 229, 380, 465, 466, 481, 659, 695, 883, 934, 935<br>Juneau, D. Rogers |

Numbers correspond to references in Appendix 4, p. 230-273.
Names correspond to individuals in Appendix 3, p. 226-229.

| Species | Calcasieu Lake, LA |
|---|---|
| Bay scallop<br>*Argopecten irradians* | Carver, Ferguson, B. Rogers |
| American oyster<br>*Crassostrea virginica* | 288, 319, 914, 943<br>Carver, Ferguson, B. Rogers |
| Common rangia<br>*Rangia cuneata* | 287, 397<br>Carver, Ferguson, B. Rogers |
| Hard clam<br>*Mercenaria species* | Carver, Ferguson, B. Rogers |
| Bay squid<br>*Lolliguncula brevis* | 27, 32, 434, 917, 918, 919<br>Carver, Ferguson, B. Rogers |
| Brown shrimp<br>*Peneaus aztecus* | 30, 31, 32, 73, 280, 287, 316, 345, 381, 382, 384, 434, 478, 540, 703, 756, 757, 759, 941, 942<br>Carver, Ferguson, B. Rogers |
| Pink shrimp<br>*Peneaus duorarum* | Carver, Ferguson, B. Rogers |
| White shrimp<br>*Penaeus setiferus* | 30, 31, 32, 73, 280, 381, 382, 384, 434, 540, 678, 703, 756, 757, 759, 942<br>Carver, Ferguson, B. Rogers |
| Grass shrimp<br>*Palaemonetes pugio* | 32, 287, 381, 384, 756, 757, 759<br>Carver, Ferguson, B. Rogers |
| Spiny lobster<br>*Panulirus argus* | Carver, Ferguson, B. Rogers |
| Blue crab<br>*Callinectes sapidus* | 32, 73, 287, 345, 381, 382, 384, 434, 756, 757, 759<br>Carver, Ferguson, B. Rogers |
| Gulf stone crab<br>*Menippe adina* | 32, 757, 947<br>Carver, Ferguson, B. Rogers |
| Stone crab<br>*Menippe mercenaria* | 947<br>Czapla |
| Bull shark<br>*Carcharhinus leucas* | 21<br>Carver, Ferguson, B. Rogers |
| Tarpon<br>*Megalops atlanticus* | Carver, Ferguson, B. Rogers |
| Alabama shad<br>*Alosa alabamae* | Carver, Ferguson, B. Rogers |
| Gulf menhaden<br>*Brevoortia patronus* | 21, 32, 73, 255, 256, 257, 316, 345, 381, 382, 384, 434, 540, 541, 756, 757, 759, 797, 800, 799, 915, 916<br>Carver, Ferguson, B. Rogers |
| Yellowfin menhaden<br>*Brevoortia smithii* | 704<br>Carver, Ferguson, B. Rogers |
| Gizzard shad<br>*Dorosoma cepedianum* | 21, 32, 255, 256, 381, 704, 757<br>Carver, Ferguson, B. Rogers |
| Bay anchovy<br>*Anchoa mitchilli* | 21, 32, 73, 257, 345, 381, 382, 384, 434, 704, 756, 757, 759, 915, 916<br>Carver, Ferguson, B. Rogers |
| Hardhead catfish<br>*Arius felis* | 21, 32, 381, 434, 704, 756, 757<br>Carver, Ferguson, B. Rogers |
| Sheepshead minow<br>*Cyprinodon variegatus* | 21, 255, 256, 381, 384, 704, 756, 757, 759<br>Carver, Ferguson, B. Rogers |
| Gulf killifish<br>*Fundulus grandis* | 21, 256, 381, 384, 704, 756<br>Carver, Ferguson, B. Rogers |
| Silversides<br>*Menidia species* | 32, 255, 256, 381, 384, 704, 756, 757, 759<br>Carver, Ferguson, B. Rogers |
| Snook<br>*Centropomus undecemalis* | Carver, Ferguson, B. Rogers |
| Bluefish<br>*Pomatomus saltatrix* | 21<br>Carver, Ferguson, B. Rogers |
| Blue runner<br>*Caranx crysos* | Carver, Ferguson, B. Rogers |
| Crevalle jack<br>*Caranx hippos* | 32, 434, 704, 757<br>Carver, Ferguson, B. Rogers |
| Florida pompano<br>*Trachinotus carolinus* | 48, 49, 434, 757<br>Carver, Ferguson, B. Rogers |
| Gray snapper<br>*Lutjanus griseus* | 757<br>Carver, Ferguson, B. Rogers |
| Sheepshead<br>*Archosargus probatocephalus* | 21, 32, 381, 434, 704, 757<br>Carver, Ferguson, B. Rogers |
| Pinfish<br>*Lagodon rhomboides* | 21, 32, 384, 434, 757<br>Carver, Ferguson, B. Rogers |
| Silver perch<br>*Bairdiella chysoura* | 21, 32, 384, 434, 704, 757<br>Carver, Ferguson, B. Rogers |
| Sand seatrout<br>*Cynoscion arenarius* | 21, 32, 73, 184, 186, 187, 218, 345, 381, 382, 384, 434, 704, 756, 757, 759, 799, 934<br>Carver, Ferguson, B. Rogers |
| Spotted seatrout<br>*Cynoscion nebulosus* | 21, 32, 219, 381, 382, 383, 384, 434, 704, 756, 757<br>Carver, Ferguson, B. Rogers |
| Spot<br>*Leiostomus xanthurus* | 21, 32, 73, 184, 186, 381, 382, 384, 434, 704, 757<br>Carver, Ferguson, B. Rogers |
| Atlantic croaker<br>*Micropogonias undulatus* | 21, 22, 32, 73, 156, 184, 185, 186, 345, 381, 382, 384, 434, 477, 540, 704, 756, 757, 759, 944, 945<br>Carver, Ferguson, B. Rogers |
| Black drum<br>*Pogonias cromis* | 21, 32, 184, 186, 384, 434, 757<br>Carver, Ferguson, B. Rogers |
| Red drum<br>*Sciaenops ocellatus* | 21, 32, 381, 384, 434, 704, 756, 757, 927<br>Carver, Ferguson, B. Rogers |
| Striped mullet<br>*Mugil cephalus* | 21, 32, 345, 381, 382, 384, 434, 604, 704, 756, 757<br>Carver, Ferguson, B. Rogers |
| Code goby<br>*Gobiosoma robustum* | 757<br>Carver, Ferguson, B. Rogers |
| Spanish mackerel<br>*Scomberomorus maculatus* | 21, 32, 434, 757<br>Carver, Ferguson, B. Rogers |
| Gulf flounder<br>*Paralichthys albigutta* | 757<br>Carver, Ferguson, B. Rogers, Thompson |
| Southern flounder<br>*Paralicthys lethostigma* | 21, 32, 381, 384, 434, 704, 756, 757<br>Carver, Ferguson, B. Rogers |

Numbers correspond to references in Appendix 4, p. 230-273.
Names correspond to individuals in Appendix 3, p. 226-229.

