

# GUIDE TO EXPERTS

University of Maryland Center for Environmental Science

# HARNESSING THE POWER OF SCIENCE to transform the way society understands and manages the environment

A globally eminent research and graduate institution focused on advancing scientific knowledge of the environment, the **University of Maryland Center for Environmental Science** provides sound advice to help state and national leaders and prepares future scientists to meet the global challenges of the 21st century.



## RESEARCH

We work across disciplines and in diverse settings—from the Appalachian Mountains to the Arctic—seeking solutions that improve people’s lives and sustain the natural world.



## PUBLIC SERVICE

As trusted scientific advisors, our faculty provide unbiased research to inform management decisions and public policy on pressing environmental issues in our communities and around the world.



## EDUCATION

Our renowned faculty train the next generation of environmental leaders as part of the University System of Maryland’s nationally ranked graduate program in marine and environmental science.

*Location key: Appalachian Laboratory (AL), Chesapeake Biological Laboratory (CBL), Horn Point Laboratory (HPL), Institute of Marine and Environmental Technology (IMET), Integration and Application Network (IAN), Maryland Sea Grant College (MDSG).*

## POPULAR TOPICS

### CHESAPEAKE BAY RESTORATION

CHESAPEAKE BAY REPORT CARD:

**Bill Dennison**, Vice President for Science Applications and Professor (IAN): Coastal ecosystem ecology, assessing ecosystem health [dennison@umces.edu](mailto:dennison@umces.edu)

CRABS: **Thomas Miller**, Director and Professor (CBL): Recruitment and population dynamics of aquatic animals, fish early life history, blue crabs [miller@umces.edu](mailto:miller@umces.edu)

OYSTERS: **Michael Wilberg**, Professor (CBL): Population dynamics, quantitative fisheries, stock assessment, management strategy evaluation, fisheries management [wilberg@umces.edu](mailto:wilberg@umces.edu)

OYSTER HATCHERY: **Stephanie Tobash Alexander**, Oyster Hatchery Manager (HPL): Production of oyster larvae, seed, spat on shell, restoration, aquaculture [tobash@umces.edu](mailto:tobash@umces.edu)

STRIPED BASS/MENHADEN: **Genny Nesslage**, Assistant Research Professor (CBL): Fish and wildlife population dynamics and modeling, fisheries stock assessment, biological invasions, quantitative ecology [nesslage@umces.edu](mailto:nesslage@umces.edu)

SEA-LEVEL RISE: **Ming Li**, Professor (HPL): Estuarine and coastal dynamics, regional impacts of climate change and extreme weather events [mingli@umces.edu](mailto:mingli@umces.edu)

## RESEARCH AREAS

Biodiversity & Invasive Species • Climate & Energy • Coastal & Estuarine Science • Environmental Chemistry & Toxicology • Fisheries & Aquaculture Genes & Microbes • Ocean Science • Restoring & Sustaining Ecosystems • Terrestrial Ecology & Land Management • Water Resources & Watersheds

## FOR ASSISTANCE CONTACTING EXPERTS:

**Amy Pelsinsky**  
Director of Communications  
410-330-1389  
[apelsinsky@umces.edu](mailto:apelsinsky@umces.edu)

DEAD ZONES: **Jeremy Testa**, Associate Professor (CBL): Estuarine biogeochemistry, dissolved oxygen cycling, numerical modeling, estuarine systems ecology [jtesta@umces.edu](mailto:jtesta@umces.edu)

## ECOSYSTEM HEALTH

CLIMATE CHANGE: **Peter Goodwin**, President: Ecosystem restoration and management of aquatic systems, particularly tidal and wetland systems, hydrodynamics modeling, sediment transport and flood risk reduction [pgoodwin@umces.edu](mailto:pgoodwin@umces.edu)

SUSTAINABLE LANDSCAPES:

**Eric Davidson**, Director and Professor (AL): Biogeochemistry and soil microbial ecology in forests and agriculture, greenhouse gas emissions, water quality [edavidson@umces.edu](mailto:edavidson@umces.edu)

CHANGING OCEANS: **Michael Roman**, Director and Professor (HPL): Zooplankton ecology, biological oceanography [roman@umces.edu](mailto:roman@umces.edu)

HEALTHY HARBORS: **Mario Tamburri**, Professor (CBL): Sustainable urban waterfronts, invasive species ecology (prevention and management), environmental technologies and observing, chemical ecology of aquatic organisms [tamburri@umces.edu](mailto:tamburri@umces.edu)

## TOPICS OF EXPERTISE

### AGRICULTURAL/ LAND IMPACTS

**Eric Davidson**, Director and Professor (AL): Biogeochemistry and soil microbial ecology in forests and agriculture, greenhouse gas emissions, water quality  
[edavidson@umces.edu](mailto:edavidson@umces.edu)

**Tom Fisher**, Professor (HPL): Terrestrial and atmospheric nutrient inputs, nutrient cycling and limitation  
[fisher@umces.edu](mailto:fisher@umces.edu)

**Xin Zhang**, Assistant Professor (AL): Environmental science and policy, biogeochemical cycles of carbon and nitrogen, earth system modeling  
[xin.zhang@umces.edu](mailto:xin.zhang@umces.edu)

### AIR QUALITY

**Mark Castro**, Associate Professor (AL): Atmospheric-biosphere interactions, impacts of land use on water quality  
[mcastro@umces.edu](mailto:mcastro@umces.edu)

**Xin Zhang**, Assistant Professor (AL): Biogeochemical cycles of carbon and nitrogen, earth system modeling, atmospheric-biosphere interactions  
[xin.zhang@umces.edu](mailto:xin.zhang@umces.edu)

### ALGAL BLOOMS

**Pat Glibert**, Professor (HPL): Phytoplankton ecology, nitrogen uptake and mineralization by plankton, primary production and photosynthesis  
[glibert@umces.edu](mailto:glibert@umces.edu)

