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Research article

Floristic diversity and rarity assessment along altitudinal gradient in diverse forest types of Pithoragarh, Kumaun Himalaya, Uttarakhand, India

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Abstract: Present study was carried out in four different forest types (Sal, Pine, Oak and Deodar) of Kumaun Himalaya along altitudinal gradient 650 to 2200 m asl. A total 337 species of vascular belonging to 280 genera and 98 families were recorded from the present study. Of these, 303 species were Angiosperms (252 Dicotyledons and 51 Monocotyledons), 3 Gymnosperms and 31 Pteridophytes and their distribution in different life forms, *i.e.*, trees (53 spp.), shrubs (74 spp.), herbs (196 spp.) and climber (14 spp.). Among angiosperms Asteraceae (37 spp.) was dominant family followed by Poaceae (24 spp.), Fabaceae (24 spp.) and Lamiaceae (21 spp.). In Gymnosperms only two family (Pinaceae and Cupreceae) was recorded. A total of 31 species of Pteridophytes were recorded from present study. 49 species recorded in IUCN criteria (2022–23) one species were Vulnerable one near threatened and 47 were under least concern.
Keywords: Floristic diversity - Forest types - Vascular plant.

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INTRODUCTION

The Himalaya has been documented in world 36 global biodiversity hotspots for its unique and rich biodiversity that is under threats (Palni & Rawal 2013; Sharma *et al.* 2016). At present, out of 36 Global Biodiversity Hotspots 50% were in the mountains making it specific for global community (Perrigo *et al.* 2020). The Himalayan region covers approximately 18% of India's land. There are about 3,470 species considered exclusively endemic to the Himalaya (Samant *et al*. 1998). The Himalaya region is specific place of over 8,000 species of flowering plants and about 10,000 species of lower plants (Singh & Hajra 1996). About 29% (4000 species), which constitute about half of the higher plant species listed from the Himalaya, were reported to be endemic (Jain & Sastry 1980). In Uttarakhand state angiosperms include 4781 taxa under 1391 genera and 211 families, whereas wild gymnosperms were represented by 19 species under 9 genera of 4 families (BSI 2021). At present, popularization of the plant taxonomy and systematic studies at global level were gaining importance. In view of the above, an attempt has been made to investigate four different forest type for floristic diversity. Detailed floristic inventory was necessary for formulating appropriate conservation plans.

Study area

Study area is located in district of Pithoragarh, from Aunla Ghat (Ramganga river bank) to Chandak. The Latitude (N) and Longitude (E) of the study area are 29º 37′ 0.36″ and 80º 09′ 42.05″ respectively. Elevation ranges from 650–2200 m. study site supports a variety of forest vegetation. The river valleys are dominated by Sal forests, while increasing elevation Chir pine replaces the Sal forests followed by *Quercus leucotrichophora* A. Camus (Banj) and Deodar forest in the upper ridges of the study area (Fig. 1).

Methodology

Extensive floristic surveys were conducted covering different altitudinal zones (650–2200 m) in diverse

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forest types. For Vegetation assessment (50 × 50 m) plot was marked in Sal, Pine, Oak, and Deodar Forest in study area. Inside one plot ten (10 ×10 m) quadrats for tree species laid randomly and inside the 10 ×10 m quadrat 2 (5 × 5 m) quadrats for shrubs and 4 (1 × 1 m) quadrats for herbs were laid. Identification of plants in the field was made with the help of floras, research papers herbarium and reports (Polunin & Stainton 1984, Osmaston 1927, Stainton 1988, Gaur 1999). Threat on various flora were assessed with the help of IUCN (2022–23) red list of threatened species.

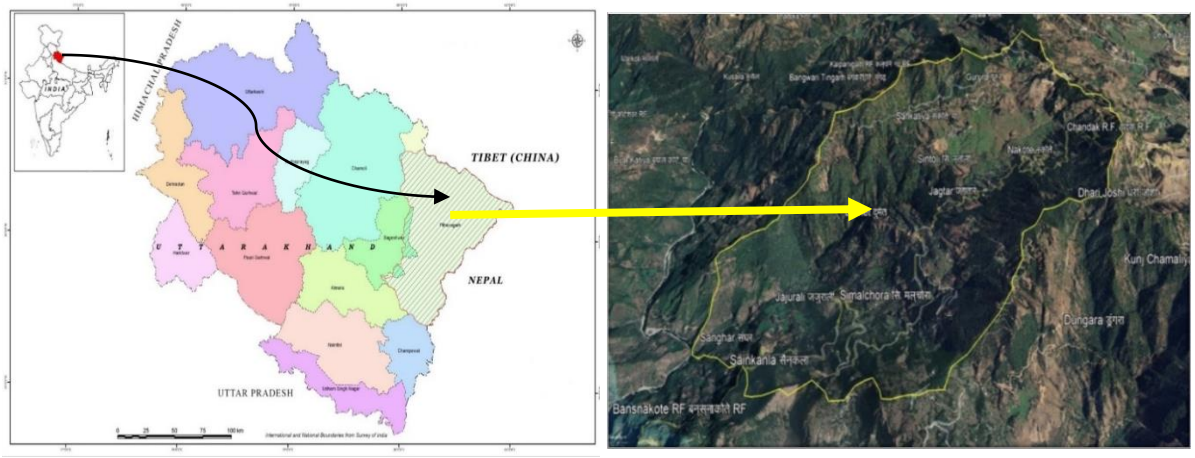

Figure 1. Map showing location of study area.

RESULTS

Floristic Diversity

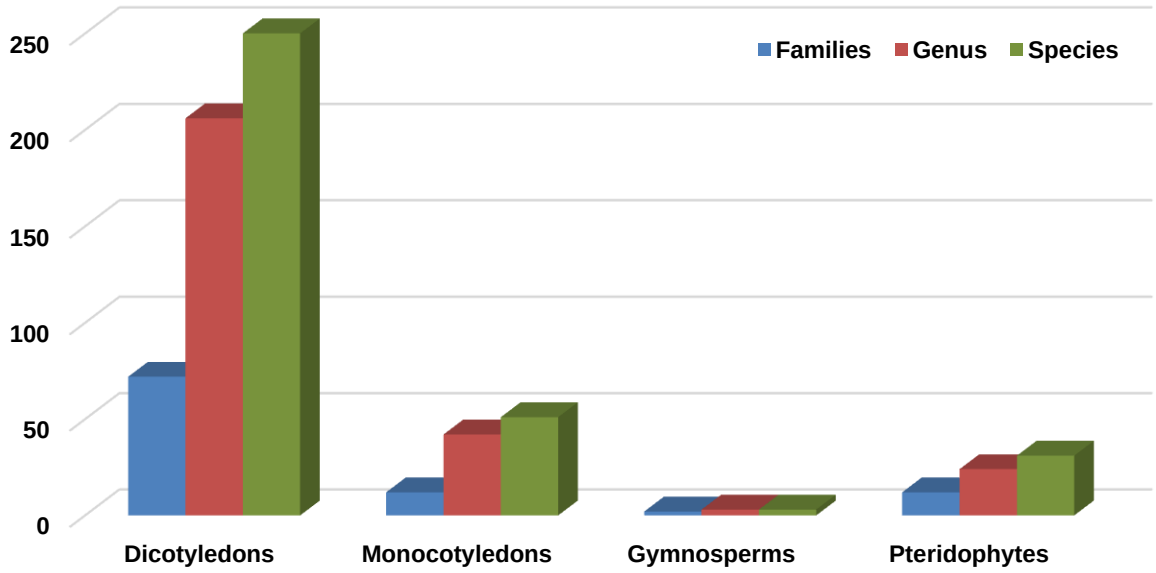

Figure 2. Distribution of Plants in different taxonomic group.

