Estimating the Effects of Topographic Position on Biodiversity of Understory Vegetation in Mountain Forests in Korea

Hee Han¹, Hyungho Kim², Joosang Chung¹

¹ Department of Forest Sciences, Seoul National University, Seoul, South Korea
² Division of Environmental Forest Sciences, Gyeongsang National University, Jinju, South Korea

The objective of this study was to investigate the biodiversity of understory vegetation associated with topographic positions in Gwangneung Experimental Forest of Korea Forest Research Institute. Vegetation data were collected in 109 1x1m random plots in the study area and biodiversity was measured using Shannon-Wiener diversity index, Simpson index and species richness. The spatial distribution of plots was analyzed using GIS in terms of forest stand conditions, soil types, landforms and topographic wetness index (TWI). The terrain conditions of plots were classified as upper slopes, open slopes and valleys based on the topographic position index (TPI). Multiple regression analysis was used in estimating the relationship between biodiversity of understory vegetation and abiotic environmental factors. According to the results of this study, the biodiversity of understory vegetation is influenced significantly by landforms and TWI is the most significant variable to influence biodiversity of topographic positions in mountain forests in Korea.

Keywords: Biodiversity, mountain forests, topographic position index, topographic wetness index, GIS