**Judy O'Neil**, Research Associate Professor (HPL): Cyanobacteria ecophysiology and plankton trophodynamics  
[joneil@umces.edu](mailto:joneil@umces.edu)

**Allen Place**, Professor (IMET): Genomics of toxin producing dinoflagellates, mitigation of cyanobacteria blooms  
[place@umces.edu](mailto:place@umces.edu)

### ALTERNATIVE ENERGY

**Feng Chen**, Professor (IMET): Marine microbial ecology, microbial diversity, genomics, clean green biotechnology  
[chenf@umces.edu](mailto:chenf@umces.edu)

**Russell Hill**, Director and Professor (IMET): Symbiosis between bacteria and marine invertebrates, microalgae and biofuels  
[hill@umces.edu](mailto:hill@umces.edu)

**Yantao Li**, Associate Professor (IMET): Microalgal molecular biology and lipid biochemistry, biotechnology and environmental bioremediation, metabolic

engineering for biofuels and bioproducts  
[yantao@umces.edu](mailto:yantao@umces.edu)

IMPACT ON MARINE LIFE—**Helen Bailey**, Associate Research Professor (CBL): Spatial ecology, movement ecology, habitat use and selection modeling, assessing environmental impacts of offshore energy  
[hbailey@umces.edu](mailto:hbailey@umces.edu)

**David Secor**, Professor (CBL): Migration and population ecology of marine fishes, telemetry and analytical techniques for tracking fish movements, fisheries and protected species  
[secor@umces.edu](mailto:secor@umces.edu)

### CHEMISTRY & TOXICOLOGY

**Michael Gonsior**, Associate Professor (CBL): Chemical diversity of complex dissolved organic matter in aquatic and engineered systems, disinfection by-products, photochemistry, fluorophores  
[gonsior@umces.edu](mailto:gonsior@umces.edu)

**Andrew Heyes**, Associate Research Professor (CBL): Trace metal geochemistry, mineral weathering, contaminant transport and hydrology, sedimentology, wetlands and aquatic chemistry  
[heyes@umces.edu](mailto:heyes@umces.edu)



**Carys Mitchelmore**, Professor (CBL): Water quality, environmental fate and impacts of pollutants, hydrocarbons and personal care products, toxicity testing, oyster health and aquaculture, coral health and biochemistry [mitchelmore@umces.edu](mailto:mitchelmore@umces.edu)

**Christopher Rowe**, Associate Professor (CBL): Physiological ecology, ecotoxicology, herpetology [rowe@umces.edu](mailto:rowe@umces.edu)

**Johan Schijf**, Associate Professor (CBL): Aqueous biogeochemistry of trace metals [schijf@umces.edu](mailto:schijf@umces.edu)

## CHESAPEAKE BAY RESTORATION

**Walter Boynton**, Professor Emeritus (CBL): Systems ecology, nutrient cycling in estuarine systems, estuarine restoration, management/policy [boynton@umces.edu](mailto:boynton@umces.edu)

**Jeff Cornwell**, Research Professor (HPL): Beneficial use of dredged

materials for wetland restoration, water quality effects of dredging [cornwell@umces.edu](mailto:cornwell@umces.edu)

**Bill Dennison**, Vice President for Science Application and Professor: Coastal ecosystem ecology, bioindicators in nearshore environments, assessing ecosystem health [dennison@umces.edu](mailto:dennison@umces.edu)

**Peter Goodwin**, President: Ecosystem restoration and management of aquatic systems, particularly tidal and wetland systems, hydrodynamics modeling, sediment transport and flood risk reduction [pgoodwin@umces.edu](mailto:pgoodwin@umces.edu)

**Matthew Gray**, Assistant Professor (HPL): Ecophysiology of bivalves, ecological restoration, ecosystem services, aquaculture [mgray@umces.edu](mailto:mgray@umces.edu)

**Jeremy Testa**, Associate Professor (CBL): Estuarine biogeochemistry, dissolved oxygen cycling, numerical

modeling, estuarine systems ecology [jtesta@umces.edu](mailto:jtesta@umces.edu)

**Lisa Wainger**, Research Professor (CBL): Environmental economics, integrated ecological and economic modeling, ecosystem services, environmental restoration, water quality trading [wainger@umces.edu](mailto:wainger@umces.edu)

## CLIMATE CHANGE

**Victoria Coles**, Associate Professor (HPL): Climate variability and change, observations and modeling of ocean and estuarine ecology, biogeochemistry and circulation [vcoles@umces.edu](mailto:vcoles@umces.edu)

**Andrew Elmore**, Professor (AL): Landscape ecology, remote sensing, spatial analysis, understanding global changes at the interface of ecology, geology, and the human sciences [aelmore@umces.edu](mailto:aelmore@umces.edu)



“What you do with coastline management has huge implications in terms of how the tides and storm surge in Chesapeake Bay respond to sea-level rise. Climate change is real; sea-level rise is happening. We have to understand it and plan for it right now.”

—Oceanographer Ming Li, co-author of “Sea-level rise projections for Maryland”



“Dolphins are very iconic, and they are in our backyard. Whether you’re at home, you have a community pier, you live near the water, or you go out on the water, we need your eyes on the sea telling us about the dolphins.”

