

William C. Dennison

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Professional Preparation

University of Chicago	Chicago, IL	Biology	Ph.D. 1984
University of Alaska	Fairbanks, AK	Oceanography	M.S. 1979
Western Michigan Univ.	Kalamazoo, MI	Environ. Sci., Biology	B.A. 1976

Appointments

2025-present	Provost, Vice President for Academic Affairs and Professor, University of Maryland Center for Environmental Science
2002-2025	Vice President for Science Application and Professor, University of Maryland Center for Environmental Science
2023-2024	Interim President, University of Maryland Center for Environmental Science
1992-2002	Lecturer/Senior Lecturer/Reader, University of Queensland, Australia
1988-1991	Assistant Research Professor, Horn Point Laboratory (UMCES)
1984-1987	Postdoctoral Fellow; Coastal Marine Scholar, SUNY @ Stony Brook, NY

Publications

Authored or co-authored over 120 peer review journal articles. Google Scholar 'h' index is 82 with over 37,000 total citations, published in a diversity of different journals (38) about a diversity of topics (seagrasses, mangrove, corals, macroalgae, phytoplankton, bacteria and viruses, science communication, education, coastal management, eutrophication). Authored or co-authored 25 book chapters in a variety of research and education books. These book chapters also cover a diversity of topics including marine biology, conservation, methods, science integration and communication. Co-authored or co-edited 12 books in a variety of topics including coastal ecosystems, science integration and science communication. These books feature high resolution graphics, incorporating conceptual diagrams, photographs, maps, figures and tables to complement the text.

As an example of my peer reviewed publications, my two highest cited publications are the following:

- Accelerating loss of seagrasses across the globe threatens coastal ecosystems. 2009. Waycott et al., Proc. Natl. Acad. Sci 106: 12377-121381 (4821 citations as of 25 Sept 2025)
- A global crisis for science ecosystems. 2006. Orth et al., Bioscience 56:987-996. (4103 citations as of 25 Sept 2025)

My 2025 publications are the following:

- Restoration of the Chesapeake Bay: lessons for other ecosystems. 2025. Batiuk et al., Frontiers in Mar. Sci. 12.
- Environmental risks of the third re-purposing of the Haber-Boesch reaction. 2025. CM Duarte & WC Dennison. Environmental Sustainability 8: 117-120.
- The recipe for success in working across boundaries. 2025. KR O'Brien, EA Nastase, WC Dennison. Cell Reports Sustainability 2: 1-4.

I co-created a diversity of science communication products including brochures, newsletters, booklets, reports, books, and posters. There are currently over 800 science communication products on the IAN Press website. The hallmark of these products is high quality graphical design aimed at a broad audience. These publications are authorship inclusive, with several to dozens to hundreds of contributors involved in each publication. Each of these products receives intense review through co-authors, outside reviewers, copy editors, design editors and stakeholders. Some of these products are translated into a variety of different languages and they are distributed via a variety of networks to decision makers, stakeholders, resource managers, scientists, and to the interested public.

Leadership

Created and formed large multi-institutional, multi-disciplinary research efforts. 1) The development of the Multiscale Enclosed Ecosystem Research Center (MEERC) at the University of Maryland Center for Environmental Science (UMCES), funded by the U.S. EPA for 10 years (1992-2002), focusing on the effect of various aspects of spatial, temporal and complexity scales on key ecological processes. A co-authored book summarized this effort (Enclosed Experimental Ecosystems and Scale: Tools for Understanding and Managing Coastal Ecosystems, Springer, 2009), and I served as one of the co-editors. 2) Formed the Cooperative Research Centre for Coastal, Estuary and Waterway Management in Brisbane, Australia, which ran from 1999-2006. The Coastal CRC was a consortium of four universities and several agencies that focused on developing better coastal management systems. 3) I helped create the National Socio-Environmental Synthesis Center (SESYNC: www.sesync.org) in 2011 in Annapolis, funded by the National Science Foundation. SESYNC was focused on multi-disciplinary synthesis and on learning how to improve the synthesis process. 4) Founded the Integration and Application Network (IAN) at UMCES in 2002. IAN has grown into a vibrant team of Science Communicators and Science

Integrators who work globally with a diversity of partners to co-design and co-produce a variety of science communication products.

