



Salt Marsh Harvest Mouse Nest Variation: Potential to Adapt to Rising Sea Levels



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Background



Little is known of nest use by salt marsh harvest mice (*Reithrodontomys raviventris halicoetes*, SMHM) because nests can be hard to locate. During a 3 year radiotelemetry study we often found mice in nests. Mice use a variety of nest types, located in a variable vegetation. Some mice even use multiple nests, returning to different ones depending on time of day. Variability in nest types and locations suggest SMHM may not be the specialists we once believed them to be. These findings offer a glimpse of hope for adaptation to rising sea water.

Nest Varieties

SMHM nests come in many forms. SMHM will recycle old bird nests and crayfish burrows, use nest boxes, make their own nests, or potentially, use nests or burrows built by other rodents. Researchers classified nests into two major categories: elevated nests and ground nests.



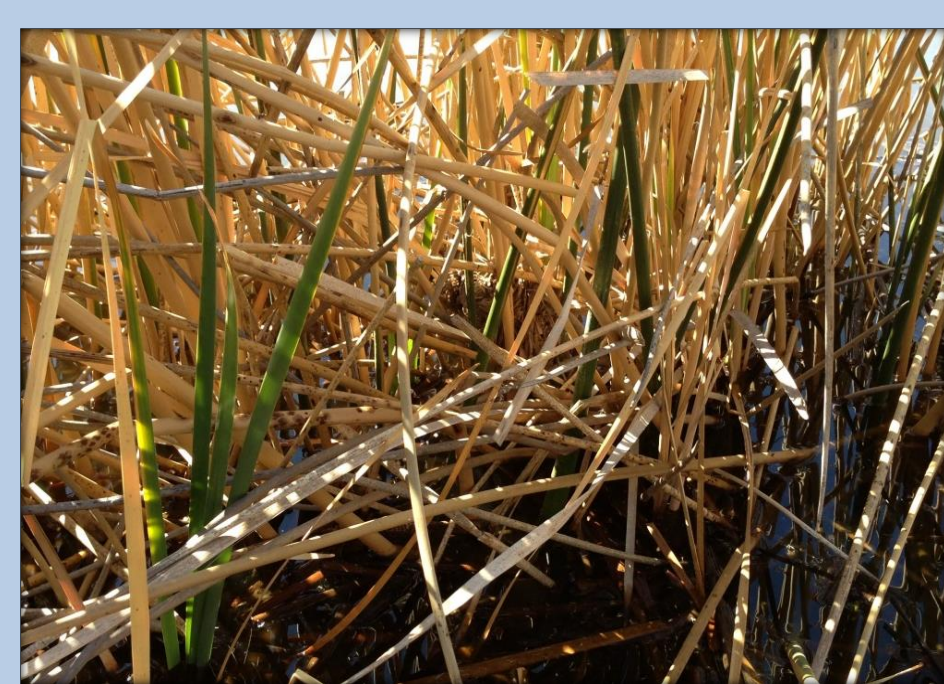
Elevated Nests



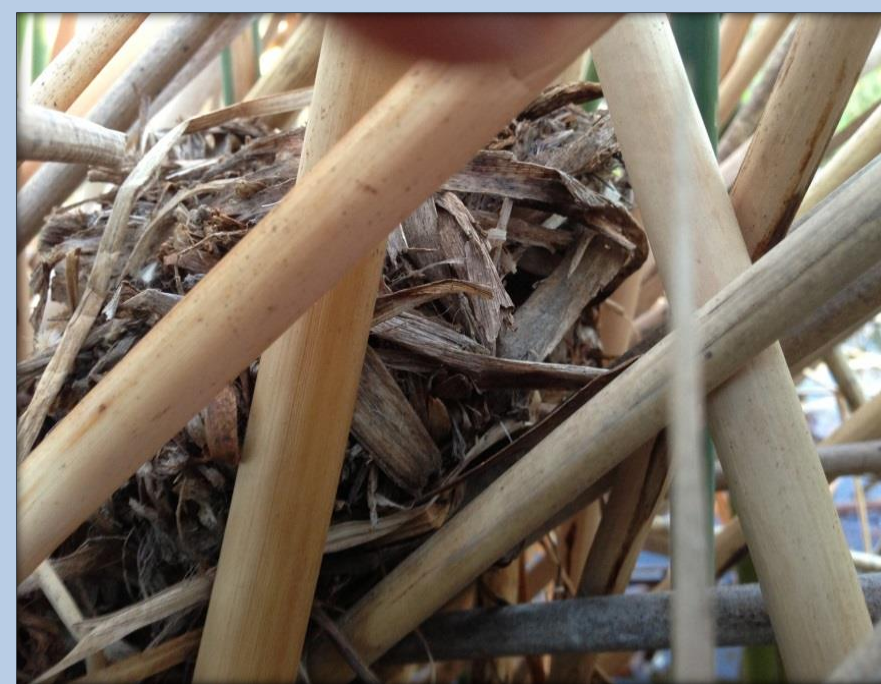
Nest made of harvested annual grasses elevated above standing water in *Salicornia pacifica*.



