



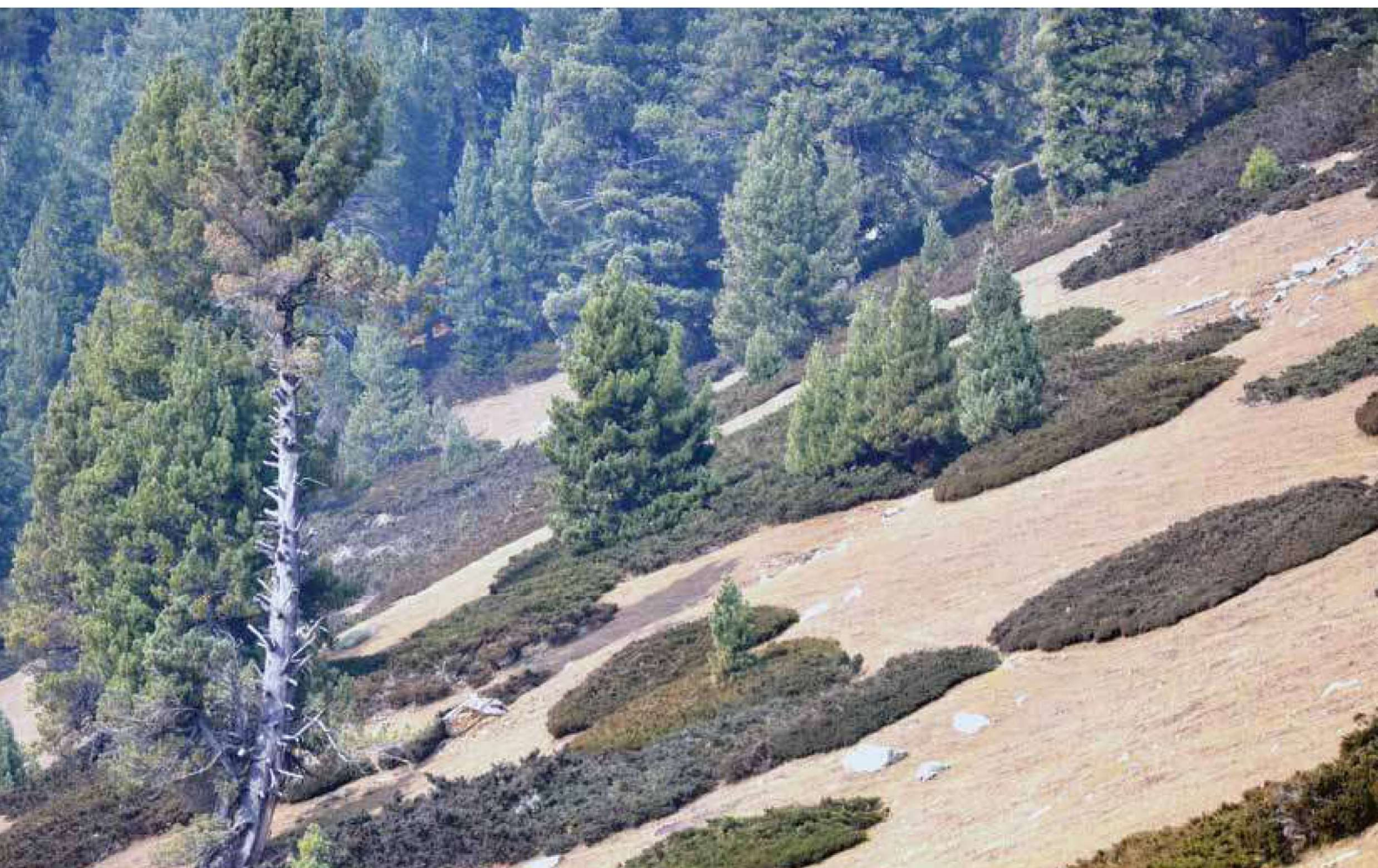
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# Interpreting mountain treelines in a changing world

LARGELY BASED ON THE INDIAN HIMALAYA

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## Cover photo

**Caption:** A treeline site from Kashmir. Trees emerging from the mat patches of juniper are of silver fir (*Abies pindrow*)

Courtesy: Prof. Zafar Reshi, Kashmir University, India



## CHAPTER 13

# Anthropogenic pressures on Himalayan timberlines and experiences with livelihood interventions

– Pankaj Tewari, Ripu Daman Singh, Surabhi Gumber, Krishna Kumar Tamta, and Harshita Joshi

Within the Indian Himalayan Region, people in high altitude areas (i.e., above 2000 masl) still depend heavily on forests, including those in the timberline ecotones, for firewood, fodder, and litter (for fertilizing crop fields). Further, the widely recognized aesthetic, cultural and spiritual attributes of these high mountain areas have historically made them attractive to people, resulting in additional pressures from the continuous growth of religious, spiritual, and adventure tourism.

## BIOMASS EXTRACTION IN TREELINE VILLAGES

Most households in Uttarakhand still grow agricultural crops on terraces carved out of the slopes, but the yields are not enough for household food sufficiency. A study carried out three decades ago estimated that each energy unit generated from crop fields entailed the use of 8-10 energy units from forests in the form of firewood, fodder and litter across much of Uttarakhand, Nepal, and Himachal Pradesh (Singh and Singh 1992). Because of lifestyle changes, some access to cooking gas, and reduction in livestock numbers, forest dependence has decreased in many parts, but in villages near treelines, biomass extraction continues unabated. Since agricultural produce is inadequate to meet the needs of households, many villagers are engaged in other jobs, such as running restaurants, shops, lodges, and tourist camps during the summer tourist season. A study by IHTRP (Singh et al. 2018b) in some villages just below Tungnath treeline revealed that summer tourism accounted for 47.3% of the total income generated at household level. The other income sources were shops (33.8%), physical labour (12.8%), government jobs (3.2%), and cash from horticultural (2.6%) and agricultural crops (0.16%).

Studies conducted in the mid-Himalayan region show that forest degradation, not deforestation, is the key problem (Singh 1999; Baland and Mookherjee 2013; Singh et al. 2014). The nature of degradation in the Himalayas is different when compared to degradation in other regions of the world (Singh 1998). In several parts