



Photo credit: Wolf Vogelbein.

Impact

FALL 2024 NEWSLETTER

VIRGINIA INSTITUTE OF MARINE SCIENCE | WILLIAM & MARY'S BATTEN SCHOOL OF COASTAL & MARINE SCIENCES

\$100M GIFT TO ESTABLISH WILLIAM & MARY'S BATTEN SCHOOL OF COASTAL & MARINE SCIENCES

THIS HISTORIC GIFT IS THE LARGEST EVER TO A UNIVERSITY IN SUPPORT OF COASTAL AND MARINE SCIENCE EDUCATION, RESEARCH AND SOLUTIONS

The accelerating pace of global change poses grave challenges to marine systems and to billions of people who live near coastlines. Worldwide, coastal communities face existential threats: rising sea levels, increased storm intensity and flooding, loss of agricultural land and impaired water quality. At this crucial moment, William & Mary (W&M) will lead the way forward.

A transformational \$100 million gift from philanthropist Jane Batten HON '17, L.H.D. '19 will catalyze the newly named Batten School of Coastal & Marine Sciences. Batten's visionary gift will position W&M and its Virginia Institute of Marine Science (VIMS) as the premier destination for developing solutions to these threats—building

on the university's strong scientific reputation and unmatched expertise in coastal resilience.

This is the biggest and boldest gift ever given to a university for a school dedicated to coastal and marine sciences. It is the largest gift in W&M's 331-year history.

GLOBAL IMPACT

Through this gift, Batten is calling on the global community to unite in supporting the school's groundbreaking research and innovation.

"William & Mary has long been at the vanguard of research tackling urgent local, national and international challenges. No institution is better positioned to address global change," said President Katherine Rowe. "By investing in bold ideas and new partnerships, the Batten School will power 'science for solutions' for Virginia and the world."

Rapid global change—a term that encompasses more than just climate change—is greatly deteriorating ecological, economic and social stability in coastal communities and marine systems. It impacts approximately 3.2 billion people worldwide, including 128 million in the U.S. who live near coastlines. In Virginia alone, it affects nearly five million people who live in coastal regions.



>From left to right: Virginia Senator Tim Kaine, W&M President Katherine Rowe, Jane Batten HON '17, L.H.D. '19, and VIMS Director/Batten School Dean Derek Aday at the announcement of Batten's historic gift. Photo credit: Jenny McQueen.

GLOBAL MOVEMENT

Batten views her gift as just the beginning.

"This gift propels us forward toward great promise and progress," Batten said. "I am confident that it will spark significant change, building resilience in coastal communities in the Commonwealth and across the globe for generations to come."

The university has set a goal of raising at least another \$100 million from state, federal and private sources to realize fully the vision for the school.

"I'm calling on fellow philanthropists, government leaders, alumni and friends to join me in taking action," Batten added. "I've always believed that philanthropy is not just something you

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ENDOWMENT FUND SUPPORTS UNIQUE INTERNSHIP FOR EASTERN SHORE STUDENTS

"I learned so much," said Carter Nottingham, now a freshman at Virginia Tech, as he spoke about his recent research into scallop DNA and morphology as part of the Bonnie Sue Internship Program with VIMS and William & Mary's Batten School of Coastal & Marine Sciences at the Eastern Shore Lab (ESL). "I don't think many kids my age get to experience what I've experienced."

Nottingham was one of five students accepted into the 2024 Bonnie Sue Internship Program for summer interns. "This is a great program, one of the better things we do, giving young students hands-on experience in marine science" said ESL Director Richard Snyder, addressing attendees who gathered at ESL in mid-August to watch the interns present the results of their individual research projects. "It helps students see what their careers might be, and most interns do stay in this field, so it gives them a jump start."

High school and college interns assist ESL faculty and staff with ongoing research projects. Kendyl Farrell, another Bonnie Sue intern and a sophomore at Virginia Tech, spent the summer trawling and studying nekton such as fish, squid and crabs, marine animals with the ability to move and swim independently of currents. "This is something I really want to do with my life," said Farrell, "so I thought this was the perfect opportunity to get the field experience and extra knowledge."

