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NOTES ON ACANTHUS HIRSUTUS BOISS. WITH A NEW KEY TO TURKISH TAXA OF ACANTHUS

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ABSTRACT. A form of *A. hirsutus* Boiss. (Acanthaceae) from Turkey with a pink corolla is described as forma *roseus* D. J. Wood. A broad concept of *A. hirsutus* is adopted, including *A. syriacus* (as subsp. *syriacus* (Boiss.) Brummitt) and *A. caroli-alexandri* Hausskn. from Greece which has been erroneously referred to *A. spinosus* L. in *Flora Europaea* and *Med-Checklist*. *A. dioscoridis* L. and *A. spinosus*, although separated with some difficulty from *A. hirsutus*, are maintained as separate species on the grounds of different leaf morphology. A new key to *Acanthus* taxa in Turkey is provided.

A NEW PINK-FLOWERED FORM OF A. HIRSUTUS

Acanthus hirsutus Boiss. forma **roseus** D. J. Wood, **forma nov.**
A forma typica corolla cum calycis parte superiore rosea differt.
Type. Turkey A5 Çorum: near Boğazkale (ancient Hattuşaş), undulating terrain with many rock outcrops, soil a stiff brown clay cultivated for cereals wherever practicable, c.1200m, 14 vi 1987, *D. J. Wood* s.n. (holo. K, iso. E).

The key to the species of *Acanthus* given in the *Flora of Turkey* (Hossain, 1982) indicates that *A. dioscoridis* L. is the only Turkish species in which the corolla is purple or pinkish-red. However, field observations and collections made by one of us (D.J.W.) have established that a pink corolla may occur also in *A. hirsutus* Boiss.

The typical form of *A. hirsutus*, in which the corolla is greenish-white to cream and the upper lobe of the calyx pale yellowish-green, is a very common plant in many parts of western and central Turkey. In the Çorum Vilayet near Boğazkale (A5) plants of this species with a pink inflorescence, among a population in which the typical form predominated, were first noticed in 1985, and the site was revisited in 1987 in order to obtain further details and herbarium specimens.

A count established that there were between 65 and 70 pink-flowered plants in a total of c.500. Half the pink inflorescences were among a dense colony of c.250 plants; the other half were among smaller outlying groups the furthest distance between which was estimated as 350m. The intensity of pigmentation differed considerably between individual plants, but in most cases was sufficiently pronounced to stand out at a distance, as when viewed at 100m through 10x binoculars. In extreme cases the corolla was a deep rose-pink, and the upper calyx a somewhat brownish-pink shading to green at the base. In plants at the other end of the scale the pigmentation was confined to a small area of pale pink on the corolla or to a band of brownish-pink at the upper extremity of the calyx.

Pink-flowered examples of *A. hirsutus* resembling those at Boğazkale have not been noticed among many thousands of plants seen in other parts of

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Turkey, However, a few plants with slight pink pigmentation confined either to the corolla or to the calyx, as described above, have been seen at Ermenek in the Taurus Mountains of southern Turkey and near Haymana 60km SSW of Ankara. *Bornmüller* 14384, mentioned by Hossain (1982) as being a possible intermediate between *A. hirsutus* and *A. syriacus* Boiss., has been re-examined at Kew and found to resemble those few plants at Boğazkale and Ermenek with brownish-pink pigmentation on the upper calyx but none on the corolla. It appears, therefore, that such plants are intermediate between the typical form of *A. hirsutus* and the pink form from Boğazkale, and that examples, including Bornmüller's plant, can occur in various parts of the country. This pink variant is significant in discussion of the taxonomy of the genus and in horticulture, and it seems appropriate to recognize it at the rank of forma.

Notes on A. hirsutus, A. syriacus and their relatives

Acanthus hirsutus Boiss., Diagn. ser. 1(4): 86 (1844).
Syn.: *A caroli-alexandri* Hausskn. in Gartenflora 35: 633 (1886), syn. nov.
Type: Greece, Pindus Mts, near Korona Monastery, *Haussknecht* (presumably JE, n.v.).

Acanthus hirsutus Boiss. subsp. **syriacus** (Boiss.) Brummitt, **comb. et stat. nov.**
Basionym: *A. syriacus* Boiss., Diagn. ser. 1(11): 135 (1849). Types: as cited in Hossain (1982) (syn. G).

