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VIMS

Batten School of Coastal & Marine Sciences

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Photo caption: An adult male *Leptuca thayeri* from a salt marsh in St. Mary's, Georgia. Carapace width 36 mm.
Photo credit: Photo taken in April 2025 by David Johnson.

Message from the Associate Dean of Research and Advisory Services

As a multi-disciplinary research and education institution, VIMS is the technical advisor to the Commonwealth of Virginia and serves as the graduate school of marine science for William & Mary. VIMS faculty, staff, and students publish over 200 peer-reviewed scientific publications and technical reports, annually. This annotated bibliography provides a listing of the peer-reviewed publications by VIMS authors and co-authors for the first half of 2026 (January – June 2026).

Megan La Peyre, Associate Dean



Office of Research & Advisory Services
Virginia Institute of Marine Science
Batten School of Coastal & Marine Sciences
William & Mary

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Title	Understanding the resilient carbon cycle response to the 2014–2015 blob event in the Gulf of Alaska using a regional ocean biogeochemical model
Author(s)	Abe Y., Ito T., Timmerman A.H.V. , Reinhard C.T., Montoya J.P.
Journal	Biogeosciences, 23(11): pg. 3871 - 3885 (2026)
Link	www.doi.org/10.5194/bg-23-3871-2026
Summary	Marine heatwaves (MHWs) are increasing in frequency and intensity. During the 2014–2015 MHW in the NE subarctic Pacific, moored observations showed a moderate decrease in oceanic pCO ₂ , contrary to the expected increase from warming-induced solubility reduction alone. Using a regional model, we show that this decline resulted from a decrease in dissolved inorganic carbon supply caused mainly by weakened vertical transport, rather than biological processes.

Title	Monitoring coral reef metabolism under changing oceans —novel insights from seawater stable carbon isotopes
Author(s)	Bolden I.W., Timmerman A.H.V. , Clark D.R., Belanger B.K., Oster J.L., Salas-Saavedra M., Niespolo E.M.
Journal	Journal of Geophysical Research: Biogeosciences, 131: art no. e2025JG009416 (2026)
Link	www.doi.org/10.1029/2025JG009416
Summary	Environmental stressors are driving Caribbean reefs from coral to sponge and macroalgae dominance. Seasonal sampling in Curaçao reveals highly variable net ecosystem productivity and calcification, with periods of intense net ecosystem dissolution. We suggest zooplankton grazing may be a significant source of respired carbon, implying heterotrophic feeding is a primary energy pathway providing the coral community with a stable food source.

Title	Iron supply to the Amundsen Sea, Antarctica is dominated by circumpolar deepwater and continental subglacial sources
Author(s)	Chinni V., Steffen J.M., Stammerjohn S.E., St-Laurent P. , Herbert L.C., Yager P.L., Conway T.M., Fitzsimmons J.N., Sherrell R.M.
Journal	Communications Earth and Environment, 7(1): art no. 162 (2026)
Link	www.doi.org/10.1038/s43247-026-03264-x
Summary	Mitigation of anthropogenic CO ₂ depends on marine blooms fueled by nutrients/micronutrients. The study revealed that melting glacial ice does not provide a substantial input of micronutrients from ship-board measurements in Antarctica, in contrast to expectations in earlier studies.

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Biogeochemistry (cont.) (VIMS authors in **bold**, asterisk indicates VIMS student)

Title	Marsh migration into forests and farms: Effects on soil biogeochemistry along the salinity gradients
Author(s)	Fettrow S., Montgomery A., Pratt D., Michael H., Kirwan M. , Seyfferth A.L.
Journal	Journal of Geophysical Research: Biogeosciences, 131(2): art no. e2025JG009149 (2026)
Link	www.doi.org/10.1029/2025JG009149
Summary	Soil cores were taken from marshes migrating into farms and forests. Marsh end members support sulfate reduction; transitional zones support iron reduction; and upland end members support aerobic metabolisms at the surface, with iron reduction occurring at depth.

Title	Eddy-induced iron transport sustains the biological productivity in the Gulf of Alaska
Author(s)	Ito T., Timmerman A.H.V. , Bjouklund A., Stanley S.I., Abe Y., Reinhard C.T., Montoya J.
Journal	Journal of Geophysical Research: Oceans, 131(2): art no. e2025JC022996 (2026)
Link	www.doi.org/10.1029/2025JC022996
Summary	In the Gulf of Alaska, there is a biogeochemical gradient from highly productive coastal waters to the weakly productive and iron-limited open ocean. An ocean biogeochemistry model was developed to simulate the role of mesoscale ocean eddies in shaping nutrient cycling. Anticyclonic eddies generated along the continental shelves had elevated iron concentrations, supporting offshore biological productivity. A sensitivity experiment that suppressed mesoscale features resulted in decreased eddies and productivity.

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Title	Northern range expansion of the Atlantic mangrove fiddler crab <i>Leptuca thayeri</i> Rathbun, 1900 (Decapoda: Brachyura: Ocypodidae)
Author(s)	Acosta-Rodríguez V.N. , Cole R. , Doomstorm D., Wittyngham S.S., Johnson D.S.
Journal	Journal of Crustacean Biology, 46(1): art no. ruaf072 (2026)
Link	www.doi.org/10.1093/jcbiol/ruaf072
Summary	The Atlantic mangrove fiddler crab (<i>Leptuca thayeri</i>) expanded 307 km north of its historic range into South Carolina. Based on iNaturalist, personal observations, and surveys, the crab also inhabits salt marshes, suggesting that they are habitat generalists. The warming coastal waters are the likely driver of this climate-related range expansion.