—Helen Bailey created the Chesapeake DolphinWatch app

**Matthew Fitzpatrick**, Associate Professor (AL): Spatial modeling, quantitative ecology, biogeography, macroecology, biodiversity, climate change, biological invasions  
[mfitzpatrick@umces.edu](mailto:mfitzpatrick@umces.edu)

**Peter Goodwin**, President: Ecosystem restoration and management of tidal and wetland systems, hydrodynamics modeling, sediment transport and flood risk reduction  
[pgoodwin@umces.edu](mailto:pgoodwin@umces.edu)

**Hali Kilbourne**, Associate Professor (CBL): Paleoclimatology and paleoceanography, contextualizing modern climate change and exploring the processes causing seasonal to centennial climate variability  
[kilbourn@umces.edu](mailto:kilbourn@umces.edu)

**Ming Li**, Professor (HPL): Physical oceanography, estuarine and coastal dynamics, regional impacts of climate change and extreme weather events,

biological-physical interactions  
[mingli@umces.edu](mailto:mingli@umces.edu)

**Michael Roman**, Director and Professor (HPL): The effects of warming oceans and decreasing oxygen on marine food webs  
[roman@umces.edu](mailto:roman@umces.edu)

**Christopher Rowe**, Associate Professor (CBL): Physiological ecology, ecotoxicology, herpetology  
[rowe@umces.edu](mailto:rowe@umces.edu)

**Jian Zhao**, Assistant Professor (HPL): Physical oceanography, mesoscale and sub-mesoscale processes, ocean’s role in climate, geophysical fluid dynamics  
[jianzhao@umces.edu](mailto:jianzhao@umces.edu)

ARCTIC RESPONSE—  
**Lee Cooper**, Research Professor (CBL): Stable and radioisotope composition of organic materials and natural waters, aquatic plant physiology, high latitude oceanography and hydrology  
[cooper@umces.edu](mailto:cooper@umces.edu)

**Jackie Grebmeier**, Research Professor (CBL): Ecological responses of Arctic continental shelves to climate change, benthic ecology and marine ecosystem dynamic; connections among sea-ice coverage, water column processes and sea-floor organisms  
[jgrebmei@umces.edu](mailto:jgrebmei@umces.edu)

WILDFIRE—**Mark Cochrane**, Professor (AL): Earth systems science, wildland fire, climate change, ecology, land cover change, remote sensing  
[mark.cochrane@umces.edu](mailto:mark.cochrane@umces.edu)

## COASTAL ECOSYSTEMS

**Jeff Cornwell**, Research Professor (HPL): Sediment biogeochemistry, nutrient/metal/sulfur cycling in estuaries and coastal wetlands  
[cornwell@umces.edu](mailto:cornwell@umces.edu)

**Lora Harris**, Associate Professor (CBL): Systems ecology, coastal ecology, biogeochemistry, numerical modeling, metabolic rates  
[lharris@umces.edu](mailto:lharris@umces.edu)

**Ming Li**, Professor (HPL): Physical oceanography, estuarine and coastal dynamics, regional impacts of climate change and extreme weather events, biological-physical interactions [mingli@umces.edu](mailto:mingli@umces.edu)

**William Nardin**, Assistant Professor (HPL): Impact of storms and sea-level rise on wetlands eco-geomorphology, interaction between river (and estuaries), hydrodynamics and coastal processes [wnardin@umces.edu](mailto:wnardin@umces.edu)

**Cindy Palinkas**, Associate Professor (HPL): Geological oceanography, sediment transport and deposition in intertidal, fluvial, and estuarine environments, tidal marshes response to environmental change [cpalinkas@umces.edu](mailto:cpalinkas@umces.edu)

**Larry Sanford**, Professor (HPL): Estuarine and coastal physical oceanography, fine sediment transport, boundary layers and turbulence, interdisciplinary processes in shallow water [lsanford@umces.edu](mailto:lsanford@umces.edu)

**Court Stevenson**, Professor Emeritus (HPL): Ecology of marsh and seagrass communities, effects of sea-level rise on coastal ecosystems, wetland restoration at Poplar Island, creation of living shorelines [court@umces.edu](mailto:court@umces.edu)

**Ryan Woodland**, Assistant Professor (CBL): Coastal food webs, trophic ecology, fish ecology, anthropogenic effects and climate change, stable isotope ecology [woodland@umces.edu](mailto:woodland@umces.edu)

## CRABS

**J. Sook Chung**, Professor (IMET): Neuroendocrine regulation on crustacean physiology of molting, growth, reproduction, sex differentiation, and stress responses [chung@umces.edu](mailto:chung@umces.edu)

**Thomas Miller**, Director and Professor (CBL): Recruitment and population dynamics of aquatic animals, fish early-life history, blue crabs [miller@umces.edu](mailto:miller@umces.edu)

**Louis Plough**, Associate Professor (HPL): Population structure of blue crabs, molecular identification of crabs species and origins, genomics of adaptation in blue crabs [lplough@umces.edu](mailto:lplough@umces.edu)

**Eric Schott**, Associate Research Professor (IMET): Molecular detection and characterization of aquatic invertebrates, pathogens and viruses, soft-shell crabs [schott@umces.edu](mailto:schott@umces.edu)

**Michael Wilberg**, Professor (CBL): Population dynamics, quantitative fisheries, stock assessment, management strategy evaluation, fisheries management [wilberg@umces.edu](mailto:wilberg@umces.edu)

## EDUCATION & PUBLIC ENGAGEMENT

**Lora Harris**, Associate Professor (CBL): Systems ecology, coastal ecology, biogeochemistry, diversity in geosciences, SEAS Islands Alliance [harris@umces.edu](mailto:harris@umces.edu)

**Rose Jagus**, Professor (IMET): Translational control of gene expression, IMET Summer Internship program, Living Marine Resources Cooperative Science Center [jagus@umces.edu](mailto:jagus@umces.edu)

**Heath Kelsey**, Program Director (IAN): Conversations at the intersection of science/community/environment; scientific report cards on environmental restoration [hkelsey@umces.edu](mailto:hkelsey@umces.edu)

**Fredrika Moser**, Director (MDSG): Marine science policy, science education, SEAS Island Alliance, REU Program [moser@mdsg.umd.edu](mailto:moser@mdsg.umd.edu)

**James Pierson**, Associate Professor (HPL): Biological oceanography, plankton ecology, trophic dynamics, SEAS Island Alliance [jpierson@umces.edu](mailto:jpierson@umces.edu)

**Larry Sanford**, Vice President for Education and Professor (HPL): Estuarine and coastal physical oceanography, MEES program graduate education [lsanford@umces.edu](mailto:lsanford@umces.edu)