Synergistic Activities

1. Chair, Science and Technical Advisory Committee, Chesapeake Bay Program (2025-present)
2. Chair, Science and Technical Advisory Committee, Maryland Coastal Bays Program (2007-2024)
3. Chair, Science and Technical Assessment and Reporting group, Chesapeake Bay Program (2010-2023)
4. Chair, Chesapeake Research Consortium (2023-present)
5. Director, International Riverfoundation, Brisbane, Australia (2004-present)
6. Member, Land-Ocean Interactions in the Coastal Zone Scientific Steering Committee (2003-2009)
7. Over 500 blog posts written by WC Dennison that summarize workshop outcomes, conference or meeting overviews, topical issues and various book and paper reviews. www.umces.edu/ian

Teaching

I enjoy teaching both undergraduate and graduate students, and have found ways to teach even while on a primarily research appointment (postdoctoral researcher) or with administrative duties (current job). I spent ten years with intensive teaching duties as well (University of Queensland). My favorite teaching delivery mode is immersive short courses (days to semester long), which I have written about (Studying nature in situ: Immersive education for better integrated water management; Journal of Contemporary Water Education and Management, 2013). I have taught immersive short courses in Puerto Rico, Bermuda, the Great Barrier Reef, and Stradbroke Island, Australia. In addition, I have taught aboard a tall ship throughout the Atlantic Ocean as part of Sea Semester, based in Woods Hole, Massachusetts. In regular semester courses, I enjoy using an 'inverted' or 'flipped' classroom in which lecture material is provided before the class time so that the interactive time with students is discussion-based, rather than content delivery (aka, instead of the 'sage on the stage', serve as a 'guide on the side').

I have taught a wide variety of courses in small (<10) to large (300+) classrooms, using a variety of technologies (e.g., smart boards, clickers, multiple projectors), but also including rudimentary teaching aids in remote settings (e.g., shipboard flip charts, sand sculptures). I have taught at every undergraduate level (freshman non-majors to senior majors) and at various graduate levels (Honours, Masters, PhD). I have also led several efforts in developing online teaching materials for high school teachers (Teach Ocean Science; USAUS-H2O Virtual Environment Program).

In the Marine Estuarine Environmental Science (MEES) program, which is comprised of five universities in the University System of Maryland, I have served on the Graduate Faculty Council. When the MEES program restructured the curriculum, I co-chaired the newly created Environmental and Society foundation with a social scientist (Dr. Michael Paolisso), we co-taught the foundation course, and co-supervised the first graduate students through this foundation. The Environmental and Society foundation integrates both natural and social science, and with my background in natural science, but working closely with social scientists meant that this experience in expanding my horizons was one of the highlights of my career.

I worked with several colleagues to develop two Professional Certificate programs on the edX online educational platform. 1) Environmental Management for Sustainability with four courses; a) Strategic Communication for Sustainability Leaders, b) Storytelling with Data using Socio-environmental Report Cards, c) The Science Advisory Toolbox for Environmental Management, and d) Innovative Environmental Management Models: Case Studies and Applications. 2) Environmental Project Management for Sustainability with three courses; a) Stakeholder Outreach: Effective Communication of Complex Environmental Threats, b) Stakeholder Collaboration: Organizing for Environmental Justice and Equitable Solutions, and c) Co-Production: Addressing Complexity with Environmental Adaptive Management. I am currently developing an online course entitled “Chesapeake 101: Science and Management”.

Mentoring undergraduate and graduate students has been particularly rewarding to me. I am particularly proud of the diversity of the pursuits that students that I have mentored have undertaken. In addition to the standard academic pursuits in which former students serve as researchers, faculty and even a dean, former students have gone on to become a NASA astronaut, an Emmy award winning National Geographic videographer, an underwater habitat educator/entrepreneur, an Australian International Volunteer, and business owners (Darwinian Consulting, Visual Science).

It is my belief that university teaching is undergoing a major revolution in delivery mechanisms and funding models. The development of online materials, massive open online courses, flipped classrooms, and other teaching innovations has and will continue to change university teaching. I do not feel that these innovations have, nor ever will, replace the need for committed, passionate and effective teachers. But I see the need to keep innovating and producing high quality educational experiences.

