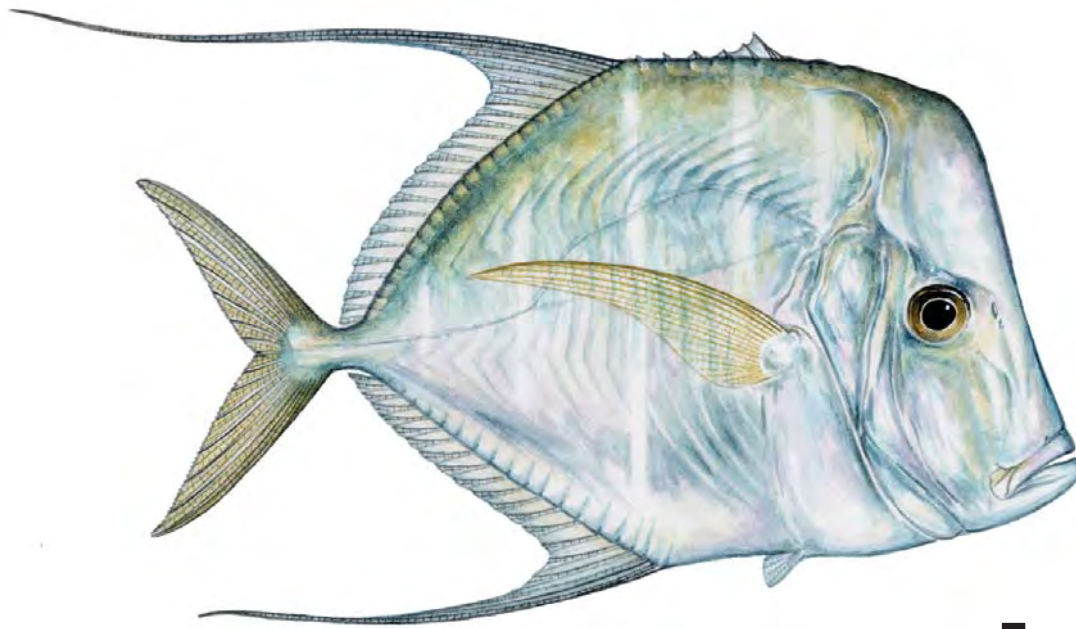


Fishing Lines

AN ANGLER'S GUIDE
TO FLORIDA'S MARINE
RESOURCES





Fishing

LINES

About Fishing Lines

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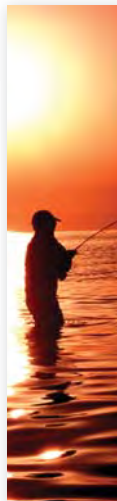
This guide was developed by the Florida Fish and Wildlife Conservation Commission (FWC) Division of Marine Fisheries Management Outreach and Education Program as an educational tool to provide you with information about Florida's marine resources.

This publication includes articles about marine angling, important habitats, saltwater fish and state efforts to enhance marine resources. Information is also included about fisheries management in Florida, the importance of catch and release, where funding comes from and where it goes.

The second half of Fishing Lines has a field guide to help anglers and the public identify some of the many fish species that live in Florida's marine and estuarine waters. Illustrations and descriptions for 121 species are included in the Fish Identification Section.

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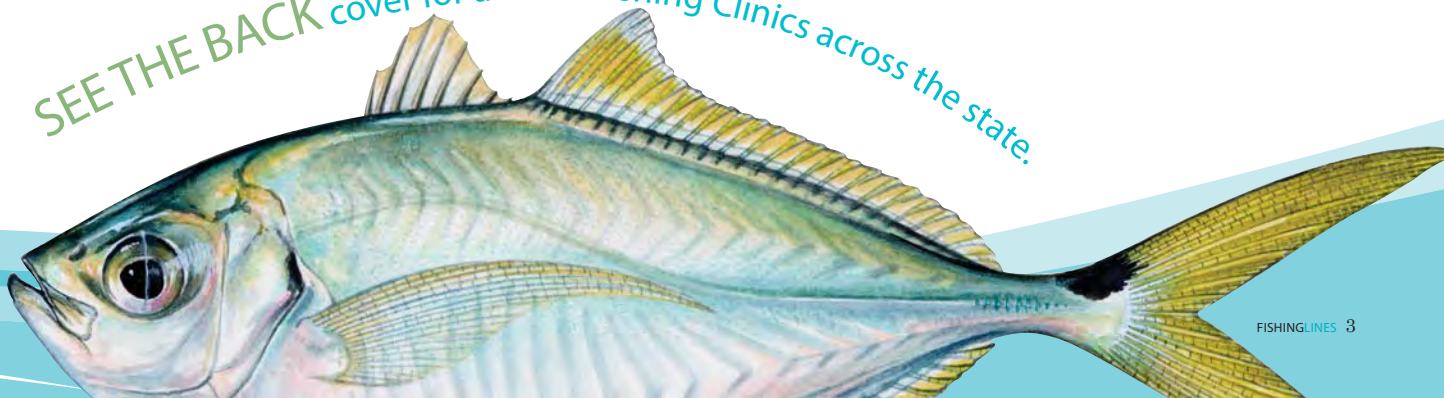
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SEE THE BACK cover for a list of Fishing Clinics across the state.



WHY DO WE FISH



Eat, sleep, go fishing. Fishing is addictive. Got Fish? I fish, therefore I am. A bad day fishing is better than a good day at work. All of these slogans indicate the desire to go fishing, but why do we fish? What is the draw to this sport over other outdoor recreational activities?

Some people find solace in a fishing experience; the smell of the salt air, the sun on your shoulders while casting a lure across a calm water surface. The anticipation of a fish striking the lure as the water erupts with unseen energy, the tug of the rod and line stripping off the reel. The pleasure in releasing the fish and watching it glide through the water back to its spot.

Others fish and develop a relationship with their adversary. Anglers study the life history of the fish, speculate where fish will be during a certain time of year, what lures or baits will work the best under different conditions and the best method to present something to a fish. They study their foe preparing for the battle.

Food is the goal of others who fish. They spend the day on the water catching fish that will be cooked and enjoyed that night and saved for other meals. They know which fish taste better over the grill, battered and deep fried, or blackened with lemon squeezed over it. Very tasty indeed!

Regardless of the reason, people are drawn to explore Florida's marine habitats, full of excitement, ready to experience the thrill of landing a saltwater monster. Many of us enjoy any opportunity to fish for Florida's vast array of saltwater fish, even if we do not bring back a fish. The positive experience keeps us coming back for more fishing.

CONSERVING FLORIDA'S MARINE RESOURCES

Saltwater fishing has always been a way of life for people living in Florida, and a tradition of conservation dates back to the days of the Native Americans. As Florida's population has grown over time, the number of people pursuing saltwater fish species has increased as well. In the 1960's the Florida Board of Conservation began to regulate saltwater fisheries to ensure the sustainable and responsible use of one of Florida's most economically and recreationally important resources. The Florida Fish and Wildlife Conservation Commission (FWC), founded July 1st, 1999, continues this mission today by managing fish and wildlife resources for their long-term well-being and the benefit of the people.

Over the past several decades, fisheries managers have used different tools to promote conservation, preservation, and sustainability, in addition to currently accepted fisheries management practices. Some of these tools are promoting catch and release, ethical angling, and personal stewardship. These conservation practices are discussed in more detail throughout the magazine.

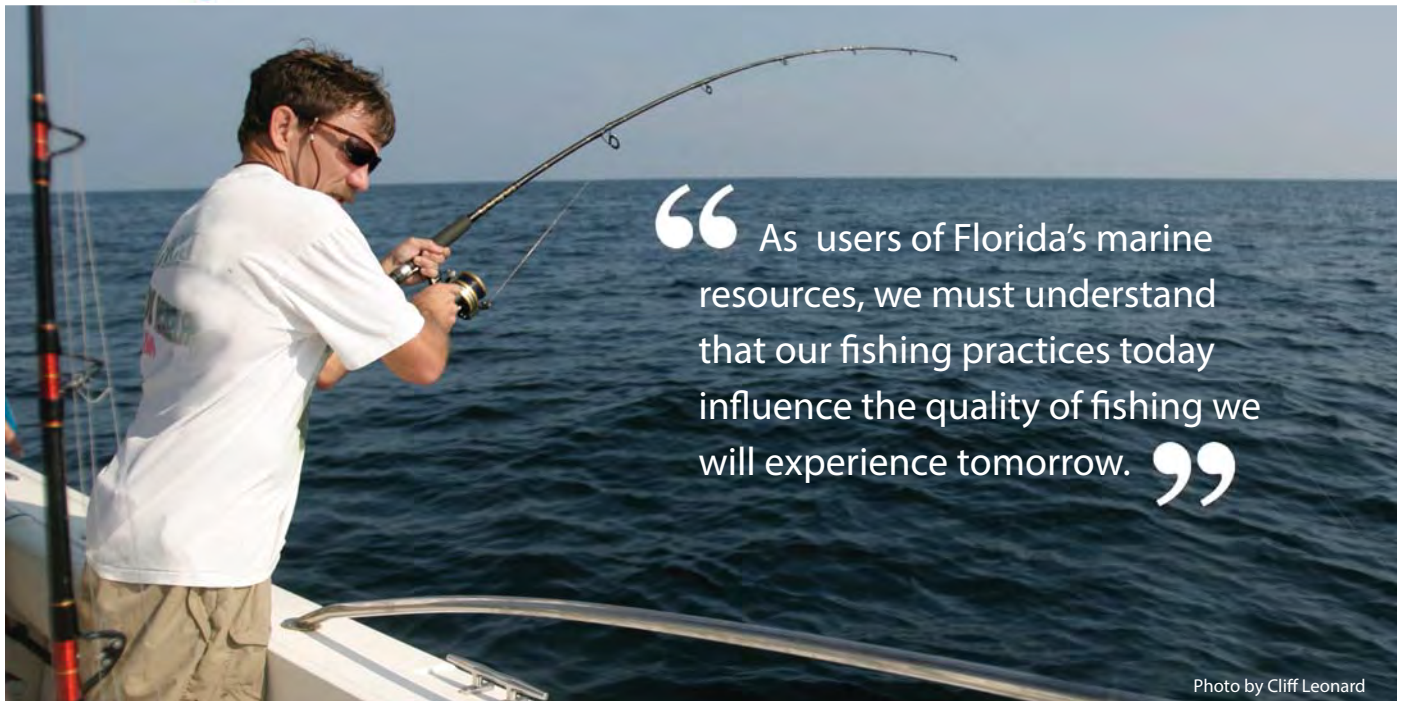
Many marine fisheries managers and outreach staff nationwide use the term "shifting baselines" to help anglers put the decline of some marine fish populations and their habitats in perspective.



Shifting baselines is a term that describes how people compare the current state of a fish population to a perceived "baseline" population from a certain point in history. The current baseline population is its status prior to human exploitation which has occurred for hundreds of years. However, shifting baselines occur when anglers, scientists, or managers redefine the baseline based on the population status from only a few generations prior. Think back to old photographs you have seen of recreational fishing catches from "the old days" where many enormous fish line the docks and proud anglers pose by their catch. Today photos like these are rarely taken. Our grandfathers talk about great days out on the water catching trophy fish like sailfish and snappers. However, what is considered a trophy fish now would be

regarded as a typical or even small catch in our grandfathers' time. Today there simply aren't as many large fish out there to be caught, largely due to overfishing, habitat destruction, and an increasing number of saltwater anglers. As more anglers remove more fish from the ecosystem, there will inevitably be less fish around to be caught. Fewer fish results in smaller spawning stocks and less food for larger fish, resulting in even fewer fish in the future. Public understanding of this concept of "shifting baselines" is important to marine fisheries managers. It enables the managers to help the anglers visualize the degradation of marine fisheries over time.

Shifting baselines can also be applied to marine habitat. One of the most significant examples is the dramatic reduction in Florida's seagrass coverage.



“ As users of Florida’s marine resources, we must understand that our fishing practices today influence the quality of fishing we will experience tomorrow. ”

Photo by Cliff Leonard

Seagrass beds serve as essential fish habitat for many marine sport fish species and provide foraging grounds and hiding places for larval and juvenile fish. Seagrass beds are also home to countless invertebrates, including blue crabs and scallops. During the past 100 years, Tampa Bay has experienced an 81% reduction in total sea grass coverage, Charlotte Harbor has experienced a 29% reduction, and Ponce Inlet has experienced a total loss of 100%. Similar reductions in seagrasses have occurred in many other Florida coastal waters. However, scientists are designing projects to restore seagrass beds, and managers are actively protecting this habitat to conserve what is currently present. By protecting, conserving, and restoring this critical form of habitat, we will be giving the marine sport fish we are trying to catch a better chance of maturing to adulthood and reproducing thus creating even more fish.

As users of Florida’s marine resources, we must understand that our fishing practices today influence the quality of fishing we will experience tomorrow.



Photo by Steve Woodsum

Catch and Release

Wet your hands before handling fish to prevent damaging its protective slime coating. Don't use gloves or towels, as this will remove the protective slime.

LOOKING FORWARD TO THE FUTURE - NEW DIRECTOR WELCOMES INPUT TO DEVELOP SUCCESSFUL MANAGEMENT STRATEGIES

By Jessica McCawley, Director

FWC Division of Marine Fisheries Management

As the new director of the Florida Fish and Wildlife Conservation Commission's (FWC) Division of Marine Fisheries Management, I come to the position with a passion for both recreational and commercial fishing and a marine science background that includes more than 10 years of experience in marine fisheries management for the State of Florida. I grew up on the Gulf Coast of Alabama fishing for seatrout and throwing a cast net for shrimp. It was there that my love of fishing and marine life was fostered, eventually leading to a pursuit in my education and career in marine science from the University of South Alabama. In graduate school, I studied red snapper on artificial reefs, specifically the diet and prey demand of red snapper. During my time with the FWC, I have worked extensively with stakeholders seeking solutions to protect marine resources for current and future generations.

I look forward to working with the citizens and visitors of the state to develop successful fishery management strategies for the future. Every person who fishes, who enjoys seafood while visiting one of our state's many restaurants, or who depends upon fishing for a livelihood has a role in the management of marine fisheries. It is because of your help, be it your input on important marine fisheries issues, or your understanding and cooperation when new protection measures are put into place, that we have successful management in state and federal waters off Florida. Engaged stakeholders ensure we know how the public might be affected by a new management plan. Your input and ideas help us craft plans that benefit both the fish and the fishers. And once a plan is in place, it is the stakeholders who make it successful.

Without your help and support, we could not have recently increased the bag limit for red drum in the northern regions of the state. But thanks to your efforts and a successful management plan, we were able to do just that.

For years, stakeholders have shared their input by attending one of our five Commission meetings held across the state each year. They have also called us on the phone, written letters, and sent in emails. We take these interactions very seriously. In turn, we have kept you updated via handy and easy-to-read printed publications such as our recreational and commercial regulations publications or the publication you are reading right now, *Fishing Lines*.

But thanks to new technology, getting and keeping in touch with FWC is now becoming easier than ever. In addition to our regular paper regulations brochures, our informative website provides constantly updated state and federal information as well as guides that can easily be printed and taken with you or, thanks to our new mobile website, easily viewed on a mobile device. Looking for a one-stop shop for all of our recent marine fisheries management news? Visit the Hot Sheet online or sign up for our newest information delivery service, GovDelivery, and choose what FWC news you'd like to receive by email or text. Want more? Check out one of our social media sites, from Facebook to Twitter to YouTube and more. Here, we get the opportunity to not only show off what we do, but to interact directly with you, our stakeholders. No time to travel to a workshop? We now have the ability to host live webinar workshops online, where you can share input on an upcoming issue without leaving the comfort of your home.



As we move forward, I am excited to hear your thoughts and discover new and exciting ways to communicate with you. In the meantime, thanks for your support and help in making Florida the "Fishing Capital of the World."

If you have any concerns or ideas you want to share with us about marine fisheries management please feel free to contact us at Marine@MyFWC.com or you can call us at 850-487-0554.

ANGLER OUTREACH AND EDUCATION

The FWC's Division of Marine Fisheries Management, Outreach and Education subsection was created in the early 1990's to educate the public about marine fisheries conservation, fisheries research, and the role people have in fisheries management. This section's staff travels throughout Florida and offers a variety of engaging programs for recreational anglers and participates in numerous public events. Through their efforts, the public has opportunities to learn more about some of Florida's most important natural resources. These activities include Kids' Fishing Clinics; Ladies, Let's Go Fishing; fishing and boating show presentations; the State Hatchery Outreach Program, presentations to fishing clubs; educator workshops; and the Grand Slam program. Funded mostly by U.S. Fish and Wildlife Service Sport Fish Restoration (SFR) grants and the sale of saltwater fishing licenses, the mission of the FWC's Outreach and Education subsection is to promote the conservation and preservation of Florida's marine resources through educating anglers about catch and release, habitat conservation, ethical angling, and environmental stewardship.



One of the larger programs run by the Outreach and Education staff are the Kids' Fishing Clinics. These clinics are one-day fishing events spread regionally throughout Florida. This program aims to create responsible marine resource stewards by teaching children about the vulnerability of Florida's marine ecosystems. In addition, children are taught fundamental saltwater fishing skills participating in a positive fishing experience. At the clinics, participants complete multiple skill stations including fishing tackle, knot tying, casting, the habitat awareness tank, and most importantly, the "good angler" station. Participants then receive a free rod and reel before they head out to fish off a pier, sea wall, or bridge. Since 1996, over 59,000 children have participated in the Kids' Fishing Clinics. An estimated 37,000 parents or guardians have also taken part in these events. None of this would have been

possible without the 11,000 volunteers who have assisted in educating these young anglers about fishing techniques, marine habitats, ethical angling and conservation.

Ladies, Let's Go Fishing! (LLGF) is dedicated to attracting more women to sport fishing and to promoting conservation and responsible angling. Founded in 1997 by Betty Bauman of Ft. Lauderdale, LLGF has reached over 7,000 women interested in fishing. This organization sponsors weekend seminars that teach women various fishing techniques at beginner and advanced levels. Seminars offer a range of experiences presented in a non-intimidating environment, including classes on inshore, offshore, bottom and fly fishing, with a wide variety of hands-on exercises. FWC outreach staff participates in LLGF's throughout Florida every year to promote marine

Catch and Release

Avoid removing large fish from water. If you must remove them, support their weight horizontally to prevent damage to their internal organs.

“ Since 1996, 59,000 children and 37,000 parents or guardians have participated in our Kids’ Fishing Clinics. None of this would be possible without the 11,000 volunteers who have come out to assist in educating these young anglers about fishing techniques, marine habitats, ethical angling, and conservation. ”

fisheries conservation through a presentation and by using a hands-on approach to teach women about catch and release techniques, as well as conveying other conservation measures for sustainable fisheries.

FWC Outreach and Education staff regularly attend fishing and boating shows, setting up a booth featuring a large Sport Fish Restoration display, a 500 gallon saltwater aquarium, and tables with the many FWC publications provided free of charge, thanks largely to Sport Fish Restoration funds. FWC’s outreach presence at these shows gives anglers a chance to interact one-on-one with a staff member so they can ask questions and see demonstrations on the use of venting tools, dehookers, and proper fish handling. Attending these fishing and boating shows are also a great opportunity for outreach staff to explain the science behind the management and ways anglers can participate in the management of Florida’s fisheries resources.

The Outreach and Education subsection is also involved with FWC’s research section, the Florida Fish and Wildlife Research Institute (FWRI), through their involvement with the State Hatchery Outreach Program. The purpose of this program is to inform saltwater anglers of the role of Fisheries Stock Enhancement in managing Florida’s saltwater resources and how the SFR funding contributes to the effort. Tours of FWC’s Stock Enhancement Research Facility (SERF) and special opportunity fishing events are given throughout the year to provide kids and stakeholder groups an opportunity to view hatchery operations and to catch marine sport fish. Participants are

taught how to be ethical anglers and stewards of natural resources and the benefits of the Sport Fish Restoration program to Florida’s marine fisheries.

FWC Outreach and Education staff also gives presentations to fishing clubs and other interested groups. These presentations inform Florida’s anglers and boaters about Sport Fish Restoration projects and funding, allow staff to disseminate SFR funded fisheries conservation material, provide a forum for dialogues about fisheries issues and garner anglers’ support for fisheries conservation.

The Grand Slam program was designed to encourage anglers to target a variety of species during their fishing trips. Any angler who provides information that they have caught three particular fish species within a one-day period can apply for a Grand Slam. The regions and species are as follows: North Florida- red drum, spotted seatrout,

cobia; West Coast- red drum, snook, tarpon; South Florida- bonefish, tarpon, permit; East Coast- red drum, tarpon, spotted seatrout. You do not have to catch the group of three fish in the region with that name to obtain that regions certificate. Catches must be made according to International Game Fish Association (IGFA) angling rules, and follow all FWC regulations. Grand Slam recipients receive a full color certificate signed by the executive director of the FWC and by the president of IGFA.

The FWC has also partnered with the Florida Marine Science Educator Association (FMSEA) to offer educators the opportunity to conduct aquatic species collecting trips with students. Educators are certified at workshops offered regionally throughout the state and are instructed on the benefits of collecting, best management practices, and basic aquarium maintenance.





Photo by Jeff Berliss

CORAL REEF



Photo by Lauren Zuckerman

BEACH AND SURF



MANGROVE



GULF STREAM AND BLUE WATER



ESTUARY



Where Fish Live

Florida's Diverse Marine Habitat

Florida's marine communities surround its 2,276 miles of tidal shoreline. From Fernadina Beach on the Atlantic to Pensacola on the Gulf, and south to the Keys, there are several different habitats forming interwoven areas of great productivity.

Sandy beaches and salt marshes line the many estuaries found in northern Florida and provide ample habitat for an array of fish species. Extensive seagrass meadows thrive in the nearshore waters throughout Florida supplying a beneficial corridor for inshore and offshore species.

Mangrove forests gradually replace salt marshes half way down the state and densely blanket the shoreline, nurturing many species. Elaborate coral reefs extend along the southern tip of Florida supporting a large variety of tropical species. All of these habitats provide shelter, nurseries, and places to feed for valuable marine organisms in addition to stabilizing sediments, diminishing storm driven water and wind, and filtering the water.





BEACH AND SURF

A sandy beach with no vegetation, under constant siege from storm-stirred seas, seems an unlikely setting for fish. Nevertheless, the nutrients are there and the water quality is usually high. Seaweed wrack provides nutrients for this community and hardy creatures find the surf habitat just right for their needs.

One of Florida's most highly valued food fish, the Florida pompano, is the state's most sought after surf fish. The pompano's favorite food is the mole crab, also called the sand flea, which burrows in the fine sand at the edge of the water. Swift-moving pompano chase the sand fleas into inches of water and nose down to capture them. Anglers gather the sand fleas with screened sieves, fishing for them on the bottom, just below the surf line.

Plankton-feeding baitfish such as cigar minnows, Atlantic thread herring, menhaden, and Spanish sardines form huge schools just off the beaches, their

ranks constantly thinned by attacks from bluefish, Spanish and king mackerel, cobia, jacks, and other prized marine fish.

During the warm months, just off West Coast beaches, adult tarpon are abundant and support a thriving catch-and-release sport fishery.

Gulf kingfish, otherwise known as whiting, are abundant on East Coast beaches and common throughout the upper half of the peninsula. Their downward-angled mouths and tiny barbels show they are bottom feeders that eat crab, shrimp, and mollusks.

Fishing piers along the beach habitats can provide top-notch fishing. The piers themselves provide habitat, with sheepshead nibbling barnacles off pilings. Bluefish, pompano, and Spanish mackerel are the bread-and-butter species of the pier operators, but wide ranging king mackerel (and the occasional sailfish on the East Coast) flash past piers with some regularity.



Each year, Florida's beaches attract millions of visitors. However, pollution and development threaten this fragile habitat. Beach-front development and irresponsible foot traffic can destroy shifting sand dunes. Beach renourishment projects have filled in natural holes and smothered nearshore reefs. Tar from ocean-going tankers often litters the sand, and pollution from Florida's rivers and canals threatens water purity.

SEAGRASS

At some stage of their life, 70 percent of the world's harvested seafood species depend upon seagrass and other estuarine habitat for survival.

Seagrasses help keep Florida's saltwater estuaries clear and beautiful. Take away the seagrass and the water would soon start to silt, becoming so cloudy that sunlight could not penetrate. Without seagrasses, fish, crabs, clams, snails and many other marine organisms would leave. Seagrass is the vital link to marine food webs and ecosystems. Without seagrasses and algae, fish and shellfish would be non-existent. Manatees, sea turtles, pinfish, bucktooth parrotfish, and sea urchins all eat seagrass.

Skimming in our skiffs over shallow flats, we've all seen seagrasses, their blades bent by the current like leaves in the wind. Yet most of us don't know much about seagrass except that it grows underwater and attracts fish. We don't see what a powerful habitat it is. More than 400 species of marine organisms live in the lush grasses of the Indian River, for example. Riding the crest of waves off Pine Island Sound or Tampa, we might not realize that 80 percent of the seagrasses in the entire Gulf of Mexico are found in coastal Florida.

Florida's seven seagrass species -turtle, manatee, widgeon, Cuban shoal, star, paddle, and Johnson's seagrass -developed from land-based plants that, over millennia, have adapted to living in saltwater. Like their ancestors, they are flowering plants that are fertilized by pollen, but instead of the pollen being carried by wind and insects, it is borne by currents.



Photo by NOAA

By protecting, conserving, and restoring seagrass we can help preserve our marine fisheries.

Along with plankton, seagrasses form the base of the food web for fish and shellfish. Decaying seagrasses, from blades lost in storms and through the natural shedding process, eventually become detritus, which is rich in bacteria and nutrients. Detritus feeds mullet and shrimp, which in turn become forage for gamefishes such as redfish, spotted sea trout, snook, sailfish, and king mackerel. Some detritus-eating fishes and crustaceans move from seagrass beds to offshore waters, where they are preyed upon by large marine animals,

thereby transporting the food energy originally created by seagrasses to the deep ocean.

Seagrasses perform many other important ecological functions as well, including providing shelter for juvenile fish and shellfish and binding sediments to prevent erosion. Seagrasses also reduce turbulence on the bottom and can absorb excess nutrients in cloudy water. Because of their biological diversity and productivity, seagrasses are the tropical rain forests of the marine environment. Like the rain forests, they must be protected.



PhotobyCliffLeonard

More than 70% of Florida's recreationally and commercially important fishes, crustaceans, and shellfish spend periods of their lives in estuaries.

ESTUARINE COMMUNITIES

Estuaries (from the Latin word meaning “boiling”) are where the rivers meet the sea. Estuaries are dynamic systems with waters that can be very salty or almost fresh. They rank as one of the most productive ecosystems in nature. More than 70 percent of Florida’s most important recreational and commercial marine species spend a portion of their lives in these sheltered and fertile waters. That’s why estuaries are sometimes called “the cradle of the ocean.”

Estuarine habitats include mangroves, seagrass, oyster bars, exposed rock, salt marshes, mud and sandy bottom, and algae beds.

Many fish that spawn offshore use estuaries as nursery grounds. Mullet, redfish, and gag grouper are nurtured in estuaries as juveniles, but move offshore as adults to spawn. As their eggs develop into larvae, they are transported into estuaries by tides and currents.

Those juvenile mullet that survive the dangerous journey from offshore locations where they spawned head straight for salt marshes, muddy tidal creeks, and sheltered shallows. They are active fish, and at three inches long can jump clear out of the water. Feeding on algae and decaying matter, mullet grow rapidly. A key member of the food chain, mullet are a major prey item for seatrout, redfish, tarpon, flounder, and king mackerel, as well as shorebirds.

Freshwater is an essential element for a healthy estuary. Valuable shellfish such as oysters, crabs, and shrimp cannot grow without a certain amount of freshwater, which is loaded with calcium, silicone, and other nutrients. About 70 percent of Florida’s 13 million people live in the coastal zone making the quantity and quality of freshwater runoff pouring into estuaries a major concern. Shellfish are filter feeders straining their food from the water around them. If incoming water is

tainted by coliform bacteria (from human and animal wastes), pesticides, or other pollutants, oysters and shrimp that look perfectly healthy may transmit diseases.

Oyster bars teem with life, much of it attractive to gamefish. When a tongload of oysters crashes onto a culling board, tiny crabs and shrimp scurry in all directions seeking cover. When seatrout are driven off the grass flats by wintery blasts, they are often found in the deep cuts between bars. Hulking black drum, which have pharyngeal teeth that can crush oysters, prowl the bars looking for their favorite foods.

