MATERIALS FOR A FLORA OF TURKEY: VII

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PAPAVERACEAE

Glaucium corniculatum (L.) Rudolph, Diss. Flor. Jen. Pl., 13 (1781) subsp. **refractum** (Nábělek) Cullen, **comb. et stat. nov.**

Syn.: *G. refractum* Nábělek in Publ. Fac. Sci. Univ. Masaryk, Brno, No. 35:22 (1923).
G. grandiflorum Boiss. & Huet var. *helissopelma* Fedde, Pflanzenreich IV. 104, 40:227 (1909).

Syntypes: in steppis ad septentriones ab urbe Bardâd ad colles aridos Gebel Kumataš inter Bakûba et Hanikîn 2 mai. 1910 (No. 832) et inter Hanikîn et Kasr-i-Širîn in Kurdistania Persica 3 mai. 1910 (No. 835) leg. *Nábêlek* (BRA)!

A large number of specimens referable to this taxon are now available, mostly from Turkey, and examination of these has shown that the characters which distinguish it from *G. corniculatum sens. str.* (fruiting pedicels reflexed, leaf segments long mucronate, etc.) frequently break down; reflexed and non-reflexed pedicels sometimes occur on the same specimen. However, as plants with reflexed pedicels occur mainly in the steppe (Irano-Turanian) regions of Turkey, where they replace the largely Mediterranean *G. corniculatum sens. str.*, it seems best to treat them both as subspecies of the same species.

Glaucium grandiflorum Boiss. & Huet in Boiss., Diagn., sér, (5), 15 (1856) var. **torquatum** Cullen, **var. nov.**

A var. *grandifloro* pedicellis refractis brevioribus, siliquis erecto-curvatis differt.

TURKEY. Vil. Kirşehir, Mucur, calcareous hillsides in steppe; petals red with black blotch, 17 June 1954, *Davis* 21823 (holo. E.).

A very striking variant of *G. grandiflorum*, reminiscent of *G. corniculatum* subsp. *refractum* (Náb.) Cullen in its reflexed peduncles, but differing in its larger, redder petals, broader fruits and more deeply pinnatifid stem leaves. It has been found only once, well within the distribution area of var. *grandiflorum*, and therefore does not seem to merit recognition as a subspecies; further collections are needed before its status can be settled.

This taxon cannot be equated with *G. grandiflorum* var. *helissopelma* Fedde; an examination of an isosyntype of this taxon (Kurdistan, *Noë* 199, K), has shown that it should be referred to *G. corniculatum* subsp. *refractum* (Náb.) Cullen.

Papaver fugax Poir., Encycl. Meth. **5,** 118 (1804)

Syn.: *P. caucasicum* M. Bieb., Fl. Taur.-Cauc. **2,** 5 (1808).
P. floribundum Desf., Choix Pl., 62, t. 46 (1808).

Although Fedde (1909) treated *P. fugax*, *P. caucasicum* and *P. flori-*

bundum as separate species, examination of much recently collected material has shown that they cannot be maintained as such. The characters used by Fedde for their separation (capsule shape, leaf segmentation) do not hold, even if only specimens cited by him are used, and are not in any way correlated. In this broad sense the species agrees with Boissier's (1867) circumscription of *P. caucasicum*, if the variety *stenocarpum* Boiss. (=*P. armeniacum* (L.) DC., see below) is excluded. The species is widely distributed in central and eastern Anatolia (Vils. Erzincan, Gümüşane, Maraş, Van, Muş, Erzerum, Bitlis, Kars, Çoruh and Ağri). Some specimens (e.g. *Huber-Morath* 13940, Vil. Malatya, Perveri to Gölbasi, 1200 m.; *Davis & Hedge* 29500, Vil. Erzerum, Horasan to Karaurgan, 2000 m.; *Sintenis* 1889:1096, Vil. Erzincan, Sipikor Dag, the type of *P. bartuschianum* Fedde, op. cit., p. 347) show combinations of the characters of *P. fugax* and *P. tauricola* Boiss., having orange-brown setose buds, stems and leaves densely hispid-setose, and sparsely setose to glabrous capsules. However, in general habit, capsule shape and size and leaf segmentation they are closer to *P. fugax* than to *P. tauricola*. Within this variable species, one clearly marked variant may be recognized:

var. **platydiscus** Cullen, **var. nov.**

A var. *fugaci* capsulis anguste ellipsoideis, 11–15 × 4–5 mm. (non 14–16 × 6–8 mm.), discis valde planis differt.

