Fishes of the North Inlet Estuary, SC
A guide to their identification and ecology

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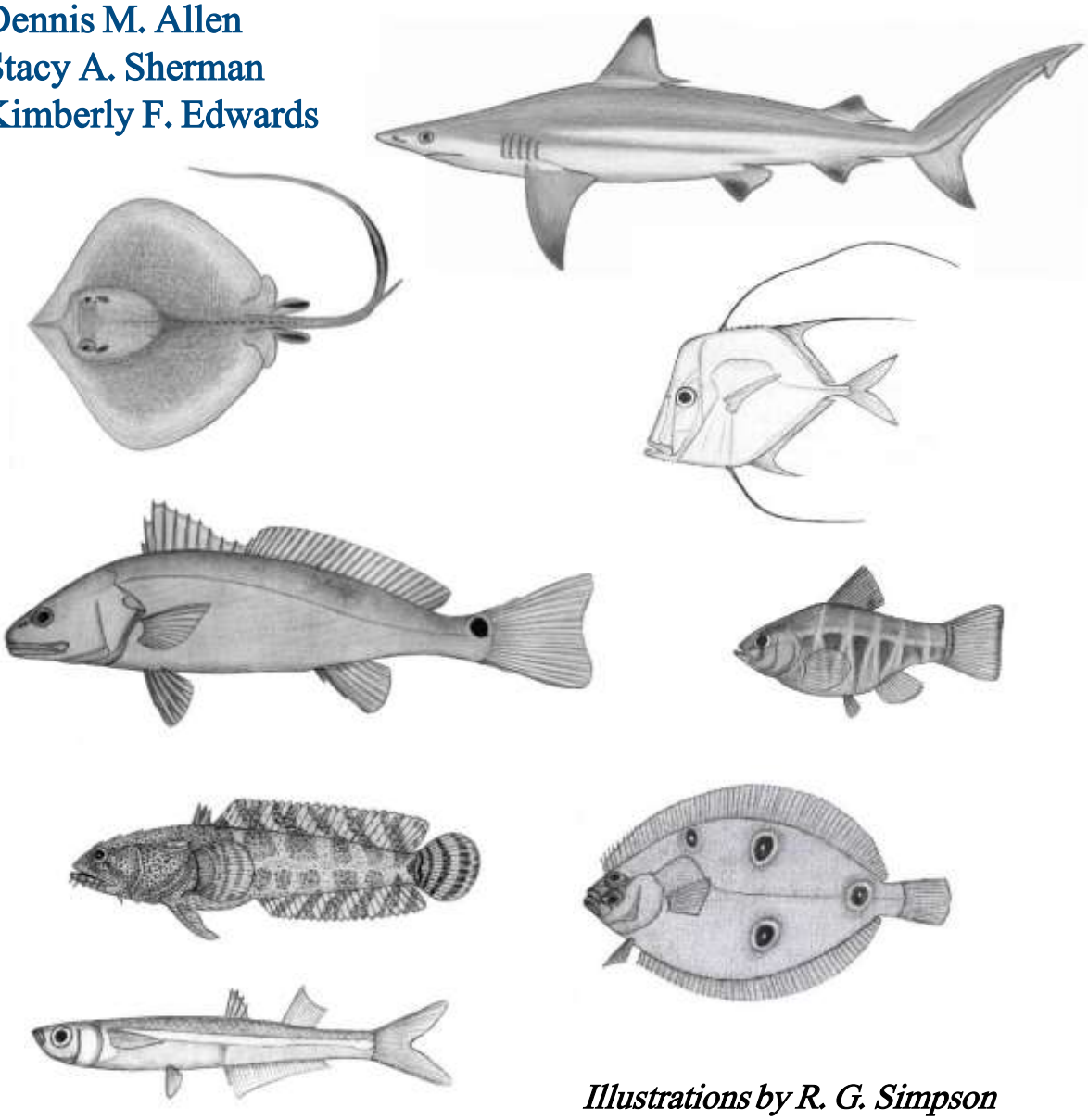

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This book is dedicated to my father, Craig Simpson, who has given me the encouragement and inspiration to follow my dreams.

Raymond G. Simpson

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Preface and Acknowledgments

Anybody who spends time around tidal waters and marshes is aware that fishes are abundant and important to both the ecology of coastal systems and the recreational and economic interests of our local communities. What most observers and fishermen do not realize is that the diversity of species and life styles of fishes in this region are very high and that many species are seldom seen and sometimes difficult to identify. This book has been developed to help students, researchers, fishermen, and curious coastal observers identify and understand more about the fishes that occur in the estuarine and shallow ocean waters of the North Inlet and Winyah Bay areas of the South Carolina coast.

This project was first proposed in 2005 by Dr. Richard Dame, Professor of Marine Science at Coastal Carolina University, after he learned of the artistic talents of then undergraduate student Raymond Simpson. Ray produced many line drawings of marine fishes from tropical and temperate waters before becoming a summer research assistant on a newly funded National Science Foundation project in 2005. Recognizing the long-standing interest in preparing a guide to the local fishes, Dr. Dennis Allen, Dr. Stacy (Luthy) Sherman, and Kimberly (Foley) Edwards encouraged Ray to develop a collection of biological illustrations and to draft descriptions of the the ecology, life cycle, and distinguishing characteristics of each species. Ray illustrated 104 species of the fishes, sharks, and rays most likely to be encountered in the North Inlet Estuary. The illustrations and descriptions were organized and configured and a list of all species recorded since 1978 was included. Dr. Rob Young, Department of Marine Science, Coastal Carolina University arranged the printing of the original 2006 guide.

The supply of printed copies of the original guide was exhausted by 2010. Requests for copies continued to arrive. In 2014, Dennis approached Ray about revising and expanding the original work. Ray modified 48 of the original illustrations and contributed 6 new species. Dennis revised the text entries and all other authors of the original guide contributed to the final draft. The list of all species recorded since 1978 has been updated. We continue to document new occurrences and information about our local fauna, and your help is encouraged.

Many other individuals participated in the project. We especially thank: Brad Dean, Dr. Henrietta Hampel, Paul Kenny, Lisa Knott, Josh Rabon, and Dr. Rob Young for assistance in the collection of materials from which many specimens were drawn and for additional help along the way. We also thank Beth Thomas, Wendy Allen and Ginger Ogburn-Matthews for reviewing the original manuscript and providing ideas for improving the final product.

About the Authors

The authors continue to be involved in environmental research, education, and stewardship.

- Ray Simpson is currently seeking a Ph.D. on the evolutionary biology and the systematic/taxonomy of fishes at Yale University. He is also a freelance scientific illustrator (http://watlfish.com/ *or* rgsimpson@gmail.com).
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- Dr. Stacy Sherman is a Senior Environmental Scientist at the California Department of Fish and Wildlife (Stacy.Sherman@wildlife.ca.gov).
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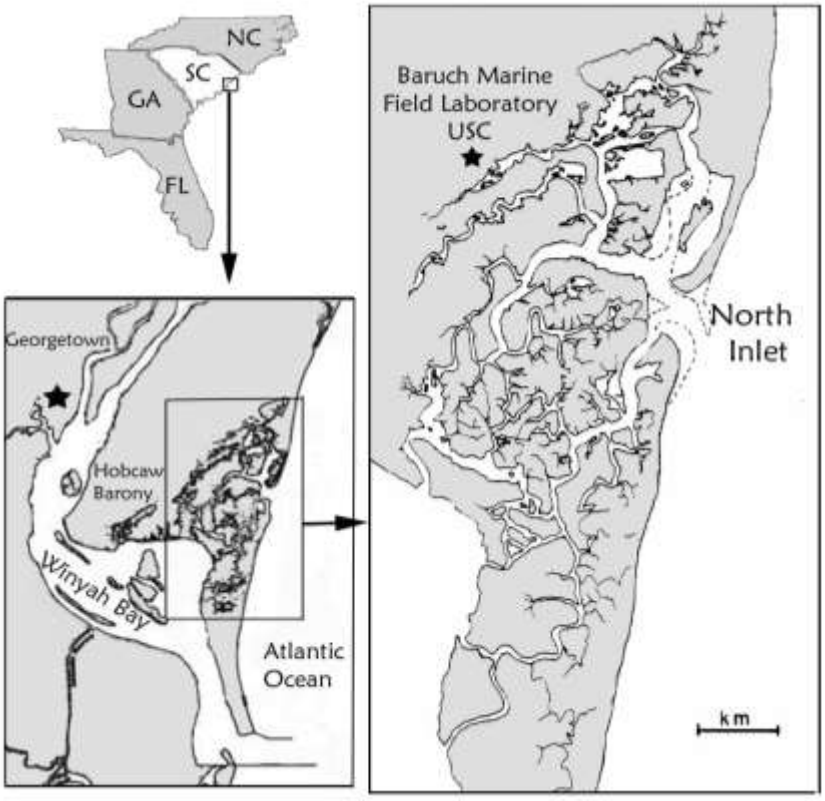
Introduction

Estuaries are most simply defined as coastal areas where fresh and salt waters mix. These nutrient enriched, transitional areas between terrestrial and oceanic systems support high productivity, which translates into abundant food sources. In estuaries, rich food supplies combine with a wide range of environmental conditions and habitats along a dynamic physical gradient to support a high abundance and diversity of animals. Among these are upwards of 200 fish species, ranging from tiny gobies to large game fishes and sharks. This guide was developed to broaden the recognition and understanding of southeastern US fishes and aid in identification of species that occur in the warm temperate North Inlet Estuary and nearby areas.



North Inlet is a barrier-island-bounded, salt marsh estuary in coastal South Carolina, just north of the midpoint between Myrtle Beach and Charleston. The inlet is flanked by Debidue Island to the north and North Island to the south. The western edge of the marsh is bordered by the forests of Hobcaw Barony, property of the Belle W. Baruch Foundation. Well-buffered from anthropogenic inputs, North Inlet is considered one of the most pristine American estuaries. Its salt marsh and creeks comprise the northeastern half of the North Inlet–Winyah Bay National Estuarine Research Reserve (NERR). North Inlet Estuary is characterized by high oceanic salinities, except around the forest edge after heavy rains. A semi-diurnal tidal regime (two cycles/day) keeps the shallow estuary well mixed. The average tidal range between high and low tide levels is about 1.4 m (about 4.6 ft), but tides approaching 2 m (6.6 ft) occur several times a year. Tides drive chemical, geological, and biological processes within estuaries.

The marsh is dominated by smooth cord grass, *Spartina alterniflora*, which together with other plants and algae produce more organic material per acre per year than most agricultural systems. This rich base of carbohydrates, lipids, and proteins is consumed in various forms by small invertebrates that later provide food for fishes, birds, marine mammals, and humans.

The tides alternately flood and drain marshes via a network of channels. The deeper channels that always contain water are termed subtidal. Intertidal is the term for the smaller, higher-elevation creeks that are flooded at high tide, but are nearly devoid of water at low tide. Intertidal areas below the marsh level support live oyster reefs and associated invertebrates. At high tide, many fish species access the marsh surface, regularly taking advantage of the opportunity to forage on resident invertebrates. As the tide ebbs, these fishes retreat to subtidal channels or to remnant pools within the intertidal creeks. Fish species are often associated with a certain habitat type amongst the mosaic of habitats that comprise the estuary. Some fishes, such as anchovies and silversides, spend their entire lives in the water column, while others are sedentary and live close to the bottom and/or structure. Bottoms of channels and creeks range from sand to soft mud, often with shell rubble intermixed. Some fish species, especially large predators, always remain in these deeper channels, but most species forage on richer supplies of food available in the intertidal zone whenever it is flooded. Intertidal mud or muddy sand flats usually support high densities of worms, clams, and other benthic (buried) species.

Many fish discussed in this guide are familiar to local fishermen: targeted species (e.g. Southern Flounder, Red Drum) and others that might be common bait fishes (e.g. Mummichog or "mud minnows"). Because the majority of fish species in North Inlet are not susceptible to capture by hook and line, gigs, or even traps, scientists use a variety of gear to collect and study the diversity of species (Table 1). Note: Some gear require a permit from the SC Department of Natural Resources. Consult state regulations before using seines, other nets, and traps. Always be aware of current state regulations regarding the possession of fish, shrimps, and crabs.

The composition of the fish species assemblage in North Inlet changes throughout the year as different species and life stages move in and out of the estuary. In general, there are two groups of fishes, residents and transients. Residents live in the estuary throughout their lives. The Mummichog is probably the most common resident fish; it lays its eggs at the base of the marsh grass, grows up in the nearby creeks and subtidal channels, and dies in the same area. Other residents include the gobies, blennies, and silversides. Transient species spend only part of their lives in the estuary, but in the warm months, they far outnumber the residents. These species are often called "estuarine dependent" because of their reliance on estuaries to complete their life cycle. Early life stages (larvae and juveniles) account for the largest proportion of most transient fish populations. Species such as the Southern Flounder, Red Drum, and Spot spawn in the ocean, but larvae that do not make it into an estuary may not survive. For this reason, estuaries are often referenced as "nurseries" or "essential habitat" for fishes. An estuary functions as a nursery because its high plant and algae productivity is necessary to support high rates of growth in young fishes. Also critical to these species is the structural complexity and shallow depths of estuaries which provide young fishes with refuge from predation. Many commercially and recreationally fished species are classified as estuarine dependent.

Table 1. Nets and gear used to collect fish.

Gear	Description	Advantages	Disadvantages
Seine	Nylon mesh panel stretched from the bottom to the surface, pulled by two people	Samples shallow water	Does not catch fast swimmers; can snag on oysters and debris, enabling specimens to escape
Trawl	Tapered bag-like net pulled by a boat and held open by trawl doors	Captures fishes on or just above the bottom in deeper waters	Does not catch small fishes, very fast swimmers, or those that live close to the surface or edges
Beam trawl	Tapered bag-like net pulled by a boat and held open by a rigid frame	Especially good for capturing small flatfishes	Does not catch very fast swimmers, or those close to the surface
Block net	Funnel-shaped net covering the entire mouth of an intertidal creek; set at high tide, captures animals as they leave with the ebbing tide	Very effective in collecting all animals occupying the flooded habitat	Labor intensive, most nekton die during confinement
Gill net	Monofilament mesh panel with weighted bottom line and buoyant top line; set perpendicular to bottom and can be fished unattended	Collects larger, faster swimming fishes not collected by other gear	Entanglement gear snags fish under the gill plates, it usually means mutilation and death of the fish; also, entangled oyster clumps, crabs, and debris are tedious to remove; net repairs are constant
Trap	Wire or plastic enclosures with funnels designed for easy entry and more difficult exit	Can be used in pools and other areas where pulling nets is not possible	Selective since many species will not enter or be retained in traps
Habitat tray	Wire mesh tray filled with shell and set on bottom in deeper areas to sample structure dwelling fishes, quickly lifted from above	Effective for sampling small animals which tend to hide in the rubble when lifted	Selective since many species will swim away
Lift net	Rectangular net that is buried in the bottom and lifted to entrap fishes within	Very good technique for sampling marsh surface at different levels of flooding	Very labor intensive, requires removable boardwalks to approach nets
Longline	Nylon mainline with perpendicular monofilament or wire leaders that terminate in hooks with bait	Only means of catching largest fishes besides rod and reel; effort can be standardized	Labor intensive, potentially dangerous with large sharks and rays

How to use this Guide

In North Inlet, over 180 resident and transient fish species have been identified (Appendix), but only about 20 are familiar to anglers. An additional 30 to 40 species are common and regularly encountered by scientists. Most are not abundant or even regularly caught. Although we could not describe every fish that occurs in North Inlet in this guide, all of the common fishes and many of the uncommon or rare species are treated. Some uncommon and rare species that are not covered with a full species account may be characterized under a 'Similar species' entry for a more common similar looking species. You might need to refer to a more comprehensive guide to fishes for the Southeast region or beyond; see Reference and Recommended Field Guides at the back of this Guide.

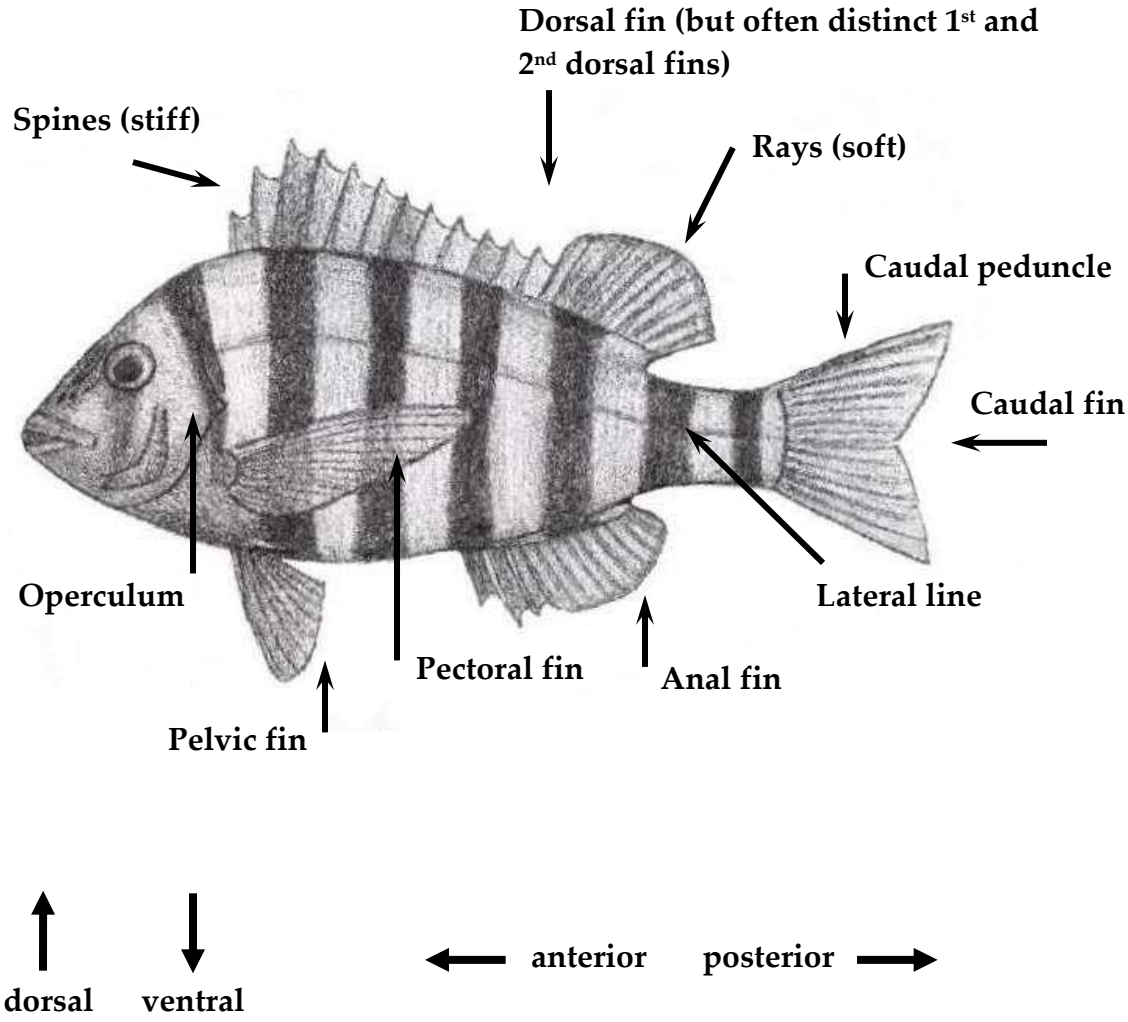
The species are presented in the systematic order used by fish scientists. Many local fishes are referred to by more than one name. For instance, the Red Drum is also known as the spottail bass, channel bass, puppy drum, and redfish. To reduce confusion, the American Fisheries Society (AFS) has designated one official common name for each species (Nelson, et al. 2004). We use official AFS names for all entries in this guide. Also, following AFS convention, the first letter of each word in the accepted common name of the fish is capitalized (e.g. Atlantic Sharpnose Shark).

Unless you are already familiar with a fish of interest and can search by name in the Index, use features such as body shape, color pattern, and location of the mouth to focus your search. Browse the pages using general appearance, then, once a reasonable match is made, read the descriptions of key features, behavior, habitats, and seasons of local occurrence and narrow your identification. The use of unfamiliar words (jargon) is sometimes unavoidable in a guide like this. A Glossary is included in the back of this Guide.

Note that color descriptions are based on living or fresh specimens. Colors, stripes, and spots often fade or change considerably in fishes after death. Markings, color patterns, and even body shapes can differ between young and adult fishes of the same species. Anatomical features such as fin shapes and placements as well as numbers of fin spines and rays are among the most reliable features used in identifying fish species.

For most species, we have provided descriptions of other species with which your specimen might be confused. Most distinguishing characteristics are described, but the entries for alternate candidates mentioned under "similar species" should be studied before making a decision about identity. Even then, you should not be surprised if some doubt remains. Even trained scientists sometimes find themselves unsure, especially with juveniles. As we continue to learn more about the fishes of North Inlet, we always welcome observations, photos, and specimens from fishermen and others who are interested in our local fishes. The North Inlet – Winyah Bay NERR offers programs in which students and citizens of all ages can participate in the regularly scheduled collections of fishes in North Inlet. Check their web page at http://www.northinlet.sc.edu/ for educational opportunities.

General anatomical features of a typical bony fish. In this lateral (side) view, the upper margin of the fish is known as dorsal, and the lower margin is known as ventral. In all fishes, the head end is anterior, and the tail end is posterior. Additional terms are defined in the Glossary.

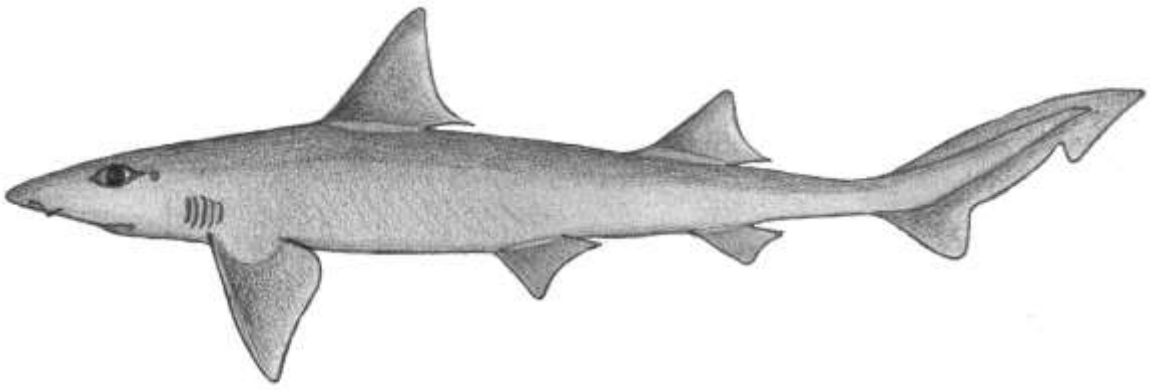


Illustrated Species Accounts

Illustrations and descriptions are provided for all of the common fishes known to occur in the North Inlet estuary. Also provided are accounts for dozens of less common and rare species. In addition to the 113 species presented as full page descriptions, many additional species that could be confused with the ones illustrated are mentioned under "Similar Species" on those pages. The accounts are presented by family according to the systematic order used by fish scientists.

Identification of the resident and transient fish species of the North Inlet estuary has been ongoing since 1978. To date the list includes 182 species and likely more will be added in the future. All species known to occur in North Inlet estuary are listed in the Appendix.

Triakidae - houndsharks



Dusky Smooth-hound (formerly Smooth Dogfish)
Mustelus canis

Description An elongate shark, the Dusky Smooth-hound has a flattened ventral surface and an obvious ridge on the dorsal midline. The head is flattened dorsally and the eyes are positioned more toward the top of the head than the side. The snout is long and the eyes large. The first dorsal fin is slightly larger than the second dorsal. The first dorsal begins above the rear margin of the pectoral fin and the second dorsal begins well forward of the anal origin. The anal fin is much smaller than the second dorsal. Fins usually have white edges. The teeth are flattened, blunt, and arranged in a mosaic pattern of rows.

Coloration Its color ranges from dark gray to olive on the back grading to white or yellowish on the belly. There are no obvious markings on the body or fins except the first dorsal fin margin may be light in young fish.

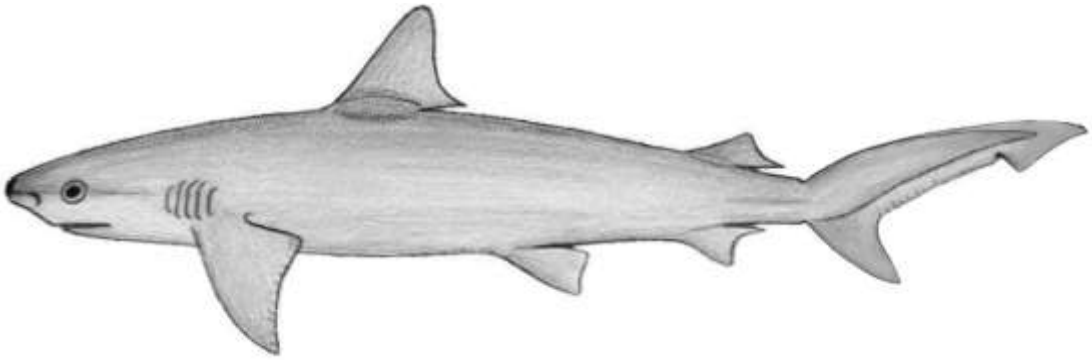
Size Maximum size of the Dusky Smooth-hound is about 150 cm (5 ft), but it is usually less than 100 cm. Young sharks are around 30-40 cm, and they mature around 80-90 cm.

Range It occurs from Canada to southern South America, including the Caribbean Sea islands and the Gulf of Mexico.

Habitat This coastal shark is found over muddy and sandy bottoms and, unlike many coastal sharks, it tends to remain fairly close to the bottom. It can tolerate low salinities and has been reported in freshwater. Dusky Smooth-hounds occasionally enter the deeper channels of North Inlet, but only during the colder part of the year when most other sharks are not present. Its diet includes fishes, squids, and crustaceans.

Similar Species All other sharks can be distinguished by having laterally-set eyes, distinct rows of pointed teeth (as opposed to mosaics of crushing teeth), an undulating caudal margin, and a larger average size. The Spiny Dogfish (*Squalus acanthias*) has spines on both dorsal fins and no anal fin. All other sharks except the Lemon Shark (*Negaprion brevirostris*) have very unequal dorsal fins.

Carcharhinidae - requiem sharks



Blacknose Shark
Carcharhinus acronotus

Description The Blacknose Shark has a slender body and long snout. A deep notch is evident on the dorsal edge at the base of the caudal fin. The first dorsal fin begins above the rear edge of the pectoral fin. The second dorsal begins above the origin of the anal fin. No interdorsal ridge is present between the dorsal fins, and there is no keel on the caudal peduncle.

Coloration This shark is usually yellowish-brown or brown in color grading to white on the belly. There is a small dark blotch on the tip of the snout that is most noticeable in young sharks. The first dorsal fin may have a dusky tip, and the second dorsal may have a dark blotch, but not strong black markings. The other fins are usually unmarked.

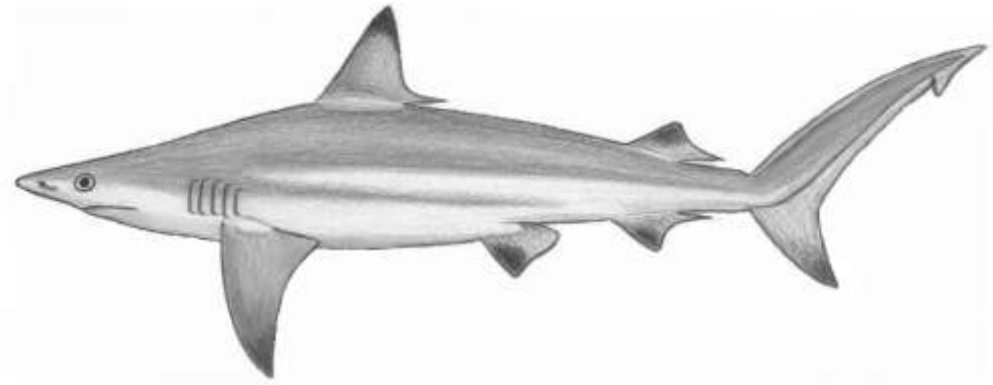
Size Maximum size is about 200 cm (6 ft) but large adults are usually 100-150 cm. At birth, the Blacknose Shark is about 50 cm; it matures at around 100 cm.

Range This shark is found from North Carolina to Brazil, including the Caribbean Sea and the Gulf of Mexico.

Habitat This is a coastal ocean species found mostly at depths between 18-64 m. It prefers sand and rubble bottoms and frequently ventures into estuaries, but stays in areas of high salinity. In North Inlet, it is most often found in subtidal channels and the surf zone near the inlet. It only occurs during the warmest months (June to October). Young fish are more common in shallow water. There is segregation by size and sex in this shark, and it may form aggregations.

Similar Species The Sandbar Shark (*C. plumbeus*) has an interdorsal ridge and unmarked fins and the Blacktip Shark (*C. limbatus*) has dark tips on most of its fins and lacks a dark spot on the snout. The Dusky Shark (*C. obscurus*) has an interdorsal ridge and has dusky tips to its fins in young fish, but they are plain in adults. The Dusky Smooth-hound (*Mustelus canis*) and Lemon Shark (*Negaprion brevirostris*) have two dorsal fins of almost equal size, and the Atlantic Sharpnose Shark (*Rhizoprionodon terraenovae*) has much smaller pectorals in proportion to its body, a dorsal ridge, and light spots on the body.

Carcharhinidae- requiem sharks



Blacktip Shark
Carcharhinus limbatus

Description The Blacktip Shark has a moderately deep (stocky) body, a moderately long snout, and small eyes. There are five gill slits, and long, pointed pectoral fins. The large, first dorsal fin begins at a point posterior to the origin of the pectoral fin. The second dorsal begins anterior to the origin of the anal fin. There is no ridge between dorsal fins. The teeth are erect and narrow with serrated edges.

Coloration This species is dark gray to bronze above grading to white on the belly. There is a noticeable dark band on the sides extending from near the gills to above the pelvic fin. The tips of the dorsal, pectoral, pelvic, and lower caudal fins are dark, but the anal fin is usually all white (sometimes with black posterior tip).

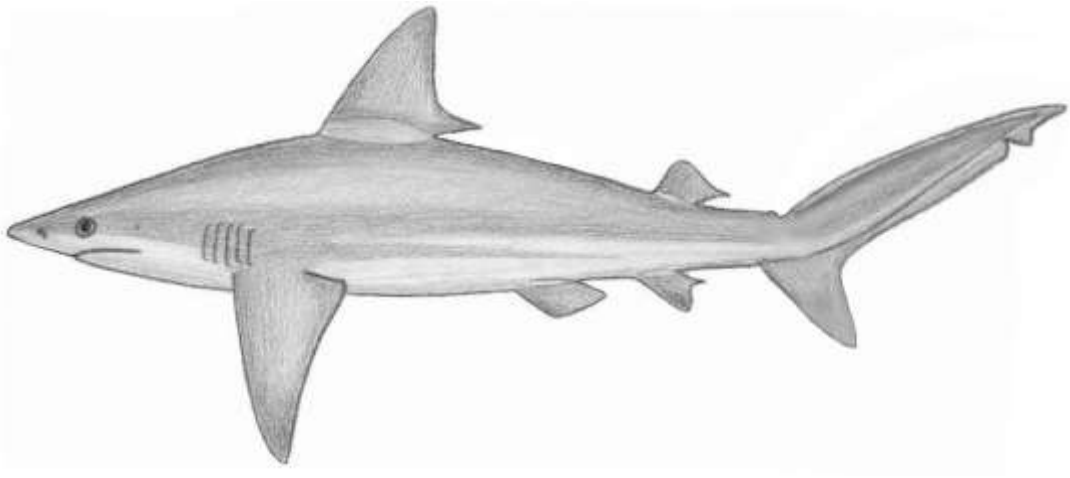
Size Maximum size is about 250 cm (8 ft, 250 lbs), but it is usually less than 175 cm (6 ft., 100 lbs.) They mature at around 120-190 cm, and females give birth every two years. Young sharks are usually 50-75 cm at birth.

Range It is found in the Western Atlantic from New England to southern Brazil.

Habitat This is a coastal and offshore species that often enters estuaries in the summer months. It can tolerate brackish, but not freshwater. In North Inlet, the Blacktip Shark is most often found in the deepest creeks and near the inlet, but it frequents the beachfront surf zone as well. Young sharks are more common in estuaries. It is a fast-swimming predator on fishes, and is commonly observed clearing the water, often in pursuit of mullet and menhaden.

Similar Species It is most often confused with the Spinner Shark (*C. brevipinna*) which has a distinct black tip on the tip of the anal fin. The Sandbar Shark (*C. plumbeus*) and Dusky Shark (*C. obscurus*) have an interdorsal ridge and unmarked fins. Markings on the fins of Blacknose (*C. acronotus)* and Finetooth Sharks (*C. isodon*) are also light. The Dusky Smooth-hound (*Mustelus canis*) and Lemon Shark (*Negaprion brevirostris*) have two dorsal fins of almost equal size, while the Atlantic Sharpnose Shark (*Rhizoprionodon terraenovae*) has much smaller pectorals in proportion to its body, a dorsal ridge, and light spots on the body.

Carcharhinidae- requiem sharks



Sandbar Shark
Carcharhinus plumbeus

Description This species has a stout, compact body, broad head, small eyes, and a snout that is shorter and more rounded than in other species. The pectoral fins are very long and pointed. The first dorsal fin begins above the insertion of the pectoral fin and it is very high (8.5-15% of TL) and triangular. The second dorsal begins above the origin of the anal fin. It has a conspicuous ridge between the dorsal fins and no keel on the caudal peduncle.

Coloration The Sandbar Shark is gray to brown grading to white on the belly. There are no obvious markings on the fins or body.

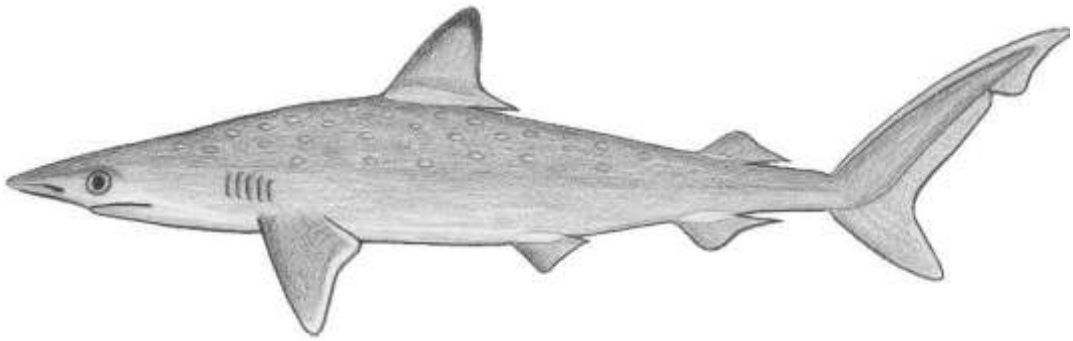
Size Its maximum size is about 230 cm (7 ft) although it is usually under 200 cm. Young sharks are 50-75 cm at birth and this shark matures at around 130-185 cm.

Range The Sandbar Shark ranges from southern New England to southern Brazil, including the Caribbean and the Gulf of Mexico.

Habitat This is a coastal species that is found over both sandy and muddy bottoms. It is an occasional visitor to estuaries during the warmer months. In North Inlet, the Sandbar Shark can be found in deep subtidal channels and around the mouth of North Inlet. It feeds mainly on fishes and squid.

Similar Species All other large, local sharks, except the Dusky Shark (*C. obscurus*), lack a ridge between their dorsal fins and most have at least one fin with a dark to dusky tip. Young Dusky Sharks often have dusky tips to their fins but adults are plain. Dusky Shark differs from Sandbar Shark by having a much lower and smaller dorsal fin (6-9% of TL) with a rounded anterior margin. The Dusky Smooth-hound (*Mustelus canis*) and Lemon Shark (*Negaprion brevirostris*) have two dorsal fins of almost equal size, and the Atlantic Sharpnose Shark (*Rhizoprionodon terraenovae*) has much smaller pectorals in proportion to its body, a dorsal ridge, and light spots on the body.

Carcharhinidae- requiem sharks



Atlantic Sharpnose Shark
Rhizoprionodon terraenovae

Description This elongate shark has a fairly shallow body. Its eyes are large and its snout is long. The labial folds on the corners of the mouth are well developed; this is not in the case in other local sharks. The first dorsal fin begins at a point at or slightly posterior to the rear edge of the pectoral fin, and the second dorsal begins posterior to the anal fin origin. The first dorsal fin is much larger than the second dorsal, and the pectoral fins are short and rounded. There is a pair of long, pre-anal ridges present ventrally. There is a ridge present between the dorsal fins, but keels do not occur on the caudal peduncle.

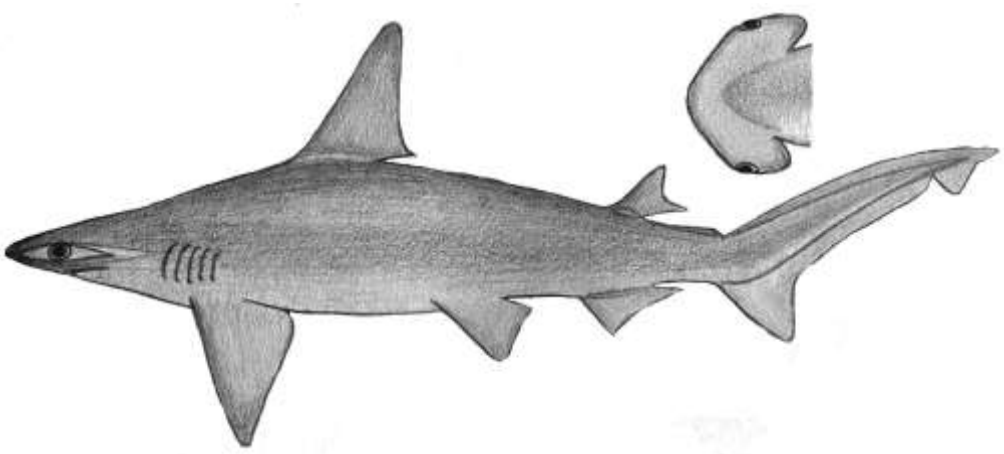
Coloration The Atlantic Sharpnose is gray to brownish -gray on the back grading to white on the belly. Adults often have some conspicuous and irregularly scattered white spots on their sides. The dorsal fin often has a dusky tip and the pectoral fins usually have a white margin. The edges of the tail are often dusky. Juveniles often have black edges on the dorsal and caudal fins.

Size Maximum size for this shark is about 110 cm (3.5 ft) but it is usually less than 90 cm. Young are 30-40 cm at birth and mature at 65-90 cm.

Range and Habitat The Atlantic Sharpnose Shark ranges from Canada to Florida and the Gulf of Mexico. Although it is a coastal ocean species, young can be common in estuaries. It is the most common shark in the North Inlet system, where it occurs even in the shallowest tidal creeks. Adults occur offshore in winter and produce four to seven pups in the early summer. Young of the year Atlantic Sharpnose Sharks less than 50 cm are particularly abundant in North Inlet especially from June to August. They are tolerant of low salinities but avoid freshwater. This shark feeds on fishes and shrimp, and aggressively attacks baits of local fisherman.

Similar Species The only other sharks with a dorsal ridge are the Dusky Smooth-hound (*Mustelus canis*), the Dusky Shark (*Carcharhinus obscurus*), and the Sandbar Shark (*C. plumbeus*). These species all differ from the Atlantic Sharpnose Shark by lacking a long pre-anal ridge, a white edge on the pectoral fin, and white spots.

Sphyrnidae – hammerheads



Bonnethead
Sphyrna tiburo

Description This very distinctive, elongate shark has a broad and laterally flattened head. Viewed from above, the head is shovel-shaped with a broadly rounded anterior margin that has no indentations or scallops. The eyes are located on the ends of the "hammer". The dorsal fin is very high and its origin is above the posterior edge of the pectoral fin. The pectoral fins are broad and long. The second dorsal fin has a shorter base than the anal fin and its origin is above the center of the anal fin.

Coloration The Bonnethead is gray to greenish-brown above grading to white below. Whitish spots often occur on the sides but there are no markings on fins.

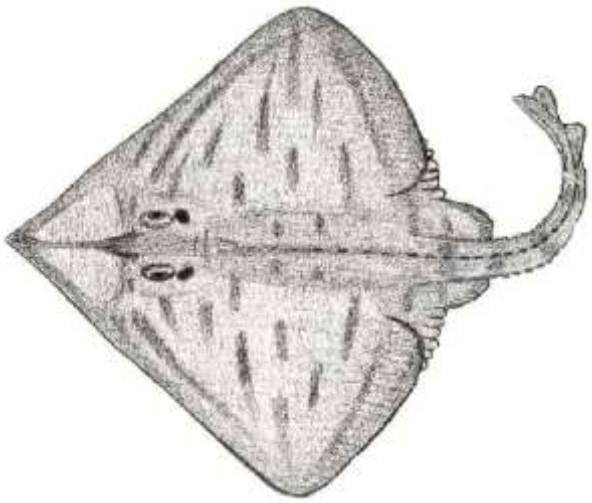
Size Its maximum size is about 150 cm (5 ft) but it is usually less than 80 cm. Young sharks are 35-40 cm at birth, and they mature between 50 and 85 cm.

Range The Bonnethead occurs from New England to Argentina, including the Caribbean and the Gulf of Mexico.

Habitat It is a shallow coastal species found over sand and muddy bottoms. It will enter estuarine waters but is rarely seen in freshwater. It is a slow-moving species that feeds mainly on crabs, shrimps, and small fishes. In North Inlet, small and medium size individuals are often seen cruising shallow edges of tidal creeks and over flats. They are caught by local anglers, especially between May and September.

Similar Species The Scalloped Hammerhead Shark (*S. lewini*) and nearly identical Carolina Hammerhead Shark *(S. gilberti*) are distinguished by their much wider and more rectangular "hammers" with scalloped anterior margins. Both hammerheads are larger in average size, and are much less likely to be seen inside of North Inlet.

Rajidae – skates



Clearnose Skate
Raja eglanteria

Description This diamond-shaped ray has a long snout with a pair of prominent, triangular, translucent "windows". The pectoral fins are broad and wing-like with rounded edges. The pelvic fins have two lobes with the frontal lobe almost obscured by the disk. The tail is fairly short, about half as long as the disk. There are two identically sized dorsal fins on the rear of the tail and no barbed spines of any kind. There is, however, a row of thorns along the centerline of the body and tail. Numerous small thorns are found around the eyes and snout.

Coloration This species is light brown to gray with assorted dark brown blotches and markings. There are often dark spots and incomplete bars on the body. The belly is either whitish or yellowish.

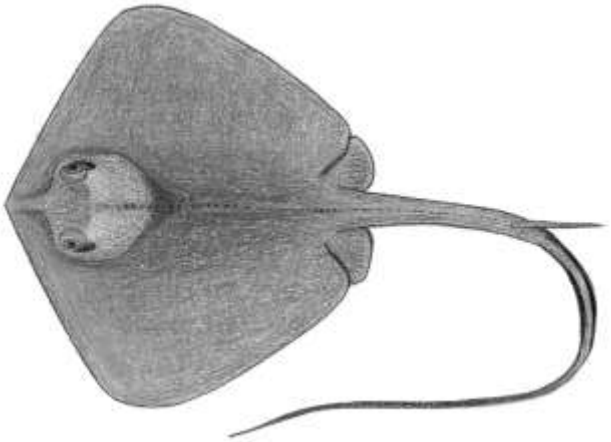
Size Maximum size of the Clearnose Skate is about 80 cm (2.5 ft) total length and 50 cm width; but it is usually less than 70 cm TL.

Range It occurs from Massachusetts to Florida and is present in the northern Gulf of Mexico.