Nathan Jones, now a freshman at Salisbury University who used his internship to study microbial biofilms, agreed. "It was very beneficial because I've never been in a marine biology setting, and it's really set me up for the future and the work in this type of environment."

The internship is also unique in that it offers opportunities exclusively to local students from the Accomack and Northampton Counties on the Eastern Shore of Virginia. "I feel that this year

really showed me how vital all the organisms are around here," said Farrell. "It really opened my eyes to how important where we live is and the environment around us."

Eastern Shore native Reba Turner Smith can attest to the influence of the program. Once an intern, Turner Smith is now ESL's Castagna Shellfish Research Hatchery manager and a senior research specialist. "I remember getting a very broad view of what it would be like to work in research," she said. "I was able to tease out what I was good at, what I liked and what I didn't."

The Bonnie Sue Internship Program was started with enthusiastic support from the local community, championed by Steve Johnsen HON '18, a former Eastern Shore resident and former president of the VIMS Foundation who was instrumental in establishing and maintaining the endowment fund. "As the program continued, there were additional challenges getting funding and we recognized there was a need to solidify that."

Johnsen approached Robert "Bobby" Turner, who for years had captained a charter fishing vessel in the area, the *Bonnie Sue*, which had been built by Turner's father and named for his mother. Johnsen collaborated

with Turner to find support for the internship program. "Thousands of people went out with Bobby," said Johnsen. "We did an outreach program and many of them gave, and many of them still give in recognition of the great times spent with Bobby on the *Bonnie Sue* vessel." To honor Turner's unique impact in Wachapreague and his essential help in



>Bonnie Sue interns have unique opportunities for hands-on research work in the field with VIMS staff. Photo credit: Reba Turner-Smith.



>Nathan Jones, a freshman at Salisbury University, enthusiastically studies microbial biofilms during his internship. Photo credit: Reba Turner-Smith.

supporting the internship program, the endowment fund was named after his celebrated vessel.

Today the Bonnie Sue Internship Program Fund continues to support annual summer interns at the ESL. Since the endowment fund was established in 2010, the program has welcomed approximately five interns every summer. Alumni have gone on to complete graduate programs in marine science, work in the aquaculture industry and for government agencies and teach K-12.

Among contributors to the fund is the Accomack Garden Club. "One of our core missions is conservation," said club member Lynn Calvert, "and what's more conservationist than this? It's so nice to see bright, motivated, involved young people."

To make a difference in a budding scientist's life by supporting the Bonnie Sue Internship Program Fund, visit [VIMS.edu/giving/where-to-give](https://vims.edu/giving/where-to-give) and click on the "Bonnie Sue Internship Program (4262)."



>Fellow interns look on as Kendyl Farrell, a sophomore at Virginia Tech, presents the results of her internship research project. Photo credit: Ethan Smith.

EXPERTS ENCOURAGED BY CONTINUED EXPANSION OF CHESAPEAKE BAY GRASSES

Underwater grasses in the Chesapeake Bay expanded 7% to an estimated 82,937 acres in 2023 to reach their seventh-highest level in 40 years of monitoring, according to an annual survey led by researchers at William & Mary's Batten School of Coastal & Marine Sciences at VIMS, in collaboration with the Maryland Department of Natural Resources.

Submerged aquatic vegetation (SAV) provides critical habitat for many of the Bay's most coveted species. And because they require clear water to obtain sunlight, SAV serves as an important bellwether for the broader health of the Chesapeake Bay.

"Overall, the 2023 numbers are encouraging and nearly back to levels observed before the dramatic declines we experienced in 2019," said Associate Professor Christopher Patrick, who directs the SAV Monitoring and Restoration Program at VIMS and is a member of the Chesapeake Bay Program's SAV Workgroup. "While we had some localized declines, we had impressive gains in areas of great ecological importance."

Researchers divide the bay into four regions based on the salinity of the water:

- **Tidal fresh:** This freshwater area saw a 3% increase in SAV.
- **Oligohaline:** This slightly salty region experienced a 54% decrease.
- **Mesohaline:** This moderately salty zone, the largest of the four, had a substantial increase of 21%.
- **Polyhaline:** This very salty region showed an increase of 12%.

