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Research Article

FLORISTIC COMPOSITION OF BANGUS VALLEY OF KASHMIR HIMALAYA

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ABSTRACT
A survey was conducted to study the plant wealth of Bangus Valley of Kashmir Himalaya between 2017-2018. The identification of the species was confirmed with the help of available floristic literature and with the help of plant taxonomists. During the investigation, a total of 155 species of vascular plants were recorded which included 144 species of angiosperms, 6 of gymnosperms and 03 species of pteridophytes. Asteraceae with 23 species is the largest family followed by Rosaceae with 14 species and Lamiaceae with 13 species. *Euphorbia* and *Poa* are the largest genera with 04 species each, followed by *Artemesia*, *Aster,* and *Potentilla* with 03 species each. For each species is given its current valid scientific name with author citation, family name, growth form, flowering season and altitudinal range.

Keywords: *Bangus Valley, vascular plants, Pteridophytes, Angiosperms, Gymnosperms, Kashmir Himalaya.*

INTRODUCTION
The Kashmir, popularly known as paradise on earth (Vigne, 1842), has been gifted by nature with the abode of pastures, meadows and other grasslands which spread throughout its length and breadth. Bangus a large picturesque valley, which is one of the most attractive and beautiful areas of the Kashmir Valley is situated in the Kupwara district of Jammu and Kashmir. It is surrounded on all sides by lofty mountains and thus has escaped human interference so far because of its inaccessible terrains. Besides military activities, the only impact experienced by the valley is that of grazing. The valley has remained almost unexplored so far and very little is known about its biodiversity. The state government has recently decided to develop the valley into a tourist spot and the work has already been initiated for the road which will make the valley easily accessible to the tourists.

The unsustainable use of natural resources associated with the degradation of supporting ecosystem and consequent socio-economic fallout is one of the major environmental concerns confronting the man today. In spite of crucial role that the pastures play in the socio-economy and environment of the region, there are only a few preliminary and fragmentary reports on the pastures of Kashmir Himalaya (Kaul and Sapru, 1985; Lone and Pandit, 2007; Shazia *et al*., 2013; Mir and Ateeq, 2015) which are mostly related to the phytosociology of the vegetation. The present study was, therefore, proposed with the main focus on exploring the floristic potential of the pastureland.

MATERIALS AND METHODS
The study area, Bangus Valley, falls in the north-west part of the Kashmir valley. The valley is an unexplored region and unknown tourist paradise of frontier district Kupwara of Jammu and Kashmir. It is situated in the North Western periphery of Tehsil Handwara of District Kupwara, 97 Kms away from Srinagar, the summer capital of Jammu and Kashmir. It lies between 34° 22` N latitude and 74° 35` E longitude at an attitude of 3044 meters (10,000 feet) above mean sea level. The total area of Bangus is about 300 square kilometers and is about 20 km long and 15km wide and is surrounded by Rajwar and Mawar in the East, Qazinag and Shamusbary hills in the West, Chowkibal Mountains and Karnah Galli on the northern side, Leepa Mountains in the south, towards north-west are Badrun alpine region which is rich in medicinal herbs (Fig. 1).

