



## Phytodiversity (Angiosperms, Gymnosperms and Pteridophytes) in Lamberi forest range, Rajouri, J&K, India

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### Abstract

The present study has been carried to assess phytodiversity in the Lamberi Forest Range of Rajouri, J&K, India. A total of 222 species of angiosperms (217), gymnosperm (1) and pteridophytes (4) belonging to 80 families and 167 genera has been recorded. Among angiosperms, dicots have been represented by 203 species distributed in 152 genera and 69 families while the monocots have been represented by only 14 species distributed in 6 families and 10 genera. Overall, the ratio of family to genus has been worked out to be 1: 2.87, family to species 1: 2.77 while the genus to species has been worked out to be 1: 1.32. The dominant families of the area were Asteraceae, Lamiaceae, Fabaceae and Rosaceae. Forty families show monotypic representation.

**Keywords:** Angiosperm, Gymnosperm, Jammu, Lamberi forest range, Phytodiversity, Pteridophytes

### Introduction

The knowledge of the floristic composition, species diversity and structural analysis studies of a plant community are prerequisite to understand the overall structure and function of any ecosystem and also are essential for providing information on species richness of the forests, forest management purpose and help in understanding forest ecosystem functions (Venu, 2002; Giriraj *et al.*, 2008; Pappoe *et al.*, 2010). Documenting basic patterns of biodiversity is fundamental for prioritizing areas for conservation and management action (Villasenor *et al.*, 2007). As forests are known to be critically important habitats in terms of the biological diversity they contain and in terms of the ecological functions they serve by providing important environmental benefits (Bekele, 1994; SCBD, 2001; Vivero *et al.*, 2005; Nune *et al.*, 2010), knowledge of their structure and function is of utmost importance. The Indian Himalayan region occupies a special place in the mountain ecosystems of the world. This region is considered as the repository of biological and cultural diversity (Negi and Gaur, 1994). While the utilization of biological resources is a prerequisite for human

sustenance on this planet, at the same time it is equally essential to conserve these resources for future generations through their sustainable utilization. Therefore, documentation of diversity of any region is of paramount importance as this will also help in better conservation, management and utilization of its resources. Study on forest composition, diversity and socio-economic status in Jammu region adjoining to the study area has been done by Singh, 2002; Sharma, 2003 and Raina and Kumar, 2011. Enumeration of Lamberi forest range which is very rich in plant diversity has not been done so far. Therefore, in this study we have tried to work out the floristic composition of this forest covering all the important aspects of the phytodiversity (angiosperms, gymnosperms and pteridophytes) of the Lamberi forest range.

### Study area

Lamberi forest range (Latitude 33° 06' to 33° 13' North and Longitude 74° 08' to 74° 18' East) is a part of Nowshera forest division in Rajouri district of J&K. This forest range covers an altitudinal range of 600 m to 1200 m a.s.l. and experiences four distinct seasons as Summer (Mid March to end of June), Monsoon (July to September), Autumn (October to mid November) and Winter (mid November to mid March). There is a great extreme

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of temperature with June recorded as hottest and January coldest month with average maximum and minimum temperature of 37.4<sup>0</sup> C to 7.42<sup>0</sup> C. Average rainfall of area is 500mm. Most of the rainfall occurs during monsoon season.

### Material and Methods

Extensive field surveys were conducted in the study area from June 2011 to May 2012, in different seasons to assess the diversity of higher plants including pteridophytes. Species were identified with the help of various local, regional and National floras and herbaria. Majority of the plants were identified on the spot by their vernacular names. Taxonomical categories-genera and species within the family were placed alphabetically.

### Results and Discussion

The list of plants collected from the study area has been depicted in the Table 1. The perusal of table revealed the presence of a total of 222 species belonging to 80 families and 167 genera. Dicots have been represented by 203 species distributed in 152 genera and 69 families which formed a major part of the flora while the monocots have been represented by only 14 species distributed in 6 families and 10 genera (Table 2). The pteridophytes have been represented by 4 genera belonging to 4 families viz. Adiantaceae, Dryopteradaceae, Pteridaceae and Thelypteridiaceae. In gymnosperms Pinaceae (1 species and 1 genera) was the only family which has been recorded from the study area.

