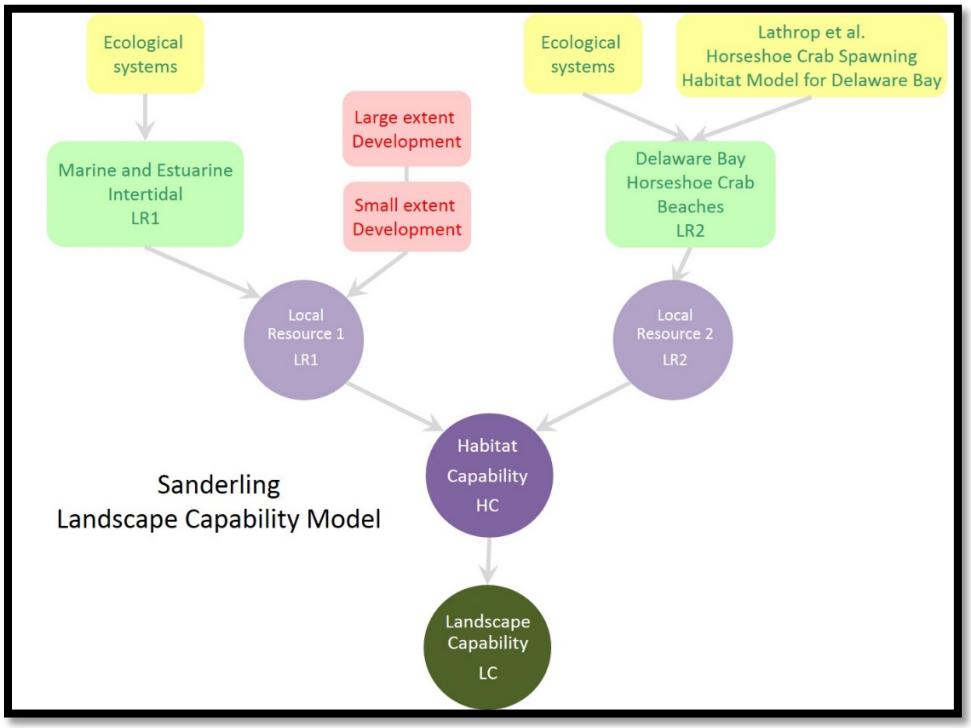
Sanderling – migratory period

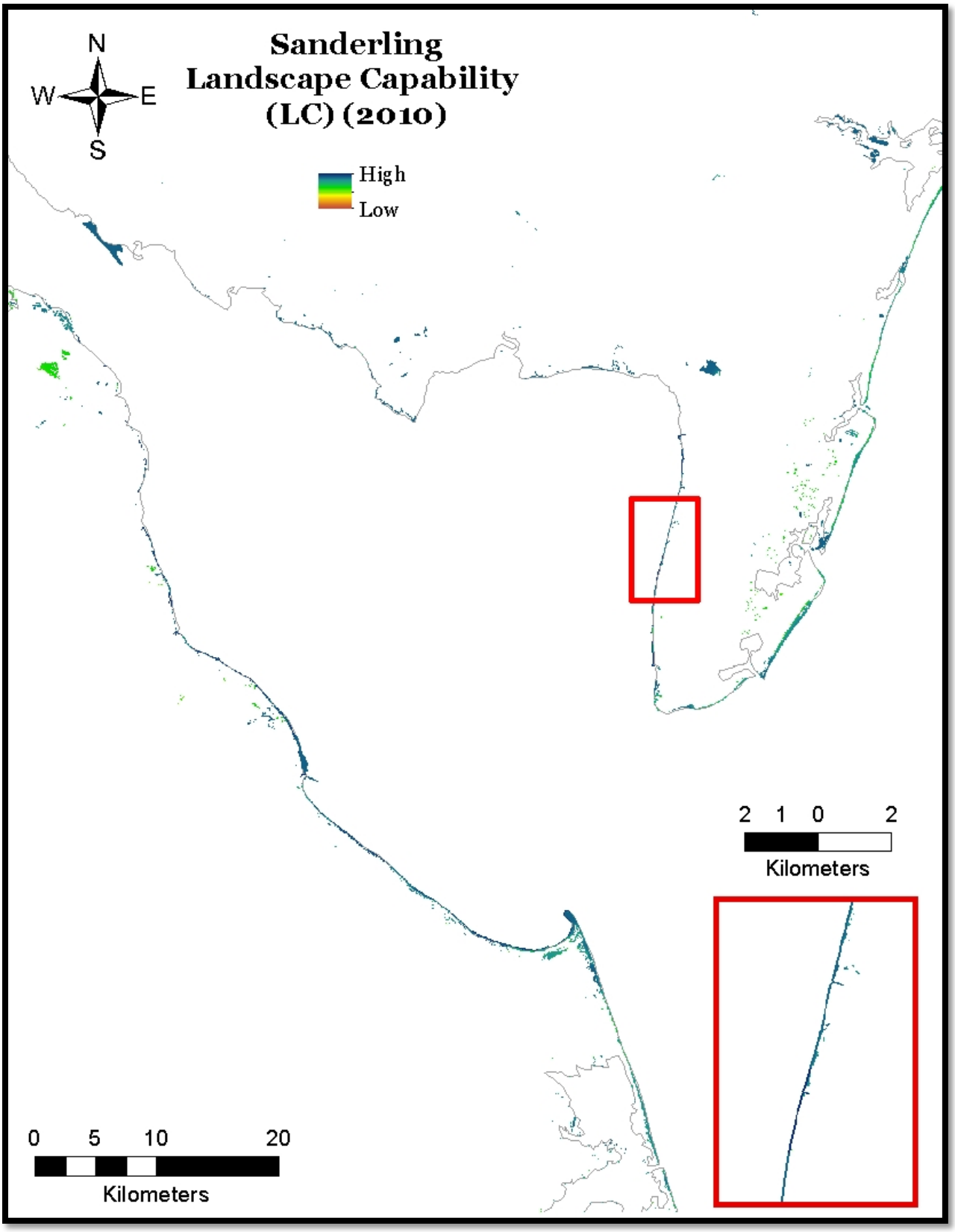
Sanderling was selected as a representative species for the Designing Sustainable Landscapes project at the Mid-Atlantic region workshop of the North Atlantic LCC (https://scholarworks.umass.edu/designing_sustainable_landscapes/). The habitat clusters (ecological systems) and associated wildlife species that it represents generally comprise of intertidal marine and estuarine habitats. The *Landscape Capability* (*LC*) index integrates only habitat capability and reflects the relative capacity of a site to support the species.

***Habitat capability* (*HC*)** - The *HC* index considers four factors representing the capability of a system to provide required habitat: (1) intertidal marine and estuarine habitats with a preference for unconsolidated bottom, (2) small extent development, representing short-distance edge effects such as access by predators and direct human disturbance that occur on a scale of tens to a few hundred meters from development, (3) large extent development, representing the effects of human-mediated landscape change that accumulate over a larger geographical areas and that may penetrate more deeply into habitat patches than the processes of local edge effects, such as population increases of generalist predators, and (4) Delaware Bay horseshoe crab spawning habitat (Lathrop et al. http://crssa.rutgers.edu/projects/coastal/hcrab/). 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 NALCC decided that the *LC* model for sanderling would only focus on the migratory period. Therefore, developing a *CN* model did not seem appropriate given that (1) their distribution during this phase of their annual cycle is dependent upon their overwintering and breeding distributions, (2) itineracy of the migratory period would limit the feasibility and interpretation of a *CN* model, and (3) an important component of spring distribution is clearly tied to horseshoe crab breeding regardless of climate.

Landscape Capability (LC) Because we did not calculate *CN* for sanderling (see above), the *LC* index is equal to *HC*. Thus, the index computed for 2010 reflects the gradient of worst (0) to best (maximum value) sites within the landscape that support this species. 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 5,300 present and 5,300 absent eBird data points. Model performance was determined to be acceptable (Kappa = 0.73, Deviance explained=48%, AUC = 0.93).





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