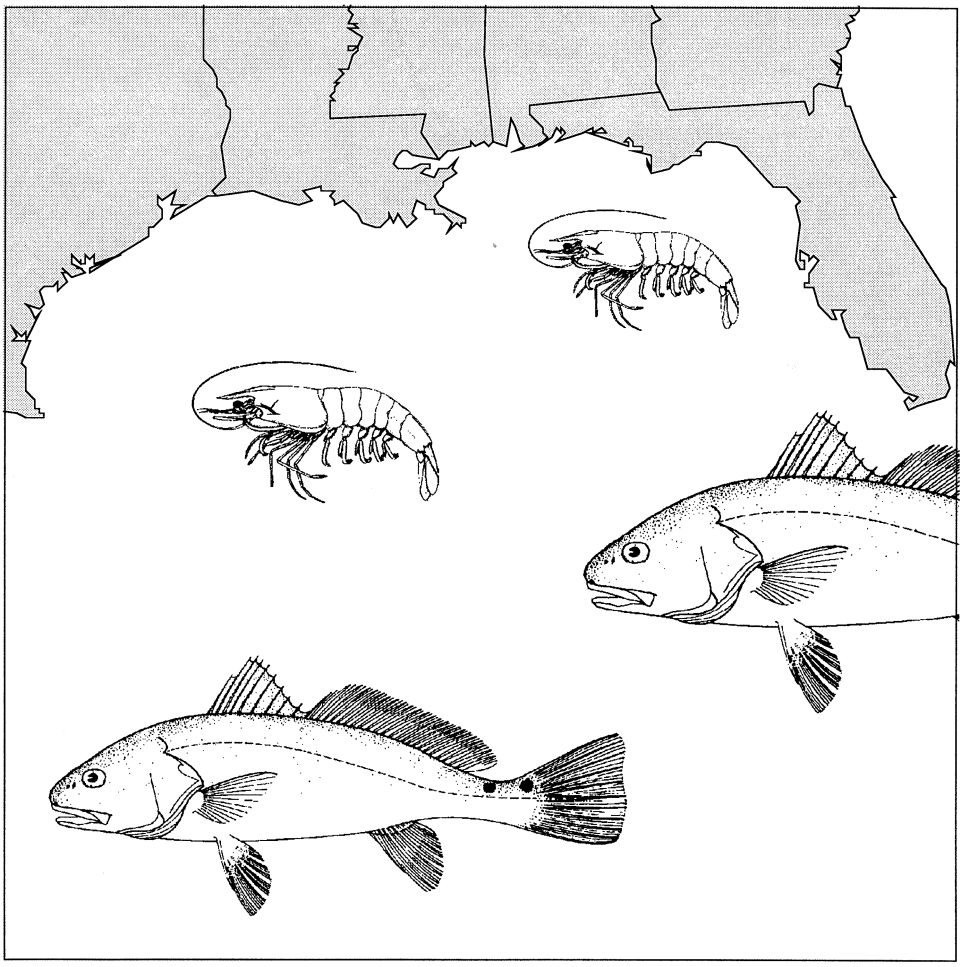
NOAA's Estuarine Living Marine Resources Program

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

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

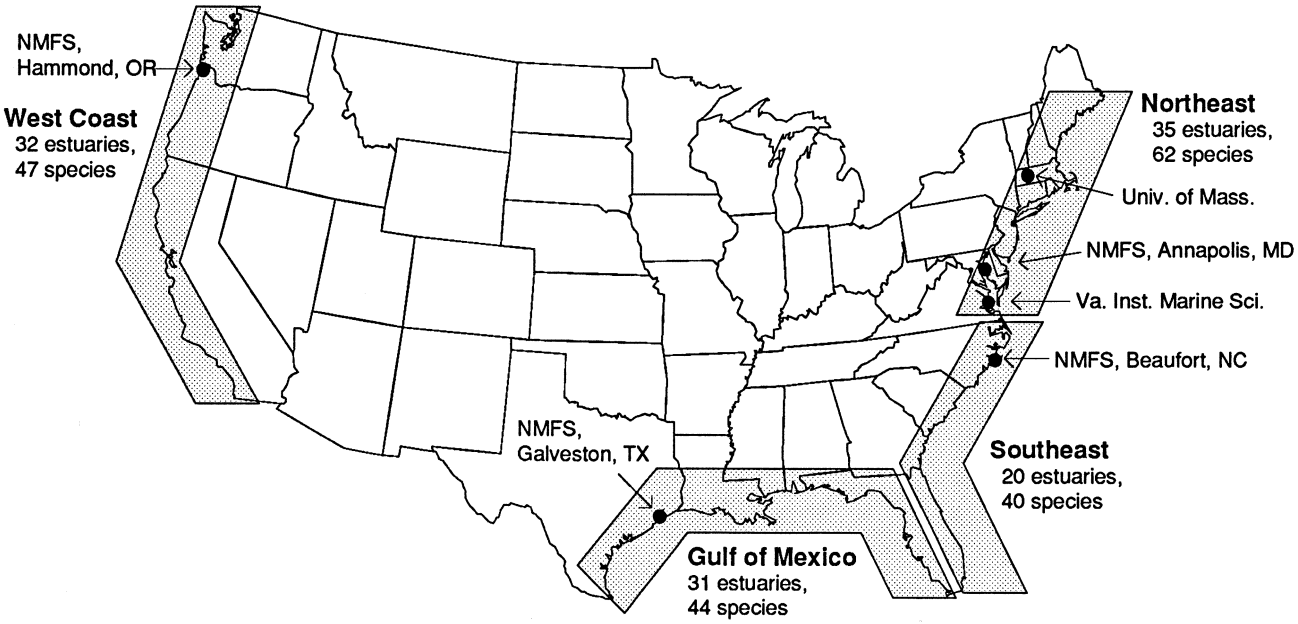

Figure 1. ELMR study regions and regional research laboratories.

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.

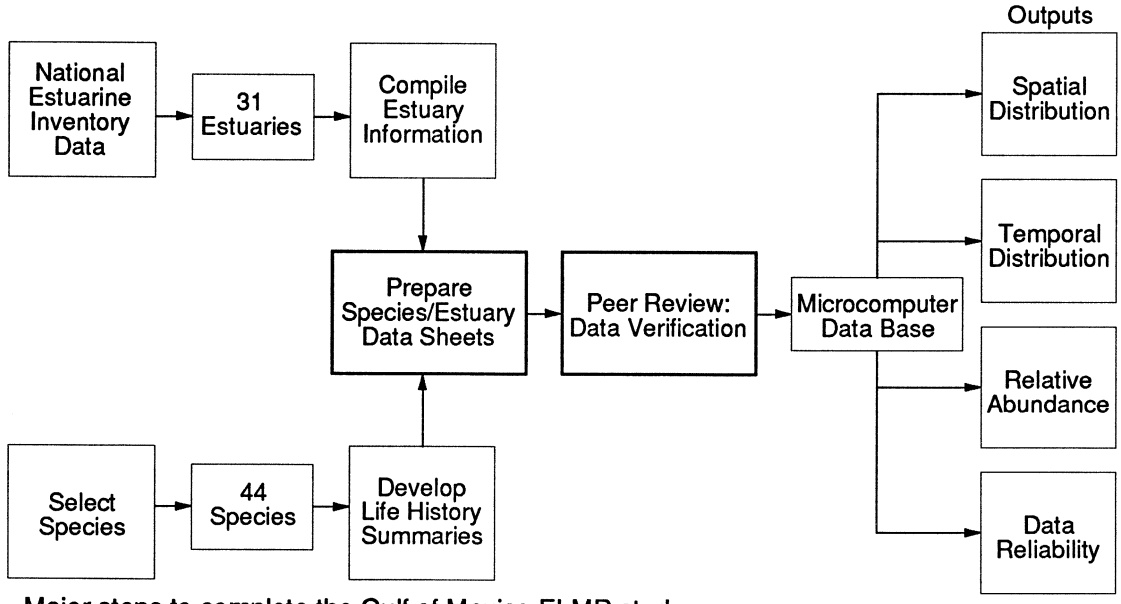

Figure 2. Major steps to complete the Gulf of Mexico ELMR study.

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*.

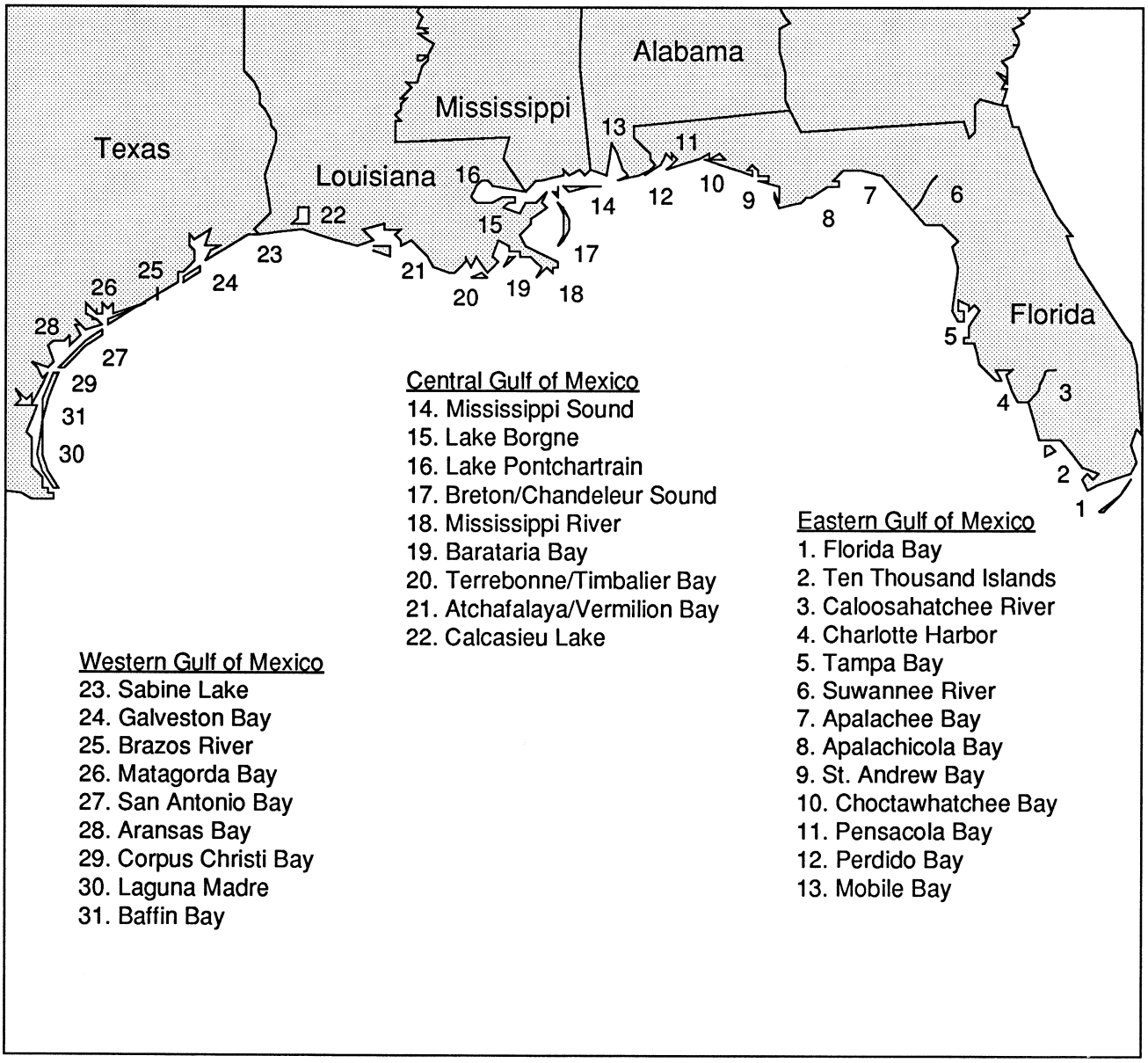

Figure 3. ELMR Gulf of Mexico estuaries.

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.

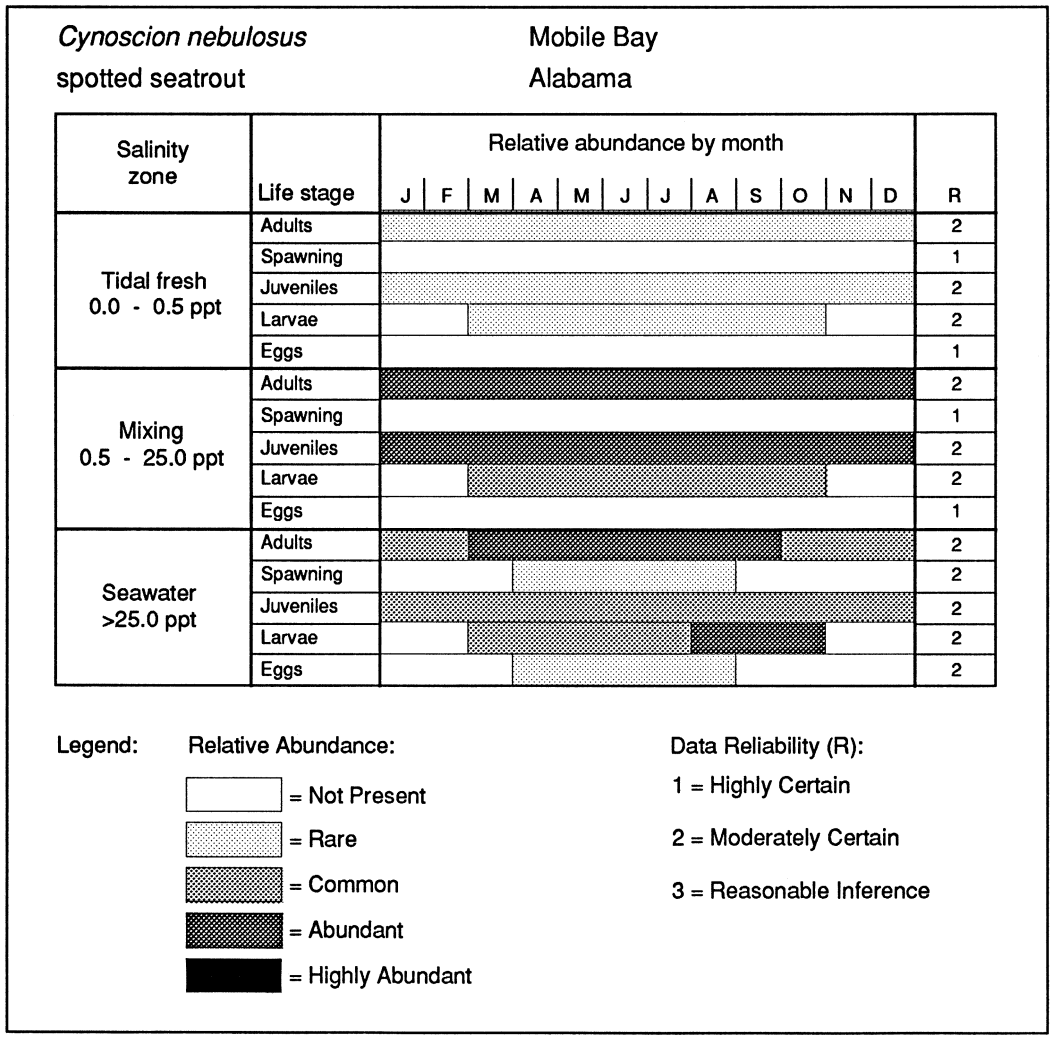

Figure 4. Example of a species/estuary data sheet: spotted seatrout in Mobile Bay.

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

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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

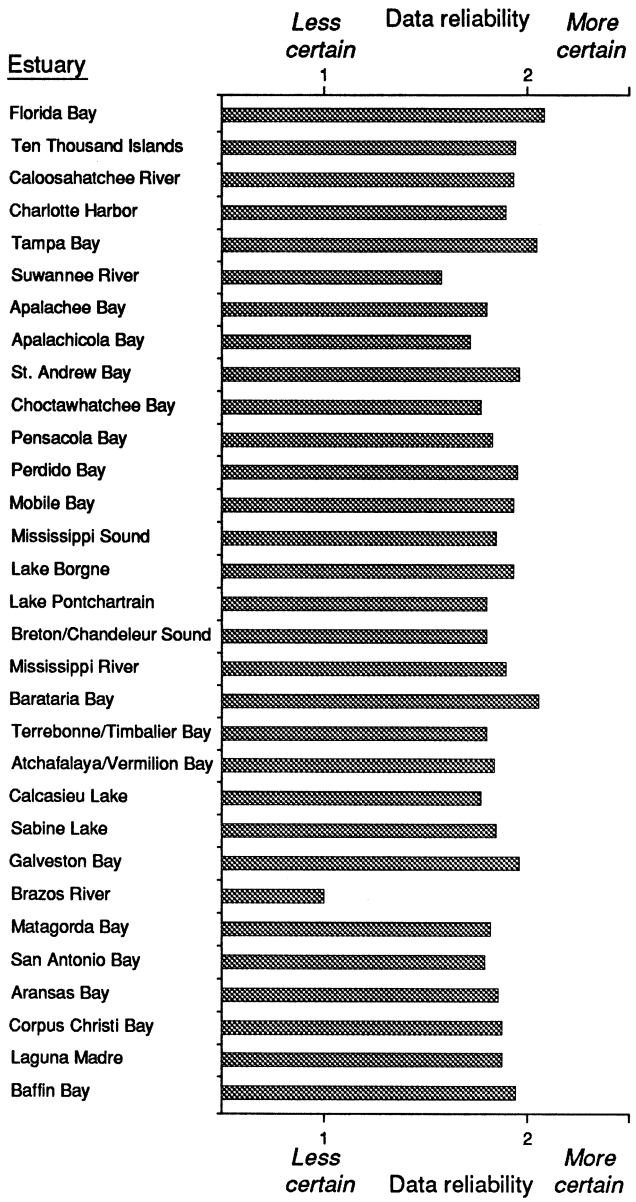

Figure 5. Mean data reliability by estuary.

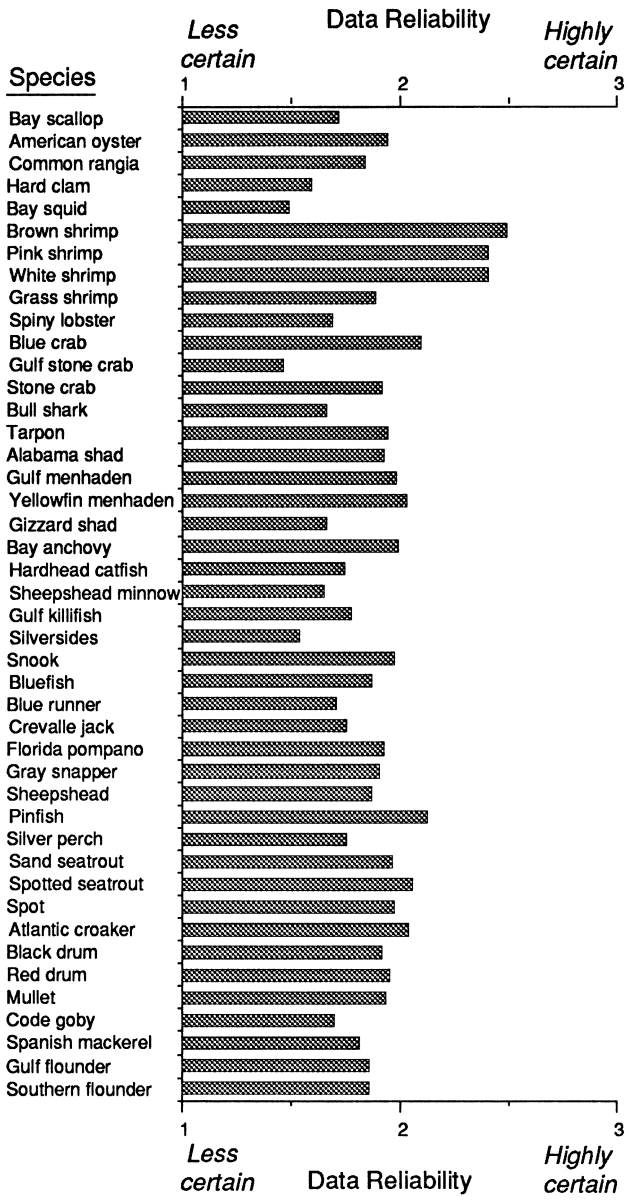

Figure 7. Mean data reliability by species.

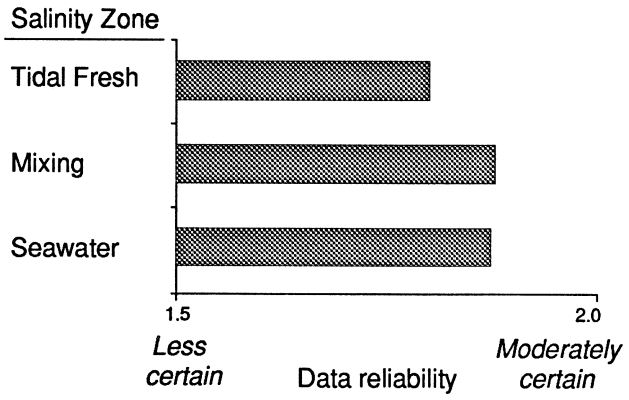

Figure 6. Mean data reliability by salinity zone.

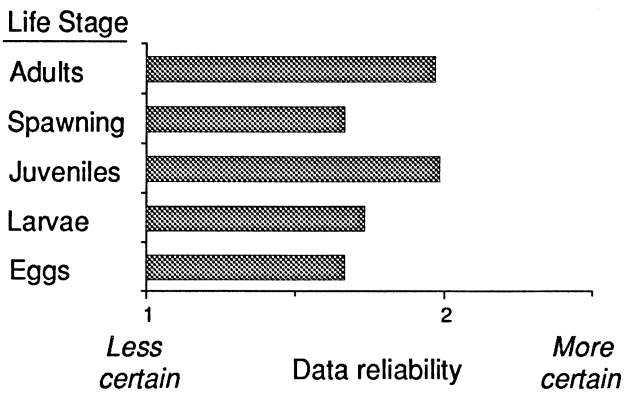

Figure 8. Mean data reliability by life stage.

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.

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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*) American oyster (*Crassostrea virginica*) Common rangia (*Rangia cuneata*) Hard clam (*Mercenaria* species) Bay squid (*Lolliguncula brevis*) Brown shrimp (*Penaeus aztecus*)	20	21	22	23	24
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*)	25	26	27	28	29
Stone crab (*Menippe mercenaria*) Bull shark (*Carcharhinus leucas*) Tarpon (*Megalops atlanticus*) Alabama shad (*Alosa alabamae*) Gulf menhaden (*Brevoortia patronus*) Yellowfin menhaden (*Brevoortia smithi*)	30	31	32	33	34
Gizzard shad (*Dorosoma cepedianum*) Bay anchovy (*Anchoa mitchilli*) Hardhead catfish (*Arius felis*) Sheepshead minnow (*Cyprinodon variegatus*) Gulf killifish (*Fundulus grandis*) Silversides (*Menidia* species)	35	36	37	38	39
Snook (*Centropomus undecimalis*) Bluefish (*Pomatomus saltatrix*) Blue runner (*Caranx crysos*) Crevalle jack (*Caranx hippos*) Florida pompano (*Trachinotus carolinus*) Gray snapper (*Lutjanus griseus*)	40	41	42	43	44
Sheepshead (*Archosargus probatocephalus*) Pinfish (*Lagodon rhomboides*) Silver perch (*Bairdiella chrysoura*) Sand seatrout (*Cynoscion arenarius*) Spotted seatrout (*Cynoscion nebulosus*) Spot (*Leiostomus xanthurus*)	45	46	47	48	49
Atlantic croaker (*Micropogonias undulatus*) Black drum (*Pogonias cromis*) Red drum (*Sciaenops ocellatus*) Striped mullet (*Mugil cephalus*) Code goby (*Gobiosoma robustum*) Spanish mackerel (*Scomberomorus maculatus*)	50	51	52	53	54
Gulf flounder (*Paralichthys albigutta*) 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
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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																				
		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
- M - Mixing
- S - Seawater
- * - Salinity zone not present

Life Stage

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

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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
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

- ● 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
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

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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
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
- 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																				
		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

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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
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
- 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								
		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								

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																				
		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																				

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	*
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																				

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
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

- ● 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	*
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	*	*	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
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

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
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
- * - 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
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																				

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	*
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

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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
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	*	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
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
- 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
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
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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	*
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																				

Relative Abundance

- ● Highly Abundant
- ◉ Abundant
- ○ Common
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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
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																				

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
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								

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 5. Temporal distribution

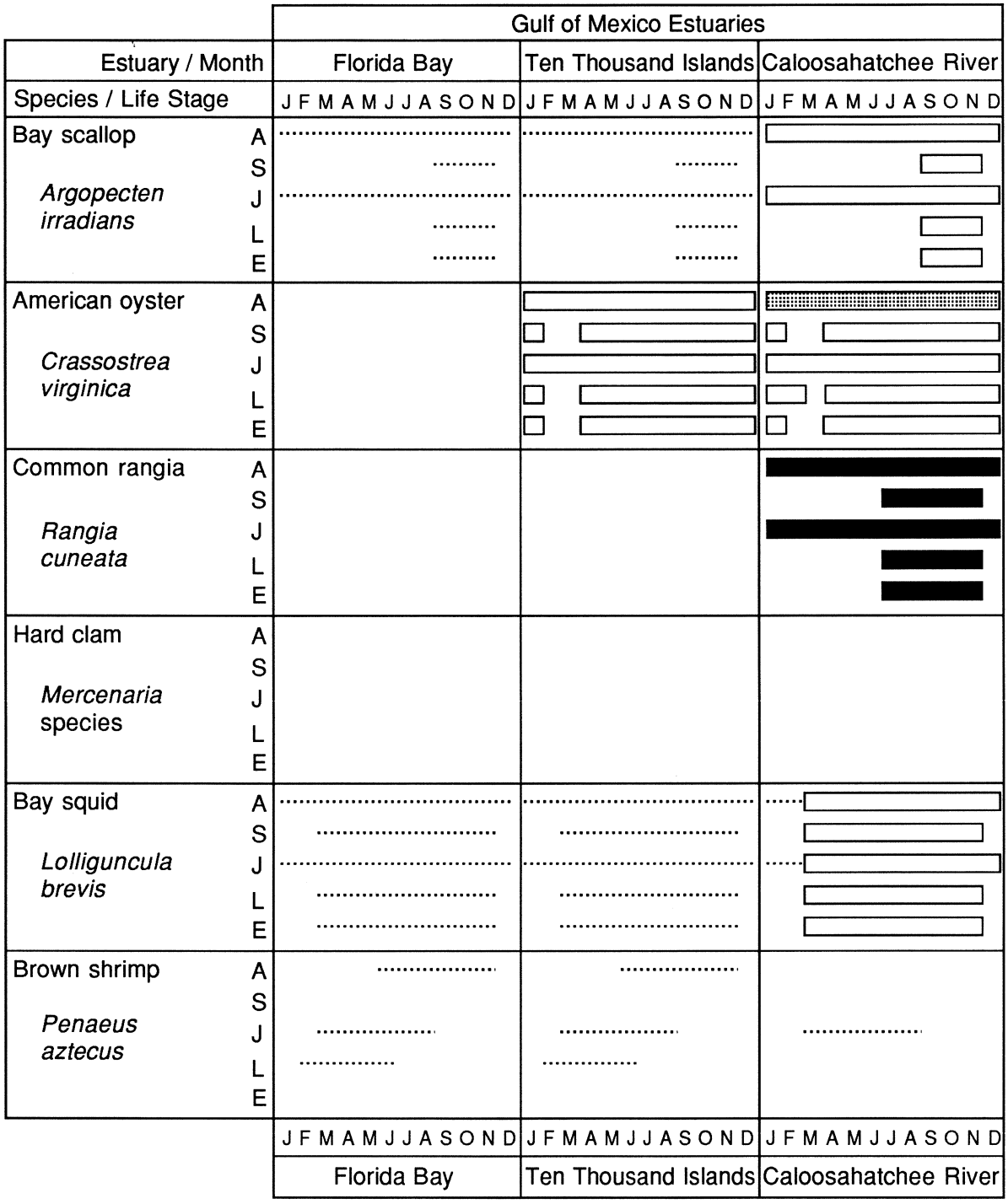
Index to Table 5. Page location of temporal distribution table for each species and estuary.

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

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

Common and Scientific Name	Estuary										
	Brazos River	Matagorda Bay	San Antonio Bay	Aransas Bay	Corpus Christi Bay	Laguna Madre	Baffin Bay				
Bay scallop (*Argopecten irradians*) American oyster (*Crassostrea virginica*) Common rangia (*Rangia cuneata*) Hard clam (*Mercenaria* species) Bay squid (*Lolliguncula brevis*) Brown shrimp (*Penaeus aztecus*)	84	85	86	87	88	89	90				
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*)	91	92	93	94	95	96	97				
Stone crab (*Menippe mercenaria*) Bull shark (*Carcharhinus leucas*) Tarpon (*Megalops atlanticus*) Alabama shad (*Alosa alabamae*) Gulf menhaden (*Brevoortia patronus*) Yellowfin menhaden (*Brevoortia smithi*)	98	99	100	101	102	103	104				
Gizzard shad (*Dorosoma cepedianum*) Bay anchovy (*Anchoa mitchilli*) Hardhead catfish (*Arius felis*) Sheepshead minnow (*Cyprinodon variegatus*) Gulf killifish (*Fundulus grandis*) Silversides (*Menidia* species)	105	106	107	108	109	110	111				
Snook (*Centropomus undecimalis*) Bluefish (*Pomatomus saltatrix*) Blue runner (*Caranx crysos*) Crevalle jack (*Caranx hippos*) Florida pompano (*Trachinotus carolinus*) Gray snapper (*Lutjanus griseus*)	112	113	114	115	116	117	118				
Sheepshead (*Archosargus probatocephalus*) Pinfish (*Lagodon rhomboides*) Silver perch (*Bairdiella chrysoura*) Sand seatrout (*Cynoscion arenarius*) Spotted seatrout (*Cynoscion nebulosus*) Spot (*Leiostomus xanthurus*)	119	120	121	122	123	124	125				
Atlantic croaker (*Micropogonias undulatus*) Black drum (*Pogonias cromis*) Red drum (*Sciaenops ocellatus*) Striped mullet (*Mugil cephalus*) Code goby (*Gobiosoma robustum*) Spanish mackerel (*Scomberomorus maculatus*)	126	127	128	129	130	131	132				
Gulf flounder (*Paralichthys albigutta*) Southern flounder (*Paralichthys lethostigma*)	133	134	135	136	137	138	139				

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

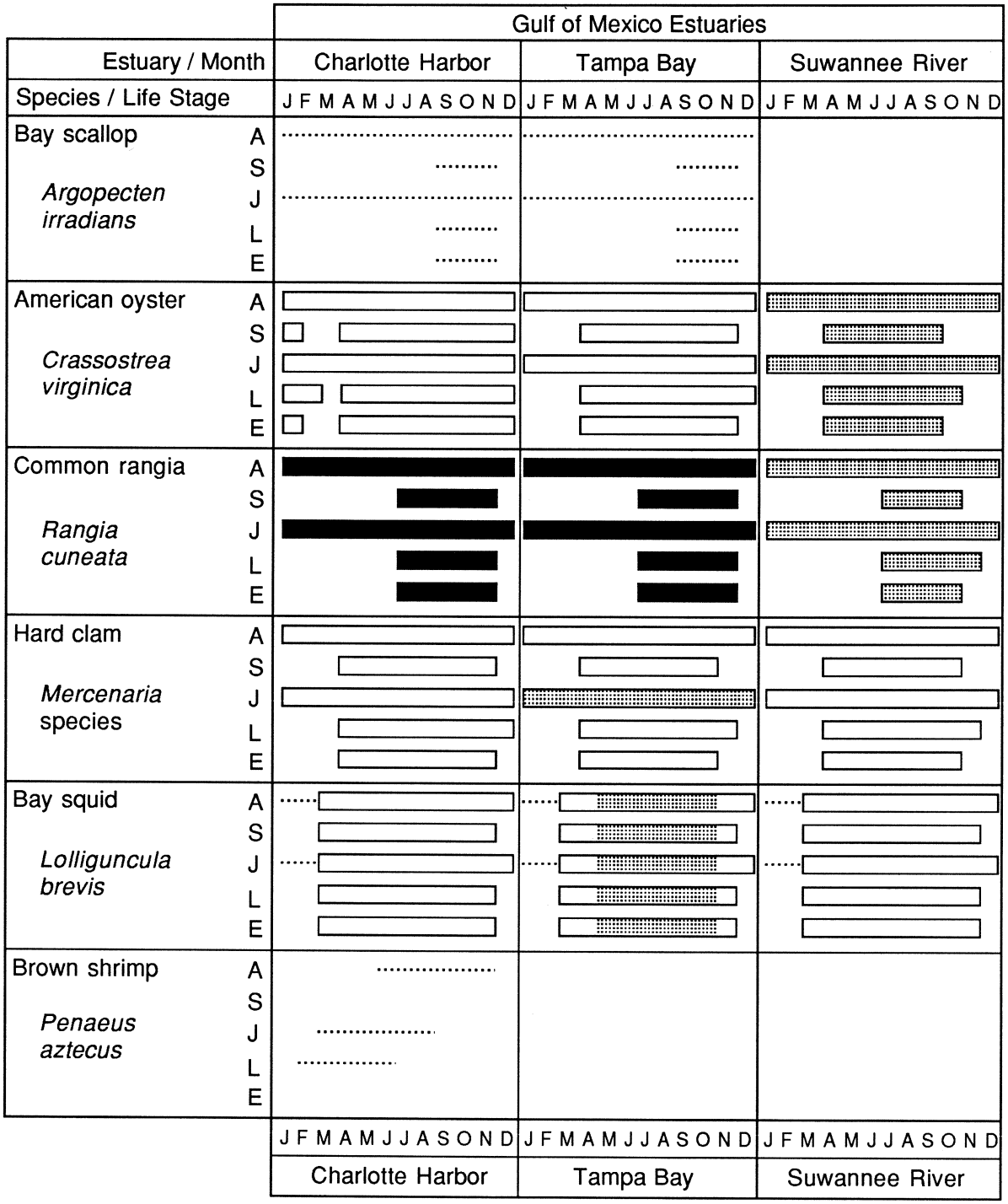


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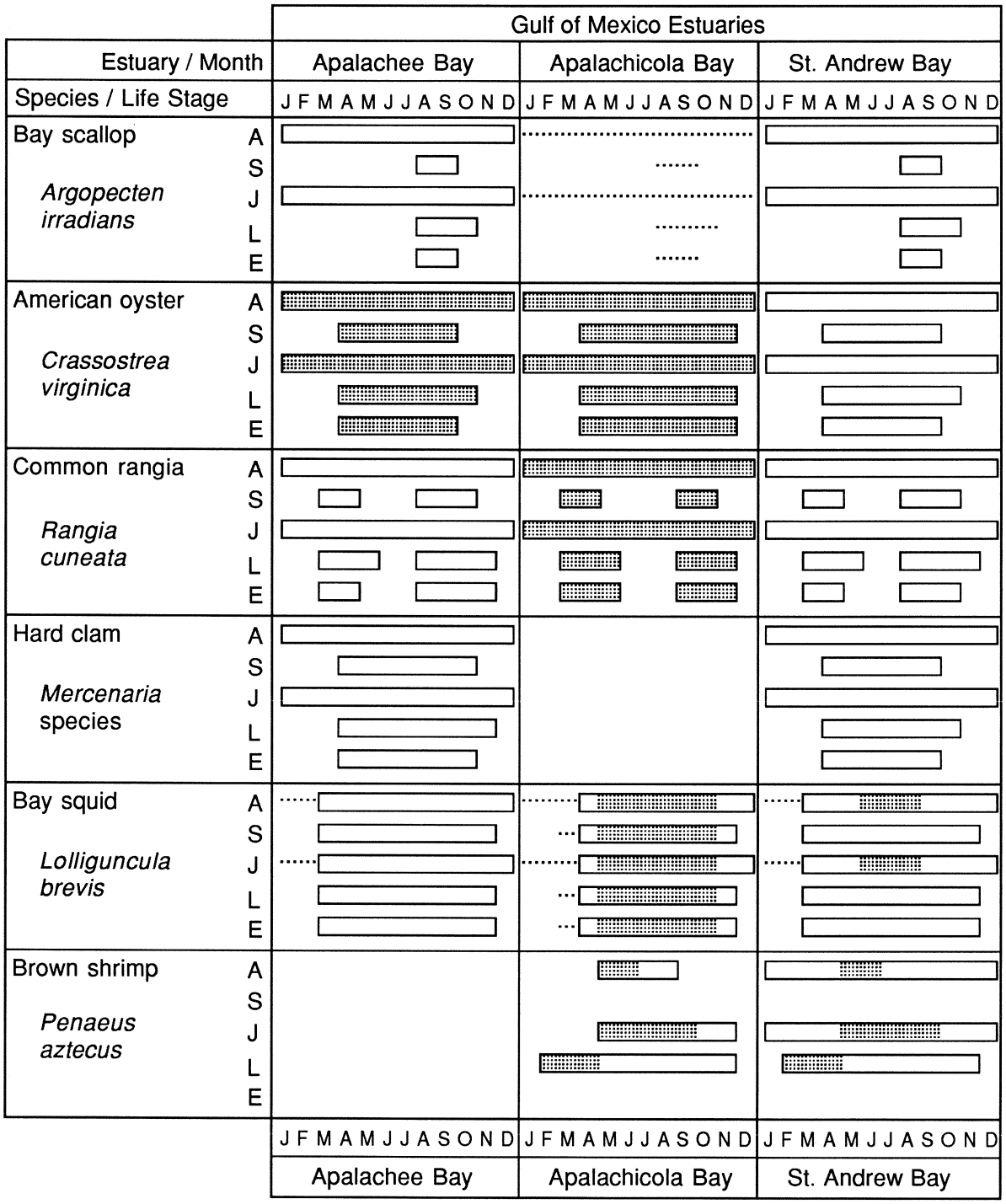
Table 5, continued. Temporal distribution



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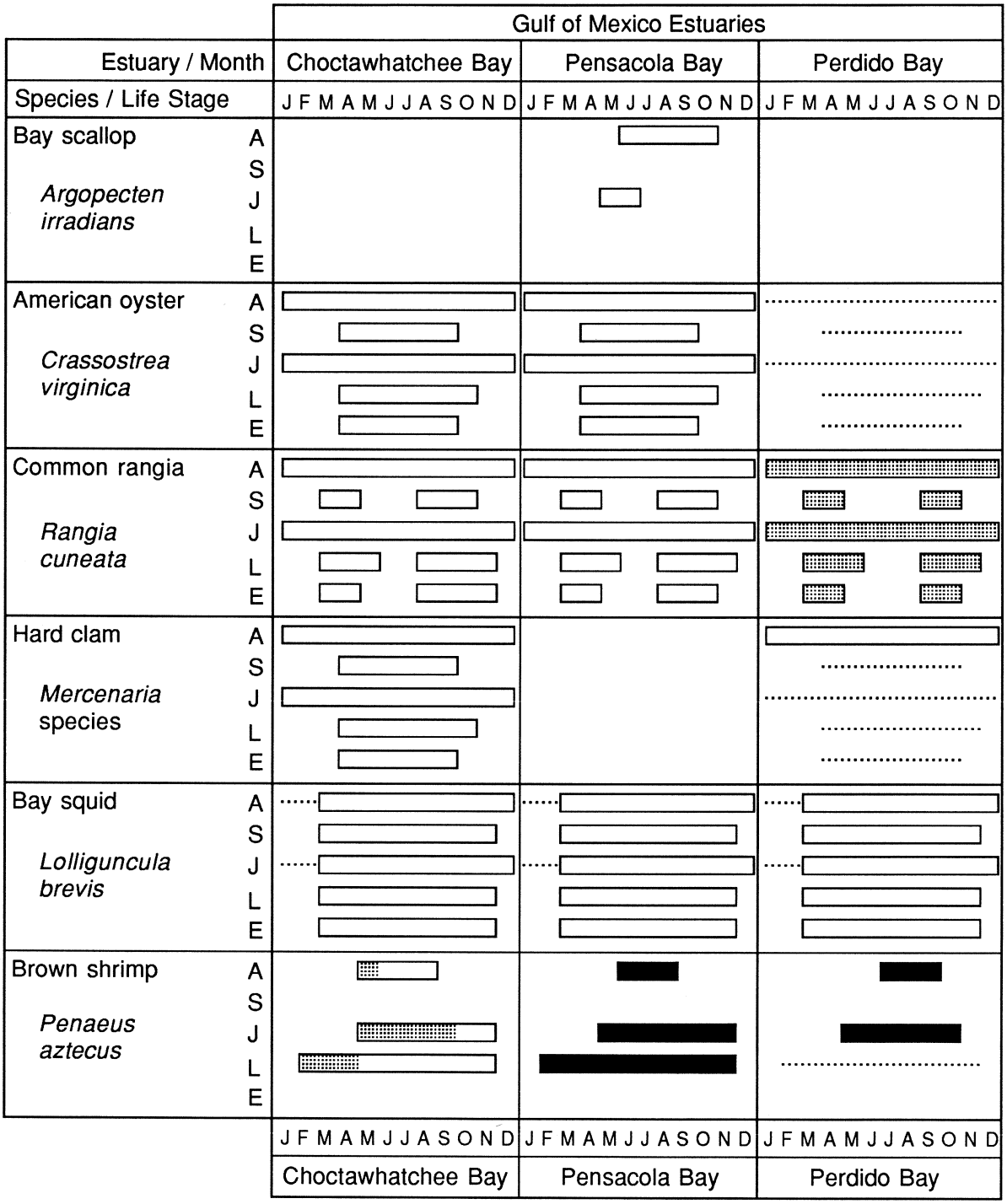

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Life Stage

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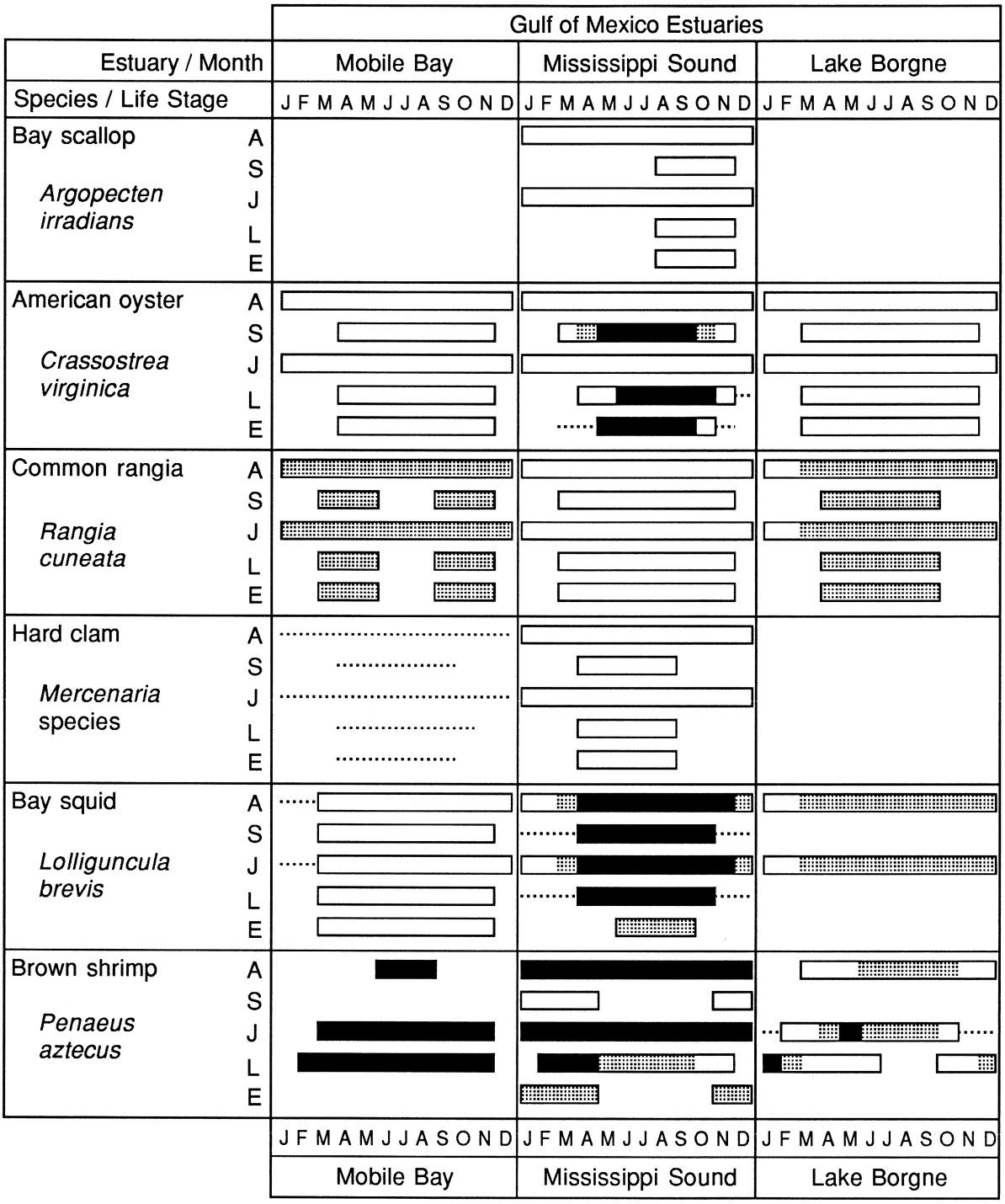