| Species | Sabine Lake, TX/LA |
|---|---|
| Bay scallop<br>*Argopecten irradians* | LeBlanc, Mambretti |
| American oyster<br>*Crassostrea virginica* | 339, 377, 480, 850<br>LeBlanc, Mambretti |
| Common rangia<br>*Rangia cuneata* | 17, 480, 850, 954<br>LeBlanc, Mambretti |
| Hard clam<br>*Mercenaria species* | LeBlanc, Mambretti |
| Bay squid<br>*Lolliguncula brevis* | 850<br>LeBlanc, Mambretti |
| Brown shrimp<br>*Penaeus aztecus* | 339, 377, 501, 591, 611, 612, 850, 954<br>LeBlanc, Mambretti |
| Pink shrimp<br>*Penaeus duorarum* | 339, 377, 591, 611, 612<br>LeBlanc, Mambretti |
| White shrimp<br>*Penaeus setiferus* | 337, 339, 377, 501, 591, 611, 612, 850, 852, 954<br>LeBlanc, Mambretti |
| Grass shrimp<br>*Palaemonetes pugio* | 954<br>LeBlanc, Mambretti |
| Spiny lobster<br>*Panulirus argus* | Pattillo |
| Blue crab<br>*Callinectes sapidus* | 337, 339, 591, 639, 850, 954<br>LeBlanc, Mambretti |
| Gulf stone crab<br>*Menippe adina* | 947<br>LeBlanc, Mambretti |
| Stone crab<br>*Menippe mercenaria* | 947<br>Czapla |
| Bull shark<br>*Carcharhinus leucas* | Green, LeBlanc, Mambretti |
| Tarpon<br>*Megalops atlanticus* | LeBlanc, Mambretti |
| Alabama shad<br>*Alosa alabamae* | LeBlanc, Mambretti |
| Gulf menhaden<br>*Brevoortia patronus* | 591, 742, 797, 800, 849<br>LeBlanc, Mambretti |
| Yellowfin menhaden<br>*Brevoortia smithii* | Pattillo |
| Gizzard shad<br>*Dorosoma cepedianum* | 849<br>LeBlanc, Mambretti |
| Bay anchovy<br>*Anchoa mitchilli* | 591, 849<br>LeBlanc, Mambretti |
| Hardhead catfish<br>*Arius felis* | 742, 849<br>LeBlanc, Mambretti |
| Sheepshead minow<br>*Cyprinodon variegatus* | 849<br>LeBlanc, Mambretti |
| Gulf killifish<br>*Fundulus grandis* | 849<br>LeBlanc, Mambretti |
| Silversides<br>*Menidia species* | LeBlanc, Mambretti |
| Snook<br>*Centropomus undecemalis* | LeBlanc, Mambretti |
| Bluefish<br>*Pomatomus saltatrix* | 849<br>LeBlanc, Mambretti |
| Blue runner<br>*Caranx crysos* | Pattillo |
| Crevalle jack<br>*Caranx hippos* | 849<br>LeBlanc, Mambretti |
| Florida pompano<br>*Trachinotus carolinus* | LeBlanc, Mambretti |
| Gray snapper<br>*Lutjanus griseus* | LeBlanc, Mambretti |
| Sheepshead<br>*Archosargus probatocephalus* | 337, 742, 849<br>LeBlanc, Mambretti |
| Pinfish<br>*Lagodon rhomboides* | 591, 849<br>LeBlanc, Mambretti |
| Silver perch<br>*Bairdiella chysoura* | LeBlanc, Mambretti |
| Sand seatrout<br>*Cynoscion arenarius* | 218, 337, 591, 742, 849<br>LeBlanc, Mambretti |
| Spotted seatrout<br>*Cynoscion nebulosus* | 219, 337, 591, 742, 849<br>LeBlanc, Mambretti |
| Spot<br>*Leiostomus xanthurus* | 591, 742, 849<br>LeBlanc, Mambretti |
| Atlantic croaker<br>*Micropogonias undulatus* | 337, 591, 742, 849<br>LeBlanc, Mambretti |
| Black drum<br>*Pogonias cromis* | 337, 591, 742, 849<br>LeBlanc, Mambretti |
| Red drum<br>*Sciaenops ocellatus* | 193, 337, 591, 742, 849<br>LeBlanc, Mambretti |
| Striped mullet<br>*Mugil cephalus* | 337, 591, 742, 849<br>LeBlanc, Mambretti |
| Code goby<br>*Gobiosoma robustum* | LeBlanc, Mambretti |
| Spanish mackerel<br>*Scomberomorus maculatus* | 591, 849<br>LeBlanc, Mambretti |
| Gulf flounder<br>*Paralichthys albigutta* | LeBlanc, Mambretti |
| Southern flounder<br>*Paralicthys lethostigma* | 569, 591, 742, 849<br>LeBlanc, Mambretti |

Numbers correspond to references in Appendix 4, p. 230-273.
Names correspond to individuals in Appendix 3, p. 226-229.

| Species | Galveston Bay, TX |
|---|---|
| Bay scallop<br>*Argopecten irradians* | 623, 809<br>Benefield, Trimm |
| American oyster<br>*Crassostrea virginica* | 52, 215, 337, 339, 340, 367, 402, 403, 404, 405, 406, 407, 408, 409, 410, 411, 412, 413, 414, 537, 586, 684, 723, 735, 809, 834, 835, 967. Benefield, Trimm |
| Common rangia<br>*Rangia cuneata* | 17, 26, 454, 537, 623, 723, 809, 967<br>Benefield, Trimm |
| Hard clam<br>*Mercenaria species* | 189, 190, 215, 415, 453, 586, 623, 809<br>Benefield, Trimm |
| Bay squid<br>*Lolliguncula brevis* | 20, 113, 142, 390, 391, 537, 586, 623, 723, 735, 809<br>Benefield, Forsythe, Trimm |
| Brown shrimp<br>*Peneaus aztecus* | 8, 17, 43, 44, 53-55, 122, 125, 127, 150, 169, 178, 289, 337, 339, 340, 454-457, 484, 501, 566, 575, 576, 586, 591, 605, 607, 608, 611-625, 680, 691, 723, 725, 727, 735, 739, 809, 889, 905, 907, 960, 965, 967, 968, 970. Baxter, Benefield, Trimm |
| Pink shrimp<br>*Peneaus duorarum* | 53, 54, 55, 150, 339, 340, 484, 575, 586, 591, 611-625, 809, 889, 907, 967, 968<br>Baxter, Benefield, Trimm |
| White shrimp<br>*Penaeus setiferus* | 8, 17, 20, 26, 44, 53, 54, 55, 125, 127, 150, 159, 169, 178, 237, 337, 339, 340, 421, 454-457, 484, 501, 537, 575, 586, 591, 605, 608, 611-625, 691, 723, 725, 727, 728, 735, 739, 806, 809, 889, 907, 960, 966, 967, 968. Baxter, Benefield, Trimm |
| Grass shrimp<br>*Palaemonetes pugio* | 17, 127, 169, 178, 421, 454, 455, 537, 586, 623, 691, 723, 809, 907, 929, 953, 968<br>Benefield, Trimm |
| Spiny lobster<br>*Panulirus argus* | Pattillo |
| Blue crab<br>*Callinectes sapidus* | 10, 17, 20, 26, 50, 54, 55, 127, 135, 142, 147, 169, 178, 282, 337, 338, 339, 340, 454, 455, 456, 537, 586, 591, 627, 637, 638, 639, 640, 667, 691, 723, 726, 735, 809, 893, 894, 907, 967, 968. Benefield, Trimm |
| Gulf stone crab<br>*Menippe adina* | 178, 402, 405, 454, 623, 723, 809, 947, 968<br>Benefield, Trimm |
| Stone crab<br>*Menippe mercenaria* | 947<br>Czapla |
| Bull shark<br>*Carcharhinus leucas* | 42, 77, 307, 623, 679, 722, 724, 739<br>Benefield, Green, Trimm |
| Tarpon<br>*Megalops atlanticus* | 247, 679, 968<br>Benefield, Trimm |
| Alabama shad<br>*Alosa alabamae* | Benefield, Trimm |
| Gulf menhaden<br>*Brevoortia patronus* | 17, 20, 26, 45, 127, 169, 178, 192, 268, 283, 284, 393, 416, 421, 454, 455, 456, 487, 488, 537, 573, 585, 586, 591, 623, 679, 722, 724, 734, 735, 737, 739, 742, 804, 967, 968. Benefield, Trimm |
| Yellowfin menhaden<br>*Brevoortia smithii* | Pattillo |
| Gizzard shad<br>*Dorosoma cepedianum* | 17, 20, 127, 169, 178, 284, 487, 537, 586, 623, 679, 722, 724, 734, 735, 737, 739, 804<br>Benefield, Trimm |
| Bay anchovy<br>*Anchoa mitchilli* | 17, 20, 45, 127, 169, 178, 216, 283, 284, 393, 421, 454, 455, 487, 537, 573, 586, 623, 679, 722, 724, 734, 735, 737, 739, 804, 967, 968. Benefield, Trimm |
| Hardhead catfish<br>*Arius felis* | 17, 20, 45, 127, 178, 192, 216, 283, 284, 487, 488, 537, 585, 586, 591, 623, 679, 722, 724, 734, 735, 737, 537, 742, 804, 807, 808, 968. Benefield, Trimm |
| Sheepshead minow<br>*Cyprinodon variegatus* | 9, 20, 127, 169, 178, 284, 453, 455, 487, 543, 544, 586, 623, 679, 722, 724, 735, 737, 739, 804, 824, 968<br>Benefield, Trimm |
| Gulf killifish<br>*Fundulus grandis* | 9, 20, 127, 169, 216, 453, 455, 487, 586, 623, 679, 722, 724, 735, 737, 739, 804, 824, 967, 968<br>Benefield, Trimm |
| Silversides<br>*Menidia species* | 9, 17, 20, 127, 169, 216, 283, 421, 455, 586, 623, 734, 737, 739, 804, 967, 968<br>Benefield, Trimm |
| Snook<br>*Centropomus undecemalis* | 574, 586<br>Benefield, Trimm |
| Bluefish<br>*Pomatomus saltatrix* | 20, 487, 623, 679, 724, 739, 967<br>Benefield, Trimm |
| Blue runner<br>*Caranx crysos* | 679<br>Pattillo |
| Crevalle jack<br>*Caranx hippos* | 20, 45, 178, 284, 393, 487, 488, 586, 623, 679, 722, 724, 734, 737, 804<br>Benefield, Trimm |
| Florida pompano<br>*Trachinotus carolinus* | 20, 284, 337, 623, 679, 734, 737, 739<br>Benefield, Trimm |
| Gray snapper<br>*Lutjanus griseus* | 623, 679<br>Benefield, Trimm |
| Sheepshead<br>*Archosargus probatocephalus* | 17, 20, 45, 85, 88-91, 192, 284, 337, 393, 488, 537, 546, 570, 585, 586, 591, 623, 635, 636, 670, 672, 722, 724, 734, 735, 737, 739, 742, 804, 851, 852, 967, 968. Benefield, Trimm |
| Pinfish<br>*Lagodon rhomboides* | 9, 17, 20, 127, 169, 192, 216, 284, 393, 421, 487, 488, 585, 586, 591, 623, 679, 724, 734, 735, 737, 739, 742, 804, 967, 968<br>Benefield, Trimm |
| Silver perch<br>*Bairdiella chysoura* | 20, 178, 216, 219, 284, 393, 487, 488, 586, 623, 679, 722, 724, 734-737, 739, 804, 967<br>Benefield, Trimm |
| Sand seatrout<br>*Cynoscion arenarius* | 17, 20, 45, 51, 127, 169, 178, 192, 216, 218, 283, 284, 337, 393, 421, 455, 487, 488, 537, 585, 586, 591, 623, 626, 670, 679, 722, 724, 734-737, 742, 804, 807, 808. Benefield, Trimm |
| Spotted seatrout<br>*Cynoscion nebulosus* | 17, 20, 25, 85, 88-91, 127, 192, 193, 216, 219, 284, 337, 393, 453, 454, 488, 537, 546, 547, 570, 585, 586, 591, 623, 635, 636, 670, 672, 679, 722, 724, 734, 735, 737, 739, 742, 804, 851, 852, 967, 968. Benefield, Trimm |
| Spot<br>*Leiostomus xanthurus* | 9, 17, 20, 45, 127, 169, 178, 192, 216, 283, 284, 393, 421, 453, 454, 487, 488, 537, 585, 586, 591, 623, 679, 724, 735, 737, 738, 739, 742, 804, 807, 808, 967, 968. Benefield, Trimm |
| Atlantic croaker<br>*Micropogonias undulatus* | 17, 20, 45, 85, 127, 169, 178, 192, 216, 220, 283, 284, 337, 393, 453, 454, 455, 487, 488, 537, 573, 585, 586, 591, 623, 670, 672, 679, 722, 724, 734-739, 742, 804, 807, 808, 851, 852, 945, 968. Benefield, Trimm |
| Black drum<br>*Pogonias cromis* | 17, 20, 85, 88-91, 127, 178, 192, 216, 221, 284, 337, 393, 453, 454, 487, 488, 537, 546, 547, 568, 570, 585, 586, 591, 623, 635, 636, 670, 672, 679, 722, 724, 734, 735, 737, 739, 742, 804, 851, 852. Benefield, Trimm |
| Red drum<br>*Sciaenops ocellatus* | 17, 20, 85, 88-91, 127, 192, 193, 216, 221, 284, 337, 373, 393, 453, 454, 487, 488, 546, 547, 563-567, 570, 585, 586, 591, 623, 635, 636, 670-672, 679, 722, 734-737, 739, 742, 804, 851, 852, 939, 968. Benefield, Trimm |
| Striped mullet<br>*Mugil cephalus* | 9, 17, 20, 127, 169, 178, 192, 283, 284, 337, 393, 421, 453, 454, 487, 488, 537, 586, 591, 623, 679, 722, 724, 735, 737, 739, 742, 804, 967, 968. Benefield, Trimm |
| Code goby<br>*Gobiosoma robustum* | 284, 487, 586, 623, 679, 968<br>Benefield, Trimm |
| Spanish mackerel<br>*Scomberomorus maculatus* | 41, 487, 591, 623, 679, 734, 739<br>Benefield, Trimm |
| Gulf flounder<br>*Paralichthys albigutta* | 178, 284, 421, 562, 586, 679<br>Benefield, Trimm |
| Southern flounder<br>*Paralicthys lethostigma* | 17, 20, 85, 88-91, 169, 178, 192, 216, 284, 393, 453, 454, 455, 537, 546, 547, 562, 569, 570, 585, 586, 591, 623, 628, 635, 636, 670, 672, 679, 722, 724, 734-737, 739, 742, 804, 838, 851, 852, 967, 968. Benefield, Trimm |

