

# Impact

**VIMS** | WILLIAM & MARY  
VIRGINIA INSTITUTE OF MARINE SCIENCE



Algal bloom in the York River.  
© W. Vogelbein

## News From VIMS

### INTENSE, WIDESPREAD ALGAL BLOOMS COLOR CHESAPEAKE BAY

Water sampling and aerial photography by VIMS researchers show that the algal blooms that colored lower Chesapeake Bay this August were among the most intense and widespread of recent years.

VIMS professor Kimberly Reece reports that water samples collected near the mouth of the York River on August 17 contained up to 200,000 algal cells per milliliter, the densest concentration she has seen in nearly 10 years of field sampling. A sample with a concentration of even 1,000 algal cells per milliliter is visible to the naked eye and considered dense enough to be called a bloom.

The current blooms are dominated by a single-celled protozoan called *Alexandrium monilatum*, an algal species known to release toxins harmful to other

marine life, particularly larval shellfish and finfish. Beginning in mid-August, VIMS received sporadic and localized reports of small numbers of dead fish, oysters, and crabs from the lower York River and adjacent Bay waters associated with nearby blooms, although a direct cause/effect relationship has not been established for any of these events.

Aerial photography and water sampling by VIMS professor Wolfgang Vogelbein between August 17th and 27th confirmed the blooms' intensity, and revealed that they extend much farther into the open waters of Chesapeake Bay than previously reported and also reached up the York River as far as West Point.

"This is new and important information," says Vogelbein, "as we have never appreciated that *Alexandrium*

extends so far into the mainstem of the Bay, or so far up the York River." Bloom patches in the mainstem reach from the York River to the mouth of the Rappahannock River, across the Bay to within 3-4 miles of Cape Charles, and as far south as the Chesapeake Bay Bridge-Tunnel. The bloom patches are most dense on the western side of the Bay, with other areas experiencing less activity. The main body of the bloom is several miles off shore and thus was not detected prior to the recent fly-overs facilitated by the Virginia Marine Resources Commission.

*Alexandrium monilatum* is one of several species of harmful algae that are of emerging concern in Chesapeake Bay. It was first conclusively detected in Bay waters in 2007, when Reece and

*Continued on page 4*

### EMMY AWARD-WINNING TV SHOW FOCUSES ON VIMS SCIENCE

The cast and crew of the *Aqua Kids* television series traveled to VIMS' Gloucester Point and Wachapreague campuses in July to interview scientists and learn about local marine research as they filmed several episodes for their 11th season airing this fall.

An educational children's program, *Aqua Kids* strives to educate young people about the importance of protecting marine environments and the animals that live there. The show is broadcast weekly on 128 stations across the United States.

The *Aqua Kids*' cast and crew spent almost two weeks at VIMS, helping researchers collect animals for the annual Juvenile Fish and Blue Crab Survey, re-establish

scallops on Virginia's Eastern Shore, and study terrapin turtles alongside researchers with the Chesapeake Bay National Estuarine Research Reserve. They also did field and lab work related



The *Aqua Kids* learn about underwater gliders with Asst. Professor Donglai Gong. © E. Fryer

to marine debris, seagrasses, marsh habitats, climate change, oysters, blue crabs, underwater gliders, and more.

VIMS Professor Ken Moore says he was "very happy to have had the opportunity to answer the *Aqua Kids*' questions. Working with a younger audience is really important because they're our next generation of citizens and scientists."

George Stover, *Aqua Kids* producer, says, "The cast and crew had an incredible week at VIMS. The research they are doing is critical to the health of the Bay and its surrounding waterways, wetlands, and wildlife. The episodes featuring the VIMS scientists will be highly educational and informative"

The new episodes will air between October 1st and December 31st on WTVZ.