Teaching examples

- Designed and taught undergraduate biology and ecology courses at all levels, lecture, lab and field, University of Queensland, State University of New York@ Stony Brook, Salisbury University (1985-present)

- Designed and taught graduate courses, University of Queensland, Bermuda Biological Station for Research, University of Maryland Center for Environmental Science, (1987-present)
- Designed and taught professional short courses, Science Communication and Integrated Assessment, Maryland, Florida, California, Holland, Mexico, Thailand (2003-present)

Course titles:

- Science for Environmental Management
- Environmental Field Methods
- Environment and Society
- Science Visualization
- Marine Botany
- Introduction to Biology
- Ecophysiology of corals, mangroves and seagrasses
- Plant Diversity
- Coral reef biology and geology
- Tropical marine ecology
- Issue Study Groups: a) Science basis for a Chesapeake headwaters report card; b) Ecological forecasting in practice; c) Transdisciplinary science for environmental problem solving; d) Developing an environmental justice index for the Chesapeake watershed report card; e) Synthesizing and communicating an overview of the Chesapeake Bay and Watershed

Academic leadership

I have been involved in creating and forming three large multi-institutional, multi-disciplinary research efforts, discussed previously.

I served as the co-Principal Investigator for a Global Seagrass Trajectories working group at the National Center for Ecological Analysis and Synthesis (NCEAS) which developed a global data base of seagrass expansions and declines, then analyzed this data to determine the net rate of seagrass decline globally (conservatively, one soccer field every 30 minutes since 1980). We also determined that seagrasses have a 'charisma gap' compared with much more widely recognized coral reefs and tropical rain forests and have initiated a variety of efforts to close this charisma gap.

Since 2002, I have served in an academic leadership position at the University of Maryland Center for Environmental Science. In my Vice President position, I have backed up the President, served on the Academic and Executive Councils, served as the UMCES representative on the University System of Maryland's provost council, served as the UMCES representative to the Council for Environmental Deans and Directors, and worked with Laboratory Directors, faculty, staff and graduate

students. I have represented UMCES to all levels of state government, including the Governor, Department Secretaries, Maryland elected officials, and various agency staff.

I often think that my real talent is being able to recognize and foster the development of excellent people. I enjoy recruiting excellent scientists and surrounding myself with intelligent, passionate and talented people. I have had the good fortune to work with some of these excellent colleagues for many years. In addition, I have helped various people realize different career paths and, in all cases, enjoy staying in touch with those people whose lives I have touched.

Local and regional activities

In a variety of locations throughout my career, I have developed an active local and regional suite of activities in the science and management realm. During my postdoctoral tenure at Stony Brook, New York, I discovered an algal bloom new to science, locally known as 'brown tide' as a result of my seagrass field work. This algal species was eventually identified as *Aureococcus anophagefferens*, and a major research effort was initiated to study its causes and impacts which I was involved in, and since then, I have served as an advisor or reviewer for continued blooms in Long Island and Texas.

During my junior faculty stint at Horn Point Laboratory, University of Maryland Center for Environmental Science, I joined a team to develop habitat requirements for Chesapeake Bay seagrasses, and led an effort to synthesize and publish these results (Dennison et al., 1993, Bioscience).

My local and regional involvement ramped up considerably during my ten years in Brisbane, Australia. It began when I assembled a group of scientists interested in Moreton Bay, and then helped form the Healthy Waterways program. I served in a variety of leadership roles in the Healthy Waterways program, including leading the effort to develop and implement an Ecosystem Health Monitoring Program, chairing Scientific Expert Panels and various task forces. In terms of a legacy from this ten-year stint in Australia, I helped to a) produce five books on Moreton Bay and its watershed (available on IAN Press), b) create a sustainable long-term monitoring and reporting program (www.hlw.org.au), and c) obtain funds and design a world class research station (Moreton Bay Research Station). In addition to these products and programs, the other legacy is the former students and postdoctoral fellows who worked in my laboratory and who have gone on to play an active role in science and management within the Austral-Asian region.

