

UNCW Coastal & Marine Science News

May/June 2018

A note from the executive director, Dr. Aswani Volety:

Dear Colleagues:

I hope all of you are having a wonderful summer and that you are finding time to unwind and recharge with family and friends.

One thing that has not slowed during the past two months is the research effort of faculty and staff. UNCW coastal and marine science has received a great deal of attention this summer. GenX research has garnered interest and support, as have projects like Dr. Till Wagner's work exploring icebergs and climate and Dr. Devon Eulie's shoreline management research, among many others.

This summer has also been a busy time for community outreach. The Benthic Ecology Lab worked with volunteers from the Town of St. James, the Wacammaw Boys Home and Marine Quest campers to build oyster reef systems, the Danner and Pricope labs are collaborating with Audubon N.C. and the UnderSea Vehicles Program (UVP) completed its first mission of the year in May. UNCW also hosted STEAM Team Summer Camp for unserved students from our area - you may have seen the students at CMS last month.

These projects, and more exciting endeavors that demonstrate the tremendous impact UNCW coastal and marine science programs have on our local community and the world, are detailed below.

Best wishes for a wonderful summer!

*Best regards,
Aswani Volety*

Outreach, Recognitions, & Other Notables

- ◆ Kara Yopak (Biology and Marine Biology) was featured in a [WCAI interview](#): “Sharks are Smart in Their Own Way.”
- ◆ Madeline Maren’s (M.S. Marine Biology) work on sand tigers was featured by [Port City Daily](#).
- ◆ Roger Shew (Earth and Ocean Sciences) provided the League of Women Voters a question and answer document on offshore fossil fuel energy exploration and development including summaries of the seismic issues and permitting.
- ◆ Till Wagner’s (Physics and Physical Oceanography) work on “Icebergs, Sea Ice, Land Ice and their Role in the Climate System” was featured on [WHQR](#).
- ◆ Devon Eulie (Environmental Sciences) was one of the organizers for a Stakeholder meeting examining Shoreline management research.
- ◆ The Danner Lab (BMB) has been working closely with the Pricope Lab (EOS) and Audubon North Carolina to study the thermal biology of birds on nearby beaches by integrating population biology, eggshell coloration, and thermal and visual imaging from a UAV. They launched new outreach based on this research, entitled "A Birds Eye View of the Thermal Landscape." They presented this to the students in Marine Quest's O.C.E.A.N.S. program.
- ◆ The Danner Lab (BMB) conducted outreach with Oceans-17, entitled "Surviving the Heat: Beach Bird Thermoregulatory Biology."
- ◆ The Benthic Ecology Lab (BMB) conducted outreach with Oceans-17 on projects related to reef and marsh restoration.
- ◆ Susanna Lopez-Legentil (BMB) was invited to join the Editorial board of Scientific Reports (Nature Publishing Group).
- ◆ The Benthic Ecology Laboratory (BMB; coordinated by Troy Alphin, Martin Posey, Ryan Lowndes) worked with over 70 Town of St. James volunteers, students in the Marine Quest Oceans 17 camp, as well as volunteers from the Wacammaw Boys Home (>100 folks total) to build several shoreline stabilization oyster reef systems as well as plant Spartina to aid marsh re-establishment behind the reef structures.



Outreach, Recognitions, & Other Notables

- ◆ Larry Cahoon (BMB) received the [Green Tie / Catalyst Award](#) from the N.C. League of Conservation Voters for his research on emerging contaminants in the Cape Fear River. The award recognizes someone with a long history and/or strong commitment to serving the public and protecting environmental quality.
- ◆ The UnderSea Vehicles Program (UVP) completed its first mission of the year aboard the NOAA Ship Pisces in May. The team completed 11 days of ROV operations for over 55 hours of bottom time. This mission was led by the National Marine Fisheries Service Panama City Lab and the goal was to compare fish populations on the inside of Marine Protected Area's to surrounding outside areas from Florida to North Carolina.
- ◆ Ami Wilbur (Shellfish Research Hatchery and BMB), Jay Styron (CMS), Troy Alphin (BMB), and Martin Posey (CMS and BMB) have participated in several advisory committee meetings aimed at enhancing shellfish mariculture in North Carolina. These meetings are part of the Shellfish Mariculture Advisory Committee work for the UNC Collaboratory, which is tasked with providing legislative recommendations.
- ◆ In June, the College of Arts and Sciences supported the [STEAM 2018 camp](#); a week-long, residential summer camp hosted by UNCW for underserved ninth and tenth-grade students recruited from New Hanover, Pender and Brunswick counties designed to encourage students from populations underrepresented in universities and colleges to pursue higher education and a variety of career paths through applied learning opportunities in science, technology, engineering, arts and mathematics. They spent a half day at CMS experiencing a variety of natural science and technology activities hosted by Lynn Leonard (EOS), Troy Alphin (BMB), Ami Wilbur (SRH, BMB), David Wells (CMS), Martin Posey (CMS and BMB) Jason White and Eric Glidden (UVP, CMS), and Brett Bolton and Chris LaClair (CORMP, CMS).



