

SPATIAL METHODS FOR BROAD-SCALE ASSESSMENT OF DEER BROWSE

IMPACTS IN VIRGINIA

BACKGROUND



Ungulates are important modifiers in many ecosystems and can significantly alter biodiversity. Throughout the eastern United States, white-tailed deer (*Odocoileus virginianus*) are the forefront of research and discussion due to chronically high densities in many regions and the resultant impact to ecosystems and human land use activities.

Ecological benchmarks or measures of herbivory impact have become increasingly important metrics to consider in deer population management. However, current limitations in understanding, such as, knowledge of the spatial consistency of impact measurements, impede their application across landscapes.

We propose a method to examine deer spatial browse patterns and factors influencing browse intensity across Virginia by implementing a spatially explicit and stratified study design.

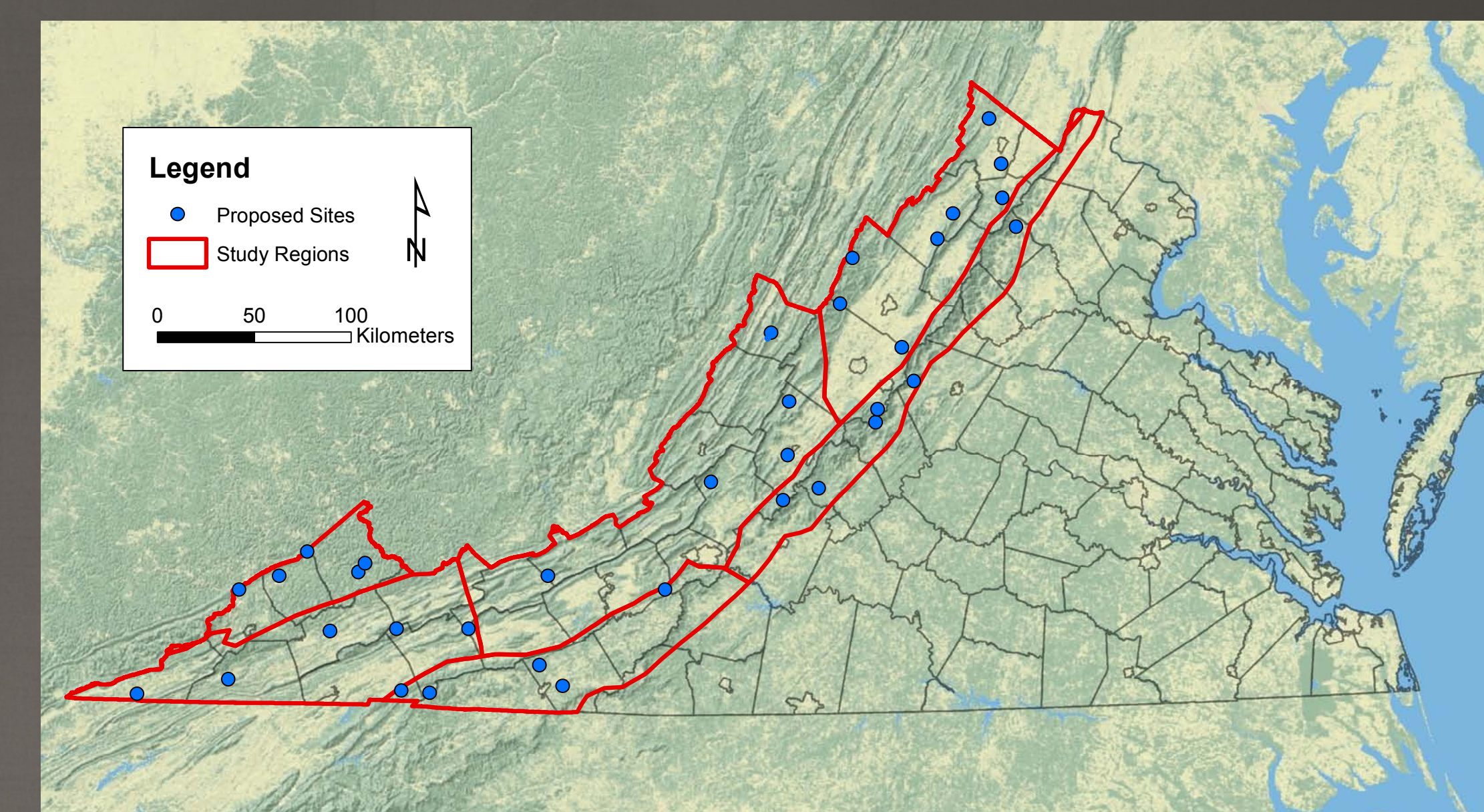


By examining distinct, spatial aspects of deer herbivory across landscapes, the information gathered may provide critical insight and aid the widespread application of deer impact measurements.

