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43/2 Varadarajulu Nagar, 5th Street West, Ganapathy, Coimbatore, Tamil Nadu 641006, India
Registered Office: 3A2 Varadarajulu Nagar, FCI Road, Ganapathy, Coimbatore, Tamil Nadu 641006, India
Ph: +91 9385339863 | www.threatenedtaxa.org
Email: sanjay@threatenedtaxa.org

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Cover: The critically endangered *Lilium polyphyllum* in watercolour and acrylics. © Aishwarya S Kumar.



INTRODUCTION

The family Fabaceae or Leguminosae is one of the socio-economically important families in Angiosperms. It is commonly known as legume, pea, or bean family. This family members possess all types of habits such as herbs, trees, shrubs, and climbers. It is easily recognised by their pods (legume). Fabaceae Lindl. is the third largest family of angiosperms in terms of number of taxa. It is represented by 770 genera & 19,500 taxa worldwide (FAO 2016; LPWG 2017). In India, the family Fabaceae is represented by 174 genera, 1110 species & 256 intraspecific taxa (Sanjappa 2020). Legumes are very important source of proteins in developing countries. In tropical and temperate region wild beans used in the manufacture of resins, tannins, oils, varnishes, paints, dyes, and medicines (LPWG 2017). Other than socio-economic importance legumes are equally beneficial for ecosystems and recycling via nitrogen uptake, enhance soil porosity, recycling of nutrients, decreasing soil pH, reduction of soil compaction and in rotation with cereals they offer a source of slow-fixation of nitrogen to sustainable cropping (USDA 1998; Popelka et al. 2004). In brief, it is economically important family for development of the region therefore present study focuses on preparation of checklist of legumes from Satmala hill range for future advancement.

MATERIAL & METHODS

Study Area

Satmala is well known hill range in Nashik district, Maharashtra, India. Due to low rainfall & hot climatic condition, the hill range harbour seasonal vegetation. The co-ordinates of hill range is 20.3902 °N & 73.9086 °E. This hill range consist many high peaks with elevation of more than 1,200 m. Some of them are Dhodap (1,451 m), Achala (1,238 m), Ahivant (1,226 m), Saptashrungigad (1,240 m), Markandya (1,331 m), Indrai (1,475 m), Sadetin Rodaga (1,350 m), Chandreshwari (1,300 m), and Rajdher (1,325 m). Major habitats on this hill range are slopes, exposed rock surfaces, grasslands, ephemeral flush vegetation, soil covered areas & seasonal ponds. Average rainfall recorded during last decades ranges 900–1,200 mm and temperature is 28–45 °C. The climate of these plateaus is dry throughout the year except during the south-west monsoon season.

Data collection

Preliminary checklist of taxa belonging to the family Fabaceae from Nashik district was prepared from all the available floras & checklists (Cherian & Pataskar 1969; Lakshminarasimhan & Sharma 1991; Singh & Karthikeyan 2001; Yadav & Dhanke 2010; Pawar & Pokle 2011; Auti et al. 2021). Studies on herbarium specimens was carried out by visiting some important herbaria such as BSI, CAL, DD, and SUK, which is followed by extensive & intensive field visits from June 2020 to January 2022. All important microhabitats were covered by conducting more than 45 field tours and data. on habit, life form, endemism, ethno botany, microhabitat, distribution, and flowering phenology was recorded. Three herbarium specimens were prepared for every collected taxa following standard herbarium methodology (Jain & Rao 1976). Identification of specimens was carried out using local & regional floras as well as all available taxonomic literature (Hooker 1876; Lakshminarasimhan & Sharma 1991; Naik 1998; Singh & Karthikeyan 2001; Yadav & Dhanke 2010). Some doubtful specimens identified by direct comparison with identified specimens deposited in BSI and CAL. Also digital images such as Kew herbarium catalogue (accessed from June 2020 to January 2022), JSTOR Global plants (accessed from June 2019 to February 2022) were consulted online. The names of species checked using POWO (Plants of the world online accessed from July 2020 to March 2022). All species were classified according to latest phylogenetic classification of leguminosae (LPWG 2017) and listed in Table 1. Study area map and pie diagram is provided for sub-family wise distribution of species. Colour photo plates of a few important taxa are given for easy identification (Images 1–3).

RESULTS

Checklist

A total of 69 species, four varieties, and one subspecies of family Fabaceae have been reported from Satmala hill range of Nashik district. All the species classified into three subfamilies of Fabaceae, viz., Cercidoideae, Caesalpinoideae, and Faboideae/Papilionoideae. Among these subfamilies, Faboideae or Papilionoideae is the largest subfamily with 59 taxa under 27 genera followed by subfamily Caesalpinoideae with 13 species and nine genera, subfamily cercidoideae with two species and two genera (Figure 2). *Crotalaria* L. is the largest genus with eight taxa, followed by *Alysicarpus* Desv. with seven taxa, *Indigofera* L. & *Vigna*

