

## TAXONOMIC NOTES ON NORTH INDIAN PLANTS

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## A B S T R A C T

The paper deals with the nomenclature, diagnostic features and variations of taxonomically controversial eleven taxa of north Indian flowering plants.

In spite of the publication in India of quite a large number of regional floras (*cf.* Maheshwari 1963, Santapau 1967, Gupta 1968, Raizada 1976, Saldanha & Nicolson 1976, Singh & Kachroo 1976, Srivastava 1976, Babu 1977, Oomachan 1977, Bhandari 1978, Nair 1978, Raizada & Saxena 1978, Sharma & Bir 1978, Shah 1978, Bennet 1978, Sharma & Tiagi 1979 and Rao & Razi 1981) during the last two decades or so, the identification and nomenclature of some Indian plants still remains doubtful and controversial. A perusal of the above mentioned floras reveals that in different works sometimes different names have been used for the same species citing the other name(s) in synonymy. The adoption of a particular name even in critical and discordant cases has seldom been discussed. Occasionally, the 'keys' provided for the discrimination of taxa show overlapping features. During our work on the revised 'Flora of Punjab', it was noted that several characters of taxonomic significance which need emphasis remain unrecorded. In addition, several variations were observed in Punjab plants. Even there were some cases of misidentifications. Information about eleven such species/taxa is communicated in the present paper which is the first one in the series that will follow subsequently as the work progresses. Most of these taxa are common throughout the plains and some-

times even in the hills of north India. The arrangement of the families is more or less after Hooker (1872-1897) except in few cases where the latest circumscription of the families has been adopted. This arrangement is followed in the Indian floras and herbaria besides its being in conformity with the policy of Botanical Survey of India for the preparation of the revised 'Flora of India'. However, the genera and species are arranged alphabetically. Voucher specimens are deposited in PUN and the collection numbers are mentioned for each taxon.

## Family: NYMPHAEACEAE

1. *Nymphaea* Linn.

The two species of this genus namely, *N. nouchali* Burm. f. and *N. stellata* Willd. are frequently segregated in Indian taxonomic literature on the basis of entire or sinuate leaves in *N. stellata* and sharply toothed leaves in *N. nouchali*. But in the populations met within Punjab State, intermediate forms are frequent with both types of leaves on the same plant (Fig. 1). This may possibly be due to hybridization since both the species grow and flower together. Following key is quite useful for separating the two taxa:



Fig. 1: Habit of *Nymphaea stellata* Willd.

Leaves densely pubescent beneath,  
sepals 5-10-ribbed, anthers  
without appendages ... *N. nouchali*

Leaves glabrous on both sides,  
sepals many veined but not ribbed,  
anthers with appendages ... *N. stellata*

*Specimens examined*: (i) *N. nouchali*:  
Kauli, Sirhind, Patiala; M. Sharma 1307,  
1520, 2073.

(ii) *N. stellata*: Gandakheri, Sarai Banjara,  
Lalru; M. Sharma 2221, 2834, 3571.

Family: HYPECOACEAE

2. *Hypocoum pendulum* Linn. Sp. Pl. 124.  
1753; Cullen in Davis, Fl. Turkey 1:  
237. 1965; in Rech. f. Fl. Iran. 34: 23.  
1966; Jafri & Qaiser in Nasir & Ali, Fl.  
W. Pak. 61: 27. 1974. *H. procumbens*  
*auct. mult.* non Linn.; Hook. f. Fl. Brit.  
Ind. 1: 120. 1872; Dhillon & Bhandari,  
J. Bombay nat. Hist. Soc. 70: 577-582.  
1973.

This species has been recorded by some Indian taxonomists under the name of *H. procumbens* Linn. — a misidentification. *H. procumbens* Linn. is characterized by erect and jointed fruits. In *H. pendulum* Linn., on the other hand, fruit is curved and unjointed (Fig. 2). Specimens from north-west India are referable to the typical variety which is separated from var. *parviflorum* (Kar. & Kir.) Cullen as follows:

Fruit indehiscent, not surrounded by a  
membranous epidermis; outer petals  
rhomboid or trilobed, glands present  
at the base of filaments ... var. *pendulum*

Fruit pseudo-dehiscent, surrounded by a  
membranous epidermis; outer petals  
elliptic, glands absent from the base of  
filaments ... var. *parviflorum*

*Specimens examined*: Samana, Rohar; M.  
Sharma 3965, 4274.