A total sum of 337 species of vascular plants (Angiosperms, Gymnosperms and Pteridophytes) belonging to 280 genera and 98 families were recorded from present study. Out of 337 species 303 species were Angiosperms (252 Dicotyledons and 51 Monocotyledons), 3 Gymnosperms and 31 species were Pteridophytes (Fig. 2). The checklist of species and their nativity, distribution range and life form were showed in appendix I. They were distributed in different life forms, *i.e.*, trees 16% (53 species), shrubs 22% (74 species), herbs 58% (196 species) and climber 4% (14 species) table 1 showed the distribution in tree shrub and herb. Amongst the families maximum species were represented in Asteraceae (37 species) followed by Poaceae (24 species), Fabaceae (24 species), Lamiaceae (21 species) Rosaceae (12 species) and Orchidaceae (7 species) (Fig. 3). In Gymnosperms only two family (Pinaceae and Cupreceae) was recorded. A total of 31 species of Pteridophytes were also recorded from the region in which family Pteridaceae (9) was dominant (Table 1). Maximum species recorded in Oak forest followed by Pine forest and least recorded in Sal forest (Table 2). 44 families *i.e.*, Boraginaceae, Convolvulaceae, Agavaceae, Amaranthaceae, Amaryllidaceae, Balsaminaceae, Plantaginaceae, Begoniaceae, Blechnaceae, Convolvulaceae, Coriariaceae, Cupressaceae, Cyperaceae, Cystopteridaceae,

Cystopteridaceae, Dioscoreaceae, Dipterocarpaceae, Droseraceae, Elaeagnaceae, Gentianaceae, Hypericaceae, Hypodematiaceae, Juglandaceae, Linaceae, Lygodiaceae, Lythraceae, Mimosaceae, Myricaceae, Myrsinaceae, Myrtaceae, Nyctaginaceae, Oleaceae, Orobanchaceae, Oxalidaceae, Sabiaceae, Sapotaceae, Selaginellaceae, Symplocaceae, Thymelaeaceae, Valerianaceae, Violaceae, Woodsiaceae and Saxifragaceae were monotypic in the study area.

Table 1. Taxonomic Description of Floristic Diversity.

Taxonomic Groups	Families	Genera	Species	Trees	Shrubs	Herbs	Climbers
Angiosperms	84	253	303	50	74	165	14
Gymnosperms	2	3	3	3			-
Pteridophytes	12	24	31			31	
Total	98	280	337	53	74	196	14

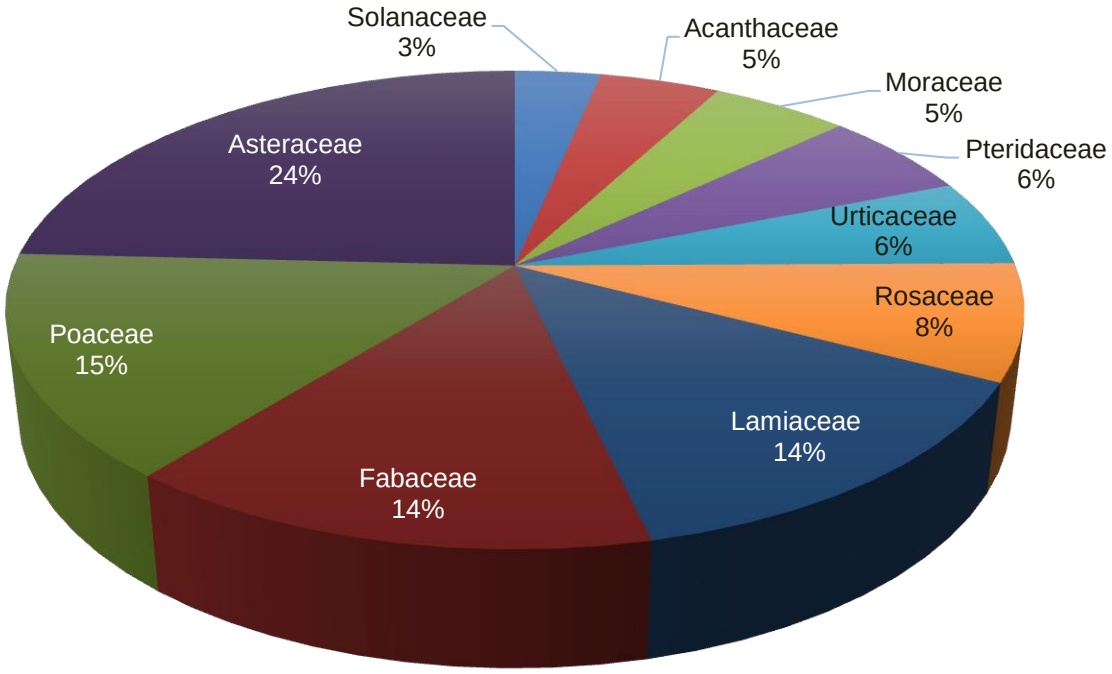

Figure 3. Proportional Composition of Dominant Families in study area.

Table 2. Distribution of species in diverse forest types.

S.N.	Forest types	Total species	Tree	Shrub	Herb	Climber
1	Sal forest	77	23	19	32	3
2	Pine forest	122	5	35	78	4
3	Oak forest	147	12	30	100	5
4	Deodar forest	90	3	20	62	5

Analysis of rarity

Out of 337 recorded species, 153 were native to the Himalayan region, 36 were native to India while the remaining were non-natives originated from different biogeographic domains worldwide (Fig. 4). According to the recent IUCN criteria (2022-23), 49 species have been categorized into various threat categories *viz*., Vulnerable (*Paris polyphylla* Sm.) near threatened (*Aegle marmelos* (L.) Corrêa) and 47 were under least concern *Acer oblongum* Wall. ex DC., *Saccharum spontaneum* L., *Hydrocotyle javanica* Thunb, *Viola Pilosa* Blume, *Geranium wallichianum* D.Don ex Sw, *Bergenia ciliate* (Haw.) Sternb., *Berberis aristata* DC., *Viburnum mullaha* Buch.-Ham. ex D. Don, *Zanthoxylum armatum* DC., *Rhododendron arboretum* Smith, *Cupressus torulosa* D. Don, *Cinnamomum tamala* (Buch.-Ham.) T. Nees and Eberm, *Carpinus betulus* L., *Aesculus indica* (Wall. ex Cambess.) Hook, *Carpinus viminea* Wall. ex Lindl, *Cedrus deodara* (Roxb. ex D. Don) G. Don, *Pyrus pashia* Buch.-Ham. ex D. Don, *Terminalia chebula* Retz., *Xylosma longifolia* Clos, *Ilex dipyrena* Wall., *Prunus cerasoides* D. Don, *Ficus palmata* Forssk., *Shorea robusta* C. F. Gaertn., *Alnus nepalensis* D. Don., *Ziziphus mauritiana* Lam., *Woodfordia fruticose* (L.) Kurz, *Toona ciliate* M. Roem.,

Goodyera repens (L.) R.Br., *Ranunculus sceleratus* L., *Litsea monopetala* (Roxb.) Pers, *Lyonia ovalifolia* (Wall.) Drude, *Mallotus philippensis* (Lam.) Müll.Arg., *Melia azedarach* L., *Mimosa pudica* L., *Pyracantha crenulata* (D. Don) M. Roem., *Quercus glauca* Thunb., *Rubus ellipticus* Sm., *Sapindus mukorossi* Gaertn., *Syzygium cumini* (L.) Skeels, *Terminalia bellirica* (Gaertn.) Roxb, *Bauhinia variegata* L., *Diplazium esculentum* (Retz.) Sw., *Emblica officinalis* Gaertn., *Ficus auriculata* Lour., *Ficus religiosa* L., *Ficus semicordata* Buch.-Ham. ex Sm. and *Vitex negundo* L.

