MATERIALS FOR A FLORA OF TURKEY: XII

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This paper includes miscellaneous notes, new taxa and combinations necessitated by the preparation of volume 2 of the Flora of Turkey.

CARYOPHYLLACEAE

Cerastium dichotomum L. subsp. **inflatum** (Link) Cullen, **comb. nov.**

Syn.: *C. inflatum* Link in Desf., Cat. Hort. Par. 462 (1829).

Both subsp. *dichotomum* and subsp. *inflatum* are widespread in Turkey, though, on the whole, subsp. *inflatum* is more easterly and southerly in distribution. Many intergradations occur between the two subspecies.

Holosteum L.

The genus *Holosteum* is in need of revision. Although several specific epithets have been published, and although the material shows striking differences in single characters, it seems impossible to separate satisfactorily more than two species in Turkey, themselves not always easily separable.

The following brief account is based mainly on Orient material in the herbarium of the Royal Botanic Garden, Edinburgh; the specimens cited are confined to those from the area covered by the Flora of Turkey. It does not explain the variation found in the Turkish material, but I feel it is more workable than previous accounts, some of which recognise up to 5 species (cf. Boissier, Fl. Or. 1 : 709-711, 1867; Bornmüller in Feddes Rep. 89, 1 : 255–6, 1940). There is also considerable confusion in the synonymy in these accounts.

The conclusions reached here resemble those of J. Gay (Ann. Sci. Nat. sér. 3, 4 : 23–44, 1845), except that he separated plants with ciliate petal claws as a separate species (*H. imberbe* Gay).

1. Plants glabrous, with at most the margins of the leaves ciliate; umbels 3–5 (–8)—flowered, the flowers arising one by one from the stem's apex; pedicels erect in flower and early fruit . . . . **1. marginatum**
1. Plants with glandular indumentum on the upper or middle stem; umbels (3–) 5–12 (–16)—flowered, the flowers usually arising ± simultaneously; pedicels usually becoming sharply deflexed at base **2. umbellatum**

1. H. marginatum C. A. Meyer in Hohen., Talysch Enum. 402 (1838).

TYPE: (Soviet Azerbaijan) in graminosis prope coloniam Helendorf. *Hohen.*

TURKISH SPECIMENS:– A5 Samsun: Kavak, 700m, *Tobey* 523A! *ibid.*, Ladik Istasyonu, SW under Karadağ, 1000 m, *Tobey* 958! Amasya: Amasya, in montis Logman, *Bornmüller* 1889 : 57! A7 Gümüşane: Surda near Gümüşane, *Sintenis* 1894: 5433!

This species is only confused with small, almost glabrous specimens of *H. umbellatum*, which have only been seen from Samos.

2. H. umbellatum L., Sp. Pl. 88 (1753).

It is in this species that most of the confusion occurs. Some of the characters used by previous authors can be used to separate what are, at most, varieties; see key below. Others, such as petal-claw ciliation and leaf width are of no use in the Turkish material. Yet others, such as the distribution of indumentum, petal/sepal lengths ratio, numbers of flowers per umbel, are of limited use and break down frequently. In addition, there are striking differences in a few of the specimens: many (over 10) flowers per umbel, correlated with 5 stamens but with nothing else; glandular hairs present in a prominent patch in the middle of the stem, likewise correlated with 5 stamens only; and some very tall specimens. None of the characters, not even those used in the key, show geographical correlation.

The three varieties keyed out here ± correspond with three of the previous species as formerly conceived. There are many intermediates.

1. Petals (1·5–) 2–3 x sepals; stamens 10; lower stems and leaves usually with glandular hairs; petals pink . . . var. **tenerrimum**
1. Petals 0·7–1·5 x sepals; stamens 5 or 10; lower leaves with or without glandular hairs; petals white, sometimes with a pink flush . . 2
2. Capsules 6·5–9 mm; stamens 10 . . . . var. **glutinosum**
2. Capsules 4–6 mm; stamens 5 . . . . var. **umbellatum**

var **tenerrimum** (Boiss.) Gay in Ann. Sci. Nat. sér. 3, 4 : 35 (1845).

Syn.: *H. tenerrimum* Boiss., Diagn. sér. 1, 1 : 53 (1842).
H. macropetalum Bornm. & Hausskn., Mitt. Deutsch. Bot. Ver. f. Gesamt. Thür. (in Geogr. Ges. Jena 15, 1890).