Nest made of *S. pacifica* and trap batting elevated above standing water in *S. pacifica*.



Cryptic recycled marsh wren nest in *Schoenoplectus acutus* elevated above water (close up on right).



Ground Nests



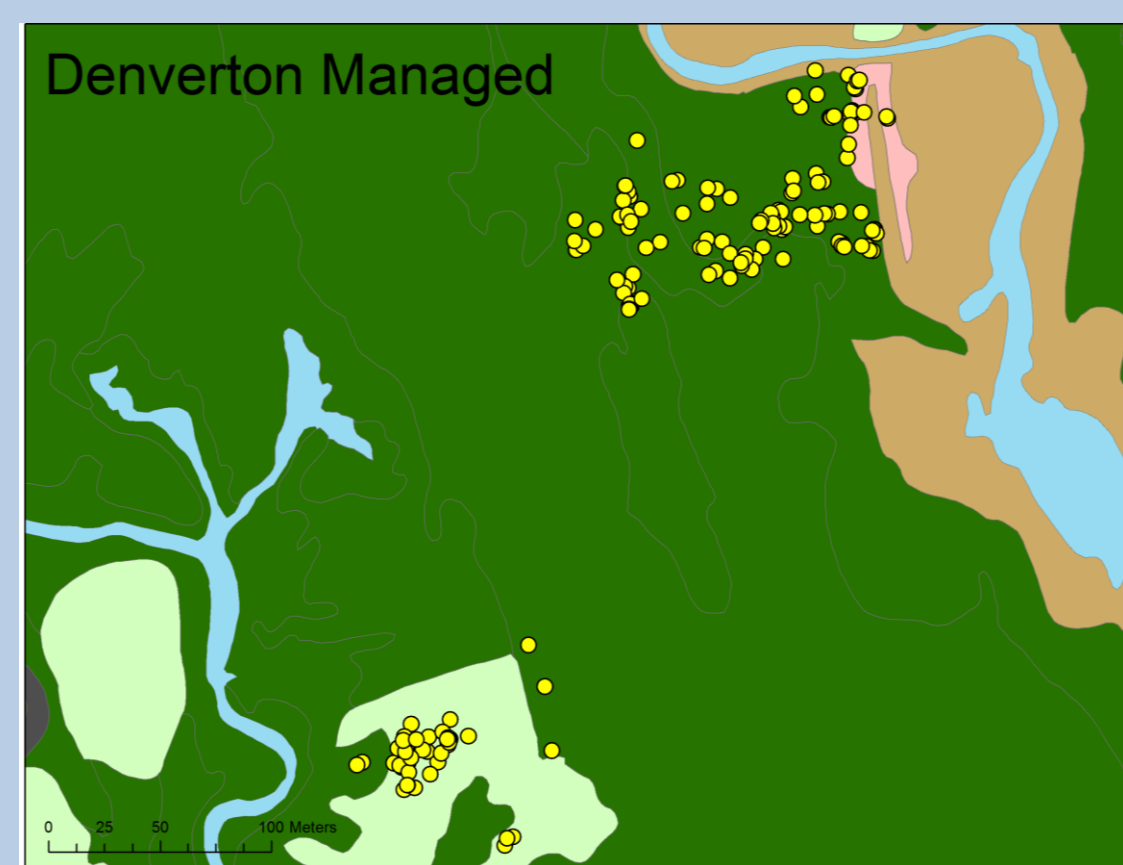
Nest made of harvested grasses hidden in dead *S. pacifica* (close up on right).



