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Rachel Dixon

Rachel Dixon is a Ph.D. candidate in the Fisheries Department at VIMS. She received her Bachelor's of Science in Marine Biology from UNC-Wilmington and her Masters of Science in Marine Studies from the University of Delaware. Rachel's dissertation focuses on the recruitment dynamics of striped bass in the Chesapeake Bay.

Fishes of the Chesapeake Bay

A presentation on the diversity of fishes in the Chesapeake Bay, the methods used to sample and study fishes, and the challenges facing fishes and their habitat. Come learn what lives in our biggest local waterway!

General public, kids and above

Jennifer Dreyer

Jenny Dreyer is currently a research manager for the Benthic Ecology Lab working on oyster restoration, submerged aquatic vegetation, and various other benthic community ecology projects in Chesapeake Bay. She also curates the VIMS Invertebrate Collection. Other active research interests include polychaete taxonomy and systematics, hydrothermal vent ecology, benthic deep-sea biology, reproductive biology and ecology; and environmental impacts on benthic communities.

Benthic Invertebrates and Beyond...

What lives at the bottom of a body of water? Learn about the invertebrate diversity at the bottom of the Chesapeake Bay and beyond!

General public, kids and above

Deep Sea Biology

Learn about deep sea biology including hydrothermal vent biology, cold seep biology, whale falls and wood falls.

General public, kids and above

Travels to the end of the earth.... Antarctica

Learn about the what it takes to work in Antarctica and get to know the animals living there.

General public, kids and above

Jennifer Dreyer (Cont.)**A Career in Marine Science**

Learn generally what it takes to have a career in marine science and the wide variety of positions available.

General public, kids and above

Dr. Mary Fabrizio

Dr. Mary Fabrizio is a Professor and Department Chair in the Fisheries Science Department at the Virginia Institute of Marine Science. She was born in Buenos Aires, Argentina and grew up in and around New York City. She received an undergraduate degree in Biology from Fordham University and completed her Ph.D. in Biological Oceanography at the University of Rhode Island. Her research interests focus on the relationship between fish and their habitats. Mary was the first female professor, and subsequently the first female department chair, within the fisheries science department at VIMS. She also served as the 7th female president of the American Fisheries Society from 2007-2008.

Expedition Nepal

In 2019, a team of fisheries biologists from VIMS, led by Professor Dr. Mary Fabrizio, traveled to Nepal to study the country's freshwater fishes. Their goal was to understand how national parks - primarily designed to protect large land animals - may also protect fish habitats and diversity. Along the way they learned a great deal about the rewards and challenges associated with conducting international research. Join us as Dr. Fabrizio provides a first-hand account of the expedition - from extreme heat to wild rhinoceros encounters - and what they hope to discover with the information they gathered.

Young adults and above

Invasive Blue Catfish in the Chesapeake Bay Region

The blue catfish is a freshwater fish that was introduced to the region in the 1970s and has since increased in abundance and spread into the estuarine waters of Chesapeake Bay. I can discuss the research conducted by my lab to learn about the salinity tolerance of blue catfish, as well as other characteristics that make this fish a particularly successful invader. I can also discuss the management implications of this invasive species, including the growing fishery for blue catfish, the trophy fishery, and what managers are doing to control its spread.

Young adults and above

The Uncharismatic Forage Fishes of Chesapeake Bay

My lab has been studying forage fishes (fish that are eaten by predators such as striped bass, summer flounder, ospreys, dolphins) and their distribution throughout the Bay relative to water quality conditions and physical habitats. We have found that the extent of suitable habitats in the bay drive the abundance of some of these species, whereas the

abundance of others is driven by factors such as predation. This talk includes lots of maps depicting where habitats are suitable and unsuitable for various species, including the ubiquitous bay anchovy. The results from this study, which is based on a 17-year sampling program with monthly observations of forage fishes, are being used to guide management of forage fishes and conservation of habitats to ensure the long-term production of striped bass, summer flounder, and other targeted species.