The losses in the oligohaline region were mostly localized to the Middle and Gunpowder rivers, which also saw declines in 2022. Last year, researchers noted an increase in turbidity in this area, suggesting the cause may be affiliated with events happening within the rivers' watersheds.

"It's important to note that [oligohaline] is a relatively small region," said Patrick. "It does not have a huge impact on the total counts for the Bay."

Of note, the polyhaline region showed its largest amount of SAV since 1997, growing at depths in some places not seen in decades. This is encouraging, as the region provides important habitat for many species and is predominantly occupied by eelgrass (*Zostera*



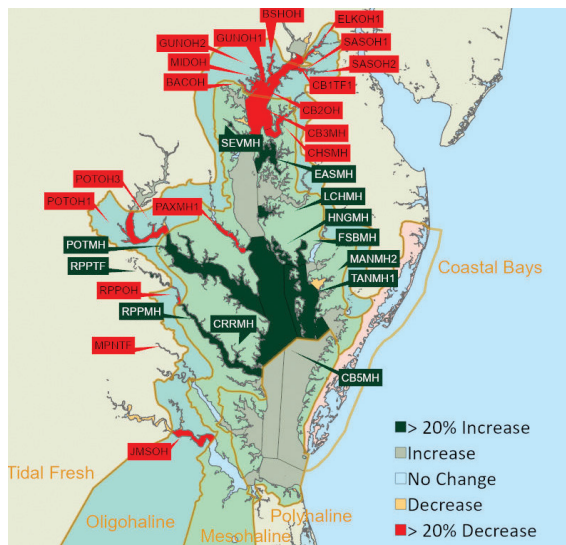
>Water stargrass (*Heteranthera dubia*) grows in the fresh waters of the upper Chesapeake Bay and tributaries throughout the Bay watershed. Photo credit: Alyson Hall.

marina), which has been overtaken by widgeon grass (*Ruppia maritima*) as the dominant grass species in the Bay.

CONDUCTING THE SURVEY

VIMS has tracked the abundance of underwater grasses as an indicator of Bay health since 1978, with the annual survey launched in 1983. The efforts were started by former Professor Robert J. Orth, conducted using aerial photographs taken from planes following specific flight patterns. In recent years, satellite imagery has been used to supplement aerial photographs when weather or other factors prohibit flights or adequate photos.

"The survey is a tremendous undertaking and requires ideal conditions of low winds, low tide and clear skies in order to properly photograph the grass beds," said Patrick. Ground surveys help supplement and confirm the presence of grass beds found in aerial surveys.



>This map shows SAV coverage changes from 2022 across salinity zones.

The survey allows the Chesapeake Bay Program to assess progress toward restoration goals outlined in the Chesapeake Bay Watershed Agreement, which set a target of restoring 130,000 acres by 2025. The 2023 numbers represent a 61% achievement of that goal and a 45% attainment of the ultimate goal of 185,000 acres of restored grasses. At its most pristine, it's believed the Chesapeake Bay could have supported up to 600,000 acres of SAV.

MANAGING WATER QUALITY KEY TO FUTURE SUCCESS

A VIMS-led study published in *Proceedings of the National Academy of Science* in May 2023 documented the rise of widgeon grass in areas once dominated by eelgrass. Widgeon grass is more heat tolerant than eelgrass and its seeds are longer lasting. However, widgeon grass is very sensitive to increased nutrient levels, which can lead to drastic fluctuations in coverage. Widespread declines documented in 2019 were attributed to increased run-off entering the Bay following a very wet spring season.

"The losses observed in 2019 wiped out nearly a decade of progress, but we have rebounded well in the last three years," said Patrick. "We are also seeing very encouraging expansion of eelgrass in the lower portion of the Bay, with the highest numbers ever recorded in Mobjack Bay."

Patrick and other experts attribute the expansion of eelgrass in the saltier regions of the lower Bay to relatively warm winters and fewer documented marine heatwaves, possibly in relation to the La Niña climate cycle. However, with summer temperatures trending ever higher, VIMS experts predict that eelgrass may struggle in the future.