TURKEY. Vil. Tunceli, Munzur Dağ, above Ovacik, 2600 m., Screes. Biennial, flowers orange, *Davis & Hedge* (D. 31408) (holo. E); Vil. Van, Van to Hoşap, 1920 m. *Huber-Morath* 1093; Hoşap to Başkale, 2340–2370 m., *Huber-Morath* 10933; Vil. Giresun, Sebinkarahissar, 1300–1330 m., *Huber-Morath* 13942; Vil. Malatya, Malatya to Darende, 1500 m., *Huber-Morath* 9201.

This variety which cannot be equated with either *P. caucasicum* sens. str. or *P. floribundum* sens. str., occurs to the west and south of the area of var. *fugax*.

Papaver cylindricum Cullen, **sp. nov.** (Sect. *Miltantha* Bernh.) Pl. 1

A *P. fugaci* Poir. alabastris ovato-globosis, capsulis angustissime ellipsoideis, 8–15 × 3–5 mm., valde costatis, obscure torulosis, discis cylindricis vel cylindrico-conicis differt.

Herba biennis. *Radix* fusiformis, ad collum reliquiis foliorum marcidorum obtecta. *Caulis* solitarius, rigide erectus, 30–80 cm. altus, infra dense hispido-setosus, supra sparsim adpresse-setosus vel glaber. *Folia* inferiora petiolata, ambitu oblongo-lanceolata, bipinnatisecta, segmentis anguste triangularibus dentatis vel subintegris mucronatis, supra setosis, infra solum in venis primariis hispido-setosis; superiora sessilia, minus dissecta. *Inflorescentia* stricta, paniculata, alabastris ovato-globosis, 10–14 × 7–10 mm., sparsim hispido-setosis, aliquantum nutantibus, floribus capsulisque erectis. *Petala* lateritia, fugacissima. *Capsula* glabra vel sparsim setosa, angustissime ellipsoidea, valde costata, obscure torulosa, 8–15 × 3–5 mm. *Discus* cylindricus vel raro cylindrico-conicus, c. 1·4 × 0·6 mm., stigmate 3–4 radiato. *Semina* reniformia, griseo-brunnea, reticulata, c. 0·7 × 0·4 mm.

TURKEY. Vil. Bitlis, Tatvan to Ahlat, near Sogurt, 2000 m., slope in steppe, flowers brick red, biennial, *Davis & O. Polunin* (D. 24614-holo. E.);