**Table 1: List of Plants Collected from Lamberi Forest Range along with their Life forms, Habit, Division and Familial description**

S. No	Name	Life form	Habit
<b>Angiosperm Dicot</b>			
<b>Family : Acanthaceae</b>			
1.	<i>Barlera dichotoma</i> Roxb.	CH	Herb
2.	<i>Justicia adhatoda</i> Nees.	N	Shrub
3.	<i>Justica simplex</i> D. Don	CH	Herb
4.	<i>Strobilanthes alatus</i> Nees.	TH	Herb
<b>Family :Amaranthaceae</b>			
5.	<i>Achyranthes aspera</i> L.	H	Herb
6.	<i>Aerva scandens</i> wall.	CH	Herb
7.	<i>Alysicarpus vaginalis</i> (L.) DC.	TH	Herb
8.	<i>Amaranthus gangeticus</i> Linn.	TH	Herb
9.	<i>Amaranthus viridis</i> L	TH	Herb
<b>Family: Anacardiaceae</b>			
10.	<i>Lannea coromandelica</i> Merr.	M	Tree
11.	<i>Mangifera indica</i> Linn.	M	Tree
12.	<i>Rhus cotinus</i> L.	N	Shrub
<b>Family: Apiaceae</b>			
13.	<i>Centella asiatica</i> Urb.	H	Herb
14.	<i>Scandix pectin-veneris</i> Linn.	TH	Herb
<b>Family: Apocynaceae</b>			
15.	<i>Carissa opaca</i> Stapf.	N	Shrub
16.	<i>Nerium indicum</i> Mill.	N	Shrub



Phytodiversity (Angiosperms, Gymnosperms and Pteridophytes)

<b>Family: Araliaceae</b>			
17.	<i>Hedera nepalensis</i> K. Koch.	L	Climber
<b>Family: Arecaceae</b>			
18.	<i>Phoenix sylvestris</i> (Linn.) Roxb.	M	Tree
<b>Family: Asclepiadaceae</b>			
19.	<i>Calotropis procera</i> R.Br.	N	Shrub
20.	<i>Perugularia extensa</i> N.E.Br.	L	Climber
<b>Family: Asteraceae</b>			
21.	<i>Anaphallis triplenervis</i> Sims ex C.B.Clarke.	CH	Herb
22.	<i>Artemisia parviflora</i> Roxb. ex D. Don.	CH	Herb
23.	<i>Bidens biternata</i> Linn.	TH	Herb
24.	<i>Cirsium arvense</i> (Linn) Scop.	CH	Herb
25.	<i>Cirsium wallichii</i> DC.	CH	Herb
26.	<i>Cichorium intybus</i> L.	H	Herb
27.	<i>Conzya japonicus</i> (Thunb.) DC.	TH	Herb
28.	<i>Cousinia falconeri</i> Hook.F.	TH	Herb
29.	<i>Erigeron canadensis</i> L.	TH	Herb
30.	<i>Gnaphalium indicum</i> L.	TH	Herb
31.	<i>Parthenium hysterophorus</i> L.	TH	Shrub
32.	<i>Saussurea albescens</i> Hook.,f.	H	Herb
33.	<i>Saussurea heteromalla</i> (D.Don) Hand.-Mazz.	H	Herb
34.	<i>Sonchus arvensis</i> L.	TH	Herb
35.	<i>Sonchus asper</i> (L.)Hill	TH	Herb
36.	<i>Taxaacum officinale</i> Weber.	TH	Herb
37.	<i>Trifolium arvense</i> Linn.	H	Herb
38.	<i>Trifolium pretense</i> Linn.	H	Herb
39.	<i>Trifolium repens</i> Linn.	H	Herb
40.	<i>Xanthium stromarium</i> Linn.	TH	Herb
<b>Family: Balsaminaceae</b>			
41.	<i>Impatiens brachycentra</i> Kar.&Kir.	TH	Herb
<b>Family: Berberidaceae</b>			
42.	<i>Berberis lyceum</i> Royle.	N	Shrub
<b>Family: Bignoniaceae</b>			
43.	<i>Bougainvillea glabra</i> Choisy.	L	Climber
<b>Family: Bombaceae</b>			
44.	<i>Bombax ceiba</i> L.	M	Tree