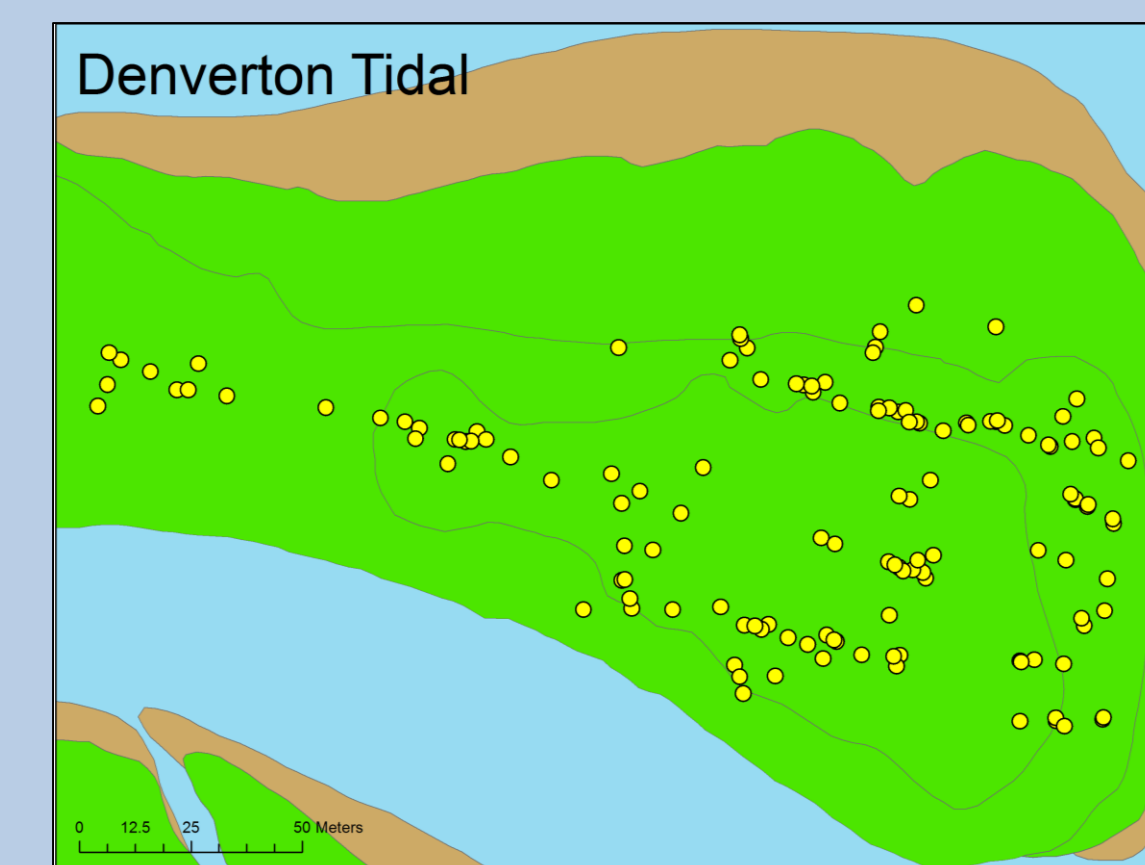
Recycled crayfish burrow beneath *S. pacifica* (close up on right).