## EASTERN SHORE LAB WELCOMES NEW DIRECTOR, HOSTS INTERNS

It's been a busy few months at the Eastern Shore Laboratory in Wachapreague, which welcomed Dr. Richard Snyder as its new Director this spring. The lab also hosted a cohort of student interns this summer as part of its full complement of research and educational activities. Snyder says plans for a new molecular biology lab are just one of his ideas for establishing the ESL as a year-round research enterprise. The ESL's Summer Intern Program—now in its 7th year—hosted Kelsey Bisker (Franktown, Clemson University); Tyler Chandler (Melfa, University of Virginia);



Dr. Richard Snyder leads staff on a tour of the ESL campus. © E. Fryer

Emilee Dize (Onancock, James Madison University); Parker Kellam (Onancock, Washington and Lee University); and Justin Shaffer (Franktown, Virginia Tech). Snyder “whole-heartedly thanks the donors for supporting this program, and the parents for loaning us their young adults for the summer.”

### VIMS Eastern Shore Lab Marine Life Day Saturday, September 26th 12pm – 4pm

Join us in Wachapreague to learn about marine life and VIMS' Eastern Shore Laboratory! Visit the website for more information. <http://bit.ly/eslmlday>



Eastern Shore Lab interns pose with program donors. © E. Fryer

## GRAD STUDENTS MAKE WAVES

VIMS graduate students continue to excel on the local and national stage. Dr. Jonathan Lefcheck, a recent PhD graduate, was awarded the 2015 Thatcher Prize for Excellence in Graduate and Professional Study during William & Mary's commencement ceremony in May. He is the sixth VIMS student to receive the honor. Three fellow graduate students are applying their scientific expertise in our nation's capital as John A. Knauss Marine Policy Fellows. The fellows—who began their yearlong placements in legislative and executive offices in February—are PhD student Alison Colden (staffer for California Congressman Mike Thompson), master's student Emily Egginton Skeehan (Strategic Planning and External Affairs Coordinator at NOAA), and recent master's graduate Stephen Manley (Marine Mammal Health and Stranding Fellow with the National Marine Fisheries Service).

## VALUE OF VIRGINIA AQUACULTURE REACHES ANOTHER HIGH

VIMS' annual survey of aquaculture in the Commonwealth shows that Virginia shellfish farmers sold \$55.9 million in oysters and clams in 2014, an increase of 14% total revenue for clam growers and 39% for oyster growers.

“It's all-around good news for the industry,” says Karen Hudson, VIMS extension affiliated with Virginia Sea Grant. Hudson co-authored the “2014 Virginia Shellfish Aquaculture Situation and Outlook Report.”

Virginia has been the nationwide leader in growing hard clams for years, and in 2014 its clam industry reached an all-time high of 243 million sold. Virginia's oyster growers sold 39.8 million cultured oysters in 2014, making the Commonwealth a leader in East Coast production for the year.

“Our report provides a snap-shot of how industry is doing, and everything I'm hearing from growers is that demand is up,” says Hudson. She suggests there could be any number of driving forces.

The report—produced each year since 2005—is based on an industry survey completed during the first quarter of 2015.

—Janet Krenn/VASG

## FACULTY HONORED WITH PLUMERI AWARDS

Professors Jeff Shields and Harry Wang have been selected as recipients of 2015 Plumeri Awards for Faculty Excellence at William & Mary.

The award—established in 2009 with a generous gift from Joseph J. Plumeri II '66, D.P.S. '11—provides \$10,000 for honored faculty members to use for research, summer salaries, or other stipends associated with scholarly endeavors. “I am proud to honor those professors whose remarkable service to the institution has helped so many students pursue their dreams with passion and integrity,” says Plumeri.

Shields' research focuses on diseases of crabs, lobsters, and other

commercially important crustaceans, while Wang develops high-resolution computer models to better predict storm-surge flooding.

“We greatly appreciate Mr. Plumeri's foresight and generosity in supporting our faculty,” says VIMS Dean and Director John Wells. “Previous recipients have used their stipends to support student research in our labs here at VIMS, at field sites throughout Chesapeake Bay, and around the world.”

