

# Periodic Research

## An Enumeration of Trees Along The Historical Mughal Road of J&K State, India

### Abstract

This floristic study deals with the systematic enumeration of tree species along the historical Mughal Road having three distinct climatic zones. Survey reveals occurrence of 124 tree species belonging to 4 gymnosperm and 38 angiosperm families. This kind of documentation of plants in hand is helpful to restore biodiversity of the area that has recently been subjected to mechanical interferences.

**Keywords:** Floristic, Systematic, Survey, Gymnosperm, Angiosperm, Mechanical Interference.

### Introduction

The historical *Mughal road* is a corridor to *Kashmir Valley*. Its importance for the people of *Rajouri*, *Poonch* and *Jammu* is exactly the same as that of *G.T. Road* of *Sher Shah Suri* for the people of *Northern India* including *West Punjab*. *Rajtrangi*, *Ain-E-Akbari*, *Tuzk-E-Jahangiri* and literature of famous historians *Heuin-Tsong* and *Burnneir* reveal its importance with rest of the continent. *Akbar the great* paid first visit to *Kashmir* using this route in 1586 and there after used this route for 3 times. The *Emperor Jahangir* used this route to reach *Srinagar* for 13 times from *Lahore*. He was followed by *Shah Jahan*, *Aurangzeb* and *Sultans of Kashmir*.

This Indian Himalayan region has a rich heritage of species and genetic strains of flora and fauna and considered as mega hot spot of biological diversity<sup>1</sup>. Starting from the historical *Chingus Sarai* to *Shopian Kashmir* along the *Mughal Road* one comes across the rich flora of *Subtropical to Temperate and Alpine zone*. The study areas contiguous to the *Mughal Road* have the potential of adventurous, heritage, pilgrimage, cultural, health, film and eco-tourism. This rich biodiversity all along comprising both conifer species excluding *Gingko biloba* and lush green and rich flora of broadleaved trees of various species in about 150 km. passes through foot, heart and head of large chunks of vegetation in zig zag turns covering entire subtropical, temperate and alpine region of district *Rajouri*, *Poonch* and *Shopian* on either sides of famous *Pir-Ki-Gali* which is situated at an altitude of 10,500 ft. with maximum height of 15566 ft. on right and left of saddle. The *Rajouri* and *Poonch* districts, however, are floristically the least surveyed in *Jammu* province, with scanty and scattered information available on their flora<sup>2-8</sup>.

### Materials and Methods

The investigation is based on observations of plants from different places along the historical Mughal Road from *Chingus* (*Rajouri*) through *Dehra Gali Buzliaz* to *Shopian*. The collected plants were identified with the help of taxonomists, available literature and regional flora<sup>2-10</sup>. The plants are listed alphabetically under their respective families according to *Bentham and Hooker's* system of classification.

### Observations

The track represents 124 species of trees, belonging to 42 families comprising 4 of gymnosperms and 38 of angiosperms. *Rosaceae* seems to be the dominant family comprising 15 species followed by *Moraceae* 11; *Myrtaceae* 8; *Cupressaceae*, *Mimosaceae* and *Rutaceae* 6; *Pinaceae* and *Salicaceae* 5; *Fagaceae*, *Sapindaceae*, *Caesalpiniaceae* and *Meliaceae* 4; *Anacardiaceae*, *Betulaceae*, *Fabaceae*, *Oleaceae* and *Ulmaceae* 3; *Aceraceae*, *Apocynaceae*, *Arecaceae*, *Bignoniaceae*, *Ebenaceae* and *Platanaceae* 2 and *Araucariaceae*, *Bombacaceae*, *Boraginaceae*, *Buxaceae*, *Cornaceae*, *Elaeagnaceae*, *Ericaceae*, *Euphorbiaceae*, *Juglandaceae*, *Lauraceae*, *Lythraceae*, *Magnoliaceae*, *Phyllanthaceae*, *Protaceae*, *Rhamnaceae*, *Simaroubaceae*, *Taxaceae*, *Thymelacaceae* and *Tiliaceae* 1 each species. The enumeration list is presented below with the names of species and families.