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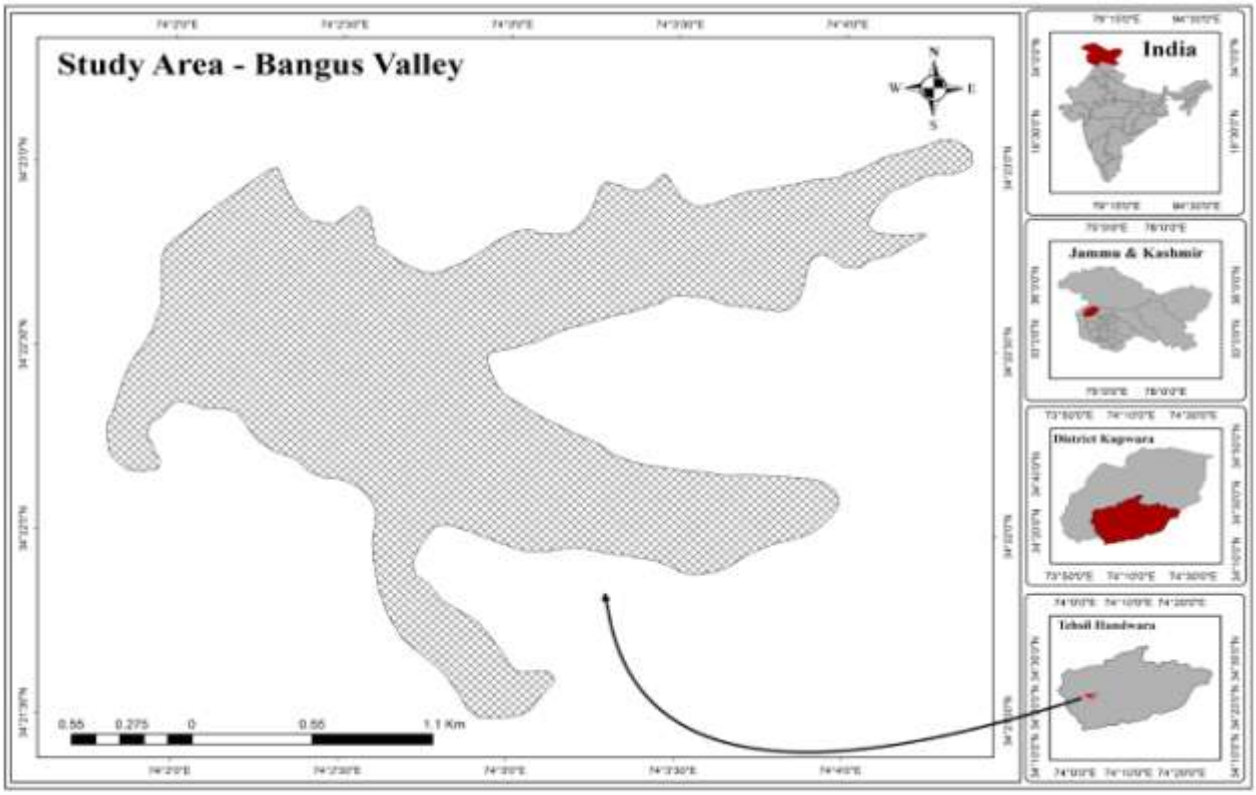


Fig.1. Location map of the study area.

Survey of the study area and collection of plant specimens from different sites was carried out on monthly basis from 2017-2018 for the months from April to September of both the years and for the rest of the period the area remains snow covered and inaccessible.

For plant specimens collected at various sites, the standard taxonomic methods were used for the preparation of type specimen (Lawrence, 1951)). Identification of specimens was made with the help of available taxonomic literature (Stewart, 1972; Pollunin and Stainton, 1986; Dar *et al.*, 1995; BSI, 1996). The families were sequentially arranged according to Bentham and Hooker (1862-1881) with slight modifications after Cronquist (1981). The species were arranged alphabetically under each family.

RESULTS

The following list pertains to the plants collected during frequent field trips to Bangus, starting from April 2017 to September 2018. The identification of the specimens was carried out by using the available literature and with the help of plant taxonomists. All the specimens were deposited in Department of Botany, Amar Singh College, Srinagar.

Table 1. Vascular Plant species of Bangus Valley of Kashmir Himalaya

S. No	Name of the Species with Author Citation	Family	Life Form	Flowering Season	Altitudinal Range
ANGIOSPERMS					
DICOTYLEDONS					
01	*Aconitum chasmanthium* Stafp ex Holmes.	Ranunculaceae	Herb	June-August	3100-3500m
02	*Anemone falconeri* Thomson.	Ranunculaceae	Herb	May-June	2200-2900m

