

MATERIALS FOR A FLORA OF TURKEY XXXVII:

Labiatae, Plumbaginaceae, Plantaginaceae

COMPILED BY P. H. DAVIS

ABSTRACT. The following groups are treated here. Labiatae: *Ajuga chamaepitys* (L.) Schreber s.l., extensively revised to include 13 subspecies; *Ballota*, 1 new species; *Dracocephalum*, 1 new varietal combination; *Lamium*, 4 new species, 2 new subspecies, 1 new variety and several infraspecific combinations; *Mentha*, 2 new subspecific combinations; *Micromeria*, 4 new subspecies and 1 new subspecific combination; *Nepeta*, 3 new species, 1 new specific combination, 1 new variety, and a discussion of the *N. racemosa* complex; *Origanum*, 3 new sections; *Salvia*, 2 new species and 1 new subspecies; *Satureja*, 4 new species and 1 new subspecies; *Scutellaria*, 1 new section, 3 new subspecies and 15 subspecific combinations; *Stachys*, 1 new species and 1 new specific combination; *Teucrium*, 1 new species, 1 new subspecies and 1 new variety; *Thymbra*, 1 new subspecies. Plantaginaceae: *Plantago*, 1 new species. Plumbaginaceae: *Armeria*, 1 new species.

INTRODUCTION

This is the second (and last) Materials paper to treat the families included in *Flora of Turkey* vol. 7—to be our last volume of Dicotyledons. Following our usual policy, all specimens cited have been seen unless the contrary is indicated by n.v. (*non vidi*). On the other hand, I have introduced into the Materials a device used in the Flora: an exclamation mark (!) after those synonyms of which type material has been seen.

This paper brings together contributions from the following authors: Z. Afzal-Rafii, P. H. Davis, A. Doroszenko, J. R. Edmondson, T. Ekim, R. M. Harley, I. C. Hedge, J. Ietswaart, J. M. Lamond, R. R. Mill, K. Tan and B. Tutel. I am indebted to Sally Jones for drawing Fig. 1 (*Ajuga chamaepitys*). We are grateful to the Science Research Council (U.K.) for their continued support for the *Flora of Turkey* project.

LABIATAE

Ajuga L.

(Syn.: *Chamaepitys* Hill)

P. H. DAVIS

The treatment of the *Ajuga chamaepitys* (L.) Schreber—*A. chia* Schreber complex, centred in the Near East, has long presented a taxonomic challenge that has not been satisfactorily solved, though W. B. Turrill (*New Phytol.* 33:218-230, 1934) gave an interesting account of the group's morpho-geographical variation as it was known at that time. Having examined several hundred sheets from SW Asia, I have come to the conclusion that to assign specific rank to *any* of the segregates is not a practical procedure. On the other hand, there is a considerable number of infraspecific taxa that can be usefully recognised on morphological and often eco-geographical grounds. Their distinctness, however, is blurred round the edges—a phenomenon that may be partly due to introgression, partly to ecotypic variation or to modifications (e.g. shaded or depauperate specimens looking very different from the norm). Habit, indumentum,

shape of cauline and floral leaves (bracts) and flower size, provide the most useful differential characters; although the sequential shape of the basal leaves may provide distinguishing characters, they soon wither and have not been observed in several of the strongly perennial taxa. The ratio of calyx teeth to tube is often variable within gatherings, and so is nutlet morphology; size of nutlets roughly correlates with flower size.

I have, with considerable hesitation, recognised here 13 subspecies within *Ajuga chamaepitys* (L.) Schreber, 10 of which grow in Turkey. Although the synonymy given in this revision will lead the reader to most of the relevant literature, more extensive references are given by M. Smejkal in *Preslia* 33:386-398 (1961). Since the publication of Smejkal's paper, J. Holub, in *Folia Geobot. Phytotax.* 9(3):269 (1974), has combined a number of binomials under *Chamaepitys* Hill—in my view an unnecessary encumbrance. These names are not included in the synonymy given in my account.

Most recently, Mouterde, in his *Nouvelle Flore du Liban et de la Syrie* 3(1):97-100 (1978) has recognised several segregate species in his area, but has taken an extremely broad view of *A. tridactylites* [Gingins ex] Benth. SE Anatolia and adjacent Iraq are particularly critical areas for *Ajuga chamaepitys* (*sensu lato*) and further study may lead to some modification of the formal treatment provided below.

Apart from the distinctive *A. iva* (L.) Schreber, only three related species lie outwith the limits of *A. chamaepitys* adopted here: the startlingly woolly *A. bombycina* Boiss., which perhaps comes near enough to *A. chamaepitys* subsp. *mesogitana* (Boiss.) Bornm. for its exclusion from *A. chamaepitys* to be questioned; *A. chasmophila* P. H. Davis from cliffs in the Anti-Lebanon, with a characteristic habit and exceptionally long calyx teeth; and *A. vestita* Boiss. from SE Anatolia (Mardin). Though the latter has sometimes been treated as closely allied to *A. bombycina* (no doubt due to a similarity in leaf shape and indumentum), it is in fact very different, having white (instead of yellow) corollas with an exceptionally long slender tube and a lower lip with a small middle lobe; its nutlets (unknown to Boissier) are foveolate, as in the European *A. chamaepitys* subsp. *chamaepitys*.

Stem indumentum and upper cauline leaves and lower floral leaves (bracts) of *A. chamaepitys* (*sensu lato*) are illustrated in Fig. 1, but it should be emphasised that the variation in shape and size of these organs is much greater than shown. The complex would seem an excellent one for biosystematic studies, but as the plants are rather difficult to grow or maintain in Britain, such an investigation would be easier to undertake in the Near East.

A key to the Turkish taxa of *A. chamaepitys*, whose infraspecific taxa are described and commented on below, will appear in *Flora of Turkey* vol. 7.

***Ajuga chamaepitys* (L.) Schreber, Pl. Vert. Unilab. 24 (1773).**

Syn.: *Teucrium chamaepitys* L., Sp. Pl. 562 (1753)!

1. subsp. *chamaepitys*

Slender annual, the leaf lobes narrowly linear, usually longer and narrower than in subsp. *chia* (Schreber) Arcangeli, exceeding the small (10-15 mm) corollas. Nutlets pitted (foveolate).

Described from Italy, England, Hungary & Switzerland (Hb. Linn. 722/5).

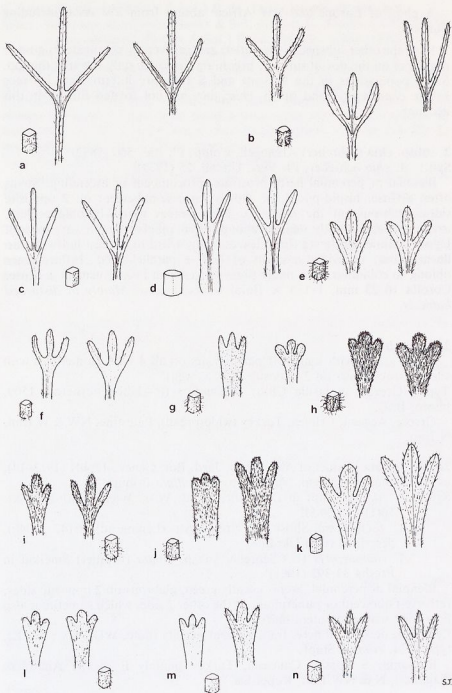


FIG. 1. *Ajuga chamaepitys*. Cauline leaves (left), floral leaves (right) and sections of stems. a, subsp. *chamaepitys*; b, subsp. *chia* var. *chia* (2 floral leaves to show variation); c, subsp. *chia* var. *ciliata*; d, subsp. *laevigata*; e, subsp. *palaestina*; f, subsp. *glareosa*; g, subsp. *libanotica*; h, subsp. *tridactylites*; i, subsp. *euphratica*; j, subsp. *mesogitana* var. *mesogitana*; k, subsp. *mesogitana* var. *amplifolia*; l, subsp. *cypria*; m, subsp. *mardinensis*; n, subsp. *rechingeri*. (All natural size).

A plant of Europe and NW Africa; absent from SW Asia (including Turkey).

In all the other subspecies the nutlets are transversely corrugate (rugose or rugulose) on the dorsal surface, becoming foveolate only towards the top. Some populations in the Balkans and S Italy are intermediate between subsp. *chamaepitys* and subsp. *chia*; they are not treated further in this account.

2. subsp. *chia* (Schreber) Arcangeli, Comp. Fl. Ital. 560 (1882).

Syn.: *A. chia* Schreber, Pl. Vert. Unilab. 25 (1773)!

Biennial or perennial herb, prostrate, procumbent or ascending. Stems often diffuse, hispid-pilose, or shortly retrorse-pubescent on 2 opposite sides (glabrous on the other 2). Basal leaves narrowly oblanceolate, irregularly and bluntly dentate above (often subglabrous in var. *ciliata*). Upper cauline and lower floral leaves neatly trifid to at least halfway into linear lobes, undivided portion of leaf $\pm$ parallel-sided. Inflorescence oblong to columnar, 3 to many times longer than broad, usually $\pm$ dense. Corolla 16–23 mm, 1–1.5 $\times$ floral leaves, yellow. *Mainly in disturbed habitats.*

2a. var. *chia*.

Stems green, with long stiff patent hairs on all 4 sides (sometimes with short retrorse hairs on 2 opposite sides as well).

Type. [Greece] in insula Chio, *Tournefort* (P—Hb. Tournefort 1509, photo; BM).

Greece, Aegean, Crimea, Turkey (widespread), Palestine, NW & W Iran, N Iraq.

2b. var. *ciliata* Briquet in Ann. Cons. Jard. Bot. Genève 17:401 (1913–14), as *A. chamaepitys* subsp. *chia* Murb. var. *ciliata* Briquet!

Syn.: *A. comata* Stapf in Denkschr. Akad. Wiss. Wien, Math-Nat. Kl. 50(1):50 (1885)!

A. pseudochia Shost. in Not. Syst. (Leningrad) 8:147 (1940), described from Ukraine.

A. chamaepitys (L.) Schreber subsp. *ciliata* (Briquet) Smejkal in Preslia 33:392 (1961)!

Biennial or perennial. Stems usually green, glabrous on 2 opposite sides, retrorse-pubescent or puberulous on the other 2 sides which sometimes also bear long scattered patent hairs.

Lectotype designated here. Iran, without locality (holo. WU—n.v.; iso. K), type of *A. comata* Stapf.

Romania, S Russia, Caucasia, Turkey (mainly E of the Anatolian diagonal), N & NW Iran, Kopet Da.

In Turkey intergrading so much with var. *chia* that subspecific rank seems unjustified.

Turrill (in *Kew Bull.* 1933:222, 1934) discusses material from S Spain (e.g. *Reverchon* 401) that resembles var. *ciliata* in habit and stem indumentum.

3. subsp. *laevigata* (Banks & Sol.) P. H. Davis, **comb. et stat. nov.**

Syn.: *Teucrium laevigatum* Banks & Sol. in Russell, Aleppo 2:255 (1794)!

Ajuga laevigata (Banks & Sol.) Boiss., Fl. Or. 4:804 (1879)!

A. glabra Benth. Lab. Gen. Sp. 700 (1834)! non Presl (1826).

Annual, biennial or perennant. Usually more robust than in subsp. *chia* with glabrous, sturdy, subcylindrical, usually purplish stems bearing a paniculate inflorescence. Cauline and lower floral leaves with a broad oblong sometimes long-ciliate basal portion that may be subvaginate at base; lobes linear, usually longer than basal portion. Corolla (18-)20-25 mm, yellow. *Vineyards, fields, stony places.*

Type from near Aleppo (Syria), *Russell* (BM).

Turkey (E and adjacent S Anatolia), Syrian Desert, Anti-Lebanon, N Iraq.

The stems are much less noticeably angled than in the other subspecies. Typical material of *laevigata* (e.g. from Mesopotamia) is so distinct as to seem to warrant specific rank. However, intermediates with subsp. *chia* (especially var. *ciliata*) are so common on the periphery of the range of *laevigata* that subspecific rank seems necessary.

4. subsp. *palaestina* (Boiss.) Bornm. in Beih. Bot. Centr. 31(2):254 (1914).
Syn.: *A. palaestina* Boiss., Diagn. ser. 1(12):92 (1853)!

A. chia Schreber var. *suffrutescens* Boiss., Fl. Or. 4:803 (1879) p.p. incl. typ. *A. palaestinae* Boiss. non *A. chamaepitys* (L.) Schreber var. *suffrutescens* Willk. (1891)!

A. lycia Stapf in Denkschr. Akad. Wiss. Wien, Math.-Nat. Kl. 50(1):102 (1885)!

Perennial (rarely annual), often with woody taproot 2-4 mm broad. Stems procumbent or prostrate, densely to sparsely villous (sometimes glabrous outside Turkey), 5-20(-30) cm, often diffuse and branched. Basal leaves (when present) linear-oblongate, remotely crenate-dentate and ± hairy. Upper cauline and lower floral leaves cuneate, trifid to halfway into oblong obtuse lobes that are narrower than in subsp. *tridactylites*, broader than in subsp. *chia*, canescent-pilose to subglabrous. Inflorescence usually dense, or lax below, usually 5-10(-15) cm. Corolla 15-20 mm, yellow, sometimes drying pinkish. *Mainly calcareous slopes (rarely in crevices), extending into disturbed ground, 5-1220 m.*

Lectotype designated here. [Syria] in collibus circa Damascus, [1846], *Boissier* (G—Hb. Boiss.). According to his *Diagnoses*, Boissier apparently based *A. palaestina* Boiss. on his own material from Jerusalem and Damascus, but as the only Jerusalem specimen in G was collected by *Kotschy* in 1855, it is necessary to choose Boissier's excellent Damascus sheet as lectotype.

W & S Anatolia, E Aegean Islands, Latakia, Lebanon, Palestine & Cyprus.

Variable in amount of indumentum; some specimens with glabrescent purplish stems have been seen from Cyprus, Lebanon and Palestine. Subsp. *palaestina* is certainly close to the variable subsp. *chia*, differing mainly in facies and shorter broader leaf lobes, and in having a more consistently

near-coastal distribution. It has quite often been determined as *A. tridactylites* [Gingins ex Bentham] Boiss.

5. subsp. *glareosa* P. H. Davis, subsp. nov.

Syn.: *A. chia* Schreber var. *suffrutescens* Boiss., Fl. Or. 4:803 (1879), pro parte quoad speciminibus Bithyniae et Ciliciae! non *A. chamaepitys* (L.) Schreber var. *suffrutescens* Willk. (1891)!

Herba perennis, manifeste suffrutescens, $\pm$ villosa, procumbens, caudiculis lignosis numerosis saepe inter lapides repentibus. *Caules* superne dense foliosi, breves, breviter villosi. *Folia* basalia haud persistentia. Folia caulina et floralia late cuneata, virescentia, ad $\frac{1}{3}$ – $\frac{1}{2}$ in lobos oblongo-lineares $\pm$ patentes divisa. *Inflorescentia* brevis, 1–3(–5) cm. *Calyx* dentibus tubo 1–2-plo longioribus. *Corolla* 18–22 mm, flava, foliis floralibus 1·5–2-plo longior. *Nuculae* (vix maturae) 3 mm, tenuiter transverse rugulosae. *On mountains in rock crevices, stony places and especially calcareous screes, c. 1600–2650 m.*

Type. Turkey A2(A) Bursa: in regione alpina, Olympi Bithynus (Ulu Da.) in latere australi, Pichler (holo. G), syntype of *A. chia* var. *suffrutescens* Boiss.

TURKEY. A2(A) Bursa: Ulu Da., 2100 m, Buttler & Erben 18022. B1 Balikesir: mt Ida (Kaz Da.), nr Kareikos, Sintenis 1883:788b. B7 Erzincan: Egin (Kemaliye), Szanduk (Sandik), Sintenis 1890:2262. C4 Konya: Küçük Geyik Da., Çetik 41. C5 Niğde: Kizil Tepe to Bulgar Maden, 2500 m, Siehe 1912:293; Ala Da., Ulupinar Y. to Kara G., 2000–2650 m, Spitzenberger 103. Içel: Bolkar Dağları, N of Arslanköy, 2500 m, Spitzenberger 126.

Some poor material from Lebanon may also belong here.

Subsp. *glareosa* is probably closer to subsp. *chia* (Schreber) Arcangeli var. *chia* than to subsp. *mesogitana* (Boiss.) Bornm. or subsp. *libanotica* P. H. Davis, but differs from all three in its caudiculous habit with abbreviated flowering shoots—evidently an adaptation to stony alpine habitats. It is a handsome plant that should make good garden material for scree or alpine house.

6. subsp. *libanotica* P. H. Davis, subsp. nov.

