



HARRIS BIENN

THE WATER INSTITUTE
OF THE GULF



Experience Profile

Harris Bienn joined The Water Institute in 2014 as a research intern in the Engineering Design and Innovation group. His focus has evolved broadly into the realm of geospatial analysis and geodata engineering.

His ongoing research is focused on assessing the sociocultural and environmental impacts of habitat loss due to multidimensional stress, applying geostatistical and machine learning techniques to forecast riverine shoaling, developing Geographic Information Systems (GIS) techniques to capture traditional ecological knowledge, and designing web GIS applications to support stakeholder engagement.

His academic interests include scientific information visualization, digital cartography, data science, and programming.

His recent work at The Water Institute includes the identification of nature-based solutions for sustainable water resource management, application of participatory GIS to inform resilience assessment efforts in Louisiana and across the Gulf Coast, and geostatistical assessment of the combined impacts of multiple hazards on vulnerable populations.

Prior to joining The Water Institute, Harris worked for the Jacobs Alliance Group at the ExxonMobil Chemical Plant doing process engineering preparations for turnaround projects. Harris spent four years in the United States Marine Corps as an enlisted infantryman and left the service in 2012.

Company Role

Geospatial Scientist/Lead GIS Analyst

Project Role / Focus Areas

- Geospatial and geostatistical analysis
- Multi-hazard severity
- Socioeconomic vulnerability and equity
- Sociohydrology

Education

- B.S. – Environmental Engineering, Louisiana State University, 2018
- Marine Corps Leadership Course, United States Marine Corps Leadership Academy, 2010
- Spatial Intelligence Analysis, Marine Corps Air Ground Combat Center, 2009

Awards / Honor

- Judge's Choice, 28th WERC Environmental Design Contest, April 2018
- Navy Achievement Medal, July 2011
- Afghanistan Campaign Medal, December 2009, September 2010
- Combat Action Ribbon, January 2010

Professional Experience

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| The Water Institute of the Gulf | 2014-Present |
| <ul style="list-style-type: none"> • <i>Research Associate</i> | |
| Jacobs Engineering Group | 2012-2013 |
| <ul style="list-style-type: none"> • <i>Process Technician</i> | |
| United States Marine Corps, 3rd Battalion 4th Marines | 2009-2012 |
| <ul style="list-style-type: none"> • <i>Section Leader</i> | |

Selected Projects

A Community-Informed Framework for Quantifying Risk and Resilience in Southeast Louisiana. *The Walton Family Foundation, The Foundation for Louisiana, Baton Rouge.*

This study integrated multi-attributed aspects of coastal risk—economic, social, and environmental—into a unified coastal resilience assessment framework using a consistent set of quantitative metrics. To capture the unique local character and priorities that comprise community resilience across different geographies within the region, a rigorous, replicable process was developed to gather and incorporate qualitative local knowledge into a quantitative data model. A racial equity lens was incorporated into the analysis given recognition that communities of color and Indigenous peoples are not inherently vulnerable because of their demographics, but often experience greater risk from hazards because of a history of structural and environmental discrimination.

Selected Projects (cont.)

Monitoring Plans for Louisiana's System-Wide Assessment and Monitoring Program (SWAMP) Version IV. Louisiana Coastal Protection and Restoration Authority.

Hundreds of coastal protection and restoration projects are currently being planned, designed, and built throughout Louisiana's coastal zone. Measuring the combined impacts of these projects at a basin-wide scale, as well as identifying unintended consequences, is significant and necessary undertaking. This study described the development of a coastwide monitoring plan for Louisiana with specific implementation recommendations for Barataria Basin, Pontchartrain Region (Breton Sound, Pontchartrain and Mississippi River Delta basins), and the western basins of Calcasieu-Sabine, Mermentau, Teche-Vermilion, Atchafalaya, and Terrebonne. Key transdisciplinary research was conducted under the Coastal Ecology and Human Dimensions programs with additional support from the Applied Geosciences and the Natural Systems Modeling programs at The Water Institute of the Gulf.

Assessing Temporal and Spatial Variability in Community and Parish Level Responses to Oil Spills and Other Events in Coastal Louisiana U.S. Bureau of Ocean Energy Management, New Orleans, Louisiana

This study, conducted in partnership with the University of Arizona, enhanced academic understanding surrounding the socioeconomic effects of major disruptive events on Louisiana communities across short- and long-term horizons. The cumulative impact of these disruptive events, which included oil spills, hurricanes, floods, and droughts, was assessed using complex geospatial and statistical analysis techniques that resulted in decadal hazard surfaces identifying relative hazards within a specific decade and across multiple decades. Through application of Principle Component Analysis (PCA), decadal and cross decadal hazard incidence was compared against employment and natural resource dependence to determine the greatest influence on migration variability in the Louisiana coastal zone in the second half of the 20th century.

Selected Reports

1. Moss, L., Carruthers, T., Bienn, H., McInnis, A., & Dausman, A. (2020). Gulf-wide data synthesis for restoration planning: Utility and limitations. *Shore & Beach*, 23–33.
2. Baustian, M. M., Clark, F. R., Jerabek, A. S., Wang, Y., Bienn, H. C., & White, E. D. (2018). Modeling current and future freshwater inflow needs of a subtropical estuary to manage and maintain forested wetland ecological conditions. *Ecological Indicators*, 85, 791–807.
3. Scott A. Hemmerling, Tim J.B. Carruthers, Ann C. Hijuelos, Sequoia Riley, and Harris C. Bienn. 2016. Trends in Oil and Gas Infrastructure, Ecosystem Function, and Socioeconomic Wellbeing in Coastal Louisiana, The Water Institute of the Gulf, Baton Rouge, LA, WISR-001-2016.
4. Scott A. Hemmerling, F. Ryan Clark, and Harris C. Bienn. 2016. Water Resources Assessment for Sustainability and Energy Management, The Water Institute of the Gulf, Baton Rouge, LA Selected Documents

Selected Conference Proceedings and Presentations

1. Analyzing the Flooding Vulnerability of an At-Risk Neighborhood in New Orleans, Louisiana Using Community-Sourced Data. 28th WERC Environmental Design Contest. Apr. 8-11, 2018. Las Cruces, NM.
2. Simulating Ecological Responses to Coastal Ecosystem Restoration: A Case Study of Proposed Sediment Diversion Operation on the Lower Mississippi River. Restore America's Estuary Summit. Dec. 2016. New Orleans, LA.
3. Model Development for Deltaic and Coastal Ecosystem Restoration: Nutrients, Pelagic Primary Production and Sedimentary Processes. State of the Coast. Jun. 1-3, 2016. New Orleans, LA.