03	*Aquilegia fragrans* Benth.	Ranunculaceae	Herb	June-August	2000-2300m
04	*Caltha alba* Cambess.	Ranunculaceae	Herb	April-July	2000-3200m
05	*Clematis grata* Wallich.	Ranunculaceae	Herb	July-October	1900-3000m
06	*Delphinium denudatum* Wallich ex Hook. f. & Thomas.	Ranunculaceae	Herb	June-August	1900-2700m
07	*Ranunculus acraeus* Heenan & P.J.Lockh..	Ranunculaceae	Herb	May-July	2500-3400m
08	*Meconopsis aculeata* Royle.	Papaveraceae	Herb	June-August	2900-3700m
09	*Cannabis sativa* Linn.	Cannabaceae	Herb	July-September	1700-2700m
10	*Urtica dioica* Linn.	Urticaceae	Herb	June-September	1700-2700m
11	*Salix denticulata* Anderson (*S. elegans* Wallich ex Anderson).	Salicaceae	Shrub	June-August	2200-3300m
12	*Salix wallichiana* Anderson.	Salicaceae	Shrub	May-June	2600-3300m
13	*Chenopodium foliosum* (Moench.) Aschers.	Chenopodiaceae	Herb	June-August	1800-3200m
14	*Arenaria neelgaharensis* Wight and Arn.	Caryophyllaceae	Herb	June-August	2100-3400m
15	*Lychnis coronaria* (Linn.) Desr.	Caryophyllaceae	Herb	May-July	1700-2900m
16	*Stellaria media* (Linn.) Vill.	Caryophyllaceae	Herb	March-October	1700-3100m
17	*Hypericum choisianum* Wallich ex N. Robson	Caryophyllaceae	Herb	June-September	2400-3600m
18	*Hypericum perforatum* Linn.	Hypericaceae	Herb	May-August	1700-2500m
19	*Malva neglecta* Wallr.	Malvaceae	Herb	June-August	1800-3400m
20	*Viola indica* W. Becker.	Violaceae	Herb	April-May	1700-2600m
21	*Capsella bursa pastoris* (Linn.) Medikus.	Brassicaceae	Herb	April-June	1700-2500m
22	*Cardamine impatiens* Linn.	Brassicaceae	Herb	May-August	1900-2400m
23	*Lepidium capitatum* Hook. & Thomson.	Brassicaceae	Herb	June-September	1800-2800m
24	*Nasturtium officinale* R. Br.	Brassicaceae	Herb	June-September	2000-3500m
25	*Androsace mucronifolia* Watt.	Primulaceae	Herb	June-August	3300-4000m
26	*Androsace rotundifolia* Hardw.	Primulaceae	Herb	June-August	1700-3400m

27	*Primula denticulata* Smith.	Primulaceae	Herb	April-July	2000-3500m
28	*Primula macrophylla* D.Don.	Primulaceae	Herb	July-August	2900-3700m
29	*Primula rosea* Royle.	Primulaceae	Herb	June-August	2600-3500m
30	*Rhodiola himalensis* (D.Don) S. H. Fu	Crassulaceae	Herb	June-August	3200-400m
31	*Sedum ewersii* Ledeb.	Crassulaceae	Herb	July-September	2400-3600m
32	*Sedum quadrifidum* Pall.	Crassulaceae	Herb	July-September	2600-3600m
33	*Bergenia ciliata* (Haw.) Sternb. Revis.	Saxifragaceae	Herb	April-July	3500-4000m
34	*Bergenia stracheyi* (Hook.f. & Thomas.) Engl.	Saxifragaceae	Herb	June-August	2800-3600m
35	*Alchemilla ypsilotoma* Rothm.	Rosaceae	Herb	June-August	3000-4100m
36	*Duchesnea indica* (Andrews) Th. Wolf.	Rosaceae	Herb	May-August	1800-2800m
37	*Fragaria nubicola* Lindl ex. Lacaita	Rosaceae	Herb	1800-3800m	April-June
38	*Geum elatum* Wallich.	Rosaceae	Herb	June-August	2600-3300m
39	*Geum urbanum* Linn.	Rosaceae	Herb	June-August	1800-3200
40	*Padus cornuta* (Wall. ex Royle) Carr.	Rosaceae	Tree	April-June	2000-2800m
41	*Potentilla argyrophylla* Wallich ex Lehm.	Rosaceae	Herb	June-August	1800-2800m
42	*Potentilla desertorum* Bunge.	Rosaceae	Herb	June-August	2300-3200m
43	*Potentilla nepalensis* Hook.	Rosaceae	Herb	June-September	2100-3000m
44	*Rosa sericea* Lindley	Rosaceae	Shrub	May-August	2100-4000m
45	*Rosa macrophylla* Lindley.	Rosaceae	Shrub	June-August	2000-3300m
46	*Sibbaldia cuneata* Hornem. ex Kuntze	Rosacaeae	Herb	June-August	3000-3800m
47	*Sorbaria tomentosa* (Lindley) Rehdar.	Rosaceae	Shrub	June-August	1900-3200m
48	*Spiraea canescens* D.Don.	Rosaceae	Shrub	June-July	1800-2800m
49	*Trifolium pratense* Linn.	Paplionaceae	Herb	April-July	1700-2700m
50	*Trifolium repens* Linn.	Paplionaceae	Herb	April-August	1700-2700m

