

ADDITIONS TO THE PAPILIONACEOUS FLORA OF PACHMARHI HILLS, MADHYA PRADESH

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ABSTRACT

Thirty nine species of Papilionaceae are reported for the first time from Pachmarhi in Madhya Pradesh. This makes a total record of 99 species (103 taxa) of Papilionaceous plants from the region. As many as 9 species, namely, *Argyrobium flacidum*, *Atylosia kulnensis*, *Desmodium floribundum*, *D. maculatum*, *Flemingia fruticulosa*, *Phaseolus velutinus*, *Shuteria vestita*, *Sophora mollis* and *Teramnus mollis* are new records for Madhya Pradesh. This fully justifies the need for intensive floristic surveys of the restricted regions for compilation of Flora of India.

INTRODUCTION

Brandis and Stewart (1874) and Mukherjee (1923) made preliminary observations on the flowering plants of Pachmarhi hills in Madhya Pradesh. But a detailed account of the angiospermic flora of the region has only been provided by Seshagiri Rao and Narayanaswamy (1960), Kapoor and Yadav (1962) and Saxena (1971). According to Seshagiri Rao and Narayanaswamy (1960) the family Papilionaceae (Fabaceae) with 40 species (41 taxa) is one of the dominant families of flowering plants of Pachmarhi, Khandwa-Asirgarh and Chindwara-Betul zones. However, from the Pachmarhi zone alone which includes Mahadev hill also, only 23 taxa are recorded by these workers (Seshagiri Rao and Narayanaswamy, 1960). Later, Kapoor and Yadav (1962) added 15 species of the family to the list. Panigrahi and Singh (1967) while dealing with the family Leguminosae from Madhya Pradesh, recorded the occurrence of only 10 Papilionaceous taxa from Pachmarhi. Of these, one taxon was a new record over the previous reports. Recently, 18 more species have been recorded by Saxena (1971) and an addition of 3 species (out of a total 27 reported

exclusively from Pachmarhi while discussing the phytogeography of Legumes of Madhya Pradesh) is made by Tiwari (1979). This makes a total tally of 60 species of the family from this region prior to the present studies.

COLLECTIONS

Extensive surveys of Pachmarhi Plateau and adjoining areas between 200-1,100 m altitude carried out by the authors during the months of June to November in the years 1972-1975 as a consequence of cytogenetical studies on the legumes of the region, have revealed the presence of as many as 87 species (90 taxa) of Papilionaceous plants within the Pachmarhi zone. Amongst our collections, the following 50 taxa are common with the previous records of Seshagiri Rao and Narayanaswamy (1960), Kapoor and Yadav (1962), Panigrahi and Singh (1967), Saxena (1971) and Tiwari (1979).

Abrus precatorius Linn., *Alysicarpus bupleurifolius* (Linn.) DC. var. *gracilis* Baker, *Atylosia scarabaeoides* Benth., *Butea monosperma* (Lam.) Taub., *B. superba* Roxb., *Crotalaria albida* Heyne ex Roth, *C. hirsuta* Willd., *C. juncea* Linn., *C. linifolia* Linn. f., *C. medicaginea* Lamk. var. *luxurians* Baker,

C. prostrata Roxb., *C. pusilla* Heyne ex Roth, *C. sericea* Retz., *Dalbergia lanceolaria* Linn. f., *D. paniculata* Roxb., *D. sisso* Roxb. ex DC., *Desmodium dichotomum* DC., *D. gangeticum* DC., *D. heterocarpon* (L.) DC. [= *D. polycarpum* (Poiret) DC.], *D. laxiflorum* DC., *D. motorium* (Houtt.) Merr. [= *D. gyrans* (Linn. f.) DC.], *D. triflorum* (Linn.) DC., *Derris indica* (Lam.) Bennett (= *Pongamia glabra* Vent), *Eleiotis sororia* DC., *Erythrina stricta* Roxb., *E. suberosa* Roxb., *Flemingia semialata* Roxb., *Indigofera cassioides* Rottl. ex DC. (= *I. pulchella* Roxb.), *I. linifolia* (L. f.) Retz., *I. linnaei* Ali (= *I. enneaphylla* Linn.), *I. trita* Linn. f., *Millettia auriculata* Baker, *Ougeinia delbergioides* Benth., *Phaseolus aureus* Roxb., *P. mungo* Linn., *P. pauciflorus* Dalz., *P. sublobatus* Roxb., *Pterocarpus marsupium* Roxb., *Pueraria tuberosa* DC., *Smithia bigemina* Dalz., *S. conferta* Sm., *Sophora interrupta* Bedd., *Tephrosia hamiltonii* Drum., *T. purpurea* (L.) Pers., *Teramnus labialis* Spreng., *Uraria hamosa* Wall., *Vigna umbellata* (Thunb.) Ohwi & Ohashi (= *P. calcaratus* Roxb.), *V. unguiculata* (L.) Walp ssp. *unguiculata* (= *Dolichos biflorus* Linn.), *V. vexillata* (L.) Ritch. and *Zornia diphylla* (Linn.) Pers.