Habitat The Clearnose Skate occurs from the edge of the continental shelf (to about 1000 ft depth) to the shallow salt marsh creeks. In North Inlet, it can be common over soft as well as sandy bottoms. The Clearnose Skate is most commonly encountered in summer and fall, moving to deeper water for the winter. It feeds on invertebrates and fish.

Similar Species This is the only skate know to occur within the estuary. Stingrays have long, whip-like tails unless the section behind the tail has been cut off (a common practice among fishers trying to avoid the barb) leaving a short, often thorny tail similar to that of a skate. Skates do not have stinging barbs.

Dasyatidae – stingrays



Bluntnose Stingray
Dasyatis say

Description The Bluntnose Stingray has a diamond-shaped disk with rounded edges on the pectoral fins. The snout is slightly pointed and shorter than the distance between the eyes. The tail is long and whip-like with one or more barbed spines. The fin folds on the top and bottom of the tail are well developed, similar in height. In males, claspers extend 1/3 their length past the posterior margin of the disk.

Coloration This ray can be light brown, gray, olive, or dark in color with a white belly. The tail beyond the spine is dark and the top and bottom tail folds are often black.

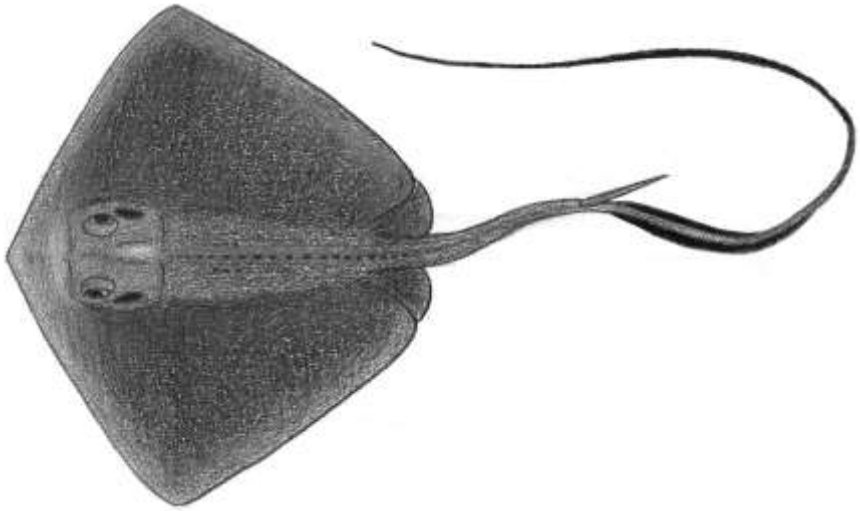
Size Maximum width of the Bluntnose Stingray is about 90 cm (3 ft).

Range It ranges from Virginia to Florida and occurs in the Gulf of Mexico, Caribbean Sea, and the coast of Brazil.

Habitat The Bluntnose Stingray is a coastal species found mostly over sand and mud bottoms. It prefers areas of higher salinity. In North Inlet, it is found mostly in subtidal channels, not usually moving into shallow intertidal creeks during high tide. It occurs in all but the coldest months. It is a benthic feeder that conumes clams, worms, crabs, and fishes. When inactive, it buries in the substrate with only its eyes exposed.

Similar Species The Bluntnose Stingray (*D. say*) and Southern Stingray (*D. americana*) are very similar, but the Southern Stingray has more angled disk points, a snout length that is greater than the distance between the eyes, and an upper tail fin that is much taller on the bottom tail fin. The Atlantic Stingray (*D. sabina*) also has rounded pectoral fins, but its long pointed snout and a more reddish body color are distinct.

Dasyatidae – stingrays



Southern Stingray
Dasyatis americana

Description The Southern Stingray has a diamond-shaped disk (1.2 times wide as long) with pointed edges on the pectoral fins. The snout is slightly pointed and longer than the distance between the eyes. The tail is long and whip-like with one or more barbed spines. There is a short ridge on the top of the tail and the fin below the tail is taller, about as tall as the tail is wide. In males, claspers extend 1/3 their length past the posterior margin of the disk.

Coloration This ray can be light brown, gray, olive, or dark in color with a white belly. The tail beyond the spine is dark. The tail fin folds can be dark.

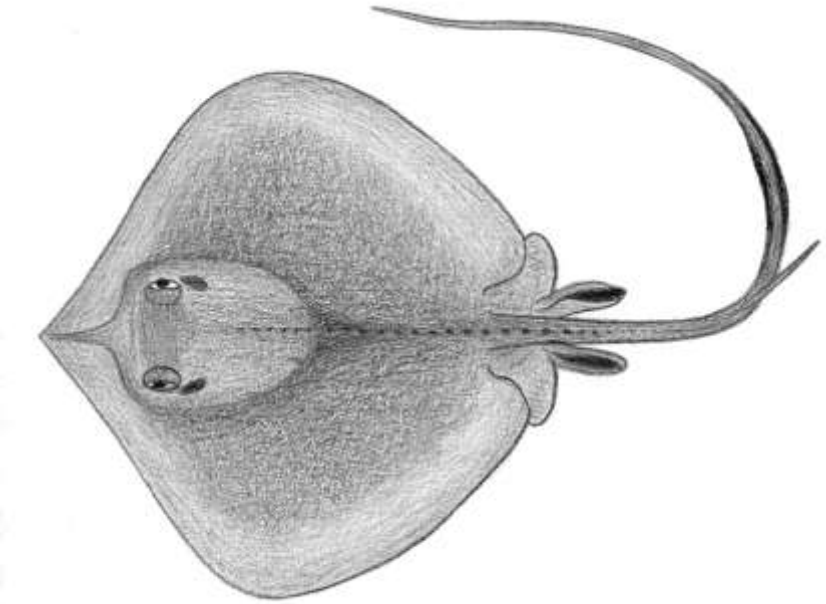
Size Maximum width of the Southern Stingray is about 150 cm (5 ft) and it can weigh well over 100 lbs. It matures at around 50-80 cm disk width.

Range It ranges from New Jersey to Florida and occurs in the Gulf of Mexico, Caribbean Sea, and the coast of Brazil.

Habitat The Southern Stingray is a coastal species found mostly over sand and mud bottoms. It prefers areas of higher salinity but will enter brackish and sometimes even freshwater. In North Inlet, it is found in subtidal channels, but moves into shallow intertidal creeks during high tide. It is the largest ray in North Inlet, and it occurs in all but the coldest months. It is a benthic feeder that makes large depressions in the mud as it feeds on invertebrates including clams, worms, and crabs. When inactive, it buries in the substrate with only its eyes exposed. The tail barb can give a nasty sting if the ray is stepped on.

Similar Species The Bluntnose Stingray (*D. say*) has more rounded disk edges, a snout length that is less than the distance between the eyes, and fins of similar height on the top and bottom of the tail. The Atlantic Stingray (*D. sabina*) also has rounded pectoral fins, but it has a long pointed snout and a reddish body color.

Dasyatidae - stingrays



Atlantic Stingray
Dasyatis sabina

Description This is a small species of stingray with a disk that is about as wide as long. The leading edges of the wings are concave giving rise to a pointed snout that is longer than the distance between the eyes. The tail is long and whip-like with one or more barbed spines. A row of short thorns extends along the mid-body to the base of the spine. The pelvic fins are small and are partly hidden by the wing-like pectoral fins. Male claspers extend more than 1/3 their length past the posterior margin of the disk.

Coloration Reddish -brown to yellowish-brown above and white below. It often has darker pigmentation on the midline. The tail is dark past the spine.

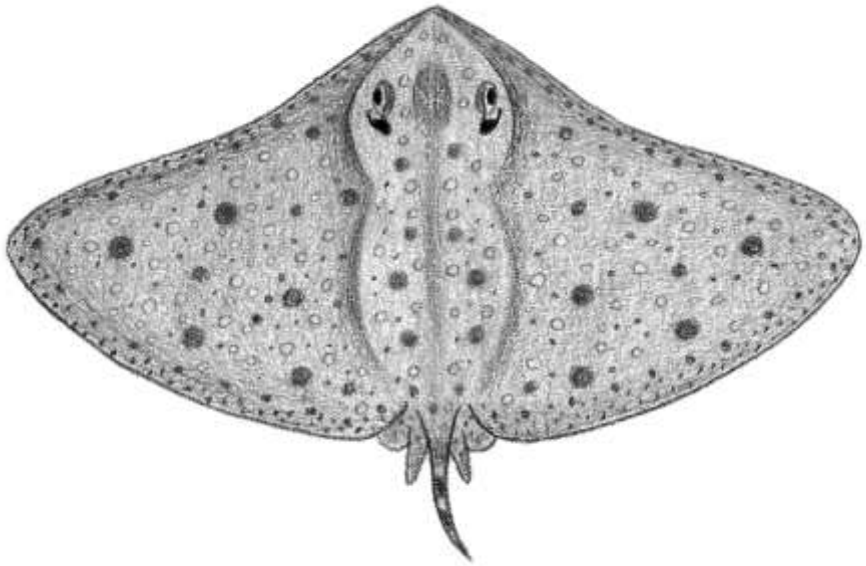
Size Maximum size to 60 cm (2 ft) disk length (width about the same), maturing at around 20 cm disk width.

Range The Atlantic Stingray occurs from Chesapeake Bay to the Florida Keys and the Gulf of Mexico. This species is common in North Inlet creeks from spring to fall, but some overwinter.

Habitat It is a coastal species and one of the few stingrays that can live in freshwater. Locally, it is found in subtidal as well as in intertidal creeks where it is often seen foraging at the water's edge. It is an active feeder on epibenthic as well as buried invertebrates. When inactive, it buries itself in the substrate with only its eyes exposed. The tail barb can give a nasty sting if the ray is stepped on.

Similar Species The Bluntnose Stingray (*D. say*) also has rounded disk edges, but differs in that its snout length is less that the distance between the eyes. The Southern Stingray (*D. americana*) has pointed edges to its pectoral fins and grows larger in size.

Gymnuridae – butterfly rays



Smooth Butterfly Ray
Gymnura micrura

Description The Smooth Butterfly Ray is a very broad ray (1.5 times as broad as long) with large wing-like pectoral fins. It is diamond-shaped to oval with a pointed snout and blunt wingtips. The tail is very small and lacks a spine. Dorsal and caudal fins are absent. The pelvic fins are small and have only single lobes which are partly covered by the disk.

Coloration This ray's color varies from brown, gray, green to yellowish-tan with numerous dark lines, spots, and blotches. Light spots and reticulations are often present. The tail is banded in darker brown. The ventral side is white with a gray margin.

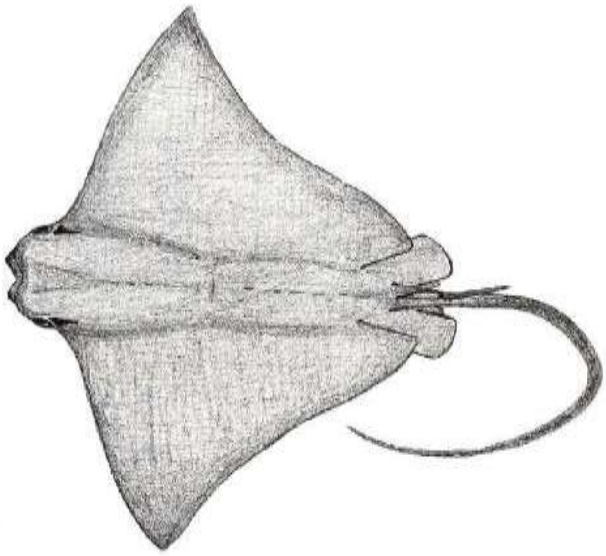
Size The Smooth Butterfly Ray reaches a maximum size of 120 cm (4 ft) disk width, but it is usually 20-70 cm in width.

Range It occurs from Chesapeake Bay to Brazil, including the Gulf of Mexico, but it is absent from the Caribbean Sea.

Habitat This graceful swimmer is found in coastal waters over sandy bottoms. In North Inlet, it can be found in both deeper channels and on shallow sandy flats. Both large and very small individuals occur during the summer. It is a benthic species that feeds on fishes and invertebrates.

Similar Species The overall shape of all other rays is squarer. The Smooth Butterfly Ray (*G. micrura*) is most often confused with the much less common Spiny Butterfly Ray (*G. altavela*) which has a more oval shape, a distinct tentacle extending from the back edge of the spiracle, and one or more spines (barbs).

Rhinopteridae - cownose rays



Cownose Ray
Rhinoptera bonasus

Description This ray is broad with pointed pectoral fins and a long tail with a barbed spine. The body is wider than long and has a distinct raised head region with a bi-lobed snout and central indentation. Its eyes and spiracles are placed well forward and to the side. The pectoral fins insert on the side of the head. The mouth is inferior and the teeth are in the form of bony plates. The pelvic fins are small and partly overlapped by the disk. There is a small dorsal fin present but no caudal fin. The skin is smooth, except for denticles at the midline.

Coloration It is brown, golden-brown, or reddish-brown above and whitish to yellowish below.

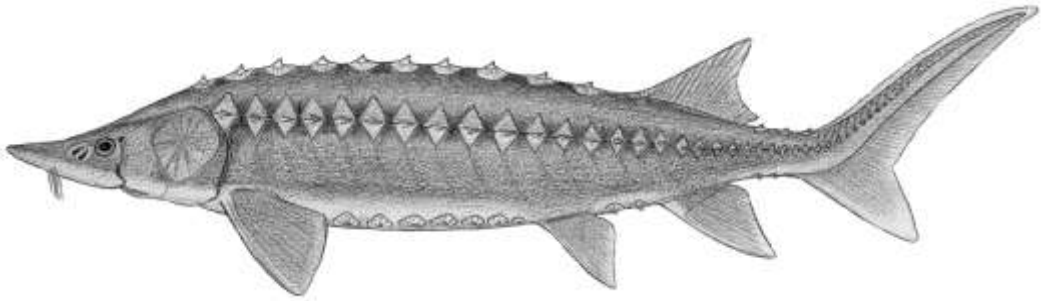
Size Maximum width is about 90 cm (3 ft). Young are about 40 cm wide at birth.

Range The Cownose Ray occurs from New England to southern Argentina, including the Caribbean and Gulf of Mexico. Recent studies suggest that two closely related species may occur in the Southeast region. *R. brasiliensis* is genetically distinct from *R. bonasus.* but it is morphologically so similar that tooth plates must be examined to distinguish the two species.

Habitat This coastal species occasionally enters estuaries in the summer. It is one of the most active rays and, unlike most bottom-oriented rays, the Cownose Ray often swims high in the water column and occasionally leaps out of the water. It feeds on benthic crustaceans and mollusks which it roots out with its rostrum. Large schools devastate shellfish beds in some estuaries.

Similar Species The Spotted Eagle Ray (*Aetobatus narinari*) is easily distinguished by its pointed rostrum and white spots over a dark background. They are generally larger than Cownose Rays and also leap. Most other local stingrays (*Dasyatis* spp.) are squarer in overall shape, have rounder heads and wing tips, and have eyes and spiracles on the top of the head (not on the sides).

Acipenseridae - sturgeons



Atlantic Sturgeon
Acipenser oxyrinchus

Description The Atlantic Sturgeon is a large, elongate fish with a long snout and small inferior mouth. Three rows of bony plates distinguish the sturgeon from all other fishes. One row is on the dorsal surface, one is on the side, and another is on the belly. The dorsal, anal, and pelvic fins are set far back on the body. They are similar in size and pointed. The pectoral fin is set low on the body, and the tail is shark-like (heterocercal). The snout is very long and slightly upturned with 4 barbels on the underside. The mouth is located on the bottom of the head, almost right under the eye. Rubbery lips mark the terminus of an extendable proboscis. Gill-like spiracles are present behind the eyes.

Coloration This species varies from brown to dark gray to blue-black and the belly is pale. The viscera are pale.

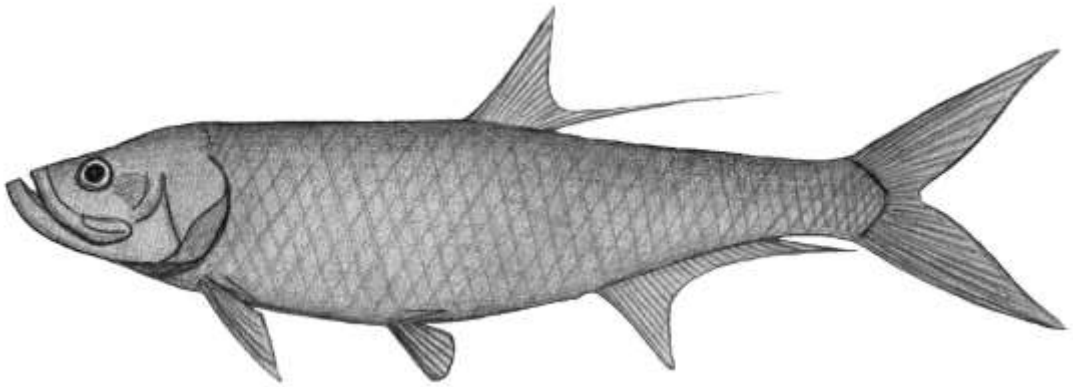
Size Adult Atlantic Sturgeon attain a maximum size of over 350 cm (11 ft, 800 lbs) but most individuals seen in local estuaries are usually much smaller (80-200 cm).

Range It occurs from Canada to Florida and in the Gulf of Mexico. It is an anadromous species that makes spawning runs from the ocean into rivers where they spawn in the spring. Young spend years in the low salinity areas.The Atlantic Sturgeon is only rarely encountered in North Inlet, but it is frequently seen in neighboring Winyah Bay Estuary where it used to support a fishery that produced caviar. Adults are often observed partially launching their bodies out of water.

Habitat This species occurs in fresh, brackish, and salt water and moves freely between the three. This species is fairly slow-moving and feeds near the bottom on benthic organisms. It was over-fished and has had protected status for over 25 years. Adults may live to over 60 years. As of 2014, NOAA lists the status of Carolina Distinct Population of the American Sturgeon as endangered.

Similar Species The Shortnose Sturgeon (*A. brevirostrum*) has a short, blunt snout, widely spaced plates, and its maximum size is only about 100 cm. It also occurs in Winyah Bay and has an endangered species status.

Megalopidae - tarpons



Tarpon
Megalops atlanticus

Description The tarpon is a moderately elongate herring-like fish with a large upturned mouth and projecting lower jaw. The dorsal fin is located slightly past mid-body and has 13-15 rays and a long, thin, filamentous, last ray. The anal fin is long with a concave margin and 21-25 rays. The caudal fin is strongly forked with equal lobes. The pectoral and pelvic fins are located low on the lower body. The scales are large, armor-like, and shiny, with 41-48 along the lateral line.

Coloration The tarpon is uniformly metallic silver although the back is often dark with bluish or greenish coloration.

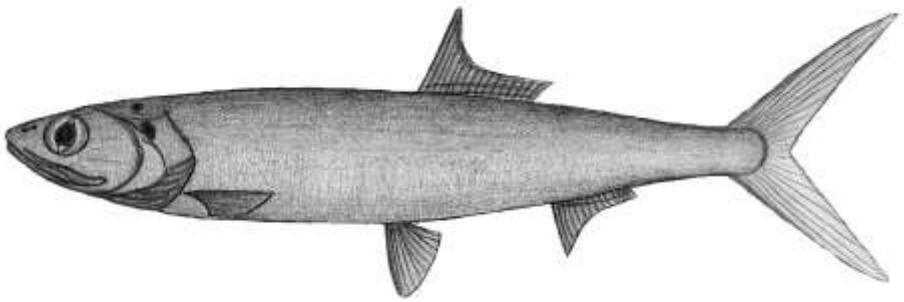
Size It reaches a maximum size of about 220 cm (7 ft, 200 lbs.).

Range Tarpon are warm water fishes that range from Virginia to Brazil, including the Caribbean Sea and the Gulf of Mexico.

Habitat This species is found in many different habitats from freshwater to offshore reefs. They spawn offshore and produce eel-like, pelagic leptocephalus larvae that begin to resemble the adult once they settle inshore. Juveniles usually prefer low salinity and brackish waters. In North Inlet, recently settled juveniles are found in high marsh pools. Adults migrating north in mid-summer are encountered along local beaches and in deeper waters near the mouths of inlets. Tarpon are conspicuous as they crash schools of mullets and menhaden and are often seen jumping in late summer and early fall. They are able to breathe air using a specially modified swim bladder and can live in areas of low oxygen. This coastal migrant is a popular game fish in the southeastern US.

Similar Species The Ladyfish (*Elops saurus*) is also long and silvery and has large eyes, but it has a fairly symmetrical mouth, yellow-green colotaion on the back and small scales. Like the tarpon it jumps when hooked but ladyfish weigh less than 5 pounds.

Elopidae – tenpounders



Ladyfish
Elops saurus

Description The Ladyfish is an especially elongate and moderately compressed fish with large eyes. The head is pointed and flat above, and it has a large terminal mouth. The teeth and scales are small. The dorsal fin, which is located past mid-body lacks spines and has 21-25 rays. The anal fin has 14-17 rays and its origin is posterior to the dorsal fin. The caudal fin is deeply forked with equal lobes. The pectoral fins are low on the body.

Coloration The Ladyfish is silvery with a dark blue to greenish back. There is often a yellowish sheen in fresh specimens. The fins are dusky in color.

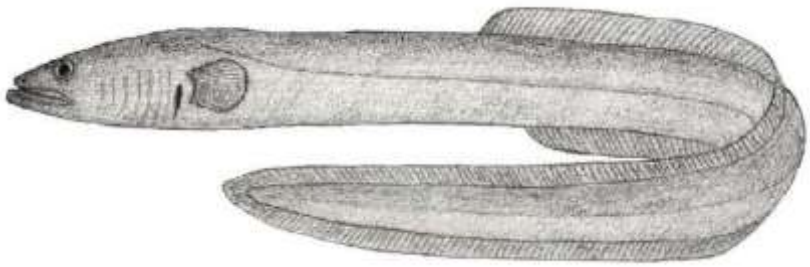
Size Maximum size for the Ladyfish is about 90 cm (3 ft), but most are less than 50 cm.

Range Ladyfish occur in warm waters from New England to Brazil, including the Gulf of Mexico and the Caribbean Sea. Caribbean populations may belong to a separate species.

Habitat This is a coastal species that is often found in estuarine waters. Ladyfish often form schools, and tolerate a wide range of salinities, but they rarely enter freshwater. They feed on fishes and sometimes crustaceans. They breed offshore and produce an eel-like leptocephalus larva that lives in high salinity waters. In North Inlet, small (20-30 cm) juvenile ladyfish recruit to shallow creeks early in the summer and grow to more than 25 cm before leaving the estuary in the fall. Larger ladyfish (40-60 cm) feed near the surface in shallow waters including the flooded marsh. These speedy swimmers usually jump when hooked by anglers.

Similar Species Tarpon (*Megalops atlanticus*) are also silvery, elongate, jump, and have large eyes, but the Tarpon's projecting lower jaw and large scales are distinctive. The Bonefish (*Albula vulpes*) is similar in shape and color but is deeper-bodied with a steeper dorsal profile and an inferior mouth (as opposed to terminal in *Elops*). Bonefish are very rare in North Inlet.

Anguillidae - freshwater eels



American Eel
Anguilla rostrata

Description The American Eel is an elongate, cylindrical, fish with small eyes and a large mouth that extends to the rear of the orbit. There is a well developed pectoral fin on the mid-side of the body and a short gill slit. The dorsal fin is far back on the body (well behind the pectoral fin) and the anal fin begins posterior to the dorsal fin. The caudal fin is continuous around the tail. The lower jaw projects over the upper jaw and the teeth are small and granular. Tiny scales are present, but embedded in the tough and slimy skin. A lateral line is present.

Coloration Young eels are yellowish to brown grading to whitish below. As they mature they darken above and whiten below, often with a bronze sheen.

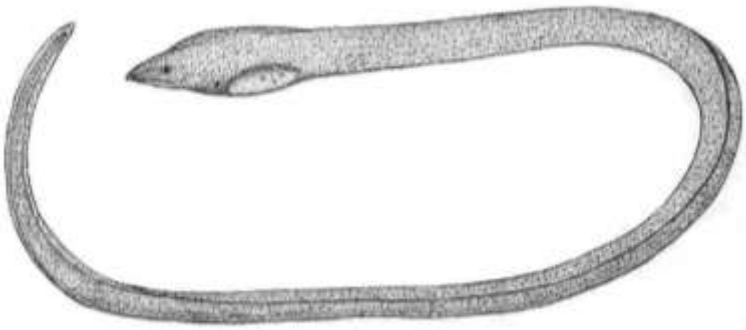
Size Maximum size for the American Eel is about 150 cm (5 ft) but most are less than 50 cm. Females grow much larger than males.

Range It occurs from Greenland to the Caribbean Sea, including the Gulf of Mexico. This catadromous species leaves rivers and estuaries to spawn in a specific area of the Central Atlantic Ocean known as the Sargasso Sea.

Habitat Adult American Eels are restricted to fresh and estuarine waters. After 6-8 years in the estuary the adults migrate to the deep ocean to spawn, and do not return. After nearly one year as a pelagic leptocephalus larva, young "glass eels" settle into coastal waters and move to freshwater. It is a bottom-feeder and often burrows deep into muddy bottoms by day and feeds at night. They are hardy fish and secrete mucous when handled. Small and medium American Eels are found in the upper reaches of creeks in North Inlet, but they are more abundant in Winyah Bay.

Similar Species Other eels occur in the high salinity creeks of North Inlet, but the Speckled Worm Eel (*Myrophis punctatus*) is by far the most common. The Speckled Worm Eel is usually less than 15 cm (6 in.) long, has a tiny pectoral fin, an overhanging upper jaw, and black speckles all over the body. The moray eels also have overhanging upper jaws, but they have prominent teeth and the bodies are more laterally compressed.

Ophichthidae - snake eels



Speckled Worm Eel
Myrophis punctatus

Description This is a very slender and elongate eel. The dorsal fin origin is about halfway between the anal opening and the tip of the tail. The snout is conical, and the tube-like nostrils are on the tip. Very small pectoral fins are present. The caudal fin is continuous with dorsal and anal fins.

Coloration The Speckled Worm Eel is generally light tan to pale with fine black speckles over the entire dorsal surface and lateral sides of the body. It can be dark brown but the spots are still evident. The belly is usually lighter with few spots. The gut area is lighter than the rest of the head region and has a dark upper border.

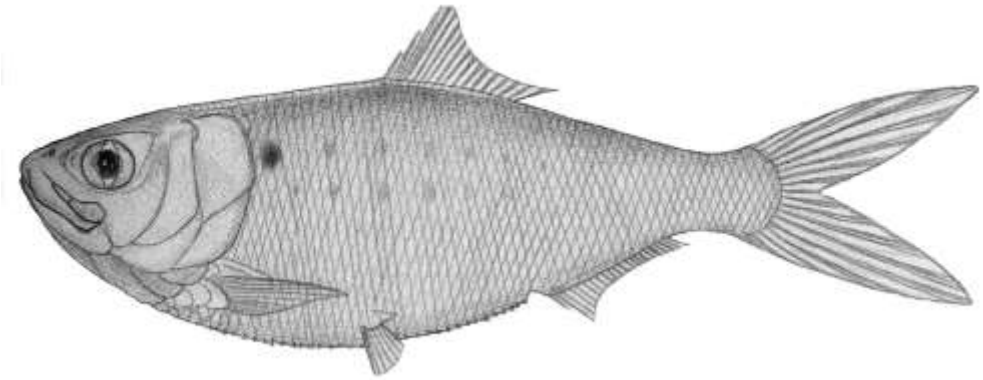
Size Maximum size for the Speckled Worm Eel is 35 cm (14 in).

Range This eel occurs from Bermuda and North Carolina to Brazil, including the Gulf of Mexico, the West Indies, and Central America.

Habitat The Speckled Worm Eel spawns in the ocean and produces leptocephali larvae which become juveniles in shallow water in the winter. Juveniles and adults occur in estuaries and offshore waters. It inhabits muddy bottoms where it burrows into the substrate. Because of its cryptic habits, it escapes detection and collection; however, the Speckled Worm Eel is an abundant fish in North Inlet. It can tolerate low salinities.

Similar Species The Shrimp Eel (*Opichthus gomesii*) is similar to this species but is larger in size, has a darker gray coloration with a pale belly, and has no spots. The dorsal and anal fins do not continue around the tail (the Speckled Worm Eel has a continuous fin). The American Eel (*Anguilla rostrata*) has a projecting lower jaw, a large pectoral fin, and green-brown body coloration.

Clupeidae - herrings



Atlantic Menhaden
Brevoortia tyrannus

Description The Atlantic Menhaden is a laterally compressed deep-bodied fish. The dorsal fin is situated about midway across the dorsal surface, and the anal fin originates below and just posterior to the end of the dorsal fin. The pelvic fin has 6 rays, is slightly rounded on its margin, begins below the origin of the dorsal fin, and has rays of nearly equal length throughout. The pectoral fin is low on the side of the body and the caudal fin is forked. There is a belly keel and a distinct notch is apparent on the front edge of the upper jaw.

Coloration The Atlantic Menhaden is silvery-green to brassy on the sides becoming darker blue-green on the dorsum. Small spots occur on the sides of larger fish and all have a dark spot behind the upper gill cover near the lateral line. The fins are yellowish to dusky.

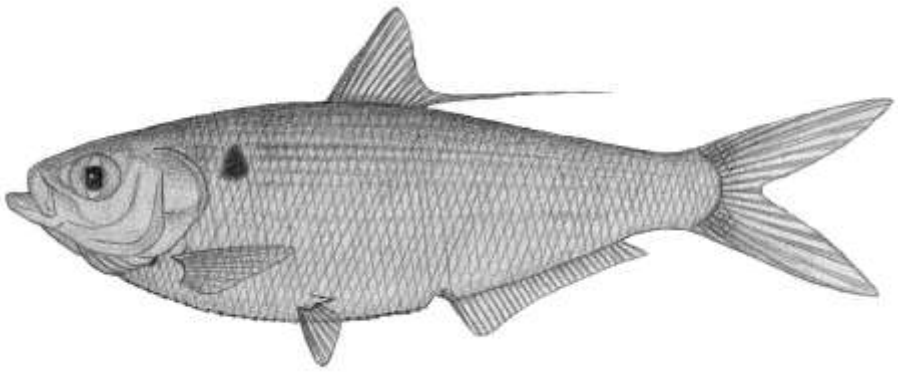
Size This herring's maximum size is about 50 cm (20 in), but it is usually around 20 cm (8 in) or smaller in the South.

Range It occurs from Nova Scotia to NE Florida.

Habitat The Atlantic Menhaden is a pelagic species that normally forms large schools which are often conspicuous at the surface. It spawns offshore in the autumn-winter and young-of-the-year grow to about 12 cm before moving to the ocean in the fall. Juveniles can be expected in any shallow waters but large individuals (1 or 2 year old fish) are found mainly in near inlets. It is most common during the spring and summer months in North Inlet. It tolerates salinities from almost fresh to full seawater. The Atlantic menhaden is an important commercial species, and it is also widely used for bait.

Similar Species At least six other, less abundant herrings occur in the area and the juveniles are difficult to distinguish from one another. Keys should be consulted for proper identification. However, during the warmest months, no other deep-bodied, local herring has a black spot after the gill cover while lacking an elongate dorsal ray.

Clupeidae - herrings



Threadfin Shad
Dorosoma petense

Description This elongate herring has a moderately deep belly. The mouth is terminal and the snout is pointed. There is a median notch in the upper jaw. The dorsal fin has 11-15 rays and the last one is elongate, about two times the height of the dorsal fin. The anal fin has 17-27 rays. The belly has scutes. The caudal fin is forked. There are 41-48 scales in the lateral line.

Coloration The Threadfin Shad is bright silver with a dark back. There is a dark spot behind the upper gill cover and there are often faint dorsal stripes on the body. The fins are dusky.

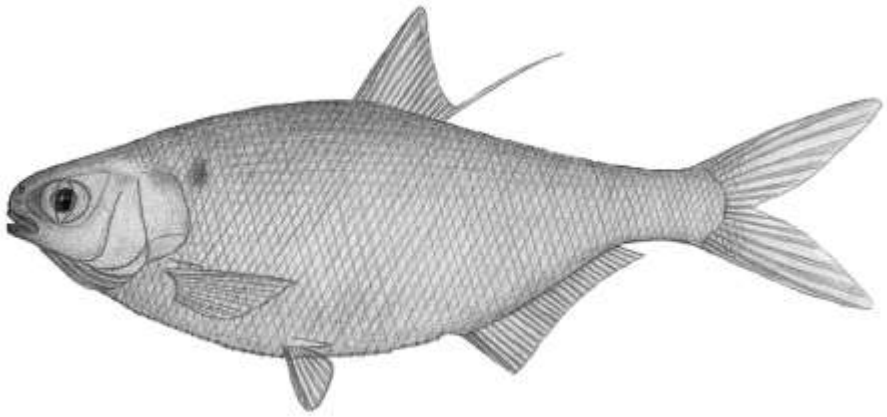
Size The Threadfin Shad's maximum size is about 18 cm but most of those seen locally are 4-8 cm.

Range It is native to the Gulf of Mexico but has been introduced to several river basins on the East Coast. It is common throughout the salinity gradient in Winyah Bay**.**

Habitat The Threadfin Shad is a schooling, pelagic species. Adults tolerate higher salinities than juvenile fish. It spawns in spring and again in fall around vegetated areas. It feeds on planktonic organisms. Juveniles are occasionally found in the shore zone in North Inlet. It can be expected in the area from spring to late summer.

Similar Species The Gizzard Shad (*D. cepedianum*), which also has an elongated dorsal ray, is found in the same area. It differs in having a blunt snout, a subterminal mouth, more than 25 anal fin rays, and 52-70 lateral scales. The only other herring with an elongate dorsal ray is the Atlantic Thread Herring (*Opisthonema oglinum*) but this is an uncommon high salinity species that lacks the median notch in the upper jaw. *Alosa* spp. herrings and shads occur in Winyah Bay, but, like the Atlantic Menhaden (*Brevoortia tyrannus*), do not have elongated dorsal rays.

Clupeidae - herrings



Gizzard Shad
Dorosoma cepedianum

Description This herring has a deep belly. The mouth is sub terminal and the snout is somewhat blunt. There is a median notch in the upper jaw. The dorsal fin has 10-13 rays and the last one is elongate, less than about 1.5 times the height of the dorsal fin. The anal fin has 25-36 rays. The belly has scutes. The caudal fin is forked. There are 52-70 scales in the lateral line.

Coloration The Gizzard Shad usually has a greenish blue back and brassy sides. There is a dark spot behind the upper gill cover and there are often faint dorsal stripes on the body. The fins are dusky.

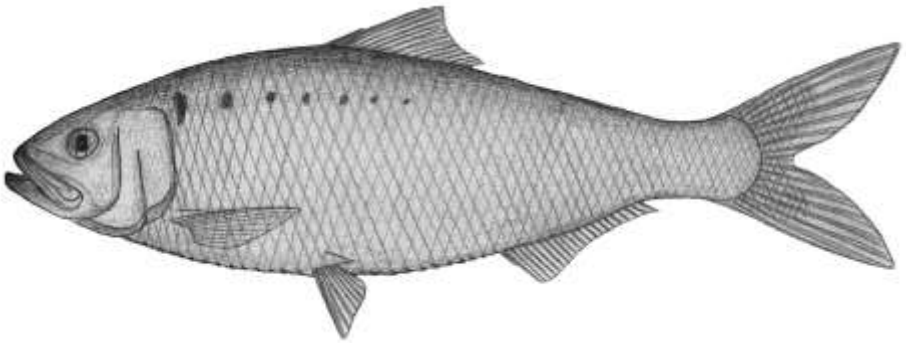
Size The Gizzard Shad's maximum size is about 30 cm (12 in.) but most of those seen locally are 4-10 cm.

Range It is native to the Gulf of Mexico but has been introduced to several river basins along the East Coast. It can be expected in the area from spring to late summer especially during major overflows of brackish water from Winyah Bay.

Habitat The Gizzard Shad is a schooling, pelagic species that is best known from freshwater reaches of rivers and lakes, but occurs in low and moderate salinities. It feeds on planktonic organisms. Juveniles are occasionally found in the shore zone in North Inlet.

Similar Species The Threadfin Shad (*D. petenense*), which also has an elongated dorsal ray, is found in the same area. It differs in having a pointed snout, a terminal mouth, less than 25 anal fin rays, and 50 lateral scales. The only other herring with an elongate dorsal ray is the Atlantic Thread Herring (*Opisthonema oglinum*) but this is an uncommon high salinity species that lacks the median notch in the upper jaw. *Alosa* spp. (river) herrings and shads occur in Winyah Bay, but, like the Atlantic Menhaden (*Brevoortia tyrannus*), do not have elongated dorsal rays.

Clupeidae – herrings



American Shad
Alosa sapidissima

Description This moderately elongate herring has a deep belly with a toothy ventral edge. Its eyes are relatively small and the eyelids are adipose. The mouth is large and the lower jaw tip closes into a deep pit in the upper jaw.The dorsal fin is short and the tail is deeply forked. The body is heavily scaled.

Coloration American Shad is a silvery fish with dark backs that range from dark blue to blue-green metallic with whitish bellies. There is a large black spot on the shoulder just posterior to the gill cover, followed by 4-7 smaller dark or at least distinctly dusky spots along an irregular row terminating below the dorsal fin. The fins can range from pale and dusky to greenish. The pale lining of the gut cavity is useful in distinguishing it from other herrings.

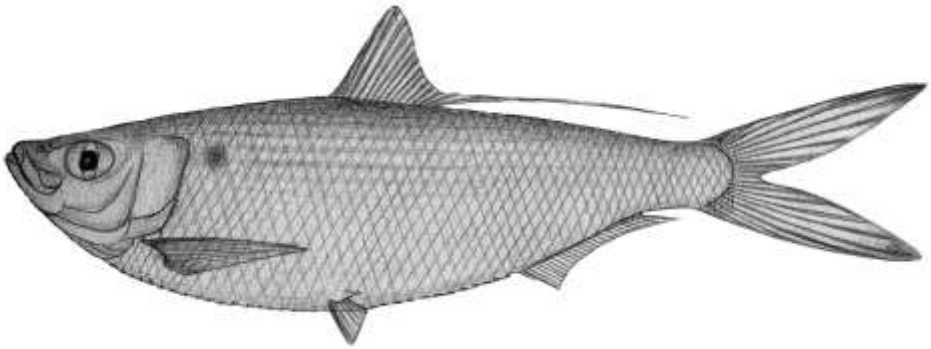
Size American Shad is the largest of the local herrings. Most adults that make the spawning run up Winyah Bay in early spring are 40-50 cm (16-20 in.) long and weigh 2-4 lbs.

Range The species occurs from Canada to central Florida.

Habitat Adults live in the ocean and most Atlantic Shad overwinter north of Cape Cod, Massachusetts, then migrate south and enter their native river systems along the east coast to north Florida. Adults pass through the estuary quickly and spawn in freshwater, often far up the rivers. American Shad gill net fisheries provide ripe ovaries ('roe') to local markets during the spawning run. Juveniles move into brackish water areas and spend the first year or two in the estuary. The few individuals that have been collected in North Inlet creeks were less than 3 inches long.

Similar Species The Hickory shad (*Alosa mediocris*) is similar but uncommon in SC estuaries. Other local herrings have large eyes, yellowish fins, and usually only one dark spot, although the Atlantic Menhaden (*Brevoortia tyrannus*) also is freckled across its body. The Blueback Herring (*Alosa aestivalis*) has a metallic blue back and a dark lining to the body cavity, unlike the pale lining in the American Shad.

Clupeidae – herrings



Atlantic Thread Herring
Opisthonema oglinum

Description This elongate herring has a moderately deep belly with a saw-toothed edge. Its cross-sectional profile is narrow. The mouth is terminal and upwardly pointed, opening close to the fairly flat dorsal surface. The dorsal fin has 17-21 rays and the last one is very elongate, reaching the base of the caudal fin. The anal fin has 21-25 rays. The caudal fin is deeply forked.

Coloration The Atlantic Thread Herring has blue upper sides and back whereas the lower half of the body is silver. There is a dark spot behind the upper gill cover which is frequently followed by other smaller spots. The fins are dusky, but the tips of the dorsal and caudal fins are black.

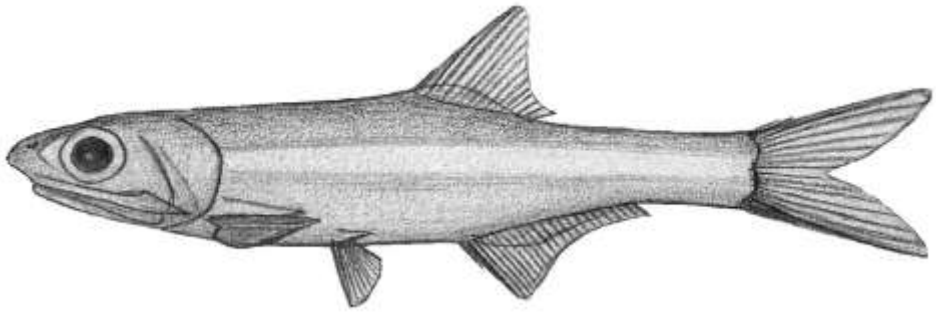
Size The Atlantic Thread Herring's maximum size is about 25 cm (10 in.), but most of those seen locally are about 6-8 cm (2-3 in.).

Range It is distributed along most of the U.S. east coast, Gulf of Mexico, Caribbean Sea, and South American coast to Brazil.

Habitat The Atlantic Thread Herring is a schooling, pelagic species which appears restricted to high salinity waters. It feeds on planktonic organisms. Adults are not found in the estuary, but juveniles are occasionally found in the shore zone close to the mouth of North Inlet. It can be expected in the area from spring to late summer.

Similar Species The Gizzard Shad (*D. cepedianum*) and Threadfin Herring (*D. petenense*) also have long dorsal filaments, but they are rounder in cross-section and lack distinct black tips on the tail and dorsal fin. Other small herrings including Scaled Sardine (*Harengula jaguana*) and Spanish Sardine (*Sardinella aurita*) occur in the nearshore ocean. *Alosa* herrings and shads occur in Winyah Bay. None of these other species has elongated dorsal rays.

Engraulidae - anchovies



Striped Anchovy
Anchoa hepsetus

Description The Striped Anchovy is an elongate fish with a huge mouth that below the prominent snout. The snout is blunt and its length is about ¾ of the eye diameter. The anal fin has 16-23 soft rays and its origin is below the last dorsal ray. There are 14-17 dorsal rays. The caudal fin is deeply forked and the pectoral fin is low on the body.

Coloration The Striped Anchovy's dorsum is dark an often bluish grading to silvery on the sides and white on the belly. Superimposed on the pale almost translucent body side is a bright silvery lateral stripe that runs from the gills to the tail: it is almost as wide as the eye.The fins are translucent.

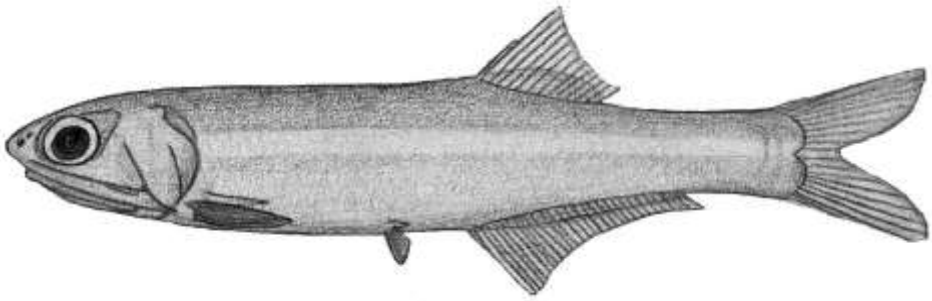
Size Maximum size of the Striped Anchovy is about 15 cm (6 in), but most individuals encountered are under 10 cm.

Range The Striped Anchovy occurs from Massachusetts to E. Florida, the North and West Gulf of Mexico, Cuba, and northern South America.