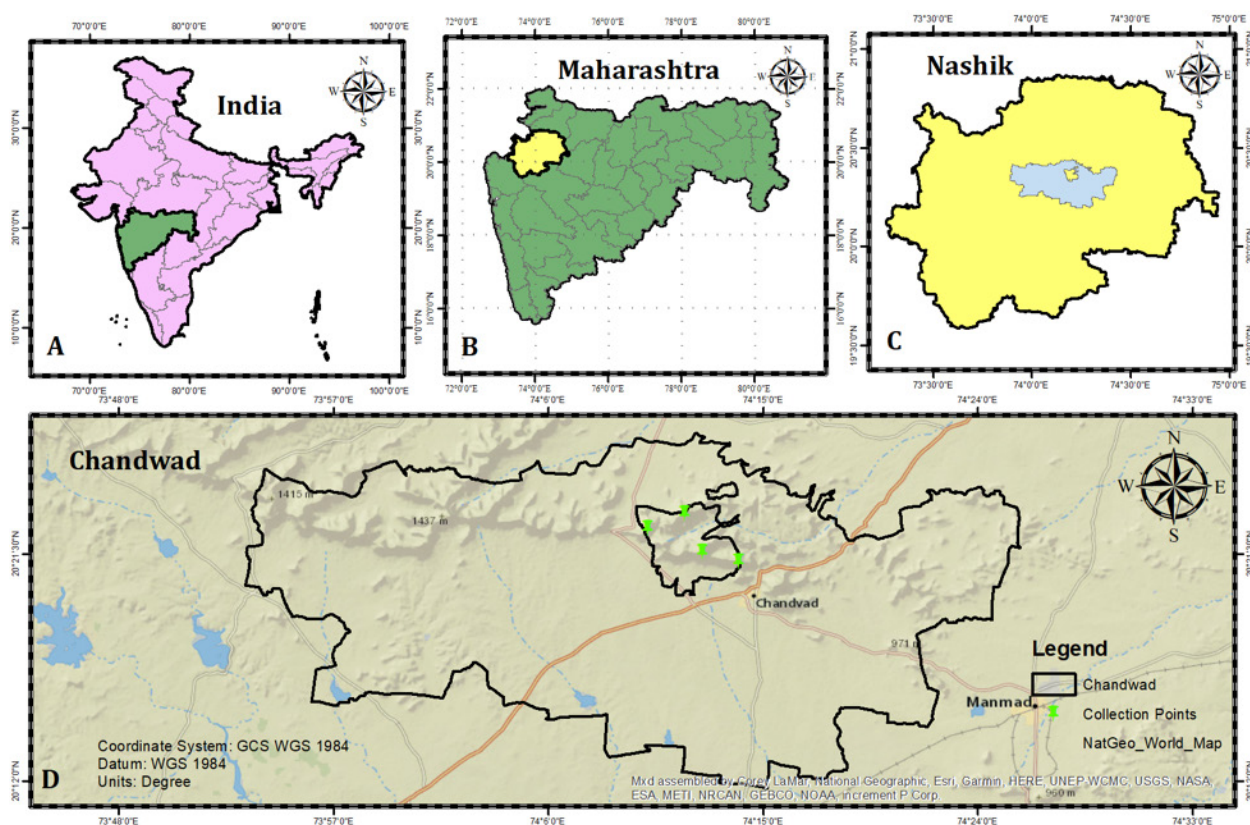


Figure 1. Study area: A—Position of Maharashtra in India | B—Position of Nashik in Maharashtra | C—Position of Chandwad in Nashik | D—Position of collection localities in Nashik district.

Savi with five taxa each. Fabaceae of Satmala hill range consists of 26 herbs, 21 shrubs, 14 trees, and 12 climbers. During field visits it is observed that Satmala hill range is dominated by species of Fabaceae family after family Poaceae.

Endemism

Few taxa are endemic to Peninsular India, viz., *Alysicarpus bupleurifolius* var. *hybridus* Burm.f. ex DC. found to be growing near edges of seasonal streams. *Alysicarpus pubescens* Law and *Cajanus sericeus* (Benth. ex Baker) Maesen were collected from soil rich areas on uppermost plateau. *Clitoria annua* J. Graham found to be growing inside bushes. It is observed that population of *Vigna khandalensis* (Santapau) Sundararagh. & Wadhwa is very small and restricted to uppermost plateau but *Vigna indica* T.M.Dixit, K.V.Bhat & S.R.Yadav is a dominant species found inside grasslands. *Indigofera glandulosa* var. *sykesii* Griff. ex Baker found to be growing on edges/cliffs of plateaus.

