There are so many options for careers related to ocean and aquatic science! This booklet will give you just a sense of those opportunities so that, with a mind open to possibility, you can chart your own course.

A career resource for students, developed by the National Ocean Sciences Bowl
Making A Living In Ocean And Aquatic Science

Why choose a career in ocean and aquatic science?
What makes ocean and aquatic science both important and interesting?

- Ocean science is becoming more interdisciplinary (you need to know at least a little bit of each basic science as well as math to succeed)
- Ocean-related issues are global with strong social connections (applied ocean science answers questions and solves problems)
- The ocean sciences support the economy (the ocean and Great Lakes economy contributed over 2.6 million jobs and more than $222.7 billion to the U.S. Gross Domestic Product (GDP) in 2009, according to NOAA’s Coastal Services Center)
- Ocean and aquatic science do not only involve water, they are also about our land (use and health) and the atmosphere (weather, carbon exchange, etc.)
- Ocean science offers so many opportunities for new discoveries (we have discovered and described less than half the species in the ocean)

Where can you work?
Ocean and aquatic science-related opportunities exist in all sectors, and niche jobs can be found or created in any sector or industry, particularly as you advance in your career. Here are some examples of where you would most commonly work if you choose one of these career areas.

<table>
<thead>
<tr>
<th></th>
<th>Academia (universities, colleges, research laboratories)</th>
<th>Industry and business</th>
<th>Government (federal, state or local)</th>
<th>Non-profit and non-governmental organizations (NGOs)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Research</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Education</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Product or technology development</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Communications</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Tourism</td>
<td></td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Information systems</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Conservation or restoration</td>
<td></td>
<td></td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Resource management</td>
<td></td>
<td></td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Policy</td>
<td></td>
<td></td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Project management</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
</tbody>
</table>
There is something for everyone!

You all know about working in universities, but there are many places to pursue ocean and aquatic science beyond academic careers. The opportunities span basic science (biology/chemistry/physics/geology) to engineering and technology to policy and resource management to education and communication and the arts. Have you thought about these options: ship captain, technician on a drill ship, commercial fisher, environmental lawyer, technical writer, science journalist, nature photographer, snorkeling or scuba tour guide?

There are so many possibilities!

Greg Myers
B.S. Geology Sciences
Senior Technical Expert, Engineering and Technology, Ocean Drilling, Consortium for Ocean Leadership
22 years of experience

S. Kersey Sturdivant
Ph.D. Marine Science
Postdoctoral Research Fellow, Duke University
7 years of experience, 1 year in current position

Ayana Elizabeth Johnson
Ph.D. Marine Biology
Director of Science and Solutions, Waitt Foundation
11 years of experience: received Ph.D. Jan 2011, but working in ocean and policy conservation field since finishing undergraduate program 2002

Janet Duffy-Anderson
Ph.D. Marine Studies
Research Fisheries Biologist, NOAA Fisheries, Alaska Fisheries Science Center
20 years of experience (5 year doctorate, 4 years postdoctoral work, 10+ years at NOAA)

Justin Manley
M.S. Ocean Engineering
Senior Director of Business Development, Teledyne Benthos
23 years of experience in marine technology

LTJG Brian RC Kennedy
B.S. Marine Biology
Expedition Specialist and a NOAA CORPS Officer, National Oceanic and Atmospheric Administration Office of Ocean Exploration and Research
3 years of experience working for NOAA

Ian Voparil
Ph.D. Oceanography
Business Lead Venture Support Integrator for Deepwater, Shell Exploration and Production Company
11 years of experience in marine science, 8 years with energy

Nancy Knowlton
Ph.D. Zoology
Sant Chair of Marine Science, National Museum of Natural History
Almost 40 years of experience—received Ph.D. in 1978, but first started research in 1974
Pathways To A Career

There is no right path to reach your career. The more people you ask about what led them to their current jobs, the more you’ll see the path is often meandering and guided by serendipity. But that does not mean that you cannot plan your path. Just stay open to opportunities along the way. You never know what experiences will help lead you to your dream job!

The NOSB as a stepping stone in your career path...