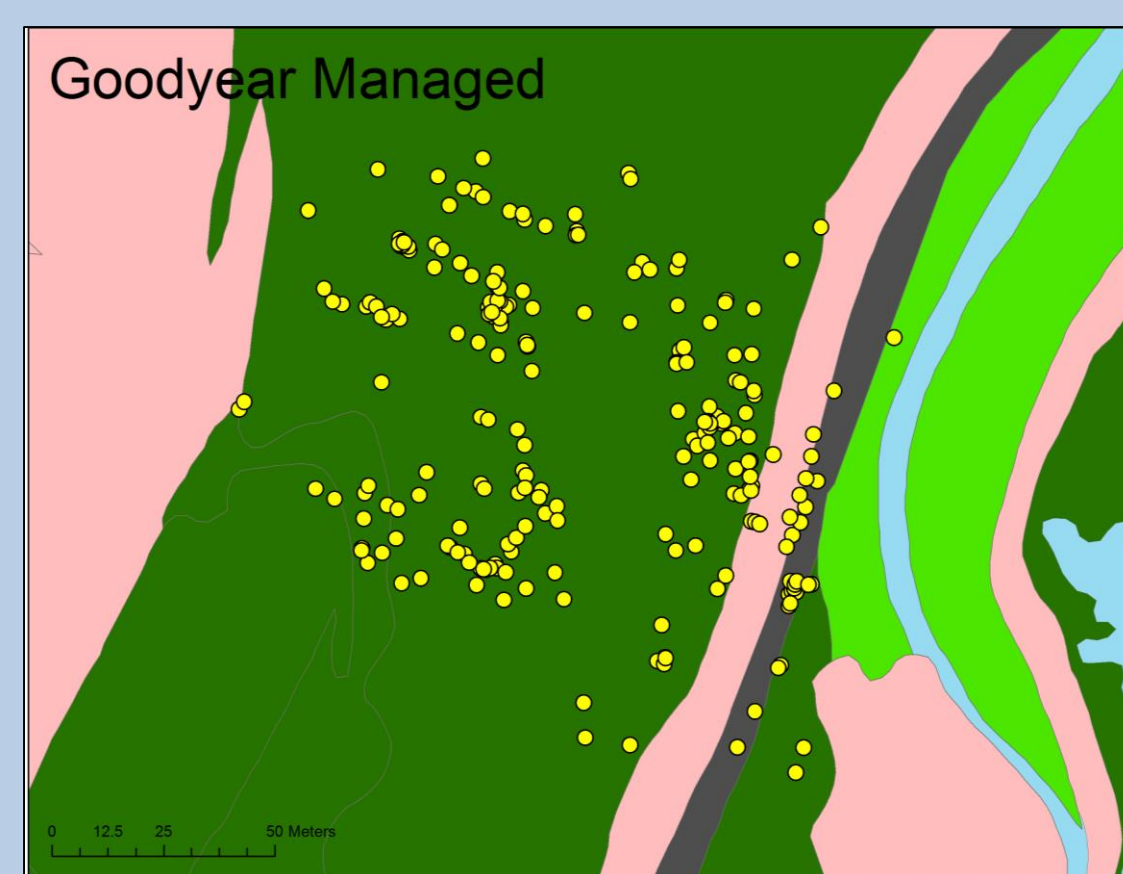
Likely Nest Locations by Site and Vegetation*



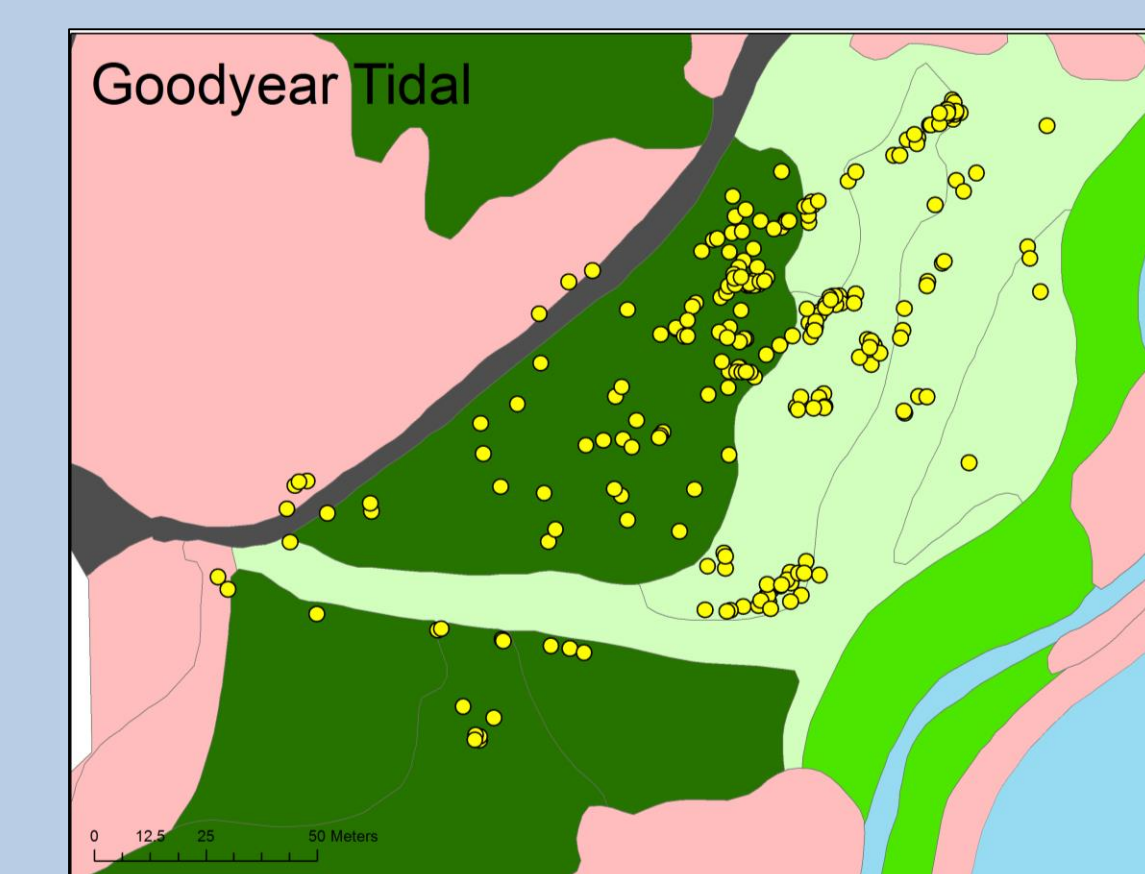
Daytime nest locations clustered in *S. pacifica* and *Cotula coronopifolia*