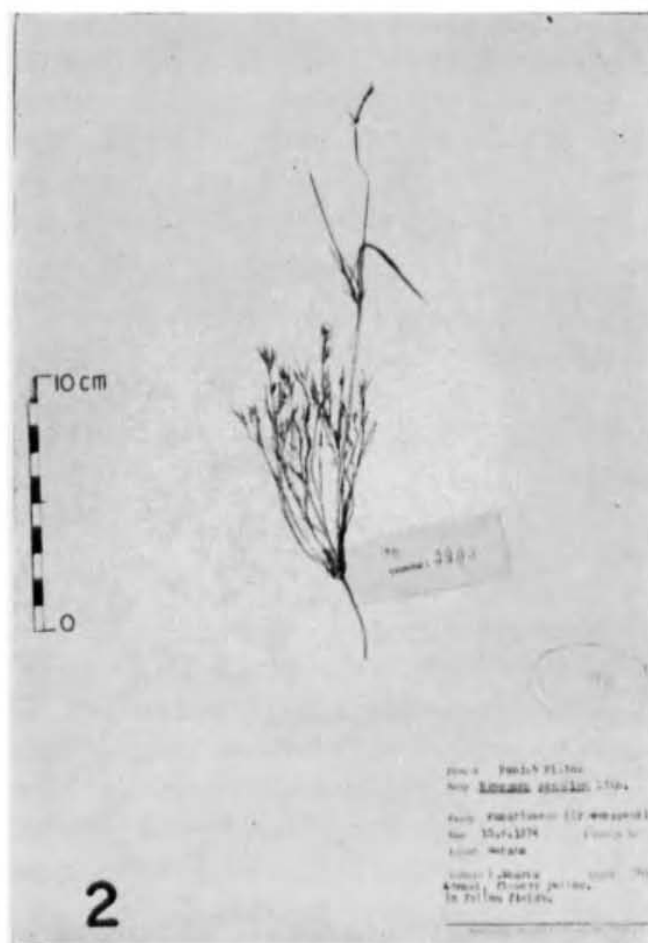


Fig. 2: Habit of *Hypocoum pendulum* Linn.

## Family: FUMARIACEAE

3. **Fumaria indica** (Hassk.) Pugsley, J. Linn. Soc. Bot. 44: 313. 1919; Maheshwari, Fl. Delhi 56. 1963; Ill. Fl. Delhi t. 4. 1966; Babu, Herb. Fl. Dehra Dun 51. 1977. *F. vaillantii* Loisel. var. *indica* Hassk. Flora 56: 443. 1873. *F. parviflora* Lam. var. *vaillantii* auct. (non *F. vaillantii* Loisel. 1809); Hook. f. & Thoms. Fl. Ind. 258. 1855. *F. parviflora* Lam. subsp. *vaillantii* auct. mult. (non *F. vaillantii* Loisel. 1809); Hook. f. & Thoms. in Hook. f. Fl. Brit. Ind. 1: 128. 1872; Duthie, Fl. Upp. Gang. Pl. 1: 37. 1960, repr. ed.

This is very near to *F. parviflora* Lam. and *F. vaillantii* Loisel. and, in fact, was treated as a variety or subspecies *vaillantii* of *F. parviflora* by Hooker & Thoms. (*loc. cit.*) and Duthie (*loc. cit.*). From *F. parviflora* it differs by flat and not channelled leaf segments, whereas from *F. vaillantii* it can be segregated on the basis of the size of bracts which are as long or longer than pedicels in fruits in *F. indica*. However, in *F. vaillantii* bracts are shorter, only  $\frac{1}{2}$  or  $\frac{3}{4}$  of the length of the pedicels.

*Specimens examined*: Univ. Campus Patiala, Rajpura, Devigarh, Bhunarheri; M. Sharma 192, 3810, 3899, 4515.

