

OREGON STATE UNIVERSITY
MARINE STUDIES INITIATIVE

A VISION FOR A PATH FORWARD



Oregon State
UNIVERSITY



Message from leadership

We are pleased to share this vision for Oregon State University and its external partners to address the successful stewardship of the ocean and all it touches, for today and into the future. This vision is based on the efforts of more than 125 Oregon State faculty and students, educational partners from across the state and hundreds of conversations with Oregon citizens and decision makers over the last year.

Building on Oregon State's half century of excellence in marine sciences, we have a unique opportunity to create a globally distinct marine studies program that blends the natural and social sciences, business, engineering, education and the arts and humanities.

The time is right to launch this Marine Studies Initiative to provide a transformational educational experience centered on marine studies, increase access to higher education for Oregon's coastal communities, elevate our transdisciplinary research to even greater global distinction, sustain and enhance the state's marine-related economy and increase marine literacy across Oregon. Please join us as we set sail on this exciting voyage.



Jack Barth

MSI Co-chair | Professor and Associate
Dean for Research | College of Earth,
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Robert Cowen

MSI Co-chair | Director, Hatfield
Marine Science Center

JUST AS THE OCEAN has inspired creativity for millennia, the MSI will harness humankind's fascination with the sea and all it touches to motivate the next generation of students and citizens. Through its transdisciplinary and collaborative programs, the MSI will provide innovative approaches to solving ocean and related societal challenges. For example, fostering coastal community resilience and bolstering local economies will be addressed by understanding and preparing for changes due to natural hazards, climate change and shifting demographics.

Global challenges need global champions

The world's oceans belong to everyone, and their health is critical to the future. The ocean is an essential life support system — absorbing carbon dioxide from the atmosphere, generating up to half of the world's supply of oxygen, regulating global climate and providing many resources used by humans.

Marine habitats, nearshore ecosystems and coastal communities face daunting pressures that threaten their sustainability — climate change, climate dynamics, ocean acidification, rising sea levels, variable fish stocks, natural disasters and many others.

Oregon State University is responding to these challenges with the Marine Studies Initiative. Building on a deep history of nationally ranked programs in marine sciences and natural resources, world-leading research and premier facilities, Oregon State is pioneering a new teaching, research, outreach and engagement model to help sustain healthy oceans and all who depend on them.

Vision

Through its Marine Studies Initiative, Oregon State is recognized as a global leader in 21st century transdisciplinary education and research and leads the development of inclusive strategies for successful stewardship of the oceans and planet for today and the future.

Mission and values

The mission of the Marine Studies Initiative is to create a healthy future for our oceans and the planet through transdisciplinary research and teaching that emphasizes collaboration, experiential learning and problem solving.

The Marine Studies Initiative embodies the values that guide Oregon State University: accountability, diversity, integrity, respect and social responsibility. In addition to being guided by these values, the MSI includes specific opportunities for students and faculty to explore these values and detect and address ethical dilemmas.

Marine studies in Oregon: context and background

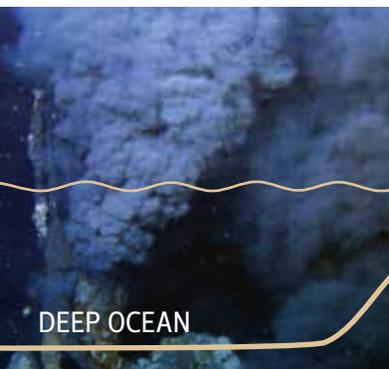
Oregon is home to groundbreaking ocean exploration amid some of the most productive, sustainable fisheries in the world. The state's rich and bountiful agriculture and healthy and productive forests have led to creative and innovative solutions to water management and water policy.

Oregon State University is one of two U.S. universities to have land, sea, space and sun grant designations. And Oregon State University faculty are world leaders in biology, ecology, oceanography, economics, agriculture, engineering, sociology, writing and more. Since the ocean touches all these disciplines, the state of Oregon offers an unparalleled living-learning laboratory with diverse ecosystems, including a 300-mile coastline that features some of the world's most pristine coastal waters, estuaries and rivers, mountain snowpack and inland watersheds. All of these are profoundly impacted by the ocean.