Title	Investigating coastal vegetation dynamics and ecosystem impacts under elevated CO ₂ and temperature: A process-based approach
Author(s)	Ding J., McDowell N., Conroy N., Day D.J., Fang Y., Kemner K.M., Kirwan M.L. , Kovach M., Megonigal P., Morris K.A., O'Meara T., Pennington S.C., Peixoto R.B., Thornton P., Weintraub M.N., Regier P., Sandoval L., Machado-Silva F., Stearns A., Ward N.D., Wilson S.J., Bailey V.
Journal	Journal of Geophysical Research: Biogeosciences, 131(4): art no. e2025JG009305 (2026)
Link	www.doi.org/10.1029/2025JG009305
Summary	Marsh migration into coastal forests resulted in a net loss of modeled ecosystem productivity, and warming temperatures intensified hydraulic stress and tree mortality.

Title	Limited impacts of storms on mid-Atlantic coastal forests
Author(s)	He K. , Kirwan M.L.
Journal	Agricultural and Forest Meteorology, 380: art no. 111094 (2026)
Link	www.doi.org/10.1016/j.agrformet.2026.111094
Summary	Using 37-year Landsat NDVI data across the U.S. mid-Atlantic coast, our study tests whether storms trigger abrupt coastal forest retreat. Storm-driven high-water events had limited effects, whereas drought and temperature dominated forest variability, challenging storm-centered explanations of abrupt coastal forest loss and emphasizing climate variability in shaping forest resilience.

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Climate Change (cont.)

(VIMS authors in **bold**, asterisk indicates VIMS student)

Title	Sea-level-driven land conversion amplified by coastal agriculture
Author(s)	Molino G.D. , Chen Y., Levins G.C. , Kirwan M.L.
Journal	Nature Sustainability, 9: pg. 1151–1159 (2026)
Link	www.doi.org/10.1038/s41893-026-01835-6
Summary	Farmland is more vulnerable to sea-level rise than forests, though local levee construction reduced rates of marsh encroachment to rates in line with forested land uses.

Title	Seasonal hydrology at the salt marsh-upland interface
Author(s)	Noori A., Nordio G., Pratt D., Messerschmidt T. , Fettrow S., Seyfferth A.L., Kirwan M.L. , Michael H.A., Fagherazzi S.
Journal	Journal of Geophysical Research: Biogeosciences, 131(3): art no. e2025JG009297 (2026)
Link	www.doi.org/10.1029/2025JG009297
Summary	This study examines seasonal variations in soil and groundwater hydrology at the transition zone between salt marshes and upland areas. Hydrological variability across vegetation gradients decreases during the summer, indicating that vegetation gradients along the marsh–forest ecotone are mainly governed by winter and spring conditions.

Title	Salt in the wound: Consequences of changing salinities on marine disease
Author(s)	Rocker M.M., Yoshioka R.M., Johnston K.E., Record N.R., Small H.J. , Groner M.L.
Journal	Philosophical Transactions of the Royal Society B, 381(1945): art. no. 20240324
Link	www.doi.org/10.1098/rstb.2024.0324 (2026)
Summary	This review explores the role of changing salinities on a range of pathosystems. The article presents case studies from fisheries and aquaculture-focused areas as well as studies on human health risks from seafood-associated illness and a conservation-related study exploring the influence of salinity and disease on habitat-forming species.

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Climate Change (cont.)

(VIMS authors in **bold**, asterisk indicates VIMS student)

Title	10,000 years of centennially-resolved climate and sea-level change archived in Svalbard beach-ridge system
Author(s)	Strzelecki M.C., Lindhorst S., Hein C.J. , van der Bilt W.G.M., Kivimaki K.E.* , Kavan J.
Journal	Scientific Reports, 16(1): art no. 3627 (2026)
Link	www.doi.org/10.1038/s41598-025-33652-w
Summary	Beach ridges in Svalbard record 10,000 years of Arctic environmental change. Their growth patterns reveal past shifts in sea level, glaciers, and sea ice, demonstrating that these common coastal features can serve as powerful natural archives of climate history.

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Title	Carbon sequestration along a gradient of tidal marsh degradation in response to sea level rise
Author(s)	Huyzentruyt M., Wens M., Fivash G.S., Walters D., Bouillon S., Carr J., Guntenspergen G., Kirwan M.L. , Temmerman S.
Journal	Biogeosciences, 23(2): pg. 851 - 865 (2026)
Link	www.doi.org/10.5194/bg-23-851-2026
Summary	Natural levees along river channels are hotspots for carbon sequestration in tidal marshes.

Title	Probabilistic sediment characterization using Chirp sub-bottom profiler and Portable Free-Fall Penetrometer measurements
Author(s)	Rahman M.R., Rodriguez-Marek A., Stark N., Friedrichs C. , Dorgan K.M., Massey G.
Journal	Applied Ocean Research, 173: art no. 105137 (2026)
Link	www.doi.org/10.1016/j.apor.2026.105137
Summary	This study develops a probabilistic framework combining continuous but indirect Chirp sub-bottom sonar observations with sparse, more accurate Portable Free-Fall Penetrometer measurements. Gaussian process regression and Bayesian fusion produce continuous seabed sediment classifications with quantified and substantially reduced uncertainty. Field tests demonstrate more reliable characterization than either method alone.