Numbers correspond to references in Appendix 4, p. 230-273.
Names correspond to individuals in Appendix 3, p. 226-229.

| Species | Brazos River, TX |
|---|---|
| Bay scallop<br>*Argopecten irradians* | |
| American oyster<br>*Crassostrea virginica* | 457 |
| Common rangia<br>*Rangia cuneata* | |
| Hard clam<br>*Mercenaria species* | |
| Bay squid<br>*Lolliguncula brevis* | 113, 457 |
| Brown shrimp<br>*Peneaus aztecus* | 125, 457 |
| Pink shrimp<br>*Peneaus duorarum* | 457 |
| White shrimp<br>*Penaeus setiferus* | 18, 125, 457 |
| Grass shrimp<br>*Palaemonetes pugio* | 457 |
| Spiny lobster<br>*Panulirus argus* | Pattillo |
| Blue crab<br>*Callinectes sapidus* | 457 |
| Gulf stone crab<br>*Menippe adina* | 457, 947 |
| Stone crab<br>*Menippe mercenaria* | 947<br>Czapla |
| Bull shark<br>*Carcharhinus leucas* | 77 |
| Tarpon<br>*Megalops atlanticus* | 18, 457 |
| Alabama shad<br>*Alosa alabamae* | |
| Gulf menhaden<br>*Brevoortia patronus* | 18, 457 |
| Yellowfin menhaden<br>*Brevoortia smithii* | Pattillo |
| Gizzard shad<br>*Dorosoma cepedianum* | 18, 457 |
| Bay anchovy<br>*Anchoa mitchilli* | 18, 457 |
| Hardhead catfish<br>*Arius felis* | 18, 457 |
| Sheepshead minow<br>*Cyprinodon variegatus* | 18, 457 |
| Gulf killifish<br>*Fundulus grandis* | 18, 457 |
| Silversides<br>*Menidia species* | 457 |
| Snook<br>*Centropomus undecemalis* | |
| Bluefish<br>*Pomatomus saltatrix* | 457 |
| Blue runner<br>*Caranx crysos* | Pattillo |
| Crevalle jack<br>*Caranx hippos* | 457 |
| Florida pompano<br>*Trachinotus carolinus* | 457 |
| Gray snapper<br>*Lutjanus griseus* | |
| Sheepshead<br>*Archosargus probatocephalus* | 457 |
| Pinfish<br>*Lagodon rhomboides* | 18, 457 |
| Silver perch<br>*Bairdiella chysoura* | 219, 457 |
| Sand seatrout<br>*Cynoscion arenarius* | 218, 457, 816 |
| Spotted seatrout<br>*Cynoscion nebulosus* | 18, 219, 457 |
| Spot<br>*Leiostomus xanthurus* | 18, 457 |
| Atlantic croaker<br>*Micropogonias undulatus* | 18, 457 |
| Black drum<br>*Pogonias cromis* | 457, 761 |
| Red drum<br>*Sciaenops ocellatus* | 457, 761 |
| Striped mullet<br>*Mugil cephalus* | 18, 457 |
| Code goby<br>*Gobiosoma robustum* | |
| Spanish mackerel<br>*Scomberomorus maculatus* | 457 |
| Gulf flounder<br>*Paralichthys albigutta* | |
| Southern flounder<br>*Paralicthys lethostigma* | 457, 569 |

Numbers correspond to references in Appendix 4, p. 230-273.
Names correspond to individuals in Appendix 3, p. 226-229.