<b>Family: Boraginaceae</b>			
45.	<i>Cordia myxa</i> L.	M	Tree
46.	<i>Heliotropium ellipticum</i> Ledeb.	TH	Herb
<b>Family: Brassicaceae</b>			
47.	<i>Lepidium sativum</i> Linn.	TH	Herb
<b>Family: Buddlejaceae</b>			
48.	<i>Buddleja asiatica</i> Lour.	N	Shrub
<b>Family: Cactaceae</b>			
49.	<i>Opuntia vulgaris</i> Mill.	N	Shrub
<b>Family: Caesalpinaceae</b>			
50.	<i>Cassia fistula</i> L.	M	Tree
51.	<i>Cassia occidentalis</i> L.	TH	Herb
52.	<i>Cassia tora</i> L.	TH	Herb
53.	<i>Bauhinia purpurea</i> Linn.	M	Tree
54.	<i>Bauhinia variegata</i> Linn.	M	Tree
<b>Family: Cannabinaceae</b>			
55.	<i>Cannabis sativa</i> Linn.	CH	Herb
<b>Family: Caryophyllaceae</b>			
56.	<i>Silene conoidea</i> Linn.	TH	Herb
57.	<i>Silene inflata</i> Sm.	TH	Herb
58.	<i>Stellaria media</i> (L.)Vill.	TH	Herb
59.	<i>Stellaria asiatica</i> Mill.	TH	Herb
<b>Family: Celastraceae</b>			
60.	<i>Gymnosporia royleana</i> Laws.	N	Shrub
<b>Family: Chenopodiaceae</b>			
61.	<i>Chenopodium murale</i> L.	TH	Herb
<b>Family: Clusiaceae</b>			
62.	<i>Hypericum cernuum</i> Roxb.	CH	Herb
<b>Family: Combretaceae</b>			
63.	<i>Terminalia chebula</i> Retz.	M	Tree
<b>Family: Commelianaceae</b>			
64.	<i>Commelina bengalensis</i> L.	TH	Herb
65.	<i>Commelina communis</i> Linn.	TH	Herb
<b>Family: convolvulaceae</b>			
66.	<i>Ipomoea carnea</i> Jacq.	CH	Shrub
67.	<i>Ipomoea eriocarpa</i> R.Br.	L	climber
68.	<i>Ipomoea muricata</i> Jacq.	L	Climber
69.	<i>Ipomoea nil</i> Roth.	L	Climber



Phytodiversity (Angiosperms, Gymnosperms and Pteridophytes)

70.	<i>Ipomoea purpurea</i> (Linn) Roth.	L	Climber
<b>Family:</b> Cucurbitaceae			
71.	<i>Tridax procumbens</i> L.	TH	Herb
<b>Family:</b> Cuscutaceae			
72.	<i>Cuscuta reflexa</i> Roxb.	E	Epiphyte
<b>Family:</b> Cyperaceae			
73.	<i>Carex spp.</i>	H	Herb
74.	<i>Eriophorum comosum</i> Nees.	CH	Herb
<b>Family:</b> Ebenaceae			
75.	<i>Diospyros cordifolia</i> Roxb.	M	Tree
<b>Family:</b> Euphorbiaceae			
76.	<i>Phyllanthus emblica</i> L.	M	Tree
77.	<i>Euphorbia geniculata</i> Orteg.	TH	Herb
78.	<i>Euphorbia helioscopia</i> L.	TH	Herb
79.	<i>Euphorbia hirta</i> L.	TH	Herb
80.	<i>Euphorbia prunifolia</i> Jacq.	TH	Herb
81.	<i>Euphorbia royleana</i> Boiss.	N	Shrub
82.	<i>Mallotus philippensis</i> Muell. Arg.	M	Tree
83.	<i>Ricinus communis</i> L.	N	Shrub
<b>Family:</b> Fabaceae			
84.	<i>Dalbergia sissoo</i> Roxb.	M	Tree
85.	<i>Desmodium trifolium</i> Dc.	CH	Herb
86.	<i>Erythrina indica</i> Lam.	M	Tree
87.	<i>Indigofera pulchella</i> Roxb.	N	Shrub
88.	<i>Indigofera linifolia</i> (L.f.) Retz	TH	Herb
89.	<i>Lathyrus sativus</i> Linn	H	Herb
90.	<i>Melilotus alba</i> Medic.	TH	Herb
91.	<i>Parkinsonia aculeate</i> L.	M	Tree
92.	<i>Vicia sativa</i> Linn.	C	Climber
<b>Family:</b> Flacourtiaceae			
93.	<i>Flacourtia indica</i> Merr	M	Tree
<b>Family:</b> Fumariaceae			
94.	<i>Fumaria indica</i> Pugsley.	TH	Herb
<b>Family:</b> Gentianaceae			
95.	<i>Gentiana argentea</i> L.	H	Herb
<b>Family:</b> Geraniaceae			
96.	<i>Geranium ocellatum</i> Jacq.	CH	Herb
97.	<i>Geranium rotundifolium</i> L.	CH	Herb