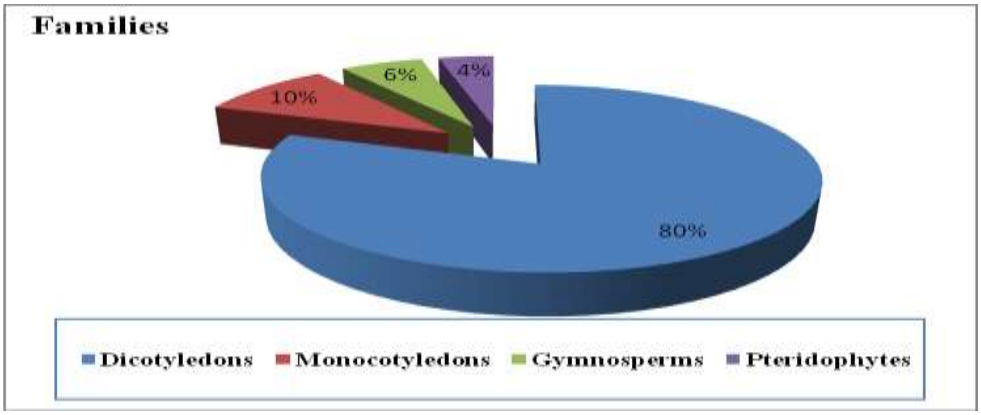
51	*Vicia tenera* Benth.	Paplionaceae			
52	*Epilobium hirsutum* Linn.	Onagraceae	Herb	April-August	1700-2700m
53	*Epilobium laxum* Royle.	Onagraceae	Herb	July-August	2500-3500m
54	*Euphorbia prostrata* Ait.	Euphorbiaceae	Herb	June-August	2000-3200m
55	*Euphorbia royleana* Boiss.	Euphorbiaceae	Shrub	June-August	2000-2900m
56	*Euphorbia thomsoniana* Boiss.	Euphorbiaceae	Herb	June-August	3000-4200m
57	*Euphorbia wallichii* Hook.f.	Euphorbiaceae	Herb	April-May	2200-3400m
58	*Persicaria capitata* (Buch.-Ham. ex D.Don) Gross	Polygonaceae	Herb	April-June	2000-3200m
59	*Polygonum amplexicaule* D. Don. *Bistorta amplexicaule*	Polygonaceae	Herb	July-September	2100-3500m
60	*Polygonum affine* D.Don.	Polygonaceae	Herb	June-September	2800-3600m
61	*Rheum emodii* Wallich ex Meissner.	Polygonaceae	Herb	June-July	3200-3700m
62	*Rumex nepalensis* Sprengel.	Polygonaceae	Herb	May-August	2100-3200m
63	*Impatiens thomsonii* Hook.f.	Balsaminaceae	Herb	June-July	2200-3100m
64	*Acer caesium* Wallich ex Brandis.	Aceraceae	Tree	March-May	2500-3400m
65	*Oxalis corniculata* Linn.	Oxalidaceae	Herb	April-July	2500-2900m
66	*Phytolacca acinosa* Roxb.	Phytolacaceae	Herb	June-August	2500-2900m
67	*Geranium nepalensis* Sweet.	Geraniaceae	Herb	May-August	2900-3800m
68	*Geranium wallichianum* D. Don ex Sweet.	Geraniaceae	Herb	June-September	2200-3400m
69	*Cortia depressa* (D.Don) Norman	Apiaceae	Herb	June-August	3500-400m
70	*Daucus carota* L.	Apiaceae	Herb	June-August	2400-3700m
71	*Heracleum candicans* Wallich ex DC.	Apiaceae	Herb	June-July	2100-3300m
72	*Heracleum canescens* Lindl.	Apiaceae	Herb	June-July	1900-3400m
73	*Gentiana harwanensis* G. Singh.	Gentianaceae	Herb	May-July	1900-2700m
74	*Swertia petiolata* D. Don.	Gentianaceae	Herb	June-August	2800-3600m
75	*Pleurogyne brachyanthera* Clarke in	Gentianaceae	Herb	June-	3500-