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Table 1  
Systematic Enumeration of Trees

S. No	Name of Tree Species	Family
1.	<i>Abies pindrow</i> Royle	Pinaceae
2.	<i>Acacia farnesiana</i> (L.) Wild	Mimosaceae
3.	<i>Acacia fistula</i> Schweinf.	Mimosaceae
4.	<i>Acacia modesta</i> Wall	Mimosaceae
5.	<i>Acer caesium</i> Wall. ex Brandis	Aceraceae
6.	<i>Acer oblongum</i> Wall.ex DC	Aceraceae
7.	<i>Aegle marmelos</i> (L.)Correa	Rutaceae
8.	<i>Aesculus excels</i> Roxb.	Sapindaceae
9.	<i>Aesculus indica</i> (Wall. ex Cambess.) Hook. f.	Sapindaceae
10.	<i>Ailanthus altissima</i> (Mill.) Swingle	Simaroubaceae
11.	<i>Albizia julibrissin</i> Durazz	Mimosaceae
12.	<i>Albizia lebeck</i> (L.) Benth.	Mimosaceae
13.	<i>Albizia odoratissima</i> (L. f.) Benth.	Mimosaceae
14.	<i>Alnus nitida</i> (Spach) Endl.	Betulaceae
15.	<i>Alstonia scholaris</i> (L.) R.Br.	Apocynaceae
16.	<i>Araucaria columnaris</i> (G.Forst.) Hook.	Araucariaceae
17.	<i>Bauhinia variegata</i> L.	Caesalpiniaceae
18.	<i>Betula alnoides</i> Buch. Ham. ex D. Don	Betulaceae
19.	<i>Betula utilis</i> D. Don	Betulaceae
20.	<i>Bombax cieba</i> L. (Syn <i>Salmalia malabarica</i> (DC.) Schott. & Endl.	Bombacaceae
21.	<i>Broussonetia papyrifera</i> (L.) Vent.	Moraceae
22.	<i>Buxus wallichiana</i> Baill.	Buxaceae
23.	<i>Callistemon citrinus</i> (Curtis) Stapf	Myrtaceae
24.	<i>Callistemon lanceiolatus</i> (Sm.) Sweet	Myrtaceae
25.	<i>Cassia fistula</i> L.	Caesalpiniaceae
26.	<i>Cassia occidentalis</i> L.	Caesalpiniaceae
27.	<i>Cassia tora</i> L.	Caesalpiniaceae
28.	<i>Catalpa bignonioides</i> Scop.	Bignoniaceae
29.	<i>Cedrela odorata</i> L.	Meliaceae
30.	<i>Cedrela serrata</i> Royle	Meliaceae
31.	<i>Cedrus deodara</i> (Roxb.) G. Don	Pinaceae
32.	<i>Celtis australis</i> L.	Ulmaceae
33.	<i>Citrus aurantifolia</i> (Christm.) Swingle	Rutaceae
34.	<i>Citrus limetta</i> Rissoo	Rutaceae
35.	<i>Citrus medica</i> var <i>galgala</i>	Rutaceae
36.	<i>Citrus sinensis</i> Osbeck.	Rutaceae
37.	<i>Cordia dichotoma</i> G. Frost.	Boraginaceae
38.	<i>Cornus macrophylla</i> Wall. (Syn. <i>Swida macrophylla</i> (Wall.) Soják	Cornaceae
39.	<i>Cryptomeria japonica</i> D. Don	Cupressaceae
40.	<i>Cupressus funebris</i> Endl.	Cupressaceae
41.	<i>Cupressus sempervirens</i> L.	Cupressaceae
42.	<i>Cupressus torulosa</i> D. Don	Cupressaceae
43.	<i>Cydonia oblonga</i> Mill.	Rosaceae
44.	<i>Dalbergia sissoo</i> Roxb.	Fabaceae
45.	<i>Daphne oleoides</i> Schreber	Thymelacaceae
46.	<i>Diospyros kaki</i> Thunb.	Ebenaceae
47.	<i>Diospyros lotus</i> L.	Ebenaceae
48.	<i>Elaeagnus umbellate</i> Thunb	Elaeagnaceae
49.	<i>Eriobotrya japonica</i> Lindl.	Rosaceae
50.	<i>Eucalyptus alba</i> Reinw. ex Bl.	Myrtaceae
51.	<i>Eucalyptus citriodora</i> (Hook.) K. D. Hill & L. A. S. Johnson	Myrtaceae
52.	<i>Eucalyptus globules</i> Labbil.	Myrtaceae
53.	<i>Eucalyptus tereticornis</i> Sm.	Myrtaceae
54.	<i>Ficus auriculata</i> Lour.	Moraceae
55.	<i>Ficus bengalensis</i> L.	Moraceae
56.	<i>Ficus benjamina</i> L.	Moraceae
57.	<i>Ficus carica</i> L.	Moraceae
58.	<i>Ficus elastica</i> Roxb.	Moraceae
59.	<i>Ficus palmata</i> Frossk	Moraceae