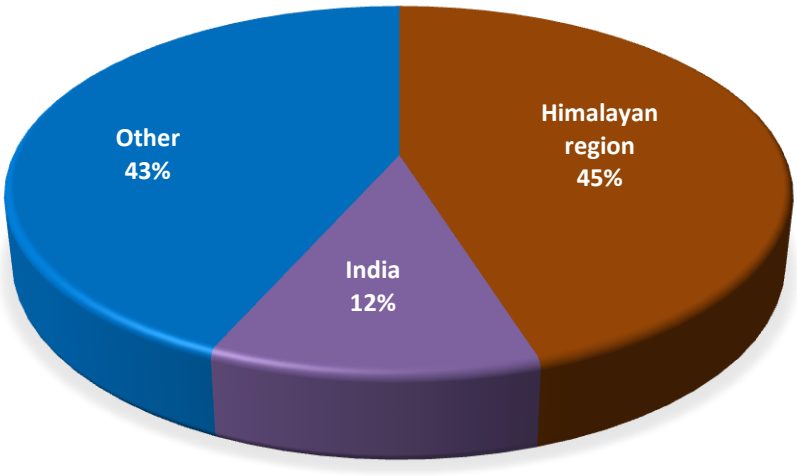

Figure 4. Nativity of plants in study area.

DISCUSSION

Uttarakhand has about 4700 species of flowering plants under 213 families and 1503 genera (Uniyal *et al.* 2007), accounting roughly for 27 percent of total Indian angiosperm flora. Outcome of the present study was 337 species of vascular plants (Angiosperms, Gymnosperms and Pteridophytes) belonging to 280 genera and 98 families were recorded from present study area. Of these, 303 species were Angiosperms (252 Dicotyledons and 51 Monocotyledons), 3 Gymnosperms and 31 Pteridophytes. Gairola *et al.* (2010) evaluated the phyto-diversity of the moist temperate forest of Garhwal Himalaya and recorded a total of 338 species belonging to 249 genera under 93 families. Kumar *et al.*, (2012) documented 300 species of angiosperms, pteridophytes (31 species) and gymnosperms (4 species) between 1500-2330m elevation in Mussoorie which is comparable to present study. Rana and Rawat, (2017) reported total 10,452 species of Angiosperms belonging to 2302 genera and 232 families and 51 species of Gymnosperms belonging to 8 families, 20 genera from the Indian Himalayan Region, Nepal and Bhutan. Naithani (2019) documented 1034 species of vascular plants, of which 910 species were angiosperms, 07 gymnosperms, and 117 pteridophytes from the Valley of Flowers (Table 3). Occurrence of 337 species of vascular plants in a comparatively smaller area possibly points out at the uniqueness of the area in many aspects including topography and climate.

Table 3. Comparison of floristic diversity of the present study with the earlier reported ranges for Uttarakhand, Western Himalaya.

S.N.	Study area	Plant group	Family	Genera	Species	Reference
1	Kumaon Region	Vascular plants	94		816	Osmaston (1927)
2	Valley of Flowers	Vascular plants	45	150	262	Smythe (1938)
3	Nainital	Vascular plants	457		869	Gupta (1968)
4	Mussoorie	Vascular plants			1331	Raizada & Saxena (1978)
5	Chamoli	Angiosperms	163	892	1934	Naithani (1984)
6	Askot WLS	Vascular plants			1262	Samant *et al.* (1998)
7	Uttarakhand	Angiosperms	223	1523	4700	Uniyal *et al.* (2007)
8	Mandal-Chopta	Vascular plants	93	249	338	Gairola *et al.* (2010)
9	Binog WLS	Vascular plants	102	237	335	Kumar *et al.* (2012)
10	Tarai region, Kumaun	Angiosperms	66		206	Mathur and Joshi (2013)
11	Jaunsar Bawar	Angiosperms	156	689	1289	Agarwal (2017)
12	Uttarakhand	Vascular plants			4990	Rana & Rawat (2017)
13	Valley of Flowers and Bhundyar valley	Vascular plants	135	474	1034	Naithani (2019)
14	Pithoragarh	Vascular plants	98	280	337	Present study

Hooker (1906) described Orchidaceaae, Leguminaceae (Fabaceae), Gramineae (Poaceae), Rubiaceae, Euphorbiaceae, Acanthaceae, Compositae (Asteraceae), Cyperaceae, Labiatae (Lamiaceae) and Urticaceae as 10 dominant families of India. whereas in present study Asteraceae, Poaceae, Fabaceae, Lamiaceae, Rosaceae, Urticaceae, Pteridaceae, Moraceae, Acanthaceae and Orchidaceae were dominant families of study area. Fabaceae was dominant family in Sal forest followed by Asteraceae, Poaceae was dominant family in pine forest followed by Asteracea. Asteraceae was dominant family in Oak and Deodar forest followed by Rosaceae (Table 4). Samant (2021) reported Among the Angiosperms families, Asteraceae, Poaceae, Fabaceae, Orchidaceae, Brassicaceae, Lamiaceae, Euphorbiaceae, Scrophulariaceae, Rubiaceae, Liliaceae, Apiaceae, Polygonaceae, Acanthaceae, and Rosaceae are the species rich and contribute maximum number of species.

Table 4. Composition of Dominant Families in different forest types.

Sal forest	Pine forest	Oak forest	Deodar forest
Fabaceae	Poaceae	Asteraceae	Asteraceae
Asteraceae	Asteraceae	Rosaceae	Rosaceae
Poaceae	Lamiaceae	Pteridaceae	Urticaceae
Lamiaceae	Fabaceae	Lamiaceae	Ranunculaceae
Moraceae	Moraceae	Orchidaceae	Caprifoliaceae
Combretaceae	Rosaceae	Betulaceae	Dryopteridaceae
Euphorbiceae	Anacardiaceae	Urticaceae	Zingiberaceae
Phyllanthaceae	Urticaceae	Polypodiaceae	Lamiaceae
Malvaceae	Solanaceae	Caprifoliaceae	Apiaceae
Lauraceae	Menispermaceae	Berberidaceae	Berberidaceae

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Appendix I: Diversity, distribution and nativity of floristic diversity in Pithoragarh, Kumaun Himalaya.