## Family: BRASSICACEAE

4. **Coronopus didymus** (Linn.) Sm. Fl. Brit. 2: 691. 1800; Maheshwari, Fl. Delhi 57. 1963; Babu, Herb. Fl. Dehra Dun 57. 1977. *Lepidium didymum* Syst. 2: 433. 1754. *Senebiera pinnatifida* DC. Mem. Soc. Hist. Nat. Par. 144. t. 9. 1799; Duthie, Fl. Upp. Gang. Pl. 1: 146. 1960, repr. ed. *S. didyma* (Linn.) Pers. Syn. 2: 185. 1807; Kashyap & Joshi, Lahore Dist. Fl. 27. f. 14. 1936.

This plant is extremely variable in its appearance and size. The pinnatisect radical leaves, forming a rosette appear with the advent of cold season and disappear in mature plant. These have apparently gone unrecorded in Indian floras.

*Specimens examined*: Univ. Campus Patiala, National Institute of Sports Patiala, Gandakheri, Banur, Nabha, Chamkaur Sahib; M. Sharma 258, 1811, 2632, 3240, 3818, 8394.

5. **Rorippa dubia** (Pers.) Hara, J. Jap. Bot. 30: 196. 1955; Backer & Bakh. f. Fl. Java 1: 190. 1963; Raizada, Suppl. Fl. Upp. Gang. Pl. 7. 1976; Babu, Herb. Fl. Dehra Dun 61. 1977. *Sisymbrium dubium* Pers. Syn. 2: 199. 1806. *Nasturtium indicum* DC. var. *apetalum* DC. Prodr. 1: 139. 1824. *N. indicum* auct. Pl. non DC., Hook. f. & Anders. in Hook. f. Fl. Brit. Ind. 1: 134. 1872, *pro min. parte*; Kashyap & Joshi, Lahore Dist. Fl. 22. 1936.

This species has often been merged with *R. indica* (Linn.) Hiern (= *Nasturtium indicum* DC.) with which it closely resembles. In general, the absence of petals in *R. dubia* immediately separates it from *R. indica*. However Kashyap & Joshi (*loc. cit.*) point out that towards the end of the flowering season i.e. during April and May, in *N. indicum* many flowers do not develop petals or these may be only rudimentary ones. Absence of petals in *R. indica* has also been confirmed by Babu (*loc. cit.*) who records that the petals may be present or absent. In such cases of apetalous flowers, following key is of help in the segregation of the two species:

Leaves entire or irregularly lyrate-pinnatifid, sepals 2.5-3 mm long	... <i>R. indica</i>
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Leaves serrate-dentate, sepals upto 2.5 mm long	... <i>R. dubia</i>
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*Specimens examined*: Baradari Gardens, Patiala, Bassi Pathanan; M. Sharma 918, 1768 & 2035; 2662.

Family: CAPPARACEAE

6. **Capparis decidua** (Forsk.) Edgew. J. Linn. Soc. Bot. 6: 184. 1862; Maheshwari, Fl. Delhi 65. 1963; Ill. Fl. Delhi t. 12. 1966. *Sodada decidua* Forsk. Fl. Aegypt.-Arab. 81. 1775. *Capparis aphylla* Roth, Nov. Pl. Sp. 238. 1821; Hook. f. & Thoms. in Hook. f. Fl. Brit. Ind. 1: 174. 1872; Duthie, Fl. Upp. Gang. Pl. 1: 51. 1960, repr. ed.

Hook. f. & Thomson (*loc. cit.*) and Duthie (*loc. cit.*) record the number of stamens as 18-20. But we could not come across any flower with more than 14 (10-14) stamens even on extensive sampling. Although the plants flower profusely yet the fruiting is not common. Plants often propagate by root-suckers.

*Specimens examined*: Patiala-Rajpura Road, Banur, Mandi Gobindgarh, Rajpura; M. Sharma 245 & 246, 1879, 2808, 4539.