60	<i>Ficus religiosa</i> L.	Moraceae
61	<i>Ficus virens</i> Aiton	Moraceae
62	<i>Fraxinus floribunda</i> Wenz.	Oleaceae
63	<i>Grevillea robusta</i> A. Cunn. ex R. Br.	Protaceae
64	<i>Grewia optiva</i> Drummond ex Burret	Tiliaceae
65	<i>Jacaranda mimosifolia</i> D. Don	Bignoniaceae
66	<i>Juglans regia</i> L.	Juglandaceae
67	<i>Juniperus wallichiana</i> Hook.f. & Thomson ex Brandis	Cupressaceae
68	<i>Leucaena leucocephala</i> (Lam.) de Wit	Fabaceae
69	<i>Litichi chinensis</i> Sonn.	Sapindaceae
70	<i>Mallotus philippensis</i> (Lam.) Muell.	Euphorbiaceae
71	<i>Malus domestica</i> Borkh.	Rosaceae
72	<i>Malus sylvestris</i> (L.) Mill.	Rosaceae
73	<i>Mangifera indica</i> L.	Anacardiaceae
74	<i>Melia azedarach</i> L.	Meliaceae
75	<i>Michelia champaca</i> L. (Syn. <i>Magnolia champaca</i> L. Bail.ex Pierre)	Magnoliaceae
76	<i>Morus alba</i> L.	Moraceae
77	<i>Morus serrata</i> Roxb.	Moraceae
78	<i>Murraya koenigii</i> (L.) Spreng	Rutaceae
79	<i>Neolitsea consimilis</i> (Nees) Kosterm. Comb. ined.	Lauraceae
80	<i>Olea europaea</i> L.	Oleaceae
81	<i>Olea ferruginea</i> Royle	Oleaceae
82	<i>Phoenix dactylifera</i> L.	Arecaceae
83	<i>Phoenix humilis</i> Royle	Arecaceae
84	<i>Phyllanthus emblica</i> L. ( <i>Embliba officinalis</i> Gaertn.)	Phyllanthaceae
85	<i>Picea smithiana</i> (Wall.) Boiss.	Pinaceae
86	<i>Pinus roxburghii</i> Sargent	Pinaceae
87	<i>Pinus wallichiana</i> A. B. Jackson	Pinaceae
88	<i>Pistacia chinensis</i> subsp. <i>integerrima</i> (J. L. Stewart ex Brandis) Rech. f..	Anacardiaceae
89	<i>Pistacia khinjuk</i> Stocks	Anacardiaceae
90	<i>Platanus occidentalis</i> L.	Platanaceae
91	<i>Platanus orientalis</i> L.	Platanaceae
92	<i>Populus ciliata</i> Wall. ex Royle	Salicaceae
93	<i>Populus nigra</i> L.	Salicaceae
94	<i>Prunus amygdalus</i> Batsch (Syn. <i>P. communis</i> (L.) Arcang)	Rosaceae
95	<i>Prunus armeniaca</i> L.	Rosaceae
96	<i>Prunus avium</i> L.	Rosaceae
97	<i>Prunus bokhariensis</i> Royle ex C. K. Schneid.	Rosaceae
98	<i>Prunus cerasus</i> L.	Rosaceae
99	<i>Prunus domestica</i> L.	Rosaceae
100	<i>Prunus padus</i> L.	Rosaceae
101	<i>Prunus persica</i> (L.) Batsch.	Rosaceae
102	<i>Prunus tomentosa</i> Thunb.	Rosaceae
103	<i>Psidium guajava</i> L.	Myrtaceae
104	<i>Punica granatum</i> L.	Punicaceae
105	<i>Pyrus communis</i> L.	Rosaceae
106	<i>Pyrus pashia</i> Buch. Ham. ex D. Don	Rosaceae
107	<i>Quercus semecarpifolia</i> Smith.	Fagaceae
108	<i>Quercus dilata</i> Lindl. ex Royle	Fagaceae
109	<i>Quercus glauca</i> Thunb.	Fagaceae
110	<i>Quercus leucotrichophora</i> A. Camus	Fagaceae
111	<i>Rhododendron arboreum</i> Sm.	Ericaceae
112	<i>Robinia pseudoacacia</i> L.	Fabaceae
113	<i>Salix alba</i> L.	Salicaceae
114	<i>Salix babylonica</i> L.	Salicaceae
115	<i>Salix elegans</i> Wall. ex Andersson	Salicaceae
116	<i>Sapindus mukorossi</i> Gaertn.	Sapindaceae
117	<i>Syzygium cumini</i> (L.) Skeels	Myrtaceae
118	<i>Taxus wallichiana</i> Zucc.	Taxaceae
119	<i>Thevetia peruviana</i> (Pers.) K. Sehu	Apocynaceae
120	<i>Thuja occidentalis</i> L.	Cupressaceae