Wang says the award “means a lot to me. It's an endorsement of many years of work and my passion toward Chesapeake Bay.” He plans to use a portion of

the funds “to collaborate with European scientists on developing cutting-edge numerical models for street-level inundation modeling.”

Shields says “Receiving this recognition of achievement from my peers means that I've contributed to the success of the Institute and the College through my expertise. I plan to use the award to fund a much-needed sabbatical to catch up on my writing.”



VIMS professor Jeff Shields



VIMS professor Harry Wang

## NEW WEBSITE PROMOTES COASTAL RESILIENCE

NOAA, the U.S. Army Corps of Engineers, FEMA, and VIMS have joined with representatives from state agencies, non-governmental organizations, academia, and private industry to launch a new community of practice designed to protect U.S. coastlines.

The partnership promotes a hybrid engineering approach that integrates natural or “green” measures with hard or “gray” structural ones at the landscape scale. The effort is referred to as a “Systems Approach to Geomorphic Engineering,” or SAGE. The goal is to help coastal communities identify more effective and affordable means of coastal protection against an increasing threat of more coastal storms, rising sea level, and fiscal constraints at all levels of government.

The primary portal for SAGE is a one-stop website—<http://sagecoast.org>—that makes resources readily available to resource managers, community leaders, developers, and the public. The website includes a database describing coastal resilience projects around the nation, including “Living Shorelines” for shoreline stabilization, habitat restoration, and floodplain management. Each project includes a variety of site, design, and partner information.

Carl Hershner, director of the Center for Coastal Resources Management at VIMS and a member of the SAGE Leadership Team, says “The variety of projects—from developing an 80-foot living shoreline to installing 3 acres of tidal wetlands—demonstrates the many ways communities can incorporate SAGE into their planning.”

To join SAGE or receive The SAGE Report newsletter, sign up online at <http://sagecoast.org/info/contact.html> or e-mail [info@sagecoast.org](mailto:info@sagecoast.org).



Living shorelines reduce erosion and enhance wetland habitat. © D. Malmquist

## NEW STUDENTS ARRIVE ON CAMPUS



VIMS welcomed 21 new graduate students to its Gloucester Point campus in August, bringing overall enrollment in William & Mary’s School of Marine Science to 88 students. Selected from a pool of 119 applicants, this year’s class includes 15 master’s degree students and 7 doctoral students. The matriculating class includes 6 students from Virginia, 11 from out-of-state, and 4 from international locations.

From L: Fei Da, Shanna Williamson, Luke Bassett, Elisabeth Clyne, Jingwei Song, Lauren Huey, Xun Cai, Dan Crear, Julie Krask, Gail Schwieterman, Taylor Goelz, Savannah Michaelson, Olivia Phillips, Bethany Williams, Karinna Nunez, Dan Coleman, and Diego Biston Vaz. Not pictured: AJ Johnson, Joseph Matt, Kristen Omori, and Haixing Wang.

## BIOLUMINESCENCE LIGHTS UP BAY

A dense bloom of bioluminescent algae lit up the waters of lower Chesapeake Bay during August. The spectacular glow drew nocturnal crowds to local beaches and generated significant coverage in local media. Responsible for the glow was a toxin-producing algae that has been implicated in earlier “harmful algal blooms” or HABS (see photo to right). Learn more at [vims.edu/habs](http://vims.edu/habs).



(Above) Outreach educator Kattie McMillan pours York River water onto the beach, where it makes a bioluminescent splash.



© S. Maples



© S. Maples

## FACULTY IN TOP TIER OF GLOBAL OYSTER RESEARCH

A new analysis shows that 4 VIMS professors rank among the 20 most prolific authors of oyster-related research articles worldwide. As an institution, VIMS ranks eighth in the world in provision of oyster-related publications during the last three decades.

The study, by researchers at the Chinese Academy of Sciences' Institute of Oceanology, analyzed bibliographic and keyword information from Thomson Reuters' Science Citation Index-Expanded© to identify authorship, priority research areas, and emerging research trends among 11,493 oyster-related publications from 1991 to 2014. The study appeared in the June 2015 issue of *Aquaculture International*.