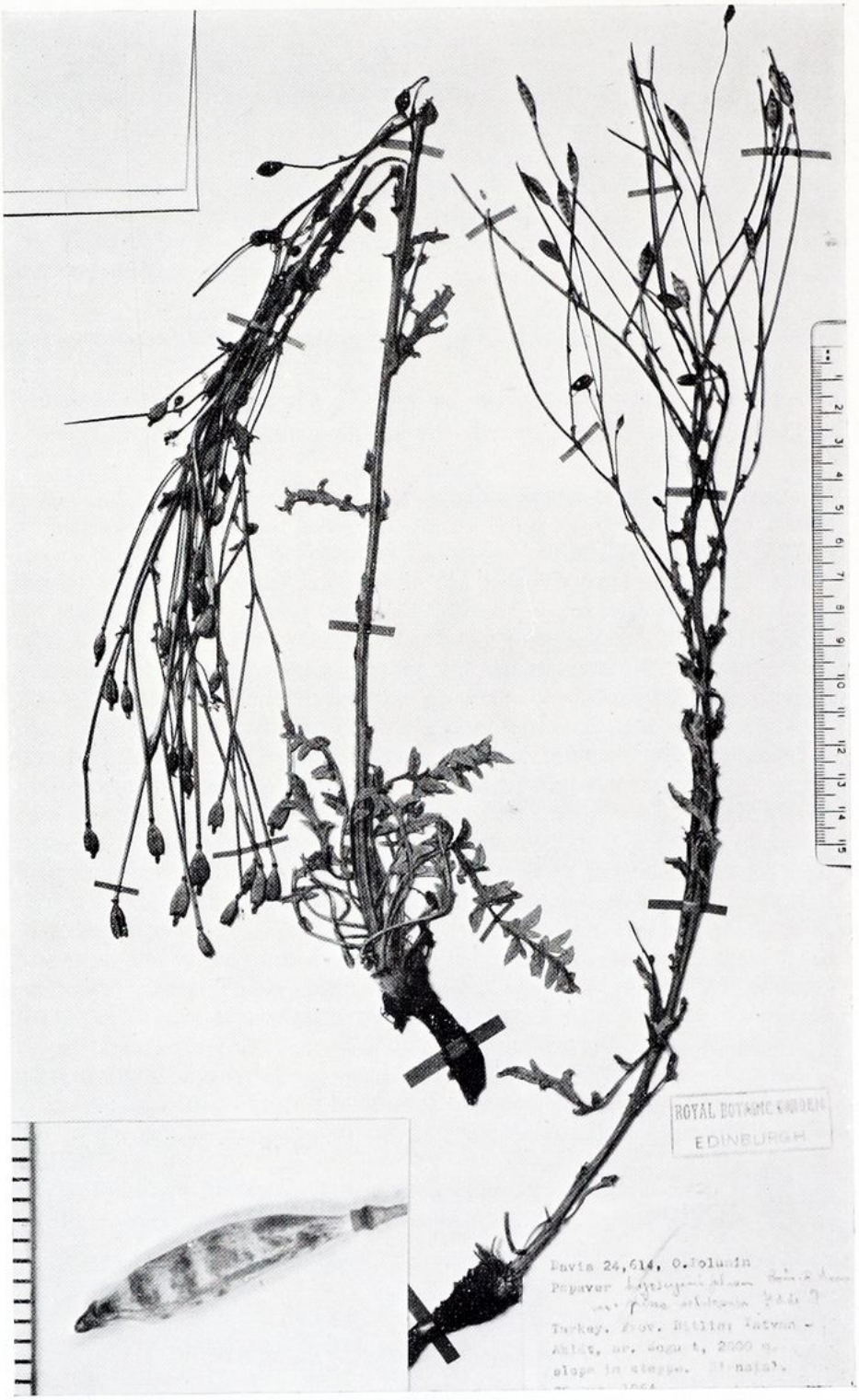

PLATE 1. Type specimen of *Papaver cylindricum* Cullen. Inset: ripe capsule enlarged.

Nemrut Dağ, 2000 m., flowers brick red, biennial, *Davis & O. Polunin* (D. 25390). Vil. Muş, Patnos to Malazgirt, 23 km. westlich Patnos, auf Eruptivgestein, *Huber-Morath* 10931. Vil. Agri, Erçis to Patnos, steppe 23 km. nördlich Erçis, beim Dorf Kocapinar, 1850 m., *Huber-Morath* 10932.

This new species, which is clearly related to *P. fugax* Poir., is remarkable for its narrow capsule and almost cylindrical disc. One specimen (D. 25390) has sparsely setose capsules; the others are glabrous. It occurs in the steppe, flowering in July.

Papaver armeniacum (L.) DC., Syst. **2,** 120 (1821). Fedde, Pflanzenreich, **40,** IV. 104, 352 (1909) pro parte.

Syn.: *Argemone armeniaca* L., Sp. Pl., 509 (1753).
Papaver caucasicum M. Bieb. var. *stenocarpum* Boiss., Fl. Or. 1:110 (1867).