Herba perennis, nana, canescens, alpina. *Caules* floriferi solum 3–6 cm longi, procumbentes, hirsuto-villosi, saepe $\pm$ tortuosi, superne foliis dense imbricatis. *Folia* basalia haud persistentia. *Folia* caulina superiora cuneato-obtriangularia, 10–12 mm longa, ad 5 mm lata, adpresse striguloso-pilosa, ad $\frac{1}{4}$ – $\frac{1}{3}$ trifida, lobis ovato-oblongis obtusis; folia floralia 5–8 $\times$ 3–5 mm, obtriangularia, ad $\frac{1}{4}$ – $\frac{1}{3}$ trifida, lobis $\pm$ divergentibus obtusis. *Inflorescentia* 2–3 cm longa, ovata, plerumque densa, foliis floralibus imbricatis. *Calyx* c. 5 mm, ad medium in dentes anguste triangulares divisus, adpresse striguloso-pilosus. *Corolla* 10–15 mm longa. *Nuculae* 3 mm longae, dorsaliter transverse rugulosae, versus apicem foveolatae. *Alpine rocks and rocky slopes, 2548–3050 m.*

Type. Lebanon. Above Hermel, 2590–2740 m, Davis 10209 (holo. K).

LEBANON. Summit of Sannin [2548 m], G. Post 972; Qornet es Sauda, 2895–3050 m, Davis 9806; Makmel, 1846, Boissier.

ANTI-LEBANON. Hermon, Boissier (as *A. chia* var. *suffrutescens* Boiss.).

Previously confused with *A. tridactylites* (as a species or as a variety of *A. chia*), from which it is distinguished by its stiffer, adpressed, almost strigulose leaf hairs, but perhaps more closely related to subsp. *glareosa* P. H. Davis which differs in habit and having much larger flowers.

7. subsp. *tridactylites* (Gingins ex Benth) P. H. Davis, **comb. et stat. nov.**

Syn.: *A. tridactylites* [Gingins ex] Benth, Lab. Gen. Sp. 699 (1835)!

A. chia Schreber var. *tridactylites* (Gingins ex Benth) Boiss., Fl.

Or. 4:803 (1879)!

Saxatile perennial, varying from very dwarf and conferted to elongate and lax (in shade), softly lanate-villous throughout. Stems 3–15 cm, usually simple, brittle. Basal leaves not persisting. Upper cauline and lower floral leaves broadly cuneate to obtriangular, divided to $\frac{1}{2}$ – $\frac{1}{3}$ into divergent ovate to broadly oblong very obtuse lobes. Inflorescence dense, globose to oblong (in shade interrupted and columnar). Corolla 12–16(–20) mm, yellow or creamy, with reddish spots, usually drying pink or purplish. *Rock crevices*, c. 1000–2000 m.

Lectotype. [Sinai] in summo monte Sanctae Catherinae, *Bové* (G—DC).

Sinai, Jordan, N Iraq, W Iran—common in the Zagros range.

Mouterde (*Nouv. Fl. Lib. Syrie* 3(1):98, 1978) records this 'species' as widespread and variable in Syria, but has accepted a very broad circumscription. Although subsp. *tridactylites* might be expected to occur there, I have seen no Syrian material which could be safely referred to it in the narrow sense adopted here. Its distribution appears to be disjunct.

8. subsp. *euphratica* P. H. Davis, **subsp. nov.**

Herba perennis, saxatilis, pilis longis (praesertim in caulibus) molliter lanato-villosa. *Caules* procumbentes vel ascendentes, simplices vel inferne sparse ramosi, 5–17 cm longi, ut videtur fragiles. *Folia basalia* subpersistentia, anguste obovata, subintegra vel crenata, basi attenuata. *Folia caulina* pauca ad $\frac{1}{2}$ – $\frac{1}{3}$ -trifida (lobo mediano quam lateralibus longiore), floralia interiora late cuneata, ad medium in lobos anguste oblongos rectos sub-obtusos trifida. *Inflorescentia* densa, 3–6 cm longa. *Corolla* 15–18 mm longa, in vivo ut videtur flava, in sicco saepe rosacea. *Nuculae* 2.5 mm longae, tenuiter transverse-rugulosae, versus apicem foveolatae.

Type. Turkey B7 Erzincan: Egin (Kemaliye), Szanduk (Sandik), ad parietes rupium, *Sintenis* 1890:2262 (holo. LD).

TURKEY. B7 Erzincan: Auschin (Avşin) ad Euphratem, *Sintenis* 1890: 2197; Keban Maden, *Sintenis* 1889: 835; Ergani to Maden (collector's name illegible, W). C6 Urfa: d. Birecik, Rum Kala'a (Helfeti), *Sintenis* 1888:1508.

Apparently endemic, in Turkey replacing the closely allied subsp. *tridactylites* and differing from it in its longer narrower leaf lobes, and apparently in the form of its broad subpersistent basal leaves. The sheets cited above have been variously identified as *A. tridactylites*, *A. palaestina* and *A. chia* var. *latiloba*.

9. subsp. *mesogitana* Bornm. in Beih. Bot. Centr. 31(2): 255 (1914).

Syn.: *A. mesogitana* Boiss., Diagn. ser. 1(7):62 (1846)!

Suffrutescent procumbent or prostrate perennial. Stems densely lanate, (5-)8-20 cm. Basal leaves (when present) obovate or oblong-oblancoolate, crenate-dentate. Cauline and lower floral leaves cuneate or oblong-cuneate, lanate and greyish, inconspicuously glandular, divided to one third into ovate to oblong obtuse lobes. Inflorescence 5-15 cm. Corolla 15-25 mm, yellow. *Rocky slopes and scree, 870-2135 m.*

Lectotype designated here: Turkey C2 Aydin: in terra mobile regionis alpinae montis Mesogis (Aydin Da.) supra Tralles (Aydin), vi 1842, *Boissier* (holo. G).

Mainly scattered on mountains in the western half of Anatolia, in the following grid squares and provinces: A5 Samsun, B2 Izmir, C2 Aydin, Denizli, C3 Antalya, C4 Konya.

A gathering from Lebanon: Brummana, 200 m, *Bornmüller* 1897:1336 (K, as *A. tridactylites*) matches subsp. *mesogitana* in leaf shape and habit, but is only sparsely hirsute. See note under subsp. *mardinensis* for material intermediate between the latter and subsp. *mesogitana*.

10. subsp. *cuneatifolia* (Stapf) P. H. Davis, *comb. et stat. nov.*

Syn.: *A. chia* Schreber var. *suffrutescens* Boiss., Fl. Or. 4:803 (1879) pro parte quoad specimenibus Tauri Isaurici!

A. cuneatifolia Stapf in Denkschr. Akad. Wiss. Wien, Math.-Nat. Kl. 50(1):102 (1885)!

Procumbent perennial with a woody stock. Stems many, patent-pilose and with numerous clearly visible subsessile glands. (Basal leaves unknown). Cauline and lower floral leaves greenish, pilose, with numerous conspicuous subsessile glands, broadly cuneate to obtriangular, 15-25(-30) mm, 3-(-5)-toothed or lobed to one third into ovate to oblong, obtuse lobes. Inflorescence dense, 3-7 cm. Corolla 15-25 mm, yellow. *Rocky limestone slopes and rock crevices, c. 1000-3660 m.*

Type. Turkey C2 Antalya/Muğla (Lycia): Akdag, 17 vii 1882, *Luschan* (WU).

TURKEY. B1 Balikesir: mt Ida (Kaz Da.) nr Kareikos, *Sintenis* 1883:788a. C3 Antalya: Bozburun Da. above Çukur Y., 1900-2100 m, *Davis* 15622; Çalbalı Da., 2000-2100 m, *Davis* 15283. C4 Antalya: Geyik Da., 2440 m, *Davis* 14500. C5 Niğde: Ala Da., 2300-3200 m, 3 viii 1962, *Urdl.* C9 Hakkari: Cilo Da., in Diz De., 1760 m, *Davis* 23880. C10 Hakkari: W of Cilo Tepe, 3660 m, *Davis* 24198 (dwarf high alpine form, stems sparsely pilose). NIRAQ. Mosul Liwa, Matina, 1800 m, *El Rawi* 8669A.

11. subsp. *cypria* P. H. Davis, *subsp. nov.*

Herba parva, perennis, saxatilis, molliter incano-villosa. *Caules* 3-8 cm, prostrati vel procumbentes, fere ad basin floriferi. *Inflorescentia* oblonga, densa. *Folia basalia* obovato-oblancoolata, pauce crenata, saepe mox emar-cida. *Folia caulina* et floralia inferiora cuneata, 8-14(-18) mm, versus apicem breviter obtuse 3(-5)-latidentata vel subintegra. *Calyx* dentibus tubum aequantibus vel longioribus. *Corolla* solum 8-11 mm longa, flava, in sicco erubescens. *Nuculae* 2.5 mm longae, in parte superiore foveolatae, inferne dorsaliter transverse rugulosae. *Crevices of limestone rocks, 20-915 m.*

Type. Cyprus. Near Dhiorios, 300 m, rough limestone slope, flowers pale sulphur, lip finely crimson-spotted, but lobes pencilled same colour, *Meikle* 2345 (holo. K).

CYPRUS. *Athalassas* (Nicosia), 180 m, *Syngrassides* 1328; nr Kantara, *Sinten* & *Rigo* 1880: 123; *Pentadactylos*, *Sinten* & *Rigo* 1880:123; *Buf-favento*, 760–915 m, *Davis* 2798; *ibid.*, *Davis* 2186; Yaila (above Kythrea), 820–915 m, *Davis* 2865; Larnaca-tis-Lapithos, 300–460 m, *Davis* 2094.

TURKEY. (SW Anatolia). C2 Muğla: d. Fethiye, Mt Cragus (Baba Da.), *Forbes*. C3 Antalya: Çarma Da., 210 m, *E. R. B. Little* 37; d. Kemer, Göynük De., 20–100 m, *Peşmen* 4575 & *Güner*.

Distinguished from subsp. *mesogitana* by its smaller usually more shortly lobed cauline and lower floral leaves, and by its smaller flowers.

12. subsp. *mardinensis* P. H. Davis, subsp. nov.

Herba parva, perennis, suffrutescens, pilis brevibus densis subadpressis molliter canescens. *Caules* floriferi 4–12 cm longi, procumbentes. *Inflorescentia* oblonga, densa, 3–10 cm longa. *Folia* caulina superiora et floralia inferiora parva, imbricata, cuneato-oblonga vel cuneata, 5–12 mm longa (folia caulina infirma diminuta), canescentia, saepe violaceo-suffusa, ad $\frac{1}{4}$ – $\frac{1}{3}$ in lobos subobtusos trifida. *Corolla* 14–20(–24) mm longa, aurea. Type. Turkey C8 Mardin: Gercüş, 1100 m, calcareous steppe, *Davis* 42880 (holo. E).

TURKEY. C9 Mardin: d. Silopi, Hessana at foot of Cudi Da., 900 m, S sloping limestone rocks, *Davis* 42816; Cudi Da. above Hessana, 1400–1500 m, rocky limestone slope, flowers gold, *Davis* 42832.

IRAQ. Dj. Bikhair, nr Zakho, 800–1200 m, *El Rawi* 23072; Mt (Djebel) Sindjar, *Hausknecht* 828 (as *A. chia* var. *suffrutescens*).

The type is a good match with the Dj. Sindjar specimen at K.

Two puzzling gatherings have been seen from SE Anatolia that are intermediate between subsp. *mardinensis* and subsp. *mesogitana*. These are:—C8 Siirt: gorge of Siirt, 610 m, *Rix* 389(K); 15 km SSW of Siirt, 500 m, 17 vi 1966, *Eiselt* (W). Similar small-flowered material (mostly in fruit) is well represented at K from N Iraq, mainly from the neighbourhood of Zakho and Rowanduz. The status of this material is unclear to me.

13. subsp. *rechingeri* (M. Bilik) P. H. Davis, comb. et stat. nov.

Syn.: *A. rechingeri* M. Bilik in *Ark. Bot.* 5:347 (1960)!

Distinguished from subsp. *mardinensis* P. H. Davis by its densely imbricate cauline and floral leaves, acute more pointed leaf teeth, longer more stiff and spreading indumentum, and usually longer dense columnar inflorescences. Basal leaves not observed. *Corolla* 12–14 mm, yellow. *Rocky steppe, limestone gullies*.

Type. Syria. Des. Syr. in montibus a Qaryatein or. vers., *Post* 104 (holo. G).

SYRIA. Near Qaryatein, Nebk, Palmyra and Rutba.

TURKEY. C6 Maraş/Gaziantep: Halibas, 33 km NE of Gaziantep, 600 m,

Eiselt; Büyük Araplar Köyü, 1200–1300 m, *T. Ekim* 3310 (habit rather lax). C8 Mardin: Mardin to Nusaybin, 850 m, shallow limestone gully, *Davis* 28496 (unicate).

Unfortunately the Turkish material is all in fruit, but seems to belong here.

Ballota

P. H. DAVIS & A. DOROSZENKO

***Ballota latibracteolata* P. H. Davis & A. Doroszenko, sp. nov.**

A *B. larendana* Boiss. & Heldr. caulibus glanduloso-villosis, bracteolis latioribus lineari-oblongatis vel spatulatis, 6–10 × 0.6–2.2 mm, glanduloso-ciliatis distincte mucronatis, calyce paulo majore (c. 8 mm longo) glanduloso-pubescente dentibus mucronatis longioribus differt.

Type. Turkey C4 İçel: Anamur, in grounds of Selçuk castle, in shade of walls, flowers whitish with rose-purple stripes, *Townsend* 74/65 (holo. & photo. K).

TURKEY. C3/4 Antalya: Alanya, *Elsa* & *G. Wängsjö* 2718 (LD). C4 İçel: Anamur to Gilindre, 20 m, *Davis* 26016 (E, BM)—in bud; Anamur, *Péronin*!

A well-distinguished coastal species, readily recognised by its broad bracteoles. The closely related *B. larendana* is almost confined to central Anatolia, where it is local and rather variable. *B. simonii* Huber-Morath (*Bauhinia* 5:231, 1976) falls within the latter's range of variation.

Dracocephalum

J. R. EDMONDSON

***Dracocephalum multicaule* Benth var. *setigerum* (Boiss. & Huet) Edmondson, comb. et stat. nov.**

Syn.: *D. setigerum* Boiss. & Huet in Boiss., *Diagn. ser. 2*, 4:21 (1859)!

The variety is endemic to E Turkey. According to Shishkin (*Fl. URSS* 20:470, 1954), *D. multicaule* (var. *multicaule* according to the present treatment) occurs in Iran, but I have not seen any evidence to support this statement; the only confirmed records come from eastern Turkey and Transcaucasia.

Lamium

R. R. MILL

Turkey and adjacent SW Asia is a major centre of diversity for the genus *Lamium*, with several polymorphic species. The range of variation is so great that it is difficult to gain a proper appreciation from a study of the material in British herbaria. It was therefore of very great benefit to have the opportunity of spending a week at the Rijksherbarium, Leiden, in May 1979. My discussions with Drs J. Mennema, who is monographing the genus, and the examination of a vast range of material on loan to him from numerous European herbaria, have greatly helped in my own treatment of the genus for *Flora of Turkey*.

Lamium caricense R. Mill, *sp. nov.*

Species *L. lycio* Boiss. affinis sed calyce longiore (10.5–19.5 mm), bracteolis longioribus [(3.5–)4–8.5 mm] differt.

Herba perennis. *Caules* 12–34(–53) cm alti, plerumque villosi, rariore puberulentes vel breviter pilosi. *Folia* ovata, rariore ovato-reniformia, longe petiolata (petiolum ad 10–70 cm longum), lamina mediana 20–50(–80) × 14–44(–60) mm, ± profunde cordata, margine crenato vel duplicato-crenato, atrovirentia vel nigrescentia, villosa vel puberulentia. *Verticillastri* 1–6, 6–10(–12)-flori. *Bracteolae* (3.5–)4–8.5 mm longae. *Calyx* 10.5–16(–19.5) mm longus, tubo 5–11 mm longo, pubescente vel villosus, dentibus anguste triangularibus, 3–6.5(–8) mm, ± dense ciliatis. *Corolla* roseo-purpurea vel malvina, non vel indistincte striata, 22–40 mm longa; tubus rectus, 12–17 mm longus, annulatus; labium superius bifidum lobis divergentibus oblongis 1–4(–5) mm longis; labium inferius ± profunde emarginatum, 6.5–13 mm, lobis lateralibus angulatis, exappendiculatis vel breviter appendiculatis. *Nuculae* 2.2–3.2 × 1.1–1.2 mm, atrovirentes maculis paucis pallidis ornatae. *Fl.* (Nov.–)Mar.–Jul.

Type. Turkey C2 Aydin: d. Karacasu, Baba Da. above Seki, 1400 m, shady rocks, 22 iv 1965, *P. H. Davis* 41628 (holo. E, iso. K).

