

CAREER GUIDE FOR MARINE SCIENTIST

SOC Code: 19-1029

Pay Band(s): 4, 5 and 6 ([Salary Structure](#))

Standard Occupational Description: Research or study basic principles of plant and animal life, such as origin, relationship, development, anatomy, and functions.

Marine Scientists positions in the Commonwealth are assigned to the following Roles in the [Life and Physical Science Career Group](#):

[Scientist I](#)
[Scientist II](#)
[Scientist III](#)

While Marine Scientists within the Commonwealth are all located within the Life and Physical Science Career Group, individuals may want to pursue other opportunities within the Commonwealth depending upon individual training, education, knowledge, skills, abilities, and interests.

Other Career Group(s) that may be of interest are:

[Laboratory and Research Technicians and Specialists](#)
[Environmental Services](#)
[Education Administration](#)
[Program Administration](#)

SKILLS, KNOWLEDGE, ABILITIES AND TASKS

(Technical and Functional Expertise)

Skills

Note: *The technical and functional skills listed below are based on general occupational qualifications for Marine Scientists commonly recognized by most employers. Typically, you will not be required to have all of the skills listed to be a successful performer. Recruitment and selection standards for an individual state job must be based on the specific knowledge, skills, and abilities for that job as indicated in the job announcement and job description in the Employee Work Profile.*

1. Using scientific rules and methods to solve problems.
2. Understanding written sentences and paragraphs in work related documents.
3. Managing one's own time and the time of others.
4. Considering the relative costs and benefits of potential actions to choose the most appropriate one.
5. Using logic and reasoning to identify the strengths and weaknesses of alternative solutions, conclusions or approaches to problems.
6. Giving full attention to what other people are saying, taking time to understand the points being made, asking questions as appropriate, and not interrupting at inappropriate times.
7. Communicating effectively in writing as appropriate for the needs of the audience.
8. Understanding the implications of new information for both current and future problem-solving and decision-making.
9. Identifying complex problems and reviewing related information to develop and evaluate options and implement solutions.

10. Determining the kind of tools and equipment needed to do a job.

Knowledge

Note: *The technical and functional knowledge statements listed below are based on general occupational qualifications for Marine Scientists commonly recognized by most employers. Typically, you will not be required to have all of the knowledge listed to be a successful performer. Recruitment and selection standards for an individual state job must be based on the specific knowledge, skills, and abilities for that job as indicated in the job announcement and job description in the Employee Work Profile.*

The **Knowledge** of:

1. Plant and animal organisms, their tissues, cells, functions, interdependencies, and interactions with each other and the environment.
2. Laws, legal codes, court procedures, precedents, government regulations, executive orders, agency rules, and the democratic political process.
3. Chemical composition, structure, and properties of substances and of the chemical processes and transformations that they undergo. This includes uses of chemicals and their interactions, danger signs, production techniques, and disposal methods.
4. Structure and content of the English language including the meaning and spelling of words, rules of composition, and grammar.
5. Circuit boards, processors, chips, electronic equipment, and computer hardware and software, including applications and programming.
6. Principles and processes for providing customer and personal services. This includes customer needs assessment, meeting quality standards for services, and evaluation of customer satisfaction.
7. Relevant equipment, policies, procedures, and strategies to promote effective local, state, or national security operations for the protection of people, data, property, and institutions.
8. Arithmetic, algebra, geometry, calculus, statistics, and their applications.
9. Principles and methods for describing the features of land, sea, and air masses, including their physical characteristics, locations, interrelationships, and distribution of plant, animal, and human life.
10. Practical application of engineering science and technology. This includes applying principles, techniques, procedures, and equipment to the design and production of various goods and services.

Abilities

Note: *The technical and functional abilities listed below are based on general occupational qualifications for Marine Scientists commonly recognized by most employers. Typically, you will not be required to have all of the abilities listed to be a successful performer. Recruitment and selection standards for an individual state job must be based on the specific knowledge, skills, and abilities for that job as indicated in the job announcement and job description in the Employee Work Profile.*

The **Ability** to:

1. Communicate information and ideas in speaking so others will understand.
2. Read and understand information and ideas presented in writing.
3. Combine pieces of information to form general rules or conclusions (includes finding a relationship among seemingly unrelated events).
4. Communicate information and ideas in writing so others will understand.
5. See details at close range (within a few feet of the observer).
6. Arrange things or actions in a certain order or pattern according to a specific rule or set of rules (e.g., patterns of numbers, letters, words, pictures, mathematical operations).
7. Speak clearly so others can understand you.
8. Generate or use different sets of rules for combining or grouping things in different ways.