Habitat This species forms large schools in coastal ocean waters and estuaries and tolerates a wide range of salinities. In North Inlet, larvae and juveniles can be very common in intertidal and subtidal creeks, but of the two anchovy species common to the area, the Striped Anchovy more frequently occurs near the inlet. It occurs in the summer and fall but is absent in the cold months. It spawns in the ocean and mouths of estuaries from April-July. Striped Anchovies consume copepods and other zooplankton.

Similar Species The Bay Anchovy (*A. mitchilli*) is similar but has a shorter snout, a softer, flatter body with a pink sheen and a dorsal fin placed far back on the body. Silversides (*Menidia* species) have very small mouths and heavier scales.

Engraulidae - anchovies



Bay Anchovy
Anchoa mitchilli

Description The Bay Anchovy has a short, blunt snout which is about one half of the eye diameter. The mouth is very large and opens below the prominent snout. The dorsal fin is situated far back on the dorsum compared to other species and its origin is directly above that of the anal fin. The anal fin has 23-31 rays. The anus is closer to the pelvic fin base than to the anal fin origin. The tail is forked and the pectoral fin is low on the side of the body. The body is fairly flat in cross-section.

Coloration Overall, the body of the Bay Anchovy is translucent with pinkish to bronze sheen. A silvery stripe that is almost as wide as the eye runs from the gill cover to the tail. The fins are transparent. The gut can be easily seen through the body wall.

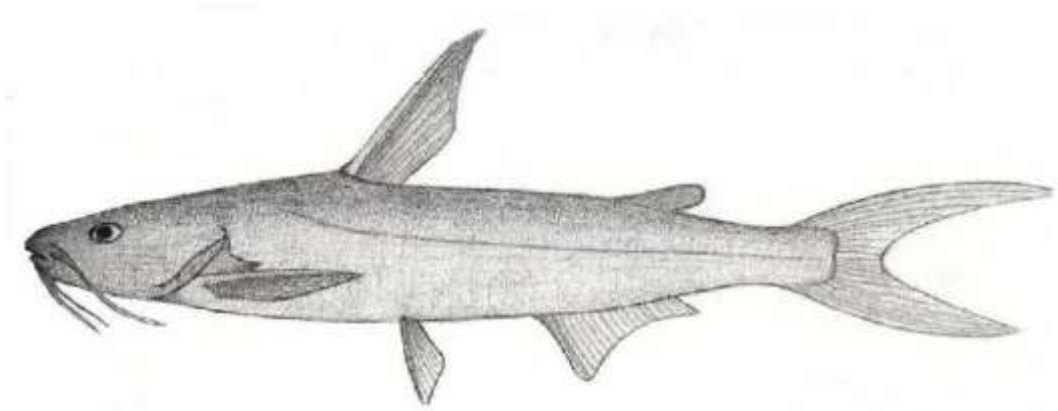
Size The Bay Anchovy grows to 10 cm (4 in) but most are usually less than 5 cm.

Range It occurs from Maine to the Florida Keys and around the Gulf of Mexico to the Yucatán Peninsula

Habitat The Bay Anchovy is most common in shallow coastal waters and estuaries over muddy bottoms. It can tolerate extremes in salinity. In North Inlet, it forms schools that range from the surface to bottom of deep creeks where it feeds on small zooplankton. Compared to the Striped Anchovy, the Bay Anchovy is more likely to occur in intertidal creeks and along shorelines from the inlet to the edge of the forest. It is most common in the spring and summer and almost disappears from North Inlet in fall-winter.

Similar Species The Striped Anchovy (*A. hepsetus*) is similar but has a longer snout, rounder and firmer body without a pink sheen, and a dorsal fin that originates far forward of the anal fin. The silversides (*Menidia* species) have very small mouths and heavier scales.

Ariidae - sea catfishes



Hardhead Catfish
Ariopsis felis

Description This moderately elongate catfish has a flattened head and rounded snout. The rough, bony head shield is very obvious. There are three pairs of barbels around the mouth, two pairs on the chin and one pair on the side of the mouth. The pectoral and dorsal fins both have strong serrated spines, but lack elongate tips. There is a well developed adipose fin. The caudal fin is deeply forked. The pelvic fin inserts posterior to vertical from the dorsal fin base.

Coloration The Hardhead Catfish is brown to dark blue above grading to white below. Its fins are blue to brown. The soft adipose dorsal fin is blackish.

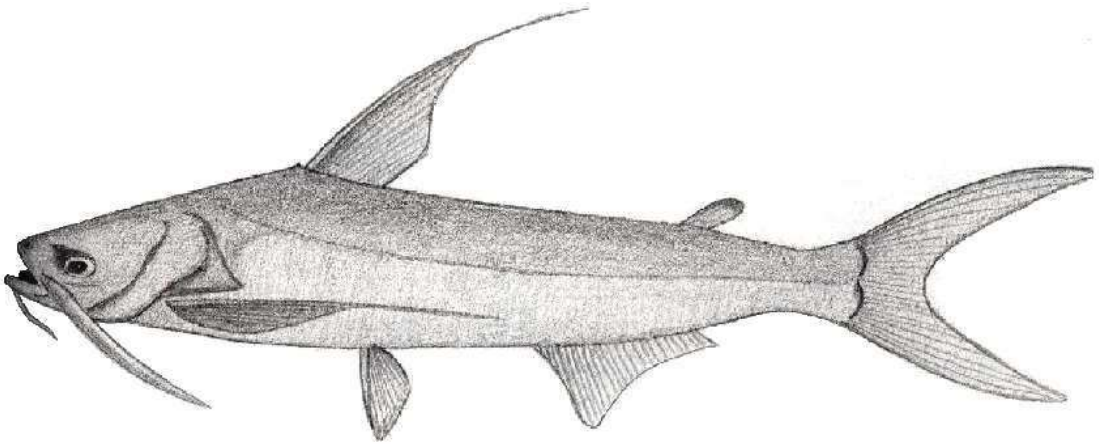
Size Its maximum size is about 70 cm (28 in), but 15-25 cm is more typical.

Range The Hardhead Catfish occurs from North Carolina to Florida and along the entire Gulf of Mexico.

Habitat This is a coastal species that prefers brackish and salt water but will rarely enter freshwater. The Hardhead Catfish prefers cloudy waters over muddy bottom and is commonly captured in subtidal channels and waterways. Juveniles are rarely captured but larger fish are common in spring and summer. Abundance of the Hardhead Catfish in North Inlet has declined sharply since the 1970-80's and is presently considered uncommon. It is absent in the colder months when it most likely moves offshore. Toxic compounds can be transferred through punctures by the dorsal and pectoral spines. The Hardhead Catfish is unique among local fishes in that males carry and incubate fertilized eggs in their mouths until the young become free swimming some weeks later.

Similar Species The Gafftopsail Catfish (*Bagre marinus*) is a high salinity species that lacks an obvious visible bony head shield, has elongate dorsal and pectoral fin tips, and has much longer maxillary barbels. The Blue Catfish (*Ictalurus furcatus*) and White Catfish (*Ameiurus catus*) occur in low salinity areas of Winyah Bay but are not likely to overlap the Hardhead Catfish's distribution in saltier waters.

Ariidae - sea catfishes



Gafftopsail Catfish
Bagre marinus

Description This catfish also has a flattened head and rounded snout; however, the bony head shield is almost invisible. The mouth is slightly inferior and there are two pairs of barbels around the mouth; one pair of short barbels on the chin and one long pair on the sides of the mouth that may reach the pelvic fin base. The dorsal fin is large with a filamentous tip and erectile spine. The pectoral fins also have a serrated, erectile spine and a filamentous tip. A well-developed adipose fin is situated on the dorsum close to the tail. The anal fin has 22-28 soft rays. The tail is strongly forked.

Coloration The Gafftopsail Catfish is bluish gray to brown above fading to white below.

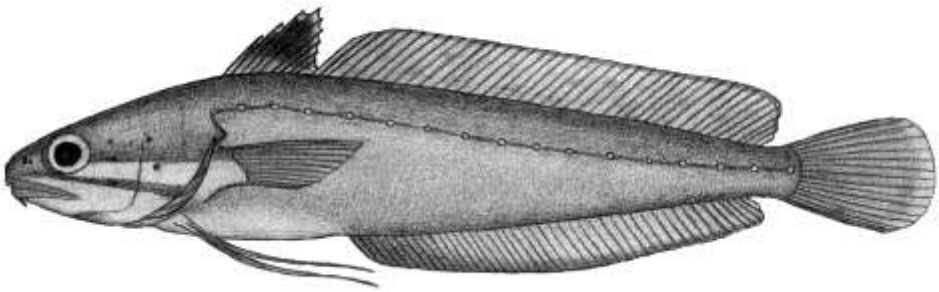
Size Maximum size of the Gafftopsail Catfish is about 100 cm (3 ft) but most are close to 50 cm.

Range It is a tropical/subtropical species that occurs Brazil to New England, but is absent from the islands of the Caribbean.

Habitat This catfish is found in shallow coastal waters including the high salinity reaches of estuaries. The Gafftopsail Catfish is a bottom-feeder that eats small fishes and invertebrates. In North Inlet, it is uncommon and most likely to be encountered along beaches in the summer months. It is absent during the winter. Like the Hardhead Catfish, the males hold eggs in their mouths (and do not feed) until the young emerge after about two months. Spines on the dorsal and pectoral fins can transfer toxic compounds to wounds.

Similar Species The Hardhead Catfish (*Ariopsis felis*) has an obvious bony head shield, lacks elongate fin tips, and has shorter maxillary barbels. The Blue Catfish (*Ictalurus furcatus*) and White Catfish (*Ameiurus catus*) occur in low salinity areas of Winyah Bay, but are not likely to overlap the Gafftopsail Catfish's distribution in saltier waters.

Phycidae - phycid hakes



Spotted Hake
Urophycis regia

Description The Spotted Hake has two separate dorsal fins and a pair of long, filamentous pelvic rays which reach past the origin of the anal fin. The first dorsal fin has a short base and is taller than the second dorsal fin, which has a very long base. The anal fin has a slightly shorter base. The caudal fin is separate from the dorsal fin and the anal fin is rounded. A small chin barbel is present. The lateral line is straight and prominent.

Coloration The Spotted Hake is brown above grading to white below. It can be uniform or blotchy in coloration. The lateral line is dark with a series of pale spots along its length. The pair of dusky streaks extending from behind the eye to the base of the pectoral fin is a diagnostic feature. The anal fin has a dark margin and the second dorsal fin has many dark spots and a light margin. The first dorsal fin has a dark tip with distinctive white edging.

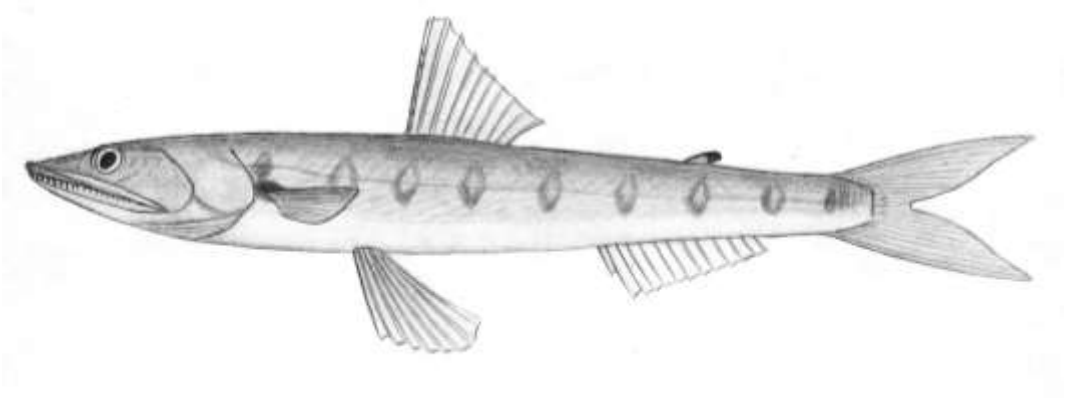
Size Maximum size of the Spotted Hake is about 40 cm (16 in) but 6-25 cm is more typical.

Range It ranges from Cape Cod to Florida and occurs in the northeastern Gulf of Mexico.

Habitat This is a bottom-dweller that lives over soft bottoms and feeds on invertebrates and fishes. Adults are found from shore to 420 m deep, but prefer shallower waters. In North Inlet, juveniles and small adults occur throughout the subtidal creeks in the winter and spring.

Similar Species Confident separation of the Spotted Hake from the Southern Hake (*U. floridana*) requires counting the number of rays on the dorsal fins. The Southern Hake (*U. floridana*) usually has a completely dark first dorsal fin, shorter pelvic rays, and black spots behind the eye rather than dark streaks, but color differences are not clear in juveniles.

Synodontidae – lizardfishes



Inshore Lizardfish
Synodus foetens

Description The Inshore Lizardfish is an unusually elongate fish with a pointed snout, large mouth and sharp teeth. The snout is much longer than the width of the eye. The dorsal fin is tall and a small adipose fin is above the midpoint of the anal fin. The anal fin has 8-14 rays and its base is equal to, or slightly longer than, the dorsal fin base. The pelvic fins have 8 rays and the innermost rays are shorter than the outer ones. The tip of the pectoral fin is directly above the origin of the pelvic fin. The tail is deeply forked.

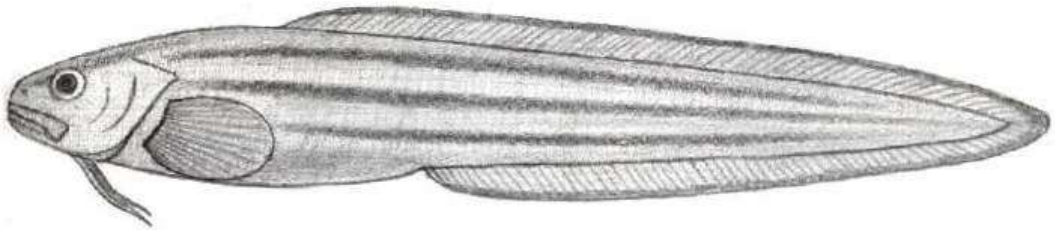
Coloration This lizardfish is pale brown to greenish in color, darker above and whitish below. There are 8 diamond-shaped dark markings on the mid-side of the body, and a dark spot occurs at the pectoral fin base. The rest of the body and fins are uniformly colored. Young fish are brown with dark ventral spots. Spots are also present along the anal fin base.

Size Maximum size of the Inshore Lizardfish is about 45 cm (18 in).

Range It ranges from Massachusetts to the northern Caribbean Sea, including the Gulf of Mexico and the Caribbean Sea.

Habitat This species is a bottom dwelling predator that buries itself almost completely and waits in ambush for prey. It eats small crustaceans and fishes and is often caught by anglers. In North Inlet, it is widely distributed in the creeks and along shorelines. Juvenile Inshore Lizardfish arrive from the ocean in the early summer. Juveniles and small adults are commonly encountered until water temperatures drop in the fall. The Inshore Lizardfish favors estuarine creeks, bays, and beaches, but is also caught offshore to a depth of 180 m.

Ophidiidae - cusk-eels



Striped Cusk-eel
Ophidion marginatum

Description This relatively tall-bodied eel has two long barbels below the head. There is no caudal fin, and the dorsal and anal fins are continuous around the tail of the fish. The mouth is fairly large and reaches to the middle or rear of the eye. There are no pelvic fins and the pectoral fins are large and fan-like. Males have a fleshy crest on the head.

Coloration The Striped Cusk-eel is pale, gold to brown, with 2 or 3 dark stripes along each side of the body. The stripes are faint in young fish and are never very bold in adults. The dorsal and anal fins have a dark margin. There may be a dark stripe through the eye.

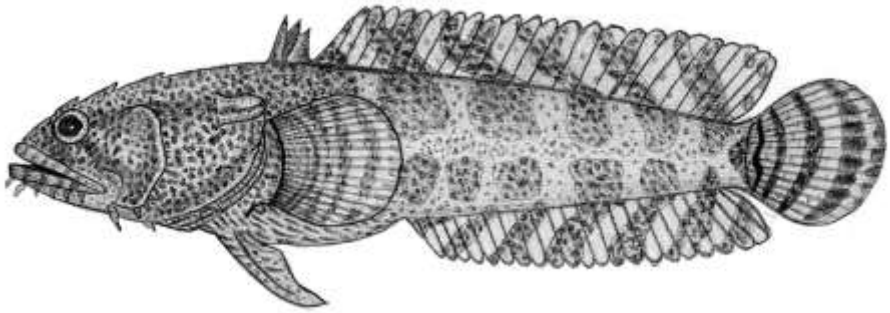
Size Maximum size of the Striped Cusk-eel is about 25 cm (10 in), but 8-20 cm is typical.

Range It ranges from New York to N.E. Florida.

Habitat This is a bottom dweller that will often bury itself completely in the sediment by day and emerge to feed at night. In North Inlet, the Striped Cusk-eel was, historically, common in subtidal channels during summer, but appears uncommon during the recent decade. Little is known about its distribution or habits. They are known to produce drumming sounds.

Similar Species No other fish has long, sub-opercular barbels; in all other fishes, the barbels are on the chin or originate at the base of the pelvic fin. None of those has continuous fins like the cusk-eels. There is a possibility that other similar cusk-eel species occur in our area. A taxonomic key to the group would need to be studied to identify these.

Batrachoididae – toadfishes



Oyster Toadfish
Opsanus tau

Description The Oyster Toadfish is a broad and fairly flattened fish. The eyes are close to the top of the head, and short barbels are present along the edge of the lower jaw. There are 3 dorsal spines and 25-27 soft rays, and the dorsal and anal fins terminate close to the base of the tail. The pectoral fin is very large and fan-like. The pelvic fin is placed far forward on the throat.

Coloration The Oyster Toadfish is mottled with different shades of brown, orange, and yellow that form blotches, bands, and spots on a tan to whitish background. The body pattern is very variable. Dark bands often radiate from the eyes. The pectoral and caudal fins have vertical bands on them. Forward-slanting bands occur on the dorsal and anal fins.

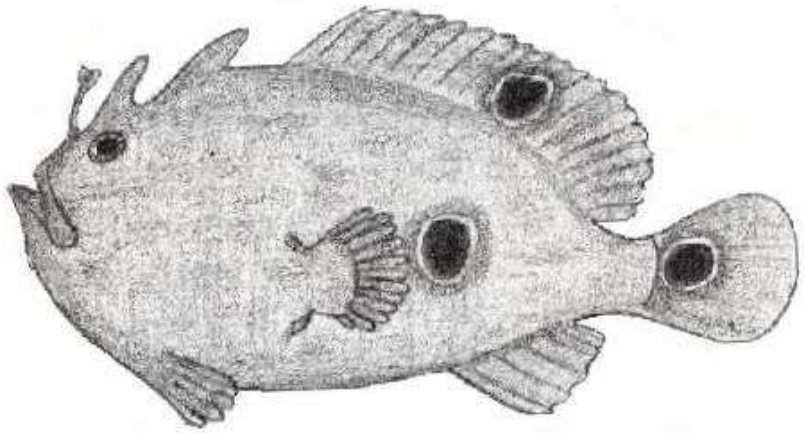
Size Its maximum size is about 40 cm (16 in), but lengths less than 20 cm are more typical.

Range **The** Oyster Toadfish ranges from Cape Cod to Florida.

Habitat It inhabits shallow coastal waters mainly over hard bottoms and reefs, and is especially common around oyster reefs, docks, and other man-made structures. In North Inlet, juveniles and adults are found year-round., especially from spring to fall. It is a rather sedentary, bottom-living ambush predator that feeds on crabs and other invertebrates. Females deposit eggs on the bottom, often inside of shells, and tend nests until fully formed juveniles emerge. Their very strong jaw and a sharp dorsal spine require caution when handling.

Similar Species The only other toadfish in this area, the Atlantic Midshipman (*Porichthys plectrodon*), is easily distinguished by being overall pale with large dark spots on the dorsal surface and no bands on the fins. It has 35-36 dorsal rays, 32-33 anal rays, and lines of photophores along the body. It is not common within estuaries. Small Oyster Toadfish can be confused with Skilletfish (*Gobiesox strumosus*), but the narrow profile and large cup-shaped pair of pelvic fins on the Skilletfish are distinctive.

Antennariidae - frogfishes



Ocellated Frogfish
Antennarius ocellatus

Description The Ocellated Frogfish is stout and deep bodied with a large mouth and small eyes. The mouth is upturned and highly expandable. The thick skin is covered in close-set spinules, giving it a rough texture. The three dorsal spines are separated from the rest of the fin: the first is a modified fishing lure, or illicium, and the other two are embedded in the skin and appear as humps on the top of the head. The dorsal and anal fins are soft. The pectoral fins are limb-like and move in any direction. A small circular gill opening is located under the pectoral fin. The pelvic fins are small and act as "props" when the fish is resting.

Coloration It is yellowish-tan, to brown, to olive in color. It is often mottled with a darker shade of brown. There are three ocelli on the body: one on the dorsal fin, one mid-body, and another on the tail.

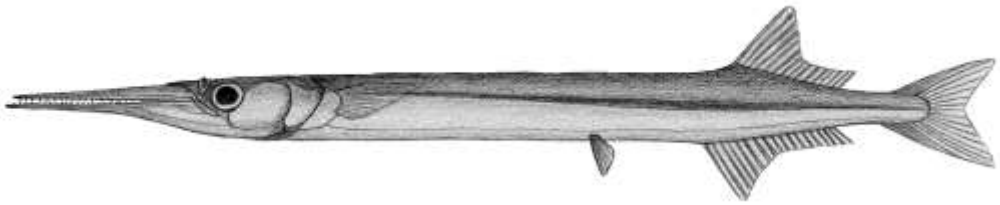
Size Its maximum size is about 30 cm (1 ft) but it is usually about half that size.

Range The Ocellated Frogfish ranges from North Carolina to the Caribbean Sea, and occurs in the Gulf of Mexico and South America.

Habitat It is found over reefs, rubble, sandy, and muddy bottoms. This frogfish is usually found in coastal waters and around offshore reefs, but it strays into estuaries where it remains in deeper subtidal channels. It is an ambush predator that lies in wait for unwary fishes. It uses its illicium, wagging it back and forth and finally engulfing prey that come within reach. The Ocellated Frogfish is a slow swimming fish that is benthic in habit. It is a rare visitor to North Inlet in the summer.

Similar Species The Sargassumfish (*Histrio histrio*) is also a frogfish, but differs in that it lives in *Sargassum* weed floating in the open sea. It is yellowish-brown with light and dark blotches and also numerous fleshy tabs to mimic the *Sargassum*. It lacks ocellated spots. It is only found in North Inlet when rafts of fresh *Sargassum* are blown inshore during summer.

Belonidae - needlefishes



Atlantic Needlefish
Strongylura marina

Description The Atlantic Needlefish is a slender and elongate fish with a rounded cross-section. The mouth is very long and slender and has numerous and conspicuous teeth. The dorsal and anal fins are placed far back on the body and are highest on the anterior ends. The dorsal fin has 14-17 rays and the anal fin has 16-20. There is no keel on the caudal peduncle. The pectoral fin has 10-12 rays. The lower lobe of the tail fin is larger than the upper lobe.

Coloration This species is silvery with a bluish-green back and a dark stripe along most of the body. The top of the head is often dark, but the dark pigment never extends below the eye.

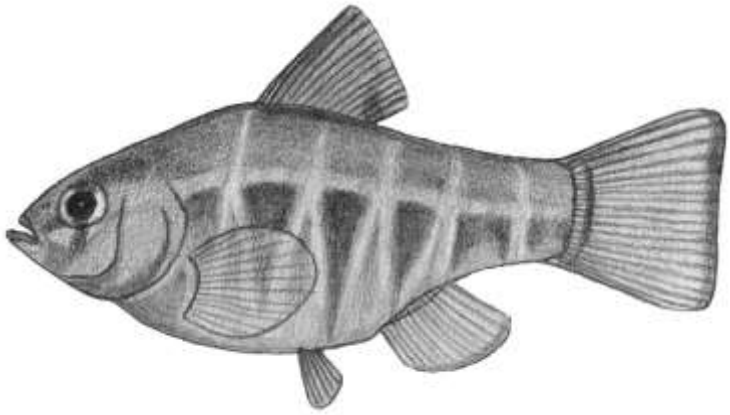
Size Its maximum size is about 64 cm (25 in), but 10-20 cm is more typical.

Range The Atlantic Needlefish ranges from Massachusetts to Florida, and it occurs in the Gulf of Mexico and on the Central American and Brazil coasts. It is absent from the Bahamas and Antilles islands.

Habitat This is a coastal species that is common in estuaries, even in tidal freshwater. It prefers vegetated areas and feeds upon fishes. Atlantic Needlefish are most often seen close to the surface of the water. Juveniles are common along shallow shorelines in North Inlet during the summer. They usually swim slowly, but are capable of very rapid bursts of speed when disturbed.

Similar Species Several other long-mouthed fishes are only occasionally seen in North Inlet: The Houndfish (*Tylosaurus crocodilus*) has more than 20 dorsal rays (21-23), a lateral keel on the caudal peduncle, and the lower lobe of the caudal fin is longer than the upper. Juveniles have an elongate black lobe on the dorsal fin. Taxonomoic keys are recommended for separating the various species of warm-water needlefishes. Three halfbeak species (*Hemiramphus balao, H. meeki,* and *H. brasiliensis*) can be distinguished from the Atlantic Needlefish by having an elongate lower jaw, short upper jaw, and a long, lower caudal lobe. The Longnose Gar (*Lepisosteus osseus*) is a large scaly fish that shares the same body shape but has large scales that form an armor-like skin which is dark green with bold spots on the body and fins.

Cyprinodontidae - pupfishes



Sheepshead Minnow
Cyprinodon variegatus

Description This is a stout-bodied fish with a small, terminal mouth and large eye. The tall dorsal fin is located on the middle of the back. The anal and pelvic fins start at a point posterior to the dorsal origin. The pectoral fin is large and rounded and the tail is truncate and has a straight posterior margin.

Coloration The Sheepshead Minnow has a pale olive, gray, or brown undercolor with darker, upside-down, triangular bars on the side of the body that vary in intensity. The back is dark and there are random light markings and spots on the body. Breeding males often have a brilliant blue cast to their forebody, a dark margin on the caudal fin, and lack dark spots on the dorsal fin.

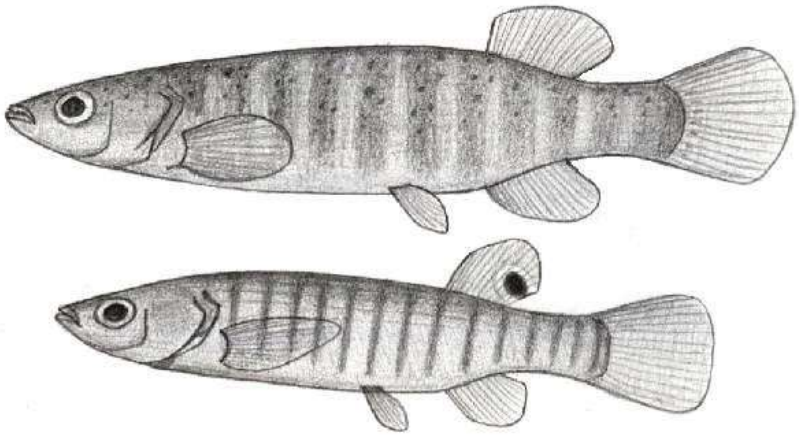
Size The Sheepshead Minnow reaches 9 cm (3.5 in) in length, but 2-3 cm is more typical.

Range It ranges from Massachusetts to northeastern Mexico and also occurs in the West Indies and on the northern coast of South America.

Habitat This minnow is found in shallow coastal waters, estuaries, salt marshes, and even freshwater. It can be found in quiet lagoons, tidal creeks, marsh pools, and roadside ditches. It is very tolerant of both very high and very low salinity and is common in turbid waters. It forms small aggregations over muddy and vegetated bottoms. Sheepshead Minnows are omnivorous and consume more plant material than most other shallow water fishes.

Similar Species Sheepshead Minnows often co-occur with mollies and mosquitofish (Poeciliidae) which are elongate livebearers with large scales, and killifishes (Fundulidae) which are elongate and greenish in color.

Fundulidae - top minnows



Marsh Killifish
Fundulus confluentus
Female (above) Male (below)

Description This moderately elongate killifish has a flat head and a small, wide, upturned mouth that is about level with the middle of the eye. The dorsal fin is far back on the body, and the anal fin originates below and slightly posterior to the origin of the dorsal fin. The pelvic fins are far back and posterior to the tip of the pectorals, which are large and fan-shaped. All fins are broad and rounded.

Coloration The male is brown, has a dark back and 14-18 dark bars on the side of the body. The bars are more distinct than in females. There are often black streaks on the dorsal surface of the male and a black spot is present on the posterior edge of the dorsal fin. The female has the same coloration as the males except the bars are wider and more diffuse. The female often looks plain brown in color, but small dark spots are found on the dorsum.

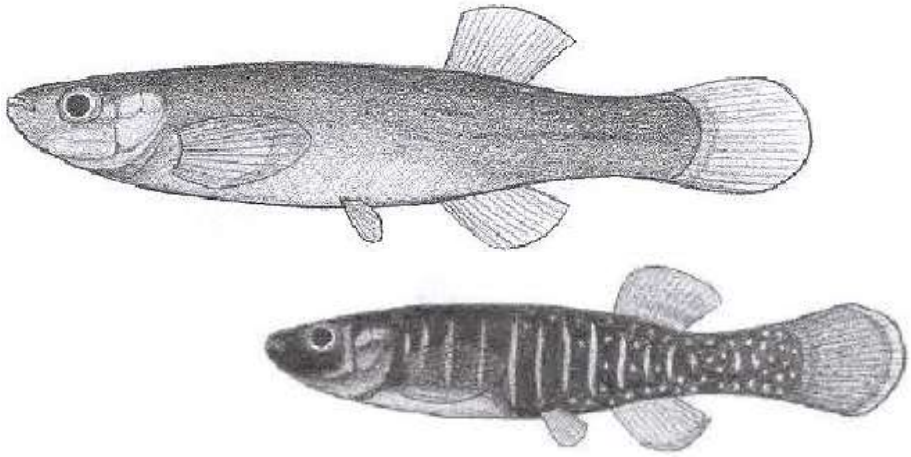
Size Maximum size of the Marsh Killifish is 7.5 cm (3 in).

Range It occurs from the Chesapeake Bay to Florida and is also found in the N.E. Gulf of Mexico.

Habitat The Marsh Killifish is a brackish to freshwater species; it is not found in high salinity marshes. It prefers calm, grassy backwaters and freshwater marshes. It often forms aggregations and is omnivorous. In North Inlet it is uncommon, and only found along the edge of the forest.

Similar Species The Spotfin Killifish (*F. luciae*) is rare in the tidal marsh and differs in being smaller in average size (adults less than 5 cm) and having fewer and broader light bands. Male Spofin Killifish also have a spot on the dorsal fin. It also favors salt marshes as opposed to low salinity waters. The Mummichog (*F. heteroclitus*) is by far the most abundant killifish in the area. When breeding, males have a green and blue color, light speckles and silvery bars, but no spot on the dorsal fin.

Fundulidae - top minnows



Mummichog
Fundulus heteroclitus
Female (above) Male (below)

Description This moderately elongate killifish has a flat head and a wide, upturned mouth that is level with the middle of the eye. The dorsal fin is far back on the body. All fins are broad and rounded.

Coloration During summer, when adults are sexually active, differences in coloration are distinct. Males are mostly olive green, but there are silvery bars on the side with bright silver spots above and between. The dorsal and tail fins are bluish with silver spots, while the ventral fins are yellow with silver spots. The females are also olive green, but have almost no color markings. There is a possibility that other similar cusk-eel species occur in our area. Small mummichogs are difficult to sex.

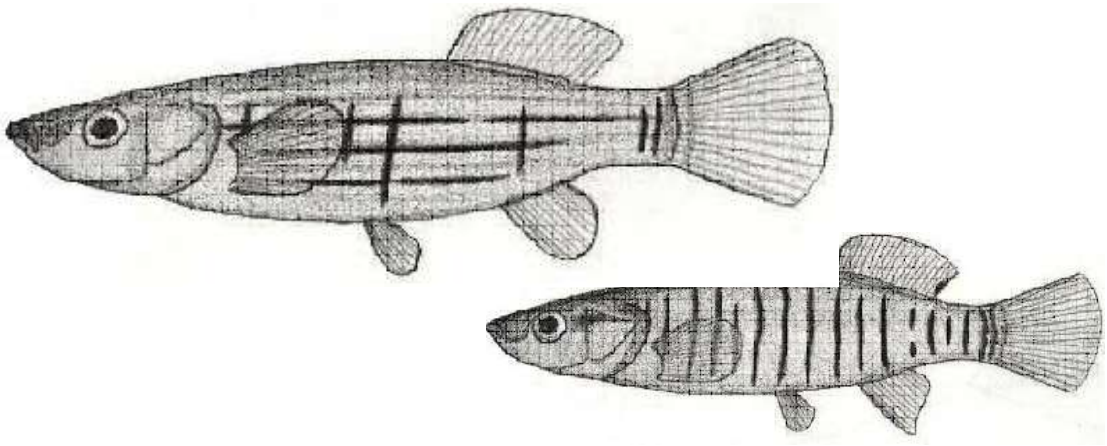
Size Adults rarely reach 15 cm (6 in); generally, 10 cm is a large individual.

Range The Mummichog ranges from New Jersey to northeastern Florida.

Habitat This killifish lives in salt marshes and rarely enters freshwater. It is confined to shallow waters and occurs over mud bottom, oyster reefs, and flooded vegetation. In North Inlet, it is a resident species with high site fidelity. One of the most abundant local fishes, it occurs in high numbers all year. During summer, females deposit eggs at the base of *Spartina* in the high marsh on spring tides and the young emerge on the next set of spring tides. The Mummichog forages on the marsh at high tide and often remains in pools at low tide. It feeds on living and decomposing plant material as well as a variety of insects and small invertebrates. It is highly resilient to low water, low oxygen, high salinity, and temperature fluctuations and can live for long periods out of water. During the coldest periods, Mummichogs bury and remain inactive in the mud. This species is known locally to anglers as 'mud-minnow'.

Similar Species Even experts can have difficulty separating young Mummichogs from other killifish species (*F. confluentus, F. luciae, Lucania parva*) that occur in the North Inlet salt marsh. Except the Striped Killifish, *F. majalis*, the others are comparatively rare.

Fundulidae - top minnows



Striped Killifish
Fundulus majalis
Female (above), Male (below)

Description This killifish is moderately elongate and slender with a long and pointed snout. The small, wide, upturned mouth is positioned level with the middle of the eye. The dorsal fin is placed far back on the body, and the anal fin originates posterior to the origin of the dorsal fin. All fins are broadly rounded.

Coloration Males have numerous black vertical bars from behind the gill cover to the caudal peduncle. The base color is whitish to light brown and the fins are often orangey to yellowish in color. Females have 2 or 3 black stripes along the length of the body with occasional vertical fragments. The fins are translucent. Females tend to be larger and less numerous than males. Immature and juvenile fish have both vertical and horizontal stripes and bars and are difficult to sex. Coloration does not change seasonally.

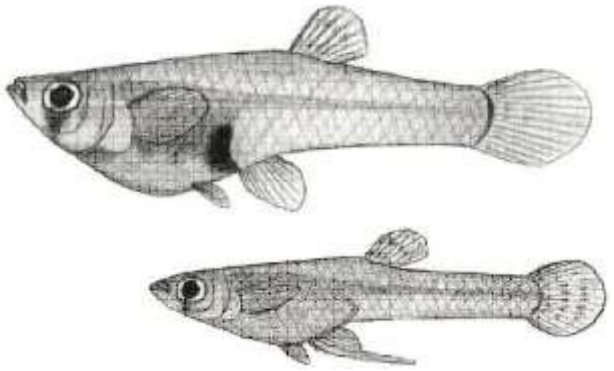
Size The Striped Killifish reaches about 15 cm (6 in), although 10 cm is more typical.

Range It ranges from New Hampshire to NE Florida, and the N. Gulf of Mexico.

Habitat It is found in marine to brackish waters and is an abundant resident species in intertidal creeks, salt marshes, and along beaches of North Inlet. It often co-occurs with the Mummichog *(F. heteroclitus*) in the marsh, but its distribution is lower in the intertidal. *F. majalis* forages on the flooded marsh at high tide and may remain in creek pools at low tide, but it is often found in along shorelines adjacent to deeper waters. Unlike the Mummichog, *F. majalis* also resides along featureless shorelines of large creeks, on mud/sand bars, and in the surf zone.

Similar Species The snout is much more pointed than in the Mummichog (*F. heteroclitus*) and the color patterns and markings are distinctly different from all of the other *Fundulus* species. It tends to be a more slender in shape and the mouth is lower on the head. The stripe and bar markings of the Striped Killifish, which do not occur in other local killifishes, are usually evident in all but the smallest juveniles.

Poeciliidae – livebearers



Eastern Mosquitofish
Gambusia holbrooki
Female (above) Male (below)

Description The Eastern Mosquitofish has a deep belly, flat head, and small upturned mouth. The eye is fairly large. The single dorsal fin has 7 rays and no spines. The anal fin is anterior to the dorsal fin origin and has 9 rays. The tail fin is rounded. The male anal fin is modified into a gonopodium. Males are usually smaller and thinner than females. Females bear nearly fully developed young.

Coloration The body is usually pale brown to gray, with a cross-hatched pattern formed by dark scale margins. The female has a pale belly and gravid fish often have a black blotch showing through the body wall. The body looks semi-transparent and the gut and backbone are often visible through the skin. There is a faint, dark bar through the eye of some individuals. The fins are clear and sometimes lightly spotted.

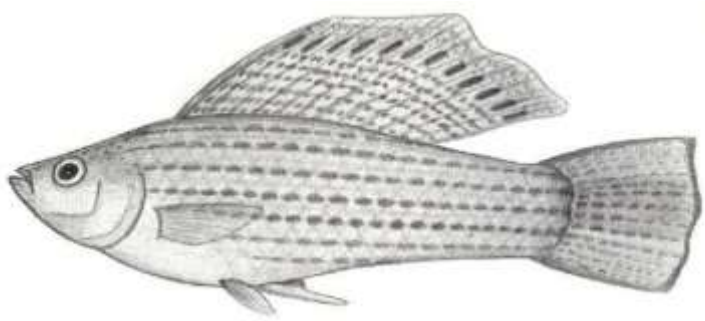
Size Most reach a maximum of 4 cm (1.5 in); females may grow to 8 cm (3.5 in).

Range It ranges from New Jersey to Florida and the Gulf of Mexico. Closely related, but morphologically distinct groups of mosquitofish occur in different habitats and locations. There is debate about designations of species and subspecies of the mosquitofish in regions of the US.

Habitat This small fish lives in vegetated habitats in both fresh and saltwater. It feeds on small invertebrates, insects, and plant matter and is an effective consumer of mosquito larvae in shallow marsh pools and ditches. In North Inlet, it is a resident species that only occurs in the upper extent of tidal influence, especially near the forest border.

Similar Species The Rainwater Killifish (*Lucania parva*) is similar in size and shape and also has dark scale edges, a black marking on the anterior end of the dorsal fin, a more robust body, and broader fins. *Fundulus* species have a much longer and lower dorsal fin, a branched third anal ray, and an anal fin that originates close to the caudal fin. Male killifishes lack a gonopodium and females lack a blotch in the anal area. In the Eastern Mosquitofish, both sexes have yellow-tinged fins.

Poeciliidae – livebearers



Sailfin Molly (male)
Poecilia latipinna

Description The Sailfin Molly has a fairly deep body, a small upturned mouth, and a flat head. The caudal peduncle is broad, and the tail is proportionately large and broad. Males have an elongate anal fin, known as a gonopodium, for reproduction. This species bears young alive. Females have normal rounded anal fins. In both sexes, the anal and pelvic fins are close to mid-body. The male has a huge sail-like dorsal fin that is often higher than the body is deep. Females have a much lower dorsal fin. Both sexes are similar in body proportions with the exception of the dorsal fin.

Coloration The Sailfin Molly is silvery-gray with a black spot on the center of each scale. This gives the appearance of dashed parallel lines along the side of the body. The dorsum is often darker, and there is often a yellowish sheen on the lower head of males. The fins are also spotted and have a yellowish tinge. Males have distinctive black ovals on the upper dorsal fin with small spots below them and the front margin of the fin is often dark. The middle of the male's caudal fin can be orange with a dark edge. The female is much plainer in coloration.

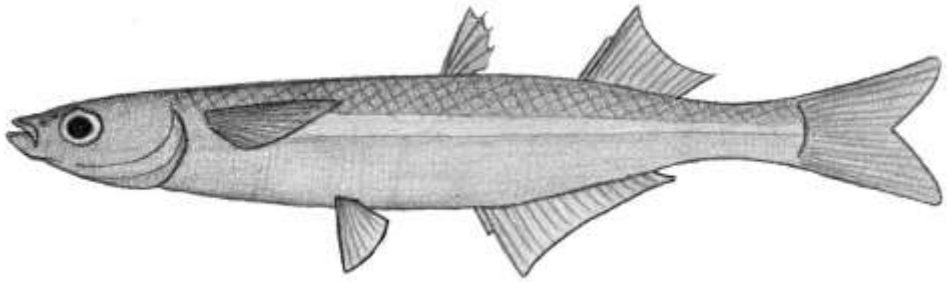
Size Its maximum size is 12.5 cm (5 in) with both sexes similar in size.

Range It occurs from North Carolina to the Yucatan Peninsula.

Habitat The Sailfin Molly occurs in fresh and marine waters, often in vegetated areas. It is common in quiet lagoons, channels, ponds, marshes, and tidal pools. It feeds mostly on plant matter. In North Inlet it occurs in shallow pools, creeks, and ditches near the forest edge. It is a common year round resident, but it is not abundant in the system.

Similar Species The Rainwater Killifish (*Lucania parva*) and Eastern Mosquitofish (*Gambusia holbrooki*) resemble the females of this species. *L. parva* lacks spots on the body, but has a black mark on the anterior end of the dorsal fin, a more robust body, and broader fins. Male Rainwater Killifish lack a gonopodium. Eastern Mosquitofish have a much shorter and more posteriorly located dorsal fin.

Atherinopsidae - New World silversides



Rough Silverside
Membras martinica

Description The Rough Silverside is a very elongate fish with large eyes and a small upturned mouth. The first dorsal fin originates anterior to the origin of the anal fin. It has 4-5 spines and the second (soft) dorsal has 7-12 rays. The anal fin is nearly straight-edged and has 15-21 rays. The pectoral fin is located above the center line of the body. The scales are distinctly rough-edged and can be felt by rubbing the back or examining the fish closely.

Coloration The Rough Silverside is minty-green to yellowish above with a prominent silvery body stripe. There are numerous melanophores present on the dorsal surface which give the back a cross-hatched appearance (more so than *Menidia menidia*). The fins, sides, and belly are pale to translucent.

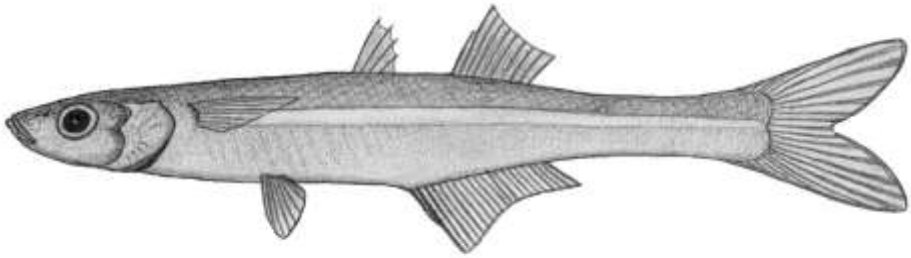
Size Its maximum size is about 12.5 cm (5 in), but 7.5 cm is more typical.

Range The Rough Silverside occurs from New York to southern Florida, and it occurs throughout the Gulf of Mexico.

Habitat It is most common in saline waters, including lower reaches of estuaries, the surf zone, and subtidal channels. It is often found with the Atlantic Silverside in higher salinity marshes, but it is not usually a shore zone fish, preferring deeper open waters. The Rough Silverside often forms schools near the surface of large channels. In North Inlet, it occurs from summer to autumn. It spawns in vegetated areas, especially around *Spartina* blades. It tolerates low salinities, but is rare in these areas.

