

Representative Species Model: Wood Turtle (*Glyptemys insculpta*)

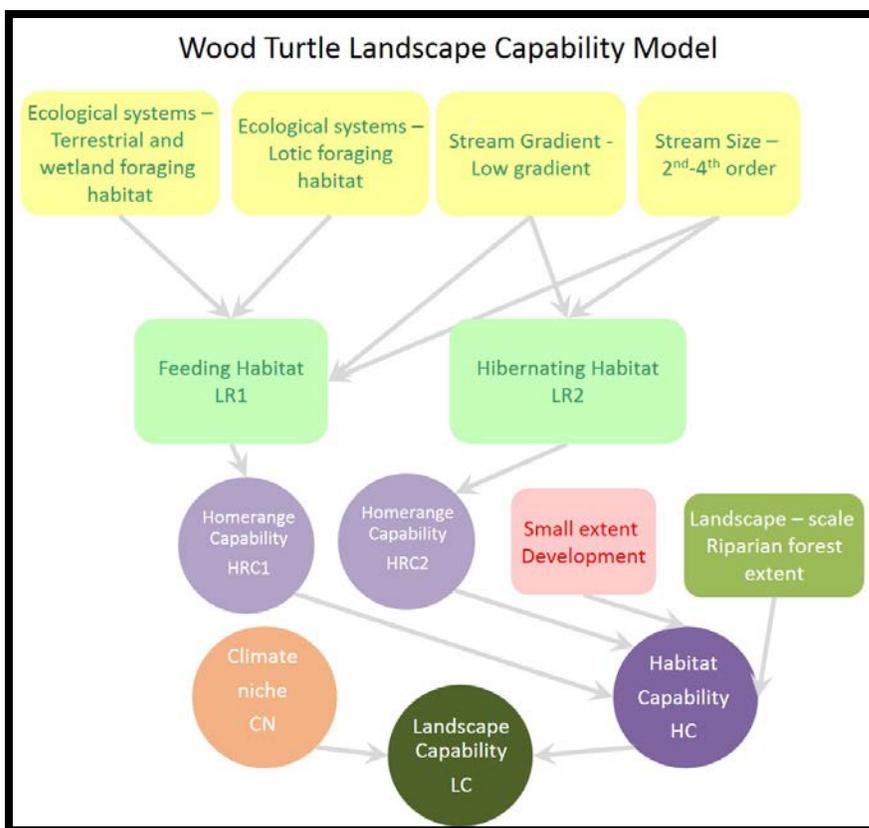
Wood Turtle

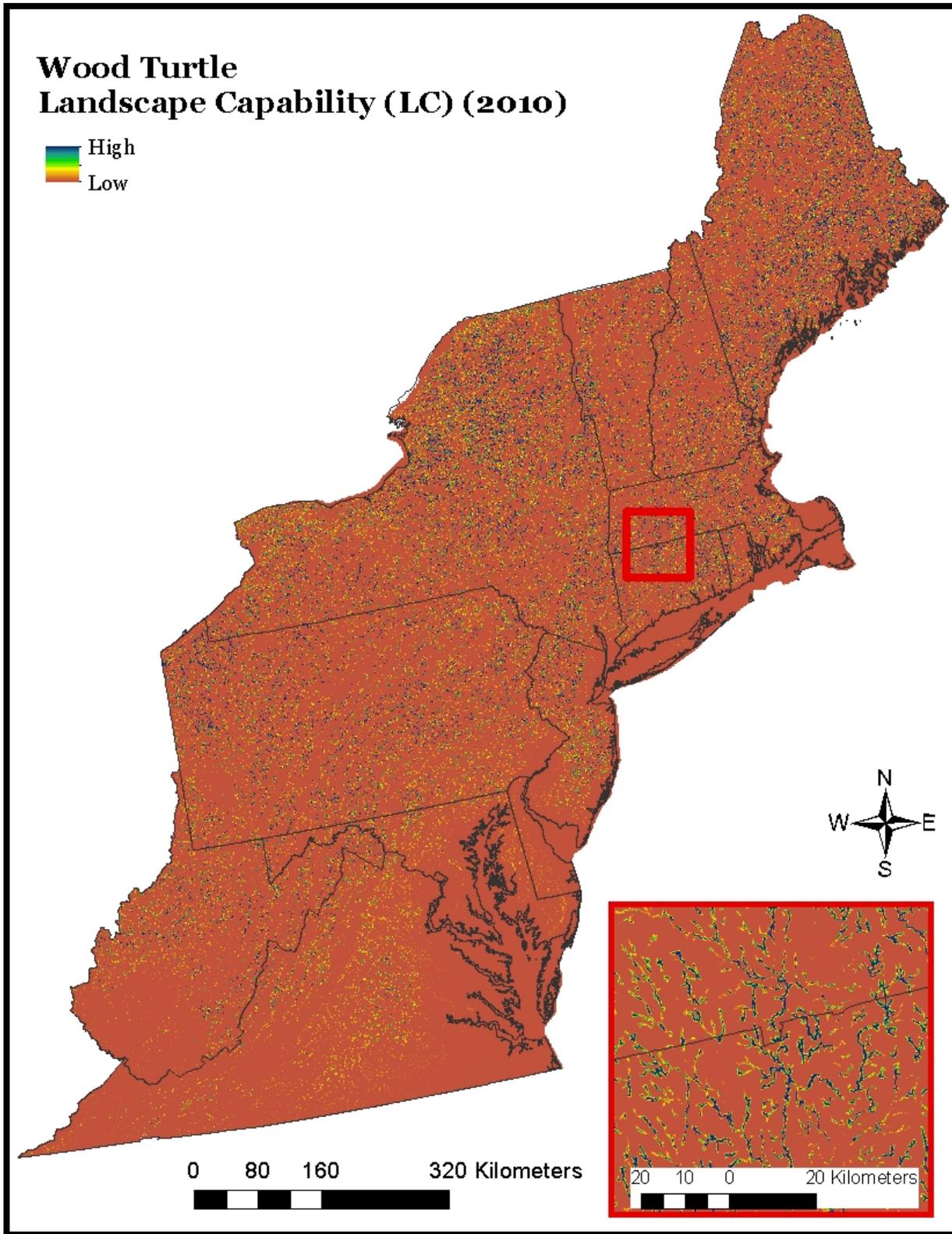
Wood Turtle was selected as a representative species for the Designing Sustainable Landscapes project of the North Atlantic LCC (https://scholarworks.umass.edu/designing_sustainable_landscapes/). The habitat clusters (ecological systems) and associated wildlife species that it represents generally comprise of slow-moving moderately sized streams and forest and wetland systems near those streams. 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 five factors representing the capability of a system to provide required feeding habitat: (1) ecological system, identifying forests, wetlands, and streams (2) stream size, identifying primarily 2nd -4th order streams, (3) stream gradient, identifying primarily slower moving streams, (4) landscape-level riparian forest extent, representing the amount of undisturbed riparian forest habitat in the landscape surrounding the homerange, and (5) small extent development, representing the risk of mortality associated with developed land cover. 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 considers five climate variables representing: (1) growing degree days, (2) annual precipitation, (3) growing season precipitation, (4) annual temperature, and (5) maximum summer temperature. The *CN* is derived from a logistic regression model derived from approximately 1,110 wood turtle present locations and an equal number of random locations throughout 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*. 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. All present location data were used to develop *CN*, therefore *LC* was not validated with an independent data source for this species. However, the model was qualitatively verified by several species experts and future plans included a formal comparison of this model to other, independent models predicting wood turtle occupancy.





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