A much confused species. Linnaeus based his description of *Argemone armeniaca* on a phrase name given by Tournefort (1703). Obviously Linnaeus did not see a specimen, which is presumably why he placed the species in *Argemone* rather than *Papaver*. Tournefort's phrase name for the plant was "*Papaver orientale hypecoifolio fructu minimo*"; Boissier in the synonymy of his *P. caucasicum* var. *stenocarpum* cites this name, and among the specimens he lists, the following occurs: "Armenia turcica, *Tourn*!" Although Boissier saw this specimen it has not been possible to trace it for the preparation of this account; therefore it is necessary to interpret the taxon in Boissier's sense, using his quite adequate description and specimen citations. Although Boissier treated the taxon as a variety of *P. caucasicum* M. Bieb. (=*P. fugax* Poir., see above), it is obvious from his description and from the specimens he cites (e.g. Persia, in monte Elvend, *Aucher* 370; in monte Kuh Daëna, Persiae australis, *Kotschy* 723) that it is very different from typical *P. fugax*, and deserves recognition as a separate species. This course was followed by Fedde (1909), who, however, cited many more specimens than Boissier, some of them from northern Turkey. These Turkish specimens are referable to *P. triniifolium* Boiss., a separate species, which is, however, superficially similar to *P. armeniacum*. Therefore, Fedde's description of *P. armeniacum* is inaccurate, as it is based on specimens belonging to two separate species.

On the basis of this interpretation, *P. armeniacum* occurs widely in Iran, but in Turkey is restricted to the extreme South East (Vilayets Van & Hakâri).

The following key to the non-scapose Turkish species of Sect. *Miltantha* Bernh. should assist in their identification:

1. Leaves (2–)3–4 × pinnatisect, the segments linear to oblong, less than 3 mm. wide 2
   Leaves 1(–2) × pinnatisect, the segments narrowly to broadly triangular, more than 5 mm. wide 3

2. Plant with 1 main stem, very glaucous; petals 2–2·5 cm. long *P. triniifolium*
— Plant with numerous stems, green or slightly glaucous; petals 0·75–1·5 cm. long . . . . . *P. armeniacum*

3. Capsule rounded at the base, usually setose; buds hispid setose, with orange-brown hairs . . . . . *P. tauricola**
— Capsule tapered to the base, usually glabrous; buds sparsely hispid with grey-brown hairs 4

4. Disc conical or flat; capsule abruptly contracted near the apex, 6–8 mm. broad . . . . . *P. fugax*
— Disc cylindrical or cylindric-conical; capsule tapered to the apex, 3–5 mm. broad . . . . . *P. cylindricum*

Corydalis solida (L.) Sw., Sv. Bot., **8,** t. 531 (1817)

A very variable species, widely distributed in the Middle East and in Europe, and treated by Hayek (1925) as composed of a number of subspecies. The following account of the Turkish taxa represents an extension of Hayek's treatment.

subsp. **solida**

Syn.: *C. solida* (L.) Sw. subsp. *eu-solida* Hayek, Prodr. Fl. Penins. Balc. **1,** 364 (1925).
C. solida subsp. *densiflora* (Presl) Hayek, loc. cit.
C. densiflora Presl, Del. Prag., 10 (1822).

A widely distributed subspecies, occurring throughout Europe and in Anatolia. It has been found impossible to maintain subsp. *densiflora* as distinct from subsp. *solida*: the distinctions given by Hayek—leaf division, bract lobe toothing—frequently break down. Admittedly, the combined subspecies is rather variable in flower size and in the breadth of the leaf segments; but variation in these characters is not strongly correlated, although there is a slight tendency for plants in south-east Europe and Anatolia to have smaller flowers and narrower leaflets than those from the rest of the range. However, these distinctions also break down too frequently to allow the recognition of two taxa within the subspecies. Subsp. *solida* occurs mainly in north and western Anatolia (Vilayets Ankara, Kastamonu, Kütahya, Denizli, Adana, Maraş, Muğla, Amasya and Antalya), and is partly replaced in south Anatolia by the following two subspecies:

subsp. **brachyloba** (Boiss.) Cullen & Davis, **comb. et stat. nov.**

Syn.: *C. solida* (L.) Sw. var. *brachyloba* Boiss., Fl. Or. **1,** 129 (1867). *Syntypes*: Lebanon, circa Eden et ad Cedros, *Blanche*; ibid., *Gaillardot* (Both G–n.v.).