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- ◆ The North Carolina Siting Tool (Troy Alphin, BMB) was referenced in the Spring 2018 issue of CoastWatch Magazine.
- ◆ Brian Arbogast (BMB); Dan Baden (MARBIONC, Chemistry and Biochemistry); Jim Blum (Mathematics and Statistics); Joseph Covi (BMB); Chris Finelli (BMB); Jeff Hill (EVS); Sue Kezios and MarineQuest; Bill McLellan (BMB); Steve McMurray (BMB); Dylan McNamarra (PPO); James Merritt (CMS); Ann Pabst (BMB); Joe Pawlik (BMB); Martin Posey (CMS, BMB); Katharine Reed; Peter Schulmann (Cameron School of Business); Katelyun Schumacher; Catharina Alves de Solva (MARBIONC); and Aswani Volety (College of Arts and Sciences) were mentioned / featured in the spring [UNCW magazine](#).
- ◆ Larry Cahoon (BMB) was featured on [WECT](#) regarding GenX and Chemours.
- ◆ Larry Cahoon (BMB) and Susanne Brander (formerly BMB, now Oregon State University) were featured in [Port City Daily](#) regarding Gen-X and their participation in a Clean Water Week panel.
- ◆ MarineQuest celebrated [World Ocean Day](#). [WECT article](#).
- ◆ UNCW Researchers were [recognized](#) for their involvement with the Coastal Federation's Blueprint for the Cape Fear River.
- ◆ Joe Pawlik (BMB) and student Boston Dang (Film Studies) [won](#) the first place award for the 2018 Ocean 180 Video Challenge for their video entitled "[Coral reef rescue: Save the parrotfishes!](#)"
- ◆ Anne Stapleton's (BMB) work, "Big data used to map stress responses in corn" was featured in [Feedstuffs](#).
- ◆ Alina Szmant and Rob Whitehead (CMS) research on CISME, a device to study coral reefs was featured by [WECT](#).
- ◆ MARBIONC and CREST campus were featured in [Wilmington Biz](#).
- ◆ Alina Szmant (BMB) was interviewed by [WECT](#) on the Hawaii sunscreen ban.
- ◆ Roger Shew (EOS) discussed the poaching and habitat destruction of flytraps with the [Coastal Review](#).
- ◆ Aswani Volety (CAS) was selected for the [Millennium Leadership Initiative Institute](#).

Outreach, Recognitions, & Other Notables

- ◆ North Carolina scientists and students work to combat ocean plastics. Bonnie Monteleone (CHM) and Sam Athey (MSMS) work on ocean plastics was featured in [Waste360](#).
- ◆ Marlon Weems (MARBIONC) was selected as Judge for [BIO 2019 Start-up Stadium](#).
- ◆ Brittani Blizzard & Crystal Helms served on a panel for an Event Planning workshop through HR's Talent Advisory Board. These trainings have been created for an admins-helping-admins experience to learn more about processes and programs at UNCW. (CMS)

Presentations

- ◆ From the iMESA lab (Patrick Erwin and Susanna Lopez-Legendil, BMB). Student names are bolded:
 - ◇ **Denison ER**, McLellan WA, Pabst DA, Rhodes RG, Erwin PM. American Society for Microbiology Annual Meeting 2018, Atlanta, GA. "Host phylogeny and life stage shape the gut microbiome in dwarf (*Kogia sima*) and pygmy (*K. breviceps*) sperm whales."
 - ◇ **Evans JS**, Erwin PM, Sihaloho HF, Shenkar N, López-Legendil S (2018) Color morphs of *Distaplia bermudensis* represent cryptic lineages with distinct microbiomes that remain structurally and functionally equivalent across different environments. International Invasive Sea Squirt Conference, Woods Hole, MA. *Oral*.
 - ◇ **Goddard-Dwyer M**, López-Legendil S, Erwin PM (2018) Microbiome shifts across the native and invasive range of the ascidian *Clavelina oblonga*. International Invasive Sea Squirt Conference, Woods Hole, MA. *Oral based on poster (°1 min presentation)*.
 - ◇ **Webb J, Counts B**, Nydam M, López-Legendil S (2018) Two lineages of *Polyandrocarpa zorritensis* co-exist in the US southeastern Atlantic. International Invasive Sea Squirt Conference, Woods Hole, MA. *Oral based on poster. *Awarded an undergraduate CSURF travel Award.*
 - ◇ **Counts B**, Turon X, López-Legendil S (2018) No introduced ascidians detected in reef and mangrove habitats of the Bahamas. International Invasive Sea Squirt Conference, Woods Hole, MA. *Oral based on poster.*
 - ◇ **Thomas P**, Kinsey ST, López-Legendil S, Wilbur A (2018) Effects of air exposure on markers of oxidative damage in an invasive tunicate (*Styela plicata*) and a native shellfish (*Crassostrea virginica*). International Invasive Sea Squirt Conference, Woods Hole, MA. *Oral based on poster.*