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Life Stage

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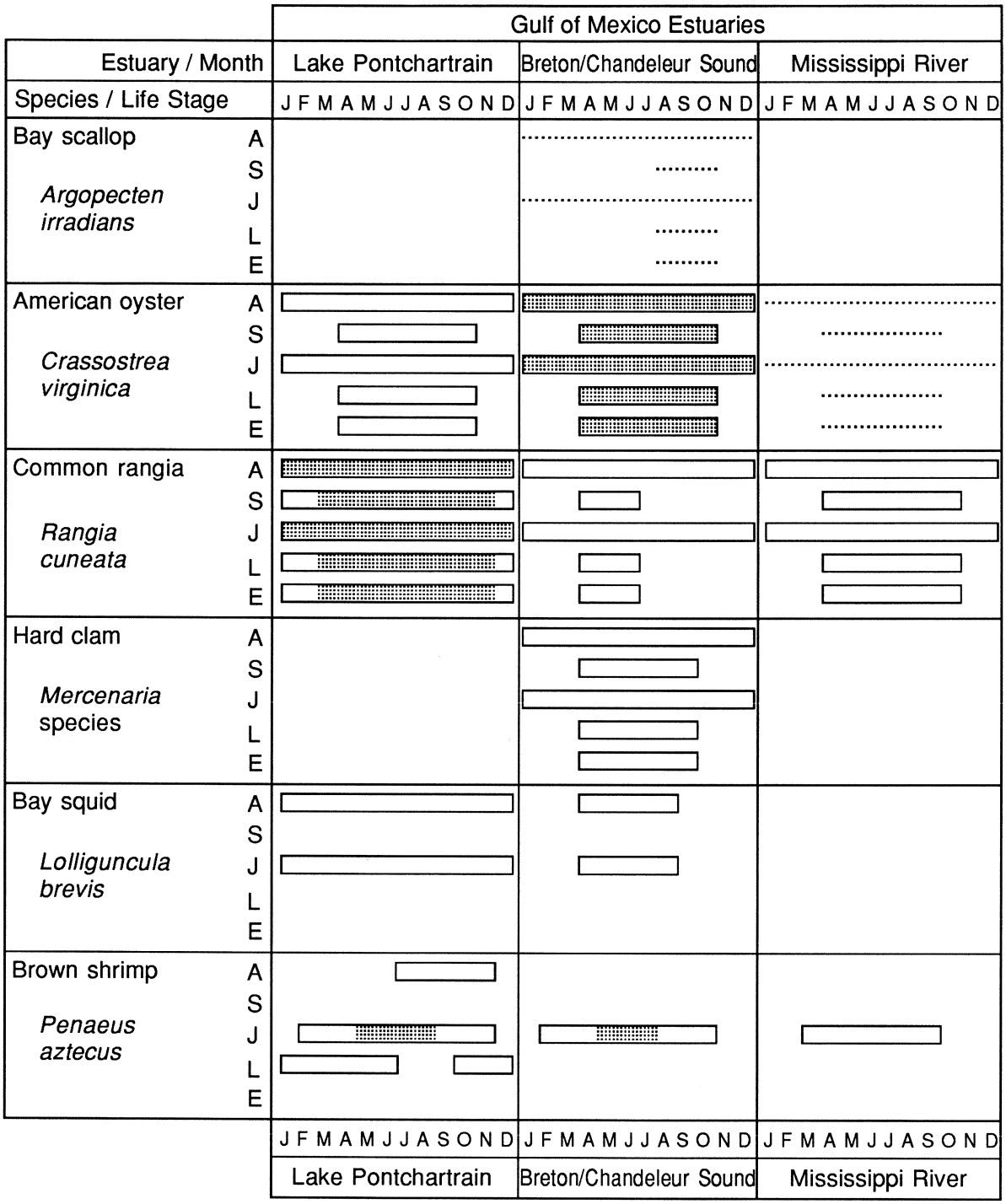
Table 5, continued. Temporal distribution



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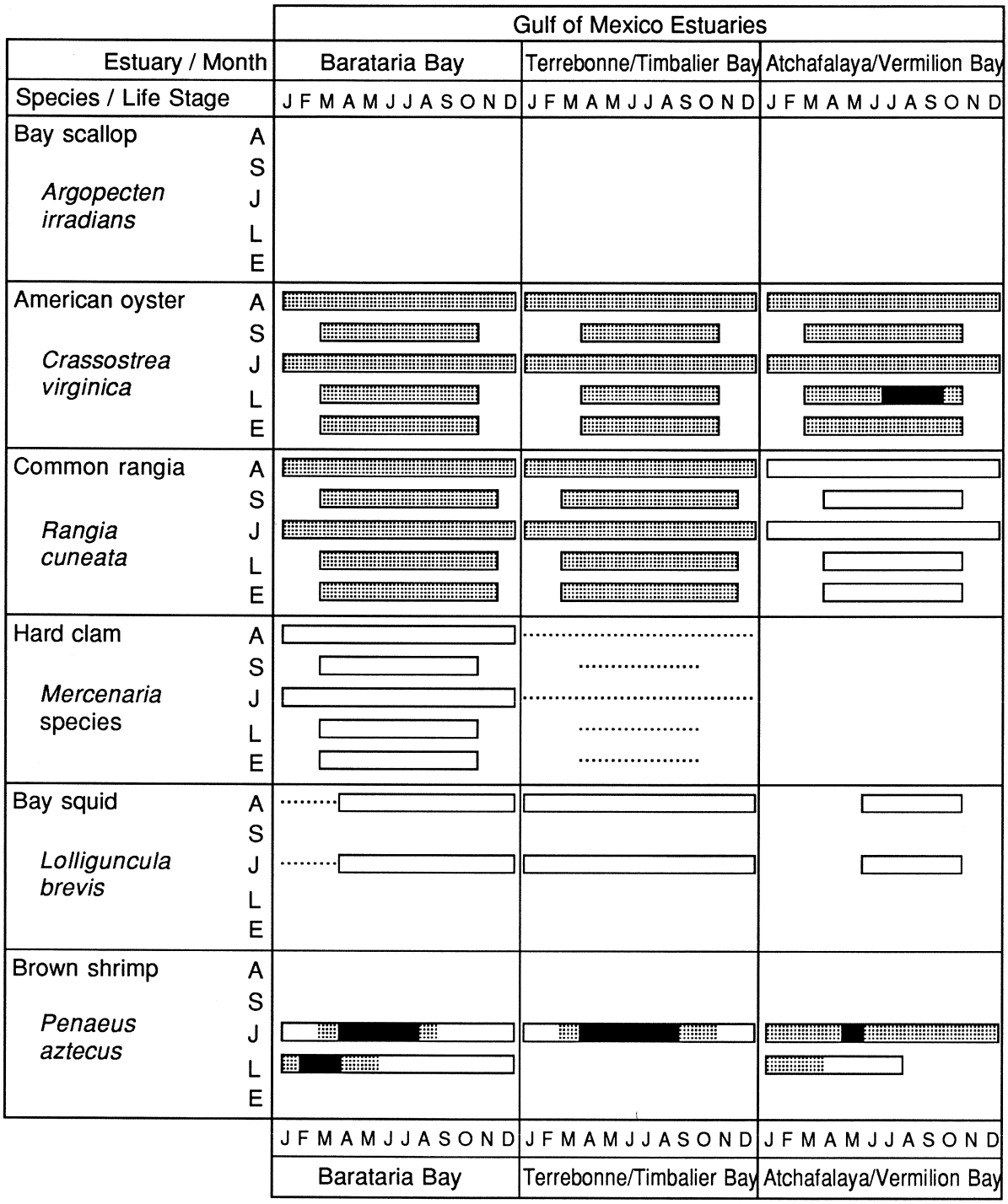

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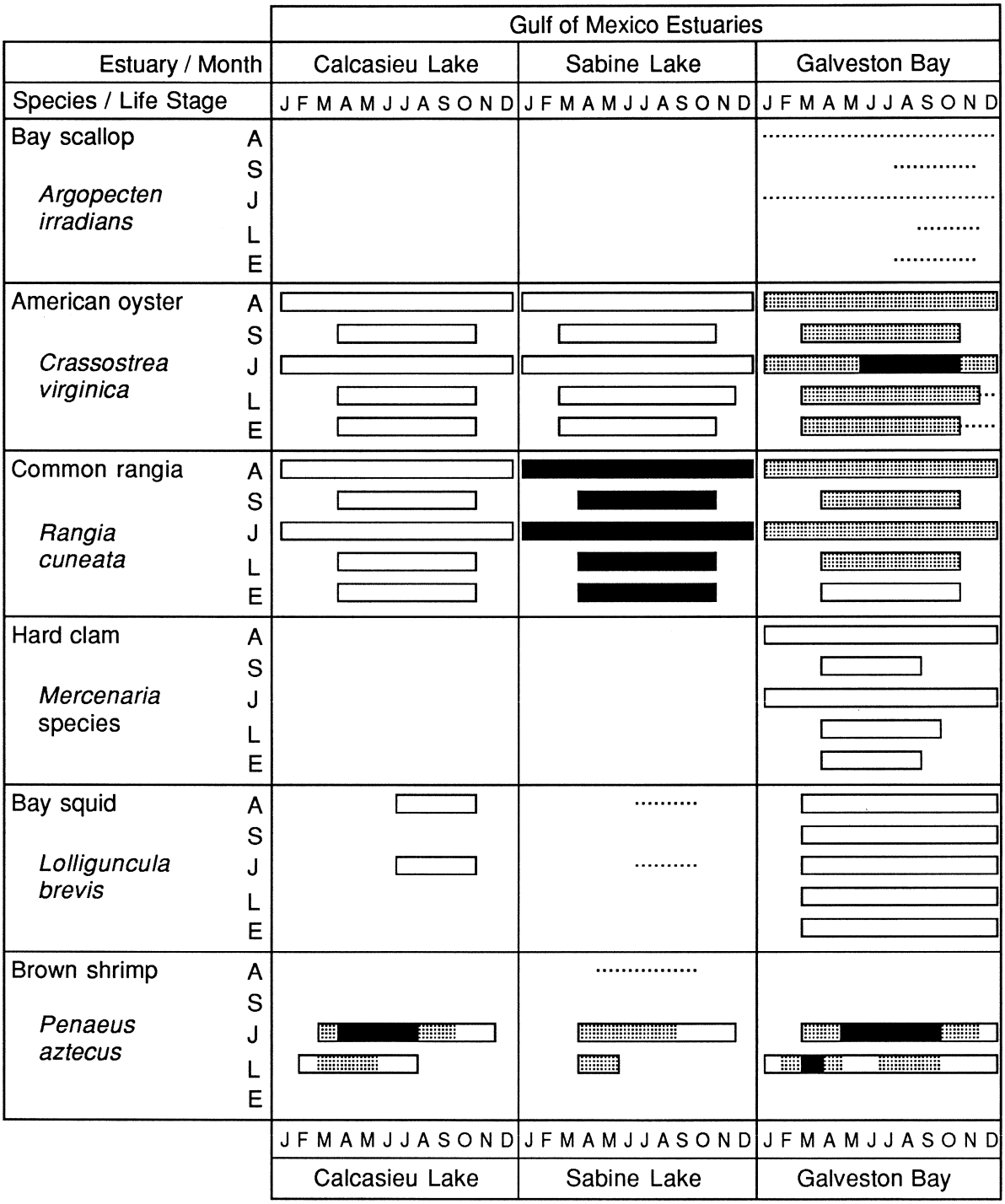

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- Common
- Rare
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Life Stage

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

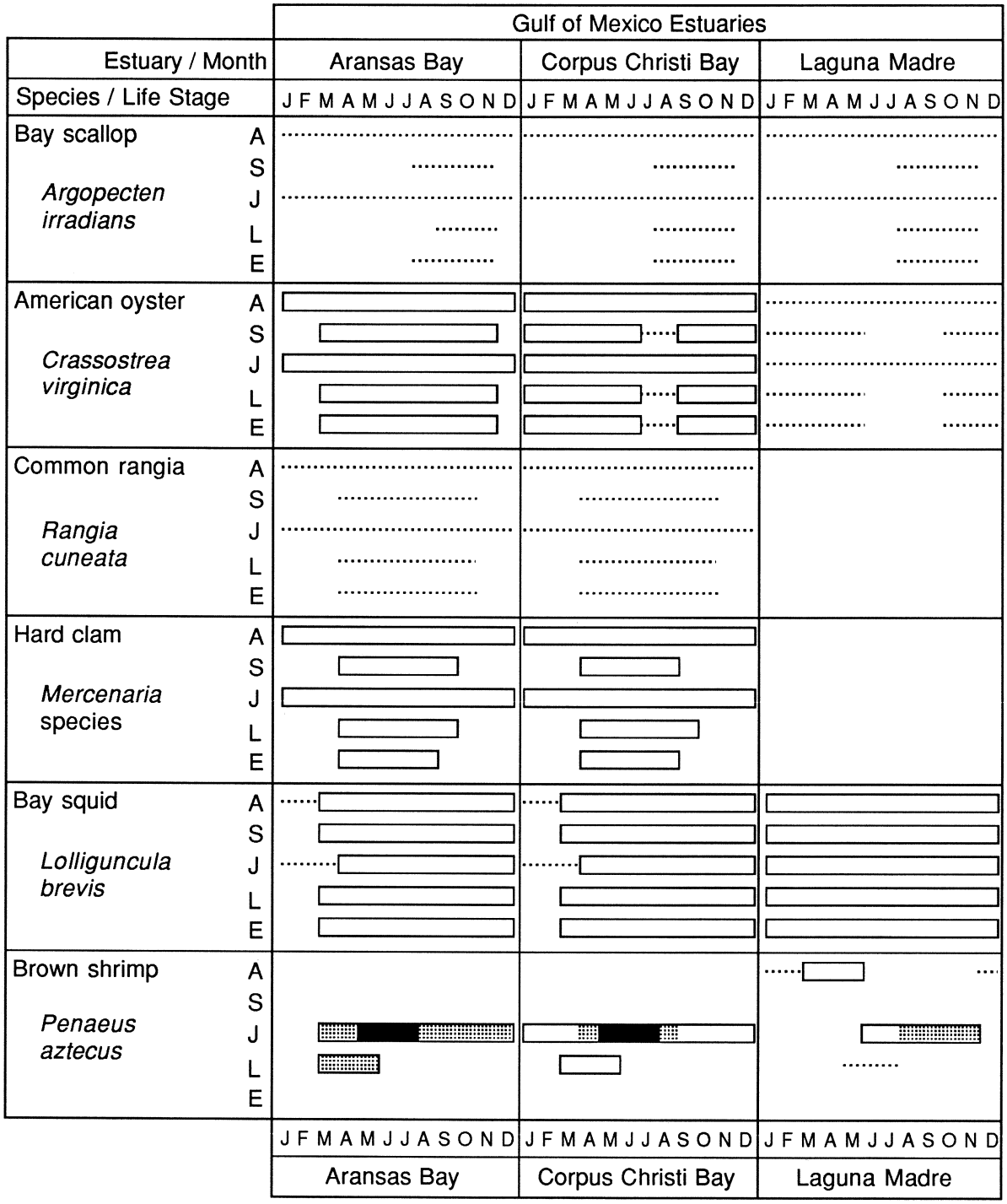
Relative Abundance

- ■ 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

		Gulf of Mexico Estuaries
Estuary / Month		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

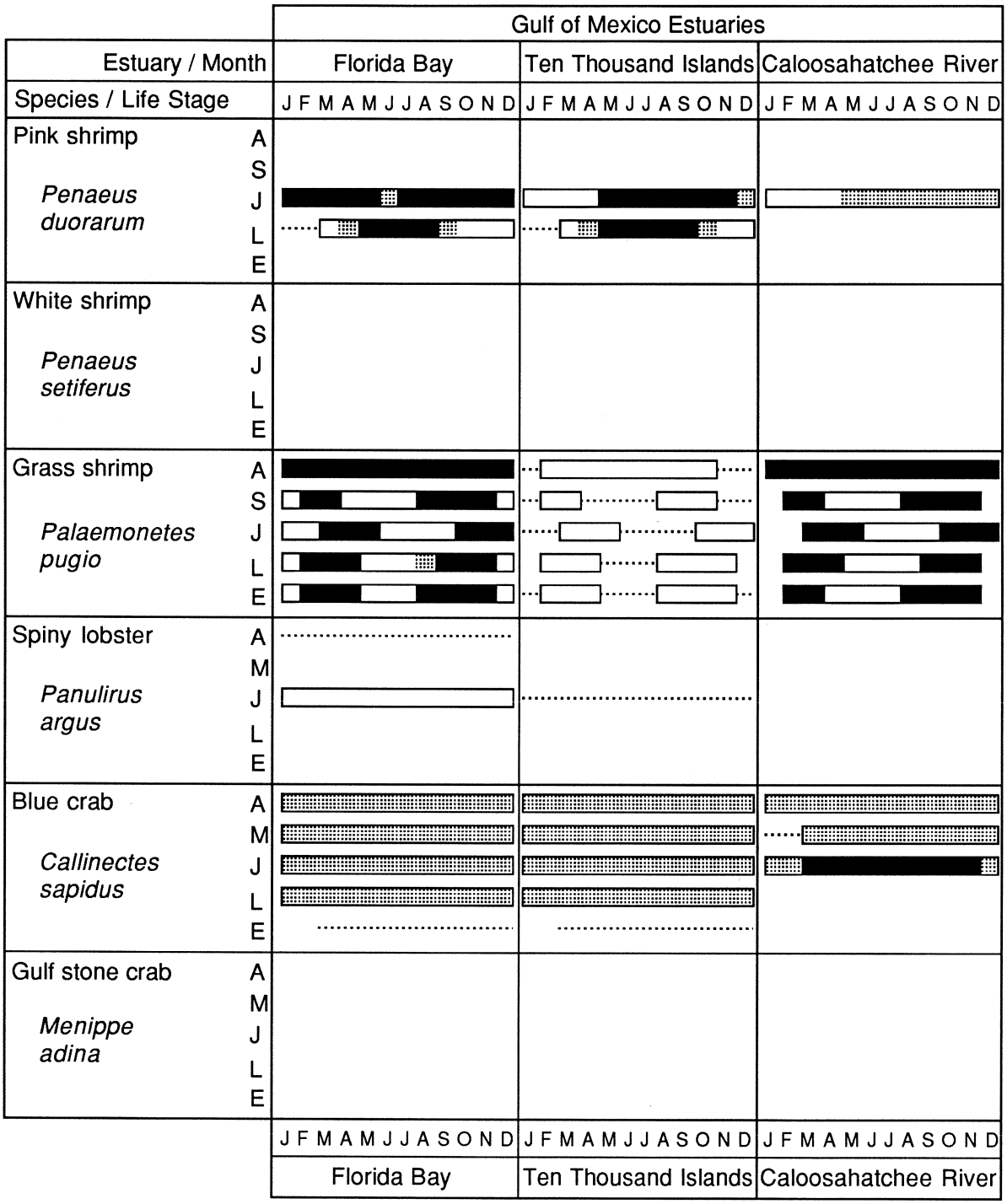
Relative Abundance

- 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

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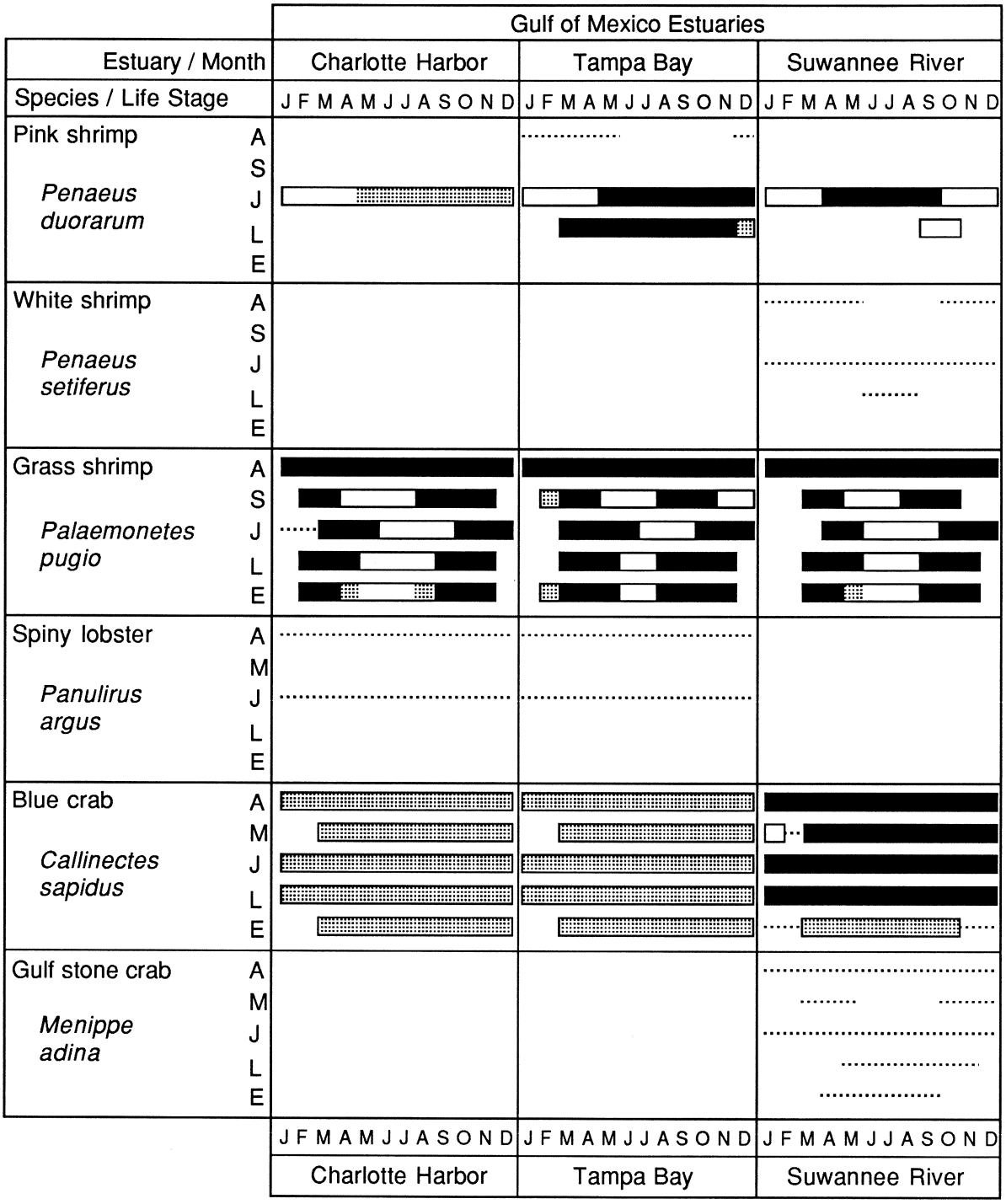
- Abundant
- Common
- Rare
- Blank — Not Present

Life Stage

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

Table 5, continued. Temporal distribution



Relative Abundance

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Life Stage

A - Adults
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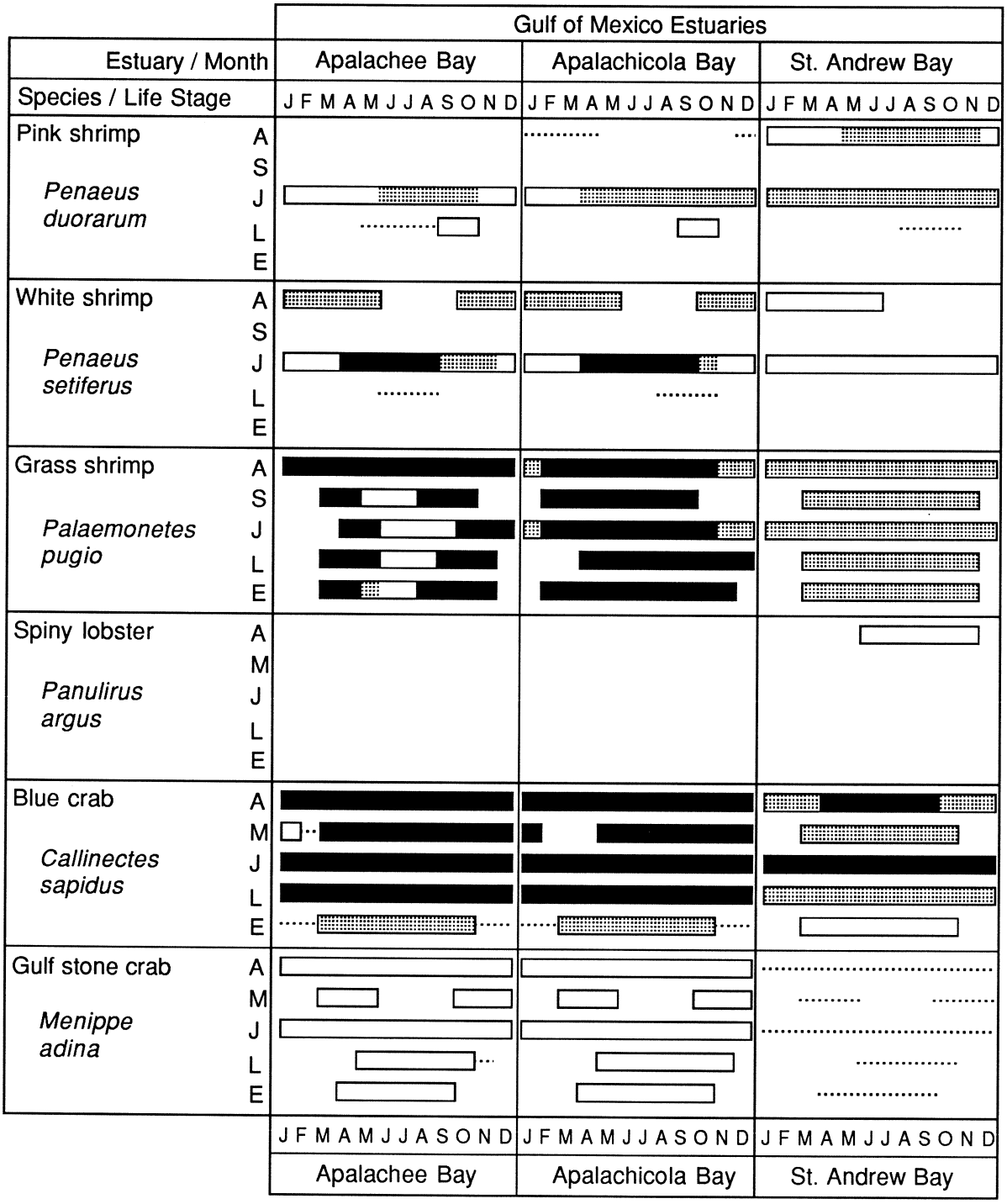
M - Mating

Table 5, continued. Temporal distribution



Relative Abundance

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Life Stage

A - Adults
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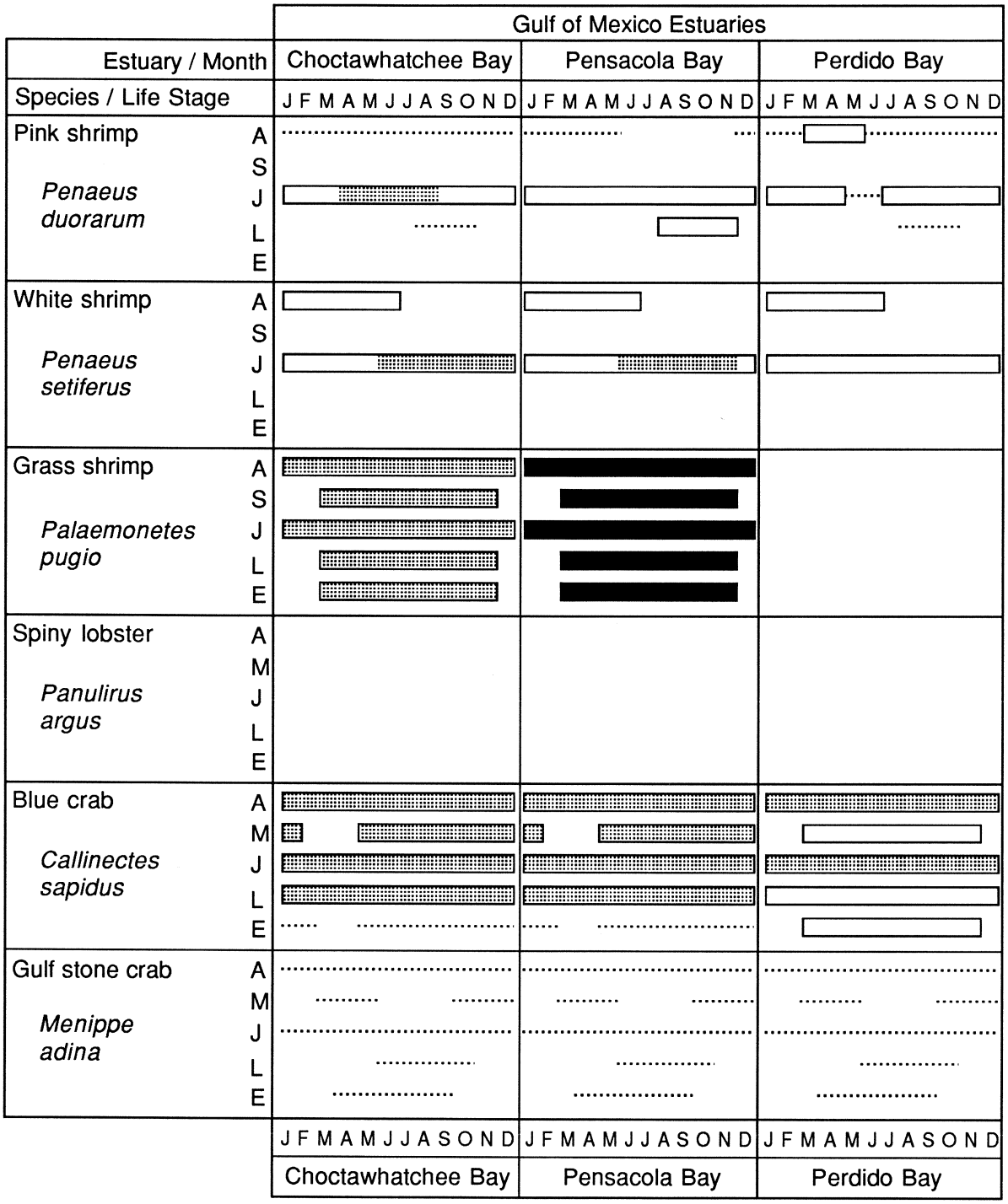
Table 5, continued. Temporal distribution



Relative Abundance

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Life Stage

A - Adults
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Table 5, continued. Temporal distribution

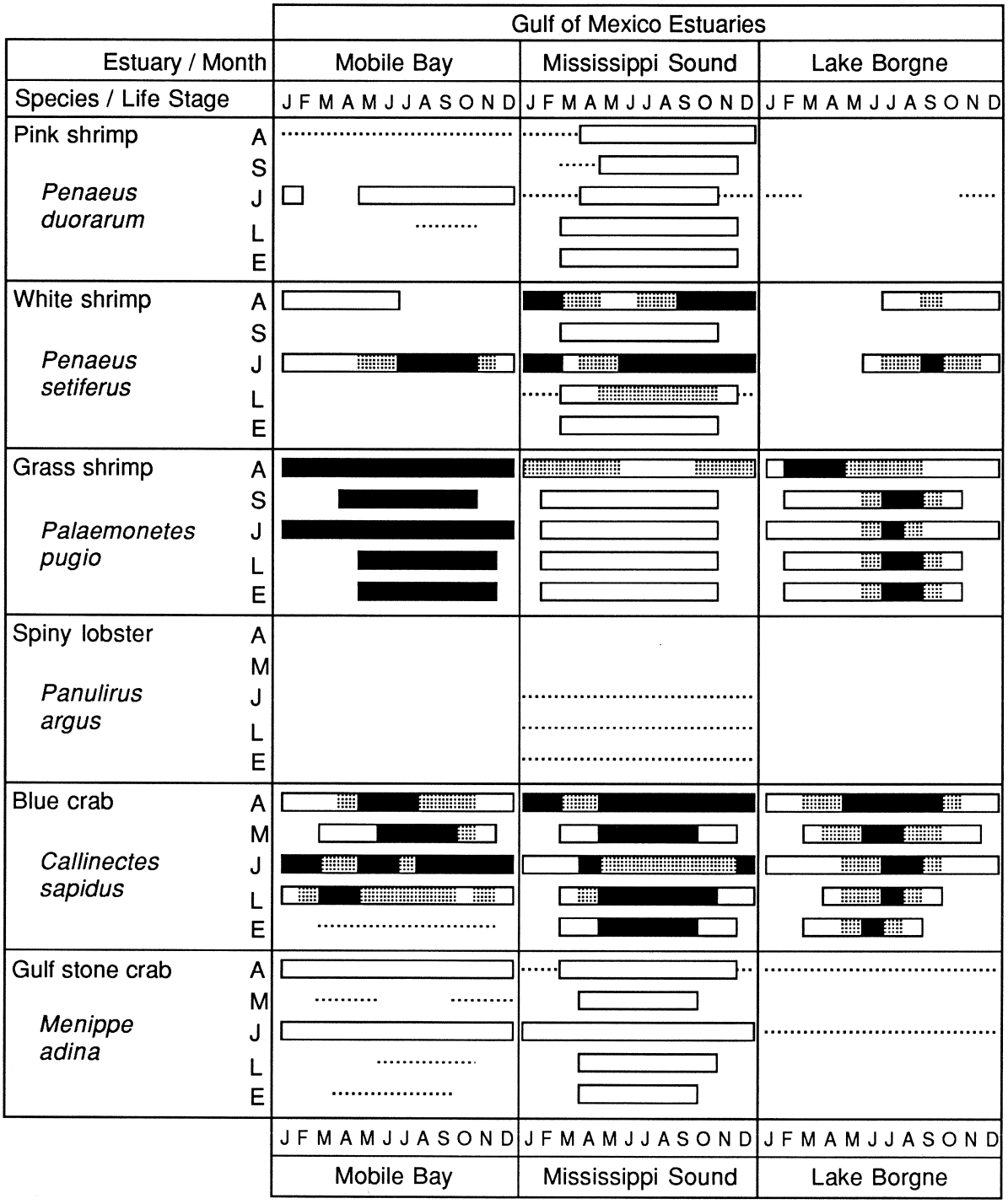

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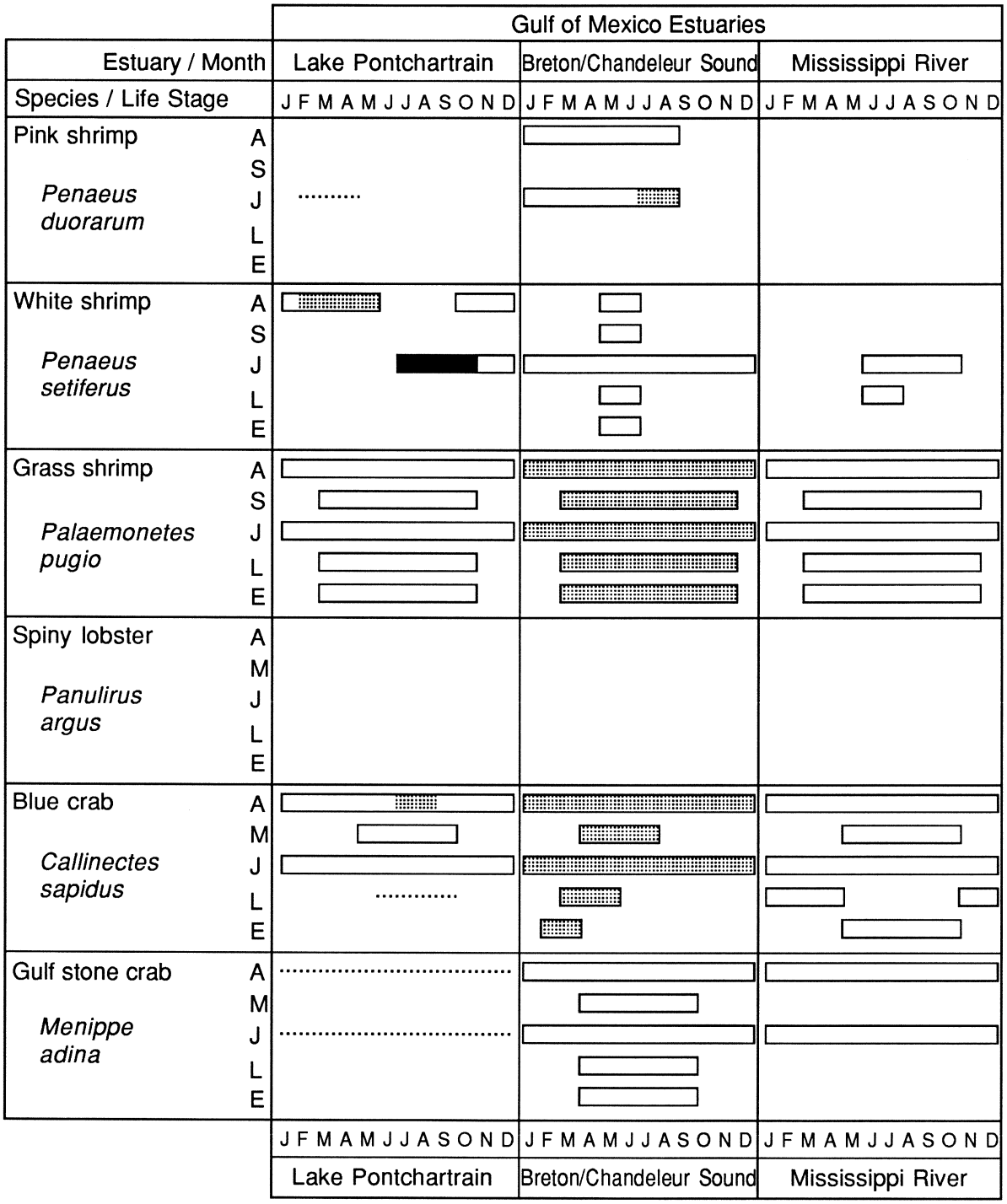
Table 5, continued. Temporal distribution



Relative Abundance

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Life Stage

A - Adults
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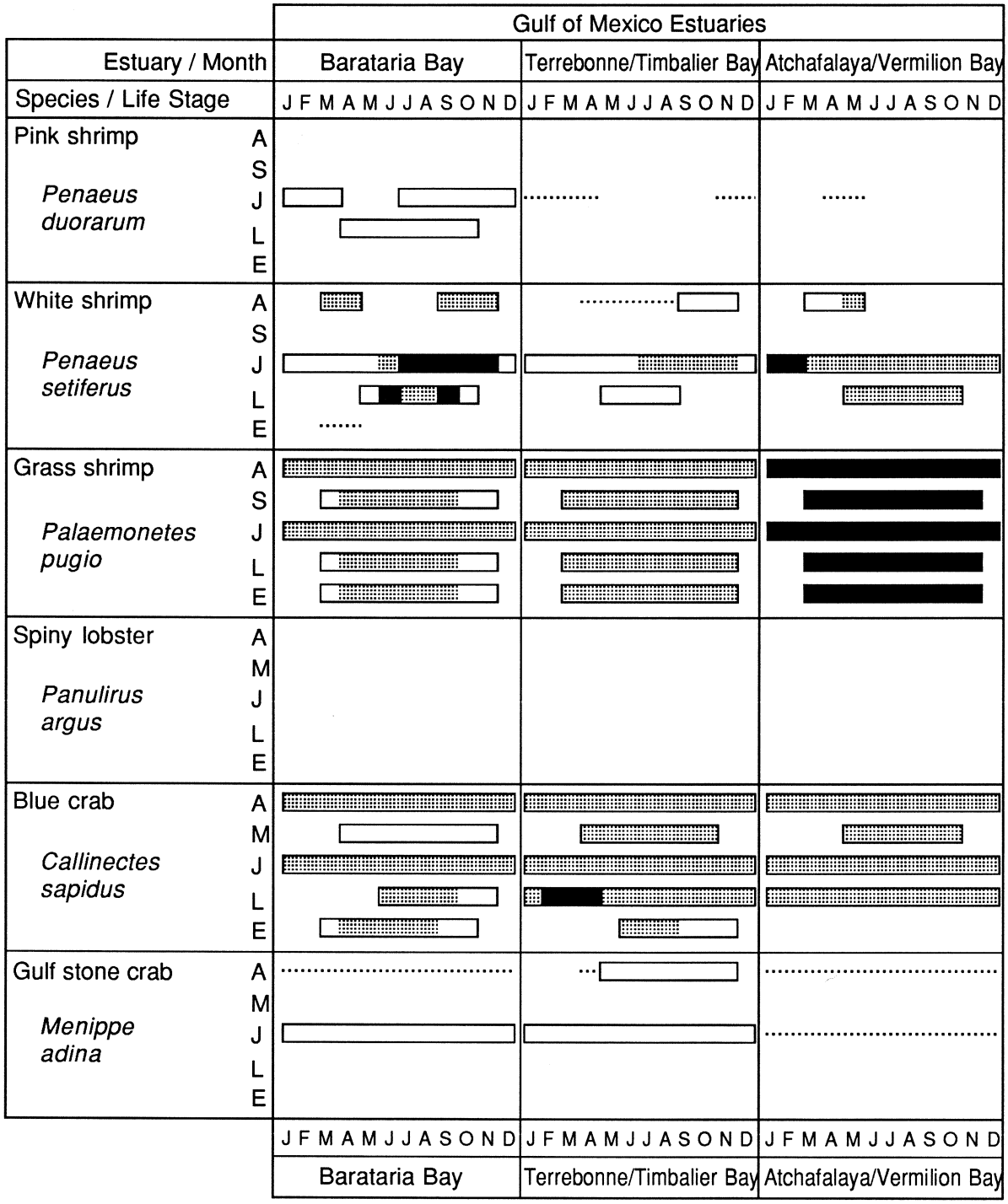
Table 5, continued. Temporal distribution



Relative Abundance

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Life Stage

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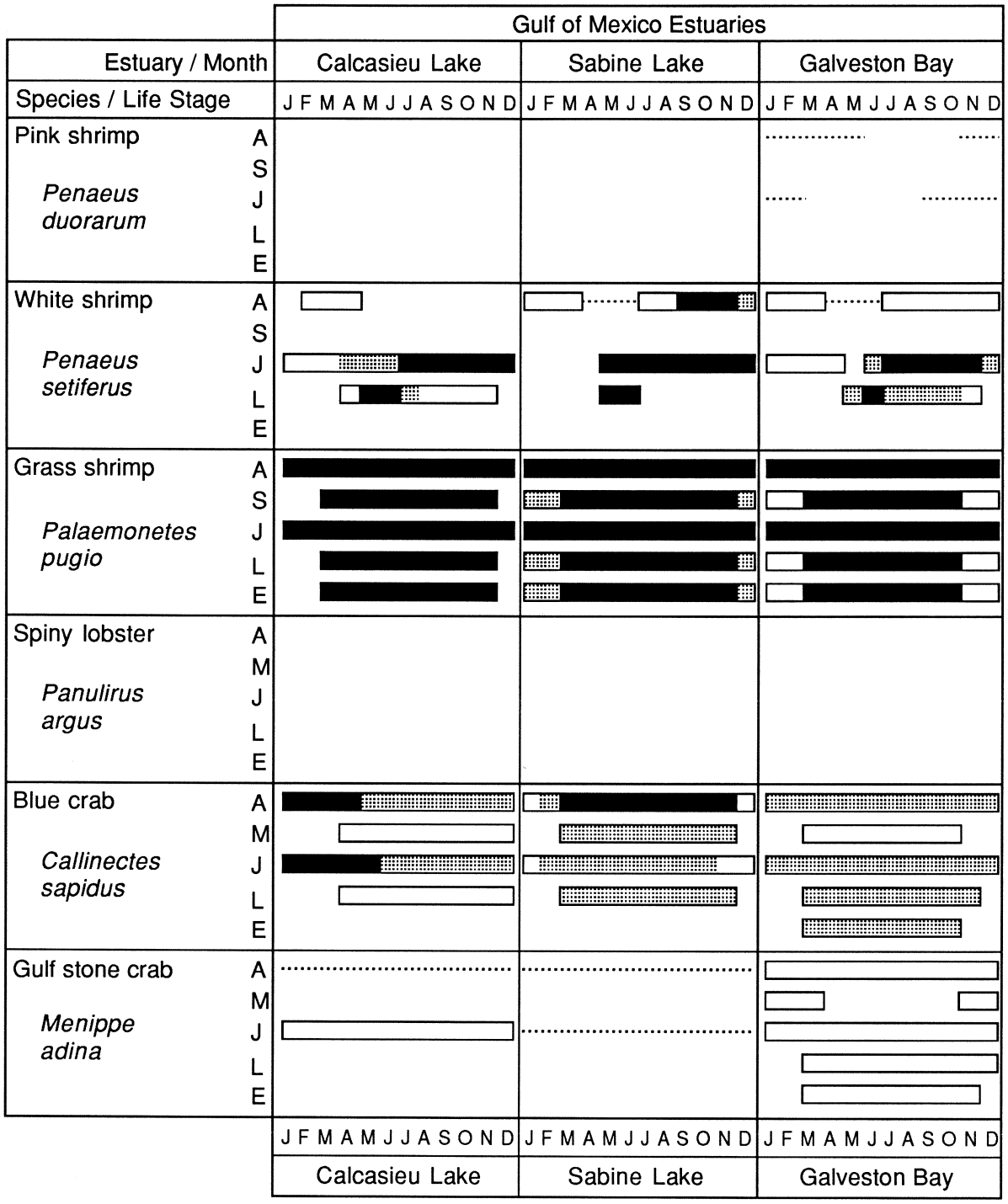
J - Juveniles
L - Larvae
E - Eggs
M - Mating