	Hook. f.(=*Swertia*)			August	4200m
76	*Atropa accuminata* Royle.	Solanaceae	Herb	June-August	2300-3100m
77	*Hyoscyamus niger* Linn.	Solanaceae	Herb	May-September	2300-2900m
78	*Podophyllum hexandrum* Royle.	Podophyllaceae	Herb	May-August	2100-3000m
79	*Arnebia benthamii* (Wallich ex D.Don) I. M. Johnston.	Boraginaceae	Herb	June-August	3000-3600m
80	*Lithospermum arvensis* Linn.	Boraginaceae	Herb	May-July	1700-2600m
81	*Myosotis caespitosa* Schultz.	Boraginaceae	Herb	May-August	2200-2900m
82	*Myosotis arvensis* (L.) Hill.	Boraginaceae	Herb	May-August	3200-4000m
83	*Ajuga bracteosa* Wallich ex. Benth.	Lamiaceae	Herb	June-September	1800-3000m
84	*Calamintha umbrosum* (M. Bieb.) K. Koch.	Lamiaceae	Herb	April-September	3000-4000m
85	*Clinopodium vulgare* L.	Lamiaceae	Herb	June-August	3000-4000m
86	*Lamium album* Linn.	Lamiaceae	Herb	June-September	1800-2700m
87	*Mentha longifolia* (L.) Hudson (*M. sylvestris* L.).	Lamiaceae	Herb	July-August	3000-3800m
88	*Lycopus europaeus* L.	Lamiaceae	Herb	June-July	3500-4000m
89	*Nepeta cataria* L.	Lamiaceae	Herb	June-August	3000-3700m
90	*Nepeta laevigata* (D.Don) Hand-Mazz.	Lamiaceae	Herb	July-September	2600-3600m
91	*Origanum vulgare* L.	Lamiaceae	Herb	June-September	1800-3200m
92	*Phlomis bracteosa* Royle ex Benth.	Lamiaceae	Herb	June-August	1900-2800m
93	*Prunella vulgaris* Linn.	Lamiaceae	Herb	June-August	1700-2900m
94	*Salvia hians* Royle ex Benth.	Lamiaceae	Herb	June-September	2300-3200m
95	*Thymus linearis* Benth. ex Benth.	Lamiaceae	Herb	April-September	1700-3000m
96	*Mazus pumilus* (Burm. f.) Steenis.	Mazaceae	Herb	May-August	2800-3500m
97	*Plantago lanceolata* Linn.	Plantaginaceae	Herb	May-August	1700-2600m
98	*Verbascum thapsus* Linn.	Scrophulariaceae	Herb	May-August	2000-3400m
99	*Veronica laxa* Benth.	Scrophulariaceae	Herb	May-	1900-

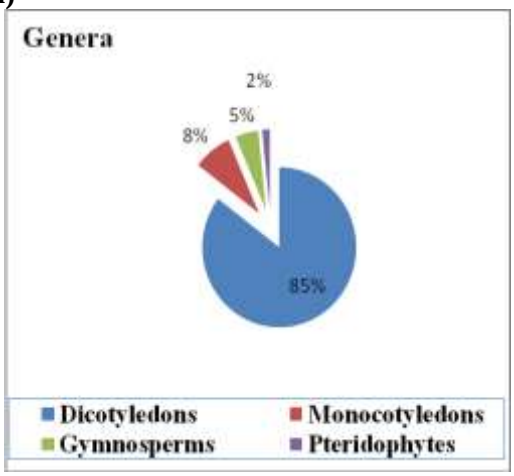
				August	3200m
100	*Galium aparine* Linn.	Rubiaceae	Herb	April-July	1800-3400m
101	*Sambucus wightiana* Wallich ex Wight & Arn.	Sambucaceae	Herb	June-August	1700-3600m
102	*Dipsacus inermis* Wall.	Dipsacaceae	Herb	July-September	1800-3100m
103	*Lonicera biflora* Desf.	Caprifoliaceae	Shrub	May-July	2100-3200m
104	*Lonicera quinqueolocularis* Hardw.	Caprifoliaceae	Shrub	May-July	1800-3000m
105	*Lonicera angustifolia* Wallich ex DC.	Caprifoliaceae	Shrub	May-July	2500-3500m
106	*Viburnum grandiflora* wallich ex DC.	Caprifoliaceae	Shrub	May-July	1800-3000m
107	*Achillea millefolium* Linn.	Asteraceae	Herb	June-September	1800-3500m
108	*Anthemis cotula* L.	Asteraceae	Herb	June-July	1800-2500m
109	*Artemisia absinthium* Linn.	Asteraceae	Herb	July-August	2000-2800m
110	*Artemisia maritima* Linn.	Asteraceae	Herb	July-September	2100-3200m
111	*Artemesia vulgaris* L.	Asteraceae	Herb	May-August	2600-3400m
112	*Aster falconeri* (C. B.Clarke) Hutch.	Asteraceae	Herb	July-August	2800-3500m
113	*Aster diplostephioides* C.B.Clarke.	Asteraceae	Herb	July-August	2200-2600m
114	*Aster thomsonii* C. B. Clarke.	Asteraceae	Herb	July-September	2000-3200m
115	*Carduus nutans* L.	Asteraceae	Herb	June-August	2000-3200m
116	*Cichorium intybus* Linn.	Asteraceae	Herb	July-September	1800-2500m
117	*Cirsium arvense* (Linn.) Scop.	Asteraceae	Herb	March-August	2400-3300m
118	*Cirsium falconeri* (Hook.f.) Petrak.	Asteraceae	Herb	June-September	2500-3300m
119	*Erigeron alpines* L.	Asteraceae	Herb	July-August	2200-2700m
120	*Inula denticulata* Borbas	Asteraceae	Herb	July-September	2900-3900m
121	*Inula royleana* C. B. Clarke.	Asteraceae	Herb	July-September	2900-3600m
122	*Jurinea dolomiaea* Boiss.	Asteraceae	Herb	July-September	2900-3700m
123	*Lactuca decipiens* (Hook. F. Thoms.)	Asteraceae	Herb	June-	2700-

