

January 2021 Special Edition: Sea Grant Research

This month, we are putting the spotlight on some of Sea Grant's recent and notable research. You can access a complete list of recent publications [here](#).

As always, Sea Grant research projects can be searched on seagrant.noaa.gov/research and publications resulting from Sea Grant research can be accessed via the [Sea Grant Library](#). Additionally, funding opportunities and selected projects can be accessed at seagrant.noaa.gov/Funding.

486

Peer-Reviewed
Publications

972

Graduate Students
Supported

1281

Researchers

256

Graduate Degrees
Awarded

1010

Undergraduate
Students
Supported

Metrics above were reported by Sea Grant programs in June 2020 for work completed February 2019 to January 2020. More at seagrant.noaa.gov/research.

Sea Grant showcases successful research to application approaches



[Strategies for Successful Research to Application Projects: A Case Study of the National Sea Grant College Program](#)

Hollis R. Jones, Rebecca A. Briggs, Alison Krepp, Elizabeth Rohring

Frontiers in Marine Science, Published January 12, 2021

Led by 2019 Knauss Fellow Hollis Jones, a team from the National Sea Grant Office examined case studies from the Sea Grant network to better understand strategies for successful research to application (R2A) projects that address complex environmental problems occurring in a socio-economic context. The authors identified five common facilitating factors that enabled 'successful' R2A across all projects: platforms for partnerships, iterative communication, transparent planning, clear examples of R2A, and

graduate student involvement. Examples of successful frameworks are published in *Frontiers in Marine Science* in hopes of encouraging more organizations to engage in the R2A process.

Photo (credit Louisiana Sea Grant): One case study featured in the article as a successful platform for building partnerships between researchers and extension is Louisiana Sea Grant's Louisiana Discovery, Integration and Application (LaDIA) Fellows Program. As part of LaDIA, university professors from across Louisiana study a sediment core with a representative from the Coastal Protection and Restoration Authority, August 2019.

California Sea Grant Delta Science Fellowship supports salmon genomic discovery

[A complex phenotype in salmon controlled by a simple change in migratory timing](#)

Neil F. Thompson (CA SG), Eric C. Anderson, Anthony J. Clemento, Matthew A. Campbell, Devon E. Pearse, James W. Hearsey, Andrew P. Kinziger, John Carlos Garza

Science, Published October 30, 2020

This study examined the genomes of Chinook salmon from fall and spring runs, finding that a single genomic region is nearly perfectly associated with spawning migration timing but not with other traits such as maturity and fat reserves, traits long perceived as central to distinct salmon groups. Further, they concluded that associated phenotypes are caused by the migration environment rather than genetics. The authors' finding that a complex migratory phenotype results from a single gene region will facilitate conservation and restoration of this iconic fish.

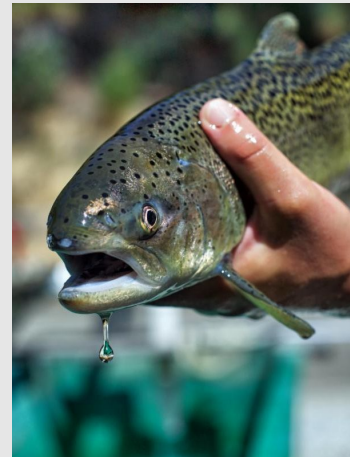


Photo (credit USFWS): Winter run Chinook salmon.

Researchers identify sea level rise-related flooding threats to Honolulu's infrastructure with support from Hawai'i Sea Grant



[Sea-Level Rise Induced Multi-Mechanism Flooding and Contribution to Urban Infrastructure Failure](#)

Shellie Habel, Charles H. Fletcher, Tiffany R. Anderson, Philip R. Thompson

Scientific Reports, Published March 2, 2020

While sea level rise induced flooding is often thought of as water washing onshore, new research from Hawai'i Sea Grant found that groundwater inundation and storm-drain backflow represent more substantial predicted flood sources in Honolulu. The study simulated flood scenarios under these three mechanisms for Honolulu's primary urban center and assessed widespread potential impacts on critical infrastructure. The results illustrate the need to develop effective flood management strategies that consider site-specific sources of sea level rise induced flooding.

Photo (credit Hawai'i and Pacific Islands King Tides Project): Vehicles attempt to drive through a flooded road in Honolulu, HI.

Study funded by Mississippi-Alabama Sea Grant Consortium develops new resources for genetic management of red snapper

[Development and characterization of genomic resources for a non-model marine teleost, the red snapper \(*Lutjanus campechanus*, Lutjanidae\): Construction of a high-density linkage map, anchoring of genome contigs and comparative genomic analysis](#)

Adrienne E. Norrell, Kenneth L. Jones, Eric A. Saillant

The red snapper *Lutjanus campechanus* is an exploited reef fish of major economic importance in the Gulf of Mexico region. With funding from Mississippi-Alabama Sea Grant Consortium, the authors developed the first draft of a reference genome for red snapper that will serve as a framework for the interpretation of genome scans during studies of wild populations and captive breeding programs.



