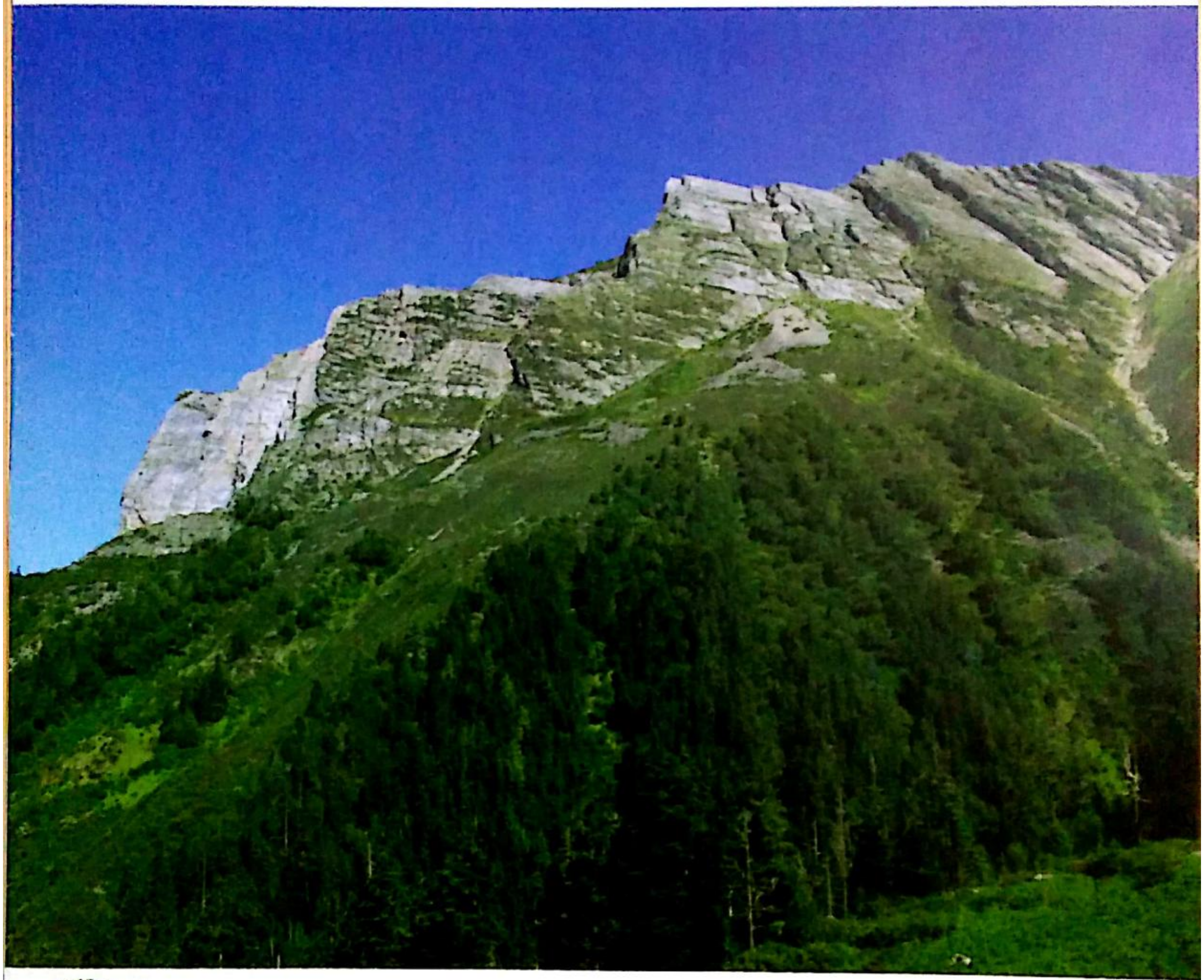
Timberline and Altitudinal Gradient Ecology of Himalayas, and Human Use Sustenance in a Warming Climate



Indian Himalayan Timberline Project (IHTP) under

NATIONAL MISSION ON HIMALAYAN STUDIES (NMHS)

Ministry of Environment, Forest and Climate Change (Govt. of India)