Table 5, continued. Temporal distribution



Relative Abundance

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Life Stage

A - Adults
S - Spawning adults
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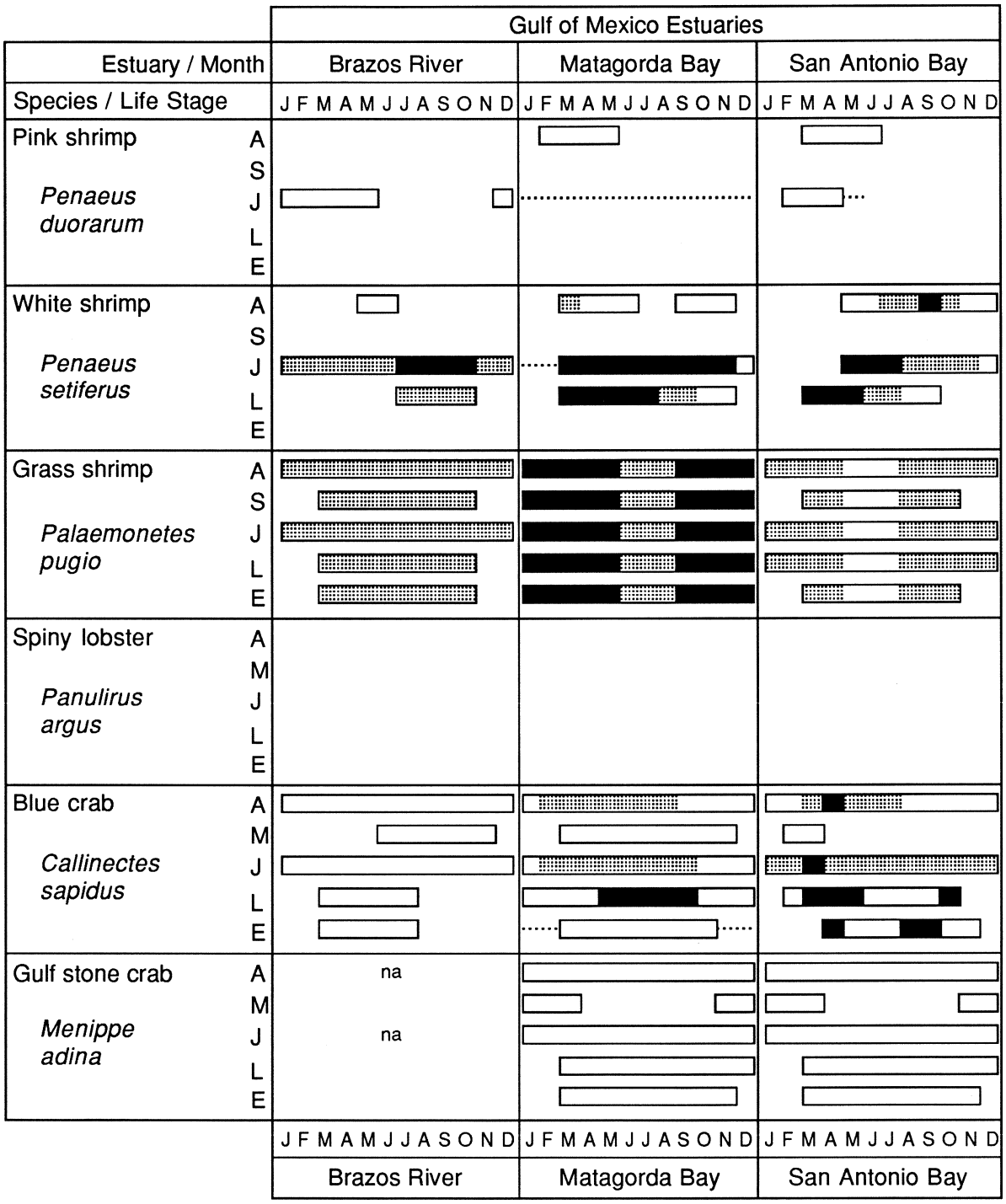
Table 5, continued. Temporal distribution



Relative Abundance

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- Rare
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Life Stage

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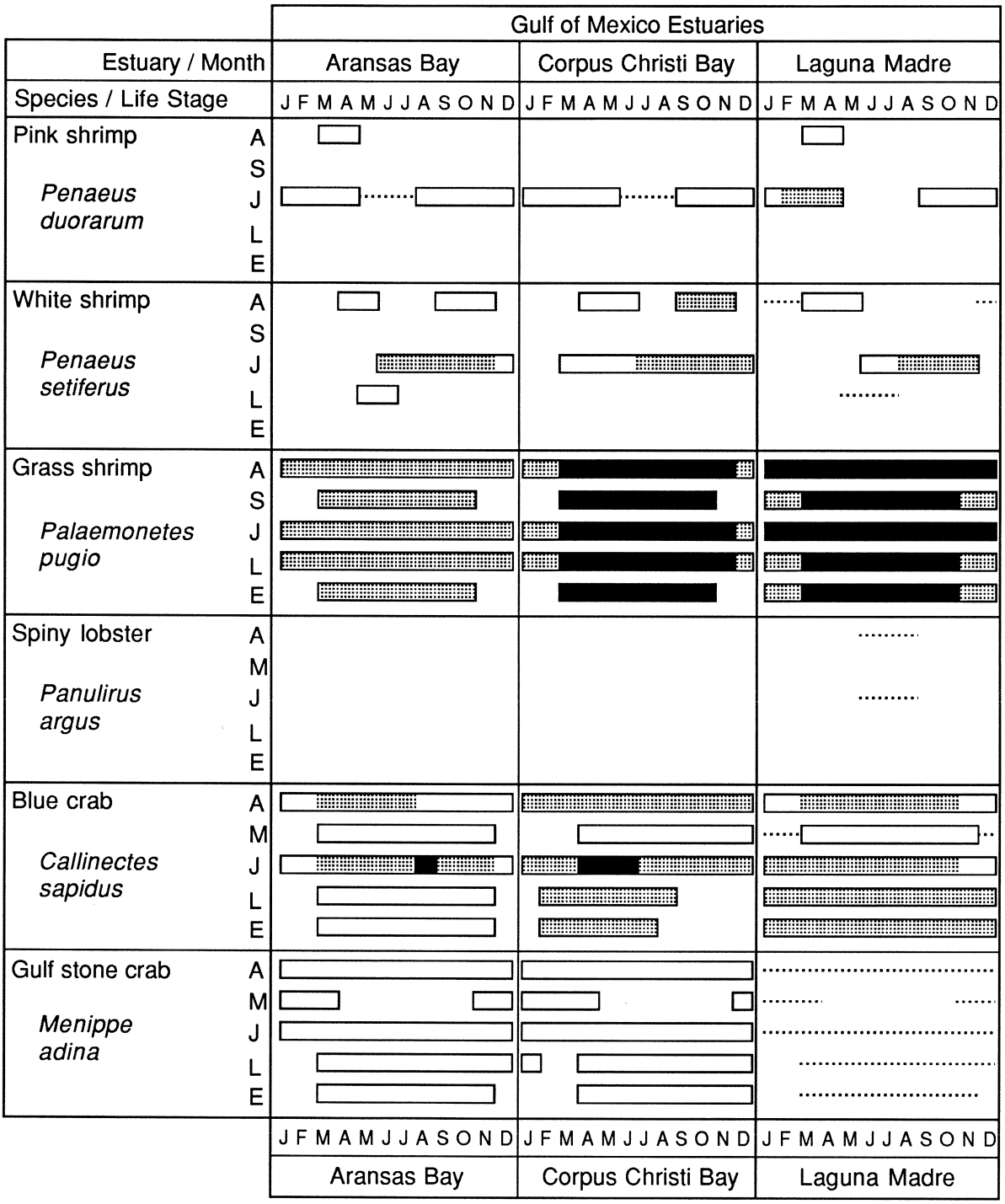
Table 5, continued. Temporal distribution



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Life Stage

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S - Spawning adults
J - Juveniles
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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 *Penaeus duorarum*	A	·····
	S	
	J	···▭·····
	L	
	E	
White shrimp *Penaeus setiferus*	A	·····
	S	
	J	·····
	L	
	E	
Grass shrimp *Palaemonetes pugio*	A	■
	S	▦■▦
	J	▦■▦
	L	▦■▦
	E	▦■▦
Spiny lobster *Panulirus argus*	A	
	M	
	J	
	L	
	E	
Blue crab *Callinectes sapidus*	A	▦
	M	
	J	▦▭
	L	▭
	E	▭
Gulf stone crab *Menippe adina*	A	▭
	M	▭ ▭
	J	▭
	L	▭
	E	▭
		J F M A M J J A S O N D
		Baffin Bay

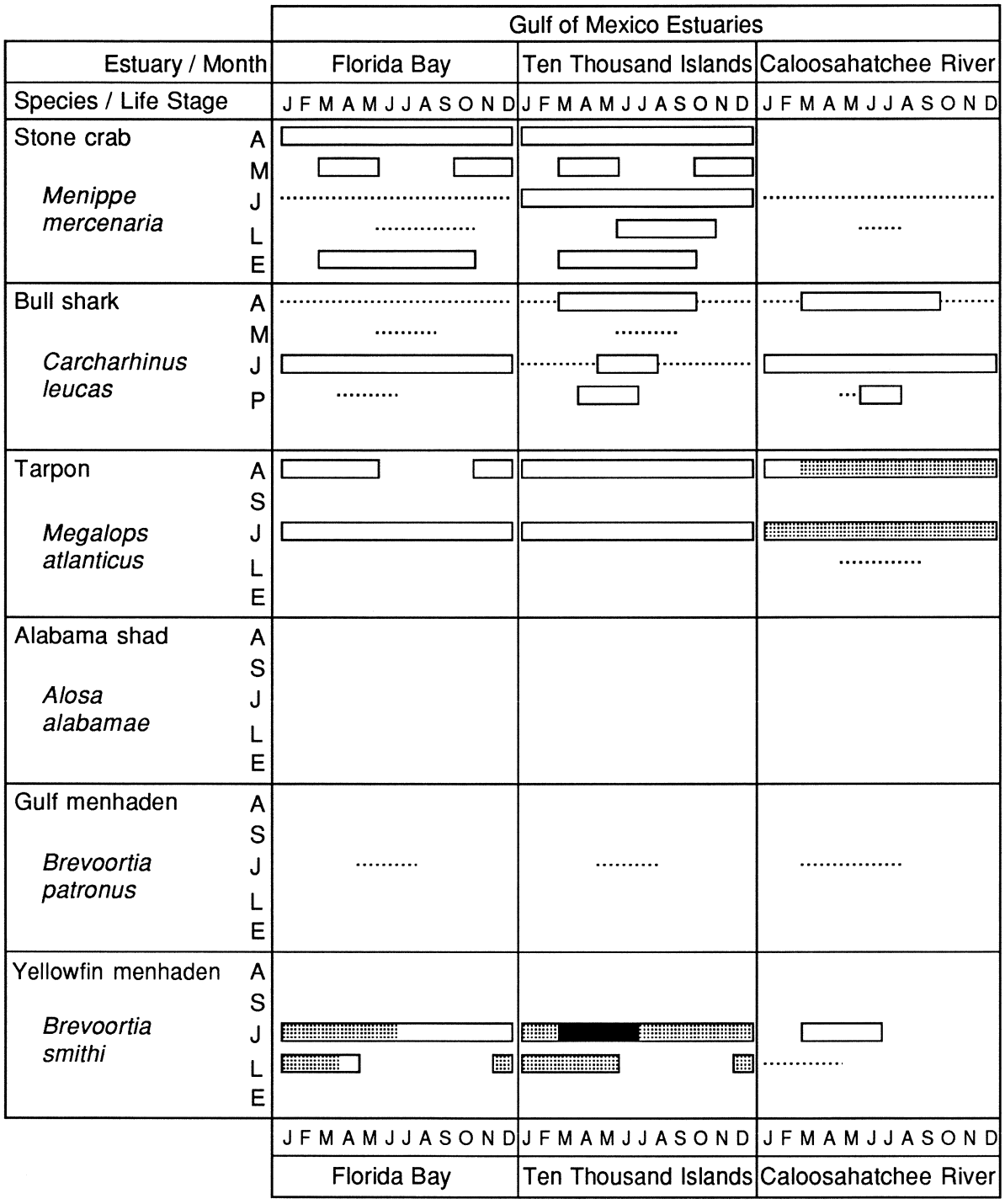
Relative Abundance

- ■ 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



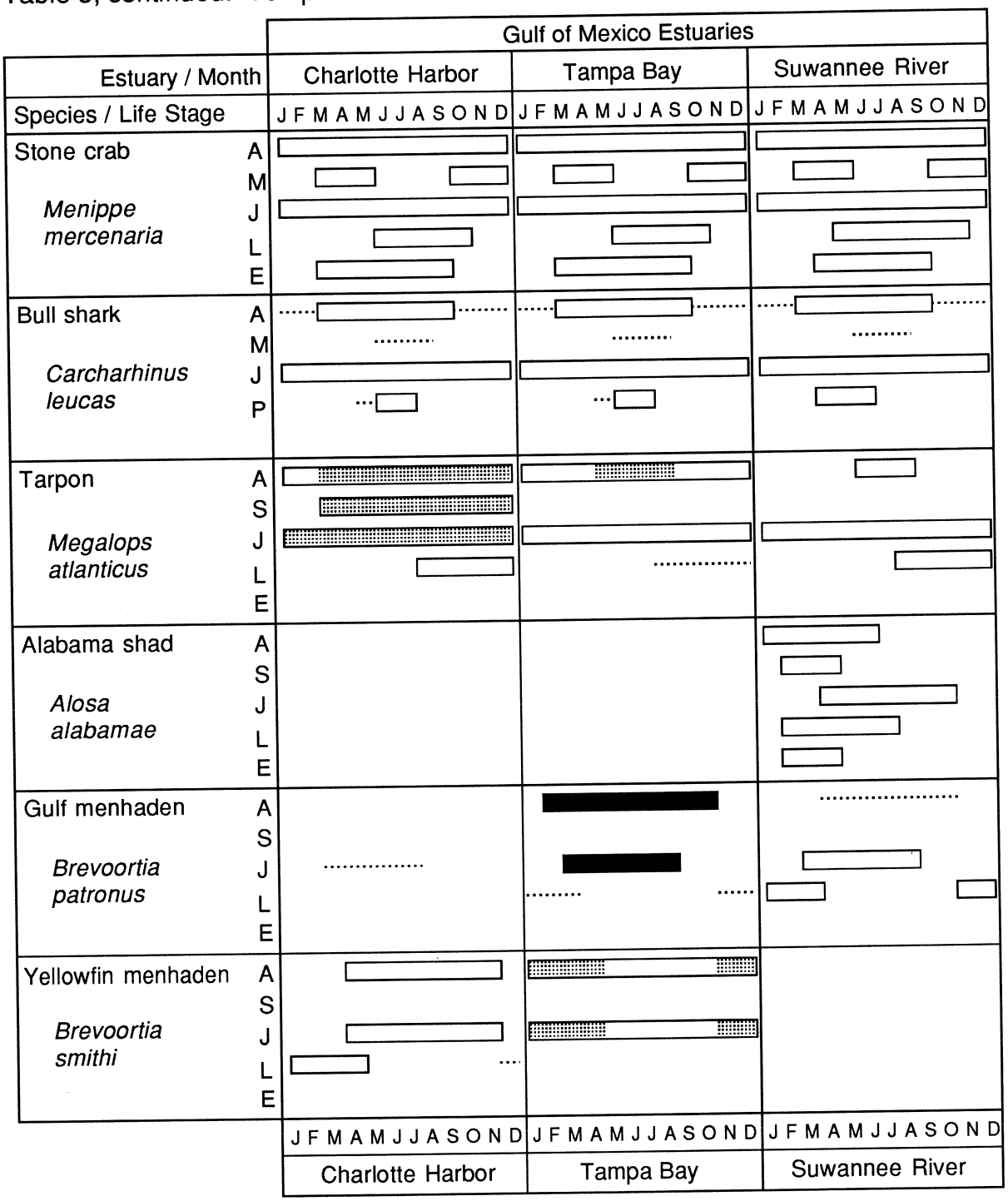
Relative Abundance

- 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



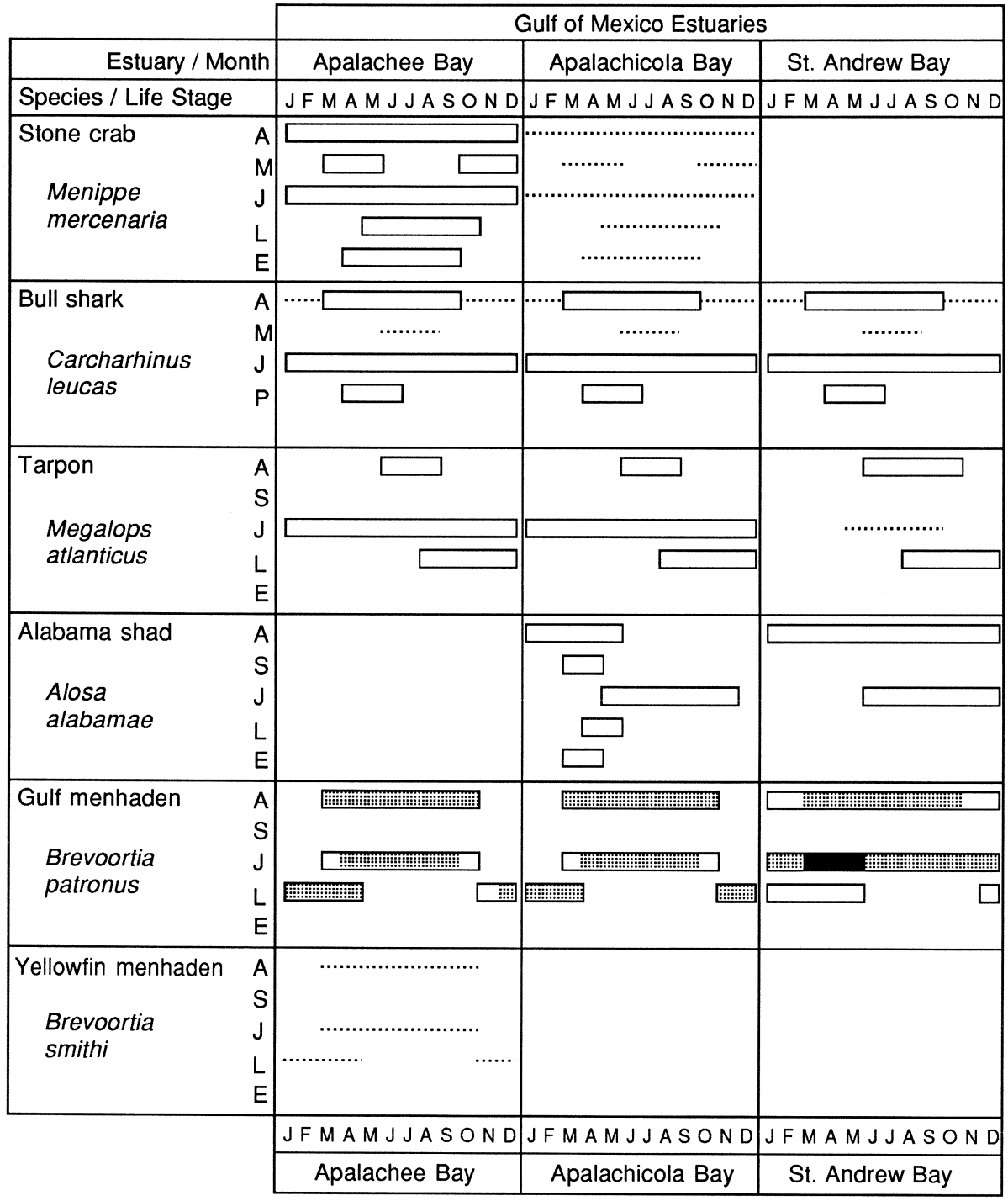
Relative Abundance

- 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



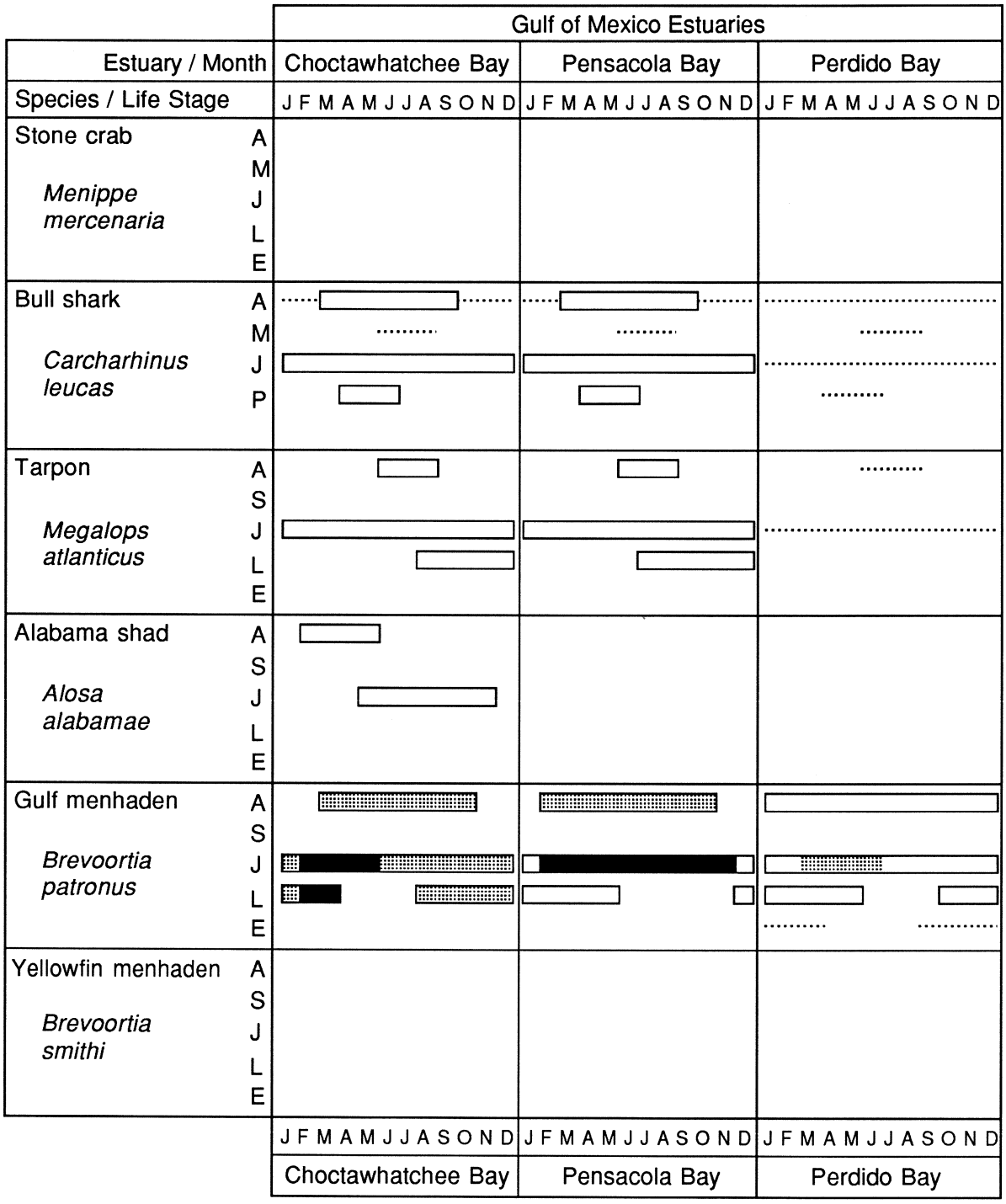
Relative Abundance

- 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



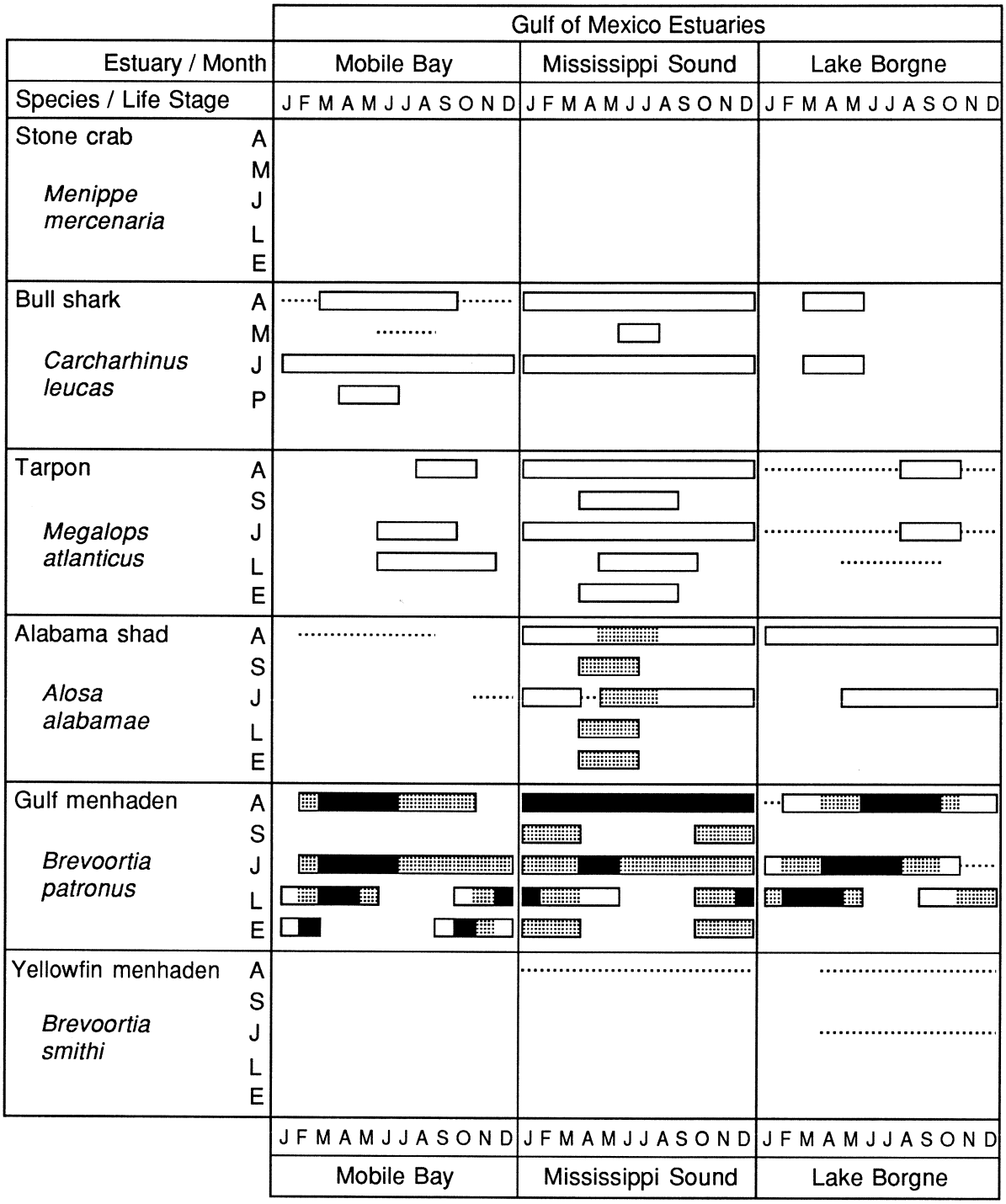
Relative Abundance

- 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



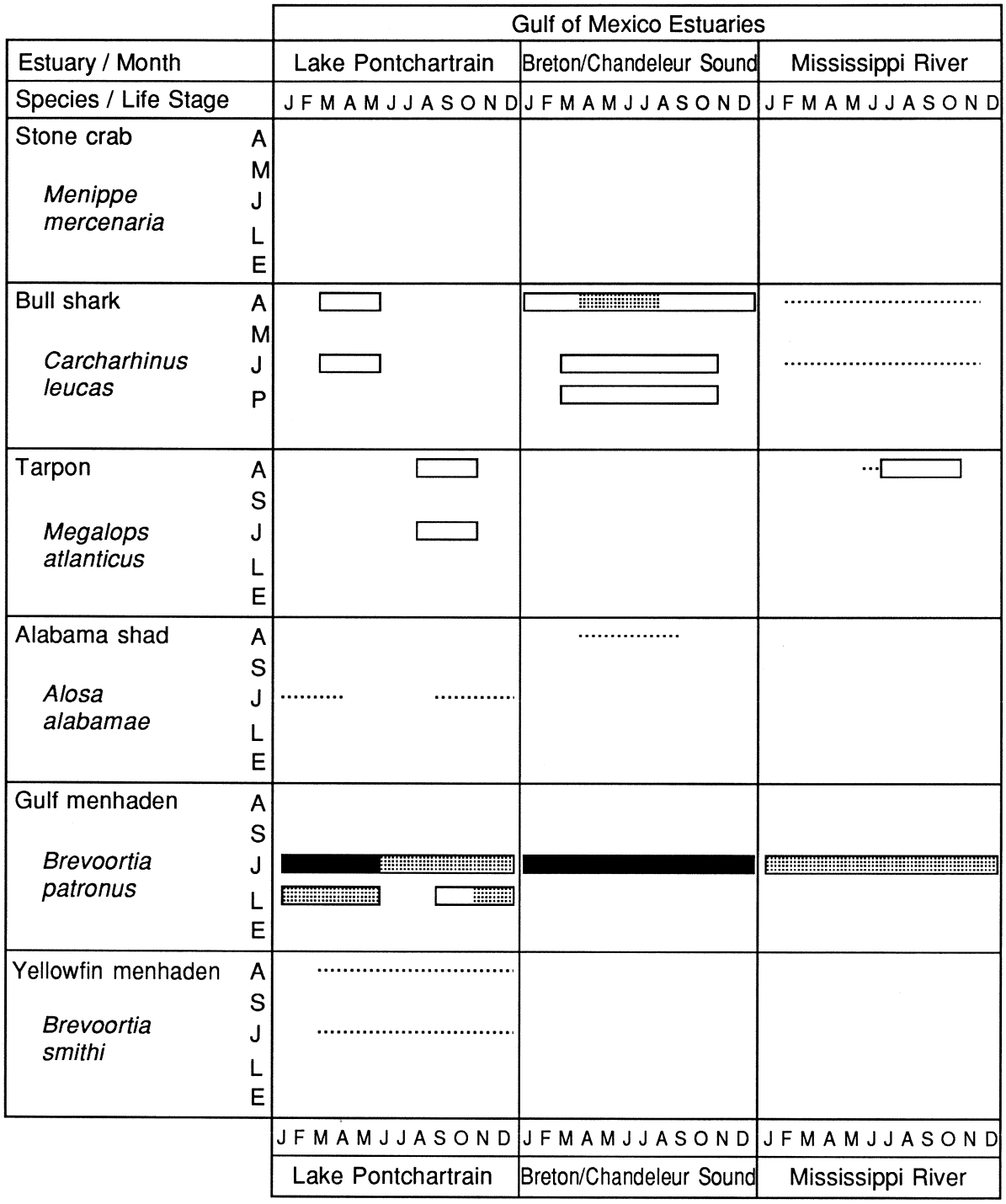
Relative Abundance

- 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		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
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
		Barataria Bay	Terrebonne/Timbalier Bay	Atchafalaya/Vermilion Bay

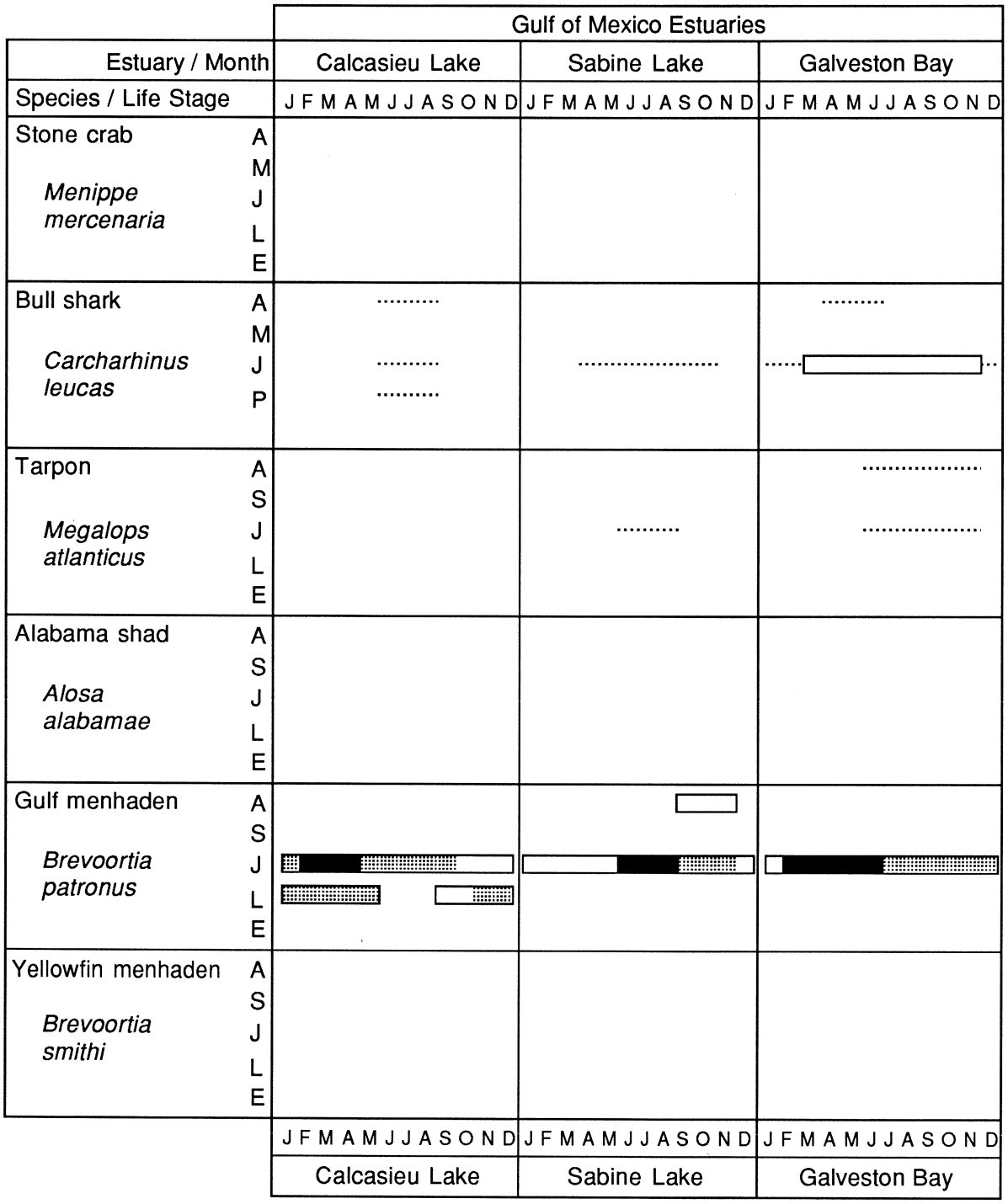
Relative Abundance

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

Life Stage

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

Estuary / Month		Gulf of Mexico Estuaries		
		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 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
		Baffin Bay

