

Sea Science

An Information/Education Series from the Marine Resources Division
South Carolina Department of Natural Resources



Careers in Marine Science

Introduction

Marine science sounds like an exciting career, but what exactly does a marine scientist do and how do you get started?

City and state aquariums and theme parks usually display large, glamorous marine animals, and television portrays marine biologists as divers searching for the mysteries of the deep, or in a cage surrounded by sharks. Actually, very few marine scientists do these kinds of exciting jobs, or work with glamorous animals.

South Carolina, for example, has many more biologists studying shrimp than dolphins or sharks. The reasons are simple: animals with a commercial fisheries value, or sought by sport fishermen, have monetary value. State and federal agencies that manage these resources want to learn as much as possible about the animals that support these fisheries, and hire marine biologists to gather this information.

In South Carolina, important marine species include shrimp, crabs, oysters, clams and a variety of fishes from grouper to sea trout to swordfish. To study the life histories of these animals, and the ecology of their habitats, some scientists venture into the ocean on large research vessels, sometimes for extended periods of time. Others study water samples in a laboratory, or spend their days hip deep in marsh mud.

Field work, which can be a long day sampling in a salt marsh or weeks spent at sea, requires physical strength and a positive attitude while covered with marsh

mud or fish slime. Subsequent lab and office work may be routine, but is part of the job in most scientific fields. Finally, scientists need to communicate their findings to other scientists as well as the general public and lawmakers. Marine biologists regularly publish scientific papers, and present their findings to others. Successful biologists need to develop both writing and public speaking skills.

Hundreds of different jobs, encompassing almost all other sciences, exist in the general field of Marine Science. Jobs in a marine-related field include:

- Oceanographer
- Marine Mammal biologist
- Microbiologist
- Ecologist
- Aquatic chemist
- Aquarium curator
- Marine educator
- Ocean engineer
- Resource manager
- Aquaculture veterinarian

Marine science careers can be very rewarding. Just being outside and enjoying the sunrise over the ocean, or a beautiful day in the salt marsh, adds to the challenge and satisfaction of understanding and helping the environment. And if research does not interest you, there are many related jobs to consider. Education, environmental law, interpretation, art, journalism, filmmaking, and many other non-scientific fields offer a chance to work with marine related topics and help the environment.

All of this work in the marine science field brings us one step closer to understanding problems of pollution, overfishing, habitat restoration, coastal human populations, and global climate change.



Taking biological samples from Wreckfish, *Polyprion americanus*.



Preparing water samples.

What are the Educational Requirements?

An inquisitive mind combined with determination and hard work contribute to the success of marine scientists. And it all starts with a good educational background.

Marine science is a popular, competitive field. Students who aim for scientific careers have to strive to be the best in their academic endeavors. Good study habits developed early in school will prepare you for a successful career. High school students need to develop a solid background in math, physics, chemistry, biology, English, and computer technology.

High school graduates can qualify for some marine science jobs, such as technicians, vessel captains and crew, but most positions require at least a bachelor's degree. Students who graduate with a four-year degree in biology, marine biology, zoology, geology, chemistry, or fisheries management can then move on to graduate school studies in more specific areas of marine science.

Getting a broad background

in the sciences is essential for understanding the complexities of oceanic or biological systems. A well rounded knowledge of science also enables you to interact with other scientists, and communicate important findings to resource managers, politicians and the public.

A good educational background includes more than just science. Marine scientists need good writing and speaking skills, which includes public speaking and writing of scientific papers and grants for funding. Communications also encompasses technology and software programs to prepare papers and analyze data.

Specialization in one area of marine science requires graduate, and often, post-graduate training in one or several areas. After four years of undergraduate study, completing a PhD takes an additional two to six years. Most colleges offer teaching or research assistantships for graduate students. These positions provide financial support and valuable experience in the field.

Is it Difficult to Find a Job in Marine Science?

Opportunities exist for well educated individuals in every branch of marine science. Many good positions are available in local, state, and federal government agencies, such as County Parks, the state Department of Natural Resources (DNR), and the federal National Oceanic and Atmospheric Administration (NOAA).