MANGROVES

Mangroves are one of Florida's true natives. Three types of mangroves are found in Florida: red, black, and white. They cover south Florida with a verdant and life-giving shield that nurtures marine organisms of all kinds, provides nesting sites for shore birds, and shelters juvenile fish.

Red mangrove trees look like big green millipedes walking on the water, their prop roots desperately grasping the bottom. Black mangroves usually occupy slightly higher elevations while the white mangroves occupy the highest elevations further upland.

North of Tampa Bay, red mangroves (with prop roots) are replaced by black mangroves, whose pencil-like roots protrude up from the bottom, rather than descending from the tree. The black mangroves are also valuable habitat.

Red mangroves not only provide habitat, they create it. Their long arrow-shaped seedpods hang vertically, with the seed at the bottom. When the seed pods mature and drop off the tree they may strike uncolonized mud with sufficient impact to take root immediately. If not, they float away, waiting to settle in some shallow area and perhaps start a new colony of trees.

As the leaves die and decay, they become food for the community of animals living on the bottom. Snook, jacks, snappers, sheepshead, grouper, and small goliath groupers hide and forage through the tangles of roots. Tarpon prowl the channels just outside the mangroves. Juvenile tripletail are seen lying on their sides, floating alongside and resembling mangrove leaves.

Anglers in shallow draft boats drift along mangrove shorelines, tossing surface plugs and flies as near to the roots as their skill permits. Snook, redfish, and small tarpon come boiling up from concealment and strike in a frenzy of spray that makes for great sport.



Mangroves buffer shorelines from strong winds and tides.

Why Mangroves are important...

Once considered fetid, mosquito wastelands, mangroves are now recognized as a vital component of estuarine shores. Mangroves provide the two most basic requirements for animal survival: food and shelter. The food comes from the rich "marine compost" produced by insect (frass), bird droppings, and leaf and twig litter that fall from mangrove canopies into the water and are consumed by microorganisms. The processed organic

material, called detritus, fuels a complex food web that begins with algae, fungi, and bacteria and transfers energy to larger organisms all the way to top-level predators such as snook, tarpon, and humans. Shelter is provided by the concealment afforded by the tangled prop roots and pneumatophores that extend below the water line. Animals also find shelter in the thick canopy, which shades the shoreline waters with dense overhanging branches.



You have to travel many, many miles to get to the loop in the gulf stream, but once you get there you will find some of the most productive blue water fishing in North America.

GULF STREAM AND BLUE WATER

The North flowing Gulf Stream has a great environmental influence on habitat along Florida's East Coast by moderating temperatures and creating conditions under which hundreds of marine species thrive. Flowing north through the Florida Straits, which begins just south of Key West, the Gulf Stream brushes against the coast of Palm Beach then swings eastward towards Europe. Averaging five knots, the speed of the currents flowing through the stream vary seasonally and according to atmospheric conditions. During the winter months, it is not unusual for the pace of the stream to move beyond eight knots. Just as its volume varies, so does its width and temperature. The width of the stream averages 25 to 40 nautical miles. Water temperatures vary from a warm 86° F off Key West in the summer to 75° F off Jacksonville in winter, a range of temperatures that is comfort-

able for virtually all pelagics (open water fish) such as wahoo, billfish, tunas, cobia, dolphin, and mackerel.

"Bluewater" is a term often used to describe the Gulf Stream. Off the Palm Beaches, the color of the Gulf Stream can be seen from the upper floors of condos. At Jacksonville, a boater has about 75 nautical miles to run before entering the deep blue depths of the Gulf Stream.

The stream's swift northward movement poses some dangers. Anglers drifting in the current don't realize that they may have moved many miles since they last took a compass bearing. Northeastly winds can bring waves twice as high in the stream as on either side of it.

Gulf Stream anglers, like those in all deep waters, keep their eyes open for visible signs of fish, birds hovering or

diving into the water, or surface commotion that might indicate feeding fish. Debris or patches of floating sargassum collect along current edges of the Gulf Stream. Eddies that break off from the Stream are always worth investigating. Most blue water anglers prefer to work the color changes or edges of the Gulf Stream, where two different bodies of water meet. Mixing currents tend to concentrate debris. Submerged deepwater structure such as reefs can be immensely productive when fished with trolling lures.



CORAL REEF

Florida contains 2,276 miles of shoreline and 663 miles of beaches and is known world-wide for its fishing, diving, and boating. Florida is also home to the extensive Florida Reef Tract which spans more than 330 miles from the Dry Tortugas in Monroe County (west of Key West) to the St. Lucie Inlet in Martin County.

More than 6,000 species of marine organisms are found on Florida's coral reefs. The Florida Reef Tract also contributes to Florida's economy, supporting more than 71,000 jobs and generating \$6.3 billion dollars in income and sales each year for Monroe, Miami-Dade, Broward, Palm Beach, and Martin counties.

Some people mistake corals for rocks or plants, but they are actually living animals. A coral colony is made up of hundreds of individual animals called polyps that extract minerals from seawater to create a limestone skeleton, similar to our bones. If you think of a coral colony as a birthday cake, the layer of icing would be the living coral polyps and the cake would be the underlying limestone skeleton.

Corals are also among the slowest growing organisms on Earth. Most grow at a rate of just two millimeters per year - it can take more than 13 years for a coral colony to grow one inch! This slow growth rate is why it is so important to protect these valuable and highly vulnerable resources from threats like anchor damage and water pollution.

What can you do? On the water you can protect coral reefs by anchoring in the sand, tying up to a mooring buoy, obeying fisheries' regulations and knowing how to properly use a navigational chart and GPS. On land, you can help protect coral reefs by recycling, eliminating toxic household chemicals, conserving water, utilizing lawn fertilizers appropriately, and using natural pesticides.

The state of Florida is committed to conserving the Florida Reef Tract, which is both a state and national

treasure. To learn more about what the Florida Department of Environmental Protection's Coral Reef Conservation Program and Florida Keys National Marine Sanctuary are doing to protect your coral reefs and other ways that you can help, visit <http://www.dep.state.fl.us/coastal/>.



Photo by Dave Gilliam

Staghorn coral.



Photo by Dave Gilliam

Elkhorn coral.



Photo by Bryan Clark

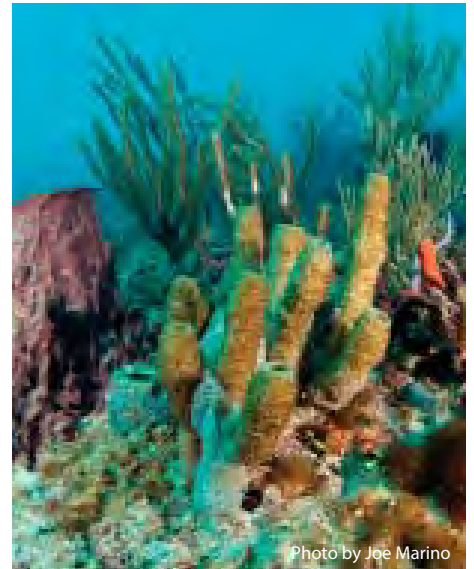


Photo by Joe Marino

More than 6,000 species of marine life are found on Florida's coral reefs.



Photo by Joe Marino

Coral colonies are made up of tiny animals called coral polyps that look similar to sea anemones.



Above: Use mooring buoys when available or anchor in the sand to avoid harming corals. Photo by Miami-Dade County Environmental Resources Management. Left: A giant anemone with sponges and corals on a southeast Florida coral reef.



PhotobyBillHorn,FWC

A Queen Angel fish swims near the Spiegel Grove anchor chain.

ARTIFICIAL REEFS

People periodically ask the question “What is an artificial reef?” An artificial reef is ‘artificial’ only in the sense that it is man-made. An artificial reef is one or more objects of natural or human origin deployed purposefully on the seafloor to influence physical, biological, or socioeconomic processes related to living marine organisms. Both natural and artificial reefs provide shelter for marine fishes and surfaces for attached invertebrate plant and animal communities. The organisms that make up artificial reef communities interact

not only with each other but also with surrounding sandy bottom communities and organisms in the water column above the reef, ranging from tiny planktonic larvae to large pelagic fish.

Florida’s artificial reefs of the early 1960’s through the mid 1980’s were the well-meaning but uncoordinated and unregulated fishing reef projects of enthusiastic angling clubs and private individuals with no liability insurance, little outside funding, and lacking technical assistance. The many lessons learned over the decades of artificial

reef construction in the Atlantic Ocean and Gulf of Mexico are summarized in an excellent reference document prepared by the Gulf and Atlantic States’ Marine Fisheries Commissions, titled “Guidelines for Marine Artificial Reef Materials”, Second Edition.

Today, Florida has a legislatively created artificial reef program within FWC which manages one of the most active artificial reef programs in the United States. The more than 2,500 artificial reefs constructed in state and adjacent federal waters off 34 of

35 coastal counties have been built to provide recreational fishing and diving enhancement, socioeconomic benefits to adjacent coastal communities, an increase in structural habitat for reef associated or reef dependent fishes and invertebrates, and to provide research opportunities addressing reef ecology questions.

Well-planned artificial reefs are carefully placed to avoid interference with other accepted uses of the coastal ecosystem and to achieve one or more clearly defined and measurable objectives. Follow-up compliance and performance monitoring of reefs is important to measure the success in meeting these objectives. Other artificial reef building objectives undertaken in Florida beyond FWC's artificial reef program include: mitigation or restoration reefs to replace hard bottom habitat lost through activities such as beach re-nourishment, the repair of reef system damage caused by vessel groundings, and the creation of substrate for the regeneration of oyster reefs.

Because of the extent of coastline and the statewide local involvement in reef activities, the FWC artificial reef program is a cooperative partnership with local coastal governments. Due to liability issues, artificial reef permits are only issued by the Army Corps of Engineers to state or local coastal governments. Many of the 70-100 public artificial reefs constructed annually are built in state partnership with local coastal governments using a combination of federal, state, and private funds.

In response to long-range planning initiatives, in 2003 the FWC completed an Artificial Reef Strategic Plan to serve as a blueprint for both the FWC and the local coastal government reef programs. The plan has six general goals:

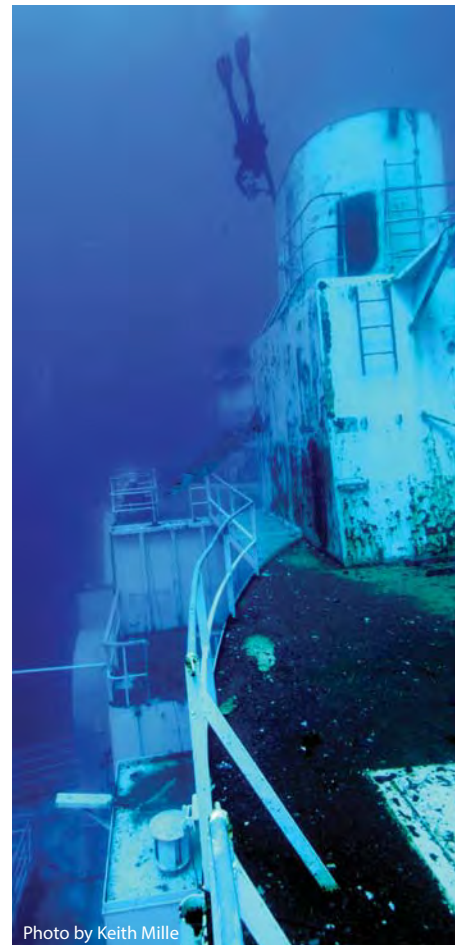
- Assure that long-term social, economic, and quality of life values of artificial reefs benefit the local and regional economies of Florida.

- Utilize artificial reefs in scientific research to obtain a mechanistic and predictive understanding of how artificial reefs function ecologically and physically across spatial and temporal scales.
- Use artificial reefs as a component of fisheries management.
- Identify, procure and maximize new and existing sources of funding for artificial reefs.
- Improve intergovernmental coordination and public/private cooperation in artificial reef development.
- Foster public and private sector marine ecosystem stewardship and accurate understanding of artificial reef issues.

There is an increasing awareness that artificial reefs face many of the same environmental and overfishing threats as natural reefs. When planning artificial reef projects, strong emphasis is placed on doing no harm to the existing marine environment. Ecosystem based management principles are also considered in artificial reef planning such as anticipation of hurricane impacts, protection of other essential fish habitat, and avoiding conflicts with fisheries management efforts to end overfishing of overexploited reef fish species.

Although not a panacea for all that ails Florida's marine environment, artificial reefs, in addition to providing well documented recreational and socioeconomic benefits, can be designed and located to achieve specific fishery management objectives, including supporting the sustainability of Florida's marine fish communities.

More information about Florida's artificial reefs can be found online at www.MyFWC.com, click on Fishing. Many counties also publish their own directories for local artificial reef sites. For more information call the Division of Marine Fisheries Management at (850) 487-0554.



Diver descending upon the Vandenberg artificial reef, Key West, Florida, May 2009.

Catch and Release

Take any pictures of your catch while it is in the water. This puts less stress on the fish and the fish will look bigger.



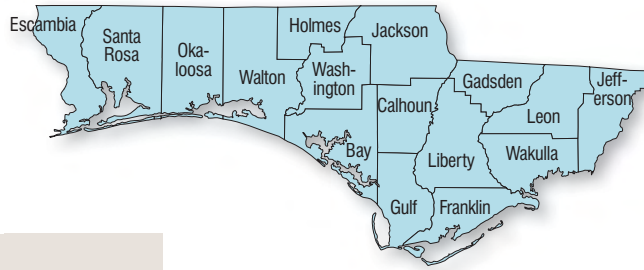
Where to Fish

Florida's inshore, nearshore, and offshore waters have an enormous assortment of saltwater fish available to anglers. With 2,276 miles of tidal shoreline, Florida has the most diverse saltwater fishing on the planet. No other state offers such a range of tropical, subtropical, and northern species of fish. This wide range of fish species is supported by the variety of habitats found in Florida.

Salt marshes, seagrasses, mangroves, hard bottom areas, patch and coral reefs and over a dozen estuary systems contribute to the highly productive fishing waters in Florida. Redfish, seatrout, mackerel, cobia, tarpon, snapper, and grouper are found throughout Florida. Anglers travel to Florida to pursue snook, bonefish, permit, and sailfish because these species are more abundant in the Sunshine State than any other state. For these reasons, anglers worldwide are drawn to the multitude of fishing opportunities in Florida.

Florida is the “Fishing Capital of the World,” because of its great resources and responsible management. The diversity of sport fishers, habitat, great weather, year-round fishing, and fishing related infrastructure are unsurpassed.

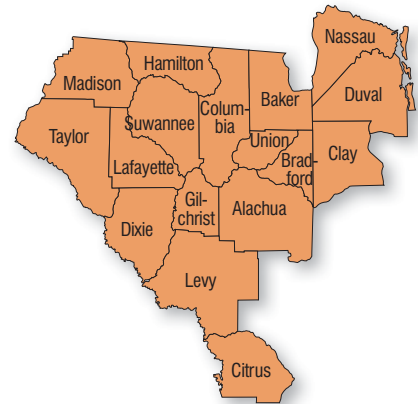




NORTHWEST

Thousands of acres of salt marshes line the bays and estuaries from Pensacola Bay to Apalachee Bay. This highly productive habitat provides excellent saltwater fishing opportunities for anglers in this region. Countless bays, and lagoons, miles of sandy beaches, island passes, and deep water support a variety of marine fish species.

These areas lure inshore and offshore fishermen with plenty of choices to target when fishing. Blue marlin, sailfish, wahoo, red snapper, grouper, and tuna are a few of the species found in the offshore waters. King mackerel, tarpon, Florida pompano, and cobia make seasonal runs through this region. Inshore waters and bays are excellent areas to catch redfish, seatrout, flounder, sheepshead, Spanish mackerel, whiting, and bluefish. Exploring bays in this region with a mask and snorkel will also yield sweet tasting scallops.

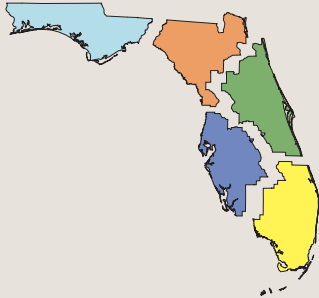


NORTH CENTRAL

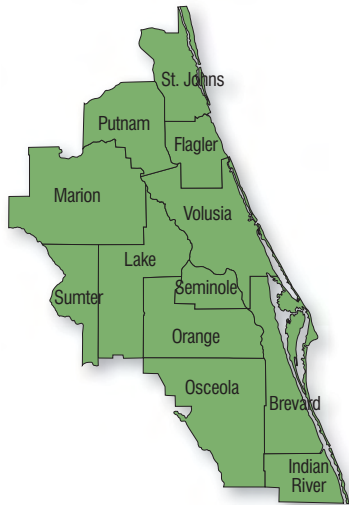
From Keaton Beach to Cedar Key numerous salt marsh creeks abound with fish trying to avoid an angler's bait or lure. This area's lush seagrass meadows hold copious numbers of baitfish. When fishing with natural baits use a circle hook to prevent gut hooking seatrout, redfish, flounder, and juvenile grouper found in this area.

Cedar Key is a favorite fishing spot for many anglers. Anglers fishing here can catch Florida pompano, black drum, sheepshead, bluefish, cobia, and tarpon, as well as oysters and clams. Additionally, anglers in Crystal River and Homosassa may be lucky enough to catch a snook.

A myriad of fish are caught around Fernandina Beach, Amelia Island, and Jacksonville including: redfish, grouper, sailfish, yellowfin tuna, wahoo, black sea bass, amberjack, cobia, jack crevalle, and king or Spanish mackerel.



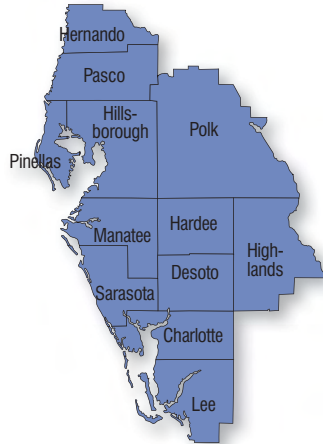
The map depicts five geographic regions of the state that provide tremendous fishing diversity and opportunity. The Northwest zone is highlighted by red snapper, redfish, and cobia. Tarpon and grouper are commonly caught in the North Central zone. Along the west coast, redfish dominate the seagrass flats near New Port Richey but for tarpon consider Boca Grande Pass. More than 225 species of fish are caught in the Florida Keys. Along the East coast large numbers of sailfish are caught off Stuart, "The Sailfish Capital of the World." Fish Cape Canveral to St. Augustine for king mackerel, tuna, and wahoo.



NORTHEAST

Deep water fishing is available to anglers on the East Coast from St. Augustine to Cape Canaveral. Gulf Stream weed lines attract dolphin fish, king mackerel, tuna, wahoo and billfish; tempting anglers to endure long boat rides to fish these floating habitats. Tripletail and triggerfish also feed in the weed lines and make excellent table fare. In these deep blue waters, the majestic sailfish is proudly sought by anglers carefully stalking this wary fish.

Inshore fishing from St. Augustine to Sebastian Inlet presents a variety of fish to anglers. Everything from snook, redfish, and seatrout to Florida pompano, sheepshead, and Spanish mackerel are targeted by anglers fishing the inshore waters of this region. Bluefish, ladyfish, whiting, mackerel, grouper, and dolphin fish are also found in the waters along this coast.

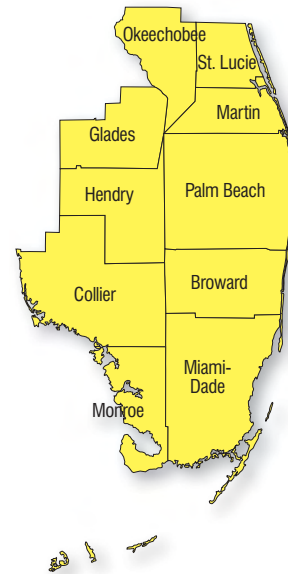


SOUTHWEST

Redfish dominate the seagrass flats near New Port Richey, but seatrout, snook, and cobia are also found here. Tampa Bay's miles of mangroves, seagrasses, and sandy beaches supply anglers with redfish, snook, seatrout, mackerel, tarpon, cobia, and amberjack. These fish are also caught around Sarasota in addition to grouper and snapper.

Boca Grande Pass is famous for tarpon, which are also caught farther south around Sanibel Island. Here anglers are also enticed by the redfish, snapper, snook, seatrout, and grouper hiding among the protective mangrove roots.

Naples presents a wide assortment of fish to anglers. When running, Florida pompano are caught from the beaches while keen-eyed permit are pursued in the shallow backwaters. Other catches around Naples include: bluefish, wahoo, mackerel, grouper, snapper, tripletail, and redfish.



SOUTHEAST

Snook are commonly caught in the waters around Fort Pierce, Stuart, Jupiter, and West Palm Beach. Jack crevalle, mackerel, Florida pompano, snapper, grouper, and dolphin fish are also frequent catches in these areas. The large numbers of sailfish caught off of Stuart give rise to its claim of "The Sailfish Capital of the World".

Biscayne Bay and Everglades National Park offer anglers the opportunity to catch a variety of saltwater species. Targeted species in these natural areas include: mangrove snapper, permit, spiny lobster, tarpon, snook, redfish, and tripletail.

More than 225 species of fish are caught in The Florida Keys, making this area a premier fishing destination. Tarpon, bonefish, and permit are carefully stalked in shallow seagrass flats, while sailfish, wahoo, tuna, dolphin, grouper, mackerel, cobia, and snapper are sought offshore.

Managing Florida's Marine Resources



FWC biologists collect information from fish caught by anglers that is used for management.

Enlightened fisheries management is more than just regulating harvest of existing fish.

Manage – it means to handle, to direct, to control; to maintain and increase. Without fisheries management in Florida, our children and their children might not have the chance to catch a bonefish on a fly or a 100-pound tarpon.

There have been laws governing Florida's fisheries since the mid-1800s. Because of this tradition, most anglers accept the need for rules and regulations. What they often don't understand is why we can't just have one easy-to-follow size and bag limit for all saltwater gamefish.

Florida's saltwater fishing regulations are complex and vary by species.

Florida's marine waters abound with hundreds of different species of fish. They don't all spawn at the same time or produce the same number of offspring. Some species prefer open ocean environments; others live out their lives in estuaries, subject to urban runoff, pollution, and fishing pressure. Differences in their biology and habitat mean that fishery managers have to use a combination of management techniques to maintain healthy fish stocks.

MAINTAINING

The many traditional ways to reduce the harvest of fish – including closed fishing seasons, bag, size, and slot limits – all protect fishes by reducing mortality at critical phases in their life cycles. No-harvest rules are implemented only in extreme cases, when a species has become so over-fished it may not recover unless it is allowed to reproduce without harassment.

Minimum size limits allow fish to mature to spawning size before they can be kept by fishermen. For some species this is adequate protection. Slot limits – which include both a minimum and a maximum size limit – permit harvest of fish that fall within the slot size while protecting smaller, immature fish and larger, broodstock fish. Slot limits work best for species with larger females (such as red drum and snook), which produce many more fertile eggs than smaller females of the species. For example, a single mature 25-pound female red drum will produce more than 1 million eggs per spawn, repeating the process every three to five days for up to two months. In comparison, a newly-matured female red drum produces less than a half million eggs. Protecting larger, more fertile females from capture increases the odds of a successful spawning season.

Bag limits reduce the number of fish anglers harvest at a given place and time. This is especially important for species that form large schools for migrating, feeding, or aggregations for spawning, which makes them more vulnerable to overfishing. Limiting the number of fish that can be harvested each day spreads fishing effort out over a broader time period, reducing the impact on the aggregation and allowing more people the opportunity to enjoy the resource.

Closed seasons protect fish when they are most vulnerable, such as during their spawning season. For snook, closed seasons are also used to protect them when they are most vulnerable to cold weather events. A hard freeze can temporarily stun (or kill) snook, making them easy to dip net. That is why they are protected from capture in January and February.

Obviously, each species of fish is unique. No single management technique suits them all. As success stories such as red drum and Spanish mackerel have demonstrated, good management can restore and maintain our valuable marine fisheries.



Photo by Ronnie Roberts

Tarpon Genetics Research

Tarpon (*Megalops atlanticus*) are found throughout Florida's coastal waters and are often called Silver Kings due to their silver coloring and blue-gray backs. These frequently targeted game fish may reach up to 8 feet and 280 pounds! While this awesome creature has been around since prehistoric times, there is still much to learn about tarpon. The Tarpon Genetic Recapture Study began in 2005 as a way for scientists at the Florida Fish and Wildlife Conservation Commission's Fish and Wildlife Research Institute (FWRI) to learn more about the habits of tarpon as well as their movement patterns.

Through this study, biologists from FWRI and Mote Marine Laboratory gather valuable tarpon information with the help of Florida anglers. Results from the analysis of DNA samples provided by anglers participating in the study help biologists gain insight on tarpon movement, distribution and their ability to withstand fishing pressures. The results also establish recapture rates that estimate how often anglers catch the same tarpon.

Tarpon anglers are encouraged to participate in the Tarpon Genetic Recapture Study. As of January 2010, over 5,000 samples have been collected thanks to public support and participation. For additional information on how you can participate in the Tarpon Genetic Recapture Study, email TarponGenetics@MyFWC.com or visit <http://www.myfwc.com/research/saltwater/tarpon/>.



These anglers demonstrate the proper handling technique.

CATCH AND RELEASE BUILDS FISHERIES

As conservation ethics grow stronger among saltwater anglers, catch and release has become increasingly important. Anglers have learned the impacts of overfishing and are changing the ways they fish to reduce their impacts. The majority of fishing trips in Florida result in fish being caught and released. Regulated species, such as red drum, are released if they are outside their slot limit, either too small or too large. Some anglers fish with the intention of releasing everything they catch. The tarpon fishery is an example of such a directed catch-and-release fishery.

There are many recommended techniques to minimize stress and increase the chances for survival of a released fish:

Tackle: Selecting appropriate tackle is the first step. Using tackle that is too

light and playing the fish to exhaustion depletes the fish's energy reserves, which puts the fish at risk of death by metabolic imbalances or predation. Ethical anglers shorten fight times to reduce stress on the fish by using tackle heavy enough for their targeted fish.

Hooks: Using barbless hooks, or hooks with the barb flattened, is one of the most important things an angler can do to minimize internal damage to the fish and make release easier and less stressful. Circle hooks are another important conservation tool. Using these hooks reduces your chance of gut hooking a fish. Circle hooks most often catch in the corner of a fish's mouth and are easier to remove, increasing the survival rate of the fish. Avoid cadmium coated hooks as cadmium is toxic to fish.

Avoid Gut Hooking: Fishing with live baits increases the likelihood of

gut-hooking fish. Using artificial baits reduces this risk. To avoid gut-hooking fish, set the hook immediately on the strike, before the fish swallows the bait. Studies show that survival of gut-hooked fish increases if the line is cut and the hook is left in place. Avoid lifting gut-hooked fish by the leader as this increases tissue damage. When fishing with live or cut bait, use non-offset circle hooks to reduce gut-hooking. Using a non-stainless steel hook will also increase the fish's chance of survival as these hooks will rust out over time.

Use Wet Hands When Handling Fish: Leaving the fish in the water during release is best, but not always practical. If a fish must be removed from the water, it should be gently cradled under the rib cage using wet hands. Dry hands, towels and gloves remove too much of the fish's protective slime and puts the fish at risk of infection.

Also avoid using a net if the fish is to be released, as it too removes the slime layer. If you must use a net, use a knotless, rubber-coated model.

Never lift a fish by the gills or eyes if it is to be released: In general, handle the fish as little as possible and release it as quickly as possible. A fish can be calmed during release-handling by turning it on its back or by covering its eyes with a wet towel. To remove the hook, use rounded-edged needle-nose pliers or a dehooker. Keep these tools in a convenient place so fish can be released quickly.

Reviving fish: Once the hook is removed, revive the fish in the water by holding it head first into the current until it swims away. When releasing a fish from a bridge, pier or boat, gently drop the fish into the water head first to reduce the impact and force water through its gills. Fish should never be thrown or dropped sideways.

Big Game: Large game fish such as billfish, tunas, sharks, and tarpon should be brought alongside the boat as quickly as possible. Do not boat these large fish – they are dangerous to both themselves and the crew.

