



IJREB

ISSN 2321-743X

International Journal of Research in
Engineering and Bioscience

Volume 2 Issue 6 (Pages 143-147)

Journal home page: www.ijreb.org

FLORISTIC DIVERSITY IN MILAM VALLEY: A COLD DESERT REGIONS OF UTTARAKHAND

K. Chandra Sekar, Aseesh Pandey and Lalit Giri

Biodiversity Conservation and Management Theme, G.B. Pant Institute of Himalayan Environment & Development, Kosi - Katarmal, Almora - 263 643, Uttarakhand, India

ABSTRACT

The floristic diversity provides the information on plant wealth of the particular region. Accordingly, a study was conducted to document the floristic diversity along an altitudinal gradient with elevations varying from 3132m to 4235m in Milam area falling in Cold Desert area of Pithoragarh District, Uttarakhand, India. The total number of plant species recorded from this Valley was 181 belonging to 39 families and 95 genera. About 41% of these plant representations belong to five dominant families, viz., Ranunculaceae (11%), Asteraceae and Cyperaceae (7.7%), Rosaceae (7.2%) and Polygonaceae (6.6%). A total of 82 medicinal plants recorded and among these 12 species fall in the category of Threatened plants. The highest density was recorded (3.1 ind./m²) for *Thymus linearis* and least density (0.1 ind./m²) was recorded for *Rheum moorcroftianum* and *Ephedra gerardiana*. Two grass species namely, *Danthonia schneideri* (8.50 ind./m²) and *Poa alpina* (4.2 ind./m²) were the most dominant grasses in the region. Proper conservation strategies are required to conserve the Floristic wealth, especially the threatened plants.

KEYWORDS: Milam Valley, Cold Desert, Uttarakhand, India

INTRODUCTION

Himalayas are one of the largest and youngest mountain chains in the world and cover roughly 10% of India total land surface. Variations in terms of its size, climate and altitudinal ranges have created environments those are unique and characteristic to this region only. The diverse climate and the varied environmental conditions prevailing in Himalayas support diverse habitat and ecosystems with equally diverse life forms. The Himalayan region is blessed with a wide variety of natural resources including medicinal plants. It provides an important habitat to the flora and fauna including 9,000 species of angiosperms and hence, is considered as the hot spot of biodiversity (Verma and Kapoor, 2010). The cold deserts in India occur in Ladakh region of Jammu & Kashmir; Lahul and Spiti district of Himachal Pradesh; Nelang Valley, Mana, Milam and Malari area of Uttarakhand. The total cold desert area in Uttarakhand is around 1000 Sq. Km.

The Cold Desert ecosystem of Himalaya is recognized as one of the very important fragile ecosystem in India. Continuous extraction of plant resources of this region and opening these areas to tourism and related developmental activities, this fragile ecosystem of cold desert has become a matter of series concern (Murti, 2001). Keeping in view, the documentation of Floristic diversity in Milam, a cold desert

region of Uttarakhand was initiated and documented.

MATERIALS AND METHODS

The present study was conducted in Milam Valley of cold desert area of Uttarakhand during 2013 at an elevation from 3132 to 4235m. The study site was situated 30°18'69.50" to 30°19' 51.00" N latitude and 80°12'47.30" to 80°11' 31.10" E longitudes. The whole area of the valley was divided into 12 segments of 100m elevations wise for documenting floristic diversity as well as conducting the phyto-sociological study. Standard method of Misra (1968), Mueller-Dombois & Ellenberg (1974) were followed for analysing density of plant species. All the recorded species were collected and preserved as per standard herbarium procedure (Jain and Rao, 1977) and all the specimens housed in the herbarium of G.B. Pant Institute of Himalayan Environment & Development, Almora (GBP). All the specimens were identified with the help of standard flora (Murti, 2001; Chandra Sekar and Srivastava, 2009; Pusalkar and Singh, 2012) and documented.