“Participating in the NOSB had a huge impact on my career. It introduced me to the NOAA Corps, my future employer, and I met my future major professor through the regional competition. Had I not met her at NOSB I probably would have attended a different university.”
—Brian Kennedy, National Oceanic and Atmospheric Administration and past participant in the NOSB Southern Stingray Bowl (Georgia/South Carolina)

“After my 2008 NOSB-sponsored Coastal Ocean Science and Training Internship with the Student Conservation Association and Redwood National and State Parks, I knew I was hooked on our National Parks. Today, as an interpretive park ranger I get to share my love of science and stories with park visitors.”
—Caitlin Campbell, Interpretive Park Ranger, National Park Service and past participant in the NOSB Shore Bowl (New Jersey)

“NOAA’s mission is to understand and predict changes in the Earth’s environment and conserve and manage coastal and marine resources to meet our Nation’s economic, social, and environmental needs. NOAA employs many kinds of scientists including marine biologists, oceanographers, and climatologists, who study the Earth’s ocean, atmosphere, and living marine resources. NOAA personnel need to have a deep scientific understanding that can be applied at the global, regional and local level while effectively working on teams. These are characteristics that NOSB helps develop. Participation in NOSB would be a strength when pursuing a STEM career at NOAA.”
—Louisa Koch, Director of Education, National Oceanic and Atmospheric Administration

“NOSB alumni with STEM degrees are excellent candidates for positions in BOEM’s Environmental Studies Program (ESP) because of their interest in the ocean, team experience, and critical thinking skills. The ESP is a nationwide program that includes nearly 250 scientists across the United States. ESP scientists work in teams to think critically and ask hard questions to ensure appropriate information is gathered to inform decisions on ocean energy and mineral extraction. NOSB alumni epitomize the qualities BOEM looks for in its scientists.”
—Rodney E. Cluck, PhD, Chief, Division of Environmental Sciences, Bureau of Ocean Energy Management
Here are a few actual paths to inspire you...

**George L. Shillinger**, Marine Biologist, Pacific Grove, CA

I have been fascinated by natural history and marine biology for as long as I can remember. I spent my childhood in San Diego, CA, exploring tide pools, fishing, and surfing. During the summer preceding my freshmen year of college, I worked as a deckhand on a commercial fishing boat, targeting swordfish and thresher sharks with drift gillnets, and jigging for albacore in the California Current. I witnessed the impacts of drift gillnetting on non-target species (e.g., blue sharks and mola-molas). After obtaining a B.A. in the Biological Basis of Behavior from the University of Pennsylvania, I worked as intern for the World Wildlife Fund, the Homeland Foundation (now Marisla Foundation), RARE, and Conservation International. Following a four-year post as the Americas Regional Program Officer and later as the Acting Director for BirdLife International’s U.S. Office, I applied to multiple graduate programs in the natural sciences and in business administration. I hoped to acquire the business skills necessary to manage a non-profit organization and the academic training necessary to define and establish research and conservation priorities. I obtained an M.S. in Ecology and Evolutionary Biology from Stanford University and an MBA at the Yale University School of Management. After Yale, I served as Director of Business Development for Animal Planet.com at Discovery Communications, Inc., and then accepted an opportunity to serve as a Director of Operations for Conservation International’s Andean Regional Program. I returned to Stanford University during 2002 to pursue doctoral research involving the application of satellite tagging technologies and remotely-sensed oceanographic data to understand the behavior and movements of pelagic species. My research focused on the population of critically endangered Eastern Pacific leatherback turtles nesting at Playa Grande, Costa Rica. While at Stanford, I co-created the Great Turtle Race, a unique international research and conservation campaign that utilized tracking data to raise global awareness and funding for the management and conservation of pelagic species. After completing a Ph.D. in Marine Biology, I served as the Executive Director for California Trout and then returned to Stanford during 2010 to serve as Director of the Marine Spatial Planning Initiative at the Center for Ocean Solutions. I am now Director of The Ocean Foundation’s Tag-A-Giant Fund, a project that focuses on supporting the research necessary to inform policies and management interventions necessary to secure a sustainable future for imperiled northern bluefin tuna.

**Zane Ruddy**, Fish Biologist, National Marine Fisheries Service, Arcata, CA

I grew up in the grasslands of North Texas and always thought I’d be a medical doctor, so I’m as surprised as anyone else that I’ve recently started a career as a fish biologist in coastal Northern California. I began my college career as a pre-med undergraduate, but my career outlook took a turn when I took Oceanography and Biogeography to satisfy my non-medical science coursework requirements. These courses opened my eyes to the diversity and dynamism of the natural world, and inspired me to switch my focus to organismal biology. The year after earning my B.S. degree I tested the job market and worked as an environmental consultant, primarily preparing standard boilerplate documents. I was hungry to learn more and open the door to more career options so I decided to attend graduate school and earn a M.S. degree in marine biology at Texas A&M – Corpus Christi on the Gulf Coast. Months into my graduate program I was accepted into the National Oceanic and Atmospheric Administration’s (NOAA) Graduate Sciences Program, which guaranteed me a full-time position with the federal government after I earned my M.S. degree. Although my graduate research focused on hatchery fish in Texas, today I work as a Fish Biologist for the Protected Resources Division of the National Marine Fisheries Service in Arcata, CA, which is responsible for conserving, protecting, and recovering species listed under the Endangered Species Act. Currently I’m focused on developing recovery plans for threatened salmon species, which requires a blend of analytical thought, creative problem solving, and public outreach.
Heather Havens, Contractor for the U.S. Navy, Washington, DC