Collaborators

भारतीय वन्यजीव संस्थान
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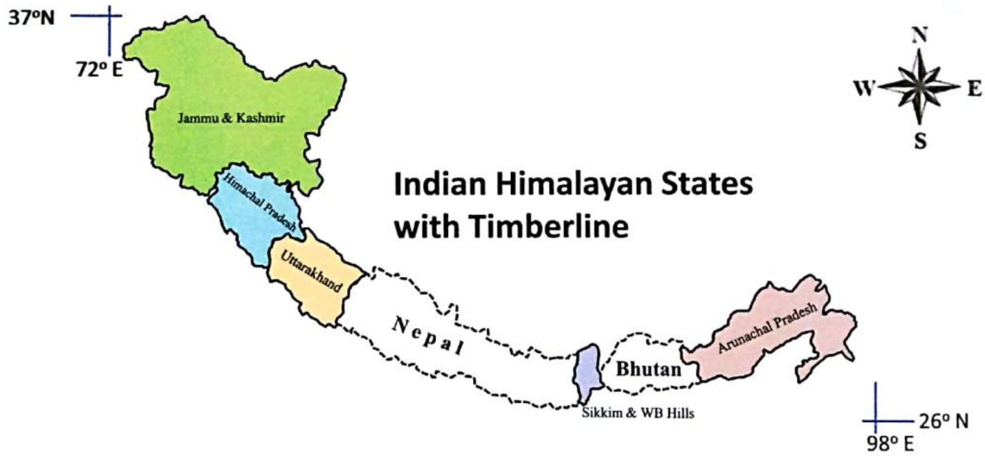
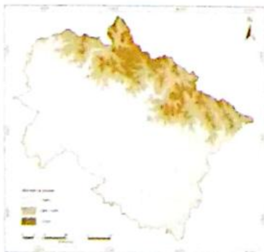
The Himalayas are warming 2-5 times more than global average and temperature rise increases with altitude, leading to shrinking of glaciers and beginning of upward shift of altitudinal ranges of many species and communities. Besides being an effective indicator of climate warming, changes in timberline have implications for biodiversity, wildlife habitats, and provisioning of ecosystem services. Therefore, timberline zones in the Himalayas need to be studied holistically to formulate mitigation strategies and conservation of important taxa and gene pool upon which the livelihoods of many rural communities depends. Since the timberline varies considerably along the East-to-West Himalayan arc, and it involves a complex assemblage of ecosystems, the project (IHTP) undertake a coordinated multi-site study.

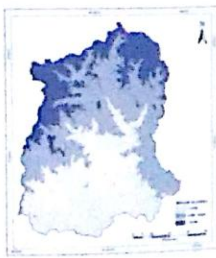


Three States representing three Precipitation Regimes of the Himalaya

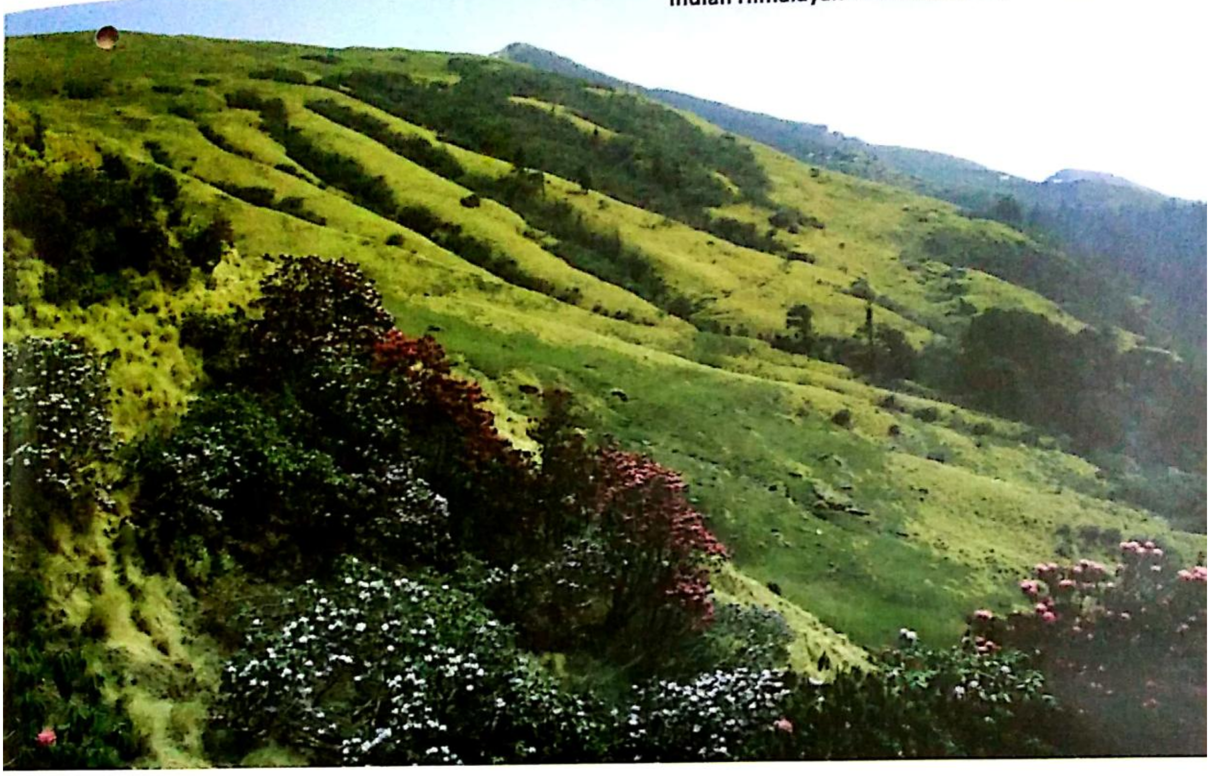
Non-monsoonal with low annual precipitation and moist pre-monsoon - Jammu & Kashmir