Presentations

- ◆ From the iMESA lab (continued...):
 - ◇ Lopez-Legentil S (2018) Ascidians and their microbial Symbionts. Center for Advanced Studies of Blanes, Spanish National Research Council, Blanes (Spain). Invited Seminar.
- ◆ Roger Shew (EOS): As part of the celebration of Clean Water Week (the first week in June), Roger presented a talk to Cape Fear River Watch on June 2nd on Offshore Energy: Fossil Fuel and Wind Assessments and Issues.
- ◆ Mallin, M.A. (CMS) 2018. “Terrestrial drivers of coastal plain stream water quality in North Carolina”. Chesapeake Research Consortium, Frederick, MD. (Invited presentation).

Publications & Grants

- ◆ Mike Durako (BMB): Development of management tools to assess seagrass vulnerability to sulfide-induced die-off and meadow recovery through isotopic, genetic, morphometric and physiological approaches, Dept. of Interior, National Park Service/Everglades National Park. 2-year grant for \$276,218.
 - ◇ This proposal was submitted as a member of the South Florida/Caribbean Cooperative Ecosystem Studies Unit (CESU) in response to a NOFO from the Critical Ecosystems Study Initiative (CESI). Much of the work will utilize UNC-WIRMS facility located at CMS.
- ◆ UVP (CMS) was awarded a grant by CIOERT for a new Seabird FastCat 49 CTD to go on the Mohawk ROV. This will allow scientist to take real time CTD measurements while doing ROV operations.
- ◆ David Webster. Endangered species monitoring on Figure Eight Island, N.C.; Figure 8 Homeowners' Association; \$19,444.00. (CAS and BMB).
- ◆ Devon Eulie; Environmental Monitoring at Brunswick Town/Fort Anderson State Historic Site; North Carolina Department of Natural and Cultural Resources (NCDNR); \$21,967.00 (EVS).
- ◆ Devon Eulie; Quantifying the geomorphic, ecological, and socioeconomic impacts of shoreline management strategies: a multi-disciplinary approach; NCSU North Carolina Sea Grant; \$47,057.00.
- ◆ Daniel Baden and Jennifer McCall; Partnership for Workforce Development in the BioPharmaceutical Industry; National Institute for Innovation in Manufacturing Biopharmaceuticals (NIIMBL); \$150,000.00 (MARBIONC and CHHS).