Title	Hurricanes along the southeast Atlantic coast build marsh resiliency through mineral sedimentation
Author(s)	Staro A., FitzGerald D.M., Georgiou I.Y., Hein C.J. , Hughes Z.J.
Journal	Journal of Geophysical Research: Earth Surface, 131(6): art no. e2025JF008775 (2026)
Link	www.doi.org/10.1029/2025JF008775
Summary	By studying Hurricane Irma deposits in southeastern U.S. salt marshes, we found that a single storm can deliver enough sediment to substantially increase marsh elevation. These episodic events play an important role in helping marshes remain resilient despite accelerating sea-level rise.

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Title Hurdles and opportunities for conservation of native fish biodiversity in Nepal

Author(s) **Fabrizio M.C.**, Nepal V., **Tuckey T.D.**, Ranjan R., Dhakal H., Edds D.R., Gillette D.P., Burchett P., Sritharan N., Lohani S., Singh K.K., Malik A., Paudel K.

Journal Fisheries, 51(3): pg. 111-126 (2026)

Link www.doi.org/10.1093/fshmag/vuaf067

Summary Native fishes in Nepal are threatened by habitat alteration, nonnative species, dams and diversions, unregulated exploitation, and climate change. This paper examines these and other factors that challenge the conservation of native fishes and provides suggestions for advancing effective means to protect Nepal's unique ichthyofauna.

Title The visual system of the longest-living vertebrate, the Greenland shark

Author(s) Fogg L.G., Tom E., Policarpo M., Cho W., Gao F., Hii D., Fawcett A.E., Boileau N., Bech-Poulsen A., Steffensen K.F., Ng C.J., Bushnell P.G., Steffensen J.F., **Brill R.**, Salzburger W., Skowronska-Krawczyk D.

Journal Nature Communications, 17(1): art no. 39 (2026)

Link www.doi.org/10.1038/s41467-025-67429-6

Summary Greenland sharks inhabit the dim water of the Arctic and were thought to have degenerated vision. Through genomic, transcriptomic, histological, and functional evidence we demonstrate Greenland sharks retain an intact visual system throughout a life span measured in centuries through robust expression of DNA repair-associated genes in the retina.

Title Evaluation of striped bass stocks in Virginia: Monitoring and tagging studies, 2025 progress report

Author(s) **Latour R.J.**, **Ralph G.M.**, **Gartland J.**

Journal Virginia Institute of Marine Science, Gloucester Point (2026)

Link <https://doi.org/10.21220/238>

Summary This report presents the results of striped bass (*Morone saxatilis*) tagging and monitoring activities in Virginia in spring 2025. It includes an assessment of the biological characteristics of striped bass taken from the 2025 spring spawning run and estimates of annual survival and fishing mortality based on annual spring tagging.

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Fish & Fisheries (cont.)

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Title Virginia Game Fish Tagging Program 30th Anniversary Report: Annual report 2025

Author(s) **Musick S.**, Hargis M.

Journal Virginia Institute of Marine Science, Gloucester Point (2026)

Link <https://doi.org/10.21220/302>

Summary Highly trained angler volunteers with the Virginia Game Fish Tagging Program (VGFTP) have tagged more than 452,000 fishes since 1995. This cooperative program has contributed data regarding fish movement and site-fidelity patterns of recreationally important species captured and released in Chesapeake Bay and Atlantic coastal waters.

Title Biomass and composition of Atlantic menhaden schools in winter on the continental shelf offshore of New Jersey: Application of a novel hydroacoustic survey with midwater trawl sampling

Author(s) Nesslage G., **Gartland J.**, **Latour R.J.**, Gurshin C., Liang D., **Gregg D.**, Axelsson S., Axelsson L., Reichle W., Kaelin J., Jech J.M., Mroch R., Brust J., Charles E.J., Wilberg M.J.

Journal Fisheries Research, 299: art no. 107773 (2026)

Link www.doi.org/10.1016/j.fishres.2026.107773

Summary Atlantic menhaden, an ecologically and economically important forage fish, are difficult to monitor, limiting stock assessment. A 2022 cooperative hydroacoustic and trawl survey off New Jersey estimated nearly 9.1 million kg of biomass, confirmed adult partial migration, characterized winter populations, and demonstrated an effective survey method for schooling pelagic fishes.

Title Testing square mesh escape panels in a scallop dredge twine top to reduce flatfish catch in the U.S. sea scallop fishery

Author(s) **Roman S.A.**, **Rudders D.B.**

Journal Journal of Shellfish Research, 44(3): pg. 363-376 (2026)

Link www.doi.org/10.2983/035.044.0304

Summary A field-based study tested two configurations of square mesh panels installed in a twine top of a commercial sea scallop dredge to reduce the catch of flatfish in the fishery. Results indicated reductions in flatfish were achieved with a two-row square mesh panel installed ahead of the apron of the dredge.

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Fish & Fisheries (cont.)

