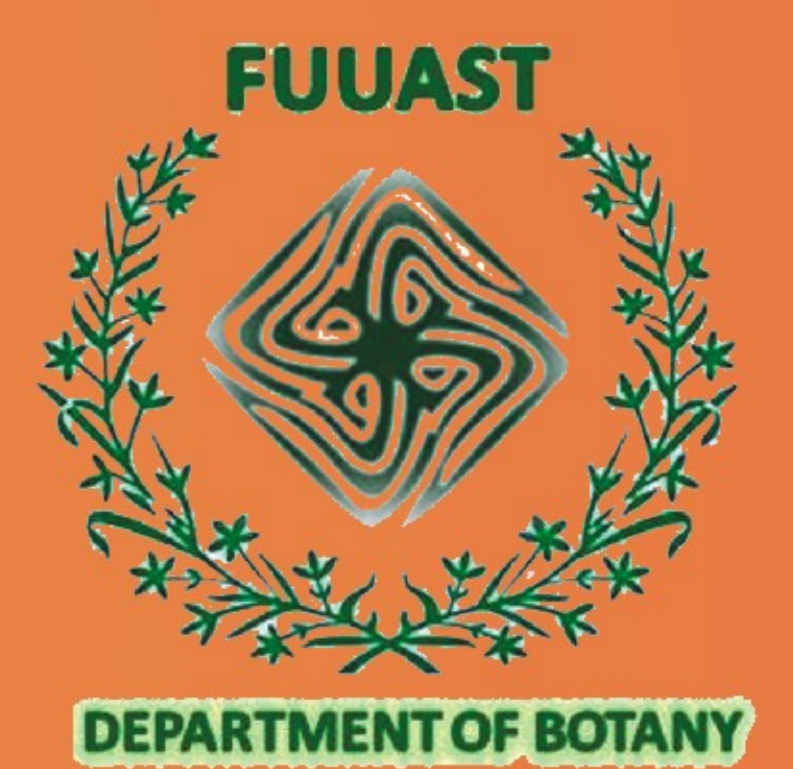


PLANT COMMUNITIES FROM SKARDU, GILGIT AND ASTORE DISTRICTS OF GILGIT-BALTISTAN, PAKISTAN

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ABSTRACT

A quantitative forest study of vegetation was conducted in 40 stands from three District of Gilgit-Baltistan. On the basis of phytosociological analysis and maximum important value index, following 5 pure stands and 5 communities of mixed tree species were recognized and quantitatively analyzed. *Pinus wallichiana-Juniperus* community. *Pinus wallichiana-Betula* community. *Picea-Juniperus* community. *Picea-Pinus wallichiana*, *Pinus wallichiana-Pinus gerardiana* community. *Picea smithiana* pure stands. *Pinus wallichiana* pure stands. *Betula* pure stands, *Juniperus macropoda* pure stand. *Abies pindrow* pure stand. Eighty three plants species of various herbs, shrubs and tree seedlings were observed and identified on the forest floor. These important forest are existing under anthropogenic threat and environmental disturbances. Climate change and forests may be linked directly to each other. Due to changes in global climate, biodiversity is experiences higher mean annual temperatures, altered precipitation patterns, more frequent and extreme weather events. Better forest management has key role to play in dealing with climate change so this quantitative description may be used in future for further investigation.