It needs oxygen! Taking an exhausted fish out of the water is like placing a plastic bag over the head of a marathon runner. Fish that are in good shape should be released immediately by removing the hook or cutting the leader as close to the hook as possible. Use artificial lures with single hooks to reduce gut hooking and facilitate release, and circle hooks with natural baits. If the fish is exhausted, revive it by making sure the head is totally submerged and towing it slightly forward. Many times, large gamefish expel their stomachs when hooked. Don't attempt to replace it – the fish will swallow it after release.

Bottom fish: When fish are brought up from depths greater than 50 feet, the decrease in pressure causes internal gases to expand in the swim bladder, displacing the eyes and internal organs, sometimes causing the stomach to protrude from the mouth. Some studies conclude that groupers caught from deeper waters that present expanded swim bladders can return to the bottom easier if the bladder is punctured. When venting an inflated fish, it's best to insert a hollow-tipped needle into

the fish under a scale at a 45-degree angle approximately 1 to 2 inches from the base of the pectoral fin. Insert the needle just deep enough to release the gases so that the fish may be released with minimal damage.

Survival Studies of Florida Fishes

Controlled studies, many conducted by FWC scientists, show that survival of fishes released after hook-and-line capture is generally high, validating catch-and-release as a conservation technique:

A recent study found that 98% of snook caught by biologists and volunteer anglers throughout Florida survived catch-and-release. Of the snook that died, most of them had been caught on live bait, supporting studies that fish caught on artificial lures generally survive the encounter better.

Scientists studying bonefish held in a large pond in the Florida Keys found that 96% of the fish caught survived multiple captures. The bonefish that died had each been caught 5 to 10 times, leading scientists to surmise that bonefish released in the wild probably have a higher survival rate.

A study of spotted seatrout caught and held in net-pens in Tampa Bay had a 95% survival rate overall. Hook position and water temperature were the significant contributing factors to mortality. Red drum has a high catch-and-release survival rate, varying from 84% in Georgia waters to 96% in Texas waters. These studies also reported that hook position and water temperature were the significant contributing factors to mortality.



Venting helps release gases that may over expand the body cavity when fish are brought to the surface from deep water.

Catch and Release

Revive a tired fish by holding it horizontally in the water and moving it forward with its mouth open to allow water to flow over the gills.

Law Enforcement

Protecting Florida's natural resources and people through proactive services.

ENFORCEMENT

"The Florida Fish and Wildlife Conservation Commission's Division of Law Enforcement is entrusted with the task of protecting our state's valuable natural resources. In a state consistently experiencing great physical and economic changes, this is a particularly unique and important role. Our officers' specialized equipment and expert training enable them to enforce state and federal laws in the woods, on the waterways, and during disasters and other emergencies. Patrolling saltwater areas to maintain safe and legal recreational and commercial activities is one of our primary missions and is important to the long term well-being of the species." (Colonel Jim Brown)



For saltwater anglers, Florida offers fishing fun in deep or shallow waters, off bridges and piers, on small boats and charter boats, and by diving, wading, and casting. With more than 700 sworn personnel to oversee the activities of the estimated 239,000 hunters, 2.7 million anglers, and over 1 million boaters, FWC officers have a large responsibility. On top of this, FWC officers are relied upon to protect over 700 species of fish and 672 species of wildlife, and patrol 34.5 million acres of land, 7.6 million acres of water, 51,858 miles of rivers, streams, creeks, and canals, 2,276 miles of tidal



Officers Mathew Griffith and Felix Collazo at a Kids' Fishing Clinic in Naples.

shoreline, and 13,200 square miles of offshore waters. The Division's mission, "Protecting Florida's natural resources and people through proactive and responsive law enforcement services," shows its commitment to monitoring those extensive areas.

The Division works together with other parts of the agency to teach and develop future generations of conservationists. The agency recently launched the community-oriented Florida Youth Conservation Centers Network. This initiative encourages citizens to get outside and enjoy the Florida outdoors, whether through saltwater fishing or other activities, and to work together to be safe and conserve our resources for future generations to enjoy.

How you can help

FWC officers do their best to ensure that they are aware of any threats to fish, wildlife and the safety of Florida residents. However, Florida residents are encouraged to help officers in this endeavor. Citizens can report violators and possibly earn a reward for their effort by calling the "Wildlife Alert" program at 1-888-404-FWCC (3922) or visiting myfwc.com/contact/wildlife-alert/.

Citizens can also contribute to the future of the state by supporting FWC's Florida Youth Conservation Centers program through events in their communities.

FWRI, the research arm of the FWC

Understanding the population structure and dynamics of important fishery species is critical to maintaining for the future.

The Fish and Wildlife Research Institute (FWRI) provides timely science-based assessments of fish and wildlife to the FWC and others responsible for making decisions about the management of Florida's diverse natural resources. FWRI monitors and provides information on the status of terrestrial, aquatic and coastal habitats, freshwater and marine fisheries, harvested and imperiled species, and other important plant and animal communities in Florida. Federal, state, county, and local government resource managers use the information provided by FWRI. In addition, recreational and commercial fishing interests, recreational hunting and boating interests, universities, and non-governmental organizations also use this information.

To gather the data and information needed by resource managers, FWRI conducts statewide research programs from more than 20 locations throughout the state including its St. Petersburg headquarters.

The science behind marine fisheries management

FWRI monitors commercial and recreational marine fisheries by collecting and analyzing biological and harvest information. Scientists use statistically valid fish sampling techniques to collect fish for study (fisheries-independent data) and obtain information directly from fishers (fisheries-dependent data). FWRI provides nearly all of the biological information and analyses used by the FWC and other fisheries managers in regulating Florida's marine resources.

Understanding the population structure and dynamics of important fishery species is critical to maintaining popu-

lations for the future. To assess the effects of current fishery regulations and predict future stock levels, FWRI biologists monitor the species caught, fishing effort, and fishing methods. They also study age, growth, spawning habits and locations, mortality, migration, larval development, and juvenile recruitment of many species. Using genetic information, researchers can identify the geographic boundaries of fishery stocks.

Researchers combine biological and fishery data to create models that estimate fishing mortality and abundance and determine the likely condition and future status of Florida's fishery resources. The FWC and other fisheries managers rely on these assessments for up-to-date indications of stock condition, which is vital information for the development of sound science-based management decisions.

How you can help:

To continue to enjoy Florida's marine resources and conserve them for future generations, learn more about your role in fisheries conservation. Your cooperation and participation in fisheries research efforts, such as shoreline and headboat angler surveys, helps researchers provide managers with the best available information. For more information about FWRI, visit <http://www.myfwc.com/research/>.



How can FWC determine that regulations are needed?

Assessing a fish population to determine its relative level of health is a multi-step process. This process starts with the collection of data through a variety of programs and methods. In general, biologists collect fisheries data in Florida by sampling populations on the water using nets and other gear or by sampling fish caught and brought back to the docks and boat ramps by anglers and commercial fishermen. For the more prominent of Florida's fish species, such as redfish,

spotted seatrout, snook, and Florida pompano, these data are compiled and analyzed for periodic comprehensive stock assessments. A stock assessment provides updated life history, biological and fishery information for a particular species, as well as commercial landings, recreational catch, and information about the status of the fishery. The FWC uses this information to determine if new regulations are needed to keep fish stocks healthy.

How Anglers Contribute to

Marine Resource Management



A basic way anglers can contribute to maintaining marine resources is to know how to identify the fish they catch, which species are regulated, and what the regulations are. The back portion of this magazine includes a section devoted to identification of regulated species. The FWC updates state marine fisheries regulations regularly and recent regulation changes are highlighted in yellow. Also, learning about a species' lifecycle and biology helps us understand why regulations are needed. For example, some fish change gender during their life. Not all fish populations have a 50:50 male/female ratio and the gender change occurs only when a certain proportion of males or females are lost. For such species, a slot limit may be established. Slot limits also may benefit species for which very large females produce a massive proportion of a population's eggs.

Most anglers enjoy learning about the fisheries in their region, understanding fish biology and the significance of the habitat they live in, and practicing boating awareness and sound fishing ethics.

There are many resources available to inform us as anglers and allow us to help the FWC manage our fisheries and the coastal environment. Such cooperation is win-win for anglers and for state resource managers.

Another way anglers can contribute to marine resource conservation is through sound catch-and-release practices. Remember to keep your hands wet when handling fish, and never use a towel or gloves. This will limit the amount of protective slime removed from the fish. Always try to release a fish while it is in the water to increase survival chances, but be aware for other predators when you have your hands in the water! When dehooking a fish, keep your tools close by. There are many styles of dehooking devices available, or you can use a pair of blunt-nosed pliers. Hook choice is also an important option to consider. Circle hooks are designed to hook in the fish's mouth, and to reduce the chance of gut-hooking. Also look for non-stainless steel hooks. Should you have to cut the line, these hooks will rust out of the fish over time.

Anglers can also aid fish populations by preserving habitat and appreciating its significance. Estuaries serve as nursery habitat for more than 95% of Florida's recreational and commercial fisheries and they also serve as

important filtering mechanisms for terrestrial runoff. Always properly dispose of chemicals and oils to prevent contamination of estuaries. When fishing in or near seagrass beds, do not motor through shallow water. Pole or paddle through and lift the motor so the propeller does not damage the grass beds. Seagrass beds take 10 years to recover from propeller damage. Be aware of coral reefs, too, as they take even longer to recover. Never throw an anchor near coral and make sure anchors are securely set so they don't drag. Know the channels and the channel markers to avoid grounding.

Anglers also help manage fisheries by assisting with data collection. The FWC Fisheries Dependent Monitoring (FDM) program collects data directly from recreational and commercial fishers. You may frequently encounter FDM staff collecting data about the fisheries. They want to learn how many people were fishing, what species and sizes of fish were kept, and what was caught and released. This real-time information aids the FWC in managing fishery resources in the best way possible.

It is important that we are all aware of our impact on the environment. As a steward of Florida's marine resources, you are ensured an active role in preserving our fisheries for future generations.



SPORT FISH RESTORATION

Did you know that every time you purchase fishing equipment or fuel for your boat you're contributing to fisheries conservation? Even better, the small contribution you make with each purchase translates into millions of dollars toward sport fish restoration each year. In fact, with your help, Florida receives around \$13 million every year to support both fresh and saltwater fisheries resources.

This cycle of money flow is all a part of the Sport Fish Restoration program, which is managed by the US Fish and Wildlife service. Angler contributions are made through a 10% excise tax on fishing tackle and boating fuels. This money goes to a general federal fund and is later redistributed to the states based on the number of resident licensed anglers, as well as the land area of the state, including water territory. When the state receives the money, it is required to make a 25% matching contribution to the grants. In Florida, the funds are managed by the Florida Fish and Wildlife Conservation Commission (FWC), and the 25% matching contribution comes from recreational fishing license fees.

Of the total money received, 15% is specifically allotted to boating access improvement projects. This includes new land acquisition for construction of boat ramps as well as the maintenance of over 200 boat ramps statewide. About \$6.5 million of the money goes towards saltwater projects, which supports programs such as fishing clinics for kids and women, fisheries research, fish stock enhancement, artificial reefs, and angler



outreach and education. A variety of publications are also produced, including boating and angling guides, fish identification posters, and the magazine you're reading now. All of these and more are available to the public free of charge through Sport Fish Restoration, and can be viewed online or ordered by visiting <http://myfwc.com/research/publications>.

All this began in 1950 when congress approved the Sport Fish Restoration Act, which expanded on a previous tax on sporting equipment to include fishing tackle. Because it was sponsored by U.S. Rep. John Dingell, Sr. of Michigan and Sen. Edwin Johnson of Colorado, the law came to be known as the "Dingell-Johnson Act." The Act was amended in 1984 in order to lend further support to marine fisheries conservation efforts. It extended the excise tax to include a wider variety of tackle and boating fuels. This amendment was sponsored by Sen. Malcolm Wallop of Wyoming and Sen. John Breaux of Louisiana,

and was therefore known as the Wallop-Breaux Amendment to the Sport Fish Restoration Act.

Thanks to this legislation, marine resources in Florida may have a brighter future. Since Sport Fish Restoration money contributes to both marine research and angler education programs, fisheries are benefitted both directly and indirectly. So the next time you purchase fishing tackle or use a public boat ramp, remember that you helped to make it all happen. This is one user tax we can all feel good about, because thanks to angler contributions and stewardship of marine resources, sport fishing will endure for generations to come.



The Sport Fish Restoration logo pictured here shows the public that an excise tax was collected on the item of fishing tackle or equipment displaying this logo. It also appears on boat ramps at marine sites improved with funds from Sport Fish Restoration and on educational materials printed with these funds.



Fishing ethics are the things anglers do when they are unobserved. It's what governs his or her impulses when no one is looking.

In short, fishing ethics is conscience.

Millions of anglers fish in Florida's salt waters. Without ethics – without people abiding by the current fishing regulations and common courtesy – the entire system would fail.

Without ethical anglers following fisheries regulations, there would soon be little of value left to catch. Ethical fishermen don't keep snook during the closed season. They don't keep egg bearing female lobsters during the sport season either. Without ethical fishermen, highly valued species such as red drum and scallop would literally be eliminated from the fishery.

Voluntary release of some legal-size fish is just as critical. Imagine three million anglers each taking just one legal redfish of average size (4 pounds). The resulting harvest – 12 million pounds of redfish – is more than the entire inshore redfish stock.

Ninety-nine out of one hundred anglers are law abiding. Based on arrest records from the FWC law enforcement, the one-in-100 violator adds up to an appalling 30,000 lawbreakers every year.

Fortunately, many Floridians voluntarily practice catch-and-release, both out of respect for the fish they catch and because they know that, without such ethical behavior, the fishing future would be bleak for them and their children.

While there is nothing illegal about taking home a full limit of fish, day after day, that number adds up to more fresh fish than any of us could comfortably eat, and results in unnecessary stress

THE Ethical

Without fishermen following fisheries regulations, there would soon be little of value left to catch. Many Floridians voluntarily practice catch-and-release, out of respect for the fish and because they know that, without such ethical behavior, the fishing future would be bleak for them and their children.

Angler

on fish populations. The brightest hope for continued availability of sportfish is for all of us to release unharmed, these fish we don't intend to eat.

There was a time when fishermen could specialize in one species, such as snook. But with bag limits currently standing at one snook, a fisherman out for a full day's sport could find himself finished well before lunch. The time has come for fishermen to rethink their goals. Diversity is the answer.

Diversity is the whole point behind the Florida Grand Slam certificate program.

"By emphasizing the challenge and achievement of catching three different species of fish in one day, we hope to encourage fishermen to diversify and spread out their fishing effort by targeting more than one species," explains a scientist of the FWC's Division of Marine Fisheries Management. "By not focusing on just one species, trying something new and different, you'll give target fish such as snook, redfish, and trout a needed rest."

Fortunately, anglers are ranging farther and wider these days, sampling a variety of species such as ladyfish, black sea bass, and barracuda. That takes some of the pressure off more sought-after species such as mackerels, snook, and grouper.

The phrase "A fish is too valuable to only be caught once," was coined in the 1880's by freshwater anglers. Now that adage covers all species. Our fish are a limited resource with value beyond a single lunch or dinner. They are an integral part of the living environment.

Florida's marine resources generate dollars that support our economy through the recreational fishing industry, sport diving, and the aquarium

trade. Fish have intrinsic worth as living creatures to be admired for their beauty and grace; appreciated for their individual adaptations for survival.

By learning respect for all the forces that must work in harmony to produce a healthy marine resource, we can ensure good fishing for generations to come. After all, respect for nature and for other anglers is what fishing ethics is all about!

The Ethical Angler

- Can identify most of the species commonly caught in their area and knows the current regulations for each.
- Understands the legal requirements for licenses and stamps.
- Appreciates the importance of habitat and a clean environment.
- Knows how to fight and release fish in a way that gives the fish the best possible chance of survival.
- Is courteous of others and does not "move in" on other fishermen or divers' spots.
- Understands and observes safe boating practices; is conscious of his boat's wake, and does not speed past anchored boats, anglers on shore, swimmers or non-motorized craft.
- Keeps trash out of the water, disposing of monofilament fishing line, napkins, food containers, and other waste in a proper receptacle ashore.
- Abides by the law and is not afraid to report those who do not.



How to spot an ethical angler

The FWC invites you to participate in the Saltwater Ethical Angler Photo Recognition Program. Send us a picture of you with your catch and you may be featured in an upcoming FWC publication, maybe even the cover of the recreational saltwater fishing regulations!

To be considered, your fish must be handled properly as it is the responsibility of every angler to strive for 100% survival of fish that are released. An ethical angler handles their catch with wet hands only, is careful not to poke fingers into gills, and fully supports the body weight of the fish by cradling it horizontally. Large fish should not be boated, as removing fish from the water can injure them.

- All submitted photos may be used in any FWC publication or on the website.
- Images must be at least 300 dpi. in .jpeg or .tiff files
- Original files from digital cameras or hard copy prints are acceptable.
- All submissions must include a signed FWC Permission to Use Image form found on our website.

Submit your ethical angling photographs to EthicalAngler@myFWC.com and good luck!

Catch and Release

Using barbless hooks, or hooks with the barb flattened, is one of the most important things an angler can do to minimize internal damage to fish and ease release.



Outdoor recycling bins constructed of PVC and mounted at piers, boat ramps, and marinas are being installed throughout the state.

WHAT CAN YOU DO TO HELP?

The FWC has joined a cooperative initiative with several other public and private organizations to implement a statewide effort to encourage fishing line recycling through a network of line recycling bins and drop-off locations. Since the inception of the Monofilament Recovery and Recycling Program (MRRP) in 1999, more than half of Florida's counties have joined the effort, and the number is steadily rising. Follow these simple guidelines to ensure the prevention of a monofilament hazard on your next fishing trip:

- Don't leave your line behind! Store it securely until it can be placed in a recycling receptacle. If your line does break, make the extra effort to retrieve it. If you throw your line away, remember to cut it into small pieces.
- Cast with care! Survey the area before you cast to avoid trees, utility lines, and other obstacles that may snag your line.
- Don't feed the animals! Feeding wildlife encourages animals to approach boats and anglers.
- Be part of the solution, cleanup fishing line pollution! Collect discarded line and participate in local cleanup efforts.
- Know who to call! If you encounter an entangled animal, know what to do! Report all entangled marine wildlife to the FWC at 1-888-404-FWCC (3922). Report all entangled land animals or birds to the local animal rehabilitation hospital.

For more information, please visit www.FishingLineRecycling.org.

HOOK INTO RECYCLING! CAST YOUR USED LINE RESPONSIBLY

"Don't Teach Your Trash to Swim" – this is a very common phrase used in marine conservation. Unfortunately, what some anglers may not be aware of is that it not only refers to trash such as bottles, cans and paper, but to fishing line as well.

In the 1930's, nylon monofilament was introduced as an alternative to braided Dacron fishing line, but it wasn't until the 1950's that an even thinner nylon monofilament line was produced. This thinner monofilament quickly took over as the preferred fishing line by anglers. It can be used on a wide variety of reels, is stronger, more resilient and is virtually invisible underwater. Consequently, the very features that make monofilament so attractive to anglers make it very hazardous to wildlife.

Depending on environmental conditions, discarded fishing line can last up to 600 years and harm wildlife that becomes entangled, causing them to drown or lose limbs. In fact, each year it causes injury and death to several types of aquatic wildlife. In addition to the threat of entanglement, animals such as dolphins, sea turtles, manatees, and sea birds can be injured by swallowing the line, which may obstruct digestion and lead to starvation. Certain types of monofilament may even contain chemicals that could poison the animal. Because it is virtually undetectable under water, it may injure divers and boaters, foul boat propellers, and threaten the health of fisheries.

Catch and Release

Gripping devices can be effective for controlling and handling fish. Grip behind the lower lip and support the weight of the fish in a horizontal position.

Index of Common Names

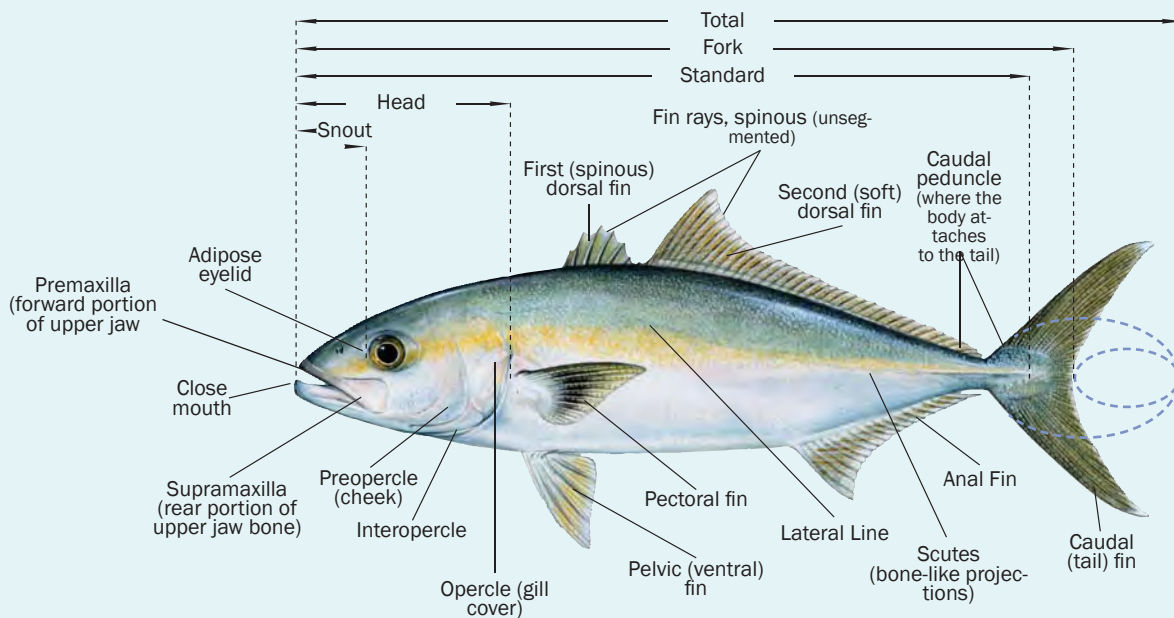
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Learning to identify fish is a fascinating study in itself and is a matter of importance to the angler; misidentification of fish can lead to fisheries violations. Included in the following listing are fish and invertebrates commonly caught by anglers in Florida. They are grouped into Families as listed in the American Fisheries Society publication, "Common and Scientific Names of Fishes."

How to use this section

Fish Illustrations by Diane Rome Peebles; Invertebrate Illustrations courtesy of Florida Department of Agriculture and Consumer Services



Features: The details most readily observed have been given top priority, since the angler has only moments to decide if a fish is a legal catch.

Similar Fish: Many fish have "look-a likes," other fish that resemble them closely. In

such instances, the most readily seen differences are given.

Habitat: Many fish are locked into particular habitats, information that often tells the angler where to drop the hook.

Size: Anglers usually judge the size of the fish by its weight. Scientists use length, since age/length relationships are more reliable than age/weight.

Notes: This includes the fish's life history, behavior, and feeding habits.

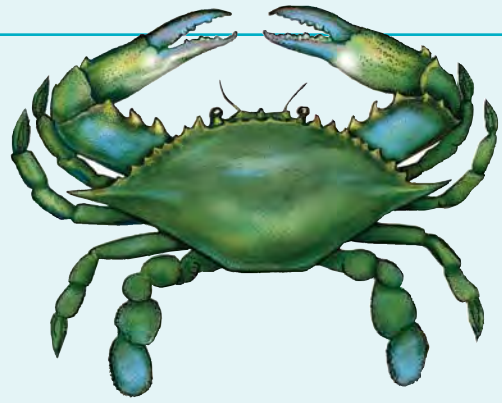
Blue Crab

Callinectes sapidus
Family Portunidae

- Features**
- Brilliant blue color on their front claws (tips are red in females) with an olive or blueish-green carapace.
 - Pair of paddle shaped legs that are excellent for swimming.
 - Nine marginal teeth behind each eye, within the last pair of teeth ending in a sharp spine.

Habitat Seagrass beds and other submerged aquatic vegetation areas are important nursery habitats for juvenile blue crabs. Adults utilize grassy and shallow sandy areas.

Size To 9 inches



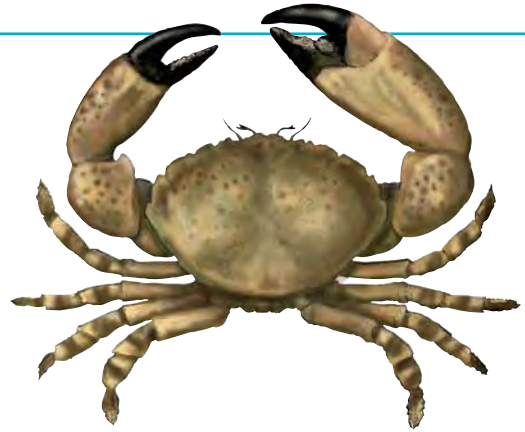
Stone Crab

Menippe spp
Family Xanthidae

- Features**
- Carapace is smooth, heavy and thick.
 - Claws are enlarged, stout and dark tipped.
 - There are four blunt teeth along the sides.
 - Usually one claw is larger and if legal can be harvested and then the crab is returned to the water.
 - Adults are reddish brown, juveniles are dark blue to purple.

Habitat Reefs and rocky areas, oyster bars in shallow to moderate deep areas. Stone crabs burrow in mud, seagrass or oyster beds.

Size To 2-4 inches.



Clams

Southern Quahog (*Mercenaria campechiensis*)
Northern Quahog (*Mercenaria mercenaria*)

- Features**
- Clams are bivalve, or two-shelled.
 - Clams have two muscles (adductors) used to close the shell.
 - Two siphons used to draw in or expel sea water.
 - Hatchet-shaped foot used to burrow into sand or mud.

Habitat Found in sediments located from high tide line to under 50 feet of water; they are most common on sand or sand-mud bottoms and tolerate a variety of salinities.

Size 1 inch thick across hinge.



Oysters

Crassostrea virginica
Family Ostreidae

- Features**
- When feeding, the oyster can pump and filter over 9 gallons of water in 1 hour.
 - Interior white with a purple mussel scar.
 - Oysters require a hard substrate to grow and often grow on the top of other oyster shells.
 - Oval in shape with a bumpy wrinkled shell.

Habitat Oysters flourish in estuaries where nutrient-rich fresh water meets the salt water.



Bay Scallops

Argopecten irradians
Family Pectinidae

- Features**
- Mottled gray and black.
 - Lower valve white.
 - Have an adductor muscle.
 - Capable of swimming by clapping valves together.
 - All species have rows of blue eyespots along edge of mantle.

Habitat Seagrass meadows in shallow waters.

Size To 3 inches.

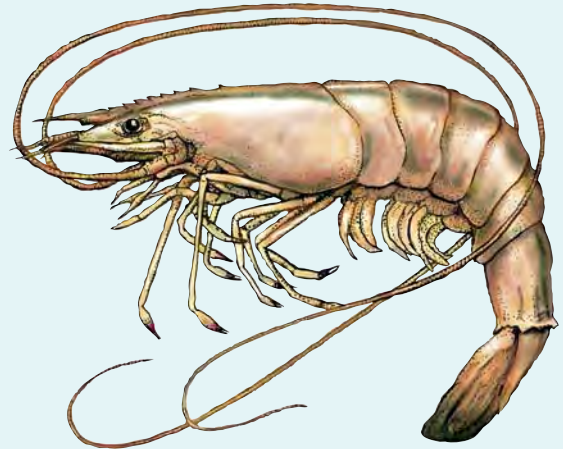


Shrimp

Brown shrimp (*Farfantepenaeus aztecus*), Pink shrimp (*Farfantepenaeus duorarum*), White shrimp (*Litopenaeus setiferus*) and royal red shrimp (*Pleoticus robustus* or *Hymenopenaeus robustus*).

- Features**
- Shrimp are decapod crustaceans characterized by five pairs of legs, often with small pincers on the end.
 - They have large, well-developed eyes, large swimmerets, and long antennae.
 - Pink shrimp found along the Atlantic Coast are usually brown; those found along the northern Gulf Coast are often lemon-yellow; and those found in the Florida Tortugas are pink.
 - White shrimp are grayish-white with a green, red or blue tinge on the tail and legs.
 - Royal red shrimp are usually deep red but are sometimes grayish pink.

Habitat Most shrimp spawn offshore in deep water from early spring through early fall. Young shrimp are carried by currents into coastal estuaries to mature. In Florida, shrimp are harvested with trawls that are cone-shaped nets towed along the bottom in waters near shore.