Citing the global importance of oysters in improving water quality through filtration, building reefs that sustain shallow-water ecosystems, and supporting an international aquaculture industry, the authors write that the aim of their paper is to provide "a comprehensive portrait of global oyster research" in order to help "establish directions for further" studies.

VIMS' top-tier oyster researchers are Drs. Eugene Burreson and Roger Mann (tied in 9th place with 64 oyster-related publications each); Dr. Stan Allen (tied in 12th place with 57 publications); and Dr. Kimberly Reece (tied in 15th place with 54 publications). To put these numbers in perspective; the analysis also found that of the 23,414 authors worldwide who had authored or co-authored at least one oyster publication since 1991, 93.1% contributed less than 5 papers.

VIMS Dean and Director John Wells says the results "clearly show the leading role our researchers play in generating the basic and applied knowledge needed to restore Chesapeake Bay's wild oysters, and to continue the sustainable growth of our region's rapidly expanding oyster farms."



Oysters play a key role in the Chesapeake Bay ecosystem and are a primary focus of research at VIMS. © R. Seitz.

## BAY'S UNDERWATER GRASSES UP 27%

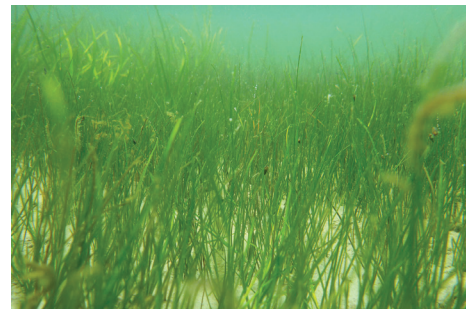
An annual survey led by researchers at VIMS shows that the abundance of underwater grasses in Chesapeake Bay increased 27% between 2013 and 2014, continuing an upward trend initiated the previous year. The increase reflects an upsurge from 59,711 acres to 75,835 acres, 41% of the baywide 185,000-acre restoration goal.

VIMS tracks the abundance of underwater grasses as an indicator of Bay health for the Chesapeake Bay Program, the federal-state partnership established in 1983 to monitor and restore the Bay ecosystem.

Professor Robert "JJ" Orth, head of the Seagrass Monitoring and Restoration Program at VIMS, says this year's numbers "represent a continued recovery from strong declines in 2011 and 2012 that had reduced seagrass abundance to a level last reported for the Bay in 1986."

Orth attributes this year's boost in bay-grass abundance to a continuing rapid expansion of widgeon grass in moderately salty waters, including areas in which underwater grasses had not been observed in previous surveys.

"It's always impressive to observe how rapidly these species spread and grow," says Orth. "The data offer hope to many of us who have watched these



Widgeon grass. © E. French/VIMS.

communities declining in our lifetime, that as the efforts to clean up the Bay continue, these populations can recover rapidly. It shows that we can't give up on our efforts to improve water quality for the plants and animals that depend on us to make this happen."

Underwater grasses are critical to the Bay ecosystem. They provide habitat and nursery grounds for fish and blue crabs, serve as food for animals such as turtles and waterfowl, clear the water by reducing wave action, absorb excess nutrients, and reduce shoreline erosion. They are also an excellent measure of the Bay's overall condition because their health is closely linked to water quality.

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*Algal Blooms, continued from page 1.*

colleagues used microscopy and DNA sequences to identify it as the dominant species of a bloom that persisted for several weeks in the York River. There are generic reports of *Alexandrium* in the Bay from the mid-1940s, and specific reports of *A. monilatum* in the mid-1960s, but none in the intervening decades.

Reports of algal blooms in the lower York River started around July 22nd. As in recent years, the initial summer blooms began with concentrations of the alga *Cochlodinium polykrikoides*, before shifting after 2-3 weeks into blooms dominated by *A. monilatum*. The *A. monilatum* bloom in the York River grew markedly less dense beginning in the last week of August.



