

Correlates of Fish Abundance and Community Composition in Eelgrass Beds in Southern California - Christine Whitcraft

Estuaries provide a range of valuable functions and services including habitat provision, flood protection, water filtration, and carbon sequestration. Specific organisms within estuaries, like submerged aquatic vegetation, are key to the provision of these functions. In southern California, one of those key organisms is eelgrass (*Zostera marina*) which forms beds in the high subtidal range of many estuaries and is critical to habitat provision for fish and invertebrates. Thus, understanding which features of these beds correlate with high abundance, diverse fish communities is important to better protect and restore eelgrass within the region. Our study used baited, remote underwater videos (BRUVs) to compare fish abundance (MaxN) and community composition among a range of eelgrass beds from low to high densities. Preliminary data from two estuaries (Huntington Beach Wetlands, Newport Bay, CA) indicate that intermediate levels of shoot density correlate with higher MaxN of fish for smaller schooling and hiding species. Larger roving predators and diggers, such as round rays, use edge or open habitats more than these smaller, bed-associated species. Next steps include evaluating abiotic parameters, leaf area, leaf complexity, and grain size to see if other factors correlate. Information generated from this study will help inform development of regional monitoring plans as well as increase our understanding of what makes eelgrass beds so valuable as habitat.

Rookery Island Creation: Siting, Design, Construction Challenges, and Long-term Monitoring - Cameron Perry

To address a regional decline in colonial waterbird nesting habitat, Galveston Bay Foundation, USFWS, and others began work on a project in Dickinson Bay, TX through a phased approach that began with developing design criteria for rookery islands to inform data gathering (surveys, geotechnical investigations, utility locating). Two island concepts were then developed, one for each nesting type (upland and ground). The project team selected the upland nesting island, which also contained shoreline habitat to accommodate ground nesters, for design and permitting. The island consisted of constructing a ring breakwater, filling with sediment to create an upland area, and sloping down to a beach with an oyster reef just offshore. Construction of the island began in September 2021 and was completed in late spring 2022. Various lessons were learned during the construction process that can be implemented on future projects.

A five-year monitoring and adaptive management plan is being implemented by GBF that focuses on the island's infrastructure, vegetation establishment, and colonial nesting bird utilization. Over 2,000 trees and shrubs have been transplanted between September 2022 through January 2023. The monitoring data collected is intended to inform project partners of annual site conditions, assist in identifying adaptive management needs, and guiding adaptive management actions to ensure project goals are achieved along with informing bird nesting design and restoration actions for other parts of the Texas coast. In 2023, birds began nesting

on the island and we estimated that there were 4,692 breeding pairs of birds from six different species.

The Little Lagoon Restoration Project: A Multi-Disciplinary Approach to Estuarine Restoration - Carl Ferraro

The City of Gulf Shores has been awarded \$5.9M in RESTORE funding to work in partnership with ADCNR, Auburn University, the University of South Alabama, Dauphin Island Sea Lab, and Mississippi State University to implement programs that improve water quality, increase and enhance habitat area, and improve ecological productivity. The five-year project will have secondary beneficial impacts to the region including more resilient and sustainable infrastructure, and increased recreational and ecotourism opportunities.

Objectives of this project will include:

- oThe construction of approximately 1000 feet of living shorelines and shoreline habitat.
- oImprovements to the hydrology of the existing canal system.
- oThe connection of approximately 200 individual septic systems to city sewer.
- oThe establishment of an oyster restoration program.
- oMarsh and seagrass bed restoration.
- oHydrodynamic modeling of Little Lagoon.
- oEcological research and long-term monitoring by university partners

The project team will also work with local community groups including the Little Lagoon Preservation Society and Gulf Shores High School's Sustainability Academy to develop opportunities for volunteer involvement, and public outreach/education.

Specific project components include:

- oShellfish Restoration Program - Auburn University
- oSeptic to Sewer Conversion Program - City of Gulf Shores
- oShoreline Restoration Program - Mississippi State University
- oMo's Landing Living Shoreline Demonstration Project - City of Gulf Shores
- oHydrologic Connectivity Program - City of Gulf Shores
- oHydrodynamic Modeling/Monitoring - University of South Alabama
- oSeagrass Restoration Program - Dauphin Island Sea Lab

Stantec is assisting the City in the implementation of the Septic to Sewer Conversion Program, the Mo's Landing Living Shorelines Demonstration Project, and a Hydrological Connectivity Project. This presentation will highlight specific location, goals and objectives of each of these project components as well the planning and design process and current status of the projects.

Community-Led Coastal Restoration: Surfrider's Approach to Building Resilience - Carla Avila-Martinez

Coastal ecosystems face unprecedented threats from climate change, including sea-level rise, erosion, and habitat degradation. In response, community-led restoration efforts have emerged

as a vital strategy to enhance coastal resilience and mitigate these impacts. Surfrider Foundation has been engaged in community-led coastal restoration efforts for decades, leveraging its extensive network of volunteers and chapters to address the pressing challenges of climate change and coastal degradation. How can local communities effectively lead coastal restoration efforts in the face of escalating climate change threats? In this presentation, we explore Surfrider's experiences and lessons learned from engaging and working with communities to implement nature-based solutions for coastal resilience.

The Climate Action Program at Surfrider empowers and supports chapter volunteers to promote nature-based solutions and restore degraded ecosystems in their communities. Through a combination of grassroots organizing, developing strong partnerships, and hands-on restoration events, Surfrider has utilized an approach that empowers communities to take action in protecting their coastlines. By mobilizing volunteers, including local residents, students, and businesses, Surfrider has led and participated in over 100 coastal restoration efforts of different levels of complexity aimed at restoring dunes, mangroves, and other critical coastal ecosystems across the United States, including Puerto Rico. Key topics to be covered include the importance of community engagement, strategies for building partnerships, and the role of education in sustaining community-led restoration efforts. This presentation will showcase Surfrider's successful strategies and case studies on community-led coastal restoration, offering valuable insights for practitioners, policymakers, and stakeholders in the field of coastal restoration.

Marsh Terracing: One of the Multiple Lines of Defense to Benefit the Barataria Land Bridge - Matt Salmon

The Barataria Basin of Southern Eastern, Louisiana provides storm surge benefits to the Greater New Orleans Area. This basin has experienced the second greatest land loss of the nine coastal Louisiana basins. The Barataria Landbridge, a critical natural feature of this basin, plays a critical role in the overall resiliency of the State, its restoration and protection needs are well documented in Louisiana's Comprehensive Master Plan and Jefferson Parish's Coastal Strategic Action Plan.

Various state agencies have implemented restoration projects to reduce land loss in this area since 1993. The Upper Barataria Terracing Project is a priority project in the 2020 Jefferson Parish Coastal Strategic Action Plan. Project location was selected for proximity to other marsh restoration projects recommended in Louisiana's Coastal Master Plans. Marsh terracing is a cost-effective technology that works in harmony with these other restoration solutions to reduce energy and assist with sediment capture and provide a buffer to reduce wave and storm surge attenuation generated by frequent storm events.

This presentation will discuss the how this project fits into Louisiana's multiple lines of defense storm risk reduction strategy, best practices for selecting location and designing a terracing project, and the iterative process to identify and successfully apply for various grant funding opportunities.