"Nutrient reductions throughout the Chesapeake Bay's watershed have played a critical role in SAV recovery," said Patrick. "With the rise of widgeon grass as the dominant species, we must continue to focus on ways to maintain and improve water quality if we hope to continue progress on SAV restoration and combat the effects of human population growth and climate change."

should do, it is something that is a privilege to do. I'm privileged to be able to give to something that will be a game-changer for the world."

Batten, who is not a W&M alumna, believes that the best way to tackle some of the greatest global threats is by giving to and through William & Mary. Her confidence in the university's leadership and vision underscores her commitment to seeing support grow and inspire others to join this crucial effort.

GLOBAL VISION

Located on the York River in Gloucester Point, Virginia, the Batten School will offer the ideal setting for coastal and marine research and education, surrounded by wetlands, marshes and coastal waters.

"We have a geographical advantage, expertise advantage and historical presence in this area. We also have the breadth and depth in coastal and marine systems to allow us to take on very significant challenges that other places aren't equipped for," said Dean of the Batten School and Director of VIMS Derek Aday. "With this unprecedented gift, we will not only advance critical research and inform policy but also train the next generation of scientists, thought leaders and engaged citizens, preparing them to navigate the complexities of global change in this century."

Specifically, the Batten School will focus on:

- **Attracting Great Minds:** Establishing a clear identity as the premier global institution for coastal and marine sciences, we will attract top students and scientists and engage stakeholders to maximize science for solutions.
- **A Global Destination:** Transformational changes at the Gloucester Point campus include new infrastructure that will build community, serve the public with engaging educational opportunities and present emerging solutions.
- **Coordination & Partnerships:** As the Commonwealth of Virginia's hub and a global leader for coastal and marine sciences, we will provide responsive policy, innovative teaching and broad engagement with public and private partners across the world.

- **Leading-Edge Degree Programs:** Launching a new bachelor's degree program, expanding graduate opportunities and alternative credentials across W&M's diverse academic schools and research institutes.
- **Interdisciplinary Reach:** Recruiting outstanding interdisciplinary scientists to address urgent coastal and marine challenges.

These focal points build on the university's Vision 2026 water initiative, elevating W&M's commitment to innovative solutions that ensure the resilience of the world's oceans, coasts and waterways.



>Jane Batten called on fellow philanthropists, government leaders, alumni and friends to join her in supporting VIMS and the Batten School during a time of global change. Photo credit: W&M.

GLOBAL 'SCIENCE FOR SOLUTIONS'

Named for one of the most generous and impactful families in the Commonwealth of Virginia, the Batten School will accelerate nearly a century of 'science for solutions' at VIMS. Established in 1940 and fully integrated with W&M in 1979, VIMS is a trusted global leader in coastal and marine research, education and public engagement.

As a state agency, VIMS has a legal mandate to conduct research and provide scientific advice to the Commonwealth. Working hand in hand with one another, the Batten School will be positioned as the nation's preeminent school for coastal and marine sciences, with the goal of offering a B.S. in addition to the existing M.A., M.S. and Ph.D. degrees.

Just months ago, W&M announced that it will seek to establish a bachelor's degree in marine science, the first public undergraduate marine science

degree in Virginia. The university looks forward to working with the State Council of Higher Education in Virginia as these initiatives continue to evolve.

GLOBAL LEGACY

Jane Batten and her late husband Frank Batten, who served on W&M's Board of Visitors in the 1990's, along with their children Dorothy Batten and Frank Batten Jr., are renowned for their exceptional generosity in the areas of environmental conservation, education and research, among others.