RESULTS AND DISCUSSION

In Milam Valley, a total of 181 plants were recorded, belonging to 39 families and 95 genera. Five dominant families namely, Ranunculaceae (11%), Asteraceae and Cyperaceae (7.7%), Rosaceae (7.2%) and Polygonaceae (6.6%) were represented with more than 41% of the total plant diversity of

the region (Fig. 1). In 3000 to 3500 m altitude 101 species, 52 Medicinal Plants (MPs) and 14 Threatened Plants (TPs) were recorded. While in 3500-4000 m altitude the composition of total species, MPs and TPs were 96, 54 and 16 respectively. The altitudinal distribution details of total species, MPs and TPs is depicted in Fig. 2 and the maximum number of species recorded in 4000-4500 m altitude.

A total of 82 medicinal plants were recorded in Milam Valley. Among these 12 species fall in the category of Threatened plants (TPs). The population status of these threatened plants is tabulated in Table 1. The density of *Thymus linearis* were recorded highest among the TPs recorded (3.1 ind./m²) and the lowest density recorded in two species namely, *Ephedra gerardiana* and *Rheum moorcroftianum* (0.1 ind./m²).

The Milam Valley considerable amount of damage to flora and vegetation caused by people living in the vicinity of the area and the animals such as migratory livestock from the adjoining area. Already devoid of tree species, people regularly using the species of *Ephedra*, *Juniperus*, *Lonicera*, *Rosa*, etc. for fuel wood purposes, thus giving the area a barren look. Green vegetation i.e. *Potentilla argyrophylla*, *Thalictrum foliolosum*, *Myricaria rosea*, etc. collected as fodder and stored for winter stall-feeding of livestock. Migratory livestock of sheep and goats graze the unrivalled

pasture and destroy the herbaceous vegetation and give physical injury to seedlings and functioning as a carrier for plant pathogens causing severe diseases to wild animals and plants.

Habitat degradation, unscientific harvesting and over-exploitation is also another threat to floristic diversity, especially the medicinal plants. The better conservation of natural resources can be done by inclusion of a section on the plant conservation especially of rare and endangered medicinal plants in the wild life protection act, promotion of community based conservation, *in-situ* conservation through establishment of nature reserves, *ex-situ* conservation through tissue culture, developing cultivation technologies and nurseries of medicinal plants and conducting of regular training on the procedure of medicinal plants collection, processing among the local people, traders and real stake holders.

ACKNOWLEDGEMENT

We thank the Director, G.B. Pant Institute of Himalayan Environment & Development, Almora for facilities. Thanks are due to CSIR (Project no. 38 (1346)/12/EMR-II) for financial support to assess the population in Cold Desert regions of Uttarakhand. We are grateful to Uttarakhand Forest Department and Indo Tibetan Border Police for logistic and field support respectively.

REFERENCES

- Verma, R.K. and Kapoor, K.S., 2010. Assessment of floristic diversity in Pooch valley of cold deserts of District Kinnaur, Himachal Pradesh. *Biological Forum — An International Journal* 2(1): 35-44.
- Murti, S.K., 2001. *Flora of Cold Deserts of Western Himalaya, Vol. 1 (Monocotyledons)*. Botanical Survey of India, Calcutta.
- Misra, R., 1968. *Ecological work book*. Oxford & IBH Publishing Company, New Delhi.
- Muller-Dombois, D. and Ellenberg, E., 1974. *Aims and methods of vegetation ecology*. John Wiley & Sons, New York.
- Jain, S.K. and Rao, R.R., 1977. *A handbook of field and herbarium methods*. Goyal Offsets, New Delhi.
- Chandra Sekar, K. and Srivastava, S.K., 2009. *Flora of the Pin Valley National Park, Himachal Pradesh*. Botanical Survey of India, Kolkata.
- Pusalkar, P.K. and Singh, D.K., 2012. *Flora of Gangotri National Park, Western Himalaya, India*. Botanical Survey of India, Kolkata.