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INTRODUCTION

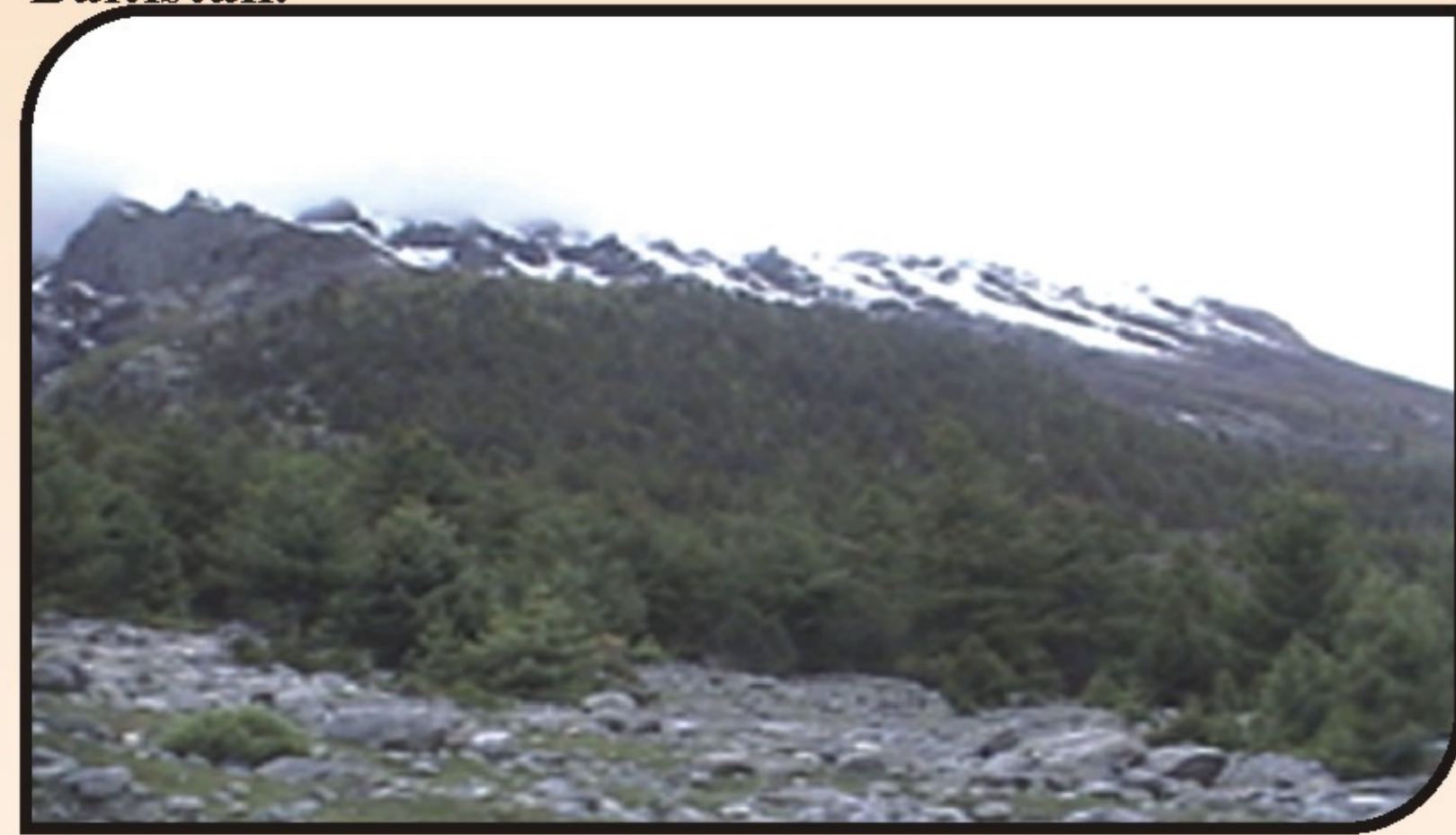
First quantitative and multivariate analysis of the vegetation around Skardu was presented by Ahmed (1976), during a scientific expedition of Northern Areas of Pakistan. Ahmed and Qadir (1976), Hussain et al. (1991) studied vegetation of Lesser Himalayan Pakistan. Ahmed and Naqvi (2005) and Ahmed et al. (2006) presented results from *Picea smithiana* forest and structure and description of various forests belonging to various climatic zones of Pakistan. Rasool (1998) worked on the protection of medicinal plants of Northern Areas of Pakistan. Shinwari and Gillani (2003) also reported the sustainable harvest of medicinal plants from Astore. Wali and Khatoon. (2007) listed the detail of economically important species of Bagrot Gilgit. Akbar et al. (2010) also studied the phytosociology and structure of Skardu District. Hussain et al. (2010) presented Phytosociology and structure of Central Karakoram National park. Beside this work no detailed phytosociological investigation were carried from Skardu, Gilgit, and Astore forested area therefore present work is presented to explore and provide further information on from 40 forested locations of these areas. This information can be used for conservation and management of forest in Gilgit-Baltistan.

