

Comparison of Marsh Vegetation Types Using Occupancy Studies of Small Mammal Populations in Louisiana



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Summary

The fresh marsh system of the Louisiana coast is an important component of the coastal and terrestrial ecosystems. As would be warranted, there is a plethora of research focused on this ecosystem and its components, such as fish, birds, reptiles, amphibians and plants. Conspicuously absent from the literature is any work focusing on small mammals, a present but highly unstudied and potentially important clade. Understanding the ecosystem as a whole, down to its functional units, is essential in protection, preservation, and restoration.

In order to evaluate the status of small mammals in Louisiana's freshwater marshes, a survey of occupancy was conducted. Occupancy modeling is a population evaluation technique that handles imperfect detection and site specific probability of target organism presence. The field research was completed from Mid-May to Early-June, 2010, at Mandalay National Wildlife Refuge in Houma, Louisiana. Completion of the project was achieved in May 2011.

Using random selection, 36 sites were chosen within the Mandalay boundaries. At each site, 10 live traps (Sherman Standard) were placed around a central point at equal intervals on floating platforms. Traps were baited with quick oats during the day, left open overnight and checked early the following morning. Each site was trapped four times; every site was sampled in the same week. At the conclusion of the trapping stage, vegetation was harvested at every other station at each site from a 0.25m^2 area next to that station's platform.

The vegetation was taken back to ICEE, sorted by species, dried, weighed and averaged for each site. Using the vegetation values as covariates, occupancy modeling was done on the small mammal data.

A total of 37 rats were captured, all marsh rice rats (*Oryzomys palustris*), the majority of which were adults. Upon performing an occupancy modeling analysis, we determined that the presence of *Sagittaria lancifolia* at a site was an indicator of *O. palustris* occupation; this leads to an overall study area occupation of roughly 80%.

It is unclear as to whether *O. palustris* influences the *S. lancifolia* or if it is the other way around, or if the two species

are capitalizing on some third, unobserved gradient. Further and

more in depth studies

should be conducted, from observational experiments to lab manipulations to determine the relationship of the fauna to the flora.