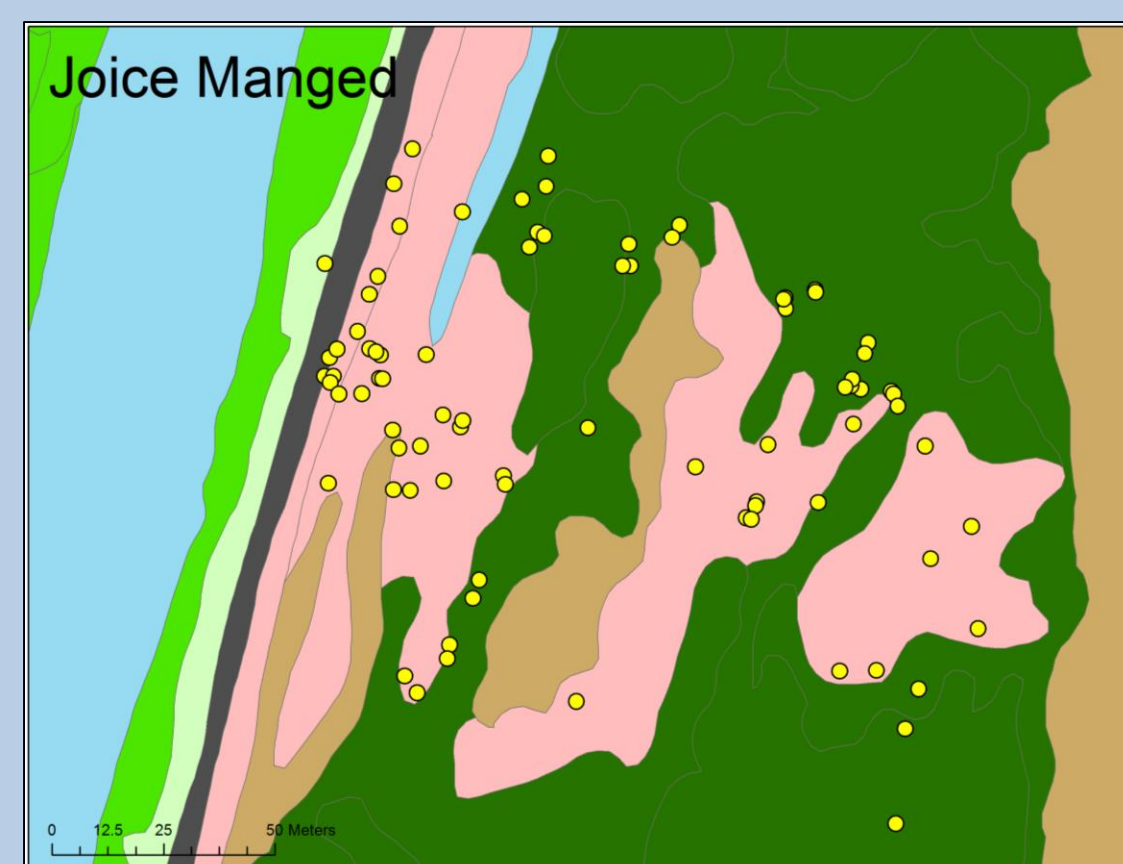
Daytime nest locations clustered exclusively in *Schoenoplectus americanus*



