

**NOAA
Southeast
Fisheries
Science
Center:**

**Research to
Sustain,
Protect &
Rebuild**

Our Nation's

Living

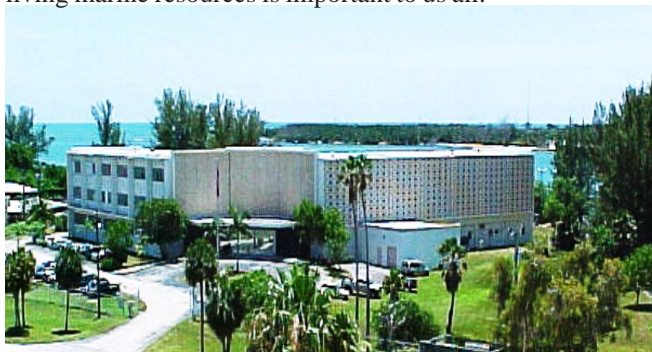
Ocean



Managing, Conserving and Preserving Our Living Marine Resources

Introduction

Is life in the sea still a mystery? Perhaps not as much as it used to be! Scientists have been studying living marine resources for years and have made phenomenal discoveries concerning everything from huge whales to fish, sea turtles, and creatures so tiny they can only be seen under a microscope. We are deeply concerned about the wellbeing and protection of marine organisms and their habitat. Everyone should be equally concerned because a broad diversity of healthy living marine resources is important to us all.



Managing, conserving and preserving our living marine resources are the focal points for the Southeast Fisheries Science Center (SEFSC). The SEFSC is one of six research centers within the National Marine Fisheries Service, also known as NOAA Fisheries, an agency of the Commerce Department's National Oceanic and Atmospheric Administration (NOAA). The SEFSC, located in Miami, Florida, oversees the fisheries research activities at laboratories in Miami and Panama City, Florida; Beaufort, North Carolina; Pascagoula, Mississippi; Lafayette, Louisiana; and Galveston, Texas. In addition, many field offices compile and contribute important data about living marine resources along the nation's southeastern coast, throughout the Gulf of Mexico, and the waters of the U.S.

Caribbean. The SEFSC's two NOAA vessels berthed at Pascagoula, the 170-foot *Oregon II* and the 224-foot *Gordon Gunter*, and many smaller craft located throughout the region serve as platforms for the collection of fishery research data. The SEFSC's mission is to conduct and synthesize scientific research that managers need and use to make effective decisions about the management of living marine resources. Our three primary goals are rebuilding and maintaining sustainable fisheries, managing protected and endangered species, and protecting and restoring healthy fishery habits. SEFSC's research related to each goal is listed below.

Rebuilding & Maintaining Sustainable Fisheries

Rebuilding and maintaining sustainable fisheries are primary efforts of the SEFSC. These important tasks include research on and assessment of fish like groupers, mackerels, tunas, and shellfish like crabs and shrimp, resources that can replenish themselves on



a continuing basis. Unfortunately, these resources are often over-fished and many populations can be damaged by loss of essential habitats or by pollution. The good news is that proper management of these species can be maintained and shrinking fish populations can be restored. The SEFSC studies the status of marine populations and impacts of various management actions (such as catch and size limits) so that abundant populations can be maintained over the long term and citizens will be able to enjoy a continuing supply of high quality seafood and recreational benefits.

The research the SEFSC conducts helps us determine the distribution, abundance, and population status of these species. The SEFSC uses an ecosystem-based management approach by working with its partners to achieve a balance between use and protection of coastal and marine resources to ensure the ecosystem's health, sustainability and viability for today's and tomorrow's generations.

How Do We Use Data?

The SEFSC collects and analyzes two types of data:

- Fishery dependent: data—such as catch, fishing effort and size information—that are collected from commercial and recreational fisheries.
- Fishery independent: data—such as age, length, growth rate, food, predators, habitat use, distribution, and abundance—that are collected from the environment



These data are used to estimate the current condition of a marine population and provide advice on management options.