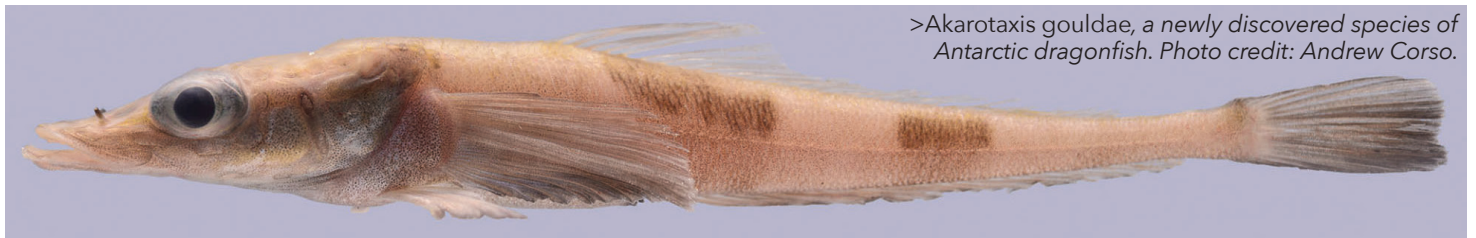
The Batten family has had an extraordinary impact on W&M, establishing the Batten Foundation Scholarship Endowment at the Raymond A. Mason School of Business and the Frank Batten Sr. MBA Investment Fund Endowment. They also created the business school's Center for Online Learning to grow its portfolio of online graduate degree programs.

Jane is actively involved with several local foundations, including the Chesapeake Bay Foundation and the Hampton Roads Community Foundation, and has received numerous awards for her volunteerism and philanthropy.

For decades, the Battens have inspired others to invest in bettering society. This \$100 million gift, in particular, underscores the family's commitment to fostering resilience in the face of global change.

"The Batten family legacy of giving continues to drive positive change worldwide. They are incredibly passionate about the Chesapeake Bay and other coastal systems, immensely knowledgeable about key issues and motivated to make a difference," added Aday. "This gift is evidence of shared trust and mutual belief that together, along with our philanthropic partners, we can make a big difference in some of the most important systems on the planet."

According to Aday, faculty, staff and students at W&M and VIMS are ready to seize this moment, broadening research, educating an engaged public and providing scientifically sound guidance for decision-making. "Our work has positioned us as a global scientific leader, a respected educational partner and a trusted advisor on coastal and marine issues. We are optimistic about our next chapter and hopeful that together, with partners across the globe, we can implement real change for the betterment of humanity."



>Akarotaxis gouldae, a newly discovered species of Antarctic dragonfish. Photo credit: Andrew Corso.

NEW SPECIES OF ANTARCTIC DRAGONFISH HIGHLIGHTS ITS THREATENED ECOSYSTEM

A new species of Antarctic dragonfish, *Akarotaxis gouldae* or Banded Dragonfish, has been discovered in waters off the western Antarctic Peninsula by researchers at VIMS and William & Mary's Batten School of Coastal & Marine Sciences. The species, named in honor of the recently decommissioned Antarctic research and supply vessel (ARSV) *Laurence M. Gould* and its crew, exemplifies both the unknown biodiversity and fragile state of the Antarctic ecosystem.

Described in the journal *Zootaxa*, *A. gouldae* was initially identified through genetic analysis. Larval specimens collected off the coast of Antarctica while trawling for zooplankton were originally thought to be *Akarotaxis nudiceps*, a closely related dragonfish. However, after comparing their DNA to *A. nudiceps* specimens housed in collections at VIMS, Yale University and the Muséum national d'Histoire naturelle in Paris, France, significant variations in mitochondrial gene regions suggested the larval samples were a species unto themselves.

Lead author Andrew Corso conducted the research while earning his Ph.D. at the Batten School at VIMS under faculty advisors Eric Hilton and Deborah Steinberg. Using the DNA evidence as their guide, Corso and his colleagues requested the examination of adult *A. gouldae* samples from numerous ichthyology collections around the world. Morphological differences became apparent between the two species once the adult samples were compared.

"There are two distinct bands on the sides of adult *A. gouldae* that are not present on *A. nudiceps*, so we were surprised that the species already existed in collections but had been previously overlooked," said Corso. "In the world of fish taxonomy, it's becoming common to distinguish species with genetics alone. Genetic testing is an extremely valuable tool, but our discovery highlights the importance of

early life stage morphology and natural history collections like those at VIMS and other institutions."