(VIMS authors in **bold**, asterisk indicates VIMS student)

Title	Addressing spatiotemporal data gaps in fish abundance modelling: Insights from offshore wind impacts in the U.S. mid-Atlantic
Author(s)	Sun M. , Braid K., Blaylock J., Hennen D., Truesdell S., Chen Y.
Journal	Diversity and Distributions, 32(2): art no. e70156 (2026)
Link	www.doi.org/10.1111/ddi.70156
Summary	This study examines how spatially structured survey gaps can bias fish abundance modelling and evaluates whether modern statistical approaches can recover missing information. Using offshore wind-related survey exclusions as a case study, it identifies when reconstruction is reliable and clarifies the role of model structure, species ecology, and spatial heterogeneity in maintaining robust abundance indices.

Title	Estimating relative abundance of young-of-year American eel, <i>Anguilla rostrata</i> , in the Virginia tributaries of Chesapeake Bay (Spring 2025)
Author(s)	Tuckey T.D. , Fabrizio M.C.
Journal	Virginia Institute of Marine Science, Gloucester Point (2026)
Link	www.doi.org/10.21220/4hv5-f188
Summary	Recruitment of glass-stage American eel was average at all sites in Virginia in 2025.

Title	Estimating relative juvenile abundance of ecologically important finfish in the Virginia portion of Chesapeake Bay: 2026 annual report
Author(s)	Tuckey T.D. , Fabrizio M.C.
Journal	Virginia Institute of Marine Science, Gloucester Point (2026)
Link	www.doi.org/10.21220/C7M2-FX49
Summary	The Juvenile Fish Trawl Survey completed another year of sampling and found that only young-of-the-year Blue catfish in the York River and older Blue catfish in the James River exhibited above-average abundances. All other species assessed, 34 in total, were either average or below average. We recorded the first record of juvenile Southern flounder in Chesapeake Bay indicating a northward shift in their distribution.

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Fish & Fisheries (cont.)

(VIMS authors in **bold**, asterisk indicates VIMS student)

Title	Multi-decadal patterns in abundance and seasonal distribution of Hogchokers (Pleuronectiformes: Achiridae), an apparent trophic anomaly, in lower Chesapeake Bay and its tributaries
Author(s)	Tuckey T.D. , Munroe T.A.
Journal	Marine and Coastal Fisheries, 18(3): art. no. vtag005 (2026)
Link	www.doi.org/10.1093/mcfafs/vtag005
Summary	Hogchokers (<i>Trinectes maculatus</i>), one of the most abundant fish in Chesapeake Bay, exhibit seasonal migrations that are affected by their size, water temperature, salinity, depth, and dissolved oxygen. Despite their high abundance, few Hogchokers are consumed by predators, limiting the transfer of energy and forming a sink in terms of fisheries productivity.

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Management & Policy (VIMS authors in **bold**, asterisk indicates VIMS student)

Title	The science behind Virginia's living shoreline standards: Resource for coastal decision-making
Author(s)	Bilkovic D.M., Mason P., Isdell R. , Fergel J., Rose A., Benson G.* , Recco D.* , Tombleson C. , Nunez K. , Havens K.
Journal	Center for Coastal Resources Management, William & Mary's Batten School of Coastal & Marine Sciences & Virginia Institute of Marine Science, Gloucester Point, Virginia (2026)
Link	www.doi.org/10.21220/321
Summary	Given the growing diversity of shoreline protection designs and materials, this resource provides a science-based framework for evaluating whether a project functions as a living shoreline, grounded in the context of Virginia's living shoreline standards.

Title	Impacts of offshore wind energy development on the commercial sea scallop fishery
Author(s)	Borsetti S., Munroe D.M., Klinck J.M., Scheld A.M. , Hofmann E.E., Powell E.N., Rudders D.B.
Journal	Ocean and Coastal Management, 273: art no. 108045 (2026)
Link	www.doi.org/10.1016/j.ocecoaman.2025.108045
Summary	This research used an integrated agent-based model to evaluate how offshore wind development may affect the Atlantic sea scallop fishery. Simulations suggested small changes in fishing activity and catch, though substantial impacts on biomass outside of wind areas, highlighting the importance of accounting for effort displacement in marine spatial planning.

Title	Tidal marsh species mapping using commercial satellite imagery for enhanced coastal management in Chesapeake Bay
Author(s)	Coffer M.M., Trinh R., Mitchell M. , Angstadt K. , Stanhope D. , Lv Z. , Nunez K. , Bartlett N.D., Wiltsie D., Sullivan S., Schaeffer B.A.
Journal	Remote Sensing Applications: Society and Environment, 41: art no. 101902 (2026)
Link	www.doi.org/10.1016/j.rsase.2026.101902
Summary	Routine mapping of tidal marsh species composition is crucial for coastal management, yet current efforts are spatially and temporally limited and lack species identification. To address this, we used 3-m PlanetScope satellite imagery to classify four common marsh plants across Virginia's Middle Peninsula in Chesapeake Bay, a region targeted for restoration given its ecological and economic significance.