9. Listen to and understand information and ideas presented through spoken words and sentences.
10. Identify and understand the speech of another person.

Tasks

Note: *The following is a list of sample tasks typically performed by Marine Biologists. Employees in this occupation will not necessarily perform all of the tasks listed.*

Tasks

1. Develop and maintain liaisons and effective working relations with groups and individuals, agencies, and the public to encourage cooperative management strategies or to develop information and interpret findings.
2. Program and use computers to store, process and analyze data.
3. Collect and analyze biological data about relationships among and between organisms and their environment.
4. Study aquatic plants and animals and environmental conditions affecting them, such as radioactivity or pollution.
5. Communicate test results to state and federal representatives and general public.
6. Identify, classify, and study structure, behavior, ecology, physiology, nutrition, culture, and distribution of plant and animal species.
7. Prepare environmental impact reports for industry, government, or publication.
8. Represent employer in a technical capacity at conferences.
9. Plan and administer biological research programs for government, research firms, medical industries, or manufacturing firms.
10. Research environmental effects of present and potential uses of land and water areas, determining methods of improving environmental conditions or such outputs as crop yields.

INTERESTED?

Like people, occupations have traits or characteristics. These characteristics give important clues about the nature of the work and work environment, and give you an opportunity to match your own personal interests to a specific occupation. When you choose a job in an occupation that matches your own interests you have taken an important step in planning a successful and rewarding career.

The occupation of Marine Scientist has **Investigative** and **Realistic** characteristics as described below:

Investigative — Investigative occupations frequently involve working with ideas, and require an extensive amount of thinking. These occupations can involve searching for facts and figuring out problems mentally.

Realistic — Realistic occupations frequently involve work activities that include practical, hands-on problems and solutions. They often deal with plants, animals, and real-world materials like wood, tools, and machinery. Many of the occupations require working outside, and do not involve a lot of paperwork or working closely with others.

LICENSURE, REGISTRATION, OR CERTIFICATION REQUIREMENTS

Generally this is not required for Marine Scientist positions in state government.

EDUCATIONAL, TRAINING, AND LEARNING OPPORTUNITIES

The Department of Labor provides the following information:

Aquatic biologists study micro-organisms, plants, and animals living in water. Marine biologists study salt water organisms, and limnologists study fresh water organisms. Much of the work of marine biology centers on molecular biology, the study of the biochemical processes that take place inside living cells.

The work of a marine biologist varies dramatically, depending on the type of work involved. Some work in a laboratory, while others work on research ships. Marine biologists who work underwater must practice safe diving while working around sharp coral reefs and hazardous marine life. Although some marine biologists obtain their specimens from the sea, many still spend a good deal of their time in laboratories and offices, conducting tests, running experiments, recording results, and compiling data.

Prospective biological scientists who hope to work as marine biologists should have at least a bachelor's degree in a biological or marine science. However, students should not overspecialize in undergraduate study, as knowledge of marine biology often is acquired in graduate study.

A Ph.D. degree usually is necessary for independent research, industrial research, and college teaching, and for advancement to administrative positions. A master's degree is sufficient for some jobs in basic research, applied research or product development, management, or inspection; it may also qualify one to work as a research technician or as a teacher in an aquarium. The bachelor's degree is adequate for some nonresearch jobs.

The State Council of Higher Education lists the College of William and Mary, Hampton University and Saint Pauls College as the three Virginia educational institutions offering programs in marine or aquatic biology.

The Virginia Institute of Marine Science at the College of William and Mary is the primary user of this occupation. For more information contact: <http://www.vims.edu/>.

COMMONWEALTH COMPETENCIES

Competencies are a set of identified behaviors, knowledge, skills, and abilities that directly and positively impact the success of employees and the organization. Competencies can be observed and measured. When consistently demonstrated, competencies make employees particularly effective in their work. Competencies help lay out a road map to career success. You can use the Commonwealth Competencies to help improve your individual performance by adopting behaviors that make high performing employees successful in their jobs. In this way, you can use the Commonwealth Competencies for your further professional development.