Photo (credit USM Thad Cochran Marine Aquaculture Center): Collecting ova from a red snapper female at the Thad Cochran Marine Aquaculture Center.

Benefits of salt marsh restoration highlighted in work supported by MIT Sea Grant



[Plant biomass and rates of carbon dioxide uptake are enhanced by successful restoration of tidal connectivity in salt marshes](#)

Faming Wang, Meagan Eagle, Kevin D. Kroeger (MIT SG),
Amanda C. Spivak (MIT SG), Jianwu Tang

Science of the Total Environment, Published January 1, 2021

Efforts to restore tidal flow to former salt marshes have increased in recent decades in New England. With support from MIT Sea Grant, this study compared plant biomass and carbon dioxide fluxes between restored marshes and natural marshes at four sites. The findings indicate that well-restored salt marshes can result in greater plant biomass and net ecosystem carbon dioxide exchange, which has the potential to enhance rates of carbon sequestration post-restoration.

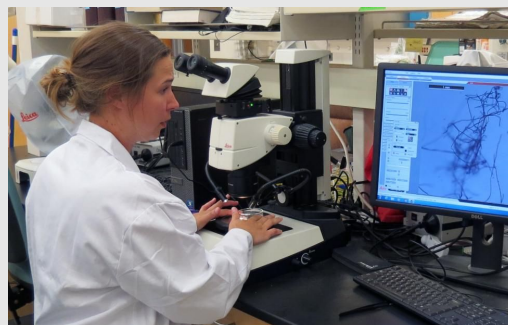
Photo (credit MIT Sea Grant): Salt marsh grass is measured with a measuring tape.

Study summarizes current knowledge, future directions on microplastics effects in North American fishery species

[Microplastic occurrence and effects in commercially harvested North American finfish and shellfish: Current knowledge and future directions](#)

Britta R. Baechler, Cheyenne D. Stienbarger (NC SG),
Dorothy A. Horn, Jincy Joseph, Alison R. Taylor, Elise F.
Granek (OR SG), Susanne M. Brander

Limnology and Oceanography Letters, Featured in
February 2020 Special Issue



Microplastics are pollutants of increasing concern, which are pervasive in the environment. Aquatic organisms encounter and ingest microplastics, but there is a paucity of data about those caught and cultured in North America. The authors of this study, which include a North Carolina Sea Grant 2020 Knauss Fellow, Cheyenne Stienbarger, and Oregon Sea Grant-funded Elise Granek, summarize current knowledge, identify data gaps and provide future research directions for addressing microplastics effects in commercially valuable North American fishery species.

Photo (credit Tiffany Woods | Oregon Sea Grant): Britta Baechler magnifies fibers from clothing with a microscope during her research at Portland State University in 2017.

Funding and Career Opportunities

[Sea Grant Career Opportunities](#) Sea Grant has several job openings across the country, such as Minnesota Sea Grant-Water Resources Center Extension Educator, Great Lakes Outreach Coordinator with New York Sea Grant, and Coastal Economics Specialist with Georgia Sea Grant.

[State Sea Grant Program Funding Opportunities](#) State Sea Grant Programs provide funding opportunities for a variety of topics within Sea Grant's strategic priorities. Programs are now opening requests for proposals. See [Sea Grant's state funding page](#) for more information and deadlines.

[Greater Amberjack Funding Opportunity](#) The Mississippi-Alabama Sea Grant Consortium is accepting proposal submissions to estimate the abundance of greater amberjack in U.S. waters in the Gulf of Mexico and South Atlantic regions. The principal investigator of a proposal must be located at a research university located within a coastal state extending from Virginia to Texas. Letters of Intent are due **February 5, 2021**.

[Special Projects: Marine Debris](#) This competition seeks projects that prevent the introduction of marine debris into the marine and coastal environment. Competitive projects will actively engage and educate a target audience in programs designed to raise awareness, reduce barriers to marine debris prevention (e.g., lack of access to waste receptacles or alternatives to single-use items), and encourage and support changes in behaviors to ensure long-term prevention of marine debris. This competition is open to all Sea Grant programs. Due date: **March 5, 2021**

Fellowship and Internship Opportunities

[Mississippi-Alabama Sea Grant Undergraduate Internships](#) Please see the links below for paid undergraduate internship (apprenticeship) opportunities this summer, offering research & extension experience related to coastal conservation & restoration, helping communities plan for sea level rise, or urban wildlife. To qualify for this program, you must not graduate before December 2021. The first two positions ([Sparks](#) and [Collini](#)) will be based in Biloxi, MS at the MSU Coastal Research and Extension Center. The third position ([Rohnke](#)) will be based in Raymond, MS at the MSU Central Research and Extension Center. The application deadline for these opportunities is **February 14, 2021**.

