

The selection, management, and fate of ecological communities within Protected Areas (nature reserves, parks, and preserved lands) are the focus of my research. My dissertation draws upon my interest in the interaction between human social processes and the ecological processes co-occurring within the landscapes where Protected Areas exist. New Jersey is the most densely populated state in the U.S., but land preservation efforts have brought a significant proportion of the forested land under some type of protected status. Although legal protection may keep a forest intact, the ecological communities within these forests are changing rapidly as a result of the past and present human land use within, and around them. Research over the last two decades has raised concerns that the deciduous upland forests of northern NJ are not regenerating their current ecological structure and composition. This is often attributed to the synergistic effects of native white-tailed deer and invasive understory plant species which limit native tree seeding growth. Through the use of remote sensing tools, I will examine the structural differences among forest patches dominated by a regenerating native under-story, versus those with heavy deer browse and an abundance of invasive plants. These patches will be further analyzed within the context of the spatial arrangement of human land uses surrounding them. The goal of my research is to identify the structural nature and potential geographic extent of forest community change within Protected Areas. By understanding if these areas are differentially susceptible to certain types of ecological change, we gain insight into future impacts upon human goals for biodiversity and ecosystem services within these protected lands.