S.N.	Taxa	Family	Life Form	Nativity	IUCN status	Altitudinal range (m)
1.	*Adhatoda vasica* Nees	Acanthaceae	S	As Trop		800-1000
2.	*Barleria cristata* L.	Acanthaceae	S	Indian		800-1000
3.	*Dicliptera roxburghiana* Nees	Acanthaceae	H	Asia		1200-1600
4.	*Justicia simplex* D. Don	Acanthaceae	H	Afr Trop		1700-2000
5.	*Nelsonia canescens* (Lam.) Spreng.	Acanthaceae	H	Indian		1000-1500
6.	*Strobilanthes alatus* Nees	Acanthaceae	H	Reg Himal		1800-2100
7.	*Strobilanthes wallichi* Nees	Acanthaceae	S	Reg Himal		1900-2100
8.	*Agave americana* L.	Agavaceae	S	As Trop		700-1200
9.	*Achyranthes aspera* L.	Amaranthaceae	H	Geront Trop		1300-1800
10.	*Achyranthes bidentata* Blume	Amaranthaceae	H	Indian		1700-2100
11.	*Aerva lanata* (L.) Juss. ex Schult.	Amaranthaceae	H	Asia		900-1300
12.	*Zephyranthes rosea* Lindl	Amaryllidaceae	H	Peru And Colombia		1500-1800
13.	*Rhus cotinus* L.	Anacardiaceae	S	Southern Europe		850-1200
14.	*Rhus parviflora* Roxb.	Anacardiaceae	S	Indian		700-1400
15.	*Rhus wallichii* Hook. f.	Anacardiaceae	S	Reg Himal		1400-2100
16.	*Semecarpus anacardium* L.	Anacardiaceae	T	Indian		600-1100
17.	*Bupleurum lanceolatum* Wall. Ex	Apiaceae	H	Reg Himal		1900-2100
18.	*Centella asiatica* L.	Apiaceae	H	Indian		1200-1900
19.	*Heracleum nepalense* D. Don	Apiaceae	H	Reg Himal		1900-2100
20.	*Hydrocotyle javanica* Thunb	Apiaceae	H	Reg Himal	LC	1700-2100
21.	*Ilex dipyrena* Wall.	Aquifoliaceae	T	Reg Himal	LC	1900-2000
22.	*Arisaema concinnum* Schott	Araceae	H	Reg Himal		1900-2100
23.	*Colocasia affinis* Schott	Araceae	H	Indian		1600-1900
24.	*Hedera nepalensis* K.Koch	Araliaceae	C	Europ Afr Bor		1900-2100
25.	*Asparagus adscendens* Willd.	Asparagaceae	S	Indian		1600-2000
26.	*Ophiopogon intermedius* D.Don	Asparagaceae	H	Indian		1200-1600
27.	*Polygonatum verticillatum* (L.) All.	Asparagaceae	H	Europe		2000-2100
28.	*Asplenium adiantum-nigrum* L.	Aspleniaceae	F	Africa Europ		1800-2100
29.	*Asplenium indicum* Sledge	Aspleniaceae	F	Indian		1500-2000
30.	*Senecio nudicaulis* Buch-Ham. ex D. Don	Asteraceae	H	Indian		1200-2000
31.	*Ageratina adenophora* (Spreng.) R. M. King and H. Rob.	Asteraceae	H	Trop America		900-1800

32.	*Ageratum conyzoides* L.	Asteraceae	H	Trop America		800-1200
33.	*Ainsliaea aptera* DC.	Asteraceae	H	Reg Himal		1700-2000
34.	*Ainsliaea latifolia* (D. Don) Sch. Bip.	Asteraceae	H	Reg Himal		1800-2100
35.	*Anaphalis busua* (Buch.- Ham. ex D. Don) DC.	Asteraceae	H	Reg Himal		1000-1400
36.	*Anaphalis contorta* (D.Don) Hook. f.	Asteraceae	H	Reg Himal		1500-1800
37.	*Anaphalis triplinervis* (Sims) Sims ex C.B. Clarke	Asteraceae	H	Reg Himal		1800-2100
38.	*Artemisia nilagirica* (C.B.Clarke) Pamp.	Asteraceae	H	Indian subcontinent		1400-2000
39.	*Artemisia parviflora* Buch-Ham. Ex Roxb.	Asteraceae	S	Indian subcontinent		1500-1700
40.	*Bidens pilosa* L.	Asteraceae	H	Reg Trop		1200-1600
41.	*Chrysanthemum leucanthemum* L.	Asteraceae	H	Europe N As		1900-2100
42.	*Cirsium argyracanthum* DC.	Asteraceae	H	Indian		1800-2100
43.	*Cirsium wallichii* DC.	Asteraceae	H	Indian		1700-2100
44.	*Conyza japonica* (Thunb.) Less	Asteraceae	H	Trop America		1300-1700
45.	*Eclipta prostrata* (L.) L.	Asteraceae	H	North America		800-1000
46.	*Emilia sonchifolia* (L.) DC.	Asteraceae	H	Asia		1600-2100
47.	*Erigeron acer* L.	Asteraceae	H	Reg Bor Temp		1500-1900
48.	*Erigeron bellidioides* Benth.ex C.B. Clarke	Asteraceae	H	Trop America		1700-2100
49.	*Galinsoga parviflora* Cav.	Asteraceae	H	Am Austr		1900-2100
50.	*Gnaphalium pensylvanicum* Willd.	Asteraceae	H	South America		800-1000
51.	*Gynura nepalensis* DC.	Asteraceae	H	Reg Himal		1100-1900
52.	*Hieracium vulgatum* Fries	Asteraceae	H	Cosmop		1200-1700
53.	*Inula cappa* (Buch.-Ham. ex D. Don) DC.	Asteraceae	H	Reg Himal		1500-1900
54.	*Lactuca serriola* L.	Asteraceae	H	Mediterranean Reg		1200-1800
55.	*Myriactis nepalensis* Less.	Asteraceae	H	Reg Himal		1500-2000
56.	*Parthenium hysterophorus* L.	Asteraceae	H	Trop America		600-1000
57.	*Solidago virgaurea* L.	Asteraceae	H	Europe		1700-2000
58.	*Siegesbeckia orientalis* L.	Asteraceae	H	Australia		1300-1500
59.	*Sonchus asper* L. Hill	Asteraceae	H	Cosmop		1300-2000
60.	*Taraxacum officinale* (L.) Weber ex F.H. Wigg.	Asteraceae	H	Reg Temp Bor Et Aust		1700-2000
61.	*Tragopogon gracilis* D.Don	Asteraceae	H	Indian		1300-1500
62.	*Tricholepis elongata* DC.	Asteraceae	H	Asia India		1200-1400
63.	*Tridax procumbens* L.	Asteraceae	H	America		800-1000
64.	*Vernonia cinerea* (L.) Less.	Asteraceae	H	Trop Asia		1500-1800
65.	*Xanthium strumarium* L.	Asteraceae	H	Asia America		1200-1600
66.	*Youngia japonica* (L.) DC.	Asteraceae	H	Eastern Asia		1000-1500
67.	*Athyrium fimbriatum* Hooker ex T. Moore	Athyriaceae	F	Reg Himal		1700-2000
68.	*Athyrium filix-femina* (L.) Roth	Athyriaceae	F	Northern Hemisphere		1800-2000
69.	*Deparia japonica* (Thunberg) M. Kato	Athyriaceae	F	Reg Himal		1300-1650
70.	*Diplazium esculentum* (Retz.) Sw.	Athyriaceae	F	Reg Himal	LC	1700-2000
71.	*Diplazium maximum* (D. Don) C. Chr.	Athyriaceae	F	Asia		1400-1800
72.	*Impatiens amphorata* Edgew.	Balsaminaceae	H	Reg Himal		1800-2000
73.	*Impatiens glandulifera* Royle.	Balsaminaceae	H	Reg Himal		1800-2000
74.	*Begonia picta* Smith.	Begoniaceae	H	Reg Himal		1800-2000
75.	*Berberis aristata* DC.	Berberidaceae	S	Reg Himal	LC	1700-2100
76.	*Berberis asiatica* Roxb. ex DC.	Berberidaceae	S	Reg Himal		1200-2000
77.	*Mahonia napaulensis* (DC.) Spreng.	Berberidaceae	S	Reg Himal		1800-2100
78.	*Alnus nepalensis* D. Don	Betulaceae	T	Reg Himal	LC	1800-2100
79.	*Carpinus betulus* L.	Betulaceae	T	Indian	LC	1700-2000
80.	*Carpinus viminea* Wall. ex Lindl.	Betulaceae	T	Reg Himal	LC	1600-2100