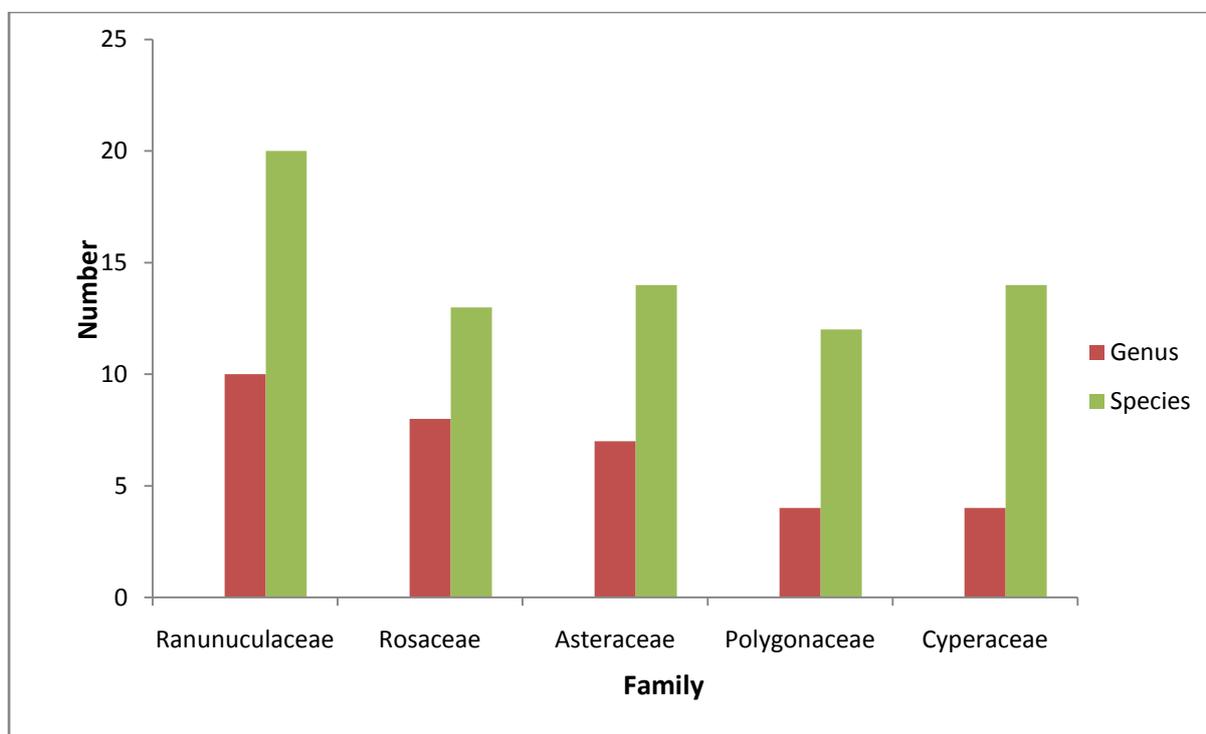


Fig. 1. Status of dominant families in Milam Valley

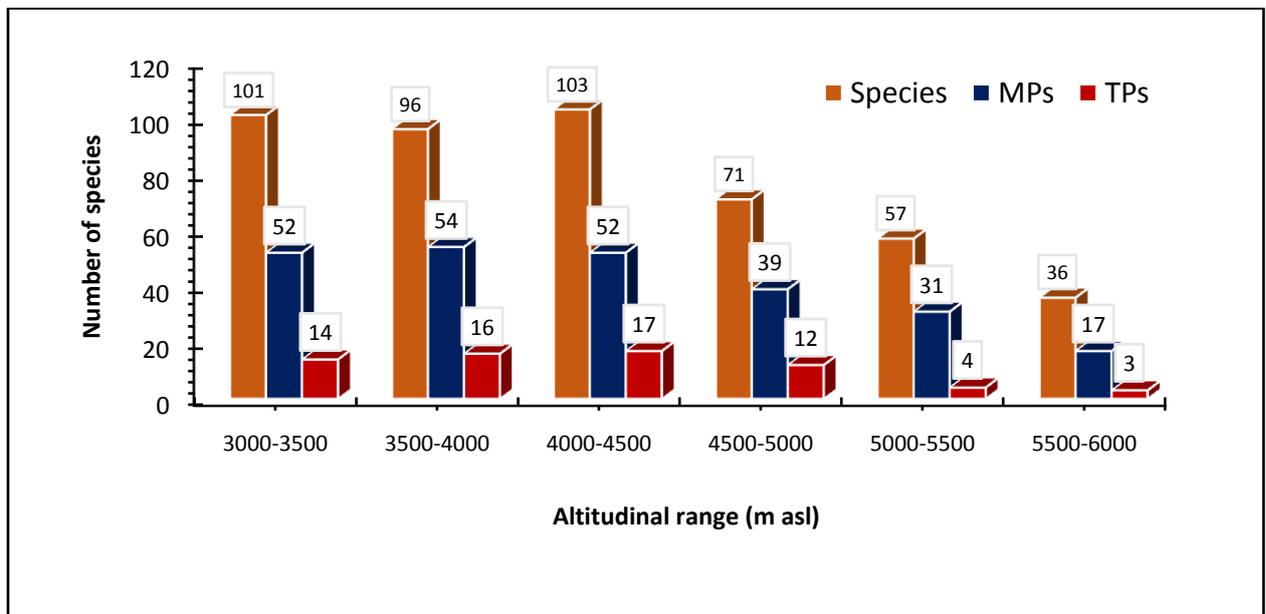


Fig. 2. Altitudinal plant diversity