**Cathlyn Styliniski**, Principal Agent (AL): Public engagement with science, citizen science, environmental education, educator professional development, education program design and evaluation  
[cstyliniski@umces.edu](mailto:cstyliniski@umces.edu)

## FISHERIES

**Helen Bailey**, Associate Research Professor (CBL): Movement and habitat use of marine animals, predator-prey interactions, impacts of offshore energy, Chesapeake Dolphin Watch  
[hbailey@umces.edu](mailto:hbailey@umces.edu)

**Edward Houde**, Professor Emeritus (CBL): Fisheries science, ecosystem-based management, ecology  
[ehoude@umces.edu](mailto:ehoude@umces.edu)

**Victor S. Kennedy**, Professor Emeritus (CBL): Historical exploitation of fisheries in Chesapeake Bay  
[kennedy@umces.edu](mailto:kennedy@umces.edu)

**Thomas Miller**, Director and Professor (CBL): Recruitment and population dynamics of aquatic animals, fish early-life history, blue crabs  
[miller@umces.edu](mailto:miller@umces.edu)

**Genny Nesslage**, Assistant Research Professor (CBL): Fish and wildlife population dynamics and modeling, fisheries stock assessment, biological invasions, quantitative ecology  
[nesslage@umces.edu](mailto:nesslage@umces.edu)

**Elizabeth North**, Associate Professor (HPL): Fisheries oceanography with emphasis on finfish and shellfish in estuaries, circulation and particle trajectory modeling  
[enorth@umces.edu](mailto:enorth@umces.edu)

**Allen Place**, Professor (IMET): Elucidation of the molecular mechanisms that permit organisms to adapt to unique circumstances, sustainable fish feeds for aquaculture  
[place@umces.edu](mailto:place@umces.edu)

**Kenny Rose**, Professor (HPL): Ecological modeling, fisheries assessment and management  
[krrose@umces.edu](mailto:krrose@umces.edu)

**David Secor**, Professor (CBL): Migration and population ecology of marine fishes, telemetry and analytical techniques for tracking fish movements, fisheries and protected species  
[secor@umces.edu](mailto:secor@umces.edu)

**Michael Wilberg**, Professor (CBL): Population dynamics, quantitative fisheries, stock assessment, management strategy evaluation, fisheries management  
[wilberg@umces.edu](mailto:wilberg@umces.edu)

## FORESTS & TERRESTRIAL ECOLOGY

**Mark Castro**, Associate Professor (AL): Atmospheric-biosphere interactions, impacts of land use on water quality  
[mcastro@umces.edu](mailto:mcastro@umces.edu)

**Mark Cochrane**, Professor (AL): Earth systems science, wildland fire, climate change, ecology, land cover change, remote sensing  
[mark.cochrane@umces.edu](mailto:mark.cochrane@umces.edu)

**Andrew Elmore**, Professor (AL): Landscape ecology, remote sensing, spatial analysis, understanding global changes at the interface of ecology, geology, and the human sciences  
[aelmore@umces.edu](mailto:aelmore@umces.edu)

**Keith Eshleman**, Professor (AL): Hydrology, watershed ecology, biogeochemistry of freshwater and groundwater, hydrological impacts of acid deposition, forest disturbances, and surface mining  
[keshleman@umces.edu](mailto:keshleman@umces.edu)

**David Nelson**, Associate Professor (AL): Stable isotope ecology, paleoecology, wind-wildlife interactions, watershed biogeochemistry  
[dnelson@umces.edu](mailto:dnelson@umces.edu)

## GENOMICS & GENETICS

**Tsvetan Bachvaroff**, Assistant Research Professor (IMET): Dinoflagellate evolution, DNA sequence analysis, establishing dinoflagellate cultures  
[bachvaroff@umces.edu](mailto:bachvaroff@umces.edu)

**Katharina Engelhardt**, Associate Research Professor (AL): Plant biodiversity (species



and genetic), restoration ecology, wetland ecology, aquatic botany, invasion ecology, roadside grasses [kengelhardt@umces.edu](mailto:kengelhardt@umces.edu)

**Robert Hilderbrand**, Associate Professor (AL): Stream ecology and conservation, DNA sequencing for stream monitoring and assessment [rhilderbrand@umces.edu](mailto:rhilderbrand@umces.edu)

**Rose Jagus**, Professor (IMET): Translational control of gene expression, regulation of gene activity in early development, host defense against virus infection and viral countermeasures [jagus@umces.edu](mailto:jagus@umces.edu)

**Allen Place**, Professor (IMET): Elucidation of the molecular mechanisms that permit organisms to adapt to unique circumstances, molecular basis of sex determination [place@umces.edu](mailto:place@umces.edu)

**Louis Plough**, Associate Professor (HPL): Population genetics of marine animals,

quantitative genetics, and experimental breeding of shellfish; larval biology of marine invertebrates [lpough@umces.edu](mailto:lpough@umces.edu)

**Eric Schott**, Associate Research Professor (IMET): Molecular detection and characterization of aquatic invertebrates, pathogens and viruses, application of genome-targeted approaches in aquatic health [schott@umces.edu](mailto:schott@umces.edu)

## INVASIVE SPECIES

**Katharina Engelhardt**, Associate Research Professor (AL): Plant biodiversity, wetland ecology, aquatic botany, invasion ecology [kengelhardt@umces.edu](mailto:kengelhardt@umces.edu)

**Matthew Fitzpatrick**, Associate Professor (AL): Modeling the spread of invasive species, macroecology, biodiversity, biogeography, climate change, quantitative ecology [mfitzpatrick@umces.edu](mailto:mfitzpatrick@umces.edu)

**Genny Nesslage**, Assistant Research Professor (CBL): Fish and wildlife population dynamics and modeling, invasive species dynamics, quantitative ecology [nesslage@umces.edu](mailto:nesslage@umces.edu)

**Mario Tamburri**, Professor (CBL): Invasive species ecology (prevention and management), sustainable urban waterfronts, environmental technologies and observing, chemical ecology of aquatic organisms [tamburri@umces.edu](mailto:tamburri@umces.edu)

**Lisa Wainger**, Research Professor (CBL): Modeling economic benefits of management, assessment of invasive species, environmental economic indicators [wainger@umces.edu](mailto:wainger@umces.edu)

## MARINE FOOD WEB

**Hongsheng Bi**, Associate Professor (CBL): Population modeling, zooplankton ecology, spatial statistics [hbi@umces.edu](mailto:hbi@umces.edu)



“Within the lifetime of children living today, the climate of many regions is projected to change from the familiar to conditions unlike those experienced in the same place by perhaps any generation. Many cities could experience climates with no modern equivalent in North America.”

