

## KEYNOTE PRESENTATIONS

### **Diversity of the Indo-Pacific Network and the Genomic Observatories MetaDatabase**

**Chris Bird**

Texas A&M University-Corpus Christi

#### **Abstract**

DIP-Net (<http://diversityindopacific.net/>) is a network of marine molecular ecologists that formed to combine resources and address relevant questions about the diversity and connectivity of marine life in the vast Indo-Pacific region. One of the major products to result from DIP-Net is the Genomic Observatories MetaDatabase (GEOME, <https://geome-db.org/>), a web-based database that captures the “who, what, where, and when” of biological samples and associated genetic sequences. The meta-data stored by GEOME is critical for the associated DNA sequences to be useful for data mining and meta-analyses. GEOME originated from the Moorea Biocode project database and a subsequent DIP-Net database created from members sharing not just their DNA sequences, but the associated information with the collection of those DNA sequences which GenBank was not designed to handle. It represents a successful collaboration between information managers and research scientists to increase the usefulness of genetic data stored in GenBank.

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### **Effects of Hurricane Harvey on Water Quality, Productivity and the Planktonic Food Web in the Mission-Aransas Estuary, Texas**

**Edward J. Buskey**

The University of Texas Marine Science Institute

#### **Abstract**

Hurricane Harvey made first landfall on San Jose Island, Texas, as a category 4 hurricane with peak wind gusts recorded at over 130 mph, and then moved directly over the Mission-Aransas Estuary. The Mission-Aransas National Estuarine Research Reserve had been monitoring water quality, nutrients and plankton data for 10 years prior to Harvey. Water quality data are collected at 5 locations with YSI data sondes and meteorological data at 2 locations, both at 15-minute intervals. Nutrient, chlorophyll and plankton data are collected monthly. Water quality and meteorological data collected in the reserve can be used to calculate primary production

and net community metabolism of the estuary. These data provide insights into the effects of major weather related and freshwater inflow events on water quality and plankton productivity over the past decade. Following the hurricane, salinities dropped sharply and a major phytoplankton bloom occurred throughout the estuary. In Copano Bay, a short-lived but massive bloom of a single species of copepod, *Acartia tonsa*, was observed, suggesting that resting eggs buried in the sediments were re-suspended and hatched synchronously after the storm. Most impacts on the base of the planktonic estuarine food web were short lived, although some impacts have persisted for much longer. However, most water quality and plankton food web indicators have now returned to more characteristic values.

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## **The Coastal Fisheries Research Program at UT Marine Science Institute**

**Brad E. Erisman**

The University of Texas Marine Science Institute

### **Abstract**

I am a fisheries ecologist with specific interests in reproductive biology, behavioral ecology, population dynamics, fisheries management, and conservation biology. My research utilizes a blend of innovative field, laboratory, and analytical techniques to address fundamental and pressing questions in fisheries ecology and marine conservation biology. My work is motivated by a desire to contribute to the advancement of science and to provide meaningful results for practical use in management and conservation. I employ a quantitative approach to examine connections between the reproductive strategies, life history patterns, and population dynamics of fishes and their resilience to anthropogenic and environmental stressors. Specifically, I investigate how variations in these traits at multiple spatial and temporal scales influence the response of fish populations and species to fishing pressure and environmental conditions, which may require different management solutions to maintain a balance between sustainable fisheries and healthy, resilient ecosystems.

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## What the Deepwater Horizon Oil Spill Taught Us about the Deep Sea

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### Abstract

The Deepwater Horizon (DWH) drill ship exploded in April 2010 causing one of the largest oil spills in history. What happened next is an amazing story. Thousands of scientists from all over the world were mobilized, about 3 billion dollars was spent on assessment and research studies, and the 20.8 billion dollar environmental damage settlement in April 2016 is the largest in US history. All dark clouds have a silver lining, and one positive outcome of the event was the huge focus on Gulf of Mexico habitats, how they work, and how to fix them. More was discovered in the six years after the spill than in the previous 40 years! We are now in a 15-year period of restoration activities. The DWH blowout wasn't the first in the Gulf of Mexico. A similar event happened in 1979 at the Ixtoc-1 wellhead in the Bay of Campeche off the coast of Mexico. We now know both events spilled about the same amount of oil, had deep-sea plumes, and marine oiled snow deposition events. Based on comparison studies, it will take 50 – 100 years for the deep sea to recover from the DWH oil spill.

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### Rapid Response on the Texas Coast: Acquiring Post-Harvey Lidar and Imagery to Assess Storm Impact and Monitor Recovery

Jeffrey G. Paine

Aaron Averett

John Andrews

Tiffany Caudle

John Hupp

Kutalmis Saylam

Geology, Jackson School of Geosciences, The University of Texas at Austin

### Abstract

Hurricane Harvey, which rapidly intensified in the Gulf of Mexico and reached Saffir/Simpson

Category 4 status as it made its first landfall on the central Texas coast on Friday, August 25, 2017, brought extreme winds, heavy rainfall, massive flooding, and moderate storm surge to the open coast and bays of Texas. Within a week of landfall, researchers at the Bureau of Economic Geology began acquiring airborne lidar data and imagery to assess storm impacts on the beach and dune system along the Texas Gulf shoreline, identify debris and infrastructure damage in Central Texas bays, quantify damage to bird habitat in bays and lagoons, and establish a baseline for monitoring beach and dune recovery in the months and years to come. These surveys were flown as part of the Texas General Land Office's comprehensive response to the effects of Hurricane Harvey as well as the Jackson School of Geosciences' rapid-response effort. Once the time-critical surveys of post-storm conditions were completed in the fall of 2017, efforts commenced to understand and quantify the impact of this somewhat peculiar storm and monitor the long-term recovery process.

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## **Hurdles with Nurdles: A Gulf-wide Citizen Science Project**

**Jace W. Tunnell**

Mission-Aransas NERR, The University of Texas Marine Science Institute

### **Abstract**

Nurdle Patrol is a citizen science project lead by the Mission-Aransas National Estuarine Research Reserve at the University of Texas Marine Science Institute in Port Aransas, Texas. We are looking to gather information about where nurdles are located across the Gulf of Mexico, remove the nurdles from the environment and create awareness about the nurdle issue to help find the source. Nurdles are small plastic pellets and are the basis of everything plastic. They look like food to animals, absorb toxins in the environment, and could be deadly to some animals. This presentation will discuss what a nurdle is, how they get into the environment, and what efforts are being made to reduce the number of pellets entering the waterways.