Review of: "Comparison of Vegetation Community Diversity, Biomass, and Sediment Properties among Constructed and Reference Salt Marshes at Deer Island, Mississippi, U.S.A."

Heather M. Joesting[1]

1 Georgia Southern University

Potential competing interests: No potential competing interests to declare.

Overall, a very well-written manuscript discussing research that is of importance to salt marsh restoration efforts. My main concern was the orientation and location of the constructed vs. restored marshes on the island and how that may affect sediment delivery and tidal influence. This was addressed in the discussion but could be elaborated on some.

My recommendation is to accept with minor revisions.

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Abstract

“They were planted with native vegetation in anticipation that they would recover in*Juncus roemerianus* (Black needlerush) dominated salt marshes.” **– was only *Juncus* planted? Or was it several native species?**

How often were marshes sampled over the six seasons? Which seasons were these?

Introduction

“Beneficial Use of dredged material (BU) is the practice of repurposing sediment from maintenance dredging projects~~that is used~~ to augment marsh habitat elevation or create new habitat along eroding marsh edges”

“Examples of recent BU projects for salt marsh restoration in the northern GoM include 30 ha at Deer Island (**citation?**), 220 ha at Round Island, MS (Roth et al. 2012; Lang 2012; Ramseur 2020), and the creation of over 800 ha of new marsh in West Bay, LA (Suedel et al. 2021), using the principles of the US Army Corps of Engineers Engineering with Nature® (EWN) program (Bridges et al. 2021).”

“ Plant community diversity in restored marshes is usually expected to become similar to that of nearby reference marshes; however, this does not always occur (Zedler and Callaway 1999, 2000).” – **why doesn’t this always occur?**

“Restoration projects that assess vegetation diversity and standing stock biomass trends in*Spartina*-dominated marshes have, therefore, been extensively studied (Woodhouse 1979; Webb and Newling 1984; Zedler and Callaway 2000, 2004).” **– should this be *Sporobulus*-dominated marshes? Be consistent with which name you use**

“The Deer Island project is one of the few BU projects available for assessment of marsh construction with repurposed dredged material where the desired salt marsh vegetation is *Juncus romerianus*, as opposed to the more commonly researched **S. alterniflorus**, dominated marshes.” – **needs italicized**

“co-located” – **change to “all located”**

Materials and Methods

Figure 1 – Please add a point of direction (i.e., compass) to clarify N vs S

“*S. patens*” – **don’t think this plant has been introduced yet, so needs full Genus name here (2nd paragraph) – introduced later in the paragraph as full name, which here can be abbreviated**

“dune plants in 2008**” – clarify which plants were dune plants – why were these planted to restore a marsh? Were these planted on the sandy containment berm? Please clarify**

“On the exterior, a containment dike, *S. patens*, *P. amarum*, and *U. paniculata* were installed (Biber 2020).” – **incomplete sentence**

“High-precision elevation data (± 2 cm) was collected at 165 randomly placed points throughout the three sites with a Trimble R8 GNSS receiver in April 2017 and August 2018 (Tables 1,2).” – **not sure Table 2 should be referenced here**

“The diurnal microtidal range in the northern GoM is between 0.3 and 0.6 m with a single high and low tide in a 24-hour time span (diurnal, microtidal)” – **diurnal, microtidal repeated**

“ The reference site was regularly inundated at high tide, whereas the two constructed sites had limited tidal exchange and were mostly groundwater-fed (Lang 2012) with permanent standing water only in the lower elevations.” - **Could the location of the marshes on the island have an impact on the results? Both restored marshes are on what I’m assuming is the south side of the island, while the reference marsh appears to be more oriented north. Could this have resulted in differences in sediment delivery, wave/tidal action, etc.?**

“ Along each transect, replicate 1m^2 quadrats were sampled for biomass and sediment cores in each of the three marsh zones (low-, mid-, and high marsh).” – **reference Table 1**

Results

“both *B. halimifolia* and *H. bonariensis are native species in this region.”* **-font issue**

Are Table 5 and Figure 5 showing the same data?

Does the SOC and BD data in Table 6 repeat what is in Figure 6?

What is graph C on Figure 6? Not identified in the caption

Discussion

“The canopies of restored ***Spartina*** marshes are typically comparable to a natural reference site within 2-5 years, whereas root biomass can take more than 15 years (Woodhouse 1979; Webb and Newling 1984; Broome et al. 1988).” – **again using Spartina here – inconsistency may cause confusion**

“Craft et al. (2003) approximated marsh biomass responses in ***Spartina***-dominated habitats over time by comparing sites of differing ages with similar geomorphic positions, tidal range, salinity, and soil classification to overcome the lack of long-term monitoring data collected from a single site.” – **Spartina here**

“The meta-analysis done by Ebbets et al. (2019), while specific to the northern GoM, is still comprised of entirely ***Spartina***-dominated marshes in Texas and Louisiana and lacks data on the*Juncus*-dominated marshes of MS and AL.”

Figure 7 and its results should be discussed in Results section