	C. B. Clarke.			August	3300m
124	*Leontopodium himalayanum* DC.	Asteraceae	Herb	July-October	2700-3500m
125	*Saussurea costus* (Falc.) Lipsch.	Asteraceae	Herb	July-September	3000-3700m
126	*Senecio chrysanthemoides* DC.	Asteraceae	Herb	July-September	2300-3400m
127	*Tanacetum doliochophyllum* Kitam.	Asteraceae	Herb	July-September	3000-4000m
128	*Taraxacum officinale* Weber.	Asteraceae	Herb	March-October	1700-2900m
129	*Rhododendron campanulatum* D. Don	Ericaceae	Shrub	April-June	3000-4200m
130	*Rhododendron arboretum* Smith	Ericaceae	Shrub	April-May	2100-3500m
131	*Juglans regia* Linn.	Juglandaceae	Tree	February-April	1700-3200m
132	*Betula utilis* D.Don.	Betulaceae	Tree	April-May	2900-3700m
MONOCOTYLEDONS					
133	*Fritillaria imperialis* Linn.	Liliaceae	Herb	April-May	2200-2900m
134	*Gagea elegans* Wallich ex D.Don.	Liliaceae	Herb	April-May	2000-3500m
135	*Arisaema jacquemontii* Blume.	Araceae	Herb	June-August	2200-3500m
136	*Iris ensata* Thunb.	Iridaceae	Herb	May-July	2100-2800m
137	*Iris hookerana* R.C Foster.	Iridaceae	Herb	April-July	2700-3500m
138	*Carex glomeratus* Linn.	Cyperaceae	Herb	September-October	2100-2700m
139	*Cyperus difformis* Linn.	Cyperaceae	Herb	July-September	1700-2600m
140	*Cynodon dactylon* (Linn.) Pers.	Poaceae	Herb	June-August	1700-2700m
141	*Dactylis glomerata* Linn.	Poaceae	Herb	June-July	1900-2900m
142	*Poa alpine* L.	Poaceae	Herb	May-July	2500-3500m
143	*Poa annua* Linn.	Poaceae	Herb	April-September	2000-2900m
144	*Poa bulbosa* L.	Poaceae	Herb		
145	*Poa pratensis* Linn.	Poaceae	Herb	May-September	2000-2600m
146	*Stipa sibirica* Linn.	Poaceae	Herb	June-August	1800-2600m

GYMNOSPERMS				
147	*Abies pindrow* Royle.	Pinaceae	Tree	2300-3500m
148	*Cedrus deodara* (Roxb. Ex D. DON) G.Don	Pinaceae	Tree	1700-3000m
149	*Picea smithiana* (Wall.) Boiss.	Pinaceae	Tree	2300-3500m
150	*Pinus wallichiana* A. B. Jackson.	Pinaceae	Tree	1900-3400m
151	*Juniperus squamata* Buch-Ham. ex D.Don.	Cupressaceae	Tree	3000-4200m
152	*Taxus baccata* L. subsp. *wallichiana* (Zucc.) Pilger.	Taxaceae	Tree	2500-3400m
PTERIDOPHYTES				
153	*Dryopteris barbigera* (Moore) Ktze.	Pteridaceae	Herbaceous	2200-2700m
154	*Dryopteris balanfordii* (C. Hope) C. Christensen.	Pteridaceae	Herbaceous	2200-3500m
155	*Marsilea quadrifolia* Linn.	Marsileaceae	Herbaceous	1900-2500m



(a)



