Reexamining the taxonomic placement of *Hypogorgia pendula* using mitochondrial DNA and morphometrics

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**INTRODUCTION**

1. *Hypogorgia pendula* was impacted by the Deepwater Horizon (DWH) oil spill1
2. Preliminary taxonomic work done on *H. pendula* suggests it is closely related to *Muricea pendula*
3. This study serves to resolve the differences between *Hypogorgia pendula* and *Muricea pendula* using mitochondrial DNA and morphometrics
4. The combination of molecular barcoding and morphology has further classified octocoral species and has provided a better understanding of the diversity in the regions impacted by the DWH oil spill, so that conservation efforts can be applied

**MATERIALS AND METHODS**

- Samples obtained from RESTORE Cruises in 2017 and 2018 aboard the R/V Ocean Project and R/V Manta (Figure 1)
- Additionally, Atlantic samples were collected by SCRN RERTC
- Scanning electron microscope (SEM) preparations were made for *H. pendula* and *M. pendula* and sclerites were imaged using JEOL 5600 LV SEM and associated software
- DNA was extracted using Qiagen DNeasy kit
- MutS regions were amplified using primers from in Quattrini et al. (2014)
- PCR products were cleaned, precipitated, and then sequenced using Applied Biosystems 3130 XL Genetic Analyzer
- MEGA7 was used to create phylogenetic trees

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**RESULTS**

- Morphological analyses showed a significant difference between *M. pendula* and *H. pendula* sclerite lengths
- These differences were confirmed with taxonomic keys from Deichmann et al. (1936)
- However, phylogenetic analyses failed to show any fixed genetic differences between the two species
- Lack of concordance between the two analyses may be due to small sample size in both number of individuals examined and loci examined
- These data support the notion that more work needs to be done to resolve the relationship between these two species

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**CONCLUSION**

- Genetic variations between *H. pendula* and *M. pendula* need to be investigated further
- Collect more samples of *M. pendula* for a more robust sequencing analysis (n = 6)
- Conduct morphometrics and corresponding statistical analyses on larger sample population of sclerites and sclerite densities of both *H. pendula* and *M. pendula* (n = 10 and n = 3, respectively)
- Analyze additional loci (COI + igr1) to examine genetic differences between *H. pendula* and *M. pendula*

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**NEXT STEPS**

1. Is *H. pendula* actually a morphotype of *M. pendula*?
2. How does *M. pendula* in the South Atlantic Bight compare to *M. pendula* and *H. pendula* in the Gulf of Mexico?

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**NEXT QUESTIONS**

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