| Species | Matagorda Bay, TX |
|---|---|
| Bay scallop<br>*Argopecten irradians* | Dailey, Weixelman |
| American oyster<br>*Crassostrea virginica* | 204, 206, 337, 339, 367, 404, 403, 406, 407, 409, 410, 470, 472, 533, 629, 929<br>Dailey, Weixelman |
| Common rangia<br>*Rangia cuneata* | 204<br>Dailey, Weixelman |
| Hard clam<br>*Mercenaria species* | Dailey, Weixelman |
| Bay squid<br>*Lolliguncula brevis* | 17, 113, 142, 204, 205, 390, 641<br>Dailey, Weixelman |
| Brown shrimp<br>*Peneaus aztecus* | 17, 53, 54, 55, 125, 204, 205, 206, 339, 340, 456, 471, 501, 575, 591, 611, 613, 614, 616-622, 624, 625, 641, 647, 651, 652, 725, 929, 969. Dailey, Weixelman |
| Pink shrimp<br>*Peneaus duorarum* | 54, 55, 204, 339, 575, 591, 611, 613, 614, 616-622, 624, 625, 641, 647, 651, 652, 969<br>Dailey, Weixelman |
| White shrimp<br>*Penaeus setiferus* | 17, 53, 54, 55, 125, 204, 206, 337, 339, 340, 456, 471, 501, 575, 591, 611, 613, 614, 616-622, 624, 625, 641, 647, 651, 652, 725, 929, 969. Dailey, Weixelman |
| Grass shrimp<br>*Palaemonetes pugio* | 205, 641, 969<br>Dailey, Weixelman |
| Spiny lobster<br>*Panulirus argus* | Pattillo |
| Blue crab<br>*Callinectes sapidus* | 17, 54, 55, 135, 169, 147, 205, 206, 337, 338, 339, 340, 473, 591, 610, 638, 639, 641, 929, 969<br>Dailey, Weixelman |
| Gulf stone crab<br>*Menippe adina* | 641, 947<br>Dailey, Weixelman |
| Stone crab<br>*Menippe mercenaria* | 947<br>Czapla |
| Bull shark<br>*Carcharhinus leucas* | 307<br>Dailey, Green, Weixelman |
| Tarpon<br>*Megalops atlanticus* | 559, 969<br>Dailey, Weixelman |
| Alabama shad<br>*Alosa alabamae* | Dailey, Weixelman |
| Gulf menhaden<br>*Brevoortia patronus* | 17, 192, 203, 205, 532, 585, 591, 606, 641, 742, 929, 940, 969<br>Dailey, Weixelman |
| Yellowfin menhaden<br>*Brevoortia smithii* | Pattillo |
| Gizzard shad<br>*Dorosoma cepedianum* | 203, 205, 532, 641<br>Dailey, Weixelman |
| Bay anchovy<br>*Anchoa mitchilli* | 17, 203, 471, 532, 606, 641, 929, 969<br>Dailey, Weixelman |
| Hardhead catfish<br>*Arius felis* | 17, 192, 203, 532, 585, 591, 641, 939, 969<br>Dailey, Weixelman |
| Sheepshead minow<br>*Cyprinodon variegatus* | 203, 205, 532, 824, 929, 940, 969<br>Dailey, Weixelman |
| Gulf killifish<br>*Fundulus grandis* | 203, 606, 824, 969<br>Dailey, Weixelman |
| Silversides<br>*Menidia species* | 203, 205, 532, 606, 641, 969<br>Dailey, Weixelman |
| Snook<br>*Centropomus undecemalis* | 574<br>Dailey, Weixelman |
| Bluefish<br>*Pomatomus saltatrix* | 641<br>Dailey, Weixelman |
| Blue runner<br>*Caranx crysos* | Pattillo |
| Crevalle jack<br>*Caranx hippos* | 203, 532, 641<br>Dailey, Weixelman |
| Florida pompano<br>*Trachinotus carolinus* | Dailey, Weixelman |
| Gray snapper<br>*Lutjanus griseus* | Dailey, Weixelman |
| Sheepshead<br>*Archosargus probatocephalus* | 85, 88-91, 192, 203, 337, 471, 532, 546, 585, 591, 628, 641, 646, 670, 672, 742, 851, 969<br>Dailey, Weixelman |
| Pinfish<br>*Lagodon rhomboides* | 192, 203, 205, 532, 585, 591, 606, 641, 742, 969<br>Dailey, Weixelman |
| Silver perch<br>*Bairdiella chysoura* | 203, 219, 532, 606, 641, 969<br>Dailey, Weixelman |
| Sand seatrout<br>*Cynoscion arenarius* | 17, 192, 203, 205, 218, 337, 471, 532, 585, 591, 606, 641, 670, 672, 742<br>Dailey, Weixelman |
| Spotted seatrout<br>*Cynoscion nebulosus* | 17, 85, 88-91, 164, 192, 193, 203, 205, 219, 337, 471, 497, 532, 546, 547, 585, 591, 606, 628, 641, 646, 670, 672, 742, 851, 929, 940, 969. Dailey, Weixelman |
| Spot<br>*Leiostomus xanthurus* | 17, 192, 203, 471, 532, 585, 591, 606, 641, 742, 929, 940, 969<br>Dailey, Weixelman |
| Atlantic croaker<br>*Micropogonias undulatus* | 17, 85, 192, 203, 205, 337, 471, 532, 585, 591, 606, 641, 670, 672, 742, 851, 929, 940, 969<br>Dailey, Weixelman |
| Black drum<br>*Pogonias cromis* | 85, 88-91, 160, 192, 193, 203, 221, 337, 471, 546, 547, 585, 591, 628, 641, 646, 670, 672, 742, 819, 851, 929, 940<br>Dailey, Weixelman |
| Red drum<br>*Sciaenops ocellatus* | 17, 85, 88-91, 192, 193, 203, 205, 221, 337, 373, 471, 497, 546, 547, 563, 564, 571, 585, 591, 628, 641, 646, 670-672, 742, 819, 851, 929, 940, 969. Dailey, Weixelman |
| Striped mullet<br>*Mugil cephalus* | 17, 192, 203, 205, 219, 262, 337, 532, 591, 606, 641, 742, 929, 940, 969<br>Dailey, Weixelman |
| Code goby<br>*Gobiosoma robustum* | 203, 532, 641<br>Dailey, Weixelman |
| Spanish mackerel<br>*Scomberomorus maculatus* | 203, 532, 591, 641<br>Dailey, Weixelman |
| Gulf flounder<br>*Paralichthys albigutta* | 562<br>Dailey, Weixelman |
| Southern flounder<br>*Paralicthys lethostigma* | 17, 85, 88-91, 192, 203, 205, 378, 471, 497, 532, 546, 547, 562, 569, 585, 591, 606, 628, 641, 646, 670, 672, 742, 851, 929, 940, 969. Dailey, Weixelman |

Numbers correspond to references in Appendix 4, p. 230-273.
Names correspond to individuals in Appendix 3, p. 226-229.

| Species | San Antonio Bay, TX |
|---|---|
| Bay scallop<br>*Argopecten irradians* | 683<br>Marwitz, Wagner |
| American oyster<br>*Crassostrea virginica* | 52, 132, 134, 139, 140, 145, 337, 340, 367, 394, 404, 403, 406, 408, 409, 410, 537, 577, 683, 684<br>Marwitz, Wagner |
| Common rangia<br>*Rangia cuneata* | 17, 365, 537, 577, 683<br>Marwitz, Wagner |
| Hard clam<br>*Mercenaria species* | 394, 683<br>Marwitz, Wagner |
| Bay squid<br>*Lolliguncula brevis* | 17, 132, 390, 537<br>Marwitz, Wagner |
| Brown shrimp<br>*Peneaus aztecus* | 17, 53, 54, 55, 132, 138, 144, 149, 339, 340, 394, 474, 501, 537, 575, 577, 591, 611, 613, 614, 616-622, 624, 625, 725<br>Marwitz, Wagner |
| Pink shrimp<br>*Peneaus duorarum* | 53, 54, 55, 132, 340, 394, 474, 575, 591, 611, 613, 614, 616-622, 624, 625, 725<br>Marwitz, Wagner |
| White shrimp<br>*Penaeus setiferus* | 17, 53, 54, 55, 113, 132, 138, 144, 149, 337, 339, 340, 365, 394, 474, 501, 537, 575, 577, 591, 611, 613, 614, 616-622, 624, 625, 725. Marwitz, Wagner |
| Grass shrimp<br>*Palaemonetes pugio* | 17, 132, 175, 537, 577<br>Marwitz, Wagner |
| Spiny lobster<br>*Panulirus argus* | Pattillo |
| Blue crab<br>*Callinectes sapidus* | 17, 54, 55, 132, 134, 137, 142, 143, 147, 148, 338, 339, 340, 365, 394, 474, 537, 577, 638, 639, 820<br>Marwitz, Wagner |
| Gulf stone crab<br>*Menippe adina* | 132, 134, 537, 577, 947<br>Marwitz, Wagner |
| Stone crab<br>*Menippe mercenaria* | 947<br>Czapla |
| Bull shark<br>*Carcharhinus leucas* | 307, 394<br>Green, Marwitz, Wagner |
| Tarpon<br>*Megalops atlanticus* | 133, 823<br>Marwitz, Wagner |
| Alabama shad<br>*Alosa alabamae* | Marwitz, Wagner |
| Gulf menhaden<br>*Brevoortia patronus* | 17, 132, 192, 537, 585, 591, 742<br>Marwitz, Wagner |
| Yellowfin menhaden<br>*Brevoortia smithii* | Pattillo |
| Gizzard shad<br>*Dorosoma cepedianum* | 132, 133, 537<br>Marwitz, Wagner |
| Bay anchovy<br>*Anchoa mitchilli* | 17, 132, 133, 136, 141, 327, 537<br>Marwitz, Wagner |
| Hardhead catfish<br>*Arius felis* | 17, 132, 133, 192, 394, 537, 585, 591, 742, 820<br>Marwitz, Wagner |
| Sheepshead minow<br>*Cyprinodon variegatus* | 132, 327, 394, 537, 824<br>Marwitz, Wagner |
| Gulf killifish<br>*Fundulus grandis* | 327, 394, 537, 824<br>Marwitz, Wagner |
| Silversides<br>*Menidia species* | 17, 132, 133, 327, 537<br>Marwitz, Wagner |
| Snook<br>*Centropomus undecemalis* | 133, 574<br>Marwitz, Wagner |
| Bluefish<br>*Pomatomus saltatrix* | Marwitz, Wagner |
| Blue runner<br>*Caranx crysos* | Pattillo |
| Crevalle jack<br>*Caranx hippos* | 132, 327<br>Marwitz, Wagner |
| Florida pompano<br>*Trachinotus carolinus* | 133<br>Marwitz, Wagner |
| Gray snapper<br>*Lutjanus griseus* | 132<br>Marwitz, Wagner |
| Sheepshead<br>*Archosargus probatocephalus* | 17, 85, 91, 132, 133, 192, 337, 394, 474, 537, 546, 570, 585, 591, 670, 672, 742, 820, 851<br>Marwitz, Wagner |
| Pinfish<br>*Lagodon rhomboides* | 17, 132, 133, 136, 141, 192, 327, 585, 591, 742, 820<br>Marwitz, Wagner |
| Silver perch<br>*Bairdiella chysoura* | 132, 219, 327, 394, 820<br>Marwitz, Wagner |
| Sand seatrout<br>*Cynoscion arenarius* | 17, 132, 133, 192, 218, 394, 537, 585, 591, 670, 672, 742, 820<br>Marwitz, Wagner |
| Spotted seatrout<br>*Cynoscion nebulosus* | 17, 85, 88, 89, 91, 133, 136, 141, 146, 192, 219, 327, 337, 394, 474, 537, 546, 547, 570, 585, 591, 670, 672, 742, 820, 851. Marwitz, Wagner |
| Spot<br>*Leiostomus xanthurus* | 17, 132, 133, 136, 141, 192, 327, 394, 537, 585, 591, 742, 820<br>Marwitz, Wagner |
| Atlantic croaker<br>*Micropogonias undulatus* | 17, 85, 132, 133, 136, 141, 192, 327, 394, 537, 585, 591, 670, 672, 742, 820, 851<br>Marwitz, Wagner |
| Black drum<br>*Pogonias cromis* | 17, 85, 89, 91, 132, 133, 136, 141, 146, 160, 192, 221, 327, 337, 474, 537, 546, 547, 570, 585, 591, 670, 672, 742, 819, 820, 851. Marwitz, Wagner |
| Red drum<br>*Sciaenops ocellatus* | 17, 85, 88-91, 133, 136, 141, 146, 192, 193, 194, 221, 327, 337, 373, 474, 546, 547, 564, 570, 585, 591, 670-672, 742, 819, 820, 836, 902. Marwitz, Wagner |
| Striped mullet<br>*Mugil cephalus* | 17, 132, 133, 192, 262, 327, 337, 394, 537, 591, 742<br>Marwitz, Wagner |
| Code goby<br>*Gobiosoma robustum* | 537<br>Marwitz, Wagner |
| Spanish mackerel<br>*Scomberomorus maculatus* | 133, 591<br>Marwitz, Wagner |
| Gulf flounder<br>*Paralichthys albigutta* | 474, 562<br>Marwitz, Wagner |
| Southern flounder<br>*Paralicthys lethostigma* | 17, 85, 90, 91, 132, 133, 136, 141, 145, 192, 327, 394, 474, 537, 546, 547, 562, 569, 570, 585, 591, 670, 672, 742, 820, 851. Marwitz, Wagner |