MATERIAL AND METHODS

Point center quarter (PCQ) method of Cottam and Curtis (1965) were used to sampled the forest dominated by coniferous three species, while the understorey vegetation investigated by circular plot (1.5) method at each stand point. Calculation according to Mueller-Dombois and Ellenberg (1974).

OBJECTIVES OF THE STUDY

To explore the phytosociology of the study area. To investigate the population dynamics of Forest tree Species. Recommendation and suggestion for preservation of forest and vegetations.

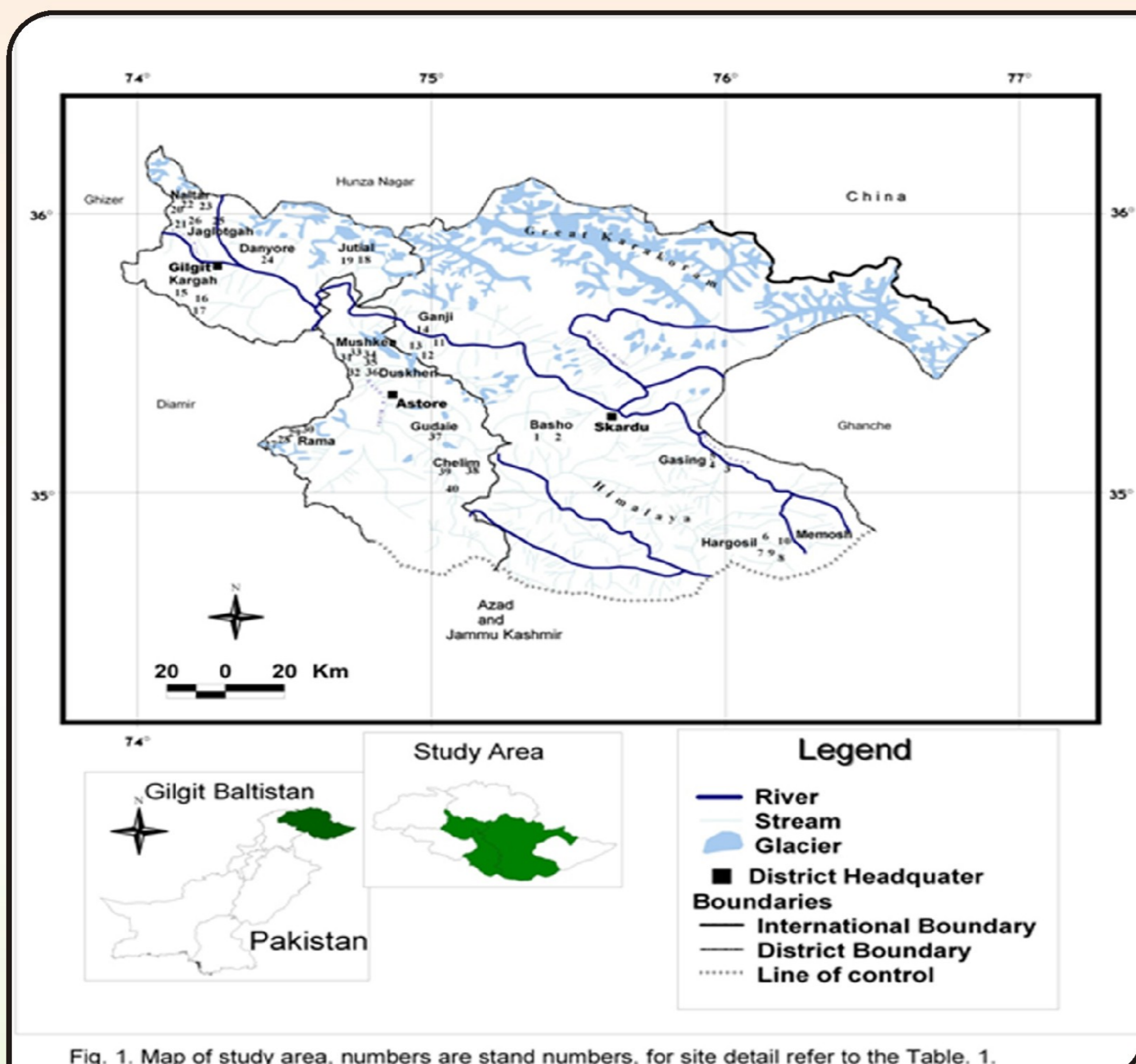


Skardu Memosh Mix Forest of P.W.J.E and B.U

Skardu Bacho Mix Forest of P.W and J.E

Gilgit Nalter P.S Forest

Gilgit Joglotgah B.U Forest



RESULTS

S.No.	Name of Community	Stand Nos.	Species	IVI Range	Density/ha Range	B.A m ² /ha Range	Elevation Range	Slope Range
1	<i>Pinus-Juniperus</i>	1—10,12	<i>Pinus wallichiana</i>	63.2—93	73.34—180	1—42.38	3414—3700	15—35
			<i>Juniperus excelsa</i>	12.2—24.4	7.68—129.3	0.7—14.63		
			<i>Betula utilis</i>	4.36—34.39	3.2—159.4	0.22—2.35		
2	<i>Pinus-Betula</i>	13,14,39	<i>Pinus wallichiana</i>	71.35—82.6	70.51—168.5	6.77—16.8	3374—3585	35—40
			<i>Betula utilis</i>	28.65—39.77	29.49—63.91	2.63—3.68		
3	<i>Picea-Juniperus</i>	18,36	<i>Picea smithiana</i>	70.25—82.6	78.2—161.7	7.48—14.25	2616—3250	40—45
			<i>Juniperus excelsa</i>	29.75—39.77	29.66—73.51	1.66—14.05		
4	<i>Picea-Pinus</i>	29,32	<i>Picea smithiana</i>	38.16—61.04	43.05—45.24	3.57—3.18	2719—3275	35
			<i>Pinus wallichiana</i>	38.96—61.84	23.05—94.71	3.17—5.96		
5	<i>Abies pindrow</i>	28	<i>Abies pindrow</i>	100	107	8	3464	45
6	<i>Pinus wallichiana-gerardiana</i>	36	<i>Pinus wallichiana</i>	63.4	56.04	1.9	2639	30
			<i>Pinus gerardiana</i>	63.3	41.41			
7	<i>Picea smithiana</i>	15,16,19,20,25,28	<i>Picea smithiana</i>	100	91.58—237.4	7.87—51	2993—3555	5—45
