University of Maryland Center for Environmental Science

EXPERTS GUIDE



Innovation for a better future

CENTER FOR ENVIRONMENTAL SCIENCE

University of Maryland Center for Environmental Science

The University of Maryland Center for Environmental Science is the premier research and educational institution working to understand and manage our world's natural resources. Our scientists pursue solutions to environmental challenges in the Chesapeake Bay and around the world from a network of laboratories across the state.

> Appalachian Laboratory

Institute of Marine and Environmental Technology

Maryland Sea Grant

Horn Point Laboratory

Chesapeake Biological Laboratory



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TOPICS BY EXPERTISE AIR QUALITY

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COAL ASH—Christopher Rowe, Associate Professor (CBL): Impacts of sublethal exposure to pollution, ecotoxicology of coal ash, bioenergetics of aquatic animals

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ALGAE BLOOMS

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Diane Stoecker, Professor (HPL): Physiological ecology and feeding biology of planktonic protists, polar and subpolar microzooplankton and algae stoecker@umces.edu

TOXIC BLOOMS—Allen Place, Professor (IMET): Molecular mechanisms that permit organisms to adapt to unique diets, molecular basis of sex determination, pfisteria, toxic algae blooms place@umces.edu

"Nutrient and sediment pollution carried by stormwater are important factors in Chesapeake Bay health. It's not the rain that affects the report card scores. It is what the rain carries." — Bill Dennison

ALTERNATIVE ENERGY

BIOFUEL—**Feng Chen**, Associate Professor (IMET): Marine microbial ecology, genomics, functional genomics, phage-host interactions, clean green biotechnology chenf@umces.edu

BIOFUEL—**Yantao Li**, Assistant Professor (IMET): Algal molecular biology and biochemistry, engineering of biofuels and bioproducts, algal biotechnology yantao@umces.edu

WIND ENERGY—**Helen Bailey**, Research Assistant Professor (CBL): Movement and habitat use of marine animals, predator-prey interactions, impacts of offshore energy hbailey@umces.edu

CHESAPEAKE BAY RESTORATION

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"We're trying to predict when the storm comes in, which area will be flooded, which street will be flooded on a very fine scale. This will help emergency responder managers and people in the area of the predicted flooding make better choices as the storm nears." — Ming Li

CLIMATE CHANGE

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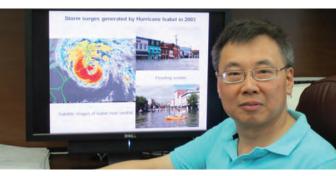
ARCTIC RESPONSE—

Lee Cooper, Research Professor (CBL): Stable and radioisotope composition of organic materials in coastal waters, high latitude oceanography cooper@umces.edu

Jacqueline Grebmeier, Research Professor (CBL): Pelagic-benthic coupling, benthic community structure, marine ecosystem dynamics jgrebmei@umces.edu

BIOLOGICAL INVASIONS/SPECIES MODELING — **Matthew Fitzpatrick**, Assistant Professor (AL): Species distribution modeling, simulation modeling, climate change, biological invasions, biodiversity mfitzpatrick@umces.edu

PALEOCLIMATOLOGY—**Hali Kilbourne**, Research Assistant Professor (CBL): Paleoclimatology and paleoceanography, link ocean circulation and climate kilbourn@umces.edu





COASTAL STUDIES

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CRABS

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

SOFT SHELL CRAB DISEASE—**Eric Schott**, Research Assistant Professor (IMET): Molecular detection and characterization of aquatic invertebrates pathogens and viruses, soft-shell crabs schott@umces.edu

REPRODUCTION—**J. Sook Chung**, Associate Professor (IMET): crustacean physiology of molting, growth, reproduction, sex differentiation and stress responses

chung@umces.edu

ENVIRONMENTAL EDUCATION

K-12—**William t**, Vice President for Science Applications and Professor: ecology of marine plants, assessing ecosystem health dennison@umces.edu "We're using satellite data to find out the growth rate of trees. If trees are growing faster, than they are taking more carbon out of the atmosphere. That's a good thing for global warming."—Andrew Elmore