TURKEY. Vil. Içel, Gülnar to Gökbelen, 1000 m., *Davis & Hedge* (D. 26061).

This subspecies differs from subsp. *solida* in its simply incised bracts, larger flowers, and straight or slightly curved style. It is known only from the Lebanon and the one Turkish locality cited above. Although originally defined by Boissier using leaf characters (*segmenta abbreviata rotundata, obtusissime incisa vel dentata*), these do not distinguish it well from subsp. *solida*. However, this taxon, as represented by material from the *locus classicus*, and by the Turkish specimen cited above, may be maintained, using the bract and floral characters given above.

* including *P. hyoscyanii folium.* Boiss. & Hausskn.

subsp. **tauricola** Cullen & Davis, **subsp. nov.**

A subsp. *solida* capsulis linearibus, stylis rectis (non geniculatis) differt. TURKEY. Vil. Içel, Namrun, 1000–1800 m., flowers very pale maroon-pink with white base, maroon spots above anthers; 6″–10″ high, growing on rocks among limestone in rich loam, *Balls* 176 (holo. E., iso. K); Vil. Seyhan, Pozanti, 800 m., *Balls* 669; ibid., near Bürücek, 1300 m., *Pinus nigra* woods on shady, stony slopes, *Davis & Hedge* (D. 26350); Kozan to Feke, 550 m., under hedges, perennial, *Davis & Hedge* (D. 26591); Dildil Dağ, above Haruniye, 1300 m., edge of *Fagetum* on metamorphic substratum, flowers dull purple with dark chocolate-purple tips of inner segments, *Davis & Hedge* (D. 26094); Vil. Hatay, Distr. Belen, Karlik Tepe above Soğuk Oluk, 1200 m., under *Abies*, perennial, *Davis & Hedge* (D. 27057).

This subspecies resembles subsp. *brachyloba* in its large flowers and straight styles. It is easily distinguished by its narrow, linear capsules, and is apparently endemic to the Cilician Taurus and the Amanus.

Corydalis rutifolia (Sibth. & Sm.) DC., Syst., **2**, 115 (1821).

Various treatments have been proposed for the Oriental taxa of *Corydalis* which have opposite leaves; and many species have been described within the group. However, in the light of recent material collected by Davis in Cyprus, Crete and Turkey, it seems best to treat them all (except for *C. verticillaris* DC., and Iraqi and Iranian species, distinguished from all others in the complex by its more dissected leaves) as subspecies within the one variable species, for which the oldest name is *C. rutifolia* (Sibth. & Sm.) DC.

subsp. **rutifolia**

Syn.: *Fumaria rutifolia* Sibth. & Sm., Prodr. Fl. Gr., **2**, 49 (1813).
Type: in insula Cypro, *Sibthorp* (OXF–n.v.)
Endemic to Cyprus.

subsp. **uniflora** (Sieb.) Cullen & Davis, **comb. et stat. nov.**

Syn.: *Fumaria uniflora* Sieber, Reise, **2**, 310 & t. 8 (1823).
Corydalis uniflora (Sieb.) Nyman, Syll., 185 (1854).
C. rutaefolia (Sibth. & Sm.) DC. var. *subuniflora* Boiss. & Heldr. in Boiss., Diagn., sér. 1, (**8**), 11 (1849).

Type: Described from Crete.
Endemic to Crete.

subsp. **erdelii** (Zucc.) Cullen & Davis, **comb. et stat. nov.**

Syn.: *C. erdelii* Zucc., in Abhandl. Math.-Phys. Akad Wiss. München, **3**, 252 (1840).
C. modesta Prain in Bull. Herb. Boiss., **7**, 168 (1899).