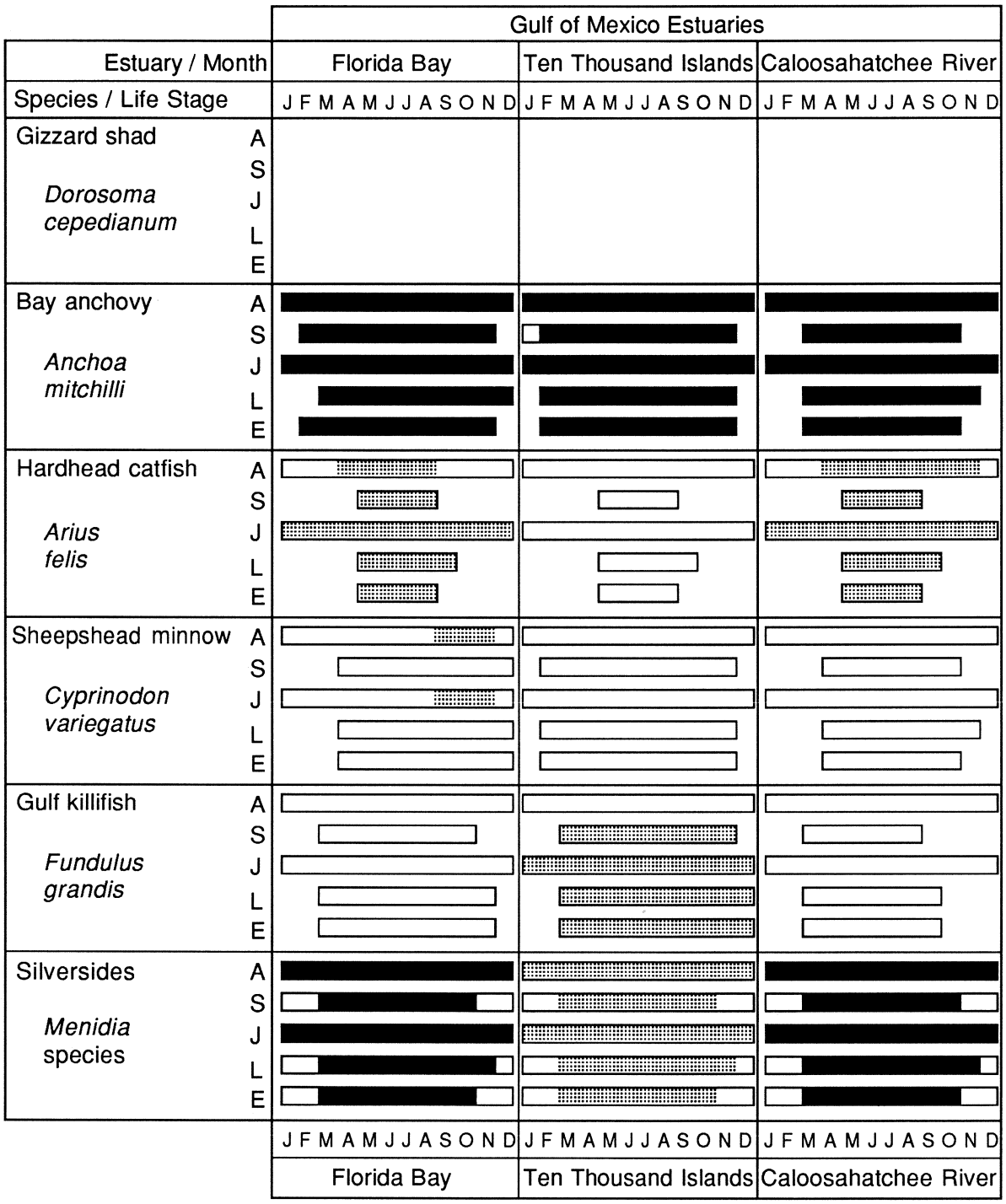
Relative Abundance

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

Life Stage

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

Table 5, continued. Temporal distribution



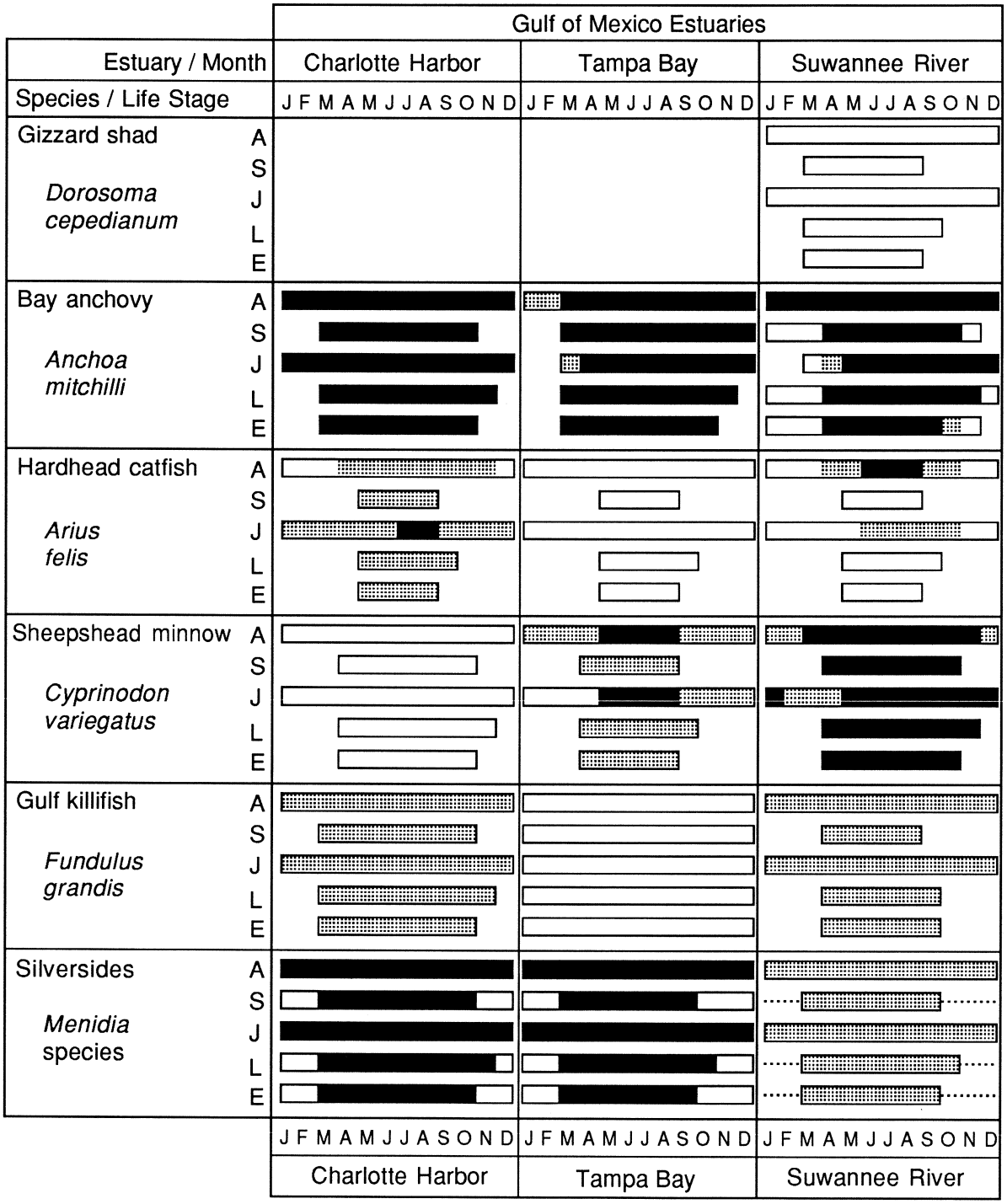
Relative Abundance

- 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



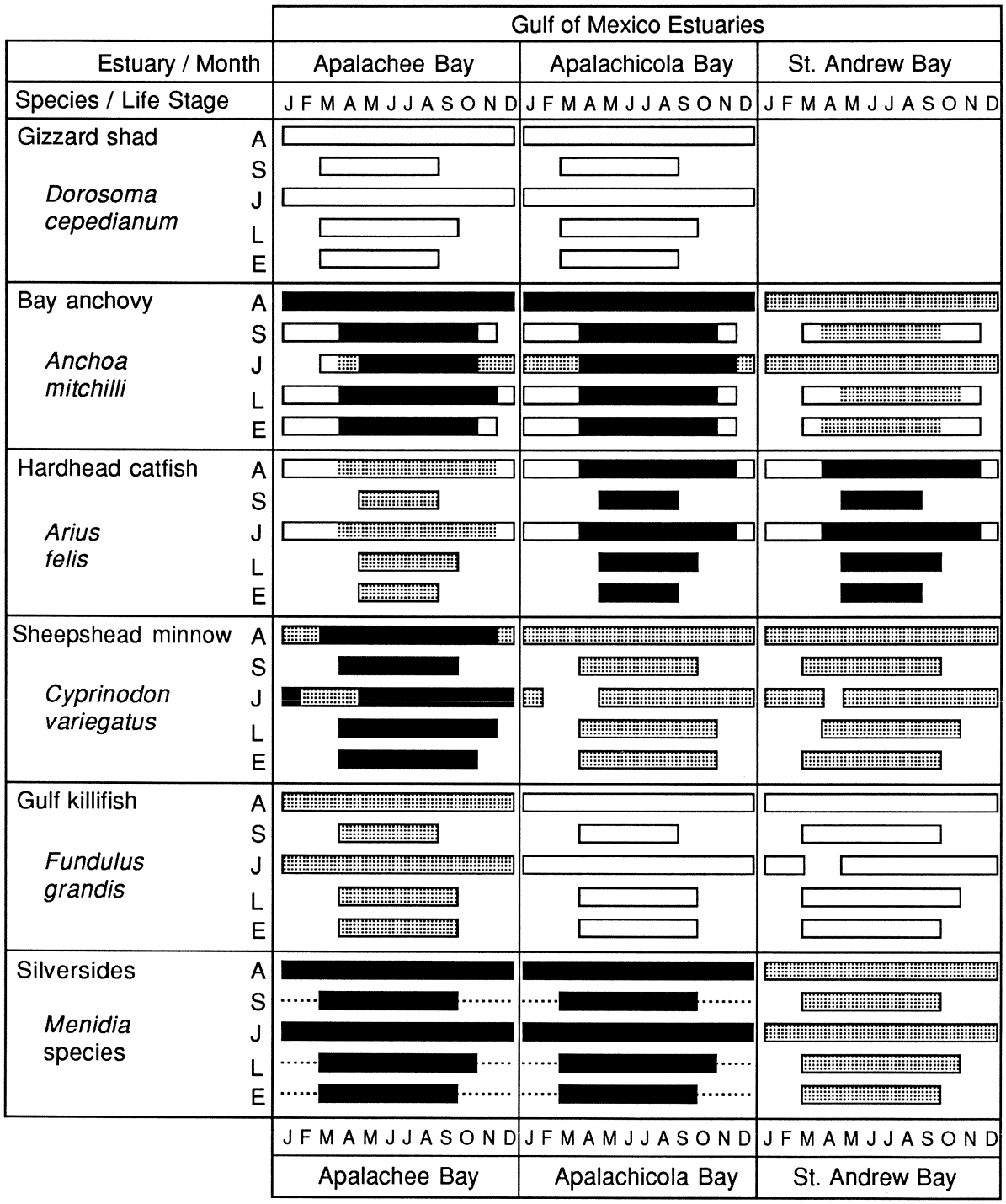
Relative Abundance

- 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



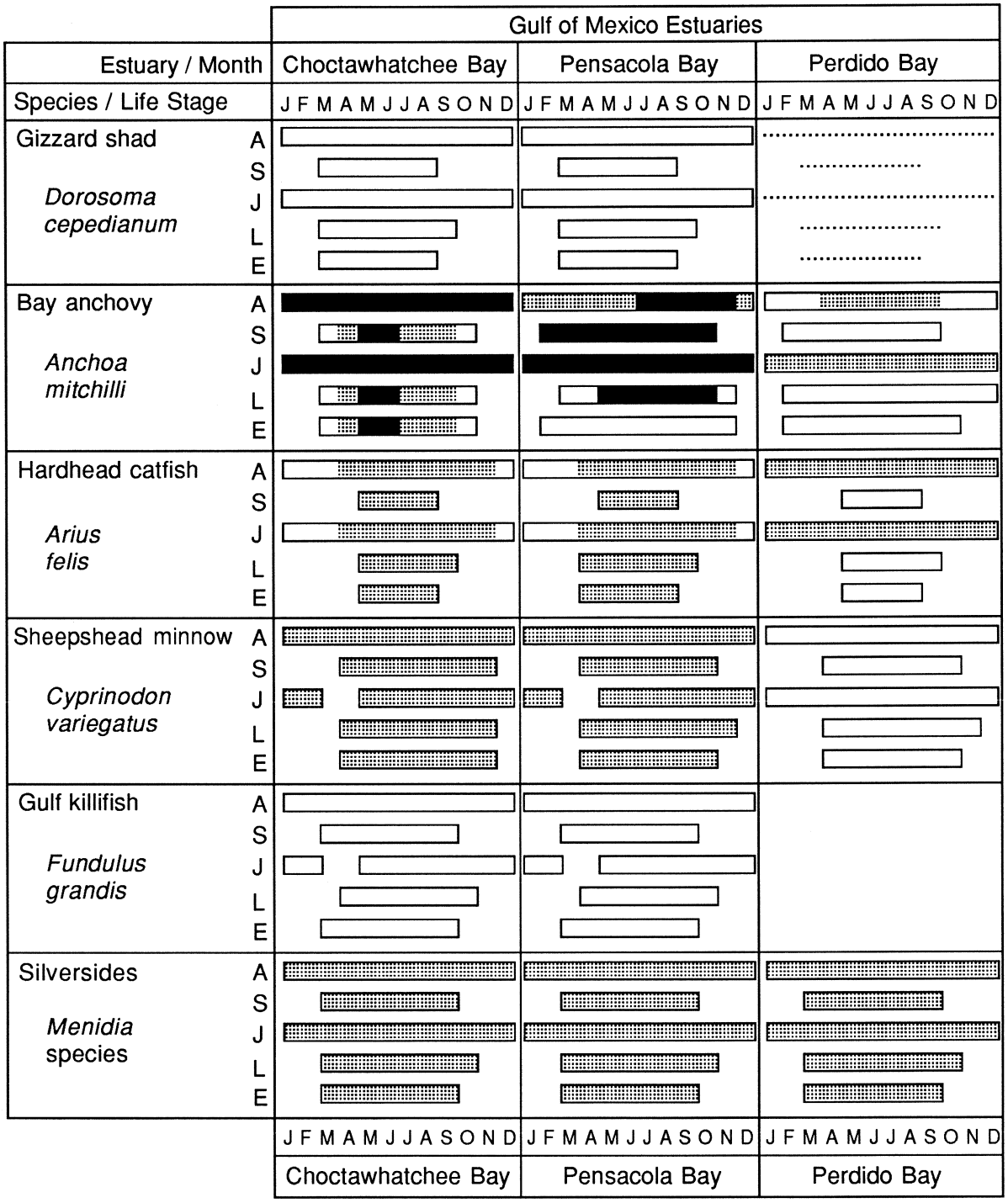
Relative Abundance

- 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

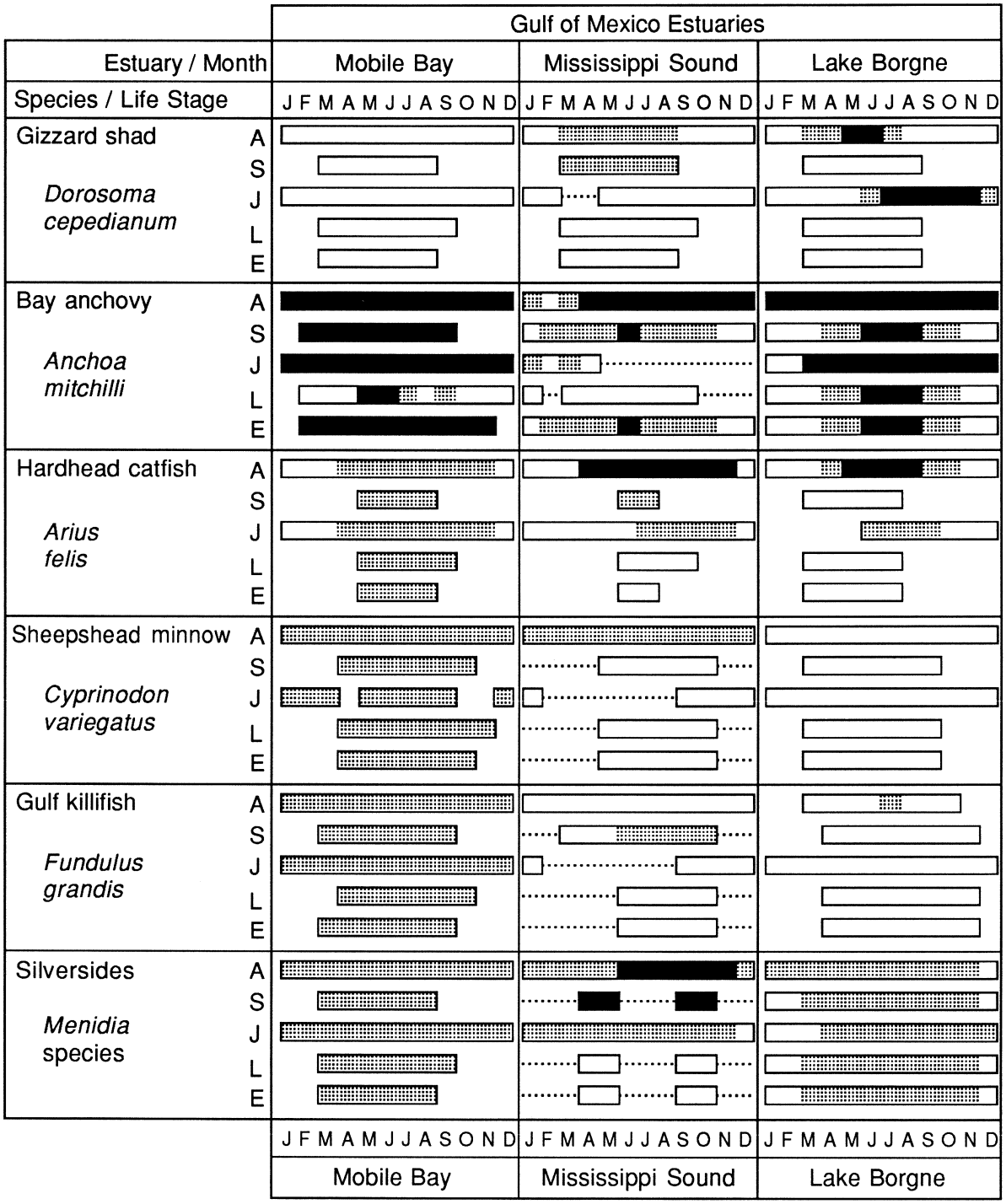
- Highly Abundant
- Abundant
- Common
- Rare
- Blank — Not Present

Life Stage

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

102

Table 5, continued. Temporal distribution



Relative Abundance

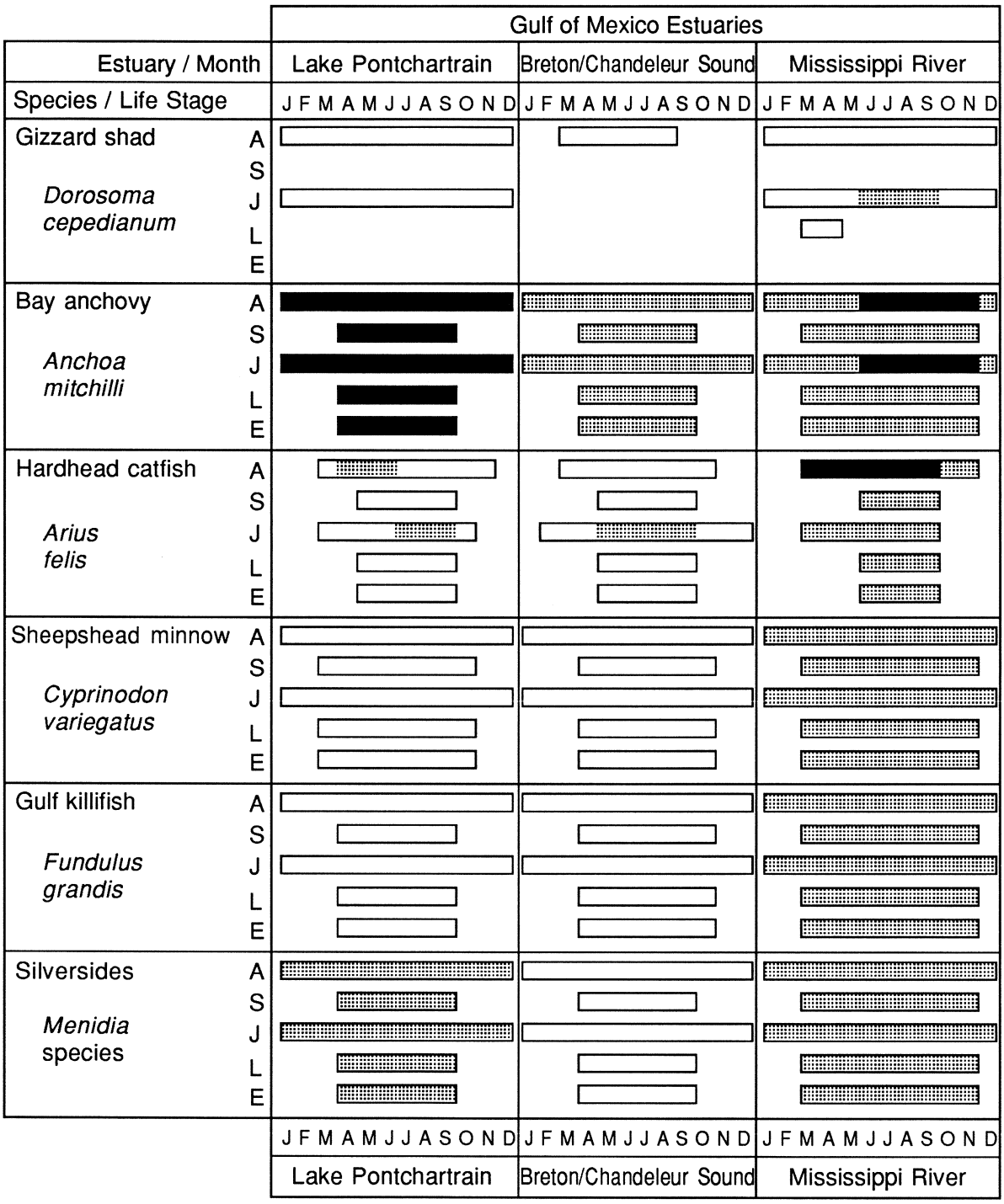
- Highly Abundant
- Abundant
- Common
- Rare
- Blank — Not Present

Life Stage

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

103

Table 5, continued. Temporal distribution



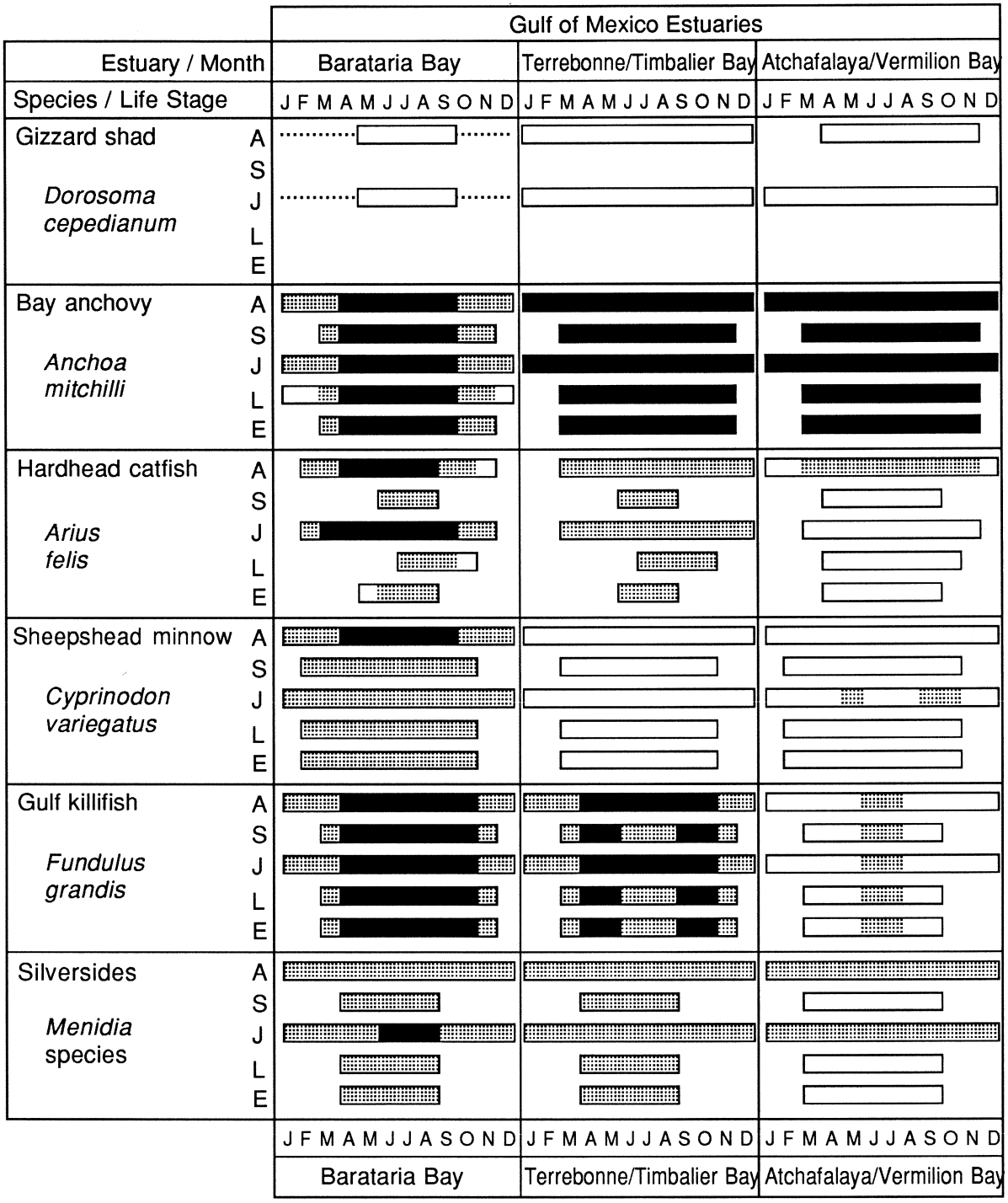
Relative Abundance

- 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



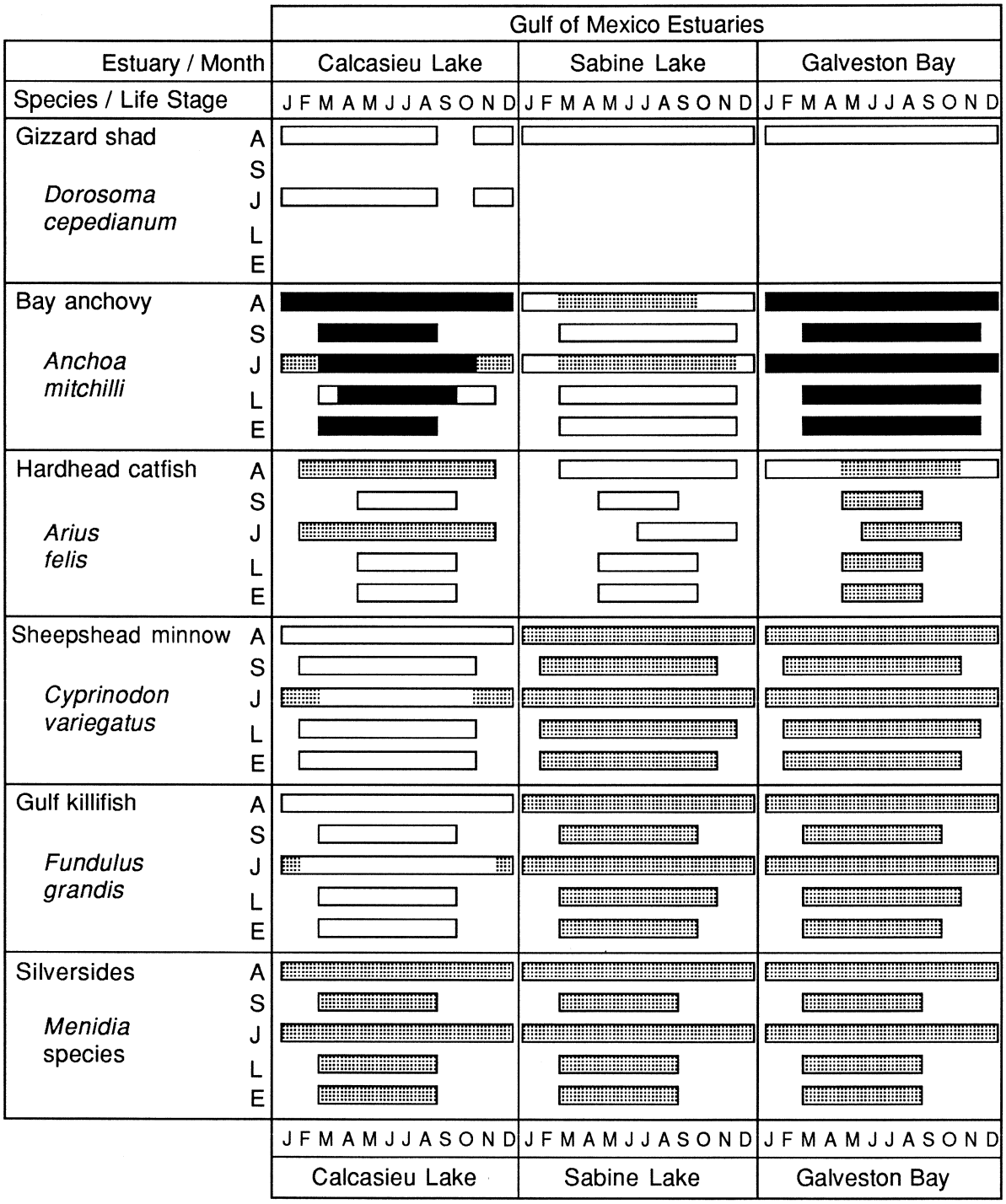
Relative Abundance

- 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



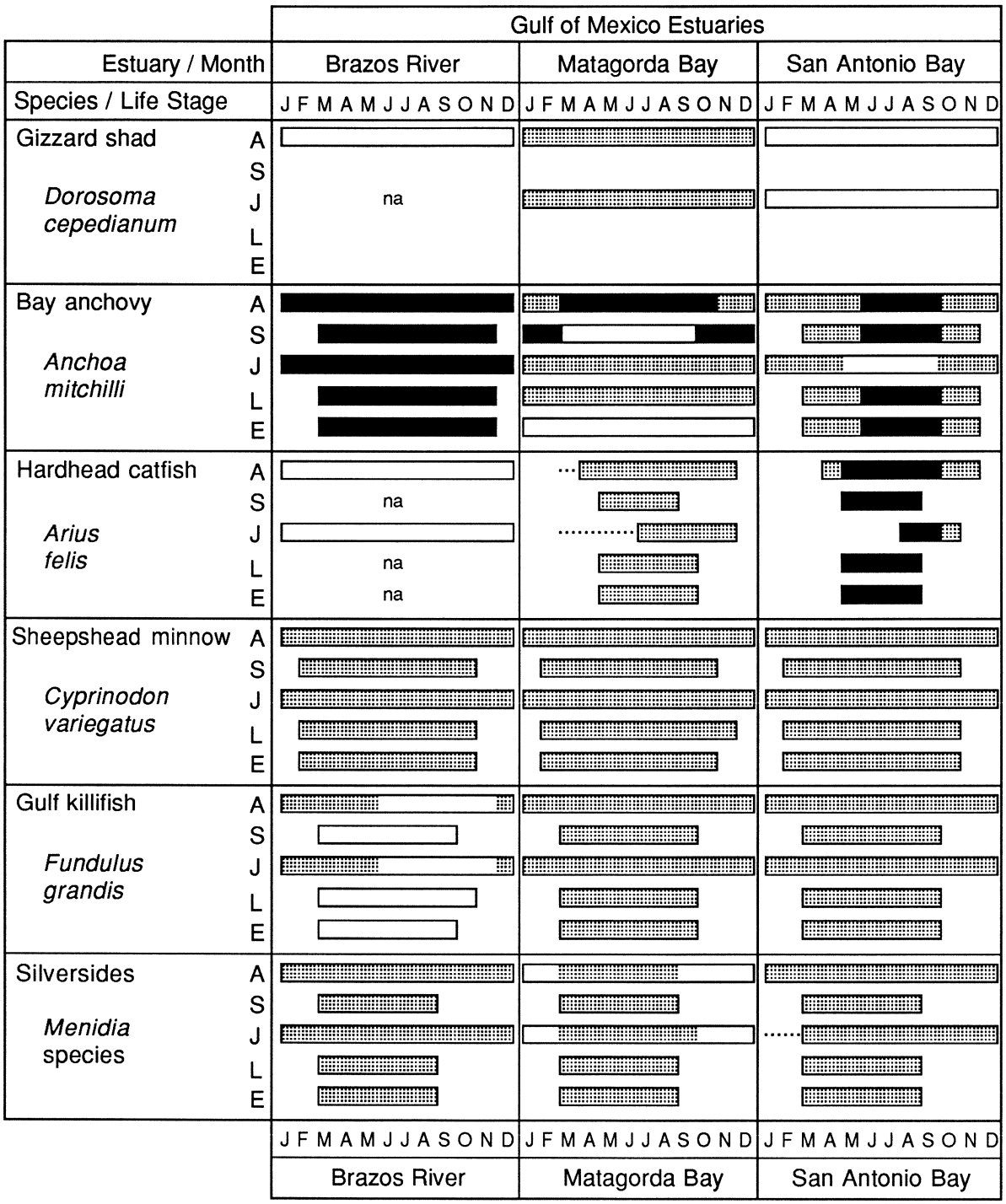
Relative Abundance

- 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



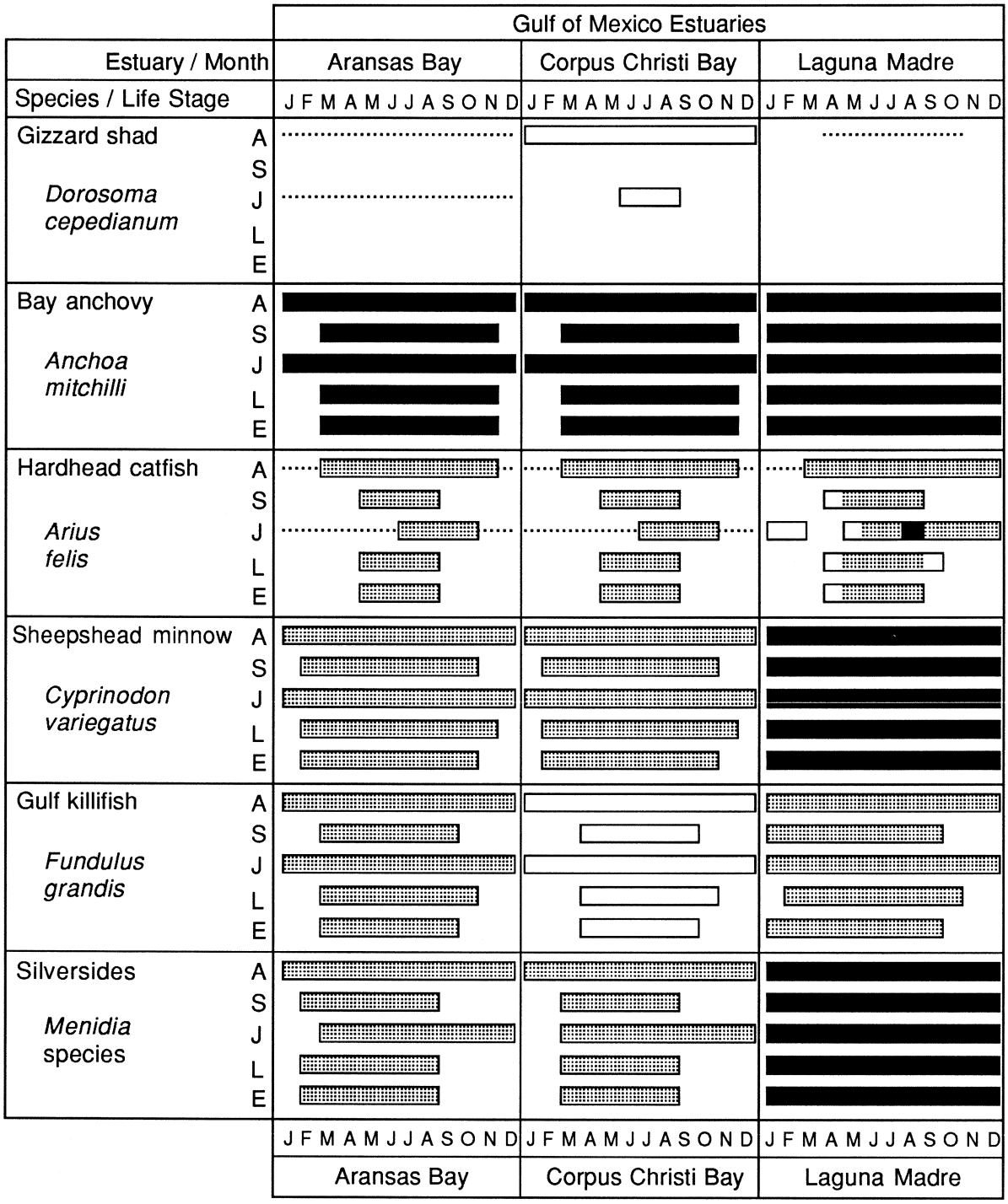
Relative Abundance

- 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



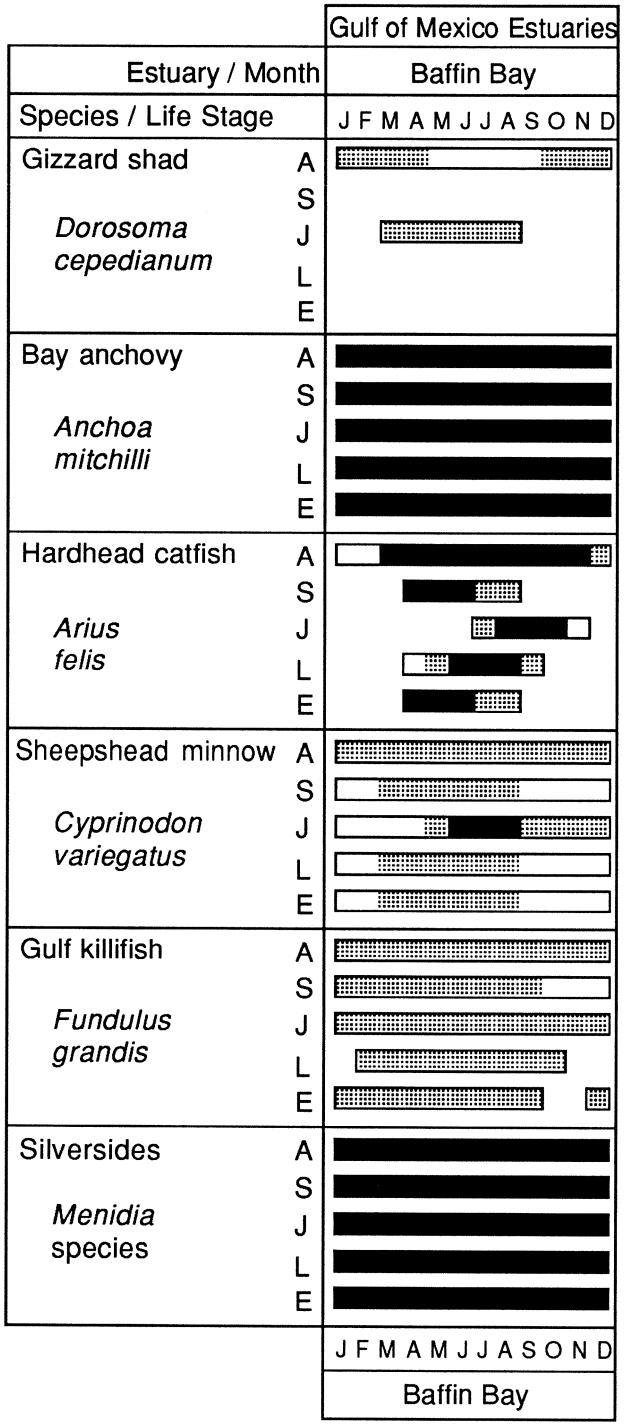
Relative Abundance

- 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



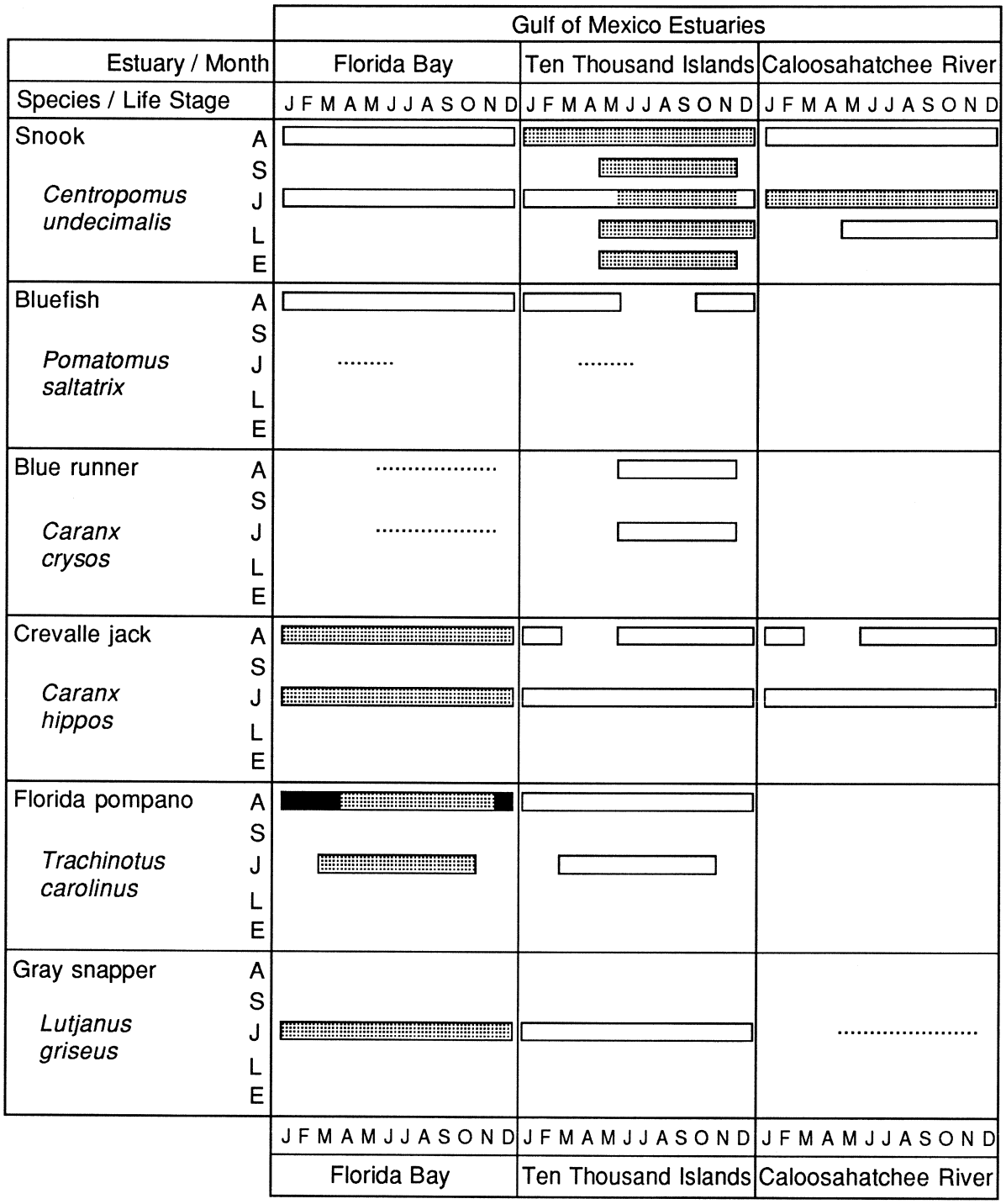
Relative Abundance

- 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



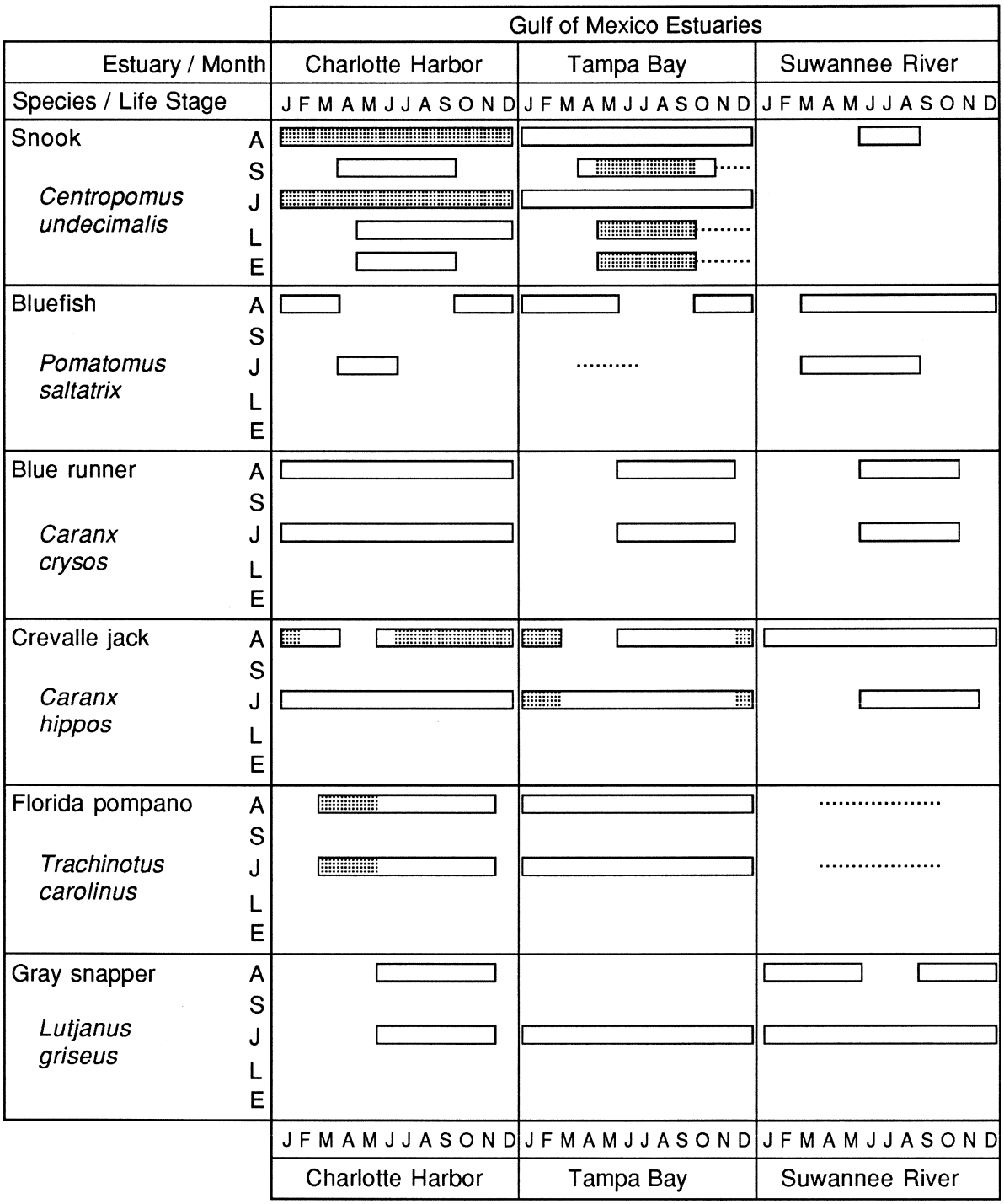
Relative Abundance

- 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

		Gulf of Mexico Estuaries		
Estuary / Month		Apalachee Bay	Apalachicola Bay	St. Andrew 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
		Apalachee Bay	Apalachicola Bay	St. Andrew Bay

Relative Abundance

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

Life Stage

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

112

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
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
		Choctawhatchee Bay	Pensacola Bay	Perdido Bay

Relative Abundance

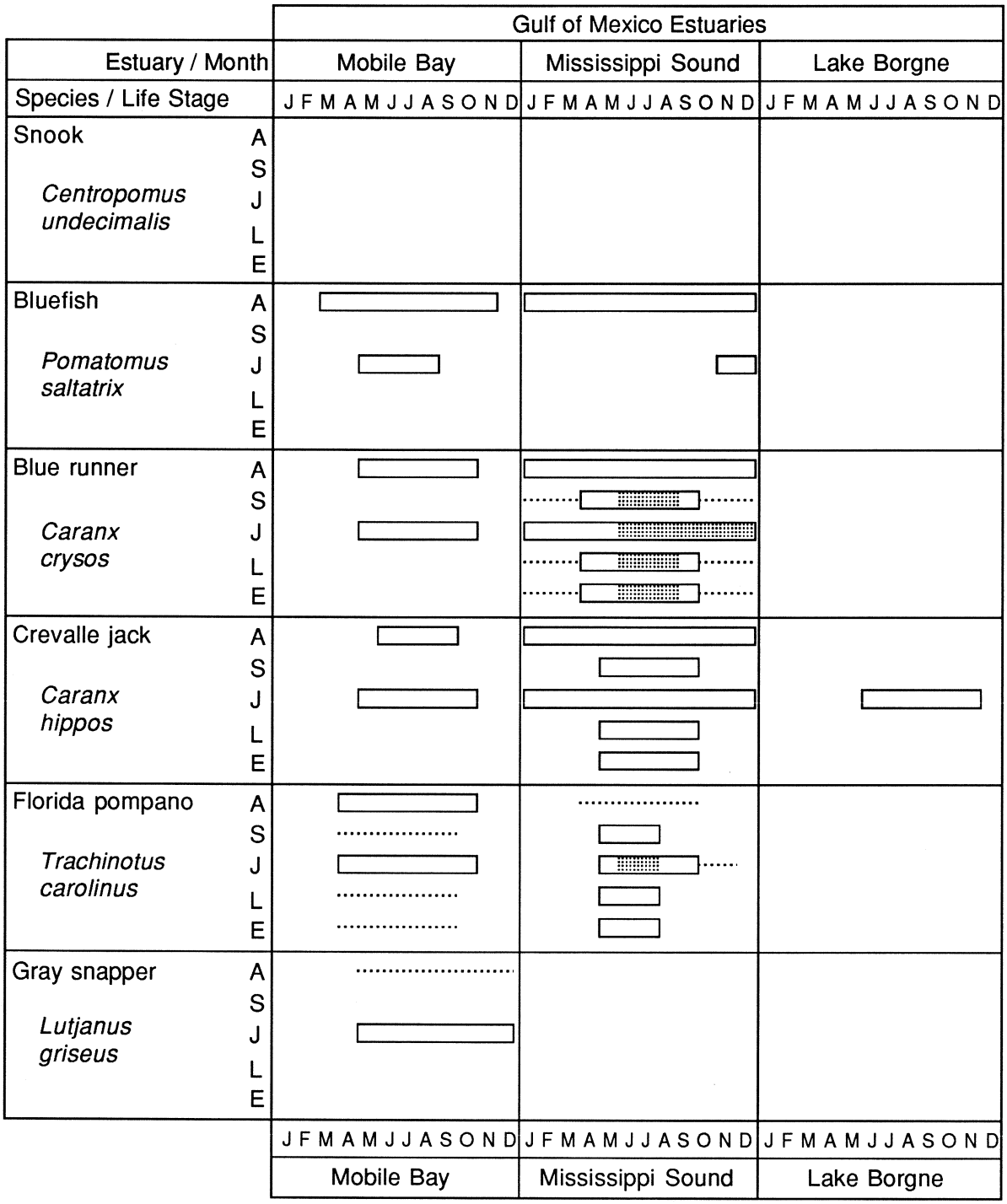
- ■ Highly Abundant
- ▒ Abundant
- ▭ Common
- ····· Rare
- Blank Not Present

Life Stage

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

113

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	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
		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

118

Table 5, continued. Temporal distribution

Estuary / Month		Gulf of Mexico Estuaries		
		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
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
		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

119

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 *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
		Baffin Bay

Relative Abundance

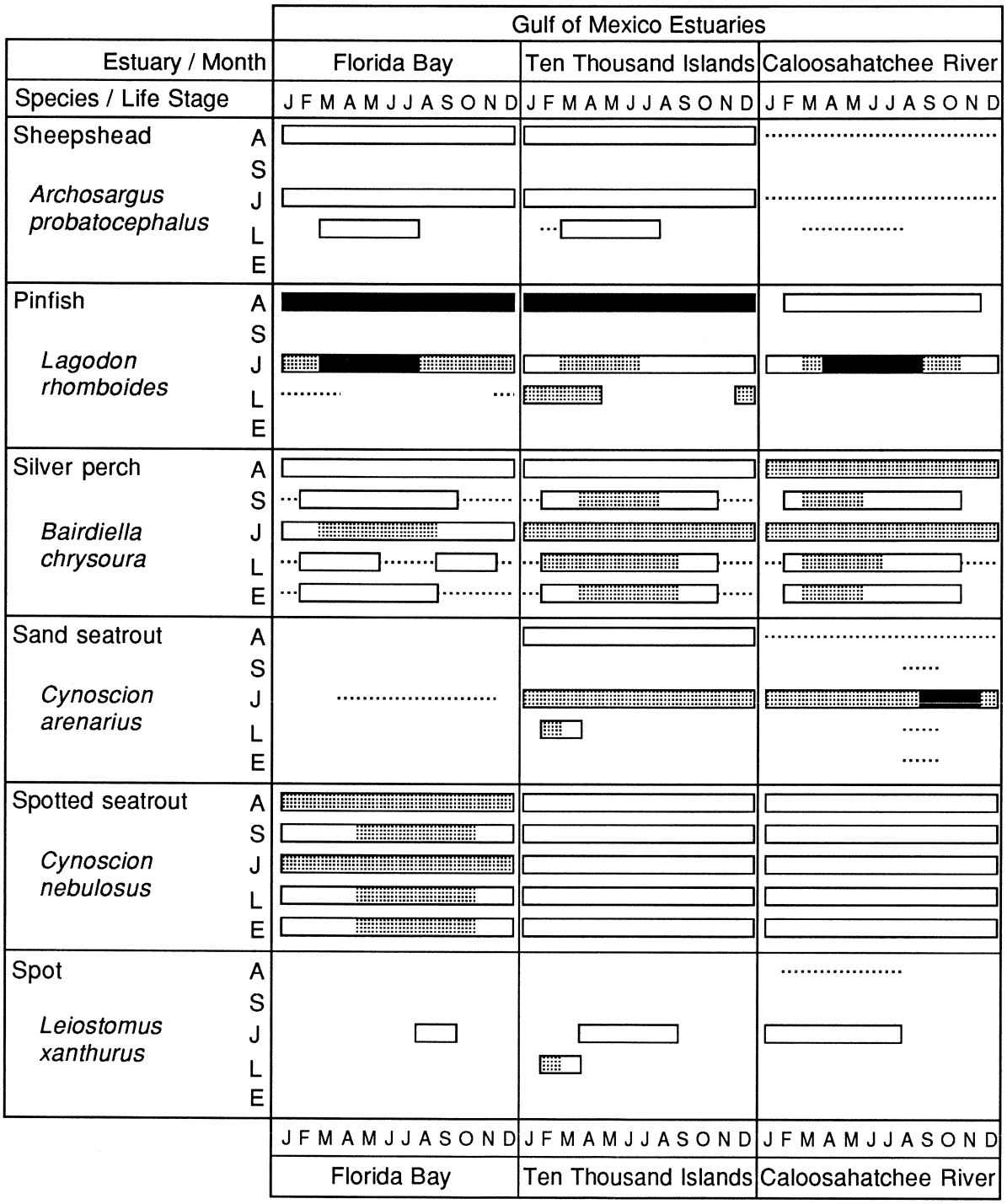
- ■ Highly Abundant
- ▦ Abundant
- ▭ Common
- ····· Rare
- Blank Not Present