Working in such a rich natural setting, Oregon State faculty are poised to create integrated and collaborative solutions to sustain the diverse ecosystems, communities and economies at the confluence of the continent and the sea. With leading researchers in interdisciplinary studies across coastal ecosystems, Oregon State fosters exemplary partnerships that address topics crossing relevant physical, biological, chemical, social and economic aspects of issues of societal importance, including climate change, natural hazards and resource exploration and use. Across this range of land and seascapes, Oregon State collaborates both with other university researchers as well as state and federal agencies, Native American tribes, businesses, nonprofits and interested stakeholders.

Oregon State's main campus in Corvallis is located an hour from the Oregon coast, where the university's renowned Hatfield Marine Science Center (HMSC) sits on Yaquina Bay. HMSC provides unparalleled access to pristine and impacted habitats, Oregon State and agency scientists and managers and coastal communities, all of which are faced with addressing critical issues connected to the sea. With further reach along the coast and inland through its agricultural experimental stations and various educational and community partnerships, Oregon State can tap internationally prominent research expertise and powerful resources to build a transformative education, research, outreach and engagement program centered on marine studies that will have global impact.

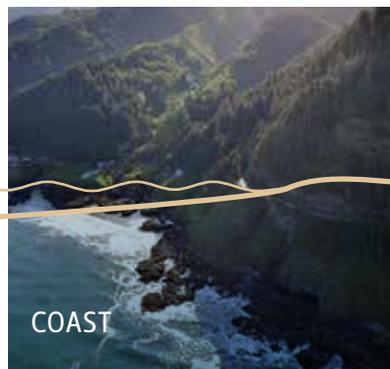
The mountains-to-ocean ecosystem of Oregon is linked to the larger regional and global system. Habitats from the tallest mountains to the ocean's deepest depths are connected by biological, chemical and physical cycles that move resources through these systems, such as the flow of water from the snow-covered Cascade Range to rivers and the sea. Our program explores the marine environment and its connections to the land and atmosphere, while positively impacting economic and social progress.



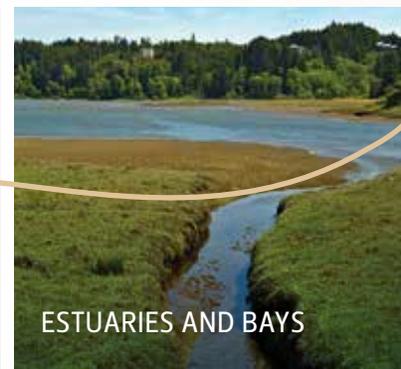
DEEP OCEAN



OCEAN



COAST



ESTUARIES AND BAYS

Unifying principles

A core suite of principles flow throughout the Marine Studies Initiative development.

USE TRANSDISCIPLINARY EDUCATIONAL AND RESEARCH APPROACHES.

The MSI will integrate the efforts of multiple disciplines to address common challenges. A full-year baccalaureate core sequence that includes both natural and social sciences will allow any Oregon State student to learn about the importance of the ocean and all it touches. The MSI will add new options to existing disciplinary programs and build a new liberal arts major based on this transdisciplinary approach to better tackle the complex issues facing coastal communities and the diverse ecosystems they depend on.

CREATE A CONVERGENT FRAMEWORK THAT UNITES OREGON STATE EXPERTISE.

The university will build an organizational framework that converges around Oregon State strengths. By bringing diverse areas of expertise together in a network of community partnerships through the MSI, the university will address challenging education and marine research problems, provide opportunities for new collaborations and partnerships and enable new forms of creativity, innovation and products. Such an approach will facilitate transdisciplinary education and research.

CREATE A SENSE OF PLACE AND UNIQUE EXPERIENCE THAT PREPARES STUDENTS FOR THE FUTURE.

The MSI will develop a vibrant learning community for students, faculty and partners to convene on ocean issues. This unique experience will prepare students, professionals and lifelong learners for leadership and the workforce by giving individuals the experience and training to navigate a spectrum of job possibilities. All aspects of the MSI will support teaching of essential life skills such as critical thinking, problem-solving, collaboration and leadership.

