*Indian Journal of Ecology (2018) 45(1): 100-106*

**Manuscript Number: 2641**
**NAAS Rating: 4.96**

# Estimation of Biomass and Carbon Stock Variations in Vegetation of Differently Managed *Quercus leucotrichophora* Forests *a*long an Elevation Gradient in Western Himalaya, India

**Pradeepen Rai and Bhupender Gupta**

*Department of Silviculture and Agroforestry, Dr. Yashwant Singh Parmar University of Horticulture and Forestry, Nauni-173 230, India*
*E-mail: pradeependilpali@gmail.com*

***Abstract***: The findings of the study conducted to estimate biomass and carbon stock in differently managed *Quercus leucotrichophora* forests along the elevation gradient revealed that the biomass and carbon stock parameters of the tree layer showed the precedence of Reserved Forest > Protected Forest > Unclassified Forest > Musterqua Forest. Aboveground biomass and its associated carbon stock of shrubs decreased significantly in the order of Reserved Forest > Musterqua Forest > Protected Forest > Unclassified Forest. Whereas, it's belowground, total biomass and carbon stock decrease as: Reserved Forest > Protected Forest > Musterqua Forest > Unclassified Forest. Aboveground biomass and carbon stock of herbage was recorded as: Reserved Forest > Protected Forest > Unclassified Forest > Musterqua forest. While, belowground biomass, total biomass and its related carbon stock decreased significantly in the order of Reserved Forest > Protected Forest > Musterqua Forest > Unclassified Forest. Along elevation gradient, tree layer had shown significant variation in biomass and carbon stock parameters where it decreased with an increase in elevation but a ziz-zag pattern and non-significance level was recorded for shrubs and herbs layer respectively. Thus, biomass and carbon stock in a forest ecosystem at different layers was influenced greatly by management strategies and elevation.

***Keywords***: *Quercus leucotrichophora*, Protected Forest (PF), Reserved Forest (RF), Musterqua Forest (MF), Unclassified Forest (UF)