7. **Crateva adansonii** DC. subsp. **odora** (Buch.-Ham.) Jacobs, Blumea 12: 198. 1964; Maheshwari, Ill. Fl. Delhi X, t. 14. 1966. *C. odora* Buch.-Ham. Trans. Linn. Soc. Bot. 15: 118. 1827; Nair, Rec. bot. Surv. Ind. 21(1): 19. 1978. *C. religiosa* var. *roxburghii* (R. Br.) Hook. f. & Thoms. in Hook. f. Fl. Brit. Ind. 1: 172. 1872; Duthie, Fl. Upp. Gang. Pl. 1: 51. 1960, repr. ed., *C. roxburghii* R. Br. in Denh. & Clapp. Narr. Travels Disc. Afr. App. 224. 1826. *C. nurvala* auct. non Buch.-Ham.; Maheshwari, Fl. Delhi 65. 1963. *C. religiosa* auct. pl. non Forst. f.; Bamber, Pl. Punjab 40. 1916; Parker, For. Fl. 21. 1918.

The north Indian specimens of this taxon have been previously identified as *C. religiosa* Forst. f. or as its variety *roxburghii*.

In *C. religiosa* the tree is in full foliage during anthesis and the fruits are greyish and roughish with flat papillae when dry. In the present species, however, the trees are bare, or with very young foliage during anthesis and the smooth fruits are red-violet brownish tinged when dry. Moreover, the basal parts of the flowers of *C. adansonii* are orange-brown tinged in herbarium specimens, whereas this is not so in the other species. Subsp. *odora* is characterized by greyish-green (when dry) leaflets with an abruptly acuminate tip 1.5-2.5 cm long. Maheshwari (*loc. cit.* 1963) describes this taxon under *C. nurvala* Buch.-Ham. which is allied to *C. religiosa* in its foliage, flower and fruit characters but has subcoriaceous, distinctly stipitate leaflets. In *C. religiosa*, on the other hand, even the mature leaflets are sessile and very thin.

*Specimens examined*: Bir Mehas Nabha, Patiala, Univ. Campus Patiala; M. Sharma 4362, 4398, 4541.

Family: RESEDACEAE

8. **Oligomeris linifolia** (Vahl) Macbr. Contr. Gray Herb., n.s. 53: 13. 1918; Maheshwari, Fl. Delhi 66. 1963; Ill. Fl. Delhi t. 15. 1966; Y. Nasir in Nasir & Ali, Fl. W. Pak. 90: 1. 1975. *Reseda linifolia* Vahl in Hornem. Hort. Hafn. 2: 501. 1814. *Oligomeris glaucescens* Camb. in Jacquemont, Voy. Inde Bot. 24. t. 25. 1844; Hook. f. & Thoms. in Hook. f. Fl. Brit. Ind. 1: 181. 1872; Kashyap & Joshi, Lahore Dist. Fl. 33. 1936; Duthie, Fl. Upp. Gang. Pl. 1: 53. 1960, repr. ed.

Kashyap & Joshi (*loc. cit.*) and Duthie (*loc. cit.*) record the petals as connate. According to Y. Nasir (*loc. cit.*) the petals are united more than half way up or free. In the collections made from Punjab, we find that the petals are quite free.

*Specimens examined*: Banur, Dera Bassi, Devigarh, Bir Chhat; M. Sharma 3241, 3510, 3956, 4229.

## Family: VIOLACEAE

9. **Hybanthus enneaspermus** (Linn.) F.v. Muell. Fragm. 10: 81. 1877; Tennant, Kew Bull. 16: 431. 1963; Maheshwari, Fl. Delhi. 66. 1963; Jacobs in Steenis, Fl. Males. ser. 1. 7: 197. f. 5-6. 1971. *Viola enneasperma* Linn. Sp. Pl. 937. 1753. *Ionidium enneaspermum* (Linn.) Vent. Jard. Malm. sub. t. 27. 1803; Dalzell & Gibson, Bombay Fl. 12. 1861. *I. suffruticosum* (Linn.) Ging. in DC. Prodr. 1: 311. 1824; Hook f. & Thoms. in Hook. f. Fl. Brit. Ind. 1: 185. 1872. *Viola suffruticosa* Linn. Sp. Pl. 937. 1753. *Ionidium heterophyllum* Vent. Jard. Malm. sub. t. 27. 1803; Duthie, Fl. Upp. Gang. Pl. 1: 54. 1960, repr. ed.

