



Photo credit: Katie Swanson

DISCOVERY STARTS HERE

Discoveries & News

Record Number of Turtles Rescued at University of Texas Marine Science Institute

Winter Storm Uri caused damage and hardship across the state of Texas, and at the Port Aransas campus of the University of Texas at Austin,

the work to recover from it included rehabilitating a record number of sea turtles threatened by the cold weather.

Staff at the Amos Rehabilitation Keep (ARK) at The University of Texas Marine Science Institute received 900 live sea turtles under threat from cold-water temperatures that had dipped to levels that are almost always fatal. Sea turtles are cold-blooded reptiles that require warm temperatures. When the water dips below 50

degrees Fahrenheit, turtles experience what is known as “cold stun,” with decreased heart rate and circulation, leading to lethargy followed by shock, pneumonia and often death. Experts say this month’s storm represented the largest cold stunning event in the United States since at least 1980, when the Sea Turtle Stranding and Salvage Network was established.

As the sea turtles started arriving, the ARK’s sea water tanks were quickly filled to capacity. The overflow went to the Institute’s heated auditorium, where about 700 turtles were treated.

To date, all but five sea turtles were released. A pair of vessels donated by Port Aransas Fisherman’s Wharf transported the majority of the turtles for release into waters that had warmed to the 55-degree threshold required to prevent a secondary stunning event.



Kellie Stagge, Animal Rehabilitator; Rylee Gonzales, Animal Attendant; and Kathryn Gray, Animal Attendant, apply lubricant to carapace of a green sea turtle to keep shell moist while out of the water. Photo credit: Jace Tunnell.

Marine Science News

*The University of Texas at Austin
Marine Science Institute
Activities and Events (Jan-Mar)*




1st Quarter 2021

Freeze Could Trigger Harmful Algal Bloom

The February 2021 freeze caused a massive kill of marine life along the



The February freeze killed many marine life including sea turtle, fish and invertebrates. The loss of invertebrates that filter nutrients creates a scenario for harmful algal blooms. Photo credit: Jace Tunnell.

Texas Coast. The dead fish and invertebrates, like oysters and worms, are in the process of decaying and will likely release nutrients that will promote the growth of algae. Typically filter feeders, such as oysters, worms, barnacles and tiny zooplankton would gobble up excess algae. In this extreme situation; however, filter feeders themselves have died and algae they would have consumed could undergo rapid growth. “These conditions are ripe for a harmful algal bloom,” says professor Dr. Ed Buskey from the University of Texas Marine Science Institute. Dr. Buskey knows a thing or two about harmful algal blooms. He was one of the lead investigators for the region that conducted research on the brown tide bloom that persisted for over eight years in the Laguna Madre in the 1990s. That algal bloom was a result of an extended period of drought leading to severe hypersalinity in the Laguna Madre, followed by a severe freeze and resulting fish kill that released a large pulse of

nutrients.

“I’m not saying for certain that there will be a harmful algal bloom,” says Buskey “but it is a very likely scenario.” The eight-year 1990 brown tide event was sustained in part because it was constrained to the Laguna Madre and Baffin Bay, which are prone to hypersalinity and low water exchange with the Gulf of Mexico. The bloom finally dissipated after heavy rains flushed the brown tide from Laguna Madre in the fall of 1997.

Buskey and his colleagues at the University of Texas Marine Science Institute are monitoring the local waters for conditions that may cause a harmful algal bloom. As research coordinator for the Mission-Aransas Reserve, Dr. Buskey has over 10 years of data with nutrient trends for local bay systems and the abundance numbers for the plankton grazers that help to eat algal blooms. “We’re ready, watching and collecting data with the hope that this freeze and scenario will be different enough that there won’t be a big bloom event like in the 90s,” says Buskey. “This time, we are armed with more knowledge about how and why they persist and what can make them go away.”

Losing Land and What it Means

The northern Alaska coast is losing up to 1.3 square miles of land every year to the sea, which is equivalent to the area of Central Park in New York City. This loss of land has a dramatic impact on local marine food webs and greenhouse gas emissions. Nowhere is that impact more apparent than in Drew Point, Alaska that experiences giant land losses on average of 17.2 meters, or 56 feet, every year—it is one of the fastest eroding coastlines in the world. Graduate student Emily Bristol from the University of Texas Marine Science Institute in Port Aransas, Texas and her colleagues drilled into the eroding bluffs to determine what role erosion plays in freeing ancient carbon and nitrogen that was previously trapped in frozen ground.

