



## ***Talk Science with Me*** *A Virtual STEM Learning Program*

Bring Mission-Aransas Reserve and University of Texas Marine Science Institute scientists into the classroom to share their research, career pathways, and how their work benefits our communities and everyday lives. Our scientists study marine and coastal environments in the Gulf of Mexico and around the world, looking at the biology geology, chemistry, and physics of these diverse systems. Students are encouraged to ask questions and share their thoughts during these live, virtual connections.

Each program is approximately 30 minutes in duration and is designed to connect directly with in-class or at-home students and teachers. Schedule a program for your own classroom by contacting us at [msi-edureserve@utlists.utexas.edu](mailto:msi-edureserve@utlists.utexas.edu), or join a scheduled program by checking our schedule and registering in advance on our *For Teachers* webpage, <http://missionaransas.org/education/teachers>.

Thanks to funding through the National Oceanic and Atmospheric Administration (NOAA) and the National Estuary Research Reserve System (NERRS) these programs are offered free of charge.

### **Available Presentations & Descriptions**



**Derek Bolser, Graduate Research Assistant (Ph.D. Student)**  
*Using SONAR to study fish populations in the Aransas Ship Channel near Port Aransas, Texas*

Derek Bolser, a PhD candidate at the University of Texas Marine Science Institute, uses SONAR to measure the abundance and distribution of fish and studies which environmental factors influence them. He will talk about his research in the Port Aransas Ship Channel and explain how fish abundance in the channel varies in response to environmental factors. This baseline data helps us detect if populations change due to future coastal development, pollution and a changing climate.



**Dr. Andrew Esbaugh, Professor/Researcher**

*The Value of Basic Research in Marine Science*

Andrew Esbaugh is a professor of fish physiology at the University of Texas Marine Science Institute. His field is best described as understanding how the fish body is designed to survive in marine and freshwater habitats. This presentation will discuss common questions related to why this field – and basic research more broadly – is important in the larger scope of marine science. In particular, he will focus on how basic research into the form and function of fishes has informed on major issues such as climate change and the Deepwater Horizon oil spill, as well as the broader role of basic science in contributing to management of the marine environment.



**Angelina Dichiera, Graduate Research Assistant (Ph.D. Student)**

*How do fish breathe underwater?*

Angelina Dichiera, a Ph.D. student, studies a simple question-- how do fish breathe underwater? In her research, she looks at how different types of fish (including sharks) can have special adaptations to better breathe underwater, even in environments where it should be very hard to breathe (air-breathing fish are real!). She will talk about how she uses a very small, but very important protein in the blood, heart, muscles, and gills to answer this question, and how this small protein can affect a fish's ability to succeed in life.



**Dr. Brett Baker, Professor/Researcher**

*Exploring life deep in the oceans*

Microbes (including bacteria) live almost everywhere on the planet, from high in the sky to deep underground. Dr. Baker will talk about exploring the depths of the Gulf of California, in the Alvin sub, looking for new forms of life near hydrothermal vents. His research of microbes here is revealing entirely new branches on the tree of life. He will also talk about the challenges and excitement of working in places like deep sea vents.



**Maggie Langwig, M.S., Research Technician**

*DNA in the deep sea*

Maggie studies microorganisms in the deep ocean to understand what taxonomic groups live there and how they obtain energy. To do this, she isolates the DNA of deep-sea microbes and analyzes what genes they have. Her talk will cover exciting new methods that allow us to study microorganisms in the deep ocean and understand how they

live in a place that has little to no light or oxygen. This talk will give you a sense for why these tiny living creatures are so important and how they have transformed our understanding of where life can exist.



**Ben Negrete, Graduate Research Assistant (Ph.D. Student)**

*Breathing without oxygen*

Ben is a first-generation graduate student who studies fish biology. His research focuses on how fish adaptations shift with environmental stressors like low oxygen (hypoxia). He studies how they breathe, how their blood changes, and how they swim in these hypoxic waters. Ben's has had the chance to work with all kinds of animals in the marine environment and has a deep love of the ocean and the adaptations that animals have to live in it.