Similar Species The three local species of silversides are difficult to distinguish from one another. The Atlantic Silverside (*Menidia menidia*) has smooth scale edges and 19-29 (usually more than 23) anal rays. The Inland Silverside (*Menidia beryllina*) is more common in low salinity areas, has smooth scales, and has anal fin that is relatively short (15-18 rays) and tall, with a distinctly concave margin.

Atherinopsidae – New World silversides



Inland Silverside
Menidia beryllina

Description The Inland Silverside is very elongate and has a large eye and a small upturned mouth. The origin of the first dorsal fin is anterior to the origin of the anal fin; it has 4 spines and 16-19 soft rays. The soft dorsal usually has 9 soft rays. The anal fin has 15-18 rays and a distinctly curved margin. The pectoral fin is located above the centerline of the body.

Coloration The Inland Silverside is light green to yellow above, light yellow to translucent below, and has a silvery lateral stripe that is narrower than the eye. Breeding individuals are often tinted with red or orange. The fins are transparent.

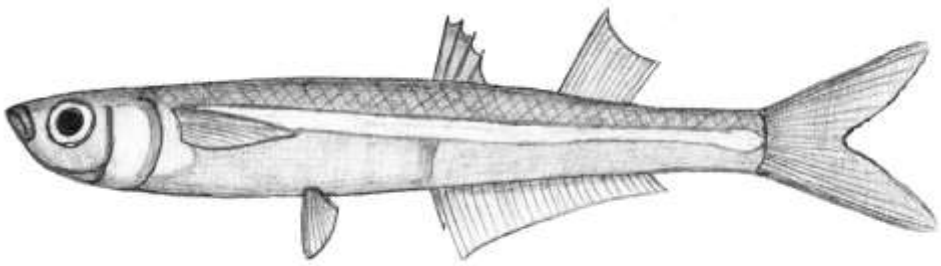
Size Its maximum size is about 10 cm (4 in), but 5-7.5 cm is typical.

Range The Inland Silverside ranges from Cape Cod to southern Florida, and it occurs in the northern and eastern Gulf of Mexico.

Habitat It prefers freshwater and lower salinity areas including coastal rivers. In tidally influenced marshes like North Inlet, it is usually found in the upper reaches of the estuary, especially near forest edges. The Inland Silverside does not occur in high salinity tidal creeks. It appears to be a year round resident around the upland edges of North Inlet.

Similar Species The three local species of silversides are difficult to distinguish from one another. The Rough Silverside (*Membras martinica*) has rough scale margins and 15-21 anal rays. The Atlantic Silverside (*M. menidia*) is more slender and longer on average, and it has 19-29 (usually more than 23) anal rays. Both of these species have straight anal fin margins and live in areas of higher salinity (beaches, tidal creeks).

Atherinopsidae - New World silversides



Atlantic Silverside
Menidia menidia

Description The Atlantic Silverside is very elongate with a large eye and small upturned mouth that does not even reach the front of the eye. The pectoral fin is located above the centerline of the body, and the caudal fin is deeply forked. There are two dorsal fins: a spiny one with 4 spines and a soft one with one spine and 12 rays. The origin of the first dorsal is slightly anterior to the anal fin origin, and above the anal opening. The anal fin has 19-29 (usually more than 23) soft rays, and a nearly straight edge. The edges of the Atlantic Silverside's scales are smooth.

Coloration A distinctive silvery stripe, which is not as wide as the eye, extends from the operculum to the caudal peduncle. Above the stripe, the back is minty green in color with a cross-hatched pattern of dark lines. Below the stripe, the sides and belly are whitish to translucent in color. The top of the head is yellowish-green, and the fins are translucent.

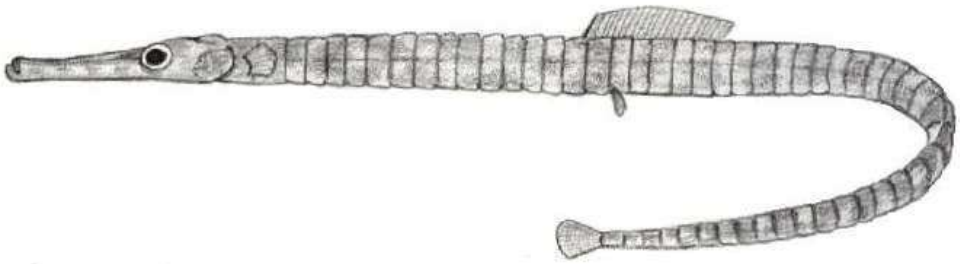
Size Maximum size of the Atlantic Silverside is about 15 cm (6 in), but adults are commonly 8-10 cm.

Range It ranges from the Gulf of St. Lawrence to NE Florida.

Habitat The Atlantic Silverside is widely distributed in estuaries. In North Inlet, it is found along high and low energy sandy beaches, along shorelines of tidal channels as well as in small muddy creeks and pools. It is more common in low energy habitats than its relative the Rough Silverside. It can be found all year long although it seems to remain in deeper waters or offshore during the coldest part of the winter. In milder conditions, large adults can be abundant in major intertidal creeks. It spawns during the summer, depositing eggs on the bottom.

Similar Species The three local species of silversides are difficult to distinguish from one another. The Rough Silverside (*Membras martinica*) has rough scale margins and 15-21 anal rays. The Inland Silverside (*M. beryllina*) has an anal fin with 15-18 anal rays and a curved margin.

Syngnathidae – pipefishes



Dusky Pipefish
Syngnathus floridae

Description The Dusky Pipefish is extremely elongate and thin and the body consists of a series of bony rings. There are 16-19 trunk rings (anterior to anal fin) and 30-38 tail rings (posterior to anal fin). The dorsal fin covers 2 trunk rings and 4-5 tail rings; it has 26-34 rays. The small mouth is located at the tip of the snout and is upturned. The gill openings are small. The anal fin is tiny; it is located just posterior to the anus and beneath the dorsal fin. The snout accounts for about 60% of the head.

Coloration The Dusky Pipefishes' body is green, olive-brown, or brown with variable dark mottling. The posterior tail rings often have irregular brown stripes. There are no spots on the belly. The snout typically has a dusky lateral stripe.

Size Its maximum size is about 25 cm (10 in).

Range This pipefish occurs from Chesapeake Bay to the Bahamas and throughout the Gulf of Mexico south to Panama.

Habitat The Dusky Pipefish is found in vegetated coastal waters and lagoons. This species appears to occur within North Inlet throughout the year, but it is not commonly encountered. It feeds on small crustaceans. Like all pipefishes, the male Dusky Pipefish carries the young in a belly pouch until they are ready to become free living.

Similar Species The Chain Pipefish (*S. louisianae*) differs by having 19-21 trunk rings, 33-36 dorsal fin rays, and a series of dark spots on the belly. The Northern Pipefish (*S. fuscus*) has a shorter snout and 36-49 rays in a dorsal fin that covers 4-5 trunk rings and 4-5 tail rings. The Lined Seahorse (*Hippocampus erectus*) is distinctive in that it swims in a vertical fashion, has a prehensile tail, and has an angled head resembling a horse.

Syngnathidae – pipefishes

Northern Pipefish
Syngnathus fuscus

Description The body of the Northern Pipefish is extremely elongate and thin, and it consists of a series of bony rings. There are 18-21 trunk rings (anterior to anal fin). The long dorsal fin covers 4-5 trunk rings and 4-5 tail rings; it has 36-49 rays. The small mouth is located at the tip of the snout and is upturned. The gill openings are small. The anal fin is very small and its origin is beneath the center of the dorsal fin. The snout length is about 50% of the total length of the head.

Coloration The Northern Pipefish is dark brown to green with a light belly. Variable light mottling and/or indistinct banding are evident, but there is no consistent pattern. A dark line often runs along the snout and through the eye.

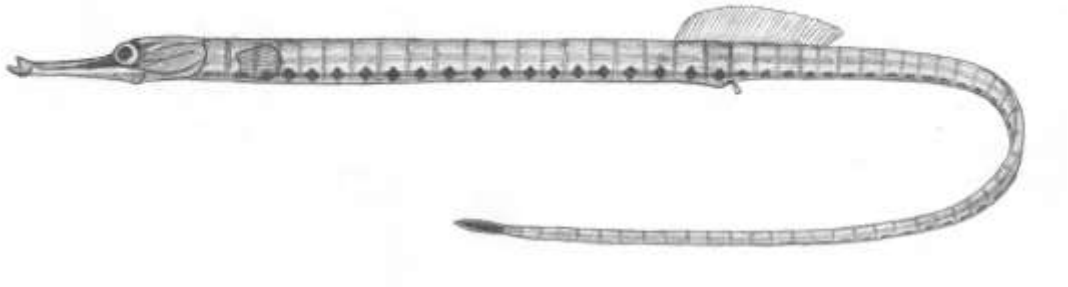
Size Its maximum size is about 30 cm (1 ft).

Range The Northern Pipefish ranges from Canada to N.E. Florida, and it occurs in the N.W. Gulf of Mexico.

Habitat It is mainly found in vegetated areas including macroalgal and seagrass beds. The Northern Pipefish tolerates a wide range of salinity. In North Inlet, it is found in deep channels year round. It may move into shallow creeks and *Spartina* vegetation as waters warm. It is the largest, and probably the most common pipefish in North Inlet. Males release young from pouches during the summer. It feeds on small crustaceans.

Similar Species The Dusky Pipefish (*S. floridae*) and Chain Pipefish (*S. louisianae*) both have dorsal fins with less than 36 rays. They also have longer snouts in relation to head length. The Lined Seahorse (*Hippocampus erectus*) is distinctive in that it swims in a vertical fashion, has a prehensile tail, and has an angled head resembling a horse.

Syngnathidae - pipefishes



Chain Pipefish
Syngnathus louisianae

Description The Chain Pipefish's body is extremely elongate and thin, and it consists of a series of bony rings. There are 19-21 trunk rings (anterior to anal fin) and 36-37 tail rings (posterior to anal fin). The dorsal fin covers 2-3 trunk rings and 5-6 tail rings and has 33-42 rays. The small mouth is located at the tip of the snout and is upturned. The gill openings are small. The anal fin is tiny, just posterior to the anus, and beneath the dorsal fin. The snout is 60-70% of the total length of the head.

Coloration It is tan to brownish in color with indistinct banding of lighter brown in fresh specimens. Markings on the lower body resemble diamonds forming a chain. A dark line extends through the eye. The fins are clear.

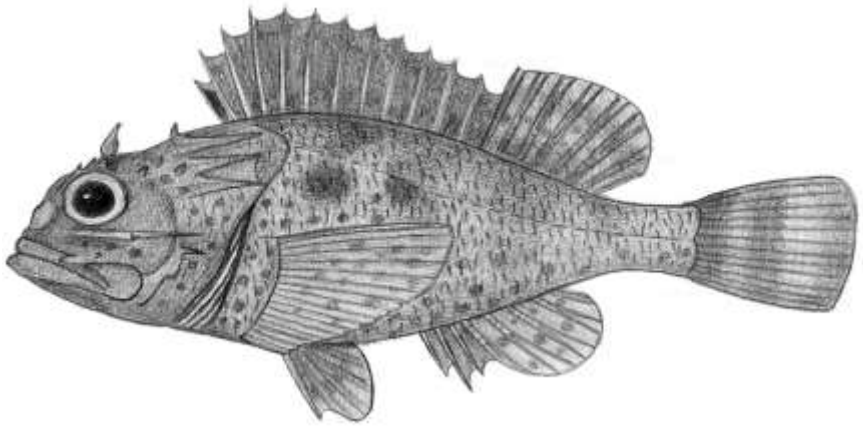
Size Maximum size for the Chain Pipefish is about 38 cm (15 in).

Range It ranges from New Jersey to S. Florida, Bermuda, the northern Gulf of Mexico, and Campeche, Mexico to Jamaica.

Habitat The Chain Pipefish is found in coastal areas, mainly in shallow water and often in vegetated areas. In North Inlet, it occurs during the spring and summer and is rare during the winter months. It feeds on small crustaceans in the water column. Males carry young during summer.

Similar Species The Dusky Pipefish (*S. floridae*) has 16-19 trunk rings, 26-34 dorsal fin rays, and lacks a pattern of dark spots or consistent markings of any kind. The Northern Pipefish (*S. fuscus*) has a shorter snout (about 50% of head length), 33-49 dorsal rays, and lacks pattern of dark spots. The Lined Seahorse (*Hippocampus erectus*) is distinctive in that it swims in a vertical fashion, has a prehensile tail, and has an angled head resembling a horse.

Scorpaenidae – scorpionfishes



Barbfish
Scorpaena brasiliensis

Description The Barbfish is a deep-bodied species with a very large and blunt head. The head has numerous large spines including one on the cheek under the eye and 3 behind the eye. There are 2 spines on the preorbital bone. A cirrus is present above the eye. The eye and mouth are large. The dorsal fin has 12 spines and 9 soft rays, and the anal fin has 3 spines and 6 soft rays. The fan-like pectoral fin has 16-20 rays, some branched. An occipital pit (on top of the head behind the eyes) is present and deep in adults but it is less noticeable in young.

Coloration The body color of the Barbfish is highly variable but often brown grading to light brown below, with red mottling and/or shading The fins are often red to brownish-red. There are always one or two large dark spots behind the head and smaller spots on the inner side of the pectoral fin. These spots may also continue on the body, especially near the base of the pectoral fin. The tail has two vertical dark bands.

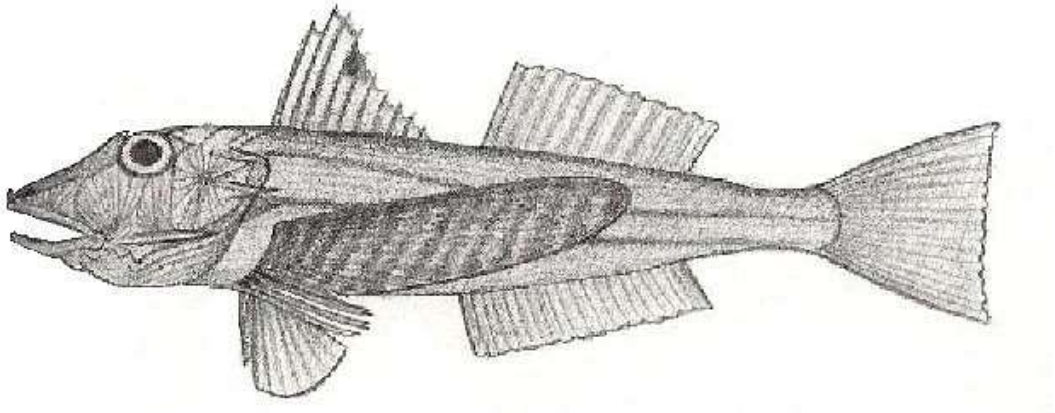
Size The Barbfish's maximum size is about 25 cm (10 in).

Range It occurs from Virginia to the southern Caribbean including the Gulf of Mexico and the islands.

Habitat This scorpionfish is found over muddy to rubble bottoms, mostly in coastal waters but it can stray into deeper estuarine channels. The Barbfish is a very rare summer visitor in North Inlet. Other species of scorpionfish may also occur. It is a benthic carnivore that ambushes its prey while either buried or camouflaged in the substrate. The spines of this species are venomous.

Similar Species Searobins (*Prionotus* spp.) are similar but their heads are fully armored, dorsal and anal fins are less ornate, and they have distinct 'fleshy feelers" for pelvic fins below fan-like pectoral fins.

Triglidae - searobins



Striped Searobin
Prionotus evolans

Description The Striped Searobin has a heavily armored head with bony spines and plates. The dorsal fin consists of two parts: a spiny portion with 10 spines and a soft portion with 12-13 rays. The anal fin is similar in size with 10-13 rays. The caudal fin is squarish. The pelvic fin inserts ventral to the pectoral base. The lower three pectoral rays are free and elongate, and the rest of the fin is broad and fan-like. It extends to near the rear of the anal fin base when laid flat.

Coloration The Striped Searobin is reddish brown to brown grading to a white belly. There are two dark lines on the body: one running along the lateral line and the other running along the mid-side to the caudal peduncle. The soft dorsal, pelvic, and anal fins are dusky and have no markings. The first dorsal fin is dusky with a prominent dark area (not a well defined spot) between the 4th and 5th spines. The caudal fin is dusky to yellowish. The free pectoral rays are banded in brown and the pectoral fins are brown with narrow, wavy dark bands. The inner part of the pectoral fins is black.

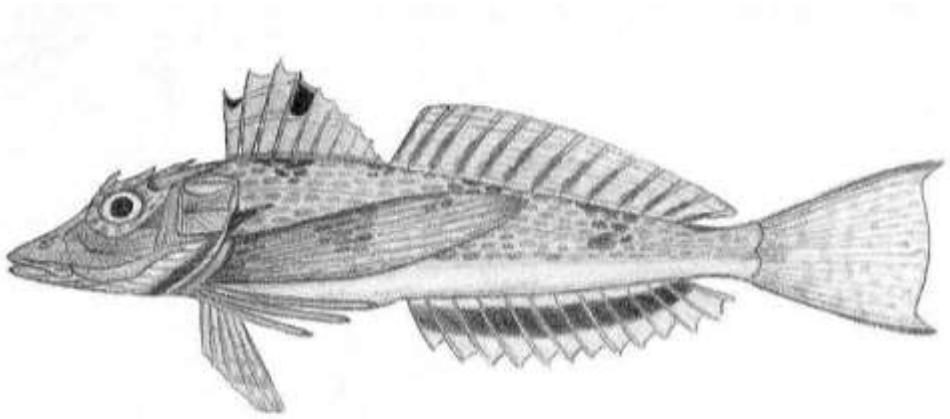
Size Maximum size for the Striped Searobin is about 45 cm (18 in), but local individuals are usually less than 15 cm (6 in.).

Range It occurs from Nova Scotia to southern Florida.

Habitat The Striped Searobin is found in coastal waters over sand, mud, or rubble bottom. It is common in North Inlet, and most likely to be encountered in the spring and summer. It uses its modified pectoral rays to find food on the bottom.

Similar Species The Leopard Searobin (*P. scitulus*) and Northern Searobin *(P. carolinus*) are easily distinguished by having obvious spots on the body. The Bighead Searobin (*P. tribulus*) has dark diagonal bars but no stripes on its body; it also has multiple dark bands on the pectoral fin. The Flying Gurnard (*Dactylopterus volitans)*, which is rare in the area, also has fan-like pectoral fins and an armored head. The first two dorsal spines are free and not connected by a membrane. The pectoral fins are spotted with brilliant blue.

Triglidae – searobins



Leopard Searobin
Prionotus scitulus

Description The Leopard Searobin has a large head with many bony ridges and spines. It has two separate dorsal fins: the first with 9-11 (usually 10) spines and the second with 11-14 soft rays. The anal fin has 10-13 soft rays and no spines, and the pelvic fins have 6 soft rays. The pectoral fins are long and reach well past the origin of the soft dorsal fin. The last three rays of the dorsal fin are free and fleshy, whereas a membrane connects the rest. The body posterior to the pectoral fin base is entirely unarmored and consists of ctenoid scales.

Coloration The Leopard Searobin's body is tan to brown with numerous small reddish-brown spots that are most distinct on the sides of the fish. The belly is abruptly whitish. The first dorsal fin has two dark areas: a small one between spines 1-2, and a large one between spines 4-5. Other unpaired fins are spotted and/or lined with reddish-brown, except the anal fin, which has a dark median stripe. The pectoral fins are also spotted and may show indistinct bands comprised of darker spots.

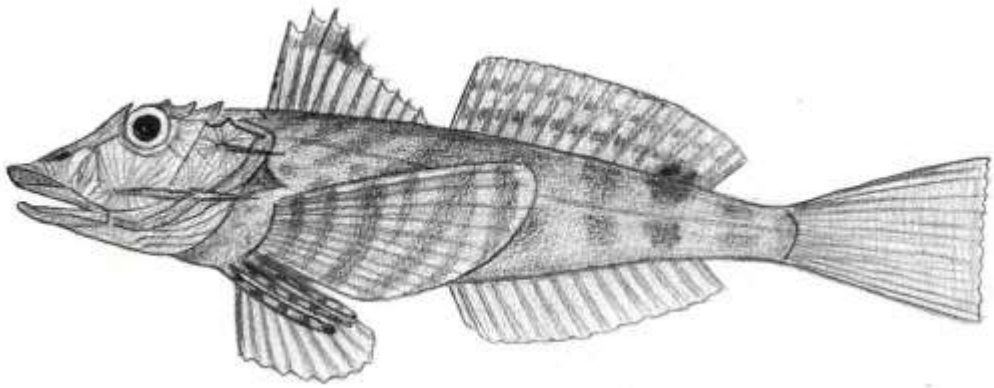
Size Maximum size is about 25 cm (10 in), but 3-15 cm is more typical.

Range It ranges from Virginia to Florida and occurs in the Gulf of Mexico, the continental coasts of Central and South America, and Venezuela.

Habitat This coastal species is found in shallow waters less than 46 m and over soft bottom. This is the most common searobin in North Inlet and is found in subtidal channels from spring to fall. Only small juveniles occur in the shore zone.

Similar Species The Northern Searobin (*P. carolinus*) is uncommon in North Inlet but can be distinguished by having a single distinct central spot on the first dorsal fin and a few wide bands on the wings. The Striped Searobin (*P. evolans*) and Bighead Searobin (*P. tribulus*) lack distinct central spots on the dorsal fin. The Flying Gurnard (*Dactylopterus volitans*) also has fan-like pectoral fins and an armored head, but its head is small with a long spine on the nape and a much larger preopercular spine. The first two dorsal spines are also free and not connected by a membrane. The pectoral fins are also spotted with brilliant blue.

Triglidae - searobins



Bighead Searobin
Prionotus tribulus

Description The Bighead Searobin has a heavily armored head with numerous bony spines and plates. There are two dorsal fins: a spiny portion with 10 spines and a soft portion with 12-13 rays. The anal fin is similar in size to the second dorsal and has 10-13 rays. The long pelvic fin originates directly below the pectoral fin. The three lowermost pectoral rays are free and fleshy, but the rest of the fin is large and fan-like. The pectoral fin reaches the middle of the soft dorsal. The caudal fin is truncate.

Coloration The Bighead Searobin is pale gray to light brown with dark mottling or bars. A distinct brown spot on the rear soft dorsal fin continues on the body as an oblique dark bar. The first and second dorsal fins often have dark areas or markings but not centrally located spots. The free pectoral rays (feelers) have dark bands. The pectoral fins are light brown with multiple dark bands and may have yellowish margins, especially in young fish.

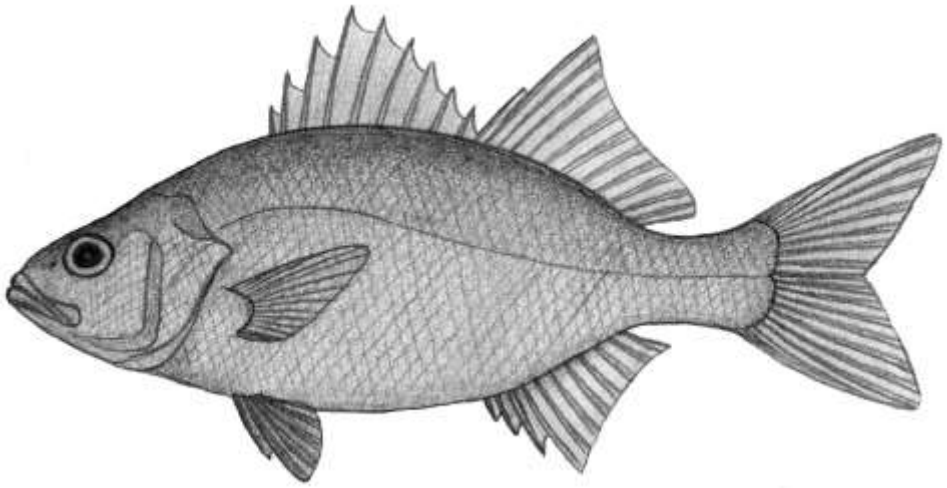
Size Its maximum size is about 35 cm (14 in), but 30 cm is typical.

Range It ranges from New York to Florida, and throughout the Gulf of Mexico.

Habitat The Bighead Searobin is found over a variety of substrates, including mud, sand and rubble. It is strictly a bottom-feeder that uses its free pectoral rays to find food in the substrate. In North Inlet, juveniles are often encountered in deep subtidal creeks and channels in summer and adults are occasionally taken by hook-and-line.

Similar Species The Leopard Searobin (*P. scitulus*) and Northern Searobin (*P. carolinus*) are easily distinguished by spots (and no lines) on the body and at least one distinct spot on the dorsal fin. The Striped Searobin (*P. evolans*) has two dark lines on the body and a few narrow bands on the pectoral fin. The Flying Gurnard (*Dactylopterus volitans*) has fan-like pectoral fins and an armored head, but its head is small with a long spine on the nape and a much larger preopercular spine. The first two dorsal spines are free and the pectoral fins are also spotted with brilliant blue.

Moronidae - temperate basses



White Perch
Morone americana

Description The White Perch is a deep-bodied, laterally compressed fish with a terminal mouth. The dorsal fin is divided by a deep notch, and the first part has 9 spines. The second part has one spine and 12 rays. The anal fin has 3 spines and 8-10 soft rays. Spines of the anal fin are much shorter than the first ray. The lateral line is not conspicuous and scales are prominent. The tail is forked.

Coloration Overall, the White Perch is silver with a dark, often greenish, back. Sometimes there are indistinct dusky lines present on the side of the body. The fins are dusky.

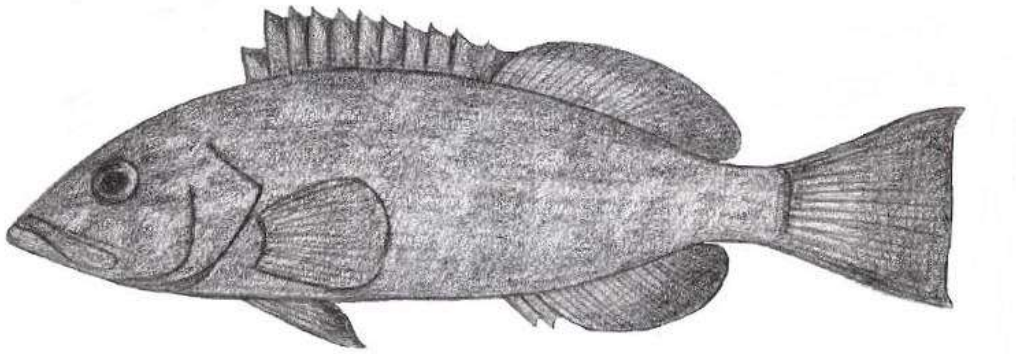
Size Its maximum size is about 48 cm (19 in), but individuals over 30 cm are uncommon.

Range The White Perch is found from Nova Scotia to South Carolina.

Habitat It occurs mostly in brackish water and rarely in salt water. It ascends rivers to spawn, and the young grow up in freshwater. Mature White Perch move back down the salinity gradient after spawning. The White Perch is a rare visitor to North Inlet, occurring only during extended periods of low salinity (brackish) water inflow from Winyah Bay, where adults are often abundant in old rice field canals.

Similar Species The Striped Bass (*Morone saxatilis*), which co-occurs with the White Perch in low salinity areas of Winyah Bay, has 11 rays in the anal fin, is more slender and elongate, and has dark stripes on the body. The only record of a Striped Bass in North Inlet since 1980 was a single juvenile at the Winyah Bay interface. The White Perch may be confused with the Pinfish (*Lagodon rhomboides*) or Silver Perch (*Bairdiella chrysoura*), but these occur mostly in high salinity areas.

Serranidae - sea basses



Gag
Mycteroperca microlepis

Description The Gag has a distinctive heavy body with a large mouth. The body depth of this grouper is less than head length. The dorsal fin has 11 spines and 16-18 soft rays, with the margin of the spinous portion distinctly notched between spines. The anal fin has 3 spines and 10-12 soft rays. Both fins are rounded in the rear. The pectoral fin is large, rounded, and has 16-18 rays. The caudal fin is truncate in young fish.

Coloration This grouper is brownish-gray with darker marbling or saddles over the dorsal part of the body. The fins are a slightly darker than the body. Dark markings radiate from the eye. Adults and juveniles share the same markings although they can be diffuse in large fish. Adults have a camouflage (banded) phase, a black-back phase (males), and a black-belly phase (males).

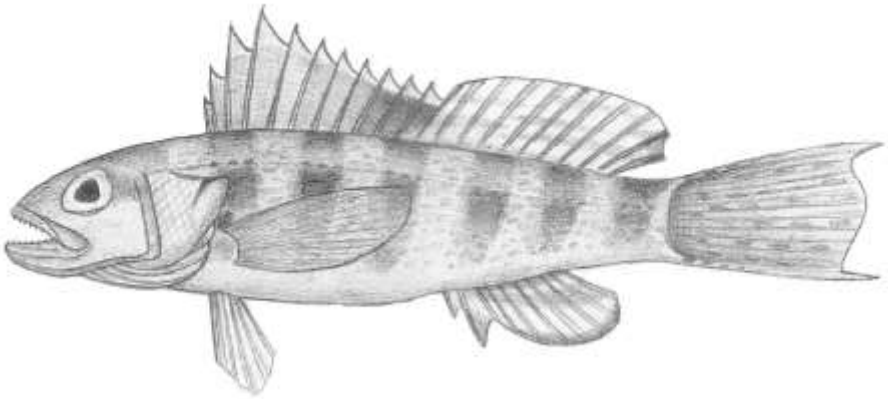
Size Maximum size of the Gag is about 120 cm (44 in and greater than 50 lbs), but only juveniles less than about 20 cm occur in the estuary.

Range It ranges from North Carolina to the Yucatan Peninsula.

Habitat Adults are deepwater fish occurring on hard bottoms offshore from 10 to 80 m. Juveniles are found inshore and in estuaries. In North Inlet, the Gag is most common during the summer in subtidal creeks, especially around oyster shell rubble and flooded oyster reefs. Late stage larvae recruit from offshore spawning areas in the spring. After growing to 15-20 cm, young fish move offshore in the fall. They feed mainly on crustaceans (shrimp) when young, and consume fish and crabs when mature. The Gag is an important sport and commercial fish in South Carolina.

Similar Species Two other groupers are rare in North Inlet: the Black Grouper (*M. bonaci*) and the Red Grouper (*Epinephelus morio*). Both occur only as juveniles. The Red Grouper is usually yellowish, with a dark reddish head and back with dark margins on the dorsal and anal fins. The Black Grouper is very similar to the Gag, but usually has more well-defined spots and dark, square blotches. Definitive identification of young groupers requires counts of scale rows, gill rakers and comparisons of other features.

Serranidae - sea basses



Rock Sea Bass
Centropristis philadelphica

Description The Rock Sea Bass is moderately elongate with a large mouth and maxillae that extend to middle of the eye. The dorsal fin has a spiny portion with 10 spines and a soft portion with 11-13 rays. The anal fin has 3 spines and 7-8 soft rays. There are deep notches between the dorsal spines. The pectoral fins are fairly large with 15-20 rays.. The caudal fin is rounded in young fish but develops a tri-lobed shape in older fish.

Coloration The body is tan to light brown, with 6-7 brown bars extending from the dorsal fin to the lower half of the body. They vary in intensity but are most distinct directly below the lateral line. A dark spot is seen at the pectoral fin base and a dark area on the rear portion of the spinous dorsal merges with a dark bar. The dorsal, anal, and caudal fins have faint brownish lines and spots over a pale, sometimes yellowish, background. The pelvic and pectoral fins are pale and unmarked.

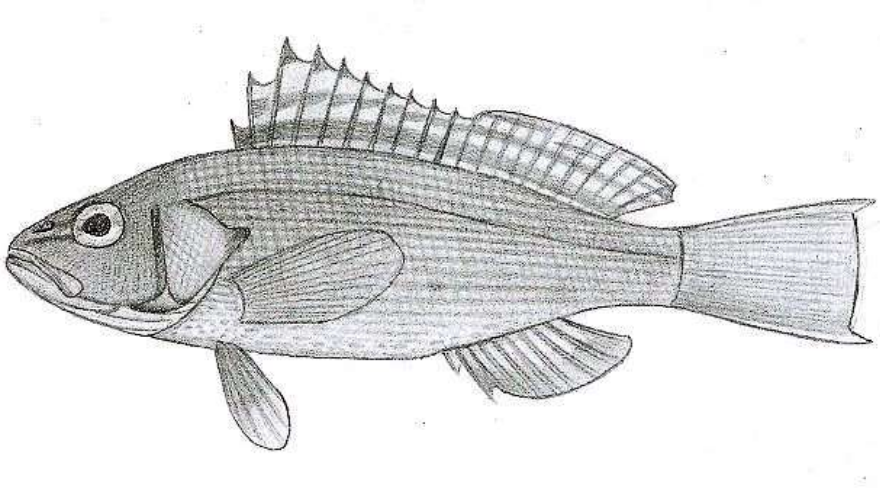
Size Its maximum size is about 30 cm (1 ft), but 2-20 cm is more typical.

Range It ranges from North Carolina to the Florida Keys, and in the northern Gulf of Mexico.

Habitat The Rock Sea Bass inhabits hard bottoms and shoreline structures including jetties. Adults are common in offshore areas, and younger fish are common in shallower water, especially during the summer. They tend to be solitary, territorial fish and are protogynous hermaphrodites (maturing first as a female and then transforming into a male later in life). They often co-occur with Black Sea Bass *(Centropristis striata)*. In North Inlet, where juveniles of both species occur in deep channels, the Rock Sea Bass is far less common.

Similar Species The Black Sea Bass (*C. striata*) differs is much darker with light scale centers, has white edges on the fins, and lacks a distinct mid-dorsal spot.

Serranidae - sea basses



Black Sea Bass
Centropristis striata

Description The Black Sea Bass' body is oval-shaped and moderately compressed. Its head is large with an oblique mouth extending to the middle of the eye. The spiny portion of the dorsal fin has 10 spines and the soft portion has 10-12 soft rays. The anal fin has 3 spines and 7 soft rays. The spiny dorsal is deeply notched between the spines. The pectoral fins are relatively large with 16-20 rays. The caudal fin is rounded in young fish but becomes tri-lobed in adult fish with a filament often forming on the upper lobe.

Coloration Adult fish are usually black, with isolated lighter blotches on the dorsal side of the body. Each scale has a light center that gives the appearance of silvery stripes down the fish's side. The belly is light in color. Light dorsal spines contrast with the dark connecting membranes, and light lines and spots often cover the fin. The pectoral, pelvic, and anal fins are usually unmarked and uniformly dark in color. The caudal fin is dark with lighter edges. Young Black Sea Bass are mottled with light and dark blotches and have a dark stripe from the eye to the base of the tail. They also have a dark spot at the base of each of the last three dorsal spines, and blue to purple streaks low on the head.

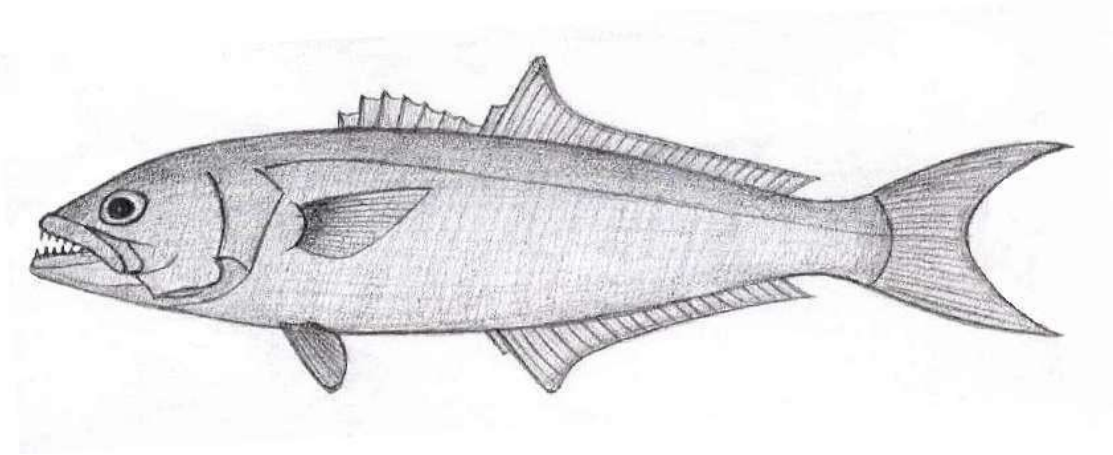
Size Its maximum size is about 60 cm (2 ft), but it is rare to see adults > 40 cm.

Range The Black Sea Bass ranges from Massachusetts to central Florida, and also occurs in the eastern Gulf of Mexico (*C. striata melana*).

Habitat The Black Sea Bass is most common on hard bottoms or near structures in shallow water. In North Inlet, juveniles < 15 cm are common on subtidal bottoms, especially near oyster reefs. Young-of-the-year (3-5 cm) migrate from offshore spawning areas early in the summer and return in the fall. The Black Sea Bass begins its life as a female, maturing in the second year at 20 cm, and then changing to a male the following year at around 23 cm. This is a popular recreational and an important commercial fish in South Carolina.

Similar Species The Rock Sea Bass (*C. philadelphica*) is much paler with dark brown bars, and it has a more slender body and a distinct, dark mid-dorsal spot.

Pomatomidae - bluefishes



Bluefish
Pomatomus saltatrix

Description The Bluefish is an elongate and laterally compressed fish with a large mouth and conspicuous teeth. There are two sections of the dorsal fin: the first with 7-8 weak spines and the second with one spine and 23-28 soft rays. The caudal fin is forked and the pectoral fins are small. The scales are small and the lateral line is almost straight.

Coloration The Bluefish is mostly silvery blue with a dark blue-green back and greenish fins. The base of the pectoral fin is dark.

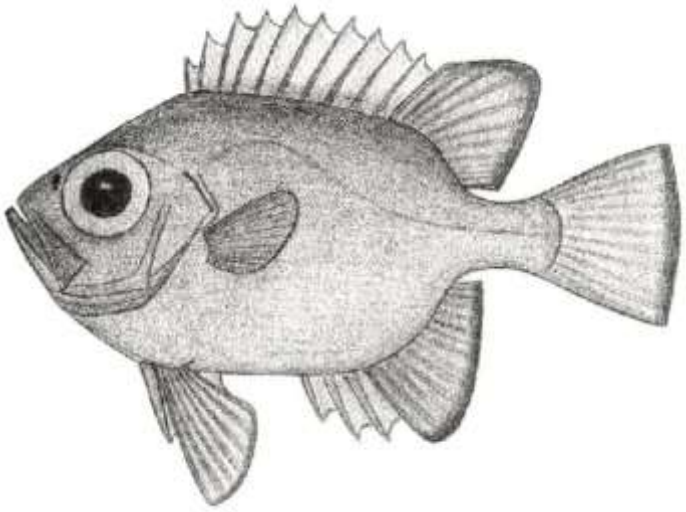
Size Bluefish attain a maximum length of about 110 cm (3.5 ft).

Range In the western Atlantic Ocean, the Bluefish occurs from Nova Scotia to the Gulf of Mexico and most of the east coast of South America. It is absent from the Caribbean Sea.

Habitat The Bluefish is an active and highly predatory fish that hunts in small groups and attacks shoals of smaller fishes, including mullet and menhaden. It is a voracious feeder. Adults are found in coastal ocean waters. Young fish form larger schools in shallow nearshore waters and are common in estuaries. In North Inlet, very young (3 cm) Bluefish arrive during early summer. Juveniles ranging from 150-400 mm occur in schools of like-size fish during the warm months. All Bluefish leave the estuary during the colder months. The Bluefish is a fast swimmer that lives high in the water column, mid-channel, and along deeper shorelines. Larger Bluefish are found close to the inlet.

Similar Species The Striped Bass (*Morone saxatilis*) is unrelated but somewhat resembles the bluefish in shape and habits. The Striped Bass has shorter dorsal and anal fins, bold dark stripes on the side of the body, and a small mouth without sharp teeth. It does not occur in the ocean in South Carolina and is rare in North Inlet estuary. Weakfish *(Cynoscion regalis)* and Spotted Seatrout (*Cynoscion nebulosus*) have similar elongate shapes but are almost round in cross-section and have distinct body markings.

Priacanthidae – bigeyes



Short Bigeye
Pristigenys alta

Description This is relatively round and deep-bodied fish with very large eyes and a large upturned mouth. The dorsal fin has 10 spines and 11 soft rays, and the anal fin has 3 spines and 10 soft rays. The pelvic fin is very long, has one spine and 5 soft rays, and is attached to the belly by a membrane.

Coloration The Short Bigeye is bright red to salmon in color with pale white to pink dorsal, anal, and caudal fins and bright red pelvic fins. The margins of the soft dorsal, soft anal, pelvic, and caudal fins are dark. There are often faint pale bands on the dorsal surface. Juveniles are orange with bright orange spots on the median fins.

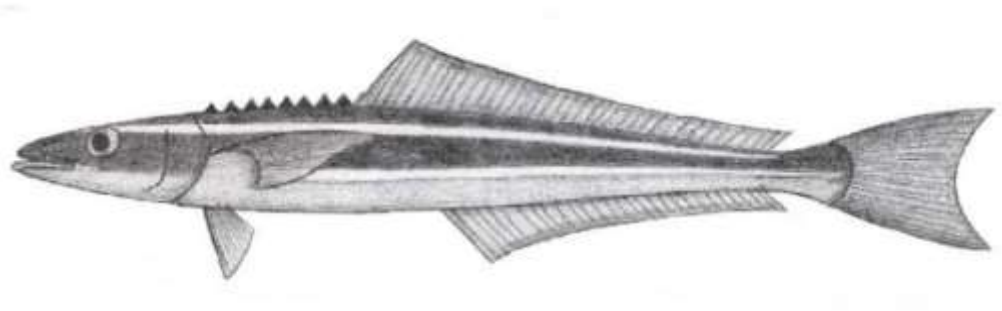
Size It reaches a maximum size of about 30 cm (1 ft).

Range The Short Bigeye occurs from Maine to Brazil, including the Caribbean Sea and the Gulf of Mexico.

Habitat This is mainly a deepwater species found from 5-125 m. It is secretive and nocturnal species that is found around rocky reefs and overhangs. The Short Bigeye is normally solitary, although it may form small groups around structure. Only small juveniles have been recorded from the North Inlet area. It is considered a rare tropical stray during summer and fall.

Similar Species No other local fish has a combination of a squarish side profile, bright red color, and proportionately large eye. Other bigeye species occur in the tropics and in the deep ocean, but their occurrence in local estuaries would be extremely rare.

Rachycentridae - cobia



Cobia
Rachycentron canadum

Description The Cobia is an elongate and slender fish with a large terminal mouth. Its eye is fairly large. The first dorsal fin consists of 7-9 isolated spines that are not connected by any sort of membrane. The rest of the dorsal fin is long and the rays become sequentially shorter toward the posterior end. The anal fin has a shorter base than the dorsal fin, but is also long. The caudal fin is forked.The scales are embedded in the thick skin.

Coloration Cobia have blackish backs, brownish sides and a light belly. They have two silvery white stripes that flank a dusky to dark lateral line stripe that extends the length of the body. The lower stripe is usually brighter. These markings become faint in individuals larger than about 80 cm. The fins are dark.

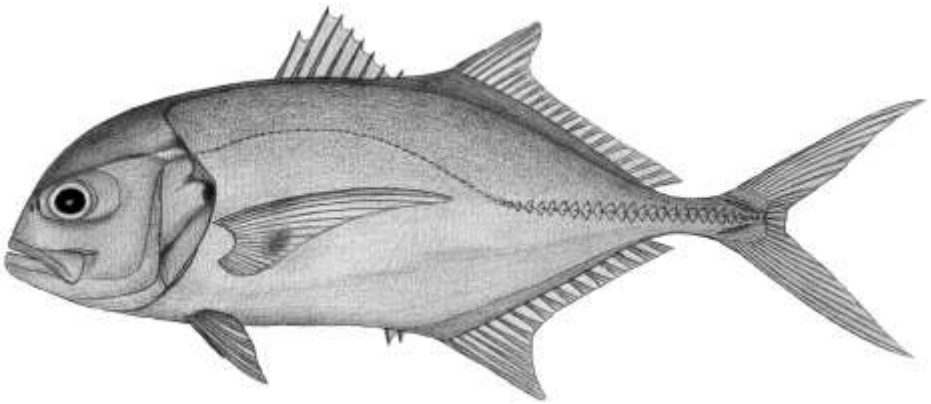
Size The Cobia's maximum size is about 200 cm (6.5 ft, 120 lbs).