Monsoonal with dry pre-monsoon season - Uttarakhand



Moist pre-monsoon and dry winter - Sikkim



Project Objectives

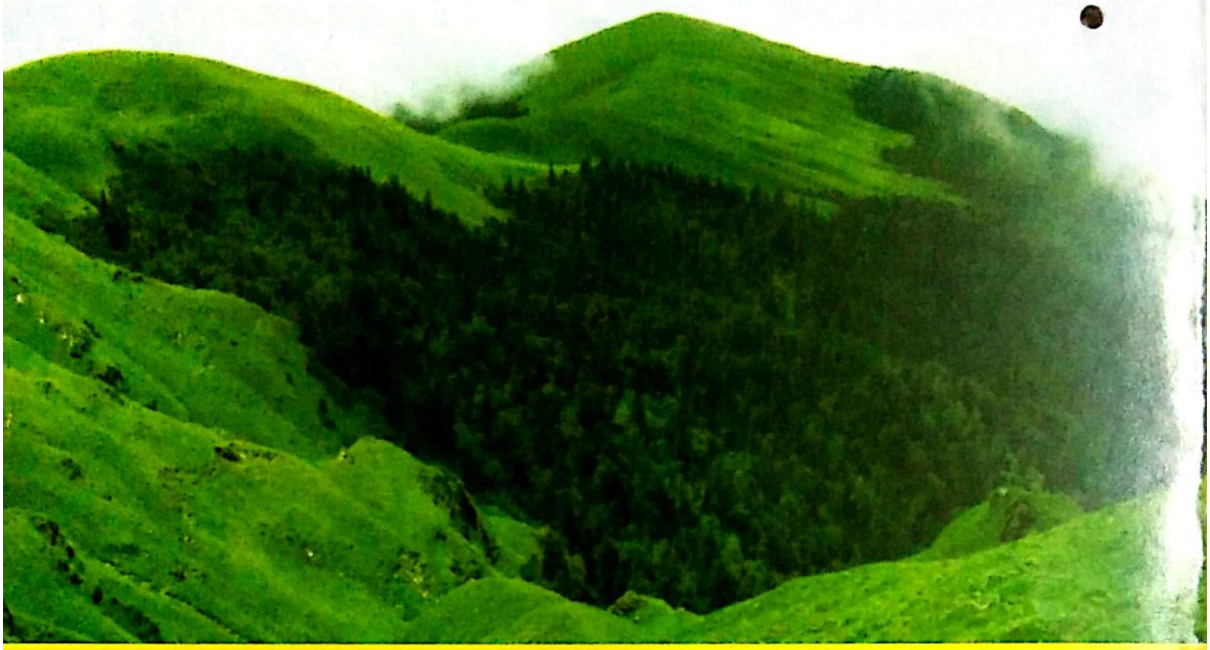
- To characterize and map timberline zone in the Indian Himalayan Region (IHR) using satellite and ground based observations including smart phone applications
- To determine the temperature lapse rate and pattern of precipitation along altitudinal gradients in different precipitation regimes across the IHR

- To study plant diversity, community structure, tree diameter changes and natural recruitment pattern along the three principal sites in the IHR
- To understand tree phenological responses, nutrient conservation strategies and tree-water relations in response to warming climate

- To study relationship between tree ring growth and past climatic changes in different climate regime across IHR
- To understand the impact of depletion of snow-melt water on growth of tree seedlings, grasslands species composition and selected functional processes

- To promote participatory action research (Citizen Science) on innovative interventions to improve livelihoods, women participation in conservation and management of timberline resources

Indian Himalayan Timberline Project under NMHS



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