In a recent manuscript in *Frontiers in Earth Science*, Bristol and colleagues described their efforts to determine how much carbon and nitrogen from the eroding bluffs are being released into the ocean to fuel food webs and greenhouse gas emissions. To understand how past geology can impact the amount of carbon and nitrogen stored in



Lousie Farquharson, Assistant Professor from University of Alaska Fairbanks, looks down as Emily Bristol, graduate student at The University of Texas Marine Science Institute, cores into frozen ground near Drew Point, Alaska to obtain samples to bring back to the laboratory. Photo credit: Benjamin Jones, University at Alaska Fairbanks

bluffs, the researchers drilled in three different types of terrain (ancient lake basins, recently drained lakes and no lakes) to collect cores from the tundra surface all the way to below sea level. With the help of mass spectrometry and dating the material with isotopes, the researchers were able to characterize the age and source of organic matter in frozen soil. The researchers then used aerial images

from a 52-year time period (1955-2017) to estimate erosion inputs of carbon and nitrogen.

The researchers found that this rapidly eroding coastline on the northern Alaskan coast is releasing 1,369 kilograms of carbon per meter every year during the 21st century (2002–2018). This rate, while staggering, is even more so because it was nearly double the average flux of the previous half-century (1955–2002). Total nitrogen fluxes through coastal erosion had similar trends that emphasize coastal erosion is a significant pathway for both carbon and nitrogen trapped in permafrost to enter the ocean.

While erosion has shown to be a significant source of organic matter in the Arctic, the results from this indicate that analysis of the most rapidly eroding bluffs like in Drew Point, Alaska are important to collect because these areas are poised to contribute the greatest amount of carbon and nitrogen in the future.

Bristol is joined by her colleagues in contributing to this research: Craig Connolly and Jim McClelland from UTMSI; Thomas Lorenson and Bruce Richmond from United State Geological Survey; Anastasia Ilgen, Charles Choens, and Diana Bull from Sandia National Laboratories;



<https://youtu.be/T10zDkUXPP0>

Learn about what some of our students are researching in this *Talk Science to Me* short video. Xiangtao “Taotao” Jiang is studying plastics in the ocean - if they attract toxins and how long it will take them to degrade.

Mikhail Kanevskiy and Benjamin Jones from University of Alaska Fairbanks; and Go Iwahana from International Arctic Research Center. This study was supported by Sandia National Laboratories and the National Science Foundation.

UT Austin and its Marine Science Program Is Once Again Named Among the World's Leading Universities

The latest 2021 edition of the World University Rankings by Subject named programs at The University of Texas Austin among the top in the world. In particular, Marine Science moved up from 24 to rank number 21.

Of the 41 academic disciplines at the university that are in the 2021 subject rankings, more than a third of them improved their positions this year. In total, nine subjects including Marine Science are ranked among the top 25. The rankings, compiled by higher education analysts QS Quacquarelli Symonds, are based on a variety of factors including research impact and overall academic

and employer reputation. The rankings looked at the performance of 14,435 individual university programs at 1,452 universities in 86 locations around the world.

"These rankings reflect the high-impact research and creative problem-solving UT Austin is known for and illustrate the immense societal value of leading research universities," said Dan Jaffe, interim executive vice president and provost. "Without our world-class faculty and exceptionally talented students, this level of academic excellence would not be possible."

UT Austin has been recognized as a top university by other recent publications, including [U.S. News & World Report](#), which ranked [UT Austin No. 38](#) in the world in its Best Global Universities ranking. [Five specialty programs](#) ranked No. 1, and 48 schools and specialties ranked among the nation's top 10. The university also received national recognition for Latino student success.



We'd like to give a special shout out to our newly promoted faculty members. Congratulations Dr. Brett Baker, Associate Professor, and Dr. Deana Erdner, Full Professor!

Around Campus

Hurricane Recovery & Repairs

- The pier is in progress. Pilings for the pier lab will be installed within the next two weeks and be complete in May.
- The new seawater system will be bid in July and installation will begin late summer.
- At the Amos Rehabilitation Keep, the Animal Hospital is in design with WKMC Architects.
- The Patton Marine Science Education Center is currently out for bid and construction is anticipated this summer.
- The new Estuarine Research Center Dormitory will be bid in summer with construction in late summer.
- The windows of Dormitory D will be replaced in June.
- The Center for Coastal Ocean Science is currently out for bid and construction is anticipated this summer.
- The visiting scientist lodging, Lund House is under construction, with completion estimated this year.
- We anticipate construction of the Wilson Cottage Complex to begin in late 2021.
- The wet laboratory (Room 120) at the Fisheries and Mariculture Laboratory will be repaired this summer.
- Generator replacement at Port Street Campus is expected in mid-May and before hurricane season begins.
- The research vehicle garage is under construction.
- The exhibits at the Bay Education Center in Rockport were completed and the Center is ready to be open.
- Invasive vegetation species at the Wetlands Education Center will be removed and the area will be replanted.
- Campus irrigation repair will begin soon.
- Landscaping damaged by the freeze is being designed for replanting.
- HVAC coils damaged by freeze are ordered and will be installed soon.
- Surveys of the damage to one of the Wilson cottages damaged by the freeze are being completed.
- The monument sign at the Port Street campus entrance will be completed later this year.