Young adults and above

Debra Gauthier

Debra is the Chief of GIS & Web Operations for the Multispecies Research Group (MRG) and a Marine Scientist in the Fisheries Department at VIMS. My background is in Biological Oceanography (B.S. Millersville University, Pennsylvania, 1997) and Fisheries Biology (M.S. Humboldt State University, California, 2003). She started working with the Multispecies Research Group (MRG) in 2003, one year into its flagship monitoring program, Chesapeake Bay Multispecies Monitoring and Assessment Program (ChesMMAP), designed by Dr. Robert Latour, Christopher Bonzek, and James Gartland. Since then, the MRG has grown to develop an additional large-scale monitoring survey, Northeast Area Monitoring and Assessment Program (NEAMAP), take the lead on the long-running VIMS shark longline survey, develop 2 juvenile shark longline surveys in local waters (Cooperative Atlantic States Shark Pupping and Nursery, COASTSPAN), and take the lead on the long-running VIMS striped bass monitoring and tagging surveys. At present, Debra's duties with the MRG mainly focus on data mapping, web data reporting and infographics, as well as processing stomach samples for diet analysis and processing otoliths for fish age and growth analysis.

Multispecies Fisheries Research Group

In this talk, Debra provides a very broad overview of the surveys we perform. She gives background information on why we perform fisheries monitoring, discuss our sampling design, and provide some results. She concludes by discussing how the results inform management and the public of species distributions, population age and growth structure, and foraging habits.

General public, middle school and up

Predator-Prey Interactions in Fisheries

In this talk, Debra provides a specific focus on fisheries sampling to perform stomach contents analysis. She gives background information on why we perform diet analysis via stomach contents, discuss the sample processing, and provide some results. She concludes by discussing how the results inform the public of Chesapeake Bay and nearshore Mid-Atlantic food webs.

General Public

Dr. Amber Hardison

Dr. Amber Hardison is an Associate Professor in the Department of Physical Sciences at the Virginia Institute of Marine Science (VIMS). She was raised in Richmond, Virginia. Dr. Hardison received a Bachelor of Science degree in Chemistry from the University of Virginia,

earned a Ph.D. in Marine Science at VIMS, then conducted postdoctoral research at Brown University. Her research interests focus on understanding the dynamic processes influencing carbon and nutrient cycling within coastal systems and the impacts of human and climatic processes on these cycles. The lab's research approach combines novel isotopic and organic geochemical techniques in both experimental and field settings to study the sources and fates of these elements in estuarine and marine ecosystems and the role of microbes in processing these nutrients. Her projects range from the Gulf of Mexico to the Arctic.

Nitrogen, Nitrogen, Everywhere

This talk will provide the history of nitrogen loading to global coastal systems, the consequences of that input, and ways to reduce the levels of nitrogen and phosphorus in the future.

Adults, or can be modified for K-12

Dr. Kirk Havens

Dr. Kirk Havens is a Research Professor of Marine Science and the Director of the Center for Coastal Resources Management (CCRM) which has a mission to support informed decision-making on resource management issues at all levels of government, including by private and corporate citizens. Dr. Havens has a B.S. in Biology and M.S. in Oceanography from Old Dominion University, and a Ph.D. in Environmental Science and Public Policy from George Mason University. His research interests include tidal and non-tidal wetlands ecology and functional assessments, marine debris, derelict fishing gear, and plastic pollution, environmental law, public policy, and thermal imaging in animal ecology land use and watershed issues. He is an author of the book *Thermal Imaging Techniques to Survey and Monitor Animals in the Wild* <https://www.elsevier.com/books/thermal-imaging-techniques-to-survey-and-monitor-animals-in-the-wild/havens/978-0-12-803384-5>. His recent activity includes highlighting the work of the Polynesian Voyaging Society to raise awareness of ocean and coastal indigenous knowledge through the voyages of the traditional Polynesian voyaging canoe, Hōkūle‘a, to help advance the values of ecological restoration and climate change resilience as part of their "He Wa'a, He Honue - The Earth is Our Canoe" project.

Marine Debris / Plastic Pollution in the Marine Environment (plastic, microplastic, whales, worms, lost crab pots, cranberries, shotguns, biopolymers, beer, & bovine digestion - yes, it's all linked!)