RESEARCH, PRACTICE AND TEACH SUSTAINABILITY. Sustainability means supplying the needs of present generations without compromising the ability of future generations to meet their own needs. Oregon State and the MSI are committed to defining, understanding and communicating the complex questions necessary to ensure a sustainable future for Oregonians and for ocean resources.

PROMOTE DIVERSITY. Enhancing the diversity of the Oregon State community is essential to sustaining excellence and to preparing students for a globally connected world. The MSI supports Oregon State's goals of increasing the diversity of faculty, staff and students through new hires, enhanced retention efforts, developing more comprehensive work-life balance initiatives for all employees and pursuing equity in student success and quality learning.

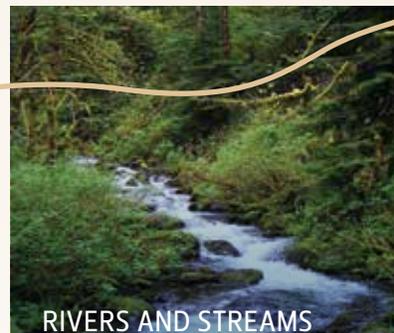
ALIGN WITH OREGON STATE UNIVERSITY PRIORITIES. The MSI aligns directly with Oregon State's strategic planning goals to provide a transformative educational experience, demonstrate leadership and strengthen impact and reach throughout Oregon and beyond. The Marine Studies Initiative will help advance Oregon State's leadership in three signature areas of distinction: advancing the science of sustainable earth ecosystems, improving human health and wellness and promoting economic growth and social progress.



AGRICULTURE



FORESTS



RIVERS AND STREAMS



MOUNTAINS

GOAL 1

PROVIDE A TRANSFORMATIONAL EDUCATIONAL EXPERIENCE CENTERED ON MARINE STUDIES. Create a transdisciplinary environment that expands innovative marine education and training opportunities for students, professionals and lifelong learners. This includes establishing a university-wide marine studies degree program, expanding collaborations with our educational partners and engaging students in seeking globally relevant solutions.

STRATEGIES

- **BUILD COMPREHENSIVE PROGRAMS.** Design interdisciplinary educational core programs (courses, options and certificates) that foster student success and lifelong learning, engage a diverse student body, teach ethics and promote marine literacy at all levels within Oregon State University and across the state. These programs will prepare all types of students for leadership and the workforce.
- **CREATE A NEW MARINE STUDIES DEGREE.** Create an interdisciplinary marine studies undergraduate major and minor that focus on the human dimensions of marine systems. The emphasis of these liberal arts degrees will be placed on the social, political and cultural issues of the coasts and oceans, built on a meaningful understanding of marine natural science.
- **LAUNCH INNOVATIVE EDUCATIONAL EXPERIENCES.** Offer experiential learning opportunities at Oregon State's main campus in Corvallis, the Hatfield Marine Science Center and other coastal and ocean sites in collaboration with academic, government and industry partners. Teaching and learning will focus on seeking solutions to ocean and related societal challenges.



GOAL 2

ADVANCE LEADERSHIP IN TRANSDISCIPLINARY MARINE RESEARCH AND SCHOLARSHIP. Pioneer transdisciplinary marine studies by building on Oregon State's world-class marine research and scholarship and forming networks that span scientific, political and socio-cultural disciplines. From integrated marine systems science to studying society's reliance on the sea to global change and coastal community resilience, this research will advance the collective ability to accurately predict the outcomes of human actions and model the future trajectories of the world's complex ecosystems.

STRATEGIES

- **ADVANCE SCHOLARLY LEADERSHIP.** Elevate existing marine research programs to internationally recognized excellence through faculty hiring and increased programmatic support.
- **CREATE A FRAMEWORK FOR TRANSDISCIPLINARY RESEARCH.** Develop and implement effective organizational and governance structures at Oregon State to achieve transdisciplinary collaboration that spurs innovations from basic scientific and scholarly discoveries to their practical applications.
- **EMBRACE DATA-TO-DISCOVERY.** Promote advanced mathematical, statistical and computational methods to discover, analyze, simulate and predict the structures and processes of marine and human systems.
- **ENHANCE AND EXPAND FACILITIES.** Provide built and virtual environments to encourage creative collaborations that leverage the university's strengths and have meaningful impacts. This includes enhancing existing facilities and building new infrastructure. Beyond promoting scholarly accomplishments, these facilities will also support teaching, learning, outreach and engagement goals.