81.	*Woodwardia unigemmata* (Makino) Nakai	Blechnaceae	F	Reg Himal		1600-2000
82.	*Cynoglossum lanceolatum* Forsskål	Boraginaceae	H	Asia		1200-1900
83.	*Cynoglossum zeylanicum* (Vahl) Wight ex Wall.	Boraginaceae	H	Trop America		800-1000
84.	*Celtis australis* L.	Cannabaceae	T	Europ		1200-1600
85.	*Lonicera parviflora* Lam.	Caprifoliaceae	S	Reg Himal		1700-2000
86.	*Lonicera quinquelocularis* Hardw.	Caprifoliaceae	S	Reg Himal		1900-2100
87.	*Vibernum coriaceum* Blume	Caprifoliaceae	S	Reg Himal		1600-2000
88.	*Viburnum cotinifolium* D.Don	Caprifoliaceae	S	Reg Himal		1900-2100
89.	*Viburnum mullaha* Buch.-Ham. ex D. Don	Caprifoliaceae	S	Reg Himal	LC	2000-2100
90.	*Stellaria media* L.	Caryophyllaceae	H	Reg Himal		1400-1800
91.	*Euonymus tingens* Wall.	Celastraceae	S	Reg Himal		1800-2000
92.	*Gymnosporia royleana* Wall. ex M. A. Lawson	Celastraceae	S	Reg Himal		1700-2100
93.	*Anogeissus latifolia* (DC.) Wallich ex Guill. and Perr.	Combretaceae	T	Indian		800-1100
94.	*Terminalia alata* B. Heyne ex Roth	Combretaceae	T	Indian		1000-1300
95.	*Terminalia bellirica* (Gaertn.) Roxb.	Combretaceae	T	Indian	LC	900-1200
96.	*Terminalia chebula* Retz.	Combretaceae	T	Indian	LC	1000-1400
97.	*Commelina paludosa* Blume	Commelinaceae	H	Trop Asia		1500-1800
98.	*Ipomoea purpurea* (L.) Roth	Convolvulaceae	H	Mexico		1600-1900
99.	*Cyanotis barbata* D.Don	Commelinaceae	H	Indian		1300-1400
100.	*Evolvulus alsinoides* (L.) L.	Convolvulaceae	H	Trop America		1200-1500
101.	*Coriaria nepalensis* Wall.	Coriariaceae	S	Reg Himal		2000-2100
102.	*Cupressus torulosa* D. Don	Cupressaceae	T	Reg Himal	LC	1900-2100
103.	*Cyperus brevifolius* (Rottb.) Hassk.	Cyperaceae	H	America		800-1000
104.	*Cyperus rotundus* L.	Cyperaceae	H	Africa Europ		900-120 0
105.	*Gymnocarpium dryopteris* (L.) Newman	Cystopteridaceae	F	North America		1600-2000
106.	*Pteridium revolutum* (Blume) Nakai	Dennstaedtiaceae	F	Indian		1800-1900
107.	*Dioscorea belophylla* (Prain) Viogt. ex Haines	Dioscoreaceae	C	Reg Himal		1000-1400
108.	*Dioscorea deltoidea* Wall. ex Griseb	Dioscoreaceae	H	Reg Himal		1800-2000
109.	*Shorea robusta* C.F. Gaertn.	Dipterocarpaceae	T	Indian	LC	600-900
110.	*Drosera peltata* Sm. ex Willd.	Droseraceae	H	Australia		1200-1800
111.	*Dryopteris wallichiana* (Spreng.) Hyl	Dryopteridaceae	F	Reg Himal		1900-2100
112.	*Polystichum squarrosum* (D.Don) Fee	Dryopteridaceae	F	Indian		1400-2000
113.	*Polystichum stimulans* (Kunze ex Mett.) Bedd.	Dryopteridaceae	F	Reg Himal		2000-2100
114.	*Dryopteris sparsa* (D.Don) Kuntze	Dryopteridaceae	F	Asia, indian		1900-2000
115.	*Elaeagnus parvifolia* Wall. ex Royle	Elaeagnaceae	S	Asia, Reg Himal		1600-2000
116.	*Equisetum diffusum* D. Don	Equisetaceae	F	Reg Himal		1900-2000
117.	*Lyonia ovalifolia* (Wall.) Drude	Ericaceae	T	Reg Himal	LC	1400-1700
118.	*Rhododendron arboreum* Smith	Ericaceae	T	Reg Himal	LC	1700-2100
119.	*Euphorbia heterophylla* L.	Euphorbiaceae	H	Trop America		800-1100
120.	*Euphorbia hirta* L.	Euphorbiaceae	H	Trop America		800-1100
121.	*Jatropha curcas* L.	Euphorbiaceae	S	Trop America		800-1100
122.	*Mallotus philippensis* (Lam.) Müll.Arg.	Euphorbiaceae	T	Trop Asia	LC	700-900
123.	*Dalbergia sericea* G. Don	Fabaceae	S	Trop America		1000-1400
124.	*Abrus precatorius* L.	Fabaceae	S	Trop Asia		700-900
125.	*Acacia catechu* (L.f.)Willd	Fabaceae	T	Indian		800-900
126.	*Acacia dealbata* L.	Fabaceae	T	Australia		900-1300
127.	*Albizia lebbeck* (L.) Benth.	Fabaceae	T	Trop Asia		700-900
128.	*Bauhinia vahlii* Wight and Arn.	Fabaceae	C	Indian		900-1200
129.	*Bauhinia variegata* L.	Fabaceae	T	Indian	LC	900-1000
130.	*Cassia floribunda* Cav.	Fabaceae	S	Cosmop		1200-1400
131.	*Cassia occidentalis* L.	Fabaceae	H	Australia		900-1200