Publications & Grants

- ◆ Martin Posey, Hope Sutton, Byron Toothman, and Heather Wells; Reserve Monitoring and Stewardship Programs Service Contract July 2017-June 2018; NCDENR Department of Environmental Quality (DEQ); \$11,056.00 (CMS)
- ◆ Daniel Baden. A1 Biochemical Laboratories Postdoctoral Fellowship 2016-2017; A1 BioChem Labs (ABCL); \$80,000.00 (MARBIONC).
- ◆ Peter Zamora; “Influence of Groundwater Flows and Nutrient Inputs on White Lake Water Quality”; Bald Head Island Conservancy; \$29,855.44 (EOS)
- ◆ Joanne Hall received a Coastal Research Projects [grant](#) from the North Carolina Community Collaborative Research Grant Program. (EOS)
- ◆ Ami Wilbur (SRH, BMB), C. Weirich (NC Sea Grant), D. Eggleston (NCSU) and D. Cerino (Carteret Community College) “Evaluation of bay scallop *Argopecten irradians* aquaculture in North Carolina as a means for industry crop diversification and restoration of wild stocks” Atlantic States Marine Fisheries Commission Marine Aquaculture Pilot Project \$116,109.
- ◆ Brian Arbogast and Nathaniel Akers; Assessing geographic patterns of genetic variation and gene flow in North Carolina populations of the Gopher Frog (*Rana capito*); NC Aquariums; \$8,700.00. (BMB)
- ◆ Heather Koopman, Alex Costidis, William McLellan, Anne Pabst, David Rotstein, and Andrew Westgate; Lipid composition and nitrogen solubility of the spinal cord and brain: comparisons between diving animals and terrestrial animals to provide insight into Type II DCS; DOD Office of Naval Research; \$84,872.00 (BMB).
- ◆ Justine Reel, Andrea Bourdelais, Jennifer McCall; STTR: Development of user-friendly fluorescence based assays for marine toxins; SeaTox Research, Inc.; \$196,619.00 (CHHS, MARBIONC)
- ◆ Henry Styron; Snowy Grouper Survey; Snowy Grouper Survey; \$7,975.00 (CMS)
- ◆ S. López-Legentil and P. Erwin. Puerto Rico Sea Grant (June 1, 2018 to April 30, 2020) – \$115,600 (total). Development of a cost-efficient assessment tool to prevent the establishment of invasive marine species in Puerto Rico. (BMB)
- ◆ Duernberger, K.A., C.R. Tobias and M.A. Mallin. 2018. Processing watershed-derived nitrogen in a southeastern USA tidal creek: An ecosystem-scale ¹⁵N tracer study. *Limnology and Oceanography* doi:10.1002/lno.10927. (CMS)

Publications & Grants

- ◆ Halls, Joanne N.; Hill, Jeffery M.; Urbanek, Rachael E.; Sutton, Hope. 2018. "Distribution Pattern of Red Fox (*Vulpes vulpes*) Dens and Spatial Relationships with Sea Turtle Nests, Recreation, and Environmental Characteristics." *ISPRS Int. J. Geo-Inf.* 7, no. 7: 247. (EOS, CMS). [Link](#).
- ◆ Smith, L. S. Hallager, E. Kendrick, K. Hope, and R. M. Danner. 2018. Husbandry of wild-caught song sparrows (*Melospiza melodia*). *Zoo Biology*. (BMB). [Link](#).
- ◆ Bonier, F., P. R. Martin, T. W. Small, J. E. Danner, R. M. Danner, W. A. Nelson, and I. T. Moore. 2018. Post-juvenal molt in rufous-collared sparrows (*Zonotrichia capensis*): energetic costs and strategies. *Ornitologia Neotropical*. (BMB). [Link](#).
- ◆ Deignan L, Pawlik JR, López-Legentil S (2018) Evidence of shifting genetic structure among Caribbean giant barrel sponges in the Florida Keys. *Marine Biology* 165: 106 (BMB)
- ◆ McConville, M.M., Roberts, J.P., Boulais, M., Woodall, B., Butler, J.D., Redman, A.D., Parkerton, T.F., Arnold, W.R., Guyomarch, J., LeFloch, S. and Bytingsvik, J., Camus, L., Volety, A., Brander, S. 2018. The Sensitivity of a Deep-Sea Fish Species (*Anoplopoma fimbria*) to Oil-Associated Aromatic Compounds, Dispersant, and Alaskan North Slope Crude Oil. *Environmental toxicology and chemistry*, (BMB / OSU, CAS). [Link](#).
- ◆ Kelley, P.H., G.P. Dietl, and C.C. Visaggi. 2018. Training tomorrow's conservation paleobiologists, p. 209-225. In C.L. Tyler and C.L. Schneider, eds., *Marine Conservation Paleobiology*. *Topics in Geobiology* 47. Springer International Publishing. (EOS)
- ◆ Borrett SR, Sheble L, Moody J, Anway EC. 2018. Bibliometric review of ecological network analysis: 2010–2016. *Ecological Modelling*. 24;382:63-82. (BMB; Evan Anway was a former MS Biology student). [Link](#).
- ◆ Furman, B. T., Leone, E. H., Bell, S. S., Durako, M. J., Hall, M. O. 2018. Braun-Blanquet data in ANOVA designs: simulated results based on field data. *Marine Ecology Progress Series* 13: 13-22. doi:10.3354/meps12604 (BMB – work is part of a 20 year long project)
- ◆ Amanda M. Cole, Michael J. Durako and Margaret O. Hall; Multivariate Analysis of Water Quality and Benthic Macrophyte Communities in Florida Bay, USA Reveals Hurricane Effects and Susceptibility to Seagrass Die-Off. 2018. *Frontiers in Plant Science*. Vol 9. (BMB)
- ◆ Scott, A.R., Pawlik, J.R. 2018. A review of the sponge increase hypothesis for Caribbean mesophotic reefs. *Marine Biodiversity*, DOI: 10.1007/s12526-018-0904-7 (BMB)