Range It occurs in the entire western Atlantic from Massachusetts to Argentina.

Habitat Adults are coastal and pelagic species but large Cobia occasionally enter large estuaries. Juveniles are much more likely to occur in estuaries. In North Inlet, juvenile Cobia have been observed in deep channels during summer. It is a strong swimmer and a predator on invertebrates (especially crabs) and fishes. It is a very fast growing and strong swimming fish, that is popular with recreational anglers.

Similar Species The Remora (*Remora remora*) and other suckerfishes are similar in body shape, and some genera even show black and white stripes (*Echeneis* spp.), but they are easy to distinguish from cobia by the oval, ridged suction disk on the top of the head.

Carangidae – jacks



Crevalle Jack
Caranx hippos

Description This deep-bodied, laterally flattened jack has large eyes and a deeply forked tail. Like most jacks, the Crevalle Jack has well-developed adipose eyelids, especially in adult fish. The jaws are large (maxilla extends past posterior edge of eye) and contain many small teeth. There are two sections of the dorsal fin: the first part with 8 spines, and the second with one spine and 15-21 soft rays. The first anal fin has 2 spines and the second has one spine plus 15-17 soft rays. The anterior rays of the dorsal and anal fins are especially long. The pectoral fin is falcate and longer than the head. The lateral line is arched at the front and 23-35 scutes are present on the posterior end. The chest lacks scales except for a patch in front of the pelvic fins.

Coloration The Crevalle Jack is silvery-gold with a dark and sometimes blue to green back. A dark spot on the upper gill cover is usually prominent, and a dark spot occurs under the pectoral fins of medium and large fish. Young fish usually display dark vertical bars. The fins are pale to yellowish with the caudal fin often yellow.

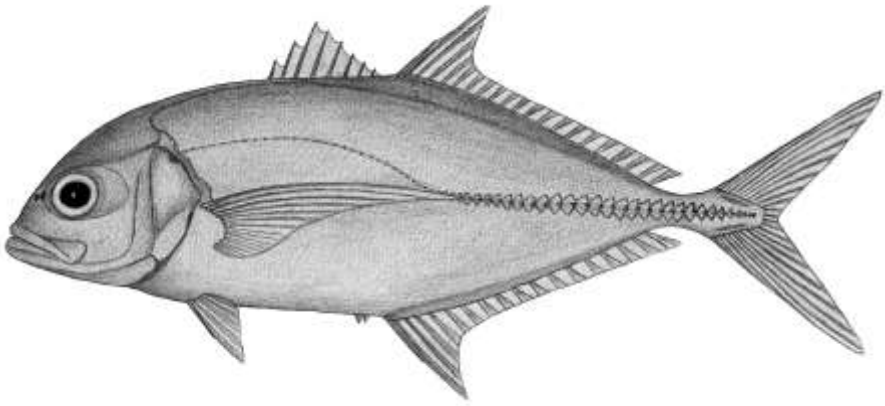
Size Maximum size for the Crevalle Jack is about 100 cm (3.3 ft).

Range It occurs from Nova Scotia to S. Florida, the Gulf of Mexico and Caribbean Sea.

Habitat Adult Crevalle Jacks usually travel in schools in both shallow and deep offshore waters. Young fish are common in estuaries. In North Inlet, juveniles (usually <3 cm) recruit in the spring and summer months, grow quickly, and leave the estuary in fall as temperatures drop. Juveniles 10-15 cm in length are caught by anglers throughout the summer. They can be found from the beachfront surf to the shallowest marsh creeks. It is a voracious predator, often attacking fish and shrimp too large to swallow easily. It is a very fast swimmer. Young often make a loud grunting sound when handled. Young can enter brackish waters and rivers.

Similar Species Many local jack species look similar. The Horse-eye Jack (*C. latus*) and Crevalle Jack (*C. hippos*) are difficult to distinguish at a small size, but the numbers of scutes and sizes of scaled areas on the chest are helpful.

Carangidae – jacks



Horse-eye Jack
Caranx latus

Description This elongate and deep-bodied fish is laterally compressed. It has large eyes. Like most jacks, the Horse-eye Jack has well-developed adipose eyelids, especially in adult fish. The jaws are large (maxilla extends to posterior edge of eye) and contain many small teeth. The first part of the dorsal fin has 8 spines and the second has one spine and 19-22 soft rays. The second dorsal and anal fins have long anterior rays. The caudal fin is deeply forked and the pectoral fins are falcate and longer than the head. The lateral line is arched at the front and has 32-39 scutes on the posterior end. The chest of individuals greater than 75 mm is usually fully scaled.

Coloration The Horse-eye Jack is mostly silvery with a dark blue back and a yellowish sheen. The fins are dusky except for the tail, which is yellowish. The scutes are often dark in color. There is no spot on the pectoral fin (as in *C. hippos*) and the spot on the gill cover is small and faint. Juveniles usually have multiple body bands.

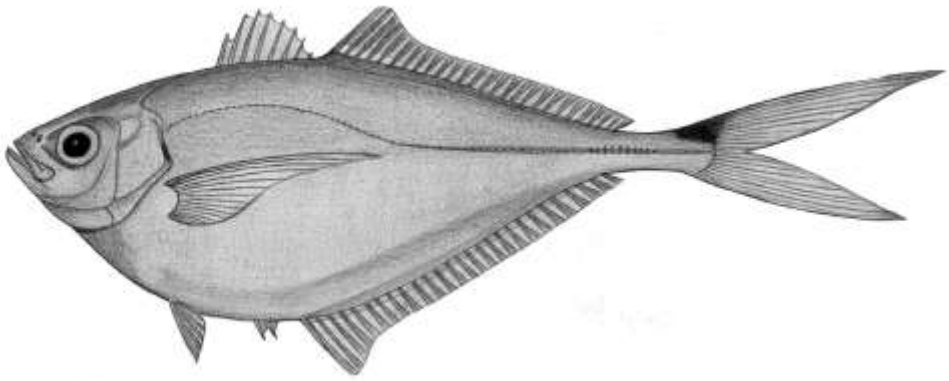
Size Maximum size of the Horse-eye Jack is about 80 cm (2.6 ft)).

Range It occurs from New Jersey to Brazil, including the Gulf of Mexico and the Caribbean Sea.

Habitat The Horse-eye Jack is found mostly in small groups along sandy beaches and in offshore waters, but juveniles enter estuaries in early summer and leave by the fall. In North Inlet, juveniles co-occur with, but are rarer than, the Crevalle Jack (*C. hippos*). It is tolerant of brackish water. It feeds mostly on fishes but it will eat invertebrates.

Similar Species The Horse-eye Jack (*C. latus*) and Crevalle Jack (*C. hippos*) are difficult to separate at a small size, but numbers of scutes and sizes of scaled areas on the chest are helpful.

Carangidae - jacks



Atlantic Bumper
Chloroscombrus chrysurus

Description The Atlantic Bumper has a rather unique shape with a deep posterior body that tapers sharply to a very long caudal peduncle. It is laterally compressed and the mouth is small and upturned. The first dorsal fin is barely separated from the second and has 8 spines. The second dorsal fin has one spine and 25-28 soft rays. The anal fin also has two parts: a short anterior section with 2 spines, and a long, soft part with one spine and 25-28 rays. The caudal fin is deeply forked with the top lobe slightly longer than the bottom lobe. The pectoral fin is long. The body is smooth to the touch with fine scales. The chest is fully scaled and the lateral line has 6-12 small scutes on the posterior end.

Coloration The Atlantic Bumper is silvery with a dark dorsal surface. The body often has a bluish sheen and the fins are yellowish to dusky. There is a black saddle on the upper caudal peduncle and sometimes there is a spot on the upper gill cover.

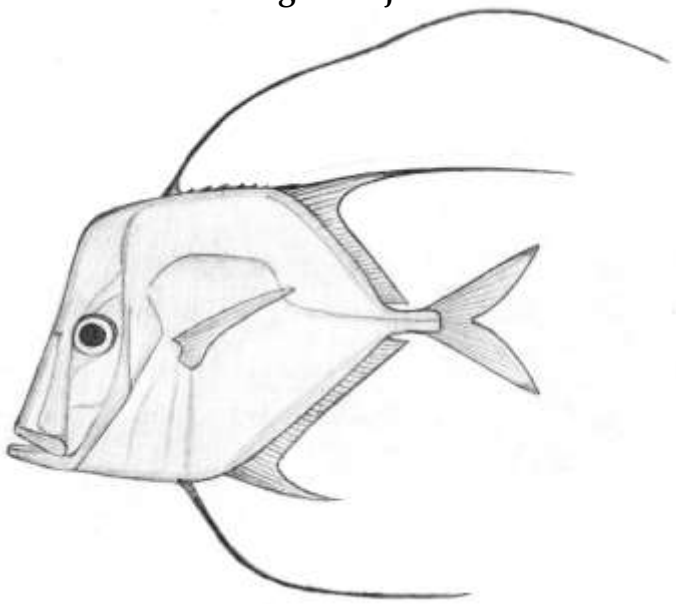
Size Its maximum size is about 26 cm (10 in).

Range The Atlantic Bumper occurs from Massachusetts to the Gulf of Mexico and Uruguay, including the Caribbean Sea.

Habitat It is found in shallow, coastal waters both on sandy shores and in estuaries. Atlantic Bumpers form large schools and feed on small fish and zooplankton. In North Inlet, young fish are solitary, but common, and often associate with jellyfish. It occurs in shallow tidal creeks as well as in open waters during summer and fall.

Similar Species The Leatherjacket (*Oligoplites saurus*) has a more elongate body, separated dorsal spines, and no spot on the caudal peduncle.

Carangidae - jacks



Lookdown
Selene vomer

Description This uniquely shaped fish has a very deep body which is extremely laterally compressed. The head profile is very steep (nearly vertical) and the terminal mouth is at the bottom of the head. The first portion of the dorsal fin has 8 spines and the second has one spine and 20-23 rays. In juvenile fish (<7.5 cm) the first dorsal spines and rays in the second part of the fin are extremely elongate. These shorten as the fish matures. The anal fin has 2 spines (reabsorbed in adults) in the first part, and one spine and 17-20 soft rays in the second part. The pelvic fin is elongate in juvenile fish. The caudal fin is forked. Its body scales are small and they are embedded in the skin.

Coloration The Lookdown looks metallic, silver with a bluish to golden sheen. In young fish the elongate rays on the dorsal and pelvic fins are black, and the body has golden bands and blotches.

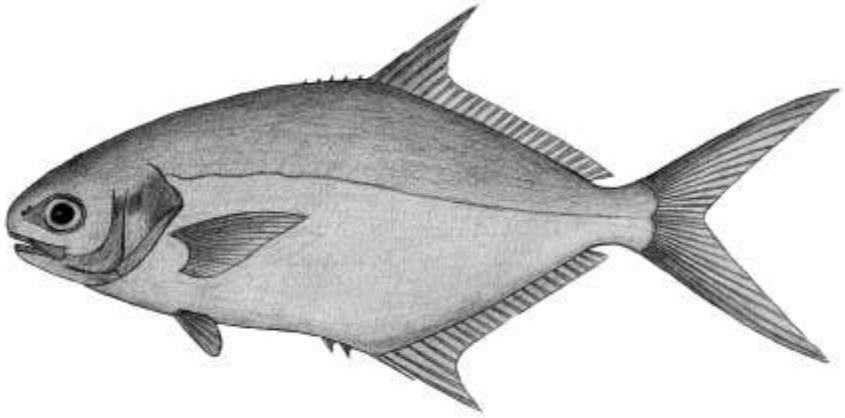
Size Maximum size of the Lookdown is about 40 cm (16 in).

Range It ranges from Maine to Uruguay, including the West Indies**.**

Habitat The Lookdown is found in shallow coastal waters over both hard and soft bottoms. It is a warm water species. Juveniles recruit to North Inlet estuary during early summer, and can be common in subtidal channels as well as shallow shore zones all summer. Compared to other small jacks, juvenile Lookdowns are slow swimmers, but they prey on small fishes and shrimps.

Similar Species It can be confused with other jacks, but the very thin cross-section and very long and almost vertical face of the Lookdown are features not seen in other jacks. The Atlantic Moonfish (*Selene setapinnis*) is quite similar but is more elongate, has short dorsal and anal fins, lacks bars on the body, and has a knobbed forehead.

Carangidae – jacks



Florida Pompano
Trachinotus carolinus

Description The Florida Pompano is a fairly deep-bodied, diamond-shaped, and laterally compressed jack. It has a blunt snout and an inferior mouth. The anterior portion of the dorsal fin has 6 spines (often absorbed in large fish), and a long second part has one spine and 22-27 rays. The anal fin has 2 separate spines and a long second part with one spine and 20-24 rays. The anterior rays of the dorsal and anal fins are slightly elongate. The pectoral fins are short and the tail is deeply forked. The body is smooth and there are no lateral or caudal scutes.

Coloration The Florida Pompano is bright silver with a metallic green to blue-green head and upper body. There is often a yellowish sheen on the lower part of the body or the bases of the fins. The fins are yellowish to dusky.

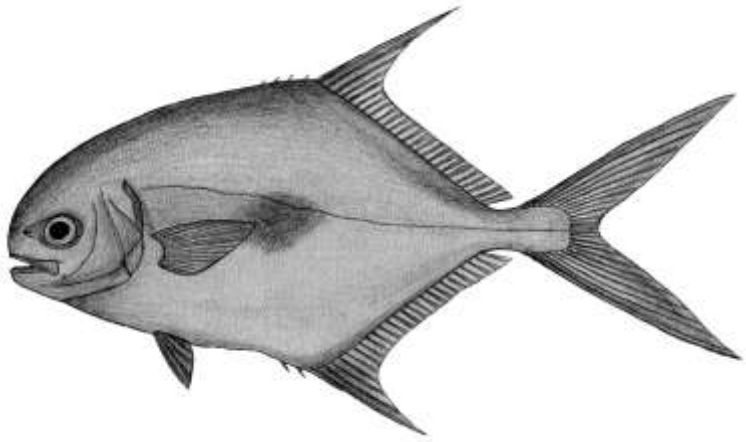
Size Its maximum size is about 60 cm (2 ft).

Range The Florida Pompano ranges from Massachusetts to Brazil, including the Gulf of Mexico and the Caribbean Sea.

Habitat The Florida Pompano is a schooling species found over soft bottoms along coasts and in inlets. It most likely spawns offshore and juveniles can be very common in coastal waters, especially in the surf zone. In North Inlet, it is most common along shorelines near the inlet, and is occasionally found in intertidal creeks during summer and fall. It is a bottom-feeder that eats mollusks, crustaceans, and fish. It can tolerate brackish water.

Similar Species The similarly shaped, but unrelated Butterfish (*Peprilus triacanthus*) and Harvestfish (*P. paru*) differ by lacking pelvic fins and free spines on the anterior portion of the dorsal fin. The Harvestfish is much deeper-bodied than the Butterfish and has longer dorsal and anal lobes. The Florida Pompano is most easily confused with the Permit (*T. falcatus*) which has 5 dorsal spines, 17-21 dorsal rays, 16-19 anal spines, and a deeper body. Juvenile Florida Pompano are uniformally silver whereas juvenile Permits usually have black body marks and reddish fins.

Carangidae - jacks



Permit
Trachinotus falcatus

Description The Permit is a deep-bodied, short, diamond-shaped, and laterally compressed fish. It has a blunt snout and an inferior mouth. The dorsal fin has 7 forward spines (often absorbed in large fish) and a long second part with one spine and 17-21 soft rays. The anal fin has 2 separate anterior spines and a long second part with one spine and 17-18 soft rays. The anterior rays of the dorsal and anal fins are elongate. The anal fin base is the same length as the dorsal fin base. The pectoral fin is short and the tail is deeply forked. The body is smooth to the touch and there are no lateral or caudal scutes present. Juveniles are more rounded and blunt-nosed with a smaller caudal fin in proportion to the body.

Coloration The Permit is silver with a dark upper head and body. Adult fish often have a yellow patch on the belly and a dark blotch at mid-body, but this is absent in small individuals. Juveniles often have dark dorsal and anal fins and a dark red tinge on the anal fin area.

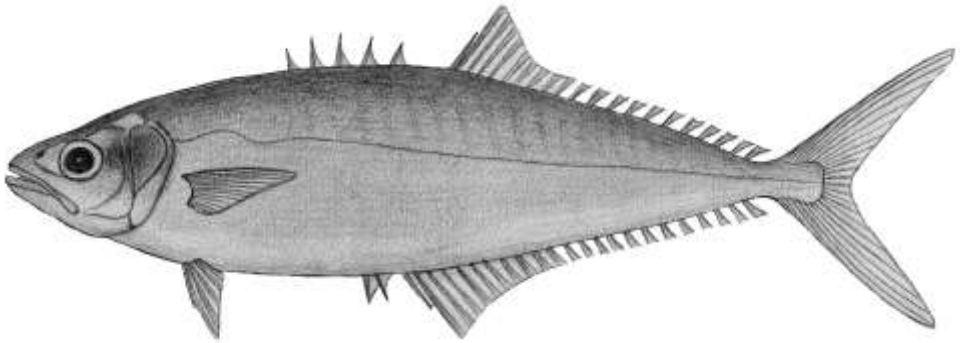
Size The Permit's maximum size is about 100 cm (3 ft).

Range It occurs from Massachusetts to Brazil, the Caribbean Sea and Gulf of Mexico.

Habitat The Permit occurs over soft bottoms along coasts and in inlets. It most likely spawns offshore and juveniles can be very common in coastal waters, especially in the surf zone. In North Inlet, juveniles are common from the inlet to the inner creeks throughout the summer. Larger juveniles occur in the surf. It is a bottom-feeder that eats mollusks, crustaceans, and fish.

Similar Species The similarly shaped but unrelated Butterfish (*Peprilus triacanthus*) and Harvestfish (*P. paru*) lack pelvic fins and free anterior spines on the dorsal fin. The Florida Pompano (*T. carolinus*) has 6 dorsal spines, 22-27 dorsal rays, 20-24 anal rays, and a more slender body. Juvenile Florida Pompano are uniformally silver whereas juvenile Permits usually have black body marks and reddish fins.

Carangidae – jacks



Leatherjacket
Oligoplites saurus

Description The Leatherjacket is a very elongate fish with a laterally compressed body. The mouth is large and terminal, reaching the posterior margin of the eye. The eye is fairly small. The first dorsal fin has 5 widely separated spines (rarely 4 or 6) and the second has one spine and 19-21 soft rays. The anal fin has two spines that are separate from the rest of the fin, which has one spine and 19-22 soft rays. The posterior rays of both fins are partly detached from each other and resemble finlets. The caudal fin is deeply forked and the pectoral fin is shorter than the head length. The body is fairly smooth with embedded scales, and the lateral line has no scutes. The spines are sharp and contain poison so care is needed when handling these fish.

Coloration The Leatherjacket is bright silvery with a bluish to yellowish sheen. Fresh specimens can show diffuse bands on the sides. The first dorsal fin is usually dark but the remaining fins, especially the tail, are dusky to yellowish.

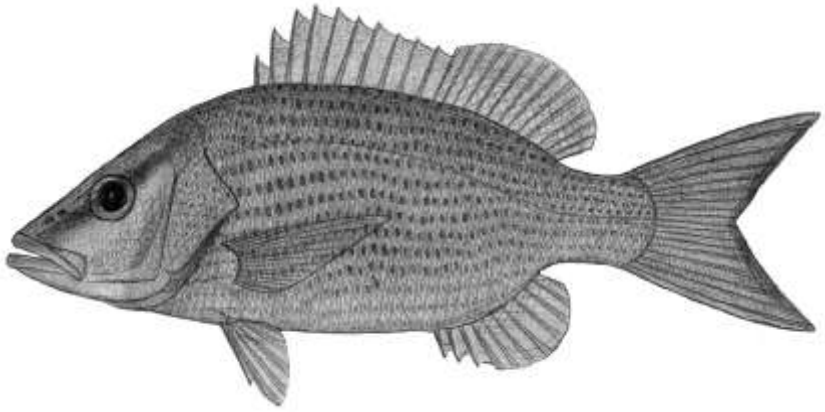
Size Its maximum size is about 30 cm (1 ft).

Range The Leatherjacket occurs from Massachusetts to Brazil, including the Gulf of Mexico and the Caribbean Sea.

Habitat This schooling jack is common in shallow coastal waters. It can be found from sandy shores to estuaries and can tolerate low salinities. It is more common in fast flowing water conditions than in static waters. Adults spawn from spring to early summer. Only small, juvenile Leatherjackets are known from North Inlet. They usually occur in shore zone habitats in late summer and fall.

Similar Species The Atlantic Bumper (*Chloroscombrus chrysurus*) has a much deeper anterior profile, a continuous spiny dorsal fin, and has a dark spot on the upper caudal peduncle. The Spanish mackerel (*Scomberomorus maculatus)* has a long, relatively high first dorsal fin with a black spot, sharp teeth, and a distinctive spotted body pattern.

Lutjanidae – snappers



Gray Snapper
Lutjanus griseus

Description The Gray Snapper is fairly deep-bodied, with a large head and a long, pointed snout. It has well-developed teeth and a large eye. There is a continuous dorsal fin with 10 spines and13-14 rays, and the anal fin contains 3 spines and 7-8 rays. The caudal fin is slightly forked.

Coloration Juveniles are gray to brown with faint dark stripes and/or mottling. The caudal and dorsal fins are dusky and often have dark margins. The ventral fins are reddish. The eye interrupts a distinctive dark stripe that extends from the snout to the opercula. Two or more narrow blue lines are visible under the eye. Adult fish are light gray to bronze with a dark spot on each scale; these form dotted lines on the body. The dark eye-bar is also present in adults.

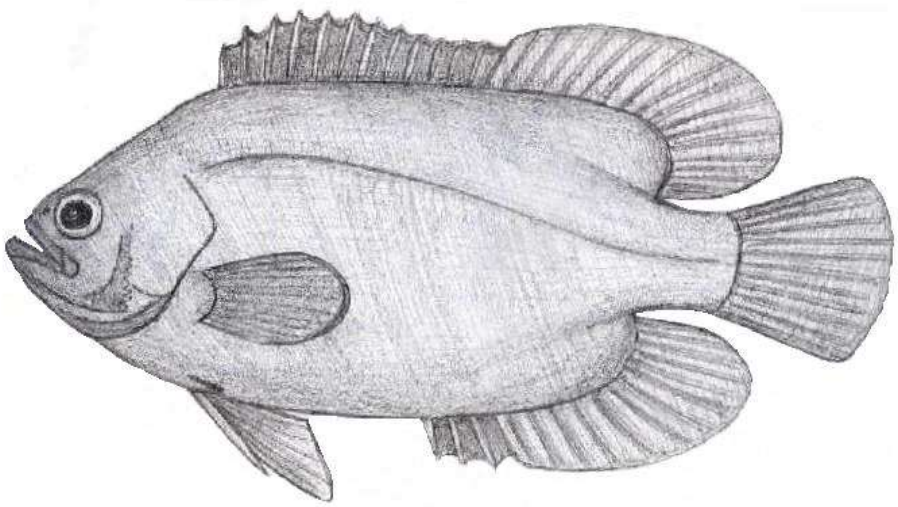
Size Adult Gray Snapper reach 90 cm (3 ft).

Range It ranges from Massachusetts to Brazil, Bermuda and the West Indies.

Habitat The Gray Snapper lives in warm coastal and offshore waters. It can be found in estuaries, mangroves, coral reefs, rocky reefs, and even rivers. Adults do not live off South Carolina, but young-of the year juveniles use estuaries. In North Inlet, juveniles (1-3 cm) arrive in early to mid summer and occupy creeks until they migrate in the fall. All life stages favor structured subtidal bottoms. In salt marsh systems, the Gray Snapper favors shelly subtidal areas around oyster reefs. It can tolerate low salinities.

Similar Species Two other species of snapper, the Mutton Snapper (*L. analis*) and the Lane Snapper (*L. synagris*), are rarely found in North Inlet. The juvenile Mutton Snapper is olive green with broken yellow stripes and distinct white bars on the sides (6-7). There is a large black spot on the sides under the soft dorsal, and its anal fin is distinctly pointed. TheLane Snapper juvenile also has the lateral black spot and light bars, but is reddish over the body and dorsal fin. Both species have yellowish ventral fins.

Lobotidae – tripletails



Tripletail
Lobotes surinamensis

Description The Tripletail is an oval-shaped, deep-bodied fish with a steep frontal profile. The eye is small and located close to the mouth, which is slightly upturned. The dorsal and anal fins are large, rounded, and extend so far back that the fish looks like it has three tails. The dorsal fin has 12 spines and 15 soft rays, and the anal fin has 3 spines and 11 soft rays. The bases of the dorsal and anal fins are scaled. The pectoral fin is shorter than the pelvic fin.

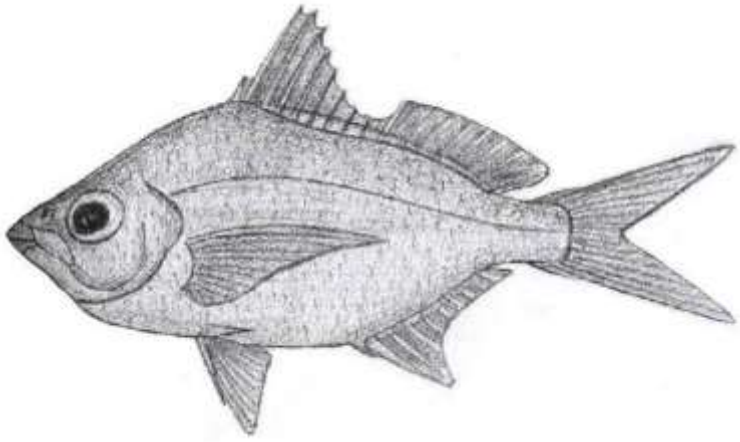
Coloration Tripletails vary from brownish-yellow to dark brown with irregular mottling and blotches. It is able to modify its body color depending on its habitat.

Size Maximum size of the Tripletail is about 110 cm (3.5 ft).

Range It occurs throughout the western Atlantic from New England to Argentina.

Habitat This distinctive coastal species is strongly associated with floating debris and structures. At sea, it often lives around floating *Sargassum*. The Tripletail is often called sluggish, and spends much of the time drifting or maintaining position close to stationary objects in tidal systems; however, it is capable of rapid bursts of speed. In North Inlet, juveniles are considered unusual summer visitors. Individuals up to 15 lbs are caught by anglers near the mouth of Winyah Bay during summer. They eat crustaceans and other fish.

Gerreidae – mojarras



Irish Pompano
Diapterus auratus

Description The Irish Pompano is a moderately deep-bodied and laterally compressed fish with a terminal, protrusible mouth. Its body is especially tall between the bases of the dorsal and pelvic fins. The edges of the preopercles are finely serrated and the preorbital bones are smooth. The dorsal fin has 9 spines and 10 rays, and the second dorsal spine is very tall (longer than distance between snout and rear of eye). The dorsal fin is concave in the center. The Irish Pompano's caudal fin is deeply forked.

Coloration It is silver with a dark back. Young specimens often show 3 narrow vertical bars. Fins are dusky except for the ventral fins, which have a yellowish tinge.

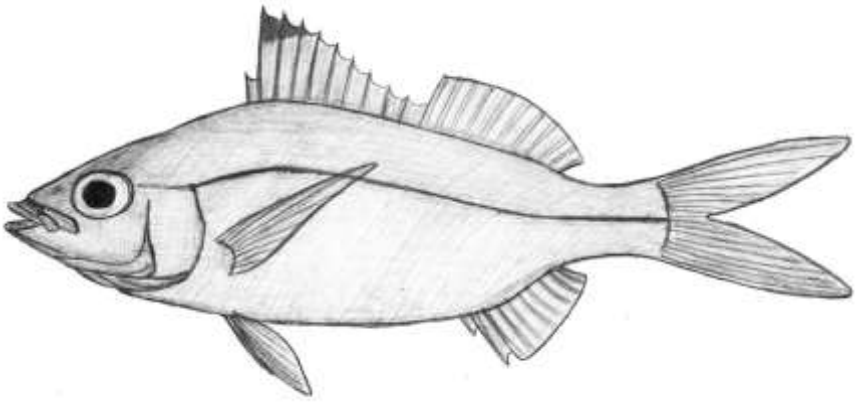
Size Maximum size of the Irish Pompano is about 34 cm (14 in).

Range It is common from Florida and the Caribbean to Brazil, but strays as far north as New Jersey. The Irish Pompano is absent from the northern and eastern Gulf of Mexico, but present on the Texas coast.

Habitat This coastal species is found around mangroves, seagrass meadows, tidal creeks, and lagoons. In North Inlet, young specimens are common in subtidal channels as well as shallow shore zones.

Similar Species All other mojarras in the area (*Eucinostomus, Gerres*) differ by having smooth preopercular margins. Only the Silver Jenny (*E. gula*) is as deep-bodied as the Irish Pompano, but it has a much lower dorsal fin. Mojarras less than about 25 mm are very difficult to identify to species. There is a superficial resemblance to several other small silver fishes including Pinfish, Spot, and Silver Perch, but only the mojarras have a protrusible mouth.

Gerreidae – mojarras



Spotfin Mojarra
Eucinostomus argenteus

Description The Spotfin Mojarra has a moderately elongate and oval-shaped body. The mouth is extremely protrusible, and the eye is large. There are 9-10 dorsal spines and 10 dorsal soft rays. On the anal fin, there are 3 spines and 7-8 soft rays. The pectoral fins are long and pointed. The caudal fin is deeply forked. The preopercles are smooth. The scaleless patch (groove) between the eyes is not covered by scales.

Coloration The Spotfin Mojarra is bright silver with a yellowish sheen. The back is often darker and the lateral line is distinctly black. The dorsal fin has a dark tip. Smokey diagonal bars or irregular blotches are often evident.

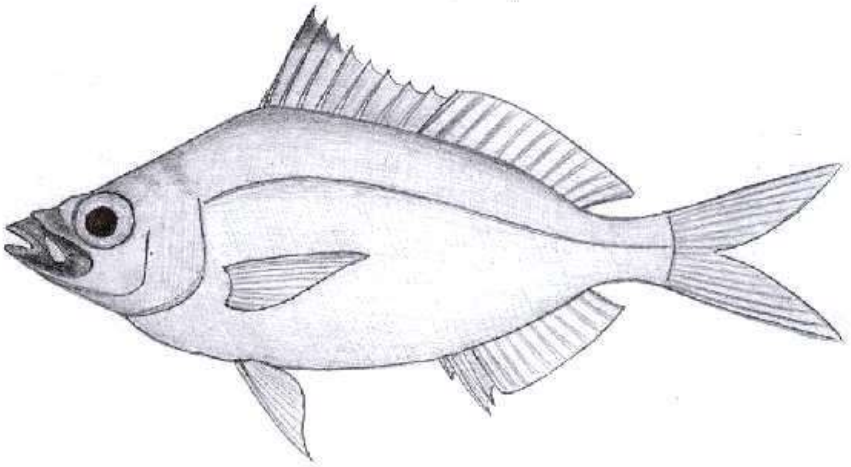
Size Its maximum size is about 20 cm (8 in).

Range The Spotfin Mojarra ranges from New Jersey to southeast Brazil and it occurs in the Gulf of Mexico, Bahamas, and Caribbean Sea.

Habitat This is a coastal fish which is common over soft bottoms in bays and estuaries and also along sandy shores of beaches. It can tolerate low salinities and is known to enter freshwater. It is abundant in North Inlet where it is collected in both intertidal and subtidal areas from mid- summer through fall. None remains in the estuary during the winter.

Similar Species The Irish Pompano (*Diapterus auratus*) has a deeper body, serrated preopercles, and a much higher second dorsal spine (greater in length than head to rear of eye). The Silver Jenny (*E. gula*) is deeper-bodied and has 7 anal rays. Mojarras less than about 25 mm are very difficult to identify to species. There is a superficial resemblance to several other small silver fishes including Pinfish, Spot, and Silver Perch but only the mojarras have a protrusible mouth.

Gerreidae – mojarras



Silver Jenny
Eucinostomus gula

Description The Silver Jenny has a moderately elongate body that is noticeably deeper than in the otherwise very similar Spotfin Mojarra, *E. argenteus*. The back is more arched as well. The mouth is extremely protrusible, and the eye is large. The dorsal fin has 9 spines and 10 soft rays, and the anal fin has 3 spines and 8 soft rays. The caudal fin is deeply forked. The preopercles are smooth. The scaleless patch (groove) between the eyes is crossed by a row of scales.

Coloration This mojarra is silver with no obvious markings. The back is often a little darker than the sides. The fins are pale except for the spiny dorsal, which has a dark tip.

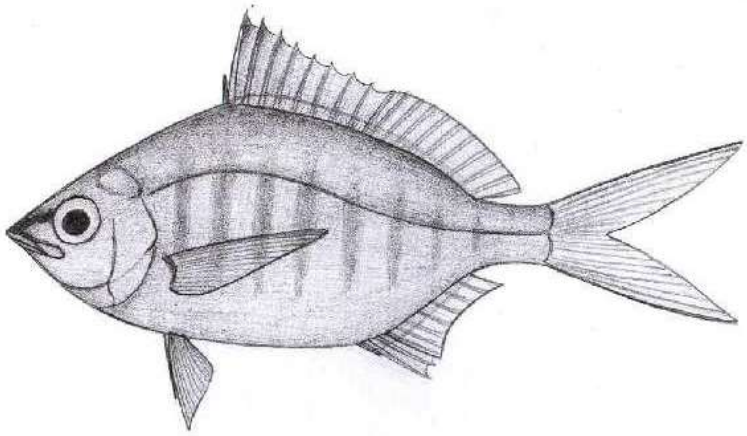
Size Maximum size of the Silver Jenny is about 23 cm (9 in).

Range It occurs in the western Atlantic from Massachusetts to Argentina, and in the Gulf of Mexico and Caribbean Sea.

Habitat The Silver Jenny is found in coastal waters over muddy bottoms, especially in vegetated areas or in vegetation-lined creeks. It often schools. In certain areas, it has been known to enter freshwater. In North Inlet, this species is common in shallow creeks and most likely to be captured in late summer to fall months.

Similar Species The Irish Pompano (*Diapterus auratus*) has serrated preopercles and a higher dorsal fin. The Spotfin Mojarra (*E. argenteus*) is more slender and has 7 or 8 anal rays. Mojarras less than about 25 mm are very difficult to identify to species. There is a superficial resemblance to several other small silver fishes including Pinfish, Spot, and Silver Perch, but only the mojarras have a protrusible mouth.

Gerreidae - mojarras



Yellowfin Mojarra
Gerres cinereus

Description The yellowfin mojarra is similar in body shape to the mojarras of the genus *Eucinostomus* (especially *E. gula*). It is deep-bodied with a pointed snout and a concave chin margin. The mouth is highly protrusible. There are 9 dorsal spines and 10 rays and 3 anal spines and 7 rays. The pectoral fin is long and reaches the base of the anal fin. The tail is deeply forked.

Coloration This species is very distinctive in coloration among the mojarras in our area. It has 6-7 dark bars that extend through the middle two thirds of the body sides. There is no mottling on the upper body, but a brilliant blue sheen in often evident in fresh specimens. The rest of the body is silver. The anal and pelvic fins are bright yellow in color. The other fins are colorless to dusky.

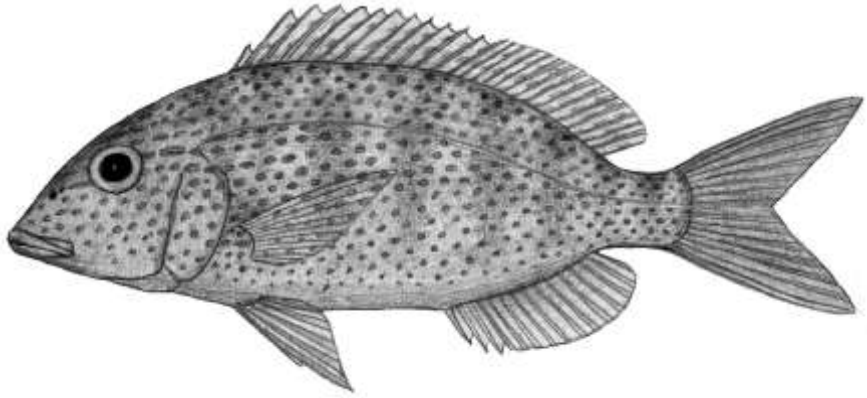
Size The yellowfin mojarra can grow to 41 cm (16 in).

Range It occurs from Florida to the Bahamas, and in Bermuda, the northern Gulf of Mexico, the Caribbean Sea, and the coast of South America.

Habitat It is found in shallow waters over sandy bottoms, seagrass beds, or in mangrove channels. It often forms small schools and is a bottom-feeder. It is frequently found in brackish and even fresh water. The only specimens collected in North Inlet were in summer in a high marsh pond which had a mud bottom and was only around 60 cm deep.

Similar Species This species differs from all other mojarras in the area by having a distinct pattern of dark bars on the side of the body, a bluish sheen to the dorsal surface, and bright yellow ventral fins. The Irish pompano (*Diapterus auratus*) may have yellowish ventrals and faint bars, but has serrated preopercles.

Haemulidae – grunts



Pigfish
Orthopristis chrysoptera

Description This grunt is distinguished from other local species by its very small mouth which barely extends past the nostril. The Pigfish has a long sloped face and high back profile. The body is moderately elongate. There is a single dorsal fin with 12-13 spines and 15-17 soft rays, and the anal fin has 3 spines and 12-13 soft rays. The caudal fin is slightly forked.

Coloration The Pigfish's color pattern is complex. It has a brassy yellow-brown appearance with light blue and yellow lines along the sides of the body. The back is dusky and there are often indistinct orange bars and a faint stripe from the eye to the tail. The fins are dusky with brassy yellow spots and line markings. The head has yellowish spots.

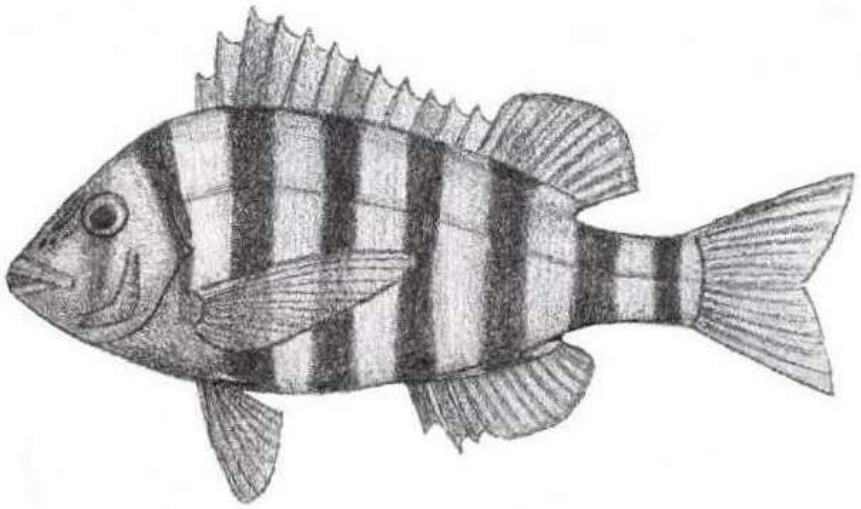
Size Maximum size for the Pigfish is about 46 cm (18 in).

Range It ranges from New York to Mexico.

Habitat The Pigfish is a coastal species which is found over both sandy and muddy bottoms. Adults spawn in warm ocean areas. All sizes prefer living in or around oyster reefs and other hard bottom. In North Inlet, juveniles (15-20 mm) are found in channels in early summer and grow to about 60 mm before leaving in the fall. Individuals older than one year also occur during the summer. This species is mostly a nocturnal feeder on crustaceans and fishes.

Similar Species The White Grunt (*Haemulon plumieri*) is rare in the area and is distinguished by a much larger mouth that reaches past the anterior part of the eye. It has 9 anal rays, a red interior to the mouth, and blue and yellow stripes on the side.

Sparidae - porgies



Sheepshead
Archosargus probatocephalus

Description The Sheepshead is an oval-shaped and laterally compressed species with a deep body. The mouth is small and does not extend past the front of the eye. It derives its name from the large, distinctive, flattened teeth which are similar to those of sheep. The large dorsal fin spines number 12 and they are strongly notched. The spines are followed by 10-12 soft rays. Three anal spines, with the second spine being the largest and strongest, are followed by 10-11 soft rays. The pectoral fins are very long and extend to the anal opening. The caudal fin is slightly forked.

Coloration The Sheepshead is light gray with 4-7 prominent dark bars that span the full depth of the body. One bar extends from the forehead to the base of the pectoral fin. The markings are bolder in smaller individuals. There is no spot on the operculum, or above the lateral line.

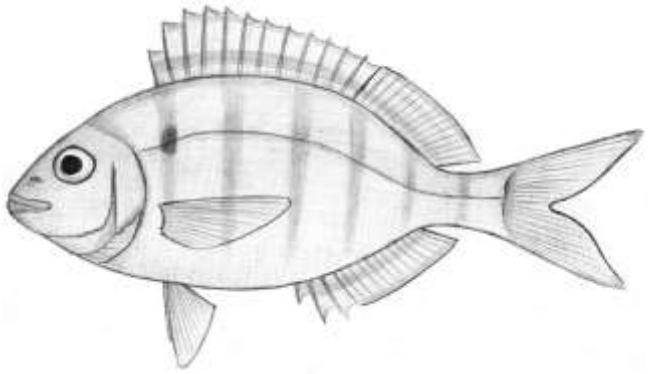
Size Its maximum size is about 90 cm (3 ft), but most local fish are less than 50 cm, 1-6 lbs.

Range The Sheepshead ranges from Nova Scotia to Florida, and from the northern Gulf of Mexico to Brazil. It is not found in the Caribbean Sea.

Habitat This coastal species prefers hard bottom habitats, especially shallow water rubble and oyster reefs. It is common in estuaries and will enter brackish water. It feeds on invertebrates, often scraping barnacles, mussels, and other encrusting animals off of structures. In North Inlet, Sheepshead of all sizes are found in all but the coldest winter months. Juveniles and adults are more common in subtidal channels but may wander into intertidal creeks or flooded marsh.

Similar Species The Black Drum (*Pogonias cromis*) also has black bars on the side but is easily differentiated by having a more inferior mouth without conspicuous teeth, numerous chin barbels, a truncate caudal fin, and a more flattened cross-section.

Sparidae – porgies



Pinfish
Lagodon rhomboides

Description The Pinfish has an oval-shaped body with a small terminal mouth that extends to the front of the eye. The dorsal fin has 12 rigid, sharply pointed spines and 11-12 soft rays. The anal fin has 3 spines and 11 soft rays. The pectoral fin extends almost to the base of the anal fin.

Coloration Pinfish are silver with a bluish tint and horizontal gold stripes that are obvious only in fresh specimens. It has a distinctive black spot across the lateral line, just above the pectoral fin base. There are usually 6 dusky bars that span most of the body. The anal, caudal, and pectoral fins are pale yellow in color.