Ethno Medicine & Economics

Few wild legumes from study area used by local

people/community to cure ailments. The decoction made from the leaf powder of *Dichrostachys cinerea* (L.) Wight & Arn. used to cure common fever. Ringworms were cured by powdered seeds of *Senna sophora* (L.) Roxb. A juice made by leaves of *Guilandina bonduc* L. is taken to cure piles. Gum of *Butea monosperma* (Lam.) Kuntze used by tribal people in nearby villages to cure diarrhoea. Few plants are economically important, young pods of *Vigna indica* T.M.Dixit K.V.Bhat & S.R.Yadav are eaten as raw by local community & visitors directly. The leaves of *Senna tora* (L.) Roxb. used as a wild vegetable. The fruits of *Tamarindus indica* L. & *Pithecellobium dulce* (Roxb.) Benth. are edible. Also fruits of *Mucuna pruriens* (L.) DC. are used by tribal community as a wild vegetable. The whole plant of *Crotalaria medicaginea* Lam. is used as cattle feed. The seeds of *Crotalaria mysorensis* Roth used as manure. Dry pods of *Vachellia nilotica* (L.) P.H.J.Hurter are used to prepare tooth powder. *Aeschynomene virginica* (L.) Britton, Sterns & Poggenb., used as a fodder for milk cattle's. Timber of *Butea monosperma* (Lam.) Kuntze, *Tamarindus indica* L., *Cassia fistula* L., *Dalbergia sissoo* Roxb. ex DC, *Dichrostachys cinerea* (L.) Wight & Arn., *Pithecellobium dulce* (Roxb.) Benth., *Piliostigma*

Table 1. Checklist of Legumes from Satmala Hill Range as per latest classification of LPWG (2017).

	Botanical name	Vernacular name	Habit, habitat, life form	GPS coordinates		Phenology	Exsiccata
				Latitude	Longitude		
Subfamily: CERCIDOIDEAE (02 Genera & 02 Species)							
01	<i>Piliostigma malabaricum</i> (Roxb.) Benth.	Kanchan	Tree, Soil Rich Area, P	20.336 N	74.260 E	Nov–Feb	SDW-1160
02	<i>Tamarindus indica</i> L.	Chinch	Tree, Hill Slopes, P	20.353 N	74.233 E	Feb–Jun	SDW-1212
Subfamily: CAESALPINIOIDEAE (09 Genera & 13 Species)							
03	<i>Biancaea decapetala</i> (Roth) O.Deg	Chilar	Shrub, Edges of Seasonal Streams, P	20.336 N	74.259 E	Oct–Nov	SDW-1005
04	<i>Cassia fistula</i> L.	Bahawa	Tree, Hill Slopes, P	20.236 N	74.257 E	Jul–Sep	SDW-369
05	<i>Chamaecrista absCUS</i> (L.) H.S.Irwin & Barneby	Chimar	Herb, Soil Covered Area, T	20.359 N	74.260 E	Aug–Sep	SDW-173
06	<i>Chamaecrista mimosoides</i> (L.) Greene	Chinchani	Herb, Rock Crevices, T	20.386 N	74.195 E	Oct–Nov	SDW-922
07	<i>Guilandina bonduc</i> L.	Sagargota	Shrub, Edges of Seasonal Streams, P	20.336 N	74.257 E	Oct–Nov	SDW-1350
08	<i>Pithecellobium dulce</i> (Roxb.) Benth.	Vilayati chinch	Tree, Hill Slopes, P	20.360 N	74.207 E	Dec–Feb	SDW-1218
09	<i>Prosopis cineraria</i> (L.) Druce	Shami	Tree, Gravelly Hill Slopes, P	20.353 N	74.232 E	Mar–Apr	SDW-1214