It is tempting to postulate that *A. hirsutus* forma *roseus* is the result of introgression with some other species of the genus. Hossain (1982) has suggested that *A. hirsutus* may introgress with *A. syriacus* Boiss. in southern Anatolia. The latter species has purple pigmentation on the bracts and calyx and occurs in this area, which is more or less at the eastern geographical limit of *A. hirsutus* (Hossain, 1982: map 3). However, *A. syriacus* is not known in the north of Turkey, and so can scarcely be responsible for the pink calyx in *Bornmüller* 14384 (from A4). Furthermore, it has a white corolla and so is even less likely to be involved in the origin of the pink-flowered Boğazkale plant. A more likely origin might be introgression with *A. dioscoridis* L., which has a pink corolla but is found further to the east than *A. hirsutus* (Hossain 1982: map 3).

In fact, looking more broadly at the taxonomy of this group, it appears that virtually all characters which have been used to separate taxa are indistinct or break down in some plants. This may be due more to incomplete speciation than to subsequent introgression. *A. hirsutus* is particularly difficult to satisfactorily separate in a key from several other taxa.

Typical *A. dioscoridis* has more or less entire leaves and a pink corolla, and thus looks very distinct from typical *A. hirsutus* with pinnatifid leaves and white or greenish-yellow corolla. However, plants referred to *A. dioscoridis* var. *perringii* (Siehe) E. Hossain by Hossain (1982) have pinnatifid leaves and fall geographically between typical *A. dioscoridis* and *A. hirsutus*. *A. dioscoridis* var. *laciniatus* Freyn from the same geographical area, is merely a less extreme variant with less deeply lobed leaves and scarcely seems worth formal taxonomic recognition. These taxa bridge the gap between *A. dioscoridis* and *A. hirsutus*, and the discontinuity between them is reduced further by the recognition here

of *A. hirsutus* forma *roseus*. However, the very different leaf shape of typical *A. dioscoridis* supports its recognition as a separate species. *A. dioscoridis* var. *brevicaulis* (Freyn) E. Hossain, also recognized in the Flora of Turkey, differs only in having a stunted growth form and again seems scarcely worth formal recognition, though its occurrence well to the north-west of typical *A. dioscoridis* suggests that it might merit further investigation.

As Hossain and other authors have emphasized, *A. hirsutus* is also closely allied to *A. syriacus*. The range of variation in leaf shape in these two taxa appears to completely coincide, and since most species in *Acanthus* are distinguished by leaf shape rather than by floral characters this is highly significant. As indicated in Hossain's key, there is a difference in stem indumentum between the two taxa, but this is not clear-cut and merely a matter of degree. The pubescence at the apex of the ovary and base of the style in *A. hirsutus* is conspicuous on specimens we have examined, but also occurs occasionally in some specimens of *A. syriacus*. The purple bracts of the latter are often conspicuous, but their constancy is difficult to verify since few herbarium specimens are annotated for this character. Mention of purple bracts seems to be largely omitted from earlier Flora descriptions of *A. syriacus*. We have at least one photograph of a plant from the area of this species (*B. Mathew* s.n., Gaziantep, Turkey) in which the bracts and calyx are not purple. The two taxa are geographically complementary to each other (Hossain, 1982: map 3), and in view of the vegetative similarity and the doubts about the inflorescence characters, it seems preferable to regard them as only subspecifically distinct.

A further problem concerns the separation of *A. hirsutus* from *A. spinosus* L. The latter occurs in the Balkan Peninsula and East Aegean Islands, and in the south-west corner of Turkey where it may overlap slightly with *A. hirsutus* (Hossain, 1982: map 3). In *A. spinosus* the leaves tend to be more deeply divided and have stronger veins and spines, but the difference is only one of degree. The other main character is the number of main veins in the inflorescence bracts, 3–5 in *A. spinosus* and 5–13 in *A. hirsutus*, but there is an overlap here and it is difficult to define what is a main vein. We cannot maintain the clear separation in number of veins given in the Flora of Turkey. As with *A. dioscoridis*, it seems desirable to maintain specific rank largely because of leaf differences. If a policy were adopted of giving only subspecific rank to taxa which are geographically complementary and differ only or mainly in leaf morphology, a large part of the genus would have to be sunk into one species.