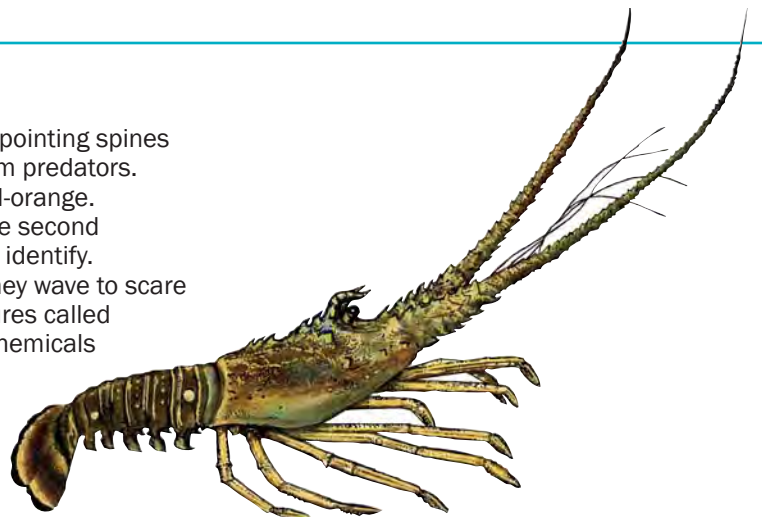
Spiny Lobster

Panulirus argus
Family Palinuridae

- Features**
- Spiny lobsters get their name from the forward-pointing spines that cover their bodies to help protect them from predators.
 - They vary in color from almost white to dark red-orange.
 - Two large, cream-colored spots on the top of the second segment of the tail make spiny lobsters easy to identify.
 - They have long antennae over their eyes that they wave to scare off predators and smaller antennae-like structures called antennules that sense movement and detect chemicals in the water.

Habitat Hardbottom, seagrass, and coral reefs of South Florida and Caribbean.

Size To 15 pounds (10 inches).



Shortfin Mako

Isurus oxyrinchus

Family Lamnidae, Mackerel Sharks

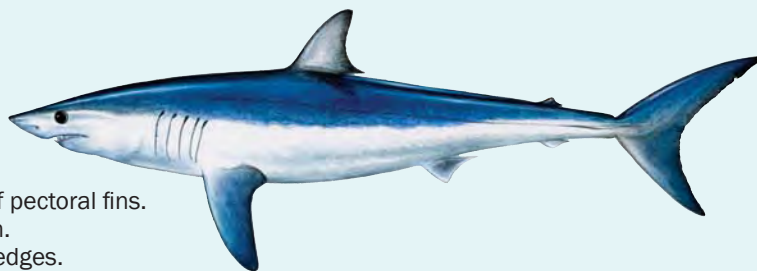
- Features**
- Lunate tail with similarly sized lobes.
 - Lateral keel at the base of the tail.
 - Deep blue back and white underside.
 - Underside of sharply pointed snout white.
 - Origin of first dorsal entirely behind base of pectoral fins.
 - Second dorsal fin slightly in front of anal fin.
 - Long, narrow, recurved teeth with smooth edges.

Similar fish White shark, *Carcharodon carcharias*, whose teeth are serrated and triangular, and the longfin mako, *Isurus paucus*.

Habitat Offshore fish often seen near the surface.

Size To 300 pounds (12 feet).

Notes Active, strong swimming fish known for leaping out of the water when hooked; feeds on mackerel, tuna, sardines, and some much larger fish.



Atlantic Sharpnose Shark

Rhizoprionodon terraenovae

Family Carcharhinidae, Requiem Sharks

- Features**
- Long and flattened snout.
 - White trailing edge of pectoral.
 - Black-edged dorsal and caudal fins, especially when young.
 - May have small whitish spots on sides.
 - Furrows in lips at the corners of the mouth.
 - Outer margin of teeth deeply notched in both jaws.
 - Second dorsal fin originates over middle of anal fin.
 - Slender body, brown to olive-gray in color with white underside.

Similar fish Other Carcharhinids.

Habitat Inshore species, even found in surf; also common in bays and estuaries; adults occur offshore.

Size A small species, 2 to 4 feet.

Notes Mature adults between 2 to 2.75 feet long; 4-7 newborns range from 9 to 14 inches in length; adults feed on small fish and crustaceans.



Sandbar Shark

Carcharhinus plumbeus

Family Carcharhinidae, Requiem Sharks

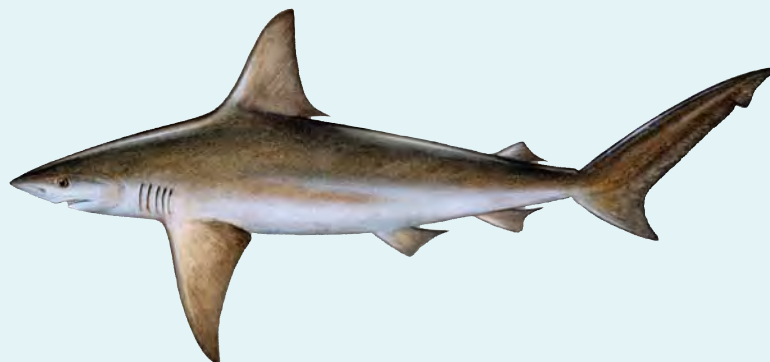
- Features**
- Snout broadly rounded and short.
 - First dorsal fin triangular and very high
 - poorly developed ridge between dorsal fins.
 - Brown or gray in color with white underside.
 - Upper and lower teeth finely serrated.

Similar fish Dusky shark, *Carcharhinus obscurus*; bull shark, *Carcharhinus leucas*.

Habitat Nearshore fish typically found at depths ranging from 60 to 200 feet.

Size To 10 feet.

Notes Both predator and scavenger, feeding mainly near the bottom on fish and shellfish; migrates long distances; matures at about 6 feet in length.



Blacknose Shark

Carcharhinus acronotus

Family Carcharhinidae, Requiem Sharks

- Features**
- Distinctive dusky smudge at snout tip (more prominent in young).
 - No dark tips on fins.
 - Pale olive-gray above, whitish below.
 - First dorsal fin begins above rear corner of pectoral fin no mid dorsal ridge.
 - Upper teeth very asymmetrical, those toward front coarsely serrated at base.

Size To 5 feet.

Habitat Common in bays and lagoons.



Blacktip Shark

Carcharhinus limbatus

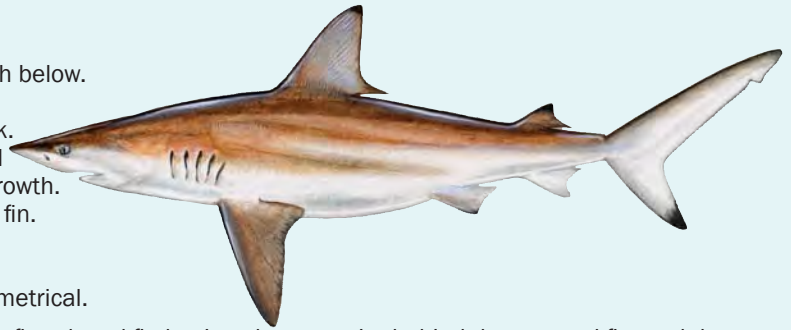
Family Carcharhinidae, Requiem Sharks

- Features**
- Dark bluish gray (young paler) above, whitish below.
 - Distinctive whitish stripe on flank.
 - Inside tip of pectoral fin conspicuously black.
 - Dorsal fin, anal fin, and lower lobe of caudal fin also black-tipped in young, fading with growth.
 - First dorsal fin begins above axil of pectoral fin.
 - Snout long, almost V-shaped from below.
 - No middorsal ridge.
 - Upper and lower teeth serrated, nearly symmetrical.

Similar fish Spinner Sharks, *Carcharhinus brevipinna*, the first dorsal fin begins above a point behind the pectoral fin, and the snout is longer.

Habitat Principally pelagic, but often comes inshore in large schools, particularly in association with Spanish Mackerel; frequently the most common shark (especially young) in clear-water cuts and along beaches in Florida and the Bahamas.

Size To 8.25 feet.



Scalloped Hammerhead

Sphyrna lewini

Family Sphyrnidae, Hammerhead Sharks

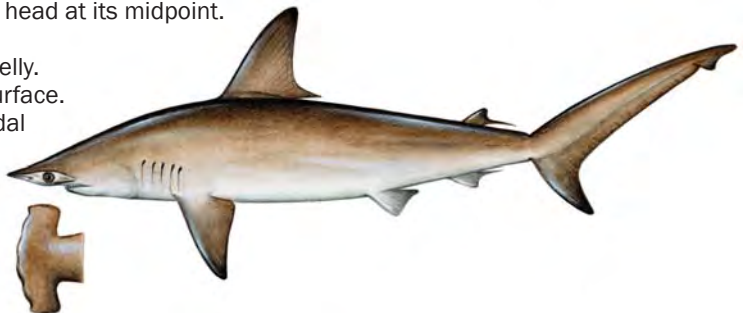
- Features**
- Fifth gill slit shorter than 4 preceding ones, located behind the pectoral fin base.
 - Flattened head extending to hammer-like lobes on each side.
 - Distinct indentation of the front margin of the head at its midpoint.
 - Teeth smooth-edged.
 - Gray-brown to olive in color with white underbelly.
 - Pectoral fins tipped with black on the undersurface.
 - Tips of first and second dorsal lobes and caudal also may have dusky tips.
 - Pelvic fin with nearly straight hind margin.

Similar fish Other hammerhead sharks.

Habitat Both offshore and inshore.

Size Common to 6 feet and can reach 14 feet.

Notes Predatory fish, feeding mainly on fish, squid, and stringrays; male matures at about 6 feet in length.



Bonnethead Shark

Sphyrna tiburo

Family Sphyrnidae, Hammerhead Sharks

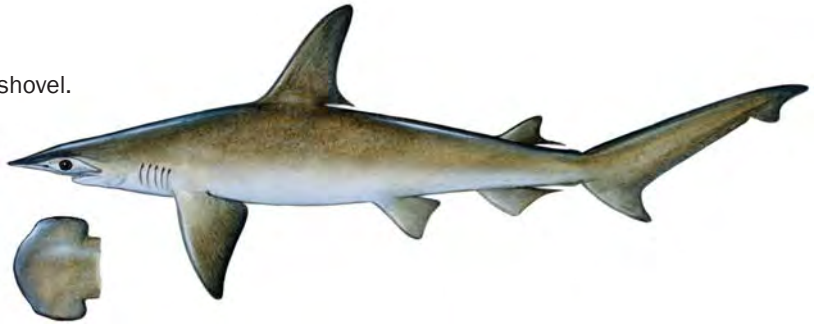
- Features**
- Broadly widened head in the shape of a shovel.
 - Only slight indentation of anal fin.
 - Front of head not notched at midline.
 - Gray or grayish-brown in color.

Similar fish Other hammerhead sharks.

Habitat Inshore species found in bays and estuaries.

Size To 5 feet.

Notes Matures at about 3 feet in length and bears 6 to 12 young at a time; feeds mainly on crabs and other crustaceans.



Southern Stingray

Dasyatis americana

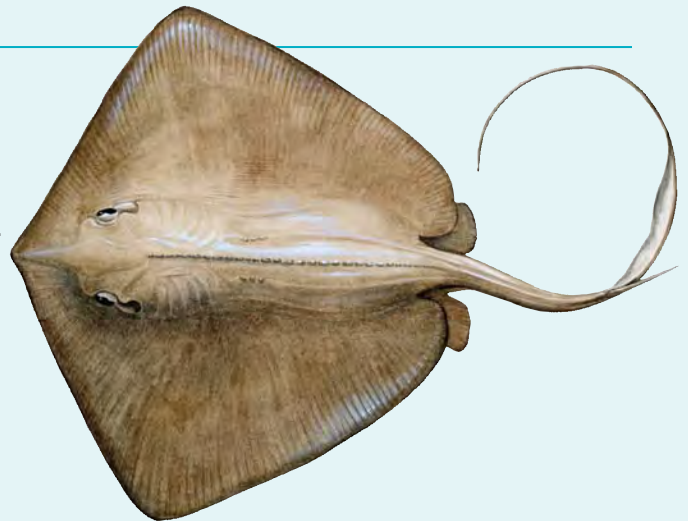
Family Dasyatidae, Stingrays

- Features**
- Disk almost a perfect rhombus, with pointed corners.
 - Ventral finfold on tail long and relatively high, dorsal finfold rows near shoulder.
 - Disk usually uniform dark brown above, grayer in young.
 - Large spine on base of tail.

Habitat Common in bays and estuaries.

Size To 6 feet across disk.

Notes The largest stingray along our Southeastern and Gulf shores.



Ladyfish

Elops saurus

Family Elopidae, Tarpons

- Features**
- Terminal mouth.
 - Slender body.
 - Small scales.
 - Last dorsal ray not elongated.
 - Head small and pointed.

Similar fish Juvenile tarpon, *Megalops atlanticus*.

Habitat Inshore fish, in bays and estuaries; occasionally enters freshwater, occurring in tidal pools and canals; often forms large schools and harasses bait at the surface.

Size 2 to 3 pounds (36 inches).

Notes Known to spawn offshore; ribbon-like larvae very similar to *Albua* and *Megalops*, peaking in fall; adults feed predominantly on fish and crustaceans; leaps when hooked.



Tarpon

Megalops atlanticus
Family Megalopidae, Tarpons

- Features**
- Last ray of dorsal fin extended into long filament.
 - One dorsal fin.
 - Back dark blue to green or greenish black, shading into bright silver on the sides.
 - May be brownish gold in estuarine waters.
 - Huge scales.
 - Mouth large and points upward.

Similar fish (As juveniles) ladyfish, *E. saurus*.

Habitat Primarily inshore fish, although adult fish spawn offshore where the ribbon-like larval stage of the fish can be found.

Size To 300 pounds (96 inches).

Notes Slow grower, matures at 7 to 13 years of age; spawning occurs between May and September; female may lay more than 12 million eggs; can tolerate wide range of salinity; juveniles commonly found in fresh water; gulps air at the surface; feeds mainly on fish and large crustaceans.



Bonefish

Albula vulpes
Family Albulidae, Bonefishes

- Features**
- Silvery color with bluish or greenish back.
 - Slender, round body.
 - Snout long, conical, aiming downward and overhanging the lower jaw.
 - Dark streaks between scales on upper half of body and faint crossbands extending down to lateral line.
 - Extremities of dorsal and caudal fins shaded with black.

Similar fish Ladyfish, *E. saurus*.

Habitat Primarily inshore fish inhabiting shallows of the Florida Keys; found in shallows often less than 1 foot deep, usually over lush grass flats, occasionally over white sand.

Size To 18 pounds, rarely more than 10 pounds.

Notes Travels in loose schools; roots out shrimp, shellfish, crabs, and fish from the bottom; spawns offshore, eggs hatching into ribbon-like larvae that metamorphose into fish-like form at about 2 inches and move inshore.



American Shad

Alosa sapidissima
Family Clupeidae, Herrings

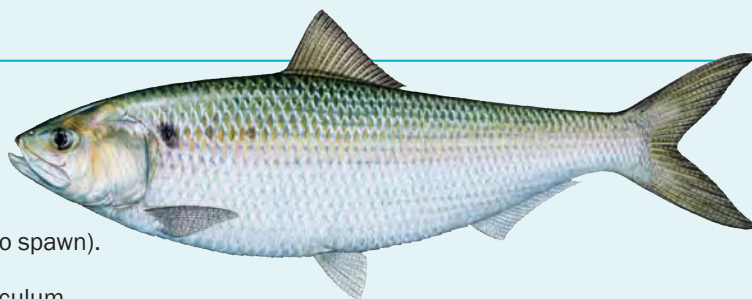
- Features**
- Color of back green or greenish blue with metallic lustre.
 - Silvery sides, white underneath (colors darken when fish enters fresh water to spawn).
 - Belly with scutes forming distinct keel.
 - One or more dark spots in a row behind operculum.
 - Lower jaw with pointed tip that fits into v-shaped notch in upper jaw.

Similar fish Outer species of *Alosa* (shad and herring) and *Brevoortia* (menhaden); menhaden, which are often referred to as "shad," have a rounder lower jaw tip; American shad is an East Coast species replaced on the Panhandle coast by Alabama shad.

Habitat Offshore except during late winter, spawning run into East Coast rivers, notably the St. Johns River.

Size To 12 pounds (20 inches).

Notes Anadromous species, coming into fresh water to spawn; young remain in fresh water to length of 2 to 4 inches, then move out to sea; plankton feeder, but strikes small, bright spoons or flies; their roe (as many as 30,000 in a single female) is prized, the flesh full of fork bones. Important fish food but with depleted stock numbers.



Atlantic Thread Herring

Opisthonema oglinum

Family Clupeidae, Herrings

- Features**
- Back dark blue/gray, sides silvery, belly white.
 - Small head.
 - Last dorsal ray is elongated.

Habitat In salt water from Cape Cod to Brazil, including Gulf of Mexico.

Size To 12 inches.

Notes Has scales on ridge of back before dorsal fin.



Scaled Sardine

Harengula jaguana

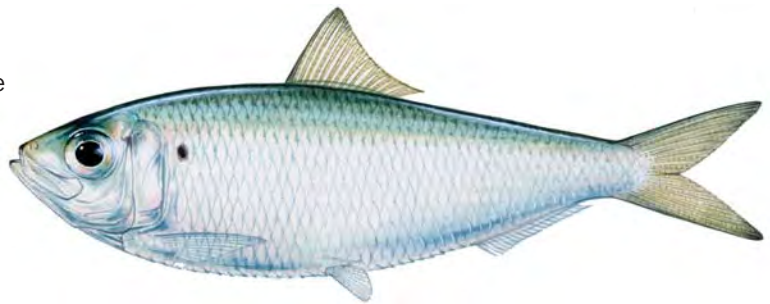
Family Clupeidae, Herrings

- Features**
- Solid back with dark streaks, usually single small dark spot at upper edge of opercle and sometimes one at shoulder.

Habitat N. Gulf of Mexico to Brazil.

Size To 7 inches.

Notes Commonly caught with strings or wire loops.



Spanish Sardine

Sardinella aurita

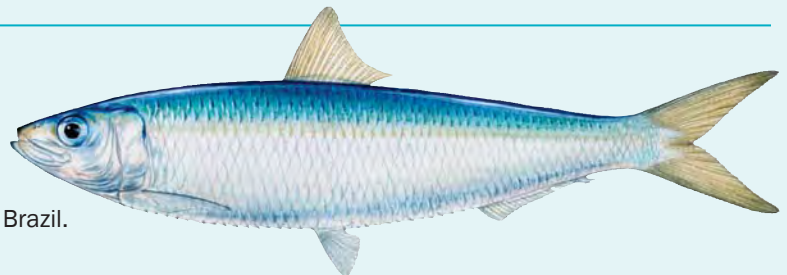
Family Clupeidae, Herrings

- Features**
- Back bluish gray, sometimes greenish.
 - Sides silvery to brassy.
 - Slender body.

Habitat In schools ranging from N. Gulf of Mexico to Brazil.

Size To 10 inches.

Notes An abundant fish, representing a resource so far only utilized locally.



Gulf Menhaden

Brevoortia patronus

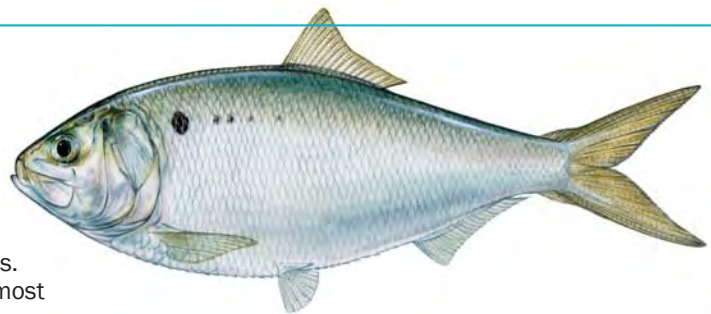
Family Clupeidae, Herrings

- Features**
- Oval, deep, and compressed.
 - Blue or green, sometimes bluish-brown above.
 - Sides and belly silvery, fins yellowish.
 - Distinct spot at the top of the gill plate that is often followed by several rows of smaller spots.
 - Head very large, exposed margin of scales almost vertical, fringed.

Habitat Near surface; schools primarily in estuaries and near shore waters of the northern Gulf from early spring through fall.

Size Rarely over 10 inches.

Notes Sexual maturity begins at late age 1 with major spawning areas offshore across the northern Gulf.



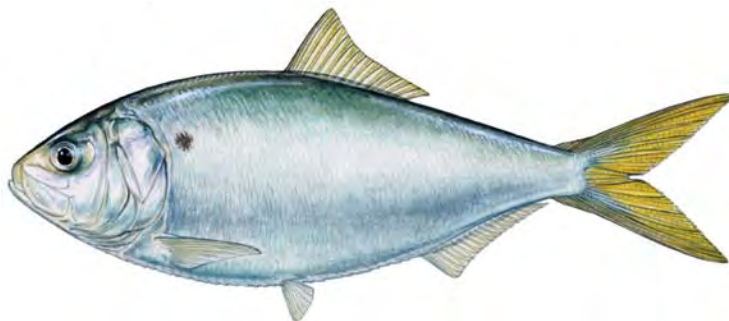
Yellowfin Menhaden

Brevoortia smithi

Family Clupeidae, Herrings

- Features**
- Silvery, with a greenish or bluish back.
 - Fins golden yellow.
 - A single dark shoulder spot.
 - Scales on back noticeably smaller than those on sides and difficult to count – about 60-70 rows across middle of side.
 - 27-30 (usually 28-29) ventral scutes.

Size To 13 inches.



Ballyhoo

Hemiramphus brasiliensis

Family Hemiramphidae, Halfbeaks

- Features**
- Pectoral fin short.
 - Tip of pelvic fin extends past beginning of dorsal fin.
 - Tip of lower jaw and upper lobe of caudal fin orange-red.
 - Dorsal and anal fins unscaled.

Habitat Young are pelagic; adults abundant in bays and nearshore waters, near reefs.

Size To 16 inches.



Fat Snook

Centropomus parallelus

Family Centropomidae, Snooks

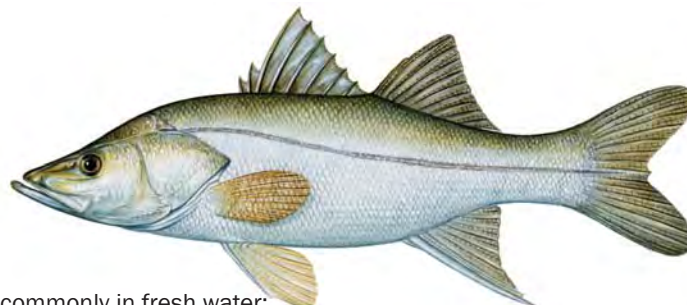
- Features**
- Deeper body than other snooks.
 - Black lateral line extends onto tail.
 - Mouth reaches to or beyond center of eyes.
 - Yellow-brown to green-brown above silvery on sides.
 - Usually no dusky outer edge of all snook.

Similar fish Other *Centropomus*.

Habitat Inshore species found in mangrove habitat; found commonly in fresh water; occurs more in interior waters (as opposed to estuarine water) than other snook.

Size To 24 inches.

Notes Usually found in fresh water; mangrove shorelines serve as nursery grounds for young.



Common Snook

Centropomus undecimalis

Family Centropomidae, Snooks

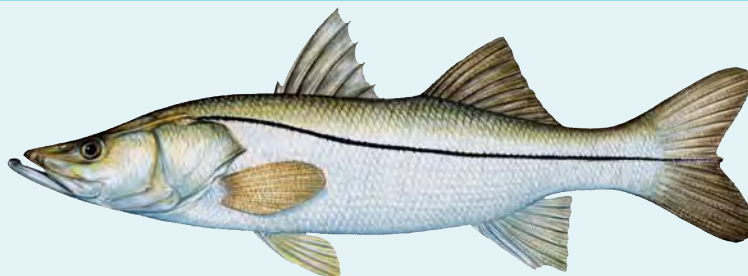
- Features**
- Distinct black lateral line.
 - High, divided dorsal fin.
 - Sloping forehead.
 - Large mouth, protruding lower jaw.
 - Grows much larger than other snooks.
 - Pelvic fin yellow.

Similar fish Other *Centropomus*.

Habitat From central Florida south, usually inshore in coastal and brackish waters, along mangrove shorelines, seawalls, and bridges; also on reefs and pilings.

Size To 50 pounds (48 inches).

Notes Cannot tolerate water temperatures below 60° F; can tolerate wholly fresh or saltwater; schools along shore, inlets and in passes during spawning season; feeds on fish and larger crustaceans.

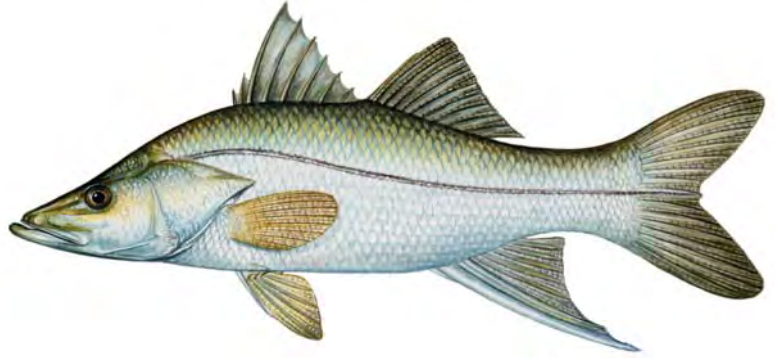


Swordspine Snook

Centropomus ensiferus

Family Centropomidae, Snooks

- Features**
- Smallest of the snooks.
 - Profile slightly concave.
 - Prominent lateral line outlined in black (not solid), extends through caudal fin.
 - Color yellow-green to brown-green above, silvery below.
 - Giant second anal spine that extends past the base of the caudal fin.
 - Largest scales of all snook.



Similar fish Other *Centropomus*.

Habitat Occurs in inshore estuarine habitats from south Florida as far north on East Coast as St. Lucie River.

Size To 1 pound (12 inches).

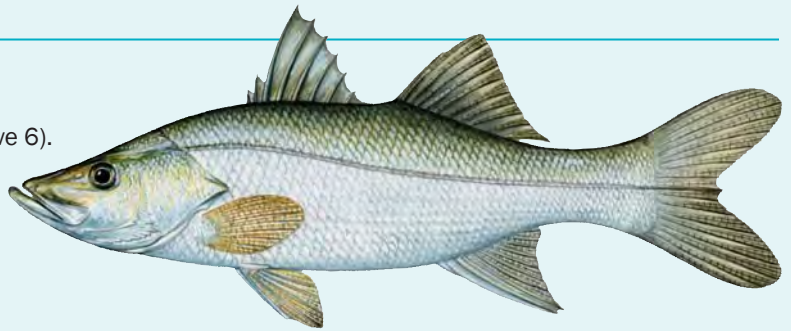
Notes Full-grown adults are less than 12 inches long; mangrove shoreline habitats serve as nursery areas for young; rare on Florida's west coast; prefers only slightly brackish or fresh water.

Tarpon Snook

Centropomus pectinatus

Family Centropomidae, Snooks

- Features**
- Only snook with 7 anal fin rays (others have 6).
 - Lower jaw curves upward.
 - Compressed body.
 - Prominent black lateral line extends through tail.
 - Tips of pelvic fins reach beyond anus.



Similar fish Other *Centropomus*.

Habitat Inshore in south Florida; frequently in fresh water.

Size To 20 inches.

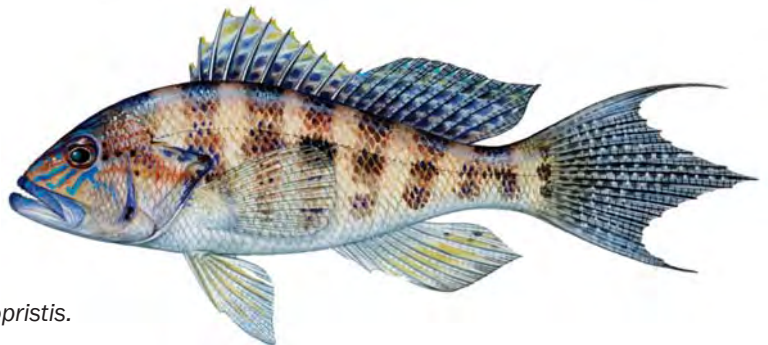
Notes Feeds on small fish and larger crustaceans; young are nurtured along mangrove shorelines; rare on Florida's West Coast.