132.	*Cassia tora* L.	Fabaceae	H	Trop Asia		800-1100
133.	*Crotalaria albida* B. Heyne ex Roth	Fabaceae	H	Trop Asia		800-1200
134.	*Crotalaria prostrata* Rottl. ex Willd.	Fabaceae	H	Trop Asia		800-1500
135.	*Desmodium elegans* DC.	Fabaceae	S	Reg Himal		1500-2000
136.	*Desmodium latifolium* DC.	Fabaceae	S	Indian		800-1200
137.	*Desmodium microphyllum* (Thunb.) DC.	Fabaceae	H	Asia		800-1200
138.	*Flemingia macrophylla* (Willd.) Merr.	Fabaceae	S	Trop Asia		800-1500
139.	*Flemingia strobilifera* (L.) W. T. Aiton	Fabaceae	S	South East Asia		800-1200
140.	*Flemingia semialata* Roxb.	Fabaceae	S	Trop Asia		800-1600
141.	*Indigofera heterantha* Wall. ex Brandis	Fabaceae	S	Reg Himal		1300-1600
142.	*Ougeinia oojeinensis* (Roxb.) Hochr.	Fabaceae	T	Reg Himal		800-1300
143.	*Piptenthus nepalensis* (Hook) D.Don.	Fabaceae	S	Reg Himal		1900-2100
144.	*Trifolium repens* L.	Fabaceae	H	Geront Bor Temp		1500-2000
145.	*Quercus glauca* Thunb.	Fagaceae	T	Reg Himal	LC	1300-1800
146.	*Quercus leucotrichophora* A. Camus	Fagaceae	T	Reg Himal		1800-2100
147.	*Canscora diffusa* (Vahl) R.Br. ex Roem. and Schult.	Gentianaceae	H	Asia		800-1000
148.	*Swertia chirayita* Buch Ham.	Gentianaceae	H	Reg Himal		2100
149.	*Geranium nepalense* Sweet	Geraniaceae	H	Indian		1900-2100
150.	*Geranium wallichianum* D.Don ex Sw.	Geraniaceae	H	Reg Himal	LC	2100
151.	*Deutzia staminea* R. Brown ex Wallich	Hydrangeaceae	S	Asia		1800-2000
152.	*Hydrangea macrophylla* (Thun) Ser.	Hydrangeaceae	S	Japan		1200-1400
153.	*Hypericum oblongifolium* Choisy	Hypericaceae	S	Reg Himal		1900-2000
154.	*Hypodematium crenatum* (Forssk.)	Hypodematiaceae	F	Trop Asia		1300-1800
155.	*Engelhardia spicata* Leschen.ex Blume	Juglandaceae	S	Reg Himal		1000-1300
156.	*Ajuga parviflora* Benth.	Lamiaceae	H	Reg Himal		800-1300
157.	*Anisomeles indica* (L.) Kuntze	Lamiaceae	H	Eastern Asia		600-800
158.	*Calamintha umbrosa* (M.Bieb.) Rchb.	Lamiaceae	H	Asia		1700-1900
159.	*Caryopteris odorata* (D.Don) B.L.Rob.	Lamiaceae	S	Reg Himal		900-1200
160.	*Colebrookea oppositifolia* Sm.	Lamiaceae	S	Indian		1000-1400
161.	*Elsholtzia flava* Benth.	Lamiaceae	H	Asia		1200-1600
162.	*Hyptis suaveolens* (L.) Poit.	Lamiaceae	H	Trop Mexico		700-900
163.	*Isodon rugosus* (Wall. ex Benth.)	Lamiaceae	H	Indian		700-900
164.	*Leucas aspera* Wall.	Lamiaceae	H	Indian		1500-1800
165.	*Leucas lanata* Benth.	Lamiaceae	H	Indian		1500-1800
166.	*Micromeria biflora* (Buch.-Ham. ex D.Don) Benth.	Lamiaceae	H	Asia		1700-2000
167.	*Nepeta linearis* Royle ex Benth.	Lamiaceae	H	Indian		1900-2000
168.	*Origanum vulgare* L.	Lamiaceae	H	Asia		1500
169.	*Pogostemon plectranthoides* Desf.	Lamiaceae	S	Asia		1200-1500
170.	*Roylea cinerea* (Don) Baill.	Lamiaceae	H	Reg Himal		1700-2000
171.	*Salvia lanata* Roxb.	Lamiaceae	S	Spain And Southern France		1500-1700
172.	*Scutellaria discolor* Colebr.	Lamiaceae	H	Trop Asia		1700-1900
173.	*Scutellaria lateriflora* L.	Lamiaceae	H	North America		1400-1600
174.	*Stachys sericea* Wall ex Benth.	Lamiaceae	H	Asia		1700-1800
175.	*Coleus barbatus* (Andr.) Benth.	Lamiaceae	H	Europ As Et Afr Bor		1300-1400
176.	*Vitex negundo* L.	Lamiaceae	H	As Trop Et Subtrop	LC	1300-1600
177.	*Cinnamomum tamala* (Buch.-Ham.) T. Nees and Eberm.	Lauraceae	T	Indian	LC	800-1200
178.	*Litsea monopetala* (Roxb.) Pers.	Lauraceae	T	Reg Himal	LC	600-1000

179.	*Machilus odoratissima* (Wall. ex Nees) Nees	Lauraceae	T	Indian		1000-1100
180.	*Phoebe lanceolata* (Nees) Nees	Lauraceae	S	Indian		800-1000
181.	*Persea duthiei* (King ex Hook. f.) Kostermans	Lauraceae	S	Reg Himal		1800-2000
182.	*Gagea elegans* Wall.ex D.Don	Liliaceae	H	Europ As Bor		1800-2000
183.	*Lilium wallichianum* Schult.	Liliaceae	H	Asia		1200-2000
184.	*Paris polyphylla* Sm.	Melanthiaceae	H	Reg Himal	VU	2000-2100
185.	*Reinwardtia indica* Dumort.	Linaceae	H	Reg Himal		1400-2000
186.	*Lygodium flexuosum* (L.) Sw.	Lygodiaceae	F	Indian		1500-1700
187.	*Woodfordia fruticosa* (L.) Kurz	Lythraceae	S	Asia	LC	1200-1500
188.	*Bombax ceiba* L.	Malvaceae	T	Asia		800-1000
189.	*Grewia elastica* Royle	Malvaceae	T	Indian		1200-1700
190.	*Grewia oppositifolia* Buch.-Ham. ex D. Don	Malvaceae	T	Indian		1300-1700
191.	*Sida cordifolia* L.	Malvaceae	S	Indian		800-900
192.	*Osbeckia chinensis* L.	Melastomataceae	H	Eastern Asia		1600-1800
193.	*Osbeckia stellata* Buch.-Ham. ex D. Don	Melastomataceae	S	Eastern Asia		1600-1700
194.	*Melia azedarach* L.	Meliaceae	T	Indian	LC	1100-1300
195.	*Toona ciliata* M. Roem.	Meliaceae	T	Asia	LC	1000-1300
196.	*Cissampelos pareira* L.	Menispermaceae	C	Florida		1200-1300
197.	*Stephania glabra* (Roxb.) Miers	Menispermaceae	C	Asia		1400-1800
198.	*Tinospora cordifolia* (Willd.) Hook. f. and Thomson	Menispermaceae	C	Indian		1000-1500
199.	*Mimosa pudica* L.	Mimosaceae	US	Trop America	LC	1400-1500
200.	*Ficus auriculata* Lour.	Moraceae	T	Asia	LC	1000-1500
201.	*Ficus scandens* Roxb.	Moraceae	C	Asia		800-1000
202.	*Ficus nemoralis* Wall. ex Miq	Moraceae	T	Indian		900-1300
203.	*Ficus palmata* Forssk.	Moraceae	S	Northeastern Africa:	LC	1200-1600
204.	*Ficus religiosa* L.	Moraceae	T	Indian	LC	900-1600
205.	*Ficus semicordata* Buch.-Ham. ex Sm.	Moraceae	T	Indian	LC	800-1300
206.	*Morus laevigata* Wall. ex Brandis	Moraceae	T	Indian		1100-1500
207.	*Morus serrata* Roxb.	Moraceae	T	Reg Himal		1400-1800
208.	*Myrica esculenta* Buch.-Ham. ex D. Don	Myricaceae	T	Indian		1200-1800
209.	*Myrsine africana* L.	Myrsinaceae	S	Reg Himal		1700-2100
210.	*Syzygium cumini* (L.) Skeels	Myrtaceae	T	Indian	LC	700-1000
211.	*Boerhavia diffusa* (BD) Linn.	Nyctaginaceae	H	Indian		1600-1900
212.	*Jasminum dispermum* Wall.	Oleaceae	H	Trop Asia		1800-2000
213.	*Bulbophyllum reptans* (Lindl.)	Orchidaceae	H	Reg Himal		1700-1900
214.	*Cymbidium iridioides* D.Don	Orchidaceae	H	Reg Himal		1600-2000
215.	*Goodyera repens* (L.) R. Br.	Orchidaceae	H	Europe	LC	1800-2100
216.	*Habenaria pectinata* (Sm.) D. Don	Orchidaceae	H	China		1700-2000
217.	*Crepidium acuminatum* D. Don	Orchidaceae	H	Reg Himal		2000-2100
218.	*Satyrium nepalense* D.Don	Orchidaceae	H	Reg Himal		1700-1900
219.	*Vanda cristrata* Lindl.	Orchidaceae	H	Reg Himal		1600-1900
220.	*Lindenbergia grandiflora* (Buch.-Ham.) Benth.	Orobanchaceae	H	Trop Asia		1700-1900
221.	*Oxalis corniculata* L.	Oxalidaceae	H	Asia Europ		1200-1800
222.	*Bischofia javanica* Blume	Phyllanthaceae	T	Trop Asia		800-900
223.	*Emblica officinalis* Gaertn..	Phyllanthaceae	T	Indian	LC	700-1200
224.	*Glochidion velutinum* Wight	Phyllanthaceae	S	Indian		900-1300
225.	*Phyllanthus niruri* L.	Phyllanthaceae	H	Indian		800-1000
226.	*Cedrus deodara* (Roxb. ex D. Don) G. Don	Pinaceae	T	Reg Himal	LC	1850-2100
227.	*Pinus roxburghii* Sarg.	Pinaceae	T	Reg Himal		1000-1500
228.	*Plantago erosa* Wall.	Plantaginaceae	H	Asia		1500
229.	*Andropogon distans* Nees	Poaceae	H	Indian		1400-1800
230.	*Arthraxon lanceolatus* (Roxb.) Hochst.	Poaceae	H	Asia		1300-1700