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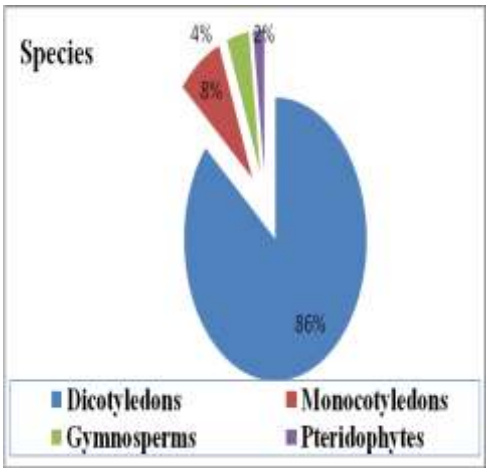

(c)

Figs. 2 a, b and c. Percent contribution of various groups of vascular plants in terms of families (a), genera (b) and species (c) in Bangus Valley of Kashmir Himalaya

Table 2: Statistical analysis of the vascular plants of Bangus Valley of Kashmir Himalaya (Data in figures indicate percentage contribution)

Plant Group	Families	Genera	Species
Pteridophytes	02 (3.92)	02 (1.62)	03 (1.93)
Gymnosperms	03 (5.88)	06 (4.87)	06 (3.87)
Dicotyledons	41 (80.39)	105 (85.36)	132 (85.16)
Monocotyledons	05 (9.80)	10 (8.13)	14 (9.03)
Total	**51**	**123**	**153**

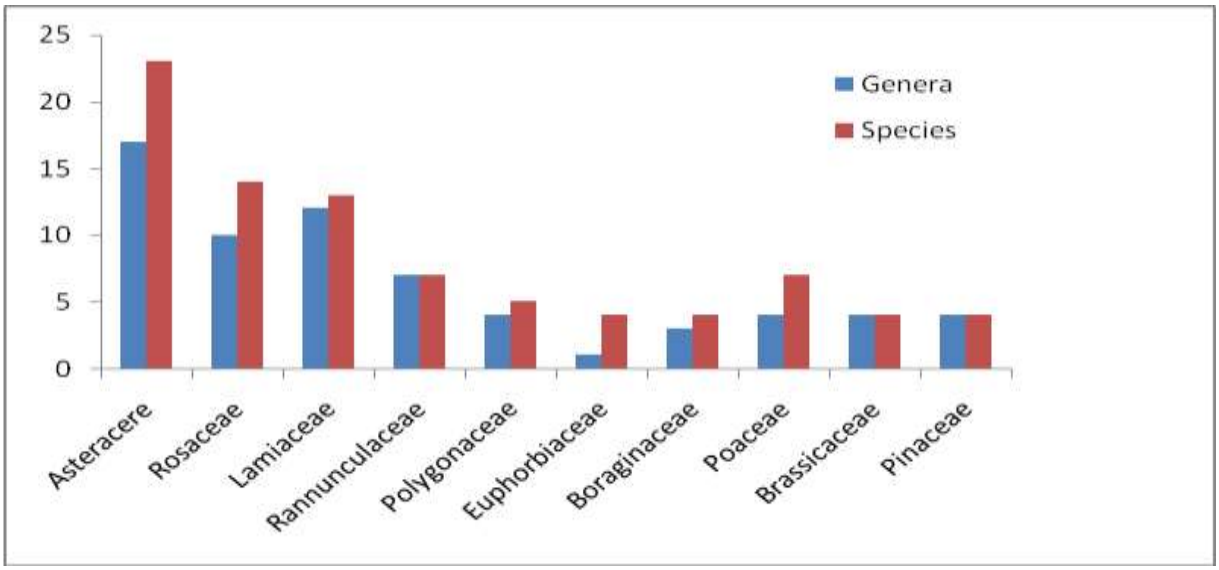

Figure 3: Dominance pattern of first ten families with respect to the number of genera and species in Bangus Valley of Kashmir Himalaya

