

Representative Species Model: Snowy Egret (*Egretta thula*)

Snowy Egret

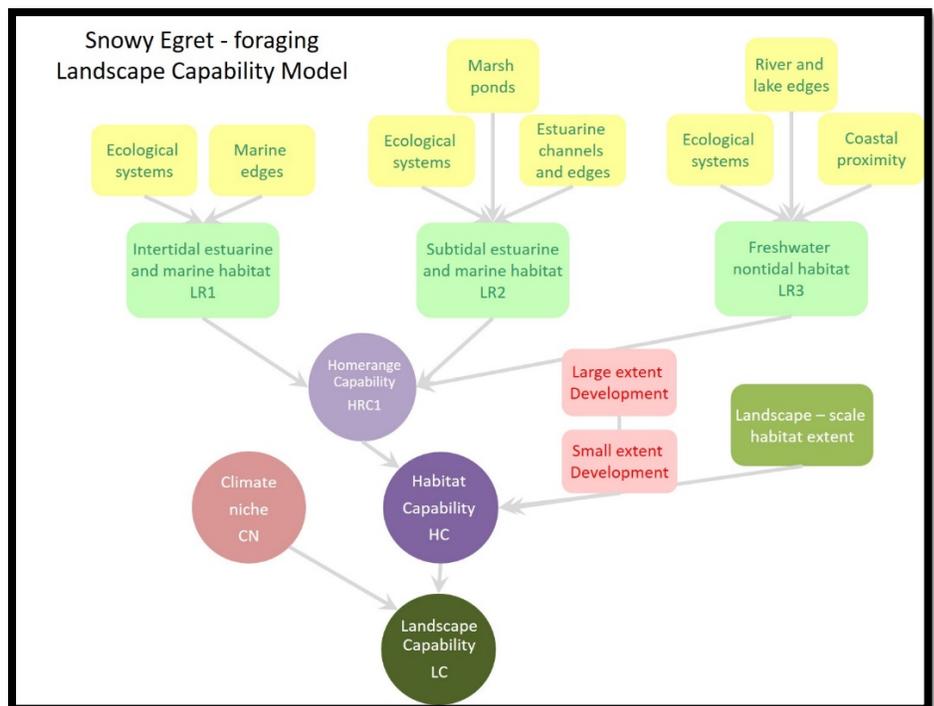
Snowy egret was selected as a representative species for the Designing Sustainable Landscapes project of the North Atlantic LCC (https://scholarworks.umass.edu/designing_sustainable_landscapes/). The habitat clusters (ecological systems) and associated wildlife species that it represents are shallow estuarine habitats for all of the subregions throughout the NA LCC. The *Landscape Capability (LC)* index integrates habitat capability and climate suitability into a single index that reflects the relative capacity of a site to support the species.

Habitat capability (HC) - The *HC* index considers six factors representing: (1) intertidal marine and estuarine systems, (2) subtidal marine and estuarine edges including saltmarsh ponds, (3) freshwater systems near the coast including wetlands and the edges of rivers and lakes, (4) small extent development, representing short-distance edge effects and direct human interactions, (5) large extent development, representing the effects of human-mediated landscape change that accumulate over a larger geographical area, and (6) landscape-scale habitat extent. The *HC* index represents the relative capacity of a site to provide the habitat needed by the species based on current scientific knowledge.