[Community Engaged Internship Program](#) Sea Grant programs are now accepting applications for undergraduate students to participate in Community Engaged Internships. For [North Carolina Sea Grant](#), applicants should contact [Jane Harrison](#) for more information. [Oregon Sea Grant's](#) application deadline is **February 15, 2021**. [Wisconsin Sea Grant's](#) application deadline is **February 25, 2021**. Stay tuned for details on additional opportunities.

[John A. Knauss Marine Policy Fellowship Program](#) The Sea Grant Knauss Fellowship provides a unique educational and professional experience to graduate students who have an interest in ocean, coastal and Great Lakes resources and in the national policy decisions affecting those resources. Applicants are strongly encouraged to reach out to the Sea Grant Program in their state one to two months prior to the state application deadline to receive application support and provide notification of an intent to apply. Applications must be submitted to the state Sea Grant program by **February 19, 2021**.

[Michigan Sea Grant Undergraduate Internship Program](#) Michigan Sea Grant's undergraduate internship program coordinates and funds students working on summer Great Lakes stewardship projects. Each internship pairs a student with a business, nonprofit, government agency, or academic institution that can help support and guide the project. The application closes on **March 1, 2021**.

Connections and Partner Updates

[NOAA Fisheries Report on COVID-19 Impacts to Seafood Industries](#) The U.S. fishing and seafood sector generated more than \$200 billion in annual sales and supported 1.7 million jobs in recent years. It experienced broad declines in 2020 as a result of the COVID-19 public health crisis, according to a new NOAA Fisheries analysis. While losses vary by sector, by region and by industry, data and information from this report may help businesses and communities assess losses and inform long-term recovery and resilience strategies.

[NOAA Education's Favorite Photos of 2020](#) A few of NOAA Education's favorite photos of 2020 came from Sea Grant programs! Check out photos from Lake Champlain Sea Grant and Woods Hole Sea Grant, along with Oregon Sea Grant's grand prize-winning photo, which will be featured on the cover of the 2020 NOAA Education Accomplishments Report.

[USGCRP Advisory Committee](#) The National Academies is seeking new members to serve on the Committee to Advise the U.S. Global Change Research Program (USGCRP), with expertise in the following areas: climate variability and change; human dimensions of global change; adaptation and mitigation approaches and technologies; observations, monitoring, and data management; ecosystem impacts and interactions; water cycle; carbon cycle; atmospheric composition; climate modeling; land use and land cover change; decision support tools; program management and evaluation; and risk characterization and communication. [Submit nominations for committee members](#) by **February 12, 2021**.

[NOAA B-WET FY21 Notice of Funding Opportunity](#) NOAA Fisheries is now seeking proposals under the Gulf of Mexico Bay Watershed Education and Training (Gulf B-WET) Program. NOAA's B-WET program

funds locally relevant, authentic experiential learning for K-12 audiences through Meaningful Watershed Educational Experiences. In addition to supporting implementation of the MWEE, the FY21 Gulf B-WET funding opportunity includes a new priority to address gaps in environmental education exacerbated by the global pandemic. Applicants should apply through Grants.gov. Applications must be received by 11:59 p.m. ET on **February 26, 2021** to be considered for funding.

Wildlife Forever Fish Art Contest. The Fish Art Contest uses art, science and creative writing to foster connections to the outdoors and inspire the next generation of stewards. The contest is open to all youth in grades K-12 (ages 5-18). To compete, participants will submit an entry consisting of a completed entry form, an original illustration of a fish from the Official Fish List and a one-page creative writing submission (required for grades 4-12). The 2021 contest deadline is **March 31, 2021**.

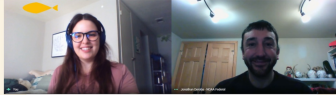
Thank you, Sea Grant mentors! #NationalMentoringMonth



I COULDN'T ASK FOR SOMEONE MORE KIND AND WISE TO OVERSEE MY PROJECT.

Despite the distance, Dr. Jon Deroba offered substantial guidance and advice, helping me complete the preliminary work of my fellowship.

- Emily Liljestrand
2019 NMFS-Sea Grant
Population & Ecosystem Dynamics Fellow



MENTORING IS A TRUE AND EQUAL EXCHANGE OF GIFTS.

It energizes and inspires all parties in the transaction, and spurs everyone to pay it forward.

- Mona Behl,
Associate Director of Georgia Sea Grant,
quoting her mentor, Dr. Bill Hooke



THANKS TO CRAIG (MCLEAN), I'M WALKING AWAY FROM THIS YEAR WITH INSIGHT INTO THE QUALITIES NECESSARY FOR BECOMING A STRONG LEADER!

One of the key lessons I have learned from him is the importance of using open communications with colleagues, stakeholders and decision-makers. This transparency and honesty can help form trusting relationships, which are critical for successful partnerships and collaboration.

- Tiffany Atkinson
2020 Knauss Fellow, Special Assistant to
the Assistant Administrator, NOAA Research



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