—Matt Fitzpatrick created the Future Urban Climates app

**James Pierson,**  
Associate Professor (HPL):  
Biological oceanography,  
plankton ecology, trophic  
dynamics, copepods  
[jpierson@umces.edu](mailto:jpierson@umces.edu)

**Michael Roman,**  
Professor (HPL):  
Zooplankton ecology,  
biological oceanography  
[roman@umces.edu](mailto:roman@umces.edu)

**Ryan Woodland,** Assistant  
Professor (CBL): Coastal  
food webs, trophic ecology,  
fish ecology, anthropogenic  
effects and climate change,  
stable isotope ecology  
[woodland@umces.edu](mailto:woodland@umces.edu)

## MICROBIAL BIOLOGY

**Feng Chen,** Professor  
(IMET): Marine microbial  
ecology, microbial  
oceanography and  
biogeography, microbial  
diversity, genomics,  
functional genomics, clean  
green biotechnology  
[chenf@umces.edu](mailto:chenf@umces.edu)

**Jacob Cram,** Assistant  
Professor (HPL): Microbial  
ecology, biogeochemistry,  
biological oceanography,  
mechanistic and statistical  
modelling, microbial  
communities, marine snow  
[jcram@umces.edu](mailto:jcram@umces.edu)

**Clara Fuchsman,**  
Assistant Professor  
(HPL): Biogeochemical  
cycles, microbial ecology,  
sinking particles, anoxic  
environments such  
oxygen minimum zones  
[cfuchsman@umces.edu](mailto:cfuchsman@umces.edu)

**Russell Hill,** Director and  
Professor (IMET): Symbiosis  
between bacteria and  
marine invertebrates,  
molecular and culture-  
based studies of symbiotic  
bacteria, microalgae,  
biofuels [hill@umces.edu](mailto:hill@umces.edu)

**Sairah Malkin,**  
Assistant Professor (HPL):  
Biogeochemistry, microbial  
ecology, benthic ecology,  
geochemical cycling in  
aquatic systems  
[smalkin@umces.edu](mailto:smalkin@umces.edu)

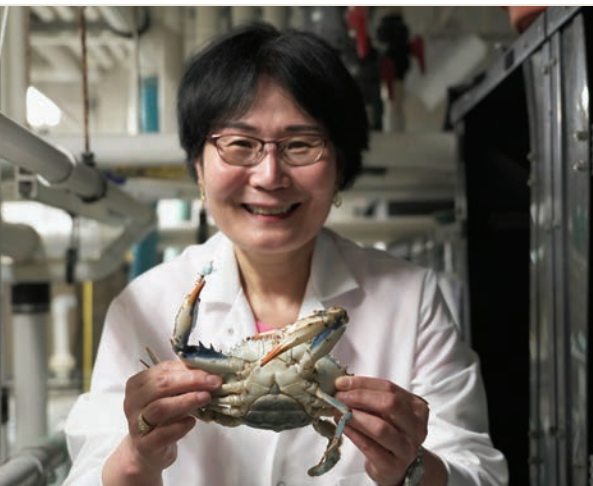
**Allen Place,** Professor  
(IMET): Elucidation of the  
molecular mechanisms that  
permit organisms to adapt  
to unique circumstances,  
molecular basis of sex  
determination  
[place@umces.edu](mailto:place@umces.edu)

## NUTRIENT DYNAMICS

**Walter Boynton,** Professor  
Emeritus (CBL): Systems  
ecology, nutrient cycling  
in estuarine systems,  
estuarine restoration,  
management/policy  
[boynton@umces.edu](mailto:boynton@umces.edu)

**Jeff Cornwell,**  
Research Professor (HPL):  
Biogeochemistry; nutrient,  
metal, and sulfur cycling  
in estuaries and coastal  
wetlands  
[cornwell@umces.edu](mailto:cornwell@umces.edu)

**Eric Davidson,** Director  
and Professor (AL):  
Biogeochemistry and  
soil microbial ecology  
in forests/agriculture,  
greenhouse gas emissions  
and water quality  
[edavidson@umces.edu](mailto:edavidson@umces.edu)



“Decoding the blue crab genome enables us to decode the factors providing resiliency of the blue crab to climate change and disease in the Chesapeake Bay and beyond.”

— Biochemist Sook Chung is leading the effort to sequence the genome of blue crab

**Tom Fisher**, Professor (HPL): Terrestrial and atmospheric nutrient inputs, nutrient cycling and limitation, primary production of aquatic systems  
[fisher@umces.edu](mailto:fisher@umces.edu)

**Lora Harris**, Associate Professor (CBL): Systems ecology, coastal ecology, biogeochemistry, numerical modeling, metabolic rates  
[harris@umces.edu](mailto:harris@umces.edu)

**Laura Lapham**, Associate Professor (CBL): Methane emissions from aquatic environments, biogeochemistry, carbon cycling, gas hydrates, hydrocarbon seeps, stable isotopes, sulfate reduction, methane oxidation, methanogenesis  
[lapham@umces.edu](mailto:lapham@umces.edu)

**Sairah Malkin**, Assistant Professor (HPL): Biogeochemistry, microbial ecology, benthic ecology, geochemical cycling in aquatic systems  
[smalkin@umces.edu](mailto:smalkin@umces.edu)