TURKEY. A1(A) Çanakkale: Renkoei (Erenköy), Menderes Da., in Dumbrek valley, 12 & 30 iv 1883, *Sintenis* 110. Renkoei, Scala, 10 iv 1883, *Sintenis* 110. B1 Balikesir: Kaz Da., Arduc Batz, 1300 m, 20 v 1962, *Dudley* (D. 34828). Manisa: Manisa Da., c. 950 m, 30 iii 1977, *K. Lewejohann* Tu-74-074 & *F. Holtz*. Izmir: Nif Da., N slope above Kemalpaşa, 12 v 1969, *Fitz & Spitzenberger* 450. B2 Manisa: Demirci to Simav, Akcakertik pass, 1310 m, *Huber-Morath* 17227. Izmir: Boz Da., 1640 m, *Huber-Morath* 2675. C1 Aydin: Samsun Da. above Güzelçamlı, 500–600 m, *Davis* 41692. C2 Muğla: above Bozdoğan, 610 m, 22 iv 1962, *Guichard* TUR/71/62. Denizli: Honaz Da. on the way to Arpacik, 1320 m, 7 xi 1972, *A. Baytop* ISTE 23683; *ibid.*, 800 m, 8 iv 1973, *Tuzlaci* ISTE 24019. Antalya: Kuhu Da., S of Elmali, 12 vi 1969, *Fitz & Spitzenberger* 779.

GREECE. Mt Phoidias, 5 vi 1893, *K. Grimus von Grimberg* 228. Cephalonia, mt Aenos, 13 vi 1895, *K. Grimus von Grimberg*.

This new species is close to *L. lycium* Boiss. but was formerly confused with *L. garganicum* L. The corolla tube of the latter, however, lacks an annulus. *Davis* 41692 has a more strongly striate corolla and is thereby transitional to *L. garganicum*, although the corolla is annulate as in all other specimens of *L. caricense* which have been seen.

Lamium pisidicum R. Mill, *sp. nov.*

Syn.: *L. tenuiflorum* sensu Boiss., *Fl. Or.* 4:759 (1879) non Fisch. & Mey. in *Ann. Sci. Nat. sér.* 4, 1:35 (1854).

A *L. tenuifloro* Fisch. & Mey. corolla tubo tenuissimo, labio superiore bifido recedit.

Herba perennis, pubescens usque villosa. *Caules* 12–22 cm alti, ascendentes vel erecti, pilis brevibus obsiti, eglandulosi; inflorescentia glandulosa. *Folia* longe petiolata (petiolum 18–40 mm longum), lamina ovata vel reniformis, 18–25 × 15–17 mm, apice obtusa, basi cordata, margine ± profunde inciso-crenato, pilosa vel villosa. *Verticillastri* 1–4, 8-flori, ± remoti. *Bracteolae* 2.5–3.7 mm, anguste lineari-setaceae, margine setuloso.

Calyx 8–10 mm longus, campanulatus, dentibus longitudine $\frac{3}{4}$ – $\frac{1}{4}$ tubi partes aequantibus, anguste triangularibus, glandulosis. *Corolla* rosea-purpurea vel malvina, (16–)21–30 mm longa; tubus tenuissimus, (10–)16–21 $\times$ 0.8 mm, exannulatus; labium superius 5.5–10 mm longum, $\pm$ profunde bifidum (lobis 1–3 mm longis); labium inferius crenulatum, emarginatum, 4–6 mm longum. *Nuculae* ignotae. *Fl.* Mai.

Type. Turkey C3 Isparta: in monte Davros Pisidia, 914–1829 m, v 1845, *Heldreich* (holo. E, iso. G).

TURKEY. C3 Isparta: Davras Da., dry places, 23 v 1966, *A. Baytop* ISTE 9609; S bank of Eğirdir G., 19 v 1965, *Eiselt*.

Related to *L. tenuiflorum*, which has a more easterly distribution (Konya and İçel vilayets). It differs from *L. tenuiflorum* by its still more slender corolla tube (0.8 mm broad, not 1.2–1.5 mm as in the latter species) and its deeply bifid hood. It is considered sufficiently distinct to be worthy of specific rank. Both it and *L. tenuiflorum* are closely allied to *L. garganicum*.

***Lamium garganicum* L., Sp. Pl. ed. 2:808 (1763).**

Anatolia is a major centre of variation for this highly polymorphic species which extends from Spain and NW Africa eastwards to Iran. Treatment of the species is very difficult because of the highly reticulate and often continuous nature of the variation. However, the variation is such that certain infraspecific taxa can be delimited on the basis of more or less discontinuous character states. None of the many Turkish specimens seen match those from Italy, including the specimens from mt Gargano in the Linnaean herbarium (Hb. Linn. 733/2, 4, 5—photos) and consequently I do not consider that subsp. *garganicum* occurs in Turkey. Subsp. *striatum* (Sm.) Hayek, which Ball (*Bot. J. Linn. Soc.* 65:347–350, 1972; *Fl. Europaea* 3:147, 1972) included in subsp. *garganicum*, does occur in the *Flora of Turkey* area but is confined to the East Aegean islands (Lesvos and Samos). Subsp. *laevigatum* (Sm.) Arcangeli occurs in NW Anatolia. In addition to these two subspecies, one new subspecies and four new combinations are proposed in the following treatment.

L. garganicum* L. subsp. *reniforme* (Montbret & Aucher ex Benth) R. Mill, *comb. et stat. nov.

Syn.: *L. reniforme* [Montbret & Aucher ex] Benth in *Ann. Sci. Nat. sér.* 2, 6:47 (1836)!

L. striatum Sm. var. *reniforme* (Montbret & Aucher ex Benth) Boiss., *Fl. Or.* 4:757 (1879)!

Inner & S Anatolia, Caucasia, N Iran.

L. garganicum* L. subsp. *nepetifolium* (Boiss.) R. Mill, *comb. et stat. nov.

Syn.: *L. striatum* Sm. var. *nepetaefolium* Boiss., *Fl. Or.* 4:757 (1879)!

Lectotype designated here: Turkey C5 İçel: Tauro Cilicico [in rupestribus vallis Gusguta et montis Gisyl Deppe, 1830–2440 m, 25 vi 1853], *Kotschy* 17 (G).

S Anatolia (Adana, İçel, Maraş). Endemic.

L. garganicum L. subsp. **rectum** (Schenk) R. Mill, **comb. et stat. nov.**

Syn.: *L. rectum* Schenk, Pl. Sp. Nov. Aegypt. 19 (1840).

S Anatolia (incl. Amanus), Latakia, Palestine, Lebanon.

L. garganicum L. subsp. **lasioclades** (Stapf) R. Mill, **comb. et stat. nov.**

Syn.: *L. lasioclades* Stapf in Denkschr. Akad. Wiss. Wien, Math.-Nat. Kl. 50(2):101 (1885)!

S & SE Anatolia, Syria, N Iraq.

L. garganicum L. subsp. **pulchrum** R. Mill, **subsp. nov.**

Differt a ceteris subspeciebus turcicis habitu caespitoso, caulibus tegetem formantibus, corolla alba apicibus labiorum maculis violaceis (non kermesinis) ornatis.

Caules 6–17 cm alti, tegetem formantes, villosi usque subglabri. *Folia* reniformia vel cordata-ovata, 3–16 × 3–20 mm, petiolis 5–45 mm longis, densissime albido-villosa, glandulosa. *Folia floralia* cordato-ovata, 8–18 × 11–14(–21) mm, crenata. *Verticillastri* 1(–2), 4–8-flori. *Bracteolae* 3–6 mm longae. *Calyx* (6·5–)10–11 mm longus, glaber vel pilosus, dentibus triangularibus 2–4 mm longis villosio-ciliatis glandulosus. *Corolla* alba, 25–35 mm longa, purpureo-striata, apicibus amborum labiorum macula violacea ornatis; labium superius retusum, 8–15 mm longum. *Nuculae* 3·5 × 1·3–1·5 mm, brunneae, immaculae. *Fl.* Jun.–Aug.

Type. Turkey C5 Niğde: Ala Da., base camp, 2515 m, 29 vi 1964, P. W. Wood & W. B. Gibson 117 (holo. E).

TURKEY. B5 Niğde: Aksaray, Hasan Da., 2120 m, *Düzenli* 3080. C5 Niğde: Ala Da. on Demirkazik, *Findlay* 120.

Endemic. A very beautiful subspecies, closely allied to subsp. *rectum* but also resembling *L. tomentosum* in habit and indumentum, differing from the latter by the larger, striate corolla lacking an annulus in the tube.

Lamium armenum Boiss. subsp. **sintenisii** R. Mill, **subsp. nov.**

Subsp. *armeno* valde affinis sed foliis adpresse pubescentibus vel pilosis (haud tomentosis), corolla rosea (haud alba) differt.

Herba perennis humilis tegetes formantes radice crassi et caudiculis numerosis nudis ad 15 cm longis. *Caules* 4–11 cm alti, ± glabri, eglandulosi. *Folia* rhombea vel suborbicularia, 2–10 × 2–10 mm, truncata vel cuneata, adpresse-pubescentia vel -pilosa, petiolis alatis 5–15 mm longis; veni subtus elevati, chartacei, alati. *Verticillastri* 1–2, 4-flori. *Bracteolae* 2·5–4 mm longae. *Calyx* viridis, demum vivide purpurascens, 10–14 mm longus, tubus 7·5–10 mm longus, dentes 2·5–5 mm longi. *Corolla* rosea, 35–39 mm longa, tubo 25–28 mm longo exannulato; labium superius 11–14 mm integrum, ± truncatum; labium inferius kermesinum maculis atro-kermesinis ornatum, 9–12 mm longum. *Nuculae* 4 × 1·5–1·6 mm, laeves. *Fl.* Jul.

Type. Turkey A4 Kastamonu: Tossia, Büyük Ilgaz Dag, in summo, 2700 m, 23 viii 1892, *Sintenis* 4764 (holo. JE; iso. B, G, GOET, K, Z).

TURKEY. A4 Kastamonu: Ilgaz Da., Cazikgediği SW of Çatalilgaz, 2000 m, *Watson et al.* 3822; *ibid.*, E of pass, 2000 + m, on scree of summit, *Darrah* 61; *ibid.*, N side of Ilgaz Da., unstable limestone scree, 2200 m, 28 vii 1962, *Davis, Coode & Yaltirik*, D. 38405.

Endemic. Subsp. *armenum*, which differs from subsp. *sintensis* by its normally white corollas with larger lower lip 12–14 mm long, leaves with denser, pubescent to villous indumentum, and larger lower floral leaves $10\text{--}12 \times 12$ mm, is confined in Turkey to Erzincan, Gümüşane, Trabzon and Erzurum vilayets but also occurs in Adzhariya. Both subspecies are restricted to mobile scree habitats and represent an example of a pair of vicarious taxa.

***Lamium sulfureum* [Hausskn. & Sint. ex] R. Mill, sp. nov.**

L. tomentosum Willd. affinis sed caulibus brunnescentibus, superne sparse pilosis, inferne glabris, bracteolis 1–1.5 mm longis, calyce 8.5–9 mm longo dentibus 3–3.5 mm longis, labio superiore corollae integro differt.

Herba perennis 7–13 cm alta. *Caules* ascendentes, simplices, brunnescentes, inferne glabri, superne sparse pilosi, eglandulosi, pilis et longioribus subpatentibus et brevioribus adpressis muniti. *Folia* petiolata (petiola medianorum 7–20 mm longa), lamina cordato-ovata vel reniformia, inferiora $3\text{--}9 \times 3\text{--}9$ mm, mediana $9\text{--}18 \times 10\text{--}22$ mm, obtusa, cordata, crenato-mucronulata, eglandulo-pilosa vel -villosa et glandulis sessilibus minuta. *Folia floralia* inferiora $13\text{--}20 \times 8\text{--}18$ mm, suprema $7\text{--}8 \times 5$ mm, cordato-ovata, obtusa vel acuta, cordata usque truncata, crenata (dentibus in quoque latere 7–10). *Verticillastri* 1–2, 4–6-flori, ad apicem caulis congesti. *Calyx* campanulatus, 8.5–9 mm longus, tubus 5–5.5 mm, pilosus; dentes 3–3.5 mm, villosi, ciliati-setulosi, glandulis sessilibus provisi. *Corolla* crenea vel eburnea, 22–28 mm longa, tubus 14–16 mm longus, annulatus; labium superius integrum, 8.5–12 mm longum, villosum, inferius 5–8 mm longum, lobo mediano emarginato ad 2–2.5 mm, crenato vel undulato lobis lateralibus appendice 1.3–1.5 mm longa munitis. *Nuculae* ignotae. *Fl.* Jul.

Type. Turkey A7 Gümüşane: Karagoellidag, in lapidos[is] mobil[ibus] ad Boejükgoell (Büyükgöl), ad nivem, 2745 m, 31 vii 1894, *Sintensis* 7007 (holo. LD, iso. Z).

TURKEY. A8 Gümüşane: Kara Da., N of Bayburt, 3050 m, *Balls* 1834.

Endemic. Allied to *L. tomentosum*.

***Lamium eriocephalum* Bentham subsp. *glandulosidens* (Hub.-Mor.) R. Mill, comb. et stat. nov.**

Syn.: *L. glandulosidens* Hub.-Mor. in *Bauhinia* 6(2):296 (1978)!

SW & adjacent C Anatolia; disjunct from var. *eriocephalum* (Bolkar Da. range, ?Hatay).

***Lamium maculatum* L. var. *villosifolium* R. Mill, var. nov.**

A varietate typica foliis parvis dense villosis, saepe purpureo-tinctis differt.

Type. Turkey A4 Kastamonu: Büyük Ilgaz dag, in pascuis alpinis, 28 v 1892, *Sintensis* 4008 (holo. LD).

TURKEY. A4 Kastamonu: Ilgaz Da., 1860 m, *Davis* 21584. A5 Kastamonu, Çukurhan, Kaz Da., 1600 m, *Kilinç* 3733. A5/6 Amasya: Ladik, Kurt Y., 1400 m, *Tobey* 1634.

A gathering from A5 Çorum (Kebabdere above Karmış, 1800 m, Coode & Jones 1762) is intermediate between var. *maculatum* and var. *alpinum*.

Endemic. Sintenis's specimen was named 'var. *alpinum* Hausskn., nov. var.' but this epithet is antedated by *L. maculatum* var. *alpinum* Heuffel (1858).

Lamium leucolophum [Hausskn. ex] R. Mill, sp. nov.

Species *L. crinito* [Montbret & Aucher ex] Benthaffinis sed dentibus calycis multo brevioribus (3–4 mm), indumento adpresse piloso non plumoso, labio superiore corollae pilis longis leucocristato differt.

Herba perennis. *Caules* ascendentes, pilosi, 10–15 cm alti. *Folia* petiolis anguste alatis 6·5–15 mm longis, lamina ovato-reniformis, 12–17 × 13–18·5 mm, obtusa, cordata, duplicato-crenata, atroviridis, pilosa vel villosa, rugosa. *Folia floralia* late ovata, inferiora 12–17 × 13–15 mm. *Verticillastri* 4–5, 10-flori. *Bracteolae* 1·5 mm longae. *Calyx* 7·5–9 mm longus, tubus 4·5–5 mm longus, adpresse pilosus, dentes 3–4 mm, ciliati. *Corolla* e sicco albo, 19–20 mm longa; tubus rectus, 12–13 mm longus, annulatus; labium superius 7 mm longus, pilis densis longis eburneis cristatum; labium inferius 9 mm longum, lobo mediano profunde emarginato, c. 4·5 × 4 mm, lobis lateralibus dente 0·5 mm longo provis. *Nuculae* (una sola visa) c. 2·5 × 1·3 mm, pauciaca, albido-pustulosae. *Fl.* Apr.–Mai.

Type. Turkey A4 Kastamonu: Kastambuli (Kastamonu), inter segetis prope Hambarlu, 4 v 1892, Sintenis 3753 (holo. JE, iso. LD).

Endemic. Near to *L. crinitum*. The holotype is named '*leucopogon*' in Haussknecht's handwriting but the material was later distributed under the name '*L. leucolophum*'.

Lamium moschatum Miller var. *rhodium* (Gand.) R. Mill, comb. et stat. nov.

Syn.: *L. rhodium* Gand. in Bull. Soc. Bot. Fr. 60:26 (1913)!

W & SW Anatolia, E Aegean islands.

Rechinger (*Fl. Aegaea* 511, 1943) treated *L. rhodium* as a doubtful synonym of *L. moschatum* Miller var. *micranthum* Boiss., which Boissier (*Fl. Or.* 4:759, 1879) had distinguished from var. *moschatum* by its more slender calyx teeth and smaller corollas. I have compared type material of *L. rhodium* (Rhodes, in collibus petrosis ad Filierino, 20 v 1870, Bourgeau: holo. LY; iso. LD, P) with specimens of *L. moschatum* var. *micranthum* from S Anatolia, Palestine and Cyprus, and consider that the two are distinct. *L. rhodium* differs by its larger corollas similar in size to those of *L. moschatum* var. *moschatum*. However, all the material of *L. rhodium* which I have seen differs from var. *moschatum* by its smaller calyces [8–12(–13) mm, not (12–)13–14 mm] and nutlets covered with whitish spots. The differences are such that *L. rhodium* does not warrant specific rank and it is here reduced to varietal status within *L. moschatum*.