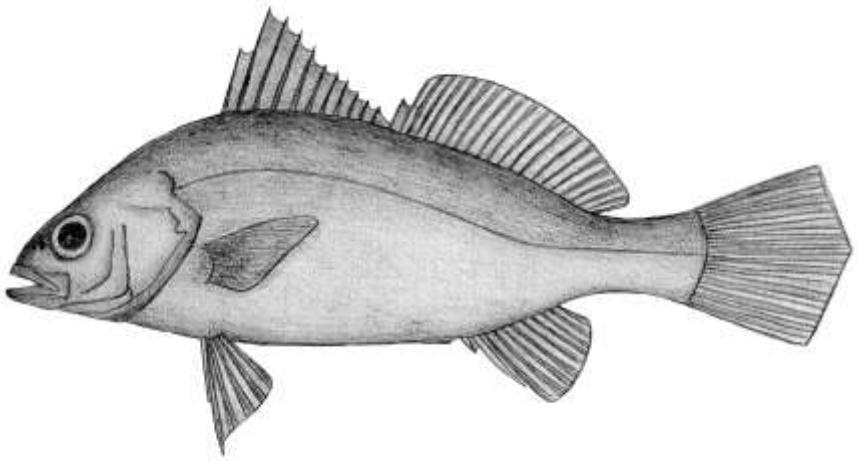
Size Maximum size of the Pinfish is about 40 cm (16 in).

Range It occurs from Cape Cod to Florida, but as a warm water porgy it is most common in the Southeast, Gulf of Mexico to the Yucatan Peninsula, and Cuba.

Habitat This shallow-water species occurs over a wide range of bottom types, favoring hard structured habitat in the ocean and estuaries. In more southern areas, it occurs on soft bottoms with seagrasses and around mangroves. Pinfish tolerate both brackish and freshwater. Adult Pinfish spawn in the ocean and late stage larvae less than 15mm recruit to estuaries during winter. Young–of-the-year grow to about 60 mm by fall. In North Inlet, the Pinfish occurs year-round with larger fish being found in the summer and fall. It is abundant throughout subtidal channels and intertidal creeks, and generally considered a pest by local anglers.

Similar Species The Spot (*Leiostomus xanthurus*) is also silver with a black post-opercular spot, but is more elongate, soft finned, square-tailed, and without a terminal, toothy mouth. Pinfish could be confused with the following two ocean dwelling porgies. The Spottail Pinfish (*Diplodus holbrooki*) is similar in shape, but has 13-16 dorsal rays, 13-15 anal rays, and is silvery (no yellow stripes) with a dark blotch on the caudal peduncle (pinfish lacks this spot). The Red Porgy (*Pagrus pagrus*) is easily distinguished by its steeper forehead and an overall pinkish-red body color with no dark spots or bars.

Sciaenidae – drums



Silver Perch
Bairdiella chrysoura

Description The body of the Silver Perch is moderately elongate with a blunt snout. The mouth is terminal and slightly upturned and the eye is fairly large. There is no chin barbel. The first dorsal fin has 10-11 spines and the second dorsal has one spine and 19-23 rays. The anal fin has 2 spines and 8-10 rays. The second anal spine is longer than the first anal soft ray. The caudal fin is truncate to slightly rhomboidal.

Coloration This is a silver fish with a dark back grading to white on the belly. The body often has a yellowish cast in fresh fish, but there are no markings. The fins are dusky yellow.

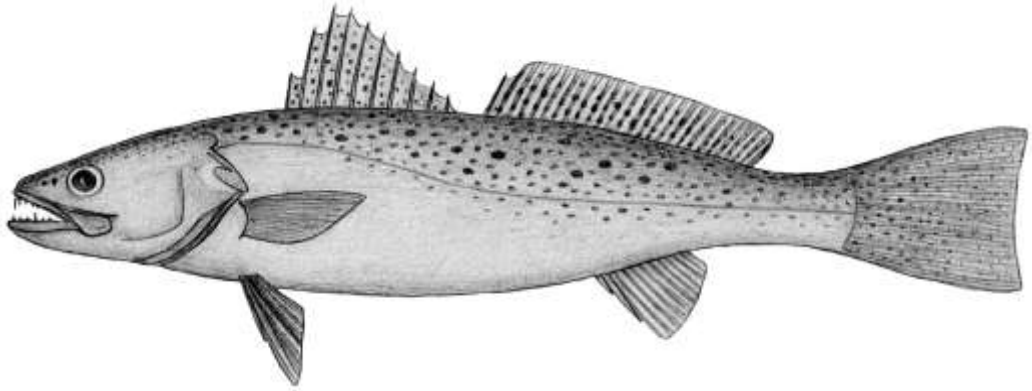
Size Maximum length of the Silver Perch is about 30 cm (1 ft), but 5-15 cm is more typical.

Range Silver Perch occur from New York to south Florida and the Gulf of Mexico.

Habitat This shallow coastal fish is found over sandy or muddy bottoms and often occurs in estuaries. It is most common during the spring and summer months. In North Inlet, young fish are common in intertidal creeks and adults are found more often in deeper channels. It tolerates salinities from full seawater to freshwater. Large silver perch are sometimes caught on hook and line.

Similar Species Most similarly shaped silvery fish have markings. The Star Drum (*Stellifer lanceolatus*) has similar fin counts and shape but has a more upturned mouth, concave forehead, and pointed caudal fin. It is rare in North Inlet, but common in Winyah Bay. The Spot (*Leiostomus xanthurus*) and Atlantic Croaker (*Micropogonias undulatus*) are similar at small sizes but are firmer bodied fish and usually have a pattern of oblique dark lines on the back. The Atlantic Croaker has chin barbels and a coppery sheen. The Spot has a dark spot behind the upper gill cover.

Sciaenidae - drums



Spotted Seatrout
Cynoscion nebulosus

Description The Spotted Seatrout is very elongate and fairly round in cross-section. It has a large, terminal mouth that extends to the rear margin of the eye. The teeth are prominent with the pair in the upper front being the largest. There are two pores on the snout. The first dorsal fin has 9-10 spines and the second dorsal has one spine and 24-26 soft rays. The anal fin has 2 spines and 10-11 soft rays. The caudal fin is truncate to emarginate.

Coloration The Spotted Seatrout is silver with a dark back and a bluish sheen. There are many well-defined dark spots on the body as well as the dorsal fin and tail. The first dorsal fin is dusky and the other fins are yellowish.

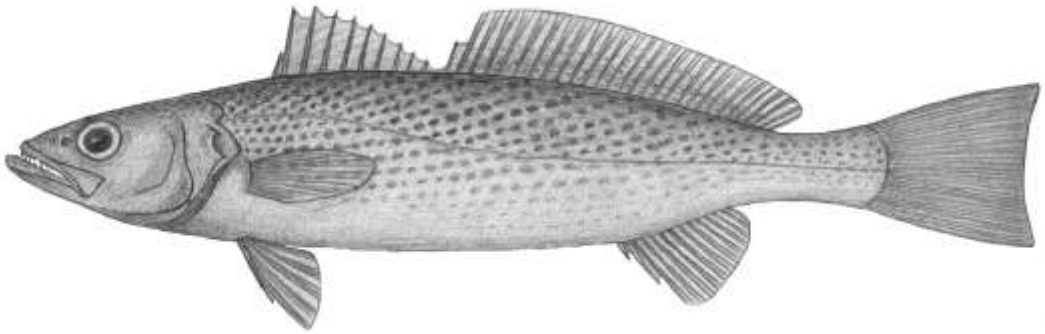
Size Its maximum size is about 100 cm (3.2 ft).

Range The Spotted Seatrout ranges from Long Island to Florida and it occurs in the Gulf of Mexico.

Habitat It occurs in shallow coastal waters, estuaries and salt marsh creeks. It can be found over sand or mud bottoms, but favors deeper, fast-moving water. It often feeds along shorelines, near oyster reefs and creek mouths. This is an active swimmer and aggressive predator that feeds on both crustaceans, especially shrimp, and fishes. In North Inlet, the Spotted Seatrout is a year-round resident that moves toward deeper areas and outside inlets during the coldest months. It spawns near the inlet in the summer. All life stages can be found in the estuary. Spotted Seatrout is a favorite species among local anglers; most of those caught are 10-20 inches. Anglers need to check state regulations for size and catch limits.

Similar Species The Weakfish (*C. regalis*) is almost identical in shape and size, but it has small irregular markings that form oblique dark lines, rather than distinct spots.

Sciaenidae - drums



Weakfish
Cynoscion regalis

Description The Weakfish is elongate and fairly round in cross-section. It has a large, terminal mouth that extends to the rear margin of the eye. The teeth are prominent with the pair in the upper front being the largest. There is one pore on the snout. The first dorsal fin has 10 spines and the second dorsal has one spine and 25-29 soft rays. The anal fin has 2 spines and 10-13 soft rays. The caudal fin is truncate to emarginate.

Coloration The Weakfish's body is basically silver with a dark greenish-gray back. It can have a violet or pink iridescent hue. There are many dark irregular spots that form oblique dark lines on the side of the body. There are no spots on the dorsal fin and tail. The fins are dusky to bright yellow.

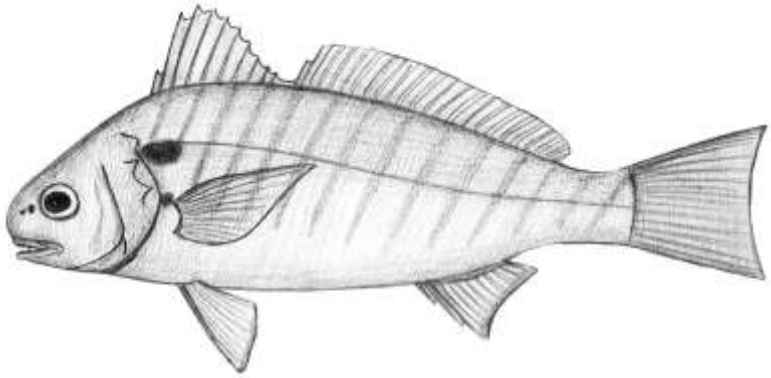
Size Maximum size of the Weakfish is about 90 cm (3 ft).

Range Weakfish occur along the entire Atlantic coast and the Gulf of Mexico.

Habitat It occurs in shallow coastal oceans areas and estuaries where it prefers sandy bottom areas with moving water. In North Inlet, it is most abundant in the spring to fall. Spawning probably occurs outside of the inlets; larvae and small juveniles enter estuaries and young fish move offshore in the late fall. Schools of young and adults occur in deeper subtidal creeks. This is an active swimmer and aggressive predator that feeds on both crustaceans and fishes. Near the southern range for this species, the Weakfish is smaller and less abundant than further north, so it is not usually targeted by local anglers. Nevertheless, Weakfish are caught on lures and bait in North Inlet. Anglers need to check state regulations for size and catch limits.

Similar Species The Spotted Seatrout (*C. nebulosus*) has large, randomly distributed spots (not lines) on the body, dorsal fins, and tail.

Sciaenidae - drums



Spot
Leiostomus xanthurus

Description The Spot has a steep forehead, blunt snout, and is laterally compressed. The mouth is small, inferior, and extends only to about the midpoint of the eye. There is no chin barbel. The edge of the preopercle has no spines. There is a distinct notch between the spinous and soft dorsal fins: the first dorsal has 10 spines and the soft dorsal has one spine and 30-32 soft rays. The anal fin has 2 spines and 12-13 rays. The caudal fin margin is almost straight.

Coloration The Spot is silver with the back being darker than the belly. There is a distinct dark spot above the pectoral fin, right under the lateral line. There is a series of faint diagonal bars (11-15) on the side of the body that extend from the dorsal fin to below the lateral line. The fins are dusky yellowish in color.

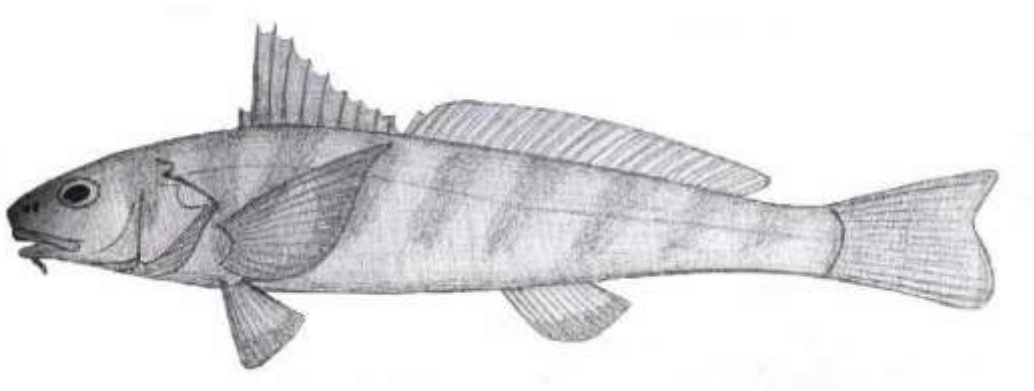
Size Maximum size of the Spot is about 36 cm (14 in).

Range It occurs from Cape Cod to Florida and in the northern Gulf of Mexico.

Habitat The Spot occurs at depths from 0-60 m over soft bottoms. Young fish favor estuaries. Adults spawn in deep ocean waters during late fall and winter. Late stage larvae arrive in estuaries during the coldest months and most juveniles grow to 70-90 mm (3-4 in.) before migrating to the ocean in the fall. In North Inlet, young-of-the-year Spot are the most abundant demersal transient fish. Individuals older than one year also over-summer in the subtidal channels and intertidal creeks. Pre-spawning adults often aggregate in deep channels and on the beachfront before moving to deeper water in the fall. It is a favorite fish for local anglers in the fall, when many can be caught in a single outing. The Spot feeds on the bottom often creating a cloud of sediment when it scoops for worms and other invertebrate prey.

Similar Species The Atlantic Croaker (*Micropogonias undulatus*) is similar but is more elongate and has chin barbels and a pointed tail; however, it lacks a black upper body spot. The Pinfish (*Lagodon rhomboides*) is also silver with a black spot, but it has a small terminal mouth, prominent and rigid fin spines, and a slightly forked tail. The Silver Perch (*Bairdiella chrysoura*) has a slightly upturned mouth and no markings on the body.

Sciaenidae – drums



Southern Kingfish
Menticirrhus americanus

Description The Southern Kingfish is elongate and almost triangular in cross-section. It has a blunt snout with a small inferior mouth. A small chin barbel is present. The spiny dorsal fin has 10 spines and the 2nd and 3rd rays are similar in length. The first dorsal is barely connected to the soft portion which has one spine and 22-26 rays. The anal fin has one spine and 6-8 rays. The caudal fin is rounded with its lower lobe noticeably longer than the upper lobe (S-shaped).

Coloration It is silvery-gray with a dark back and a variable pattern of 7-8 oblique dark bars on the back and sides. The tips of the pectoral, pelvic, and anal fins are often dusky with a yellowish cast. The dorsal fin is the same color as the body.

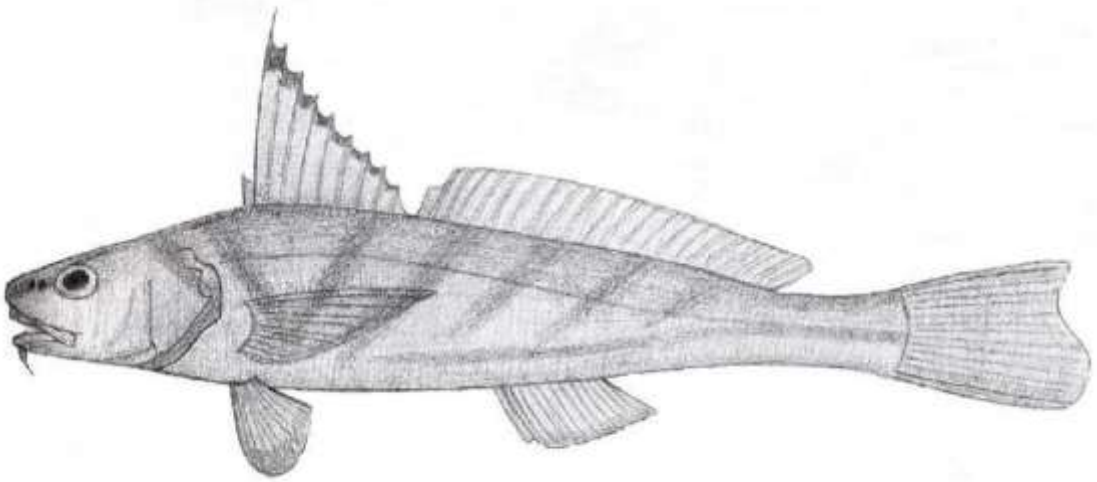
Size Its maximum size is about 60 cm (24 in), but most are usually 2-20 cm.

Range The Southern Kingfish ranges from Cape Cod to southern Florida, and occurs in the Gulf of Mexico and South American coasts from Central America to Argentina. It does not occur in the Caribbean Sea.

Habitat The Southern Kingfish is found over sand and muddy-sand bottoms, mainly in the surf zone but also in shallow coastal waters and estuaries. Juveniles can tolerate brackish water. In North Inlet, small juveniles are found in high and low energy shore zones especially inside the inlet. Adults occur in deeper channels and the surf, but rarely occur far from the inlet. They form small groups and feed on bottom-dwelling invertebrates. This is an important gamefish, known locally as "whiting".

Similar Species The Gulf Kingfish (*M. littoralis*), which can be expected in North Inlet on rare occasions, can be distinguished from the two other kingfishes by having no barred markings, pale fins, and a black tip on the upper tail. The Northern Kingfish (*M. saxatilis*) is very similar to the Southern Kingfish, but it usually has a bolder dark pattern with anterior bars that join ventrally to form a "V". Other elongate drums have straight or pointed tail margins.

Sciaenidae - drums



Northern Kingfish
Menticirrhus saxatilis

Description The Northern Kingfish is elongate and triangular in cross-section. It has a blunt snout and a small inferior mouth with a small chin barbel. The spiny dorsal fin has 10 spines and the second spine is longer than the third. The first dorsal is barely connected to the soft portion. The soft dorsal has one spine and 20-26 rays. The anal fin has one spine and 7-9 rays. The caudal fin is rounded with its lower lobe noticeably longer than the top lobe (S-shaped).

Coloration The Northern Kingfish is silvery-gray with a dark back. There are 5-6 well-defined, oblique, dark body bars with the second and third angled to form a "V" under the first dorsal. There are sometimes additional markings including a posterior stripe below the lateral line. The tips of the dorsal, anal, pectoral, and pelvic fins are dark. The dorsal fin also has a dark edge. There are often dark markings on the snout.

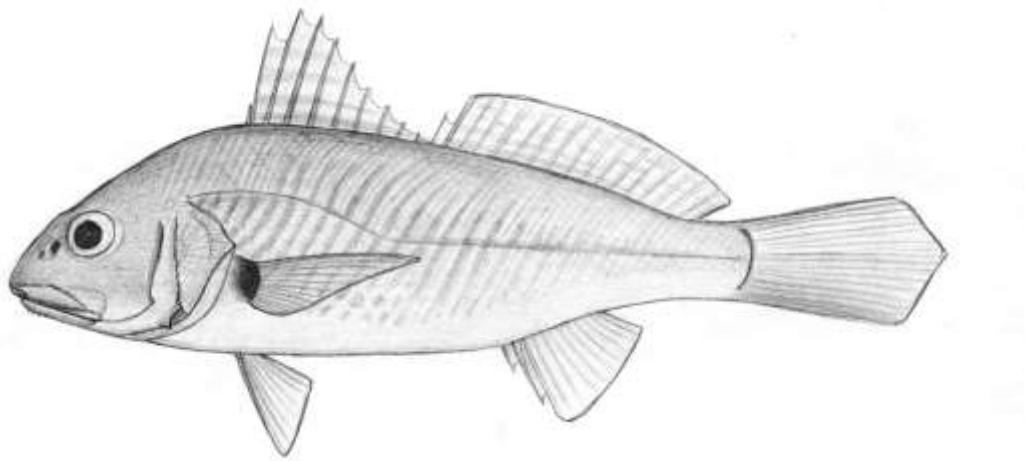
Size Maximum size of the Northern Kingfish is about 50 cm (20 in).

Range It occurs from the Gulf of Maine to Florida and throughout the Gulf of Mexico.

Habitat Adults are common in coastal waters, especially in areas with sandy to mixed sand-mud bottoms. Juvenile Northern Kingfish are also common in estuaries and may enter freshwater. In North Inlet, individuals of all sizes occur near the ocean. Small juveniles are most common in high and low energy surf zones. Large fish are found in the surf and deeper open waters. This is a bottom-feeder that eats mostly on invertebrates. It is an important local gamefish, which along with other kingfishes, is referred to as "whiting".

Similar Species The Southern Kingfish (*M. americanus*) is very similar but has a more faint color pattern, a shorter dorsal fin without a dark tip, and anterior bars that do not form a distinct "V". Other elongate drums have straight or pointed tail margins. The Gulf Kingfish (*M. littoralis*) is found in coastal waters and can be expected in North Inlet on rare occasions. It can be distinguished from the two other species by having no bar markings, pale fins, and a black caudal fin tip.

Sciaenidae - drums



Atlantic Croaker
Micropogonias undulatus

Description The Atlantic Croaker is moderately elongate and laterally compressed. It has a fairly large subterminal mouth with maxilla reaching a point below the midpoint of the eye. The teeth in the upper jaw are slightly enlarged. There are 3-4 pairs of tiny barbels on the chin. The preopercle is serrated with 3-4 spines. The first dorsal fin has 10 spines and is slightly separated from the second dorsal, which has one spine and 27-30 rays. The anal fin has 2 spines and 7-9 soft rays. The caudal fin is doubly emarginated with the center rays being the longest.

Coloration The Atlantic Croaker is silver with a coppery sheen in fresh specimens. The back is grayish with irregular black spots forming fairly faint diagonal lines across the sides of the body. The spots are most numerous above the lateral line and fade below the lateral line. The parallel diagonal lines are oriented with the lower end being more anterior. The dorsal fins are also spotted with dark markings. The other fins are yellowish. There is often a dusky to dark spot at the pectoral fin base.

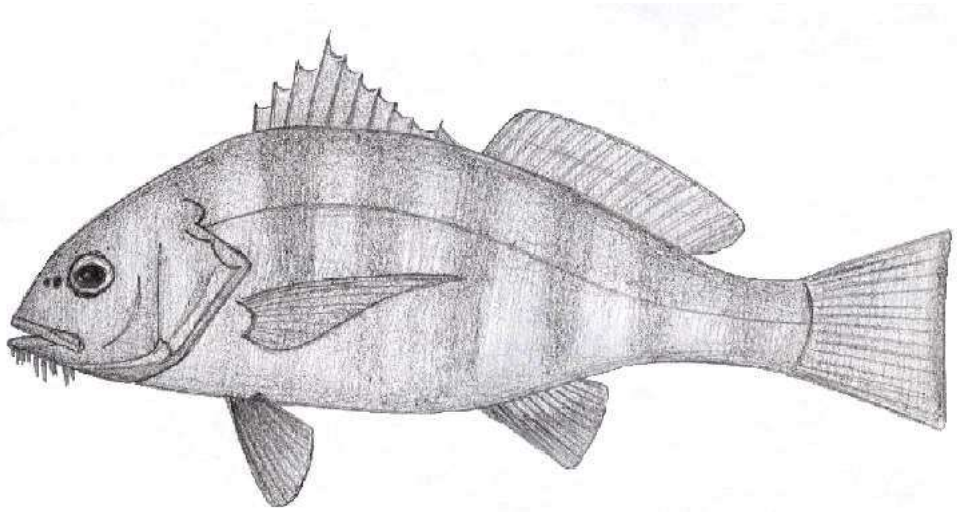
Size Maximum size of the Atlantic Croaker is about 50 cm (20 in).

Range It occurs from Cape Cod to Florida, and in the Gulf of Mexico from Florida to the Bay of Campeche.

Habitat The Atlantic Croaker occurs on soft bottoms both inshore and offshore to a depth of 100 m, but it is mostly a shallow ocean and estuarine species. Adults spawn in the ocean in the late summer. Juveniles occur in subtidal areas during much of the year. The Atlantic Croaker is much more abundant along the salinity gradient of Winyah Bay than in the high salinity creeks of North Inlet. It is distinctive in that it produces a croaking sound when taken out of the water.

Similar Species The Spot (*Leiostomus xanthurus*) also has faint diagonal bars on the body but lacks chin barbels and has a square tail and a dark spot at the origin of the lateral line. The Red Drum (*Sciaenops ocellatus*) is similarly shaped but has a large black spot (sometimes multiple spots) at the base of the caudal fin and has neither barbels nor a pointed tail. The kingfishes are much more elongate.

Sciaenidae - drums



Black Drum
Pogonias cromis

Description The Black Drum is fairly deep-bodied fish with a strongly arched back. It has an inferior mouth with 10-13 small barbels on the chin. The spiny dorsal has 10 spines and the soft dorsal has one spine and 19-22 soft rays. The pectoral fins are long and pointed. The anal fin has 2 spines and 5-7 soft rays. The caudal fin is large and fairly straight-edged.

Coloration It is silvery-gray to dark gray. Young fish are light with 5 or 6 dark bars that extend from the dorsal fins most of the distance to the ventral surface. The smallest juveniles have the strongest pattern, and the bars fade as individuals approach 60-80 cm (about 10 lbs). Bars are not evident in large adults. Large fish are uniformly dark gray with slightly darker fins.

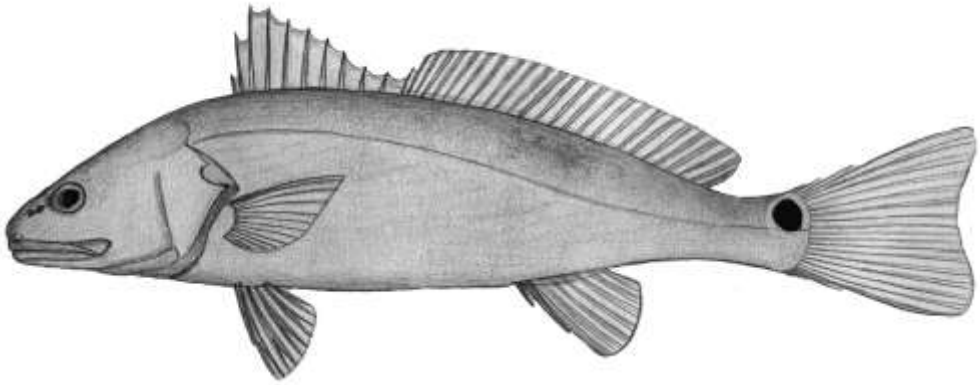
Size Maximum size of the Black Drum is about 150 cm (5 ft, over 100 lbs).

Range It ranges from Maine to Florida, the northern Gulf of Mexico, and from the southern Caribbean to Argentina.

Habitat The Black Drum lives over sand and mud bottoms in coastal waters. Adults often form large schools inshore and spawning occurs in the open waters of large estuaries, such as neighboring Winyah Bay; however, large fish are rarely encountered by anglers. In North Inlet, young-of-the-year juveniles and several older year classes occur in subtidal creeks, but individuals over about 10 lbs are rare. Black Drum occur year round but are less common in winter when they seem to reside in deep holes and channels. It uses plates in its throat to crush bottom-dwelling invertebrates such as clams and crabs.

Similar Species The Sheepshead (*Archosargus probatocephalus*) also has black bars on its sides, but it is more oval in shape and has a terminal mouth with large flat teeth. The Sheepshead lacks chin barbels and has a forked instead of straight-edged tail. The kingfishes have single chin barbels and oblique bars, and the the body shape is much more elongate.

Sciaenidae - drums



Red Drum
Sciaenops ocellatus

Description The Red Drum is a moderately elongate species with an arched dorsal profile and a flat belly. The mouth is inferior and reaches the rear margin of the orbit. There are no chin barbels present. The preopercle is smooth, except for young fish in which it is finely serrate. The dorsal fin is strongly notched between the spiny and soft portions. The spiny dorsal has 10 spines and the soft portion has one spine and 23-25 rays. The anal fin has 2 spines and 8-9 rays and the second spine is only one half the size of the first ray. The caudal fin is truncate in adults but rhomboidal in juveniles.

Coloration This fish is overall silvery with a red to coppery sheen all over a body that is dark on the dorsal surface and fades to light on the belly. There is usually one dark, eye-sized spot on the caudal peduncle but it is not unusual to see multiple large spots or a combination of large and small spots extending to mid body along the base of the second dorsal fin.

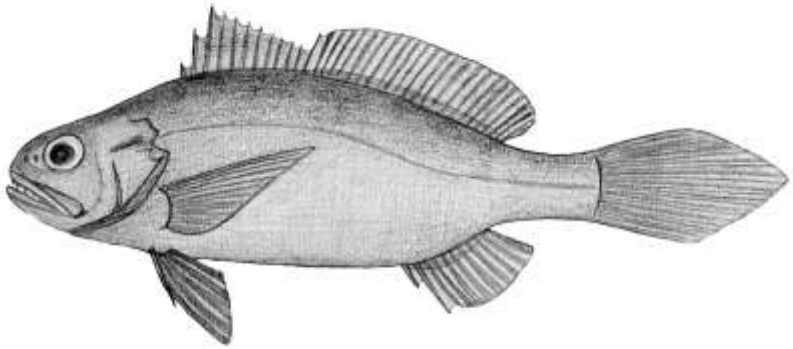
Size Maximum size may be >160 cm (5 ft) and over 60 lbs, but most of those caught in the estuary are usually under 100 cm and 10 lbs.

Range It occurs from Long Island to Florida and in the Gulf of Mexico.

Habitat Red Drum is a common coastal and estuarine species that is found over a wide range of bottom types. It is a predatory fish that feeds on invertebrates and fishes. Young (up to about 30 inches and 4 years of age) are found in shallow estuarine waters and can tolerate low salinity water. Adults occur in shallow ocean areas and around the surf and jetties where they spawn in late summer. It is an important recreational gamefish. The red drum also known as spottail bass, redfish, puppy drum, and channel bass. Check for current state catch regulations.

Similar Species It is most similar in shape to the Atlantic Croaker (*M. undulatus*) which is silver, without a tail spot, and rarely > 25 cm (10 in.).

Sciaenidae - drums
Star Drum



Stellifer lanceolatus

Description The Star Drum is a small and fairly rounded croaker like fish that has a prominently pointed tail with the longest rays in the center. The forehead is flat and broad with a distinct depression between the eyes. The snout is blunt. The mouth is large and obliquely angled.

Coloration The Star Drum is uniformally silver with a slightly darker gray to olive dorsal surface. All of the fins are dusky to pale. The spiny dorsal fin tip is usually blackish, but, unlike most other drums, the Star Drum does not have ant body spots or markings.

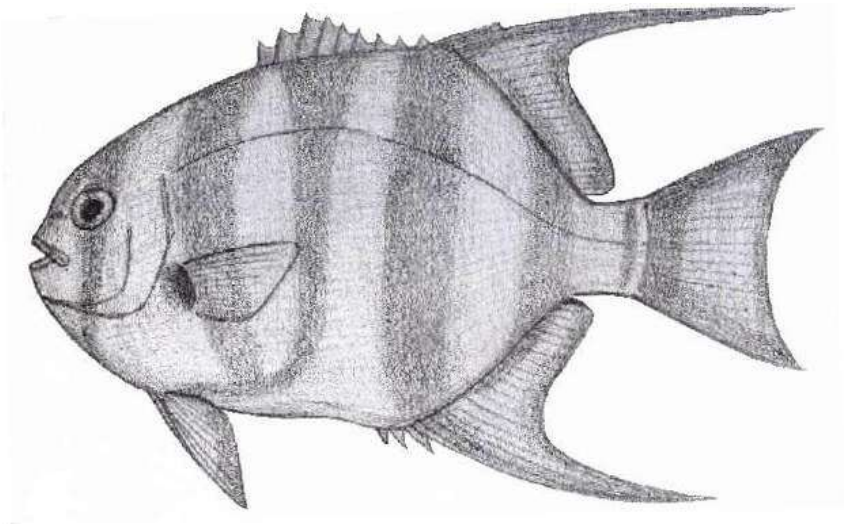
Size Maximum size is about 15 cm (6 in.).

Range It occurs from Virginia to Florida and in the central Gulf of Mexico.

Habitat This is a common species in deeper portions of large estuaries such as Winyah Bay, but is unusual to see Star Drum in the salt marsh waterways of North Inlet. Its rarity is not attributed to salinity differences (with Winyah Bay consistently lower) because it is known to occur in the coastal ocean.

Similar Species No other local drums have concave areas between the eyes. It is most similar in shape and color to the Silver Perch (*Bairdiella chrysoura*), but Sliver Perch has large eyes, a darker back and yellowish fins. Star Drum can also be confused with the Atlantic Croaker (*Micropogonias undulatus*) which is also mostly silver, but has oblique stripes, yellowish fins, and dark spot at the base of the pectoral fin. Because of its small size, it can be confused with juvenile kingfishes ('whitings') and seatrouts, but the former are elongate with chin barbels and whereas the Spotted Seatrout and Weakfish are elongate with numerous spots or freckles. The Star Drum is too small to be caught on hooks.

Ephippidae – spadefishes



Atlantic Spadefish
Chaetodipterus faber

Description The Atlantic Spadefish has a deep, spade-shaped body and is laterally compressed. It has a small terminal mouth with firm lips and small teeth. The dorsal fin is comprised of two parts in adult fish, with less distinct separation in juveniles. The spiny portion has 9 spines. The soft portion has 21-23 rays with elongate anterior rays. The anal fin has 3 spines and 18-19 rays, which are also elongate anteriorly. The caudal fin is emarginate. The skin is thick and leather-like.

Coloration The body is silver to gray with dark bars that fade with age. There are 6 bars: one through the eye, one from the nape to pectoral, one from the spiny dorsal to pectoral, one from the anterior soft dorsal to anterior anal, one from the rear dorsal to rear anal, and lastly, one on the caudal peduncle. The smallest juveniles are almost uniformly black. The fins are usually dusky to dark.

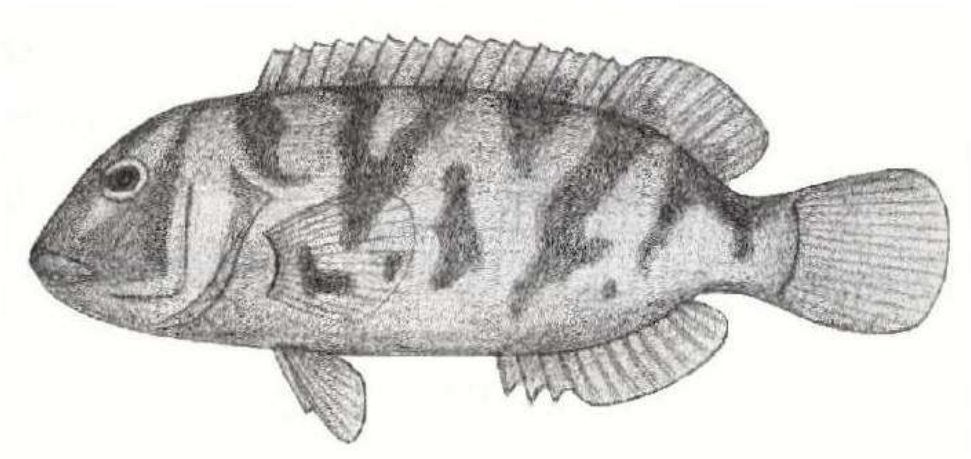
Size Maximum size is about 100 cm (3 ft), but most caught are <50 cm (26 in.).

Range It ranges from Massachusetts to Brazil.

Habitat This is a coastal species found in a variety of habitats, from coral reefs to northern estuaries. It is common around manmade structures, such as artificial reefs, and often forms large schools that often swarm near the surface. In North Inlet, only young-of-the-year and one year old juveniles are found during the summer. They occur in the deeper creeks and move into the ocean as cooler weather approaches. This species feeds on invertebrates. These slow swimming fish scrape sessile animals off structure and consume jellyfish in the water column.

Similar Species The Atlantic Spadefish is morphologically distinct, especially with respect to its fins, from other local wide-bodied species with dark bars. The Spotfin Butterflyfish (*Chaetodon ocellatus*) is similar in shape but has no body bars. It has one dark bar through the eye and bright yellow dorsal and anal fins.

Labridae – wrasses



Tautog
Tautoga onitis

Description The Tautog is a heavy-bodied species with a blunt head, large lips and strong teeth. The front of the head is broadly rounded and the mouth is set low on the head. The body width is fairly uniform from the opercula to near the caudal peduncle. The dorsal fin has 16-17 spines and 10 soft rays, and it extends across most of the dorsum. The anal fin has 3 spines and 7-8 rays. The caudal and pectoral fins are broad, rounded, and fan-like. In addition to the long, blunt teeth in the front of the jaw, the tautog also has crushing teeth in the back of the mouth. Its skin is thick and covered with mucus.

Coloration The Tautog is mottled dark and light brown with the dark brown often forming irregular bands in younger fish. The mottling continues onto the dorsal fin but the other fins are plain and dark. Large adults are more uniform with random blotches.

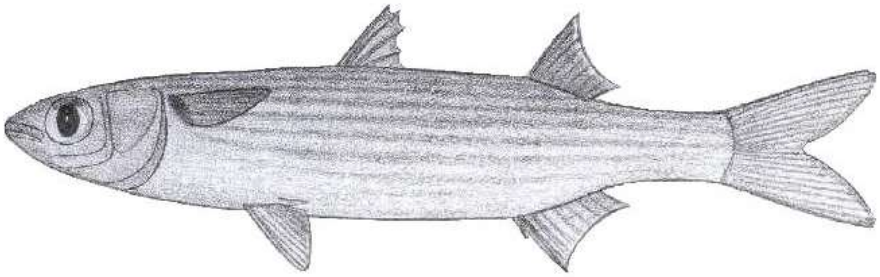
Size Maximum size of the Tautog is about 90 cm (3 ft), but most are <30 cm (1 ft.).

Range It is a cold water fish that ranges from Nova Scotia to South Carolina.

Habitat It is common in northern waters where it moves inshore and into estuaries during the winter and offshore during the summer. It favors areas of hard bottom and man-made structure where it feeds on crustaceans and mollusks. Rarely seen and only during winter in North Inlet, the Tautog is uncommon on nearshore ocean reefs along with Spiny Dogfish (*Squalus acanthias*) during the coldest months. It is one of the largest wrasses in the West Atlantic and one of the few species that strays into the area from northern, as opposed to southern waters. Small individuals are winter rarities in North Inlet channels.

Similar Species With its heavy, fairly rectangular body, mottled gray color, and leathery, slimy skin, this wrasse is hard to confuse with other local fish.

Mugilidae – mullets



Striped Mullet
Mugil cephalus

Description The Striped Mullet is an elongate fish with a small terminal mouth and flattened head. The body is almost round in cross-section. The large eyes have prominent adipose eyelids in large specimens. The dorsal fins are short and widely separated; with 5 dorsal spines on the first dorsal and 7-9 rays on the second. The bases of the second dorsal and anal fins are not fully scaled in adult fish (less noticeable in juveniles). The anal fin has 3 spines and 8 soft rays (2 spines and 9 soft rays in specimens < 50 mm). The pectoral fin is high on the side and the tail is forked.

Coloration The Striped Mullet is dark blue to olive above, grading to silver on the sides and belly. Several dark stripes, created by dark spots on the scales, extend along the center of the body for much of the length of the body, especially on the dorsal half of the body. The stripes are most apparent on fresh specimens. The upper eyes are dusky to dark. The fins are dusky and there is often a dark spot at the pectoral fin base.

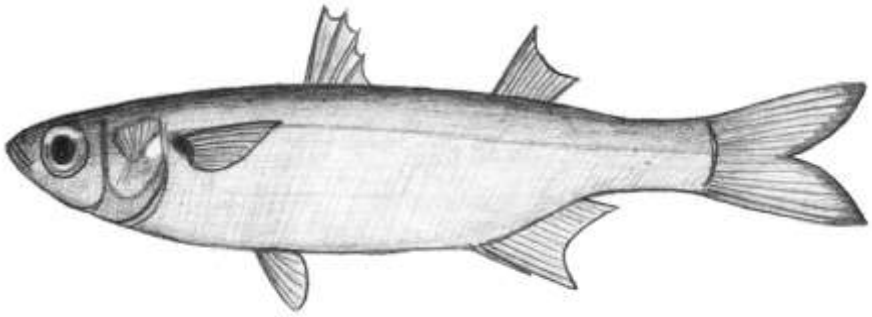
Size Maximum size is about 120 cm (4 ft) but most adults are < 30 cm (1 ft).

Range It occurs along continental coasts from Nova Scotia to Brazil, including the Gulf of Mexico. It is absent from the Caribbean Sea.

Habitat This is a coastal species that often enters brackish and freshwater. In North Inlet, Striped Mullet are abundant and conspicuous throughout the year. Young-of-the-year (<20 mm) enter the estuary in winter and grow to 8-10 cm before the next winter. Multiple year classes are present in the estuary during winter but numbers increase sharply in the spring. Striped Mullet occur from the inlet to creeks near the forest border. Like-sized animals form schools that swim near the surface. Striped Mullet feed on detritus, algae, and invertebrates that they acquire while foraging on the bottom. These fast-swimming fish are important prey for a variety of fishes and birds. Large individuals are frequently observed free jumping. They are not caught on baited hooks.

Similar Species The White Mullet (*M. curema*) is very similar but has 9 soft anal rays (> 50 mm) rather than 8, fully scaled dorsal and anal fin bases, no dark stripes, and a bright yellow blotch on the opercula and in the eyes.

Mugilidae – mullets



White Mullet
Mugil curema

Description The White Mullet is an elongate fish with a small terminal mouth and a flattened head. Its body is almost round in cross-section. The eyes have prominent adipose eyelids (in specimens > 30 mm). In larger fish (> 50 mm) the anal fin has 3 spines and 9 soft rays (2 spines and 10 soft rays in fish < 50 mm). The first dorsal fin consists of 4-5 spines and the second has 8-9 rays. They have short bases and are widely separated. The bases of the second dorsal and anal fins are completely scaled in adults (less so in fish < 30 mm). The pectoral fin has 15-17 rays. It is located high on the side of the body. The caudal fin is forked.

Coloration The White Mullet is blue to olive above grading to silver-white on the sides and belly. There are no obvious stripes. A bright yellow blotch is usually evident on each operculum and the upper eye. These marks are most apparent in fresh specimens. The dorsal fins are dusky and the anal and pelvic fins are yellowish. The tail is yellowish with a dark edge. There is often a dark blotch at the base of the pectorals.

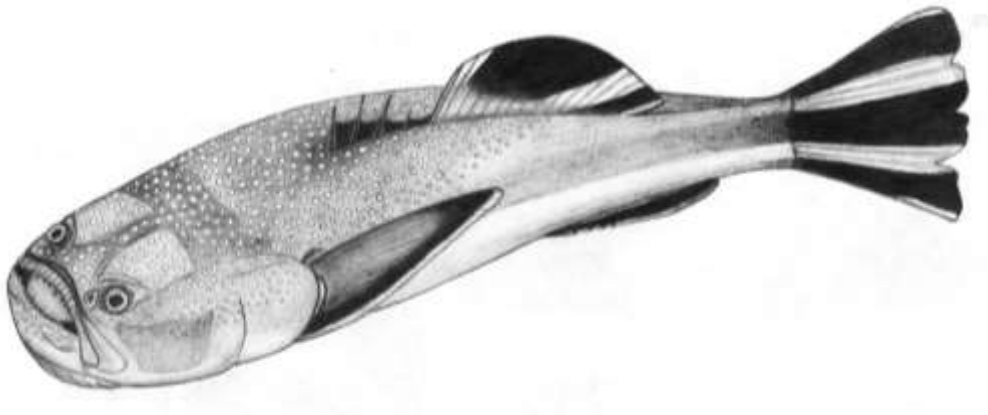
Size Maximum size is about 91 cm (3 ft), but most are less than 30 cm (1 ft).

Range It occurs in coastal waters from Nova Scotia to S. Brazil, including the Caribbean and the Gulf of Mexico.

Habitat This is mostly a shallow water species that often forms large schools. It is common in estuaries but does not enter freshwater. Adults move offshore to spawn and young grow and feed in estuaries. In North Inlet, young-of-the-year enter the estuary in spring and leave in the fall. Older year classes occur through the summer, but no white mullet occur in the system during the coldest months. In summer, juveniles can be expected anywhere from intertidal pools to deep channels, and they regularly mix with young striped mullet (*M. cephalus*). Older fish are rarely seen far from the inlet, where they most often occur in the surf and along low energy beaches. In general, within the estuary, the White Mullet is much less abundant than the Striped Mullet.