Numbers correspond to references in Appendix 4, p. 230-273.
Names correspond to individuals in Appendix 3, p. 226-229.

| Species | Aransas Bay, TX |
|---|---|
| Bay scallop<br>*Argopecten irradians* | 400, 683, 965<br>Campbell, Meador |
| American oyster<br>*Crassostrea virginica* | 179, 337, 340, 366, 367, 368, 369, 370, 717<br>Campbell, Meador |
| Common rangia<br>*Rangia cuneata* | 365, 683<br>Campbell, Meador |
| Hard clam<br>*Mercenaria species* | 190, 683, 745<br>Campbell, Meador |
| Bay squid<br>*Lolliguncula brevis* | 17, 176, 326, 372, 390, 399, 745<br>Campbell, Meador |
| Brown shrimp<br>*Peneaus aztecus* | 17, 53, 54, 55, 166, 167, 176, 181, 277, 323, 326, 334, 339, 340, 371, 372, 399, 456, 501, 575, 591, 611, 613, 614, 616-622, 624, 625, 691, 725, 785, 788, 791. Campbell, Meador |
| Pink shrimp<br>*Peneaus duorarum* | 53, 54, 55, 176, 181, 277, 326, 339, 340, 372, 399, 400, 456, 575, 591, 611, 613, 614, 616-622, 624, 672, 785, 788, 791, 964. Campbell, Meador |
| White shrimp<br>*Penaeus setiferus* | 17, 53, 54, 55, 113, 277, 323, 326, 337, 339, 340, 365, 371, 372, 399, 456, 501, 575, 591, 611, 613, 614, 616-622, 624, 625, 691, 725, 785, 788, 791, 964. Campbell, Meador |
| Grass shrimp<br>*Palaemonetes pugio* | 17, 371, 372, 400, 691, 964<br>Campbell, Meador |
| Spiny lobster<br>*Panulirus argus* | Pattillo |
| Blue crab<br>*Callinectes sapidus* | 17, 54, 55, 135, 142, 147, 176, 323, 326, 334, 338, 339, 340, 365, 371, 372, 400, 591, 638, 639, 691, 783, 787, 790, 964. Campbell, Meador |
| Gulf stone crab<br>*Menippe adina* | 326, 334, 372, 394, 716, 745, 947, 964<br>Campbell, Meador |
| Stone crab<br>*Menippe mercenaria* | 947<br>Czapla |
| Bull shark<br>*Carcharhinus leucas* | 42, 307, 395, 792, 964<br>Campbell, Green, Meador |
| Tarpon<br>*Megalops atlanticus* | 324, 842<br>Campbell, Meador |
| Alabama shad<br>*Alosa alabamae* | Campbell, Meador |
| Gulf menhaden<br>*Brevoortia patronus* | 15, 17, 75, 176, 339, 323, 324, 371, 395, 399, 585, 591, 740, 742, 745<br>Campbell, Meador |
| Yellowfin menhaden<br>*Brevoortia smithii* | Pattillo |
| Gizzard shad<br>*Dorosoma cepedianum* | 324, 334, 371, 372, 740, 745<br>Campbell, Meador |
| Bay anchovy<br>*Anchoa mitchilli* | 15, 17, 68, 324, 327, 329, 371, 372, 395, 399, 430, 591, 633, 740, 964<br>Campbell, Meador |
| Hardhead catfish<br>*Arius felis* | 17, 176, 192, 323, 324, 325, 334, 371, 372, 399, 585, 591, 633, 742, 745, 792, 964<br>Campbell, Meador |
| Sheepshead minow<br>*Cyprinodon variegatus* | 68, 176, 324, 327, 329, 371, 372, 543, 544, 740, 745, 824<br>Campbell, Meador |
| Gulf killifish<br>*Fundulus grandis* | 68, 310, 324, 329, 371, 372, 740, 745, 824<br>Campbell, Meador |
| Silversides<br>*Menidia species* | 15, 17, 68, 323, 324, 327, 329, 334, 371, 372, 395, 400, 430, 740, 745, 964<br>Campbell, Meador |
| Snook<br>*Centropomus undecemalis* | 574, 842<br>Campbell, Meador |
| Bluefish<br>*Pomatomus saltatrix* | 176, 324, 395, 745, 842<br>Campbell, Meador |
| Blue runner<br>*Caranx crysos* | Campbell, Pattillo |
| Crevalle jack<br>*Caranx hippos* | 176, 324, 327, 371, 395, 842, 964<br>Campbell, Meador |
| Florida pompano<br>*Trachinotus carolinus* | 324, 329, 337, 395, 842<br>Campbell, Meador |
| Gray snapper<br>*Lutjanus griseus* | 334, 842<br>Campbell, Meador |
| Sheepshead<br>*Archosargus probatocephalus* | 15, 17, 68, 85, 88-91, 176, 192, 323, 324, 334, 337, 400, 546, 570, 585, 591, 670, 672, 742, 745, 784, 786, 792, 851, 964. Campbell, Meador |
| Pinfish<br>*Lagodon rhomboides* | 15, 17, 68, 75, 121, 176, 192, 323, 324, 327, 334, 371, 372, 395, 400, 430, 431, 432, 585, 591, 633, 742, 745, 792, 964. Campbell, Meador |
| Silver perch<br>*Bairdiella chysoura* | 15, 68, 75, 176, 219, 323, 324, 327, 334, 371, 372, 395, 400, 419, 422, 430, 633, 745, 792, 964<br>Campbell, Meador |
| Sand seatrout<br>*Cynoscion arenarius* | 15, 17, 176, 192, 218, 323, 324, 337, 395, 422, 585, 591, 633, 670, 672, 742, 745, 792, 920, 964<br>Campbell, Meador |
| Spotted seatrout<br>*Cynoscion nebulosus* | 15, 17, 68, 85, 88-91, 109, 176, 192, 219, 323, 324, 327, 334, 371, 372, 419, 422, 430, 546, 547, 570, 585, 591, 633, 670, 672, 688, 708, 742, 745, 784, 786, 789, 793, 842, 851, 920, 964. Campbell, Meador |
| Spot<br>*Leiostomus xanthurus* | 15, 17, 68, 192, 323, 324, 327, 334, 371, 372, 395, 399, 400, 422, 430, 585, 591, 633, 742, 745, 964<br>Campbell, Meador |
| Atlantic croaker<br>*Micropogonias undulatus* | 15, 17, 68, 75, 85, 176, 192, 219, 324, 329, 334, 337, 371, 372, 395, 399, 422, 430, 585, 591, 633, 670, 672, 688, 742, 745, 792, 851, 964. Campbell, Meador |
| Black drum<br>*Pogonias cromis* | 15, 17, 75, 85, 88-91, 160, 192, 221, 323, 324, 327, 337, 371, 372, 395, 422, 546, 547, 568, 570, 585, 591, 670, 672, 742, 786, 789, 792, 819, 851, 964. Campbell, Meador |
| Red drum<br>*Sciaenops ocellatus* | 15, 17, 68, 75, 85, 88-91, 192, 193, 221, 323, 324, 327, 329, 337, 371-373, 395, 400, 422, 423, 430, 546, 547, 563-565, 570, 572, 585, 591, 670-672, 688, 742, 745, 784, 786, 789, 792, 819, 836, 842, 851, 964. Campbell, Meador |
| Striped mullet<br>*Mugil cephalus* | 15, 17, 68, 176, 192, 262, 323, 324, 327, 334, 337, 371, 395, 400, 591, 632, 633, 740, 742, 745, 964<br>Campbell, Meador |
| Code goby<br>*Gobiosoma robustum* | 15, 68, 395, 400, 430, 431, 432, 745, 964<br>Campbell, Meador |
| Spanish mackerel<br>*Scomberomorus maculatus* | 41, 176, 324, 395, 591, 633, 741, 792, 842, 964<br>Campbell, Meador |
| Gulf flounder<br>*Paralichthys albigutta* | 15, 68, 324, 395, 430, 562, 633, 855<br>Campbell, Meador |
| Southern flounder<br>*Paralicthys lethostigma* | 15, 17, 68, 75, 85, 88, 89, 90, 176, 192, 324, 327, 372, 400, 430, 546, 547, 562, 569, 570, 585, 591, 633, 670, 672, 742, 745, 784, 786, 789, 792, 822, 851, 855, 964. Campbell, Meador |