**Jeremy Testa**, Associate Professor (CBL): Estuarine biogeochemistry, dissolved oxygen cycling, numerical modeling, estuarine systems ecology  
[jtesta@umces.edu](mailto:jtesta@umces.edu)

**Xin Zhang**, Assistant Professor (AL): Biogeochemical cycles of carbon and nitrogen, earth system modeling, atmospheric-biosphere interactions  
[xin.zhang@umces.edu](mailto:xin.zhang@umces.edu)

## OCEAN SCIENCE

### BIOLOGICAL—

**Jacob Cram**, Assistant Professor (HPL): Microbial ecology, biogeochemistry, mechanistic and statistical modeling, microbial communities, marine snow  
[jcram@umces.edu](mailto:jcram@umces.edu)

**Clara Fuchsman**, Assistant Professor (HPL): Biogeochemical cycles, microbial ecology, and sinking particles in anoxic environments such as oxygen minimum zones  
[cfuchsman@umces.edu](mailto:cfuchsman@umces.edu)

**Jackie Grebmeier**, Research Professor (CBL): Arctic benthic ecology and marine ecosystem dynamics, connections among sea ice coverage, water column processes and sea-floor organisms  
[jgrebmei@umces.edu](mailto:jgrebmei@umces.edu)

**Raleigh Hood**, Professor (HPL): Using models to simulate and predict biogeochemical and ecological variability in marine environments  
[rhood@umces.edu](mailto:rhood@umces.edu)

**Ming Li**, Professor (HPL): Estuarine and coastal dynamics, regional impacts of climate change and extreme weather events  
[mingli@umces.edu](mailto:mingli@umces.edu)

**Judy O'Neil**, Research Associate Professor (HPL): Cyanobacteria ecophysiology and plankton trophodynamics  
[joneil@umces.edu](mailto:joneil@umces.edu)

**James Pierson**, Associate Professor (HPL): Biological oceanography, plankton ecology, trophic dynamics, copepods  
[jpierson@umces.edu](mailto:jpierson@umces.edu)

**Michael Roman**, Director and Professor (HPL): Zooplankton ecology, biological oceanography  
[roman@umces.edu](mailto:roman@umces.edu)

**Greg Silsbe**, Assistant Research Professor (HPL): Role of phytoplankton in global carbon cycle, satellite remote-sensing, tropical limnology  
[gsilsbe@umces.edu](mailto:gsilsbe@umces.edu)

**Diane Stoecker**, Professor Emeritus (HPL): Biological oceanography and plankton ecology, microzooplankton, mixotrophy (alternate modes of nutrition) in plankton  
[stoecker@umces.edu](mailto:stoecker@umces.edu)

### PHYSICAL—

**William Boicourt**, Professor Emeritus (HPL): Physical oceanographic processes, continental shelf and estuarine circulation  
[boicourt@umces.edu](mailto:boicourt@umces.edu)

**Lee Cooper**, Research Professor (CBL): Stable and radioisotope composition of organic materials and natural waters, aquatic plant physiology, high latitude oceanography and hydrology  
[cooper@umces.edu](mailto:cooper@umces.edu)

**Shenn-Yu Chao**, Professor (HPL): Continental shelf and slope circulation, western boundary currents, numerical modeling of ocean circulation processes [chao@umces.edu](mailto:chao@umces.edu)

**Victoria Coles**, Associate Professor (HPL): Climate variability and change, observations and modeling of ocean and estuarine ecology, biogeochemistry and circulation modeling [vcoles@umces.edu](mailto:vcoles@umces.edu)

**Joe Jurisa**, Assistant Professor (HPL): Mixing and transport processes in estuarine and coastal systems [jjurisa@umces.edu](mailto:jjurisa@umces.edu)

**Larry Sanford**, Professor (HPL): Estuarine and coastal physical oceanography, fine sediment transport, boundary layers and turbulence, interdisciplinary processes in shallow water [lsanford@umces.edu](mailto:lsanford@umces.edu)

**Jian Zhao**, Assistant Professor (HPL): Mesoscale and sub-mesoscale processes, ocean's role in climate, geophysical fluid dynamics [jianzhao@umces.edu](mailto:jianzhao@umces.edu)

## OYSTERS

**Stephanie Tobash Alexander**, Oyster Hatchery Manager (HPL): Production of oyster larvae, seed, spat-on-shell, restoration, aquaculture [tobash@umces.edu](mailto:tobash@umces.edu)

**Matthew Gray**, Assistant Professor (HPL): Ecophysiology of bivalves, ecological restoration, ecosystem services, aquaculture [mgray@umces.edu](mailto:mgray@umces.edu)

**Elizabeth North**, Associate Professor (HPL): Fisheries oceanography with emphasis on finfish/shellfish in estuaries, circulation and particle trajectory modeling, OysterFutures [enorth@umces.edu](mailto:enorth@umces.edu)

**Kennedy Paynter**, Associate Professor (CBL): Comparative physiology of estuarine organisms, oyster disease biochemistry [paynter@umces.edu](mailto:paynter@umces.edu)

**Louis Plough**, Associate Professor (HPL): Population genetics of marine animals, quantitative genetics, and experimental breeding of shellfish, larval biology of marine invertebrates [lplough@umces.edu](mailto:lplough@umces.edu)

**Michael Wilberg**, Professor (CBL): Population dynamics, quantitative fisheries, stock assessment, management strategy evaluation, fisheries management [wilberg@umces.edu](mailto:wilberg@umces.edu)

## SOCIOECONOMIC MODELING

**Lisa Wainger**, Research Professor (CBL): Cost-effective environmental restoration strategies, value of ecosystem services, and other environmental economic modeling [wainger@umces.edu](mailto:wainger@umces.edu)