Publications & Grants

- ◆ Researchers at the University of North Carolina Wilmington gave the NC House of Representatives their report on GenX, which reveals several new poly-fluoroalkyl chemical compounds were identified at the Sweeney Water Treatment Facility. [WWAY article](#).
- ◆ Deignan, L.K, Pawlik, J.R., López-Legentil, S. 2018. Evidence for shifting genetic structure among Caribbean giant barrel sponges in the Florida Keys. *Marine Biology* 165:106 DOI: 10.1007/s00227-018-3355-6 (BMB)
 - ◇ Lindsey Deignan's paper confirms that there are two cryptic species of giant barrel sponges on Florida's reef track, and one of them is rapidly taking over!
- ◆ McConville, Megan, John Roberts, Myrina Boulais, Benjamin Woodall, Joshua Butler, Aaron Redman, Thomas Parkerton, William Arnold, Julian Guyomarch, Stephane Le Floch, Lionel Camus, Aswani Volety and Susanne Brander. 2018. The sensitivity of a deep-sea fish species (*Anoplopoma fimbria*) to oil-associated aromatic compounds, dispersant, and Alaskan North Slope crude oil. *Environmental Toxicology and Chemistry*. Vol 1999: 1-12.
- ◆ Vignier, Julien*, Anne Rolton*, Philippe Soudant, Fu-Lin E Chu, Rene Robert, Aswani K. Volety. 2018. Evaluation of toxicity of Deepwater Horizon slick oil on spat of the oyster *Crassostrea virginica*. *Environmental Science and Pollution Research*. 25 :1176-1190. [Link](#).

CMS & Partners

- ◆ Lower Cape Fear River BluePrint Open House; Cape Fear River Assembly, and Cape Fear River Partnership back-to-back meetings were held at CMS in May. These meetings included [presentations](#) by Larry Cahoon, Ralph Mead, Steve Skrabal, Martin Posey, as well as numerous student posters. (BMB, CHM)
- ◆ Welcome to Greg Czyzyk, our new Shipping and Receiving person!!!
- ◆ Note we now have an ADA accessible door for the auditorium foyer.
- ◆ Steve and Jill McMurray are pleased to announce the birth of their son: Grayson Edward McMurray was born at 4:07am on Sunday, June 24; 6lbs 4oz.

CMS & Partners

- ◆ Reminder: CMS Fall Open House - September 22nd.
- ◆ Reminder: Planet Oceans, 11 September; Speaker will be Stephen Murphey, Director of the NC Division of Marine Fisheries and UNCW alumni.
- ◆ MARBIONC, Alcami Team Up For New Workforce Development Program. [Wilmington Biz article](#).
- ◆ Harris Muhlstein was recently recognized by UNCW with a [Seahawk Kudos Award](#) for rescuing three young men caught in a rip tide at Fort Fisher Beach on May 10. Muhlstein is MarineQuest's School Coordinator and a certified ocean lifeguard.
- ◆ From Sue Kezios (MarineQuest): It's Back! After a seven year hiatus, Summer Ventures in Science and Mathematics has returned to UNCW. SVSM is a state-funded 4 week long residential program for highly talented high school students who have demonstrated a proficiency and interest in STEM. This summer we have 48 students in the program. Lynn Leonard and Patti Mason are co-instructing a course in Coastal Oceanography, with support from graduate student Cecily Heins and master teacher Steve Clark from Hoggard high school. Just in week one alone, this team has taken their class to conduct field investigations in the marsh, on Masonboro Island, aboard the RV Cape Fear and at several different beaches. Students have also spent time in the lab analyzing samples they've collected, and meeting with guest speakers including Roger Shew and Till Wagner. At the end of week two, the students will propose research projects to complete during the second half of the program.
 - ◇ June at MarineQuest has been super busy! The summer started off with a splash as we welcomed 50 summer staff members. We are nearing the half way point and have seen so many great kids already. Thank you to all of the CMS Faculty and Researchers who have collaborated with us thus far and everyone for their patients with kids in the facility.
 - ◇ Also in June MarineQuest hosted our first teacher workshop and it was a great success! Our next workshop will be held on August 13th.
- ◆ **The Coastal & Marine Science newsletter will soon be moving to an online format with an online submission form for news items. Stay tuned!**