Dr. Kirk Havens and his team focus on developing innovative solutions to real world problems, such as by-catch reduction in derelict crab traps, plastic pollution, and wildlife entanglement in erosion control netting. Join us as Dr. Havens describes how biopolymers – plastic-like materials produced naturally by bacteria – are being used to solve issues of ecological and economic importance.

High school and above

Dr. Kirk Haves (Cont.)**Using Thermal Imaging to Monitor Animals in the Wild**

Dr. Kirk Havens has authored the book "Thermal Imaging Techniques to Survey and Monitor Animals in the Wild" (Elsevier). Learn how thermal imaging can be used to monitor animals such as bears and panthers and even tortoises.

High school and above

The Virginia Wetland Condition Assessment Tool (WetCAT)

Understanding the relative level of stress from human disturbance on a wetland's capacity to perform valued ecosystem services, such as providing habitat or improving water quality, is important in wetlands conservation. Dr. Kirk Havens, Research Professor and Director of VIMS' Center for Coastal Resources Management (CCRM) and his team partnered with the Virginia Department of Environmental Quality to develop an online interactive mapping tool called the Wetland Condition Assessment Tool or WetCAT. WetCAT has the ability to rapidly census wetland condition at multiple scales and includes all the mapped wetlands in Virginia. WetCAT received the Governor's Technology Award and the Environmental Council of States Award.

Middle school and above

Derelict Fishing Gear in the Marine Environment

The accumulation and effects of derelict fishing gear is a worldwide problem and includes gear such as traps, pots, and nets. Once lost, derelict fishing gear can continue to capture and kill both target and non-target animals. Dr. Kirk Havens, Research Professor and Director of VIMS' Center for Coastal Resources Management (CCRM) and his team study the impacts of derelict gear in the Chesapeake Bay and other regions across the nation and how citizens can help.

Middle school and above

Dr. Chris Hein

Dr. Chris Hein is an associate professor in the Physical Sciences Department at VIMS. He received a Bachelor of Science degree from the Cornell University Department of Earth and Atmospheric Sciences, a Ph.D. from Boston University, and then completed postdoctoral research at Woods Hole Oceanographic Institution. Dr. Hein's research here at VIMS applies the tools of sedimentology and organic chemistry to investigate the link between coastal evolution and climate variability, with a goal of forecasting future coastal change in response to regionally-specific changes in climate. He has current projects in Bangladesh, Brazil, France, the Arctic, South Carolina, and the barrier islands of Massachusetts, New Jersey, Maryland, and, Virginia.

Virginia's Barrier Islands: Breakneck Change in a Rapidly Changing World

Barrier islands and their marshes and bays are home to diverse ecological communities and large-scale infrastructure. Although they are a seemingly permanent feature of our coasts, these islands are among the most rapidly-changing landscapes on Earth. No barrier island system on the U.S. East Coast changes as swiftly as that of Virginia's Eastern Shore. Join us as Dr. Christopher Hein shares the geology, human history, and modern change seen along barrier islands in Virginia and around the world.

Young adult and above

Putting Modern Sea Level Change in Context: Geologic Controls and Timescales

Virginia experiences one of the highest rates of sea-level rise in the country. This talk explores why, starting with the same forces that control the motion of the Earth's continental plates over hundreds of millions of years, right through to the role of humans today.

Young adult and above

Karen Hudson

Ms. Hudson has been at VIMS for over 20 years, with the first half of her career working on a variety of oyster-related research including molecular genetics of oyster species and marine pathogens and oyster breeding. Her more recent work has been focused on advisory service in shellfish aquaculture. In this role, she works closely with the shellfish industry, regulatory agencies and external groups whose actions directly or indirectly impact the conduct and expansion of shellfish culture in Virginia. She is actively involved in fostering the development of applied research projects to address complex shellfish culture problems. Current research focus areas include supporting shellfish health in the hatchery; shellfish seed biosecurity; and assessing vulnerability of the shellfish industry to ocean acidification and other co-stressors. Hudson provides advice and assistance for both commercial and non-commercial molluscan shellfish growers. She is the science advisor and VIMS liaison to the Tidewater Oyster Gardeners Association, facilitator of VIMS' Shellfish Aquaculture Industry Advisory Committee, and involved in providing guidance and outreach on a variety of research projects involving shellfish culture.