10	<i>Senna auriculata</i> (L.) Roxb.	Tarvad	Shrub, Hill Slopes, P	20.335 N	74.257 E	Jan–Mar	SDW-1351
11	<i>Senna oxyphylla</i> (Kunth) H.S.Irwin & Barneby	Jangali takala	Shrub, Soil Rich Area, P	20.354 N	74.229 E	Sep–Oct	SDW-672
12	<i>Senna sophera</i> (L.) Roxb.	Jangali takala	Sub-Shrub, Hill Slopes, P	20.387 N	74.193 E	Aug–Sep	SDW-1353
13	<i>Senna tora</i> (L.) Roxb.	Takala	Herb, Hill Slopes, P	20.334 N	74.258 E	Jul–Dec	SDW-20
14	<i>Senegalia catechu</i> (L.f) P.J.H.Hurter & Mabb.	Khair	Tree, Hill Slopes, P	20.386 N	74.192 E	Feb–Sep	SDW-1167
15	<i>Vachellia nilotica</i> (L.) P.H.J.Hurter & Mabb.	Babhul	Tree, Hill Slopes, P	20.360 N	74.208 E	Mar–Dec	SDW-1356
Subfamily: FABOIDEAE (27 Genera & 59 Species)							
16	<i>Abrus precatorius</i> L.	Gunj	Climber, Inside Bushes, P	20.351 N	74.227 E	Sep–Dec	SDW-281
17	<i>Aeschynomene aspera</i> L.	Nalabi	Sub-Shrub, Edges of Seasonal Streams, T	20.361 N	74.208 E	Aug–Sep	SDW-149
18	<i>Alysicarpus bupleurifolius</i> (L.) DC	Shevara	Herb, Inside Grasses, T	20.356 N	74.225 E	Aug–Jan	SDW-610
19	<i>Alysicarpus bupleurifolius</i> var. <i>hybridus</i> Burm.f.ex DC.	Shevara	Herb, Edges of Seasonal Streams, T	20.356 N	74.225 E	Sep–Nov	SDW-165
20	<i>Alysicarpus heyneanus</i> Wight & Arn.	Shevara	Herb, Soil Rich Area, T	20.388 N	74.189 E	Sep–Nov	SDW-349
21	<i>Alysicarpus monilifer</i> (L.) DC.	Shevara	Herb, Soil Covered Area, T	20.356 N	74.220 E	Aug–Sep	SDW-607
22	<i>Alysicarpus pubescens</i> Law	Durangi Shevara	Herb, Soil Rich Area, T	20.388 N	74.189 E	Sep–Oct	SDW-195
23	<i>Alysicarpus tetragonolobus</i> Edgew	Lal Shevara	Herb, Hill Slopes, T	20.334 N	74.259 E	Jul–Aug	SDW-153
24	<i>Alysicarpus vaginalis</i> (L.) DC	Shevara	Herb, Exposed Rock Surfaces, T	20.355 N	74.219 E	Aug–Sep	SDW-121
25	<i>Butea monosperma</i> (Lam.) Kuntze	Palas	Tree, Cliffs, Hill Slopes, P	20.335 N	74.260 E	Feb–Jun	SDW-1357
26	<i>Cajanus sericeus</i> (Benth. ex Baker) Maesen	Reshami Tur	Shrub, Soil Rich Area, T	20.389 N	74.190 E	Oct–Feb	SDW-918
27	<i>Cajanus scarabaeoides</i> (L.) Thouars	Ran Tur	Climber, Inside Bushes, T	20.337 N	74.260 E	Oct–Nov	SDW-372
28	<i>Clitoria annua</i> J. Graham	Gokarn	Sub-Shrub, Soil Rich Area, P	20.338 N	74.258 E	Aug–Sep	SDW-1093
29	<i>Clitoria ternatea</i> L.	Nila Gokarn	Climber, Inside Bushes, C	20.356 N	74.219 E	Oct–Dec	SDW-1174
30	<i>Crotalaria bifaria</i> L.f	Nili godhadi	Herb, Inside Bushes, T	20.390 N	74.193 E	Oct–Nov	SDW-290
31	<i>Crotalaria gajureliana</i> Gholave, Madhav & Gosavi	Khulkhula	Herb, Soil Rich Area, T	20.386 N	74.195 E	Oct–Nov	SDW-919
32	<i>Crotalaria hebecarpa</i> (DC) Rudd	Piwali godhadi	Herb, Soil Rich Area, T	20.361 N	74.209 E	Jun–Oct	SDW-768