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Management & Policy (cont.) (VIMS authors in **bold**, asterisk indicates VIMS student)

Title	Evaluating management options for high-density recruitment events in the Atlantic sea scallop fishery: A decision tree approach
Author(s)	Kowaleski K.R. , Scheld A.M. , Peros J., Roman S.A. , Mann R. , Rudders D.B. (2026)
Journal	North American Journal of Fisheries Management, 46(2): pg. 351-367 (2026)
Link	www.doi.org/10.1093/naifmt/vqaf128
Summary	This research developed decision trees to guide management of high-density recruitment events in the Atlantic sea scallop fishery, one of the US's most valuable fisheries. A survey of managers, industry advisors, and researchers was used to identify key management concerns and feasible responses, providing a structured framework to improve decision-making.

Title	The hidden costs of plastic pollution: A call to value its unpriced externalities
Author(s)	Murphy E.L., Morse M., Wallmo K., Maurer B., Law K.L., Ternes M.E., Domanski A., Scheld A. , Helm L., Jambeck J., Uhrin A.V.
Journal	Environmental Research Letters, 21(8): art. no. 081003 (2026)
Link	www.doi.org/10.1088/1748-9326/ae57c1
Summary	The article proposes a framework for estimating the social cost of plastic pollution by valuing its environmental, human health, and socio-cultural externalities. Several key research needs are identified in order to improve cost-benefit analyses, policy design, and investment decisions aimed at reducing plastic pollution.

Title	Advancing the use of spatial data in implementing adaptive management to support coastal resilience
Author(s)	Nunez K. , Mason P. , Rudnick T. , Tombleson C. , Duning C. , Hendricks J. , Lv Z. , Hill E. , Graulich J. , Schatt D. , & Duhring K.
Book chapter	In: Coelho, C., Hallin, C., Sancho, F., Silva, P.A. (eds) Coastal Dynamics 2025. Coastal Research Library, 41: pg. 284–290 (2026)
Link	www.doi.org/10.1007/978-3-032-15473-6_45
Summary	This work presents an integrated framework that combines geospatial data, artificial intelligence, predictive modeling, decision-support tools, and community science to strengthen adaptive coastal management and improve resilience to climate change and other coastal hazards.

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Management & Policy (cont.) (VIMS authors in **bold**, asterisk indicates VIMS student)

Title	Shaping scientific literacy: How underserved students conceptualize marine scientists and themselves
Author(s)	Nuss S., Caputo A., Lawrence L., Gardiner G.O., Smith B., Cackowski C.
Journal	In: Kennedy, T.J. (eds) Ocean Literacy: The Foundation for the Success of the Ocean Decade, Volume I. Sustainable Development Goals Series. Springer, Cham.: pg. 117 - 134 (2026)
Link	www.doi.org/10.1007/978-3-031-98145-6_9
Summary	Developing ocean literacy for all citizens is an important component of protecting and stewarding the ocean. Not all communities have access to marine science education opportunities, and barriers to developing ocean literacy may exist. This study explores the impact of a summer enrichment program for students from low socioeconomic backgrounds.

Title	Improving living resource responses in ecosystem restoration: An illustration using the Chesapeake Bay
Author(s)	Rose K.A., Monaco M.E., Ihde T.F., Smith E.P., Stauffer J.R., Jr., Havens K.J., McDonnell L., Linker L.C., Gootman K.S., Vogt B., Friedrichs M.A.M., Fabrizio M.C., Hawes C.A., Horemans D.M.L.
Journal	Journal of the American Water Resources Association, 62(3): art no. e70134 (2026)
Link	www.doi.org/10.1111/1752-1688.70134
Summary	The paper presents a framework for prioritizing ecosystem restoration projects and evaluating their success using fish responses and fisheries indicators. Illustrated with Chesapeake Bay examples, it combines ecological principles, statistical analyses, and modeling to guide restoration planning and adaptive management.

Title	An evaluation of the advisory system for North Carolina marine fisheries regulators
Author(s)	Weinkle J., Hinson M., Poston A., White S.B.
Journal	Coastal Management, 54(4): pg. 302-318 (2026)
Link	www.doi.org/10.1080/08920753.2026.2668885
Summary	This article examines the use of the advisory system to North Carolina fisheries regulators within the context of three controversial areas of decision-making. We identify weaknesses in the advisory system and provide recommendations for improving outcomes toward goals of public trust in the regulatory process and accountability of decision makers.

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Title	The role of living shorelines as a resilience strategy for nutrient reduction in estuarine systems
Author(s)	Dodsworth E., Mitchell M.M., Song B., Bilkovic D.M., Brush M.J.
Journal	Frontiers in Marine Science, 13: art no. 1777684 (2026)
Link	www.doi.org/10.3389/fmars.2026.1777684
Summary	We examined the magnitude of different nutrient storage and removal pathways in living shorelines. Generally, we found that nutrient storage and removal pathways were similar to those in natural marshes. However, the short-term storage of nitrogen and phosphorus through uptake by benthic microalgae and the permanent removal of nitrogen through denitrification were both higher in living shorelines.