The remaining 40 taxa (39 species and one variety) as enumerated below, are new records for Pachmarhi zone. The voucher specimens are preserved in the Herbarium of the Department of Botany, Punjabi University, Patiala (PUN). Field collection number/s in each case is/are mentioned after flowering period.

ENUMERATION OF NEW RECORDS*

Aeschynomene indica Linn. Sp. Pl.: 173 (1753); Baker in Fl. Brit. India 2: 151

(1876); Tiwari in Phyto-Geog. Legumes (M.P.): 315 (1979).

Common in marshy areas at Matkuli. Flowers: August. *Santosh* 3173.

Alysicarpus bupleurifolius (Linn.) DC. Prodr. 2: 352 (1825); Baker in Fl. Brit. India 2: 158 (1876); Tiwari in Phyto-Geog. Legumes (M.P.): 335 (1979).

Common in moist grassy areas between 1,000-1,100 m. Flowers: September. *Santosh* 3162.

A. longifolius Wt. & Arn. Prodr. Pen. Ind. Or.: 233 (1834); Baker in Fl. Brit. India 2: 159 (1876); Tiwari in Phyto-Geog. Legumes (M.P.): 336 (1979).

An occasional herb met within lawns of Chushul Coy. Flowers: October. *Santosh* 3319.

A. monilifer (L.) DC. Prodr. 2: 353 (1825); Baker in Fl. Brit. India 2: 157 (1876); Tiwari in Phyto. Geog. Legumes (M.P.): 336 (1979).

Common in sandy areas at Matkuli. Flowers: September. *Santosh* 3165.

A. procumbens (Roxb.) Schindler in Fedde. Rep. 21: 11. t. 43 (1925); Syn. of *A. hamosus* Edgew. Cat. Banda Pl. 47 (1852) in: Baker in Fl. Brit. India 2: 157 (1876); Tiwari in Phyto-Geog. Legumes (M.P.): 337 (1979).

Grows wild in grassy areas near Holiday Home. Flowers: August. *Santosh* 3163.

A. rugosus (Willd.) DC. var. **heyneanus** Baker in Fl. Brit. India 2: 159 (1876); Tiwari in Phyto-Geog. Legumes (M.P.): 357 (1979).

Grows only near Matkuli. Flowers: September. *Santosh* 3320.

A. vaginalis (Linn.) DC. var. **nummularifolius** Baker in Fl. Brit. India 2: 158

*Localities with the altitude, where collections were made are :

Pachmarhi : Mahadev, 1,050 m ; Pachmarhi plateau, 1,050 m ; Chushul Coy, 1,000 m ; Holiday Home, 1,000 m ; Jata Shankar, 1,000 m ; Bindrabani Khud, 1,000 m ; Bari Aam, 1,000 m ; Fairy Pool, 990 m ; Jamboo Deep Khud, 980 m ; Little Fall, 970 m ; Fancy Pool, 950 m ; Mandadev, 950 m ; Be Fall, 900 m ; Down Fall, 900 m ; Duchess Fall, 900 m ; Patharchatta, 900 m ; Big Fall, 850 m ; Sangam, 800 m ; Tridhara, 700 m ; Dhana, 300 m ; Singanama, 210 m ; Matkuli, 200 m ; Dokhra Kheri, 200 m ; Denwa river bank, 200 m.

Chindwara : Patial Kot, 150 m and Tamia, 600 m.

(1876); Tiwari in Phyto-Geog. Legumes (M. P.): 339 (1979).

Growing wild in marshy areas near Matkuli. Flowers: September-October. *Santosh* 3164.

****Argyrolobium flaccidum** (Royle) Jaub. & Spach in Ann. Sc. Nat. Ser.: 2 (19): 48 (1843); Baker in Fl. Brit. India 2: 63 (1876).

Common along the way to Be Fall. Flowers: September. *Santosh* 3315.

****Atylosia kulnensis** Dalz. in Jour. Linn. Soc. 8: 186 (1873); Baker in Fl. Brit. India 2: 214 (1876).

Rare. Grows in fallow fields at Matkuli. Flowers: September. *Santosh* 3321.