Wolf Vogelbein, Sarah Pease, and Kim Reece collect oysters for HAB testing. © D. Malmquist

## LEGISLATORS CONGRATULATE VIMS ON 75TH ANNIVERSARY

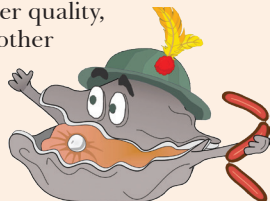
U.S. Senators Mark Warner and Tim Kaine and U.S. Representative Rob Wittman have introduced a resolution congratulating the Virginia Institute of Marine Science on its 75th anniversary in 2015. The resolution expresses the Virginia lawmakers' appreciation for the 75 years of service to the environment by faculty, staff, and students at VIMS and in William & Mary's School of Marine Science.

For access to the full text of the House and Senate versions of the resolution, visit <http://bit.ly/congresvims>



## OYSTOBERFEST OCTOBER 23, 2015

Want to eat delicious half-shell or flame-roasted oysters while dancing to the musical stylings of Slapnation? Visit VIMS on October 23 to celebrate our 75th anniversary and the recent upsurge in farmed oysters during “Oystoberfest.” The event commemorates VIMS’ long-standing leadership in marine science, including recent breakthroughs in aquaculture research that have helped a once-struggling Virginia oyster industry stage a remarkable rebound. Gifts to the VIMS Foundation for this event will support our research, education, and advisory service programs—with continued benefits not only for oysters but for fish, clams, scallops, crabs, seagrasses, water quality, and the many other areas of VIMS research that benefit Virginia, the Bay, and beyond.



The event will take place rain or shine at the Gloucester Point Campus. Event dress is casual. We will also be roasting up some bratwurst to give the event a German Octoberfest theme. This is a **TICKET ONLY** event, with a limited number of tickets available. For more information, visit [www.vims.edu/oystoberfest](http://www.vims.edu/oystoberfest) or contact Jennifer Dillon, 804-684-7226 or Lisa Phipps, 804-684-7099, email: [lcphip@vims.edu](mailto:lcphip@vims.edu).

Thanks go out to our early sponsors: Phillips Energy Inc, Waypoint Seafood and Grill, Henry and Nancy George, and Blue Water Yacht Sales.

## “MERMAID CUP” GOLF TOURNAMENT

The Peninsula chapter of the Associated General Contractors of Virginia will hold the “Mermaid Cup” Golf Tournament on September 17, 2015 at the Williamsburg National Golf Club-Yorktown Course, 3700 Centerville Road in Williamsburg.

Registration begins at 10:30 am, with a shotgun start at 12:00 pm. Cost is \$125 per person, which includes greens fee, cart, sleeve of balls, lunch, dinner, refreshments, and prizes. All proceeds will benefit the VIMS Foundation, which supports our research, education, and advisory services programs.

To register for the event, visit [www.agcva.org/calendar](http://www.agcva.org/calendar) and click on Sept. 17. For questions, contact Don Sproul at 757-873-6869. Preregister by Sept. 13th.



## NATALE CHALLENGE A HUGE SUCCESS

Thank you to Charlie Natale and to all of the supporters who contributed and helped us achieve the \$10,000 match for the VIMS Graduate Student Support Endowment (GSSE). The Challenge encouraged participation and increased giving by faculty, staff, friends and alumni. This and other student endowments are crucial for providing flexible funding for student needs.

## DOMINION FOUNDATION GRANT

The Dominion Foundation, the philanthropic arm of Dominion Resources, Inc., has given VIMS a \$25,000 grant to support the “Protecting and Preserving Salt Marsh Habitat” project headed by Assistant Professor Matt Kirwan. Salt marshes play a key role in the Chesapeake Bay ecosystem and provide an important line of defense to protect against storm surge and sea-level rise.