Numbers correspond to references in Appendix 4, p. 230-273.
Names correspond to individuals in Appendix 3, p. 226-229.

| Species | Corpus Christi Bay, TX |
|---|---|
| Bay scallop<br>*Argopecten irradians* | 400, 417, 965<br>Fuls |
| American oyster<br>*Crassostrea virginica* | 179, 340, 379, 400, 417, 550, 553, 745<br>Fuls |
| Common rangia<br>*Rangia cuneata* | 417<br>Fuls |
| Hard clam<br>*Mercenaria species* | 190, 417, 745<br>Fuls |
| Bay squid<br>*Lolliguncula brevis* | 17, 74, 176, 343, 390, 399, 745<br>Fuls |
| Brown shrimp<br>*Peneaus aztecus* | 17, 54, 55, 74, 166, 167, 176, 181, 277, 339, 340, 343, 379, 399, 417, 501, 551, 552, 556, 575, 591, 611, 613, 614, 616-622, 624, 625, 725, 848. Fuls |
| Pink shrimp<br>*Peneaus duorarum* | 54, 55, 74, 176, 181, 277, 339, 340, 343, 399, 400, 575, 591, 611, 613, 614, 616-622, 624, 625, 725, 367, 848<br>Fuls |
| White shrimp<br>*Penaeus setiferus* | 17, 54, 55, 74, 113, 277, 337, 339, 340, 343, 379, 399, 501, 551, 552, 556, 575, 591, 611, 613, 614, 616-622, 624, 625, 725, 848, 964. Fuls |
| Grass shrimp<br>*Palaemonetes pugio* | 837, 848, 964<br>Fuls |
| Spiny lobster<br>*Panulirus argus* | Pattillo |
| Blue crab<br>*Callinectes sapidus* | 17, 54, 55, 74, 135, 142, 147, 176, 338, 339, 340, 343, 379, 400, 417, 548, 555, 558, 591, 638, 639, 964<br>Fuls |
| Gulf stone crab<br>*Menippe adina* | 417, 745, 947, 964<br>Fuls |
| Stone crab<br>*Menippe mercenaria* | 947<br>Czapla |
| Bull shark<br>*Carcharhinus leucas* | 42, 307, 395, 792<br>Fuls, Green |
| Tarpon<br>*Megalops atlanticus* | 964<br>Fuls |
| Alabama shad<br>*Alosa alabamae* | Fuls |
| Gulf menhaden<br>*Brevoortia patronus* | 15, 17, 75, 176, 192, 379, 395, 399, 461, 585, 591, 742, 745, 848<br>Fuls |
| Yellowfin menhaden<br>*Brevoortia smithii* | 848<br>Pattillo |
| Gizzard shad<br>*Dorosoma cepedianum* | 745<br>Fuls |
| Bay anchovy<br>*Anchoa mitchilli* | 15, 17, 68, 74, 329, 343, 395, 399, 430, 848, 964<br>Fuls |
| Hardhead catfish<br>*Arius felis* | 17, 74, 176, 192, 334, 399, 461, 585, 591, 742, 745, 792, 848, 964<br>Fuls |
| Sheepshead minow<br>*Cyprinodon variegatus* | 68, 176, 213, 329, 745, 824<br>Fuls |
| Gulf killifish<br>*Fundulus grandis* | 68, 213, 745, 824<br>Fuls |
| Silversides<br>*Menidia species* | 15, 68, 329, 334, 343, 395, 400, 430, 461, 745, 964<br>Fuls |
| Snook<br>*Centropomus undecemalis* | 504, 574, 842<br>Fuls |
| Bluefish<br>*Pomatomus saltatrix* | 176, 343, 395, 745, 842<br>Fuls |
| Blue runner<br>*Caranx crysos* | 848<br>Pattillo |
| Crevalle jack<br>*Caranx hippos* | 74, 176, 395, 842, 848, 964<br>Fuls |
| Florida pompano<br>*Trachinotus carolinus* | 329, 337, 395, 842, 848<br>Fuls |
| Gray snapper<br>*Lutjanus griseus* | 334, 842, 848<br>Fuls |
| Sheepshead<br>*Archosargus probatocephalus* | 15, 17, 68, 74, 85, 88, 89, 91, 176, 192, 334, 337, 343, 372, 400, 461, 546, 549, 554, 557, 570, 585, 591, 670, 672, 742, 745, 792, 848, 851, 964. Fuls |
| Pinfish<br>*Lagodon rhomboides* | 15, 17, 68, 74, 75, 121, 176, 192, 334, 343, 395, 400, 430, 431, 432, 461, 585, 591, 742, 745, 792, 848, 964<br>Fuls |
| Silver perch<br>*Bairdiella chysoura* | 15, 68, 74, 75, 176, 219, 334, 395, 419, 430, 461, 745, 792, 848, 964<br>Fuls |
| Sand seatrout<br>*Cynoscion arenarius* | 15, 17, 81, 176, 192, 218, 337, 343, 395, 400, 461, 585, 591, 670, 672, 742, 745, 792, 848, 964<br>Fuls |
| Spotted seatrout<br>*Cynoscion nebulosus* | 15, 17, 68, 85, 88-91, 109, 176, 192, 219, 334, 337, 343, 379, 419, 430, 497, 546, 547, 549, 554, 557, 570, 585, 591, 688, 708, 742, 745, 793, 842, 848, 851, 964. Fuls |
| Spot<br>*Leiostomus xanthurus* | 15, 17, 68, 74, 192, 334, 343, 379, 395, 399, 400, 430, 461, 585, 591, 670, 672, 848, 964<br>Fuls |
| Atlantic croaker<br>*Micropogonias undulatus* | 15, 17, 68, 74, 75, 85, 176, 192, 219, 329, 334, 337, 343, 379, 395, 399, 430, 461, 585, 591, 670, 672, 688, 742, 745, 792, 848, 851, 964. Fuls |
| Black drum<br>*Pogonias cromis* | 15, 17, 75, 85, 88, 89, 91, 160, 192, 221, 337, 343, 395, 546, 547, 549, 554, 557, 568, 570, 585, 591, 670, 672, 742, 792, 819, 848, 851, 964. Fuls |
| Red drum<br>*Sciaenops ocellatus* | 15, 17, 19, 68, 75, 85, 88-91, 192, 193, 194, 221, 329, 334, 343, 373, 395, 400, 423, 430, 497, 546, 547, 548, 554, 557, 564, 565, 570, 585, 611, 670-672, 688, 742, 745, 792, 819, 836, 842, 848, 851, 964. Fuls |
| Striped mullet<br>*Mugil cephalus* | 15, 17, 68, 74, 176, 192, 262, 334, 337, 343, 379, 395, 400, 461, 591, 632, 742, 745, 848, 964<br>Fuls |
| Code goby<br>*Gobiosoma robustum* | 15, 68, 396, 395, 400, 430, 431, 432, 745, 964<br>Fuls |
| Spanish mackerel<br>*Scomberomorus maculatus* | 176, 343, 395, 591, 741, 792, 842, 848, 964<br>Fuls |
| Gulf flounder<br>*Paralichthys albigutta* | 15, 68, 395, 430, 562, 848, 855<br>Fuls |
| Southern flounder<br>*Paralicthys lethostigma* | 15, 17, 19, 68, 74, 75, 85, 89, 90, 91, 176, 192, 343, 371, 400, 430, 461, 497, 546, 547, 549, 554, 557, 562, 569, 570, 585, 591, 670, 672, 742, 745, 792, 822, 848, 851, 855, 964. Fuls |