	Botanical name	Vernacular name	Habit, habitat, life form	GPS coordinates		Phenology	Exsiccata
				Latitude	Longitude		
33	<i>Crotalaria juncea</i> L	Tagada	Shrub, Soil Rich Area, T	20.339 N	74.258 E	Sep–Oct	SDW-764
34	<i>Crotalaria medicaginea</i> Lam.	Rangas	Shrub, Soil Rich Area, T	20.389 N	74.194 E	Sep–Dec	SDW-943
35	<i>Crotalaria mysorensis</i> Roth	Khulkhula	Sub-Shrub, Soil Rich Area, T	20.363 N	74.209 E	Sep–Oct	SDW-1072
36	<i>Crotalaria orixensis</i> Willd.	Andabel	Herb, Soil Rich Area, T	20.356 N	74.218 E	Oct–Nov	SDW-359
37	<i>Crotalaria triquetra</i> Dalzell	Ghati	Herb, Soil Rich Area, T	20.388 N	74.194 E	Sep–Oct	SDW-693
38	<i>Dalbergia sissoo</i> Roxb. ex DC.	Shisav	Tree, Hill Slopes, P	20.339 N	74.258 E	Sep–Feb	SDW-1358
39	<i>Desmodium dichotomum</i> (Willd.) DC.	Asud, Lupti	Herb, Gravelly Hill Slopes, T	20.338 N	74.258 E	Sep–Oct	SDW-701
40	<i>Desmodium gangeticum</i> (L.) DC.	Salwan	Herb, Gravelly Hill Slopes, T	20.352 N	74.220 E	Sep–Oct	SDW-841
41	<i>Dichrostachys cinerea</i> (L.) Wight & Arn.	Durangi Babhul	Tree, Hill Slopes, T	20.362 N	74.210 E	Dec–Jan	SDW-1168
42	<i>Dolichos trilobus</i> L.	Ran Pawata	Climber, Inside Bushes, C	20.338 N	74.257 E	Oct–Nov	SDW-688
43	<i>Erythrina stricta</i> Roxb.	Pangara	Tree, Hill Slopes, P	20.356 N	74.213 E	Jan–Mar	SDW-1301
44	<i>Gliricidia sepium</i> (Jacq.) Kunth	Undirmari	Tree, Hill Slopes, P	20.338 N	74.258 E	Jan–Feb	SDW-1227
45	<i>Indigofera cassioides</i> Rottler ex DC.	Baroli	Shrub, Inside Bushes, P	20.339 N	74.252 E	Jul–Oct	SDW-339
46	<i>Indigofera cordifolia</i> B. Heyne ex Roth	Godhadi	Herb, Rock Crevices, T	20.221 N	74.196 E	Sep–Oct	SDW-698
47	<i>Indigofera glandulosa</i> J.C.Wendl.	Barbaada	Herb, Soil Covered Area, T	20.338 N	74.254 E	Aug–Oct	SDW-227
48	<i>Indigofera glandulosa</i> var. <i>sykesii</i> Baker	Borupdi	Herb, Soil Covered Area, T	20.387 N	74.196 E	Aug–Oct	SDW-700
49	<i>Indigofera linifolia</i> (L.f) Retz.	Pandarphali	Herb, Rock Crevices, T	20.363 N	74.194 E	Aug–Sep	SDW-377
50	<i>Indigofera trifoliata</i> var. <i>duthiei</i> (J.Drumm. ex Naik) Sanjappa	Borupdi	Herb, Hill Slopes, T	20.355 N	74.212 E	Oct–Nov	SDW-600
51	<i>Macrotyloma uniflorum</i> (Lam.) Verdc.	Ran Kulid	Twining Herb, Gravelly Hill Slopes, C	20.337 N	74.254 E	Sep–Oct	SDW-231
52	<i>Mucuna pruriens</i> (L.) DC.	Kachkuyari	Climber, Edges of Seasonal Streams, P	20.356 N	74.211 E	Sep–Dec	SDW-1359
53	<i>Mundulea sericea</i> (Willd) A.Chev.	Supli	Shrub, Hill Slopes, P	20.386 N	74.196 E	May–Jun	SDW-02
54	<i>Paracalyx scariosus</i> (Roxb.) Ali	Kachquiri	Climber, Inside Bushes, P	20.357 N	74.210 E	Jan–Feb	SDW-1134
55	<i>Pongamia pinnata</i> (L.) Pierre	Karanj	Tree, Hill Slopes, P	20.341 N	74.258 E	Mar–May	SDW-1314
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57	<i>Rhynchosia rothii</i> Benth. ex Aitch.	Motha Ranghevada	Climber, Inside Bushes, T	20.339 N	74.257 E	Sep–Dec	SDW-308
58	<i>Sesbania bispinosa</i> (Jacq.) W.Wight	Ran Sevari, Hadga	Tree, Edges of Seasonal Streams, P	20.362 N	74.211 E	Nov–Dec	SDW-566
59	<i>Smithia bigemina</i> Dalzell	Lahan Kavala	Herb, Moist Places, T	20.356 N	74.211 E	Sep–Oct	SDW-206
60	<i>Smithia sensitiva</i> Aiton	Motha Kavala	Herb, Edges of Seasonal Streams, T	20.336 N	74.259 E	Oct–Dec	SDW-275
61	<i>Stylosanthes fruticosa</i> (Retz.) Alston		Herb, Rock Crevices, T	20.340 N	74.263 E	Sep–Oct	SDW-269
62	<i>Tephrosia purpurea</i> (L.) Pers.	Unhali	Sub-Shrub, Hill Slopes, P	20.353 N	74.233 E	Jul–Aug	SDW-13
63	<i>Tephrosia senticosa</i> Pers.	Unhali	Sub-Shrub, Gravelly Hill Slopes, P	20.385 N	74.195 E	Jul–Aug	SDW-881
64	<i>Tephrosia villosa</i> (L.) Pers.	Unhali	Sub-Shrub, Hill Slopes, P	20.352 N	74.222 E	Jul–Aug	SDW-12
65	<i>Teramnus mollis</i> Benth.	Ran udid	Climber, Inside Bushes, C	20.391 N	74.222 E	Oct–Nov	SDW-391
66	<i>Teramnus repens</i> subsp. <i>gracilis</i> (Chiov.) Verdc.	Ran udid	Climber, Inside Bushes, C	20.361 N	74.210 E	Nov–Dec	SDW-1105
67	<i>Vigna indica</i> T.M. Dixit, K.V. Bhat & S.R.Yadav	Ran mug	Climber, Soil Covered Area, C	20.384 N	74.196 E	Aug–Sep	SDW-118
68	<i>Vigna khandalensis</i> (Santapau) Sundararagh. & Wadhwa	Bud mung	Shrub, Exposed Rock Surfaces, T	20.335 N	74.256 E	Sep–Oct	SDW-836