A. platycarpa Benth. in Miq. Pl. Jungh.: 243 (1852); Baker in Fl. Brit. India 2: 216 (1876); Tiwari in Phyto-Geog. Legumes (M. P.): 373 (1979).

Common in the open forests near Jata Shankar. Flowers: September. *Santosh* 4183.

Crotalaria medicaginea Lamk. Encyc. 2: 201 (1786); Baker in Fl. Brit. India 2: 81 (1876); Tiwari in Phyto-Geog. Legumes (M. P.): 280 (1979).

A prostrate herb met with on way to Fancy Pool with many branches arising from the common root stock. Quite different in appearance from *C. medicaginea* var. *luxurians*. Flowers: August-September. *Santosh* 3323.

C. mysorensis Roth. Nov. Pl. Sp.: 338 (1826); Baker in Fl. Brit. India 2: 70 (1876); Tiwari in Phyto-Geog. Legumes (M. P.): 281 (1979).

A dominant element of the undergrowth vegetation at Matkuli. Flowers: September. *Santosh* 3158.

C. orixensis Rottl. Ges. Naturf. Fr. Neue Schr. 4: 217 (1803); Baker in Fl. Brit.

India 2: 83 (1876); Tiwari in Phyto-Geog. Legumes (M. P.): 281 (1979).

Rare, only grows in the fallow fields at Matkuli. Flowers: September. *Santosh* 3160.

G. sessiliflora Linn. Sp. Pl. 2: 1004 (1763); Baker in Fl. Brit. India 2: 73 (1876); Tiwari in Phyto-Geog. Legumes (M. P.): 283 (1979).

A robust herb appearing in July around Fairy Pool. Flowers: September. *Santosh* 3316.

****Desmodium floribundum** G. Don. Gen. Syst. 2: 297 (1832); Baker in Fl. Brit. India 2: 167 (1876).

Occasionally met with on way to Big Fall. Flowers: October. *Santosh* 3318.

D. latifolium DC. Prodr. 2: 327 (1825); Baker in Fl. Brit. India 2: 166 (1876); Syn. of *D. velutinum* (Willd.) DC. Prodr. 2: 328 (1825) in: Tiwari in Phyto-Geog. Legumes (M. P.): 329 (1979).

Uncommon shrub growing at Matkuli. Flowers: September. *Santosh* 3344.

****D. maculatum** DC. Prodr. 2: 328 (1825); Syn. *D. gangeticum* DC. var. *maculatum* Baker in Fl. Brit. India 2: 168 (1876).

A trailing herb with simple leaves, growing abundantly at Matkuli. Flowers: August-September. *Santosh* 3381.

D. rufescens DC. in Ann. Sc. Nat. Ser. I. 4: 101 (1825); Baker in Fl. Brit. India 2: 171 (1876); Syn. of *D. ferrugineum* Wall. ex Thw. Raizada: 308 (1966) in: Tiwari in Phyto-Geog. Legumes (M. P.): 324 (1979). Rare, met with along the way to Big Fall. Flowers: October. *Santosh* 3317.

****Flemingia fruticulosa** Wall. ex Bth. in Miq. Fl. Jungh: 245 (1852); Syn. *F. strobilifera* var. *fruticulosa* Baker in Fl. Brit. India 2: 227 (1876); Nasir and Ali in Flora of West Pakistan: 404 (1972).

Common in forests near Be Fall. Flowers: September. *Santosh* 3378.

Indigofera cordifolia Heyne ex Roth, Nov. Pl. Sp.: 357 (1821); Baker in Fl. Brit.

****New record for Madhya Pradesh as determined on the basis of previous reports of Seshagiri Rao and Narayanaswamy (1960), Kapoor and Yadav (1962), Panigrahi and Singh (1967), Saxena and Shukla (1970), Saxena (1971) and Tiwari (1979).**