Bank Sea Bass

Centropristis ocyurus

Family Serranidae, Sea Basses and Groupers

- Features**
- Pale olive or brassy-brown in color with indistinct black blotches that form vertical barrings (the blotch above pectoral fin darker).
 - Wavy blue lines on head.
 - Lips purplish-blue.
 - Caudal fin tri-lobed on adults.
 - Edge of nape unscaled.



Similar fish Rock sea bass, *C. philadelphica*; other *Centropristis*.

Habitat Offshore in deep water with rocks and reefs.

Size To 12 inches.

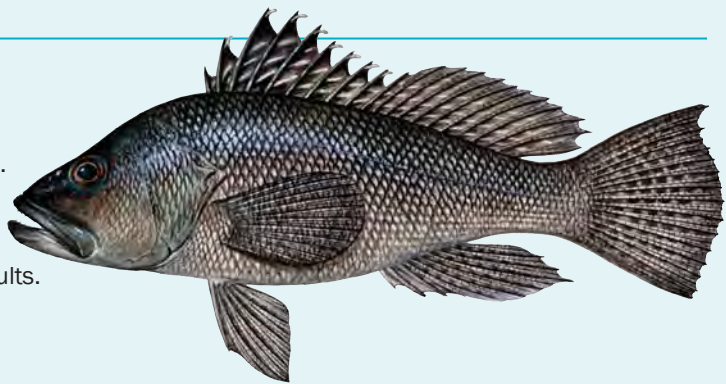
Notes Protogynous hermaphrodites. After three or four spawning seasons older females become breeding males; feeds on the bottom, taking squid, crustaceans, and small fish.

Black Sea Bass

Centropristis striata

Family Serranidae, Sea Basses and Groupers

- Features**
- Basic color dark brown or black.
 - Dorsal fin has rows and stripes of white on black.
 - Large males have iridescent blue and ebony markings, and fatty hump in front of dorsal fin.
 - Females may have indistinct vertical barrings.
 - Top most ray of caudal fin much elongated in adults.
 - Caudal may be tri-lobed.
 - Sharp spine near posterior margin of gill cover.
 - 6-7 dark bars from dorsal fin base to flanks.



Similar fish Bank sea bass, *C. ocyurus*; other *Centropristis*.

Habitat Structure-loving fish, associated with reefs and rubble offshore; smaller specimens often found in inshore finger channels.

Size To 8 pounds (24 inches). Common to 1.5 pounds (13 inches).

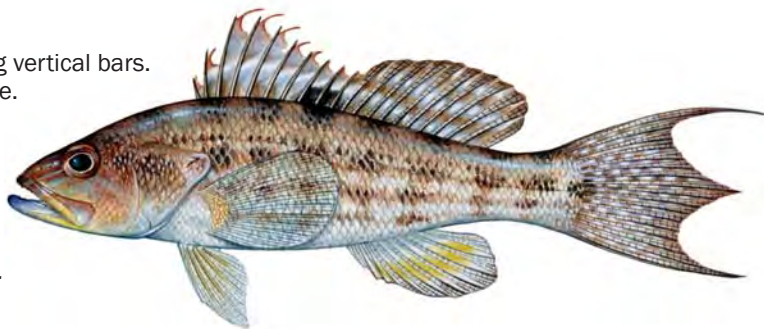
Notes Spawns January through March; protogynous hermaphrodites - after three or four spawning seasons older females become breeding males; omnivorous bottom feeders, diet including small fish, crustaceans, and shellfish.

Rock Sea Bass

Centropristis philadelphica

Family Serranidae, Sea Basses and Groupers

- Features**
- Color olive-bronze, with dark blotches forming vertical bars.
 - Dark black blotch on middle of dorsal fin base.
 - Tip of lower jaw purplish.
 - Bright blue and orange stripes and markings on head and fins.
 - Fully scaled nape.
 - Tail tri-lobed in adults.



Similar fish Bank sea bass, *C. ocyurus*; other *Centropristis*.

Habitat Offshore; differs from other sea basses in that it is often found on sandy or muddy bottoms.

Size Small species, rarely more than 10 inches.

Notes Spawns January through March; young adults are predominantly female, transforming into males as they grow older; maximum size about 10 inches.

Goliath Grouper

Epinephelus itajara

Family Serranidae, Sea Basses and Groupers

- Features**
- Head and fins covered with small black spots.
 - Irregular dark vertical bars present on the sides of body.
 - Pectoral and caudal fin rounded.
 - First dorsal fin shorter than and not separated from second dorsal.
 - Eyes small.

Similar fish Other grouper.

Habitat Nearshore around docks, in deep holes, and on ledges; young often occur in estuaries, especially around oyster bars; more abundant in southern Florida than in northern waters.

Size Largest of the groupers with adults reaching up to 8 feet and 800 pounds.

Notes Spawns over summer months; lifespan of 30 to 50 years; feeds on crustaceans and fish.

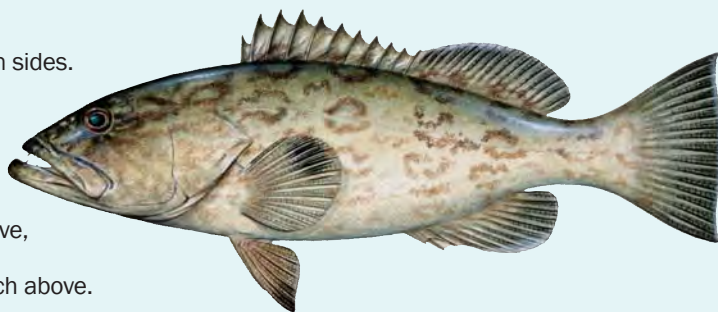


Gag

Mycteroperca microlepis

Family Serranidae, Sea Basses and Groupers

- Features**
- Brownish gray in color with dark worm-like markings on sides.
 - Strong serrated spur at bottom margin of preopercle, less noticeable in large specimens.
 - Fins dark, with anal and caudal having white margin.
 - Tail is slightly concave.
 - White margin on anal and caudal fins.
 - Under 10 pounds, gag's spur on preopercle is distinctive, where black is gently rounded.
 - Preopercle has a distinct bony knob at angle, with notch above.



Similar fish Often confused with black grouper, *M. bonaci*.

Habitat Adults offshore over rocks and reefs; juveniles occur in seagrass beds inshore.

Size To 50 pounds (36 inches). Common to 25 pounds.

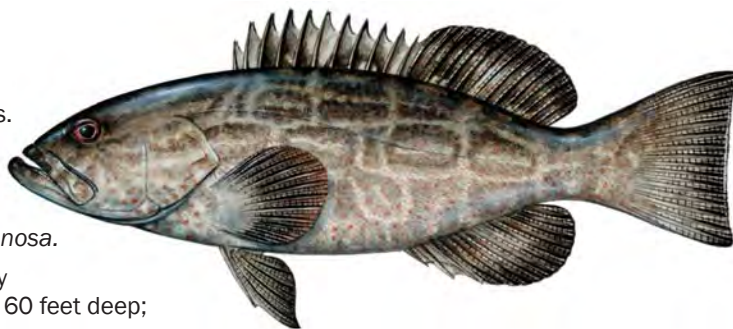
Notes Forms spawning aggregations in water no shallower than 120 feet in Middle Grounds area, January through March; current research to identify similar aggregations off the Atlantic Coast is ongoing. Young gags are predominantly female, transforming into males as they grow larger; feeds on fish and squid.

Black Grouper

Mycteroperca bonaci

Family Serranidae, Sea Basses and Groupers

- Features**
- Olive or gray body coloration with rectangular, black blotches and brassy spots.
 - Gently rounded preopercle.
 - Square tail.
 - Bluish edge on anal and caudal fins.



Similar fish Gag, *M. microlepis*, yellowfin grouper, *M. venenosa*.

Habitat Offshore species; adults associated with rocky bottoms, reef, and dropoff walls in water over 60 feet deep; young may occur inshore in shallow water.

Size To 180 pounds (48 inches). Common to 40 pounds.

Notes Spawns between May and August; protogynous hermaphrodites, young predominately female, transforming into males as they grow larger; larger individuals generally in greater depths; feeds on fish and squid.

Nassau Grouper

Epinephelus striatus

Family Serranidae, Sea Basses and Groupers

- Features**
- Stripe in shape of tuning fork on forehead.
 - Third spine of dorsal longer than second.
 - Pelvic fins shorter than pectorals.
 - Color light background with brown or red-brown bars on sides.
 - Lack dots around the eyes.
 - Large black saddle on caudal peduncle.



Similar fish Red grouper, *E. morio*.

Habitat Range limited to south Florida; somewhat site specific; smaller individuals nearshore, adults offshore on rocky reefs.

Size To 55 pounds (36 inches). Common under 10 pounds.

Notes Forms large spawning aggregations, making this species highly vulnerable to over-harvest.

Red Grouper

Epinephelus morio

Family Serranidae, Sea Basses and Groupers

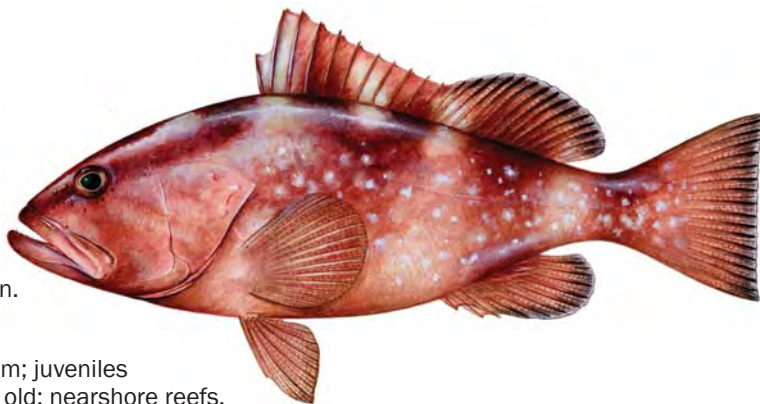
- Features**
- Color brownish red.
 - Lining of mouth scarlet-orange.
 - Blotches on sides in unorganized pattern.
 - Second spine of dorsal fin longer than others.
 - Pectoral fins longer than pelvic fins.
 - Squared-off tail.
 - Black dots around the eyes.
 - Margin of soft dorsal black with white at midfin.

Similar fish Nassau grouper, *E. striatus*.

Habitat Bottom dwelling fish associated with hard bottom; juveniles offshore along with adults greater than 6 years old; nearshore reefs.

Size To 50 pounds (42 inches). Common to 15 pounds.

Notes Spawns in April and May; prefer water temperatures between 66 and 77 °F; undergoes sex change, young individuals female, becoming male as they age; lifespan of at least 25 years; feeds on squid, crustaceans, and fish.



Scamp

Mycteroperca phenax

Family Serranidae, Sea Basses and Groupers

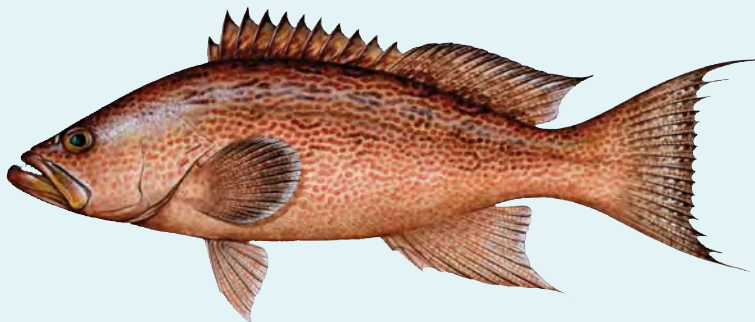
- Features**
- Color light gray or brown.
 - Large adults with elongated caudal-fin rays.
 - Reddish-brown spots on sides that tend to be grouped into lines.
 - Some yellow around corners of mouth.

Similar fish Yellowmouth grouper, *M. interstitialis*.

Habitat Nearshore reefs off the northeastern coast, and on offshore reefs in the Gulf.

Size To 12 inches.

Notes Spawns in late spring; feeds on small fish, squid, and crustaceans; undergoes sex transformation from female to male as it becomes older.



Yellowfin Grouper

Mycteroperca venenosa

Family Serranidae, Sea Basses and Groupers

- Features**
- Color highly greenish olive or bright red with longitudinal rows of darker black blotches over entire fish.
 - Outer one-third of pectoral fins bright yellow.
 - Lower parts of larger fish with small bright red spots.

Similar fish Black grouper, *M. bonaci*, other grouper.

Habitat Offshore on reefs off southern portions of Florida.

Size Common to 20 pounds.

Notes Undergoes sex reversal from female to male in latter part of life; specific name translates to "venomous," alluding to the fact that this fish, perhaps more frequently than other groupers, is associated with ciguatera poisoning; feeds on fish and squid.



Yellowmouth Grouper

Mycteroperca interstitialis

Family Serranidae, Sea Basses and Groupers

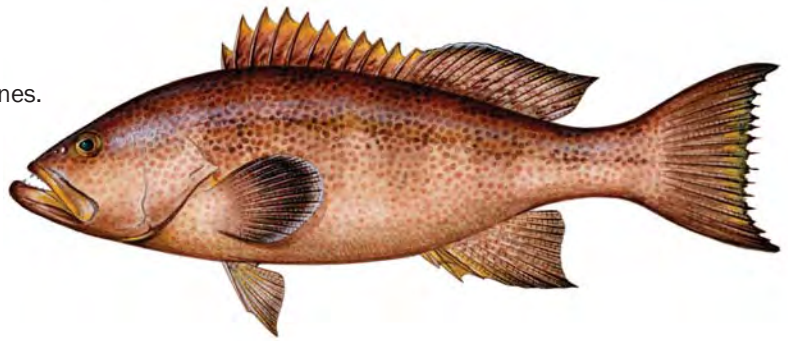
- Features**
- Color tan or brown with darker spots.
 - Spots, or a network of spots, fused into lines.
 - Distinct yellow wash behind the jaws.
 - Yellow around the eyes.
 - Outer edges of fins yellowish.
 - Mouth yellow inside and at corners.

Similar fish Scamp, *M. phenax*.

Habitat Offshore over reefs and rocks; not as common as scamp in the Gulf; range limited to southern Florida.

Size To 8 pounds.

Notes Undergoes sex change, young females become male; young fish are bicolored, dark above, white below; feeds on small fish and crustaceans.



Warsaw Grouper

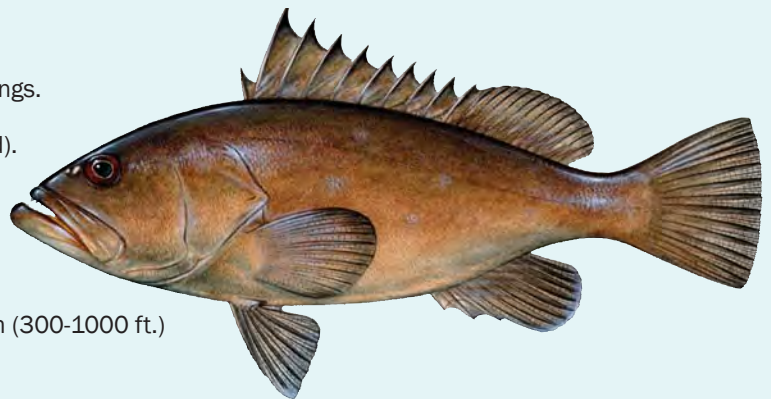
Epinephelus nigritus

Family Serranidae, Sea Basses and Groupers

- Features**
- Uniformly dark brown, with no distinctive markings.
 - Dorsal fin with 10 spines.
 - Second spine very long (much longer than third).
 - Caudal fin squared-off.
 - Rear nostril larger than front nostril.
 - Young: caudal fin yellow dark saddle on caudal peduncle.
 - Some whitish spots on body.

Habitat Deep rocky ledges and sea mounts, in 90-300 m (300-1000 ft.) Young are sometimes caught in inshore waters.

Size To 580 pounds (72 inches).



Sand Perch

Diplectrum formosum

Family Serranidae, Sea Basses and Groupers

- Features**
- Body and dorsal fins with many dark brown bars and alternating orange and blue horizontal lines.
 - Head with many blue lines.
 - Preopercular spines very well developed grouped in 2 radiating clusters with a deep notch between them.
 - Upper lobe of caudal fin prolonged in adults.

Habitat Bays, coastal grassy areas, and shallow banks.

Size To 12 inches.

Notes Popular as a pan fish despite its small size.



Bluefish

Pomatomus saltatrix

Family Pomatomidae, Bluefishes

- Features**
- Color blue or greenish blue on back, sides silvery.
 - Mouth large.
 - Teeth prominent, sharp, and compressed.
 - Dorsal and anal fins nearly the same size.
 - Scales small; lateral line almost straight.



Similar fish Blue runner, *Caranx crysos*.

Habitat Young usually inshore spring and summer, moving offshore to join adults fall and winter; strong migration of northeast Atlantic stock to Florida East Coast in winter.

Size Most West Coast catches under 3 pounds, much larger on East Coast (to 27 pounds).

Notes Travels in large schools, following schools of baitfish; cannibalistic; all members of a given school about the same size; spawning occurs offshore in spring and summer.

Rachycentron canadum

Family Rachycentridae, Cobia

- Features**
- Long, slim fish with broad depressed head.
 - Lower jaw projects past upper jaw.
 - Dark lateral stripe extends through eye to tail.
 - First dorsal fin comprised of 7 to 9 free spines.
 - Young have conspicuous alternating black and white horizontal stripes.



Similar fish Remora, *Eceneis naucrates*.

Habitat Both inshore and nearshore inhabiting inlets, bays, and among mangroves; frequently seen around buoys, pilings, and wrecks.

Size To 150 pounds (72 inches). Common at 10-50 pounds.

Notes Spawns in spring and early summer; feeds on crabs, squid, and small fish.

Almaco Jack

Seriola rivoliana

Family Carangidae, Jacks and Pompanos

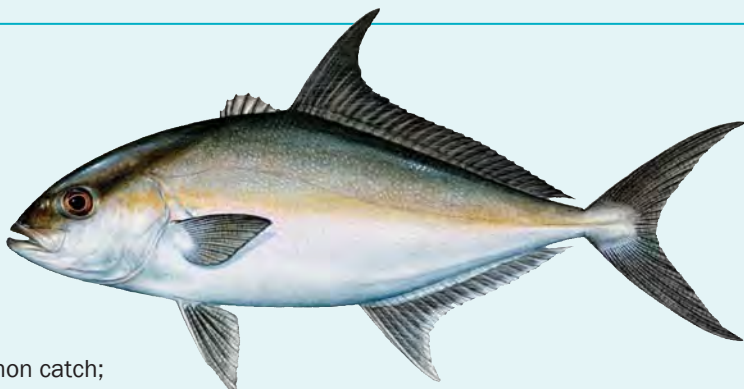
- Features**
- Deep-bodied.
 - Sometimes darker in coloration.
 - Front of soft dorsal and of anal fins high and elongated.
 - Body more flattened than banded rudderfish or greater amberjack.
 - No scutes.

Similar fish Greater Amberjack, *S. dumerili*.

Habitat Wide-ranging in offshore waters, not a common catch; young are associated with Sargassum.

Size To 13 pounds (30 inches).

Notes Spawns offshore, apparently during spring, summer, and fall.



Banded Rudderfish

Seriola zonata

Family Carangidae, Jacks and Pompanos

- Features**
- Dark band from eye to first dorsal fin and six prominent bars on body.
 - Larger fish are bluish, greenish, or brown.
 - Soft dorsal base about twice the length of the anal fin.
 - Tail-lobe white tipped.

Similar fish Other *Seriola*.

Habitat Nearshore and offshore over hard bottom, generally in shallower water than other amberjacks; young associated with weed lines or floating debris and may follow sharks and other large fish.

Size Usually less than 10 pounds (24 inches).

Notes Adults feed on fish and shrimp; spawns offshore most of year.



Juvenile

Greater Amberjack

Seriola dumerili

Family Carangidae, Jacks and Pompanos

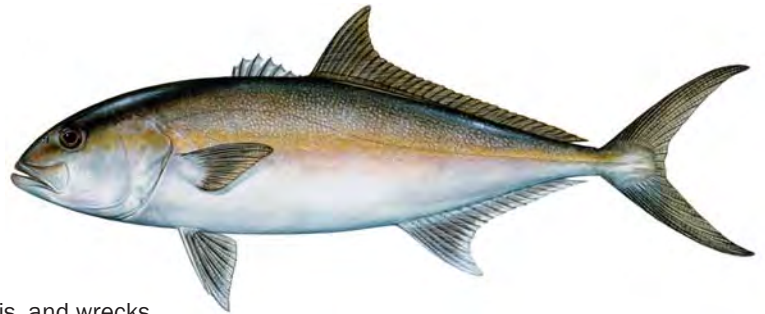
- Features**
- Dark stripe (variably present) extends from nose to in front of dorsal fin and “lights up” when fish is in feeding mode.
 - No scutes.
 - Soft dorsal base less than twice the length of the anal fin base.

Similar fish Other *Seriola*.

Habitat Offshore species associated with rocky reefs, debris, and wrecks, typically in 60-240 feet of water; sometimes caught nearshore in south Florida; juveniles associate with floating objects and may occur in water less than 30 feet deep.

Size To 176 pounds (60 inches). Common to 40 pounds.

Notes Largest of the jacks; thought to spawn offshore throughout much of the year; feeds on squid, fish, and crustaceans; an important game fish, but may cause ciguatera poisoning.



Lesser Amberjack

Seriola fasciata

Family Carangidae, Jacks and Pompanos

- Features**
- Olive green or brownish back and silver sides.
 - Dark band (variably present) extends backward and upward from eye.
 - Juveniles have split or wavy bars on sides.
 - Proportionately larger eye and deeper body than greater amberjack.

Similar fish Other *Seriola*.

Habitat Nearshore and offshore, apparently living deeper than other *Seriola* (commonly 180-410 feet deep).

Size Usually less than 10 pounds.

Notes Believed to spawn offshore; adults eat fish and squid.



Blue Runner

Caranx crysos

Family Carangidae, Jacks and Pompanos

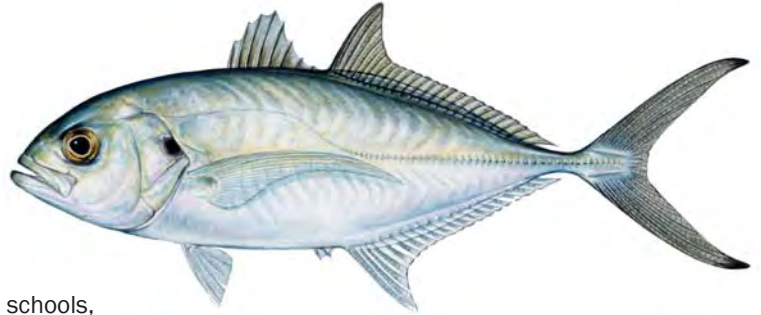
- Features**
- Color light olive to bluish green above, silvery gray to golden below.
 - Frequently black spot on operculum.
 - Readily distinguished from crevalle jack by lack of a dark blotch on the pectoral fin.
 - Tail tips blackish.

Similar fish Bluefish, *P. saltatrix*, other *Caranx*.

Habitat Juveniles found offshore; adults nearshore in schools, but something ranging inshore as well.

Size To 4 pounds. (20 inches). Common under 1 pound.

Notes Matures by 9 to 10 inches; spawns offshore from January through August; young form schools associated with floating objects, and have been observed living inside the belly of jellyfish; adults feed on fish, shrimp, and squid.



Crevalle Jack

Caranx hippos

Family Carangidae, Jacks and Pompanos

- Features**
- Color bluish-green to greenish-gold back and silvery or yellowish belly.
 - Soft dorsal and anal fins almost identical in size.
 - Prominent black spot on operculum (gill cover).
 - Black spot at the base of each pectoral fin.
 - No scales on throat.
 - Body deep, front of head steep.

Similar fish Other *Caranx*.

Habitat Common to both inshore waters and the open sea.

Size To 20 pounds. Common 3-5 pounds.

Notes Tolerates a wide range of salinities; schools corner a pod of baitfish at the surface and feed with commotion that can be seen for great distances; feeds mainly on small fish; peak spawning occurs offshore from March through September.



Palometa

Trachinotus goodei

Family Carangidae, Jacks and Pompanos

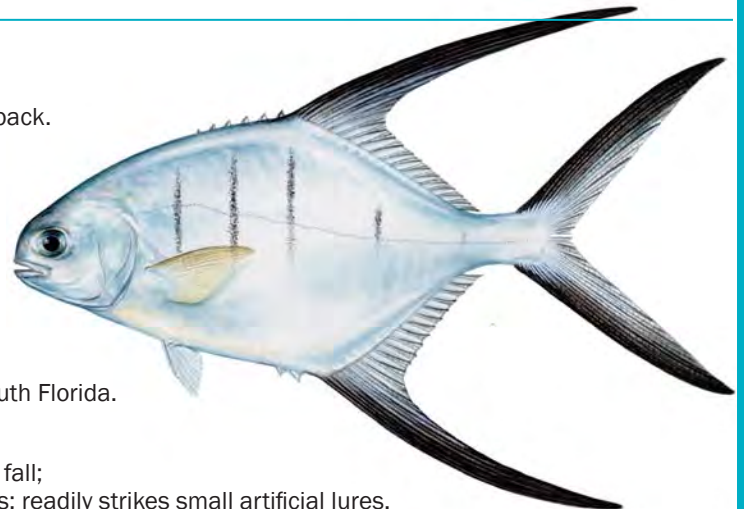
- Features**
- Gray to blue-green on top of head and along the back.
 - Bright silvery sides, yellow on breast.
 - Elongated dorsal and anal fins, dusky or black with bluish edges.
 - Deep body, with four narrow bars high on the sides, and traces of a fifth nearer the tail.
 - No scutes.

Similar fish Pompano, *T. carolinus*, permit, *T. falcatus*.

Habitat In clear water along sandy beaches and bays, occasionally found over reefs; most common in south Florida.

Size Usually less than 1 pound (20 inches).

Notes Thought to spawn offshore in spring, summer, and fall; has shown rapid growth in mariculture experiments; readily strikes small artificial lures.



Permit

Trachinotus falcatus

Family Carangidae, Jacks and Pompanos

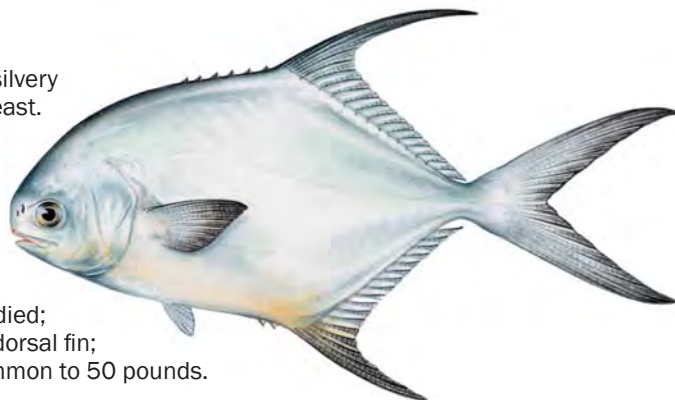
- Features**
- Color gray, dark or iridescent blue above, shading to silvery sides, in dark waters showing golden tints around breast.
 - Small permit have teeth on tongue (none on pompano).
 - No scutes.
 - Dorsal fin insertion directly above that of the anal fin.
 - 17 to 21 soft dorsal rays, 16 to 19 soft anal rays.

Similar fish Florida pompano, *T. carolinus*; the permit is deeper bodied; dorsal body profile forms angle at insertion of second dorsal fin; pompano rarely grow larger than 6 pounds, permit common to 50 pounds.

Habitat Offshore on wrecks and debris, inshore on grass flats, sand flats, and in channels; most abundant in south Florida, with smaller specimens from every coastal county.

Size Common to 50 pounds.

Notes Feeds mainly on bottom-dwelling crabs, shrimp, small clams, and small fish.