Described from Turkey (Izmir/Manisa) : In umbram *Juniperorum* in regione alpina Mesogis, Cami et Tmoli; aestate 1842, *Boissier*. A specimen in Geneva has been seen.

TURKISH SPECIMENS:– A5 Amasya: Amasya 4–900m, *Bornmüller* 1889 : 946! (type of *H. macropetalum*); *ibid.*, Ladik, 1200m, *Tobey* 610! A7 Gümüşane: Gümüşane, Sorda, *Sintenis* 1894 : 5437! B1 Izmir: Koukouloudja near Izmir, *Balansa* 121 ! (type of *H. sibthorpii* Boiss. in sched.) C1 Izmir: Samsun Dağ above Güzelçamli, 800 m, *D.* 41725! C2 Aydin: Çine to Yatağan, 300 m, *D.* 25210! *ibid.*, Gökbel to Çine, 400 m, *D.* 41477! C6 Gaziantep: Bal kuz (Belkis), 400 m, *Haradjian* 1015!

Not seen outside Turkey. A specimen from C2 Aydin (Karacasu, Baba Dağ above Seki, 1200 m, *D.* 41546!) resembles var. *tenerrimum* but has white petals; another from C6 Gaziantep (Yonas, 25 km E of Gaziantep, 900 m, *Haradjian* 1784 !) is intermediate between var. *tenerrimum* and larger flowered forms of var. *glutinosum*.

var. **umbellatum**.

Syn.: *H. umbellatum* sensu Boiss., Fl. Or. 1 : 709 (1867) excl. var. *pleiandrum* Fenzl.
H. umbellatum var. *oligandrum* Fenzl in Ledeb., Fl. Ross. 1 : 373 (1842).

Described from Germany and France.

TURKISH SPECIMENS : A5 Samsun : Havza, Sekizgoz, 1000 m, *Tobey* 928! *ibid.*, Kavak, 700 m, *Tobey* 523! B4 Ankara: Ankara, 10 v 1907, *Fréres de E. C.* p.p.! B5 Yozgat: 45 km S of Yozgat on road from Boğazliyan,

1100 m, *Coode & Jones* 1517! C2 Antalya: Elmali to Korkuteli, Sariyer Dağ, 1700 m, *D.* 25743! C2 Antalya: Avlan Göl, 1150 m, *Iter Leydense* 1959 : 714! C4 Konya: Konya to Çumra, Küçük köy, 980 m *Helbaek* 2411! Içel: Mut, Adras Dağ, 1300 m, *Coode & Jones* 977 ! C5 Içel: Kagiraki, *Siehe* 1896 : 77! *ibid.*, Tarsus to Namrun near Ortaköy, 1000 m, *D.* 26400! C6 Adana: Dildil Dağ above Haruniye, 1300 m, *D.* 26105! Maraş: d. Andirin, Akifiye at Findik Dere, 1500 m, *Coode & Jones* 1194! Gaziantep: Gaziantep, 900 m, *Balls* 2153!

Specimens have been seen from Iraq, Iran, Afghanistan, W. Syria, Jordan, Palestine & Cyprus. The following specimens are intermediate between var. *umbellatum* and var. *glutinosum*:–

B4 Ankara: Tuz Gölü near Kochisar, 900 m, *D.* 26294! *ibid.*, Çankaya, *Kotte*! B5 Kayseri: Kayseri to Gemerek, 1300 m, *Coode & Jones* 1318 ! Yozgat: Himmetdede to Boğazliyan, 1200 m, *Coode & Jones* 1453! C4 Konya: Konya to Çumra, Küçük köy, 980 m, *Helbaek* 2398! C5 Niğde: Aksaray to Ulukişla, 1200 m, *Coode & Jones* 186! C7 Urfa: Biredjik, Djebel Taken, *Sintenis* 1888 : 223 p.p.!

A gathering from Samos (*D.* 1641!) consists of small plants varying from glabrous (but for pedicels) to weakly glandular-hairy on stems. These might be referable to var. *glabrum* Ktze.

var. **glutinosum** (Bieb.) Gay in Ann. Sci. Nat. sér. 3, 4 : 33 (1842).

Syn.: *Arenaria glutinosa* Bieb., Fl. Taur.-Cauc. 1 : 344 (1808).
H. liniflorum Fischer & Meyer, Ind. Sem. Hort. Petrop. 3 : 39 (1839).
H. liniflorum Stev. in Fischer & Meyer, Ind. Sem. Hort. Petrop. 4 : 10 & 6 : 52 (1839)—this considered synonymous with *H. imberbe* by Gay & Boissier, and not with var. *glutinosum*.
H. umbellatum var. *pleiandrum* Fenzl in Ledeb., Fl. Ross. 1 : 374 (1842).