in Milam Valley (MPs - Medicinal Plants; TPs- Threatened Plants)

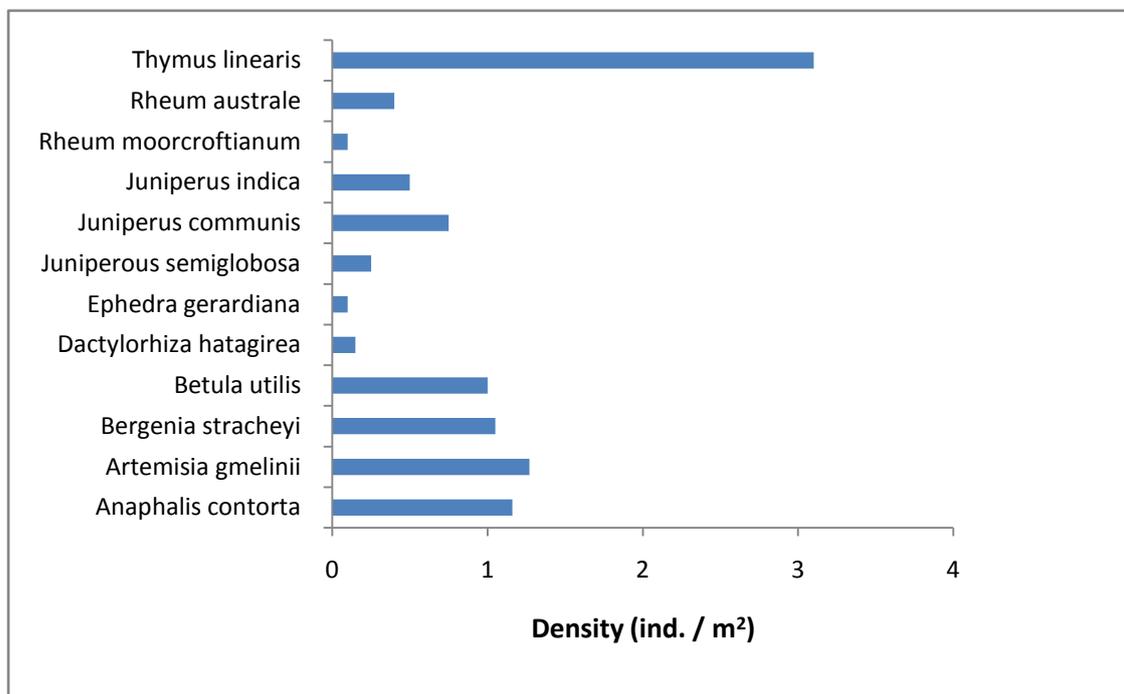


Fig. 3. Population density of Threatened plants of Milam Valley