Genetic testing also revealed evolutionary clues. Using a process called time-calibrated phylogeny, Corso and coauthor Thomas Desvignes from the Institute of Neuroscience at the University of Oregon estimated that *A. gouldae* diverged as a separate species approximately 780,000 years ago. During this time, most of the Southern Ocean was covered in glaciers.

"This process essentially looks at the rate of genetic mutations as a guide for a species' evolutionary history," said Corso. "We hypothesize that a population of dragonfishes may have become isolated within deep trenches under glaciers, surviving on food pushed in by the moving ice. Once the glaciers retreated, this subpopulation had become distinct enough to be reproductively incompatible with *A. nudiceps*."

NEWLY DISCOVERED, YET POTENTIALLY THREATENED

Presently, Antarctic dragonfishes are poorly understood because they live in the remote Southern Ocean and spend most of their adult life in deep water. Prior research suggests these fishes engage in nest guarding in shallower coastal waters, and their offspring remain closer to the surface during their larval stage. Examination of female ovaries showed limited reproductive capacity. And while *A. nudiceps* are distributed in waters surrounding the southern continent, analysis of larval sampling data suggests the distribution of *A. gouldae* is limited to the waters around the western Antarctic Peninsula.

Dragonfishes are important prey items for many species, including Antarctica's iconic penguins, whose populations have declined dramatically in recent decades. A 2022 study by Corso linked warming waters and reduced ice in the Southern Ocean to declines in Antarctic silverfish populations.

"*A. gouldae* appear to have one of the smallest ranges of any fish endemic to the Southern Ocean," said Corso. "This limited range combined with their low reproductive capacity and the presence of early life stages in shallower waters suggest that this is a vulnerable species that could be impacted by the krill fishery."

The waters surrounding the western Antarctic Peninsula are heavily targeted by the international Antarctic krill fishery, which is managed by the Conservation of Antarctic Marine Living Resources (CCAMLR). Commercial fishing vessels trawl for krill in waters between 0-250 meters deep, and CCAMLR emphasizes the difficulties in correctly identifying larval and juvenile finfish bycatch in these operations.

"Since we know so little about the biodiversity of this area," said Corso, "we feel caution should be taken in extracting resources until we have a better understanding of the impact to the greater ecosystem."



>*Akarotaxis gouldae* was named in honor of the recently decommissioned Antarctic research supply vessel *Laurence M. Gould*. Photo credit: Kharis Shrage.

“THE ARTS AND SCIENCES HAVE A LOT IN COMMON, AND THAT’S OUR LOVE FOR THE PLANET”

INAUGURAL ARTIST-IN-RESIDENCE REFLECTS ON HER TIME AT VIMS AND W&M’S BATTEN SCHOOL

Looking out over the waters of the Chesapeake Bay from the sandy shores of the Goodwin Islands, Tricia Bass knew she was a long way from her home in Colorado. The professional painter was accompanied to the islands by researchers from VIMS and William & Mary’s Batten School of Coastal & Marine Sciences, who were doing work as part of the Chesapeake Bay National Estuarine Research Reserve in Virginia (CBNERR-VA).

“I waded to shore with my gear, and I just thought it was incredible,” said Bass. “I had no idea how beautiful Virginia is, especially coastal Virginia. I just fell in love with it.” But what was this artist from the mountainous West doing on the scenic coast of Virginia?

In the spring of 2024, Bass partnered with VIMS and the Batten School for an Artist-in-Residence (AiR) pilot program, with the idea that art can generate interest in marine science and VIMS among new and diverse audiences. “The goal is science communication,” said Bethany Smith, a marine educator with the Marine Advisory Program at VIMS, “and reaching people we otherwise might not be able to reach.”

Bass spent two weeks on-site at the VIMS Gloucester Point campus, where she met with scientists and students, went into the field to paint, and led a paint-along session that was open to the public. By the end of the two weeks, Bass had created several paintings, one of which she donated to VIMS and the Batten School and is now prominently displayed in the welcome area of the Dean & Director’s suite in Watermen’s Hall.



>Bass created several paintings depicting VIMS facilities and the surrounding environment. Photo credit: John Wallace.