Numbers correspond to references in Appendix 4, p. 230-273.
Names correspond to individuals in Appendix 3, p. 226-229.

| Species | Laguna Madre, TX |
|---|---|
| Bay scallop<br>*Argopecten irradians* | 82, 128, 951<br>Dansby, Rice, Tunnell |
| American oyster<br>*Crassostrea virginica* | 81, 82, 92, 98, 112, 337, 339, 367, 403, 409, 449, 667, 684, 818<br>Dansby, Rice, Tunnell |
| Common rangia<br>*Rangia cuneata* | Dansby, Rice, Tunnell |
| Hard clam<br>*Mercenaria species* | 81, 82, 415<br>Dansby, Rice, Tunnell |
| Bay squid<br>*Lolliguncula brevis* | 17, 81, 82, 92, 128, 387, 390, 796, 818<br>Dansby, Rice, Tunnell |
| Brown shrimp<br>*Peneaus aztecus* | 17, 53, 54, 55, 81, 82, 92, 96, 98, 112, 128, 277, 339, 373, 352, 355, 357, 387, 448, 451, 456, 501, 575, 591, 611, 613, 614, 616-622, 624, 625, 667, 669, 691, 725, 817, 854. Dansby, Rice, Tunnell |
| Pink shrimp<br>*Peneaus duorarum* | 53, 54, 55, 82, 96, 98, 277, 339, 340, 352, 355, 357, 448, 451, 456, 575, 591, 611, 613, 614, 616-622, 624, 625, 667, 669, 725, 817, 854. Dansby, Rice, Tunnell |
| White shrimp<br>*Penaeus setiferus* | 17, 53, 54, 55, 81, 82, 92, 96, 98, 112, 277, 339, 340, 352, 355, 357, 387, 448, 451, 456, 501, 575, 591, 611, 613, 614, 616-622, 624, 625, 667, 669, 725, 796, 817, 854. Dansby, Rice, Tunnell |
| Grass shrimp<br>*Palaemonetes pugio* | 17, 82, 96, 387, 691, 817, 837<br>Dansby, Rice, Tunnell |
| Spiny lobster<br>*Panulirus argus* | Pattillo, Tunnell, Hockeday |
| Blue crab<br>*Callinectes sapidus* | 17, 54, 55, 81, 82, 92, 96, 98, 112, 135, 142, 147, 338, 339, 340, 344, 351, 356, 359, 387, 450, 452, 591, 638, 639, 667, 668, 691, 796, 817, 818. Dansby, Rice, Tunnell |
| Gulf stone crab<br>*Menippe adina* | 817, 818, 947<br>Dansby, Rice, Tunnell |
| Stone crab<br>*Menippe mercenaria* | 947<br>Czapla |
| Bull shark<br>*Carcharhinus leucas* | 42, 307<br>Dansby, Edwards, Green, Rice |
| Tarpon<br>*Megalops atlanticus* | 82, 112, 817<br>Dansby, Edwards, Rice |
| Alabama shad<br>*Alosa alabamae* | Dansby, Edwards, Rice |
| Gulf menhaden<br>*Brevoortia patronus* | 17, 82, 92, 96, 98, 112, 128, 192, 387, 424, 585, 591, 742, 796, 817<br>Dansby, Edwards, Rice |
| Yellowfin menhaden<br>*Brevoortia smithii* | Pattillo |
| Gizzard shad<br>*Dorosoma cepedianum* | 82, 98, 112, 344, 387, 751, 817<br>Dansby, Edwards, Rice |
| Bay anchovy<br>*Anchoa mitchilli* | 17, 83, 92, 98, 112, 128, 377, 387, 424, 751, 796, 817, 818<br>Dansby, Edwards, Rice |
| Hardhead catfish<br>*Arius felis* | 17, 81, 82, 92, 96, 98, 112, 192, 344, 377, 387, 424, 585, 591, 742, 751, 796, 817, 818<br>Dansby, Edwards, Rice |
| Sheepshead minow<br>*Cyprinodon variegatus* | 82, 96, 112, 128, 330, 354, 377, 387, 424, 751, 796, 817, 824<br>Dansby, Edwards, Rice |
| Gulf killifish<br>*Fundulus grandis* | 82, 96, 112, 128, 330, 424, 817, 824<br>Dansby, Edwards, Rice |
| Silversides<br>*Menidia species* | 330, 377, 387, 424, 742, 796, 817<br>Dansby, Edwards, Rice |
| Snook<br>*Centropomus undecemalis* | 428, 504, 574, 818<br>Dansby, Edwards, Rice |
| Bluefish<br>*Pomatomus saltatrix* | 796, 817<br>Dansby, Edwards, Rice |
| Blue runner<br>*Caranx crysos* | Harrington, Rice, Pattillo |
| Crevalle jack<br>*Caranx hippos* | 82, 92, 112, 424, 796, 817<br>Dansby, Edwards, Rice |
| Florida pompano<br>*Trachinotus carolinus* | 337, 424, 796, 817<br>Dansby, Edwards, Rice |
| Gray snapper<br>*Lutjanus griseus* | 82, 424, 796<br>Dansby, Edwards, Rice |
| Sheepshead<br>*Archosargus probatocephalus* | 17, 81, 82, 85-91, 95-101, 112, 192, 337, 344, 353, 358, 354, 424, 546, 570, 585, 591, 628, 670, 672, 742, 796, 817, 851. Dansby, Edwards, Rice |
| Pinfish<br>*Lagodon rhomboides* | 17, 82, 83, 92, 98, 112, 128, 192, 354, 377, 424, 585, 591, 742, 796, 817, 818<br>Dansby, Edwards, Rice |
| Silver perch<br>*Bairdiella chysoura* | 82, 83, 92, 112, 128, 219, 377, 387, 424, 796, 817<br>Dansby, Edwards, Rice |
| Sand seatrout<br>*Cynoscion arenarius* | 17, 83, 98, 112, 192, 218, 337, 344, 387, 424, 585, 591, 670, 672, 742, 817<br>Dansby, Edwards, Rice |
| Spotted seatrout<br>*Cynoscion nebulosus* | 17, 81, 82, 83, 85-101, 112, 128, 192, 219, 337, 344, 353, 358, 354, 377, 387, 424, 546, 547, 570, 585, 591, 670, 672, 742, 796, 817, 818, 851. Dansby, Edwards, Rice |
| Spot<br>*Leiostomus xanthurus* | 192, 344, 354, 377, 387, 424, 585, 591, 742, 796, 817<br>Dansby, Edwards, Rice |
| Atlantic croaker<br>*Micropogonias undulatus* | 17, 83, 92, 96, 98, 112, 128, 192, 219, 337, 344, 377, 387, 424, 585, 591, 670, 672, 742, 751, 796, 817, 851<br>Dansby, Edwards, Rice |
| Black drum<br>*Pogonias cromis* | 17, 81-92, 94-101, 112, 192, 221, 337, 344, 353, 358, 354, 377, 387, 424, 546, 547, 568, 570, 585, 591, 670, 672, 742, 796, 817, 818, 819, 851. Dansby, Edwards, Rice |
| Red drum<br>*Sciaenops ocellatus* | 17, 81, 82, 83, 85-92, 94-101, 112, 128, 192, 193, 221, 337, 344, 353, 354, 358, 373, 377, 387, 424, 546, 547, 563, 564, 566, 570, 614, 741, 670, 672, 742, 751, 796, 817, 818, 819, 851. Dansby, Edwards, Rice |
| Striped mullet<br>*Mugil cephalus* | 17, 81, 82, 92, 96, 98, 112, 128, 192, 219, 262, 337, 344, 354, 377, 387, 424, 591, 632, 742, 751, 796, 817<br>Dansby, Edwards, Rice |
| Code goby<br>*Gobiosoma robustum* | 128, 424<br>Dansby, Edwards, Rice |
| Spanish mackerel<br>*Scomberomorus maculatus* | 82, 83, 112, 330, 591, 796<br>Dansby, Edwards, Rice |
| Gulf flounder<br>*Paralichthys albigutta* | 82, 377, 562, 817<br>Dansby, Edwards, Rice |
| Southern flounder<br>*Paralicthys lethostigma* | 17, 81, 82, 83, 85-92, 94-101, 112, 192, 330, 344, 353, 358, 377, 387, 424, 546, 547, 569, 570, 585, 591, 670, 672, 742, 817, 851. Dansby, Edwards, Rice |