	Botanical name	Vernacular name	Habit, habitat, life form	GPS coordinates		Phenology	Exsiccata
				Latitude	Longitude		
69	<i>Vigna mungo</i> (L.) Hepper	Udid	Creeping Herb, Soil Covered Area, T	20.360 N	74.210 E	Sep–Oct	SDW-184
70	<i>Vigna radiata</i> (L.) Wilczek.	Mukani	Creeping Herb, Soil Rich Area, T	20.385 N	74.197 E	Oct–Dec	SDW-328
71	<i>Vigna radiata</i> var. <i>sublobata</i> (Roxb.) Verdc.	Mug	Creeping Herb, Moist Soil Covered Area, T	20.384 N	74.198 E	Oct–Nov	SDW-1112
72	<i>Vigna vexillata</i> (L.) A. Rich	Halunda	Climber, Inside Bushes, C	20.335 N	74.264 E	Sep–Oct	SDW-590
73	<i>Zornia diphylla</i> (L.) Pers.	Jimgari	Herb, Rock crevices, T	20.336 N	74.255 E	Aug–Sep	SDW-302
74	<i>Zornia gibbosa</i> Span.	Landgu	Herb, Hill Slopes, T	20.349 N	74.228 E	Aug–Sep	SDW-126

SP—Sadetin Rodaga Plateau | CP—Chandreshwari Plateau | KP—Koldher Plateau | RP—Rajdher Plateau | IP—Indrai Plateau | DP—Dhodap Plateau | P—Phanerophyte | T—Therophyte | C—Chamaephytes.

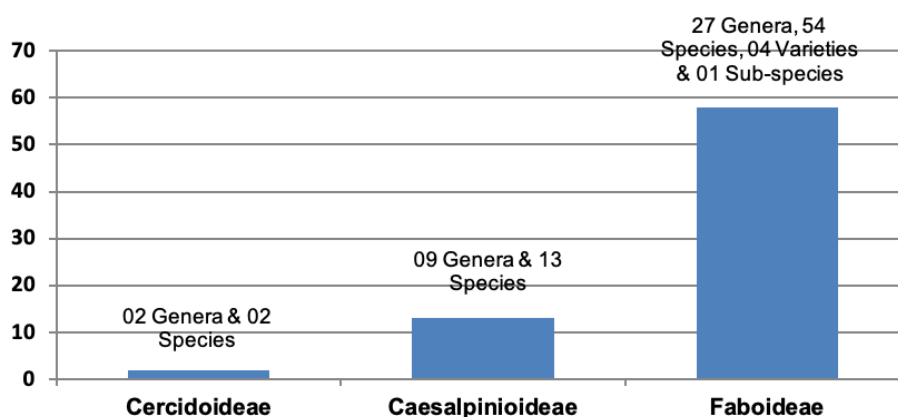


Figure 2. Subfamily wise distribution of species as per LPWG 2017.

malabaricum (Roxb.) Benth, *Prosopis cineraria* (L.) Druce, *Pongamia pinnata* (L.) Pierre, *Senegalia catechu* (L.f) P.J.H.Hurter & *Vachellia nilotica* (L.) P.H.J.Hurter are often used for construction purposes. The seeds of few plants such as *Dalbergia sissoo* Roxb. ex DC., *Cassia fistula* L., *Erythrina stricta* Roxb., and *Butea monosperma* (Lam.) Kuntze collected by local people to grow saplings in their garden.

CONCLUSION

The family Fabaceae Lindl. is the second largest family after Poaceae due to its high adaptability on various microhabitats. Many species of Fabaceae are good source of ethno medicine, timber, and wild edible. Some herbaceous members belonging to the genus, *Chamaecrista* Moench, *Alysicarpus* Desv, *Crotalaria* L., *Desmodium* Desv, *Indigofera* L., *Senna* Mill., are dominant inside grasslands while some such as *Piliostigma* Hochst, *Tamarindus* Tourn. ex. L., *Cassia* L., *Prosopis* L., *Vachellia* Wight & Arn., *Butea* Roxb. ex

Willd., *Dichrostachys* (A.Dc.) Wight & Arn., *Dalbergia* L.f, *Senegalia* Raf., *Guilandina* L., *Vachellia* Wight & Arn, *Pongamia* Adans. are dominant in dry deciduous forest cover the hill slopes. Few endemic species such as *Vigna khandalensis* (Santapau) Sundararagh. & Wadhwa, *Alysicarpus pubescens* Law, *Crotalaria juncea* L., and *Cajanus sericeus* (Benth. ex Baker) Maesen restricted to uppermost plateau only. Few legumes, *Sesbania bispinosa* (Jacq.) W.Wight & *Smithia sensitiva* Aiton are restricted to edges of seasonal streams only. According to the IUCN Red List of Threatened Species, 27 species were 'Least Concern' and one species is 'Near Threatened'. It is observed that major threats to these species are over grazing & human interference. So there is urgent need to conserve these special habitats for sustainable utilization of legumes from study area.

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Image 1. A —*Abrus precatorius* L. | B— *Aeschynomene aspera* L. | C—*Alysicarpus bupleurifolius* (L.) DC. | D—*Alysicarpus heyneanus* Wight & Arn. | E—*Alysicarpus pubescens* Law | F—*Cajanus sericeus* (Benth. ex Baker) Maesen | G— *Cajanus scarabaeoides* (L.) Thouars | H— *Clitoria annua* J. Graham | I—*Clitoria ternatea* L. | J—*Crotalaria hebecarpa* (DC) Rudd. | K—*Crotalaria juncea* L. | L— *Crotalaria mysorensis* Roth | M—*Desmodium dichotomum* (Willd.) DC. | N— *Desmodium gangeticum* (L.) DC | O— *Dichrostachys cinerea* (L.) Wight & Arn. | P— *Erythrina stricta* Roxb. © Swapnil D. Wagh.