The AiR pilot program at VIMS and the Batten School aligned with W&M’s designation of the 2023-24 academic year as the “Year of the Arts,” which celebrated the importance of arts education and the vital role that the arts play in all facets of the W&M educational experience. In fact, what stood out most about the AiR experience to Bass was the power of art to transcend boundaries as she connected with the VIMS researchers.

“The arts and sciences have a lot in common, and that’s our love for the planet,” she said. “[Scientists] take that love and try to find solutions for a planet that’s challenged by climate change, whereas I’m trying to get people to fall in love with our planet and see that it really is worth protecting.”

Peer organizations have had success with similar programs.

In 2018, the *Journal of Business Research* published the results of a study into an artist residency program at an aquaculture institute in the U.K., where researchers found “that ‘new ways of seeing’ aquaculture science resulted in the creation of aesthetic, emotional, environmental, educational and social values... [And] artist

residencies, if planned thoughtfully, have the potential to create an innovative and creative culture on campus and beyond.”

Implementing the AiR pilot program was a labor of love for Smith, who first had the idea to connect art and science when she was a high school teacher and assigned a plankton-as-art project. “I realized very quickly that kids who were usually disengaged with science would turn in amazing pieces of art with full descriptions. The lightbulb went on for me as a teacher: this is a way we can access audiences with science that maybe we’re not accessing with a lab tour or a lecture.”

Bass was excited to help make those connections at VIMS and the Batten School. “I think it’s important that VIMS



>The painting donated by Bass to VIMS and the Batten School, which now hangs in the Dean & Director’s suite in Watermen’s Hall. Photo credit: Ethan Smith.

shares with the world that we live in an incredibly beautiful place, and I think an artist can do that and help people care.” She added, “I hope they can do this every year, because it will help VIMS generate a whole other level of interest in their work.”

Turning AiR into an annual, or even semesterly, program is Smith’s goal, along with introducing a K-12 educational component. “To get this off the ground,” said Smith, “we will need outside support. Private funding from donors who love the arts, or the sciences or both could kick-start the entire program.”



>VIMS and Batten School inaugural Artist in Residence, Tricia Bass, paints a beach landscape as she connects art with science. Photo Credit: VIMS and W&M’s Batten School.

"I'VE LEARNED A BUNCH"

SUMMER CAMPS PROVIDE HANDS-ON EDUCATION FOR YOUNG STUDENTS

Since 2009, VIMS and William & Mary's Batten School of Coastal & Marine Sciences have welcomed an enthusiastic group of rising third through eighth graders for week-long, hands-on programs that enable students to learn about the Chesapeake Bay, coastal ecosystems and environmental stewardship. This summer, VIMS and the Batten School hosted 64 student campers and seven Junior Counselors.

"When I found out I got accepted to this camp, I got really excited and started jumping around," said Bailey, a rising eighth-grade student who attended summer camp in August. She said the best part of camp was "canoeing and the seine netting. I caught a summer flounder and a lot of little fish... I've learned a bunch."

Offered at no cost to campers—thanks to generous support from private donors—and run by the Chesapeake Bay National Estuarine Research Reserve in Virginia (CBNERR-VA) at VIMS and the Batten School, these camps are tailored to meet the learning stages of specific age groups. Rising third- and fourth-grade students, referred to as "Bay Buddies," and rising fifth- and sixth-grade students, or "Chesapeake Champions," participate in a day-camp experience on our Gloucester Point campus. Later in the summer,



>VIMS and Batten School summer camps allow students to be in the field and hands-on with marine science. Photo credit: Matthew Thayer.

rising seventh- and eighth-grade students are our "Estuary Explorers," who head to the VIMS and Batten School Eastern Shore Lab for an educational sleepaway camp.

"Because we can work with them not only for the week, but also returning to summer camp multiple times through the years, we really get to build relationships with the students," said CBNERR-VA Education Coordinator Sarah Nuss. "The kids like all the hands-on experiential things, like getting in the water, or dissecting a shark or going out on a boat, but we also have a lot of structure. While it is camp, and we make it fun, we are making sure they're learning something too."