Rise of Oyster Aquaculture in Virginia and its Economic Importance

The story of the rise of hatchery-based aquaculture focusing on the economic trends of this industry and the role of aquaculture with the wild fishery.

Adults, General public

Methods of Oyster Aquaculture in Virginia

An overview of the two oyster culture methods including intensive (containerized) and extensive (spat-on-shell). The "how" it's done.

Adults, General public

Karen Husdon (Cont.)**VIMS' Role in Shellfish Aquaculture Research**

A high level overview of the contribution of VIMS researchers to shellfish aquaculture including the major areas of focus.

Adults, General public

Dr. David Johnson

Dr. David Johnson is a marine ecologist and an Assistant Professor in Biological Sciences at VIMS. Dr. Johnson and his group's research focuses on how ecosystems will change will be altered through time as a result of global changes. He is particularly fond of invertebrates and you can find the JLab working in the mud and water in a variety of coastal ecosystems. Dr. Johnson also places a large focus on science communication and prioritizes getting his science into the real world as much as possible. You can find him on Twitter @DavidSamJohnson!

Ghost Forests, Zombie Shrimp, and Space Fish: Strange But True Tales Of The Salt Marsh

Why do zombie crustaceans mindlessly wander the marsh? Why can't a snail let go of its past? Join us as Dr. David Johnson of VIMS answers these questions and shares stories of the strange animals wonderfully adapted to life in a salt marsh.

Young adults, General public

Shelley Katsuki

Shelley Katsuki is the Kauffman Aquaculture Center (KAC) Manager and Field Specialist at the Aquaculture Genetics and Breeding Technology Center. She received her Bachelor's Science in Biology from St. Francis University and her Master's of Science in Biology from Old Dominion University. Shelley is responsible for all daily operations at KAC including broodstock conditioning, water filtration, algal culture, spawning and larval rearing of triploid and tetraploid oysters.

The ABC's of Oyster Aquaculture in Virginia

Discover how VIMS researchers produce the polyploid oysters that transformed Virginia's oyster aquaculture industry. Shelley Katsuki presents an overview of oyster aquaculture with a focus on the triploid and tetraploid oyster work done at the Kauffman Aquaculture Center in Topping, VA- one of two oyster hatcheries operated by the

Aquaculture Genetics and Breeding Technology Center (ABC) at VIMS.

Young adults, General public

Dr. Lisa Kellogg

Founding Director, RecFish, and Assistant Professor, Biological Sciences, VIMS; Dr. Kellogg is a research scientist at the Virginia Institute of Marine Science whose work has focused primarily on oyster reefs and oyster aquaculture. The concept for RecFish grew out of her desire to better understand the value of oyster reef habitats to finfish in Chesapeake Bay, recognition that oyster reefs are rarely sampled as part of traditional fishery survey efforts, and interest in how data collected from the recreational anglers might be used to supplement existing fisheries data. The daughter of a wildlife biologist, Dr. Kellogg has been fascinated by animals and how they interact with each other and their environment for as long as she can remember.

RecFish: Engaging Recreational Anglers as Community Scientists

Dr. Lisa Kellogg will discuss development of the RecFish app, winner of VIMS Innovation Fund awards in 2019 and 2020. RecFish will aid in fisheries management by providing fish population data gathered by anglers. Get an insider's look at how this tool will help in collecting important information about Chesapeake Bay fishes and how you can help with this effort.

Adults, General public

Dr. Molly Mitchell

Dr. Molly Mitchell is a Research Assistant Professor and the Program Director of the Master of Arts degree program at the Virginia Institute of Marine Science. Dr. Mitchell is a three-time William & Mary alumna, earning her bachelor's degree in biology and environmental science and her master's degree and Ph.D. in marine science from the University. Dr. Mitchell's research focuses on shifts in coastal resources due to the interaction of sea level rise and human-driven changes. She works with decision-makers and resource managers to translate research and current scientific understanding into practical recommendations. In her role as M.A. Program Director, she oversees the implementation of VIMS' new professional degree program.

