Abstracts
The University of New Orleans

Oral Presentations

Do Anger Appeals Affect Black Audiences Differently Than White Audiences?
Ami Brooks
Faculty mentor: Monique Turner (Michigan State University)

African Americans and White Americans are likely to have different reactions to political anger appeals. We aim to analyze emotional responses from audience members as they react to anger and non-angering appeals to race-related and race-neutral speeches. A specific emotional appeal used successfully over time known to invoke feelings of anger to achieve results with high efficacy is known as anger appeal. Dr. Davin Phoenix found that though successful for the majority, anger appeals do not affect black audiences, and invoke feelings of resignation instead of anger. Though an interesting theory, it has not been systematically tested. Dr. Monique Turner and I have devised an experimental survey study on Amazon Mechanical Turk (MTurk) to systematically test Dr. Phoenix's theory. We hypothesize that African American survey participants will display more feelings of resignation compared to their white counterparts whom we hypothesize will respond with more feelings of anger.

Oral session 2A

Pocket Parks and Student Murals
Rowan Lambert
Faculty mentor: Carol Lunn

The Office of Research collaborated with Fine Arts students for a public-art initiative raising awareness about the devastating effects of climate change on local bird populations. Murals were painted around specific areas on campus that were then transformed into pocket parks full of native plants. These beautification projects are part of the Audubon Mural Project and Keep UNO Beautiful, a Keep Louisiana Beautiful affiliate. Fine Arts students received service learning credit for their work on the murals. Members of Audubon Society gave students presentations about the Audubon Mural Project, opening the door for networking opportunities and further collaboration with students. The Native Plant Initiative provided plants for the beautification projects, utilizing native plants to benefit the overall environment, provide habitat and shelter for native insect species as well as provide an abundant food source for native bird populations. The Office of Research hosted a community outreach event where the Native Plant Initiative gave away hundreds of free native plants. The community was informed about the efforts of UNO Fine Arts students, the Audubon Mural Project, the beautification projects as part of Keep UNO Beautiful, and the importance of native plants.

Oral session 1D

Using Wavelets to Compress Acoustic Data
Avery Landeche & Shaun Pies
Faculty mentors: Kendal Leftwich and Juliette Ioup

This research investigates the use of wavelets to compress acoustical data. The power spectral densities of acoustic data before and after wavelet decomposition, compression, and recomposition are compared to assess the quality of compression. Cross-correlation is used to compare the amplitude peaks of the power spectral densities.

Oral session 3A

Ecological Niche Modelling of the Leptosiphon
Sable Murphy & Caitlyn Bumby
Faculty mentor: Charles Bell

To better predict the potential impacts of climate change on species ranges it is critical to understand their current distributions and ecologies. The goal of this study is to create models for the geographic ranges of 36 Californian and other western species of the Leptosiphon (Polemoniaceae) using a limited set of climatological variables through a process known as ecological niche modelling (ENM). These models can be used to both generate and test hypotheses of ecological relationships and important factors dictating the current distribution of these rather small, arid-adapted flowering plant species. Ecological niche models in this study were generated using the R packages ENMeval, ENMtools, and Maxent on RStudio. Climatological predictor variables used in model training were sourced from WorldClim 2.1 with a resolution of 2.5 arc seconds. The most common predictor variables used in model inputs were the minimum temperature of the coldest month, temperature annual range, mean temperature of the wettest quarter, and precipitation of the warmest quarter. Our next goal is to predict the future range shifts of study species using various climate change scenarios predicted by both low and high emission models.

Oral session 3F

Poster Presentations

Effects of Ocean Warming and Acidification on the Rates of Suspension Feeding for Two Reef Invertebrates in the Northern Gulf of Mexico
Haley Beaulieu
Faculty mentor: Traci Erin Cox

Ocean acidification and warming often have species-specific consequences on organismal behavior and physiology that in turn can scale to influence ecosystem processes. Suspension-feeding invertebrates couple benthic and pelagic processes and are prominent taxa at artificial reefs throughout the northern Gulf of Mexico (nGoM)-a region where effects of global ocean change are relatively understudied. Our purpose was to evaluate whether predicted ocean changes will impact the feeding rates of two suspension-feeding invertebrates abundant on nGoM reefs, the Leafy jewel box clam (*Chama macerophylla*) and Titan acorn barnacle (*Megabalanus coccopoma*). In a laboratory mesocosm, organisms were exposed to single- and multi-stressor treatments. Treatments mimicked current conditions as well as modest and extreme scenarios of warming and acidification predicted for the end of the 21st century. Feeding rates were measured within isolated chambers. Organisms were fed algae and the remaining algae were assessed at set time intervals (5, 20, 40, and 80 minutes) using images slides, analyzed with image-J. Bivalve feeding appeared unaffected yet, barnacles kept at the more extreme acidification scenario (corresponding to pHT of 7.5) had significantly increased feeding rates ($p < .001$) compared to other conditions (pHT of 8.1 and 7.8). This effect, however, was not observed in multi-stressor treatments. Therefore, barnacles may only be able to compensate for moderate stress by taking up more energy. This interpretation is consistent with survivorship measured in the same study and is concerning given suspension feeders improve water clarity and serve to transfer primary productivity from the water column into secondary fish production.