Title	Blue nitrogen follows the fate of tidal wetlands
Author(s)	Langley J.A., Chapman S.K., Wang L., Maxwell T.L., Rivera P., Adame M.F., Arias-Ortiz A., Asanopoulos C., Blanco J.F., Breithaupt J.L., Canty S.W.J., Chambers L.G., Cornwell J.C., Craft C., Cross S., Feller I.C., Friess D.A., Grey A., Holmquist J., Jones S.F., Jupin J.L.J., Kelleher B.P., Kelleway J.J., Kirwan M.L. , Krauss K.W., Lovelock C.E., McClellan S.A., Megonigal J.P., Morris J.T., Morrisette H., Neubauer S.C., Pastore M.A., Rogers K., Rovai A.S., Ruiz-Fernandez A.C., Saintilan N., Sanchez-Cabeza J.-A., Simpson L.T., Smeaton C., Spivak A.C., Steinmuller H.E., Weston N.B..
Journal	Earth's Future, 14(6): art no. e2025EF006747 (2026)
Link	www.doi.org/10.1029/2025EF006747
Summary	The ability of coastal wetlands to accumulate nitrogen in their soils can be easily estimated from commonly reported carbon accumulation rates.

Title	Resilient nekton composition in the face of climate-driven foundation species shifts
Author(s)	Leavitt H., Thomas A., Doerr J.C., Johnson D.S. , Nelson J.A.
Journal	Ecology, 107(5): art no. e70397 (2026)
Link	www.doi.org/10.1002/ecy.70397
Summary	Despite mangroves encroaching into salt marshes in the Gulf of Mexico due to climate warming, many fish communities remain the same.

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Title Biodegradable facilitation mimics extend the window of opportunity for salt marsh establishment

Author(s) Li Z., Xu Y., Wang X., **Shen J.**, Ma S., Chu X., Zhao Z., Yin Y., Xi X., Wang L., Yuan L. (2026)

Journal Journal of Environmental Management, 408: art no. 129945

Link www.doi.org/10.1016/j.jenvman.2026.129945

Summary Three-dimensional (3D) biodegradable structures act as Nature-based Solutions by mimicking vegetation facilitation to reduce environmental stressors including hydrodynamic forcing and unstable sediment conditions, yet their role in biophysical feedbacks remains unclear. Here, we designed saltmarsh-specific 3D biodegradable structures that mimic key ecological facilitation traits and used flume experiments to quantify hydrodynamic attenuation and sediment stabilization mechanisms. Results showed that aboveground structures attenuated flow velocity and reduced seedling bending, while belowground components enhanced sediment cohesion, elevated erosion thresholds, and stabilized substrates prior to root system development.

Title Chesapeake Bay water clarity: Challenges and successes

Author(s) Turner J.S., **Friedrichs C.T.**, **Parrish D.B.***, Fall K.A.

Journal Annual Review of Marine Science, 18(1): pg. 89 - 119 (2026)

Link www.doi.org/10.1146/annurev-marine-040224-120528

Summary This review synthesizes how sediments, nutrients, phytoplankton-derived organic matter, physical processes, and benthic communities shape Chesapeake Bay water clarity. Despite complex spatial patterns and differing trends among clarity metrics, four decades of nutrient and sediment reductions have improved light penetration and supported underwater-grass recovery.

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Modeling

(VIMS authors in **bold**, asterisk indicates VIMS student)

Title	A new perspective to fish trajectory imputation: a spatiotemporal probability model for simulating acoustically tagged fish movement
Author(s)	Ahmadian M., Boone E. L., Chiu G. S. , Weng K. C.
Journal	Journal of Applied Statistics: Environmental Statistics and Data Science, 2(1) (2026)
Link	www.doi.org/10.1080/29984688.2026.2623273
Summary	We develop a probability model for simulating fish movements between detected locations observed by a spatially static network of acoustic receivers. Our model prevents imputed positions from being near any receiver or to cross land barriers. Other features of our model allow simulated locations to form biologically plausible movement trajectories.

Title	Survival across habitats and sizes explains ontogenetic habitat shifts in juvenile blue crabs
Author(s)	Hyman A.C. , Chiu G.S. , Seebo M.S. , Smith A. , Saluta G.G. , Knick K.E. , Lipcius R.N.
Journal	Frontiers in Marine Science, 13: art no. 1726672 (2026)
Link	www.doi.org/10.3389/fmars.2026.1726672
Summary	We conducted a field experiment on juvenile blue crabs' survival across seagrass, marsh edge, and sand in the York River. Bayesian models to compare survival rates were developed to account for animal size and key covariates. Seagrass was found to be beneficial to small juveniles, while the other two habitats were favorable to larger juveniles.

Title	The impact of vegetation on hydrodynamics in Port Phillip Bay
Author(s)	Li R., Li S., Wu W. , Dong X., Babanin A.V.
Journal	Ocean Engineering, 349: art no. 124173 (2026)
Link	www.doi.org/10.1016/j.oceaneng.2026.124173
Summary	This study investigates the impact of SAV on local hydrodynamics in the Port Phillip Bay (Australia) based on SCHISM ocean model. The modeling demonstrates that SAV reduces water movement extremes, and modifies nearshore sediment dynamics.

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Title	Machine learning prediction of saltwater intrusion to support coastal water resource management
Author(s)	Shen J. , Cai X., Qin Q.
Journal	Journal of Environmental Management, 401: art no. 128811 (2026)
Link	www.doi.org/10.1016/j.jenvman.2026.128811
Summary	Saltwater intrusion (SWI) threatens estuarine ecosystems and water resources under climate change. We developed machine learning models to estimate daily SWI lengths across Chesapeake Bay and major tributaries. Trained on hydrodynamic simulations, the models accurately reproduced, forecasted, and reconstructed SWI dynamics, providing an efficient tool for long-term management applications.