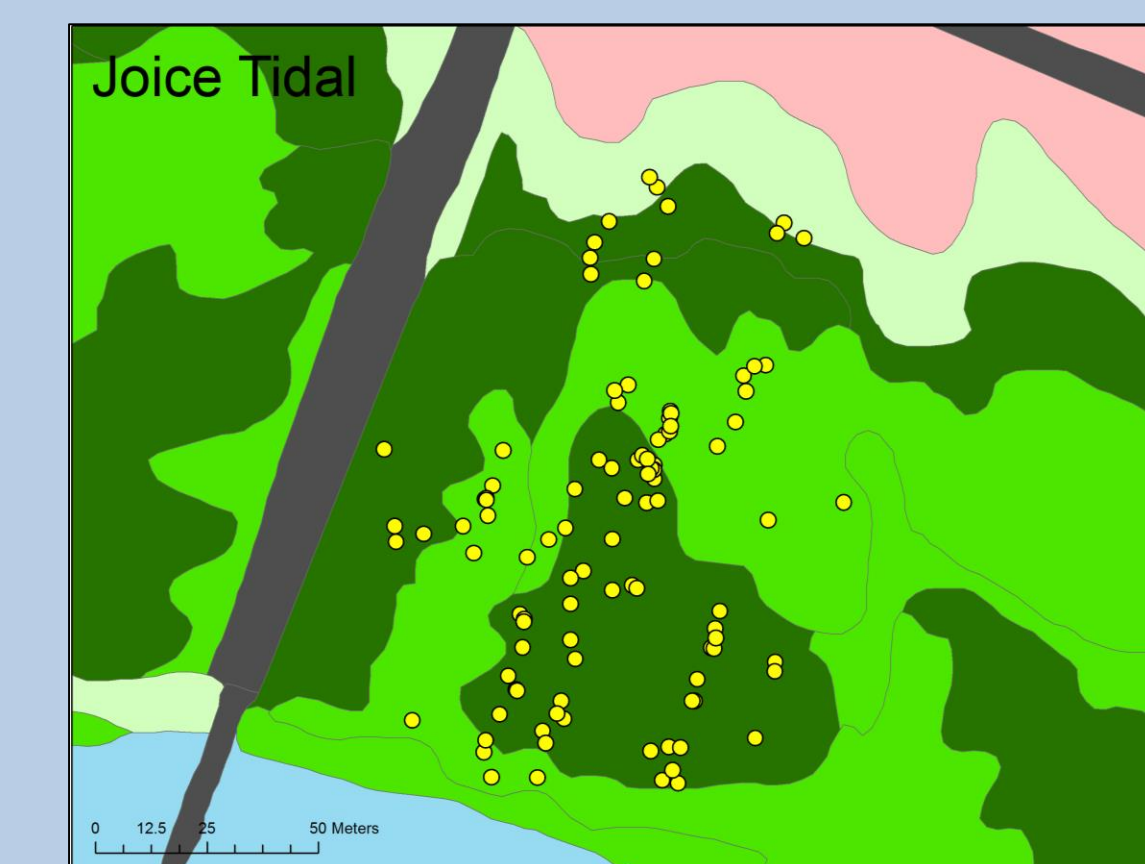
Daytime nest locations clustered in *S. pacifica*, *Distichlis spicata*, and *Phragmites australis*



Daytime nest locations clustered in *S. pacifica* and *Typha*



Daytime nest locations clustered in *P. australis*, and *S. pacifica*



Daytime nest locations clustered in *S. pacifica*, *S. americanus*, and *D. spicata*

*note: map colors correspond with habitat quality, not species.

Discussion

Variation in nesting type and location suggests that SMHM may not be the habitat specialists researchers once believed them to be, and offers evidence that they may adapt to threats such as climate change. These results can guide future research to answer relevant management questions such as:

- What types of vegetation need to be searched in preparation for construction work?
- How will climate change affect nesting habitat for SMHM?
- How can land managers increase desirable nesting vegetation for SMHM as sea levels rise?



Citations: Trombley S., Smith K. Potential evidence of biparental care or mate guarding in the salt marsh harvest mouse (*Reithrodontomys raviventris halicoetes*), *Fish and Game Journal*, Volume 102-4, 2017

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