UTMSI Marina Opens

The University of Texas Marine Science Institute (UTMSI) is very pleased to officially reopen its marina. The marina was created in the 1950s to facilitate easy access to the Gulf of Mexico and local bay systems. The marina serves the Institute's research fleet; educational vessel, the R/V Katy; long term slip rental tenants; and is the dock for the Aransas Harbor Pilots. Slip rentals support the maintenance of the marina and UTMSI research vessels. The renovation of the marina was long-overdue and made even more critical after damage from Hurricane Harvey. The renovation



The Sarah Beth, owned and captained by Norman Howard, was the first private boat to return to the University of Texas Marine Science Institute marina. Norman was accompanied by Philip Stephens and Jim Grafga. Norman has rented a slip in the marina since 1996 and named his boat after his daughter.

included an entire replacement of bulkheads, docks and ramp. Associated ADA ramps, lighting, hydraulic lifts, and floating docks were also installed. The marina's boat ramp is used by the UTMSI small boat fleet and vessels from state and federal agencies, including the Texas Parks and Wildlife Department, U.S. Army Corps of Engineers and the

United States Coast Guard. Reconstruction was supported by the Texas State Legislature, The University of Texas at Austin President, UTMSI Director Discretionary funds, and Aransas-Corpus Christi Pilots. The marina renovation was designed by GOVIND Development LLC and constructed by J.M. Davidson Incorporated.

Mission-Aransas Reserve and Education

MissionAransas.org



Bay Education Center's Exhibits are Installed

The Bay Education Center, at 121 Seabreeze Drive, Rockport, Texas is ready for opening with fresh and new exhibits. The Center took on major damage during 2017's Hurricane Harvey storm where a majority of the exhibits were impaired or destroyed. Museum Arts and Teal Construction recreated some of the exhibits, and in some cases, designed and built completely new interactives that were recently installed in the newly renovated building.

Plans to reopen the building to visitors will be confirmed once the University of Texas deems it safe to do so. Exhibit installation was supported by a grant from the National Oceanic and Atmospheric Administration and National Estuarine Research Reserve System. The



New exhibits were installed in the Bay Education Center. Courtesy photo.

University's Mission-Aransas Reserve operates the Bay Education Center in partnership with Aransas County Navigation District and with support from the City of Rockport.

Abandoned Crab Trap Removal Program

Every February, Texas Parks and Wildlife Department closes the bays to commercial and recreational crabbing for a 10-day period. This temporary closure enables a coordinated effort by agencies and organizations to remove derelict crab traps which continue to entrap and kill crabs, fish, and turtles.

This year, 1203 traps were removed from the three coastal bay systems on the Texas mid-coast (Lavaca/Matagorda, San Antonio, and Aransas Bays). "It's especially important to remove these old traps from the bays. Not only are they a source of ghost fishing, but they are also navigation hazards and unsightly litter," said co-organizer Katie Swanson, Mission-Aransas Reserve Stewardship Coordinator at the University of Texas Marine Science Institute.



New exhibits were installed in the Bay Education Center. Courtesy photo.

Removal of derelict crab traps was a massive effort this year involving 60 boat days and 148 volunteer days. The effort was led by San Antonio Bay Partnership, Mission-Aransas National Estuarine Research Reserve, the Lavaca Bay Foundation, and the Matagorda Bay Foundation who organized many groups, including U.S. Fish and Wildlife Service's Aransas National Wildlife Refuge, Texas Parks and Wildlife Department Coastal Fisheries, local chapters of the Coastal Conservation Association, the Guadalupe Blanco River Trust, International Crane Foundation, Mid-Coast Texas Master Naturalists, Texas Sea Grant, Lavaca-Navidad River Authority, and individual citizen volunteers.

This is the second year that technology was used to collect data on each removed trap including: location, owner, and content. SABP Chairman Allan Berger stated, "The data reveals that many of the derelict traps are on the shoreline, likely the result of several storms this summer. However, a significant number appear to be in

place and not picked up by commercial crabbers. It is anticipated that an analysis of the data can reveal root-causes and result in fewer lost traps in the future."