Similar Species The Striped Mullet (*M. cephalus*) has 8 anal rays (>50 mm). It lacks scales at the bases of the dorsal and anal fins, dark stripes on the dorsal surface, and bright yellow markings on the opercula and upper eyes.

Uranoscopidae - stargazer



Southern Stargazer
Astroscopus y-graecum

Description The Southern Stargazer is an elongate, dorsally-flattened, and heavy-bodied fish with eyes situated on the top of the flat and bony head. The large mouth is upturned and contains many small teeth. There is a small spiny dorsal fin with 3-5 spines and a soft portion with 12-17 rays. The anal fin has 12-17 rays but no spines. The caudal fin is truncate. There is a small venomous spine just above the pectoral fin base. This fish must be handled with care. The body is smooth to the touch. A triangular patch between the eyes contains an organ capable of delivering an electric charge.

Coloration The Southern Stargazer is blue-gray or brown above grading to white on the lower sides. The head and back have many small white spots with dark edges that fade away posterior to the soft dorsal. The tail has 3 black stripes running the length of the fin. The soft dorsal fin has two black stripes or saddles, with the anterior one being the larger of the two. The anal fin is dark with a white margin and the pelvic fin is white. The pectoral fin is dusky grading to black; the margin has a white edge.

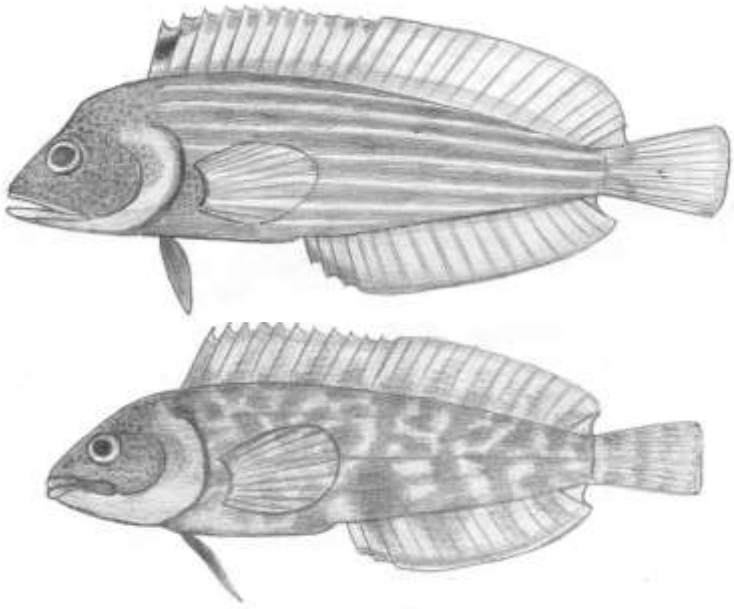
Size Maximum size of the Southern Stargazer is about 44 cm (18 in).

Range It occurs on coasts from North Carolina to the Yucatan Peninsula and on the north coast of South America, but not in the Caribbean islands.

Habitat It lives on soft bottoms in shallow waters, often burying itself completely with only its eyes showing above the substrate. They ambush their prey from this position and use the electric organ for hunting and self-defense. In North Inlet, Southern Stargazers of all sizes are found mostly in the spring and summer months. They can occur in both shallow shore zones and subtidal channels. Although rarely caught on baited hooks, anglers must handle carefully.

Similar Species The Northern Stargazer (*A. guttatus*) reaches the southern limit of its range in this area and is difficult to distinguish. It usually has spots of increasing size towards the rear and a middle caudal stripe that runs onto the side of the body. Locally, only stargazers, flounders, skates, and rays have eyes on the top of the head.

Blenniidae - combtooth blennies



Striped Blenny
Chasmodes bosquianus
Male (above) Female (below)

Description The Striped Blenny is an elongate fish that is more rectangular when viewed from the side than most fishes. Females are generally smaller than males and less robust. Unlike other local blennies, there are no cirri on the head. The dorsal fin, with 11 spines and 17-19 rays, is continuous from above the opercula to the tail. The anal fin is long and has 2 spines and 18-19 rays. The pelvic fin is long and thread-like. The pectoral fin is large and rounded. The tail has 10-11 soft rays and is small compared to the body.

Coloration The Striped Blenny is sexually dimorphic in Coloration the female is usually mottled in brown to greenish-brown with subtle, greenish, broken stripes. The male has 8 or 9 irregular bluish-brown stripes that extend the length of the body over a pale background and a banded tail. A blue spot occurs near the front of the dorsal fin but it is much brighter in males. In both sexes, the posterior portion of the dorsal fin is pale with dark mottling and speckling; however, males often have a reddish-orange sheen on their dorsal, anal, and caudal fins.

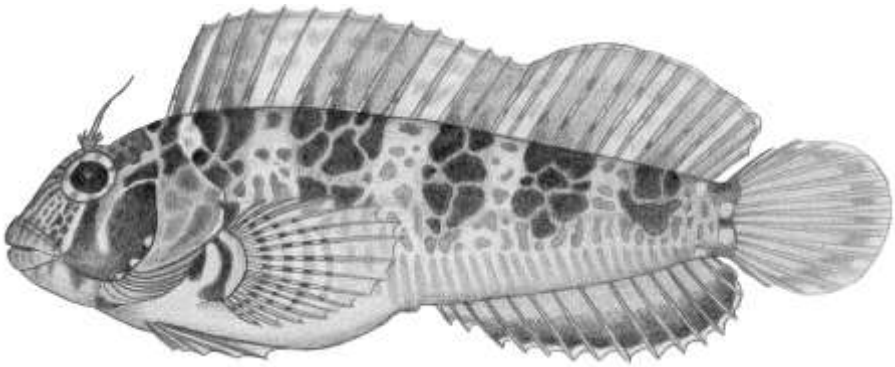
Size Maximum size of the Striped Blenny is about 8 cm (3 in).

Range It occurs from New York to NE Florida and the western Gulf of Mexico.

Habitat It inhabits oyster reefs and shell rubble in shallow coastal waters. They often lay eggs inside empty oyster shells and guard them from predators. In North Inlet, Striped Blennies are common year-round residents that move between subtidal channels and intertidal oyster reefs.

Similar Species All other blennies in our area have either branched or unbranched cirri around their eyes. Gobies and sleepers are more slender and round in cross-section.

Blenniidae - combtooth blennies



Crested Blenny
Hypleurochilus geminatus

Description The Crested Blenny is elongate and somewhat triangular when viewed from the side. This blenny has cirri which are broad-based but become thin (and longer in males); 4-5 smaller cirri occur at the bases of the longer ones. The dorsal fin is long, originating above the opercula and terminating at the base of the caudal peduncle; it has 11-13 spines and 13-16 rays. The anal fin is also very long. The pelvic fin is long and thread-like with one spine and 3-4 rays. The pectoral fin is large and rounded. The tail is rounded and small compared to the body. Canine teeth are present in the jaws. A bony crest is present between the eye and the origin of the dorsal fin.

Coloration Both male and female Crested Blennies are grayish brown with variably sized dark blotches and spots that form dark bars on the body. There is often a line of blotches on the side that form a lateral stripe. Short bars radiate from the eye. Dark spots occur on the front of the dorsal fin of both sexes. The fins are variably marked with stripes or spots.

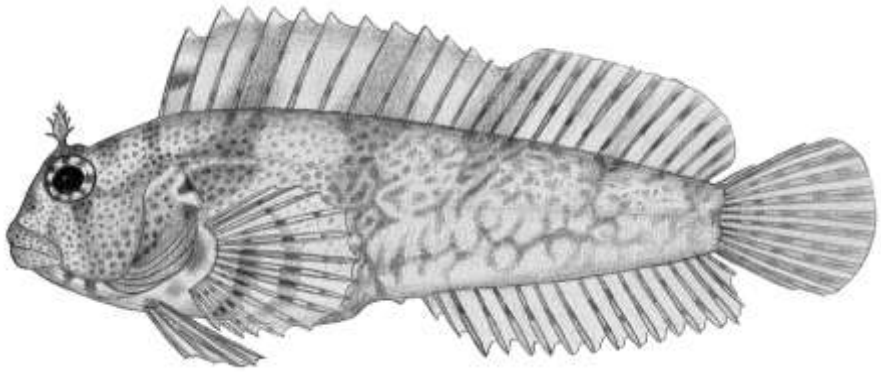
Size Maximum size of the Crested Blenny is about 9 cm (4 in).

Range It occurs from New Jersey to eastern Florida and the Gulf of Mexico.

Habitat The Crested Blenny is a cryptic inhabitant of oyster reefs and shell piles in shallow coastal waters. It lays eggs inside empty oyster shells and guards them from predators. In North Inlet, crested blennies are common year-round residents that move between subtidal channels and intertidal oyster reefs.

Similar Species The Freckled Blenny (*Hypsoblennius ionthas*) has wide, unbranched cirri above the eye, and the Feather Blenny (*H. hentz*) has much longer, branched cirri, a bolder pattern, and lacks a dorsal spot. Both the feather and freckled blennies lack enlarged canine teeth and have a pattern of small dark spots or freckles on the head and body. Gobies and sleepers are much more elongate and round in cross-section. The Striped Blenny (*Chasmodes bosquianus*) lacks cirri above the eyes and has distinct stripes on the side.

Blenniidae - combtooth blennies



Feather Blenny
Hypsoblennius hentz

Description The Feather Blenny is an elongate fish that is somewhat triangular in shape when viewed from the side. This blenny has long, branched cirri above the eyes. The dorsal fin is long, originating anterior to the opercula with 12-13 spines and 13-16 rays. The anal fin is also long. The pelvic fin is long and thread-like with 1 spine and 3 rays. The pectoral fin is large and rounded. The tail is rounded with 13 soft rays and is rather small compared to the body. There is a frenum separating the two sides of the upper lip. There are no large canine teeth in either jaw.

Coloration Male and female Feather Blennies are olive brown with numerous brown to reddish-brown spots that are usually smaller than the pupil. There are 5-6 dark bands on the body and the spots are usually darker than the bands. Body bands often continue onto the fin. The pectorals and caudal fin are banded in dark brown. There is an inverted-V shaped band radiating from the eye. A bluish spot is often visible on the front of the dorsal fin.

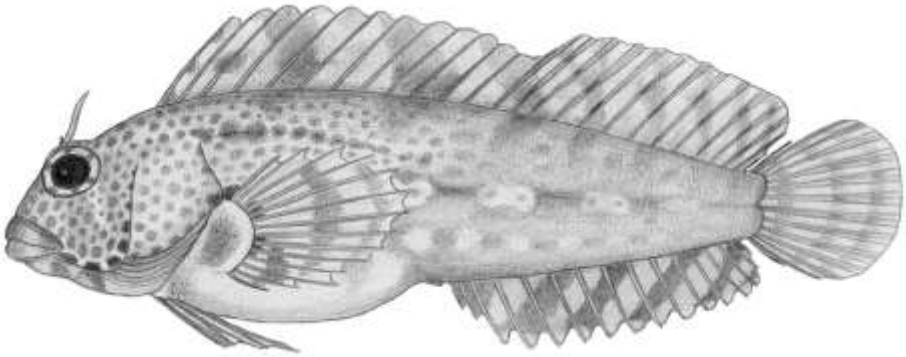
Size Maximum size of the Feather Blenny is about 10 cm (4 in).

Range It ranges from Nova Scotia to Florida and occurs in the Gulf of Mexico.

Habitat The Feather Blenny occurs over a wide range of bottom types but is often found in oyster reefs and shell piles in shallow coastal waters. It deposits eggs inside empty oyster shells. In North Inlet, the feather blenny is a common year-round resident that moves between subtidal channels and intertidal oyster reefs.

Similar Species The Freckled Blenny (*H. ionthas*) differs by having wide, unbranched cirri, a line of dark spots on the dorsal fin, and a pair of conspicuous dark bars under the eyes. The Striped Blenny (*Chasmodes bosquianus*) lacks cirri over the eyes and has stripes along the side of the body (especially males). The Crested Blenny (*Hypleurochilus geminatus*) has short and thin, branched cirri, a pattern of larger blotches and/or a midlateral stripe, and dark spots on the front of the dorsal fin. It also has a bony crest on the head. Gobies and sleepers are much more elongate and round in cross-section.

Blenniidae - combtooth blennies



Freckled Blenny
Hypsoblennius ionthas

Description The Freckled Blenny is an elongate fish that is somewhat triangular in shape when viewed from the side. This blenny has wide, long, but unbranched cirri above the eyes. The dorsal fin is long, originating anterior of the opercula; it has 12-13 spines and 13-16 rays. The anal fin is also very long. The pelvic fin is long and thread-like with one spine and 3 rays. The pectoral fin is large and rounded. The tail is rounded with 13 soft rays, and it is rather small compared to the body. The margin of the upper lip has a free edge (no frenum). There are no large canine teeth in either jaw.

Coloration Male and female Freckled Blennies are brown with numerous dark spots and freckles on the head and body. There are 5-6 dark bands on the body but they are usually faint. A series of black spots form a line down the middle of the dorsal fin. The pectorals and caudal fin are faintly marked with bands. Two dark bands between the eyes and mouth are much darker than in other species.

Size Maximum size of the Freckled Blenny is about 10 cm (4 in).

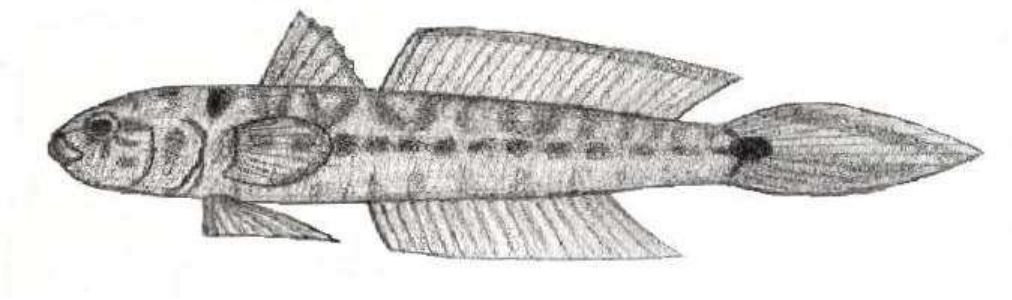
Range It occurs from North Carolina to Florida and in the northern Gulf of Mexico.

Habitat The Freckled Blenny is a cryptic inhabitant of oyster reefs and shell piles in shallow coastal waters. It lays eggs inside empty oyster shells and amongst assorted rubble and guards them from predators. In North Inlet, Freckled Blennies move between subtidal channels and intertidal reefs. They are common year-round residents of the estuary.

Similar Species The Feather Blenny (*H. hentz*) has long, branched cirri. The Striped Blenny (*Chasmodes bosquianus*) has no cirri and lacks dark freckles on the body. The Crested Blenny (*Hypleurochilus geminatus)* has short and branched cirri and a pattern of larger spots and blotches. Gobies and sleepers are much more elongate and round in cross-section.

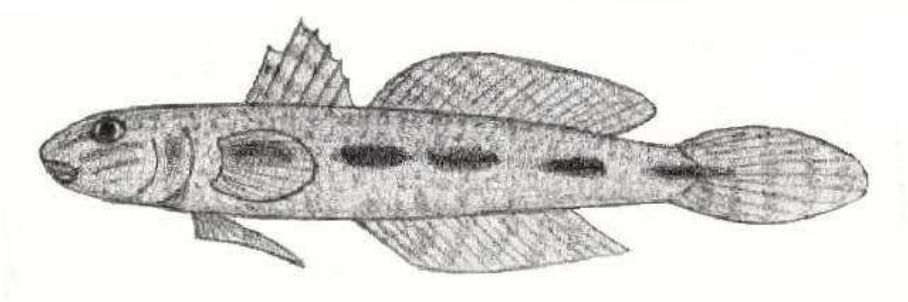
Gobiidae – gobies

Gobies are small, elongate fishes that occur in oyster reefs, shell rubble, vegetation, and other shallow water habitats. They are common but difficult to find due to their cryptic habits. Eight species known from North Inlet are illustrated and briefly described below. All are widespread on the East Coast and most occur in the Gulf of Mexico.



Darter Goby
Ctenogobius boleosoma

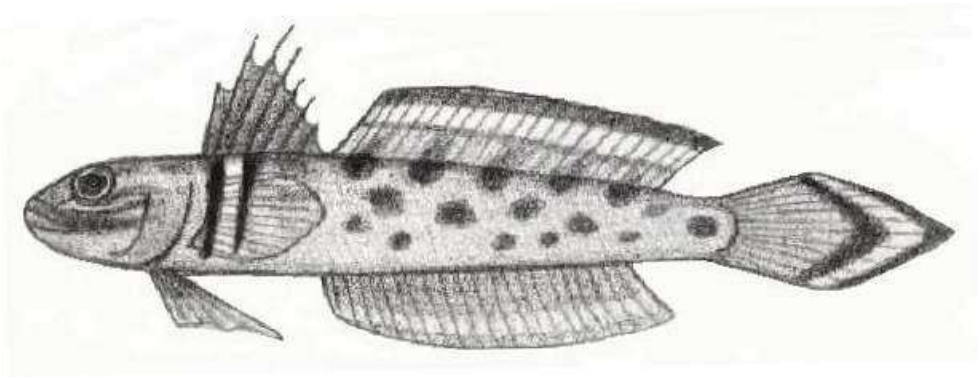
Description This elongate goby has a long, sharply pointed tail. It is light brown to tan with a series of dark spots that extends along the lateral line and terminates in a large dark blotch. Dark mottled markings may form "V" marks above and below the lateral line. There are also elongate, dark spots above the pectoral fins, and dark lines on the head. The dorsal fin has 6 spines and 11 rays. Males sometimes have an orange edge on the dorsal fin and an orange line through the tail. It grows up to about 7.5 cm (3 in). The Darter Goby prefers areas of higher salinity and is often found on the flooded salt marsh. It is a common species in North Inlet.



Freshwater Goby
Ctenogobius shufeldti

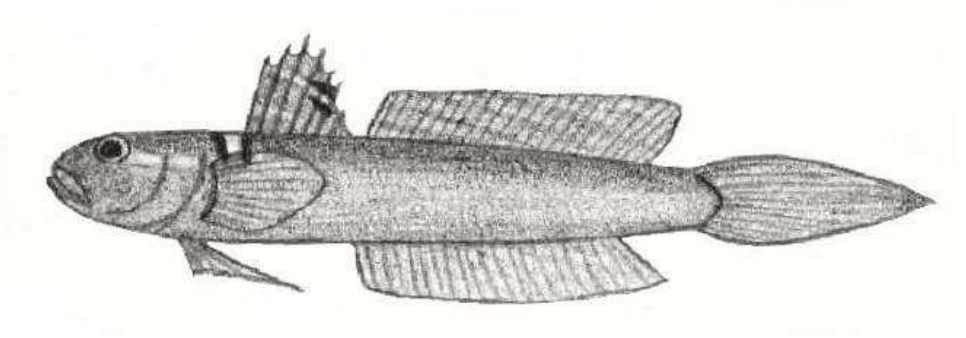
Description This elongate goby has a long, rounded tail. It is light brown with a series of 5 dark, elongate blotches along the lateral line. It lacks a spot above the pectoral fin and no V-shaped markings occur on the upper body (only indistinct mottling). The fins are usually unmarked. The dorsal fin has 6 spines and 12 rays. It grows to about 8 cm (3 in) in length. The Freshwater Goby prefers lower salinity marshes and freshwater, but it is common, especially along the forest border of North Inlet.

Gobiidae – gobies



Clown Goby
Microgobius gulosus

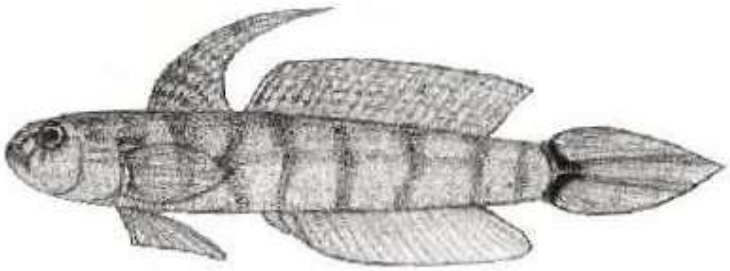
Description The Clown Goby is elongate with a long, sharply-pointed tail. It is usually tan to light gray with numerous dark blotches and spots on the side. The most conspicuous are five blotches along the base of the second dorsal fin. There are usually two bright silvery bands under each eye and two dark bands surround a silver band behind the gill opening. The second dorsal fin has a clear central stripe and dark margin. The tail also has a clear V-shaped band bordered by dark. The dorsal fin has 7 spines and 16 rays. The Clown Goby grows to about 8 cm (3 in). It is a marine fish but can tolerate freshwater. This warm water goby is rare in North Inlet.



Green Goby
Microgobius thalassinus

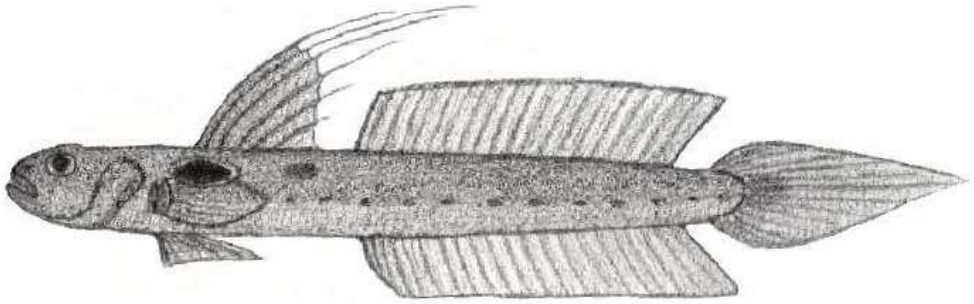
Description The Green Goby is elongate with a long, sharply pointed tail. It is easily distinguished from other gobies by its bright green, olive, or bluish-green coloration and lack of any dark markings on the body. A light stripe extends posteriorly from the eye. Two dark bars flank a short white band across the dorsum above the pectoral fins (shorter than in the Clown Goby). The dorsal fin has 7 spines and 16 rays. The rest of the body and fins are usually plain. The Green Goby grows to about 4 cm (2.5 in). This goby is most commonly found on deeper channel bottoms in North Inlet.

Gobiidae – gobies



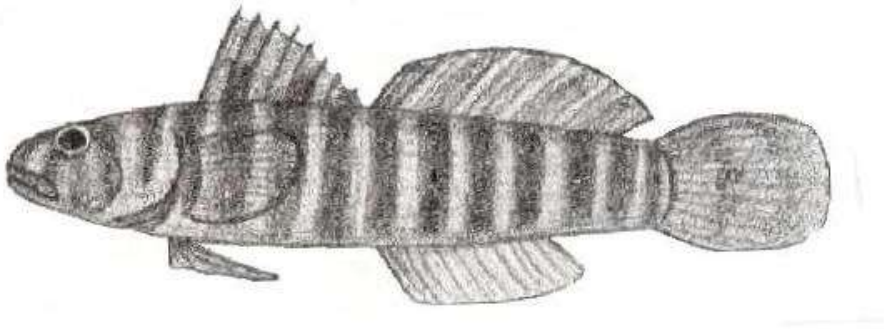
Lyre Goby
Evorthodus lyricus

Description The Lyre Goby is elongate with a moderately long, pointed tail. It is usually tan to gray in color with a variable pattern of 5-6 irregular bars. It often shows median dark blotches and lines radiating from the eye. The caudal fin has a distinctive lyre-shaped dark marking with a light central area. The dorsal fin is very high in both sexes, but the males (illustrated) can be especially long, often extending to the caudal peduncle. The dorsal fin usually has dark diagonal lines. Males have two pink stripes on the caudal fin. Scales are present on the head between the eye and the dorsal fin (lacking in most *Gobionellus*). The dorsal fin has 6 spines and 11 rays. The Lyre Goby grows to about 7.5 cm (3 in). It is a marine species that prefers mud bottoms. In North Inlet, the few specimens that have been collected were found in pools in the high marsh near the edge of the forest.



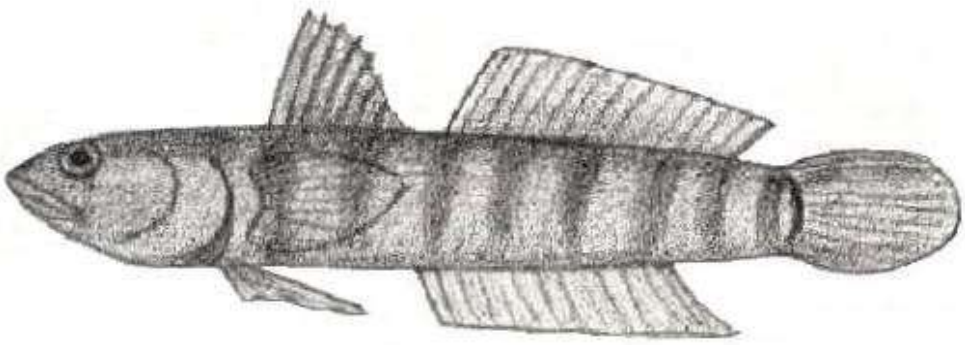
Highfin Goby
Gobionellus oceanicus

Description The Highfin Goby is very elongate with a long, pointed tail. It is light brown with a light belly and has a prominent dark spot on the shoulder above the pectoral fin. There is often another dark spot behind it under the first dorsal fin. The dorsal fin has 6 spines and 14 rays. The first dorsal fin is high, and it has free, filamentous spines. The second dorsal and the anal fins are long and fairly high. A series of small dots occur along the lateral line. The Highfin Goby can reach 20 cm (8 in); it is the largest goby in the area. It is found in marshes, bays, and estuaries, but is not common in North Inlet.



Naked Goby
Gobiosoma bosc

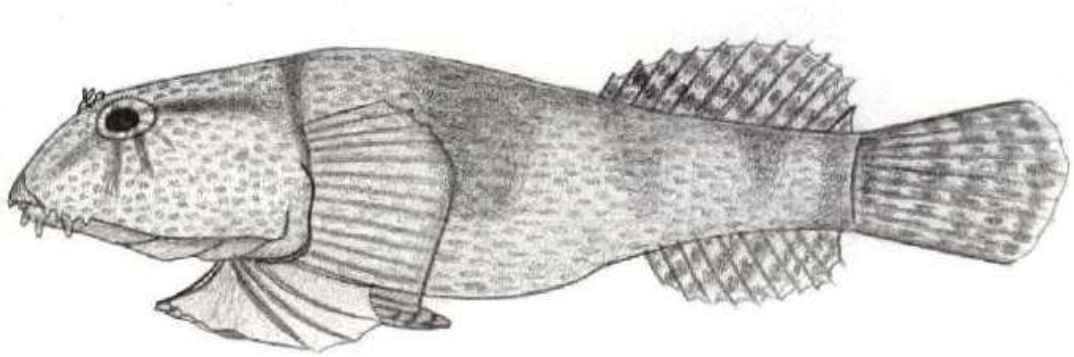
Description The Naked Goby is a moderately elongate goby with a rounded tail. It is pale brown with 9-11 dark bars which are usually wider than the interspaces. The bands often extend onto the dorsal fins. It is stouter and deeper-bodied than the other gobies (except *G. ginsburgi*). The naked goby is scaleless. The first dorsal fin has 7 spines and the second has 1 spine and 12-13 rays. It grows to about 6 cm (2.5 in). The Naked Goby is found in Atlantic and Gulf coast estuaries, and, in North Inlet, it is one of the most abundant demersal fishes. This cryptic fish is found in shelly and muddy habitats, and larvae hatching from nests of adhesive eggs are extremely abundant in the summer plankton. This aggressive feeder consumes small benthic invertebrates.



Seaboard Goby
Gobiosoma ginsburgi

Description The Seaboard Goby is difficult to distinguish from the Naked Goby. It has 8 bands that are narrower and interspaced wider than in the Naked Goby; however, the bands in both species are often faint. The first dorsal fin has 7 spines and the second has 1 spine and 11 rays. The Seaboard Goby has 18-19 pectoral fin rays (*G. bosc* has 11). It can also be distinguished from the Naked Goby by a pair of large scales on each side of the caudal fin base. It grows to about 6 cm (2.5 in). It prefers rubble bottoms and favors higher salinity and deeper waters than the naked goby. Compared to the Naked Goby, it is uncommon to rare in North Inlet.

Gobiesocidae - clingfishes



Skilletfish
Gobiesox strumosus

Description The Skilletfish has an elongate and narrow profile and appears flattened when viewed from above. Its head is particularly wide. Modified ventral fins form a sucker on the ventral surface of the body. The dorsal and anal fins are set far back on the body and almost reach the caudal fin. The fins lack spines. There are numerous fleshy tabs around the mouth, and the nostrils are tubular. There are no scales on the body.

Coloration The Skilletfish is olive-green to brown with close-set reddish-brown spots that form a net-like pattern on the entire head and body. There are often diffuse saddles on the dorsal surface. The fins are densely spotted. Dark bars radiate from the eyes.

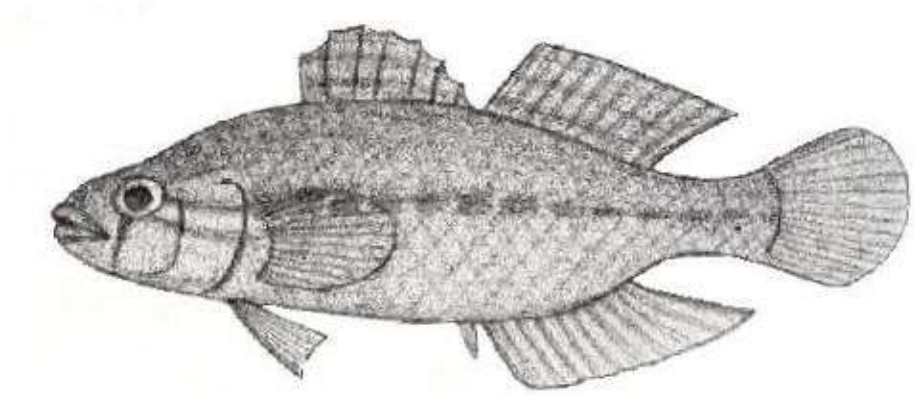
Size Maximum size of the Skilletfish is about 7.5 cm (3 in).

Range It ranges from New Jersey to Florida, and occurs in the Gulf of Mexico and along the continental coast to Brazil.

Habitat The Skilletfish lives in and among oyster rubble in shallow coastal and estuarine habitats. It is cryptic, often remaining attached to the inside of shells with its sucker. In North Inlet, the Skilletfish is a year-round resident in intertidal reefs and subtidal shell piles.

Similar Species The Skilletfish is most likely to be confused with small oyster toadfish that live in the same habitat. The Oyster Toadfish has a long, more centrally located dorsal fin with prominent anterior spines, and its pelvic fins do not form a large sucker.

Eleotridae - sleepers



Fat Sleeper
Dormitator maculatus

Description The Fat Sleeper has a flat head and a robust body that is oval in cross-section. There are two dorsal fins: the first with 7 spines and the second with one spine and 9-15 soft rays. The base of the second dorsal is about equal to the distance between the rear of the fin and the caudal fin. The anal fin has one spine and 9-10 soft rays. The mouth is terminal and slightly upturned. The eyes are fairly small and located near the dorsal side of the head. The pelvic fins are separate and not connected by a membrane. The pectoral fins are large and rounded. The lateral line is inconspicuous.

Coloration The Fat Sleeper is variable in color and pattern but it is usually brown to olive, with a dark back and light belly. Sometimes wide, dark diagonal bands are seen on the sides. A series of dark blotches form a broken mid-lateral stripe from the opercula to the caudal fin. Three dark lines radiate from the rear of the eye and a single line extends from under the eye. The fins are transparent but are usually banded or striped with light spots. A blue spot is almost always evident above the base of the pectoral fin. The scales often have dark edges.

Size Maximum size of the Fat Sleeper is about 25 cm (10 in).

Range It occurs from North Carolina to FL and the Gulf of Mexico to Brazil.

Habitat This sleeper is found mostly in freshwater or low-salinity ponds and marshes, but will also enter brackish marshes. It is a bottom-dwelling species which resembles a tall, overgrown goby. It is a predatory fish. In North Inlet, juveniles have been collected in ditches and ponds at the edge of the forest during the warm months.

Similar Species The Spinycheek Sleeper (*Eleotris amblyopsis*) is similar, but is rounder in profile, more elongate, and has 6 dorsal spines, a dark body with a pale nape, and a ventrally pointing preopercular spine. Small sleepers might be confused with some of the gobies that occupy the same habitats, but the gobies have large pelvic fins which form cup-shaped suckers.

Trichiuridae - snake mackerels

Atlantic Cutlassfish
Trichiurus lepturus

Description The Atlantic Cutlassfish is an extremely elongate and ribbon-thin (in cross-section) fish that tapers to a sharp point. It does not have a caudal fin. The single dorsal fin has 3 spines and 130-135 rays and extends from the opercula to the tip of the body. The forehead is slightly convex and the mouth is large and contains numerous large, conspicuous teeth. The anal fin is usually embedded in the skin and invisible. It contains 100-105 spinules. There are no pelvic fins. The pectoral fins have one spine and 11-13 rays, which usually point dorsally.

Coloration The Atlantic Cutlassfish is bright silver (almost mirror-like) with a bluish sheen in fresh individuals. The fins may be translucent or yellowish.

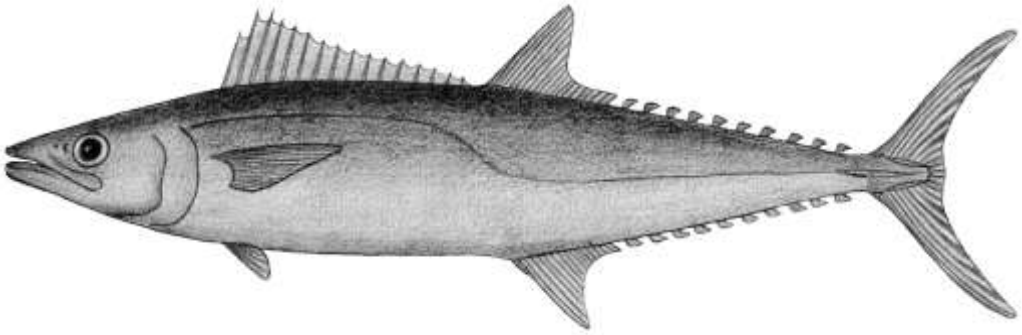
Size Its maximum size is about 120 cm (48 in).

Range It occurs from Cape Cod to Argentina, including the Gulf of Mexico and the Caribbean Sea.

Habitat The Atlantic Cutlassfish is found in open coastal waters, deep salt marsh creeks, and near large beachfront structures, including jetties. It is an active swimmer that feeds mostly on fish, but not aggressive (like bluefish and mackerel) when handled by anglers. Juveniles live closer to the bottom during the day and move toward the surface at night. Larger adults are the opposite, moving toward the surface during the day and the bottom at night. In North Inlet, the Atlantic Cutlassfish can be common especially during early summer. It can be observed free-jumping in large creeks, presumably while chasing bait fish.

Similar Species Although it resembles some deep sea fish species, no other local fish has such a long, ribbon-like body and fangs.

Scombridae – mackerels



King Mackerel
Scomberomorus cavalla

Description The King Mackerel is an elongate, laterally compressed, and torpedo-shaped fish with a pointed snout and large mouth. The maxilla reaches to the posterior margin of eye. There are two dorsal fins that are barely separated from each other. The first dorsal fin has 14-16 spines. The second dorsal fin and the anal fin are small and have long anterior spines. Both of these fins terminate in a series of finlets: 8-9 dorsally and 9-10 anally. There are two flaps between the small pelvic fins. Two small keels flank a large keel on either side of the caudal peduncle. The tail is deeply forked. The lateral line curves abruptly downward over the anus.

Coloration The King Mackerel is silver with a dark bluish-green back. The front of the dorsal fin is the same color as the rest of the fin. Juveniles have golden spots on the sides and can be confused with Spanish mackerel (see below).

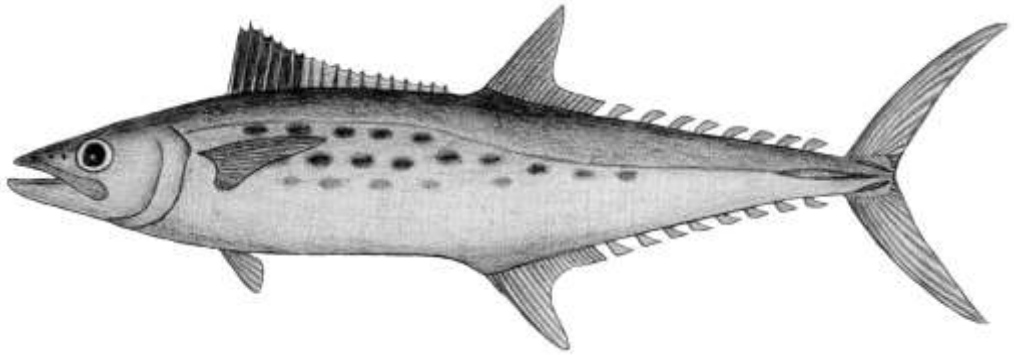
Size Maximum size of the King Mackerel is about 170 cm (5.5 ft.) and over 60 lbs, but most caught locally are from 8-35 lbs.

Range It ranges from Massachusetts to Florida and occurs in the western Gulf of Mexico, the Caribbean Sea, and along the continental coast to South America.

Habitat The King Mackerel is an open-water, coastal ocean species that swims alone or in small groups. It will occasionally stray into estuaries; and it occasionally enters the mouth of North Inlet during the late summer and fall when schools of menhaden and mullet move into the mouth at high tide. Very small juveniles have been collected at the surface of large subtidal channels in summer. This desirable game fish was much more abundant close to shore before 1995.

Similar Species The Spanish Mackerel (*S. maculatus*) has distinct golden spots on the side of the body, a distinctive black area that covers the anterior portion of the dorsal fin, and 17-19 dorsal spines. Juvenile mackerels are more difficult to tell apart.

Scombridae – mackerels



Spanish Mackerel
Scomberomorus maculatus

Description The Spanish Mackerel is elongate and laterally compressed. It has two distinct dorsal fins with the first elements of each being especially tall. The first dorsal fin has 17-19 spines. A set of similar-sized and isolated finlets line the dorsal edge along the posterior one third of the body, and a matching set occurs along the ventral edge following the anal fin. Sharp, fairly widely spaced teeth are on both jaws.The tail is narrow and widely forked. The lateral line takes a gentle step ventrally over the anus.

Coloration The Spanish Mackerel is silver-sided with an iridescent green to blue-green back. Several rows of evenly distributed yellow-orange spots occur on either side of the lateral line at all ages. The anterior portion of the first dorsal fin is black with a whitish base. The tip of the second dorsal is usually black.

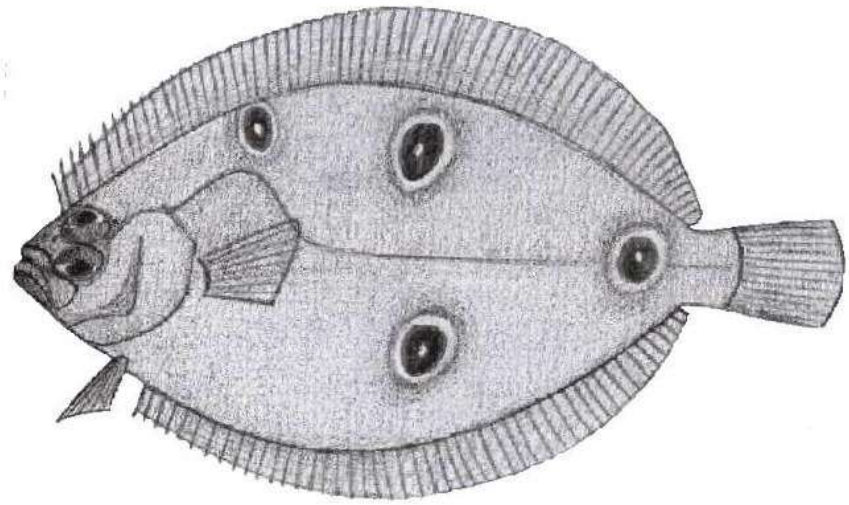
Size Maximum size of the Spanish Mackerel is about 60 cm (2 ft.); most of those caught by anglers in the area are around 40 cm (15 in.)

Range It ranges from Canada to Florida and occurs in the western Gulf of Mexico, the Caribbean Sea, and along the continental coast to South America.

Habitat The Spanish Mackerel is an open-water, coastal ocean species that usually occurs in schools which are conspicuous when chasing baitfish as individuals grey-hound across the surface. It will occasionally stray into estuaries; and often enters the mouth of North Inlet during the late summer and fall, often feeding on anchovies. Very small juveniles have been collected at the surface of large subtidal channels in summer.

Similar Species The King Mackerel (*S. cavalla*) lacks: distinct golden spots on the side of the body, a distinctive black area that covers the anterior portion of the dorsal fin, and a strongly descending lateral line. Juvenile mackerels are more difficult to tell apart. The king mackerel is more oval in cross-section, the Spanish being comparatively flat.

Paralichthyidae - sand flounders



Ocellated Flounder
Ancylopsetta quadrocellata

Description The Ocellated Flounder is an oval-bodied flatfish with a convex snout and a large mouth that extends to the middle of the lower orbit. The origin of the dorsal fin is above the eyes and it extends to the caudal peduncle. It has 62-84 rays and the first few rays above the eye are free. The anal fin is separate from the pelvic fins. The pelvic fin rays on the eyed side are larger than the rays on the blind side in adult fish. There are 13 caudal fin rays. The lateral line is strongly arched over the pectoral fin.

Coloration The Ocellated Flounder is brown with variable dark brown mottling and speckling depending on the substrate. There are 4 prominent ocelli on the eyed side of the body: one above the lateral line arch above the pectoral fin, two at mid-body above and below the lateral line, and one straddling the lateral line on the rear body. The fins are brown with variable spots.

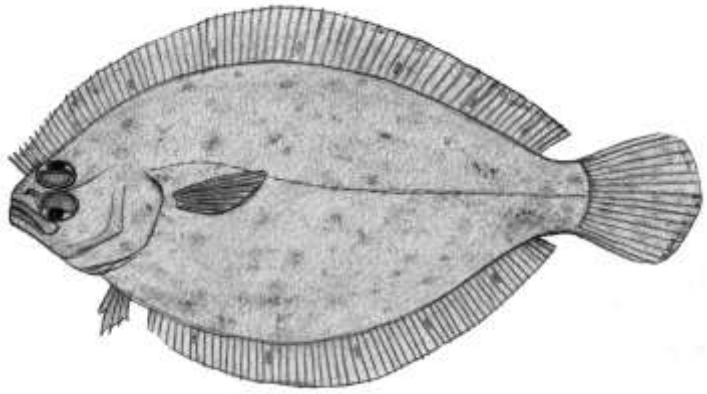
Size Maximum size of the Ocellated Flounder is about 25 cm (10 in).

Range It ranges from North Carolina to Florida and occurs throughout the Gulf of Mexico.

Habitat The Ocellated Flounder occurs at depths from 1-165 m, but it is most common in waters less than 50 m. It is found over sand and mud bottoms and is a camouflaged ambush predator. In North Inlet, it is most common in subtidal channels during the spring. This flounder does not regularly use intertidal creeks.

Similar Species The Fourspot Flounder (*Paralichthys oblongus*) is not as deep-bodied and it lacks the anterior spot above the pectoral fin and the spot that straddles the lateral line on the Ocellated Flounder. All other local flounders have three, five, or no large spots.

Paralichthyidae - sand flounders



Bay Whiff
Citharichthys spilopterus

Description The Bay Whiff is a moderately elongate flatfish with the eyes located on the left side of the head. The dorsal fin is long and has 74-84 rays and its origin is far anterior to the upper eye. The anal fin has 52-63 rays. The eyes are set close together with a bony ridge between them. The mouth is fairly large and extends past the middle of the lower eye orbit (*Etropus* species have a tiny mouth that never reaches the eye). The pelvic fin has 6 rays.

Coloration The Bay Whiff is pale brown to tan with variable dark mottling and/or reticulated markings on the eyed side. There are occasionally dark spots on the body and fins, but they are small. There is often a dark spot on the caudal peduncle. The markings fade upon death and the body color is more uniformally tan and appears scaly. The blind side is white.