Title	A numerical study of eastern oyster (<i>Crassostrea virginica</i>) larval growth and dispersal in Barataria estuary, Louisiana, USA
Author(s)	Zang Z., Xue Z.G., Sable S.E., La Peyre M.K. , Rose K.A., Stephens T.A., Carter B., Lindquist D.C., Ou Y., Lei Z.
Journal	Estuaries and Coasts, 49(4): art no. 114 (2026)
Link	www.doi.org/10.1007/s12237-026-01729-y
Summary	Eastern oysters provide critical services in estuaries and support a culturally and economically valuable fishery. Understanding larval growth, mortality and transport can help inform restoration and management of wild populations. This work developed a coupled hydrodynamic-larval model to explore patterns and drivers of larval growth and settlement across a key oyster producing estuary in coastal Louisiana, demonstrating the critical need to understand and account for salinity, turbidity, food, and multiple stressors on larval dynamics to project oyster resource outcomes.

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Title	Tidal modulation of waves around the Aleutian Islands
Author(s)	Cassalho F., Kurapov A.L., Moghimi S., Durski S.M., Zhang J.Y. , Abdolali A., Khazaei B., Sun Y., Ye F. , Myers E.
Journal	Journal of Geophysical Research: Oceans, 131(4): art no. e2025JC023780 (2026)
Link	www.doi.org/10.1029/2025JC023780
Summary	Forming a critical part of the North Pacific Great Circle Route, the narrow passes of the Aleutian Islands are considered among the United States' most treacherous waters for maritime navigation. This study investigates the tidal modulation of surface gravity waves throughout the archipelago using a high-resolution, unstructured-grid, coupled ocean-wave model.

Title	Offshore windfarm monopiles attenuate wave action compensating for shear-induced sediment resuspension
Author(s)	Hosseini S.T., Pein J., Staneva J., Stanev E., Zhang Y.J.
Journal	Ocean Modelling, 202: art no. 102738 (2026)
Link	www.doi.org/10.1016/j.ocemod.2026.102738
Summary	This study investigates the impact of offshore wind farm monopiles on sediment dynamics in the high energy wave environment of the German Bight, North Sea. Results indicate that wind-induced waves are the dominant driver of sediment mobilization, particularly during extreme events. Monopiles generate a wave-induced wake that attenuates wave energy, reducing bottom shear stress downstream. These findings suggest potential implications for sediment budgets, ecosystem resilience in the Wadden Sea, and sustainable planning within sediment-sensitive regions.

Title	Simultaneous resolution of near-shore intertidal and deep estuarine circulation by eliminating bathymetric smoothing in modeling — the Salish Sea
Author(s)	Khangaonkar T., Wang T., Yun S.K., Ni W., Nugraha A., Mitra A., Zhang Y.J.
Journal	Ocean Dynamics, 76(4): art no. 42 (2026)
Link	www.doi.org/10.1007/s10236-026-01794-8
Summary	In coastal ocean modeling, the use of terrain following σ -coordinates is immensely popular, but it creates baroclinic pressure gradient error (PGE) near steep slopes and shelf breaks. The PGE is problematic in fjords and deep estuaries and is commonly addressed through bathymetric smoothing. Here we assess the feasibility of eliminating the need for smoothing, using the Localized Sigma Coordinates with Shaved Cell (LSC2) formulation and the SCHISM model over a fjord-like deep estuary, the Salish Sea in the Pacific Northwest, including U.S. and Canadian waters.

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Physical Oceanography (cont.) (VIMS authors in **bold**, asterisk indicates VIMS student)

Title	The role of local winds and a semi-persistent coastal front on the diurnal heat budget in an upwelling bay
Author(s)	Thibodeau A.P., Walter R.K., Mazzini P.L.F. , Connolly T.P., Edwards C.A., Robbins I.
Journal	Continental Shelf Research, 300: art no. 105702 (2026)
Link	www.doi.org/10.1016/j.csr.2026.105702
Summary	This study quantifies the heat budget of an upwelling bay using two years of observations. During weak upwelling or weak winds, surface heat fluxes dominate temperature changes. Under strong upwelling and persistent thermal fronts, advective heat transport becomes increasingly important, demonstrating that local winds and frontal strength jointly regulate bay heat budgets and temperature variability.

Title	Improving cross-scale hydrodynamic simulations in the Chesapeake Bay with physically based calibration
Author(s)	Wu W. , Wang Z. , Zhang Y.J. , Shen J. , Tian R., Linker L.C., Cerco C.F.
Journal	Ocean Modelling, 200: art no. 102680 (2026)
Link	www.doi.org/10.1016/j.ocemod.2026.102680
Summary	This study demonstrates a physically based calibration procedure with observation-derived parameterizations to improve the cross-scale hydrodynamic simulation in Chesapeake Bay. This approach reduced temperature and salinity errors by ~60 % compared to previous modeling studies in the Bay underscoring the advantages of physically based calibration procedures.

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Shellfish & Crustaceans

(VIMS authors in **bold**, asterisk indicates VIMS student)

Title	Comparing minimally lethal sampling methods for genomics in the Eastern Oyster (<i>Crassostrea virginica</i>)
Author(s)	Leung E., Small J. , Lotterhos K.E.
Journal	Ecology and Evolution, 16(2): art no. e73116 (2026)
Link	www.doi.org/10.1002/ece3.73116
Summary	This paper examines a variety of options to non-lethally sample DNA from live oysters for downstream genetics/genomics analysis.