Poster session 1B

Synthesis of Rilmenidine Analogues as Potential Therapeutic Agents for the Treatment of Breast Cancer
Danielle Poussard
Faculty mentor: Mark Trudell

The amino-oxazolidine rilmenidine has been shown to activate the expression of Nischarin which in turn can reduce breast cancer cell proliferation. Structural modification of rilmenidine is envisaged to lead to more potent activation of Nischarin expression and ultimately to greater efficacy in breast cancer cells. To this end the synthesis of a broad series of rilmenidine analogues has been initiated to establish the structure activity relationships of this molecule relative to Nischarin activation. To achieve the preparation of the initial target compounds, new chemistry has been developed for the efficient

synthesis of the N-(2-chloroethyl)amide precursors to the target amino-oxazolidine analogues. The synthetic details along with the scope and limitations of the reaction sequence for the preparation of the N-(2-chloroethyl)amides will be presented.

Poster session 2A

Growth and Decay of River Dunes at Slow, Medium, and Fast Flood Rates Within a Flume

Victoria Sanchez, Giancarlo Portocarrero, Mayson Wagner, Brittany Johnson
Faculty mentor: Robert C. Mahon

The present is the key to the past. Environmental processes that are taking place today can help explain those that took place millions of years ago. A key factor in understanding past river systems is analyzing the growth and decay of wavelike bedforms called dunes, as they're commonly preserved in the stratigraphy of sandy rivers. In aqueous environments, a dune forms when water flow forces sediment grains to move in a particular direction and accumulate until they form a mound. In order to examine how various flood conditions affect dune migration and preservation, a series of three experiments were conducted in a flume. This environment resembled the natural conditions of a shallow, narrow river channel with the ability to control discharge amplitude and stream flow conditions. With that, the tests mimicked flood events at slow, medium, and fast rates without changes in depth or magnitude of discharge. Through each experiment, the results were recorded and interpreted by three hydrographs. The data suggested that longer flood events show a better preservation of falling limbs in dunes, while shorter flood events present no stratigraphic signal of dune preservation. This was likely due to them having less time to scour. Fundamentally, changes in dune morphology help tell the story of ancient rivers throughout the course of Earth's history. They preserve the geologic information that supports the interpretation of what we see on today's surface.

Poster session 2B

Chlorophyll a Production on Artificial Reefs in the Northern Gulf of Mexico

Emalee Swisshelm, Haley R. Beaulieu, Sable Murphy, Amanda Kirkland, Mark Albins, & Sean Powers
Faculty mentor: T. Erin Cox

Algae are prominent members of benthic communities at artificial reefs in the northern Gulf of Mexico where they serve as a food source to support higher trophic levels. Despite importance, reef algal abundance and the environmental factors that influence it, are little described in the region. Our goal is to describe the spatial and temporal variation in algal abundance (using Chlorophyll a production as a proxy) at artificial reefs off the coast of Alabama to better understand carbon production and inform on ecosystem management. As a first step, we investigated changes in Chl-a production with light availability due to depth both among and across reef structures. In October 2021, 137 plugs of the reef (with organisms attached) were collected from the top and bottom of 17 pyramid modules of similar age and construction, located at depths of 11 to 33 m. Pigments were extracted in acetone and a fluorometer was used to measure Chl-a (µgL-1) standardized to plug surface area. Chlorophyll a production ranged from 0.38–11.40 µg m-2 and did not differ with depth. Thus, there is no evidence that light limited algal abundance up to 33 m depth. Production was also highly variable between replicates from the same reef and this likely reflects the patchy distribution of organisms that we observed. As a next step, we will investigate for temporal variation in Chl-a production indicative of seasonal changes and we will test for patterns in production with distance from Mobile Bay, a variable source of riverine inputs.

Poster session 1A

Stormwater Analysis of Gatto Park Neighborhood Low Impact Development using PCSWMM

Shannon Tracy , Ashley Robichaux, & Will Peteres
Faculty mentor: Gianna Cothren

A UNO Civil Engineering Design team provides this preliminary stormwater management analysis for a bid on the contract to redevelop the Gatto Playground Park neighborhood site. Gatto Playground, located at 5100 Wildair Drive in New Orleans, Louisiana, is a park that offers outdoor recreation and nature preservation. The UNO design team's objective is to address the problem of flooding in the neighborhood by implementing green infrastructure such as bioswales in the park and bioretention cells and permeable pavers along the streets in Gatto Park

neighborhood. The effect of green infrastructure, Low Impact Development (LIDs) on site runoff is modelled in PCSWMM, provided by computational Hydraulics International (CHI). Data needs include a digital elevation map (DEM), soil type, land use and a map of the existing drainage system. The Curve Number method is used to compute infiltration. The model estimates the potential for flooding during and after a one-hour design storm that covers the entire site. Results generated by the model show a dramatic reduction in peak flow and increase in time of concentration at the outfall of the drainage system for the neighborhood after the implementation of LIDs. Correspondingly, the model indicates that if LIDs are in place, flooding at drainage junctions will no longer occur. Data gathered from the Gatto Park neighborhood during similar storm events can be compared to the results of the model and the model can be calibrated. This could produce a more accurate reflection of the flooding conditions of the neighborhood during a storm.

Poster session 2A