Lamium tomentosum Willd. var. *hakkiarense* (Náb.) R. Mill, comb. et stat. nov.

Syn.: *L. hakkiarense* Náb. in Publ. Fac. Sci. Univ. Masaryk Brno 70:67, t. 4 f. 2 (1926)!

SE Anatolia, N Iraq.

Mentha

R. M. HARLEY*

***Mentha longifolia* (L.) Hudson subsp. *typhoides* (Briq.) Harley, comb. nov.**
Syn.: *M. sylvestris* L. subsp. *typhoides* Briq. in Bull. Soc. Bot. Genève 5:90 (1889)!

Type. Turkey C5 Adana: bords des ruisseaux descendant du Masmeneu Dag (Mazmili Da.) à 25 lieues (100 km) au sud de Césarée (Kayseri), 8 viii 1855, *Balansa* (holo. G).

The recognition, in different parts of its range, of many local specific and infraspecific taxa which can all be referred to the widespread and polymorphic *M. longifolia* (L.) Hudson has done little to clarify its taxonomy. Fortunately, the Turkish material has not been picked on by the more extreme splitters for their attentions, and therefore synonymy is not too serious a problem.

The species ranges through Europe and Asia to the Himalayas and extends through N and E Africa to the Cape. Generally occurring in montane regions, it is split up into many populations showing greater or lesser degrees of morphological differentiation. At the same time, due partly to environmentally controlled plasticity effects, but also to genetic variability, the variation within populations appears greater than one normally expects to find within most plant species. In the past, less careful workers have been tempted to recognise new taxa in each isolated herbarium specimen, but there is a genuine difficulty in trying to define taxa of a meaningful size and distribution, when such variation exists. The most recent attempt to consider the classification of the whole group is that of Briquet (1889), but the treatment was superficial and based on too little material, with the result that the author attempted to modify it on several subsequent occasions.

In the account for *Flora of Turkey* only three subspecies have been recognised: subsp. *longifolia*, subsp. *typhoides* (Briq.) Harley, with two varieties, and subsp. *noeana* (Boiss. ex Briq.) Briq. Turkey appears to have acted as a melting pot for various geographical elements within *Mentha* and this is well demonstrated in *M. longifolia*. The taxa recognised will probably have to be increased when the group is better understood, and when we know more about the situation in certain neighbouring regions, especially the Caucasus.

In western Turkey particularly, the interaction between *M. spicata* and *M. longifolia* in forming hybrids, with possible introgression between different levels of ploidy, needs to be investigated. This will undoubtedly help to explain some of the difficulties in identifying some plants which may be the result of hybridisation. Indeed, without detailed field studies in areas where complex variation patterns occur, it is almost impossible to create a meaningful taxonomy.

***Mentha spicata* L. subsp. *tomentosa* (Briq.) Harley, comb. nov.**
Syn.: *M. tomentosa* d'Urv., Enum. Pl. Ins. Pont. Eux. 67 (1822) nom. illegit. subsp. *tomentosa* Briq. in Bull. Soc. Bot. Genève 5:97 (1889).

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M. microphylla sensu Hayek, Prodr. Fl. Balc. 2:397 (1930) et sensu Harley in Fl. Eur. 3:186 (1972), ? an C. Koch in Linnaea 21:650 (1849).

M. sieberi C. Koch in Linnaea 21:649 (1849)!

M. canescens Sieber in sched. non Roth (1800).

M. sylvestris L. var. *stenostachya* Boiss., Fl. Or. 4:543 (1879)!

M. sieberi C. Koch var. *illyrica* Borb. & H. Braun in H. Braun, Verh. Zool.-Bot. Ges. Wien 40:390 (1890).

M. microphylla C. Koch subsp. *illyrica* (Borb. & H. Braun) Hayek, Prodr. Fl. Balc. 2:398 (1930).

M. sofiana Trautm., Bot. Közlem. 29:111 (1932)!

Type. Greece. Ad fontes insulae Scyri (Skiros), vii 1819, *Dumont d'Urville* 618 (holo. G-DC, photo).

This plant has suffered from an extensive synonymy and has often been treated as a distinct species as *M. microphylla* C. Koch. However, it shares with typical *M. spicata* the same ancestry, both being allotetraploids derived from *M. longifolia* and *M. suaveolens*.

Populations from Bulgaria have been studied in the field and these indicate that there has been so much hybridisation between the naturalised *M. spicata* and '*M. microphylla*' that no distinction can be drawn between them, the hybrids being fully fertile and giving rise to extremely heterogeneous and variable populations. The situation in Turkey is apparently very similar. It therefore seems more appropriate to treat the native E Mediterranean plant as a subspecies of *M. spicata*, while the cultivated and naturalised plants fall under subsp. *spicata*.

The name *M. tomentosa* d'Urv. is illegitimate, being a later homonym of *M. tomentosa* Sm. in Rees, *Cyclop.* 23 (1812). Briquet, however, subdivided *M. tomentosa* into three subspecies, namely subsp. *tomentosa*, subsp. *condensata* and subsp. *glareosa*, and I am here treating *M. tomentosa* d'Urv. subsp. *tomentosa* Briq. as validly published.

It could be argued that subsp. *tomentosa* should be regarded as an autonym and as such it should not (Art. 26.2) 'be taken into consideration for reasons of priority'. This Article, however, expressly states that it is 'the first valid publication of a name of an infra-specific taxon which does not include the type of the correct name of the species' which automatically establishes the name of a second taxon of the same rank which, for the purposes of the Article, is to be regarded as an autonym. In the instance cited here, Briquet has deliberately published and described the subspecies and as such it is not automatically established and must be taken into consideration for purposes of priority.

I wish to thank Mr R. D. Meikle and Dr R. K. Brummitt for their invaluable advice on this point.

Micromeria

P. H. DAVIS

Micromeria fruticosa (L.) Druce in Rep. Bot. Exch. Cl. Brit. Isles 3:421 (1941).

subsp. *giresunica* P. H. Davis, subsp. nov.

Caules procumbentes, 15–30 cm. *Inflorescentia* ovato-oblonga, laxe paniculata, 3–10 cm longa. *Calyx* 2–2.5 mm longus, obconico-cylindricus, fauce conspicue barbatus.

Type. Turkey A7 Giresun: Tamdere to Yavuzkemal, nr Karınca, 1500 m, crevices of granite rocks, nr road tunnel, 13 viii 1952, *Davis* 20750 (holo. E, iso. K).

Differs from the S Anatolian subsp. *brachycalyx* P. H. Davis (*Kew Bull.* 1951:77, 1951) in its procumbent habit and larger, more elongate calyces. The NE Anatolian subsp. *serpyllifolia* (Bieb.) P. H. Davis (*loc. cit.*, 1951) differs from subsp. *giresunica* in its erect habit and calyces not bearded at throat.

Micromeria cremnophila Boiss. & Hohen. in Boiss., *Fl. Or.* 4:570 (1879). subsp. *amana* (Rech. fil.) P. H. Davis, **comb. et stat. nov.**

Syn.: *M. amana* Rech. fil. in *Svensk. Bot. Tidskr.* 43:42 (1949).

Endemic to S Anatolia (Cilician Taurus, Anti-Taurus, Amanus).

Although *M. amana* was originally related by Rechinger to *M. cristata* (Hampe) Griseb. and *M. microphylla* (d'Urv.) Benthham, it is morphologically so close to the rather variable *M. cremnophila* Boiss. & Hohen. from Greece that they must be treated as conspecific.

subsp. *anatolica* P. H. Davis, **subsp. nov.**

A subsp. *amana* (Rech. fil.) P. H. Davis caulibus patenter pubescenti-hispidulis, foliis pagina superiore hispidula vel scabridula recedit. *Fl.* Jun.–Aug. *Crevices of limestone rocks, stony hillsides, 830–1800 m.*

Type. Turkey B9 Van: 5 km N of Çatak in crevices of boulders, 25 vii 1954, *Davis* & O. Polunin, *D.* 23258 (holo. E, iso. K).

TURKEY. B6 Malatya: Darende, 1070 m, *Davis* 21852. Sivas: Gök Pinar, 1600 m, *Sorger* 76-24-39. B7 Tunceli: Munzur Da., Aksu Dere above Ovacik, 1800 m, *Davis* 31480. Erzincan: Kharput (Harpur), 5 vi 1889, *Sintenis* 1889. Malatya: 11 km from Malatya to Adiyaman, 830 m, *Huber-Morath* 9383. C5 Adana: peak S of Pozanti, *Aberdeen Univ. Amanus Exped.* P3 894; Masmeneu Da., *Balansa* 1855:575. Niğde: E of Maden, 1525 m, *Darrah* 491. İçel: Gülek Boğazi, 1160 m, 1853, *Kotschy*. C9 Hakkari: Cilo Da., Diz Dere, 1760 m, *Davis* 23996.

Micromeria cristata (Hampe) Griseb., *Spic.* 2:122 (1844).

subsp. *phrygia* P. H. Davis, **subsp. nov.**

Caules floliferi 3–5(–7) cm longi, plerumque superne ramosi, tholum formantes. *Caules et folia* puberulentes (pilis 0.1–0.2 mm). *Inflorescentia* 1–3 × 8–10 mm, verticillastris confertis. *Calyx* 3.5–4.5 mm longus. *Corolla* 6–7 mm, pallide lilacina, vel alba labio inferiore. *Fl.* Jul.–Aug. *On limestone rocks and cliffs, 1000–2000 m.*

Type. Turkey B2 Kütahya: d. Gediz, Şaphane Dağ, 1900 m, sunny rocks, flowers white with mauve spotting on lip, 27 viii 1950, *Davis* 18457 (holo. E, iso. K).

TURKEY. B2 Kütahya: Şaphane Da., 1600 m, *Davis* 18494; 18 km from Kütahya to Gediz, 1000 m, *Davis* & Coope, *D.* 36922; mt Bodroun, 1830 m, *Heldreich* [syntype of *M. xylorrhiza* (Boiss. & Heldr.) P. H. Davis]. B3 Isparta: d. Eğridir, Barla Da., 2000 m, *Khan et al.* 397.

Some material of this subspecies was originally included in my account of subsp. *xyloirrhiza* (Boiss. & Heldr.) Davis (*Notes R.B.G. Edinb.* 21:64, 1952). On further study it seems better treated as belonging to a new subspecies somewhat intermediate between subsp. *xyloirrhiza* and subsp. *carminea* (P. H. Davis) P. H. Davis (*op. cit.*, p. 65, 1952).

subsp. **orientalis** P. H. Davis, **subsp. nov.**

Syn.: *M. elliptica* C. Koch var. *pubescens* [Boiss. & Kotschy ex] Boiss., Fl. Or. 4:571 (1879)!

Caules floriferi 4–12 cm alti, simplices vel inferne ramosi, habitu haud pulvinato. *Caules* et *folia* patentia pilosa (pilis usque ad 0.5 mm). *Inflorescentia* 3–7 cm × 10–15 mm, verticillastris approximatis, ± laxiflora. *Calyx* 3.5–4 mm longus. *Corolla* c. 6 mm, lilacina, vel alba labio lilacino-maculato. *Fl.* Aug. *Cliff ledges and crevices*, c. 1100–1980 m.

Type. Turkey B6 Malatya: Gürün to Malatya, 40 km from Malatya, c. 1400 m, cliff ledges, cracks, flowers pale lilac, 7 viii 1956, McNeill 461 (holo. E). TURKEY. B7 Tunceli: 46 km from Tunceli to Pülümür, 1100 m, Huber-Morath 15569. B8 Muş: Teng valley, 1980 m, Kotschy 1859:453 (type of *M. elliptica* C. Koch var. *pubescens* Boiss.).

The characteristic imbricate-leaved resting buds at the base of the stems clearly refer this plant to *M. cristata*, not to *M. elliptica* to which Boissier subordinated it.

Nepeta

I. C. HEDGE & J. M. LAMOND

Nepeta baytopii Hedge & Lamond, **sp. nov.**

Affinis *N. fissae* C. A. Meyer et *N. lamiifoliae* Willd. sed floribus majoribus, bracteolis et dentibus calycum acuminato-aristatis.

Perennis, basi ± lignescens. *Caules* floriferi plures, arcuato-ascendentes, c. 40 cm, retrorso-pilosi, pilis eglandulosis minutis numerosis, pilis longioribus paucis basin versus praesertim nec non glandulis sessilibus, internodiis mediis c. 7 cm longis. *Folia basalia* ignota. *Folia caulina* media ovato-triangularia ut videtur crassiuscula, 1.5–2.5 × 1.5–2 cm, petiolata (1–2 cm), basi subcordata, apice obtusa, margine crenata vel serrata, superne breviter pilosi, inferne similia sed glandulis sessilibus praedita; folia superiora decrescentia, sessilia. *Verticillastri* in capitulum 9–32-floribus congesti. *Bracteolae* lineari-lanceolatae, 8–10 mm, membranaceae, acuminato-aristatae. *Flores* breviter pedicellati. *Calyx* ± anguste tubulosus, c. 12 mm, lilacino-suffusus, leviter curvatus vel rectus, breviter praesertim in nervis scabridiusculus, ore distincte obliquo, antice profunde fissus, dentibus posterioribus oblongo-ovatis 2.5–5 mm; dentes omnes membranacei, longe acuminato-aristati. *Corolla* in sicco lilacina suffusa, 22–25 mm, tubo tenui curvato valde e calyce exserto, extus puberula interdum parce glandulosa; labium superius leviter curvatus antice profunde incisum; labium inferius deflexum. *Nuculae* ± oblongae, trigonae, laeves, c. 2.3 × 1.2 mm. *Fl.* Jul.

Type. Turkey B8 Diyarbakir: Diyarbakir to Bingöl, 25 vii 1970, T. Baytop ISTE 18250 (holo. E; iso. ISTE—n.v.).

Endemic; known only from the type.

Although *N. baytopii*, named in honour of Professor T. Baytop of Istanbul University, clearly comes within the *N. fissa* C. A. Meyer complex because of the smooth nutlets and the deeply split anterior calyx lip, it differs from the other members on account of the larger corollas and the long acuminate-aristate bracteoles and calyx teeth.

***Nepeta conferta* Hedge & Lamond, sp. nov.**

Species propter verticillastos confertos, calyces mucronatos, flores albidos (?) insignis.

Perennis, basi ut videtur lignescens. *Caules* floriferi numerosi, c. 60 cm alti, quadranguli, simplices vel superne tenuiter pauciramosi, manifeste erecti, internodiis mediis 4–5 cm longis, omnino pilis brevibus retrorsis eglandulosis atque glandulis sessilibus cinerascens, inferne atropurpurei-suffusi. *Folia caulina* media petiolata (5–10 mm), oblongo-ovata, 2–3·3 × 0·8–1·7 cm, basi truncata, margine crenata, subtus pilis adpressis eglandulosis et glandulis sessilibus cinerascens-pubescentes, supra similia sed indumento sine glandulis brevior et minus densiore, folia superiora sensim decrescentia, brevius petiolata usque subsessilia, acutiora. *Verticillastri* numerosi conferti in spicasterum c. 5 × 2 cm stramineum congesti. *Bracteolae* lineari-acuminatae, c. 5 mm, apice parum recurvatae. *Flores* plurimi brevissime tenuiter pedicellati. *Calyx* 10–12 mm longus, anguste tubulosus, basi attenuatus, superne sensim ampliatus, ore paulo obliquo ad c. $\frac{3}{4}$ in dentes divergentes acuminato-mucronatos divisus, pilis eglandulosis ± retrorsis et glandulis sessilibus paucis provisus. *Corolla* in sicco albidobrunnescens, c. 14 mm, tubo tenue curvato e calyce vix exserto; labium superius leviter curvatum, antice profunde incisum; labium inferius ± deflexum. *Nuculae* ignotae. *Fl.* Jun.

Type. Turkey C2 Antalya: Kuhu Da., S von Elmali, Gebiet von Çiglikara, 16 vi 1969, Fitz & Spitzenberger 878 (holo. W).

Although known only from the cited specimen this appears to be a distinct new species on account of the rather stiffly erect habit, greyish indumentum, the conferted spike-like inflorescences, the long mucronate calyx teeth and the apparently white or cream corollas. Further material might give a clue about its allies, but at present it can only be regarded as an isolated species.

***Nepeta congesta* Fisch. & Mey. in Ann. Sci. Nat. ser. 4, 1:34 (1854).**

Type. [Turkey B4 Konya] Guenzlu (Kulukessa), loc. palud. desert. steril., c. 1000 m, Tchiatcheff 235 (P).