121	<i>Toona ciliata</i> Roem.	Meliaceae
122	<i>Ulmus villosa</i> Brandis ex Gamble	Ulmaceae
123	<i>Ulmus wallichiana</i> Planch.	Ulmaceae
124	<i>Ziziphus mauritiana</i> Lamk.	Rhamnaceae

### Discussion

A cross section of species in the study area represents the floral structure of subtropical, temperate and alpine zones of Jammu and Kashmir State. The lesser Himalayan region with ca 900-1800 m. altitude is colonized by subtropical broad leaved forests, mainly dominated by *Chir pine* (*Pinus roxburghii*) and Oak (*Quercus* spp.)<sup>11</sup>.

Major commercial timber species found are Chir (*Pinus roxburghii*), Kail (*Pinus wallichiana*), Spruce (*Picea smithiana*), Fir (*Abies pindrow*) and Deodar (*Cedrus deodara*). The spruce trees exist in the tension belt between Fir and Kail. *Taxus baccata* is another slow growing species with red wood and needle like leaves which are used for curing cancer. Among important broadleaved trees predominantly growing in large patches mostly in shady places and *Nallahs*. The prominent and economically important species are mentioned as Shisham-*Dalbergia sissoo*, Toon -*Toona ciliata*, Mulberry- *Morus* spp., Ban oak-*Quercus incana*, Mohru Oak-*Quercus dilatata*, Iru Oak-*Q. semicarpifolia*, Olive- *Olea ferruginea*, Draik- *Melia azadirach*, Khirak-*Celtis australis*, Haari- *Prunus armeniaca*, Batangi-*Pyrus pashia*, Phawara-*Ficus palmata*, Pipal-*Ficus religiosa*, Simbal-*Salmalia malabarica*, Dhaman - *Grewia optiva*, Safeda- *Populus ciliata*, Beesa - *Salix alba*, Manu - *Ulmus villosa*, Kain - *Ulmus wallichiana*, etc.

As we gain height and proceed to temperate and alpine zone we find Cheeru (*Neolitsea consimilis*), Kander (*Cornus macrophylla*), Box wood (*Buxus wallichiana*), Horse chestnut (*Aesculus indica*), Tarkana (*Acer caesium*), Drawa (*Cedrela serreta*), Walnut (*Juglans regia*), Bagnu (*Populus ciliata*), Ash wood (*Fraxinus floribunda*), Manu (*Ulmus villosa*), Bird Cherry (*Prunus paddus*), Hardulli (*Rhododendron arboreum*), Sarol (*Alnus nitida*) and beyond tree line Bhoj Pattra (*Betula utilis* and *Betula alnoides*).