<b>Family: Lamiaceae</b>			
98.	<i>Ajuga bracteosa</i> Benth.	TH	Herb
99.	<i>Ajuga parviflora</i> Benth.	H	Herb
100.	<i>Colebrookia oppositifolia</i> Smith	N	Shrub
101.	<i>Lamium album</i> Linn.	TH	Herb
102.	<i>Mentha longifolia</i> Huds.	HH	Herb
103.	<i>Mentha sylvestris</i> L.	HH	Herb
104.	<i>Mentha piperata</i> L.	H	Herb
105.	<i>Nepeta hindostana</i> (Roth)Haines	CH	Herb
106.	<i>Nepeta spicata</i> Wall.	CH	Herb
107.	<i>Ocimum americana</i> L.	TH	Herb
108.	<i>Salvia lanata</i> Roxb.	CH	Herb
109.	<i>Stachys sericea</i> Wall.	TH	Herb
110.	<i>Vitex negundo</i> Linn.	N	Shrub
111.	<i>Vitex trifolia</i> Linn.	N	Shrub
<b>Family: Lauraceae</b>			
112.	<i>Litsea umbrosa</i> Nees.	M	Tree
<b>Family: Liliaceae</b>			
113.	<i>Gloriosa superba</i> L.	L	Climber
114.	<i>Reinwardtia indica</i> Dumort.	CH	Herb
<b>Family: Linderniaceae</b>			
115.	<i>Lindernia ciliata</i> (Colsmann) Pennell	TH	Herb
<b>Family: Lythraceae</b>			
116.	<i>Lagerstroemia parviflora</i> (L.) Pers	M	Tree
117.	<i>Woodfordia fruticosa</i> kurz.	N	Shrub
<b>Family: Malvaceae</b>			
118.	<i>Malvestrum coromandelianum</i> Garcke	TH	Herb
119.	<i>Sida cordata</i> Borssum.	TH	Herb
<b>Family: Meliaceae</b>			
120.	<i>Azadirachta indica</i> A.Juss.	M	Tree
121.	<i>Melia azedarach</i> L.	M	Tree
122.	<i>Toona ciliata</i> M.Roemer.	M	Tree
<b>Family: Mimosaceae</b>			
123.	<i>Acacia catechu</i> Wild.	M	Tree
124.	<i>Acacia modesta</i> Wild.	M	Tree



Phytodiversity (Angiosperms, Gymnosperms and Pteridophytes)

125.	<i>Acacia nilotica</i> (L.) Del.	M	Tree
126.	<i>Albizia lebbek</i> (L.) Benth.	M	Tree
127.	<i>Mimosa rubicaulis</i> Lamk.	N	Shrub
<b>Family: Moraceae</b>			
128.	<i>Ficus auriculata</i> Lour.	M	Tree
129.	<i>Ficus benghalensis</i> L.s	M	Tree
130.	<i>Ficus carica</i> L.	M	Tree
131.	<i>Ficus hispida</i> L.f.	M	Tree
132.	<i>Ficus palmata</i> Forssk.	M	Tree
133.	<i>Ficus racemosa</i> L.	M	Tree
134.	<i>Ficus religiosa</i> L	M	Tree
135.	<i>Morus alba</i> L.	M	Tree
136.	<i>Morus serrata</i> Roxb.	M	Tree
<b>Family: Musaceae</b>			
137.	<i>Musa paradisiaca</i> Linn.	M	Tree
<b>Family: Myrtaceae</b>			
138.	<i>Callistemon citrinus</i> Skeels.	M	Tree
139.	<i>Euclaptus tereticornis</i> Sm.	M	Tree
140.	<i>Psidium guajava</i> L.	M	Tree
141.	<i>Syzygium cumini</i> (L.) Skeels	M	Tree
<b>Family: Nyctaginaceae</b>			
142.	<i>Boehmeria platyphylla</i> D.Don.	N	Shrub
143.	<i>Mirabilis jalapa</i> L.	CH	Herb
<b>Family: Oleaceae</b>			
144.	<i>Jasminum officinale</i> L.	N	Shrub
145.	<i>Olea cuspidata</i> Wall. ex G. Don	M	Tree
<b>Family: Onagraceae</b>			
146.	<i>Oenothera rosea</i> Ait.	TH	Herb
<b>Family: Oxalidaceae</b>			
147.	<i>Oxalis corniculata</i> L.	CH	Herb
<b>Family: Papaveraceae</b>			
148.	<i>Argimone mexicana</i> L.	TH	Herb
<b>Family: Polygonaceae</b>			
149.	<i>Polygonum glabrum</i> Willd.	TH	Herb
150.	<i>Rumex dentatus</i> Linn.	TH	Herb
151.	<i>Rumex hastatus</i> D. Don.	CH	Herb
<b>Family: Primulaceae</b>			