Numbers correspond to references in Appendix 4, p. 230-273.
Names correspond to individuals in Appendix 3, p. 226-229.

| Species | Baffin Bay, TX |
|---|---|
| Bay scallop<br>*Argopecten irradians* | Martin |
| American oyster<br>*Crassostrea virginica* | 655<br>Martin |
| Common rangia<br>*Rangia cuneata* | Martin |
| Hard clam<br>*Mercenaria species* | Martin |
| Bay squid<br>*Lolliguncula brevis* | 182, 537<br>Martin |
| Brown shrimp<br>*Peneaus aztecus* | 80, 180, 537, 822<br>Martin |
| Pink shrimp<br>*Peneaus duorarum* | 822<br>Martin |
| White shrimp<br>*Penaeus setiferus* | 80, 182, 537, 822<br>Martin |
| Grass shrimp<br>*Palaemonetes pugio* | 537, 837<br>Martin |
| Spiny lobster<br>*Panulirus argus* | Pattillo |
| Blue crab<br>*Callinectes sapidus* | 80, 180, 182, 537, 822<br>Martin |
| Gulf stone crab<br>*Menippe adina* | 182, 822, 947<br>Martin |
| Stone crab<br>*Menippe mercenaria* | 947<br>Czapla |
| Bull shark<br>*Carcharhinus leucas* | Green, Martin |
| Tarpon<br>*Megalops atlanticus* | 80, 182<br>Martin |
| Alabama shad<br>*Alosa alabamae* | Martin |
| Gulf menhaden<br>*Brevoortia patronus* | 182, 276, 482, 537, 822, 902<br>Martin |
| Yellowfin menhaden<br>*Brevoortia smithii* | Pattillo |
| Gizzard shad<br>*Dorosoma cepedianum* | 80, 182, 276, 482, 822, 902<br>Martin |
| Bay anchovy<br>*Anchoa mitchilli* | 182, 222, 223, 482, 537, 822<br>Martin |
| Hardhead catfish<br>*Arius felis* | 80, 180, 182, 276, 482, 822, 902<br>Martin |
| Sheepshead minow<br>*Cyprinodon variegatus* | 80, 180, 182, 222, 223, 482, 537, 822, 824<br>Martin |
| Gulf killifish<br>*Fundulus grandis* | 80, 182, 482, 822, 824<br>Martin |
| Silversides<br>*Menidia species* | 80, 180, 182, 222, 223, 482, 537, 822<br>Martin |
| Snook<br>*Centropomus undecemalis* | 80<br>Martin |
| Bluefish<br>*Pomatomus saltatrix* | Martin |
| Blue runner<br>*Caranx crysos* | Pattillo |
| Crevalle jack<br>*Caranx hippos* | 822, 902<br>Martin |
| Florida pompano<br>*Trachinotus carolinus* | Martin |
| Gray snapper<br>*Lutjanus griseus* | Martin |
| Sheepshead<br>*Archosargus probatocephalus* | 182, 822<br>Martin |
| Pinfish<br>*Lagodon rhomboides* | 80, 180, 182, 276, 482, 537, 822, 902<br>Martin |
| Silver perch<br>*Bairdiella chysoura* | 80, 182, 219, 276, 482, 822, 902<br>Martin |
| Sand seatrout<br>*Cynoscion arenarius* | 80, 182, 218, 276, 822, 902<br>Martin |
| Spotted seatrout<br>*Cynoscion nebulosus* | 80, 180, 182, 219, 222, 223, 276, 482, 537, 822, 902<br>Martin |
| Spot<br>*Leiostomus xanthurus* | 80, 182, 222, 223, 276, 482, 537, 822, 902<br>Martin |
| Atlantic croaker<br>*Micropogonias undulatus* | 80, 180, 182, 222, 223, 276, 482, 537, 822, 902<br>Martin |
| Black drum<br>*Pogonias cromis* | 80, 180, 182, 183, 221, 222, 223, 276, 482, 537, 545, 568, 819, 822, 902<br>Martin |
| Red drum<br>*Sciaenops ocellatus* | 80, 180, 182, 221, 276, 482, 537, 819, 822, 836, 902<br>Martin |
| Striped mullet<br>*Mugil cephalus* | 80, 180, 182, 276, 482, 537, 822, 902<br>Martin |
| Code goby<br>*Gobiosoma robustum* | 182<br>Martin |
| Spanish mackerel<br>*Scomberomorus maculatus* | Martin |
| Gulf flounder<br>*Paralichthys albigutta* | 822<br>Martin |
| Southern flounder<br>*Paralicthys lethostigma* | 80, 180, 182, 276, 482, 537, 569, 822, 902<br>Martin |

Numbers correspond to references in Appendix 4, p. 230-273.
Names correspond to individuals in Appendix 3, p. 226-229.

## Appendix 3. Reviewers and personal communications

| Name | Affiliation |
|---|---|
| Adkins, G.B. | Louisiana Dept. of Wildlife and Fisheries, Borg, LA |
| Ahrenholz, D. | National Marine Fisheries Service, Beaufort, NC |
| Ancelet, R. | Louisiana Dept. of Wildlife and Fisheries, New Orleans, LA |
| Barkuloo, J. | U.S. Fish and Wildlife Service, Panama City, FL |
| Baxter, K.N. | National Marine Fisheries Service, Galveston, TX |
| Benefield, R.L. | Texas Parks and Wildlife Dept., Seabrook, TX |
| Bert, T. | Florida Dept. of Natural Resources, St. Petersburg, FL |
| Bortone, S. | University of West Florida, Pensacola, FL |
| Bourgeois, M. | Louisiana Dept. of Wildlife and Fisheries, Borg, LA |
| Browder, J. | National Marine Fisheries Service, Miami, FL |
| Bryan, C.E., III | Texas Parks and Wildlife Dept., Austin, TX |
| Camp, D. | Florida Dept. of Natural Resources, St. Petersburg, FL |
| Campbell, P. | Texas Parks and Wildlife Dept., Rockport, TX |
| Carver, D.C. | Louisiana Dept. of Wildlife and Fisheries, Lake Charles, LA |
| Chamberlain, B. | South Florida Water Management District, West Palm Beach, FL |
| Chaney, A. | Texas A&I University, Kingsville, TX |
| Clark, J. | Texas Parks and Wildlife Dept., Austin, TX |
| Clugston, J. | U.S. Fish and Wildlife Service, Gainesville, FL |
| Comp, G. | Sarasota County Government, Sarasota, FL |
| Czapla, T.E. | U.S. Fish and Wildlife Service, Clear Lake, TX |
| Dailey, J. | Texas Parks and Wildlife Dept., Palacios, TX |
| Dameier, J. | Louisiana Dept. of Wildlife and Fisheries, Baton Rouge, LA |
| Dansby, B. | Texas Parks and Wildlife Dept., Brownsville, TX |
| Dardeau, M. | Marine Environmental Sciences Consortium, Dauphin Island, AL |
| Davis, D. | Mote Marine Laboratory, Sarasota, FL |
| Demoran, W. | Gulf Coast Research Laboratory, Ocean Springs, MS |
| Edwards, R.E. | Mote Marine Laboratory, Sarasota, FL |

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|---|---|
| Edwards, R.J. | Pan American University, Edinburg, TX |
| Estevez, E. | Mote Marine Laboratory, Sarasota, FL |
| Fable, W. | National Marine Fisheries Service, Panama City, FL |
| Ferguson, T. | Louisiana Dept. of Wildlife and Fisheries, Lake Charles, LA |
| Finucane, J. | National Marine Fisheries Service, Panama City, FL |
| Flemer, D. | U.S. Environmental Protection Agency, Gulf Breeze, FL |
| Fonseca, M. | National Marine Fisheries Service, Beaufort, NC |
| Forsythe, J. | Marine Biomedical Institute, Galveston, TX |
| Fraser, T. | W. Dexter Bender and Associates, Fort Myers, FL |
| Fuls, B. | Texas Parks and Wildlife Dept., Flour Bluff, TX |
| Gilbert, C. | University of Florida, Gainesville, FL |
| Green, L. | Texas Parks and Wildlife Dept., Rockport, TX |
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