PROPOSED METHOD

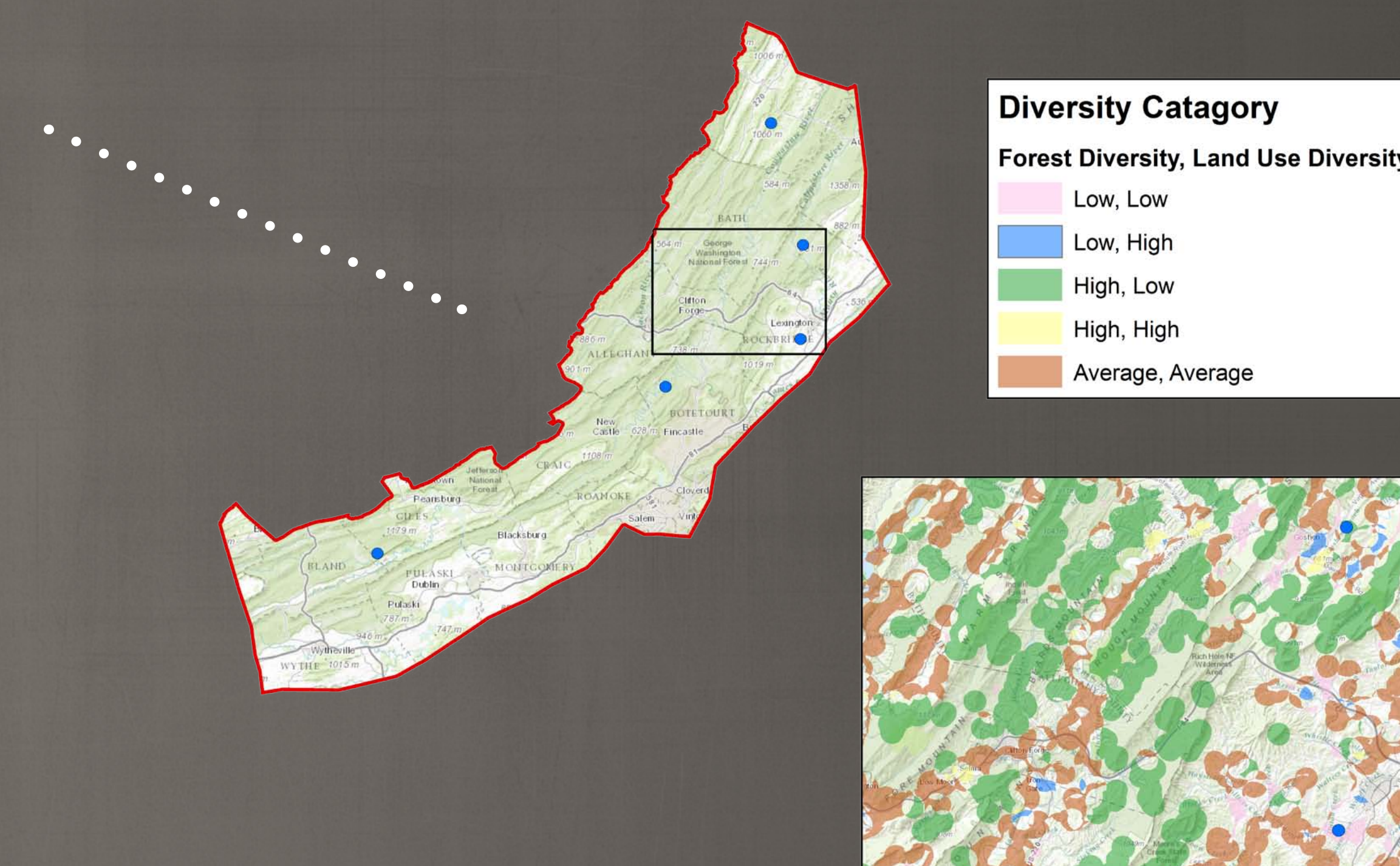
Study area

Our study area encompasses the montane regions of Virginia where ecological benchmarks of deer browse are most needed.



6 Regions

Sampling regions follow physiographic divisions as they occur within Virginia. We further divided the valley and ridge middle section into two regions due to its size. The subdivision roughly follows the boundary of the Potomac and James River watersheds.