This year's derelict crab clean-up effort was supported with funds from a NOAA Marine Debris Program Community-based Marine Debris Removal grant obtained by the Coastal Bend Bays and Estuaries Program, supplemented by local sponsors Guadalupe Blanco River Trust, Guadalupe Blanco River Authority, and the San Antonio River.

Berger says that "While the cleanup is a lot of work, it is essential for keeping our bays clean and productive—and it's fun." If you want to be included in the early planning for next year, contact Allan Berger at sanantoniobaypartnership@gmail.com.



You can watch any of the 2021 Public Lecture Series videos on the @UTMSI YouTube Channel

A look at Sea Turtle Stranding and Rehabilitation from 1982 - 2020 at the Amos Rehabilitation Keep
Alicia Walker

What Seagrass Monitoring In the Gulf of Mexico Can Tell Us
Dr. Victoria Congdon

Fantastic fish and where to find them: surprising connections between fish and man-made structures
Dr. Derek Bolser

Understanding and conserving coral reefs: of fishes, finances, and fairytales
Dr. Simon Brandl

Mercury Exposure From Subsistence Fishing
Dr. Kristin Nielsen

Diversity in a Changing Ocean
Dr. Brett Baker and Dr. Andrew Esbaugh

Saving a Thousand Cold Stunned Sea Turtles
Jace Tunnell

AN INTRODUCTION TO QGIS

A four-part virtual workshop series on creating maps and exploring spatial data

WEDNESDAYS IN MAY 2021
FROM 3PM - 5PM

For more information and registration, contact Sarah at sarah.cunningham@austin.utexas.edu



MISSISSIPPI STATE UNIVERSITY™
 COASTAL RESEARCH & EXTENSION CENTER



Calling all sailors! In February, our captain and staff from R/V Katy helped our colleagues at Conrad Blucher Institute install a CDIP buoy near the Aransas Ship Channel entrance. This buoy measures wave height, period and direction in real time and is helpful for anyone heading out into the Gulf in a small vessel. [Click here to see the data](#)

CDIP is operated by the Ocean Engineering Research Group, part of the Integrative Oceanography Division at Scripps Institution of Oceanography.

The City Nature Challenge is April 30 - May 3. Join the fun and help Port Aransas compete for the most observation of wildlife and native plants.

Let's do this.



iNaturalist training
 Saturdays at 8 a.m.
 Guided Nature Walk at Port Aransas Community Park

iNaturalist training
 April 17th from 10 a.m.-2 p.m.
 World Migratory Bird Event [Leonabelle](#) Turnbull Birding Center

May 1st 8 p.m.
 Go Mothing!
 Port Aransas Nature Preserve Pavilion



April 30 – May 3





Teacher Nurdle Patrol Kits Hit the Street

Are you a teacher that teaches students about environmental issues? Then we have a kit just for you! It's called a Teacher Nurdle Kit, and it has a curriculum for your students to learn about how plastics reach the ocean and all the materials needed for the teacher to explain the problems and solutions clearly. Over 300 kits have already been distributed to teachers all over the U.S. [Click here](#) to see what is in the kit and how teachers can get one.

Spotlight on Students

New Fellowships & Awards

- Zhenxin Hou received spring 2021 Graduate School Professional Development Award.
- Ben Negrete will receive the 2021-2022 Graduate School Continuing Fellowship.
- Miranda Madrid will continue on as the NERR-GRA for summer 2021.
- Kathryn Appler will receive the Office of Graduate School Summer 2021 Fellowship.
- Hannah Rempel received a Women Diversity Hall of Fame Marine Conservation Graduate Scholarship and an Anchor QEA Graduate Education Scholarship.
- Angelina Dichiera was short-listed for the [Journal of Experimental Biology Outstanding Paper Prize](#)

Graduations

- Victoria Congdon, Ph.D., "Assessing seagrass ecosystem status and condition: Multi-scale applications of a long-term monitoring program"
Advisor: Ken Dunton
- Derek Bolser, Ph.D., "From Somatic Growth to Community Structure of Marine Fishes: Explaining Variation with Physical Drivers and Methodological Biases at Multiple Scales"
Advisor: Brad Erisman

Remembering

Judy Renick

With sadness we report that Judy Renick, a Life Member of the Marine Science Advisory Council, recently passed away. Judy was a strong advocate for UTMSI and has made a substantial gift to the Institute in her will. She will forever be remembered for her kindness and steadfast support. Her gift provides a legacy to her commitment.