N. congesta was reduced by Boissier in *Flora Orientalis* (4:669, 1879) to a synonym of *N. curvidens* Boiss. & Bal. (cf. *N. stricta* below). However, examination of type material at Paris showed that it belonged not to the blue-flowered *N. stricta*, but to the small group of taxa in 'sect. *Oxynepete*' with white or yellowish-white flowers. It is in fact the earliest name in this group. In Turkey we have recognised two varieties; where their distributions overlap intermediates occur.

var. *congesta*

With puberulous stem indumentum. Restricted to C Anatolia.

var. *cryptantha* (Boiss.) Hedge & Lamond, **comb. et stat. nov.**

Syn.: *Oxynepea involucrata* Bunge, Lab. Pers. 59 (1873).

Nepeta cryptantha [Boiss. & Hausskn. ex] Boiss., Fl. Or. 4:669 (1879).

N. involucrata (Bunge) Bornm. in Mag. Bot. Lap. 11:9 (1912).

N. erivanensis Grossh. in Beih. Bot. Centralbl. 44, 2:234 (1928).

With a stem indumentum of multicellular, villous hairs. More widespread, occurring in C, S & E Anatolia, Transcaucasia, Iran, Palestine and the Syrian desert. It is called *N. involucrata* in *Flora Palaestina* 3:116 (1979).

Nepeta racemosa Lam., Encycl. 1:711 (1785).

Syn.: *N. mussinii* Sprengel in Henck., Adumbr. Pl. Hal. 15 (1806).

N. reichenbachiana Fisch. & Mey. in Ind. Sem. Horti Petrop. 8:68 (1841).

N. marifolia Boiss. & Huet in Boiss., Diagn. ser. 2, 4:24 (1859)!

Although *Nepeta* poses several major problems for the taxonomist in Turkey, one of the most intractable concerns the classification of the very common blue-flowered catmints from the east of the country. This is reflected in the widely varying accounts in *Flora Orientalis* and the more recent Floras of adjacent countries where these species are also common. In preparing the account of the genus for the *Flora of Turkey* we were able to examine a very large quantity of material of this group from Turkey, a good representation of it from Iran, and a less than adequate amount of material from Caucasia. Our investigations led us, not surprisingly, to add several new names to synonymy, but it became quite obvious that herbarium studies alone could only give provisional answers.

At the centre of the complex is *N. racemosa*, a previously rather neglected name, to which we have added the three new synonyms cited above. It is a low-growing procumbent plant with small discolorous leaves and softly tomentose calyces with a prominent violet indumentum. It is common in cultivation under the name *N. mussinii*. The type of *N. racemosa* is an adequate Tournefort specimen from 'The Levant' and certainly from 'Armenia'. In *Fl. URSS* and *Fl. Kavkaza* the name is not applied to any of the Caucasian plants, but the following species are accepted in the main *Flora* (vol. 20, 1954): *N. mussinii*, *reichenbachiana*, *hajastana*, *transcaucasica* and *noraschenica*; non-Soviet species mentioned within cycle 'Mussinianae' are *N. crassifolia* (Elburz), *longiflora* (N Iran), *marifolia* (Erzurum) and *deflersiana* (Yemen)—[examination of recent gatherings of the last-named does not support its inclusion in this complex].

The earliest name in this species-group is *N. longiflora* Ventenat, described from cultivated material originating from Bruguière & Olivier seed collected in N Iran. The illustration of it accompanying the type description, and a Ventenat specimen at E, agree very well with modern gatherings from the Elburz range; they are also a close match for the species *N. elbursensis* Rech. fil. Although *N. longiflora* and *racemosa* are very close, it is possible to separate most specimens satisfactorily. The Iran plant has fewer flowers in the inflorescences, longer peduncles, is less sturdy and has glandular papillae or hairs on the inflorescence axis (apparently always absent on Turkish plants).

In E Anatolia in addition to 'typical' *N. racemosa* there is another equally frequent plant which, although a very close ally, we have excluded from it. In vegetative and floral parts it is larger than *N. racemosa*, is of more erect habit and has $\pm$ sessile leaves. It shows a greater degree of heterogeneity than *N. racemosa* and gives every impression of being a hybridised mixture of this species with the Transcaucasian *N. grandiflora* (absent from Turkey), *N. stenantha* and *N. betonicifolia* (cf. below). No doubt too, as with most *Nepeta* species, its facies is much influenced by age and habitat. We were unable to reach a satisfactory decision about the status of these plants, some of which are completely fertile and hermaphrodite, others male sterile—in the same ratio as occurs throughout the genus. It seems a negative approach to widen the circumscription of *N. racemosa* to include them, but equally it may be an oversimplification to unite them under a specific epithet. We have, in fact, called them *N. transcaucasica* Grossh. as an expedient circumvention pending a detailed study of the whole *N. racemosa* problem in the field, under cultivation and using the great quantity of herbarium material from E Anatolia, Caucasia and NW and N Iran.

***Nepeta sorgerae* Hedge & Lamond, sp. nov.**

A ceteris speciebus turcicae indumento glanduloso-villoso, calycis forma ac floribus purpureis diversa.

Perennis, basi lignescens. *Caules* floriferi, c. 25 cm, simplices, quadranguli, ascendente-erecti, internodiis mediis 20–35 mm longis, et toto pilis longis et brevibus tenuis glandulosis dense vestiti. *Folia inferiora* florendi tempore emarcida. *Folia caulina* media breviter (ad 4 mm) petiolata usque sessilia, 1.8–2 $\times$ 1.5–1.9 cm, ovata, margine crenato-serrata, basi truncata vel subcordata, apice rotundata, utrinque glanduloso-villosa, $\pm$ atroviridia; *folia superiora* vix diminuta, $\pm$ adpressa. *Verticillastri* 3–5, c. 12–14-flori, infimi remoti superiores $\pm$ approximati, floribus exclusis 20–25 mm diametro. *Bracteolae* lineari-lanceolatae, c. 6–8 $\times$ 0.5–1 mm, acutae, numerosae. *Flores* brevissime pedicellati. *Calyx* late tubulosus, c. 9 mm, leviter curvatus vel rectus, ore distincte obliquo, antice profunde c. ad mediam fissus, fauce intus glabro, dentibus posterioribus $\pm$ linearibus, subulato-attenuatis, dense glanduloso-villosis. *Corolla* pallide purpurea, c. 12–13 mm, tubo tenui curvato. *Antherae* magenteae. *Nuculae* atrobrownae, late oblongae, rotundato-trigonae, c. 2 $\times$ 1 mm, tuberculatae. *Fl.* Jul.

Type. Turkey C7 Adiyaman: Nemrut Da., Gebirgsteppe, 2200 m, 17 vii 1978, *Sorger* 78-60-19 (holo. Hb. Sorger).

TURKEY. C7 Adiyaman: Nemrut Da., c. 20 km Luftlinie NE von Kâhta, Kalk, Felsfluren. Corolla blasspurpurn, Unterlippe dunkelpurpurn punktiert sonst blasspurpurn, c. 2200 m, 17 vii 1978, *Ehrendorfer et al.* 787-60 (WU, E).

Endemic to SE Anatolia; known only from the cited gatherings.

Named after Dr Friederike Sorger of Vienna, this new species is very distinct in the characters of the glandular-villous indumentum, the $\pm$ sessile ovate leaves, and the broadly tubular calyces with a deep anterior split and mucronate teeth. It may have some links with the eglandular, shortly pedunculate-flowered *N. isaurica* [Boiss. & Heldr. ex] Benth from

Mediterranean S Turkey, but until additional material of both species is at hand, the affinities of *N. sorgerae* must remain uncertain.

***Nepeta stricta* (Banks & Sol.) Hedge & Lamond, comb. nov.**

Syn.: *Satureja stricta* Banks & Sol. in Russell, Aleppo ed. 2:255 (1794)—
Syria prope Aleppo, Russell (BM!)

In *Flora Orientalis* (4:669, 1879) Boissier, following Bentham (in DC., *Prodr.* 12:393, 1848) dealt with *Satureja stricta* as a synonym of *Nepeta heliotropifolia* Lam. and the name has since languished there. Examination of the type, however, showed that it should not be linked with *N. heliotropifolia* but rather with *N. calycina* Fenzl for which it is the earliest name. Within *N. stricta* we have recognised two varieties: one, the type variety, is E Anatolian in distribution, the other W Anatolian.

var. ***stricta***

Syn.: *N. calycina* Fenzl in Flora 1843, 1:400 (1843).

With $\pm$ entire leaf margins and $\pm$ straight calyx teeth. Also in Palestine and the Syrian Desert.

var. ***curvidens*** (Boiss. & Bal.) Hedge & Lamond, comb. et stat. nov.

Syn.: *N. curvidens* Boiss. & Bal. in Boiss., *Diagn. ser. 2*, 4:26 (1859).

With usually crenate leaf margins and calyx teeth generally recurved. Endemic to W Anatolia.

N. congesta and *N. stricta* belong to 'sect. *Oxynepea*'—a surprisingly clear-cut group in a genus where existing sections are quite unworkable (in our account for the *Flora of Turkey* we have only recognised three informal groups based largely on flower colour and inflorescence characters). The section is characterised by a widely branching thyrsoid inflorescence with small flowers $\pm$ included in the calyces, and a corolla with a straight lower lip. Although it had been previously described as having unisexual flowers with the central one of the cyme being female (e.g. *Flora Europaea* 3:160, 1972) this is certainly not always the case.

A detailed study of the taxa within this interesting group would be rewarding taxonomically and phytogeographically, and it seems worthwhile giving a brief synopsis here of all the species involved. They stretch in distribution from Spain to Turkestan.

N. beltranii Pau. C Spain. Very close to *N. hispanica*.

N. congesta Fisch. & Mey. See above for vars. and distribution. Includes *N. involucrata* Bge., *N. cryptantha* Boiss. and *N. erivanensis* Grossh.

N. cyrenaica Quétel & Zaffran. Libya (Cyrenaica). Related in the type description to '*N. cryptantha*' though this seems doubtful. Known only as a cornfield weed, the possibility of its being introduced cannot be excluded.

N. heliotropifolia Lam. Includes *N. callichroa* Hausskn. & Briq.; var. *heliotropifolia*, E Anatolia, W Iran; var. *gilanica* Bornm., N. Iran; var. *major* Boiss., NW Iran; var. *rectidens* Bornm., NW Iran.

N. hispanica Boiss. & Reuter. C & SE Spain.

N. kopetdaghensis Pojark. Transcaspia (Kopet Dagh, USSR & Iran).
Close to *N. heliotropifolia*.

- N. parviflora* M. Bieb. SE Europe, Crimea, N Caucasus. Includes *N. euxina* Velen. Close to *N. ucranica*.
N. schischkinii Pojark. SE Caucasus, NW Iran. Very close to *N. heliotropifolia*. Cf. *N. heliotropifolia* var. *gilanica*.
N. stricta (Banks & Sol.) Hedge & Lamond. See above for vars. and distribution. Includes *N. calycina* Fenzl and *N. curvidens* Boiss. & Bal.
N. ucranica L. Bulgaria, Romania, EC & SE Russia. The oldest name in the section, it has often been erroneously applied. Turkish specimens cited by Boissier in *Flora Orientalis* under this name are referable to *N. heliotropifolia*.

Nepeta betonicifolia C. A. Meyer, Verz. Pfl. Cauc. 92 (1831).

Syn.: *N. speciosa* Boiss. & Noë in Diagn. ser. 2, 4:24 (1859)!

N. glabrescens Boiss., Fl. Or. 4:658 (1879) p.p.!

N. scordiifolia Bornm. in Bull. Herb. Boiss. 7:246 (1879)—non Schrank (1822).

N. calvertii Boiss.—nomen nudum.

N. kronenburgii Freyn in Bull. Herb. Boiss. ser. 2, 1:280 (1901) (BRNM!)

N. strictifolia Pojark. in Not. Syst. (Leningrad) 15:303 (1953)!

N. grossheimii Pojark., op. cit.: 310!

This species, like *N. racemosa*, is common in E Anatolia, Caucasia and NW Iran. It also extends south in Turkey to the Amanus. With the wide range of material available to us, we had little hesitation in adding the six new synonyms listed above. Characterised by a ± erect habit, leaves ± adpressed to the stem, and at least the upper verticillasters condensed into a 'spike', its limits are generally more distinct than those of *N. racemosa*, but on the evidence of some apparently intermediate herbarium specimens it is probable that hybridisation and introgression occur with at least *N. racemosa* and *N. transcaucasica*.

Origanum

J. H. IETSWAART*

In my revision of the genus *Origanum* (Ietswaart, J. H. (1979). *A taxonomic revision of the genus Origanum*. Thesis, Amsterdam—in press) five new sections are recognised, three of which (sects. *Brevifilamentum*, *Longitubus* and *Prolaticorolla*) also occur in my account of the genus for *Flora of Turkey* vol. 7. Since volume 7 of the *Flora* is going to press before the generic revision will appear, the three sections mentioned are published here.

Section ***Brevifilamentum*** Ietswaart, sect. nov.

Type species: *Origanum rotundifolium* Boiss.

Rami primarii plerumque, secundarii raro adsunt. *Folia* vulgo plus minusve coriacea. *Spicae* plerumque amplae, nutantes. *Bractaeae*

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imbricatae, calycibus $1\frac{1}{2}$ -3-plo longiores. *Flores* plerumque complures pro verticillastro, pedicellis brevibus, bisexuales, magni. *Calyces* tubulares, bilabiati, usque ad c. $\frac{1}{2}$ divisi, dentibus manifestis; fauces semper pilosae. *Corollae* bilabiatae, usque ad c. $\frac{1}{2}$ incisae, calycibus c. 2-plo longiores haud saccatae. *Stamina* inaequalissima; superiora brevissima et inclusa, filamentis corollis c. 10-plo brevioribus; inferiora plus minusve brevia vel longa et (plus minusve) exserta, filamentis corollis c. 5- vel $1\frac{1}{2}$ -plo brevioribus.

Related to sect. *Amaracus* (Gleditsch) Benth. as conceived by Boissier (*Fl. Or.* 4:546-554, 1879).

Section **Longitubus** Ietswaart, sect. nov.

Type species: *Origanum amanum* Post.

Rami primarii raro, secundarii numquam adsunt. *Folia* plus minusve herbacea. *Spicae* amplae, (paene) non nutantes. *Bracteae* imbricatae, calycibus c. 2-plo longiores. *Flores* complures pro verticillastro, pedicellis brevibus, bisexuales, maximi. *Calyces* tubulares, bilabiati, usque ad c. $\frac{1}{2}$ divisi, dentibus manifestis; fauces pilosae. *Corollae* bilabiatae, usque ad c. $\frac{1}{2}$ incisae, calycibus c. 4-plo longiores, haud saccatae. *Stamina* subaequalia, inclusa, filamentis brevissimis, corollis 50-plo breviores.

A monotypic section related to sect. *Amaracus* (Gleditsch) Benth. as conceived by Boissier (*op. cit.*, 1879).

Section **Prolaticorolla** Ietswaart, sect. nov.

Type species: *Origanum laevigatum* Boiss.

Rami primarii semper, secundarii vulgo, tertiarii interdum adsunt. *Folia* herbacea vel plus minusve coriacea. *Spicae* compactae vel paulo laxae, distinctae, mediocres, erectae. *Bracteae* foliis forma magnitudineque, textura et colore impares, papyraceae, purpureae vel viridulae, (dense) imbricatae, calycibus $1\frac{1}{2}$ -plo breviores usque ad $1\frac{1}{2}$ -plo longiores. *Flores* duo pro verticillastro bisexuales vel feminei. *Calyces* tubulares, dentibus (sub)aequalibus, usque ad c. $\frac{1}{2}$ divisi, plus minusve contractis in fructu; fauces pilosae. *Corollae* bilabiatae, usque ad c. $\frac{1}{2}$ incisae, calycibus c. 3-plo longiores. *Stamina* inaequalia, stricta, (sub)inclusa vel breviter exserta, filamentis corollis c. 4-plo breviores.

Related to sect. *Origanum* (sect. *Euoriganum* Benth.).

Salvia

I. C. HEDGE

Salvia quezelii Hedge & Afzal-Rafii, sp. nov.

Affinitas adhuc subdubia; indumento *S. pinnatae* L. similis sed inflorescentiae et calycis structura valde diversa.