**Xin Zhang**, Assistant Professor (AL): Environmental science and policy, biogeochemical cycles of carbon and nitrogen, earth system modeling, atmospheric-biosphere interactions [xin.zhang@umces.edu](mailto:xin.zhang@umces.edu)

## STATISTICS

**Dong Liang**, Assistant Research Professor (CBL): Statistical issues in synthesizing environmental data sets, spatial sampling, remote sensing, spatio-temporal modeling [dliang@umces.edu](mailto:dliang@umces.edu)

**Vyacheslav Lyubchich**, Assistant Research Professor (CBL): Machine learning and artificial intelligence, time series analysis, forecasting, applied statistics, non-parametric inference, random networks [lyubchic@umces.edu](mailto:lyubchic@umces.edu)

## STREAM HEALTH & RESTORATION

**Keith Eshleman**, Professor (AL): Hydrology, watershed ecology, biogeochemistry of freshwater and groundwater, hydrological impacts of acid deposition, forest disturbances, and surface mining [keshleman@umces.edu](mailto:keshleman@umces.edu)

**Solange Filoso**, Associate Research Professor (CBL): Biogeochemistry and nutrient dynamics, effectiveness of stream restoration, impacts of



“Sampling a single river, you need a net, crew, permit; it can be expensive. The eDNA approach is an alternative where you just take a water sample, and you get an idea of the abundance of fish.”

—Louis Plough on using DNA to track fish in area waterways



human activities on water resources, water quality, urban streams  
[filoso@umces.edu](mailto:filoso@umces.edu)

**Robert Hilderbrand**, Associate Professor (AL): Stream ecology and conservation; stream assessment, monitoring, and restoration; watershed responses to land use/land cover change; brook trout  
[rhilderbrand@umces.edu](mailto:rhilderbrand@umces.edu)

**Margaret Palmer**, Professor (CBL): Stream community and ecosystem ecology, restoration ecology  
[palmer@umces.edu](mailto:palmer@umces.edu)

## UNDERWATER GRASSES

**Bill Dennison**, Professor and Vice President for Science Application: Coastal ecosystem ecology, ecophysiology of marine plants, bioindicators in nearshore environments, assessing ecosystem health  
[dennison@umces.edu](mailto:dennison@umces.edu)

**Katharina Engelhardt**, Associate Research Professor (AL): Plant biodiversity, restoration ecology, wetland ecology, aquatic botany, invasion ecology  
[kengelhardt@umces.edu](mailto:kengelhardt@umces.edu)

## URBAN WATERFRONTS

**Allen Place**, Professor (IMET): Elucidation of the molecular mechanisms that permit organisms to adapt to unique circumstances, HABs early warning system  
[place@umces.edu](mailto:place@umces.edu)

**Eric Schott**, Associate Research Professor (IMET): Molecular detection and characterization of aquatic invertebrates, pathogens and viruses, soft-shell crabs  
[schott@umces.edu](mailto:schott@umces.edu)

**Mario Tamburri**, Professor (CBL): Sustainable urban waterfronts, invasive species ecology (prevention and management), environmental technologies and observing, chemical ecology of aquatic organisms  
[tamburri@umces.edu](mailto:tamburri@umces.edu)

**Ryan Woodland**, Assistant Professor (CBL): Coastal food webs, trophic ecology, fish ecology, anthropogenic effects and climate change, stable isotope ecology  
[woodland@umces.edu](mailto:woodland@umces.edu)

## WATER QUALITY

**Walter Boynton**, Professor Emeritus (CBL): Systems ecology, nutrient cycling in estuarine systems, estuarine restoration, management/policy  
[boynton@umces.edu](mailto:boynton@umces.edu)

**Mark Castro**, Associate Professor (AL): Atmospheric-biosphere interactions, impacts of land use on water quality  
[mcastro@umces.edu](mailto:mcastro@umces.edu)

**Bill Dennison**, Vice President for Science Applications and Professor: Ecology of marine plants, assessing ecosystem health, Chesapeake Bay report card  
[dennison@umces.edu](mailto:dennison@umces.edu)

**Keith Eshleman**, Professor (AL): Hydrology, watershed ecology, biogeochemistry of freshwater and groundwater, hydrological impacts of acid deposition, forest disturbances, and surface mining  
[keshleman@umces.edu](mailto:keshleman@umces.edu)

**Solange Filoso**, Associate Research Professor (CBL): Biogeochemistry and nutrient dynamics, effectiveness of stream restoration, impacts of human activities on water resources, water quality, urban streams  
[filoso@umces.edu](mailto:filoso@umces.edu)

**Tom Fisher**, Professor (HPL): Terrestrial and atmospheric nutrient inputs, nutrient cycling and limitation  
[fisher@umces.edu](mailto:fisher@umces.edu)

**Michael Gonsior**, Associate Professor (CBL): Chemical diversity of complex dissolved organic matter in aquatic and engineered systems, disinfection by-products, photochemistry, fluorophores  
[gonsior@umces.edu](mailto:gonsior@umces.edu)

**Lora Harris**, Associate Professor (CBL): Impact of management actions on water quality, restoration of hypoxic estuaries, systems ecology, ecosystem modeling  
[harris@umces.edu](mailto:harris@umces.edu)

**Carys Mitchelmore**, Professor (CBL): Aquatic ecosystem health, whole effluent toxicity testing  
[mitchelmore@umces.edu](mailto:mitchelmore@umces.edu)

**Judy O'Neil**, Research Associate Professor (HPL): Cyanobacteria ecophysiology and plankton trophodynamics  
[joneil@umces.edu](mailto:joneil@umces.edu)

**Greg Silsbe**, Assistant Research Professor (HPL): Role of phytoplankton in global carbon cycle, satellite remote-sensing, tropical limnology  
[gsilsbe@umces.edu](mailto:gsilsbe@umces.edu)

**Jeremy Testa**, Associate Professor (CBL): Estuarine biogeochemistry, dissolved oxygen cycling, numerical modeling, estuarine systems ecology  
[jtesta@umces.edu](mailto:jtesta@umces.edu)