TYPE: in arenosis deserti inter Astrachan et Kisljar, *Bieberstein*.

TURKISH SPECIMENS: A4 Ankara: Ayas, *Kotte* 1155! A5 Çorum: Yozgat to Alaca, 1100 m, *Coode & Jones* 1690! Samsun: Havza, Sekizgöz, 1000 m, *Tobey* 929! B4 Ankara: 40 miles S. of Ankara on Konya road, 1100 m, *Coode & Jones* 94! B5 Yozgat: 7 miles from Yozgat to Sorgun, 1300 m, *Coode & Jones* 1616! B6 Yozgat: 25 miles E. of Akdağmadeni towards Yildizeli, 1500 m, *Coode & Jones* 2001! C4 Konya: Konya, 28 iv 1913, *B. V. D. Post* 23! C7 Urfa: Birecik, Djebel Taken, *Sintenis* 1888 : 223 p.p. !

Specimens have been seen from Transjordan, W. Syria, Transcaucasia and Azerbaijan, Iran and W. Pakistan. M. J. E. COODE

Saponaria halophila Hedge & Huber-Morath **species nova** affinis *S. pictae* Boiss. sed caulibus longioribus, foliis obovatis, floribus sessilibus, petalis minoribus facile distinguenda.

Perennis vel biennis (?). *Caules* procumbentes vel ascendentes, 15–45 cm longi; ad basim glabri vel pilis vel papillis eglandulosis praediti superne in regione inflorescentiae pilis longis capitatatis glandulosis dense provisi, internodiis c. 4 mm longis. *Folia* petiolata; lamina obovata, c. 10 × 5 mm, carnosa, margine integra, glabra vel pilis paucis obsita, in petiolum sensim

attenuata. *Inflorescentia* multiflora, densa. *Bracteae* lineari-ovatae, glanduloso-papillosae, quam calyces multo breviores. *Pedicelli* desunt. *Calyx* tubulosus, c. 4 mm longus, obscure 10–nervosus, pilis longis glandulosis dense munitus, dentibus 1–1·5 mm longis, anguste triangularibis marginis hyalinis. *Petala* c. 5 × 1 mm, calycibus vix longiora, linearia, apice distincte emarginata, non coronata; lamina in unguem sensim attenuata. *Filamenta* non exserta. *Ovarium* ovoideum; carpophorus ad 1 mm. *Capsula* ovoidea, 3–3·5 mm longa, carpophoro brevi suffulta. *Semina* tuberculata.
TURKEY. Prov. Konya: 76 km N. of Konya, saline marsh, 28 vi 1963, *M. Zohary & G. Orshan* 281321 (holo HUJ), 281325.

In material sent on loan by Professor Zohary, Jersualem, a distinct new species of Caryophyllaceae came to light. The correct genus to which it should be assigned caused some difficulty but it is now formally described as a *Saponaria*. Intermediate between *Saponaria* and *Gypsophila*, the new species is not clearly allied to any species in either genus but is best considered as a member of the group of species that includes *S. picta* Boiss., *S. kermanensis* Bornm. and *S. filipes* Boiss. These species have often been regarded as members of *Gypsophila* but in Barkoudah's recent monograph (Wentia 9, 1962) they are transferred to *Saponaria*.

The most distinctive features of *S. halophila* are the sessile flowers in fairly dense, many-flowered cymes, the short tubular calyx, the petals scarcely exceeding the sepals and the fleshy leaves. In calyx, capsule and seed characters *S. halophila* shares points of similarity with *Gypsophila* and *Saponaria*. In particular, the short tubular calyx with inconspicuous scarious commissures is intermediate between the two genera. Features shared with *Saponaria* are the short but distinct gynophore and the radicle only slightly longer than the cotyledons; on the other hand, the scarcely differentiated petals and the deeply 4-valved capsule are more characteristic of *Gypsophila*. *S. picta*, originally described by Boissier in *Saponaria* and later transferred by him to *Gypsophila* shares most of these intermediate technical characters with *S. halophila* and in addition has a very similar seed shape and testa. Although *S. picta* is technically the closest ally of the new species it is very distinct in general facies and unlikely to be confused with it.

