Assessment of Marsh-Dependent Nekton in Restored Salt Marshes

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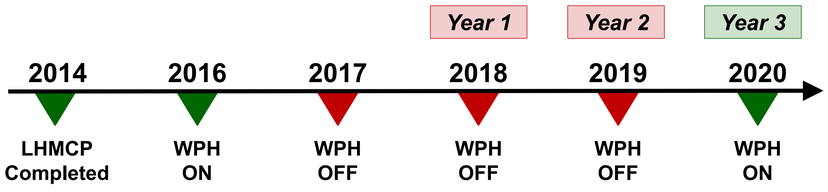
Marsh Loss and Restoration

Without preventative action, coastal land loss in Louisiana is predicted to be ~4,500 km^2 in the next 50 years. The construction of tidal marshes such as the **Lake Hermitage March Creation Project (LHMCP)** and the use of river diversions such as the **West Pointe a la Hache (WPH) siphon** to build wetlands by reconnecting the Mississippi River to adjacent estuaries have been proposed to mitigate the land loss.

To understand how river diversions may influence the ecological trajectory, food web structure, and functionality of both natural and restored marshes, **Year 1 Objective** was *to evaluate the on-marsh nekton community across sites and marsh subhabitats.*

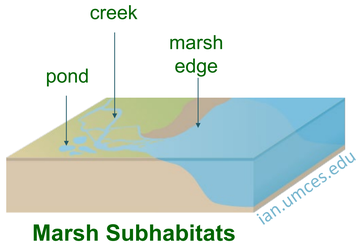
Timeline & Sampling Approach

Our sites include two created marshes and one natural marsh at the LHMCP as well as three natural marshes at varying distances from the WPH siphon.



Wire mesh traps (n = 3) were deployed 3 times for 1 hour at each subhabitat across 6 sites.

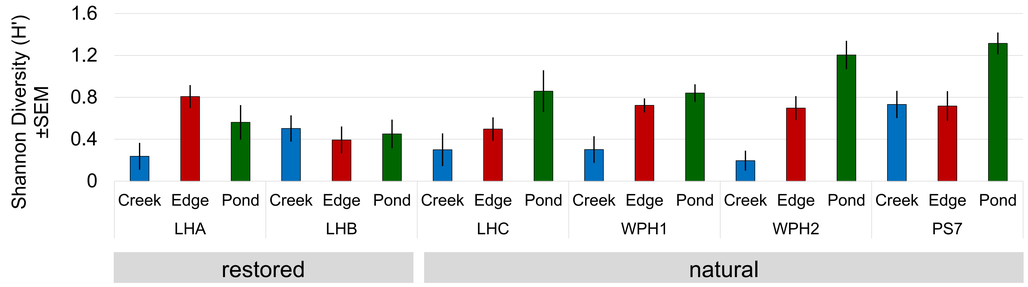
Individuals from various taxonomic groups and size classes were collected, identified, and measured.

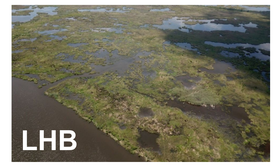


Marsh Subhabitats

On-Marsh Nekton Communities

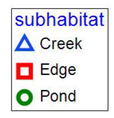
At natural sites, mean Shannon diversity (H′) values were higher in **ponds** relative to **creeks** and marsh **edges**. At the restored sites, the pattern of higher diversity in ponds did not hold.

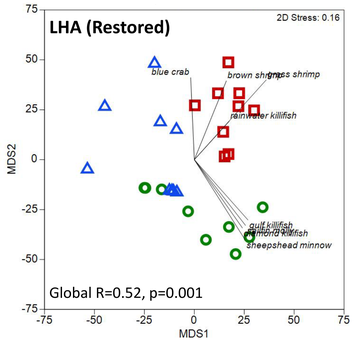


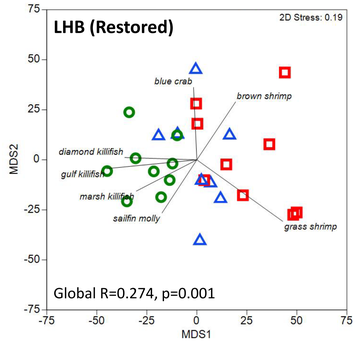


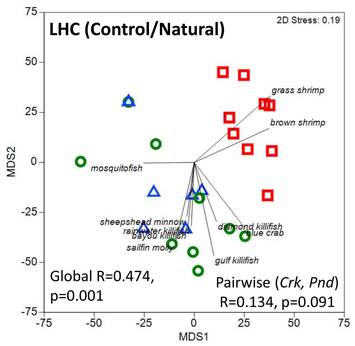
Communities varied among subhabitats, but not to the same degree across sites. Species most highly correlated (Pearson's r > 0.4) to the position of the points on the mMDS plot are displayed as vectors. ANOSIM results are included in each plot.

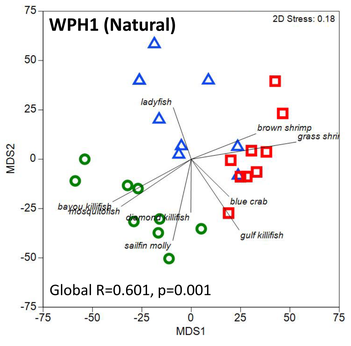
Transformation: fourth root.
Resemblance:S17 Bray-Curtis similarity (+d).

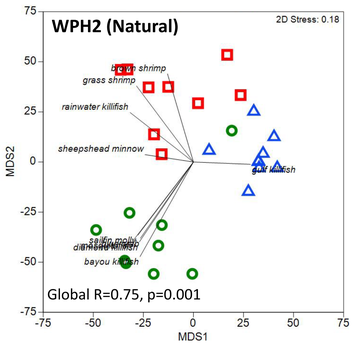


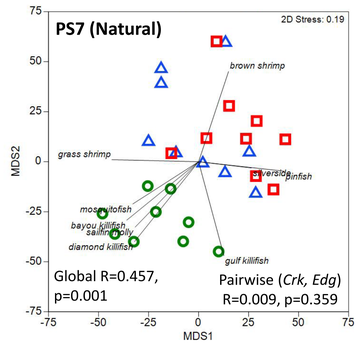












Discussion and Next Steps

- On-marsh nekton communities at different marsh subhabitats differ across sites.
- Patterns observed may be associated with marsh landscape (e.g., marsh height, number of ponds, connectivity).
- To determine which drivers influence community structure, we will incorporate site-specific data (e.g., pond sizes, marsh height) and characterize connectivity at each site.
- We will compare nekton composition and abundance during periods of low freshwater (2018, 2019) and high freshwater (2020).

Sampled ponds ranged in size, distance from the edge, and degree of isolation

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