Ms. Judy Renick was a Life Member of the Marine Science Advisory Council. Courtesy photo.

Susan Bradshaw

Our thoughts are with Marine Science Advisory Council Member Major Bradshaw. His wife Susan, that many knew from the Marine Science Advisory Council meetings, passed away. Susan was a proud University of Texas alumna. She loved Port Aransas where she and Major spent much of their time.



UTMSI remembers some of our Women in History with (top left to right) Lynn Amos, Ruth Grundy, Mary Abell, Dr. Joan Holt, (bottom left to right) Marcia Hawthorne, Dr. Sharon Herzka, and Edith McAllister. Courtesy photos.

UTMSI Women in History

To commemorate Women In History month this March, we highlighted seven women who have made significant impacts or promoted advancement for UTMSI and the marine science field.

Wildlife ecologist and artist Marcia Kier (now Marcia Hawthorne) painted scientifically accurate watercolors of biotopes displayed in [Texas Coastal Zone Biotopes: An Ecography](#). The paintings were developed by a field team of ecologists, who sketched in the field, identified the individual living organisms, and aided in the niche perspective. The result is a pictorial summary of the environment, plant, and animal population of the various identified ecological systems called biotopes. They were painted in 1972-1974 and are still used today in our Wetlands Education Center.

Mary Abell, once a student and now a member of our Marine Science Advisory Council has been influential in supporting UTMSI and advancing scientific discoveries.

In addition to being one of the longest serving advisory council members, Mary also became UTMSI's first Director of Development. More recently, in honor of her late husband, Dr. Joe Abell Jr., Mary established the [Mary Anderson Abell and Joseph Miles Abell, Jr., M.D. Endowed Chair in Marine Science](#). The new endowed chair is designed to enhance the stature of The University of Texas Marine Science Institute located in Port Aransas, Texas.

Dr. Joan Holt is a [pioneer in marine science and mariculture](#). Dr. Holt is known throughout the world and entered the field of marine science at a time when there were few women. She is best known in the public eye by fishermen conservation groups for her work on larval fish rearing and nutrition. She and Dr. Connie Arnold were the first to spawn and rear red drum in captivity. Their work led to all the red drum restocking effort by the Texas Parks and Wildlife Department.

Ruth Grundy was the first librarian at UTMSI and served for almost 30 years. She was a visionary and helped make

the UTMSI library one of the finest and most robust marine science libraries in the United States. She was a dedicated member and leader in the IAMSLIC. The regional SAIL meeting of IAMSLIC in 1999 was [dedicated to her memory](#).

Edith McAllister was a founding member of the Marine Science Advisory Council. She was instrumental in creating and supporting the Anthony Amos Endowment for Support of the Animal Rehabilitation Keep. The Edith McAllister Turtle Building at the ARK is named in her honor. Her guidance and steadfastness throughout the years helped us become what we are today.

Our female graduate students have gone on to shape the world of marine science. One of them, Dr. Sharon Herzka, holds not one, but two degrees in marine science from UTMSI. Her master's research in seagrass laid the ground work for using carbon as a metric to determine seagrass health. She then focused her PhD research on using isotope ratios to understand larval fish movement from the coast to bay systems. For the last 20 years, Dr. Herzka has been a professor at the CICESE in Mexico, and continues to advance the field of isotope, fish habitat use, and Gulf of Mexico oceanography.

Lynn Amos was the first fiscal director for UTMSI. She was instrumental in transitioning the institute from paper-

based accounting to digital. Lynn created, from scratch, an accurate and intricate accounting system called LOLA. LOLA provided digital stability and real-time information in a time when that was rare. She and her husband, Tony Amos, first arrived in Port Aransas in 1976. After serving close to 30 years at UTMSI, Lynn officially retired from the finance office - but not really because she poured her energies supporting the then Animal Rehabilitation Keep, or ARK. The ARK was renamed the Amos Rehabilitation Keep in honor of both Lynn and Tony Amos.

Welcome

New Employees

Welcome! Kathryn Gray (Animal Assistant at ARK), Shayna Whitaker (Veterinarian at ARK), Lexie Redmond (Research Scientist Assistant in Deana Erdner's lab), and Adriana Reza (Education Coordinator for Mission-Aransas Reserve).

Would you like to be added to our newsletter mailing list? E-mail Sally Palmer at sally.palmer@utexas.edu



The Texas 87th legislative session is in progress and Dr. Dean Appling (left), Interim Director, and Georgia Neblett, Director of External Affairs (right), visited Representative Todd Hunter (center) and other legislators at the start of the session to talk about UTMSI contributions. Courtesy photo.