The Commonwealth Competencies are:

1. Technical and Functional Expertise
2. Understanding the Business
3. Achieving Results
4. Serving the Customer
5. Teamwork
6. Interpersonal and Communication Skills
7. Leadership and Personal Effectiveness

The above competencies may be applied to employees throughout the Commonwealth of Virginia. They can be rank-ordered by agencies and hiring managers to represent the needs of a specific job. The rank ordering will change depending upon the occupation, an organization's priorities, the actual job requirements, and the supervisor's preferences.

Career success is both about what you do (applying your technical knowledge, skills, and ability) and how you do it (the consistent behaviors you demonstrate and choose to use) while interacting and communicating with others. Hopefully, by studying the Commonwealth competencies, identifying your developmental opportunities, and working to refine your own competence, you can take charge of your career!

For additional information about the **Commonwealth Competencies** go to: http://jobs.state.va.us/cc_planningctr.htm. For the competencies, we first list the competencies and then define each. Finally, we list competency indicators; to describe what successful performance looks like.

COMMONWEALTH CAREER PATH

Career opportunities in the Commonwealth are not limited to moving “up” to the next highest role and pay band, changing positions, or to becoming a supervisor. That’s because most roles describe a broad group of occupationally related positions that perform a range of work that requires increased knowledge and skills. For that reason, Commonwealth roles describe the career paths within the same or higher-level role for the same or different Career Group. The broad salary range and the Commonwealth’s pay practices provide flexibility in recognizing career development and advancement. ([Salary Structure](#))

For example: **Marine Scientist**

PAY BAND	PRACTITIONER ROLES
4	Scientist I
5	Scientist II
6	Scientist III

PAY BAND	MANAGER ROLES
5	Scientist Manager I
6	Scientist Manager II
7	Scientist Manager III

Sample Career Path

Scientist I

This Scientist I role provides a career track for marine scientists that perform work in a laboratory, field, and/or for scientific research. Employees' responsibilities range from entry-level performing standardized scientific tests and research functions using established protocols, to performing independent analysis/studies and serving as technical advisors or lead workers. Employees conduct research, field and/or technical investigations and surveys, laboratory and/or statistical analyses and data interpretation.

Scientist II

This Scientist II role provides career tracks for marine scientists that perform a preponderance of advanced work in a laboratory, in the field, and/or for research; or, for scientist supervisors. The first career track in this role is for employees performing complex scientific research projects or program oversight having a broad scope of responsibility. The second career track is for scientists that continue to deliver scientific services while assuming supervision of professional scientific staff and performing administrative responsibilities.

Scientist III

The Scientist III role provides career tracks for marine scientists who serve as principle investigators and experts in a laboratory, in the field, and/or for research; or for supervisors, which includes performing complex scientific research projects or program oversight having a broad scope of responsibility.

Scientist Manager I

The Scientist Manager I role provides career tracks for managers in a laboratory or scientific research setting. Employees plan, manage and evaluate the work of professional staff working in one or more disciplines; establish program goals; establish and monitor budgets; develop and implement technical methodologies, section objectives, policies and practices; allocate staff and resources; ensure compliance with government regulations, quality control standards and safety procedures; prepare research proposals; prepare technical reports and papers or develop grant contract proposals.

Scientist Manager II

The **Scientist Manager II** role provides career tracks for senior level to director level managers with responsibilities in a laboratory or scientific research setting. Employees have responsibility for an agency-wide laboratory operation; serve as assistant director of a statewide laboratory; or serve as a manager over multiple operations within a statewide laboratory. Some employees direct statewide scientific research operations or multidisciplinary research operations.

Scientist Manager III

The Scientist Manager III role provides career tracks for executives that serve as directors of scientific research centers responsible for diverse research programs or, for a statewide-consolidated scientific laboratory responsible for diverse testing, reporting and research programs. Employees direct statewide research programs and strategic research direction through subordinate managers. The results of which are shared statewide, nationally and/or internationally with research groups, agencies, businesses and associations. Employees may direct a statewide program that provides analytical support to local, state and federal human and animal health, law enforcement, consumer protection and environmental programs.

ADDITIONAL OCCUPATIONAL INFORMATION CAN BE FOUND AT:

O*NET (Occupational Information Network)

http://online.onetcenter.org/gen_search_page

Virginia Employment Commission

<http://www.alex.vec.state.va.us/>

Career One Stop

<http://www.careeronestop.org/>

Virginia Career Resource Network

<http://www.vacrn.net/>