S. halophila is another addition to the recently discovered distinct new species endemic to the salt lakes of central Anatolia. More material is needed of *S. halophila* to determine petal colour and whether or not it is a perennial species.

I. C. HEDGE

Vaccaria pyramidata Medik.
var. **pyramidata**
var. **grandiflora** (Fisch. ex DC.) Cullen, **comb. nov.**
Syn.: *Saponaria vaccaria* L. var. *grandiflora* Fisch. ex DC., Prodr. 1 : 365 (1824).
Vaccaria grandiflora (Fisch. ex DC.) Jaub. & Spach, Ill. Pl. Or. 3 : t. 231 (1847–50).
var. **oxyodonta** (Boiss.) Cullen, **comb. nov.**
Syn.: *Vaccaria oxyodonta* Boiss., Diagn. sér. 2 (1): 68 (1853).
Saponaria oxyodonta (Boiss.) Boiss., Fl. Or. 1 : 525 (1867).
var. **liniflora** (Boiss. & Hausskn.) Cullen, **comb. nov.**
Syn.: *Saponaria liniflora* Boiss. & Hausskn. in Boiss., Fl. Or. 1 : 525 (1867).

These four taxa fall into two groups—the first two, with short, broad calyx teeth and the second two with longer, more acuminate teeth. The distinctions between the varieties within each group are very slight, and further material may show that only two taxa should be recognised. Var. *grandiflora* appears to be one of the commonest plants in Turkey; it is recorded from almost every vilayet.

J. CULLEN

POLYGONACEAE

Atraphaxis billardieri Jaub. & Spach var. **tournefortii** (Jaub. & Spach) Cullen, **comb. nov.**

Syn.: *A. tournefortii* Jaub. & Spach, Ill. Pl. Or. 2 : 14, t. 112 (1844–6).

Polygonum bistorta L. subsp. **carneum** (C. Koch) Coode & Cullen, **comb. nov.**

Syn.: *P. carneum* C. Koch in Linnaea 22 : 197 (1849).

Subsp. *carneum* replaces subsp. *bistorta* in the north-east part of Turkey (Lazistan).

Polygonum praelongum Coode & Cullen, **sp. nov.** (Sect. *Polygonum*).

A *P. setoso* Jacq. tota planta cinerea, ochreis in regione inflorescentiae enervis, hyalinis, perigonio ad basin parce rubro-glanduloso differt.

Herba perennis, radice lignosa crassa. *Caules* adscendentes, cinereo-glauci, plus minusve eramosi, 25 cm alti. *Ochreae* infernae basi brunneae, lanceolatae, parte superiore hyalinae et laceratissimae. *Folia* linearia vel lineari-lanceolata cinereo-glauca, leviter revoluta, 12–16 × 2–2·5 mm. *Inflorescentia* spicata, floribus aliquantum remotis; ochreis toto hyalinis, plus minusve enervis. *Perigonium* 5-fidum, roseum, c. 2 mm, bracteis longius, glandulis paucis rubro-roseis obsitum. *Nux ignota*.

TURKEY. Prov. Antalya, distr. Serik, Serik, roadside, perennial, flowers pink, 23 vii 1960, *Khan, Prance & Ratcliffe* 184 (holo. E !).

It is surprising that this species has been collected only once in such a habitat in a well-explored area. Fruiting specimens are needed.

Polygonum salebrosum Coode & Cullen, **sp. nov.** (Sect. *Polygonum*).

A *P. serpyllaceo* Jaub. & Spach caulibus 7–25 cm, foliis ellipticis acutis 3–5—nervis, spicis laxis elongatis, floribus 1–3–natis, perigonio 2–2·5 mm (non. c. 1·5 mm) differt.

Herba perennis, glaber, radice lignosa crassa. *Caules* procumbentes, plerumque eramosi, 7–25 cm. *Ochreae* hyalinae, conspicuae, erosae vel laciniatae. *Folia* plerumque remota, solum in parte inferiore caulis approximata, elliptica vel suborbiculata, acuta, 3–7 × 2–4 mm, 3–5—nervia, nervis subtus conspicuis. *Inflorescentia* laxa, spicata, elongata, bracteis foliis consimilibus, floribus 1–3–natis. *Perigonium* subcandidum, 5-fidum, 2–2·5 mm. *Nux* trigona, nitidissima, in perigonio persistente inclusa.