## NUNNALLY TRUST NEWS

The Moses D. Nunnally, Jr. Trust has given a generous gift in support of the Nunnally Ichthyology Collection Endowment, a key pillar for supporting VIMS’ “library” of more than 228,000 preserved fish specimens. These funds will help collection staff at VIMS develop new education and outreach programs, continue to digitize collection records, and add even more specimens to what is already the largest fish collection in Virginia.

## TAG DAY 2015

On November 4 VIMS and William & Mary will host our 3rd annual Tag Day— 24 hours to highlight how private support benefits our people and campuses. During the day, VIMS staff will affix tags to everything from buildings to classrooms to people to show that they exist in part due to generous donations from alumni, parents, and friends. Through Tag Day we hope current students and people like you who care about the Bay will further appreciate the importance of private giving to VIMS’ mission. Visit our Facebook page ([www.facebook.com/fbvims](http://www.facebook.com/fbvims)) and Twitter feed ([https://twitter.com/VIMS\\_News](https://twitter.com/VIMS_News)) for photos of the event!



Tag Day at VIMS is a fun event for the entire community.

## THE AMAZING RAISE

September 16th & 17th is the annual Amazing Raise! Hosted by the Community Foundation Serving Richmond & Central Virginia, this 36-hour online giving challenge inspires and empowers citizens— regardless of where they call home—to support Central Virginia’s nonprofit organizations. To sweeten the pot, when you give during the Amazing Raise!, you can help VIMS and other favorite nonprofits with additional incentive prizes ranging from \$500 to \$15,000. You can also participate by joining The Amazing Raise 5K on Thursday, September 16, which gives you a chance to run or walk through the beautifully landscaped roads and serene trails of Boulders Office Park in Richmond to celebrate your favorite local charity. To register for the fun run/walk or for more information on the overall event, visit <https://www.theamazingraise.org>.

## UPCOMING EVENTS

### **September 15, 6pm-8pm**

Discovery Lab: Echinoderms, VIMS  
Catlett-Burruss Research and  
Education Lab

### **September 17, 10am-12pm**

Mermaid Cup Golf Tournament  
Williamsburg National Golf Club  
\$125 per person Register by Sept.  
13 at [www.agcva.org/calendar](http://www.agcva.org/calendar)  
(choose Sept. 17 to sign up)

### **September 18, 10:30am-12pm**

VIMS Public Tour, Watermen's Hall,  
Visitors Center/Lobby

### **September 24, 7pm-8:30pm**

After Hours Lecture: Antarctic  
Edge: 70° South, film screening in  
Watermen's Hall

### **September 26, 12pm-4pm**

VIMS Eastern Shore Lab Marine  
Life Day. VIMS- Seawater Facility  
(Wachapreague)

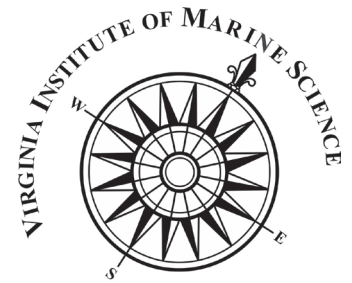
### **October 8-10**

VIMS 75th Anniversary  
Homecoming  
VIMS Watermen's Hall, Lobby

### **October 23, 6:30pm-9pm**

Oystoberfest with Slapnation Band,  
Gloucester Point  
\$75 per person  
To sponsor the event or to  
purchase tickets visit:  
[www.vims.edu/oystoberfest](http://www.vims.edu/oystoberfest)

*Reservations required for most events; age restrictions may apply.  
Visit [www.vims.edu/public](http://www.vims.edu/public) or call 804-684-7061 for details.*



The Matthew Fontaine  
Maury Society

## JOIN THE MAURY SOCIETY TODAY

Maury Society members—VIMS supporters who make donations of \$1,000 annually—are honored and celebrated at VIMS events, listed in the VIMS honor roll, and receive special recognition in our annual report. To become a member of the Maury Society, visit [www.vims.edu/impact](http://www.vims.edu/impact), and make your gift today.

[www.vims.edu/impact](http://www.vims.edu/impact)

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