- India 2: 93 (1876); Tiwari in Phyto-Geog. Legumes (M. P.): 296 (1979).
A prostrate hairy annual growing in sandy areas at Matkuli. Flowers: September. *Santosh* 3153.
- I. echinata** Willd. Sp. Pl.: 1222 (1802); Baker in Fl. Brit. India 2: 92 (1876); Syn. *I. nummularifolia* (L.) Livera in: Tiwari in Phyto-Geog. Legumes (M. P.): 300 (1979). Rare, found only on way to Little Fall. Flowers: September. *Santosh* 3154.
- I. glandulosa** Roxb. ex Willd. Sp. Pl. 3: 1227 (1802); Baker in Fl. Brit. India 2: 94 (1876); Tiwari in Phyto-Geog. Legumes (M. P.): 297 (1979).
A herb with all the parts gland dotted. Growing around Matkuli. Flowers: August. *Santosh* 3151.
- I. hirsuta** Linn. Sp. Pl.: 751 (1753); Baker in Fl. Brit. India 2: 98 (1876); Tiwari in Phyto-Geog. Legumes (M. P.): 298 (1979).
Common in sandy areas at Matkuli with hairy pods. Flowers: August. *Santosh* 3313.
- I. hochstetteri** Baker in Oliver, Fl. Trop. Afr. 2: 101 (1871); Syn. *I. anabaptista* Steud. ex Baker in Fl. Brit. India: 2: 102 (1876); Tiwari in Phyto-Geog. Legumes (M. P.): 298 (1979).
A twining herb at Matkuli. Flowers: October. *Santosh* 3390.
- I. pentaphylla** Linn. Sp. Pl.: 751 (1753); Baker in Fl. Brit. India 2: 95 (1876); Syn. of *I. glabra* L. Sp. Pl. 751 (1753) in: Tiwari in Phyto-Geog. Legumes (M. P.): 297 (1979).
A small herb with red coloured stem, growing on way to Fancy Pool. Flowers: August. *Santosh* 3375.
- I. tinctoria** Linn. Sp. Pl.: 751 (1753); Baker in Fl. Brit. India 2: 99 (1876); Tiwari in Phyto-Geog. Legumes (M. P.): 302 (1979).
Commonly growing undershrub along the way to Tridhara. Flowers: July. *Santosh* 3149.
- I. trifoliata** Linn. Cent. Pl. 2: 29 (1756); Baker in Fl. Brit. India 2: 96 (1876); Tiwari in Phyto-Geog. Legumes (M. P.): 302 (1979).
A small herb growing among grasses near Bari Aam. Flowers: August. *Santosh* 4180.
- **Phaseolus velutinus** Grah. in Wall. Cat. n.: 5615 (1831); Baker in Fl. Brit. India 2: 204 (1876).
A shrub climbing on the bushes near Down Fall. Flowers: October. *Santosh* 4194.
- Rhynchosia bracteata** Benth. ex Baker in Fl. Brit. India 2: 225 (1876); Tiwari in Phyto-Geog. Legumes (M. P.): 376 (1979).
Common, shade loving creeper on the Pachmarhi Plateau. Flowers: August. *Santosh* 3311.
- R. capitata** DC. Prodr. 2: 386 (1825); Syn. of *R. aurea* DC. Prodr. 3: 386 (1828) in: Baker in Fl. Brit. India 2: 221 (1876); Tiwari in Phyto-Geog. Legumes (M. P.): 376 (1979).
A creeper with hairy pods, grows in grasslands between 200-1,000 m. Flowers: August-September. *Santosh* 3132.
- R. minima** (L.) DC. Prodr. 2: 385 (1825); Baker in Fl. Brit. India 2: 223 (1876); Tiwari in Phyto-Geog. Legumes (M. P.): 377 (1979).
A trailing herb, grows among grasses between 800-1,000 m. Flowers: July-August. *Santosh* 3389.
- R. sericea** Spanoghe in Linnaea 15: 195 (1841) non Gill ex Hk. & Arn. (1833); Baker in Fl. Brit. India 2: 225 (1876); Tiwari in Phyto-Geog. Legumes (M. P.): 377 (1979).
A herb growing luxuriantly on way to Mahadev. Flowers: September. *Santosh* 3312.
- Sesbania bispinosa** (Jacq.) Fawcett & Rendle Fl. Jam. 4: 24 (1920); Syn. of *S. aculeata* Pers. Syn. 2: 316 (1807) in: Baker in Fl. Brit. India 2: 114 (1876); Tiwari in Phyto-Geog. Legumes (M. P.): 311 (1979).
An erect spiny shrub. Two populations distinguished on Flower character with yellow and yellow dotted brown coloured corol-

la, collected from Matkuli. Distinct like var. *sesban* and var. *picta* of *S. sesban*. Flowers: September. *Santosh* 3137, 3138.

****Shutteria vestita** W. & A. Prodr.: 207 (1834); Baker in Fl. Brit. India 2: 181 (1876); Saldanha & Nicolson in Fl. Hassan Distt., Karnataka, India: 263 (1976).