TURKEY. Vilayet Muğla, Girdev Dağ, 2200 m, 3 viii 1947, *Davis* 13776 a (holo. E !). Vil. Antalya, distr. Alanya, Bairarsuk Yayla near Geyik Dağ, 2000 m, *Davis* 14662 p.p.

This new species appears to be closest to the Iranian *P. serpyllaceum*, though very distant from it geographically. Among the Turkish species, *P. paronychioides* C. A. Meyer most resembles *P. salebrosum*, but differs in its longer, mucronate, very crowded and overlapping leaves and longer ochreae.

J. CULLEN, M. J. E. COODE

MALVACEAE

Alcea striata (DC.) Alef. subsp. **rufescens** (Boiss.) Cullen, **comb. nov.**

Syn.: *Althaea rufescens* Boiss., Diagn. sér. 2 (1): 102 (1853).
Alcea rufescens (Boiss.) Boiss., Fl. Or. 1 : 828 (1867).

Zohary, in his recent revision of *Alcea* (Bull. Res. Counc. Israel 11 D: 223-4, 1963) treats *striata* and *rufescens* as separate species, each divided into a number of varieties. However, they can be distinguished only on the degree of lobing of the upper leaves, a character which is variable in them and in the genus as a whole; some specimens cannot be assigned to either with any degree of certainty.

J. CULLEN

Alcea pisidica Huber-Morath, **sp. nov.**

Planta perennis, 60–100 (?) cm alta, ramosa. *Caules* erecti, crassi teretes, pilis stellato-fasciculatis densis basi tuberculatis obsiti, in parte inferiore glabri vel subglabri. *Folia* basalia longe petiolata magna orbiculata, 11–13 cm. longa lata, petiolis pilis stellato-fasciculatis modice obtectis, lamina supra sparse vel modice subtus densius stellato-pilosa, grossiuscule at irregulariter crenato-dentata, basi cordata, breviter 5–7—lobata, lobis semiorbicularibus, ad $\frac{1}{4}$ paginae attengentibus; folia superiora diminuta, minus longe petiolata, indistincte lobata vel subintegra. *Flores* in inflorescentia 10–25 cm. longa racemosa dispositi, singulares, pedicellati. *Pedicelli* 10–25 mm longi. Involucellum 6–7—phyllum, dense stellato-pilosum, phyllis lanceolatis 10–12 × 3–4 mm. ± striatis, calyce paulo vel dimidio brevius. *Calyx* 15–20 mm longus, ad medium in lobis ovatis striato-lineatis stellato-pilosis fissus. *Corolla* sulphurea, petala late obovato-cuneata 45–55 mm longa. *Fructus* c. 30-carpellatus, carpellis anguste alatis, alis undulatis, tergo canaliculatis et hic stellato-pilosis lateribus subglabris.

TURKEY. B3 Isparta, distr. Şarkikaraagaç, Egridir to Gelendost, wheatfield 50 km. from Egridir, 880 m, 2 vii 1948, *Huber-Morath* 8578, *J. Renz & C. Simon* (holo. Hb. Hub.-Mor., iso. Hb. Simon).

A. HUBER-MORATH

CELASTRACEAE

Euonymus latifolius (L.) Miller subsp. **cauconis** Coode & Cullen, **subsp. nov.**

A subsp. *latifolio* alabastris terminalibus brevioribus 5–8 mm, foliis plerumque ellipticis acutisve 5–7 cm. (non 8–17 cm.) longis differt.

TURKEY. Prov. Zonguldak, 7 km. W. of Kozlu, 20–30 m, rocky limestone ravine (*Ostrya* forest), 2 m shrub, *Davis, Coode & Yaltirik* (*D.* 37614—holo. E !). Prov. Sinop, Ayancik to Zindam böl., vii 1952, *Ismail Akba.*

A specimen from N. W. Iran, Azerbaijan, Kalibar, *Mirdamadi* 820, is very similar to subsp. *cauconis*, but has larger, more elliptic leaves.

Two specimens, *D* 32098 from Trabzon, Soğanli Dağ above Çaykara, 1600 m, and *D* 38676 from Kastamonu, Azdavay to Cide, 800 m, are intermediate between subsp. *cauconis* and the more widespread subsp. *latifolius*. A further specimen from Zonguldak, Şimşir Dere, 780 m, *D* 37819, is very similar to subsp. *cauconis* but is remarkable for its underground, creeping stems. The specimen, which is sterile, was collected in dense beech forest, and probably represents an extreme shade form.

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