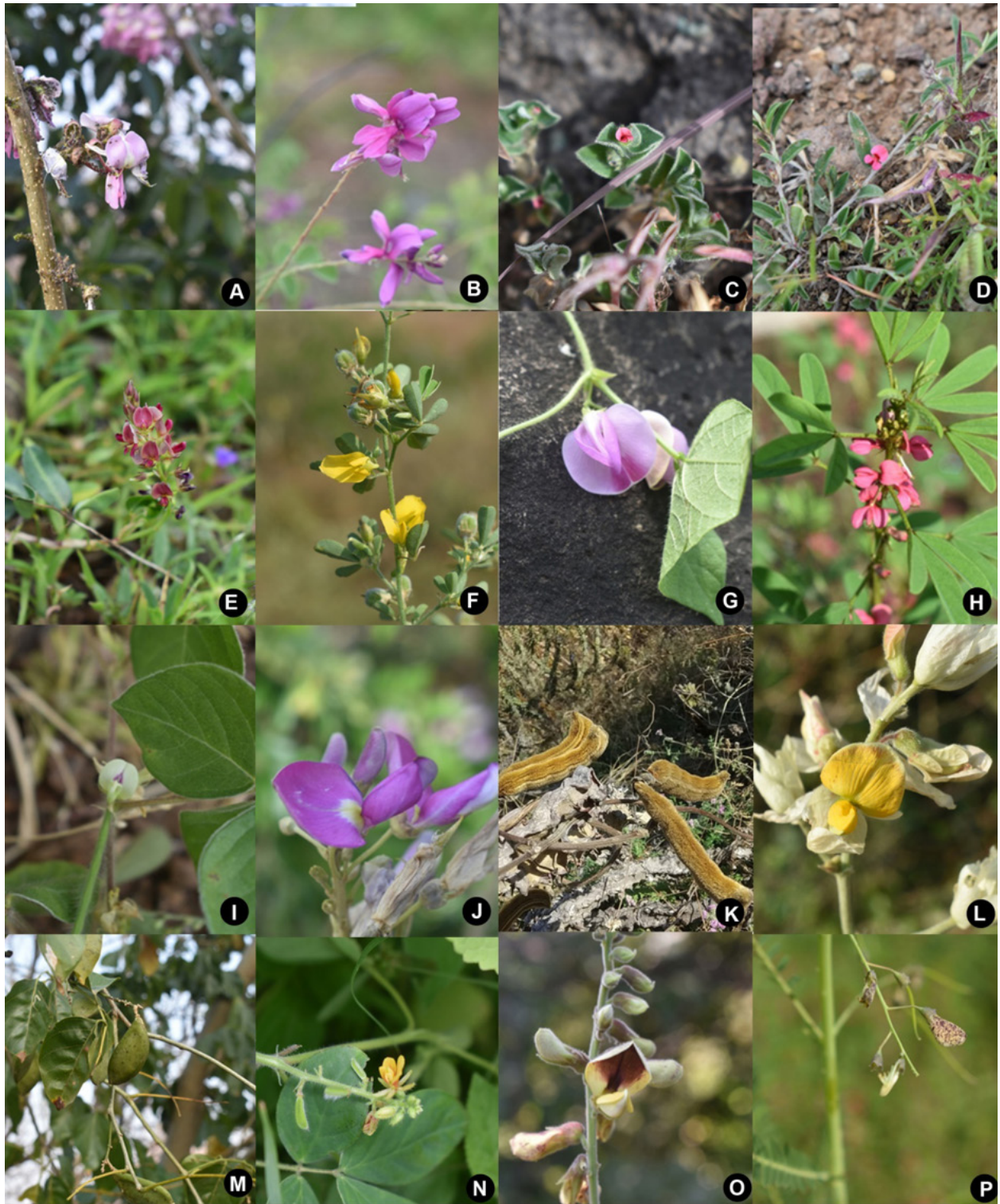


Image 2. A—*Gliricidia sepium* (Jacq.) Kunth | B—*Indigofera cassioides* Rottler ex DC. | C—*Indigofera cordifolia* B. Heyne ex Roth | D—*Indigofera linifolia* (L.f) Retz. | E—*Alysicarpus vaginalis* (L.) DC | F—*Crotalaria medicaginea* Lam. | G—*Dolichos trilobus* L. | H—*Indigofera trifoliata* var. *duthiei* (J.Drumm. ex Naik) Sanjappa | I—*Macrotyloma uniflorum* (Lam.) Verdc. | J—*Mundulea sericea* (Willd) A. Chev. | K—*Mucuna pruriens* (L.) DC. | L—*Paracalyx scariosus* (Roxb.) Ali | M—*Pongamia pinnata* (L.) Pierre | N—*Rhynchosia minima* (L.) DC | O—*Rhynchosia rothii* Benth. ex Aitch. | P—*Sesbania bispinosa* (Jacq.) W. Wight. © Swapnil D. Wagh.