Rising Tides, Sinking Coast: How Coastal Communities can Adapt to Surging Sea Levels

Rising seas, frequent flooding, and subsiding land threatens coastal communities around the globe. Dr. Molly Mitchell, a Research Assistant Professor with the Center for Coastal Resources Management at the Virginia Institute of Marine Science, has made it her life's work to understand these threats and how they affect communities. Dr. Mitchell will give us a primer on sea level rise - what causes it, how it is changing around the United States, and what can be done to address it - as well as share the work she does to promote resilience in coastal communities.

College, General Public

Dr. Chris Patrick

Dr. Chris Patrick is an Assistant Professor in the Biological Sciences department and Director of the VIMS SAV Monitoring and Restoration Program. He received his Bachelor's of Science in Behavior, Ecology, Evolution, and Systematics from the University of Maryland College Park

and his Ph.D. in Ecology from the University of Notre Dame. Prior to joining the faculty at VIMS Dr. Patrick was a Research Scientist at the Smithsonian Environmental Research Center, a AAAS Science & Technology Policy Fellow with the EPA Office of Water, and a faculty member at Texas A&M University – Corpus Christi. Dr. Patrick is a community and ecosystem ecologist with a special interest in marine and aquatic systems. He currently works both on the coastal rivers in the Gulf Coast of Texas and with submerged aquatic vegetation (SAV) of the Chesapeake Bay. His research investigates processes that control biological communities across space and time and what those communities contribute as ecosystem services.

The Next Generation of Seagrass Research: Using the Past as a Guide to Address Future Challenges

For more than 40 years VIMS has led one of the most successful seagrass monitoring and restoration programs in the world. Our long-standing research program has greatly contributed to the science community's understanding of seagrasses and the factors that threaten their survival. There is now a new scientist at the program's helm and he is using lessons learned from the past to guide the research forward. Join us as Dr. Chris Patrick, Assistant Professor at VIMS, discusses what we have learned about seagrasses over four decades, the challenges that lay ahead, and how his team is working to understand and address those challenges.

General public

Ups and downs in the Anthropocene: Understanding the processes driving resistance, resilience, and temporal variability in coastal ecosystems.

Anthropogenic climate change is simultaneously changing both average environmental conditions, a press disturbance, and the frequency and characteristics of extreme events, pulse disturbances. This makes it critically important to understand the factors that control ecosystem resistance and resilience so that we can better predict what temporal variability in ecosystem structure and function will look like in the future. Drawing from several different projects in coastal ecosystems, I present examples of how climatic drivers are affecting the resistance and resilience, and how these characteristics of ecosystems relate to one another. These data stories include work on invertebrate and fish communities in rivers of coastal Texas, seagrass ecosystems in the Chesapeake Bay, and a meta-analysis of ecosystem responses to hurricanes in the Western Atlantic, Caribbean, and Gulf Coast across systems and response variables. Together these examples suggest that systems tend to organize around either resistance or resilience, and that the press disturbance of climate change may be selecting for more resilient rather than resistant systems in the near term.

College to adults, General science audience

Kristen Sharpe

Kristen Sharpe is the Assistant Director of Outreach and Engagement at the Virginia Institute of Marine Science. Kristen received her Master's of Science degree at VIMS in 2021, where she

investigated the role that zooplankton and their fecal material play in the carbon cycle in the York River (a major tributary to the Chesapeake Bay). Originally from central New York, she received her B.S. in Biological Applications of Environmental Studies from the State University of New York College of Environmental Science & Forestry (SUNY-ESF) in 2013. Prior to entering the graduate program in 2018, she worked for nearly 5 years as the Marine Education Specialist at the Chesapeake Bay National Estuarine Research Reserve in Virginia (CBNERR-VA), an organization with a federal/state partnership between NOAA and VIMS. She has a genuine passion for outreach and education, and loves having the opportunity to share her research and interest in marine science with children and adults of all ages!