152.	<i>Anagallis arvensis</i> L.	TH	Herb
153.	<i>Androsa rotundifolia</i> Hardw.	H	Herb
<b>Family: Proteaceae</b>			
154.	<i>Grevillea robusta</i> A. Cunn. Ex R.Br.	M	Tree
<b>Family: Punicaceae</b>			
155.	<i>Punica granatum</i> Linn.	N	Shrub
<b>Family: Ranunculaceae</b>			
156.	<i>Anemone falconeri</i> Thoms.	H	Herb
157.	<i>Delphinium uncinatum</i> Hook.f.	G	Herb
158.	<i>Ranunculus aquatilis</i> L.	HH	Herb
159.	<i>Ranunculus arvensis</i> Linn.	TH	Herb
160.	<i>Ranunculus muricatus</i> L.	TH	Herb
161.	<i>Thallictrum pendunculatus</i> Edgew.	CH	Herb
<b>Family: Rhamnaceae</b>			
162.	<i>Rhamnus triquetra</i> Wall.	M	Tree
163.	<i>Sageretia oppositifolia</i> Wall.ex Roxb.	N	Shrub
164.	<i>Zizyphus nummularia</i> (Burm.f.) Wight&Arn	N	Shrub
165.	<i>Zizyphus mauritiana</i> Lamk.	M	Tree
166.	<i>Zizyphus oxyphylla</i> Edgew.	M	Tree
<b>Family: Rosaceae</b>			
167.	<i>Duchesnea indica</i> (Andrews) Focke.	CH	Herb
168.	<i>Potentilla supine</i> L.	H	Herb
169.	<i>Prinsepa utilis</i> Royle.	N	Shrub
170.	<i>Prunus domestica</i> Linn.	M	Tree
171.	<i>Prunus persica</i> Linn.	M	Tree
172.	<i>Pyrus communis</i> Linn.	M	Tree
173.	<i>Pyrus pashia</i> Buch-Ham.	M	Tree
174.	<i>Rosa multiflora</i> Lindl.	N	Shrub
175.	<i>Rubus ellipticus</i> Smith.	N	Shrub
<b>Family: Rubiaceae</b>			
176.	<i>Gallium rotundifolium</i> L.	TH	Herb
177.	<i>Randia dumetorum</i> Lamk.	N	Shrub
178.	<i>Randia tetrasperma</i> Benth. & Hook	N	Shrub
179.	<i>Rubia cordifolia</i> L.	H	Herb





Phytodiversity (Angiosperms, Gymnosperms and Pteridophytes)