I currently work as a marine scientist for the U.S. Navy in Washington, DC. My pathway to this career was not a direct one. It was shaped through various opportunities that presented themselves, often in unlikely ways. I began my education as a biology major, with aspirations to become a medical doctor. This would likely have been my ultimate career path if I had not signed up for a summer marine biology field course in the British West Indies. I spent my summer in the islands learning about the economics of sustainable fishing. I went on to study marine science in grad school earning first a M.S. from the University of South Carolina and then a Ph.D. from the University of South Florida. I had aspirations of becoming a professor, but it was another chance enrollment in a graduate course that would shift my career path once again. An ocean policy course gave me the opportunity to travel to DC to participate in Capitol Hill Ocean Week. As part of that experience I met with members of Congress and their staff and learned first-hand about how ocean policy is generated at the national level. From that point, I knew that I wanted to pursue a career in ocean policy. To meet that goal, I participated in a policy internship at the Consortium for Ocean Leadership. Through that internship I was able to work to elevate the importance of ocean science at the federal level by drafting press releases and letters to Congress on pending ocean legislation. After the internship I had the opportunity to participate in a year-long marine policy fellowship as a staffer in a Congressional office on Capitol Hill. During my fellowship I was responsible for monitoring marine policy and advising a member of Congress on key environmental and natural resource policy. After the fellowship I was hired by SAIC, a science and technology company, to work as a defense contractor for the U.S. Navy. My work currently involves the modeling and simulation of Navy generated underwater sound. It is a very exciting job and I am constantly challenged to utilize many aspects of my experience. For me, the hands on experience that I gained by spending the summer abroad and the career experience that I gained from both an internship and a fellowship were extremely valuable towards guiding me towards the career I have today.

Kelly Kryc, Energy and Climate Policy, U.S. Department of State, Washington, DC

Depending on who asks, I am an oceanographer, a geologist, or a climate scientist. My research career focused on climate in Antarctica, but my professional career has taken some interesting turns not necessarily related to my Ph.D. After I graduated, I wasn’t really sure what I could do with a Ph.D. other than be a professor. Fortunately, I attended a conference where I met with the Director of Ocean Drilling Programs. He needed an Assistant Director and, so in the near-term, my job problems were solved (Moral of story: Talk to people who have jobs you want). I started a career in science program management where I developed important professional skills in managing people, communicating, and making decisions. One of the hardest things I ever did was accept a job as a Marine Microbiology Program Officer at a private Foundation, which is a fancy way of saying I gave money to scientists with great ideas. Even though I was an oceanographer, I had zero background in biology, so it was really hard to learn quickly enough to make good decisions about funding grants, but, in the end, I developed solid expertise in an entirely new scientific discipline (Moral of story: Challenge yourself). After ten years of doing program management, I realized I really wanted work on clean energy and climate policy, so I quit my job and moved back to Washington DC where I worked for the Senate Committee on Energy and Natural Resources and now work at the State Department as Water and Power Advisor for the Bureau of Energy Resources (Moral of Story: Take risks). The work that I do helps to create laws and policies that provide access to clean energy while protecting our natural resources. My Ph.D. gave me the skills, the confidence, and the versatility to succeed in many different jobs across different sectors – I can’t wait to see what’s next!
**Chieh Peng**, Assistant Lab Officer, Integrated Ocean Drilling Program, College Station, TX

I came from Taiwan with a B.S. in Marine Biology. I attended Texas A&M University and received a M.S. in Oceanography. During my graduate work, I was involved with the Ocean Drilling Program (ODP). I worked on some geochemistry samples retrieved during several cruises, and this sparked my interest in sailing as a marine technician. I started working for ODP as a chemistry technician, whose responsibility includes operating/maintaining analytical instruments in the geochemistry lab onboard the research vessel *JOIDES Resolution*, processing samples, and helping shipboard scientists achieve their research goal. Although marine technicians normally are not directly involved in the specific research, we process samples and conduct measurements in all disciplines, and have first hands on all samples. A strong science (Earth Science specifically) background is essential to be a marine technician. After 10 years in the chemistry lab, I am now an assistant lab officer, overseeing all the technical support activities, handling logistics, and supporting the shipboard curator. The marine technician job requires long hours working onboard the ship for 2 months at a time, 3 times a year. We join the ship from various ports in the world and work with ship crew and scientists from all over the world. I thrive in the team environment and love the ocean, the travel, experiencing the local culture, and meeting new scientists every cruise. We have technicians from all over the world and various backgrounds, such as geography, biology, zoology, chemistry, physics, and of course geology. There is challenge every day, we are proud to say that we are excellent problem solvers.