Life Stage

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

120

Table 5, continued. Temporal distribution



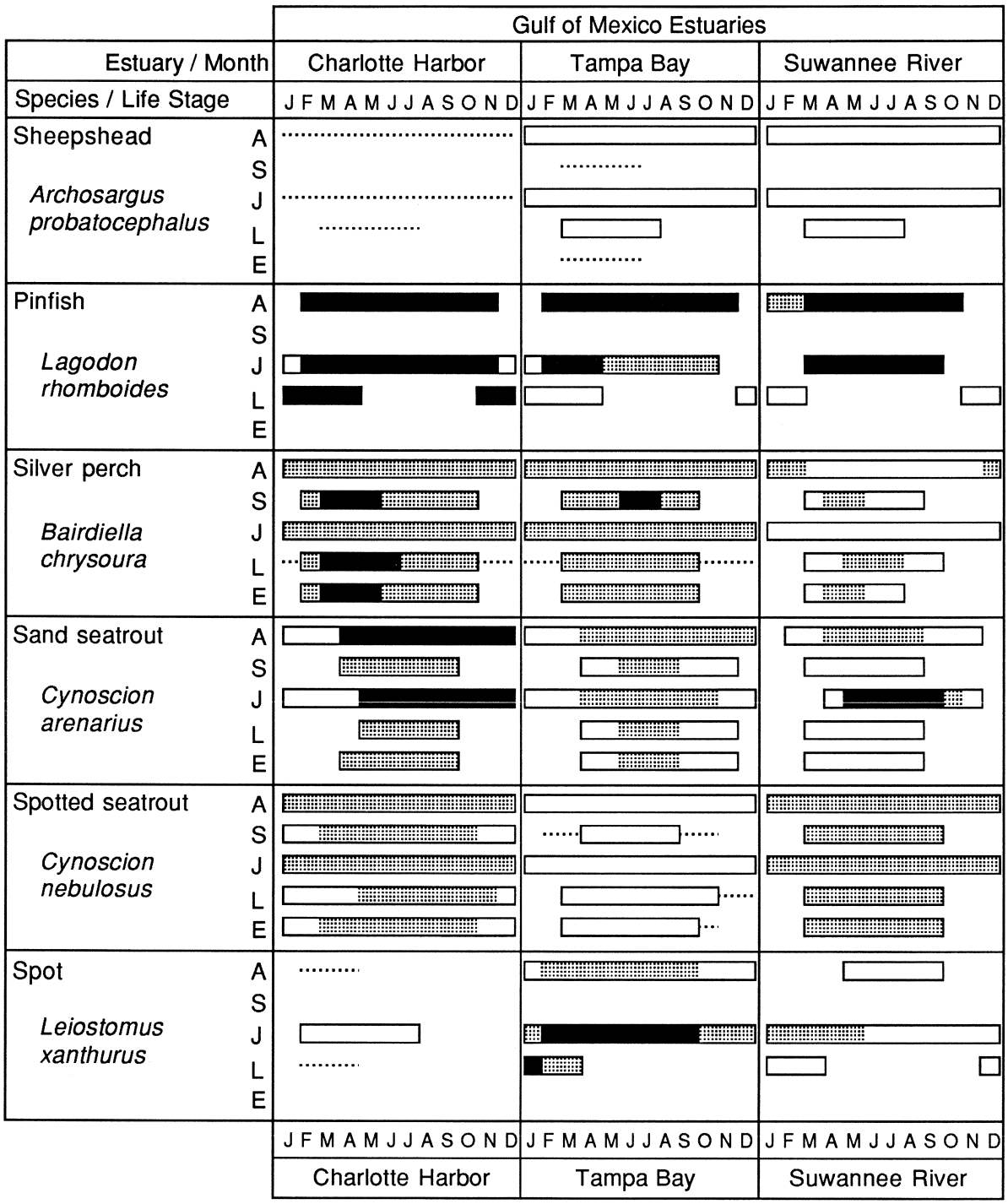
Relative Abundance

- 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

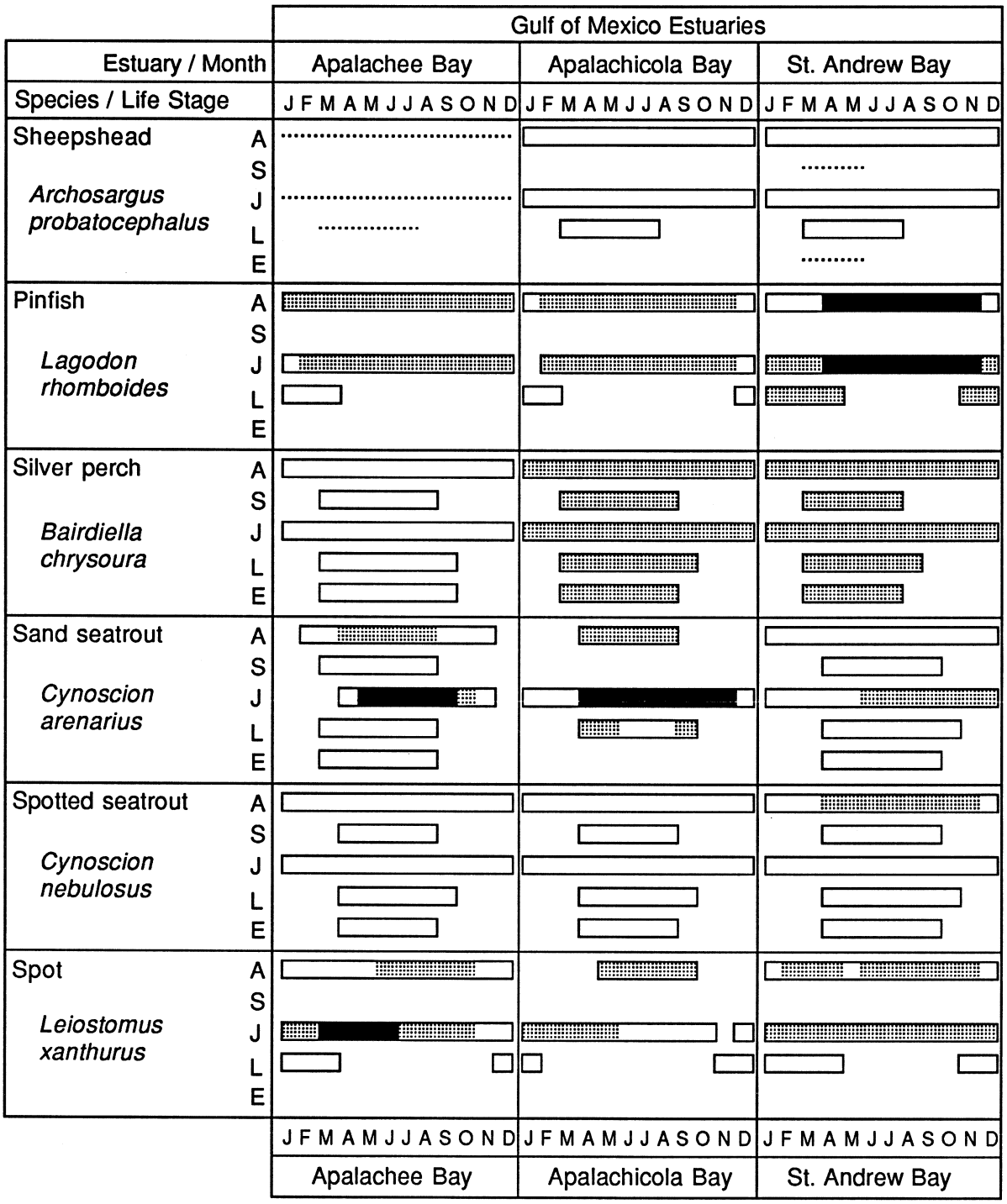
- Highly Abundant
- Abundant
- Common
- Rare
- Blank — Not Present

Life Stage

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

122

Table 5, continued. Temporal distribution



Relative Abundance

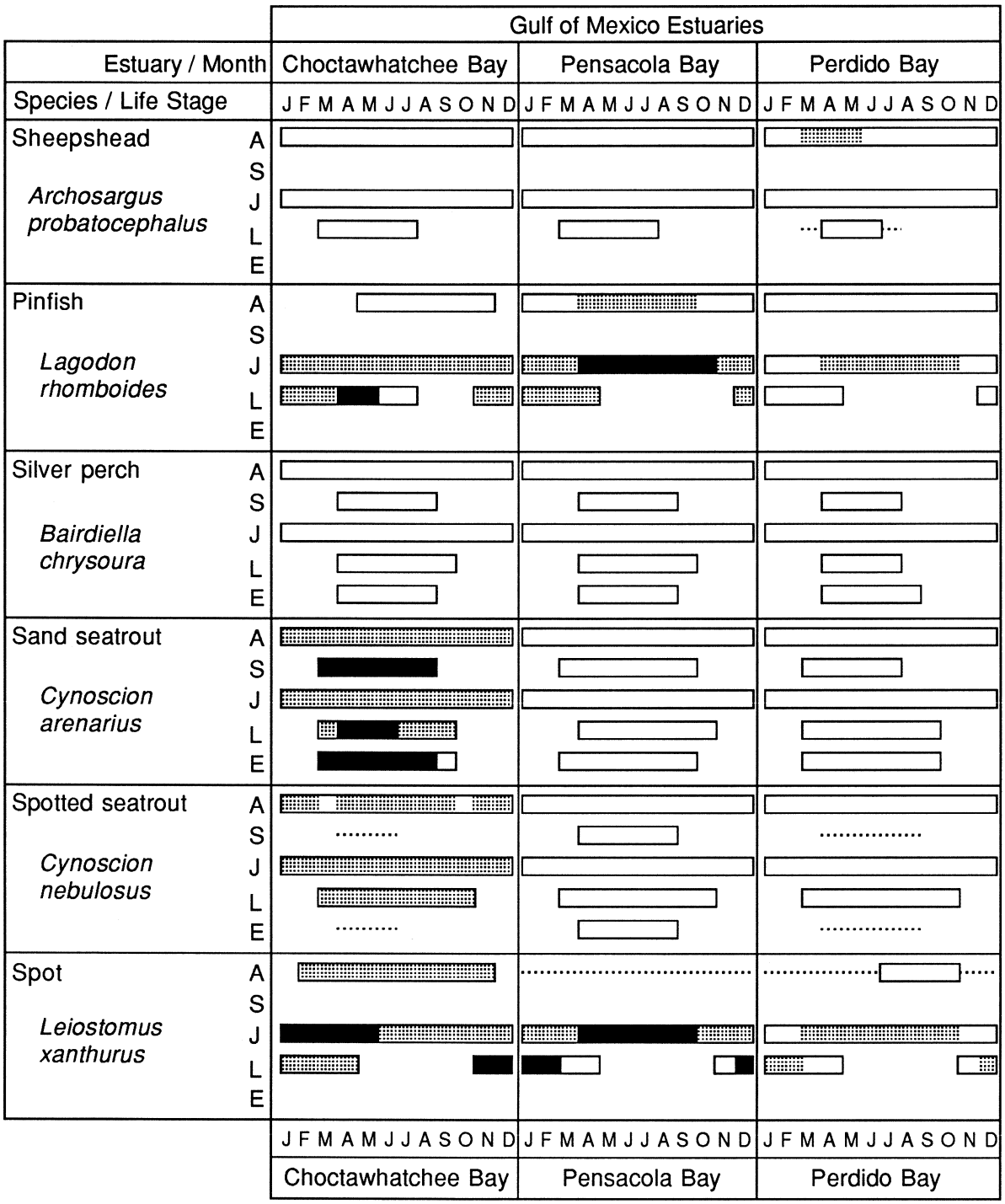
- Highly Abundant
- Abundant
- Common
- Rare
- Blank — Not Present

Life Stage

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

123

Table 5, continued. Temporal distribution



Relative Abundance

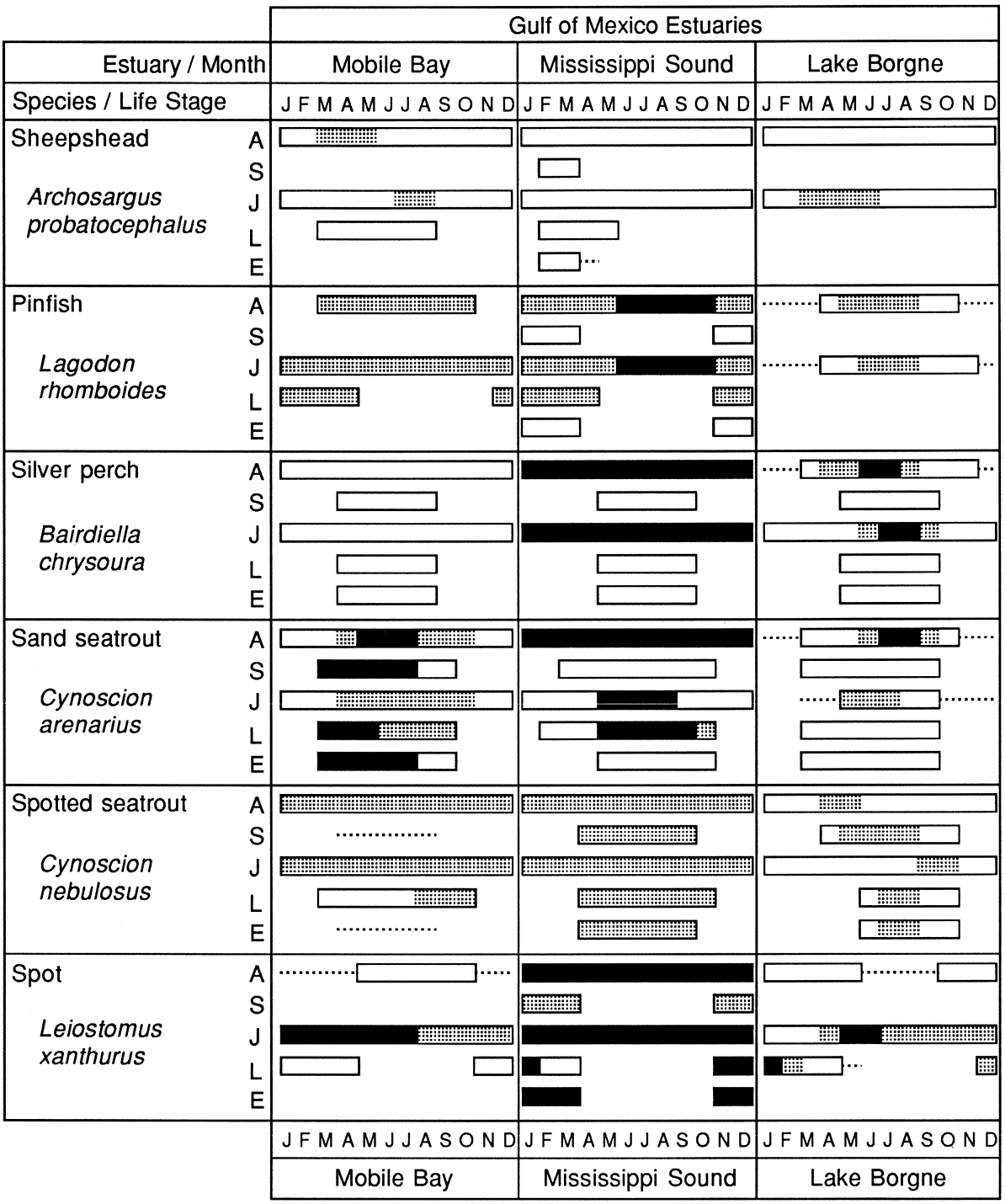
- Highly Abundant
- Abundant
- Common
- Rare
- Blank — Not Present

Life Stage

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

134

Table 5, continued. Temporal distribution



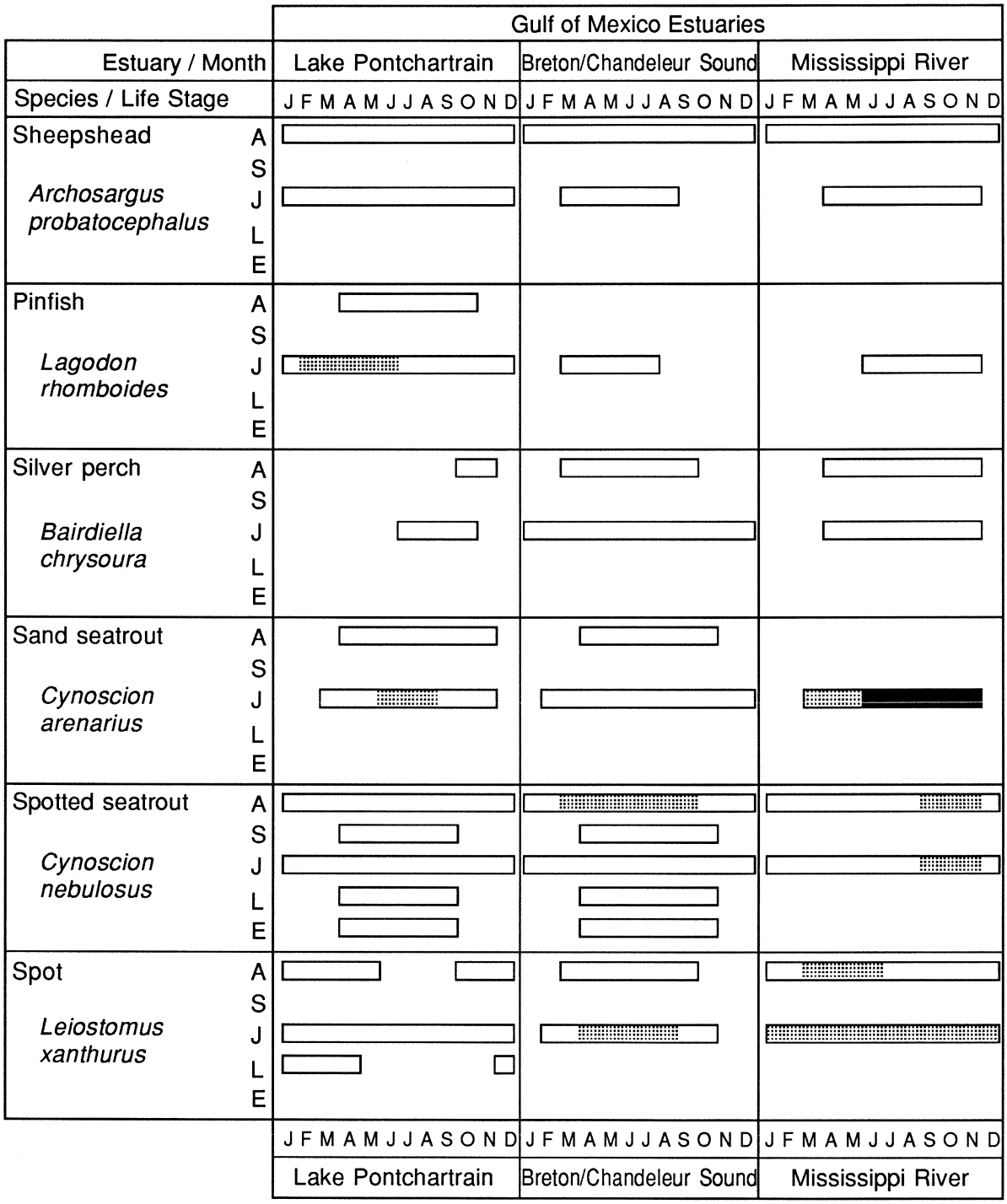
Relative Abundance

- 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



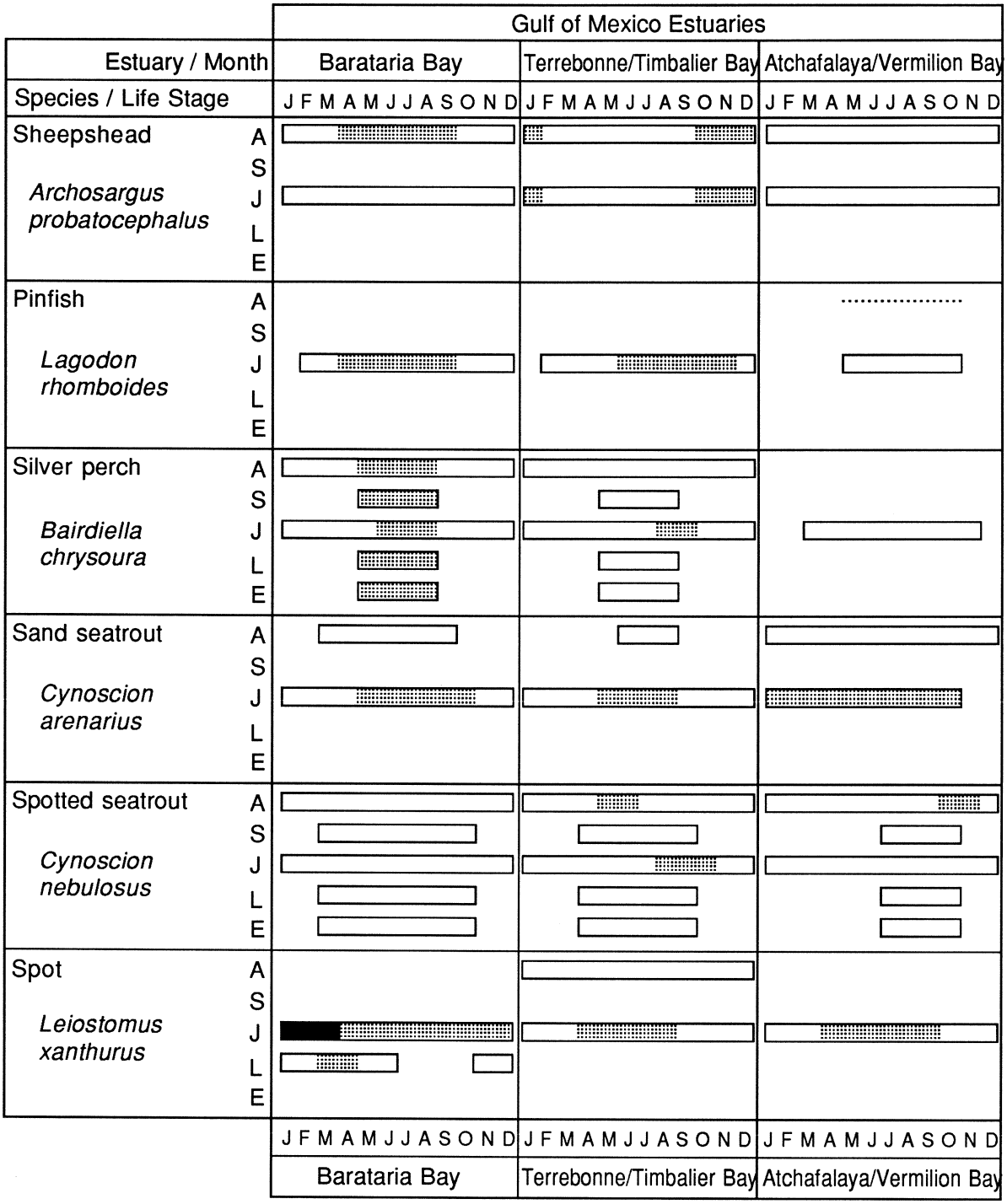
Relative Abundance

- 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

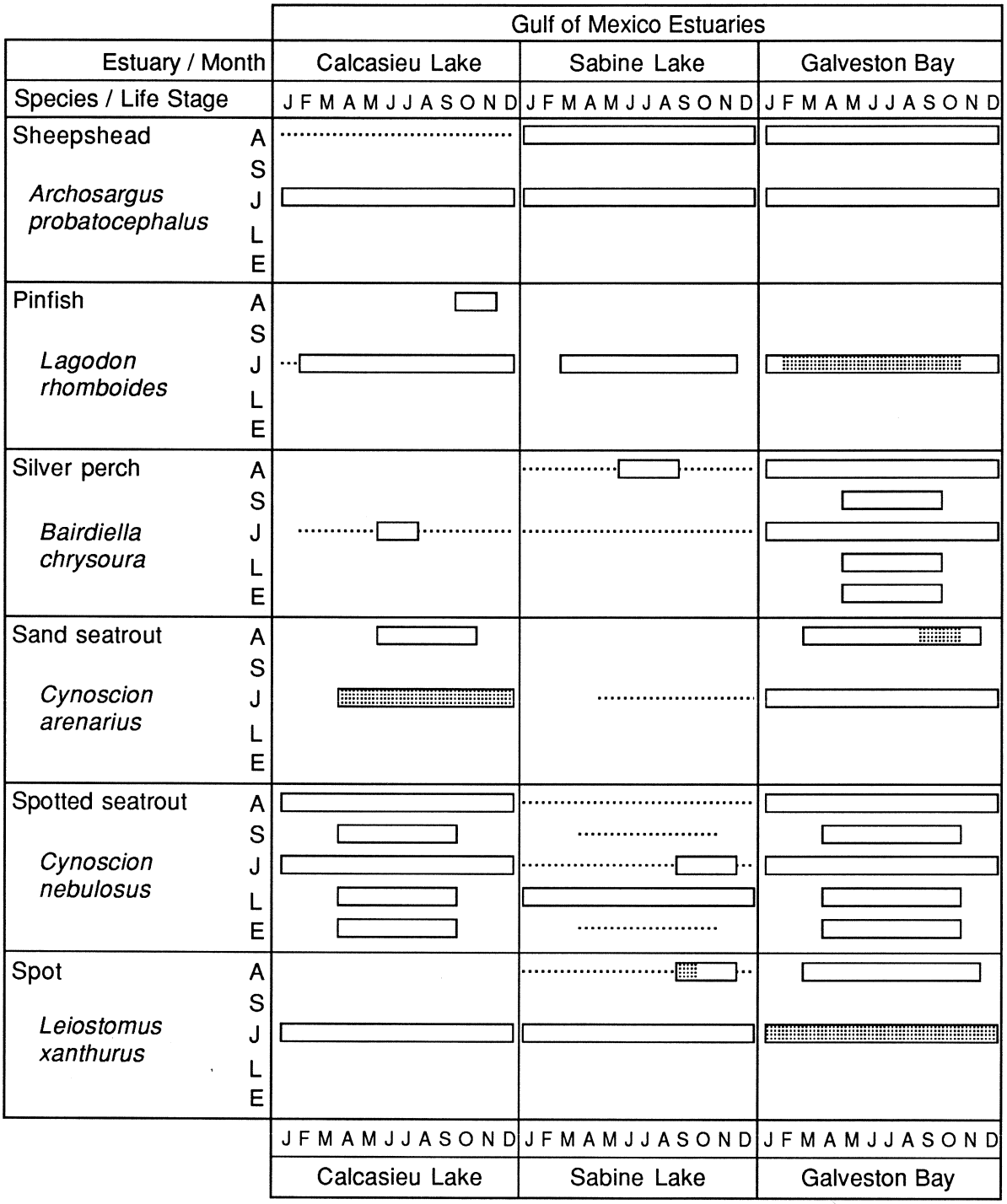
- Highly Abundant
- Abundant
- Common
- Rare
- Blank — Not Present

Life Stage

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

127

Table 5, continued. Temporal distribution



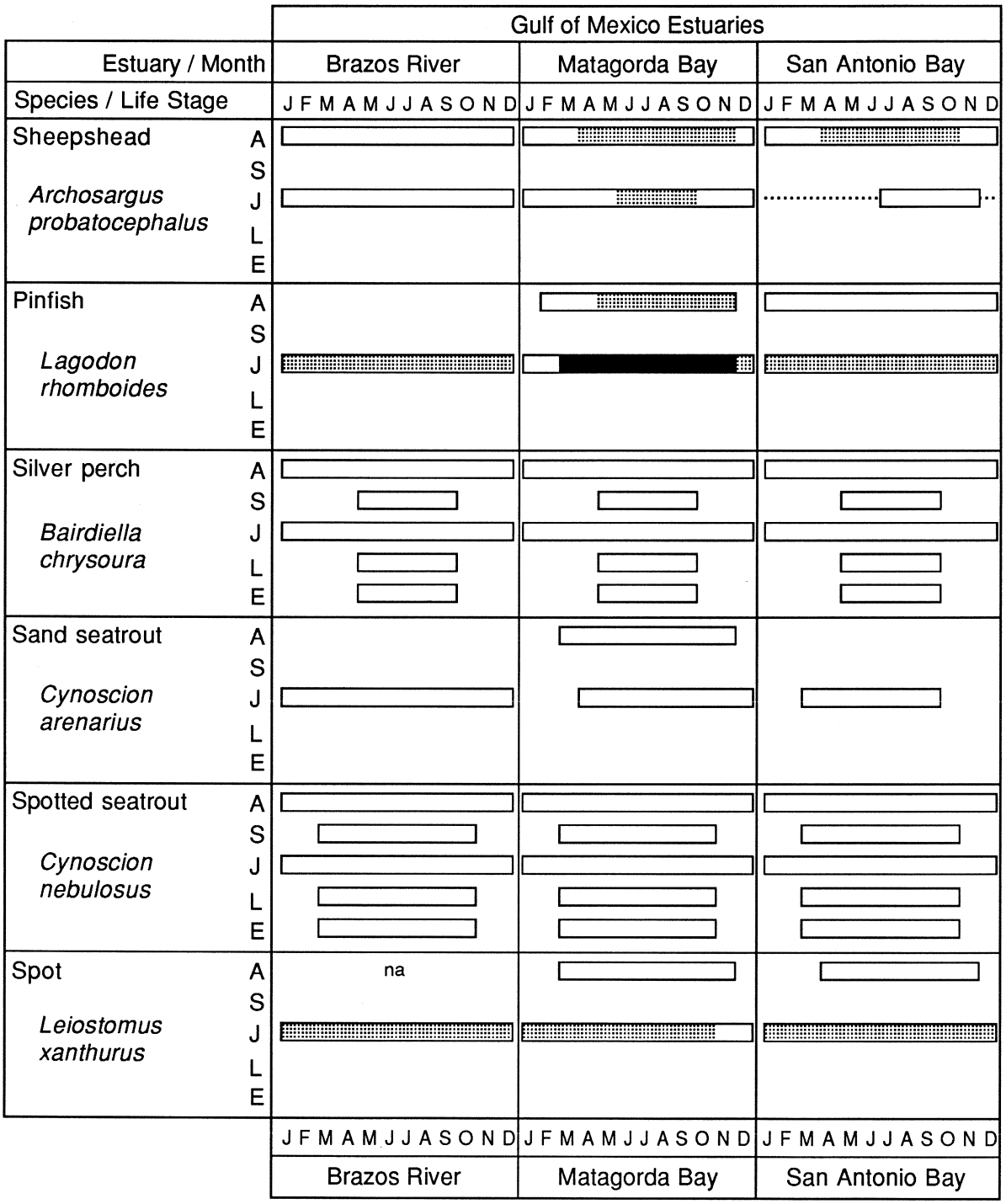
Relative Abundance

- 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

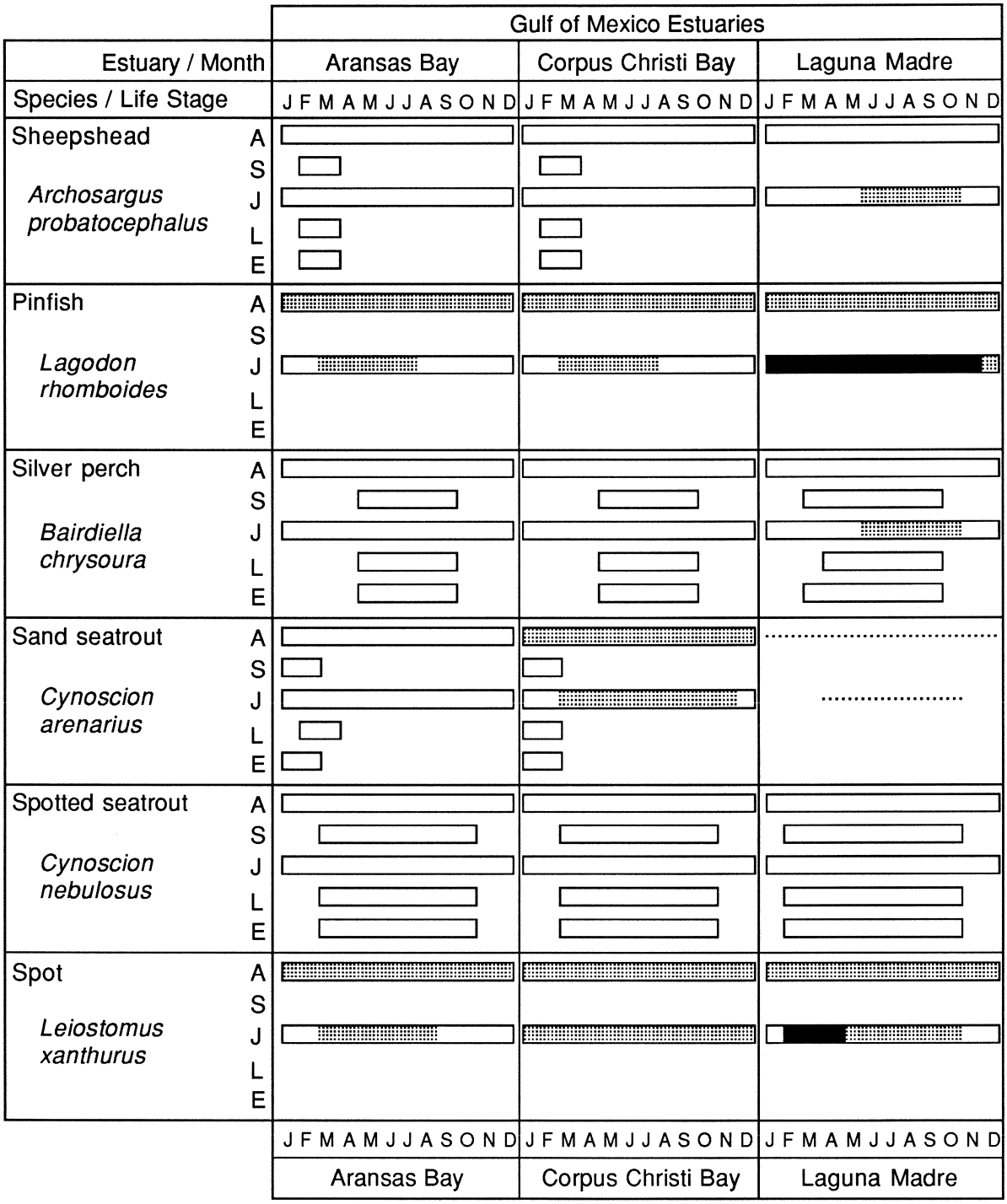
- Highly Abundant
- Abundant
- Common
- Rare
- Blank — Not Present
- na — No Data Available

Life Stage

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

129

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

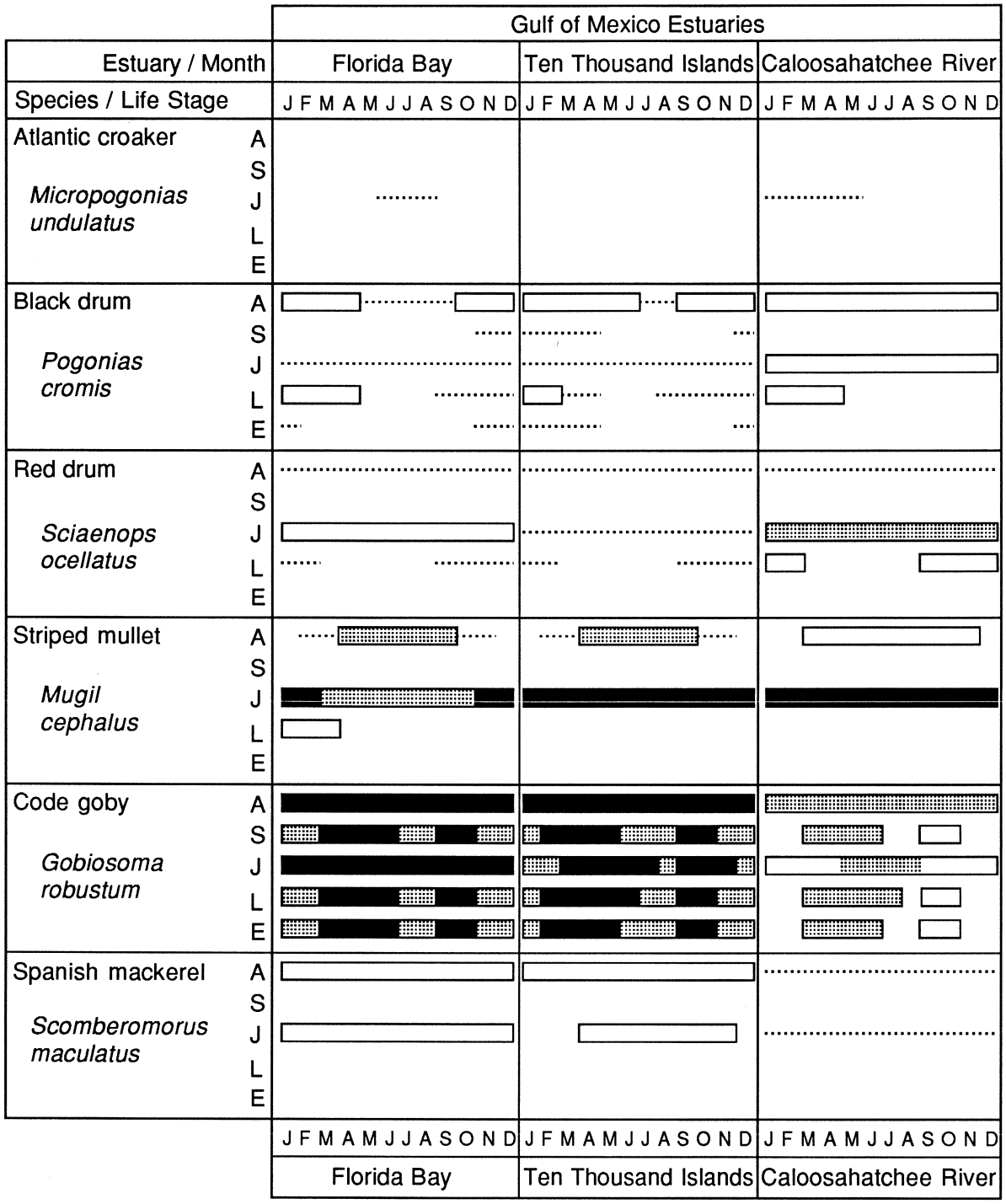
- ■ Highly Abundant
- ▦ Abundant
- ▭ Common
- ····· Rare
- Blank Not Present

Life Stage

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

131

Table 5, continued. Temporal distribution



Relative Abundance

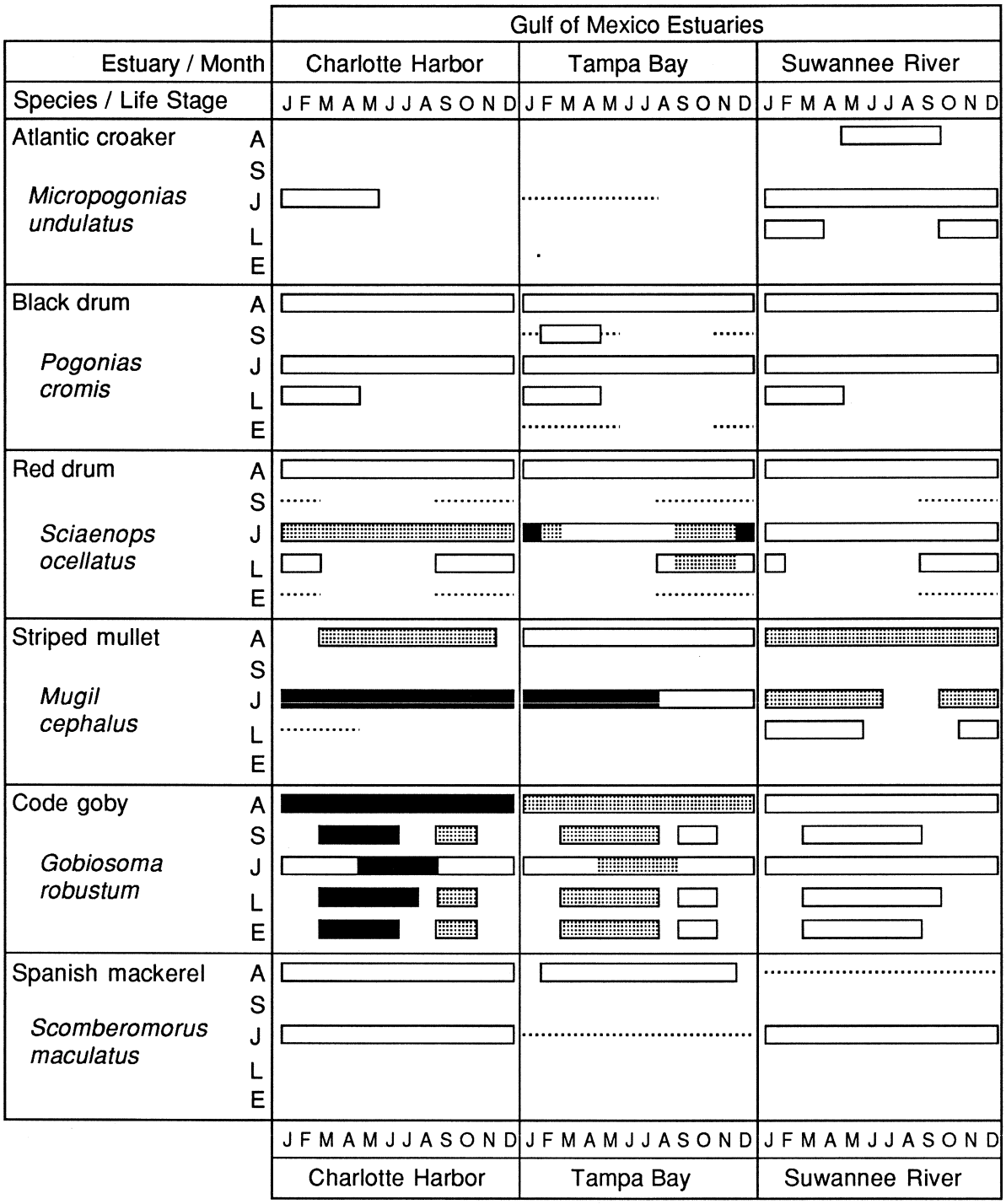
- Highly Abundant
- Abundant
- Common
- Rare
- Blank — Not Present

Life Stage

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

132

Table 5, continued. Temporal distribution



Relative Abundance

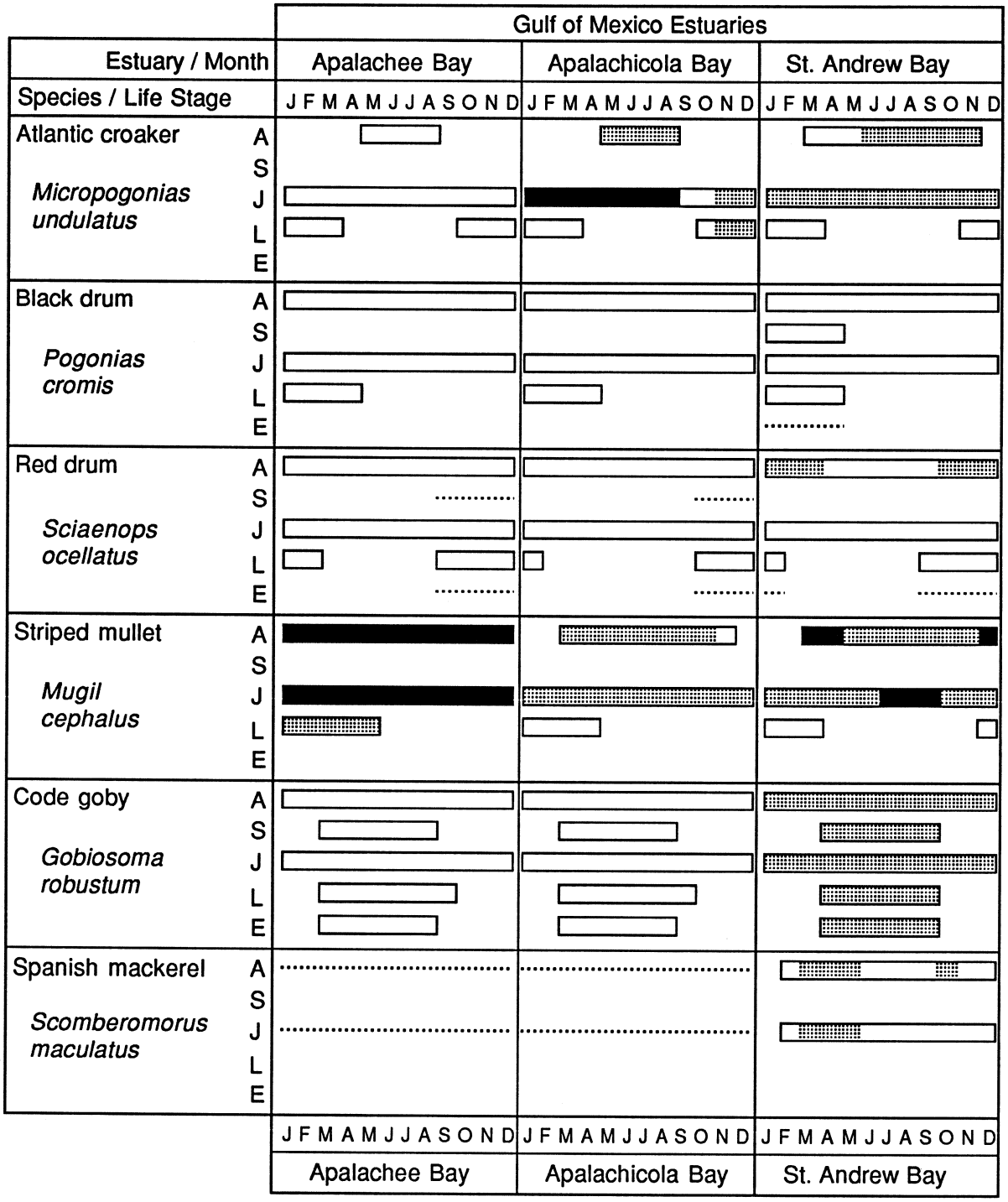
- Highly Abundant
- Abundant
- Common
- Rare
- Blank — Not Present