Sampling an Atlantic Sharpnose shark, *Rhizoprionodon terraenovae*.

As coastal development continues to rise, environmental consulting firms are creating jobs for marine science graduates in planning and coastal zone management.

Ecotourism also offers opportunities for employment. Nature-based tourism companies are searching for qualified interpreters to teach the public about the natural and marine environments. Teaching positions are also available at colleges and universities. A variety of positions also are available at aquariums and other non-profit organizations.

Salaries for these positions vary from state to state and between government agencies and private companies. As with any occupation, earnings vary with education, experience and responsibilities.

Will I be Helping the Environment?

Marine scientists help the environment by working to increase our understanding of marine life, and to ensure that ocean resources will be available in the future. Marine biologists work with animals that are caught for food or pleasure and may need protection from over exploitation, or use their expertise to lessen the effects of environmental disasters such as oil spills or fish kills.

A career in marine science may be different from what most people expect. A person entering this field may not work with dolphins and whales, but may still have a challenging and rewarding job. If you love the outdoors, and enjoy solving problems, have good grades in science and math and possess both patience and perseverance, then a career in marine science may be for you.

How do I get started?

If you are interested in marine science as a career get started as soon as possible. There may be opportunities for you to job shadow a marine scientist. Try calling aquariums, state, or federal agencies and asking about programs for job shadowing. Internships may also be available for high school and college students.

Volunteering is another way to gain hands-on experience in marine science while at the same time doing your part to give back to the environment. Many projects utilize groups of volunteers in order to accomplish all of the necessary tasks required to protect and conserve natural resources. Sea turtle conservation cannot be done without the help of volunteers that walk the beaches every year to identify, monitor and relocate nests.

Go to <http://www.seaturtle.org/groups/> to find a turtle volunteer group near you.

The South Carolina Oyster Restoration and Enhancement Program (SCORE) depends on volunteers to help restore oyster reefs. Volunteers help build reefs, monitor progress, distribute literature and give presentations to local community groups and schools. For more information on this program visit their website at <http://score.dnr.sc.gov/>.

For individuals 16 years or older, SCDNR's Marine Game Fish Tagging Program utilizes volunteer recreational anglers as a means with which to tag and release the saltwater fish they catch. For complete information on the program and how to get involved visit <http://www.dnr.sc.gov/marine/tagfish/>.



Volunteers move bagged shell onto an oyster reef site

This publication was made possible in part with funds from the sale of the South Carolina Saltwater Recreational Fishing License. The South Carolina Department of Natural Resources publishes an annual Rules and Regulations booklet that lists all saltwater fishing regulations. Have an enjoyable fishing trip by reading these requirements before you fish.

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Saltwater Fishing Conservation & Ethics

Ocean resources, once thought to be unlimited, have declined rapidly in recent decades, due in part to the overharvest of many commercial and recreational species of fish and shellfish.

To reduce overfishing, all anglers should practice wise conservation practices and adopt an ethical approach to fishing.

Size and catch limits, seasons and gear restrictions should be adhered to strictly. These regulations change from time to time as managers learn more about fish life histories and how to provide angling opportunities without depleting fish populations.

The challenge of catching, not killing, fish should provide anglers with the excitement and the reward of fishing. Undersized fish or fish over the limit should be released to ensure the future of fish populations.

More and more South Carolina fishermen now practice tag and release, which not only conserves resources but also provides information on growth and movement of fish.

Saltwater fishermen can further contribute to conservation by purchasing a Saltwater Recreational Fishing License, which is required to fish from a private boat or gather shellfish in South Carolina's salt waters. Funds from the sale of licenses must be spent on programs that directly benefit saltwater fish, shellfish and fishermen.

Help ensure the outdoor enjoyment of future generations by strictly adhering to all rules, regulations, seasons, catch limits and size limits, and through the catch and release of saltwater game fish.

South Carolina Department of Natural Resources

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