Herba perennis, basi lignescens, pluricaulis. *Rami* steriles numerosi, abbreviati, densiuscule foliati. *Caules* floriferi procumbentes vel ascendentes c. 15 cm, quadrangulares ex toto pilis longis et brevioribus glandulosis atque glandulis sessilibus densissime obtecti. *Folia* pro maxime parte basin versus conferta, pinnata; segmentum terminale ellipticum 1-1.5 × 0.6-1 cm, stipitatum, rugulosum, crenulatum, pilis glandulosis et glandulis sessilibus numerosis dense villosoglandulosum, nervatura subtus

dense reticulato supra immersa; segmenta lateralia 2-paria elliptica segmento terminale minora. *Petiolus* 0.5–2 cm. *Inflorescentia* 4–5 cm longa. *Verticillastri* 1–2-flori, 3–5-nati, c. 8–10 mm distantes. *Bracteae* ovato-ellipticae, c. 10–14 × 5–7 mm; bracteolae adsunt. *Pedicelli* c. 5 mm, erecto-patentes. *Calyx* tubulosus, in fructu 18–20 mm longus, viridis vel purpurascens-suffusus, pilis longis glandulosis praesertim ad nervos et glandulis sessilibus dense munitus; labium superius subtridentatum dento intermedio paulo latiore; labium inferius superiore aequans vel subbrevis in dentes duos ovatos breviter mucronatos fissum. *Corolla* c. 28 mm (colore ignota); tubus rectus, c. 18 mm, indistincte annulatus; galea ± porrecta, piloso-glandulosa; labium inferius superiore longius. *Stamina* inferne cohaerentia connectivo curvato, crure inferiore abbreviato fertili. *Nuculae* ± sphaericae, c. 4 × 3.5 mm.

Type. Turkey C5 İçel: S of Bolkar Da., near Namrun, among calcareous rocks, c. 1300 m, *Quézel* 73113 (holo. E, iso. hb. *Quézel*).

[TURKEY. C5 İçel: Mersin to Findikpinar, 500 m, 14 viii 1931, *Eig* & *M. Zohary* (HUJ)—sterile shoots only but probably belongs here].

Endemic to S Anatolia.

Although not yet represented by fully adequate material, this curious new species is very distinct by the combination of procumbent habit, pinnate leaves, a densely glandular-villous indumentum, few-flowered inflorescences and long tubular calyces.

S. pinnata L. appears to be the only one of the pinnate-leaved sages that can be considered as a possible ally of *S. quezelii*. It is also a very glandular plant and grows in the same area, but is up to 60 cm in height, has long (± 12–15 mm) pedicels and very characteristic urceolate (12–15 mm) calyces.

Professor P. *Quézel* of Marseille, in whose honour the new species is named, remarked (in litt.) that it was found carpeting fissures on steep rock slopes at a gradient of 40–50% in company with *Cyclotrichium* [*Satureja* s.l.] *origanifolium* (Labill.) Mand. & Scheng. It was only observed at this locality, c. 10 km E of Namrun, not far from a stream.

***Salvia candidissima* Vahl subsp. *occidentalis* Hedge, subsp. nov.**

A subsp. *candidissima* foliis oblongis vel ovatis, integris vel serrulatis, utrinque lanatis, floribus omnino albidis differt.

Type. Turkey C2 Antalya: Elmali, 2 vi 1860, *Bourgeau* 1860:225 (holo. E.; iso. G, K, W.).

S. candidissima is a common, widespread and variable species throughout Anatolia, occurring in about 20 of the grid squares used in citing specimens in the *Flora of Turkey*. Outwith Turkey, it is an uncommon species in Greece, Albania and N Iraq. In an earlier paper (Hedge in *Notes R.B.G. Edinb.* 23:167–171, 1960), an attempt was made to clarify its variability in Turkey and a number of local races were informally recognised. With the substantial amount of extra material that has accumulated since 1960, there are now good reasons for recognising two subspecies, one eastern, the other western, but not for giving formal status to the local races.

The type subspecies from inner, mostly E Anatolia, has large ± ovate often toothed to erose-margined leaves with an often thin indumentum and

white flowers with a yellow lip; the new subspecies from inner, mainly W Anatolia, generally a less sturdy plant, has oblong (to ovate) serrulate to subentire leaves with a thick indumentum and entirely white flowers. There are however many specimens of an intermediate or anomalous nature, either from areas where the ranges of the subspecies overlap or from such northern vilayets as Kastamonu, Sivas and Gümüşane.

***Salvia tobeyi* Hedge, sp. nov.**

Affinis *S. xanthocheilae* Boiss. et *S. frigidae* Boiss.; a priori bracteis maioribus recedit; ab altera foliis latioribus lanatis, caulibus pilis villosis, bracteis et calycibus maioribus differt.

Herba perennis, basi indurata. *Caules* floriferi validi, 15–60 cm, erecti, quadrangulares, in dimidio superiore vel infra paniculato-ramosi, in parte inferiore pilis paucis vel numerosis eglandulosis muniti, in regione inflorescentiae pilis longis eglandulosis et pilis brevioribus glandulosis dense provisi, internodiis c. 5 cm longis. *Folia* ovata vel ovato-elliptica, 3–9 × 2.5–4.5 cm, ± lanata, glandulis sessilibus numerosis oblecta, margine irregulariter crenato-serrata vel integra, apice acuta vel obtusa. *Petiolus* 1.5–3.5 cm, ± lanatus. *Inflorescentia* anguste paniculata. *Verticillastri* 4–6-flori, 6–10-nati, inferiores distantes, superiores approximati vel congesti, summa steriles. *Bractee* late ovatae, acuminatae, c. 12–17 × 10–14 mm. *Pedicelli* 2–4 mm, erecto-patentes. *Calyx* campanulatus, 8–11 mm (in fructu 11–14 mm), pilis glandulosis et eglandulosis dense tectus; labium superius breviter tridentatum dente intermedio vix prominente lateralibus distincte brevior; labium inferius in dentes duos ovatos spinulosos bifidum. *Corolla* alba (vel labio inferiore bubalino) c. 14–16 mm; tubus in calyce ± inclusus in faucem abrupte inflatus, intus squamula provisos, galea parum falcatum, labium inferius galeam subaequans. *Connectivum* antherarum elongatum ad basin cohaerentia, crure inferiore sterili. *Nuculae* ovoideae, ± trigonae, atrobrunneae, c. 3 × 2.5 mm. *Fl.* Jun.

Type. Turkey A4 Kastamonu: Guirdagh (Gavur Da.), c. 7 km NW of Tosya, in pascuis subalpinis, 13 vi 1892, *Sintenis* 3913 (holo. LD; iso. B, W, Z).

TURKEY. A4 Kastamonu. Zonguldak: Kel Tepe, *Tobey* 1860 (E).

Endemic to N Anatolia.

On floral characters the new species has its natural position close to the polymorphic *S. frigida* but differs in the broader, lanate leaves and the larger bracts. In the latter feature and in the general appearance of the inflorescence, and to some extent calyx structure, it has some affinity to the more eastern *S. xanthocheila*.

The new species is named for Mr Carl Tobey, an American school teacher who for several years taught at Samsun and made extensive collections in northern Turkey.

Satureja

P. H. DAVIS

As examined by Gözde Ertem at Edinburgh, *Satureja* L. (*sensu stricto*) can be conveniently distinguished from *Micromeria* (at least in the Mediterranean area) by the fact that its more or less cuneate leaves are conduplicate (or rarely curved-conduplicate) at least when young; the surface has sunken

punctate glands (often reddish, as in *Thymus*); palisade tissue occurs both on the upper and lower sides of the leaf. In *Micromeria* Benthham the leaves (usually ovate, oblong or linear) are flat throughout, or have a thickened, narrowly revolute margin; glands are either sessile or (e.g. in *M. fruticosa* (L.) Druce) glandular-perforate (observed when the leaf is held against the light); palisade tissue occurs only on the upper side.

The taxonomic problem of how best to treat the *Satureja montana* L.—*S. cuneifolia* Ten. complex in Europe has been helpfully discussed by P. W. Ball (*Bot. J. Linn. Soc.* 65:350–352, 1972). The problem of status extends into Anatolia and, because of the difficulty of assessing affinities, has driven me into adopting a somewhat narrow species concept for the *Flora of Turkey* until the relationships and variation of the vicariads are better known.

***Satureja aintabensis* P. H. Davis, sp. nov.**

Affinis *S. macranthae* C. A. Meyer sed calyce et corolla manifeste brevioribus recedit.

Herba perennis, suffruticosa, multicaulis, caudice lignoso crasso. *Caules* tenues, simplices, ut videtur prostrati, pilis recurvato-patentibus 0.1–0.2 mm longis breviter pubescentes. *Folia* late linearia, 8–10 × 1–1.5 mm, obtusa, emucronata, versus basin angustata, puberulo-velutina, dense rubro-glanduloso-punctata. *Inflorescentia* laxa, 3–6 mm longa. *Verticillastri* remoti, biflori, pedunculis 1–2 mm longis. *Folia floralia* 1.5–2 × calyces. *Calyx* 2.75–3 mm, ad $\frac{1}{2}$ obscure bilabiatus, dense crispato-pubescent, venis suturalibus obscuris; dentes triangulari-lanceolati, inferioribus quam superioribus paulo longioribus. *Corolla* 4–5 mm, verosimiliter malvina, tubo e calyce vix exserto. *Nuculae* ignotae. *Fl. Jun.–Jul.*

Type. Turkey C6 Gaziantep: in apricis calcareis circa Aintab (Gaziantep), 610 m, 25 vi 1865, *Hausknecht* (holo. W), as *Micromeria velutina*, MS.

In floral characters *S. aintabensis* resembles forms of *S. hortensis* L., but in habit (many-stemmed from a woody stock, instead of annual with one branched stem) it is clearly related to *S. macrantha* C. A. Meyer from E Anatolia, Transcaucasia, NW Iran and N Iraq.

***Satureja amani* P. H. Davis, sp. nov.**

Affinis *S. cuneifoliae* sed habitu procumbente, foliis floralibus longioribus, et calycibus actinomorpha distinguitur.

Herba humilis, suffruticosa, procumbens, basi tortuoso-lignosa. *Caules* ramosi, tenues, in parte foliosa 5–10 mm longi, aspero-puberulentes, pilis patentibus, plerumque 0.1–0.2 mm longis. *Folia* cuneato-oblancoolata, 10–15 × 2–3.5 mm, acuta, mucronata, sparse scabro-hirtella, canescentia, glandulis rubris punctata. *Inflorescentia* ± densa, ovato-oblonga, 2–3 cm longa, foliosa. *Verticillastri* biflori, floribus breviter pedicellatis. *Folia floralia* floribus 1.5–4-plo longiora. *Calyx* 3–3.5 mm longus, actinomorphus, aspero-pubescent, venis suturalibus haud conspicuis; dentes lanceolato-subulati, ad dimidium calycis attingens. *Corolla* c. 8 mm, verosimiliter alba. *Nuculae* ignotae. *Fl. Aug.–Sept. Alt. 1220–1980 m.*

Type. Turkey C6 Adana: Kusliji Dag (Kislici Da.), 1520–1980 m, vii 1908, *Haradjian* 2507 (holo. E, iso. K).

TURKEY.C5/6 Hatay/Adana: Amanus, 1220–1830 m, *Haradjian* 4618.

Resembling the variable European *S. montana* L. in its long floral leaves, but in indumentum and 2-flowered verticillasters nearer the W & S Anatolian *S. cuneifolia*, from which it differs in its procumbent twiggy habit, larger floral leaves and actinomorphic calyces.

***Satureja cilicica* P. H. Davis, sp. nov.**

Syn.: *S. cuneifolia* Ten. var. *tenuis* Boiss., Fl. Or. 4:564 (1879).

Valde affinis *S. cuneifoliae* Ten. sed indumento brevior, foliis viridibus citriodori, verticillastris $\pm$ laxifloris, calycibus minoribus et fere regularibus recedit.

Herba perennis, suffruticosa, virgata. *Caules* plerumque simplices vel superne sparse ramosi, tenues, erecti vel ascendentes, 15–30 cm longi, pilis solum 0.1 mm longis minute puberuli. *Folia* cuneato-oblonga vel oblanceolata, 12–33 $\times$ 2–6 mm, subobtusata, apice saepe breviter mucronata, minute scabridula, dense glanduloso-punctata, citriodora, pomaceo-viridia. *Inflorescentia* saltem inferne laxa, (4–)8–15 cm longa, ramulis floriferis in parte inferiore interdum provisa. *Verticillastri* plerumque 6-flori, cymulis verticillastrorum inferiorum laxis, saepe conspicue pedunculatis (pedunculis ad 4 mm longis), floribus pedicellatis. *Folia floralia* calycibus 1–2-plo longiora. *Calyx* 2.5–3 mm longus, fere actinomorphus, pubescens, venis suturalibus haud conspicuis; dentes lanceolato-subulati, longitudine $\frac{1}{2}$ – $\frac{2}{3}$ calycis aequantes. *Corolla* 7–8 mm, alba, labio inferiore purpureo-muculato. *Nuculae* ignotae. *Fl.* Jul.–Aug. *Rocky and grassy slopes, screes, 1520–1670 m.*

Type. Turkey C5 Niğde: valley W of Maden running S towards peak of Bolkar Dağ, 30 vii 1969, *J. Darrah* (holo. E).

TURKEY. C5 Niğde: Madenköy, 1670 m, *Spitzenberger* 1970:138; Gülek Maden, 1520 m, *Kotschy* 1853:240; *ibid.*, *Balansa* 1855:539; Gülek Boğazi to Gülek Maden, *Balansa* 1855:592; in Monte Tauro, *Kotschy* 1838:477.

This vicariad evidently replaces the widespread calcicole *S. cuneifolia* on the N side of the Bolgar Dağ, perhaps on non-calcareous soils.

***Satureja icarica* P. H. Davis, sp. nov.**

Affinis *S. cuneifoliae* Ten. sed habitu nano laxo pulvinato, foliis minoribus viridibus, inflorescente densa 1–2 cm longa, calycibus minoribus actinomorphis recedit.

Fruticulus laxo pulvinatus, plerumque procumbens. *Caules* inferne ramosi, 5–10(–12) cm longi, dense foliosi, pilis ad 0.1–0.2 mm longis, recurvo-puberulentis. *Folia* parva, cuneato-oblanceolata, 6–10(–18) $\times$ 2–3(–4) mm, acuta, mucronata, patenter scabro-pubescentia vel subglabra, viridia, versus basin saepe ciliata, sensim in inflorescentiam densam oblongo-cylindricam 1–2 cm longam transientia. *Verticillastri* biflori, floribus subsessilibus, parvis. *Folia floralia* calyces aequantia vel paulo longiora. *Calyx* 2–3 mm, actinomorphus, venis suturalibus haud prominen-

tibus; dentes lanceolato-subulati, longitudine $\frac{1}{2}$ – $\frac{1}{3}$ calycis aequantes. *Corolla* 5–7 mm, alba. *Nuculae* ignotae. *Fl. Jun.–Jul. On hard schists, cliffs and open heaths, 100–1040 m.*

Type. Greece. E Aegean Islands: Ikaria, Mt Atheras, 900–1040 m, hard schists, in open heath, 12 vii 1958, *Runemark & Snogerup* 12460 (holo. LD).

GREECE. E Aegean Islands: Ikaria, Mt Atheras, *Forsyth-Major* 722 (as *S. parnassica* Boiss.); above Ag. Nikolaos, 200–300 m, *Runemark & Snogerup* 11253; 2 km NW of Kirikos, 700 m, *Runemark & Snogerup* 12429 (& other gatherings).

This Aegean species is probably closest to *S. cuneifolia* Ten. However, *S. montana* L. var. *hellenica* Heldr. (*Consp. Fl. Graeca* 2:551, 1902), described from Mt Dirphys in Euboea, is probably conspecific with the better represented *S. icarica*, apparently differing from the latter only in its unbranched stems, shorter inflorescence and slightly longer calyces.

Satureja parnassica [Heldr. & Sart. ex] Boiss., *Fl. Or.* 4:563 (1879).

subsp. *sipylea* P. H. Davis, **subsp. nov.**

A subsp. *parnassico* habitu ut videtur magis erecto et divaricato-ramoso, foliis omnibus cuneato-oblongis angustioribus magis acutis (6–9 × 1.5–3 mm) divergit.

Type. Turkey B1 Manisa: partie supérieure du Mont Sipyle (Manisa Da.), au dessus de Magnésie (Manisa), dans les fentes des rochers, 16 vii 1854, *Balansa* 309 (holo. K; iso. BM, E, G).

More material of *S. parnassica* is required, both from Manisa Dağ and from Greece where the status of local populations remains unresolved.

Scutellaria

J. R. EDMONDSON

Scutellaria albida L. subsp. *colchica* (Rech. fil.) Edmondson, **comb. nov.**

Syn.: *S. vacillans* Rech. fil. subsp. *colchica* Rech. fil. in *Bot. Archiv* 43:15 (1941)!

S. woronowii Juz. in *Not. Syst. (Leningrad)* 14:360 (1951)!

N Anatolia eastwards of 36° E; Georgia.

S. albida L. subsp. *condensata* (Rech. fil.) Edmondson, **comb. et stat. nov.**

Syn.: *S. condensata* Rech. fil. in *Bot. Archiv* 43:17 (1941)!

E Anatolia; N Iraq.

S. rubicunda Hornem. subsp. *brevibracteata* (Stapf) Edmondson, **comb. et stat. nov.**

Syn.: *S. brevibracteata* Stapf in *Denkschr. Akad. Wiss. Wien, Math.-Nat. Kl.* 50(2):99 (1885)!

S Anatolia; endemic.