Life Stage

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

133

Table 5, continued. Temporal distribution



Relative Abundance

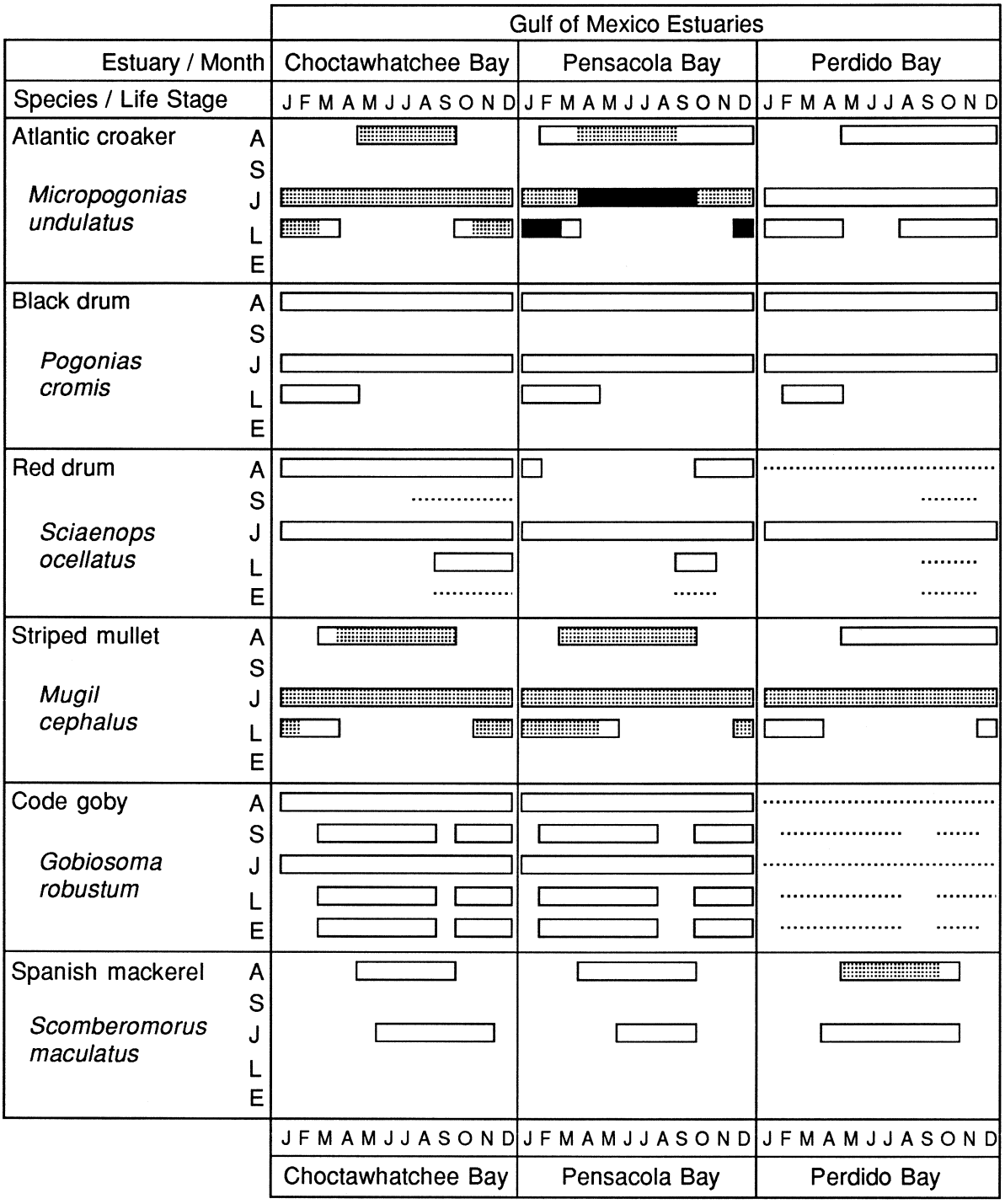
- Highly Abundant
- Abundant
- Common
- Rare
- Blank — Not Present

Life Stage

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

134

Table 5, continued. Temporal distribution



Relative Abundance

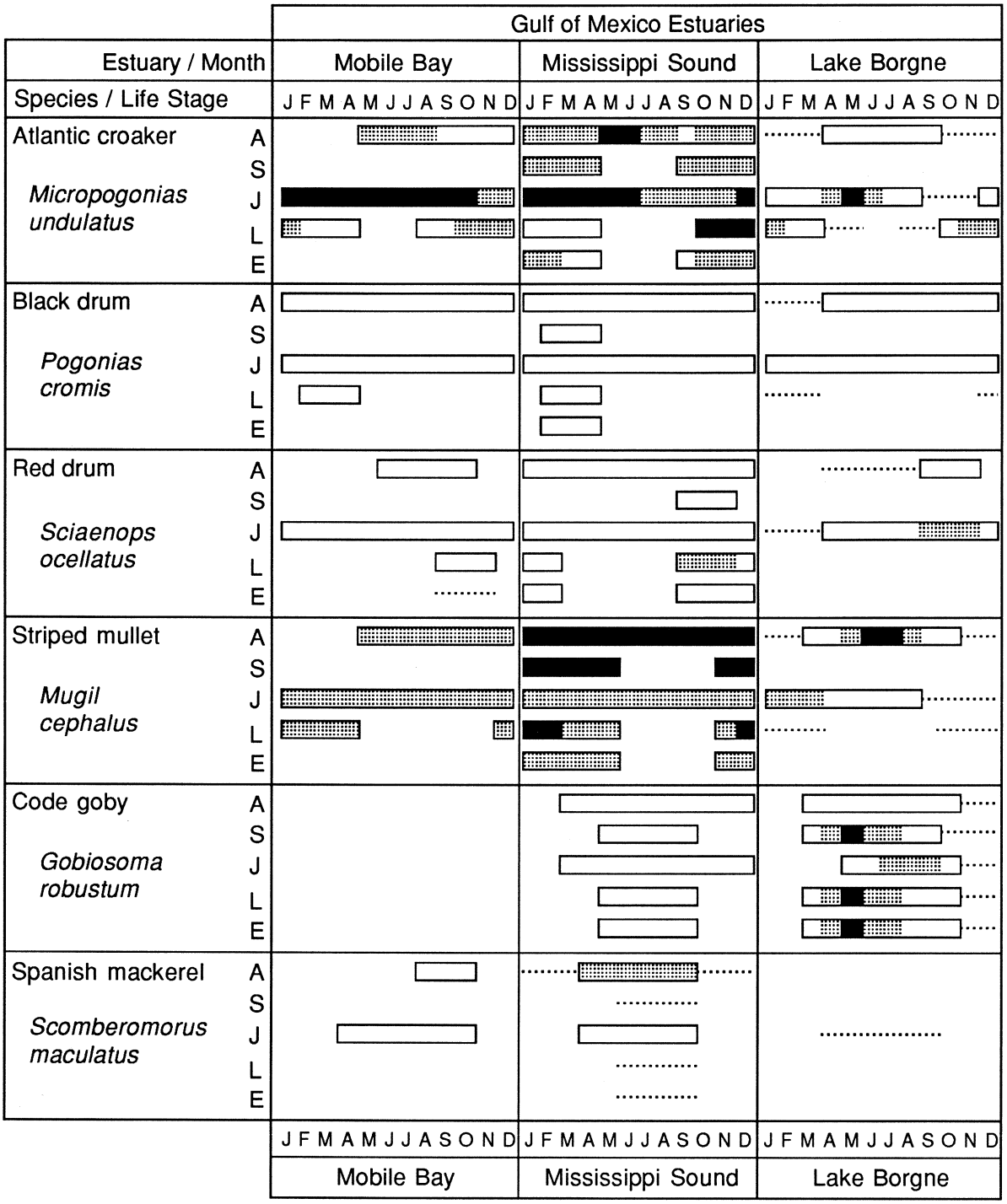
- Highly Abundant
- Abundant
- Common
- Rare
- Blank — Not Present

Life Stage

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

135

Table 5, continued. Temporal distribution



Relative Abundance

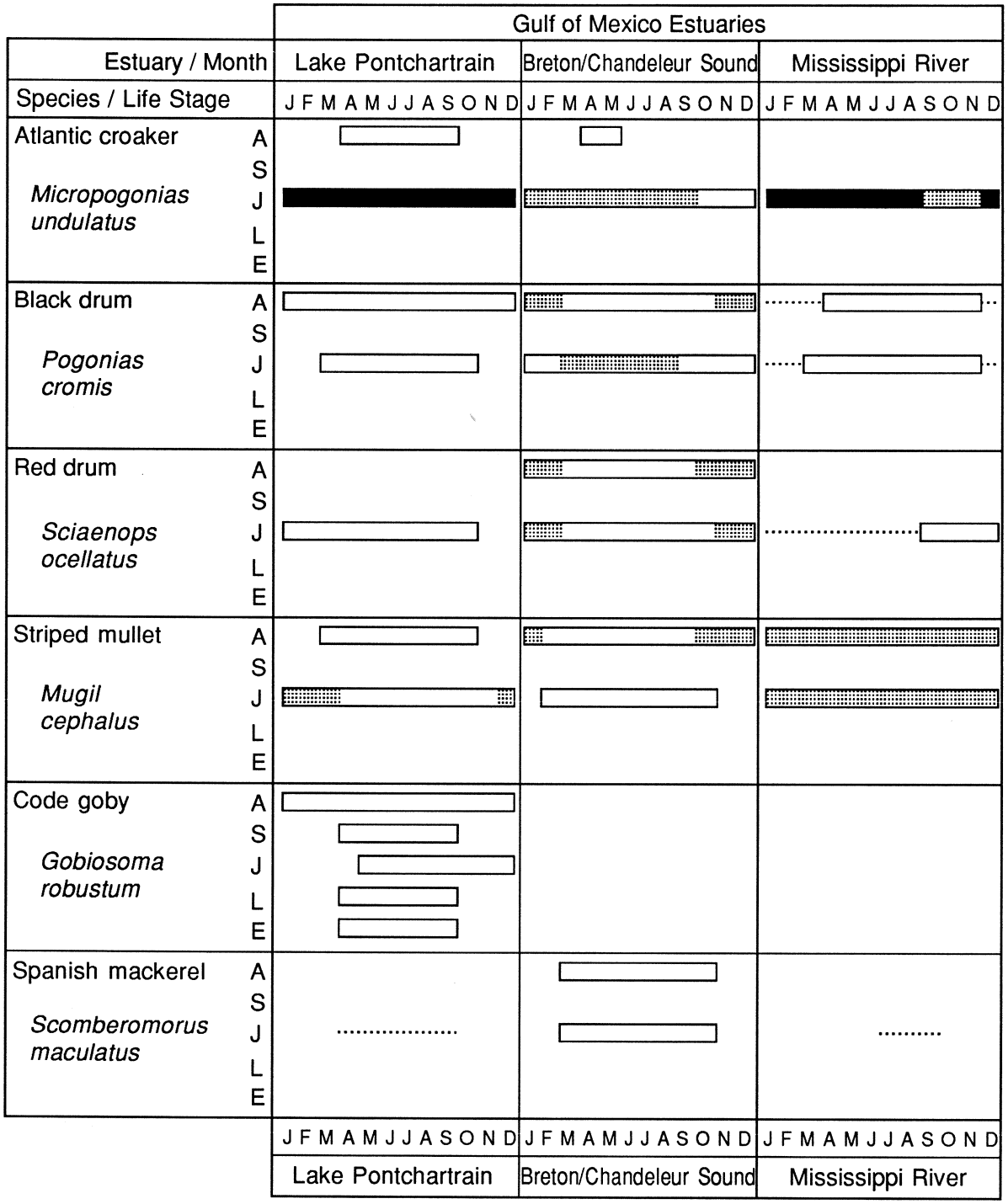
- Highly Abundant
- Abundant
- Common
- Rare
- Blank — Not Present

Life Stage

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

136

Table 5, continued. Temporal distribution



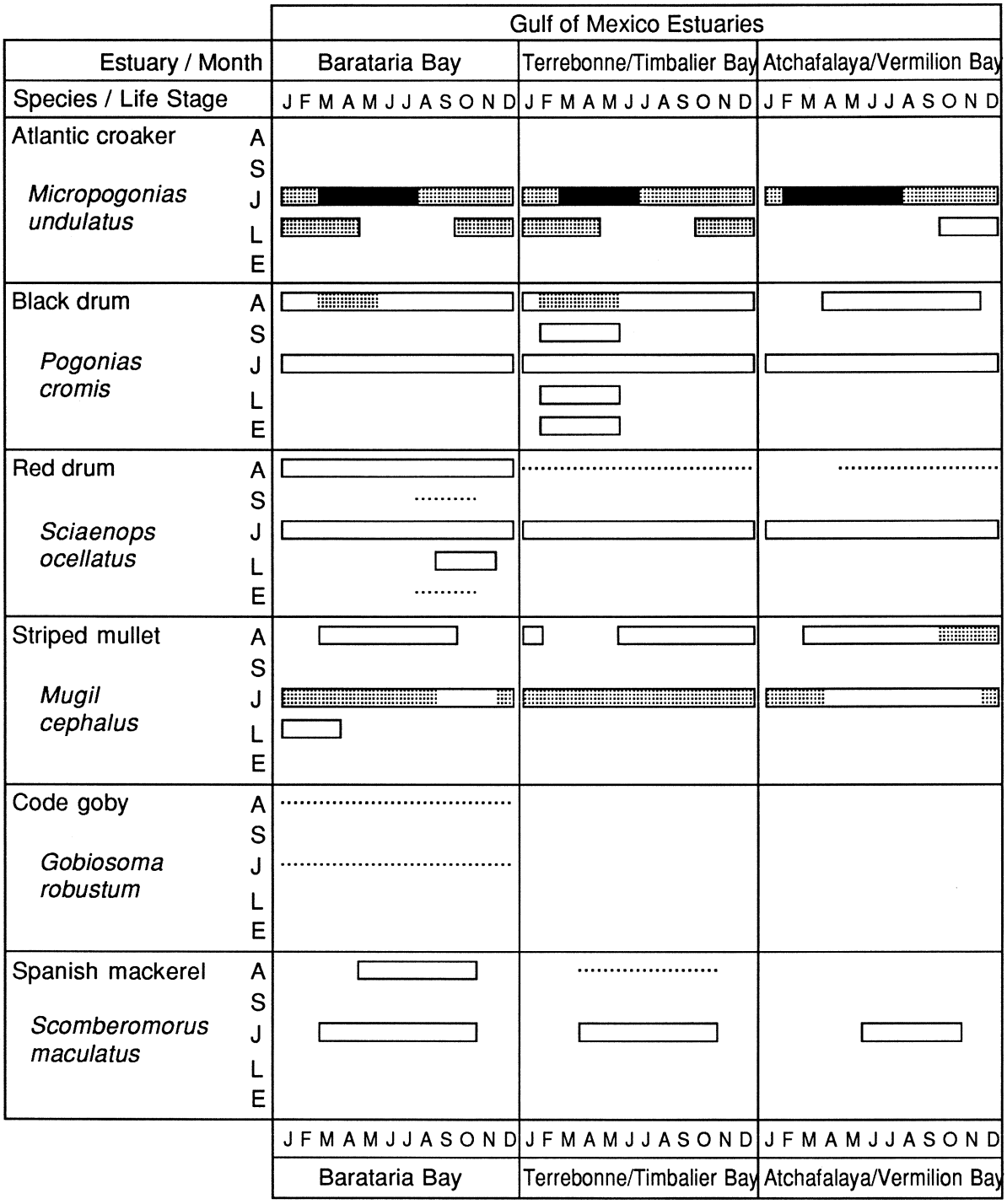
Relative Abundance

- 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

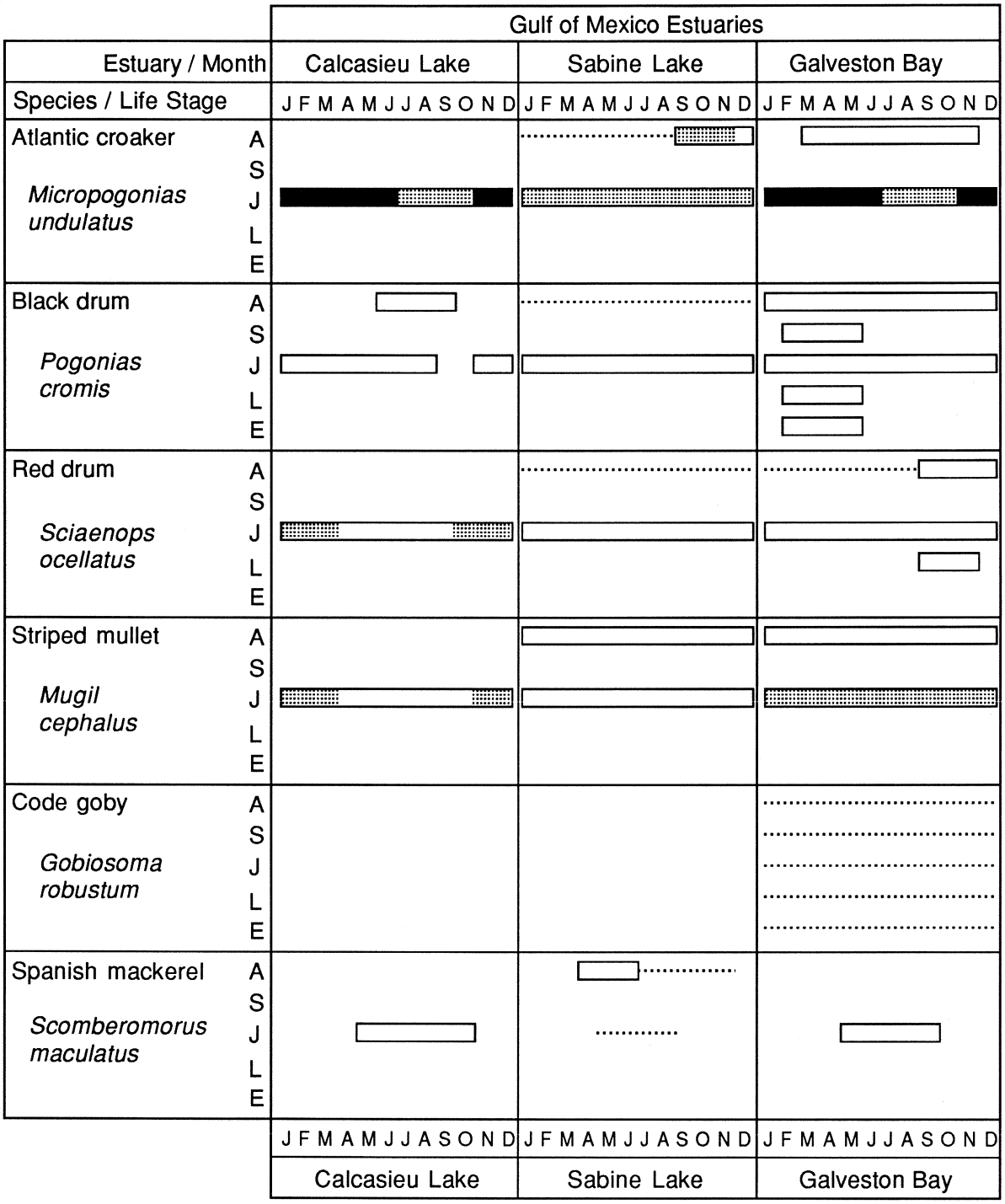
- Highly Abundant
- Abundant
- Common
- Rare
- Blank — Not Present

Life Stage

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

135

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

139

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

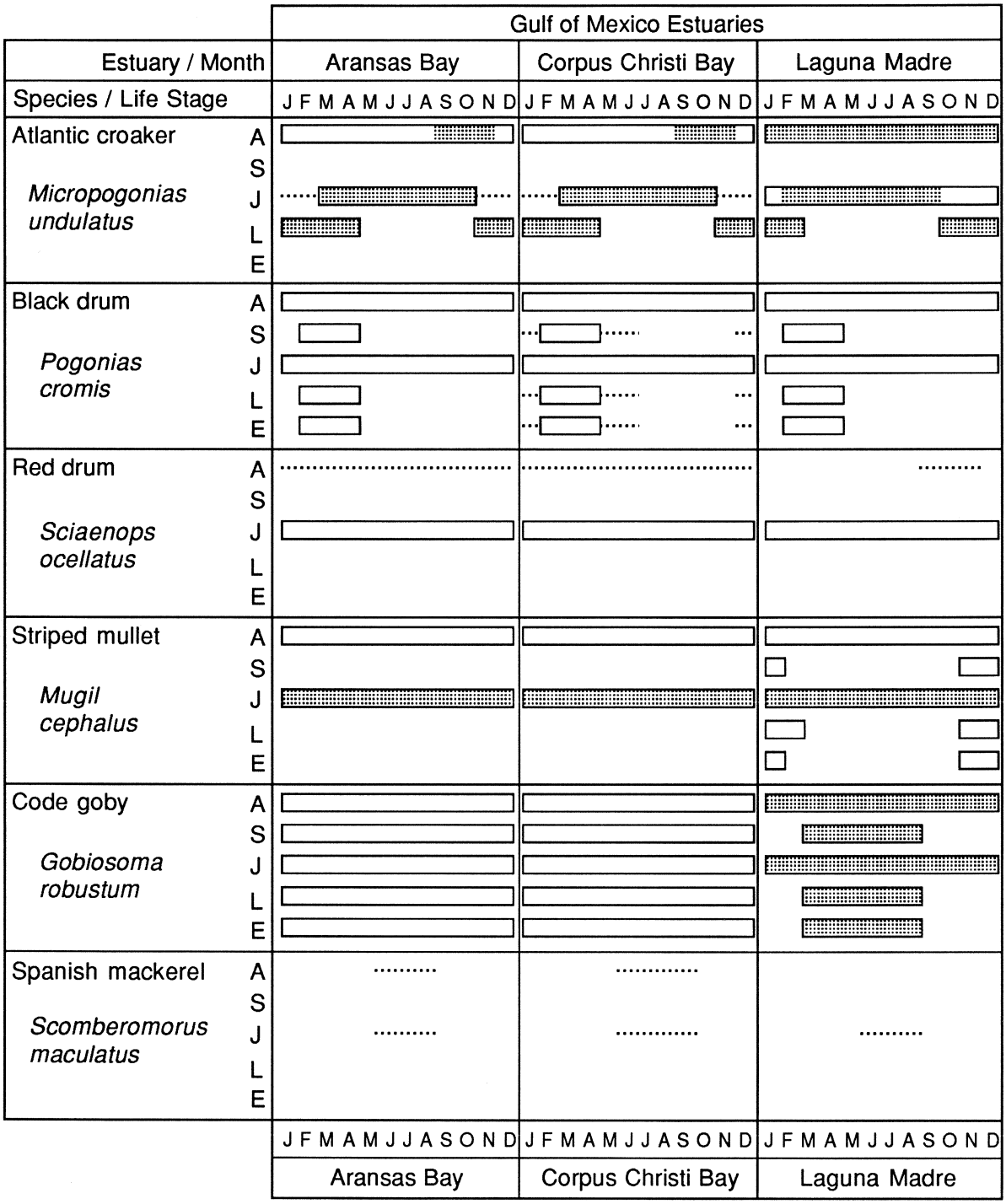
- ■ Highly Abundant
- ▒ Abundant
- ▭ Common
- ····· Rare
- Blank Not Present
- na No Data Available

Life Stage

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

140

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

142

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

		Gulf of Mexico Estuaries		
Estuary / Month		Charlotte Harbor	Tampa Bay	Suwannee 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
		Charlotte Harbor	Tampa Bay	Suwannee River

Relative Abundance

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

Life Stage

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

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Table 5, continued. Temporal distribution

		Gulf of Mexico Estuaries		
Estuary / Month		Apalachee Bay	Apalachicola Bay	St. Andrew 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
		Apalachee Bay	Apalachicola Bay	St. Andrew 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		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

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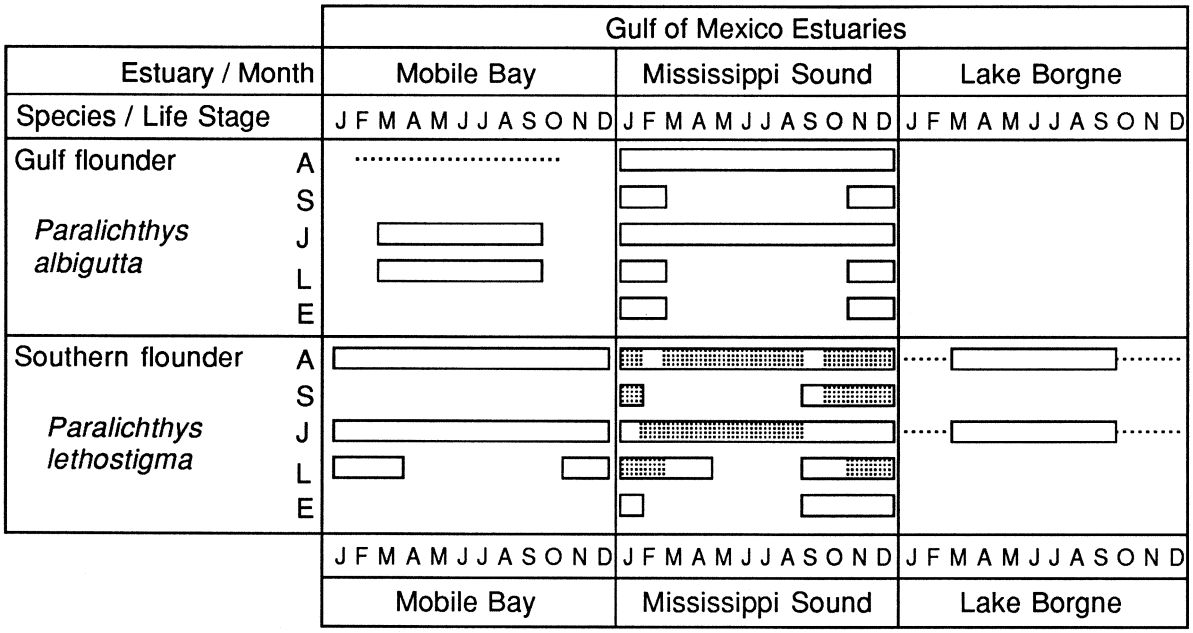
Table 5, continued. Temporal distribution



Relative Abundance

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

Life Stage

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

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

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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

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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
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
		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

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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*) American oyster (*Crassostrea virginica*) Common rangia (*Rangia cuneata*) Hard clam (*Mercenaria* species) Bay squid (*Lolliguncula brevis*) Brown shrimp (*Penaeus aztecus*)	152	153	154	155	156
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*)	157	158	159	160	161
Stone crab (*Menippe mercenaria*) Bull shark (*Carcharhinus leucas*) Tarpon (*Megalops atlanticus*) Alabama shad (*Alosa alabamae*) Gulf menhaden (*Brevoortia patronus*) Yellowfin menhaden (*Brevoortia smithi*)	162	163	164	165	166
Gizzard shad (*Dorosoma cepedianum*) Bay anchovy (*Anchoa mitchilli*) Hardhead catfish (*Arius felis*) Sheepshead minnow (*Cyprinodon variegatus*) Gulf killifish (*Fundulus grandis*) Silversides (*Menidia* species)	167	168	169	170	171
Snook (*Centropomus undecimalis*) Bluefish (*Pomatomus saltatrix*) Blue runner (*Caranx crysos*) Crevalle jack (*Caranx hippos*) Florida pompano (*Trachinotus carolinus*) Gray snapper (*Lutjanus griseus*)	172	173	174	175	176
Sheepshead (*Archosargus probatocephalus*) Pinfish (*Lagodon rhomboides*) Silver perch (*Bairdiella chrysoura*) Sand seatrout (*Cynoscion arenarius*) Spotted seatrout (*Cynoscion nebulosus*) Spot (*Leiostomus xanthurus*)	177	178	179	180	181
Atlantic croaker (*Micropogonias undulatus*) Black drum (*Pogonias cromis*) Red drum (*Sciaenops ocellatus*) Striped mullet (*Mugil cephalus*) Code goby (*Gobiosoma robustum*) Spanish mackerel (*Scomberomorus maculatus*)	182	183	184	185	186
Gulf flounder (*Paralichthys albigutta*) Southern flounder (*Paralichthys lethostigma*)	187	188	189	190	191

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Table 6. Data reliability

Species/Life Stage		Gulf of Mexico Estuaries						
		Florida Bay	Ten Thousand Islands	Caloosa-hatchee River	Charlotte Harbor	Tampa Bay	Suwannee River	Apalachee 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	□	■	■	■	■	■	■
		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

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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						
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

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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						
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		Calcasieu Lake	Sabine Lake	Galveston Bay	Brazos River	Matagorda Bay	San Antonio Bay	Aransas 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	■	■	■	■	■	■	■
		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

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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

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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

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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						
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

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Table 6, continued. Data reliability

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

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Table 6, continued. Data reliability

Species/Life Stage		Gulf of Mexico Estuaries						
		Florida Bay	Ten Thousand Islands	Caloosa-hatchee River	Charlotte Harbor	Tampa Bay	Suwannee River	Apalachee Bay
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

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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

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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

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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

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Table 6, continued. Data reliability

Species/Life Stage		Gulf of Mexico Estuaries						
		Florida Bay	Ten Thousand Islands	Caloosa-hatchee River	Charlotte Harbor	Tampa Bay	Suwannee River	Apalachee 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	■	■	■	■	■	▣	■
		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

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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

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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						
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

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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

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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

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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

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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

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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

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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

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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

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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

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Table 6, continued. Data reliability

Species/Life Stage		Gulf of Mexico Estuaries						
		Florida Bay	Ten Thousand Islands	Caloosa-hatchee River	Charlotte Harbor	Tampa Bay	Suwannee River	Apalachee Bay
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

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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 *Paralichthys albigutta*	A	☐	▣	▣	▣	▣	▣	▣
	S	■	■	■	■	■	■	▣
	J	☐	▣	▣	▣	▣	▣	▣
	L	☐	▣	▣	▣	▣	▣	☐
	E	■	■	■	■	■	■	☐
Southern flounder *Parlichthys lethostigma*	A	☐	▣	▣	▣	▣	▣	☐
	S	■	■	■	■	■	■	▣
	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

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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						
Gulf flounder *Paralichthys albigutta*	A	■	■	■	■	■	■	■
	S	■	■	■	■	■	■	■
	J	■	■	■	■	■	■	■
	L	■	■	■	■	■	■	■
	E	■	■	■	■	■	■	■
Southern flounder *Parlichthys lethostigma*	A	▣	□	▣	▣	▣	□	□
	S	■	■	■	■	□	■	■
	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						
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	A	▣	▣	▣
	S	■	■	■
Paralichthys albigutta	J	▣	▣	▣
	L	▣	▣	▣
	E	■	■	■
Southern flounder	A	▣	▣	▣
	S	▣	▣	▣
Parlichthys lethostigma	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

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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

Appendix 1. National Estuarine Invenory Map of Mobile Bay

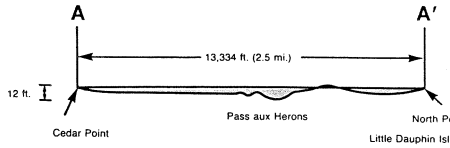
National Estuarine Atlas

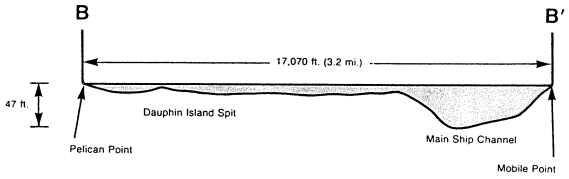
PHYSICAL AND HYDROLOGIC CHARACTERISTICS

PHYSICAL		FRESHWATER INFLOW				TIDAL DATA		
Surface Areas (mi^2)		*Flow Rates (1000 cfs)*				Prevailing Tide: Diurnal		
Fluvial Drainage	39,725	Period of Record			1975-1982	Tidal Prism (cf)		1.58×10^{10}
Estuarine Drainage	4,875							
Estuarine Zones		Long Term Average Daily			79.3	*Phase Range of Tide (ft.)*		
Tidal Fresh	29					Map Key	Station	Range
Mixing Zone	327	Long Term Average Monthly	J	129.8	J 32.3	A	3194	1.3
Seawater	53		F	120.7	A 29.4	B	3197	1.4
Total	409		M	161.4	S 29.9	C	3198	1.4
Dimensions			A	179.4	O 36.9	D	3199	0.8
Length (mi.)	128.0		M	83.3	N 43.4			
Width (mi.): Average	13.8		J	44.5	D 64.0			
Minimum	8.0	7-Day, 10-Year Low Flow			7.6			
Maximum	23.6							
Average Depth (ft.)	9.6	50-Year Flood			595.7			
Average Depth to Width Ratio	1.3×10^{-4}	100-Year Flood			653.0			
		Flow Ratios						
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.

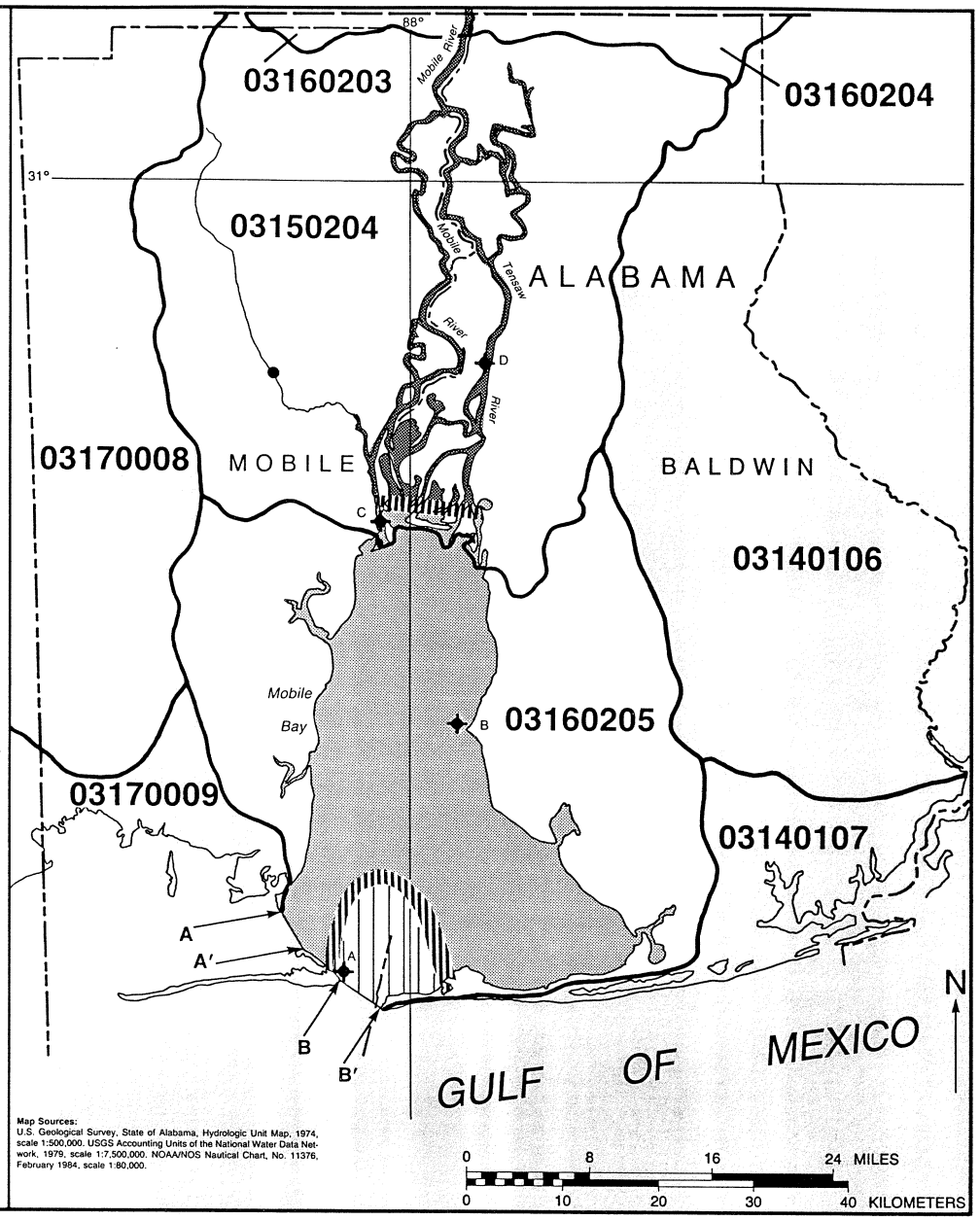
Cross Sections
(at mean high water)





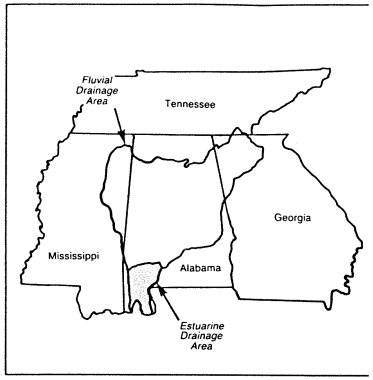
Notes:
Approximately 40% of Estuarine Drainage Area is shown on map.

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

Appendix 2. Table of references and personal communications

Species	Florida Bay, FL
Bay scallop *Argopecten irradians*	28 Fonseca, LaCroix, Tilmant
American oyster *Crassostrea virginica*	 Tilmant
Common rangia *Rangia cuneata*	491 Marelli, Tilmant
Hard clam *Mercenaria species*	296, 297, 429 Tilmant
Bay squid *Lolliguncula brevis*	56, 429, 630, 780, 878 Schmidt
Brown shrimp *Peneaus aztecus*	11, 658, 692
Pink shrimp *Peneaus duorarum*	11, 64, 105, 295, 429, 458, 658, 692, 748, 749, 782, 878 Schmidt, Tilmant
White shrimp *Penaeus setiferus*	658, 692 Tilmant
Grass shrimp *Palaemonetes pugio*	16, 782, 962 Tilmant
Spiny lobster *Panulirus argus*	200, 309, 429, 433, 438, 535, 560, 561, 547, 658, 868 Hunt, Tilmant
Blue crab *Callinectes sapidus*	392, 429, 892, 898, 962 Steele, Tilmant
Gulf stone crab *Menippe adina*	947
Stone crab *Menippe mercenaria*	61, 106, 226, 241, 242, 429, 511, 658, 898, 946, 947 Bert
Bull shark *Carcharhinus leucas*	429, 714, 780, 878 Schmidt
Tarpon *Megalops atlanticus*	460, 524, 780, 898
Alabama shad *Alosa alabamae*	909 Tilmant
Gulf menhaden *Brevoortia patronus*	780, 879, 909 Schmidt, Tilmant
Yellowfin menhaden *Brevoortia smithii*	152, 162, 524, 780, 892, 909 Tilmant
Gizzard shad *Dorosoma cepedianum*	460, 504, 524
Bay anchovy *Anchoa mitchilli*	460, 524, 750, 780, 832, 878, 879, 890, 892 Tilmant
Hardhead catfish *Arius felis*	56, 429, 524, 645, 714, 753, 780, 832, 833, 878, 879, 891, 898 Schmidt
Sheepshead minow *Cyprinodon variegatus*	524, 718, 780, 831, 832, 878, 879, 892 Tilmant
Gulf killifish *Fundulus grandis*	235, 306, 429, 524, 718, 831, 878, 891 Tilmant
Silversides *Menidia species*	524, 753, 780, 831, 878, 879, 891 Schmidt
Snook *Centropomus undecemalis*	429, 504, 524, 714, 715, 780, 897, 899, 898, 901
Bluefish *Pomatomus saltatrix*	342, 539, 779, 780
Blue runner *Caranx crysos*	301, 302, 429, 753, 779, 780, 841, 877 Edwards, Tilmant
Crevalle jack *Caranx hippos*	429, 524, 753, 779, 780, 832, 841, 877, 898 Edwards
Florida pompano *Trachinotus carolinus*	290, 658, 780, 892, 898 Tilmant
Gray snapper *Lutjanus griseus*	70, 114, 131, 312, 386, 429, 524, 714, 715, 773, 771, 772, 780, 832, 833, 879, 891, 892, 890, 898, 962 Powell, Thayer, Tilmant
Sheepshead *Archosargus probatocephalus*	56, 114, 219, 429, 445, 524, 714, 753, 780, 831, 878, 877, 879, 891, 890, 898 Schmidt
Pinfish *Lagodon rhomboides*	429, 524, 780, 782, 832, 833, 879, 890, 962 Hettler, Powell, Tilmant
Silver perch *Bairdiella chysoura*	219, 524, 714, 780, 831, 832, 833, 878, 879, 891, 890 Schmidt
Sand seatrout *Cynoscion arenarius*	218, 443, 658, 782, 863, 879, 891 Tilmant
Spotted seatrout *Cynoscion nebulosus*	114, 131, 219, 386, 429, 446, 697, 714, 715, 773, 774, 780, 832, 879, 892, 890, 899, 898, 937
Spot *Leiostomus xanthurus*	443, 658, 782, 879, 891, 892, 962 Tilmant
Atlantic croaker *Micropogonias undulatus*	443, 780, 843 Davis, Schmidt
Black drum *Pogonias cromis*	56, 114, 162, 443, 714, 753, 780, 878, 879, 891, 898 Schmidt
Red drum *Sciaenops ocellatus*	114, 429, 524, 658, 714, 715, 780, 831, 879, 899, 900, 898, 957 Schmidt, Tilmant
Striped mullet *Mugil cephalus*	278, 429, 524, 780, 832, 833, 878, 892, 898 Hettler, Powell, Tilmant
Code goby *Gobiosoma robustum*	429, 524, 780, 782, 878, 879, 892, 962 Tilmant
Spanish mackerel *Scomberomorus maculatus*	263, 475, 483, 780, 898
Gulf flounder *Paralichthys albigutta*	753, 780, 832, 879, 892 Powell, Tilmant
Southern flounder *Paralicthys lethostigma*	291, 658, 780 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 *Argopecten irradians*	28
American oyster *Crassostrea virginica*	118, 123, 658, 782, 845 Browder, Thoemke
Common rangia *Rangia cuneata*	106, 491 Browder, Marelli, Tilmant
Hard clam *Mercenaria species*	106, 297, 936 Browder, Tashiro, Tilmant
Bay squid *Lolliguncula brevis*	56, 104, 106, 161, 199, 509, 878, 781 Schmidt
Brown shrimp *Peneaus aztecus*	332, 658, 692, 946
Pink shrimp *Peneaus duorarum*	64, 105, 123, 226, 295, 648, 658, 692, 754, 782, 876 Browder, Tilmant, Schmidt
White shrimp *Penaeus setiferus*	106, 658, 692 Browder, Tilmant
Grass shrimp *Palaemonetes pugio*	16, 106, 123, 161, 226, 946, 962 Browder, Tilmant
Spiny lobster *Panulirus argus*	106, 161, 547, 561, 658 Hunt
Blue crab *Callinectes sapidus*	106, 123, 161, 392, 602, 898 Browder, Steele
Gulf stone crab *Menippe adina*	947
Stone crab *Menippe mercenaria*	62, 63, 106, 123, 226, 511, 658, 898, 946, 947 Bert, Browder
Bull shark *Carcharhinus leucas*	77, 123, 157, 660, 781, 829 Schmidt
Tarpon *Megalops atlanticus*	103, 106, 123, 161, 524, 658, 898
Alabama shad *Alosa alabamae*	909
Gulf menhaden *Brevoortia patronus*	106, 123, 161, 879, 909 Schmidt
Yellowfin menhaden *Brevoortia smithii*	106, 107, 123, 152, 161, 162, 909 Browder
Gizzard shad *Dorosoma cepedianum*	460, 504, 524 Schmidt
Bay anchovy *Anchoa mitchilli*	106, 123, 161, 524, 750, 878, 879 Browder
Hardhead catfish *Arius felis*	56, 106, 123, 158, 199, 226, 509, 524, 645, 660, 781, 879, 898 Schmidt
Sheepshead minow *Cyprinodon variegatus*	103, 106, 107, 123, 161, 524, 878, 879 Browder
Gulf killifish *Fundulus grandis*	103, 106, 107, 123, 161, 235, 524 Browder
Silversides *Menidia species*	103, 107, 123, 161, 509, 524, 660, 878, 879 Schmidt
Snook *Centropomus undecemalis*	103, 123, 269, 504, 524, 794, 897, 898, 899, 901, 903 Browder
Bluefish *Pomatomus saltatrix*	106, 269, 342, 539, 658
Blue runner *Caranx crysos*	106, 107, 301, 302, 509, 878 Edwards
Crevalle jack *Caranx hippos*	106, 107, 123, 161, 509, 524, 590, 878, 898 Browder
Florida pompano *Trachinotus carolinus*	106, 161, 658, 898
Gray snapper *Lutjanus griseus*	70, 123, 161, 312, 504, 524, 770, 771, 878, 879, 898 Browder, Tilmant
Sheepshead *Archosargus probatocephalus*	56, 106, 107, 123, 158, 161, 162, 219, 445, 509, 524, 660, 878, 879, 898 Schmidt
Pinfish *Lagodon rhomboides*	Bro86, 123, 162, 161, 524, 643, 782, 879
Silver perch *Bairdiella chysoura*	106, 108, 107, 123, 158, 161, 162, 219, 443, 509, 524, 660, 753, 781, 878, 879 Schmidt
Sand seatrout *Cynoscion arenarius*	106, 107, 123, 161, 218, 808, 863, 879 Browder
Spotted seatrout *Cynoscion nebulosus*	123, 161, 219, 690, 697, 774, 879, 898, 899 Browder
Spot *Leiostomus xanthurus*	106, 107, 123, 161, 443, 878, 879 Browder, Tilmant
Atlantic croaker *Micropogonias undulatus*	106, 161, 878 Browder, Tilmant
Black drum *Pogonias cromis*	56, 106, 123, 161, 162, 443, 509, 878, 879, 898 Schmidt
Red drum *Sciaenops ocellatus*	106, 123, 158, 162, 443, 524, 714, 770, 879, 898, 899, 900 Browder, Schmidt
Striped mullet *Mugil cephalus*	78, 103, 106, 123, 161, 278, 509, 524, 878, 898 Browder, Hettler, Tilmant
Code goby *Gobiosoma robustum*	106, 107, 123, 158, 161, 524, 878, 879 Browder
Spanish mackerel *Scomberomorus maculatus*	123, 263, 298, 475, 483, 694, 898 Browder
Gulf flounder *Paralichthys albigutta*	107, 123, 161, 879 Browder
Southern flounder *Paralicthys lethostigma*	106, 107, 123, 291, 658 Browder