<b>Family: Rutaceae</b>			
180.	<i>Aegle marmelos</i> Corr.	M	Tree
181.	<i>Zanthoxylum armatum</i> DC.	M	Tree
<b>Family: Salicaceae</b>			
182.	<i>Populus ciliata</i> Wall ex Royle.	M	Tree
183.	<i>Salix tetrasperma</i> Roxb.	M	Tree
<b>Family: Sapindaceae</b>			
184.	<i>Dodonaea viscosa</i> Jacq.	N	Shrub
185.	<i>Sapindus mukorosii</i> Gaertn.	M	Tree
<b>Family: Scrophulariaceae</b>			
186.	<i>Mazus japonicus</i> Kuntz.	TH	Herb
187.	<i>Striga asiatica</i> (L.) Kuntze.	TH	Herb
188.	<i>Verbascum thapsus</i> Linn.	CH	Herb
189.	<i>Veronica agretis</i> Linn.	TH	Herb
<b>Family: Solanaceae</b>			
190.	<i>Datura innoxia</i> Mill.	TH	Herb
191.	<i>Datura stromanium</i> L.	TH	Herb
192.	<i>Solanum erianthum</i> D. Don	N	Shrub
193.	<i>Solanum nigrum</i> Linn.	TH	Herb
194.	<i>Solanum pseudo-capsicum</i> Linn.	CH	Herb
195.	<i>Solanum surattense</i> Burm.f	TH	Herb
196.	<i>Solanum viarum</i> Dunal.	CH	Herb
<b>Family: Tiliaceae</b>			
197.	<i>Grewia optiva</i> J.R Drumm.	M	Tree
198.	<i>Grewia oppositifolia</i> Buch.-Ham. ex Roxb.	M	Tree
<b>Family: Ulmaceae</b>			
199.	<i>Celtis australis</i> Linn.	M	Tree
<b>Family: Utricaceae</b>			
200.	<i>Debregeasia</i> spp.	N	Shrub
<b>Family: Verbenaceae</b>			
201.	<i>Lantana camara</i> L.	N	Shrub
<b>Family: Violaceae</b>			
202.	<i>Viola odorata</i> Linn.	H	Herb
203.	<i>Viola patrinii</i> L.	H	Herb
<b>Angiosperm Monocot</b>			



<b>Family: Alliaceae</b>			
204.	<i>Allium cepa</i> L.	G	Herb
205.	<i>Allium sativum</i> L.	G	Herb
<b>Family: Aspergaraceae</b>			
206.	<i>Asparagus adsendens</i> Roxb.	N	Shrub
<b>Family: Cyperaceae</b>			
207.	<i>Cyperus nivens</i> Retz.	H	Herb
208.	<i>Cyperus nutans</i> Vahl, Enum.	H	Herb
<b>Family: Dioscoreaceae</b>			
209.	<i>Dioscorea bulbifera</i> Voigt.	G	Herb
<b>Family: Liliaceae</b>			
210.	<i>Tulipa stellata</i> HK.f	G	Herb
<b>Family: Poaceae</b>			
211.	<i>Avena fatua</i> L.	CH	Herb
212.	<i>Bromus japonicus</i> Thunb. ex Murr.	TH	Herb
213.	<i>Cynodon dactylon</i> Pers.	H	Herb
214.	<i>Dendrocalamus strictus</i> (Roxb.)Nees.	CH	Herb
215.	<i>Dendrocalamus parvifolium</i> Dc.	CH	Herb
216.	<i>Dendrocalamus polycarpum</i> Dc.	CH	Herb
217.	<i>Poa annua</i> L.	H	Herb
<b>Gymnosperm</b>			
<b>Family: Pinaceae</b>			
218.	<i>Pinus roxburghii</i> Sarg.	M	Tree
<b>Pteridophytes</b>			
<b>Family: Adiantaceae</b>			
219.	<i>Adiantum incisum</i> Forssk.	TH	Pteridophyte
<b>Family: Dryopteradaceae</b>			
220.	<i>Dryopteris spp</i>	H	Pteridophyte
<b>Family: Pteridaceae</b>			
221.	<i>Pteris cretica</i> L.	H	Pteridophyte
<b>Family: Thelypteridiaceae</b>			
222.	<i>Cyclosorus prolifera</i> Retz.	TH	Pteridophyte

TH=Therophytes; M=Macrophanerophytes; N=Nanophanerophytes; CH=Chamaephytes; H=Hemicryptophytes; HH=Hydrophytes; G=Geophytes; E=Epiphytes; L=Liana/Climber; AD=Angiosperm Dicot; AM=Angiosperm Monocot; PT=Pteridophyte; G=Gymnosperm.