GOAL 3

INCREASE SOCIETAL IMPACT FROM MARINE STUDIES IN OREGON AND BEYOND. Develop and sustain partnerships and outreach and engagement efforts that will allow the Marine Studies Initiative to deliver social, economic and environmental benefits to the diverse interests represented across the state. These engagement approaches build on Oregon State's success as a land, sea, sun and space grant university, provide benefits to all partners, are responsive to coastal needs and complement and enhance existing partnerships.

STRATEGIES

- **DESIGN AND SUSTAIN PARTNERSHIPS.** Develop and implement a road map for initiating and expanding partnerships with government agencies and nonprofits, Native American tribes, universities, community colleges, businesses and communities to advance the transdisciplinary teaching, learning and research missions of the Marine Studies Initiative.
- **INCREASE ACCESS TO EDUCATION.** Expand Oregon State's education mission to better reach Oregon citizens from coastal and rural areas by building access to and relevancy of educational programs.
- **COMMUNICATE AND BE RESPONSIVE.** Expand on Oregon State's outreach strengths to connect the Marine Studies Initiative's activities with stakeholders and ensure that the program is responsive and informative to needs and interests across the state, nationally and internationally.

An example of MSI's transdisciplinary approach: food from the sea

THE CHALLENGE: There are increasing demands for healthy seafood that is harvested from sustainable fisheries and delivered with high value to the world's markets. How can Oregon State build on its collaborative partnerships to develop innovative approaches that enable the fishing industry and managers to meet these needs while sustaining wild fisheries and the supporting estuarine, coastal and ocean ecosystems?

THE MSI RESPONSE—A CENTER OF EXCELLENCE

- Create and sustain a transdisciplinary educational and research program that supports integrated and technologically sophisticated ecosystem and food system approaches in fisheries and aquaculture.
- Build on Oregon State's established programs, including the Coastal Oregon Marine Experiment Station, the Seafood Research and Education Center in Astoria, multiple college marine ecosystem programs and Oregon Sea Grant Extension.
- Involve experts from policy, law, business, marketing, technology, economics, ecology, conservation, public health, education and social science.
- Provide students with transdisciplinary training, internships and coursework focused on problem solving to prepare them for leadership in a range of professions.
- Further develop partnerships with fishing, aquaculture and other seafood industries, Native American tribes, state and federal management agencies, community colleges, other scientific institutions and international organizations.

THE IMPACT: With Oregon State University's leadership and globally recognized research and education in seafood systems, the Marine Studies Initiative's innovations will be shared with the fishing industry and local communities to positively impact local economies and personal prosperity. Students will gain comprehensive and practical knowledge that supports workforce needs as well as professional training.





The Marine Studies Initiative will:

- Enhance coastal environments and related economies by increasing understanding of coastal and ocean systems and promoting sustainability and resilience on key issues including natural resources management, climate change impacts, food security and safety, natural hazards and renewable energy production.
- Address major marine issues facing Oregon and the world by creating a cohesive transdisciplinary teaching and learning program and establishing a new framework of collaboration — bridging students, faculty, government, industry partners, nonprofit organizations, communities and other institutions of higher education.
- Offer unique experiential learning opportunities and launch an undergraduate degree program in marine studies. By 2025, the MSI will have 500 students-in-residence throughout the year at the marine studies campus in Newport and up to 750 students at Oregon State's Corvallis campus. Educational opportunities will be extended through OSU Extension's outreach and engagement programs and in partnership with the state's coastal community colleges.
- Leverage Oregon State's distinctions by involving each of its 11 colleges, the Graduate School, the University Honors College, the Hatfield Marine Science Center, the Coastal Oregon Marine Experiment Station, the Seafood Research and Education Center and many of the university's centers and institutes.
- Expand and connect world-class teaching and research facilities at Oregon State's main campus in Corvallis and its Hatfield Marine Science Center in Newport along the Oregon Coast, beginning with the construction of a state-of-the-art \$50 million research, teaching and outreach facility in Newport.

marinestudies.oregonstate.edu



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