**Lily Simonson**, Artist, Los Angeles, CA

My formal educational training is in fine art. I received a B.A. in Art Practice from the University of California, Berkeley and an M.F.A. in Painting from the University of California, Los Angeles. Many of my paintings center on invertebrates, especially deep sea invertebrates. Although my degrees are in art, I chose to attend research universities as opposed to art schools, so that I could pursue a range of disciplines alongside my art. Through college and grad school, I took courses in literature, philosophy, history, and science—primarily physics, neuroscience, psychology, and chemistry. While I always had a strong interest in invertebrates, I had intentionally wanted to separate my aesthetic interest in invertebrates from the field of science. However, as I became interested in more unusual, deep sea invertebrates during graduate school, I realized that the biology of the creatures was, in many ways, the most compelling aspect of the work. I began visiting marine laboratories to observe specimens and speaking with the scientists who study them to learn more about the way they function in the ocean’s depths. In the summer of 2012, I joined a research expedition from Scripps Institution of Oceanography to explore the depths of the continental margin along the San Diego Coast and finally had the chance to observe many of my artistic subjects—living!—as they were collected from the sediment and water column. Being able to see the animals while they were alive rather than observing preserved specimens was a transformative experience for me, as I was able to draw them while they moved and see all of their natural pigmentation. The expedition even introduced me to a brand new medium: deep sea sediment. Every day, after the researchers finished sieving the mud brought up from the ocean floor, I used the remaining sediment to paint a new mural on the wall of the ship.
COMPENSATION

Compensation is a big reason why we work. What is particularly exciting about the ocean and aquatic science related fields is that there are tremendous opportunities for well-paying jobs.

As you can glean from the first few pages of this booklet, the career possibilities in ocean and aquatic science are numerous, and there is no way for us to list all the possible jobs, types of employers, geographic locations, and levels of experience that each career option requires. The information here is meant to serve as a general guide to help you in the process of determining a future career and should be used as a launching point to exploring your options.

What is a good expectation of a salary?

For any given job, salaries vary by level of education or experience, by geography (where you are working), by sector (industry, government, non-profit, etc.), and by the competitiveness of any given organization. Given the variability, the examples below provide median data that serve as a starting point for salary expectations.