Title	How Virginia shellfish hatcheries use genetics and genomics
Author(s)	Mapp G., Small J.
Journal	Virginia Institute of Marine Science, Gloucester Point (2026)
Link	www.doi.org/10.21220/303
Summary	This is a broad overview of clam and oyster work over the years at VIMS including recent developments in breeding technologies.

Title	The status of Virginia's public oyster resource 2025
Author(s)	Southworth M. , Mann R.
Journal	Molluscan Ecology Program, Virginia Institute of Marine Science, Gloucester Point (2026)
Link	www.doi.org/10.21220/49
Summary	This report summarizes data collected during 2025 in the Virginia portion of Chesapeake Bay. The report is composed of two parts, part one, oyster recruitment (shell string) in Virginia and part two, dredge survey of selected oyster bars in Virginia.

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Title	The secret life of tidal marshes and mangroves: camera trapping as a window into wildlife using North American coastal wetlands
Author(s)	Raposa K.B., Cressman K., van Proosdij D., Goldstein J., Stevens R.A., Tyrrell M., DeGasperis B., St. Laurent K., Derby R.K., Lerberg S. , Pinnix E.F., Plunkett J., Kinsella J., Pfeffer C., Killian C., Black J., Swanson K., Biggs C., Kuzmick E., Dieppa-Ayala A., Wilson Grimes K., Durdall A., Argueta J., Reid T., Fuller R., Schmitt J., Ferner M.C., Almeida M., Sánchez Márquez H.M., Rii Y.M., Nālani Olguin A., Dewire M., Wasson K.
Journal	Ecology and Evolution, 16(1): art no. e72872 (2026)
Link	www.doi.org/10.1002/ece3.72872
Summary	Scientists from across the National Estuarine Research System conducted the first-ever North American inventory of coastal wetland wildlife. Using 140 cameras in 29 estuaries, the team captured thousands of images that collectively reveal the secret lives of estuary wildlife and demonstrate the richness and diversity of wildlife in coastal wetlands.

Title	Improved reporting needed for comprehensive analysis of thin layer placement of dredge materials in salt marshes: A review
Author(s)	Reilly E. , Haaf L., Moody J.
Journal	Estuaries and Coasts, 49(2): art no. 43 (2026)
Link	www.doi.org/10.1007/s12237-025-01658-2
Summary	The addition of dredge material to a marsh surface, or Thin Layer Placement, is increasingly viewed as reuse of a valuable resource and a promising solution to combat drowning of salt marshes. This literature review was initially intended to identify patterns that would help guide the design of future projects. However, analysis was hampered by large variations in methodology and reporting of results making it hard to compare project outcomes. Here we present a set of eight recommendations for reporting standardization and clarity.

Title	An open-source tool for rapid coastal habitat change detection in the Texas coastal bend
Author(s)	Souza C.M., Capistrant-Fossa K.A. , O'Connell J.L.
Journal	Estuaries and Coasts, 49(5): art no. 137 (2026)
Link	www.doi.org/10.1007/s12237-026-01753-y
Summary	Coastal habitats in the Texas Coastal Bend are vital but threatened by environmental stressors. Researchers developed an open-source tool using remote sensing data and extreme gradient boosting to provide a more efficient monitoring tool compared to traditional field-based methods. Achieving 83.6% accuracy, this rapid habitat classification method empowers resource managers to effectively track changes and inform conservation decisions.

Title	Spatial heterogeneity of salt marsh vulnerability to sea-level rise: dual controls of hydrological setting and salinity regime
Author(s)	Yin D., Defne Z., Ganju N.K., Warner J.C., Ralston D.K., Harris C.K. , Li B.
Journal	Geophysical Research Letters, 53(8): art no. e2025GL119461 (2026)
Link	www.doi.org/10.1029/2025GL119461
Summary	Salt marshes are vital coastal ecosystems but are vulnerable to sea-level rise (SLR). Recent studies suggest that marshes exposed to waters of different salinity may respond differently to SLR, yet this has not been tested in a large estuary spanning broad salinity gradients. We address this gap in the Albemarle-Pamlico Estuarine System. Using computer models and satellite imagery, we study how marsh vulnerability changes across regions with different salinity and dynamic conditions. We find that marshes do not respond uniformly: those closer to inlets are more vulnerable to SLR than those farther inland.

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Additional Topics

(VIMS authors in **bold**, asterisk indicates VIMS student)

Topic	Chemistry
Title	Effects of environmental variables on phycotoxin degradation and preliminary identification of transformation products
Author(s)	Garber J.A. , Renaud J.B., Unger M.A. , Hale R.C. , Sumarah M.W., Smith J.L.
Journal	Water Research, 301: art no. 126034 (2026)
Link	www.doi.org/10.1016/j.watres.2026.126034
Summary	This work investigated environmental factors that influence phycotoxin stability in seawater. Exposure to UV can lead to 100% degradation of 3 phycotoxins (azaspiracid, pectenotoxin, yessotoxin) within 3 days and 50% degradation of okadaic acid in 5 days. Several transformation products were identified using high-resolution mass spectrometry.

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