ON THE FEASIBILITY OF PREDICTING EFFECTS OF SEA LEVEL RISE ON TIDAL WETLAND BIRDS: EXAMPLES FROM THE GEORGIA COAST

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Abstract: Tidal wetlands along the Atlantic Coast of the southeastern U.S. provide unique bird habitats that are characterized by high species turnover along a compressed and often spatially complex salinity gradient. We surveyed breeding marsh and forest birds and coincident vegetation in Georgia's Altamaha River estuary in order to identify important habitat predictors of species' distributions within the tidal wetland mosaic. In particular, we sought information necessary to predict changes to bird populations with the onset of accelerated sea level rise (SLR), which is predicted to significantly modify tidal wetland systems. Using occupancy modeling, we found that although some breeding species such as the Clapper Rail (*Rallus longirostris*) appear to occupy almost all available areas within their general habitat types (i.e., salt and brackish marsh), others occur in restricted ranges nested within those broader types. Occupancy patterns of the Seaside Sparrow (*Ammodramus maritimus*), for instance, are better predicted by marshgrass biomass, salinity, and distance to nearest upland, than by vegetation class; its range is nested within the full extent of salt marsh. Least Bitterns (*Ixobrychus exilis*) occur primarily within brackish marsh in our system, but their occupancy patterns are volatile across years. Popular SLR landscape change models such as the Sea Level Affects Marshes Model predict changes to general vegetation communities. Thus, attempts to interface SLR models with bird habitat associations will vary in feasibility depending on how closely species' distributions correspond to those of broad vegetation types, and how consistent their distributions prove through time.