<table>
<thead>
<tr>
<th>Geoscientist (includes Oceanographer)</th>
<th>Zoologists and Wildlife Biologists (includes Marine Biologist)</th>
<th>Mathematician</th>
<th>Microbiologist</th>
<th>Economist</th>
<th>Technical Writer</th>
<th>Hydrologist</th>
<th>Chemist</th>
<th>Civil Engineer</th>
</tr>
</thead>
<tbody>
<tr>
<td>variations by geographic location</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Washington DC²</td>
<td>$104,200</td>
<td>$98,790</td>
<td>$130,270</td>
<td>$106,120</td>
<td>$114,630</td>
<td>$76,080</td>
<td>$92,990</td>
<td>$117,220</td>
</tr>
<tr>
<td>San Diego, CA²</td>
<td>$75,870</td>
<td>$67,100</td>
<td>$95,120</td>
<td>$63,170</td>
<td>$100,470</td>
<td>$77,860</td>
<td>$92,090</td>
<td>$87,540</td>
</tr>
<tr>
<td>Seattle, WA²</td>
<td>$83,920</td>
<td>$73,360</td>
<td>$92,070</td>
<td>$65,230</td>
<td>$84,270</td>
<td>$83,750</td>
<td>$86,020</td>
<td>$84,380</td>
</tr>
<tr>
<td>Milwaukee, WI²</td>
<td>$84,600</td>
<td>$51,220</td>
<td>$70,260</td>
<td>$72,430</td>
<td>$76,150</td>
<td>$55,070</td>
<td>$66,390</td>
<td>$74,400</td>
</tr>
<tr>
<td>Houston, TX²</td>
<td>$144,540</td>
<td>$57,020</td>
<td>$80,000</td>
<td>$55,890</td>
<td>$88,200</td>
<td>$57,870</td>
<td>$67,160</td>
<td>$86,530</td>
</tr>
<tr>
<td>Boston, MA²</td>
<td>$102,040</td>
<td>$54,670</td>
<td>$115,450</td>
<td>$73,060</td>
<td>$89,960</td>
<td>$82,560</td>
<td>$86,110</td>
<td>$85,250</td>
</tr>
<tr>
<td>variations by sector (national)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Industry: Professional Scientific and Technical Services²</td>
<td>$82,320</td>
<td>$64,990</td>
<td>$108,070</td>
<td>$70,080</td>
<td>$114,390</td>
<td>$68,310</td>
<td>$83,370</td>
<td>$74,620</td>
</tr>
<tr>
<td>Colleges, Universities, and Professional Schools²</td>
<td>$79,530</td>
<td>$55,420</td>
<td>$75,760</td>
<td>$56,320</td>
<td>$69,430</td>
<td>$53,980</td>
<td>$71,160</td>
<td>$63,280</td>
</tr>
<tr>
<td>Federal government¹</td>
<td>$96,170</td>
<td>$77,590</td>
<td>$106,020</td>
<td>$100,280</td>
<td>$109,360</td>
<td>$75,560</td>
<td>$82,430</td>
<td>$104,730</td>
</tr>
<tr>
<td>variations by degree and experience (national)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bachelors degree: 1-4 years experience¹</td>
<td>$45,374</td>
<td>$43,638</td>
<td>$56,492</td>
<td>$46,924</td>
<td>$48,028</td>
<td>$43,638</td>
<td>$45,374</td>
<td>$47,323</td>
</tr>
<tr>
<td>Bachelors degree: 5-9 years experience¹</td>
<td>$53,195</td>
<td>$55,543</td>
<td>$74,951</td>
<td>$55,616</td>
<td>$65,217</td>
<td>$55,543</td>
<td>$53,195</td>
<td>$58,222</td>
</tr>
<tr>
<td>Bachelors degree: 10-19 years experience²</td>
<td>$74,449</td>
<td>$70,656</td>
<td>$84,021</td>
<td>$77,083</td>
<td>$85,039</td>
<td>$70,656</td>
<td>$74,449</td>
<td>$78,816</td>
</tr>
<tr>
<td>Bachelors degree: 20 or more years experience²</td>
<td>$99,120</td>
<td>$85,855</td>
<td>$109,423</td>
<td>$74,500</td>
<td>$99,949</td>
<td>$85,855</td>
<td>$99,120</td>
<td>$97,690</td>
</tr>
<tr>
<td>Masters degree: 1-4 years experience¹</td>
<td>$56,647</td>
<td>$45,171</td>
<td>$70,886</td>
<td>$45,171</td>
<td>$57,505</td>
<td>$45,171</td>
<td>$56,647</td>
<td>$50,514</td>
</tr>
<tr>
<td>Masters degree: 5-9 years experience²</td>
<td>$67,874</td>
<td>$59,920</td>
<td>$92,000</td>
<td>$59,475</td>
<td>$75,245</td>
<td>$59,475</td>
<td>$67,874</td>
<td>$60,979</td>
</tr>
<tr>
<td>Masters degree: 10-19 years experience²</td>
<td>$76,318</td>
<td>$64,065</td>
<td>$97,409</td>
<td>$64,065</td>
<td>$92,432</td>
<td>$64,065</td>
<td>$76,318</td>
<td>$82,908</td>
</tr>
<tr>
<td>Masters degree: 20 or more years experience²</td>
<td>$102,992</td>
<td>$89,331</td>
<td>$108,000</td>
<td>$89,331</td>
<td>$113,003</td>
<td>$89,331</td>
<td>$102,992</td>
<td>$95,041</td>
</tr>
<tr>
<td>Doctorate: 1-4 years experience¹</td>
<td>$63,465</td>
<td>$60,630</td>
<td>$110,000</td>
<td>$60,243</td>
<td>$88,229</td>
<td>$60,243</td>
<td>$62,267</td>
<td>$66,385</td>
</tr>
<tr>
<td>Doctorate: 5-9 years experience²</td>
<td>$71,875</td>
<td>$82,525</td>
<td>$106,125</td>
<td>$82,525</td>
<td>$99,995</td>
<td>$82,525</td>
<td>$86,500</td>
<td>$83,069</td>
</tr>
<tr>
<td>Doctorate: 10-19 years experience²</td>
<td>$96,984</td>
<td>$98,931</td>
<td>$119,000</td>
<td>$98,234</td>
<td>$116,711</td>
<td>$98,234</td>
<td>$96,984</td>
<td>$104,263</td>
</tr>
<tr>
<td>Doctorate: 20 or more years experience²</td>
<td>$121,131</td>
<td>$114,315</td>
<td>$131,050</td>
<td>$114,315</td>
<td>$126,405</td>
<td>$114,315</td>
<td>$119,781</td>
<td>$124,463</td>
</tr>
</tbody>
</table>

