

American Woodcock

American woodcock 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 generally comprise of northern fens, bogs, peatlands, and floodplain forests. The *Landscape Capability (LC)* index integrates breeding habitat capability and climate suitability into a single index that reflects the relative capacity of a site to support the species during the breeding season.

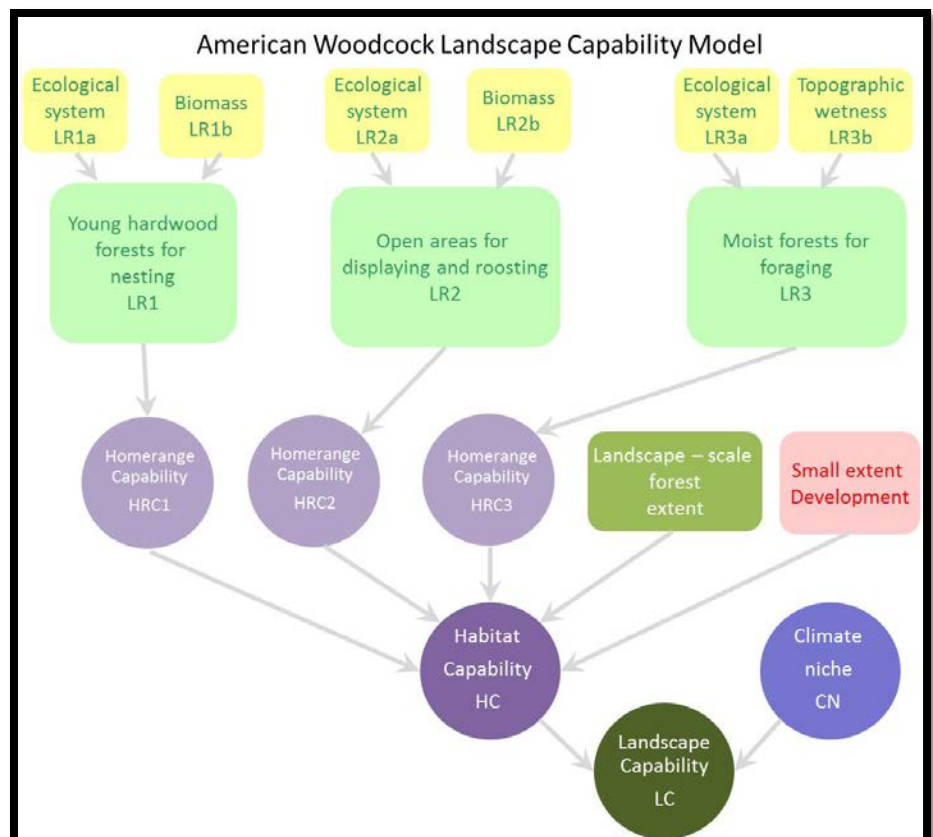


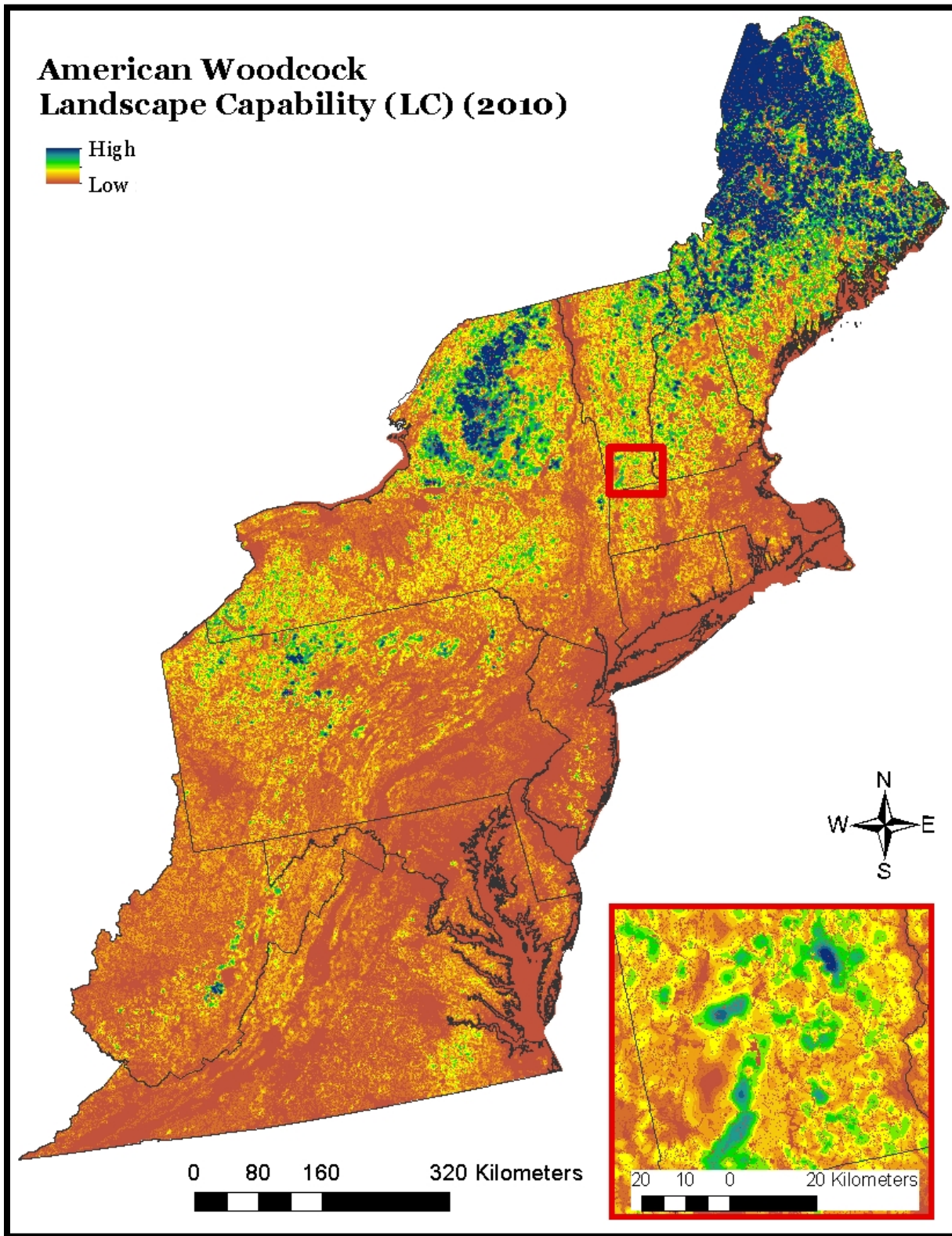
Habitat capability (HC) - The *HC* index considers five factors representing: (1) young hardwood forests used for nesting as determined by ecological systems and biomass, (2) open habitats used for breeding displays and roosting, also defined by ecological systems and biomass, (3) moist forest habitat used for foraging identified by ecological systems and a measure of topographic wetness, (4) landscape-level forest extent, representing the amount of suitable breeding habitat in the landscape surrounding the homerange, and (5) small extent development, representing short-distance edge effects such as changes in microclimate, vegetation structure and access by predators that occur on a scale of tens to a few hundred meters from a developed or agricultural edge. The *HC* index represents the relative capacity of a site to provide the habitat needed by the species during the breeding season based on current scientific knowledge.

Climate niche (CN) - The *CN* index considers five climate variables representing: (1) growing degree days, (2) annual precipitation, (3) annual mean temperature, (4) minimum winter temperature, and (5) maximum summer temperature. Because the Breeding Bird Survey (BBS) does not adequately sample woodcock habitat when they are most likely to be detected, BBS data is not used to develop the *CN* index. Alternatively, eBird complete checklist data supplemented with basic occurrence data (3,477 present locations and 2,977 absent locations) distributed throughout the Humid Temperate Domain is used to derive the *CN* index. 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*. 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.

We are currently working with USFWS to acquire spatial data from the American Woodcock Singing-ground Survey which will be used for the *CN* model, allowing eBird data to be used in model evaluation.





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