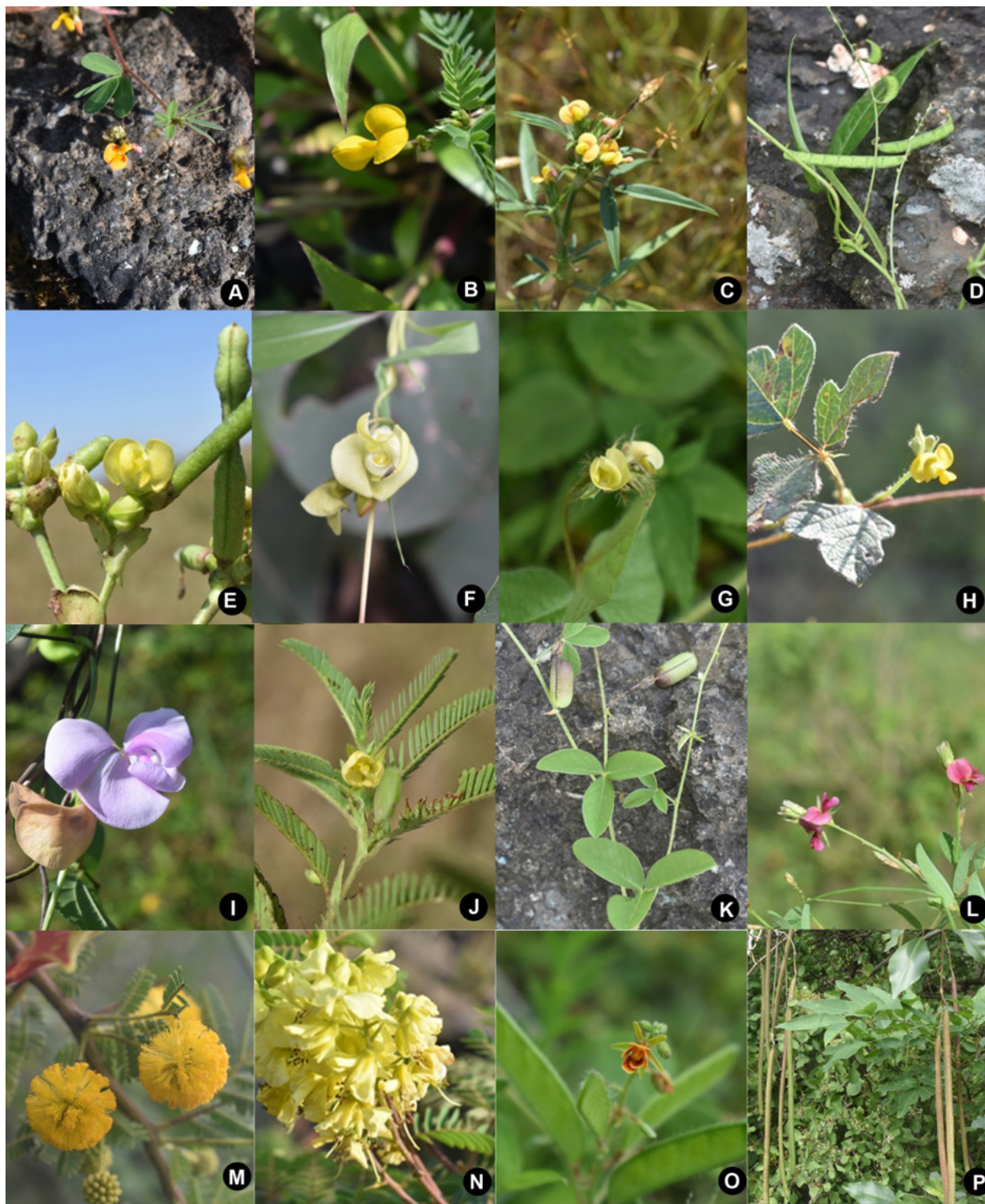


Image 3. A—*Smithia bigemina* Dalzell | B—*Smithia sensitiva* Aiton | C—*Stylosanthes fruticosa* (Retz.) Alston | D—*Teramnus mollis* Benth. | E—*Vigna khandalensis* (Santapau) Sundararagh. & Wadhwa | F—*Vigna radiata* (L.) Wilczek. | G—*Vigna mungo* (L.) Hepper | H—*Vigna indica* T.M. Dixit, K.V. Bhat & S.R.Yadav | I—*Vigna vexillata* (L.) A. Rich | J—*Chamaecrista mimosoides* (L.) Greene | K—*Crotalaria orixensis* Willd. | L—*Alysicarpus monilifer* (L.) DC. | M—*Vachellia nilotica* (L.) P.H.J.Hurter & Mabb. | N—*Biancaea decapetala* (Roth) O.Deg | O—*Chamaecrista abscus* (L.) H.S.Irwin & Barneby | P—*Cassia fistula* L. © Swapnil D. Wagh.

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