While in Australia, I also was heavily involved in the Great Barrier Reef science and management. I was elected President of the Australian Coral Reef Society, helped establish the need and then form a water quality monitoring program for the Great Barrier Reef and often served as a reviewer for the Great Barrier Reef Marine Park Authority programs and publications. I have maintained an involvement with the

Great Barrier Reef, which led to the establishment of various Great Barrier Reef report cards, and worked to incorporate climate change indicators and reporting (funded by the Great Barrier Reef Foundation).

Returning to Chesapeake Bay, I have chaired the Tidal Monitoring and Analysis Workgroup, revamped the Chesapeake reporting framework and produced annual report cards since 2006, joined the Science and Technical Advisory Committee in 2010 and was the inaugural chair of the Science and Technical Analysis and Reporting group. I serve on the Management Board and work closely with the Chesapeake Bay Program leadership team. I led an effort to synthesize the lessons learned from restoration efforts over the past couple of decades (New Insights: Science-based evidence of water quality improvements, challenges and opportunities in the Chesapeake, 2014), re-evaluate and re-invigorate the integrated monitoring program of the Bay and its watershed (Building and Sustaining Integrated Networks project). I was a co-author of the influential Comprehensive Evaluation of System Response (CESR) report. I currently serve as the Chair of the Science and Technical Advisory Committee.

I chaired the Science and Technical Advisory Committee of the Maryland Coastal Bays Program, and one of the accomplishments of this effort is a synthesis book (Shifting Sands: Environmental and cultural change in Maryland's Coastal Bays, 2009).

International activities

One of the things that living abroad does is provide you with a different perspective on the world. I had the good fortune to live in Australia for ten years, totally immersed in life far from the U.S. The Australian culture, politics, cuisine, and attitudes may appear superficially to be an offshoot of U.S. culture with our shared language, but there are many fundamental differences. In particular, the view of the world from outside the U.S. is quite different than from within the U.S. My family has dual citizenship in Australia and the U.S. I believe that this perspective enhances my ability to work internationally.

I served for six years (2003-2009) on the Scientific Steering Committee of the Land-Ocean Interactions in the Coastal Zone program, a part of the International Geophysical and Biological Programme. In this capacity, I worked with an international team of scientists to develop synthetic assessments, build science communication capacity and create working relationships that have continued to the present.

I have developed collaborations in a variety of different countries, including India and China. In India and China, we are working with local scientists to develop environmental report cards for coastal regions (India) and major rivers (China), and sustainable agriculture (China). Working closely with the Secretariat of the Pacific Environment Programme based in Samoa, I helped develop a reporting framework

for the 21 states and territories of the Pacific Ocean and conducted assessments of several island nations (Samoa, Palau, Fiji).

I have been involved in a premier European graduate training program (Eramus Mundas), both in delivering education modules and mentoring graduate students. The Integration and Application Network group has taught science communication short courses in Poland, Portugal, Singapore, Thailand, Philippines, Australia, Tanzania. I spent a sabbatical at the International WaterCentre in Brisbane, Australia in 2011, and participated in teaching graduate students from 21 countries. I have been involved in the annual International RiverSymposium, held annually in various Australian locations, since its inception in 1998. I have served on the program committee and as a session chair, panel member and presenter. I also have been serving as a Director for the International River Foundation since 2004. These activities provide opportunities to develop international connections.

Grantsmanship

One of the key determinants of a successful program is the ability to obtain the necessary resources, which can be broadly categorized as time and money. The time component refers to obtaining the necessary time and energy commitments of academic researchers, resource managers and policy makers devoted to an environmental issue. The money component translates into the ability to attract and retain good people as well as provide the physical spaces and associated infrastructure, expendable supplies and necessary travel. I have a long-term consistent track record of obtaining these resources through grants and contracts, philanthropy, and institutional resource allocations. One of my philosophies within academia is to look outside the institution for major support and then obtain institutional support as matching funds for developing increased capacity. Another aspect of grantsmanship that is vitally important in the shifting world of government and philanthropy funding is to develop and maintain a diverse portfolio of funding sources. This is something that I have excelled in accomplishing, and continue to develop an ever-broadening funding base.