1 Bureau of Labor Statistics (data, May 2011)
2 PayScale.com (occupational survey data, accessed December 2012)

When choosing a career or a specific job, salary is not the only compensation factor one should consider. Other factors include benefits (health and financial), quality of life/well-being/happiness, experience motivations, intellectual opportunities, travel opportunities, and physical motivations.
Have An Impact

Ocean and aquatic science contributes to our understanding and appreciation of the world around us!

A career in ocean and aquatic science is more than just a job, you can make a difference. Understanding ocean and aquatic science is important for addressing many environmental and societal issues, whether you are working directly in research or applied science or using your knowledge to shape decisions, practices, or public opinion. Consider the following:

ENGINEERS create barriers to erosion, technologies to mitigate storm damage and the effects of climate change, and new ways to harness and produce energy.

MARINE BIOLOGISTS AND ECOLOGISTS discover new species, explore ocean habitats, and provide information needed to help us plan infrastructure and develop policies for minimal impact on marine organisms and their ecosystems.

PALEOCLIMATOLOGISTS AND CLIMATOLOGISTS tell us what the Earth’s climate looked like in the past and what changes are expected so we can prepare for—and possibly change—the future.

ENVIRONMENTAL HISTORIANS help us understand a baseline of marine life populations before human impact and give us perspective on how social factors can contribute to environmental issues.

ECONOMISTS can determine a monetary value for our ocean-derived resources and help us better understand the economic impacts of hurricane damage, biodiversity loss, coastal inundation, and other ocean-related issues and events.

POLICYMAKERS need to understand ocean science to develop sound policies that impact our ocean resources.

ARTISTS share their wonder of the natural world and inspire the public to care more about our planet.

How can your career in ocean and aquatic science make a difference to the environment, to your community, and to the world?

The Teledyne Marine Systems group includes Teledyne Benthos, Teledyne Webb Research, and Teledyne Gavia, all with rich histories in the marine industry. Teledyne Marine Systems designs and manufactures oceanographic systems (such as acoustic telemetry and positioning, instrument housings and profiling floats) and unmanned maritime vehicles (UMVs) including the modular Gaiva AUV and Slocum glider. The products Teledyne Marine Systems designs and develops allow researchers, commercial companies, and the military to gain valuable information from the world’s ocean. While our companies serve many markets, our commitment to solving complex problems with highly engineered systems continues to be our driving force.

Locations
Falmouth, MA and Kopavogur, Iceland

Employment opportunities for Vocational / technical training, Associates degree, Bachelor’s degree, Master’s degree, Ph.D. with roles in Engineering, Production, Sales and Management

Teledyne Marine Systems commonly employs mechanical, electrical, software and ocean engineers; manufacturing technicians and supervisors familiar with lean manufacturing principles and techniques; and management and administration familiar with the ocean science and technology field.

Biggest workforce needs for the future
Engineers from entry-level to experienced, and ocean technology/science literate professionals in sales, administration and management.

What Are Employers Looking For?
According to a 2012 report by My College Options and STEMconnector, the number of science and engineering occupations are projected to grow at more than double the rate of the overall U.S. workforce over the next 5 years. This is a good reason to pursue these fields, and within the ocean and aquatic sciences there are a number of career options available. Many companies and organizations have need for people with knowledge or skills in ocean and aquatic science. Included here is information on just a handful of organizations that commonly employ ocean and aquatic scientists.
The Bureau of Ocean Energy Management (BOEM) manages the responsible exploration and development of energy and mineral resources on the Outer Continental Shelf (OCS). To support this work and inform bureau policy decisions, BOEM’s Environmental Studies Program (ESP) plans, conducts and oversees a range of scientific research from physical and biological oceanography to social and economic studies. BOEM incorporates findings from the studies program into its environmental reviews. Through the ESP, BOEM is a leading contributor to the growing body of scientific knowledge about the marine and coastal environment.

Locations

Headquarters: Herndon, VA and Washington, DC
Regional Offices: Anchorage, AK; Camarillo, CA; and New Orleans, LA
Office of Renewable Energy Programs: Herndon, VA

Employment opportunities for Bachelor’s degree, Master’s degree, Ph.D.