In Indian floras the flower colour of this species is described as red but we have not observed this colour in Punjab populations. On the other hand, the flowers are mauve-coloured with pink veins changing to deep pink on drying. The flowers open immediately after sunrise and are quite conspicuous. At about 10 A.M. the flowers close and then it becomes difficult to locate the plant from among grasses.

Hook. f. & Thoms. (*loc. cit.*) treated *Ionidium enneaphyllum* as a synonym of *I. suffruticosum*. This is contrary to the provision of Art. 57 of International Code of Botanical Nomenclature according to which choice of Dalzell & Gibson (*loc. cit.*) must be followed. These latter authors were apparently the first to unite these names under *I. enneaspermum*. Tennant (*loc. cit.*) has confirmed the conspecificity of these two taxa by comparing the specimens of Hermann at BM. He considers the differences in leaf characters as mere separations of two grades in a series. Jacobs (*loc. cit.*) concurs with Tennant.

*Specimens examined*: Univ. Campus Patiala, Sarai Banjara, Bir Chhat; M. Sharma 2052 & 3979, 2843, 4284.

## Family: FLACOURTIACEAE

10. **Flacourtia indica** (Burm. f.) Merr. Bur. Sci. Publ. Manila 9: 377. 1917 (Interpret. Herb. Amb. 377. 1917); Sleumer in Steenis, Fl. Males. ser. 1. 5: 76. f. 30. h-i. 1954; Santapau. Rec. bot. Surv. Ind. ed. 3. 16(1): 10. 1967; Raizada & Saxena, Fl. Mussoorie 41. 1978. *Gmelina indica* Burm. f. Fl. Ind. 132. t. 39. f. 5. 1768. *Flacourtia ramontchi* L' Herit. Strip. Nov. 59. t. 30, 30B. 1785. *F. sepiaria* Roxb. Pl. Cor. 1: 49. t. 69. 1795; Collett, Fl. Siml. 41. f. 13. 1902.

Raizada (Ind. For. 79: 503. 1953) did not agree with Merrill's reduction of *F. ramontchi* and *F. sepiaria* to *F. indica*. He maintained their separate identity distinguishing them on the basis of the position of the flowers which were reported to be borne on thorns (usually) in *F. sepiaria* and not on thorns in *F. ramontchi*. Fosberg (Kew Bull. 29: 253-266. 1974) also treats *F. ramontchi* as a distinct species from *F. indica* but states: "The *Flacourtia indica* complex can certainly be aggregated into one species, as Merrill and Sleumer have done, if all the connecting forms are considered" Sleumer (*loc. cit.*) emphasized that inflorescences on thorns are rather an exception than the rule and supported Merrill's view. Recently, Raizada (in Raizada & Saxena, *loc. cit.*) has also accepted the concept of Merrill.

Writers' observations have shown that the thorns frequently appear on young branches during rainy months from the axillary buds which normally develop into a leafy shoot. The thorns may even be branched. The older branches are often devoid of thorns. This indicates that the presence of thorns is not a constant feature and hence *F. sepiaria* is not distinct from *F. indica*.

*Specimens examined*: Patiala, Sirhind,

Rakhra, Rajpura, Nabha; M. Sharma 195, 2062, 2593, 3477, 5302.

### Family: POLYGALACEAE

11. **Polygala erioptera**. DC. Prodr. 1: 326. 1824; Bennett in Hook. f. Fl. Brit. Ind. 1: 203. 1872; Duthie, Fl. Upp. Gang. Pl. 1: 60. 1960, repr. ed.; Maheshwari, Fl. Delhi 68. 1963.

The plant is an annual but some specimens gathered from Punjab (PUN 7611) are conspicuously woody at base. Duthie (*loc. cit.*) records the flower colour as yellow and Maheshwari (*loc. cit.*) records it as yellow or pinky mauve. The yellow-flowered forms have not been seen from Punjab but all plants have pinkish-mauve flowers.

*Specimens examined*: Patiala, Ganda-keri, Sambhu, Univ. Campus Patiala; M. Sharma 2067, 2227, 3734, 3978.

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