K-12—Laura Murray, Research Professor (HPL): Ecology of marine and estuarine wetland communities, research experiences for environmental education murray@umces.edu

K-12—**Cathlyn Stylinski**, Senior Agent (AL): Lifelong science learning, links between teacher education and practice, evaluation of science education programs cstylinki@umces.edu

MADE CLEAR (Maryland Delaware Climate Change Education Assessment and Research)— **Donald Boesch**, Professor and President: Marine and estuarine ecology, marine pollution, national and international marine policy boesch@umces.edu

FORESTS/ECOLOGY/LAND USE

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INVASIVE SPECIES

Lisa Wainger, Research Professor (CBL): Ecological and economic modeling, assessment of invasive species, environmental economic indicators wainger@umces.edu

BALLAST WATER/GREEN SHIP TECHNOLOGIES— Mario Tamburri, Research Professor (CBL): Larval settlement and recruitment of non-native species, environmental sensor/green ship technologies tamburri@umces.edu

JELLYFISH

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METHANE CYCLING

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MARINE LIFE

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MARINE MICROBIOLOGY

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NUTRIENT CYCLING

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NUTRIENT POLLUTION/DEAD ZONES

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"Male crabs do a beautiful mating dance. He has to dance for her and show her he has good genes. He stands on tiptoe, spreads his claws and waves them like a fan."—Sook Chung Walter Boynton, Professor (CBL): Systems ecology, nutrient cycling in estuarine systems, food web dynamics boynton@umces.edu

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OCEANOGRAPHY

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

Larry Sanford, Professor (HPL): Coastal physical oceanography, boundary layer fluid mechanics and sediment transport lsanford@umces.edu

"The digital age has transformed so much of the science we do. Some fish stay put and others don't it turns out it's very common. It just hasn't been fully appreciated for marine fish. Now we see them—with tracking and telemetry."—Dave Secor

OYSTERS

Elizabeth North, Associate Professor (HPL): larval fish and zooplankton ecology, estuarine physical oceanography, fisheries recruitment variability enorth@umces.edu

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STOCK ASSESSMENT—**Michael Wilberg**, Associate Professor (CBL): Oyster stock assessment, dynamics of exploited populations, harvest policy development and application wilberg@umces.edu

ROCKFISH

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SEAGRASSES

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SEA LEVEL RISE

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EFFECT ON COASTAL ECOSYSTEMS— **Court Stevenson**, Professor (HPL): Ecology of marsh and seagrass systems, Poplar Island court@umces.edu

SEDIMENT

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STREAM HEALTH

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MOUNTAINTOP MINING—**Margaret Palmer**, Professor (CBL): Stream community and ecosystem ecology, restoration ecology palmer@umces.edu

TRACE METALS/TOXICOLOGY

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FACULTY EXPERTS

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"Underwater robot gliders will be deployed as storms approach the Atlantic Coast. The gliders will relay water temperatures back to hurricane forecasters to improve storm predictions."—Bill Boicourt Lee Cooper, Research Professor (CBL): Stable and radioisotope composition of organic materials in coastal waters, high latitude oceanography cooper@umces.edu

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Andrew Heyes, Research Associate Professor (CBL): Trace metal geochemistry, contaminant transport, wetlands and aquatic chemistry heyes@umces.edu "Invasive species is an enormous problem. It can change habitats and cause crashes of fisheries. The biggest transporter is ships—ballast water or what's growing on the side. Our job is to test ballast water treatment systems on ships to see how reliable they are."—Mario Tamburri

Robert Hilderbrand, Associate Professor (AL): Ecology, conservation biology, watershed, and stream habitat restoration, dynamic watershed modeling rhilderbrand@umces.edu

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