Bay Buddies seine in the York River, learn to use microscopes, use field guides, make crafts, and complete projects to benefit the Bay. Chesapeake Champions also seine in the river, as well as canoe, dissect squid, and use a variety of scientific tools including water quality equipment. Finally, Estuary Explorers do many of the same activities, including dissecting sharks, all while exploring both the bayside and oceanside of the Eastern Shore.

Alex, a rising eighth-grade Estuary Explorer whose favorite camp memory was pulling up a stingray during seine netting, said he would recommend the



>Students begin their dissection of a dogfish shark, part of the comprehensive summer camp education programming. Photo credit: Matthew Thayer.

If you'd like to join us in transforming our campus so that VIMS and the Batten School can continue to offer high-quality educational programming in world-class facilities for students and families, please consider making a gift to the Batten Coastal & Marine Sciences Capital Fund (5552) or the John T. Wells Outreach Endowment (4969). To get started, contact the VIMS Advancement Office at 804.684.7846.

summer camps at VIMS and the Batten School to other students because "they'd definitely have some really fun adventures." Bailey agreed that students create "memories, and have a good learning experience, too."

High school students who previously participated in a summer camp can return to the program as Junior Counselor volunteers, leading field and lab activities and inspiring young campers. Megan Way, a rising 11th-grade student and recent counselor for the Estuary Explorers said, "I attended as a camper and developed a new respect for the nature around me, especially the Bay watershed. It was a great program, so I wanted to come back and give my time to volunteer... Being [a Junior Counselor] has been great."

Erika Johnston-MacAnanny, a parent who has had two children participate, is effusive about the summer camps. "James and Elizabeth have really been engaged and fulfilled by the wonderful programming that you work so hard to execute... They both appreciate the opportunity to be considered as Junior Counselors in the future," she said. "Thank you for deepening a respect and appreciation in them for the wonders of our natural marine environment."



>Exploring Chesapeake Bay ecosystems via canoe is a student-favorite activity, along with seine netting. Photo credit: Matthew Thayer.

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www.vims.edu/impact



>Bill Walton (second from left), coordinator of the Shellfish Aquaculture Program, works with colleagues at VIMS' on-site oyster farm. Photo credit: John Wallace.

ADDING UP THE PIECES TO SOLVE SUMS

Dubbed sudden unusual mortality syndrome (SUMS), mass die-offs have plagued oyster farms across the eastern U.S. and Gulf of Mexico since 2012.

Recently, scientists at William & Mary's Batten School of Coastal & Marine Sciences at VIMS published a report from a two-day workshop that brought together 28 oyster aquaculture experts from eight universities. Convened at VIMS in early 2024, the workshop attempted to characterize the state of SUMS science, identify

UPCOMING VIMS & BATTEN SCHOOL EVENTS

Poquoson Seafood Festival* Saturday - Sunday, October 19 - 20 51 Odd Road, Poquoson, VA	Hampton Shellabration* Saturday, November 16, 11am - 3pm Downtown Waterfront, Hampton, VA
After Hours Lecture <i>Getting down in "The Weeds" with Virginia's Underwater Gardens</i> Thursday, October 24, 7pm - 8pm	Gloucester Holiday Parade* Saturday, December 7, 3pm - 5pm Main Street, Gloucester, VA
Urbanna Oyster Festival* Friday - Saturday, November 1 - 2 Downtown, Urbanna, VA	One Tribe One Day Wednesday, April 2, 2025

**Visit our exhibit at these public events.*

*All events take place on the VIMS Gloucester Point campus, unless otherwise noted.
Visit www.vims.edu/events or call 804.684.7061*

urgent questions and prioritize research to understand causes of mortality and develop mitigation strategies.

The cause of SUMS remains a mystery. "SUMS doesn't appear to be caused by parasitic or infectious agents," said VIMS Professor Ryan Carnegie, who specializes in oyster pathogens. His lab provides pathology services free of charge to oyster farmers who experience unusual die offs and maintains

a database of the events for future research.

"We wanted to shift from being reactive to proactive," said Bill Walton, Acuff Professor of Marine Science at VIMS and the coordinator of the Shellfish Aquaculture program. "The goal of the workshop was to bring together a lot of really smart people and put all of our ideas on the table so that we can make measurable progress."