BOEM scientists and engineers develop, conduct, and oversee scientific research to inform policy decisions on OCS oil, gas, and renewable energy and marine minerals development; contribute to and support the leasing program for OCS oil, gas, and marine mineral resources; undertake geological and geophysical evaluations of where resources are located; conduct engineering assessments of resource potential; conduct environmental assessments of proposed leasing activity; and assess oil-spill risks associated with offshore energy development activities.

A minimum of a Master’s degree is usually required and often a Ph.D. is preferred. BOEM job announcements can be found at www.usajobs.gov.

BOEM employs among others: physical, chemical, and biological oceanographers; physical scientists; marine biologists (avian, fisheries, benthic, marine mammal); social scientists (sociologists, anthropologists, economists, marine archaeologists); geologists; geophysicists; geographers; cartographers; geographic information science specialists; marine policy specialists; and engineers. The type of experience required depends on the position.

Biggest workforce needs for the future

Future workforce needs will be similar to the current complement of scientists and engineers: oceanographers; marine biologists; social scientists; renewable energy and natural resource economists; geographers and cartographers with knowledge/experience using nautical charts and geodatabase systems; petroleum and structural engineers; geologists; geophysicists; and public policy specialists.
The National Oceanic and Atmospheric Administration (NOAA) is a scientific agency providing information and data about life on earth, our ocean, atmosphere, and the Nation’s living marine resources. NOAA’s programs range from marine sanctuaries, environmental satellites, global climate change, and ocean exploration initiatives to climate, weather, and water services. Electronic eyes and ears have taken NOAA from beyond Earth’s orbit to deep within the ocean. This new global perspective emphasizes the fact that sustained development and continued economic well-being are ultimately linked to healthy ecosystems and a healthy environment. NOAA is an integral part of these national and international issues.

**Locations**

Department of Commerce Headquarters: Washington, DC  
NOAA Headquarters: Silver Spring, MD  

Employment opportunities for Undergraduate and Graduate Student scholarships, internships and fellowships; Post-graduate fellowships; Vocational/technical; Associates degree; Bachelor’s degree; Master’s degree; Ph.D.

NOAA employees help unlock secrets in the deep ocean, track rapidly moving storms, operate state-of-the-art environmental satellites, chart the Nation’s waterways, formulate models to forecast climate trends, protect and preserve our living marine resources. Careers in NOAA are as diverse as the line offices that make up the agency.

The Living Oceans Foundation supports and implements research and restoration projects that provide information and tools necessary to address the global challenge of preserving and protecting the world’s ocean.

**Location**

Landover, MD  

Employment opportunities

Current opportunities include Education and Outreach Coordinator, requiring Bachelor’s degree and Coral Ecology and Marine Education experience.

The Living Oceans Foundation is looking for people with a marine science background and who are certified scuba divers. Candidates should have a Master’s degree or higher and research experience. They also need to have the flexibility for frequent travel.
Now that you have an idea of the directions a career in ocean and aquatic science can take you, make it happen!

Take advantage of the following opportunities for more ideas, inspiration and experiences to lead you toward your career.

• Think carefully about the education you will need (types of schools and degrees), from community college, technical school, an undergraduate degree or graduate degrees.
• Be creative… how can you work in ocean sciences in Nebraska?
• Show initiative! Search for (and grab!) opportunities and experiences, such as scholarships, internships, fellowships, summer field work and volunteer positions.
• Ask questions! Talk to people working in the career you want. Tell people about your interests—sharing information often leads to information.
• Participate in and learn from your local NOSB bowl!

**University Ocean And Aquatic Science Programs**

Many universities have ocean and aquatic science departments, schools, or institutes with programs for undergraduate and graduate students. A few are highlighted here.

**Undergraduate and Graduate**

George Mason University Department of Atmospheric, Oceanic, and Earth Sciences  
http://cos.gmu.edu/departments/atmospheric-oceanic-and-earth-sciences

Massachusetts Institute of Technology Department of Civil and Environmental Engineering  
http://cee.mit.edu/

Department of Earth, Atmospheric, and Planetary Science  
http://eapsweb.mit.edu/

North Carolina State University Department of Marine, Earth, and Atmospheric Sciences  
www.meas.ncsu.edu/

Old Dominion University Department of Ocean, Earth, and Atmospheric Sciences  
http://sci.odu.edu/oceanography/outreach/career_in_marine_science.shtml

Oregon State University College of Earth, Ocean, and Atmospheric Sciences  
http://ceoas.oregonstate.edu/