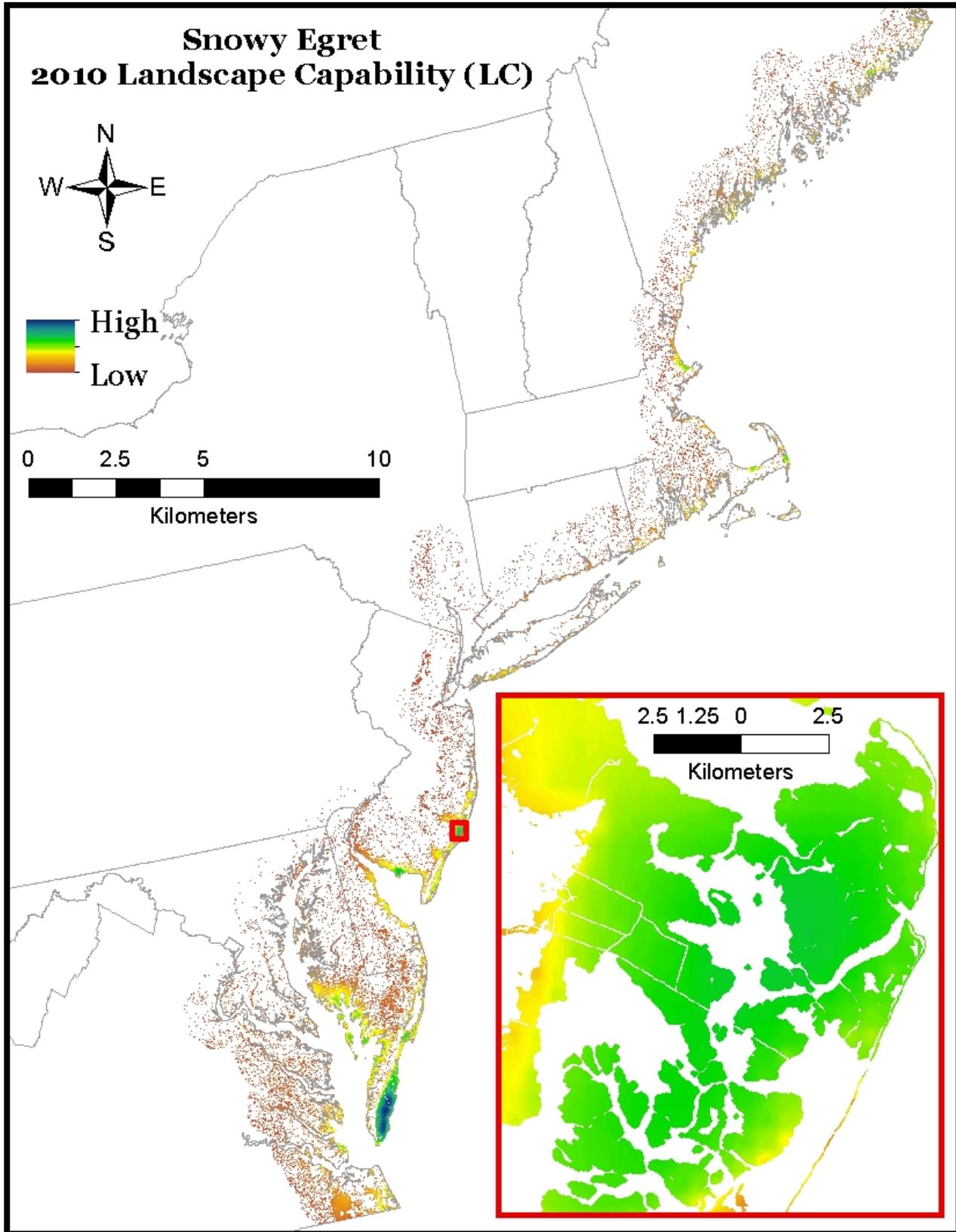


Climate niche (CN) - The *CN* index uses three climate variables representing: (1) growing season precipitation, (2) maximum summer temperature, and (3) minimum daily temperature. The *CN* model is based on a statistical model derived from 2,650 absent eBird locations and 2,650 present eBird locations distributed through the Humid Temperate Domain. The *CN* index represents the probability of the climate being suitable for the species based on its current distribution in relation to current climate.

Landscape Capability (LC) - The *LC* index is computed as the product of the *HC* and *CN* indices (see map). Thus, the index computed for 2010 reflects the gradient of worst (0) to best (maximum value) sites within the landscape that support this species during the breeding season. Note, we also compute this index for the future (e.g., 2080) based on output from the landscape change model. Model performance was performed using 2,650 present and 2,650 absent eBird data points that were held out of the *CN* model dataset. Model performance was determined to be acceptable (Kappa = 0.76, Deviance explained=39%, AUC = 0.94).



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See technical document on species at https://scholarworks.umass.edu/designing_sustainable_landscapes/ for a detailed description of the Landscape Capability modeling process.