Among the families of angiosperms, Asteraceae has been found to be the dominant family with 20 species and 15 genera followed by Lamiaceae (14 species and 9 genera), Fabaceae (9 species and 9 genera), Rosaceae (9 species and 7 genera), Moraceae (9 species and 2 genera), Euphorbiaceae (8 species and 4 genera), Poaceae (7 species and 5 genera), Solanaceae (7 species and 2 genera), Ranunculaceae (6 species and 4 genera), Amaranthaceae (5 species and 4 genera), Mimosaceae (5 species and 3 genera), Rhamnaceae (5 species and 3 genera), Convulvulaceae (5 species and 1 genera), Myrtaceae (4 species and 4 genera), Scrophulariaceae (4 species and 4 genera), Acanthaceae (4 species and 3 genera) and

Caryophyllaceae (4 species and 2 genera). *Ficus* with 7 species has been recorded as the dominant genera of the study area and is followed by *Euphorbia*, *Ipomoea* and *Solanum* (5 species each), *Acacia*, *Cassia*, *Dendrocalamus*, *Mentha*, *Trifolium*, and *Zizyphus* (3 species each). Genera recorded with two species in the study area are *Ajuga*, *Allium*, *Amaranthus*, *Bauhinia*, *Cirsium*, *Commelina*, *Cyperus*, *Datura*, *Geranium*, *Grewia*, *Indigofera*, *Justicia*, *Morus*, *Randia*, *Saussurea*, *Silene*, *Sonchus*, *Stellaria*, *Viola* and *Vitex*.

The comparison of first five dominant families recorded in the study area with adjoining areas has been presented in Table-3.

**Table- 2: Percentage and ratios of the families, genera and species of dicots and monocots, (excluding gymnosperms and pteridophytes)**

Taxa	Dicots		Monocots		Total	Ratio	
	Total Number	%age	Total Number	%age		Dicots	Monocots
<b>Families</b>	69	86.25	6	0.75	80	11.5	1
<b>Genera</b>	152	91.02	10	0.06	167	15.2	1
<b>Species</b>	203	91.44	14	0.06	222	14.5	1

**Table-3: Comparison of dominant families of study area with adjoining areas.**

S. N o.	Study area (Author)	Patnitop Hills (Kumar, K. 1997)	Trikuta Hills (Kour, 2001)	Kalakote Range (Singh 2002)	Mahamaya (Sudan, 2007)	Mansar-Surinsar WLS (Rai, 2007)	Kishtwar (Raina and Kumar, 2011)
1.	Asteraceae	Asteraceae	Asteraceae	Asteraceae	Asteraceae	Fabaceae	Asteraceae
2.	Lamiaceae	Lamiaceae	Fabaceae	Lamiaceae	Poaceae	Poaceae	Fabaceae
3.	Fabaceae	Poaceae	Poaceae	Fabaceae	Fabaceae	Asteraceae	Lamiaceae
4.	Rosaceae	Fabaceae	Lamiaceae	Ranunculaceae	Lamiaceae	Lamiaceae	Rosaceae
5.	Moraceae	Rosaceae	Euphorbiaceae	Rosaceae	Amaranthaceae	Euphorbiaceae	Poaceae

Dominant families of the study area resembles with the adjoining region of Kalakote. Poaceae which find place in the dominant families in other areas could not find place in the first five dominant families of the present study area. Comparison of largest families and genera of plants of selected

areas in the different natural regions give clue about the phyto-geographical variation within the state. The climatic conditions especially the availability of moisture, appears to be the main aspect bringing about the spatial phyto-geographical features (Singh, 2002) and this has also been observed in the



present study area. Analysis of floristic composition further revealed that the ratio of family to genera is 1:2.87, family to species is 1:2.77 and genera to species is 1:1.32. The comparative account of ratio of families to genera and genera to species of Lamberi forest range with some of the adjoining

areas has been presented in Table- 4. All these ratios have been observed to be lower as compared to the other regions and comparatively closer to Kalakote range which located adjoin to the study area. From the table it is also clear that these ratios are directly proportional to the biogeographic area.

**Table 4: Comparison of Floristic Diversity of Study area with other areas**

Floristic diversity	F	G	S	Ratio (F:G)	Ratio (F:S)	Ratio (G:S)
Kalakote Range, J&K (Singh, 2002)	99	253	356	1:2.55	1:3.59	1:1.41
Mahamaya Forests, J&K (Sudan, 2007)	73	192	282	1:2.63	1:3.86	1:4.68
Kishtwar, J&K (Raina and Kumar, 2011)	96	242	384	1:2.52	1:4	1:1.59
Lamberi Forest Range, J&K (present work)	80	167	222	1:2.87	1:2.77	1:1.32

F= Family; G= Genera; S= Species

## Conclusion

The present study indicates that Lamberi forest range is very rich in phytodiversity. However, unplanned use, habitat destruction, grazing and some anthropogenic activities may lead to degradation of the area that may result in depletion of some of the species from area. The comprehensive information on species diversity of the Lamberi forest range may be of great help in developing a strategy and action plan for conservation management and sustainable utilization of its plant resources.