Rutgers, The State University of New Jersey Institute of Marine and Coastal Sciences  
http://marine.rutgers.edu/main/

San Francisco State University Department of Geosciences  
www.sfsu.edu/~bulletin/current/programs/geosci.htm

Savannah State University Marine Sciences Program  
www.savannahstate.edu/cst/nat-science/marine-sci.shtml

Stony Brook University School of Marine and Atmospheric Sciences  
www.somas.stonybrook.edu/

Texas A&M University College of Geosciences  
http://geosciences.tamu.edu/

Galveston Marine Sciences Department  
www.tamug.edu/mars/index.html

University of Alaska-Fairbanks School of Fisheries and Ocean Sciences  
www.sfos.uaf.edu/
University of California Santa Barbara
www.lifesci.ucsb.edu/undergrad/majors/aquatic/aquatic.html

University of Connecticut at Avery Point Marine Sciences Program
www.marinesciences.uconn.edu/

University of Delaware College of Earth, Ocean, and Environment
www.ceoe.udel.edu/academics/undergraduate/summer/index.shtml

University of Hawaii-Manoa School of Ocean and Earth Science and Technology
www.soest.hawaii.edu/

University of Maine School of Marine Sciences
www.umaine.edu/marine/

University of Miami Rosenstiel School of Marine & Atmospheric Science
www.rsmas.miami.edu/

University of Michigan School of Natural Resources and Environment
www.snre.umich.edu/

University of New England Department of Marine Sciences
www.une.edu/cas/marine/

University of New Hampshire Marine Program
http://marine.unh.edu/index.html

University of North Carolina at Chapel Hill Marine Sciences Program
http://marine.unc.edu/

University of North Carolina at Wilmington Center for Marine Science
http://uncw.edu/cms/

University of Southern California Wrigley Institute for Environmental Studies
http://dornsife.usc.edu/wrigley/

University of Southern Mississippi Department of Marine Science
www.usm.edu/marine

University of Washington College of the Environment
http://coenv.washington.edu/

Virginia Institute of Marine Science/College of William & Mary
www.wm.edu/as/marinescience/index.php

Youngstown State University Department of Geological and Environmental Sciences
http://web.ysu.edu/stem/ges/

---

**Graduate only**

East Carolina University Institute for Coastal Science and Policy
www.ecu.edu/icsp/ICSP/ICSP.html

Massachusetts Institute of Technology /Woods Hole Joint Program in Oceanography, Applied Ocean Science & Engineering
http://mit.whoi.edu/home

Scripps Institution of Oceanography, University of California San Diego
http://sio.ucsd.edu/

Texas A&M University – Corpus Christi Coastal and Marine System Science Program
http://cmss.tamucc.edu//index.html

University of Colorado-Boulder, Cooperative Institute for Research in Environmental Sciences
http://cires.colorado.edu/home.html

University of South Florida College of Marine Science
www.marine.usf.edu/index.html

University of Wisconsin-Milwaukee School of Freshwater Sciences
www4.uwm.edu/freshwater/

Virginia Institute of Marine Science
www.vims.edu/
Other resources
Ocean & Aquatic Science Related Career Information

Sea Grant:  
www.marinecareers.net

Science Careers:  
http://sciencecareers.sciencemag.org

The Oceanography Society:  
www.tos.org/resources/career_profiles.html

COSEE Ocean Careers:  
www.oceancareers.com/2.0/index.php

OceanOpportunities:  
www.oceanopportunities.org

Womenoceanographers.org:  
www.womenoceanographers.org

OceanLink  
http://oceanlink.island.net/career/profiles.html

American Geosciences Institute:  
www.agiweb.org/workforce

Department of Labor:  

Brain Track:  
www.braintrack.com/colleges-by-career

Please also refer to the National Ocean Sciences Bowl’s career resources page for updated resources information:  
www.nosb.org/ocean-careers/career-resources

Federal Jobs
Applying for federal jobs can be different than applying for jobs in the private sector. Information on federal jobs can be found at the following sites.

Office of Personnel and Management:  
www.opm.gov

USA Jobs:  
www.usajobs.gov
The NOSB is managed by the Consortium for Ocean Leadership.

For more information about the NOSB, visit www.nosb.org or contact:

National Ocean Sciences Bowl Program Office
Consortium for Ocean Leadership
1201 New York Avenue, NW, 4th Floor,
Washington, DC 20005
Phone: +1 (202) 232-3900

This career booklet was made possible by support from the National Science Foundation.

The NOSB is made possible by the generous support of a number of sponsors. For a complete list, visit our website: www.nosb.org/supporting-nosb/sponsors-2