Type: in monte Lebanon (in Cedreto), *Schubert* (M?–n.v.).

A very variable subspecies as far as leaf segmentation and leaflet shape are concerned. It is common in Turkey, the Lebanon and Antilebanon, and is doubtfully recorded from Iran and Iraq.

subsp. **kurdica** Cullen & Davis, **subsp. nov.**

A subsp. *rutifolia* foliis 3-ternatis vel raro 4-ternatis, laciniis angustis,

augustissime ellipticis vel fere linearibus, floribus 15–18 mm. longis differt. TURKEY. Vil. Hakkâri, Cilo Dağ, 10 km. W. of Cilo Tepe, 3300 m., by snow, fls. white with maroon tips, *Davis & O. Polunin* (D. 24185–holo. E.); Vil. Van. Artos Dağ, 2800 m., by melting snow, flowers pinkish maroon, *Davis & O. Polunin* (D. 22796); Vil. Bitlis, Pelli Dağ, 3000 m., in late snow line, fls. maroon, *Davis & O. Polunin* (D. 22492).

The most easterly representative of the *C. rutifolia* complex. It is reminiscent of *C. verticillaris* DC. in its much divided leaves, but differs from that species in its longer inflorescence exceeding the leaves, entire bract lobes, and ovate capsule. The records of *C. verticillaris* DC., given for Turkey by Rechinger (1952, p. 9) almost certainly refer to this subspecies, but until the specimens have been examined it is not possible to be sure.

The four subspecies of *C. rutifolia* sens. lat. may be recognized as follows:

1. Leaves 3–4 × ternate, with very narrowly elliptic to linear segments; flowers 15–18 mm. long (S.E. Anatolia) . . subsp. *kurdica*
— Leaves 1–2 × ternate, the segments elliptic, or occasionally narrowly elliptic; flowers (18–)20–25 mm. long 2

2. Racemes 1–2 flowered; bracts ovate (Crete) . subsp. *uniflora*
— Racemes 2–7 flowered; bracts narrowly obovate . . 3

3. Middle leaflet much longer than the lateral leaflets, rounded at the apex (Cyprus) . . . . . subsp. *rutifolia*
— Middle leaflet and the lateral leaflets more or less equal, the middle leaflet acute (Anatolia, Lebanon, etc.) . . subsp. *erdelii*

POLYGALACEAE

Polygala papilionacea Boiss., Diagn., sér. 1, (1), 8 (1842).

A very handsome steppe species, sparingly distributed in Turkey. The specimen on which Hayek (1914) based the only record of *P. hohenackeriana* Fisch. & Mey. for Turkey (Vil. Konya, Korasch, 1400 m., *Siehe* 1906: 442) must be referred to *P. papilionacea*. *P. hohenackeriana* is a Caucasian and Iranian species which differs from *P. papilionacea* in possessing axillary as well as terminal racemes, and in the smaller size of all its parts. The Siehe specimen differs from typical *P. papilionacea* only in the slightly smaller size of its flowers (inner sepals 7–8 mm. long, as opposed to 10–11 mm.).

Polygala pruinosa Boiss., Diagn. sér. 1, (1), 8 (1842), emend. Boiss., Diagn., sér. 2, (1), 58 (1853).

subsp. **megaptera** Cullen, **subsp. nov.**

A subsp. *pruinosa* habitu prostrato, foliis parvis confertis, racemis 5–10-floris, alis capsularum latissimis 2–3 mm. latis differt.

TURKEY. Vil. Isparta, Dedegöl Dağ, above Dedegöl tarn, 2000 m., windy ridge with *Campanula compacta*, *Aster* & *Aethionema*; prostrate perennial, flowers violet, *Davis* 16063 (holo. E.); Vil. Antalya, distr. Elmali, Bey Dağ, 2500 m., scree, flowers purple, *Khan, Prance & Ratcliffe* 283.

The very broad capsule wing is the most remarkable feature of this new subspecies, which is probably a high mountain variant of *P. pruinosa*. As far as can be judged from the two specimens cited above, it flowers about one month later than subsp. *pruinosa*.