231.	*Arundinaria falcata* Nees	Poaceae	H	North America.		1200-1400
232.	*Arundinella nepalensis* Trin.	Poaceae	H	Indian		1200-1400
233.	*Capillipedium assimile* (Steud.) A. Camus.	Poaceae	H	Indian		1200-1600
234.	*Chrysopogon aciculatus* L.	Poaceae	H	Asia		800-1000
235.	*Chrysopogon gryllus* (L.) Trin.	Poaceae	H	Trop Asia		1200-1500
236.	*Cynodon dactylon* (L.) Pers.	Poaceae	H	Cosmop		1200-1700
237.	*Dendrocalamus strictus* (Roxb.) Nees	Poaceae	H	Asia		1000-1400
238.	*Digitaria cruciata* (Nees ex Steud.) A. Camus	Poaceae	H	Asia		1400-1600
239.	*Digitaria stricta* Roth	Poaceae	H	Cosmop		1400-1700
240.	*Echinochloa colonum* L.	Poaceae	H	Trop Asia		800-1000
241.	*Eleusine indica* (L.) Gaertn	Poaceae	H	Indian		800-1000
242.	*Eulaliopsis binata* (Retz.) C.E. Hubb.	Poaceae	H	Indian		1700-1800
243.	*Heteropogon contortus* (L.) P. Beauv. ex Roem. and Schult.	Poaceae	H	Cosmop		800-1200
244.	*Imperata cylindrica* (L.) P. Beauv.	Poaceae	H	Trop Asia		1200-1600
245.	*Koeleria cristata* (L.) Pers.	Poaceae	H	America		1300-1500
246.	*Oplismenus compositus* (Linn.) P.Beauv	Poaceae	H	Trop America		1200-1500
247.	*Oplismenus hirtellus* (L.) P. Beauv.	Poaceae	H	Trop America		1300-1700
248.	*Oplismenus undulatifolius* Str. - Wint.	Poaceae	H	Trop Asia		1500-1600
249.	*Pennisetum orientale* Rich.	Poaceae	H	Trop Asia		1200-1400
250.	*Saccharum spontaneum* L.	Poaceae	H	Indian	LC	1000-1400
251.	*Themeda anathera* (Nees ex Steud.)	Poaceae	H	Asia		1200-1700
252.	*Themeda arundinacea* (Roxburgh) A. Camus	Poaceae	H	Asia		1100
253.	*Bistorta amplexicaulis* (D.Don) Greene	Polygonaceae	H	Reg Himal		2000-2100
254.	*Polygonum capitatum* Buch.-Ham. ex D.Don.	Polygonaceae	H	Reg Himal		1500-1800
255.	*Polygonum chinense* L	Polygonaceae	H	Indian		1900-2000
256.	*Rumex hastatus* D. Don	Polygonaceae	S	Reg Himal		1200-1500
257.	*Drynaria mollis* Bedd.	Polypodiaceae	F	Reg Himal		1800-2000
258.	*Drynaria propinqua* (Wall. ex Mett.) Sm.	Polypodiaceae	F	Reg Himal		1900-2000
259.	*Lepisorus nudus* (Hook.) Ching	Polypodiaceae	F	Indian		1400-1700
260.	*Pyrrosia porosa* (C. Presl) Hovenkamp.	Polypodiaceae	F	Indian		1700-1800
261.	*Selliguea oxyloba* (Wall. ex Kunze) Fraser-Jenk.	Polypodiaceae	F	Asia		1600-1800
262.	*Anagallis arvensis* L.	Primulaceae	H	Europ		1600-2000
263.	*Lysimachia alternifolia* Wall.	Primulaceae	H	Reg Himal		1600
264.	*Adiantum edgeworthii* Hook.	Pteridaceae	F	Reg Himal		1600-2000
265.	*Adiantum venustum* D.Don	Pteridaceae	F	Reg Himal		1900-2000
266.	*Adiantum incisum* Forssk.	Pteridaceae	F	Indian		1300-1900
267.	*Aleuritopteris bicolor* (Roxb.) Fraser-Jenk.	Pteridaceae	F	Indian		900-1600
268.	*Onychium indicum* (D. Don)	Pteridaceae	F	Reg Himal		1500-1800
269.	*Onychium japonicum* (Thunb.) O. Ktze.	Pteridaceae	F	Asia		1700-1900
270.	*Pteris wallichiana* Agardh	Pteridaceae	F	Reg Himal		2000-2100
271.	*Pteris cretica* L.	Pteridaceae	F	Cosmop		1400-2000
272.	*Pteris vittata* L.	Pteridaceae	F	Cosmop		1400-1700
273.	*Clematis buchananiana* DC.	Ranunculaceae	C	Reg Himal		1800-2100
274.	*Clematis connata* DC.	Ranunculaceae	C	Reg Himal		2000-2100
275.	*Ranunculus diffusus* DC.	Ranunculaceae	C	Cosmop		1600-2000
276.	*Ranunculus sceleratus* L.	Ranunculaceae	H	North America	LC	2000-2100
277.	*Thalictrum foliolosum* DC.	Ranunculaceae	H	Reg Himal		1600-1900