Florida Pompano

Trachinotus carolinus

Family Carangidae, Jacks and Pompanos

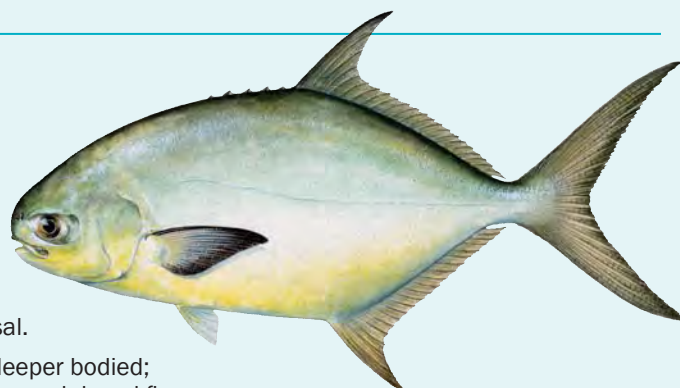
- Features**
- Greenish gray on back, shading to silvery sides.
 - Fish in dark waters showing yellow on throat, pelvic, and anal fins.
 - Deep flattened body with small mouth.
 - No scutes.
 - 22 to 27 soft dorsal rays.
 - 20 to 23 soft anal rays.
 - Origin of anal fin slightly behind origin of second dorsal.

Similar fish Permit, *T. falcatus*; *palometa*, *T. goodei*; the permit is deeper bodied; dorsal body profile not strongly angled at insertion of second dorsal fin; pompano rarely grow larger than 6 pounds, permit common to 50 pounds.

Habitat Inshore and nearshore waters, especially along sandy beaches, along oyster bars, and over grassbeds, often in turbid water; may be found in water as deep as 130 feet.

Size To 8 pounds (24 inches).

Notes Spawns offshore between March and September; feeds on mollusks and crustaceans, especially sand fleas; local movements are influenced by the tide, and seasonal movements are influenced by temperature.



Round Scad

Decapterus punctatus

Family Carangidae, Jacks and Pompanos

- Features**
- Long, fusiform body.
 - Greenish-blue fading to silver on sides, belly white.
 - Narrow, yellowish stripe from head to caudal peduncle.

Habitat Midwater or bottom from shallow water to about 50 fathoms, juveniles sometimes at surface.

Size To 9 inches.

Notes Two small papillae on shoulder distinguish scads from other carangids.



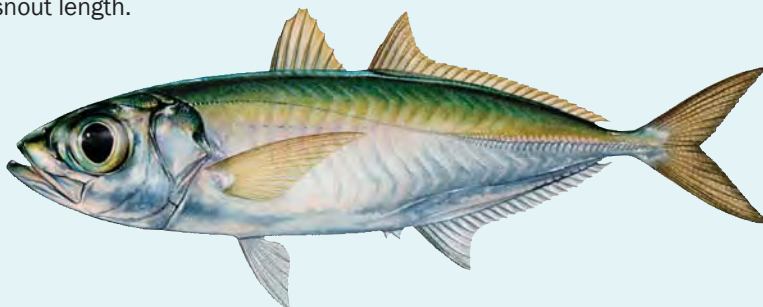
Bigeye Scad

Selar crumenophthalmus

Family Carangidae, Jacks and Pompanos

- Features**
- Eye very large – diameter greater than snout length.
 - No detached dorsal and anal finlets.
 - Two widely separated fleshy tabs on inside of rear edge of gill chamber.
 - Scutes present only on rear part of lateral line.

Size To 24 inches.



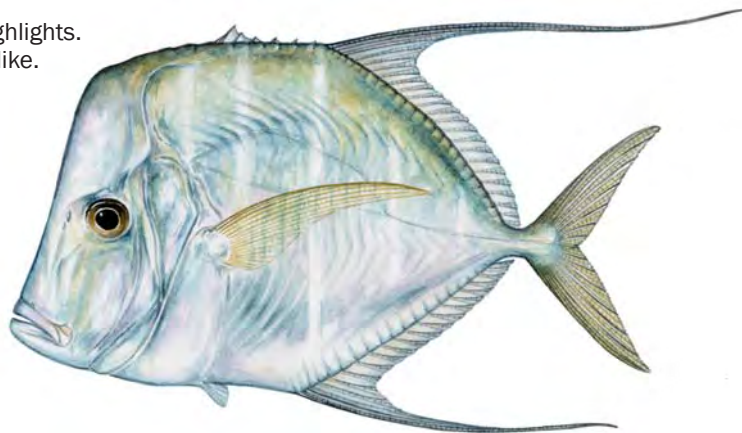
Lookdown

Selene vomer

Family Carangidae, Jacks and Pompanos

- Features**
- Silvery, iridescent, sometimes with brassy highlights.
 - Body extremely compressed and deep, platelike.
 - Front of head very steep; lobes at front of soft dorsal and anal fins very long.
 - Pelvic fins small.
 - Lateral line arched toward front.
 - Young: spines at front of dorsal fin and rays in pelvic fin streamer like.

Size To 12 inches.



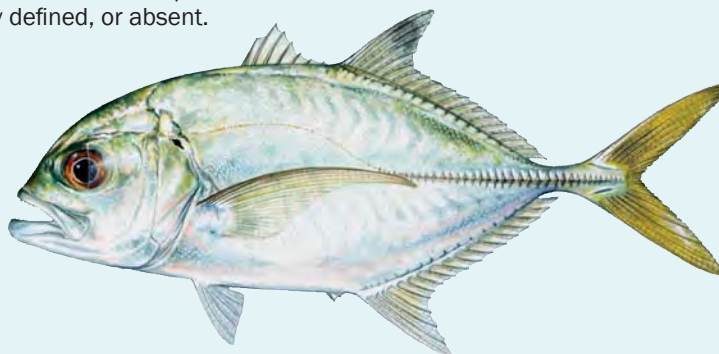
Horse-eye Jack

Caranx latus

Family Carangidae, Jacks and Pompanos

- Features**
- Similar in shape to the Crevalle jack, but front of head less steep.
 - Blackish blotch at edge of opercle small, poorly defined, or absent.
 - No dark blotch on pectoral fin.
 - Entire chest scaly except in individuals less than 3 inches long.
 - Scutes usually blackish.
 - Caudal fin yellowish.
 - 20 to 22 soft rays in dorsal fin.
 - 14 to 18 gill rakers on lower limb of first arch.

Size To 8.5 pounds (30 inches).



Leatherjacket

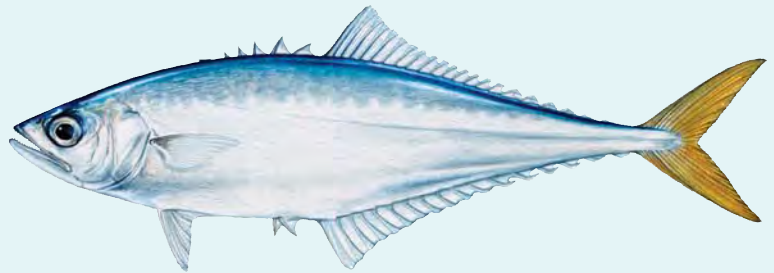
Oligoplites saurus

Family Carangidae, Jacks and Pompanos

- Features**
- Body silvery, bluish above.
 - Fins yellow.
 - Rear parts of dorsal and anal fins consist of a series of finlets.
 - Spinous dorsal fin has 5 well-developed, unconnected spines.
 - Lateral line nearly straight.
 - Scales tiny, embedded.
 - Skin appears smooth.

Habitat Enters bays and estuaries, often in turbid water.

Size To 12 inches.



Atlantic Bumper

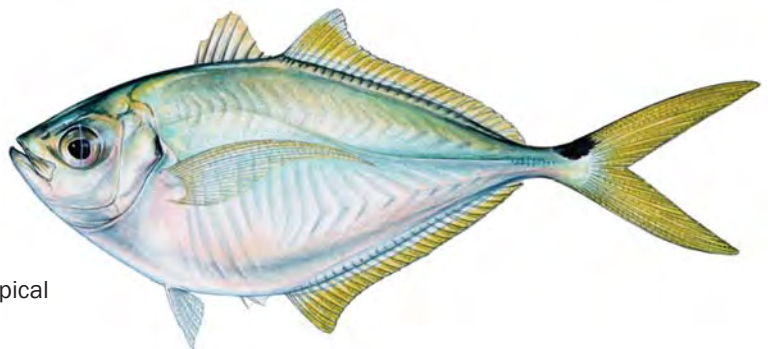
Chloroscombrus chrysurus

Family Carangidae, Jacks and Pompanos

- Features**
- Silvery to golden below.
 - Anal and caudal fins yellowish.
 - Conspicuous black saddle on caudal peduncle and small black area at edge of opercle.
 - Lower profile more arched than upper profile.
 - Lateral line strongly arched toward front.

Habitat One of the most abundant inshore fishes in tropical America; commonly enters bays and estuaries.

Size To 12 inches.



African Pompano

Alectis ciliaris

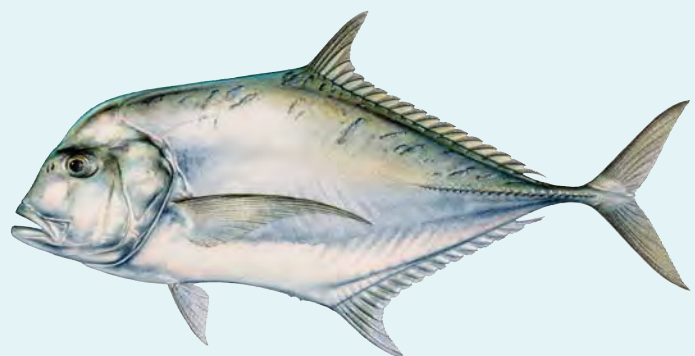
Family Carangidae, Jacks and Pompanos

- Features**
- Body is deep and compressed.
 - Coloration is metallic-blue above, silvery below.
 - Snout is blunt.
 - Dorsal and anal fins with no more than one finlet apiece.
 - Second dorsal and anal fins are falcate (sickle shaped).
 - Body becomes relatively longer with age.

Habitat Young are found in the open ocean. Adults are found to depths of 180 feet often associated with reefs, wrecks and rock ledges.

Size To 40 pounds (42 inches).

Notes Great fighter and good to eat; often found in schools over structure.

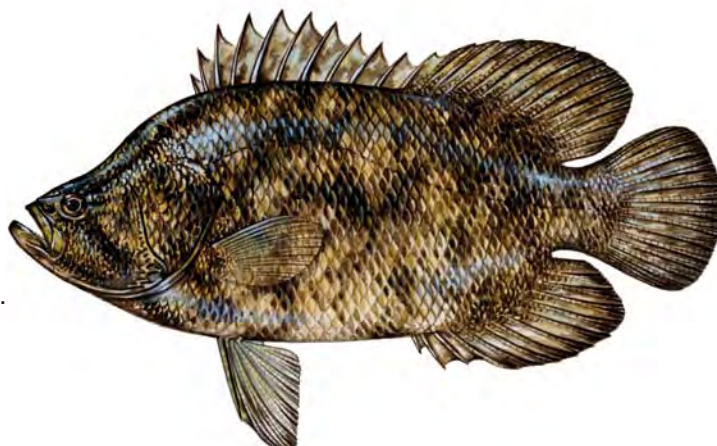


Tripletail

Lobotes surinamensis
Family Lobotidae, Tripletails

- Features**
- Head and body variously mottled, tan to dark brown.
 - Fins (except spinous dorsal and pectoral fins) almost black.
 - Pale olive band across base of caudal fin.
 - Broad, dark brown bar from eye across cheek below corner of preopercle, and another from upper corner of eye to beginning of dorsal fin.
 - Two dark streaks on top of head, behind nostrils.
 - Upper profile concave at nape.
 - Edge of preopercle strongly serrated.

Size To 42 inches.



Blackfin Snapper

Lutjanus buccanella
Family Lutjanidae, Snappers

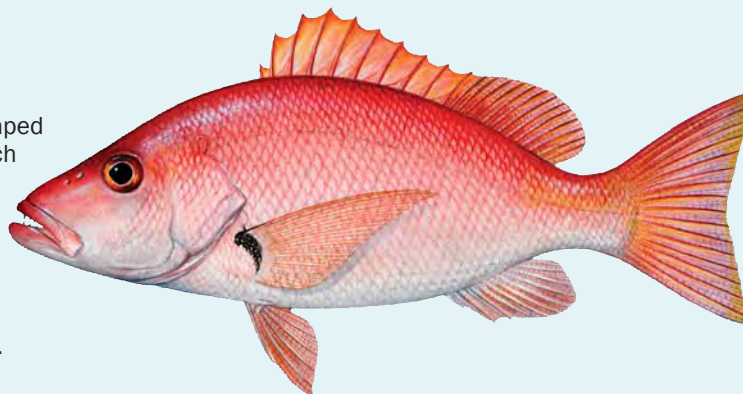
- Features**
- Color generally red, with yellowish caudal, anal, and pelvic fins.
 - Distinctive and prominent dark comma-shaped blotch at the base of the pectoral fins, which gives the fish its common name.
 - Anal fin rounded; no black spot on side underneath dorsal fin.
 - Iris orange or bronze.

Similar fish Other snappers.

Habitat Adults offshore near continental shelf break.

Size To 30 pounds (30 inches).

Notes Sometimes marketed as red snapper; feeds on smaller fishes.



Cubera Snapper

Lutjanus cyanopterus
Family Lutjanidae, Snappers

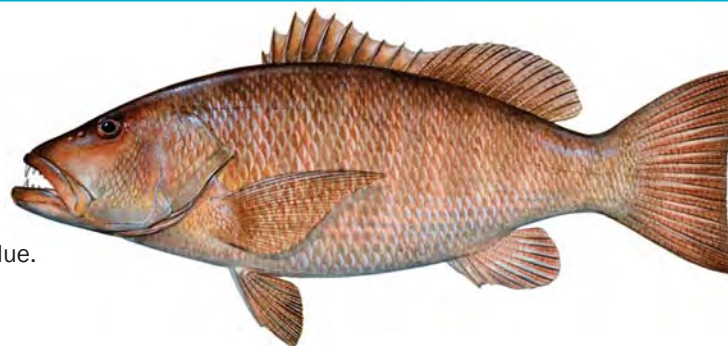
- Features**
- Color dark brown or gray, may have a reddish tinge.
 - Broad-based anchor shaped tooth patch on roof of mouth without a posterior extension.
 - Despite its specific name, which translates to "blue-fin," the fins have only a slight tinge of blue.
 - Canine teeth in both jaws very strong.
 - One pair of canines enlarged and visible even when mouth is closed.

Similar fish Gray snapper, *L. griseus* (gray snapper has anchor shaped tooth patch on roof of mouth), other snappers.

Habitat Juveniles inshore in grass beds; adults offshore or nearshore over wrecks, reefs, and ledges.

Size To 125 pounds. Common to 40 pounds.

Notes The largest of the snappers, ranging to 125 pounds; not common anywhere in its range; feeds on fishes and larger crustaceans; in the Keys, spawns during later summer.



Dog Snapper

Lutjanus jocu

Family Lutjanidae, Snappers

- Features**
- Color brown with a bronze tinge, lighter on sides.
 - Canine teeth very sharp, one pair notably enlarged, visible even when mouth is closed.
 - Blue stripe below eye usually broken into a series of dots.
 - In adults, pale triangle and a light blue, interrupted line below the eye.
 - No dark spot on body underneath dorsal fin.

Similar fish Schoolmaster, *L. apodus* (no white triangle under eye, and fins are more yellow), other snappers.

Habitat Large adults offshore over coral and rocky reefs; juveniles associated with estuaries.

Size To 30 pounds (36 inches).

Notes Spawns from spring through fall; known as a night feeder, taking fishes, mollusks, and crustaceans.



Gray Snapper (mangrove snapper)

Lutjanus griseus

Family Lutjanidae, Snappers

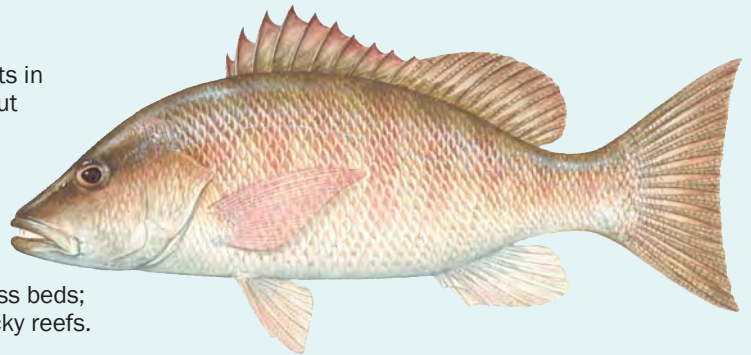
- Features**
- Color dark brown or gray with reddish or orange spots in rows along the sides dark horizontal band from snout through eye (young only).
 - Two conspicuous canine teeth at front of upper jaw.
 - Dorsal fins have dark or reddish borders.
 - No spot on side underneath dorsal fin.

Similar fish Cubera snapper, *L. cyanopterus*.

Habitat Juveniles inshore in tidal creeks, mangroves, and grass beds; adults generally nearshore or offshore on coral or rocky reefs.

Size Common to 10 pounds (24 inches).

Notes Spawns June through August; feeds on crustaceans and small fish.



Lane Snapper

Lutjanus synagris

Family Lutjanidae, Snappers

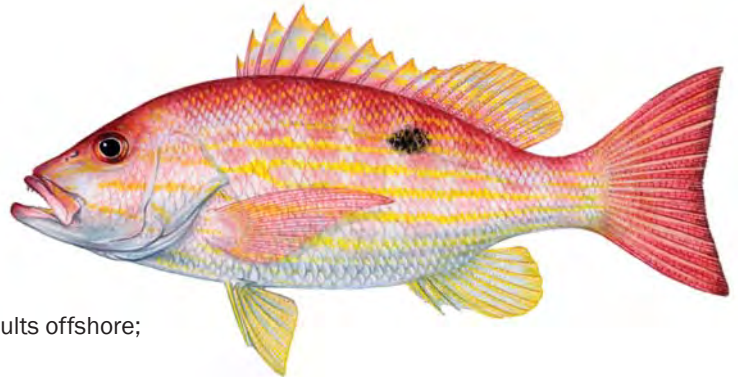
- Features**
- Color silvery-pink to reddish with short, irregular pink and yellow lines on its sides.
 - Diffuse black spot on side, about as large as the eye.
 - The dorsal fin centered above the lateral line.
 - Outer margin of caudal fin blackish.
 - Anal fin rounded.

Similar fish Mutton snapper, *L. analis*.

Habitat Juveniles inshore over grass beds or shallow reefs; adults offshore; most common in south Florida.

Size Usually less than 1 pound (14 inches).

Notes Spawns March to September, sexually mature at 6 inches; feeds on the bottom, taking crustaceans, mollusks, and fish.



Mahogany Snapper

Lutjanus mahogoni

Family Lutjanidae, Snappers

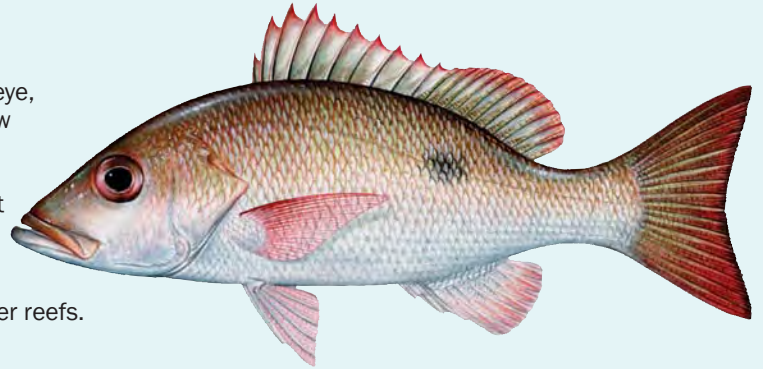
- Features**
- Color grayish-olive with a reddish tinge.
 - Conspicuous dark spot, about the size of the eye, below the soft dorsal fin, 1/4 to 1/2 of it below the lateral line.
 - The large eye and caudal fin are bright red.
 - Lower margin of the preopercle has prominent spur with strong and sharp serrations.

Similar fish Lane snapper, *L. synagris*.

Habitat Nearshore or offshore in clear water, usually over reefs.

Size To 3 pounds (15 inches).

Notes The Spanish name, ojanco, refers to its large eyes; a night feeder, with diet of smaller fishes.



Mutton Snapper

Lutjanus analis

Family Lutjanidae, Snappers

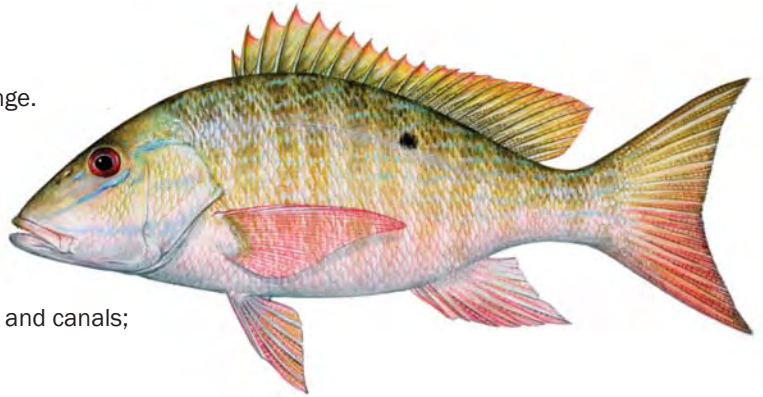
- Features**
- Color olive green on back and upper sides.
 - All fins below the lateral line having reddish tinge.
 - Bright blue line below eye, following contour of operculum.
 - Anal fin pointed.
 - Small black spot below dorsal fin.
 - V-shaped tooth patch on roof of mouth.

Similar fish Lane snapper, *L. synagris*.

Habitat Inshore associated with grassbeds, mangroves, and canals; larger adults found on offshore reefs.

Size To 25 pounds (30 inches).

Notes Spawns in July and August; feeds on fish, crustaceans, and snails.



Queen Snapper

Etelis oculatus

Family Lutjanidae, Snappers

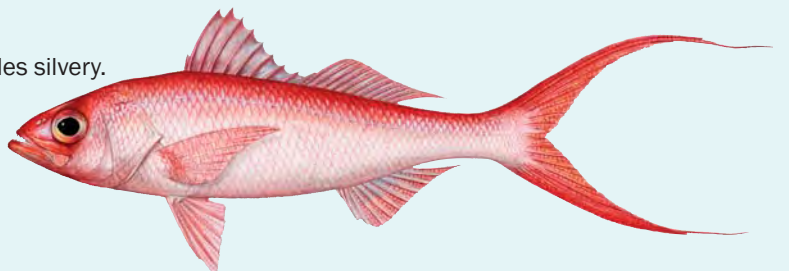
- Features**
- Color of back and upper sides red, lower sides silvery.
 - Body long and slender.
 - Dorsal fin distinctly notched.
 - Large eyes.
 - Caudal fin deeply forked.
 - No dark lateral spot.

Similar fish Other snappers.

Habitat Offshore over rocky reefs of the continental shelf to 450 feet; young suspend at mid-depths.

Size To 36 inches.

Notes Little is known, but it is reported that adults live at depths greater than 400 feet.



Red Snapper

Lutjanus campechanus

Family Lutjanidae, Snappers

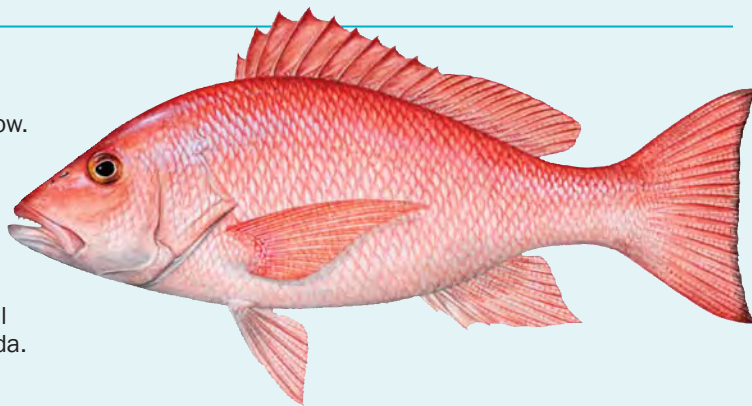
- Features**
- Color pinkish red over entire body, whitish below.
 - Long triangular snout.
 - Anal fin sharply pointed.
 - No dark lateral spot.
 - Red eye.

Similar fish Silk snapper, *L. vivanus*.

Habitat Offshore on the continental shelf, more plentiful off the Panhandle than in south or middle Florida.

Size To 35 pounds (36 inches).

Notes Juveniles occur over sandy or mud bottoms and are often taken in shrimp trawls; adults may live more than 20 years, and attain 35 pounds or more; sexual maturity attained at age 2; spawns June to October; feeds on crustaceans and fish.



Schoolmaster

Lutjanus apodus

Family Lutjanidae, Snappers

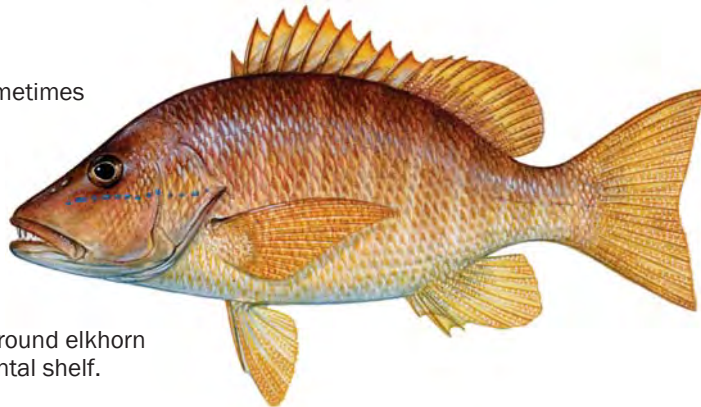
- Features**
- Color olive gray on upper sides with yellow tinge, sometimes with reddish tinge around head.
 - Long triangular snout.
 - Eight pale vertical bars on the side of the body.
 - Yellow fins.
 - Blue stripe below eye, interrupted in adults.
 - No dark lateral spot.

Similar fish Dog snapper, *L. jocu*, other snappers.

Habitat Juveniles in grass flats; adults nearshore especially around elkhorn coral reefs; large adults sometimes found on continental shelf.

Size To 8 pounds (24 inches). Common under 1 pound.

Notes Spawns July and August; attain sizes of 8 pounds and 24 inches; slow grower; feeds on crustaceans, small fishes, and gastropods.



Silk Snapper

Lutjanus vivanus

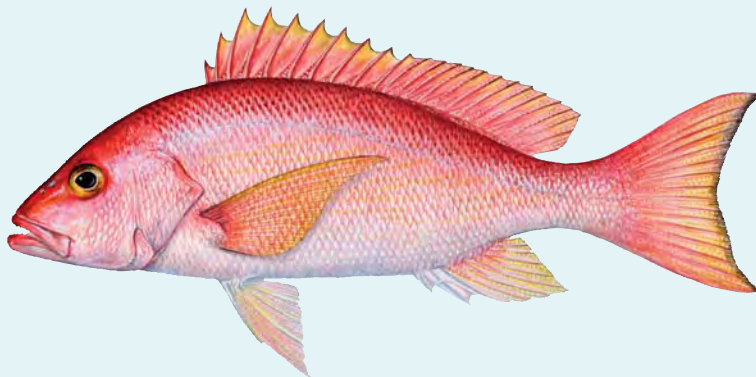
Family Lutjanidae, Snappers

- Features**
- Back and upper sides pinkish red, shading to silvery sides with undulating yellow lines.
 - Pectoral fins pale yellow.
 - Back edge of caudal fin blackish.
 - Anal fin pointed.
 - No dark lateral spot.
 - Yellow eye.

Similar fish Red snapper, *L. campechanus*.

Habitat Offshore over rocky ledges in very deep water; most common in south Florida.

Size Usually less than 5 pounds (30 inches).



Vermilion Snapper

Rhomboplites aurorubens
Family Lutjanidae, Snappers

- Features**
- Color of entire body reddish, with a series of short, irregular lines on its sides, diagonal blue lines formed by spots on the scales above the lateral line.
 - Sometimes with yellow streaks below the lateral line.
 - Large canine teeth absent.
 - Orientation of mouth and eye give it the appearance of looking upward.
 - No dark lateral spot.



Habitat Suspends at mid-depths over rocky reefs offshore.

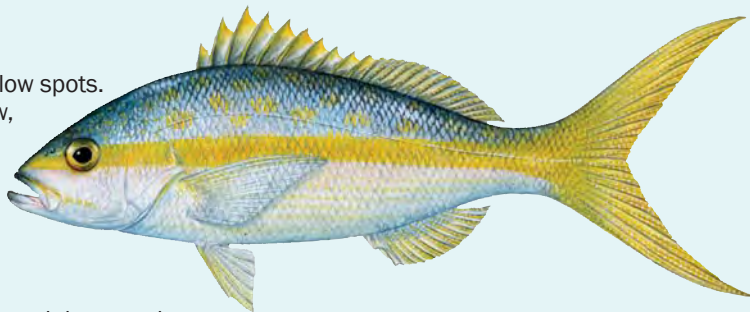
Size Usually less than 2 pounds.