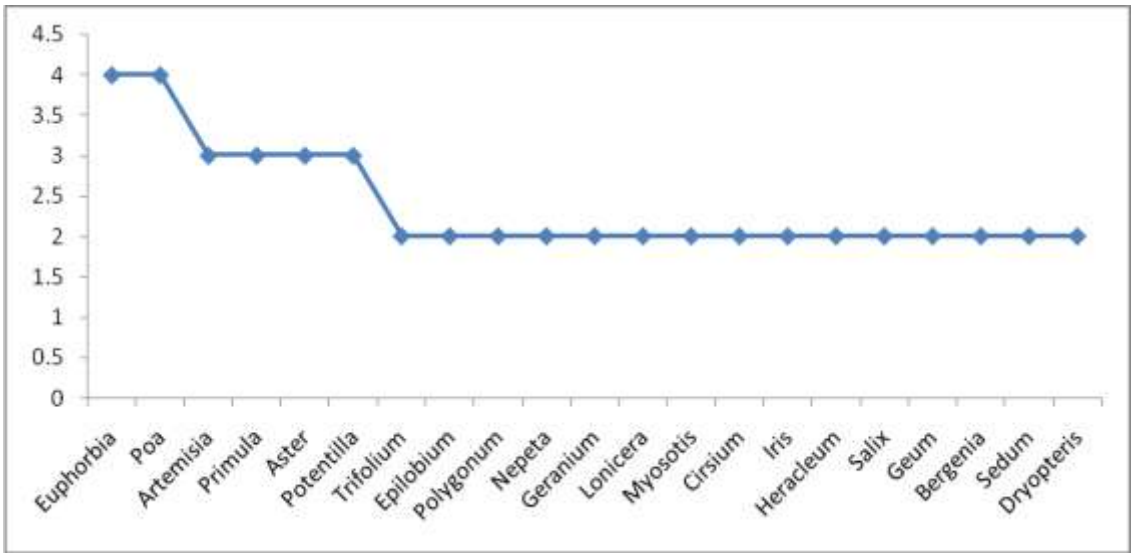

Figure 4: List of genera with the maximum number of species recorded from Bangus Valley of Kashmir Himalaya

During the present survey of the study area, in all 155 species of vascular plants (both quadrat and non-quadrat) belonging to 123 genera distributed over 51 families were encountered (Table 1). Among these, dicotyledons and monocotyledons were represented by 132 species distributed in 105 genera and 41 families, and monocots by 14 species distributed in 10 genera and 05 families respectively. On the other hand, gymnosperms share 06 species representing 06 genera and 03 families whereas pteridophytes share 03 species in 02 genera and 02 families. Calculating the proportions of angiosperms, gymnosperms and pteridophytes in the floral diversity of the study area, the percentage ratio comes out to be 90.19: 5.88: 3.92 for families; 93.49: 4.87: 1.62 for genera and 94.19: 3.87: 1.93 for species (Table 2 and Fig. 2 a,b and c).

Based on the number of species within families, Asteraceae with 23 species is the largest family, followed by Rosaceae (14 species), Lamiaceae (13 species), Ranunculaceae (07 species), Polygonaceae and Poaceae (07 species each), Boraginaceae, Euphorbiaceae, Brassicaceae, Caprifoliaceae and Pinaceae (04 species each), Caryphyllaceae, Primulaceae, Apiaceae, Gentiacaeae (03 species each) in a decreasing order (Fig. 3). On the other hand, *Euphorbia* and *Poa* were the largest genera with four species each, followed by *Artemesia, Aster and Potentilla* with three species each (Fig. 4).

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REFERENCES

Bentham G and Hooker JD (1862 – 1881). *Genera Plantarum, 2*. London.

BSI (1996). *Flora of India*. Botanical Survey of India, Kolkata, India.

Cronquist A (1981). *An Integrated System of Classification of Flowering Plants*. Columbia University Press, New York.

Dar GH, Naqshi AR and Ara S (1995). New records and new taxa of flowering plants from Jammu and **Kashmir State, 1970–1992.** Oriental Sci (Spl. Publ.), 33–44.

Shazia L, Fayaz L, Malik A (2013). Carrying Capacity Assessment for the Promotion of Ecotourism in Bungus Valley: A Future Tourist Destination of J&K – India, International Journal of Scientific Research,.2 (3).

Lawrence GHW (1951). *Taxonomy of Vascular Plants*. MacMillan, New York.

Lone HA. and Pandit AK (2007). Impact of grazing on community features and biomass of herbaceous species in Langate Forest Division of Kashmir. *Indian Forester*, **133** (1) 93-100.

Mir AH and Ateeq A (2015). Prospects of Ecotourism in Bangus Valley J&K. IJSRD- International Journal for Scientific Research & Development| Vol. 3, Issue 01, 774-778. ISSN (online): 2321-0613.

Pollunin O and Stainton A (1986). *Flowers of the Himalaya, 2nd reprint*. Oxford University

Stewart RR (1972). An annotated catalogue to the vascular plants of West Pakistan and Kashmir. 1-1028. *In:* E. Nasir, and S.I. Ali, (eds.), *Flora of West Pakistan*, Fakhri Press, Karachi.

Vigne GT (1842). Travels in Kashmir, Ladak and Iskardo (1835-1839). London: Henry Colburn.