

CONTRIBUTION OF THE UNDERSTORY TO THE OVERALL WATER USE BY MIXED TEMPERATE FOREST

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Transpiration of the forest stands is one of the critical components in forest water cycle. Therefore, to quantify transpiration is necessary to build sound forest water managements. In this study, two different sap flow methods, thermal dissipation probe (TDP) and stem heat balance (SHB), were used to determine transpiration of over- and under-story species in mixed temperate deciduous forest, located in Gwangneung, South Korea. The study site was dominated by *Quercus serrata* and *Carpinus laxiflora* as overstory, and *Euonymus oxyphyllus* and *Celtis jessoensis* as understory. The basal area of overstory species in the plot was 3.8 m² ha⁻¹ and leaf area index of understory species in the plot was 1.0 m² m⁻². All over the growing season in 2008, understory species contributed about 50% of total forest stand transpiration, thus, averaged water use by overstory species was 0.92 mm d⁻¹, while it was 0.89 mm d⁻¹ for understory species. Even though light resource reached to understory species was less than 10 % of the one to overstory species, understory species had an important role to the overall water use by mixed forest stands. This suggests that it is important to consider understory species as well as overstory species to quantify right amount of forest stand water use.