A climber, abundantly growing in Bindra-ban Khud. Flowers: March-April. *Santosh* 4196.

****Sophora mollis** Grah. in Wall. Cat.: 5335 (1828); Baker in Fl. Brit. India 2: 251 (1876); Parker in Forest Flora for the Punjab with Hazara and Delhi: 168 (1973).

A dominating shrub found in the forests on way to Sangam. Flowers: July-October. *Santosh* 3171.

Tephrosia pumila Pers. Syn. Pl. 230 (1806); Syn. *T. purpurea* Pers. var. *pumila* Baker in Fl. Brit. India 2: 113 (1876); Tiwari in Phyto-Geog. Legumes (M. P.): 306 (1979).

A prostrate herb with white flowers growing at Matkuli. Flowers: August-September. *Santosh* 4163.

T. strigosa (Dalz.) Sant. & Mahesh. in J. Bomb. Nat. Hist. Soc. 54 (3): 905 (1957); Syn. of *T. tenuis* Wall. Cat. n. 5970 (1831) in: Baker in Fl. Brit. India 2: 111 (1876); Tiwari in Phyto-Geog. Legumes (M. P.) 307 (1979).

Common herb with papery stiff pods, collected from Matkuli. Flowers: October. *Santosh* 3388.

****Teramnus mollis** Benth. in Jour. Linn. Soc. Bot. 8: 265 (1865); Syn. *T. labialis* Spreng. var. *mollis* Baker in Fl. Brit. India 2: 184 (1876); Nasir and Ali in Flora of West Pakistan: 422 (1972).

An occasional climber with white flowers covering the canopy of trees near Matkuli. Flowers: September. *Santosh* 3168.

Uraria picta Desv. ex. DC. Prodr. 2: 324 (1825); Baker in Fl. Brit. India 2: 155 (1876); Tiwari in Phyto-Geog. Legumes (M. P.): 332 (1979).

A shrub with coriaceous leaves with or without white patches along midrib region, growing at Matkuli. Flowers: September. *Santosh* 3174.

Further, some specimens (*Santosh* 4176) having close morphological similarities with *Indigofera trifoliata* but with rectangular pods were also collected from Matkuli. These flower in September-October. The taxonomic status of this taxon is being assessed.

In addition, two species, namely *Clitoria biflora* Dalz. and *Dalbergia latifolia* Roxb. are collected for the first time from Chindwara zone. These were also not reported earlier from Pachmarhi zone.

COMMENTS*

Out of our new records from Pachmarhi zone seven species are previously known from other regions of Madhya Pradesh. These are 4 species [*Indigofera hirsuta* Linn., *I. trifoliata* Linn., *I. trita* Linn. and *Tephrosia strigosa* (Dalz.) Sant. & Mahesh.] from Chindwara and 3 species [*Alysicarpus bupleurifolius* (Linn.) DC., *Indigofera glandulosa* Willd. and *Rhynchosia minima* (L.) DC.] from Khandwa (Seshagiri Rao and Narayanaswami, 1960). However, both these regions are quite far away from Pachmarhi Plateau, Chindwara at a distance of about 80 km and Khandwa about 200 km.

In spite of our extensive surveys, among the previously recorded species, we could not locate 11 species from Pachmarhi zone [*Alysicarpus vaginalis* (Linn.) DC., *Calpurnea aurea* Baker, *Flemingia bracteata* Wt., *F. strobilifera* (L.) Ait, *Galactia villosa* Wt. & Arn. (Seshagiri Rao and Narayanaswamy, 1960); *Desmodium rotundifolium* Baker (Kapoor and Yadav, 1962); *Dalbergia volubilis* Roxb. (Panigrahi and Singh, 1967) and *Crotalaria nana* Burm. f., *Galactia tenuiflora* (Willd.) Wt. & Arn., *Smithia pycnantha* Benth. ex Baker, *Vigna trilobata* (L.) Verdcourt (= *Phaseolus trilobus* sensu Ait.) (Saxena, 1971)]. These may have been ex-

tirpated from the region because of new encroachments on the forests on account of lumbering, cultivation and road building activities.

However, after counting the above 11 species, the total number of Papilionaceous members from Pachmarhi Hills and the adjoining areas comes to 101 taxa (97 species and 4 varieties). This very well speaks for the richness of the Pachmarhi region in angiospermic flora. Further, the present collections of 39 species of Papilionaceous plants alone as new records from Pachmarhi Hills clearly indicate the usefulness and desirability of intensive surveys of the restricted areas with a view to prepare not only the regional floras but also the composite Flora of India.

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