8	<i>Pinus wallichiana</i>	11,17,22,30,31,33,34,37,38,40	<i>Pinus wallichiana</i>	100	92—180	8.73—36.02	2691—3775	5—50
9	<i>Betula utilis</i>	21,23,26,27	<i>Betula utilis</i>	100	73.81—121.8	4.99—10.81	3055—3508	5—40
10	<i>Juniperus macropoda</i>	24	<i>Juniperus macropoda</i>	100	125.7	10.08	3736	45

CONCLUSION

- Five tree communities and five pure stands are recognized.
- It is concluded that *Pinus wallichiana* is dominant tree species in Skardu and Astore District.
- Largest stand of *Picea smithiana* is distributed at Nalter District Gilgit.
- The distribution pattern is extremely poor, scattered and with low relative frequency.
- The whole area is subjected to over grazing and extensive cutting.
- The forests are deteriorating rapidly. Therefore, the canopies are mostly open.
- Soil erosion is common phenomenon in these valuable forests.
- Forest ground flora consists of high valuable medicinal plants therefore conservation and managements plan should be introduce.

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Astore Gudaie P.W Forest

Astore Rama P.W and B.U Forest



Astore Rama A.P Forest

Astore Gudaie P.W Forest

RECOMMENDATION

- Prompt management, conservational and legislative action is necessary to save the natural forests.
- Cutting of forest should be seriously discouraged through environmental protection laws.
- Stress should be emphasized on the Restoration of original habitats.
- Ways and means should be developed to provide gas cylinder for domestic needs for the community on subsidized rates.
- Grazing should be strictly prohibited. •All forested areas should be declared as National Parks.



Urtica dioica L.

Thymus linearis Benth.

Potentilla anserina L.

Potentilla anserina L.



Leontopodium leontopodium (DC)

Leontopodium leontopodium (DC)

Geranium pratense L.

Bistorta affinis (D. Don) Green

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