S. rubicunda Hornem. subsp. *pannosula* (Rech. fil.) Edmondson, **comb. et stat. nov.**

Syn.: *S. pannosula* Rech. fil. in *Bot. Archiv* 43:38 (1941)!

S Anatolia (Taurus); endemic.

***S. rubicunda* Hornem. subsp. *subvelutina* (Rech. fil.) Edmondson, comb. et stat. nov.**

Syn.: *S. subvelutina* Rech. fil. in Bot. Archiv 43:31 (1941)!

N, C & S Anatolia; W Syria.

***S. orientalis* L., Sp. Pl. 598 (1753).**

Within this polymorphic species, which extends from Spain and NW Africa to Central Asia and W China, there are numerous subspecies each of which has a characteristic facies. Many of these were originally described as species, mainly using characters of growth habit, height and degree of branching of stem; size, shape and degree of incision of leaves; indumentum of leaves and bracts; size, shape and colour of bracts; and colour and length of corolla. Fedorov (*Spis. Rast. Gerb. Fl. SSSR* 27:97, no. 4838, 1967) reduced most of the Transcaucasian species within the *S. orientalis* group to subspecific rank. In the treatment for the *Flora of Turkey*, a similar status for the members of the group was felt to be appropriate in view of the number of specimens examined which could not be assigned with confidence to any one of the taxa now recognised. Whether these are morphologically intermediate between 'incipient species' which have only partially differentiated as a result of recent selection and are now largely allopatric subspecies, or whether the excessive variability is the result of introgression between species which have recently become prone to hybridise, perhaps as a result of disturbance of the habitat, can only be established by field and experimental studies. There are many other such problematic species complexes in the Turkish flora. *S. orientalis* is unusual, however, in its capacity to occupy relatively stable habitats such as montane rocks (subsp. *virens*) and unstable or degraded habitats such as the stony slopes on which subsp. *pinnatifida* often occurs.

***S. orientalis* L. subsp. *bicolor* (Hochst.) Edmondson, comb. et stat. nov.**

Syn.: *S. bicolor* Hochst. in Lorent, Wanderungen 373 (1846)!

E Anatolia; endemic.

***S. orientalis* L. subsp. *bornmuelleri* (Hausskn. ex Bornm.) Edmondson, comb. et stat. nov.**

Syn.: *S. bornmuelleri* [Hausskn. ex Bornm. in Notizbl. Bot. Gart. Berlin 7(63):32 (1917)!

Lectotype designated here: N Iraq, Riwandous (ad fines Persiae), in monte Händarin, 1200 m, 21 vi 1893, *Bornmüller* 1691 (E).

***S. orientalis* L. subsp. *carica* Edmondson, subsp. nov.**

Caules decumbentes, dense pubescentes; *caulis* principalis repens multiramosus, *ramulis* lateralibus erectis, 9–19 cm. *Folia* dimorpha, ea ad partem basalem *caulis* internodis brevibus, grisea, *petiolis* brevibus (2–4 mm); *lamina* linearis-oblonga, 3–8 × 0.8–3.5 mm, *marginem* crenato-lobato revolutoque, *pagina* superiore dense tomentella, *nervis* profunde impressis, *subtus* lanato-incana; *folia* caulina supra viridi-grisea, *subtus* grisea, *petiolo* longiore (ad 7 mm) *lamina* triangulari-ovata, 8–15 × 7–12 mm, *marginem* inciso-crenato ad dimidium latitudinis, *plana* vel anguste revoluta, supra

puberula nervis leviter impressis, infra tomentella vel incana pilis minutissimis. *Bractee* purpureae, late ellipticae vel suborbiculares, infimae ad marginem crenatae, superiores subintegrae. *Corolla* 24–26 mm, sulfurea. *Fl.* Apr.

Type. Turkey C2 Aydin: below Karacasu, 400–500 m, chalky hills, 23 iv 1965, *P. H. Davis* 41636 (holo. E).

TURKEY. C2 Aydin: nr Yenice, vi 1842, *Boissier*; Yenice to Karacasu, 300 m, *Davis* 41501.

Endemic to SW Anatolia.

S. orientalis L. subsp. *cretacea* (Boiss. & Hausskn.) Edmondson, **comb. et stat. nov.**

Syn.: *S. cretacea* Boiss. & Hausskn. in Boiss., *Fl. Or.* 4:685 (1879)!

E Anatolia (nr Malatya); Syrian Desert (Jebel Sinjar).

S. orientalis L. subsp. *haussknechtii* (Boiss.) Edmondson, **comb. et stat. nov.**

Syn.: *S. haussknechtii* Boiss., *Fl. Or.* 4:684 (1879)!

E Anatolia; endemic?

S. orientalis L. subsp. *macrostegia* (Hausskn. ex Bornm.) Edmondson, **comb. et stat. nov.**

Syn.: *S. macrostegia* [Hausskn. ex] Bornm. in *Notizbl. Bot. Gart. Berlin* 7(63):33 (1917), in adnot.!

Inner Anatolia; endemic.

S. orientalis L. subsp. *pectinata* (Bentham) Edmondson, **comb. et stat. nov.**

Syn.: *S. pectinata* Bentham in *Ann. Sci. Nat. ser. 2*, 5:44 (1836)!

Inner Anatolia; endemic. This was described from 'prope Trebizond' but as pointed out by Boissier (*Fl. Or.* 4:684, 1879) this is probably a mistake; the type was more probably collected in Cappadocia by the Euphrates, *Aucher* 1609 (G).

S. orientalis L. subsp. *pichleri* (Stapf) Edmondson, **comb. et stat. nov.**

Syn.: *S. pichleri* Stapf in *Denkschr. Akad. Wiss. Wien, Math.-Nat. Kl.* 50(2):47 (1885)!

SE Anatolia; N Iraq, Iran. A good deal of Iranian material named as *S. pinnatifida* auct. (non Hamilton, 1831) belongs to this subspecies.

S. orientalis L. subsp. *pinnatifida* Edmondson, **subsp. nov.**

Syn.: *S. orientalis* L. var. *pinnatifida* Boiss., *Fl. Or.* 4:682 (1879) vix Reichb. (1832).

S. orientalis var. *genuina* Boiss., loc. cit. pro parte minore.

Ic.: Jaub. & Spach, *Ill. Pl. Or.* 5: t. 412 (1854).

Caules prostrati vel ascendentes, 5–15 cm, ramulis lateralibus ± numerosis. *Folia* breviter petiolata, lamina anguste elliptica vel oblonga, usque ad 15 × 6 mm, profunde pinnatifida usque ad nervum medium, margine ± revoluta, subtus adpresse incano-pubescens vel lanata. *Spica* densa, ovoidea; *bractee* lanceolatae vel late ovatae, virentes vel purpureo-

suffusae, usque ad 15×4 mm, interdum confertae. *Corolla* flava, labio inferiore raro coccineo-tincto, 24–30 mm. *Fl.* Apr.–Aug.

Type. Turkey C2 Antalya: Elmali, in lacunosis, 11 v–13 vi 1860, E. Bourgeau 218 (holo. E, iso. W).

Widespread in Turkey; Balkans, N Iran.

***S. orientalis* L. subsp. *porphyrostegia* Edmondson, subsp. nov.**

Caules decumbentes vel erecti, 9–20 cm alti, ad basin multiramosi, pilis tenuibus sed paulo rigidis provisi. *Folia* petiolis 5–8 mm longis, lamina 5–13 $\times$ 4–9 mm, triangulari-ovata, margine subacuto-serrato, brevissime recurvato, supra tenue adpresso-tomentella, subtus densiore tomentella. *Spica* densa ovoida vel oblonga; *bracteae* late ovato-acuminatae, ad 18×16 mm, intense rubro-purpureae. *Calyx* dense sericeus. *Corolla* flava, 28–30 mm, pubescens. *Fl.* Mai–Jun.

Type. Turkey B8 Siirt: between Baykan and Bekirhan, 5 vi 1971, T. Baytop, ISTE 20031 (holo. E).

TURKEY. C8 Siirt: Botan Çay gorge, 6 km S of Siirt, 700 m, Davis 43236.

Endemic to SE Anatolia.

***S. orientalis* L. subsp. *santolinoides* (Hausskn. ex Bornm.) Edmondson, comb. et stat. nov.**

Syn.: *S. santolinoides* [Hausskn. ex] Bornm. in Notizbl. Bot. Gart. Berlin 7(63):32 (1917), in adnot.!

Lectotype designated here: Turkey B7 Erzincan: Bacharsuk ad Euphratem, in pascuis montosis gypsaceis, 9 v 1890, *Sintenis* 2216 (LD).

Inner Anatolia; endemic.

***S. orientalis* L. subsp. *sintenisii* (Hausskn. ex Bornm.) Edmondson, comb. et stat. nov.**

Syn.: *S. sintenisii* [Hausskn. ex] Bornm., loc. cit. (1917), in adnot.!

E Anatolia; endemic.

***S. orientalis* L. subsp. *virens* (Boiss. & Kotschy) Edmondson, comb. et stat. nov.**

Syn.: *S. virens* Boiss. & Kotschy in Boiss., Fl. Or. 4:682 (1879)!

S. tauricola Hand.-Mazz. in Ann. Naturh. Hofmus. Wien 27:409 (1913)!

E Anatolia; N & W Iran.

***Scutellaria* L. sect. *Salviifoliae* Edmondson, sect. nov.**

Syn.: *Scutellaria* sect. *Vulgares* 1. *Salviaefoliae* Boiss., Fl. Or. 4:686 (1879), without indication of rank and without a diagnosis.

Caules prostrati, decumbentes vel ascendentes. *Folia* basalia integra, parva, subtus rugosa vel plana. *Spicae* floribus secundis. *Corolla* tubo basi incurvo, flava, purpurea, rosea vel rubella.

Type species. *S. salviifolia* Benth (‘*salviaefolia*’ when originally published, contrary to Article 73 para. 10 of the Nomenclatural Code).

The section comprises four species: *S. diffusa* Boiss. & Heldr., *S. heterophylla* Benth, *S. pontica* C. Koch and *S. salviifolia* Benth.

TABLE 1
Differential characters of *Stachys* sect. *Fragilicaulis* subsect. *Fragiles*

	<i>S. longiflora</i>	<i>S. euadenia</i>	<i>S. pinardii</i>	<i>S. pseudopinaridii</i>	<i>S. butleri</i>
Eglandular hairs of stem (patent-pilose)	dense	sparse	sparse to sparsely hispid	very sparse	dense
Leaf margin	broadly dentate	broadly crenate-dentate to undulate-crenate	narrowly crenate to crenate-dentate	crenate-dentate to dentate	broadly dentate
Petiole length, mm	30-45	0.5-5	10-40	6-50	30-65
Flowers per verticillaster	2	4-6	4-10	4-6	2(-4)
Internode length between verticillasters, mm	0.7-1.2	1.5-3(-5)	1-2	2-4	1.2-1.6
Calyx length, mm	10-13	6-8	8.5-11	9.5-10.5	7-7.5
Calyx teeth	broadly triangular tapered to long-patent spinescent apex (2-3 mm) with mucro 0.5-1 mm; $\pm$ equal, $\frac{1}{2} \times$ tube	triangular, apex softly spinescent (0.5 mm); $\pm$ equal, $\frac{1}{2} \times$ tube	triangular, apex spinescent c. 1 mm; equal, $\frac{1}{2} \times$ tube	unequal, lower c. $\frac{1}{2} \times$ tube, upper $\frac{1}{2} \times$ tube	broadly triangular, with mucro 0.4-0.6 mm; equal, c. $\frac{1}{2} \times$ tube
Corolla colour	purple	purplish	white	white	white
Corolla length, mm	22-32	12-17	13-18	20-22	14-15
Lengths of corolla lips, mm: <i>u</i> , upper, <i>l</i> , lower	<i>u</i> , 4; <i>l</i> , 7-8	<i>u</i> , 3-4; <i>l</i> , 6-7	<i>u</i> , 4; <i>l</i> , 8	<i>u</i> , 3; <i>l</i> , 5	<i>u</i> , 3; <i>l</i> , 5

Stachys

R. R. MILL

***Stachys buttleri* R. Mill, sp. nov.**

S. pinardii Boiss. et *S. pseudopinardii* Bhattacharjee & Huber-Morath calycibus brevioribus, *S. pinardii* etiam labiis corollae brevioribus, *S. pseudopinardii* necnon corollis minoribus differt.

Herba saxatilis perennis, c. 70 cm alta; pars basalis caulis ignota. *Caules* pendentes, fragiles, inconspicue angulosi, patente villosi (pili c. 1.5–2 mm longi) et glandulis sessilibus densis provisi. *Folia* longe petiolata (petiola inferiorum ad 65 mm longa), late cordato-ovata, obtusa, dentata, dentibus triangularibus in quoque latere foliorum inferiorum 15–18, superiorum 8–12; paginae villosae, pilis primum densis, demum dispersis, et glandulis sessilibus munitae. *Folia floralia* caulinis $\pm$ diversa, mediana ovata, 10–12 $\times$ 6–6.5 mm, acuta, integra. *Verticillastri* 2-flori (infimi raro 3–4-flori), inferiores 12–16 mm distantes. *Bracteolae* desunt. *Pedicelli* 1.5–2 mm longi. *Calyx* campanulatus, 7.1–7.5 mm longus, in statu fructifero ad 8.2–9 mm accrescens, sparse patente-villosus; dentes triangulares, 2–2.3 mm longi (mucrone 0.4–0.6 mm longo incluso), ad basin 1.3–2 mm lati. *Corolla* alba, 14–15 mm longa, sparse glanduloso-puberulens; labium superius 4–5 mm, inferius c. 3 mm longum. *Stamina* inclusa, quam labium superius dimidio breviora. *Nuculae* nigrescentes, 2.9–3.1 $\times$ 2.0–2.1 mm. *Fl.* Jun.–Jul.

Type. Turkey C3 Antalya: Duden-Wasserfälle, schattig-feuchte Felsen, 50–90 m, 1 vii 1973, K. P. Buttler & E. Erben 17555 (holo. hb. Buttler, M).

This new species was collected on damp rocks by the Düden waterfall c. 7 km E of Antalya in S Anatolia. It is a member of *S.* sect. *Fragilicaulis* Bhattacharjee subsect. *Fragiles* Rech. fil. (see Bhattacharjee in this issue, p. 84). This subsection now comprises five species, namely *S. longiflora* Boiss., *S. euadenia* P. H. Davis, *S. pinardii* Boiss., *S. pseudopinardii* Bhattacharjee & Huber-Morath, and *S. buttleri* R. Mill. All are endemic to S Anatolia but are more or less allopatric. All are known from only a few gatherings and are closely allied. It is possible that further collecting in S Anatolia may lead to the discovery of more new taxa in this complex that would lead to a reassessment of their status. The new species possesses some characters of three of the other species, i.e. *S. longiflora*, *S. pinardii* and *S. pseudopinardii*, but in a unique combination. Selected character differences between all five species are compared in Table 1.

The species is named after Dr K. P. Buttler, its discoverer and a notable collector of the Turkish flora.

***Stachys mardinensis* (Post) R. Mill, comb. nov.**

Syn.: *Nepeta mardinensis* Post in Bull. Herb. Boiss. 7:159 (1899)!

Stachys glechomifolia Nábělek in Publ. Fac. Sci. Univ. Masaryk Brno 70:61 (1926)!

Teucrium

T. EKIM*

Teucrium orientale L. var. **puberulens** T. Ekim, var. nov.

Caules puberulens, pilos (unicellularibus) interdum in inflorescentia gradatim elongatis. Fl. Jun.-Sept.

Type. Turkey B9 Ağrı: Ağrı to Horasan, E of pass, 2050 m, 3 viii 1965, J. Lamond 2559 (holo. E).

TURKEY. A4 Kastamonu: Kastamonu to Inebolu, 900 m, Khan et al. 607. A5 Amasya: Merzifon, Manissadjian 45. A6 Amasya: Erbaa to Koçak, 300 m, Tobey 2179. A7 Gümüşane: Gümüşane, 1500 m, T. Baytop ISTE 14304. A8 Gümüşane: Bayburt, Maden, T. Baytop ISTE 14361. A9 Kars: Gölebert nr Ardahan, 1800 m, Davis 30414. B2 Kütahya: Murat Da., 1500 m, Davis 36870. B7 Tunceli: Hozat, 1700 m, Davis 31127. B8 Erzurum: Palandöken Da., 2400 m, Davis 27411. B10 Kars: Ağrı Da., Sultan Tepe, 2300 m, Özyurt & Olgun 1665. C5 İçel: Mersin, Kavaklıpınar, Uslu 772.

Common, especially in E Anatolia; the same variety also occurs in Caucasia and Iran.

Teucrium antitauricum T. Ekim, sp. nov. (Sect. *Isotriodon* Boiss.).

Affinis *T. heterotricho* [Briq. ex] Rech. fil. sed ab eo foliis sparse puberulentibus, indumento inflorescentiae dense pubescente, calyce longiore recedit.