Research Programs In Action

Research programs in the Southeast include the following:

- Fisheries Studies and Surveys: the collection of data about catch, fishing effort, tagging, size, age, reproduction and migratory patterns helps us monitor trends in abundance. Some of the techniques we use are:

At Sea:

- Cooperative tagging program – Volunteers apply tags to fish that enable scientists to obtain information about the movements of individual tagged fish.
- Observer program – NOAA Fisheries deploys trained observers on selected vessels in the U.S. large pelagic long line, shark and shrimp fishery to obtain catch, effort, and biological information.
- Ichthyoplankton surveys – Scientists aboard research vessels tow fine meshed plankton nets to collect marine creatures that are very tiny and young to determine how plentiful they are.
- Bottom trawl surveys – Scientists aboard research vessels sample bottomfish diversity and abundance using large bottom-fishing nets.
- Long line surveys – Scientists aboard research vessels set miles of hooks on fishing lines to sample sharks, tunas, swordfish and billfish.
- Trap/video surveys – Scientists place underwater video cameras on or near traps to record animal behavior.

Ashore:

- Fisheries Data Monitoring – Trained NOAA Fisheries personnel visit fisherman, seafood dealers, and processors to collect biological and socioeconomic data about commercial fisheries which includes information about seafood quality, price and fishing effort.
- Fisheries Statistics – Several cooperative data collection programs among state and federal scientists contribute to a centralized fishery information database to monitor the landings of many species of fish and shellfish.
- Fisheries Assessment – Scientists use fishery data and mathematical modeling techniques to understand the underlying health and status of fishery populations and to provide scientific advice to fishery managers concerning the effectiveness of proposed management measures

Managing Protected & Endangered Species

The SEFSC conducts research on a number of vulnerable marine species, many of which are endangered and protected under the Endangered Species Act (ESA) and the Marine Mammal Protection Act (MMPA). Species such as whales, dolphins, sea turtles, conch, Johnson's sea grass, and many coral and reef fishes have decreased in abundance, placing their future in jeopardy. Some are faced with extinction. Increased demands from a growing coastal human population, development of more efficient fishing technology, habitat loss, and the spread of environmental pollution present increasing threats. The SEFSC is committed to recovering these important species and protecting them from activities that threaten their health and continued existence.

Marine Mammals

All of the marine mammals in the Southeast, from inshore bottle-nose dolphins to giant offshore whales, are protected under the Marine Mammal Protection Act. Some



stocks are so depleted that they are also afforded protection under the Endangered Species Act. Some of the methods we use to study marine mammals are:

- Direct observation when these animals come to the surface to breathe,

- Aerial overflights conducted along our coasts to count the number of individual animals,
- Cruises aboard research vessels to count the number of offshore species and collect genetic and other biological samples, and
- Underwater listening devices that detect distinct sounds produced by these animals.

Much knowledge has recently been gained on endangered North Atlantic right whales and Gulf of Mexico sperm whales by utilizing such listening devices. These methods have yielded information on behavior, movement and habitat requirements. In addition, work is underway to better understand the life history and migratory patterns of bottlenose dolphin.

The SEFSC also coordinates an extensive, largely volunteer marine mammal-stranding response to assist beached or injured marine mammals that come ashore when ill or are known to have strong herding instincts. Our scientists, in cooperation with members of stranding networks, try very hard to save live animals.

Unfortunately, stranded creatures often die. When they do, we study them to learn as much as we can about their age, growth, diet, reproduction, where they lived, and cause of death.

Sea Turtles

SEFSC scientists conduct research on the five Atlantic species of sea turtles, all of which are endangered or threatened: Kemp's ridley, loggerhead, green, hawksbill, and leatherback. We study these animals to learn about their population sizes, reproductive habits and capabilities, migratory patterns, and much more so that we can provide sound advice to regional, national, and international management bodies. The programs we conduct include the:

- Sea Turtle Stranding and Salvage Network—a group of federal and state agencies, academic and research institutions, and volunteers who monitor beaches for animals washing ashore,
- Cooperative marine turtle tagging program,
- Kemp's ridley sea turtle recovery efforts,
- Stock assessments for all species,
- Inshore index abundance surveys in North Carolina and in Puerto Rico, and



- Experiments to reduce sea turtle bycatch and their interactions with fishing gears in the southeastern United States, particularly within the trawl, pelagic longline and gillnet fisheries.