278.	*Rhamnus purpureus* Edgew	Rhamnaceae	S	Asia		1900-2100
279.	*Ziziphus mauritiana* Lam.	Rhamnaceae	S	Asia	LC	1000-1500
280.	*Agrimonia pilosa* Ledeb.	Rosaceae	H	Reg Bor Temp		1500-1800
281.	*Cotoneaster acuminatus* Lindl.	Rosaceae	S	Reg Himal		1400-1800
282.	*Cotoneaster bacillaris* Wall. ex Lindl.	Rosaceae	S	Reg Himal		1900-2100
283.	*Cotoneaster microphyllus* Wall. ex Lindl.	Rosaceae	S	Reg Himal		1900-2000
284.	*Fragaria indica* Andrews	Rosaceae	H	Indian		1800-2100
285.	*Prinsepia utilis* Royle	Rosaceae	S	Reg Himal		1500-1900
286.	*Prunus cerasoides* D. Don	Rosaceae	T	Reg Himal	LC	1400-1700
287.	*Pyracantha crenulata* (D. Don) M. Roem.	Rosaceae	S	Reg Himal	LC	1400-1800
288.	*Pyrus pashia* Buch.-Ham. ex D. Don	Rosaceae	T	Reg Himal	LC	1200-1700
289.	*Rosa brunonii* Lindl	Rosaceae	S	Reg Himal		1700-2100
290.	*Rubus ellipticus* Sm.	Rosaceae	S	Indian	LC	1500-1800
291.	*Rubus paniculatus* Sm.	Rosaceae	S	Reg Himal		1600-1800
292.	*Galium aparine* L.	Rubiaceae	H	Reg Bor Temp Et Magell		1700-1900
293.	*Leptodermis lanceolata* Wall	Rubiaceae	S	Reg Himal		1400-1700
294.	*Randia tetrasperma* (Wall. ex Roxb.) Benth. and Hook.f. ex Brandis	Rubiaceae	S	Reg Himal		1600-1900
295.	*Rubia cordifolia* L.	Rubiaceae	H	Temp Afr Trop		1500-1800
296.	*Aegle marmelos* (L.) Corrêa	Rutaceae	T	Indian	NT	700-900
297.	*Boenninghausenia albiflora* (Hook.) Rchb. ex Meisn.	Rutaceae	S	Reg Himal		1400-1600
298.	*Murraya koenigii* L. Sprengel	Rutaceae	S	Indian		800-1000
299.	*Zanthoxylum armatum* DC.	Rutaceae	S	Reg Himal	LC	800-1200
300.	*Meliosma dilleniaefolia* Walp	Sabiaceae	T	Reg Himal		1800-2000
301.	*Populus ciliata* Wall. ex Royle.	Salicaceae	T	Indian		1300-1500
302.	*Xylosma longifolia* Clos	Salicaceae	T	Reg Himal	LC	700-900
303.	*Acer oblongum* Wall. ex DC.	Sapindaceae	T	Reg Himal	LC	1900-2000
304.	*Aesculus indica* (Wall. ex Cambess.) Hook.	Sapindaceae	T	Reg Himal	LC	1200-1500
305.	*Sapindus mukorossi* Gaertn.	Sapindaceae	T	Indian	LC	1000-1300
306.	*Diploknema butyracea* (Roxb.) H. J. Lam	Sapotaceae	T	Reg Himal		900-1000
307.	*Bergenia ciliata* (Haw.) Sternb.	Saxifragaceae	H	Reg Himal	LC	1400-1700
308.	*Lindernia anagallis* (Burm. f.)	Scrophulariaceae	H	Indian		1300-1400
309.	*Verbascum thapsus* L.	Scrophulariaceae	H	Reg Himal		1700-1800
310.	*Smilax aspera* L.	Smilacaceae	C	Europe Oriens		1800-2100
311.	*Smilax vaginata* Decne	Smilacaceae	C	Reg Himal		1900-2100
312.	*Brugmensia suaveolens* (Humb. and Bonpl. Ex Wid.) Bercht. and Presl	Solanaceae	S	South America		1000-1200
313.	*Datura stramonium* L.	Solanaceae	S	Trop America		1600-1800
314.	*Datura alba* F.Muell.	Solanaceae	S	Indian		1000-1200
315.	*Solanum nigrum* L.	Solanaceae	S	Amphig		1200-1500
316.	*Solanum xanthocarpum* Schrad. and H. Wendl.	Solanaceae	S	Asia		1200-1600
317.	*Symplocos paniculata* (Thunb.) Miq.	Symplocaceae	S	Reg Himal		1700-2100
318.	*Daphne papyracea* Wall. ex Steud.	Thymelaeaceae	S	Reg Himal		1800-2100
319.	*Boehmeria macrophylla* D. Don	Urticaceae	H	Asia		1600-1900
320.	*Boehmeria rugulosa* Wedd.	Urticaceae	T	Reg Himal		700-900
321.	*Debregeasia longifolia* (Blume.f.) Wedd.	Urticaceae	S	Indian		1200-1500
322.	*Girardinia diversifolia* (Link.) Friis	Urticaceae	S	Reg Himal		1600-1700
323.	*Lecanthus peduncularis* (Wall. ex Royle) Wedd.	Urticaceae	H	Reg Himal		1800-2000
324.	*Pilea scripta* (Buch.-Ham. ex Don) Wedd.	Urticaceae	H	Reg Himal		1700-1900

325.	*Pouzolzia hirta* (Blume) Blume ex Hassk	Urticaceae	H	Asia		1800- 2000
326.	*Urtica parviflora* Roxb.	Urticaceae	H	Reg Himal		1700-1900
327.	*Elatostema sessile* J.R.Forst. and G.Forst.	Urticaceae	H	Trop Asia		1500-1700
328.	*Valeriana wallichi* DC.	Valerianaceae	H	Reg Himal		1700-2000
329.	*Lantana camara* L.	Verbenaceae	S	Trop America		700-1000
330.	*Premna herbacea* Roxburgh	Verbenaceae	S	Asia		1300-1600
331.	*Viola pilosa* Blume	Violaceae	H	Indian	LC	1900-2000
332.	*Leea indica* (Burm. f.) Merr.	Vitaceae	S	Indian		800-1200
333.	*Parthenocissus himalayana* (Royle) Planch.	Vitaceae	C	Reg Himal		2000-2100
334.	*Vitis heyneana* Roem. and Schult.	Vitaceae	C	Asia		1800-2100
335.	*Woodsia elongata* Hook.	Woodsiaceae	F	Indian		2000-2100
336.	*Hedychium spicatum* Sm.	Zingiberaceae	H	Reg Himal		1600-2000
337.	*Roscoea purpurea* Sm.	Zingiberaceae	H	Reg Himal		1900-2100

Abbreviations: T = Tree, H = Herb, S = Shrub, , Afr = Africa, AR- Altitudinal range Am = America, Amphig = Amphigaea, Arab = Arabia, , As = Asia, Austr = Australia, Bor = Borealis, Brass= Brazil, Centr = Central, Cosmop = Cosmopolitan, et = And, Geront = Gerontia, Reg = Region, Himal = Himalayan, Ind = Indian, Mediterr = Mediterranean, Or = Orientalis, Orient = Oriental, Trop = Tropical, Temp = Temperate, Ins = Insular, Is = Island Pacif = Pacific, Subcont = Sub-continent, Temp = Temperate.