Notes Spawns April to September, females maturing at 3 to 4 years of age; grows slowly; attains a weight of 6 pounds and length of 24 inches; feeds on small, swimming crustaceans and mollusks.

Yellowtail Snapper

Ocyurus chrysurus
Family Lutjanidae, Snappers

- Features**
- Back and upper sides olive to bluish with yellow spots.
 - Lower sides and belly with alternating narrow, longitudinal pink and yellow stripes.
 - Prominent mid lateral yellow stripe begins at mouth and runs to tail, broadening as it passes the dorsal fins.
 - Caudal fin yellow and deeply forked.
 - No dark lateral spots.



Habitat Juveniles inshore on grassbeds and back reefs; adults nearshore or offshore over sandy areas near reefs.

Size To 5 pounds (30 inches).

Notes Found mainly in tropical waters; spawns in mid summer; rarely exceeds 30 inches and 5 pounds in size; feeds on small fish and invertebrates.

Hogfish

Lachnolaimus maximus
Family Labridae, Wrasses

- Features**
- Body deep, strongly compressed.
 - Color varies, but never bicolored, usually reddish, sometimes bright brick red.
 - Soft dorsal fin with a large dark spot at base.
 - Entire top of head nape purplish brown in large males, this patch of color continuous with blackish area that extends along entire base of dorsal fin.
 - Large blackish crescent through base of caudal fin.
 - Pelvic fin with dusky tip.
 - Mouth very protrusible.
 - 14 spines in dorsal fin - first 3 elongate, bladelike rays at front of soft dorsal and anal fins and lower lobes of caudal fin elongate.



Young Greenish or brownish, mottled with dark.

Size To 36 inches.

Notes Esteemed as a food fish in some areas, but has been implicated in ciguatera; usually marketed as Hog Snapper.

Gray Triggerfish

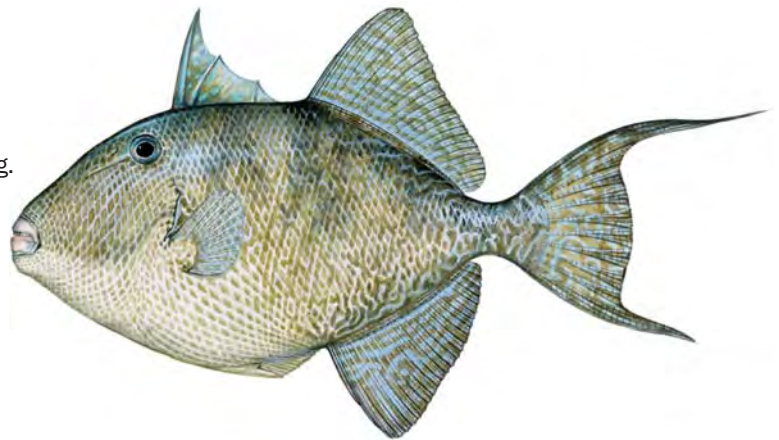
Balistes capriscus

Family Balistidae, Triggerfishes

- Features**
- Entirely olive-gray.
 - Dorsal and anal fins marbled.
 - Caudal fin lobes elongate in large adults.
 - One or more enlarged scales behind gill opening.
 - 26 to 29 dorsal fin rays.
 - 23 to 26 anal fin rays.
 - Young: large darker saddles on back (these saddles sometimes persist in adults).
 - Blue spots and short blue lines in dorsal fin and on upper half of body, becoming white below and in anal fin.
 - Upper rim of eye blue.

Habitat Hardbottom, reefs, ledges.

Size To 17 inches.



Sheepshead

Archosargus probatocephalus

Family Sparidae, Porgies

- Features**
- Basic silvery color, with 5 or 6 distinct vertical black bars on sides, not always the same on both sides.
 - Prominent teeth, including incisors, molars, and rounded grinders.
 - No barbels on lower jaw.
 - Strong and sharp spines on dorsal and anal fins.

Similar fish Black drum, *Pogonias cromis*, Atlantic spadefish, *Chaetodipterus faber*.

Habitat Inshore around oyster bars, seawalls and in tidal creeks; moves nearshore in late winter and early spring for spawning, gathering over rocks, artificial reefs, and around navigation markers.

Size Inshore – 1 to 2 pounds; offshore – common to 8 pounds.

Notes Feeds on mollusks and crustaceans such as fiddler crabs and barnacles; famed nibblers, prompting the saying that “anglers must strike just before they bite.”



Red Porgy

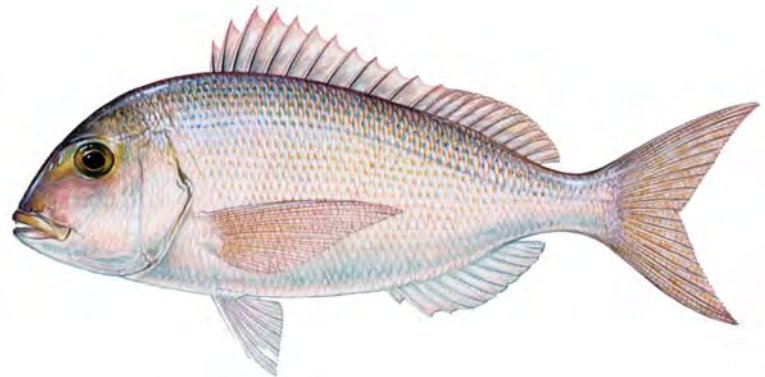
Pagrus pagrus

Family Sparidae, Porgies

- Features**
- The only American porgy with a rear nostril that is round (not slit-like).
 - Head and body silvery red, with many tiny blue spots.

Habitat Deeper part of continental shelf, but young occur in water as shallow as 18 m (60 ft.).

Size To 36 inches.



Jolthead Porgy

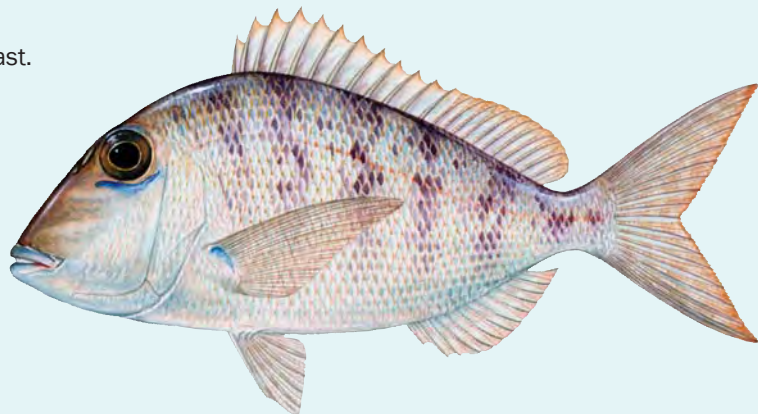
Calamus bajonado

Family Sparidae, Porgies

- Features**
- Generally silvery to brassy, with a bluish cast.
 - Front of head brown, with blue line along lower rim of eye.
 - A whitish stripe below eye, and another between eye and mouth.
 - Corner of mouth orange.

Habitat Coastal waters to 45 m (150 ft.).

Size To 8 pounds (24 inches).



JOLTHEAD PORGY

Knobbed Porgy

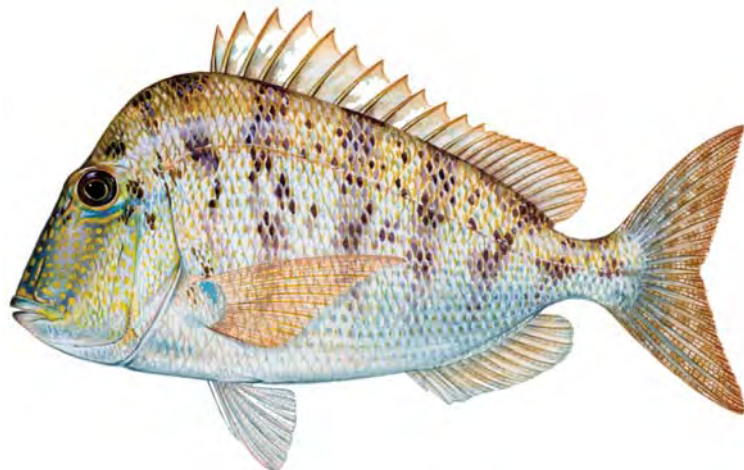
Calamus nodosus

Family Sparidae, Porgies

- Features**
- Body deep.
 - Front profile very steep.
 - Nape projects strongly in large adults.
 - Body generally silvery, with a rosy cast.
 - Cheek and snout dark purplish gray, with many bronze spots.
 - Large blue spot at axil of pectoral fin.

Habitat Hardbottom, reefs, ledges.

Size To 18 inches.



Knobbed Porgy

Grass Porgy

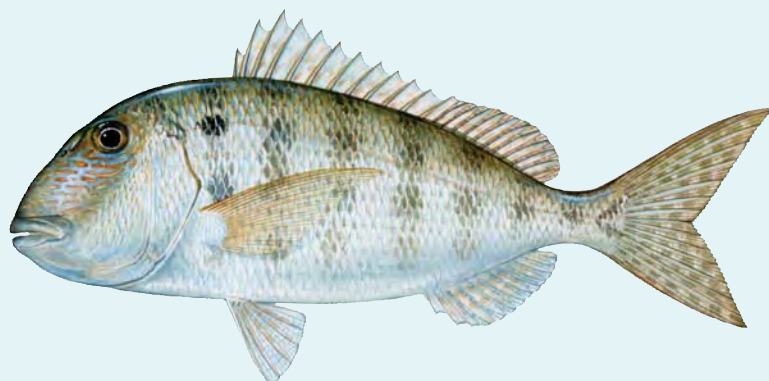
Calamus arctifrons

Family Sparidae, Porgies

- Features**
- Pale tan to silvery.
 - Dark olive above.
 - Dark bar across nape extends through eye to corner of mouth.
 - Dark blotches on body, in about 5 vertical and 4 horizontal series, suggesting interrupted bars and stripes.
 - Blotch near front of lateral line most prominent.
 - Dark V at base of caudal fin.
 - Lobes of caudal fin with dark bars.

Habitat Inshore seagrass beds.

Size To 10 inches.



Grass Porgy

Littlehead Porgy

Calamus proridens

Family Sparidae, Porgies

- Features**
- Snout and cheek bluish gray, with many wavy, dark blue lines.
 - Areas between lines sometimes brassy.
 - Each scale on upper body has a dark bluish line through the center.
 - These lines unite to form a narrow line along each scale row.

Similar fish Knobbed Porgy, *C. nodosus*.

Size To 18 inches.



Pinfish

Lagodon rhomboides

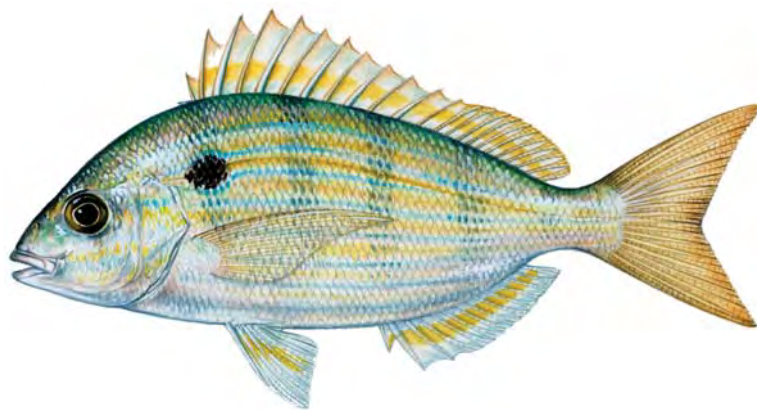
Family Sparidae, Porgies

- Features**
- Small mouth with incisor-like teeth.
 - Distinctive black spot behind the gill cover.
 - Body bluish-silver with blue and orange-yellow horizontal stripes, yellow fins.

Habitat Seagrass beds, bridges, piers, marker pilings, and around natural and artificial reefs; spawn offshore.

Size Usually less than 8 inches.

Notes Popular live bait, notorious bait stealers.



Spottail Pinfish

Diplodus holbrooki

Family Sparidae, Porgies

- Features**
- Dark saddle on caudal peduncle sometimes forms a complete ring around peduncle in adults.
 - Eight faint bars on body, alternately long and short.
 - More prominent in young.
 - Edge of opercular membrane blackish.
 - Pelvic and anal fins dusky brown, dorsal fin less dark.

Habitat Inshore seagrass beds, offshore rocks and reefs.

Size To 18 inches.



White Grunt

Haemulon plumieri

Family Haemulidae, Grunts

- Features**
- Body color light bluish-gray, head with horizontal blue stripes, white underbelly black blotch on preopercle.
 - Margin of each scale bronze.
 - Large bright orange mouth.
 - Scales above lateral line larger than scales below lateral line.

Similar fish Other grunts.

Habitat From shore to the outer reef edge or on offshore hard bottom to 115 feet; most abundant in water less than 80 feet deep; juveniles inshore.

Size To 18 inches.

Notes Audible grunting is produced by grinding of the pharyngeal teeth, with air bladder acting as amplifier; spawning occurs on offshore hard bottoms or reefs from May through June; feeds on crustaceans, mollusks, and small fishes.



Pigfish

Orthopristis chrysoptera

Family Haemulidae, Grunts

- Features**
- Gray, often with a bluish cast.
 - Many bronze to yellowish spots, dashes, and other small markings.
 - Mouth small, ending below front nostril.

Habitat Bay and banks; not on reefs in water less than 60 ft.

Size To 15 inches.



Tomtate

Haemulon aurolineatum

Family Haemulidae, Grunts

- Features**
- Bright orange mouth lining.
 - Light colored.
 - Gray to tan on back.
 - Yellow to brown stripe from head to base of tail fin.
 - Black blotch at base of tail fin fades away in larger specimens.

Habitat Bottom fish found around reefs and hard bottom areas.

Size To 1 pound (10-11 inches).

Notes Not usually eaten due to small size.



Atlantic Croaker

Micropogonias undulatus
Family Sciaenidae, Drums

- Features**
- Inferior mouth, located below the snout tip.
 - Silver-gray or bronze body with dark oblique wavy bars or lines.
 - 3 to 5 pairs of small barbels on chin.
 - Iridescent especially on head.
 - Preopercle strongly serrated.

Similar fish Spot, *Leiostomus xanthurus*.

Habitat Generally found north of Tampa Bay on the West Coast, and north of Cape Canaveral on the East Coast; young fish found in estuaries; older fish (2 to 3 years) inhabit deep offshore waters during winter and move into bays and estuaries during the spring, summer, and fall.

Size To 4 pounds (20 inches).

Notes During spawning becomes bronze or yellow in color; spawning apparently occurs offshore in fall; longevity 2 to 4 years.



Black Drum

Pogonias cromis
Family Sciaenidae, Drums

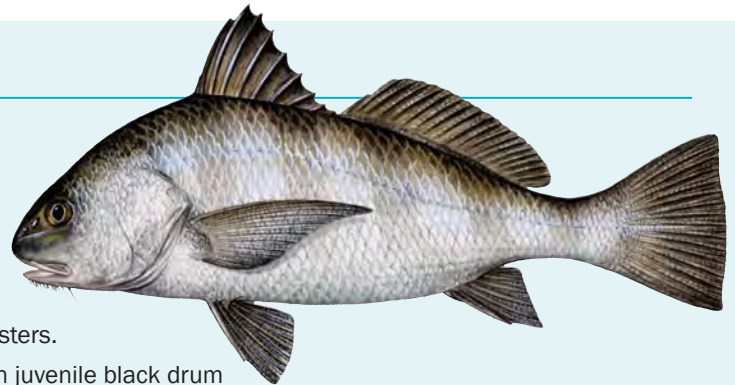
- Features**
- High arched back.
 - 10 to 14 pairs of chin barbels.
 - Gray or black colored body in adults.
 - Young have 4 to 6 vertical bars.
 - Scales large.
 - Has cobblestone-like teeth capable of crushing oysters.

Similar fish Red drum, *Sciaenops ocellatus*. The vertical bars on juvenile black drum are somewhat similar to those on sheepshead, *A. probatocephalus*; and spadefish, *Chaetodipterus faber*.

Habitat Inshore fish common to bays and lagoons; bottom dweller often found around oyster beds; also offshore.

Size Common to 30 pounds.

Notes Largest member of the drum family; spawns nearshore in winter and early spring; feeds on oysters, mussels, crabs, shrimp, and occasionally fish; longevity to 35 or more years.



Red Drum

Sciaenops ocellatus
Family Sciaenidae, Drums

Other names Redfish.

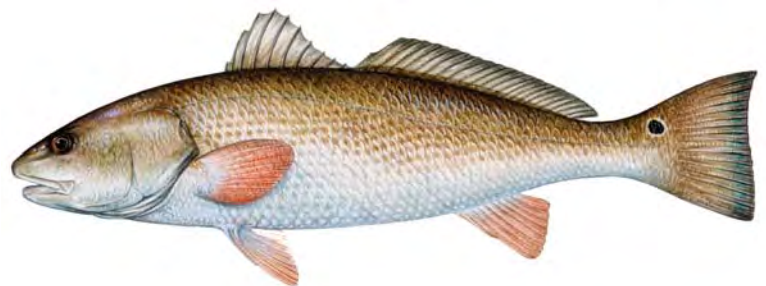
- Features**
- Chin without barbels.
 - Copper-bronze body, lighter shade in clear waters.
 - One to many spots at base of tail (rarely no spots).
 - Mouth horizontal and opening downward.
 - Scales large.

Similar fish Black drum, *P. cromis*.

Habitat Juveniles are an inshore fish, migrating out of the estuaries at about 30 inches (4 years) and joining the spawning population offshore.

Size To 92 pounds (58 inches). Common to 20 pounds.

Notes Red drum are an inshore species until they attain roughly 30 inches (4 years), then migrate to join the nearshore population; spawning occurs from August to November in nearshore waters; feeds on crustaceans, fish, and mollusks; longevity to 20 years or more.



Sand Seatrout

Cynoscion arenarius
Family Sciaenidae, Drums

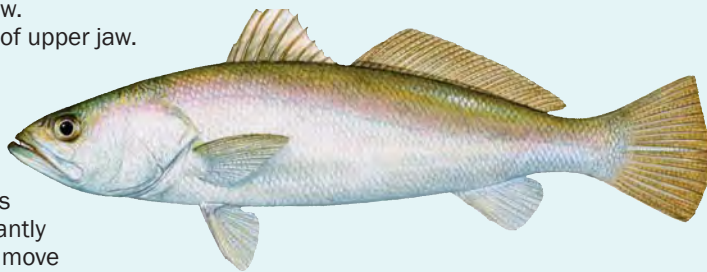
- Features**
- Pale body color, yellow above, silver to white below.
 - One or two prominent canine teeth usually at tip of upper jaw.
 - Inside of mouth yellow.
 - No well-defined black spots on back.
 - 10 to 12 soft rays in anal fin; no chin barbels.

Similar fish Silver seatrout, *Cynoscion nothus*.

Habitat A Gulf species that may occur in the Atlantic waters of extreme southeastern Florida; adults predominantly found inshore residing in bays and inlets, but may move offshore during winter months; young occur inshore in shallow bays.

Size Usually less than 1 pound (15 inches).

Notes Matures during first or second year; prolonged inshore spawning season extends through spring and summer; feeds mainly on small fish and shrimp.



Silver Seatrout

Cynoscion nothus
Family Sciaenidae, Drums

- Features**
- Pale straw-colored above, silvery sides and white below.
 - No distinctive pigmentation, although faint diagonal lines may be present on upper body.
 - 8 to 9 rays in the anal fin.
 - Large eyes.
 - Short snout.
 - One to two prominent canine teeth usually present at tip of upper jaw.
 - Lower half of tail longer than upper half.

Similar fish Other seatrout.

Habitat Most common over sand or sandy mud bottoms offshore along both the Gulf and the Atlantic Coasts of Florida.

Size Usually less than 1 pound (12 inches).

Notes Smallest seatrout; spawns offshore in deep water during spring, summer, and fall; feeds on small fish and shrimp.



Spotted Seatrout

Cynoscion nebulosus
Family Sciaenidae, Drums

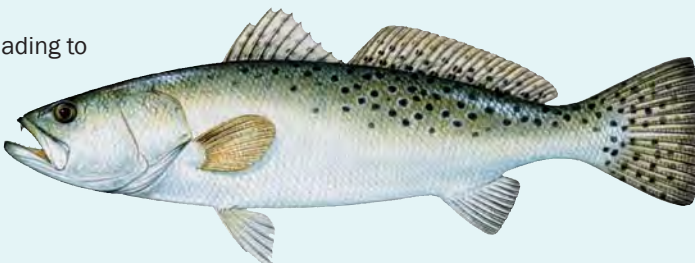
- Features**
- Dark gray or green above, with sky-blue tinges shading to silvery and white below.
 - Numerous distinct round black spots on back, extending to the dorsal fins and tail.
 - No barbels and no scales on the soft dorsal fin.
 - One or two prominent canine teeth usually present at tip of upper jaw.

Similar fish Other seatrout.

Habitat Inshore and/or nearshore over grass, sand, and sandy mud bottoms; move into slow-moving or still, deep waters in cold weather.

Size To 15.5 pounds (36 inches). Common to 4 pounds.

Notes Matures during first or second year and spawns inshore from March through November, often in association with seagrass beds; lives mainly in estuaries and moves only short distances; adults feed mainly on shrimp and small fish; prefers water temperatures between 58 and 81 °F, may be killed if trapped in shallow water during cold weather; longevity 8 to 10 years.



Silver Perch

Bairdiella chrysoura
Family Sciaenidae, Drums

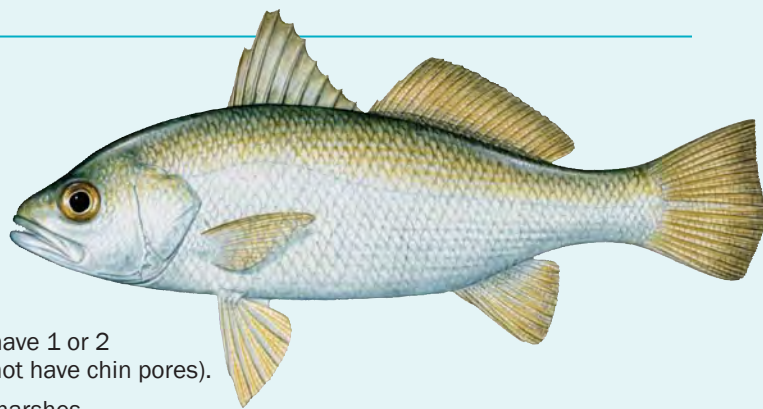
- Features**
- Color silvery with yellowish fins.
 - No spots.
 - No chin barbels.
 - No prominent canine teeth at tip of upper jaw.
 - Preopercle finely serrated.
 - 5 to 6 chin pores.
 - Mouth terminal.

Similar fish Sand seatrout, *C. arenarius* (the seatrouts usually have 1 or 2 prominent canine teeth at tip of upper jaw and do not have chin pores).

Habitat Inshore in seagrass beds, tidal creeks, rivers, and marshes.

Size To 9 inches.

Notes Spawning takes place in shallow, saline portions of bays and other inshore areas, peaking between May and September; matures by second or third year (about 6 inches); adults eat crustaceans and small fishes; may live to 6 years.



Weakfish

Cynoscion regalis
Family Sciaenidae, Drums

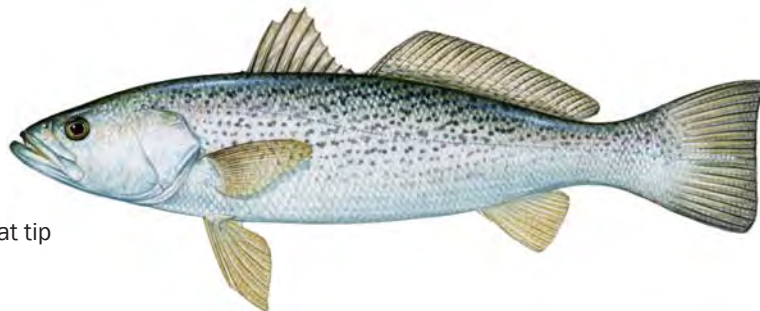
- Features**
- Dark olive or blue-green back.
 - Sides covered in tones of blue, purple, lavender, gold, and copper.
 - Irregular diagonal rows of vaguely defined dark spots appear above the lateral line.
 - 1 to 2 prominent canine teeth usually present at tip of upper jaw.
 - Black margin on tip of the tongue.
 - Pelvic and anal fins yellow.
 - Pectoral fins olive on outside, yellow underneath.

Similar fish Other seatrout.

Habitat An Atlantic Coast fish, possibly found in the extreme southeastern Gulf; adults move inshore and north during warm months inhabiting the surf, inlets, bays, channels, and estuaries; adults move offshore and south during cold months; juveniles inhabit estuaries which serve as nurseries.

Size To 6 pounds (28 inches).

Notes May mature as early as age 1; spawns in nearshore or estuarine areas between April and October; schooling fish; feeds primarily on shrimp and fish.



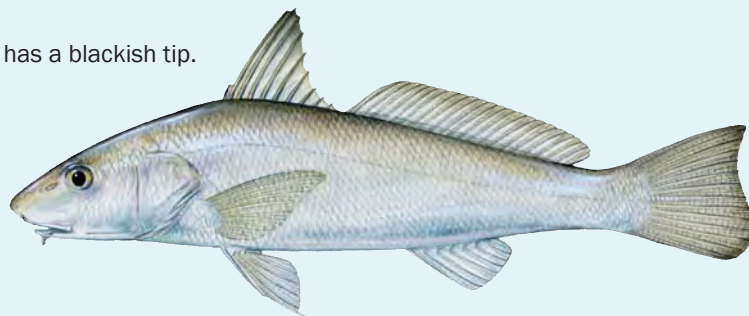
Gulf Kingfish

Menticirrhus littoralis
Family Sciaenidae, Drums

- Features**
- Similar to the Southern Kingfish but caudal fin has a blackish tip.
 - Side silvery, without dark marks.
 - Tip of spinous dorsal fin often dusky.
 - Lining of gill cavity silvery.
 - Scales on chest noticeably smaller than those on side.

Habitat At water's edge, in surf.

Size To 18 inches.



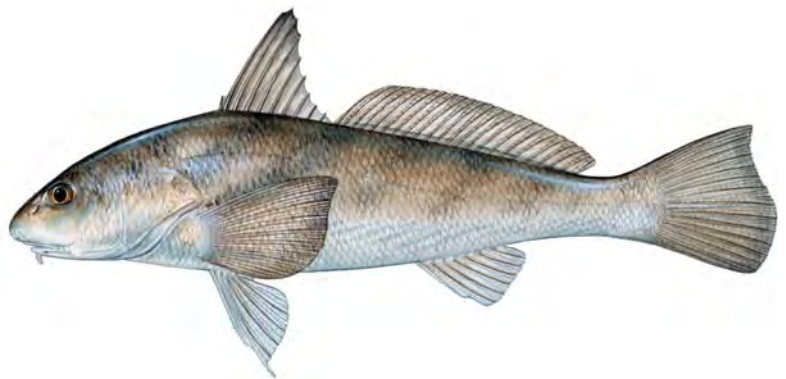
Southern Kingfish

Menticirrhus americanus
Family Sciaenidae, Drums

- Features**
- Grayish brown above, with silvery sides.
 - 7 to 8 diagonal dusky bars or blotches on each side, but these marks are obscure.
 - Form V-shaped marks on side.
 - Scales on chest about same size as those on body.

Habitat Shallow coastal waters; common along beaches.

Size To 2 pounds (15 inches).