Gear Technology

Another aspect of research is the investigation of bycatch and the extensive interactions of protected species with various fishing gears used in the southeastern United States, particularly within the longline, trawl, and gillnet fisheries. Of special interest to the SEFSC are the Turtle Excluder Device (TED) and the By-Catch Reduction Device (BRD). A TED is a rigid grid inserted at an angle in a trawl net to allow sea turtles to escape safely instead of drowning, and a BRD is a device used to reduce the unwanted catches of fish and bottom trash to increase shrimp capture.

Coral Reef Resources

Conch, Nassau grouper and goliath groupers are severely depleted reef species that now have special fishing restrictions. Also protected are important reef-building corals including, *Oculina*, elkhorn and staghorn corals which have experienced drastic and widespread population declines. SEFSC scientists conduct research on these protected species to:

- Monitor their populations,
- Assess their condition,
- Study their habitat needs and reproductive behavior to determine if they should be considered candidates for endangered species, and
- Develop measures to help them recover.



Protecting & Restoring Fish Habitat

Protecting and restoring fish habitat is a key concern for the SEFSC. Marine fish are valuable national resources, providing thousands of jobs, billions of dollars in revenue annually, recreational fishing opportunities, and a plentiful supply of wholesome seafood. They are also an important part of

marine ecosystems. But our fisheries cannot survive without the habitats that are essential for them to thrive.

What Are Fish Habitats?

Congress has defined essential fish habitat as “those waters and substrate necessary for fish to



spawn, breed, feed or grow to maturity.” It is an important part of our mission to ensure that such habitat is properly protected and conserved. Increasing pressures on marine ecosystems, however, have jeopardized fish habitat. In part this is due to overfishing, use of non-selective fishing gear, habitat damage from oil and chemical spills, and habitat loss, degradation, or impairment.

Impacts On Fish Habitats

The SEFSC is working to reduce negative effects on fish habitat. Our scientists investigate the biological productivity of different fish habitats and how different species of fish depend on them. Our methods include:

- Supporting the Coastal and Wetland Planning and Restoration Act (CWPR) by studying restored wetlands and developing ecosystem models that link habitat characteristics with fishery production,
- Conducting research to define essential fish habitat (EFH) by studying the critical elements individual species need to survive, including surveys along the Gulf and Atlantic coasts and the in the nearshore waters of Puerto Rico and the U.S. Virgin Islands,
- Planning and carrying out projects in cooperation with the NOAA Damage Assessment and Restoration Program, federal, state, and local



partner agencies, that restore degraded salt marsh, seagrass, and coral reef habitats to help rebuild declining fish stocks,

- Leading research efforts that maintain the health of marine ecosystems and revive and create fish habitat;
- Investigating the causes, components, and complexity of harmful algal blooms,
- Studying migration pathways, nursery habitats, coral, rock, oyster reefs and other coastal features,
- Monitoring fishery populations in the Florida Keys National Marine Sanctuary and other marine sanctuaries, National Parks, and other marine protected areas in the United States and U.S. Caribbean,
- Creating high-resolution maps of habitats that are used to monitor trends in submerged aquatic vegetation, water quality, and range,
- Reviewing coastal development and water projects, like the South Florida Ecosystem Restoration Project, that may favorably or adversely affect important fish habitats,
- Evaluating the short and long term response of marine fish stocks to habitat conservation strategies like area or seasonal closures, gear restrictions, and no-take marine reserves, and
- Providing real time satellite-based sea surface temperature and atmospheric data to state and federal institutions, academia, and commercial and recreational fishermen through the Coast Watch Regional Node.



Laws & Regulations

The SEFSC conducts all of its research activities as prescribed by several laws including the:

- Magnuson-Stevens Fishery Conservation and Management Act (***MSFCMA***) that regulates fishing from three miles (9 miles off Texas, western Florida, and Puerto Rico) to 200 miles offshore. This act established eight regional fishery management councils nationwide that are overseen by the Secretary of Commerce. The act is designed to conserve stocks, eliminate foreign fishing, and develop the U.S. fishing industry.
- Sustainable Fisheries Act (***SFA***) that provides NOAA Fisheries with additional management tools and authority to eliminate overfishing and to rebuild overfished fisheries while providing a greater recognition of essential fish habitats.