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

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

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

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

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

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Species	Tampa Bay, FL
Bay scallop *Argopecten irradians*	28, 508 Fonseca, Estevez
American oyster *Crassostrea virginica*	118, 170, 260, 285, 658, 845 Edwards, Estevez, Phillips
Common rangia *Rangia cuneata*	658
Hard clam *Mercenaria species*	297, 459, 825, 843 Edwards
Bay squid *Lolliguncula brevis*	56, 224, 510 Comp, Phillips
Brown shrimp *Peneaus aztecus*	244, 510, 692, 875 Comp, Camp
Pink shrimp *Peneaus duorarum*	658, 692 Comp, Edwards, Estevez
White shrimp *Penaeus setiferus*	658, 692
Grass shrimp *Palaemonetes pugio*	16, 225, 946 Phillips
Spiny lobster *Panulirus argus*	938 Hunt, Estevez
Blue crab *Callinectes sapidus*	392, 602, 658, 875, 938, 946 Steele
Gulf stone crab *Menippe adina*	947
Stone crab *Menippe mercenaria*	508, 511, 938, 947 Bert
Bull shark *Carcharhinus leucas*	77, 157, 829, 843 Comp, Heuter
Tarpon *Megalops atlanticus*	219, 719, 843 Edwards
Alabama shad *Alosa alabamae*	909
Gulf menhaden *Brevoortia patronus*	494, 909 Mahmoudi, Edwards, Phillips
Yellowfin menhaden *Brevoortia smithii*	152, 843, 875 Mahmoudi, Phillips
Gizzard shad *Dorosoma cepedianum*	460, 504, 839 Comp, Phillips
Bay anchovy *Anchoa mitchilli*	165, 750, 938 Comp, Edwards, Estevez
Hardhead catfish *Arius felis*	56, 508, 510, 645, 719, 733, 843 Comp, Phillips
Sheepshead minow *Cyprinodon variegatus*	165, 342, 719, 733 Comp, Phillips
Gulf killifish *Fundulus grandis*	235, 310, 469, 719, 843, 860 Comp, Phillips
Silversides *Menidia species*	165, 469, 508, 689, 710, 719, 733, 843, 875 Comp, Phillips
Snook *Centropomus undecemalis*	483, 504, 542, 588, 843, 923 Edwards
Bluefish *Pomatomus saltatrix*	342, 539, 658, 843
Blue runner *Caranx crysos*	447, 587, 776, 843, 875 Edwards
Crevalle jack *Caranx hippos*	776, 843, 875 Edwards
Florida pompano *Trachinotus carolinus*	258, 843 Phillips
Gray snapper *Lutjanus griseus*	843 Edwards
Sheepshead *Archosargus probatocephalus*	56, 219, 445, 469, 483, 508, 510, 687, 689, 733, 843, 875, 938 Comp, Phillips
Pinfish *Lagodon rhomboides*	165, 219, 643, 843 Comp, Edwards, Estevez
Silver perch *Bairdiella chysoura*	165, 219, 469, 504, 508, 510, 689, 710, 719, 733, 843 Comp, Phillips
Sand seatrout *Cynoscion arenarius*	218, 219, 843, 875 Comp, Phillips
Spotted seatrout *Cynoscion nebulosus*	219, 446, 504, 589, 658, 875, 928, 937 Comp, Phillips
Spot *Leiostomus xanthurus*	165, 219, 509, 719, 843, 875 Comp, Phillips
Atlantic croaker *Micropogonias undulatus*	495, 509, 843, 875 Phillips
Black drum *Pogonias cromis*	56, 443, 469, 483, 508, 510, 649, 689, 706, 719, 843 Comp, Phillips
Red drum *Sciaenops ocellatus*	650, 658, 705, 711, 719, 752, 875 Estevez, Phillips
Striped mullet *Mugil cephalus*	163, 165, 719, 752, 843, 875 Edwards, Estevez, Phillips
Code goby *Gobiosoma robustum*	79, 274, 840, 843
Spanish mackerel *Scomberomorus maculatus*	298, 475, 483, 694, 875 Comp
Gulf flounder *Paralichthys albigutta*	165, 219, 719, 843, 875, 904 Phillips
Southern flounder *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 *Argopecten irradians*	
American oyster *Crassostrea virginica*	360, 500, 845 Lindberg
Common rangia *Rangia cuneata*	491, 952 Gilbert, Marelli
Hard clam *Mercenaria species*	249, 459, 525, 825 Menzel, Nordlie
Bay squid *Lolliguncula brevis*	56 Clugston, Nordlie
Brown shrimp *Peneaus aztecus*	172, 331, 332, 500, 692 Sheridan
Pink shrimp *Peneaus duorarum*	64, 435, 500, 658, 692 Sheridan
White shrimp *Penaeus setiferus*	500, 644, 658, 692, 946 Sheridan
Grass shrimp *Palaemonetes pugio*	16, 361, 946 Sheridan
Spiny lobster *Panulirus argus*	658
Blue crab *Callinectes sapidus*	500, 699, 846, 910 Steele
Gulf stone crab *Menippe adina*	500, 947 Bert, Lindberg
Stone crab *Menippe mercenaria*	500, 947 Bert, Lindberg
Bull shark *Carcharhinus leucas*	77, 157, 829 Clugston, Nordlie
Tarpon *Megalops atlanticus*	219, 500, 658
Alabama shad *Alosa alabamae*	35, 265, 504, 909 Clugston, Gilbert
Gulf menhaden *Brevoortia patronus*	152, 217, 219, 493, 909, 913 Ahrenholz
Yellowfin menhaden *Brevoortia smithii*	909
Gizzard shad *Dorosoma cepedianum*	35, 188, 265, 460 Clugston, Nordlie, Gilbert
Bay anchovy *Anchoa mitchilli*	469, 733, 750
Hardhead catfish *Arius felis*	56, 645 Clugston, Nordlie
Sheepshead minow *Cyprinodon variegatus*	469, 733
Gulf killifish *Fundulus grandis*	469
Silversides *Menidia species*	Clugston, Nordlie
Snook *Centropomus undecemalis*	658, 733, 747
Bluefish *Pomatomus saltatrix*	259, 500, 658, 733
Blue runner *Caranx crysos*	59, 60, 301, 302, 349, 447, 733
Crevalle jack *Caranx hippos*	59, 174, 324, 447, 666, 733, 921
Florida pompano *Trachinotus carolinus*	
Gray snapper *Lutjanus griseus*	35, 504, 658
Sheepshead *Archosargus probatocephalus*	35, 56, 219, 265, 445, 469, 500, 733 Clugston, Nordlie
Pinfish *Lagodon rhomboides*	217, 219, 469, 642, 643, 733
Silver perch *Bairdiella chysoura*	165, 219, 469, 510, 719, 733, 843 Clugston, Nordlie
Sand seatrout *Cynoscion arenarius*	218, 219, 658, 816 Lindberg
Spotted seatrout *Cynoscion nebulosus*	219, 500, 595, 673 Lindberg
Spot *Leiostomus xanthurus*	35, 217, 219, 275, 469, 733
Atlantic croaker *Micropogonias undulatus*	217, 219, 275, 500 Nordlie, Warlen
Black drum *Pogonias cromis*	56 Clugston, Nordlie
Red drum *Sciaenops ocellatus*	420, 500, 515, 596, 597, 658, 731
Striped mullet *Mugil cephalus*	219, 500 Clugston, Nordlie
Code goby *Gobiosoma robustum*	469, 733
Spanish mackerel *Scomberomorus maculatus*	217, 219, 261, 298, 463
Gulf flounder *Paralichthys albigutta*	35, 219, 265, 311, 313, 469, 642, 733
Southern flounder *Paralicthys lethostigma*	35, 219, 504, 904 Clugston, Nordlie

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

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

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

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Species	Apalachicola Bay, FL
Bay scallop *Argopecten irradians*	Menzel
American oyster *Crassostrea virginica*	13, 57, 58, 514, 515, 593, 845 Menzel
Common rangia *Rangia cuneata*	491, 515, 729 Menzel
Hard clam *Mercenaria species*	Menzel
Bay squid *Lolliguncula brevis*	56, 498, 513, 515, 519, 520
Brown shrimp *Peneaus aztecus*	1, 7, 172, 177, 332, 435, 437, 506, 514, 515, 517, 519, 520, 538, 592, 692, 933 Sheridan
Pink shrimp *Peneaus duorarum*	64, 514, 515, 517, 658, 692, 729, 946 Sheridan
White shrimp *Penaeus setiferus*	514, 515, 517, 519, 520, 644, 658, 692 Sheridan
Grass shrimp *Palaemonetes pugio*	16, 361, 515, 517, 518, 729 Sheridan
Spiny lobster *Panulirus argus*	658
Blue crab *Callinectes sapidus*	514, 517, 520, 661, 662, 699, 729, 846 Steele
Gulf stone crab *Menippe adina*	511, 947 Bert, Lindberg
Stone crab *Menippe mercenaria*	511, 947 Bert, Lindberg
Bull shark *Carcharhinus leucas*	77, 157, 520, 829
Tarpon *Megalops atlanticus*	7, 219, 592, 658
Alabama shad *Alosa alabamae*	47, 499, 504, 603, 956 Menzel
Gulf menhaden *Brevoortia patronus*	66, 494, 515, 517, 518, 520, 685, 729, 805, 909
Yellowfin menhaden *Brevoortia smithii*	
Gizzard shad *Dorosoma cepedianum*	47, 115, 188, 460
Bay anchovy *Anchoa mitchilli*	66, 115, 513, 514, 515, 517, 519, 802, 805
Hardhead catfish *Arius felis*	56, 115, 518, 513, 519, 520, 515, 645
Sheepshead minow *Cyprinodon variegatus*	515, 853
Gulf killifish *Fundulus grandis*	213, 235, 512, 515
Silversides *Menidia species*	115, 513, 515, 518, 520
Snook *Centropomus undecemalis*	7, 173, 592, 747, 955
Bluefish *Pomatomus saltatrix*	7, 259, 513, 515, 518, 520, 592, 599, 658
Blue runner *Caranx crysos*	7, 60, 301, 302, 348, 349, 518, 592
Crevalle jack *Caranx hippos*	7, 174, 324, 513, 515, 518, 520, 666, 921
Florida pompano *Trachinotus carolinus*	463, 518, 539
Gray snapper *Lutjanus griseus*	518, 539
Sheepshead *Archosargus probatocephalus*	56, 66, 115, 219, 445, 518, 520, 515
Pinfish *Lagodon rhomboides*	66, 115, 219, 463, 528, 529, 643
Silver perch *Bairdiella chysoura*	66, 115, 219, 513, 518, 519, 520, 805
Sand seatrout *Cynoscion arenarius*	217, 218, 219, 514, 515, 517, 519, 520, 802, 805, 815, 816
Spotted seatrout *Cynoscion nebulosus*	66, 219, 440, 446, 476, 496, 595, 609, 673
Spot *Leiostomus xanthurus*	217, 219, 479, 514, 515, 517, 519, 520, 802, 805
Atlantic croaker *Micropogonias undulatus*	479, 504, 514, 515, 517, 519, 520, 802, 803, 945 Sheridan
Black drum *Pogonias cromis*	66, 515
Red drum *Sciaenops ocellatus*	420, 515, 596, 597, 657, 658
Striped mullet *Mugil cephalus*	47, 163, 219, 463, 658 Menzel
Code goby *Gobiosoma robustum*	66, 115, 274, 512, 840
Spanish mackerel *Scomberomorus maculatus*	66, 251, 515
Gulf flounder *Paralichthys albigutta*	219, 291, 513, 658, 686
Southern flounder *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 *Argopecten irradians*	254, 777 Fable, Fonseca, Menzel
American oyster *Crassostrea virginica*	279, 335, 360, 845, 958 Fable, Menzel, Ogren
Common rangia *Rangia cuneata*	491 Naughton
Hard clam *Mercenaria species*	249, 279, 335 Menzel, Naughton
Bay squid *Lolliguncula brevis*	56 Fable, Finucane
Brown shrimp *Peneaus aztecus*	172, 177, 332, 435, 437, 506, 515, 519, 538, 592, 692, 933, 958 Fable, Ogren, Sheridan
Pink shrimp *Peneaus duorarum*	110, 692, 777 Ogren, Sheridan
White shrimp *Penaeus setiferus*	110, 692, 958 Ogren, Sheridan, Young
Grass shrimp *Palaemonetes pugio*	777 Fable, Ogren, Sheridan, Young
Spiny lobster *Panulirus argus*	Fable
Blue crab *Callinectes sapidus*	658, 662, 699, 777, 846, 958 Naughton, Steele
Gulf stone crab *Menippe adina*	62, 320, 511, 946, 947 Bert, Lindberg, Naughton
Stone crab *Menippe mercenaria*	947
Bull shark *Carcharhinus leucas*	77, 157, 829, 921 Fable, Finucane
Tarpon *Megalops atlanticus*	219, 349, 584, 658, 862, 921 Fable
Alabama shad *Alosa alabamae*	504, 584, 720, 721 Finucane
Gulf menhaden *Brevoortia patronus*	14, 584, 665, 720, 721, 906, 921 Finucane
Yellowfin menhaden *Brevoortia smithii*	Fable
Gizzard shad *Dorosoma cepedianum*	460 Fable, Finucane
Bay anchovy *Anchoa mitchilli*	14, 191, 665, 921 Finucane
Hardhead catfish *Arius felis*	14, 56, 584, 645, 654, 665, 720, 721, 862, 921 Fable, Finucane
Sheepshead minow *Cyprinodon variegatus*	14, 654, 720, 921 Finucane
Gulf killifish *Fundulus grandis*	191, 654, 921 Finucane
Silversides *Menidia species*	348, 654, 921 Fable, Finucane
Snook *Centropomus undecemalis*	173, 349, 658, 747, 862, 921, 955 Fable
Bluefish *Pomatomus saltatrix*	111, 250, 259, 463, 584, 658, 665, 721, 862, 906, 921 Fable
Blue runner *Caranx crysos*	14, 60, 111, 250, 301, 302, 349, 584, 665, 721, 862, 906, 921 Fable
Crevalle jack *Caranx hippos*	14, 111, 191, 349, 584, 654, 665, 721, 862, 921 Fable
Florida pompano *Trachinotus carolinus*	14, 349, 584, 721, 862 Finucane
Gray snapper *Lutjanus griseus*	14, 191, 584, 654, 665, 721, 862, 921 Fable
Sheepshead *Archosargus probatocephalus*	14, 56, 219, 348, 445, 584, 665, 721, 862, 921 Fable, Finucane
Pinfish *Lagodon rhomboides*	14, 191, 219, 349, 584, 665, 720, 721, 862, 906, 921 Fable
Silver perch *Bairdiella chysoura*	14, 191, 219, 348, 654, 665, 721, 862 Fable, Finucane
Sand seatrout *Cynoscion arenarius*	14, 218, 219, 584, 654, 665, 721, 862, 906, 921 Fable
Spotted seatrout *Cynoscion nebulosus*	14, 191, 219, 584, 654, 665, 721, 862, 906, 921 Fable
Spot *Leiostomus xanthurus*	14, 219, 349, 584, 654, 665, 721, 862, 906, 921 Fable
Atlantic croaker *Micropogonias undulatus*	14, 584, 654, 665, 720, 721, 862, 906, 921 Fable
Black drum *Pogonias cromis*	191, 584, 721, 862 Fable, Finucane
Red drum *Sciaenops ocellatus*	191, 862, 921 Fable
Striped mullet *Mugil cephalus*	14, 191, 219, 349, 584, 654, 721, 921 Fable
Code goby *Gobiosoma robustum*	654 Fable
Spanish mackerel *Scomberomorus maculatus*	251, 349, 584, 653, 665, 720, 721, 862, 906, 921 Fable
Gulf flounder *Paralichthys albigutta*	14, 219, 349, 584, 654, 665, 721, 862, 906, 921 Naughton
Southern flounder *Paralicthys lethostigma*	14, 219, 721, 862, 921 Naughton

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

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

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

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

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

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

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

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

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

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Species	Mississippi Sound, MS/AL/LA
Bay scallop *Argopecten irradians*	155, 631 Demoran
American oyster *Crassostrea virginica*	73, 124, 129, 155, 231, 245, 319, 328, 536, 631, 663, 664 Demoran
Common rangia *Rangia cuneata*	155, 601, 631 Demoran
Hard clam *Mercenaria species*	155, 631 Demoran
Bay squid *Lolliguncula brevis*	32, 56, 155, 631, 700, 743, 744, 870, 932 Warren
Brown shrimp *Peneaus aztecus*	32, 56, 73, 153, 154, 155, 280, 319, 336, 696, 858, 870, 932, 941, 942 Warren
Pink shrimp *Peneaus duorarum*	56, 153, 154, 155, 696, 858, 870, 932 Warren
White shrimp *Penaeus setiferus*	32, 56, 73, 153, 154, 155, 280, 319, 696, 858, 870, 932, 942 Warren
Grass shrimp *Palaemonetes pugio*	32, 155, 336, 743, 744, 870, 932 Warren
Spiny lobster *Panulirus argus*	Waller
Blue crab *Callinectes sapidus*	32, 56, 73, 155, 601, 696, 700, 702, 870, 932 Warren
Gulf stone crab *Menippe adina*	32, 155, 856, 857, 947
Stone crab *Menippe mercenaria*	947 Czapla
Bull shark *Carcharhinus leucas*	6, 273, 441, 743, 744 Waller
Tarpon *Megalops atlanticus*	743, 744 Waller
Alabama shad *Alosa alabamae*	504 Warren
Gulf menhaden *Brevoortia patronus*	6, 32, 56, 155, 248, 319, 336, 530, 696, 701, 762, 768, 870, 932 Warren
Yellowfin menhaden *Brevoortia smithii*	155 Warren
Gizzard shad *Dorosoma cepedianum*	Warren
Bay anchovy *Anchoa mitchilli*	32, 56, 73, 155, 239, 273, 336, 530, 696, 701, 743, 744, 762, 768, 870, 932 Warren
Hardhead catfish *Arius felis*	6, 32, 56, 155, 239, 273, 336, 346, 696, 762, 870, 930 Warren
Sheepshead minow *Cyprinodon variegatus*	155, 171, 273, 336, 696, 743, 870 Warren
Gulf killifish *Fundulus grandis*	73, 155, 171, 273, 336, 696, 743, 764 Warren
Silversides *Menidia species*	32, 56, 155, 171, 273, 286, 696, 743, 762, 768, 870 Warren
Snook *Centropomus undecemalis*	Waller
Bluefish *Pomatomus saltatrix*	6, 56, 441, 743, 744, 762 Waller
Blue runner *Caranx crysos*	155, 219, 273, 743, 744, 798 Warren
Crevalle jack *Caranx hippos*	6, 32, 56, 155, 219, 273, 441, 696, 743, 744, 762, 870, 932 Warren
Florida pompano *Trachinotus carolinus*	6, 56, 155, 696, 762, 870 Warren
Gray snapper *Lutjanus griseus*	56, 762 Warren
Sheepshead *Archosargus probatocephalus*	6, 32, 56, 155, 219, 248, 273, 336, 441, 677, 696, 762, 768, 870, 932 Warren
Pinfish *Lagodon rhomboides*	6, 56, 155, 219, 273, 441, 530, 696, 762, 768, 870, 932 Warren
Silver perch *Bairdiella chysoura*	6, 32, 155, 219, 273, 441, 504, 696, 762, 768, 870, 932 Warren
Sand seatrout *Cynoscion arenarius*	6, 32, 56, 73, 155, 218, 219, 248, 273, 336, 441, 530, 677, 696, 743, 744, 768, 870, 932 Warren
Spotted seatrout *Cynoscion nebulosus*	6, 32, 56, 73, 155, 195, 219, 248, 273, 319, 336, 441, 504, 677, 696, 768, 870, 932 Warren
Spot *Leiostomus xanthurus*	6, 32, 56, 155, 219, 273, 336, 441, 504, 530, 696, 762, 768, 870, 932 Warren
Atlantic croaker *Micropogonias undulatus*	6, 32, 56, 73, 155, 219, 248, 273, 319, 441, 504, 530, 675, 696, 768, 870, 932 Warren
Black drum *Pogonias cromis*	6, 32, 56, 73, 124, 155, 248, 319, 441, 677, 768 Warren
Red drum *Sciaenops ocellatus*	6, 56, 73, 155, 248, 273, 319, 441, 504, 531, 674, 676, 696, 768, 847 Warren
Striped mullet *Mugil cephalus*	6, 56, 73, 155, 219, 248, 273, 319, 336, 696, 762, 870 Warren
Code goby *Gobiosoma robustum*	743, 744 Warren
Spanish mackerel *Scomberomorus maculatus*	6, 32, 56, 155, 219, 441, 696, 743, 744, 762, 870, 932 Warren
Gulf flounder *Paralichthys albigutta*	56, 155, 219, 273 Warren
Southern flounder *Paralicthys lethostigma*	6, 32, 56, 155, 219, 248, 273, 441, 504, 677, 696, 762, 768, 932 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 *Argopecten irradians*	Savoie, Soniat
American oyster *Crassostrea virginica*	73, 129, 231, 288, 319 Savoie, Soniat
Common rangia *Rangia cuneata*	267 Savoie, Soniat
Hard clam *Mercenaria species*	Savoie
Bay squid *Lolliguncula brevis*	32, 155, 267, 696 Savoie, Soniat
Brown shrimp *Peneaus aztecus*	32, 73, 155, 201, 267, 280, 319, 696, 941, 942 Savoie, Soniat
Pink shrimp *Peneaus duorarum*	155, 696 Savoie, Soniat
White shrimp *Penaeus setiferus*	32, 73, 155, 201, 280, 319, 696, 942 Savoie, Soniat
Grass shrimp *Palaemonetes pugio*	32, 155, 267 Savoie, Soniat
Spiny lobster *Panulirus argus*	Savoie, Soniat
Blue crab *Callinectes sapidus*	32, 73, 155, 201, 267, 696, 700, 702 Savoie, Soniat
Gulf stone crab *Menippe adina*	32, 155, 201, 696, 947 Savoie, Soniat
Stone crab *Menippe mercenaria*	947 Czapla
Bull shark *Carcharhinus leucas*	6, 267 Savoie
Tarpon *Megalops atlanticus*	Savoie
Alabama shad *Alosa alabamae*	201, 504 Savoie
Gulf menhaden *Brevoortia patronus*	6, 32, 73, 155, 201, 267, 319, 696, 763 Savoie
Yellowfin menhaden *Brevoortia smithii*	Savoie
Gizzard shad *Dorosoma cepedianum*	171, 201, 267, 485 Savoie
Bay anchovy *Anchoa mitchilli*	32, 73, 155, 201, 267, 696, 763 Savoie
Hardhead catfish *Arius felis*	6, 32, 155, 201, 267, 696, 763 Savoie
Sheepshead minow *Cyprinodon variegatus*	155, 267, 696 Savoie
Gulf killifish *Fundulus grandis*	155, 267, 696 Savoie
Silversides *Menidia species*	32, 155, 201, 267, 696 Savoie
Snook *Centropomus undecemalis*	Savoie
Bluefish *Pomatomus saltatrix*	6 Savoie
Blue runner *Caranx crysos*	Savoie
Crevalle jack *Caranx hippos*	6, 32, 155, 201, 267, 696 Savoie
Florida pompano *Trachinotus carolinus*	6, 155, 267, 696 Savoie
Gray snapper *Lutjanus griseus*	155 Savoie
Sheepshead *Archosargus probatocephalus*	5, 6, 32, 46, 155, 201, 267, 696, 763 Savoie
Pinfish *Lagodon rhomboides*	6, 155, 201, 267, 696, 763 Savoie
Silver perch *Bairdiella chysoura*	6, 155, 201, 219, 267, 696, 763 Savoie
Sand seatrout *Cynoscion arenarius*	5, 6, 32, 73, 155, 201, 218, 219, 267, 696, 763 Savoie
Spotted seatrout *Cynoscion nebulosus*	5, 6, 32, 73, 155, 201, 219, 275, 696, 763, 861 Savoie
Spot *Leiostomus xanthurus*	6, 32, 155, 201, 219, 681, 696, 763 Savoie
Atlantic croaker *Micropogonias undulatus*	5, 6, 32, 73, 155, 201, 219, 275, 681, 696, 763 Savoie
Black drum *Pogonias cromis*	5, 6, 32, 73, 201, 267 Savoie, Soniat
Red drum *Sciaenops ocellatus*	6, 73, 155, 201, 267, 696, 927 Savoie
Striped mullet *Mugil cephalus*	5, 6, 73, 155, 201, 219, 266, 486, 696 Savoie
Code goby *Gobiosoma robustum*	Savoie
Spanish mackerel *Scomberomorus maculatus*	6, 32, 155, 201, 267, 696 Savoie
Gulf flounder *Paralichthys albigutta*	Thompson
Southern flounder *Paralicthys lethostigma*	5, 6, 32, 155, 201, 267, 696, 763 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 *Argopecten irradians*	Savoie, Soniat
American oyster *Crassostrea virginica*	231, 233, 467, 867, 886, 887 Savoie, Soniat
Common rangia *Rangia cuneata*	73, 196, 198, 233, 252, 315, 467, 507, 867, 884, 885, 887 Savoie, Soniat
Hard clam *Mercenaria species*	Savoie, Soniat
Bay squid *Lolliguncula brevis*	155, 696 Savoie, Soniat
Brown shrimp *Peneaus aztecus*	73, 155, 201, 280, 389, 696, 867, 887, 941, 942 Savoie, Soniat
Pink shrimp *Peneaus duorarum*	155, 696, 867 Savoie, Soniat
White shrimp *Penaeus setiferus*	73, 155, 196, 198, 201, 280, 389, 486, 696, 867, 915, 944 Savoie, Soniat
Grass shrimp *Palaemonetes pugio*	155, 389, 486, 507, 867, 887 Savoie, Soniat
Spiny lobster *Panulirus argus*	Savoie, Soniat
Blue crab *Callinectes sapidus*	73, 155, 196, 197, 198, 201, 389, 486, 507, 696, 867, 887 Savoie, Soniat
Gulf stone crab *Menippe adina*	155, 201, 696, 947 Savoie, Soniat
Stone crab *Menippe mercenaria*	947 Czapla
Bull shark *Carcharhinus leucas*	6, 196, 198, 210, 867 Savoie
Tarpon *Megalops atlanticus*	210, 867 Savoie
Alabama shad *Alosa alabamae*	210, 350, 504, 600 Savoie
Gulf menhaden *Brevoortia patronus*	6, 155, 196, 201, 210, 315, 350, 389, 696, 864, 867, 887 Savoie
Yellowfin menhaden *Brevoortia smithii*	Savoie
Gizzard shad *Dorosoma cepedianum*	156, 196, 198, 201, 210, 315, 350, 486, 600, 696, 826, 887 Savoie
Bay anchovy *Anchoa mitchilli*	73, 156, 196, 198, 201, 210, 315, 350, 389, 507, 600, 696, 867, 887 Savoie
Hardhead catfish *Arius felis*	6, 155, 196, 198, 201, 210, 315, 350, 389, 441, 507, 696, 867, 887 Savoie
Sheepshead minow *Cyprinodon variegatus*	155, 196, 210, 507, 696, 867, 887 Savoie
Gulf killifish *Fundulus grandis*	73, 155, 210, 350, 507, 696, 867, 887 Savoie
Silversides *Menidia species*	155, 196, 198, 201, 210, 315, 350, 507, 600, 696, 867, 887 Savoie
Snook *Centropomus undecemalis*	Savoie
Bluefish *Pomatomus saltatrix*	6 Savoie
Blue runner *Caranx crysos*	Savoie
Crevalle jack *Caranx hippos*	6, 155, 196, 198, 201, 210, 350, 600, 696, 867, 887 Savoie
Florida pompano *Trachinotus carolinus*	6, 210 Savoie
Gray snapper *Lutjanus griseus*	210 Savoie
Sheepshead *Archosargus probatocephalus*	5, 6, 46, 156, 196, 198, 201, 210, 315, 350, 507, 600, 696, 887 Savoie
Pinfish *Lagodon rhomboides*	6, 155, 196, 198, 201, 210, 507, 696, 867, 887 Savoie
Silver perch *Bairdiella chysoura*	6, 155, 196, 198, 201, 210, 696, 867, 887 Savoie
Sand seatrout *Cynoscion arenarius*	5, 6, 73, 155, 196, 198, 201, 210, 218, 315, 350, 389, 507, 696, 867, 887 Savoie
Spotted seatrout *Cynoscion nebulosus*	5, 6, 73, 155, 196, 198, 201, 210, 219, 315, 319, 507, 696, 867, 887 Savoie
Spot *Leiostomus xanthurus*	6, 155, 196, 198, 201, 217, 219, 315, 507, 696, 867, 887 Savoie
Atlantic croaker *Micropogonias undulatus*	5, 6, 73, 155, 196, 198, 201, 210, 219, 315, 319, 350, 389, 507, 600, 696, 867, 887 Savoie
Black drum *Pogonias cromis*	5, 6, 73, 155, 196, 198, 201, 210, 319, 350, 696, 867, 887 Savoie
Red drum *Sciaenops ocellatus*	5, 6, 73, 155, 198, 201, 210, 319, 507, 696, 867, 887 Savoie
Striped mullet *Mugil cephalus*	6, 73, 155, 196, 198, 201, 210, 219, 315, 319, 350, 486, 600, 696, 867, 887 Savoie
Code goby *Gobiosoma robustum*	202, 210 Savoie
Spanish mackerel *Scomberomorus maculatus*	6, 201, 210, 867 Savoie
Gulf flounder *Paralichthys albigutta*	887 Thompson
Southern flounder *Paralicthys lethostigma*	5, 6, 155, 196, 198, 201, 210, 315, 350, 466, 600, 696, 867, 887 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 *Argopecten irradians*	401, 682 Ancelet
American oyster *Crassostrea virginica*	129, 230, 231, 288, 319, 401, 682, 713, 880 Ancelet
Common rangia *Rangia cuneata*	682 Ancelet
Hard clam *Mercenaria species*	232, 401, 682 Ancelet
Bay squid *Lolliguncula brevis*	32, 267, 713 Ancelet
Brown shrimp *Peneaus aztecus*	30, 31, 32, 73, 267, 280, 713, 941, 942 Ancelet
Pink shrimp *Peneaus duorarum*	401 Ancelet
White shrimp *Penaeus setiferus*	30, 31, 32, 73, 267, 280, 713, 942 Ancelet
Grass shrimp *Palaemonetes pugio*	267, 401, 713 Ancelet
Spiny lobster *Panulirus argus*	Ancelet
Blue crab *Callinectes sapidus*	32, 73, 267, 401, 713 Ancelet
Gulf stone crab *Menippe adina*	267, 401, 947 Ancelet
Stone crab *Menippe mercenaria*	947 Czapla
Bull shark *Carcharhinus leucas*	267, 321, 468 Ancelet
Tarpon *Megalops atlanticus*	Ancelet
Alabama shad *Alosa alabamae*	504 Ancelet
Gulf menhaden *Brevoortia patronus*	32, 73, 267, 318, 468, 492, 713, 763 Ancelet
Yellowfin menhaden *Brevoortia smithii*	Ancelet
Gizzard shad *Dorosoma cepedianum*	32, 267, 468, 485 Ancelet
Bay anchovy *Anchoa mitchilli*	32, 73, 267, 468, 492, 713, 763 Ancelet
Hardhead catfish *Arius felis*	32, 267, 468, 492, 713, 763 Ancelet
Sheepshead minow *Cyprinodon variegatus*	267, 468, 492, 763 Ancelet
Gulf killifish *Fundulus grandis*	267, 468, 492, 763 Ancelet
Silversides *Menidia species*	267, 468, 492 Ancelet
Snook *Centropomus undecemalis*	Ancelet
Bluefish *Pomatomus saltatrix*	492 Ancelet
Blue runner *Caranx crysos*	293, 301, 302 Ancelet
Crevalle jack *Caranx hippos*	32, 267, 293, 302, 468, 492, 713 Ancelet
Florida pompano *Trachinotus carolinus*	267, 293, 492 Ancelet
Gray snapper *Lutjanus griseus*	492 Ancelet
Sheepshead *Archosargus probatocephalus*	32, 46, 267, 468, 492, 713, 763 Ancelet
Pinfish *Lagodon rhomboides*	267, 468, 492, 713, 763 Ancelet
Silver perch *Bairdiella chysoura*	32, 267, 468, 492, 713, 763 Ancelet
Sand seatrout *Cynoscion arenarius*	32, 73, 218, 267, 468, 492, 713 Ancelet
Spotted seatrout *Cynoscion nebulosus*	32, 219, 267, 468, 492, 713 Ancelet
Spot *Leiostomus xanthurus*	32, 73, 267, 468, 492, 713, 763 Ancelet
Atlantic croaker *Micropogonias undulatus*	32, 73, 267, 468, 492, 713, 763 Ancelet
Black drum *Pogonias cromis*	32, 267, 468, 492, 713 Ancelet
Red drum *Sciaenops ocellatus*	69, 267, 468, 492, 927 Ancelet
Striped mullet *Mugil cephalus*	267, 468, 485, 492, 763 Ancelet
Code goby *Gobiosoma robustum*	492 Ancelet
Spanish mackerel *Scomberomorus maculatus*	267, 468, 492, 713 Ancelet
Gulf flounder *Paralichthys albigutta*	492 Ancelet, Thompson
Southern flounder *Paralicthys lethostigma*	32, 267, 294, 468, 492, 763 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 *Argopecten irradians*	Ancelet
American oyster *Crassostrea virginica*	682 Ancelet
Common rangia *Rangia cuneata*	Ancelet
Hard clam *Mercenaria species*	Ancelet
Bay squid *Lolliguncula brevis*	Ancelet
Brown shrimp *Peneaus aztecus*	30, 32, 34, 73, 240, 280, 826 Ancelet
Pink shrimp *Peneaus duorarum*	Ancelet
White shrimp *Penaeus setiferus*	30, 34, 240, 280, 826 Ancelet
Grass shrimp *Palaemonetes pugio*	Ancelet
Spiny lobster *Panulirus argus*	Ancelet
Blue crab *Callinectes sapidus*	Ancelet
Gulf stone crab *Menippe adina*	947 Ancelet
Stone crab *Menippe mercenaria*	947 Czapla
Bull shark *Carcharhinus leucas*	468 Ancelet
Tarpon *Megalops atlanticus*	Ancelet
Alabama shad *Alosa alabamae*	504 Ancelet
Gulf menhaden *Brevoortia patronus*	304, 305, 468, 830, 865, 931 Ancelet
Yellowfin menhaden *Brevoortia smithii*	Ancelet
Gizzard shad *Dorosoma cepedianum*	281, 468 Ancelet
Bay anchovy *Anchoa mitchilli*	468 Ancelet
Hardhead catfish *Arius felis*	468, 505 Ancelet
Sheepshead minow *Cyprinodon variegatus*	468, 583 Ancelet
Gulf killifish *Fundulus grandis*	468, 583 Ancelet
Silversides *Menidia species*	281, 468 Ancelet
Snook *Centropomus undecemalis*	Ancelet
Bluefish *Pomatomus saltatrix*	Ancelet
Blue runner *Caranx crysos*	Ancelet
Crevalle jack *Caranx hippos*	302, 468 Ancelet
Florida pompano *Trachinotus carolinus*	Ancelet
Gray snapper *Lutjanus griseus*	Ancelet
Sheepshead *Archosargus probatocephalus*	46, 468 Ancelet
Pinfish *Lagodon rhomboides*	468 Ancelet
Silver perch *Bairdiella chysoura*	468 Ancelet
Sand seatrout *Cynoscion arenarius*	218, 468 Ancelet
Spotted seatrout *Cynoscion nebulosus*	468, 830 Ancelet
Spot *Leiostomus xanthurus*	303, 304, 468 Ancelet
Atlantic croaker *Micropogonias undulatus*	304, 468, 830 Ancelet
Black drum *Pogonias cromis*	468 Ancelet
Red drum *Sciaenops ocellatus*	468 Ancelet
Striped mullet *Mugil cephalus*	468 Ancelet
Code goby *Gobiosoma robustum*	Ancelet
Spanish mackerel *Scomberomorus maculatus*	468 Ancelet
Gulf flounder *Paralichthys albigutta*	Ancelet, Thompson
Southern flounder *Paralicthys lethostigma*	468 Ancelet