Polygala nicaeensis Risso, Flore de Nice, 54 (1844).

This species, which was originally described from Nice, has frequently been recorded for the eastern Mediterranean area (Boissier 1867; Hayek, 1925; Rechinger, 1943). However, a careful examination of all available eastern Mediterranean material so identified, has shown that the specimens should be referred to the four following species: *P. vulgaris* L., *P. comosa* Schkuhr, *P. major* Jacq., or *P. anatolica* Boiss. On this interpretation, *P. nicaeensis* has a very restricted distribution, occurring only in south-east France and north-west Italy. This conclusion agrees with that of Bennett (1878), whose work on the European Polygalas has been undeservedly neglected.

In this sense, *P. nicaeensis* comprises plants similar to *P. comosa* Schkuhr, but differing from that species in their larger size, and almost orbicular, distally apiculate inner sepals. The following specimens may be cited as typical: France, Basses Alpes, Annot, 6 mai 1885, *Reverchon*; Alpes Maritimes, Fontan, 26 mai 1886, *Reverchon* 35; Italy, Liguria, Bordighera, *Bicknell & Pollini*, Fl. It. Exs. 919. Bennett (*loc. cit.*) also records the species from North Africa.

TABLE 1

Diagnostic characters of *P. nicaeensis* and its allies

	nicaeensis	*vulgaris*	*comosa*	*major*	*anatolica*
Corolla	not exserted	not exserted	not exserted	exserted	exserted
Young inflorescence	comose	not comose	comose	comose	comose
Inner Sepals	orbicular 6–8×5–6 mm.	ovate 4–6×2–3 mm.	narrowly elliptic c. 6×3 mm.	obovate, 10–17×4–6 mm.	obovate, 7–10×3–5 mm.
Habit	robust	delicate	delicate	robust	robust
Capsule	sessile	sessile	sessile	stipitate; stipe= capsule length	stipitate; stipe= c. ½ capsule length

Moggridge (1874) records that the distinctions between *P. nicaeensis* and *P. comosa* tend to break down; to this it may be added that the distinctions between *P. vulgaris* and *P. comosa* are only slight and difficult to see, except in the early flowering stage. It is possible that it would be

better to treat these three taxa as infraspecific taxa of one variable species (*P. vulgaris* L.*); however, to justify this step it would be necessary to examine large quantities of European material, and therefore, until this is done, it is safer to maintain them all as species.

Table 1 shows the distinctions between *P. nicaeensis* and the four species with which it has been confused.

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References

Bennett, A. (1878). Conspectus Polygalarum Europaeum. *J. Bot.*, **16**, 241–246, 266–282.

Boissier, E. (1867). *Flora Orientalis*, **1** Geneva.

Chodat, R. (1893). Monographia Polygalacearum. *Mém. Soc. Phys. Hist. Nat. Genève*, **31** (2).

Fedde, F. (1909). Papaveraceae: Hypecoideae-Papaveroideae. *Pflanzenreich* **40** (IV, 104) Leipzig.

Hayek, A. (1914). Plantae Sieheanae. *Ann. K. K. Naturhist. Hofmus.*, **28**, 156.

—— (1925). Prodromus Florae Peninsulae Balcanicae. *Feddes Rep. Beih.* **30** (1).

Moggridge, J. T. (1874). *Contributions to the Flora of Mentone*, pl. 77. London.

Rechinger, K. H. (1943). Flora Aegaea. *Denk. Akad. Wiss. Wien*, **105** (1).

—— (1952). Pflanzen aus Kurdistan und Armenien gesammelt von Prof. John Frödin. *Symb. Bot. Ups.*, **11** (5), 1–56.

Tournefort, J. P. (1703). *Corollarium Institutionum Rei Herbariae*, 17. Paris.

* In Chodat's monograph (1893) of the genus, *P. comosa* is treated as a subspecies of *P. vulgaris*, whereas *P. nicaeensis* is maintained as a separate species.