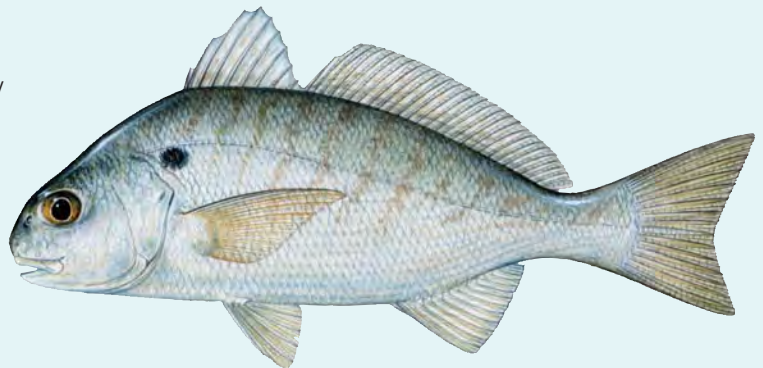
Spot

Leiostomus xanthurus
Family Sciaenidae, Drums

- Features**
- The only drum in our region with a distinctly forked caudal fin.
 - Bluish to brownish above.
 - Brassy on side.
 - Silvery to white below.
 - Distinct brownish spot on shoulder.
 - 12 to 15 narrow, diagonal dark lines on upper body.

Size To 14 inches.

Notes A popular pan fish.



Gulf Flounder

Paralichthys albigutta
Family Paralichthyidae, Large-tooth flounders

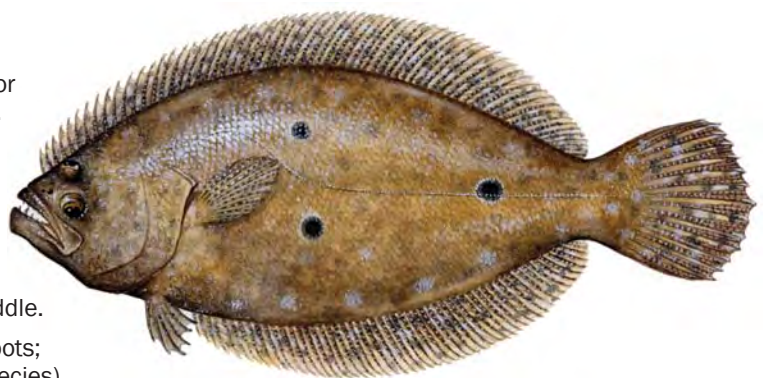
- Features**
- Body color brown, its shade depending on color of bottom, with numerous spots and blotches.
 - 3 prominent eye-like spots forming a triangle.
 - One spot on lateral line, one above, one below.
 - Numerous white spots scattered over body and fins.
 - Strong canine-like teeth.
 - Caudal fin in shape of wedge, its tip in the middle.

Similar fish Southern flounder, *P. lethostigma* (no eyelike spots; color pattern is key to distinguishing the two species).

Habitat Inshore on sandy or mud bottoms, often ranging into tidal creeks; occasionally caught on nearshore rocky reefs.

Size Common to 2 pounds (15 inches).

Notes Hatches into usual fish form, but right eye migrates over to left side early in life; a bottom dweller; thought to spawn offshore; feeds on crustaceans and small fishes.



Hardhead Catfish

Arius felis

Family Ariidae, Sea Catfishes

- Features**
- Brownish to gray-green.
 - White to yellowish below.
 - Fin spines with no fleshy filaments.
 - Barbel at corner of mouth not very flattened and shorter than head.
 - Four barbels on chin.

Habitat Continental waters and enters brackish waters.

Size To 12 pounds (24 inches).

Notes Commonly caught from catwalks, bridges, and piers, particularly in passes and inland waterways; edible, but generally not eaten.



Gafftopsail Catfish

Bagre marinus

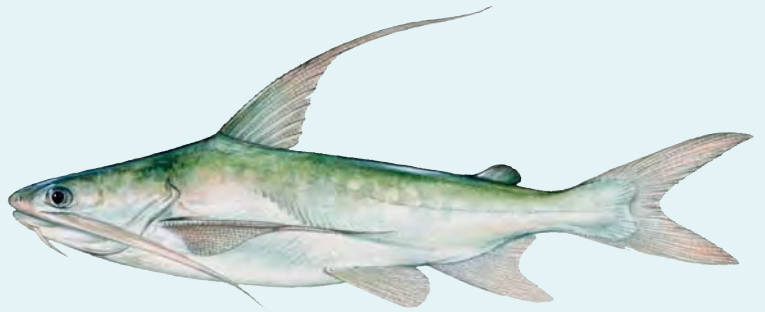
Family Ariidae, Sea Catfishes

- Features**
- Bluish above, silvery below.
 - Dorsal and pectoral fins with long, fleshy filaments on spines.
 - Barbel at corner of mouth flattened, bandlike, and very elongated, sometimes reaching anal fin.
 - Only 2 barbels on chin.

Habitat Continental waters; enters brackish waters; usually less common than the hardhead catfish.

Size To 6 pounds (24 inches).

Notes Commonly caught by anglers along bridges, piers, and catwalks; a good food fish.



Atlantic Spadefish

Chaetodipterus faber

Family Ephippidae, Spadefishes

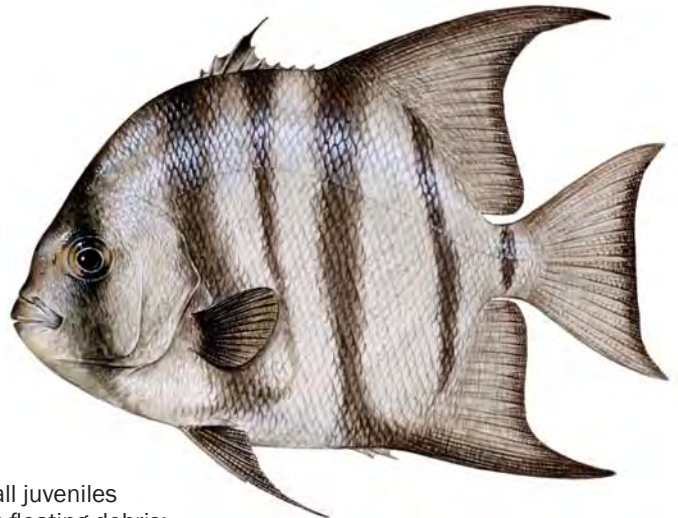
- Features**
- Silvery with 4 to 6 black vertical bands on each side which sometimes become obscure in larger fish.
 - Deep, flattened body.
 - Separated first and second dorsal fins.
 - Concave caudal fin.
 - Anterior rays of second dorsal fin and anal fin elongated.
 - Young are entirely dark brown or blackish.

Similar fish No close resemblance, but frequently and mistakenly called angelfish.

Habitat Inshore and nearshore, around natural and artificial reefs, and especially near navigation markers in 15 to 20 feet of water.

Size To 20 pounds (36 inches). Common to 2 pounds.

Notes Spawns in spring and summer; travels in large schools; small juveniles almost totally black, known to drift on their sides and mimic floating debris; feeds on crustaceans, small encrusting invertebrates, and may nibble on tentacles of jellyfish.



Fantail Mullet

Mugil gyrans

Family Mugilidae, Mulletts

- Features**
- Color olive green with blue tints on back, shading to silvery sides, white below.
 - Anal and pelvic fins yellowish.
 - Dark blotch at base of pectoral fin.
 - Inverted V-shaped mouth.
 - Insertion of second dorsal over that of the anal fin.
 - Fewer soft rays in anal fin than white mullet.

Similar fish Striped mullet, *M. cephalus*, white mullet, *M. curmea* (note difference in shape of fins and opercular margins).

Habitat Inshore, occurring along beaches in the fall.

Size Usually less than 1 pound.

Notes Spawns in nearshore or possibly inshore waters during spring and summer; juveniles occur inshore; feeds on algae, small crustaceans, and detritus.



Striped (Black) Mullet

Mugil cephalus

Family Mugilidae, Mulletts

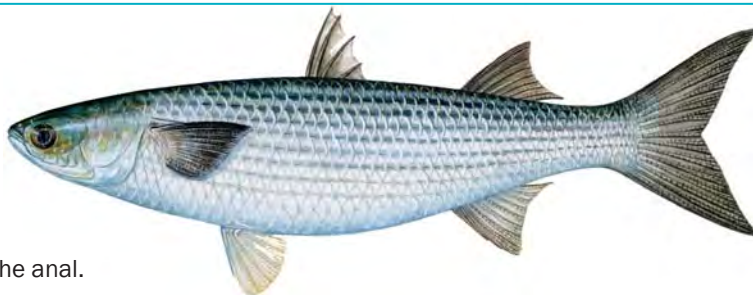
- Features**
- Color bluish-gray or green above.
 - Shading to silver on sides, with indistinct horizontal black barrings.
 - White below fins lightly scaled at base, unscaled above.
 - Blunt nose and small mouth.
 - Second dorsal fin originates behind that of the anal.

Similar fish White mullet, *M. curema*, fantail mullet, *M. gyrans* (both white and fantail mullet have black blotch at base of pectoral fin, which is lacking in the black mullet).

Habitat Inshore.

Size Roe mullet common to 3 pounds, but in aquariums known to reach 12 pounds or more.

Notes Adults migrate offshore in large schools to spawn; juveniles migrate inshore at about 1 inch in size, moving far up tidal creeks; frequent leapers; feeds on algae, detritus, and other tiny marine forms.



Striped Mojarra

Diapterus plumieri

Family Gerreidae, Mojarra

- Features**
- Body dark olive above.
 - Tan to silvery on side, often with a metallic sheen.
 - Conspicuous blackish stripe along center of each scale row.
 - All fins except pectoral fins dusky in large adults.
 - Anal fins sometimes dark orange.
 - Pelvic spine and first 2 anal spines pale.
 - Dorsal and anal spines long and stout.
 - 3 anal spines.

Habitat Brackish and coastal fresh waters (in limestone regions), grassy areas.

Size To 12 inches.



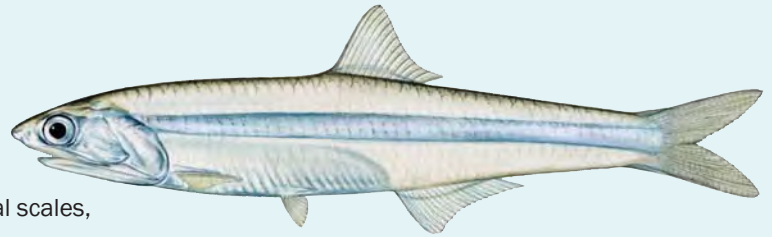
Striped Anchovy

Anchoa hepsetus

Family Engraulidae, Anchovies

- Features**
- Snout length somewhat less than eye diameter.
 - Silver stripe on body narrow – width less than eye diameter or snout length throughout.
 - Back greenish.
 - Some yellowish about the head.
 - Melanophores (pigmented cells) outline all dorsal scales, especially those behind the dorsal fin.
 - Dorsal fin begins above a point well in front of anal fin, and ends above front rays of anal fin.
 - 14 to 17 dorsal fin rays (usually 16), 15 to 18 pectoral fin rays (usually 16 to 17), and 20 to 24 anal fin rays (usually 21 to 23).

Size To 6 inches.



Bay Anchovy

Anchoa mitchilli

Family Engraulidae, Anchovies

- Features**
- Body relatively deep; head short.
 - Snout very short, only slightly overhanging mouth.
 - Silvery stripe narrow, often faint or absent toward front.
 - Stripe fades after death.
 - Body grayish, with few melanophores above.
 - Dorsal fin far back – the only U.S. species in which that fin begins above or only very slightly in front of anal fin.
 - 11 to 14 (usually 12 to 13) pectoral fin rays.
 - 23 to 31 (usually 24 to 29) anal fin rays.

Habitat In shallow bays and estuaries; common in brackish waters, but occurs to 120 ft.

Size To 4 inches.



Great Barracuda

Sphyraena barracuda

Family Sphyraenidae, Barracudas

- Features**
- Gray, with a greenish cast above, whitish below.
 - Many irregular, small black blotches on lower side.
 - 18 to 22 diagonal dark bars on upper side (not always evident).
 - Caudal fin dark with white tips.
 - 75 to 87 lateral line scales; no fleshy tip on jaw.

Young (Not shown) dark stripe on side
stripe breaks into dark squarish blotches as fish grows.

Habitat Young live in inshore seagrass beds; adults range from inshore channels to open ocean.

Size To 106 pounds.

Notes Most attacks on people have occurred when they were wading or swimming in turbid water while wearing bright objects, attempting to spear a barracuda, or carrying speared fish; flesh of smaller fish apparently not poisonous, but larger fish sometimes very toxic due to ciguatera; no safe, reliable way of recognizing toxic fish.



King Mackerel

Scomberomorus cavalla

Family Scombridae, Mackerels and Tunas

- Features**
- Color of back iridescent bluish green, sides silvery.
 - Streamlined body with tapered head.
 - No black pigment on front of the first dorsal fin.
 - Lateral line starts high and drops sharply below the second dorsal fin.
 - Young fish often have yellowish spots like those of Spanish mackerel.



Similar fish Cero, *S. regalis*; Spanish mackerel, *S. maculatus*.

Habitat Nearshore and offshore; occasionally taken from piers running into deep water.

Size To 100 pounds. Common to 20 pounds.

Notes Schooling fish that migrates from south Florida waters in winter to more northerly waters in spring; Gulf population thought to be separate from Atlantic population, with considerable mixing in winter from Cape Canaveral past Key West; spawns in mid summer offshore; feeds on small fish and squid.

Cero (cero mackerel)

Scomberomorus regalis

Family Scombridae, Mackerels and Tunas

- Features**
- Color of back iridescent bluish green.
 - Sides silvery yellow spots forming lines above and below a bronze stripe from pectoral fin to base of the tail.
 - Front of first dorsal is bluish black.
 - Lateral line curves gradually to base of caudal fin.



Similar fish Spanish mackerel, *S. maculatus*; king mackerel, *S. cavalla*.

Habitat Nearshore and offshore fish occurring mainly in south Florida, especially over coral reefs and wrecks.

Size To 11 pounds (34 inches). Common to 5 pounds.

Notes Unlike other mackerels, does not stray far from south Florida waters; spawns offshore in mid summer; feeds on small fish and squid.

Spanish Mackerel

Scomberomorus maculatus

Family Scombridae, Mackerels and Tunas

- Features**
- Color of back green, shading to silver on sides.
 - Golden yellow irregular spots above and below lateral line.
 - Front of dorsal fin black.
 - Lateral line curves gently to base of tail.

Similar fish Cero, *S. regalis*, king mackerel, *S. cavalla*.

Habitat Inshore, nearshore, and offshore, especially over deep grass beds and reefs; absent from north Florida waters in winter.

Size To 11 pounds (31 inches). Common to 2 pounds.

Notes Schooling fish that migrates northward in spring, returning to southerly waters when water temperatures drop below about 70°F; spawns offshore, spring through summer; feeds on small fish and squid.



Wahoo

Acanthocybium solanderi

Family Scombridae, Mackerels and Tunas

- Features**
- Body slender; elongated jaws form a pointed beak.
 - Dark bluish above, with about 30 dark wavy bars.
 - No gill rakers, whitish below 1st dorsal fin long and low, with 21 to 27 spines.

Habitat Offshore Gulfstream; bluewater.

Size To 183 pounds (83 inches).

Notes An important game fish, renowned for its tremendous runs and shifts of direction; usually not in schools; caught by trolling bait and artificial lures on flatlines.



WAHOO

Little Tunny

Euthynnus alletteratus

Family Scombridae, Mackerels and Tunas

- Features**
- Diagonal, sometimes wavy, dark bars on bare areas on each side of back.
 - 4 to 5 dark spots below pectoral fin.
 - No dark stripes on belly.
 - Dorsal fins connected at base.
 - Pectoral fin short.

Habitat Common offshore, but also occurs regularly in bays and over reefs.

Size To 26 pounds (38 inches).

Notes Probably the most common tuna in the West Atlantic; popular sport fish, it is also used as bait for marlin; occurs in large schools.



LITTLE TUNNY

Yellowfin Tuna

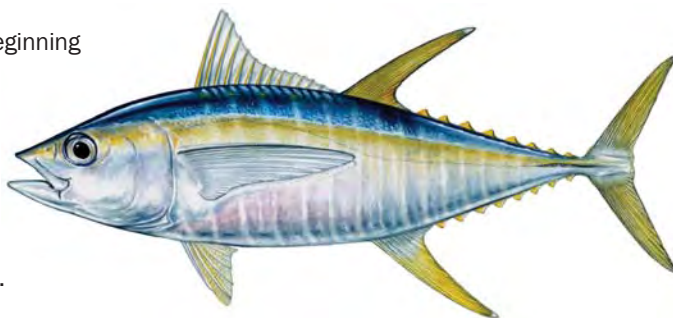
Thunnus albacares

Family Scombridae, Mackerels and Tunas

- Features**
- Pectoral fin moderately long, reaching point below beginning of second dorsal fin.
 - Second dorsal fin and all finlets yellow.
 - No white rear edge on caudal fin.
 - Golden stripe on side.
 - Eye small, 26 to 35 gill rakers.
 - Second dorsal and anal fins become much longer with age (to about 1/5 of total length).

Habitat Offshore mostly bluewater; in or near the Gulfstream.

Size To 367 pounds (82 inches).



YELLOWFIN TUNA

Blackfin Tuna

Thunnus atlanticus

Family Scombridae, Mackerels and Tunas

- Features**
- Pectoral fin moderately long, reaching point below beginning of second dorsal fin.
 - Eye large, second dorsal fin dusky.
 - All finlets dusky, with white edges.
 - Dorsal finlets sometimes turn yellowish at base after death.
 - A broad, brownish stripe along upper part of side.
 - 19 to 25 gill rakers (usually 21 to 23) on first arch.

Habitat Nearshore and offshore.

Size To 42 pounds (38 inches).



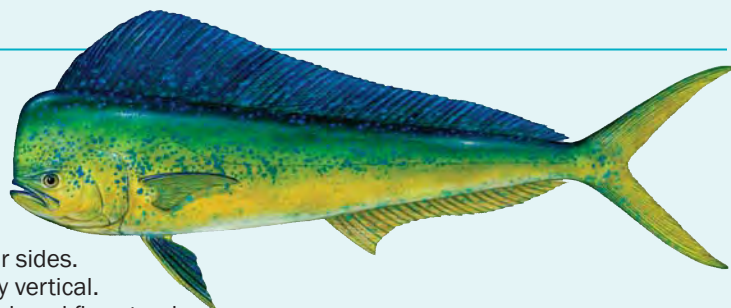
BLACKFIN TUNA

Dolphinfish

Coryphaena hippurus

Family Coryphaenidae, Dolphinfishes

- Features**
- Bright greenish blue above, yellow on sides, with capability of flashing purple, chartreuse, and a wide range of other colors.
 - Body tapers sharply from head to tail.
 - Irregular blue or golden blotches scattered over sides.
 - Anterior profile of head on adult males is nearly vertical.
 - Head of females more sloping; the single dark dorsal fin extends from just behind the head to the tail.
 - Anal fin margin concave and extending to tail.



Similar fish Pompano dolphin, *C. equisetis*; the pompano dolphin has squarish tooth patch on tongue (oval tooth patch on dolphin) and fewer dorsal rays (48 to 55 vs. 55 to 65 on dolphin).

Habitat Offshore in warm waters.

Size To 88 pounds (63 inches). Common to 30 pounds.

Notes One of the fastest-growing fish, thought to live no more than 5 years; swimming speed estimated at 50 knots; spawns in warm oceanic currents throughout much of the year; young found in sargassum weed; feeds on flying fish and squid.

Swordfish

Xiphias gladius

Family Xiphiidae, Swordfishes

- Features**
- Color of back variable, black, grayish blue, brown, metallic purple, or bronze.
 - Sides dusky, underbelly dirty white.
 - Large eyes, long flat, sword-like upper jaw.
 - Lacks scales, teeth, and pelvic fins.
 - Single keel on each side of body in front of tail.
 - First dorsal fin high, rigid and short.



Habitat Offshore species worldwide in temperate and tropic waters known to frequent depths of 400 to 500 fathoms; also has been seen basking at the surface.

Size To 1300 pounds (15 feet).

Notes Large swordfish are all females, males seldom exceed 200 pounds; except when spawning, females believed to prefer water cooler than that favored by males; feeds on squid, octopus, and pelagic fishes of all kinds.

Longbill Spearfish

Tetrapturus pfluegeri

Family Istiophoridae, Billfishes

- Features**
- Color of body dark blue, shading to silvery, white underneath.
 - Dorsal fin bluish, others brown-black.
 - Two dorsal fins, the first lengthy, its front forming a peak.
 - Two anal fins, the anus well in front of the first.
 - Upper jaw prolonged into spear, its cross section round.



Similar fish White marlin, *Tetrapterus albidus*.

Habitat Offshore in deep water.

Size To 90 pounds (7 feet).

Notes Uncommon; available data indicate that the spearfish matures at 2 years of age, and rarely lives past 4 to 5 years; they are pelagic, and feed at or near the surface, mainly on fishes and squid; named for Al Pflueger, Sr., founder of Pflueger Taxidermy.

Blue Marlin

Makaira nigricans

Family Istiophoridae, Billfishes

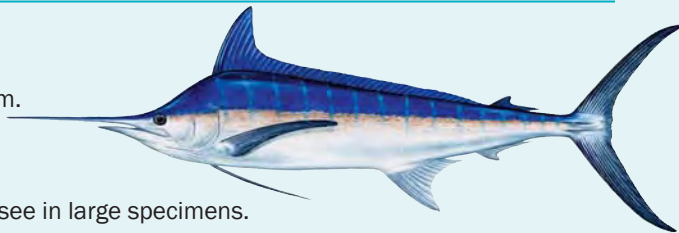
- Features**
- Color cobalt blue on top shading to silvery white on bottom.
 - Upper jaw elongated in form of a spear.
 - Dorsal fin pointed at front end.
 - Pectoral fin and anal fin pointed.
 - Lateral line reticulated (interwoven like a net), difficult to see in large specimens.
 - No dark spots on dorsal fin.
 - Body covered with imbedded scales ending in one or two sharp points.
 - Conspicuous groove on each side of the isthmus.

Similar fish White marlin, *Tetrapterus albidus* (white has rounded dorsal at front end, rounded tip of pectoral and anal fins, and spots on the dorsal fin).

Habitat Offshore, a bluewater fish.

Size Largest of the Atlantic marlins; commonly over 600 pounds (14 feet).

Notes All of trophy size are females; males do not exceed 300 pounds; make trans-Atlantic migrations; spawning procedures unknown; feeds on squid and pelagic fishes, including blackfin tuna and frigate mackerel.



White Marlin

Tetrapterus albidus

Family Istiophoridae, Billfishes

- Features**
- Color of body dark blue to chocolate brown, shading to silvery white underbelly.
 - Noticeable spots on dorsal fin.
 - Upper jaw elongated in shape of a spear.
 - Body covered with imbedded scales with a single sharp point.
 - Tips of first dorsal, pectoral, and first anal fins rounded.
 - Lateral line curved above pectoral fin then going in straight line to base of tail.
 - Conspicuous hump form area between eyes to beginning of 1st dorsal fin.

Similar fish Blue marlin, *M. nigricans*.

Habitat Offshore, a bluewater fish.

Size To 182 pounds (9 feet). Common to 8 feet.

Notes Uses its bill to stun fast-moving fishes, then turns to consume them; spawning procedures unknown; ranges throughout the Atlantic and Caribbean; feeds on squid and pelagic fishes.



Sailfish

Istiophorus platypterus

Family Istiophoridae, Billfishes

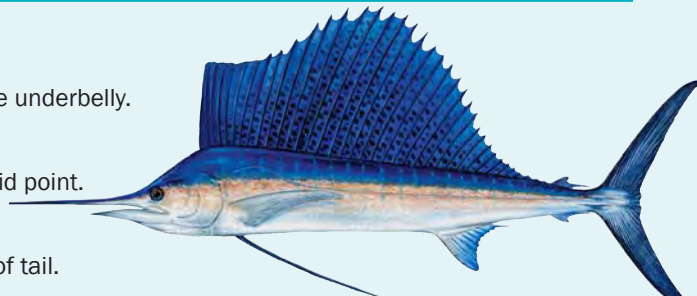
- Features**
- Color dark blue on top, brown-blue laterally, silvery white underbelly.
 - Upper jaw elongated in form of spear.
 - First dorsal greatly enlarged in the form of a sail, with many black spots, its front squared off, highest at its mid point.
 - Pelvic fins very narrow, reaching almost to the anus.
 - Body covered with imbedded scales, blunt at end.
 - Lateral line curved over pectoral, then straight to base of tail.

Similar fish White marlin, *T. albidus*, young blue marlin, *M. nigricans* (spectacular sail-like dorsal of sailfish is most notable difference).

Habitat Offshore species, in south Florida associated with waters near the Gulfstream; off the Panhandle near the 100 fathom line.

Size To 128 pounds (8 feet).

Notes Rapid growing species, reaching 4 to 5 feet in a single year; swims at speeds up to 50 knots; feeds on the surface or at mid depths on smaller pelagic fishes and squid.



Who to call for what

Marine Regulatory & Management Agencies

Florida Fish and Wildlife Conservation Commission
Division of Marine Fisheries Management
www.MyFWC.com/ [Click on Fishing](#)
2590 Executive Center Circle, E.
Tallahassee, FL 32301
(850) 487-0554

Regulates marine fishes in Florida's state waters. Provides communication between governing agencies and the public. Improves fisheries habitat and performs marine research. Enforces fisheries regulations.

South Atlantic Fisheries Management Council
www.safmc.net
4055 Faber Place Dr., Suite 210
North Charleston, SC 29405
(843) 571-4366

Responsible for the conservation and management of fisheries 3 to 200 miles offshore of North and South Carolina, Georgia and along Florida's east coast.

Gulf of Mexico
Fisheries Management Council
www.gulfcouncil.org
2203 N. Lois Avenue, Suite 1100
Tampa, FL 33607
(813) 348-1630

Develops and monitors fisheries management plans 9 to 200 miles offshore in the Gulf of Mexico.

NOAA National Marine Fisheries Service
www.nmfs.noaa.gov
263 13th Avenue South
St. Petersburg, FL 33701
(727) 824-5370

Federal agency in charge of managing marine fisheries outside state waters (3 to 200 miles offshore on the Atlantic and 9 to 200 miles on Gulf coast). NMFS is engaged in marine research and enforcement.

Florida Fish and Wildlife Conservation Commission Contacts

Our goal is to learn as much as we can about Florida's threatened and endangered species so we can better manage their populations. You can help the FWC protect these species by providing information, such as sightings of tagged manatees or injured sea turtles.

Angler Tag Return Hotline

If you catch a tagged fish in Florida waters call 1-800-367-4461 or email TagReturn@MyFWC.com

Fish Kill Hotline

1-800-636-0511 or submit a report online <http://research.myfwc.com/fishkill/submit.asp>

Horseshoe Crab Nesting Activity

Biologists at the Fish and Wildlife Research Institute (FWRI) have initiated a statewide survey to identify nesting beaches where horseshoe crabs mate and lay eggs. With the help of the public, FWRI's goal is to identify these beaches around the state 1-866-252-9326 or submit a survey online http://www.surveymonkey.com/s/horseshoe_crab.

Smalltooth Sawfish

This statewide survey provides a means for anglers, boaters, and beach-goers to help biologists learn more about the areas in which sawfish are sighted. If you catch a sawfish while fishing for other species or happen to see one while you are near the water, please contact us.

Sawfish@MyFwc.com 941-255-7403

Whooping Crane

The FWC would like to hear about your Whooping Crane sightings. You can contact project biologists by e-mail: WhoopingCrane@MyFWC.com

Nuisance Alligator

1-866-FWC-GATOR (1-866-392-4286)

Oil, Fuel, or Hazardous Material Spills in Florida Waters

1-800-320-0519

Red Tide Status Line

Toll-Free inside Florida Only -1-866-300-9399

Outside Florida - 727-552-2448

Wildlife Alert

If you suspect a wildlife violation, report it to FWC Wildlife Alert Reward Program for violations that are in progress or need immediate attention. Examples of violations include: illegal hunting, killing or capturing of protected species, fishing by illegal methods, boating under the influence. Telephones are answered 24 hours a day, seven days a week. 1-888-404-FWCC (1-888-404-3922)

Cellular phone customers - *FWC or #FWC

Use the FWC toll-free number to report wildlife violations.

Also use the number to report:

Manatees: Sick, dead, injured, or tagged

Marine Turtles: Dead, sick or injured

Right Whale Sightings:

Georgia Residents use 1-800-2-SAVE-ME

Your purchase of fishing equipment and motor boat fuels supports these Sport Fish Restoration funded saltwater programs in Florida

- Aquatic Education/Angler Outreach
- Artificial Reefs
- Stock Enhancement
- Marine Fisheries Research
- Boating-Access improvements

For a copy of *Fishing Lines* magazine, call (850) 487-0554 or go online to MyFWC.com.