Poop in the Ocean

Even though we don't like to talk about it, poop plays an important role in the health of living organisms as well as entire ecosystems! Animal poop plays a critical role in supporting marine food webs, providing important information for researchers and conservationists, and even regulating our global climate! VIMS Masters Student Kristen Sharpe will provide a general overview of the importance of poop in the ocean, and an explanation of how her research on zooplankton poop in the Chesapeake Bay helps us forecast and prepare for the impacts of climate change.

K-12, General public

Zoop Soup (and Poop): The Importance of Zooplankton

Zooplankton are all the animals drifting around in our oceans, seas, and bodies of fresh water. They range in size from microscopic to living in colonies as big as a school bus! VIMS Masters Student Kristen Sharpe will provide a general overview of the diversity of zooplankton species, shapes, and sizes; the ecological roles of these creatures; and how her research on zooplankton in the Chesapeake Bay (and their poop) aims to help us forecast and prepare for the impacts of climate change.

Middle school and above, General public

Dr. Jessica Small

Dr. Jessica Moss Small is the Director of the Aquaculture Genetics and Breeding Technology Center and an Associate Professor of Fisheries Science at VIMS where she runs the breeding program, facilitates other projects by VIMS researchers, interacts with industry and conducts research tied to breeding. She received a Bachelor's of Science in Marine and Freshwater Biology from the University of New Hampshire, and a Ph.D. in Marine Science from VIMS. Dr. Small's research interests are broad and include how genetics, parasites, and ecology impact aquaculture species. She has given scientific talks throughout the US and abroad and enjoys speaking to everyone, from scientists to children.

Dr. Jessica Small (Cont.)

Where do the oysters you eat come from?

Learn how baby oysters are made, how they are grown and what it takes to get them to your dinner plate.

Middle School and above

Breeding the best oyster

Oyster breeding is largely similar to what has occurred while domesticating chickens and cows. Learn how breeding is helping oysters live longer, grow faster and have better meat quality.

Adults

What is an oyster and why are they important?

Oysters are amazing! Learn how they help the environment, create habitat for fish and crabs and also can be eaten!

Children and above

Mara Walters

Mara Walters is a second-year Ph.D. student in the Biological Sciences Department at VIMS, where she is advised by Dr. BK Song and Dr. Rob Hale. She earned her Bachelor's degree in Biology at Wheaton College in Wheaton, Illinois. Among other experiences before coming to VIMS, Mara was an intern at Mote Marine Laboratory in Sarasota, Florida, where she got to study the impacts of oil spills on gene expression in fish and the ecotoxicology of red tide toxins. Mara's research interests lie in the impacts of microplastic pollution and plastic additives on the health of aquatic organisms, including aquatic microbes and oysters. She hopes to inspire people to use less plastic to be better environmental stewards.

Plastics in the Environment

Everyone has seen images of plastic polluting the environment in the news - trapped sea turtles, dying seagulls, and the Great Pacific Garbage Patch. Due to our extensive and increasing use of plastics, plastic can be found almost anywhere on earth, including deep in the Mariana Trench and up on Mount Everest. Much of this plastic pollution is in the form of microplastics, tiny pieces of plastic formed, in part, by the breakdown of larger plastic products. Because these plastic pieces are so small, they can travel further and impact more organisms. The story is further complicated by the complex chemical makeup and biological interactions of plastic in the environment. In this talk, Ashley will help us understand plastics, their impact, and what the future may hold.

Adults, or can be modified for K-12

Mara Walters (Cont.)**“Invisible” Plastic Pollution: The Lesser-Known Side of Our Plastic Problem**

Have you ever noticed those “BPA-free” labels on canned foods? Have you read about microplastics in the news? We’ve all seen the plastic debris that accumulates on the sides of our roads and ends up in our waterways. As if that weren’t bad enough, there’s more to the problem of plastic pollution than can be seen with the naked eye. In this talk, you’ll learn about the types of plastic pollution that we can’t often see but which are encountered by wildlife (and us!) daily—microplastics, nanoplastics, and plastic additives. These pollutants may cause even more harm than their visible counterparts and so are just as important in discussions about how to solve our plastic problem.

Adults, General Public