## References

- Bekele, T. 1994. Phytosociology and ecology of humid Afromontane forest in the Central Plateaus of Ethiopia. *J. veg. Sci.*, 5: 87- 98.
- Bulut, Z. and Yilmaz, H. 2010. The current situation of threatened endemic flora in Turkey: Kemaliye (Erzincan) CASE. *Pak. J. Bot.*, 42: 711-719.
- Farooque, N.A. and Saxena, K.G. 1996. Conservation and utilization of medicinal plants in high hills of the central Himalayas. *Environ. Conserv.*, 23: 75-80.
- Giriraj, A., Murthy, M. and Ramesh, B. 2008. Vegetation composition, structure and patterns of diversity: a case study from the tropical wet evergreen forests of the Western Ghats, India. *Edin. J. Bot.*, 65: 1-22.
- Kilic, M. and Arslan, O.S. 2010. *Turkey's Forests and Biodiversity*. International Symposium on Biology of Rare and Endemic Plant Species. (Biorare Symposium) May 26-29.
- Kour, I. 2001. Phyto-diversity and impact of tourism on the vegetation of Trikuta Hills(J&K). Ph.D. Thesis submitted to University of Jammu, Jammu, J&K, India.
- Kumar, K. 1997. Studies on plant diversity of Patnitop and adjoining area and impact of biotic activities. Ph.D. Thesis submitted to University of Jammu, Jammu, J&K, India.
- Negi, K.S. and Gaur, R.D. 1994. Principal wild food plants of Western Himalaya, Uttar Pradesh, India. In: Higher plants of Indian subcontinent( Ed. Gupta B K). Bishen Singh Mahendra Pal Singh, Dehradun, India pp 1-78
- Nune, S., Kassie, M. and Mungatana, E. 2010. Forestry resource accounting: the experience of Ethiopia. CEEPA Discussion Paper No 47, Centre for Environmental Economics and Policy in Africa, University of Pretoria, South Africa
- Pappoe, A. N., Armah, F.A., Quaye, E.C., Kwakye, P.K. and Buxton, G.N.2010. Composition and stand structure of a tropical moist semideciduous forest in Ghana. *Int. Res. J. Plant Sci.*, 1: 095-106.
- Rai, A. 2007. Studies on Phanerogan Diversity of Mansar-Surinsar Wildlife Sanctuary, J&K. Ph.D. Thesis submitted to University of Jammu, Jammu, J&K, India.



### Phytodiversity (Angiosperms, Gymnosperms and Pteridophytes)

- Raina, A.K. and Kumar, R. 2011. Floristic composition, lifeform classification and biological spectrum of the catchment of Rattle H.E. project, District Kishtwar- J&K. *Environment conservation Journal*, 12(3): 1-6
- SCBD: Secretariat of the Convention on Biological Diversity 2001. The Value of Forest Ecosystems. Montreal, SCBD, 67p. (CBD Technical Series no. 4).
- Sharma, N. 2003. Biodiversity characterization at landscape level using RS and GIS in District, Jammu. Ph.D. Thesis submitted to University of Jammu, Jammu, J&K, India.
- Singh, J. 2002. Phyto-diversity of Kalakote Range (Rajouri, J&K) and impact of mining and nomadism on the vegetation. Ph.D. Thesis submitted to University of Jammu, Jammu, J&K, India.
- Sudan, J. 2007. Phytodiversity and Socio-economic studies of Mahamaya Catchment, Jammu, J&K. Ph.D. Thesis submitted to University of Jammu, Jammu, J&K, India.
- Venu, P. 2002. Some conceptual and practical issues in taxonomic research. *Curr. Sci.*, 82(8): 924-933
- Villasenor, J. L., Maeda, P., Rosell, J.A. and Ortiz, E. 2007. Plant families as predictors of plant biodiversity in Mexico. *Divers. Dist.*, 13: 871-876.
- Vivero, J.L., Kelbessa, E. and Demissew, S. 2005. The Red List of Endemic Trees and Shrubs of Ethiopia and Eritrea. Fauna and Flora International. Cambridge, U.K.