- Atlantic Coastal Fisheries Cooperative Management Act (ACFCMA) that establishes fishery management plans for coastal fisheries. These plans include data analyses and management measures and reviewed by the Atlantic State Marine Fisheries Commission to ensure that states are in compliance.



- Endangered Species Act (*ESA*) that protects species that are threatened or endangered like sea turtles and gulf sturgeon.
- Marine Mammal Protection Act (*MMPA*) that prohibits the taking of marine mammals like whales, dolphins, and porpoises in U.S. waters, or by U.S. citizens on the high seas. And it prohibits the importation of marine mammals and marine mammal products into the United States (“taking” is defined as harassing, hunting, capturing, killing, or attempting to harass, hunt, capture or kill).
- Atlantic Tunas Convention Act (*ATC*) that regulates the take and possession of tuna and other species, and includes such things as landing, shipping, transportation, and the sale of specific species. The United States is a member of the International Convention for the Conservation of Atlantic Tuna (*ICCAT*). This is a multinational group of twenty-two nations that work cooperatively to manage these species.
- Coastal Wetlands Planning, Protection and Restoration Act (*CWPPRA*) that established a task force to develop a comprehensive plan to prevent loss and to restore coastal wetlands in Louisiana. A coastal wetland grant program has been established for other states to fund wetland restoration projects and activities.



- Fish and Wildlife Coordination Act (*FWCA*) that authorizes NOAA Fisheries to collect fisheries data and to advise other agencies on environmental decisions that affect living marine resources.
- Lacey Act (*LA*) that prohibits the trade of fish, wildlife or plant transactions and activities that violate state, federal, Native American tribal, or foreign laws.



There are other statutes, international conventions and treaties that guide NOAA Fisheries activities. For a complete listing of these laws and regulations, please review: CRS Report 95-460.

In Summary

The Southeast Fisheries Science Center is dedicated to fulfilling its mission of protecting and conserving living marine resources that the Nation relies on for healthy food, recreation, cultural, and aesthetic values, as well as the jobs and economic activities dependent on wise management of these resources. Life in the sea is not as mysterious as it was before scientific principles and methods were first widely applied to fisheries early in the nineteenth century. But scientists still have a long way to go in fully understanding the factors and environmental relationships governing the production and healthy maintenance of marine populations. Living marine resources range in size from small to large, and the SEFSC is concerned about protecting them all!

Rebuilding and maintaining sustainable fisheries, managing protected and endangered species, and protecting and restoring healthy fishery habitats are our three primary goals. We do this through active scientific investigations involving several SEFSC laboratories, each with a dedicated and diverse workforce and many constituents and partners—all committed to managing, conserving and preserving our living marine resources. To be part of it is a privilege and a responsibility that we heartily embrace. We encourage you to contact any of our locations and visit our web sites for additional information.



Where to Get More Information

The Southeast Fisheries Science Center headquarters is located in Miami, Florida with supporting laboratories throughout the southeast. Information on any of our programs, activities, or publications may be obtained from any of the locations listed below:

NOAA Fisheries, Southeast Fisheries Science Center

75 Virginia Beach Drive
Miami, FL 33149-1003
(305) 361-4200 or (305) 361-4219 Fax
<http://www.sefsc.noaa.gov>

NOAA Center for Coastal Fisheries and Habitat Research

101 Pivers Island Road
Beaufort, NC 28516-9701
(252) 728-8724 or (252) 728-8784 Fax
<http://www.shrimp.ccfhrb.noaa.gov>

NOAA Fisheries, SEFSC, Galveston Laboratory 4700 Avenue U

Galveston, TX 77551-5997
(409) 766-3500 or (409) 766-3508 Fax
<http://www.galveston.ssp.nmfs.gov/galv>

NOAA Fisheries, SEFSC, Mississippi Laboratories

3209 Frederick Street
Pascagoula, MS 39567-1207
(228) 762-4591 or (228) 762-9200 Fax
<http://www.mslabs.noaa.gov>

NOAA Fisheries, SEFSC, Panama City Laboratory

3500 Delwood Beach Road
Panama City, FL 32404-7499
(850) 234-6541 or (850) 235-3559 Fax
<http://www.sefspanamalab.noaa.gov>

