

A study of shrub-vegetation in community forests in Uttanchal Himalayas

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SUMMARY

A phyto-sociological investigation was carried out in a community-managed forest in a micro watershed located in the Western Himalayas during Oct-Nov. 2003 and Feb-March, 2004 to analyze the composition of shrubs on different topo sequences. *Pongamia glabra* (Kurenja) was found widely distributed and dominating at Hill top followed by *Woodifordia fruticosa* (Dhaura) with IVI of 28.01 and 27.94, respectively. *Lantana camara* was found most distributed and dominating on hill slopes with IVI of 119. However in Hill slopes, *Hamiltonia suaveolens* (*Padera*) was the most distributed and dominating species with IVI value of 55.68. The highest relative density value was also recorded by *Lantana camara* on hill slopes (24.63) followed by *Adhatoda vasica* (*Gulbansa*) on Hill top (12.93) and *Murraya koengii* (*Karipatta*) in Valley sites (7.83). On the whole species diversity was higher on valley (2.94) as compared to slopes (2.42) and hill top (2.37).

Key words : Western Himalayas, Shrubs, Diversity, Distribution, Species richness

Uttaranchal State that lies between 28°43'55" to 31°08'10" N Latitude and 77°35'05" to 81°02'25" E Longitude is located in Western Himalayan range and is the true representative of the Himalayan ecosystem. Geographic area of the state is 53,483 square kilometer, which supports a human population of 8.48 million of which 25.6 per cent, is urban and 74.4 per cent is rural (Census 2001). The Uttaranchal State with forest area of 44.8 per cent ranks 6th amongst States / Union Territories in terms of percentage of recorded forest area (Anonymous, 2001). Contrarily, the net cultivated area in the state is only 13.62% with nearly 70% of the holdings being marginal (< 1 ha). Use of traditional crops, crop rotation, use of cattle dung and forest litter as sources of manure help to maintain soil fertility but sustain low crop yields (Sah *et al.*, 1988) and thus the production is barely sufficient to meet even half of the demands of a family of average size. Obviously, reliance of rural people on forest resources for timber, food, fodder, fuel and grazing had been very heavy which has resulted into over exploitation of forest resources leading to their fast degradation. This has forced male out migration for earning income to meet family needs. Remittances received from out migrated family members form an important source for their sustenance (Samra *et al.*, 1999). To confront the challenge of socio-economic development, ecological restoration, Govt. of India has launched mega project on watershed management on success of some earlier model watersheds. These watershed development projects have been found to have positive impact on the environment of forest resources

through afforestation or natural regeneration as a result of protection. However, the composition and the status of regeneration in a particular forest are variable. Though some studies were conducted and sporadic information on the composition of trees in different climatic zones of India is available (Saxena and Singh, 1982; Singh and Singh, 1984; Singhal *et al.*, 1986, Raizada and Sharma, 2001), meager information is available for the different topo-sequences in Himalayan ecosystems (Pande *et al.*, 1996). Hence, the present investigation was carried out to analyse the composition of shrubs in community forest in Western Himalaya.

MATERIALS AND METHODS

The present investigation was conducted in Fakot, a Western Himalayan micro watershed. It covers an area of about 370 ha with elevation ranging from 650 to 2015 m above sea level and is representative of the outer Himalayas. The watershed is situated between 78°20' to 78°20' E and 20°13' to 20°15' N with folded sedimentary rocks (shale and slate). The forests of the area are categorized under Group '12' (Himalayan Moist Temperate Forest) and sub-groups 12 C1 and C2 (Lower and Upper Himalayan Temperate Forests) (Champion and Seth, 1968).

Phyto-sociological studies were conducted during Oct-Nov. 2003 and Feb-March, 2004 using quadrat method (Mishra, 1968) using a size of 5m x 5m. Quadrats were placed randomly in three topographical situations *viz.* hill top, hill slope and valley in the area demarcated as village common land, locally called as *Civil soyam* land. Five

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