



NATIONAL AQUARIUM IN BALTIMORE.

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Ask the Aquarium

*Fact Sheets from the
Conservation Education Department*

Careers in Aquatic and Marine Science

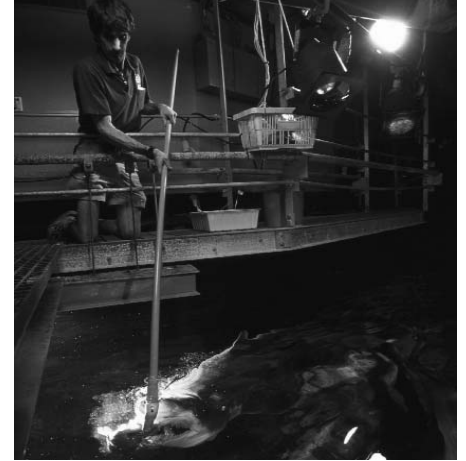
Aquatic careers are as varied as the habitats with which they are associated. The oceans are one obvious area on which people focus their marine careers; but there are many other aquatic environments, such as estuaries, lakes, rivers, streams, and wetlands on which people base their work.

Do I Need a College Degree?

Of the different careers in the field of aquatic science, most require at least a bachelor's degree (four years of college) in an appropriate scientific discipline. More specialized jobs require a master's or a doctorate in that specific field. Overall, when one has at least a college degree, one's options become much broader and compensation is greater. Degreed biologists may work in a variety of areas including research, management, public policy, education, and medicine.

Research Careers

Researchers usually have a doctorate (representing four or five years of study beyond the undergraduate degree) or are working toward one. They specialize in a single subject to which they devote their careers. These are the people who are most often called marine biologists, aquatic biologists, or aquatic ecologists. Many researchers study basic biology using marine invertebrates as laboratory subjects, simply because they are readily available and frequently easier to study than more complex animals. They often spend a great deal of their time



Care and feeding of aquatic animals is just one example of the career opportunities in marine science.

teaching or in laboratories, conducting experiments, gathering data, reading current literature, as well as writing papers and grant proposals. Very little of their time, if any, is actually spent aboard a research ship, in a submarine, or even scuba diving!

Some researchers work for the government; others are employed by commercial industries, and many of these scientists combine their research with teaching responsibilities at colleges and universities. Some researchers who do not receive a salary directly from an employer must write proposals to have their research ideas funded by grants from private and governmental agencies. The quality of their results determines if they will receive money in the future.

What do Researchers Study?

That depends on what type of marine scientist they are. Marine biologists study the life in coastal, oceanic, and estuarine habitats while aquatic scientists focus on freshwa-

ter ecosystems. Oceanographers integrate several different disciplines ranging from biology to engineering, physics, chemistry, and geology in their studies.

People with master's and bachelor's degrees may also do research, working as technical or clerical support staff under a head researcher. Their salaries are based on the amount of education and experience they have. With the rampant technological advances of the past two decades, having knowledge of - and the ability to use - computer programs are becoming job requirements of a research technician. Since these positions often require less formal training, they also offer less room for advancement and a lower salary.

Government and Business

Although research is one of the most commonly thought of marine careers, it is an area limited both by funding and the number of researchers currently in the field. On the other hand, jobs in business and government may be expanding. Biotechnology associated with marine organisms is a field that projects a strong future.

Environmental consulting and planning are two areas that have grown as the laws affecting aquatic areas have become stricter. Builders and developers rely heavily on consultants because they specialize in the regulations that control the developer's actions on the land/water. With the increase in laws applying to aquatic areas comes an increased need for management of those areas. Natural resource management occurs at the local, state, and federal levels and jobs may include wildlife park rangers, Coast Guard members, National Marine Sanctuary planners, and administrators.

Fisheries worldwide are declining, as natural resources have been over-harvested. Historically the oceans have been viewed as a limitless source of food, but time and experience have proven this notion false. The need for the "fruits of the sea" has never been greater in light of the ever-increasing world population. This situation places a tremendous burden on responsible fisheries management, and opens the door to a more-sustainable fishery, as well as the research, technology, education, and implementation of such an industry.

Other Careers

Without a college degree, many aquatic employment opportunities are still available. People may operate boats for harvesting natural resources such as crabs, oysters, shrimp, and fish. Others who operate sea vessels do so for tourism, day trips, as well as for transportation and diving trips. SCUBA teachers and dive operators have to complete specialized coursework, but do not necessarily need a college degree. Aquaculture (the raising and maintenance of fish or aquatic animals in underwater farms) managers may or may not have had college coursework in their backgrounds.

Marine-related Careers

Many careers not directly associated with oceanic research or exploration are still considered part of the marine science field. In fact, almost any "land job" one can think of has a marine counterpart. These jobs are often more abundant, more lucrative, and offer more flexibility than research positions. Educational training and other requirements will vary considerably. What follows is only a partial list:

- * lawyer who specializes in marine issues
- * marine science consultant
- * environmental lobbyist
- * computer scientist
- * Federal, state, or local government employee
- * U.S. Coast Guard
- * U.S. Navy
- * U.S. Merchant Marine
- * shipboard engineer
- * coastal engineer
- * marine architect
- * underwater archeologist
- * shipbuilder
- * marine engine mechanic
- * offshore oil rig worker
- * port authority worker
- * health department inspector
- * marine science librarian
- * marine science writer
- * marine science teacher
- * naturalist
- * park ranger
- * wildlife specialist
- * underwater filmmaker and photographer
- * marine illustrator
- * lifeguard
- * marine animal collector
- * animal trainer
- * aquatic veterinarian
- * tropical fish store worker
- * seafood processor
- * marine supply store worker