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

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Species	Barataria Bay, LA
Bay scallop *Argopecten irradians*	Dameier, Schexnayder
American oyster *Crassostrea virginica*	117, 207, 266, 288, 319, 398, 912 Dameier, Schexnayder
Common rangia *Rangia cuneata*	117, 712 Dameier, Schexnayder
Hard clam *Mercenaria species*	Dameier, Schexnayder
Bay squid *Lolliguncula brevis*	32 Dameier, Schexnayder
Brown shrimp *Peneaus aztecus*	30, 31, 32, 33, 34, 65, 73, 126, 168, 207, 280, 316, 319, 442, 826, 844, 941, 942 Dameier, Schexnayder
Pink shrimp *Peneaus duorarum*	Dameier, Schexnayder
White shrimp *Penaeus setiferus*	30, 31, 32, 33, 34, 65, 73, 126, 168, 207, 280, 319, 826, 942 Dameier, Schexnayder
Grass shrimp *Palaemonetes pugio*	32, 126 Dameier, Schexnayder
Spiny lobster *Panulirus argus*	Dameier, Schexnayder
Blue crab *Callinectes sapidus*	32, 73, 126, 207, 444, 961 Dameier, Schexnayder
Gulf stone crab *Menippe adina*	32, 427, 947 Dameier, Schexnayder
Stone crab *Menippe mercenaria*	947 Czapla
Bull shark *Carcharhinus leucas*	23, 210, 314 Dameier, Schexnayder
Tarpon *Megalops atlanticus*	210, 314 Dameier, Schexnayder
Alabama shad *Alosa alabamae*	210, 271, 314, 504 Dameier, Schexnayder
Gulf menhaden *Brevoortia patronus*	23, 32, 73, 126, 207, 210, 217, 219, 236, 271, 304, 305, 314, 316, 322, 765, 775, 821, 830, 926, 931, 961 Dameier, Schexnayder
Yellowfin menhaden *Brevoortia smithii*	Dameier, Schexnayder
Gizzard shad *Dorosoma cepedianum*	23, 32, 126, 210, 236, 314, 765, 775, 926, 961 Dameier, Schexnayder
Bay anchovy *Anchoa mitchilli*	23, 32, 73, 126, 207, 210, 236, 271, 314, 322, 775, 926 Dameier, Schexnayder
Hardhead catfish *Arius felis*	23, 32, 126, 210, 236, 271, 314, 765, 775 Dameier, Schexnayder
Sheepshead minow *Cyprinodon variegatus*	23, 126, 207, 210, 236, 270, 271, 314, 765, 775 Dameier, Schexnayder
Gulf killifish *Fundulus grandis*	23, 126, 207, 210, 236, 270, 271, 310, 314, 765, 775 Dameier, Schexnayder
Silversides *Menidia species*	23, 32, 126, 207, 210, 236, 271, 314, 765, 775, 961 Dameier, Schexnayder
Snook *Centropomus undecemalis*	317 Dameier, Schexnayder
Bluefish *Pomatomus saltatrix*	126, 210, 236, 271, 314 Dameier, Schexnayder
Blue runner *Caranx crysos*	271, 293, 301, 302, 314 Dameier, Schexnayder
Crevalle jack *Caranx hippos*	23, 32, 210, 236, 271, 293, 314, 322, 775 Dameier, Schexnayder
Florida pompano *Trachinotus carolinus*	12, 23, 32, 48, 49, 210, 236, 271, 293, 314, 775 Dameier, Schexnayder
Gray snapper *Lutjanus griseus*	23, 210, 314, 775 Dameier, Schexnayder
Sheepshead *Archosargus probatocephalus*	23, 32, 126, 210, 217, 219, 236, 264, 271, 314, 765, 775 Dameier, Schexnayder
Pinfish *Lagodon rhomboides*	23, 126, 210, 217, 219, 236, 264, 271, 314, 765, 775 Dameier, Schexnayder
Silver perch *Bairdiella chysoura*	23, 32, 126, 210, 219, 236, 271, 314, 322, 775 Dameier, Schexnayder
Sand seatrout *Cynoscion arenarius*	23, 32, 73, 126, 207, 210, 217, 218, 219, 236, 271, 314, 322, 775 Dameier, Schexnayder
Spotted seatrout *Cynoscion nebulosus*	23, 32, 126, 207, 210, 219, 236, 271, 314, 322, 374, 376, 707, 765, 775, 830 Dameier, Schexnayder
Spot *Leiostomus xanthurus*	23, 32, 73, 126, 207, 210, 217, 219, 236, 271, 275, 303, 304, 305, 314, 322, 755, 765, 775, 926 Dameier, Schexnayder
Atlantic croaker *Micropogonias undulatus*	23, 32, 73, 126, 207, 210, 217, 219, 236, 271, 275, 304, 303, 305, 314, 322, 755, 758, 775, 830, 926, 961 Dameier, Schexnayder
Black drum *Pogonias cromis*	23, 126, 210, 227, 271, 314, 765, 775 Dameier, Schexnayder
Red drum *Sciaenops ocellatus*	40, 126, 210, 217, 219, 271, 314, 375, 707, 765, 775, 927 Dameier, Schexnayder
Striped mullet *Mugil cephalus*	23, 126, 207, 210, 217, 219, 271, 314, 765, 775, 961 Dameier, Schexnayder
Code goby *Gobiosoma robustum*	210, 314 Dameier, Schexnayder
Spanish mackerel *Scomberomorus maculatus*	23, 32, 126, 210, 214, 217, 219, 271, 314, 775 Dameier, Schexnayder
Gulf flounder *Paralichthys albigutta*	271, 775 Dameier, Schexnayder, Thompson
Southern flounder *Paralicthys lethostigma*	23, 32, 126, 210, 236, 271, 272, 314, 322, 775, 801 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 *Argopecten irradians*	Adkins, Bourgeois, Guillory
American oyster *Crassostrea virginica*	288 Adkins, Bourgeois, Guillory
Common rangia *Rangia cuneata*	Adkins, Bourgeois, Guillory
Hard clam *Mercenaria species*	253 Adkins, Bourgeois, Guillory
Bay squid *Lolliguncula brevis*	4, 32 Adkins, Bourgeois, Guillory
Brown shrimp *Peneaus aztecus*	4, 30, 31, 32, 73, 253, 280, 316, 941, 942 Adkins, Bourgeois, Guillory
Pink shrimp *Peneaus duorarum*	4, 31, 32 Adkins, Bourgeois, Guillory
White shrimp *Penaeus setiferus*	4, 30, 31, 32, 73, 280, 534, 942 Adkins, Bourgeois, Guillory
Grass shrimp *Palaemonetes pugio*	4, 32 Adkins, Bourgeois, Guillory
Spiny lobster *Panulirus argus*	Adkins, Bourgeois, Guillory
Blue crab *Callinectes sapidus*	2, 3, 4, 32, 73, 253
Gulf stone crab *Menippe adina*	3, 4, 947 Adkins, Bourgeois, Guillory
Stone crab *Menippe mercenaria*	947 Czapla
Bull shark *Carcharhinus leucas*	3, 5 Adkins, Bourgeois, Guillory
Tarpon *Megalops atlanticus*	5 Adkins, Bourgeois, Guillory
Alabama shad *Alosa alabamae*	Adkins, Bourgeois, Guillory
Gulf menhaden *Brevoortia patronus*	3, 4, 32, 73, 316, 698 Adkins, Bourgeois, Guillory
Yellowfin menhaden *Brevoortia smithii*	Adkins, Bourgeois, Guillory
Gizzard shad *Dorosoma cepedianum*	3, 4, 32, 698 Adkins, Bourgeois, Guillory
Bay anchovy *Anchoa mitchilli*	4, 32, 73, 698 Adkins, Bourgeois, Guillory
Hardhead catfish *Arius felis*	3, 4, 5, 32, 698 Adkins, Bourgeois, Guillory
Sheepshead minow *Cyprinodon variegatus*	4 Adkins, Bourgeois, Guillory
Gulf killifish *Fundulus grandis*	4 Adkins, Bourgeois, Guillory
Silversides *Menidia species*	4
Snook *Centropomus undecemalis*	Adkins, Bourgeois, Guillory
Bluefish *Pomatomus saltatrix*	3, 4, 5, 698 Adkins, Bourgeois, Guillory
Blue runner *Caranx crysos*	5, 301, 302 Adkins, Bourgeois, Guillory
Crevalle jack *Caranx hippos*	3, 4, 5, 32, 698 Adkins, Bourgeois, Guillory
Florida pompano *Trachinotus carolinus*	3, 5 Adkins, Bourgeois, Guillory
Gray snapper *Lutjanus griseus*	4, 5 Adkins, Bourgeois, Guillory
Sheepshead *Archosargus probatocephalus*	3, 4, 5 Adkins, Bourgeois, Guillory
Pinfish *Lagodon rhomboides*	3, 4, 5, 32
Silver perch *Bairdiella chysoura*	3, 4, 32, 219, 698 Adkins, Bourgeois, Guillory
Sand seatrout *Cynoscion arenarius*	3, 4, 32, 73, 218, 698
Spotted seatrout *Cynoscion nebulosus*	3, 4, 5, 32, 219, 698 Adkins, Bourgeois, Guillory
Spot *Leiostomus xanthurus*	3, 4, 5, 32, 73, 698 Adkins, Bourgeois, Guillory
Atlantic croaker *Micropogonias undulatus*	3, 4, 5, 32, 73, 698 Adkins, Bourgeois, Guillory
Black drum *Pogonias cromis*	3, 4 Adkins, Bourgeois, Guillory
Red drum *Sciaenops ocellatus*	3, 4, 5, 927 Adkins, Bourgeois, Guillory
Striped mullet *Mugil cephalus*	3, 4, 32 Adkins, Bourgeois, Guillory
Code goby *Gobiosoma robustum*	Adkins, Bourgeois, Guillory
Spanish mackerel *Scomberomorus maculatus*	3, 4, 5, 698 Adkins, Bourgeois, Guillory
Gulf flounder *Paralichthys albigutta*	Adkins, Bourgeois, Guillory, Thompson
Southern flounder *Paralicthys lethostigma*	3, 4, 5, 32, 698 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 *Argopecten irradians*	Juneau, D. Rogers
American oyster *Crassostrea virginica*	319 Juneau, D. Rogers
Common rangia *Rangia cuneata*	229, 299, 300, 397, 481 Juneau, D. Rogers
Hard clam *Mercenaria species*	Juneau, D. Rogers
Bay squid *Lolliguncula brevis*	32, 465 Juneau, D. Rogers
Brown shrimp *Peneaus aztecus*	30, 31, 32, 73, 228, 229, 280, 364, 380, 385, 465, 466, 481, 760, 934, 935 Juneau, D. Rogers
Pink shrimp *Peneaus duorarum*	Juneau, D. Rogers
White shrimp *Penaeus setiferus*	30, 31, 32, 73, 228, 229, 280, 364, 380, 465, 466, 481, 534, 760, 934, 935, 942 Juneau, D. Rogers
Grass shrimp *Palaemonetes pugio*	32, 380, 418, 465, 481, 760, 934, 935 Juneau, D. Rogers
Spiny lobster *Panulirus argus*	Juneau, D. Rogers
Blue crab *Callinectes sapidus*	32, 73, 228, 229, 380, 418, 465, 481, 693, 760, 934, 935 Juneau, D. Rogers
Gulf stone crab *Menippe adina*	32, 465, 947 Juneau, D. Rogers
Stone crab *Menippe mercenaria*	947 Czapla
Bull shark *Carcharhinus leucas*	120, 210, 659 Juneau, D. Rogers
Tarpon *Megalops atlanticus*	659 Juneau, D. Rogers
Alabama shad *Alosa alabamae*	Juneau, D. Rogers
Gulf menhaden *Brevoortia patronus*	32, 73, 208, 209, 210, 211, 228, 229, 418, 465, 481, 659, 695, 760, 883, 934, 935 Juneau, D. Rogers
Yellowfin menhaden *Brevoortia smithii*	659 Juneau, D. Rogers
Gizzard shad *Dorosoma cepedianum*	32, 210, 229, 292, 380, 418, 465, 481, 485, 659, 695, 883, 934, 935 Juneau, D. Rogers
Bay anchovy *Anchoa mitchilli*	32, 73, 210, 229, 380, 418, 465, 481, 659, 695, 760, 883, 935 Juneau, D. Rogers
Hardhead catfish *Arius felis*	32, 210, 229, 380, 465, 481, 659, 695, 883, 934, 935 Juneau, D. Rogers
Sheepshead minow *Cyprinodon variegatus*	210, 380, 418, 465, 659, 760, 883, 934, 935 Juneau, D. Rogers
Gulf killifish *Fundulus grandis*	210, 380, 418, 465, 659, 760, 883, 935 Juneau, D. Rogers
Silversides *Menidia species*	210, 380, 418, 465, 659, 695, 760, 883, 934, 935 Juneau, D. Rogers
Snook *Centropomus undecemalis*	Juneau, D. Rogers
Bluefish *Pomatomus saltatrix*	434, 883 Juneau, D. Rogers
Blue runner *Caranx crysos*	434 Juneau, D. Rogers
Crevalle jack *Caranx hippos*	210, 228, 380, 418, 465, 659, 695, 883, 935 Juneau, D. Rogers
Florida pompano *Trachinotus carolinus*	659, 883 Juneau, D. Rogers
Gray snapper *Lutjanus griseus*	883 Juneau, D. Rogers
Sheepshead *Archosargus probatocephalus*	32, 210, 228, 229, 380, 418, 465, 466, 659, 695, 883, 934, 935 Juneau, D. Rogers
Pinfish *Lagodon rhomboides*	210, 229, 380, 418, 465, 481, 659, 695, 883, 934, 935 Juneau, D. Rogers
Silver perch *Bairdiella chysoura*	32, 210, 380, 418, 465, 481, 659, 695, 883, 935 Juneau, D. Rogers
Sand seatrout *Cynoscion arenarius*	32, 73, 210, 218, 228, 229, 380, 418, 465, 466, 481, 659, 695, 760, 883, 935 Juneau, D. Rogers
Spotted seatrout *Cynoscion nebulosus*	32, 210, 219, 228, 229, 380, 383, 465, 481, 659, 695, 883 Juneau, D. Rogers
Spot *Leiostomus xanthurus*	32, 73, 210, 228, 229, 380, 418, 465, 466, 481, 659, 695, 760, 883, 934, 935 Juneau, D. Rogers
Atlantic croaker *Micropogonias undulatus*	32, 73, 210, 228, 380, 418, 465, 466, 481, 659, 695, 760, 883, 934, 935 Juneau, D. Rogers
Black drum *Pogonias cromis*	32, 210, 229, 380, 418, 465, 466, 481, 659, 695, 883, 934, 935 Juneau, D. Rogers
Red drum *Sciaenops ocellatus*	210, 465, 481, 659, 883, 927, 934, 935 Juneau, D. Rogers
Striped mullet *Mugil cephalus*	210, 228, 229, 292, 380, 418, 465, 485, 659, 695, 760, 883, 934, 935 Juneau, D. Rogers
Code goby *Gobiosoma robustum*	Juneau, D. Rogers
Spanish mackerel *Scomberomorus maculatus*	32, 228, 465, 659, 695, 883 Juneau, D. Rogers
Gulf flounder *Paralichthys albigutta*	Juneau, D. Rogers, Thompson
Southern flounder *Paralicthys lethostigma*	32, 210, 228, 229, 380, 465, 466, 481, 659, 695, 883, 934, 935 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 *Argopecten irradians*	Carver, Ferguson, B. Rogers
American oyster *Crassostrea virginica*	288, 319, 914, 943 Carver, Ferguson, B. Rogers
Common rangia *Rangia cuneata*	287, 397 Carver, Ferguson, B. Rogers
Hard clam *Mercenaria species*	Carver, Ferguson, B. Rogers
Bay squid *Lolliguncula brevis*	27, 32, 434, 917, 918, 919 Carver, Ferguson, B. Rogers
Brown shrimp *Peneaus aztecus*	30, 31, 32, 73, 280, 287, 316, 345, 381, 382, 384, 434, 478, 540, 703, 756, 757, 759, 941, 942 Carver, Ferguson, B. Rogers
Pink shrimp *Peneaus duorarum*	Carver, Ferguson, B. Rogers
White shrimp *Penaeus setiferus*	30, 31, 32, 73, 280, 381, 382, 384, 434, 540, 678, 703, 756, 757, 759, 942 Carver, Ferguson, B. Rogers
Grass shrimp *Palaemonetes pugio*	32, 287, 381, 384, 756, 757, 759 Carver, Ferguson, B. Rogers
Spiny lobster *Panulirus argus*	Carver, Ferguson, B. Rogers
Blue crab *Callinectes sapidus*	32, 73, 287, 345, 381, 382, 384, 434, 756, 757, 759 Carver, Ferguson, B. Rogers
Gulf stone crab *Menippe adina*	32, 757, 947 Carver, Ferguson, B. Rogers
Stone crab *Menippe mercenaria*	947 Czapla
Bull shark *Carcharhinus leucas*	21 Carver, Ferguson, B. Rogers
Tarpon *Megalops atlanticus*	Carver, Ferguson, B. Rogers
Alabama shad *Alosa alabamae*	Carver, Ferguson, B. Rogers
Gulf menhaden *Brevoortia patronus*	21, 32, 73, 255, 256, 257, 316, 345, 381, 382, 384, 434, 540, 541, 756, 757, 759, 797, 800, 799, 915, 916 Carver, Ferguson, B. Rogers
Yellowfin menhaden *Brevoortia smithii*	704 Carver, Ferguson, B. Rogers
Gizzard shad *Dorosoma cepedianum*	21, 32, 255, 256, 381, 704, 757 Carver, Ferguson, B. Rogers
Bay anchovy *Anchoa mitchilli*	21, 32, 73, 257, 345, 381, 382, 384, 434, 704, 756, 757, 759, 915, 916 Carver, Ferguson, B. Rogers
Hardhead catfish *Arius felis*	21, 32, 381, 434, 704, 756, 757 Carver, Ferguson, B. Rogers
Sheepshead minow *Cyprinodon variegatus*	21, 255, 256, 381, 384, 704, 756, 757, 759 Carver, Ferguson, B. Rogers
Gulf killifish *Fundulus grandis*	21, 256, 381, 384, 704, 756 Carver, Ferguson, B. Rogers
Silversides *Menidia species*	32, 255, 256, 381, 384, 704, 756, 757, 759 Carver, Ferguson, B. Rogers
Snook *Centropomus undecemalis*	Carver, Ferguson, B. Rogers
Bluefish *Pomatomus saltatrix*	21 Carver, Ferguson, B. Rogers
Blue runner *Caranx crysos*	Carver, Ferguson, B. Rogers
Crevalle jack *Caranx hippos*	32, 434, 704, 757 Carver, Ferguson, B. Rogers
Florida pompano *Trachinotus carolinus*	48, 49, 434, 757 Carver, Ferguson, B. Rogers
Gray snapper *Lutjanus griseus*	757 Carver, Ferguson, B. Rogers
Sheepshead *Archosargus probatocephalus*	21, 32, 381, 434, 704, 757 Carver, Ferguson, B. Rogers
Pinfish *Lagodon rhomboides*	21, 32, 384, 434, 757 Carver, Ferguson, B. Rogers
Silver perch *Bairdiella chysoura*	21, 32, 384, 434, 704, 757 Carver, Ferguson, B. Rogers
Sand seatrout *Cynoscion arenarius*	21, 32, 73, 184, 186, 187, 218, 345, 381, 382, 384, 434, 704, 756, 757, 759, 799, 934 Carver, Ferguson, B. Rogers
Spotted seatrout *Cynoscion nebulosus*	21, 32, 219, 381, 382, 383, 384, 434, 704, 756, 757 Carver, Ferguson, B. Rogers
Spot *Leiostomus xanthurus*	21, 32, 73, 184, 186, 381, 382, 384, 434, 704, 757 Carver, Ferguson, B. Rogers
Atlantic croaker *Micropogonias undulatus*	21, 22, 32, 73, 156, 184, 185, 186, 345, 381, 382, 384, 434, 477, 540, 704, 756, 757, 759, 944, 945 Carver, Ferguson, B. Rogers
Black drum *Pogonias cromis*	21, 32, 184, 186, 384, 434, 757 Carver, Ferguson, B. Rogers
Red drum *Sciaenops ocellatus*	21, 32, 381, 384, 434, 704, 756, 757, 927 Carver, Ferguson, B. Rogers
Striped mullet *Mugil cephalus*	21, 32, 345, 381, 382, 384, 434, 604, 704, 756, 757 Carver, Ferguson, B. Rogers
Code goby *Gobiosoma robustum*	757 Carver, Ferguson, B. Rogers
Spanish mackerel *Scomberomorus maculatus*	21, 32, 434, 757 Carver, Ferguson, B. Rogers
Gulf flounder *Paralichthys albigutta*	757 Carver, Ferguson, B. Rogers, Thompson
Southern flounder *Paralicthys lethostigma*	21, 32, 381, 384, 434, 704, 756, 757 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 *Argopecten irradians*	LeBlanc, Mambretti
American oyster *Crassostrea virginica*	339, 377, 480, 850 LeBlanc, Mambretti
Common rangia *Rangia cuneata*	17, 480, 850, 954 LeBlanc, Mambretti
Hard clam *Mercenaria species*	LeBlanc, Mambretti
Bay squid *Lolliguncula brevis*	850 LeBlanc, Mambretti
Brown shrimp *Peneaus aztecus*	339, 377, 501, 591, 611, 612, 850, 954 LeBlanc, Mambretti
Pink shrimp *Peneaus duorarum*	339, 377, 591, 611, 612 LeBlanc, Mambretti
White shrimp *Penaeus setiferus*	337, 339, 377, 501, 591, 611, 612, 850, 852, 954 LeBlanc, Mambretti
Grass shrimp *Palaemonetes pugio*	954 LeBlanc, Mambretti
Spiny lobster *Panulirus argus*	Pattillo
Blue crab *Callinectes sapidus*	337, 339, 591, 639, 850, 954 LeBlanc, Mambretti
Gulf stone crab *Menippe adina*	947 LeBlanc, Mambretti
Stone crab *Menippe mercenaria*	947 Czapla
Bull shark *Carcharhinus leucas*	Green, LeBlanc, Mambretti
Tarpon *Megalops atlanticus*	LeBlanc, Mambretti
Alabama shad *Alosa alabamae*	LeBlanc, Mambretti
Gulf menhaden *Brevoortia patronus*	591, 742, 797, 800, 849 LeBlanc, Mambretti
Yellowfin menhaden *Brevoortia smithii*	Pattillo
Gizzard shad *Dorosoma cepedianum*	849 LeBlanc, Mambretti
Bay anchovy *Anchoa mitchilli*	591, 849 LeBlanc, Mambretti
Hardhead catfish *Arius felis*	742, 849 LeBlanc, Mambretti
Sheepshead minow *Cyprinodon variegatus*	849 LeBlanc, Mambretti
Gulf killifish *Fundulus grandis*	849 LeBlanc, Mambretti
Silversides *Menidia species*	LeBlanc, Mambretti
Snook *Centropomus undecemalis*	LeBlanc, Mambretti
Bluefish *Pomatomus saltatrix*	849 LeBlanc, Mambretti
Blue runner *Caranx crysos*	Pattillo
Crevalle jack *Caranx hippos*	849 LeBlanc, Mambretti
Florida pompano *Trachinotus carolinus*	LeBlanc, Mambretti
Gray snapper *Lutjanus griseus*	LeBlanc, Mambretti
Sheepshead *Archosargus probatocephalus*	337, 742, 849 LeBlanc, Mambretti
Pinfish *Lagodon rhomboides*	591, 849 LeBlanc, Mambretti
Silver perch *Bairdiella chysoura*	LeBlanc, Mambretti
Sand seatrout *Cynoscion arenarius*	218, 337, 591, 742, 849 LeBlanc, Mambretti
Spotted seatrout *Cynoscion nebulosus*	219, 337, 591, 742, 849 LeBlanc, Mambretti
Spot *Leiostomus xanthurus*	591, 742, 849 LeBlanc, Mambretti
Atlantic croaker *Micropogonias undulatus*	337, 591, 742, 849 LeBlanc, Mambretti
Black drum *Pogonias cromis*	337, 591, 742, 849 LeBlanc, Mambretti
Red drum *Sciaenops ocellatus*	193, 337, 591, 742, 849 LeBlanc, Mambretti
Striped mullet *Mugil cephalus*	337, 591, 742, 849 LeBlanc, Mambretti
Code goby *Gobiosoma robustum*	LeBlanc, Mambretti
Spanish mackerel *Scomberomorus maculatus*	591, 849 LeBlanc, Mambretti
Gulf flounder *Paralichthys albigutta*	LeBlanc, Mambretti
Southern flounder *Paralicthys lethostigma*	569, 591, 742, 849 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 *Argopecten irradians*	623, 809 Benefield, Trimm
American oyster *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 *Rangia cuneata*	17, 26, 454, 537, 623, 723, 809, 967 Benefield, Trimm
Hard clam *Mercenaria species*	189, 190, 215, 415, 453, 586, 623, 809 Benefield, Trimm
Bay squid *Lolliguncula brevis*	20, 113, 142, 390, 391, 537, 586, 623, 723, 735, 809 Benefield, Forsythe, Trimm
Brown shrimp *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 *Peneaus duorarum*	53, 54, 55, 150, 339, 340, 484, 575, 586, 591, 611-625, 809, 889, 907, 967, 968 Baxter, Benefield, Trimm
White shrimp *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 *Palaemonetes pugio*	17, 127, 169, 178, 421, 454, 455, 537, 586, 623, 691, 723, 809, 907, 929, 953, 968 Benefield, Trimm
Spiny lobster *Panulirus argus*	Pattillo
Blue crab *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 *Menippe adina*	178, 402, 405, 454, 623, 723, 809, 947, 968 Benefield, Trimm
Stone crab *Menippe mercenaria*	947 Czapla
Bull shark *Carcharhinus leucas*	42, 77, 307, 623, 679, 722, 724, 739 Benefield, Green, Trimm
Tarpon *Megalops atlanticus*	247, 679, 968 Benefield, Trimm
Alabama shad *Alosa alabamae*	Benefield, Trimm
Gulf menhaden *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 *Brevoortia smithii*	Pattillo
Gizzard shad *Dorosoma cepedianum*	17, 20, 127, 169, 178, 284, 487, 537, 586, 623, 679, 722, 724, 734, 735, 737, 739, 804 Benefield, Trimm
Bay anchovy *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 *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 *Cyprinodon variegatus*	9, 20, 127, 169, 178, 284, 453, 455, 487, 543, 544, 586, 623, 679, 722, 724, 735, 737, 739, 804, 824, 968 Benefield, Trimm
Gulf killifish *Fundulus grandis*	9, 20, 127, 169, 216, 453, 455, 487, 586, 623, 679, 722, 724, 735, 737, 739, 804, 824, 967, 968 Benefield, Trimm
Silversides *Menidia species*	9, 17, 20, 127, 169, 216, 283, 421, 455, 586, 623, 734, 737, 739, 804, 967, 968 Benefield, Trimm
Snook *Centropomus undecemalis*	574, 586 Benefield, Trimm
Bluefish *Pomatomus saltatrix*	20, 487, 623, 679, 724, 739, 967 Benefield, Trimm
Blue runner *Caranx crysos*	679 Pattillo
Crevalle jack *Caranx hippos*	20, 45, 178, 284, 393, 487, 488, 586, 623, 679, 722, 724, 734, 737, 804 Benefield, Trimm
Florida pompano *Trachinotus carolinus*	20, 284, 337, 623, 679, 734, 737, 739 Benefield, Trimm
Gray snapper *Lutjanus griseus*	623, 679 Benefield, Trimm
Sheepshead *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 *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 Benefield, Trimm
Silver perch *Bairdiella chysoura*	20, 178, 216, 219, 284, 393, 487, 488, 586, 623, 679, 722, 724, 734-737, 739, 804, 967 Benefield, Trimm
Sand seatrout *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 *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 *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 *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 *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 *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 *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 *Gobiosoma robustum*	284, 487, 586, 623, 679, 968 Benefield, Trimm
Spanish mackerel *Scomberomorus maculatus*	41, 487, 591, 623, 679, 734, 739 Benefield, Trimm
Gulf flounder *Paralichthys albigutta*	178, 284, 421, 562, 586, 679 Benefield, Trimm
Southern flounder *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 *Argopecten irradians*	
American oyster *Crassostrea virginica*	457
Common rangia *Rangia cuneata*	
Hard clam *Mercenaria species*	
Bay squid *Lolliguncula brevis*	113, 457
Brown shrimp *Peneaus aztecus*	125, 457
Pink shrimp *Peneaus duorarum*	457
White shrimp *Penaeus setiferus*	18, 125, 457
Grass shrimp *Palaemonetes pugio*	457
Spiny lobster *Panulirus argus*	Pattillo
Blue crab *Callinectes sapidus*	457
Gulf stone crab *Menippe adina*	457, 947
Stone crab *Menippe mercenaria*	947 Czapla
Bull shark *Carcharhinus leucas*	77
Tarpon *Megalops atlanticus*	18, 457
Alabama shad *Alosa alabamae*	
Gulf menhaden *Brevoortia patronus*	18, 457
Yellowfin menhaden *Brevoortia smithii*	Pattillo
Gizzard shad *Dorosoma cepedianum*	18, 457
Bay anchovy *Anchoa mitchilli*	18, 457
Hardhead catfish *Arius felis*	18, 457
Sheepshead minow *Cyprinodon variegatus*	18, 457
Gulf killifish *Fundulus grandis*	18, 457
Silversides *Menidia species*	457
Snook *Centropomus undecemalis*	
Bluefish *Pomatomus saltatrix*	457
Blue runner *Caranx crysos*	Pattillo
Crevalle jack *Caranx hippos*	457
Florida pompano *Trachinotus carolinus*	457
Gray snapper *Lutjanus griseus*	
Sheepshead *Archosargus probatocephalus*	457
Pinfish *Lagodon rhomboides*	18, 457
Silver perch *Bairdiella chysoura*	219, 457
Sand seatrout *Cynoscion arenarius*	218, 457, 816
Spotted seatrout *Cynoscion nebulosus*	18, 219, 457
Spot *Leiostomus xanthurus*	18, 457
Atlantic croaker *Micropogonias undulatus*	18, 457
Black drum *Pogonias cromis*	457, 761
Red drum *Sciaenops ocellatus*	457, 761
Striped mullet *Mugil cephalus*	18, 457
Code goby *Gobiosoma robustum*	
Spanish mackerel *Scomberomorus maculatus*	457
Gulf flounder *Paralichthys albigutta*	
Southern flounder *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 *Argopecten irradians*	Dailey, Weixelman
American oyster *Crassostrea virginica*	204, 206, 337, 339, 367, 404, 403, 406, 407, 409, 410, 470, 472, 533, 629, 929 Dailey, Weixelman
Common rangia *Rangia cuneata*	204 Dailey, Weixelman
Hard clam *Mercenaria species*	Dailey, Weixelman
Bay squid *Lolliguncula brevis*	17, 113, 142, 204, 205, 390, 641 Dailey, Weixelman
Brown shrimp *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 *Peneaus duorarum*	54, 55, 204, 339, 575, 591, 611, 613, 614, 616-622, 624, 625, 641, 647, 651, 652, 969 Dailey, Weixelman
White shrimp *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 *Palaemonetes pugio*	205, 641, 969 Dailey, Weixelman
Spiny lobster *Panulirus argus*	Pattillo
Blue crab *Callinectes sapidus*	17, 54, 55, 135, 169, 147, 205, 206, 337, 338, 339, 340, 473, 591, 610, 638, 639, 641, 929, 969 Dailey, Weixelman
Gulf stone crab *Menippe adina*	641, 947 Dailey, Weixelman
Stone crab *Menippe mercenaria*	947 Czapla
Bull shark *Carcharhinus leucas*	307 Dailey, Green, Weixelman
Tarpon *Megalops atlanticus*	559, 969 Dailey, Weixelman
Alabama shad *Alosa alabamae*	Dailey, Weixelman
Gulf menhaden *Brevoortia patronus*	17, 192, 203, 205, 532, 585, 591, 606, 641, 742, 929, 940, 969 Dailey, Weixelman
Yellowfin menhaden *Brevoortia smithii*	Pattillo
Gizzard shad *Dorosoma cepedianum*	203, 205, 532, 641 Dailey, Weixelman
Bay anchovy *Anchoa mitchilli*	17, 203, 471, 532, 606, 641, 929, 969 Dailey, Weixelman
Hardhead catfish *Arius felis*	17, 192, 203, 532, 585, 591, 641, 939, 969 Dailey, Weixelman
Sheepshead minow *Cyprinodon variegatus*	203, 205, 532, 824, 929, 940, 969 Dailey, Weixelman
Gulf killifish *Fundulus grandis*	203, 606, 824, 969 Dailey, Weixelman
Silversides *Menidia species*	203, 205, 532, 606, 641, 969 Dailey, Weixelman
Snook *Centropomus undecemalis*	574 Dailey, Weixelman
Bluefish *Pomatomus saltatrix*	641 Dailey, Weixelman
Blue runner *Caranx crysos*	Pattillo
Crevalle jack *Caranx hippos*	203, 532, 641 Dailey, Weixelman
Florida pompano *Trachinotus carolinus*	Dailey, Weixelman
Gray snapper *Lutjanus griseus*	Dailey, Weixelman
Sheepshead *Archosargus probatocephalus*	85, 88-91, 192, 203, 337, 471, 532, 546, 585, 591, 628, 641, 646, 670, 672, 742, 851, 969 Dailey, Weixelman
Pinfish *Lagodon rhomboides*	192, 203, 205, 532, 585, 591, 606, 641, 742, 969 Dailey, Weixelman
Silver perch *Bairdiella chysoura*	203, 219, 532, 606, 641, 969 Dailey, Weixelman
Sand seatrout *Cynoscion arenarius*	17, 192, 203, 205, 218, 337, 471, 532, 585, 591, 606, 641, 670, 672, 742 Dailey, Weixelman
Spotted seatrout *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 *Leiostomus xanthurus*	17, 192, 203, 471, 532, 585, 591, 606, 641, 742, 929, 940, 969 Dailey, Weixelman
Atlantic croaker *Micropogonias undulatus*	17, 85, 192, 203, 205, 337, 471, 532, 585, 591, 606, 641, 670, 672, 742, 851, 929, 940, 969 Dailey, Weixelman
Black drum *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 Dailey, Weixelman
Red drum *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 *Mugil cephalus*	17, 192, 203, 205, 219, 262, 337, 532, 591, 606, 641, 742, 929, 940, 969 Dailey, Weixelman
Code goby *Gobiosoma robustum*	203, 532, 641 Dailey, Weixelman
Spanish mackerel *Scomberomorus maculatus*	203, 532, 591, 641 Dailey, Weixelman
Gulf flounder *Paralichthys albigutta*	562 Dailey, Weixelman
Southern flounder *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 *Argopecten irradians*	683 Marwitz, Wagner
American oyster *Crassostrea virginica*	52, 132, 134, 139, 140, 145, 337, 340, 367, 394, 404, 403, 406, 408, 409, 410, 537, 577, 683, 684 Marwitz, Wagner
Common rangia *Rangia cuneata*	17, 365, 537, 577, 683 Marwitz, Wagner
Hard clam *Mercenaria species*	394, 683 Marwitz, Wagner
Bay squid *Lolliguncula brevis*	17, 132, 390, 537 Marwitz, Wagner
Brown shrimp *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 Marwitz, Wagner
Pink shrimp *Peneaus duorarum*	53, 54, 55, 132, 340, 394, 474, 575, 591, 611, 613, 614, 616-622, 624, 625, 725 Marwitz, Wagner
White shrimp *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 *Palaemonetes pugio*	17, 132, 175, 537, 577 Marwitz, Wagner
Spiny lobster *Panulirus argus*	Pattillo
Blue crab *Callinectes sapidus*	17, 54, 55, 132, 134, 137, 142, 143, 147, 148, 338, 339, 340, 365, 394, 474, 537, 577, 638, 639, 820 Marwitz, Wagner
Gulf stone crab *Menippe adina*	132, 134, 537, 577, 947 Marwitz, Wagner
Stone crab *Menippe mercenaria*	947 Czapla
Bull shark *Carcharhinus leucas*	307, 394 Green, Marwitz, Wagner
Tarpon *Megalops atlanticus*	133, 823 Marwitz, Wagner
Alabama shad *Alosa alabamae*	Marwitz, Wagner
Gulf menhaden *Brevoortia patronus*	17, 132, 192, 537, 585, 591, 742 Marwitz, Wagner
Yellowfin menhaden *Brevoortia smithii*	Pattillo
Gizzard shad *Dorosoma cepedianum*	132, 133, 537 Marwitz, Wagner
Bay anchovy *Anchoa mitchilli*	17, 132, 133, 136, 141, 327, 537 Marwitz, Wagner
Hardhead catfish *Arius felis*	17, 132, 133, 192, 394, 537, 585, 591, 742, 820 Marwitz, Wagner
Sheepshead minow *Cyprinodon variegatus*	132, 327, 394, 537, 824 Marwitz, Wagner
Gulf killifish *Fundulus grandis*	327, 394, 537, 824 Marwitz, Wagner
Silversides *Menidia species*	17, 132, 133, 327, 537 Marwitz, Wagner
Snook *Centropomus undecemalis*	133, 574 Marwitz, Wagner
Bluefish *Pomatomus saltatrix*	Marwitz, Wagner
Blue runner *Caranx crysos*	Pattillo
Crevalle jack *Caranx hippos*	132, 327 Marwitz, Wagner
Florida pompano *Trachinotus carolinus*	133 Marwitz, Wagner
Gray snapper *Lutjanus griseus*	132 Marwitz, Wagner
Sheepshead *Archosargus probatocephalus*	17, 85, 91, 132, 133, 192, 337, 394, 474, 537, 546, 570, 585, 591, 670, 672, 742, 820, 851 Marwitz, Wagner
Pinfish *Lagodon rhomboides*	17, 132, 133, 136, 141, 192, 327, 585, 591, 742, 820 Marwitz, Wagner
Silver perch *Bairdiella chysoura*	132, 219, 327, 394, 820 Marwitz, Wagner
Sand seatrout *Cynoscion arenarius*	17, 132, 133, 192, 218, 394, 537, 585, 591, 670, 672, 742, 820 Marwitz, Wagner
Spotted seatrout *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 *Leiostomus xanthurus*	17, 132, 133, 136, 141, 192, 327, 394, 537, 585, 591, 742, 820 Marwitz, Wagner
Atlantic croaker *Micropogonias undulatus*	17, 85, 132, 133, 136, 141, 192, 327, 394, 537, 585, 591, 670, 672, 742, 820, 851 Marwitz, Wagner
Black drum *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 *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 *Mugil cephalus*	17, 132, 133, 192, 262, 327, 337, 394, 537, 591, 742 Marwitz, Wagner
Code goby *Gobiosoma robustum*	537 Marwitz, Wagner
Spanish mackerel *Scomberomorus maculatus*	133, 591 Marwitz, Wagner
Gulf flounder *Paralichthys albigutta*	474, 562 Marwitz, Wagner
Southern flounder *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 *Argopecten irradians*	400, 683, 965 Campbell, Meador
American oyster *Crassostrea virginica*	179, 337, 340, 366, 367, 368, 369, 370, 717 Campbell, Meador
Common rangia *Rangia cuneata*	365, 683 Campbell, Meador
Hard clam *Mercenaria species*	190, 683, 745 Campbell, Meador
Bay squid *Lolliguncula brevis*	17, 176, 326, 372, 390, 399, 745 Campbell, Meador
Brown shrimp *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 *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 *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 *Palaemonetes pugio*	17, 371, 372, 400, 691, 964 Campbell, Meador
Spiny lobster *Panulirus argus*	Pattillo
Blue crab *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 *Menippe adina*	326, 334, 372, 394, 716, 745, 947, 964 Campbell, Meador
Stone crab *Menippe mercenaria*	947 Czapla
Bull shark *Carcharhinus leucas*	42, 307, 395, 792, 964 Campbell, Green, Meador
Tarpon *Megalops atlanticus*	324, 842 Campbell, Meador
Alabama shad *Alosa alabamae*	Campbell, Meador
Gulf menhaden *Brevoortia patronus*	15, 17, 75, 176, 339, 323, 324, 371, 395, 399, 585, 591, 740, 742, 745 Campbell, Meador
Yellowfin menhaden *Brevoortia smithii*	Pattillo
Gizzard shad *Dorosoma cepedianum*	324, 334, 371, 372, 740, 745 Campbell, Meador
Bay anchovy *Anchoa mitchilli*	15, 17, 68, 324, 327, 329, 371, 372, 395, 399, 430, 591, 633, 740, 964 Campbell, Meador
Hardhead catfish *Arius felis*	17, 176, 192, 323, 324, 325, 334, 371, 372, 399, 585, 591, 633, 742, 745, 792, 964 Campbell, Meador
Sheepshead minow *Cyprinodon variegatus*	68, 176, 324, 327, 329, 371, 372, 543, 544, 740, 745, 824 Campbell, Meador
Gulf killifish *Fundulus grandis*	68, 310, 324, 329, 371, 372, 740, 745, 824 Campbell, Meador
Silversides *Menidia species*	15, 17, 68, 323, 324, 327, 329, 334, 371, 372, 395, 400, 430, 740, 745, 964 Campbell, Meador
Snook *Centropomus undecemalis*	574, 842 Campbell, Meador
Bluefish *Pomatomus saltatrix*	176, 324, 395, 745, 842 Campbell, Meador
Blue runner *Caranx crysos*	Campbell, Pattillo
Crevalle jack *Caranx hippos*	176, 324, 327, 371, 395, 842, 964 Campbell, Meador
Florida pompano *Trachinotus carolinus*	324, 329, 337, 395, 842 Campbell, Meador
Gray snapper *Lutjanus griseus*	334, 842 Campbell, Meador
Sheepshead *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 *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 *Bairdiella chysoura*	15, 68, 75, 176, 219, 323, 324, 327, 334, 371, 372, 395, 400, 419, 422, 430, 633, 745, 792, 964 Campbell, Meador
Sand seatrout *Cynoscion arenarius*	15, 17, 176, 192, 218, 323, 324, 337, 395, 422, 585, 591, 633, 670, 672, 742, 745, 792, 920, 964 Campbell, Meador
Spotted seatrout *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 *Leiostomus xanthurus*	15, 17, 68, 192, 323, 324, 327, 334, 371, 372, 395, 399, 400, 422, 430, 585, 591, 633, 742, 745, 964 Campbell, Meador
Atlantic croaker *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 *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 *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 *Mugil cephalus*	15, 17, 68, 176, 192, 262, 323, 324, 327, 334, 337, 371, 395, 400, 591, 632, 633, 740, 742, 745, 964 Campbell, Meador
Code goby *Gobiosoma robustum*	15, 68, 395, 400, 430, 431, 432, 745, 964 Campbell, Meador
Spanish mackerel *Scomberomorus maculatus*	41, 176, 324, 395, 591, 633, 741, 792, 842, 964 Campbell, Meador
Gulf flounder *Paralichthys albigutta*	15, 68, 324, 395, 430, 562, 633, 855 Campbell, Meador
Southern flounder *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 *Argopecten irradians*	400, 417, 965 Fuls
American oyster *Crassostrea virginica*	179, 340, 379, 400, 417, 550, 553, 745 Fuls
Common rangia *Rangia cuneata*	417 Fuls
Hard clam *Mercenaria species*	190, 417, 745 Fuls
Bay squid *Lolliguncula brevis*	17, 74, 176, 343, 390, 399, 745 Fuls
Brown shrimp *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 *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 Fuls
White shrimp *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 *Palaemonetes pugio*	837, 848, 964 Fuls
Spiny lobster *Panulirus argus*	Pattillo
Blue crab *Callinectes sapidus*	17, 54, 55, 74, 135, 142, 147, 176, 338, 339, 340, 343, 379, 400, 417, 548, 555, 558, 591, 638, 639, 964 Fuls
Gulf stone crab *Menippe adina*	417, 745, 947, 964 Fuls
Stone crab *Menippe mercenaria*	947 Czapla
Bull shark *Carcharhinus leucas*	42, 307, 395, 792 Fuls, Green
Tarpon *Megalops atlanticus*	964 Fuls
Alabama shad *Alosa alabamae*	Fuls
Gulf menhaden *Brevoortia patronus*	15, 17, 75, 176, 192, 379, 395, 399, 461, 585, 591, 742, 745, 848 Fuls
Yellowfin menhaden *Brevoortia smithii*	848 Pattillo
Gizzard shad *Dorosoma cepedianum*	745 Fuls
Bay anchovy *Anchoa mitchilli*	15, 17, 68, 74, 329, 343, 395, 399, 430, 848, 964 Fuls
Hardhead catfish *Arius felis*	17, 74, 176, 192, 334, 399, 461, 585, 591, 742, 745, 792, 848, 964 Fuls
Sheepshead minow *Cyprinodon variegatus*	68, 176, 213, 329, 745, 824 Fuls
Gulf killifish *Fundulus grandis*	68, 213, 745, 824 Fuls
Silversides *Menidia species*	15, 68, 329, 334, 343, 395, 400, 430, 461, 745, 964 Fuls
Snook *Centropomus undecemalis*	504, 574, 842 Fuls
Bluefish *Pomatomus saltatrix*	176, 343, 395, 745, 842 Fuls
Blue runner *Caranx crysos*	848 Pattillo
Crevalle jack *Caranx hippos*	74, 176, 395, 842, 848, 964 Fuls
Florida pompano *Trachinotus carolinus*	329, 337, 395, 842, 848 Fuls
Gray snapper *Lutjanus griseus*	334, 842, 848 Fuls
Sheepshead *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 *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 Fuls
Silver perch *Bairdiella chysoura*	15, 68, 74, 75, 176, 219, 334, 395, 419, 430, 461, 745, 792, 848, 964 Fuls
Sand seatrout *Cynoscion arenarius*	15, 17, 81, 176, 192, 218, 337, 343, 395, 400, 461, 585, 591, 670, 672, 742, 745, 792, 848, 964 Fuls
Spotted seatrout *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 *Leiostomus xanthurus*	15, 17, 68, 74, 192, 334, 343, 379, 395, 399, 400, 430, 461, 585, 591, 670, 672, 848, 964 Fuls
Atlantic croaker *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 *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 *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 *Mugil cephalus*	15, 17, 68, 74, 176, 192, 262, 334, 337, 343, 379, 395, 400, 461, 591, 632, 742, 745, 848, 964 Fuls
Code goby *Gobiosoma robustum*	15, 68, 396, 395, 400, 430, 431, 432, 745, 964 Fuls
Spanish mackerel *Scomberomorus maculatus*	176, 343, 395, 591, 741, 792, 842, 848, 964 Fuls
Gulf flounder *Paralichthys albigutta*	15, 68, 395, 430, 562, 848, 855 Fuls
Southern flounder *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 *Argopecten irradians*	82, 128, 951 Dansby, Rice, Tunnell
American oyster *Crassostrea virginica*	81, 82, 92, 98, 112, 337, 339, 367, 403, 409, 449, 667, 684, 818 Dansby, Rice, Tunnell
Common rangia *Rangia cuneata*	 Dansby, Rice, Tunnell
Hard clam *Mercenaria species*	81, 82, 415 Dansby, Rice, Tunnell
Bay squid *Lolliguncula brevis*	17, 81, 82, 92, 128, 387, 390, 796, 818 Dansby, Rice, Tunnell
Brown shrimp *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 *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 *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 *Palaemonetes pugio*	17, 82, 96, 387, 691, 817, 837 Dansby, Rice, Tunnell
Spiny lobster *Panulirus argus*	 Pattillo, Tunnell, Hockeday
Blue crab *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 *Menippe adina*	817, 818, 947 Dansby, Rice, Tunnell
Stone crab *Menippe mercenaria*	947 Czapla
Bull shark *Carcharhinus leucas*	42, 307 Dansby, Edwards, Green, Rice
Tarpon *Megalops atlanticus*	82, 112, 817 Dansby, Edwards, Rice
Alabama shad *Alosa alabamae*	 Dansby, Edwards, Rice
Gulf menhaden *Brevoortia patronus*	17, 82, 92, 96, 98, 112, 128, 192, 387, 424, 585, 591, 742, 796, 817 Dansby, Edwards, Rice
Yellowfin menhaden *Brevoortia smithii*	 Pattillo
Gizzard shad *Dorosoma cepedianum*	82, 98, 112, 344, 387, 751, 817 Dansby, Edwards, Rice
Bay anchovy *Anchoa mitchilli*	17, 83, 92, 98, 112, 128, 377, 387, 424, 751, 796, 817, 818 Dansby, Edwards, Rice
Hardhead catfish *Arius felis*	17, 81, 82, 92, 96, 98, 112, 192, 344, 377, 387, 424, 585, 591, 742, 751, 796, 817, 818 Dansby, Edwards, Rice
Sheepshead minow *Cyprinodon variegatus*	82, 96, 112, 128, 330, 354, 377, 387, 424, 751, 796, 817, 824 Dansby, Edwards, Rice
Gulf killifish *Fundulus grandis*	82, 96, 112, 128, 330, 424, 817, 824 Dansby, Edwards, Rice
Silversides *Menidia species*	330, 377, 387, 424, 742, 796, 817 Dansby, Edwards, Rice
Snook *Centropomus undecemalis*	428, 504, 574, 818 Dansby, Edwards, Rice
Bluefish *Pomatomus saltatrix*	796, 817 Dansby, Edwards, Rice
Blue runner *Caranx crysos*	 Harrington, Rice, Pattillo
Crevalle jack *Caranx hippos*	82, 92, 112, 424, 796, 817 Dansby, Edwards, Rice
Florida pompano *Trachinotus carolinus*	337, 424, 796, 817 Dansby, Edwards, Rice
Gray snapper *Lutjanus griseus*	82, 424, 796 Dansby, Edwards, Rice
Sheepshead *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 *Lagodon rhomboides*	17, 82, 83, 92, 98, 112, 128, 192, 354, 377, 424, 585, 591, 742, 796, 817, 818 Dansby, Edwards, Rice
Silver perch *Bairdiella chysoura*	82, 83, 92, 112, 128, 219, 377, 387, 424, 796, 817 Dansby, Edwards, Rice
Sand seatrout *Cynoscion arenarius*	17, 83, 98, 112, 192, 218, 337, 344, 387, 424, 585, 591, 670, 672, 742, 817 Dansby, Edwards, Rice
Spotted seatrout *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 *Leiostomus xanthurus*	192, 344, 354, 377, 387, 424, 585, 591, 742, 796, 817 Dansby, Edwards, Rice
Atlantic croaker *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 Dansby, Edwards, Rice
Black drum *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 *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 *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 Dansby, Edwards, Rice
Code goby *Gobiosoma robustum*	128, 424 Dansby, Edwards, Rice
Spanish mackerel *Scomberomorus maculatus*	82, 83, 112, 330, 591, 796 Dansby, Edwards, Rice
Gulf flounder *Paralichthys albigutta*	82, 377, 562, 817 Dansby, Edwards, Rice
Southern flounder *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 *Argopecten irradians*	Martin
American oyster *Crassostrea virginica*	655 Martin
Common rangia *Rangia cuneata*	Martin
Hard clam *Mercenaria species*	Martin
Bay squid *Lolliguncula brevis*	182, 537 Martin
Brown shrimp *Peneaus aztecus*	80, 180, 537, 822 Martin
Pink shrimp *Peneaus duorarum*	822 Martin
White shrimp *Penaeus setiferus*	80, 182, 537, 822 Martin
Grass shrimp *Palaemonetes pugio*	537, 837 Martin
Spiny lobster *Panulirus argus*	Pattillo
Blue crab *Callinectes sapidus*	80, 180, 182, 537, 822 Martin
Gulf stone crab *Menippe adina*	182, 822, 947 Martin
Stone crab *Menippe mercenaria*	947 Czapla
Bull shark *Carcharhinus leucas*	Green, Martin
Tarpon *Megalops atlanticus*	80, 182 Martin
Alabama shad *Alosa alabamae*	Martin
Gulf menhaden *Brevoortia patronus*	182, 276, 482, 537, 822, 902 Martin
Yellowfin menhaden *Brevoortia smithii*	Pattillo
Gizzard shad *Dorosoma cepedianum*	80, 182, 276, 482, 822, 902 Martin
Bay anchovy *Anchoa mitchilli*	182, 222, 223, 482, 537, 822 Martin
Hardhead catfish *Arius felis*	80, 180, 182, 276, 482, 822, 902 Martin
Sheepshead minow *Cyprinodon variegatus*	80, 180, 182, 222, 223, 482, 537, 822, 824 Martin
Gulf killifish *Fundulus grandis*	80, 182, 482, 822, 824 Martin
Silversides *Menidia species*	80, 180, 182, 222, 223, 482, 537, 822 Martin
Snook *Centropomus undecemalis*	80 Martin
Bluefish *Pomatomus saltatrix*	Martin
Blue runner *Caranx crysos*	Pattillo
Crevalle jack *Caranx hippos*	822, 902 Martin
Florida pompano *Trachinotus carolinus*	Martin
Gray snapper *Lutjanus griseus*	Martin
Sheepshead *Archosargus probatocephalus*	182, 822 Martin
Pinfish *Lagodon rhomboides*	80, 180, 182, 276, 482, 537, 822, 902 Martin
Silver perch *Bairdiella chysoura*	80, 182, 219, 276, 482, 822, 902 Martin
Sand seatrout *Cynoscion arenarius*	80, 182, 218, 276, 822, 902 Martin
Spotted seatrout *Cynoscion nebulosus*	80, 180, 182, 219, 222, 223, 276, 482, 537, 822, 902 Martin
Spot *Leiostomus xanthurus*	80, 182, 222, 223, 276, 482, 537, 822, 902 Martin
Atlantic croaker *Micropogonias undulatus*	80, 180, 182, 222, 223, 276, 482, 537, 822, 902 Martin
Black drum *Pogonias cromis*	80, 180, 182, 183, 221, 222, 223, 276, 482, 537, 545, 568, 819, 822, 902 Martin
Red drum *Sciaenops ocellatus*	80, 180, 182, 221, 276, 482, 537, 819, 822, 836, 902 Martin
Striped mullet *Mugil cephalus*	80, 180, 182, 276, 482, 537, 822, 902 Martin
Code goby *Gobiosoma robustum*	182 Martin
Spanish mackerel *Scomberomorus maculatus*	Martin
Gulf flounder *Paralichthys albigutta*	822 Martin
Southern flounder *Paralicthys lethostigma*	80, 180, 182, 276, 482, 537, 569, 822, 902 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

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