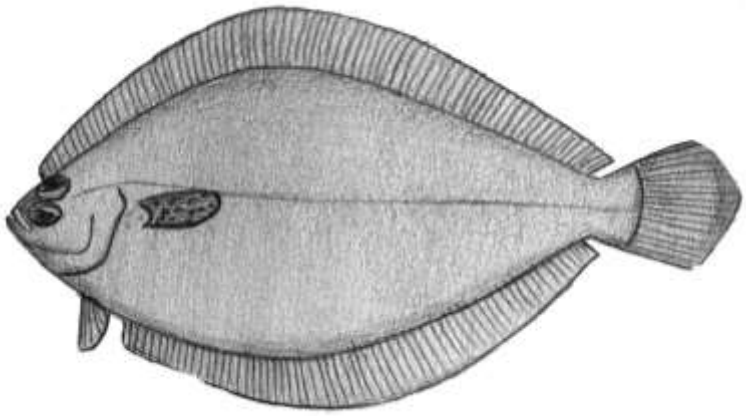
Size Maximum size of the Bay Whiff is about 15 cm (6 in).

Range It occurs from New Jersey to Brazil, including the Gulf of Mexico and the Caribbean Sea.

Habitat The Bay Whiff occurs both intertidally and subtidally in coastal waters. It is often found in brackish and even freshwater parts of estuaries. It prefers muddy bottoms and is common in North Inlet from spring to fall. The Bay Whiff is common along the edges of mud flats and in subtidal channels. Young fish prey on mysid shrimps and copepods, and adults prey on penaeid shrimps.

Similar Species The Spotted Whiff (*C. macrops*) is rarely found in North Inlet and prefers sandy bottoms. It can be distinguished by a more heavily spotted body with darker and larger spots, especially on the fins. There are often four large spots on the caudal fin. The Fringed Flounder (*Etropus crossotus*) differs by having a much smaller mouth and eyes. Small Summer (*Paralichthys dentatus*) and Southern (*P. lethostigma*) Flounders have prominent teeth, less conspicuous scales, and lateral lines that arch highly on the anterior end.

Paralichthyidae - sand flounders



Fringed Flounder
Etropus crossotus

Description The Fringed Flounder is a broad-bodied flatfish with eyes on the left side of the head. The mouth is very small, barely reaching past the nostril. The eyes are small and close-set near the snout. The dorsal fin extends from the upper eye to the caudal fin and has 73-87 rays. The pelvic fin is continuous with a long anal fin that has 57-68 rays. The lateral line is almost straight with only a small rise at the beginning. The pectoral fin is small. There are no scales on the snout, but the body appears scaly.

Coloration Its body is dull brown with small random speckles of dark pigment. Preserved or worn specimens may have a cross-hatched appearance due to dark edging around each scale. The fins are translucent and the blind side is white.

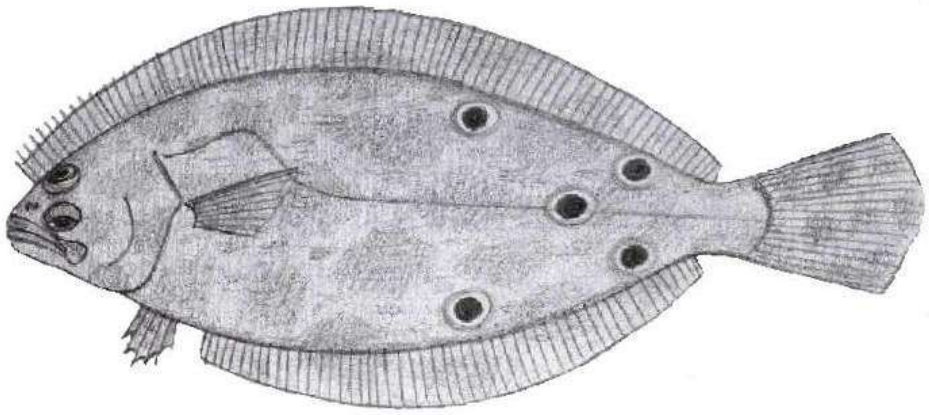
Size Maximum size of the Fringed Flounder is about 20 cm (8 in).

Range It ranges from the Chesapeake Bay to the Antilles and southern Brazil.

Habitat This is a coastal species that is found on both sand and muddy bottoms. In North Inlet, it occurs mostly on subtidal bottoms, especially close to the inlet. Some fish are present during the winter but the Fringed Flounder is more abundant in North Inlet during the summer months. It may migrate to the area from offshore every spring. It ambushes invertebrates and small fish.

Similar Species Two other species of *Etropus*, the Shelf Flounder (*E. cyclosquamus*) and the Gray Flounder (*E. rimosus*), have been recorded in North Inlet, but they are rare. These species differ from the Fringed Flounder in that they have scales on the snout. Keys with details should be consulted to separate these very similar species. The Bay Whiff (*Citharichthys spilopterus*) differs by having a much larger mouth and eyes. Small Summer (*Paralichthys dentatus*) and Southern (*P. lethostigma*) Flounders have prominent teeth, less conspicuous scales, and lateral lines that are highly arched on the anterior end.

Paralichthyidae - sand flounders



Summer Flounder
Paralichthys dentatus

Description The Summer Flounder is elongate and oval-shaped with eyes on the left side of the head. The large mouth extends beyond the posterior end of the lower eye and contains large teeth. A long dorsal fin extends from just anterior of the upper eye to the caudal peduncle and has 80-96 rays. The anal fin is long and contains 61-73 rays. The lateral line is steeply arched above the pectoral.

Coloration The left side of the body is variable in color, but is usually brown to olive-brown with brown marbling and many light spots. Young fish have 5 conspicuous ocelli on the body: two above and below the lateral line at mid-body, two above and below the lateral line on the rear, and one straddling the lateral line between the 2 pair. In individuals larger than about 8 in., these five spots are usually inconspicuous among the more numerous small dark spots that are completely surrounded by small white spots. The fins are spotted. The blind side of the body is pale or dusky with no markings.

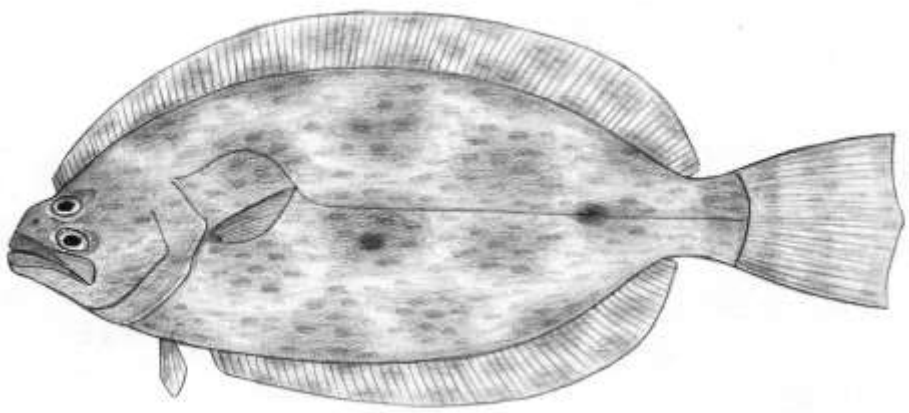
Size Maximum size of the Summer Flounder is about 94 cm (3 ft).

Range It ranges from Maine to Florida.

Habitat It is found mostly on sand bottom in the high salinity reaches of the estuaries. Spawning occurs offshore in late fall and postlarvae enter the estuary in winter. In North Inlet, young-of-the-year are joined by all other year classes in the spring. Spawning age fish leave in the fall. Juvenile Summer Flounder occur on shallow flats and in creeks. Larger fish live near the inlet. Most caught by anglers are too small (<14 in.) to keep. It is a bottom-living predator that feeds on fish and crustaceans.

Similar Species The Southern Flounder (*P. lethostigma*) is similar but does not have well defined ocelli. The Gulf Flounder (*P. albigutta*) is rarely reported within local estuaries. It has 3 large ocellated spots that form a triangle near the caudal peduncle. *Etropus* spp. and *Citharichthys* spp. do not have conspicuous teeth or arched lateral lines.

Paralichthyidae - sand flounders



Southern Flounder
Paralichthys lethostigma

Description The Southern Flounder's body is elongate and oval-shaped with eyes on the left side of the head. The large mouth extends beyond the posterior end of the lower eye and contains large teeth. The dorsal fin extends from just anterior of the upper eye to the caudal peduncle and has 80-95 rays. The anal fin is also very long and contains 63-74 rays. The pectoral fin has 11-13 rays. The lateral line is steeply arched above the pectoral fin.

Coloration The eyed side of body is commonly brown to olive-brown with darker brown blotches, marbling, and small light spots. The spots, however, are never ocellated (surrounded by a ring of small white dots). Dark spots are randomly located from head to tail. The fins are spotted and blotched with brown. The blind side of the body is pale or dusky with no markings.

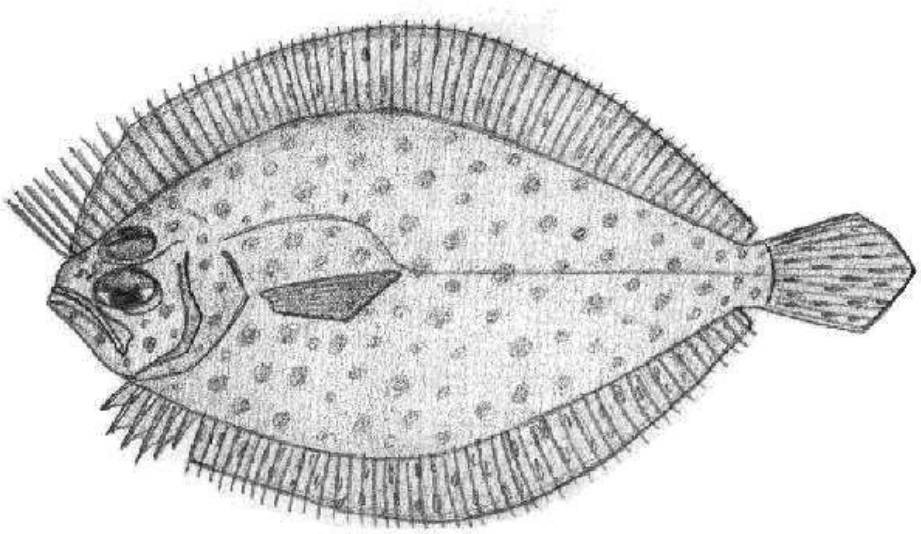
Size Maximum size of the Southern Flounder is about 90 cm (31 in). Most caught by anglers are less than 50 cm (19 in.) and 5 lbs.

Range It occurs from North Carolina to Florida and along the Gulf Coast from Western Florida to Northern Mexico.

Habitat The Southern Flounder is found on soft bottoms in estuaries to depths of 40 m. It can tolerate a wide range of salinities and temperatures. It is often found in low salinity water during the summer and moves into offshore regions in the fall and winter to spawn. Postlarvae arrive in estuaries in winter and young-of-the-year are joined by all other age classes in the spring. In North Inlet, this species is more common than the similar Summer Flounder (*P. dentatus*). Distributions of juveniles and adults of the two species do not overlap much, as the Southern Flounder prefers shallow creeks with muddy bottoms.

Similar Species Other *Paralichthys* in the area (*P. albigutta, P. dentatus*) have at least 3 distinct ocellated spots on the eyed side of the body. *Etropus* spp. and *Citharichthys* spp. do not have conspicuous teeth or arched lateral lines.

Scophthalmidae – turbots



Windowpane
Scophthalmus aquosus

Description The Windowpane has a very broad and diamond-shaped body. The eyes are on the left side of the head. The mouth is large, oblique, and extends to middle of orbit. The eyes are large and close together (less than eye diameter apart). The dorsal fin is very long, originating anterior to the nostril and extending to the caudal peduncle. The first several dorsal rays are long and free of membranes. The dorsal fin has 64-71 rays. The origin of the anal fin is very close to the end of the pelvic fin. The anal fin has 48-55 rays. The caudal fin is long and pointed. Its body is very thin, thus its name.

Coloration The eyed side of the Windowpane is brown with numerous dark spots covering the body and all fins. Although the intensity of the base color is highly variable, this flounder always appears to be speckled. The spots on the fins are usually a little larger than the ones on the body. The blind side of the body is white with no markings.

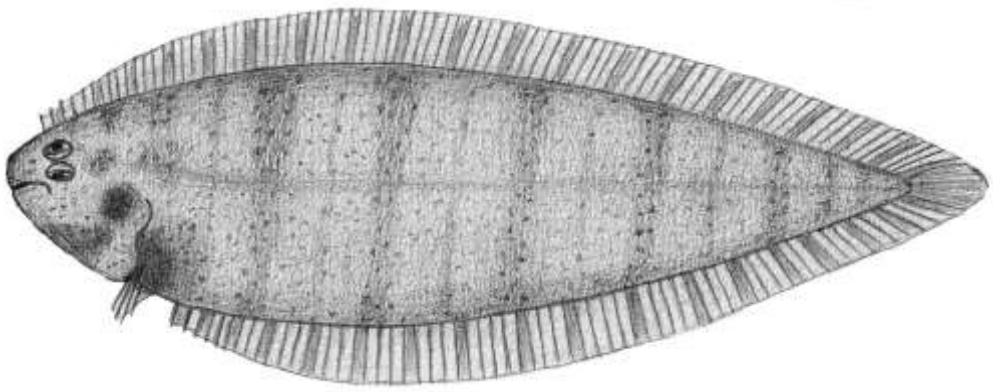
Size Maximum size of the Windowpane is about 46 cm (18 in).

Range It occurs from Nova Scotia to Florida.

Habitat The Windowpane is found to depths up to 50 m. It lives on sandy bottoms where it is an ambush predator. It only occurs in areas of high salinity. Juveniles move into deeper waters as they mature. This is a temperate species that favors cooler waters and is found in North Inlet mostly during the winter and spring.

Similar Species Among the wide-bodied, left –facing flounders, only the Ocellated Flounder is likely to be confused. It has an oval rather than overall diamond shape. The Occellated Flounder has four large spots against a medium dark background whereas the Windowpane is light and freckled. Also, its obliquely oriented mouth is distinctive.

Cynoglossidae - tonguefishes



Blackcheek Tonguefish
Symphurus plagiusa

Description The Blackcheek Tonguefish is an elongate flatfish which is deepest behind the head and gradually tapers to a point. Its small eyes are on the left side of head and they are close together. The dorsal fin originates above the eyes and merges with the caudal fin. The anal fin is continuous with the pelvic fin. The anal fin also merges with the caudal fin. The dorsal fin has 81-91 rays, and the anal fin has 66-75 rays. The pelvic fin has 4 rays and the caudal fin has 10 rays. The mouth and gill openings are small. There is no pectoral fin.

Coloration The Blackcheek Tonguefish is variable in color, from uniform tan to brown or mottled in shades of brown. There are often dark brown cross-bands (4-5) on the body although they can be entirely absent, complete, or broken. This tonguefish often has a dark blotch on the upper opercula (faint in small fish) and the rest of the opercula and lower head are often dark in color. The fins are dusky and sometimes streaked. The blind side of the body is whitish without speckles. This flatfish has especially scaly (rough to the touch), thick skin.

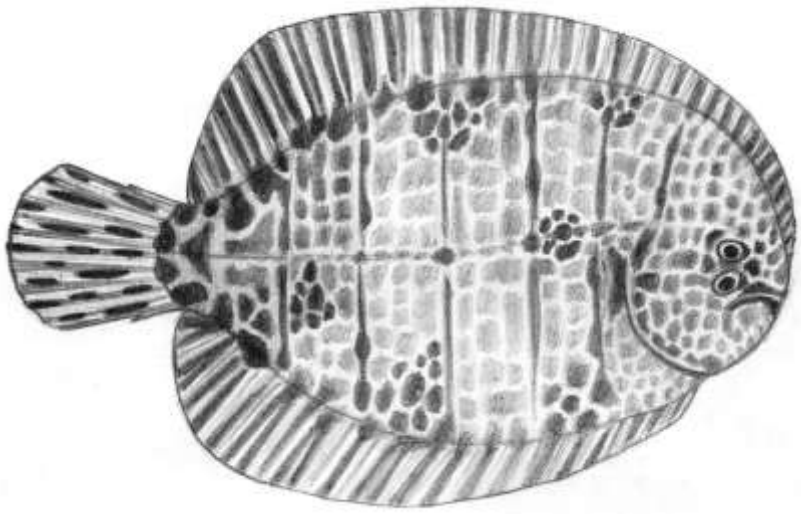
Size Maximum size is of the Blackcheek Tonguefish is about 21 cm (8 in).

Range It ranges from Long Island to Florida and occurs in the Gulf of Mexico, Cuba, and the Bahamas.

Habitat It is found on soft bottoms in estuaries and coastal ocean waters to 30 m. In North Inlet, juveniles are present all year in deeper areas; but during the warm seasons, it is common in intertidal creeks and flats as well. It is very tolerant of low salinities and prefers brackish water to full seawater.

Similar Species Although the Blackcheek Tonguefish is one of the most common flatfishes in North Inlet, juveniles of several closely related species may occur and are difficult to separate. The Offshore Tonguefish (*S. civitatium*) has unscaled dorsal and anal fin rays on the blind side and has a fainter dusky blotch on the cheek.

Achiridae – American soles



Hogchoker
Trinectes maculatus

Description The eyes of the Hogchoker are on right side of body. It has small closely set eyes and a small, curved mouth. It has no pectoral fins. The dorsal fin extends from the snout to the caudal fin and has 50-56 rays. The anal fin extends from the operculum to the caudal fin and has 36-42 rays. The caudal fin is large and fan-shaped.

Coloration The Hogchoker is brown with 6-7 thin, dark cross-bands. There are often spots and blotches on the body, and the fish can change its pattern to match the bottom type. The fins have numerous spots and wavy bands. The blind side is pale with occasional blotches. It is a relatively thick and rough skinned flatfish, which can become lodged in the throats of mammals foraging in the intertidal zone (hence its name).

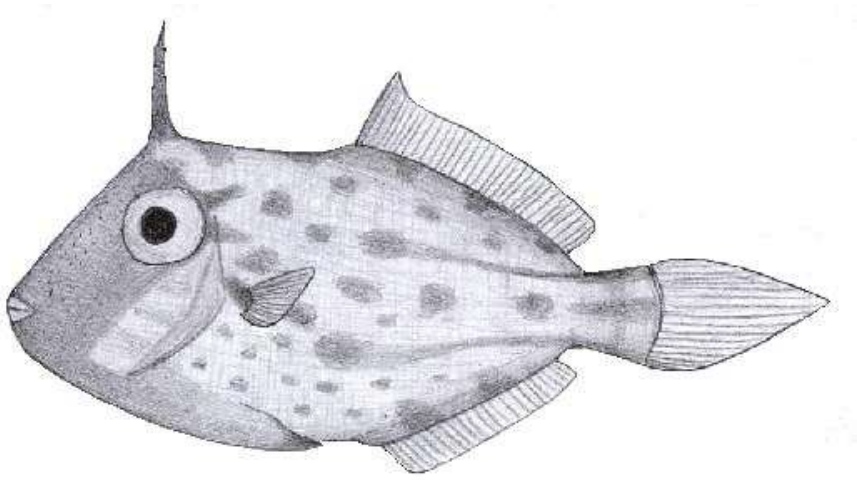
Size Maximum size of the Hogchoker is about 20 cm (8 in).

Range It ranges from Massachusetts to Florida and occurs throughout Gulf of Mexico to Panama.

Habitat The Hogchoker is found in the coastal ocean as well as in estuaries where it prefers turbid water and muddy bottoms. It can tolerate the full range of salinities. Spawning occurs in high salinity areas from May to October. Young prefer low salinity areas in upper Winyah Bay. In North Inlet, adult Hogchokers are common from spring to fall.

Similar Species No other almost round, scaly, right-facing flatfishes occur in the area.

Monacanthidae – filefishes



Planehead Filefish (juvenile)
Stephanolepis hispidus

Description The Planehead Filefish has a steep, straight forehead and a prominent toothed spine above the eye. The eyes are large and the mouth is small. The dorsal edge is straight to slightly concave between the toothed spine and dorsal spine, and the second dorsal has 29-35 soft rays. The anal fin has 30-35 soft rays. Like all filefishes, this species has an extendable "dewlap" on its chest anterior to the anal fin. The skin is leathery and coarse.

Coloration The juvenile Planehead Filefish is greenish-brown to yellowish-brown with dark brown blotches and random spots. The front of the head is often darker than the opercula. Adult fish have a more intricate mottled pattern of dark brown over tan and an elongate first dorsal ray.

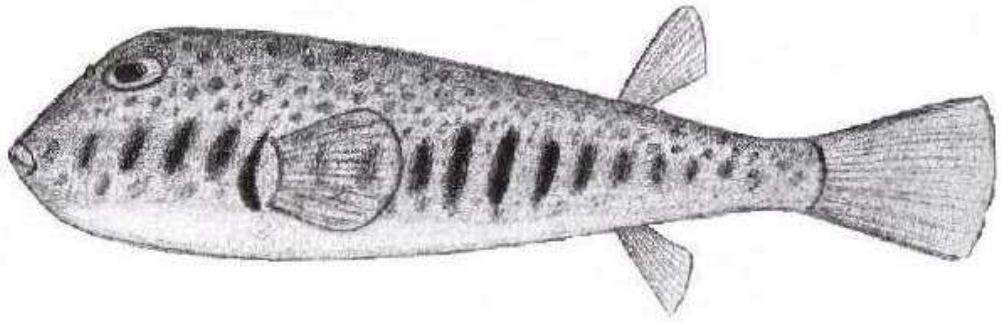
Size It grows to about 27.5 cm (11 in).

Range The Planehead Filefish occurs from Nova Scotia to the northern Gulf of Mexico, including the Caribbean.

Habitat It is found over soft bottoms and is often associated with seagrasses, *Sargassum*, and other vegetation. In North Inlet, juveniles can be found throughout the system from spring to fall. Very small juveniles (<15 mm) recruit from warmer waters and are commonly observed hovering (often around floating debris) near the surface. Larger juveniles are more common near the bottom of subtidal creeks.

Similar Species The Orange Filefish (*Aluterus schoepfii*), which is rare in the area, has a longer snout, a more elongate body, and pale color with mottling and small orange spots.

Tetraodontidae - puffers



Northern puffer
Sphoeroides maculatus

Description The northern puffer is elongate, with a straight angular forehead that terminates above the eyes. The slope of the dorsum to the caudal peduncle is almost straight. The belly is soft and has the capacity to become balloon-like when the fish fills it with water. The northern puffer has a small, terminal mouth and a pair of beak-like teeth in each jaw. The dorsal fin is far back on the body and has 8 rays. The origin of the anal fin is slightly posterior to that of the dorsal fin and has 7 rays. The pectoral fin is large and rounded and has 16 rays. The skin is thick and is covered with prickles.

Coloration The dorsal surface is dark with variable dark markings and spots. The ventral part of the body is white to pale yellow. A row of dark broken bars separates the dark upper side from the lighter belly. Numerous tiny black speckles cover the body. The tail is unmarked.

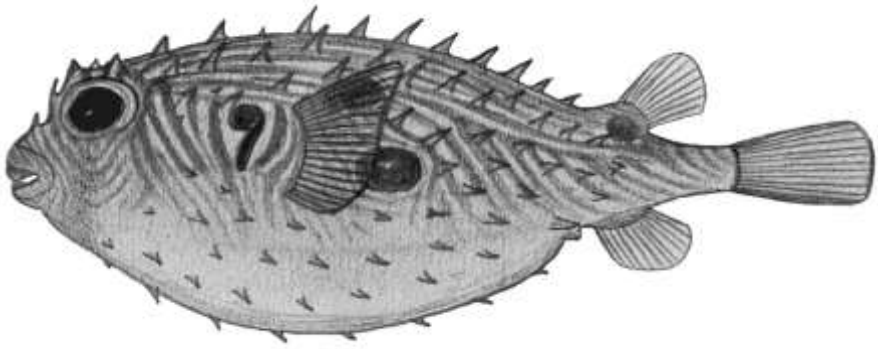
Size Maximum size of the northern puffer is about 25 cm (10 in).

Range It ranges from Newfoundland to northeast Florida.

Habitat The northern puffer is found in coastal ocean waters and estuaries. It is a coastal spawner with young entering estuaries in spring and leaving by the end of the summer. In North Inlet, it is most common during the spring and summer months with small juveniles occurring in the shore zone and larger ones in the subtidal channels. It often occurs in small aggregations and feeds on mollusks and crustaceans.

Similar Species Two other puffers occur in the area: the bandtail puffer (*S. spengleri*) and the smooth puffer (*Lagocephalus laevigatus*). The bandtail puffer differs by having 13 pectoral rays, round dark lateral spots, and two distinct dark bands on the tail. The smooth puffer differs by being more slender, having a concave tail margin, and having no conspicuous body markings (silver body). It has 13-14 dorsal rays and 12-13 anal rays.

Diodontidae – porcupinefishes



Striped Burrfish
Chilomycterus schoepfii

Description The Striped Burrfish has a round body with numerous erect spines. In young fish these spines are not obvious, but the almost spherical body and distinctive yellow and brown coloration is easy to recognize. The fins are very small and are close to the caudal peduncle. The eyes are large and the mouth is hard and beak-like. Larger fish are prickly and readily inflate when handled.

Coloration It is light brown with linear dark brown markings. The lines are often broken or joined to form polygons, especially on the belly and head, in juveniles. There are often bright yellow spots on the belly of the Striped Burrfish. Adults have mostly un-joined lengthwise lines with a few large, dark spots on the mid-side and rear of the body. The fins are unmarked. Eyes are usually bright green.

Size Maximum size of the Striped Burrfish is about 30 cm (1 ft.).

Range It occurs from Nova Scotia to the Bahamas and in the Gulf of Mexico to Brazil.

Habitat The Striped Burrfish is found in coastal waters and estuaries. It does not tolerate low salinities. In North Inlet, it occurs during the spring and summer months throughout the creek network. When very small juveniles (<15 mm) recruit to the estuary in early summer, they appear soft and swollen as they weakly swim near the surface. Larger juveniles occupy deep subtidal channels.

Similar Species Puffers of the genus *Sphoeroides* can also have a swollen appearance but they lack erect spines and the reticulated pattern of lines.

Appendix

List of 182 fish species known to occur in North Inlet estuary, Georgetown County, SC, 1978-2015. The list was originally compiled by D.M. Allen and was updated January 2015. The American Fisheries Society (AFS) has designated one official common name for each species (Nelson, et al. 2004). We use official AFS names for all entries in this guide.

Scientific Name	AFS Common Name
Carcharhinidae - requiem sharks	
Carcharhinus isodon	Finetooth Shark
Carcharhinus acronotus	Blacknose Shark
Carcharhinus leucas	Bull Shark
Carcharhinus limbatus	Blacktip Shark
Carcharhinus plumbeus	Sandbar Shark
Carcharhinus obscurus	Dusky Shark
Galeocerdo cuvier	Tiger Shark
Negaprion brevirostris	Lemon Shark
Rhizoprionodon terraenovae	Atlantic Sharpnose Shark
Squalidae - dogfish sharks	
Mustelus canis	Dusky Smooth-hound
Triakidae - houndsharks	
Squalus acanthias	Spiny Dogfish
Sphyrnidae - hammerhead sharks	
Sphyrna lewini or S. gilberti	Scalloped Hammerhead
Sphyrna tiburo	Bonnethead
Rajidae - rays or skates	
Raja eglanteria	Clearnose Skate
Dasyatidae - stingrays	
Dasyatis americana	Southern Stingray
Dasyatis centroura	Roughtail Stingray
Dasyatis sabina	Atlantic Stingray
Dasyatis say	Bluntnose Stingray

Scientific Name	AFS Common Name
Gymnuridae - butterfly rays	
Gymnura micrura	Smooth Butterfly Ray
Myliobatidae - eagle rays	
Aetobatus narinari	Spotted Eagle Ray
Rhinoptera bonasus	Cownose Ray
Acipenseridae - sturgeons	
Acipenser oxyrinchus	Atlantic Sturgeon
Lepisosteidae - gars	
Lepisosteus osseus	Longnose Gar
Elopidae - ladyfishes and tarpons	
Elops saurus	Ladyfish
Megalopidae - tarpons	
Megalops atlanticus	Tarpon
Albulidae - bonefishes	
Albula vulpes	Bonefish
Anguillidae - freshwater eels	
Anguilla rostrata	American Eel
Muraenidae - moray eels	
Gymnothorax nigromarginatus	Blackedge Moray
Ophichthidae - worm and snake eels	
Bascanichthys sp.	Whip or Sooty Eel
Myrophis punctatus	Speckled Worm Eel
Ophichthus gomesii	Shrimp Eel

Scientific Name	AFS Common Name
Congridae - conger eels	
Conger oceanicus	Conger Eel
Alosa aestivalis	Blueback Herring
Alosa mediocris	Hickory Shad
Alosa sapidissima	American Shad
Brevoortia tyrannus	Atlantic Menhaden
Dorosoma cepedianum	Gizzard Shad
Dorosoma petenense	Threadfin Shad
Opisthonema oglinum	Atlantic Thread Herring
Sardinella aurita	Spanish Sardine
Engraulidae - anchovies	
Anchoa hepsetus	Striped Anchovy
Anchoa mitchilli	Bay Anchovy
Ictaluridae - bullhead catfishes	
Ameiurus natalis	Yellow Bullhead
Synodontidae - lizardfishes	
Synodus foetens	Inshore Lizardfish
Ariidae - sea catfishes	
Ariopsis felis	Hardhead Catfish
Bagre marinus	Gafftopsail Catfish
Gobiesocidae - clingfishes	
Gobiesox strumosus	Skilletfish
Batrachoididae - toadfishes	
Porichthys plectrodon	Atlantic Midshipman
Opsanus tau	Oyster Toadfish
Antennariidae - frogfishes	
Antennarius ocellatus	Ocellated Frogfish
Histrio histrio	Sargassumfish

Scientific Name	AFS Common Name
Gadidae - codfishes	
Urophycis floridana	Southern Hake
Urophycis regia	Spotted Hake
Ophidiidae - cusk-eels	
Ophidion marginatum	Striped Cusk-eel
Hemiramphidae - halfbeaks	
Hyporhamphus meeki	False Silverstripe Halfbeak
Belonidae - needlefishes	
Strongylura marina	Atlantic Needlefish
Tylosurus crocodilus	Houndfish
Cyprinodontidae - killifishes and pupfishes	
Cyprinodon variegatus	Sheepshead Minnow
Fundulidae - killifishes and topminnows	
Fundulus confluentus	Marsh Killifish
Fundulus heteroclitus	Mummichog
Fundulus luciae	Spotfin Killifish
Fundulus majalis	Striped Killifish
Lucania parva	Rainwater Killifish
Poeciliidae - livebearers	
Gambusia affinis	Western Mosquitofish
Poecilia latipinna	Sailfin Molly
Atherinopsidae - new world silversides	
Membras martinica	Rough Silverside
Menidia beryllina	Inland or Tidewater
Menidia menidia	Atlantic Silverside
Fistulariidae - cornetfishes	
Fistularia tabacaria	Bluespotted Cornetfish

Scientific Name	AFS Common Name
Syngnathidae - pipefishes and seahorses	
Hippocampus erectus	Lined Seahorse
Syngnathus floridae	Dusky Pipefish
Syngnathus fuscus	Northern Pipefish
Syngnathus louisianae	Chain Pipefish
Dactylopteridae - flying gurnards	
Dactylopterus volitans	Flying Gurnard
Scorpaenidae - scorpionfishes	
Scorpaena brasiliensis	Barbfish
Centropomidae - snooks	
Centropomus undecimalis	Common Snook
Moronidae - temperate basses	
Morone americana	White Perch
Morone saxatilis	Striped Bass
Serranidae - sea basses and groupers	
Centropristis philadelphica	Rock Sea Bass
Centropristis striata	Black Sea Bass
Diplectrum formosum	Sand Perch
Epinephelus morio	Red Grouper
Mycteroperca bonaci	Black Grouper
Mycteroperca microlepis	Gag
Mycteroperca phenax	Scamp
Rypticus maculatus	Whitespotted Soapfish
Centrarchidae -sunfishes	
Centrarchus maculatus	Flier
Priacanthidae - bigeyes	
Pristigenys alta	Short Bigeye
Pomatomidae - bluefishes	
Pomatomus saltatrix	Bluefish

Scientific Name	AFS Common Name
Rachycentridae - cobias	
Rachycentron canadum	Cobia
Echeneidae (Echeneididae) - remoras	
Remora remora	Remora
Echeneis naucrates	Sharksucker
Carangidae - jacks and pompanos	
Caranx hippos	Crevalle Jack
Caranx latus	Horse-eye Jack
Chloroscombrus chrysurus	Atlantic Bumper
Selene vomer	Lookdown
Trachinotus carolinus	Florida Pompano
Trachinotus falcatus	Permit
Oligoplites saurus	Leatherjacket
Lutjanidae - snappers	
Lutjanus analis	Mutton Snapper
Lutjanus apodus	Schoolmaster
Lutjanus griseus	Gray Snapper
Lutjanus synagris	Lane Snapper
Lobotidae - tripletails	
Lobotes surinamensis	Tripletail
Gerreidae - mojarras	
Diapterus auratus	Irish Pompano
Eucinostomus argenteus	Spotfin Mojarra
Eucinostomus gula	Silver Jenny
Gerres cinereus	Yellowfin Mojarra
Haemulidae - grunts	
Haemulon plumieri	White Grunt
Orthopristis chrysoptera	Pigfish

Scientific Name	AFS Common Name
Sparidae - porgies	
Archosargus probatocephalus	Sheepshead
Diplodus holbrookii	Spottail Pinfish
Lagodon rhomboides	Pinfish
Pagrus pagrus	Red Porgy
Kyphosidae - sea chubs, rudderfishes & pilotfishes	
Kyphosus sp.	Bermuda or Yellow Chub
Sciaenidae - drums and croakers	
Bairdiella chrysoura	Silver Perch
Cynoscion nebulosus	Spotted Seatrout
Cynoscion arenarius	Sand Seatrout
Cynoscion regalis	Weakfish
Larimus fasciatus	Banded Drum
Leiostomus xanthurus	Spot
Menticirrhus americanus	Southern Kingfish
Menticirrhus saxatilis	Northern Kingfish
Menticirrhus littoralis	Gulf Kingfish
Micropogonias undulatus	Atlantic Croaker
Pogonias cromis	Black Drum
Sciaenops ocellatus	Red Drum
Stellifer lanceolatus	Star Drum
Ephippidae - spadefishes	
Chaetodipterus faber	Atlantic Spadefish
Chaetodontidae - butterflyfishes	
Chaetodon ocellatus	Spotfin Butterflyfish
Pomacanthidae - Angelfishes	
Pomacanthus paru	French Angelfish
Pomacentridae - damselfishes	
Abudefduf saxatilis	Sergeant Major

Scientific Name	AFS Common Name
Mugilidae - mullets	
Mugil cephalus	Striped Mullet
Mugil curema	White Mullet
Sphyraenidae - barracudas	
Sphyraena barracuda	Great Barracuda
Sphyraena borealis	Northen Sennet
Labridae - wrasses	
Tautoga onitis	Tautog
Uranoscopidae - stargazers	
Astroscopus guttatus	Northern Stargazer
Astroscopus y-graecum	Southern Stargazer
Blenniidae - combtooth blennies	
Chasmodes bosquianus	Striped Blenny
Hypleurochilus geminatus	Crested Blenny
Hypsoblennius hentz	Feather Blenny
Hypsoblennius ionthas	Freckled Blenny
Eleotridae (Eleotrididae) - sleepers	
Dormitator maculatus	Fat Sleeper
Elotris pisonis	Spinycheek Sleeper
Gobiidae - gobies	
Ctenogobius boleosoma	Darter Goby
Ctenogobius shufeldti	Freshwater Goby
Evorthodus lyricus	Lyre Goby
Gobionellus oceanicus	Highfin Goby
Gobiosoma bosc	Naked Goby
Gobiosoma ginsburgi	Seaboard Goby
Microgobius gulosus	Clown Goby
Microgobius thalassinus	Green Goby
Microdesmidae - wormfishes	
Microdesmus longipinnis	Pink Wormfish

Scientific Name	AFS Common Name
Trichiuridae - ribbonfishes and cutlassfishes	
Trichiurus lepturus	Atlantic Cutlassfish
Scombridae - mackerels, tunas, albacores, and bonitos	
Scomberomorus cavalla	King Mackerel
Scomberomorus maculatus	Spanish Mackerel
Stromateidae - butterfishes, harvestfishes, and rudderfishes	
Peprilus paru	Harvestfish
Peprilus triacanthus	Butterfish
Triglidae - searobins	
Prionotus carolinus	Northern Searobin
Prionotus evolans	Striped Searobin
Prionotus scitulus	Leopard Searobin
Prionotus tribulus	Bighead Searobin
Paralichthyidae - lefteye flounders and sand flounders	
Ancylopsetta quadrocellata	Ocellated Flounder
Citharichthys macrops	Spotted Whiff
Citharichthys spilopterus	Bay Whiff
Etropus crossotus	Fringed Flounder
Etropus rimosus	Gray Flounder
Hippoglossina oblonga	Fourspot Flounder
Paralichthys albigutta	Gulf Flounder
Paralichthys dentatus	Summer Flounder
Paralichthys lethostigma	Southern Flounder
Scophthalmidae - turbots	
Scophthalmus aquosus	Windowpane
Cynoglossidae - tonguefishes	
Symphurus civitatium	Offshore Tonguefish
Symphurus plagiusa	Blackcheek Tonguefish
Achiridae - American and scrawled soles	
Trinectes maculatus	Hogchoker

Scientific Name	AFS Common Name
Monacanthidae - filefishes	
Aluterus schoepfii	Orange Filefish
Stephanolepis hispida	Planehead Filefish
Diodontidae - burrfishes and porcupinefishes	
Chilomycterus schoepfii	Striped Burrfish
Tetraodontidae - blowfishes, rabbitfishes, and puffers	
Lagocephalus laevigatus	Smooth Puffer
Sphoeroides maculatus	Northern Puffer
Sphoeroides spengleri	Bandtail Puffer

Glossary of Anatomical and Ecological Terms

adipose fatty tissue, such as fleshy, opaque eye covering or fin
anadromous lives in the ocean but migrates to spawn in freshwater
anal fin extends along lower (ventral) edge posterior to the anus
anterior located at the front (opposite of posterior = rear)

bands vertical color markings (as opposed to horizontal stripes)
bar vertically oriented color mark
barbel a tentacle-like extension originating from the lower mouth, chin or snout region that is used to locate food
benthic living in the sediment or attached to hard surfaces on the bottom
brackish intermediate salinity, between the ocean and river proper

catadromous lives in freshwater but migrates to spawn in the ocean
caudal fin the tail
cirrus a hair-like or fleshy extension on the body, usually tentacle-like on the head
clasper an extension of the pelvic fin in male sharks and rays that is used to deliver sperm to the female
coastal used here to distinguish shallow ocean areas outside of inlets from estuarine and deep ocean areas, but sometimes refers more generally to the wide zone at the upland-ocean border
ctenoid describes a scale edge shaped like a comb, and is most often used to describe the free edge of scales in perciform fishes

demersal life style that is oriented toward the bottom (opposite of pelagic)
denticle tooth-like scales on sharks, often called dermal denticles. These structures give the rough-edge feel to the skin when felt from tail to head.
dewlap a fleshy flap of skin between the chin and the belly in some filefishes
dorsal fin extends along the top (dorsal) edge; composed of spines and rays; could be two or more dorsal fins
dorsum the dorsal surface or 'back'

estuarine associated with the tidal area between the ocean inlet and uplands; may be high or low salinity, and includes open water, marsh, or creek habitats

falcate describes the shape of a fin that is deeply concave, or sickle shaped because the central rays are shorter then the outer rays
finlet usually a series short rigid fins following the dorsal and/or anal fins; found in fast swimming, pelagic fishes such as mackerels and tunas
fork length (FL) a fish body measurement from the anterior most point of the body to the tips of the median caudal rays. This measurement is most commonly used in fishes with highly forked tails.

frenum a connecting membrane from the snout to the upper lip
fusiform describes the shape of a fish's body which is nearly cylindrical and tapers slightly towards the ends

gill slit a long narrow opening on the sides of the head of sharks and rays
gonopodium anal fin modified to serve as a copulatory organ
gravid bearing fertilized eggs
gular plate a large bony plate that lies between the upper and lower jaw in some more primitive fishes

heterocercal tail a caudal fin with unequal lobes; the upper lobe is much longer than the lower lobe and the vertebral column extends into the upper lobe
hyplural fan-like bony plate that supports the base of the tail

illicium the "fishing pole" or "lure" protruding from the head of lophiphorm fishes and hanging near the mouth to attract prey
intertidal area between the low and high tide levels (e.g. marsh and creeks)

keel a sharp or fleshy lateral strengthening ridge along the base of the dorsum or tail, typically seen in fast swimming fishes with a lunate tail

lanceolate tapering to a long point; usually refers to tail
lateral line a series of sensory tubes and pores usually along the centerline of both sides of the body; sometimes arched especially near the pectoral fins
lunate deeply forked with curved branches; crerscent shaped, usually refers to tail

mandible the main bone of the lower jaw
maxilla one of the two bones of the upper jaw that may bear teeth (maxillae, pl.)
melanophore a black or brown pigment cell on the skin of the fish that is able to change color, size and shape by expansion and contraction of the cell

nape posterior section of the head (forehead) before the dorsal fin

occipital a bone on the upper region of the back of the head, pertaining to the skull region posterior to the eye
ocellus a body marking with a center spot of one color surrounded by a ring of a another color. This color pattern may confuse predators (ocelli, pl).
opercle the large, thin bone forming the upper posterior part of the gill cover. It often has spines along the posterior edge in some higher fishes.
operculum the bony gill cover which is comprised of four bones: opercle, preopercle, interopercle and subopercle
orbit the bony eye socket

pectoral fin usually on the shoulders or sides of the body after the operculum
pelagic life style that is oriented to the water column rather than bottom
pelvic fin usually along the ventral edge before the body cavity
peritoneum membranous lining of the gut cavity; color is sometimes diagnostic
photophore a light producing organ that functions either chemically, via prey consumed, or via the presence of symbiotic bacteria within the fish
posterior: situated toward the rear (opposite of anterior)
postlarval beyond the planktonic larval stage but without all juvenile features
prickle a small sharp spine that is a modified scale
proboscis the elongate mouth parts or snout

ray a fin support which is soft, bilaterally paired, usually segmented and branched

scute a hard, thick plate present on the skin of many bony fishes which are derived from scales
snout portion of the head in front of the eyes
spine backbone composed of vertebrae or a rigid projection anywhere on the body or an element (ususally anterior) of a fin which is rigid and unsegmented; fins are usually supported by both spines and rays and counts are often diagnostic
spiracle a respiratory opening between the gills slits and the eye in rays, skates, and some sharks; allows water to flow into the gill chamber
standard length (SL) a fish body measurement from the tip of maxilla to the base of the caudal fin. This measurement does not use caudal fin rays in the measurement to avoid errors due to fin anomalies.
stripes horizontal color markings (as opposed to vertical bands)
subterminal refers to a mouth that is situated below the anterior most point of the head and is designed for bottom feeding
subtidal permanently flooded areas (e.g. channels) below mean low tide level

terminal refers to a mouth that is situated at the anterior most point of the head
truncate squared off
total length (TL) a fish body measurement from the anterior most point of the body to the ends of longest the caudal rays

ventral the lower side of the body (opposite of dorsal)
viscera a general term for the internal organs

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North Carolina Division of Marine Fisheries: http://portal.ncdenr.org/web/mf/fish-finder

American Fisheries Society: http://fisheries.org

University of South Carolina, Baruch Marine Field Laboratory:
http://www.baruch.sc.edu/baruch-marine-field-laboratory-0

North Inlet – Winyah Bay National Estuarine Research Reserve:
http://www.baruch.sc.edu/north-inlet-winyah-bay-nerr

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