HARRIS BIENN

Research Scientist, Geospatial Analysis Community of Practice Lead

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 State Marine Corps as an enlisted infantryman and left the service in 2012.

COMPANY ROLE

Research Scientist, Geospatial Analysis Community of Practice Lead

PROJECT ROLE / FOCUS AREAS

Geospatial methodology design

Geospatial analysis

Geospatial data science

EDUCATION

BS Environmental Engineering, Louisiana State University, 2018

U.S. Marine Corps Leadership Academy, 2010

Spatial Intelligence Analysis, 2009

AWARDS/ HONORS

Best Paper Award, Journal of Geographic Systems, March 2021

Judge's Choice, 28th WERC Environmental Design Contest, April 2018

Navy Achievement Medal, July 2011

Combat Action Ribbon, January 2010

PROFESSIONAL EXPERIENCE

2014-Present: Research Scientist, Geospatial Analysis Community of Practice Lead, The Water Institute

2012-2013: Process Technician, Jacobs Engineering Group

2009-2012: Section Leader, United States Marine Corps: 3rd Battalion 4th Marines

SELECTED PROJECTS

Southeast Conservation Adaptation Strategy (SECAS) *U.S. Fish and Wildlife Service. (2021). Geospatial Methodology Design.* This program advanced the utility and application of SECAS to complement existing management support tools in the Gulf of Mexico. The data and reports produced through this effort enable use of SECAS and additional data in planning and implementation of conservation and restoration projects.

A Community-Informed Framework for Quantifying Risk and Resilience in Southeast. *The Walton Family Foundation, The Foundation for Louisiana. (2020). Geospatial Methodology Design.* 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 together and incorporate qualitative local knowledge into a quantitative data model.

Monitoring Plans for Louisiana's System-Wide Assessment and Monitoring Program (SWAMP) Version IV. *Louisiana Coastal Protection and Restoration Authority. (2019). Cartographic Design.* 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 and the western basins of Calcasieu-Sabine, Mermentau, Teche-Vermilion, Atchafalaya, and Terrebonne.

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. (2018). Geospatial Analysis.* 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.

SELECTED REPORTS

1. Kiskaddon, E., **Bienn, H.**, Hemmerling, S., Dalyander, S., Grismore, A., Parfait, J., Miner, M., et al. (2022). Supporting Habitat Restoration in the Northern Gulf of Mexico through Synthesis of Data on Multiple and Interacting Benefits and Stressors. Journal of Environmental Management, 318, 115589.

2. Hemmerling, S., Carruthers, T., Hijuelos, A., & **Bienn, H.** (2020). Double Exposure and Dynamic Vulnerability: Assessing Economic Well-Being, Ecological Change and the Development of the Oil and Gas Industry in Coastal Louisiana. Shore & Beach, 72–82.

3. Hemmerling, S., Barra, M., **Bienn, H.**, Baustian, M., Jung, H., Meselhe, E., Wang, Y., and Eric White. (2020). Elevating Local Knowledge through Participatory Modeling: Active Community Engagement in Restoration Planning in Coastal Louisiana. Journal of Geographical Systems 22 (2): 241–66.

4. 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.

5. Baustian, M., Clark, F.R., Jerabek, A., Wang, Y., **Bienn, H.**, & White, E. (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.

6. Hemmerling, S., Clark, F.R., & **Bienn, H.** 2016. Water Resources Assessment for Sustainability and Energy Management, The Water Institute of the Gulf, Baton Rouge, LA.