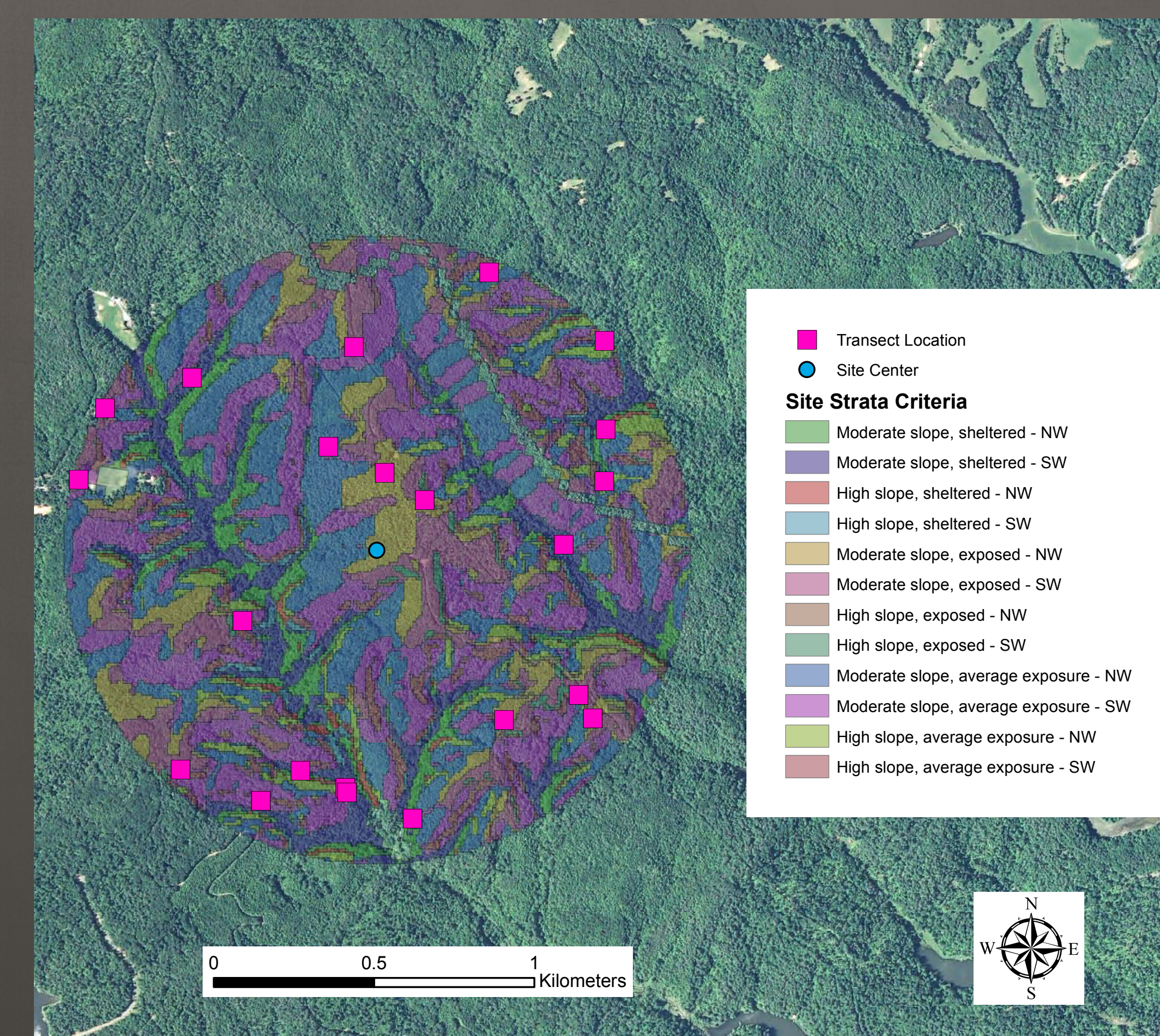


5 Sites per region



Within each sampling region, we will locate 1 site in each of 5 diversity categories for a total of 5 sites per region and a grand total of 30 sites study-wide.

20 Transects per site



20 transects will be randomly located within each site using a stratified random design. Strata are based on a variety of landform and topographic criteria. There are a total of 100 transects per region and 600 transects study-wide.

We will evaluate the relationship between topographical, proximity, and other spatial factors and browse intensity within and among transects, sites, and regions using generalized mixed models, and other analysis methods as data permits.