**Qian Zhang**, Watershed Effectiveness Data Analyst (IAN): Environmental science, water quality, watershed, nutrients, statistics, modeling  
[qzhang@umces.edu](mailto:qzhang@umces.edu)

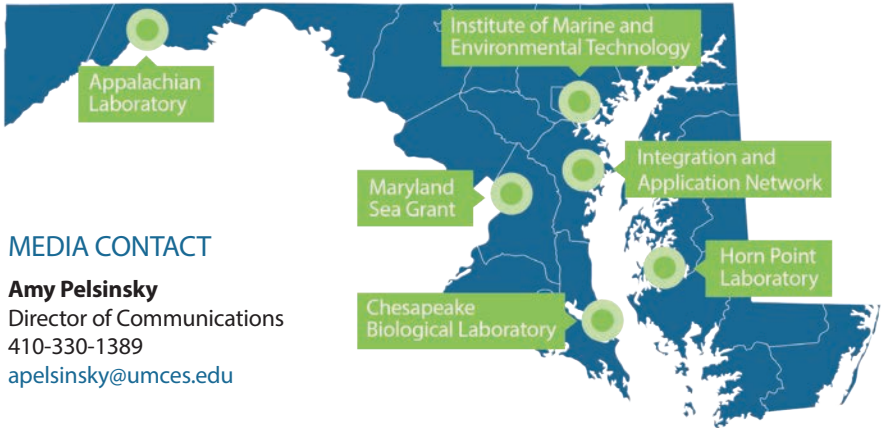
## WILDLIFE ECOLOGY

**Emily Cohen**, Assistant Professor (AL): Animal migration biology, migratory connectivity, stopover biology and aeroecology, population and behavioral ecology, ornithology  
[emily.cohen@umces.edu](mailto:emily.cohen@umces.edu)

**J. Edward Gates**, Professor Emeritus (AL): Wildlife and conservation ecology and management, impact of land alteration/connectivity/boundary dynamics, bats  
[egates@umces.edu](mailto:egates@umces.edu)

**John Hoogland**, Professor (AL): Evolution of social behavior, wildlife ecology, evolutionary ecology and behavior of prairie dog populations  
[hoogland@umces.edu](mailto:hoogland@umces.edu)

**Christopher Rowe**, Associate Professor (CBL): Physiological ecology, ecotoxicology, herpetology  
[rowe@umces.edu](mailto:rowe@umces.edu)



## MEDIA CONTACT

### **Amy Pelsinsky**

Director of Communications  
410-330-1389  
[apelsinsky@umces.edu](mailto:apelsinsky@umces.edu)

## LEADERSHIP

**Peter Goodwin**, President and Professor: Ecosystem restoration and management of aquatic systems, particularly tidal and wetland systems, hydrodynamics modeling, sediment transport and flood risk reduction [pgoodwin@umces.edu](mailto:pgoodwin@umces.edu)

**Bill Dennison**, Vice President for Science Applications and Professor, Integration and Application Network: Ecology of marine plants, assessing ecosystem health, environmental report cards  
[dennison@umces.edu](mailto:dennison@umces.edu)

**Larry Sanford**, Vice President for Education and Professor: Coastal physical oceanography, sediment transport, waves, and physical/biological interactions [lsanford@umces.edu](mailto:lsanford@umces.edu)

**Lynn Rehn**, Vice President for Administration [lrehn@umces.edu](mailto:lrehn@umces.edu)

**Stuart Clarke**, Vice President for Strategic Initiatives: Philanthropy, environmental policy and communications, community outreach and engagement  
[sclarke@umces.edu](mailto:sclarke@umces.edu)

**Dave Nemazie**, Chief of Staff: Science communication, marine and estuarine ecology, watershed management, environmental policy and development  
[nemazie@umces.edu](mailto:nemazie@umces.edu)

## LABORATORY DIRECTORS

### **Eric Davidson**

Director and Professor, Appalachian Laboratory: Biogeochemistry and soil microbial ecology in forests and agriculture, greenhouse gases emissions water quality [edavidson@umces.edu](mailto:edavidson@umces.edu)

### **Russell Hill**

Director and Professor, Institute of Marine and Environmental Technology: Symbiosis between bacteria and marine invertebrates, molecular and culture-based studies of symbiotic bacteria, microalgae, biofuels [hill@umces.edu](mailto:hill@umces.edu)

### **Thomas Miller**

Director and Professor, Chesapeake Biological Laboratory: Recruitment and population dynamics of aquatic animals, fish early-life history, blue crabs  
[miller@umces.edu](mailto:miller@umces.edu)

### **Michael Roman**

Director and Professor, Horn Point Laboratory: Zooplankton ecology, biological oceanography  
[roman@umces.edu](mailto:roman@umces.edu)

### **Fredrika Moser**

Director, Maryland Sea Grant College: Marine science policy, invasive species policy, science education, coastal sedimentology, geochemistry  
[moser@mdsg.umd.edu](mailto:moser@mdsg.umd.edu)

**Headquarters**

P.O. Box 775  
Cambridge, MD 21613  
410-228-9250  
[www.umces.edu](http://www.umces.edu)

**Appalachian Laboratory**

301 Braddock Road  
Frostburg, MD 21532  
301-689-7100

**Chesapeake Biological Laboratory**

146 Williams Street / 0038  
Solomons, MD 20688  
410-326-4281

**Horn Point Laboratory**

2020 Horns Point Road  
Cambridge, MD 21613  
410-228-8200

**Institute of Marine  
and Environmental Technology**

701 E. Pratt Street  
Baltimore, MD 21202  
410-234-8802

**Integration and Application Network**

429 Fourth Street  
Annapolis, MD 21403  
41-221-2005

**Maryland Sea Grant College**

5825 University Research Court, Suite 1350  
College Park, MD 20737  
301-405-7500



University of Maryland  
**CENTER FOR ENVIRONMENTAL SCIENCE**