Planta suffrutescens multicaulis saxatilis, caulibus simplicibus tenuibus arcuato-ascendentibus, 7-13 cm longis, sparse pubescentibus. Folia caulina infima integra vel subintegra, ovato-orbicularia vel ovata, base rotundata vel cuneata; mediana et superiora lamina leviter crenato-dentata, oblongo-ovata, distincte petiolata (petiolo 2-4 mm longo), 8-12 × 5-8 mm, supra viride, subtus glaucescente, acutiuscula, nervis lateralibus utroque costae latere 3-4, tantum subtus prominentibus. Racemus vix laxiusculus, oblongus, 1-2.5 cm longus, 5-10-florus, secundus; flores semper bini oppositi, tandem inter se 2-2.5 mm distantes; bracteae anguste ellipticae, acutae, 4-6 mm longae, ad medium calycis ± attingentes; pedicelli 2(-3) mm longae. Calyx 5-6 mm longus, dense breviter pubescens (pilis paucis duplo longioribus commixtis), basi gibbosus, tubulosus, ad tertiam partem bilabiatus; labium superius in 3 dentes 1 mm longos late triangulares ovatos acutos fissum, dente medio triangulari-ovato acutiusculo; dentes inferiores bini 2 mm longi, labio superiores longiores, acuti; dentes omnes intus glandulosi. Corolla rosea-purpurea, 8-9 mm longa, extus dense pubescens, lobis lateralibus lanceolatis acutiusculis, lateralibus distalibus minoribus oblongo-linearibus obtusis, lobo mediano orbiculare 2 mm longo et lato. Stamina lobos proximales corollae aequantia. Nuculae late oblongae, 1.5 × 0.8 mm, rugulosae, pallide brunneae. Fl. Jul.

Type. Turkey C6 Adana: distr. Saimbeyli, 1100 m, on metamorphic sloping and vertical rocks with *Galium incanum*; flowers pinkish-purple, leaves green, stems adpressed to rock, brittle, 11 vii 1952, P. H. Davis, Dodds & Çetik, D. 19888 (holo. E; iso. ANK, BM, K).

TURKEY. C6 Adana: 7 km from Saimbeyli to Tufanbeyli, 1450 m, Ekim 3595 & 3596.

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Sect. *Isotriodon* is an E Mediterranean group of rare saxatile species of which six (including the new species) grow in S Anatolia where all are allopatric. *T. antitauricum*, although having an affinity with *T. cavernarum* P. H. Davis from Ermenek (Isaurian Taurus) is morphologically closer to *T. heterotrichum* [Briq. ex] Rech. fil. from NW Syria. The new species differs from the latter by its more obscurely toothed leaves, papillose-puberulent (not glabrous) leaves and stems, short-haired inflorescence (lacking the conspicuous long hairs of *T. heterotrichum*), and larger calyx (6 mm instead of 4 mm).

***Teucrium lamiifolium* d'Urv., Enum. Pl. Ins. Pont. Eux. 64 (1822).**

1. Lamina triangular-ovate, c. 1.5 × as long as broad, crenate-serrate, yellowish-green subsp. *lamiifolium*
- + Lamina bluntly ovate-lanceolate, 2.5-3 × as long as broad, obtusely crenate, grey-tomentose subsp. *stachyophyllum*

subsp. ***lamiifolium*.**

Distribution: Bulgaria, NW, W & S Turkey.

subsp. ***stachyophyllum* (P. H. Davis) Hedge & Ekim, comb. et stat. nov.**

Syn.: *T. stachyophyllum* P. H. Davis in Notes R.B.G. Edinb. 21:48, f. 1 (1961)!

Distribution: S Turkey (Antakya), Lebanon, Palestine.

Thymbra

P. H. DAVIS

***Thymbra sintenisii* Bornm. & Azn. in Feddes Rep. 10:471 (1912).**

subsp. ***isaurica* P. H. Davis, subsp. nov.**

A subsp. *sintenisii* bracteolis quam calycibus 1-2-plo longioribus (haud ± aequalibus) inaequaliter longiciliatis (pilis longioribus 1 mm longis).

Type. Turkey C4 Antalya: d. Alanya, Kargi Çay, between Durbanas and Derince Dere, rocky slope, flowers white, 25 vii 1947, Davis 14464 (holo. E, iso. K).

Subsp. *sintenisii* grows in E Anatolia, N Iraq and perhaps adjacent Iran. The new subspecies is only known from the Isaurian Taurus, within the general range of the E Mediterranean *T. spicata* L. which extends interrudely from Greece to W Iran.

PLUMBAGINACEAE

Armeria

J. R. EDMONDSON

***Armeria icarica* Edmondson, sp. nov.**

Ex affinitate *A. trojanae* Bokhari sed foliis longioribus (ad 45 mm), scapo omnino glabro, longiore (ad 14 cm), bracteis involucri exterioribus calyce distincte brevioribus.

Herba nana, dense caespitosa; caudex lignosus ramis numerosis brevibus.

Folia anguste linearia, 10-45 × 0.8-1.5 mm, integra, glabra, mutica.

Scapus 10–14 cm altus, glaber; vagina 7–10 mm longa. *Capitulum* parvum densum, usque ad 15 mm diam. *Bracteae involucratae* ovatae vel orbiculares, exteriores ad 2.5×2 mm, margine scarioso angustissimo, interiores ad 5×4 mm, margine scarioso quam eo exteriorum multo latiore. *Spiculae* plerumque biflorae, floribus bractea florale obovata ad 5 mm longa subtentis, bracteolae similes sed minores. *Pedicelli* c. 0.5 mm, glabri. *Calyx* 6–6.5 mm longus aristis inclusis, infundibuliformis; tubus c. 2.5 mm longus, secus et inter nervos pilosus; limbus hyalinus, 5-nervis, 5-lobis, nervo sparse adpresse piloso in mucrone 0.75 mm longo excurrente. *Corolla* intense rosea. *Fructus* ignotus. *Fl.* Mai.–Jul.

Type. Greece, Ikaria: mt Atheras, 800–1000 m, on rocks, 31 v 1970, E. Stamatiadou 9249 (holo. ATH).

GREECE. Ikaria. Mt Atheras, near top of mountain, siliceous bedrock, c. 1000 m, 12 vii 1958, Runemark & Snogerup 12464 (LD); *ibid.*, NE part, schistose rocks, c. 800 m, 12 vii 1958, Runemark & Snogerup 12446 (LD); *ibid.*, summit line Vathivriho, 700–900 m, rocky schistose ground, on rocks, 6 v 1976, E. Stamatiadou 19249 (E).

Endemic to Ikaria. E Medit. (mt.) element.

Differs from *Armeria trojana* Bokhari (endemic to Kaz Da., Turkey B1 Balikesir) in its glabrous leaves and scape, shorter pedicels and herbaceous outer bracts; like this species, it favours schistose rocks. It differs from *A. cariensis* Boiss. & Heldr. in its dense, much-branched woody stock, narrower leaves, shorter scapes and smaller capitula. Specimens from Ikaria have previously been cited under *A. canescens* Host var. *latifolia* (Vis.) Hayek by Rechinger in *Fl. Aegaea* (e.g. Rech. 2211, *Fors.-Maj.* 706). *A. icarica* differs from that species in having smaller capitula (to 15 mm diam.) with minutely but distinctly stalked flowers, narrower spring leaves not more than 1.5 mm broad, and narrowly linear flat summer leaves (usually revolute in *A. canescens*). *Armeria* is centred on the W Mediterranean, especially Spain; *A. icarica* appears to approach *A. splendens* (Lag. & Rodr.) Webb from S Spain in habit and size of capitulum, but differs in having less markedly hyaline outer involucre bracts, the bracteole shorter than the calyx, and longer leaves.

PLANTAGINACEAE

Plantago

R. R. MILL, K. TAN & B. TUTEL*

While preparing the account of the genus *Plantago* for *Flora of Turkey*, one of us (B. Tutel) set aside a puzzling gathering from E Anatolia, believing that it might represent a new species which nevertheless combined certain characteristics of *P. lanceolata* L. (sect. *Arnoglossum* Decne.) and *P. gentianoides* Sm. (sect. *Gentianoides* Pilger). The specimen in question was sent to K. Rahn (Copenhagen), who determined it as a luxuriant example of *P. gentianoides*; however, Tutel disagreed. Comparative morphological studies by R. Mill (who also drew the accompanying illustration) confirmed

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Tutel's view that the gathering is distinct from both *P. lanceolata* and *P. gentianoides* and it is here described as a new species, *P. anatolica*. Additionally, K. Tan has studied the anatomy of the scapes and petioles of the three taxa and found that this yields further characters distinguishing *P. anatolica* from both *P. lanceolata* and *P. gentianoides*.

***Plantago anatolica* Tutel & R. Mill, sp. nov.** Figs 2 & 3.

P. gentianoidi Sm. affinis sed pedunculis glaberrimis, leviter 11-sulcatis subcompressis (non teretis), foliis elongatis anguste ellipticis semper integris notabilis.

Herba perennis, 30–45 cm alta. *Caudex* brevis, 5–6 cm longus, ad basin paulo incrassatus, glaber, rosula una 5–7-foliola ferens. *Folia* erecta, lamina anguste elliptica, (8–)10–18 × 1.5–3 cm, superne ad apicem paulo incrassatum mucronatum gradatim angustata, c. 7-nervata, glabra vel raro parce pilosula, integra, in petiolum 6–9 cm longum glabrum sensim attenuata. *Inflorescentiae* paucae (1–2); spicae pedunculus 25–40 cm altus, 2.5–3 mm diametro, subcompressus, folia multo superans, leviter striato-sulcatus (sulcis c. 11), in inflorescentia etiam glaber. *Spica* laxiflora, elongata, anguste cylindrica, (5.5–)8–15.5 cm longa, floribus 3–4 inferioribus remotis. *Bractee* monomorphicae, 3–4 × 1.2–1.5 mm, oblongo-ovatae, obtusissimae sed ad apicem interdum emarginatae, carina angusta fere ad apicem producta. *Sepala* plerumque omnia liberae (basibus connatis exceptis), raro antica ex parte coalita, 3.2–3.5 × 1.5–2.2 mm, antica posticaque similia, ovata, hyalina, ad apicem et secus carinam angustam c. 2.5 mm longam, brunnescentia, tota glabra. *Corolla* 4–5 mm longa, lobis 1.2–2 mm longis, ovatis vel oblongo-ellipticis, acuminatis usque ± obtusis, brunnescentibus. *Antherae* (1.0–)2.0–2.5 × 1.5 mm, ovoideae, flavidulae. *Stylus* c. 3 mm longus, stigmatē c. 1 mm longo. *Cap-sula* matura ignota; ovarium immaturum ovulos 2–4 continens. *Fl.* Mai. Type: Turkey. B9 Ağrı: 18 km from Patnos to Tutak, 1750 m, water meadow, perennial, 22 v 1966, Davis 43477 (holo. E; iso. ISTO, K).

This unexpected and distinctive new species seems to be most closely allied to *P. gentianoides* Sm., particularly subsp. *griffithii* (Decne.) Rech. fil. (Iran, Afghanistan, Pakistan & E to Tibet), which it resembles in its lax-flowered inflorescence, glabrous caudex and 2–4-ovulate ovary. It differs, however, by the 11-sulcate (instead of smooth) scape, elongate entire leaves and absence of pubescence on the scape and inflorescence. The sulcate scape suggests an affinity with sect. *Arnoglossum* (Turkish representatives: *P. lanceolata* L., *P. lagopus* L., *P. argentea* Chaix) but all the species of this section have constantly bi-ovulate ovaries and connate anterior sepals. The inflorescences of the three Turkish species, moreover, are normally dense and conical, not laxly elongate-cylindrical. Tutel observed that out of 15 dissected flowers of *P. anatolica* all but two did not have connate anterior sepals; connate sepals therefore seem to be an occasional aberration in *P. anatolica* and not of much taxonomic significance.

As the new species combines certain characters of sects. *Arnoglossum* and *Gentianoides*, it is not given formal sectional placing here. It may be necessary for a new section to be described to accommodate it, but that decision is best left to a future monographer.

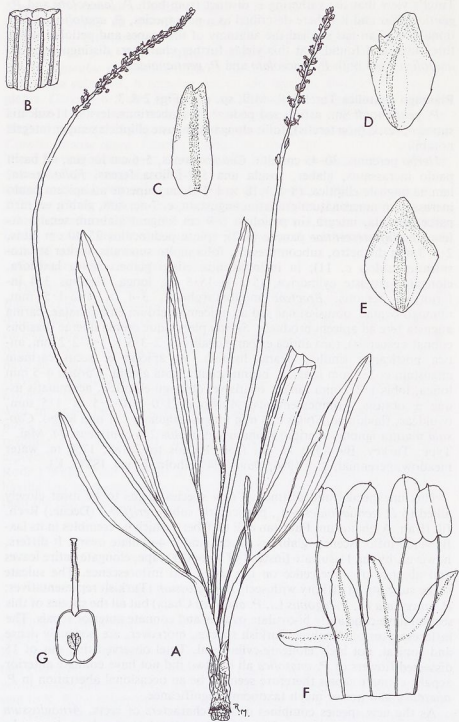


FIG. 2. *Plantago anatolica* Tutel & R. Mill: A, habit; B, longitudinal view of stem; C, bract; D, posterior sepal; E, anterior sepal; F, corolla opened out showing stamens; G, L.S. of ovary. (A $\times \frac{1}{2}$, B-G $\times 6\frac{1}{2}$).

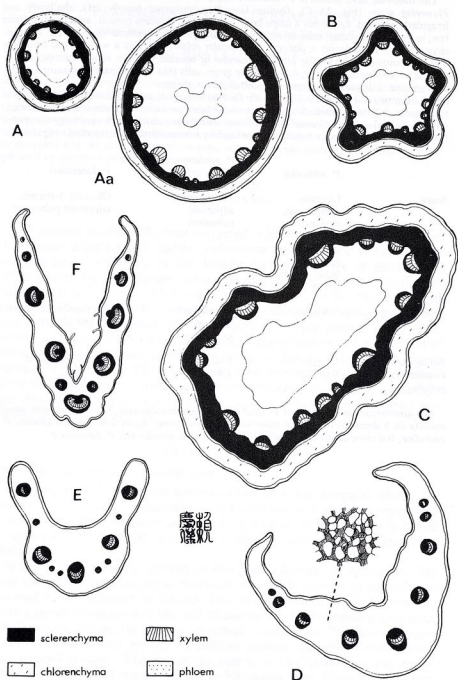


FIG. 3. A-C flowering scapes T.S. (all $\times 25$): A, *Plantago gentianoides* subsp. *gentianoides*; Aa, subsp. *griffithii*; B, *P. lanceolata*; C, *P. anatolica*. D-F distal ends of petioles T.S. (all $\times 12.5$): D, *P. gentianoides* subsp. *griffithii*; E, *P. lanceolata*; F, *P. anatolica*.

ANATOMY

The following descriptions of *P. anatolica* apply as seen in transverse sections.

Flowering scape (Fig. 2A-C): Outline laterally compressed (nearly 2:1), shallowly and irregularly grooved. *Epidermis* a single layer, cuticle thin. *Stomata* present, anomocytic. *Hairs* few, uniseriate, bicellular, smooth-walled. *Cork* absent. *Photosynthetic tissue* of 2-3 chlorenchyma layers. *Endodermis* ± distinct. *Perivascular sclerenchyma* in a well-defined complete ring, also surrounding vascular bundles. *Number of bundles* variable, some incomplete or in process of developing. *Pith region* relatively large; cells thin-walled, parenchymatous, often disorganised. *Sclereids*, mucilage or crystal idioblasts absent.

Distal (laminar) end of petiole (Fig. 2D-F): Outline V-shaped, deeply grooved. *Epidermal cells* rectangular or barrel-shaped. *Stomata* on both surfaces, anomocytic. *Hairs* sparsely scattered, only on adaxial surface. *Ground tissue* of thin-walled parenchyma with very large air-spaces (aerenchyma-like). *Vascular bundles* 11, enclosed by sclerenchyma not extending to epidermis.

	<i>P. anatolica</i>	<i>P. gentianoides</i> subsp. <i>griffithii</i>	<i>P. lanceolata</i>
<i>Scape</i>	Laterally compressed, shallowly and irregularly grooved; indumentum sparse	Terete, smooth adpressed-pubescent	Obtusely 5-angled, adpressed-pubescent
<i>Petiole</i> <i>T.S.</i>	V-shaped	Broadly and shallowly U-shaped	Intermediate between V- and U-shaped
<i>No. of vasc. bundles in petiole</i>	5 large, 6 smaller	5 large, 4 smaller	5 large, 6 smaller

The anatomical investigation of *P. anatolica*, *P. gentianoides* and *P. lanceolata* was based entirely on 8 sheets of herbarium material. This small study shows that the new species, *P. anatolica*, has close anatomical similarities with *P. gentianoides* and *P. lanceolata*.