During construction of *Mughal Road* in last several years large number of Fir (*Abies pindrow*) and Spruce (*Picea smithiana*) trees were either uprooted, half broken or top broken due to sliding boulders. Hundreds of such trees have dried and some of them are dead due to insect attack and other mycological diseases mainly in *Chhata Pani* area. The over destruction of vegetation has been continuing at an alarming pace due to a variety of causes<sup>12</sup>.

It is suggested that these dry and dead trees may be removed from the site to save the rest of healthy trees. They should be converted into timber and firewood for the sale on departmental timber sale depots.

This kind of documentation of plants is necessary for ecological implications and for searching economically important plants<sup>13</sup>. It is impossible to ensure protection and utilization of a special environmental protection plan in a scientific manner without having full knowledge of flora and fauna of the area<sup>14</sup>.

### References:

1. Myers, N., Mittermeier R. A, Mittermeier, C. A, da Fonseca, A.B. G & Kent J. (2000). *Biodiversity hotspots for conservation priorities*. Nature, 403: 853-858
2. Singh, G. and H.S. Kirn. (1981). *Alpine plants of Poonch-Kashmir*, pp. 161– 179, in: B.M. Sharma and P. Kachroo, *Flora of Jammu and Plants of Neighbourhood*. Vol. I. Dehra Dun: Bishen Singh Mahendra Pal Singh.
3. Kirn, H. S. (1992). *Pir Panjal Range, a paradise of medicinal plants*; pp. 63– 65, in: M. P. Sharma (ed.). *Bahar-e-Rajouri-92*. Nehru Yuva Kendra, Rajouri.
4. Singh, H. (1992). *Wild flowers of Rajouri mountains*; pp. 60–62, in: M.P. Sharma (ed.), *Bahar-e-Rajouri-92*. Nehru Yuva Kendra, Rajouri.
5. VirJee, Dar, G.H., Kachroo, P. and Bhat, G.M.(1984). *Taxo-ethnobotanical studies of the rural areas in district Rajouri (Jammu)*. Journal of Economic and Taxonomic Botany 5 (4): 831–838.
6. Dar, G.H., Khan, Z.S. and Khuroo, A.A. (2009). *Documenting biodiversity: a taxonomic inventory of the phanerogamic flora of Rajouri (Jammu & Kashmir), India*; pp. 95–96, in: Souvenir & Abstracts of National Conference on Biodiversity: Present Status and Future Challenges, 26-28 March, 2009. Department of Botany, University of Kashmir,
7. Malik, A.H., Khuroo, A.A., Dar, G.H. and Khan, Z.S.(2010). *The woody flora of Jammu and Kashmir State, India: an updated checklist*. Journal of Economic and Taxonomic Botany 34 (2): 274–297.
8. Dar, G.H., Malik, A.H. and Khuroo, A.A. (2014) *A Contribution to the Flora of Rajouri and Poonch Districts in the Pir Panjal Himalaya (Jammu & Kashmir), India*. Check List 10(2):317-28.
9. Sharma, B.M and P. Kachroo.(1983). *Flora of Jammu and plants of neighborhood*. BishenSingh Mahendra Pal Singh, Dehradun.
10. Swami, A. and B.K. Gupta. (1998). *Flora of Udhampur*. Bishen Singh Mahendra Pal Singh, Dehra Dun, India. 455 pp.
11. Kharkwal, G. and Rawat, Y.S.(2010). *Structure and composition of vegetation in subtropical forest of Kumaun Himalaya*. African journal of Plant Science, 4(4): 116-121.
12. Prance, G.T., Beentje, H., Dransfield, J and Johns, R. (2000). *The tropical flora remains under collected*. Ann. Miss.Bot.Gard, 87:71-76.
13. Bhattacharya, P.K. and Sarkar,k.(1998) *Flora of West Champaran District, Bihar*. Botanical Survey of India, Kolkatta, India, pp. 2-50.
14. Cetin, B. (1999). *The moss flora of the Ulaudang Park (Bursa/Turkey)*. Tr.J.Bot.23:187-93.