One of the developments in the evolution of funding for the Integration and Application Network component of the University of Maryland Center for Environmental Science has been to have a) an overall steady funding increase from outside sources in spite of vagaries of federal and state budgets, and b) more and more projects that involve an enquiry from a potential partner who has a certain amount of money to achieve a certain project aim. So rather than apply for grants or bid for projects with a certain amount of risk, these enquiry-based projects, following some negotiation, are non-competitive. This model that has developed means that much more of the effort is based on developing results and products versus writing proposals with an uncertain chance of success. Expanding this model more broadly so that more academic researchers can focus on results and products instead of proposals, particularly unsuccessful proposals which represent one of the least productive uses of time in academia, would be useful.

In my role as Interim UMCES President, I championed the Chesapeake Global Collaboratory (CGC), an UMCES faculty initiative. Using a small grant from the Merrill Family Foundation, we held a Summit at IMET in 2023, in which we brought together a diversity of experts from academia, government agencies, NGOs, and businesses to kick off the CGC. As a result of this Summit, the Merrill Family Foundation provided funds for a proof-of-concept study. In addition, UMCES received a plus-up appropriation for the CGC from the State of Maryland, and a pending federal earmark. In addition, National Science Foundation grants obtained by UMCES faculty have served to advance the CGC goals, in particular, the SCIPE project.

Media activities

As part of my efforts to influence environmental policy and management, I have had an active media presence in local, regional and national media outlets, both in Australia and in the U.S. I am regularly asked to comment on various issues, currently regarding Chesapeake Bay issues. This media presence is not a role that I actively sought out, but I have learned the value of the media in shaping public policy and establishing the role of science in environmental management. I have not saved or documented my media citations, but I have had a varied and consistent media presence since my postdoctoral fellowship at Stony Brook, in Australia and in the U.S. in a wide diversity of print and electronic media outlets.

Career Path

My career has not been a linear academic progression. Upon completing my undergraduate degree from Western Michigan University, I worked for the U.S. Fish & Wildlife Service for a little over one year before returning to graduate school at the University of Alaska. Upon completing my M.S. degree, I worked for a private research consulting firm (Kinnetic Laboratories, Inc.) for one year before returning to graduate school at The University of Chicago. These short stints in government and consulting helped me focus my graduate programs so I completed them in relatively short time periods (M.S. = 2 years; Ph.D. = 3.5 years) and was able to better appreciate the role and value of academia from both within and outside academia.

During my postdoctoral fellowship at Stony Brook University, I made two important choices that influenced my career path. One was to follow up on the discovery of a novel phytoplankton bloom ('brown tide') with applied research and community engagement. The other choice was to spend six months in Australia conducting research on the Great Barrier Reef. These choices to a) conduct applied research with community engagement in addition to basic research and b) conduct collaborative research in Australia have served to influence my career path to the present.

While at the University of Queensland, my original intent was to develop a comprehensive research program for Moreton Bay, but through a progression of challenges and opportunities, I ended up serving an active role in science leadership and becoming actively involved with management and policy. Ultimately, I felt that our successful model of integrated science and management needed to be both tested at a larger scale, but also in a more globally visible location, hence my move back to Chesapeake Bay.

Throughout my career, I have enjoyed creating functional work spaces to conduct research, conduct scientific syntheses and meet with stakeholders for various science applications. I have grown programs throughout my career, thus I am always be looking to develop, improve and expand work spaces. I enjoy this exercise of creating functional work spaces to support talented and creative people.

As a result of my non-traditional academic career path, I have not obtained major environmental awards or honors (apart from being the initial recipient of the Margaret A. Davidson Award for Stewardship by the Coastal & Estuarine Research Federation in 2017), 2), published as many scientific papers as possible, or developed a narrow specialization niche. Rather, I have reveled in celebrating the success of others (e.g., International Riverprize, awards that my students have received), enjoyed pioneering new publication techniques and approaches (e.g., science communication products, online conceptual diagram tools), and found satisfaction in achieving proficiency across a wide diversity of topics.

Reflecting on my career path which has a) blended science and management, b) had phases of intense research, teaching and administration, and c) spanned two continents, I feel that my contribution is that of a catalyst. While a chemical catalyst is more difficult to measure and quantify than the reactants or products, it is key to effecting chemical transformations. Serving in this catalytic role, I feel as though I have helped a) create better and lasting science programs and infrastructure, b) develop lasting environmental management policies and programs, that have led to c) better environmental outcomes.