Finally, mention must be made of the plant from northern Greece described as *A. caroli-alexandri* by Haussknecht (1886) who compared his new species in detail with *A. hirsutus*. In *Flora Europaea* (Heywood & Richardson, 1972) only three species were recognized, *A. mollis* L., *A. spinosus* L. and *A. balcanicus* Heywood & I. Richardson (correctly *A. hungaricus* (Borb.) Baenitz—see Brummitt, 1981), while *A. caroli-alexandri* was referred to the synonymy of *A. spinosus*. The *Med-Checklist* (Greuter et al., 1984) has repeated the latter synonymy. Rix (1980), however, has drawn attention to the distinctness of *A. caroli-alexandri* from *A. spinosus* and its similarity to *A. syriacus*. Its leaf characters (see the three good illustrations in Haussknecht loc. cit.) are exactly those of both *A. hirsutus* s. str. and *A. syriacus*, and we therefore include *A. caroli-alexandri* in *A. hirsutus* Boiss.

We have seen several specimens which correspond with *A. caroli-alexandri* from Greece and one from southern Jugoslavia: Troiatsi, near Prilep, 2 vi 1918, *Nikoloff* s.n. (K). The last was identified by Stojanoff (1928) as *A. spinosus* var. *hirsutus* Formánek (1892), which was described from Macedonian Jugoslavia, differing from typical *A. spinosus* in its hairy leaves and bracts. We have not seen the type of Formánek's name, but it seems likely that his *A. spinosus* var. *hirsutus* is a heterotypic synonym of *A. hirsutus* Boiss. Similarly, *A. spinosus* var. *thessalus* Formánek (1896), described from Greece, is also probably to be referred to *A. hirsutus* Boiss., but again we have not seen type material. Both of Formánek's varieties are recognized under *A. spinosissimus* Pers. by Hayek (1929).

A. hirsutus s. str. is now recorded also from Turkey-in-Eurpoe by Hossain (1982), repeated in Greuter et al. (1984), though it was not recorded by Webb (1966). We have not seen specimens from there to compare with the plants from adjacent Greece and Jugoslavia. On geographical grounds one might expect that all the Balkan material would be one taxon, which would be expected to be *A. hirsutus* subsp. *hirsutus*. However, some Balkan specimens in K (*Nikoloff* s.n., *Heldreich* 3283, *Sintenis* 442) show similarity to subsp. *syriacus* in indumentum and perhaps coloration of bracts, and have been annotated as *A. syriacus* by W. B. Turrill and others. It is interesting to note also that Stojanoff (1928) regarded Formánek's var. *hirsutus* as intermediate between *A. caroli-alexandri* and *A. syriacus*, with no mention of *A. hirsutus*. Rix (1980) notes that the ovary may be either glabrous or hairy, so matching either subspecies. Specimens and descriptions seen from the Balkans make no mention at all of colour of bracts or floral parts, and we are unable at present to establish whether they match subsp. *hirsutus* or subsp. *syriacus*. Good, well-annotated material is required. In the meantime we are confident enough to record *A. hirsutus* from Greece and Jugoslavia as well as from Turkey-in-Europe as a fourth species in the European flora additional to those recognized in *Flora Europaea*.

A revised key to Acanthus in Turkey

1. Leaves entire to sinuate or toothed; corolla pink to purple **A. dioscoridis**
+ Leaves pinnatifid to bipinnatifid; corolla white to greenish-yellow or rarely pink 2
2. Corolla pink 3
+ Corolla white to greenish-yellow 4
3. Stem subglabrous to shortly pubescent ..... **A. dioscoridis** var. **perringii**
+ Stem hirsute or pilose ..... **A. hirsutus** f. **roseus**
4. Leaves not spinose, the main lobes usually 2–10cm broad, the ultimate lobes terminated at most by a short mucro or acute tooth (cultivated, occasionally naturalized) ..... **A. mollis**
+ Leaves spinose, the main lobes less than 2cm broad 5
5. Bracts 3–5-veined; leaves pinnatifid or usually bipinnatifid, the main and secondary lobes and often their lateral teeth with cartilaginous raised veins continuous from midrib to spinose tip ..... **A. spinosus**

\+ Bracts 5–13-veined; leaves pinnatifid(main lobes toothed but scarcely lobed again), usually only the main lobes with cartilaginous raised veins continuous from midrib to spinose tip 6

6. Stem usually hirsute or pilose; bracts and calyx greenish or yellowish; ovary apex and style base hirsute .....**A. hirsutus** subsp. **hirsutus**

\+ Stem usually pubescent; bracts and calyx purple at tip; ovary apex and style base glabrous or shortly hirsute .....**A. hirsutus** subsp. **syriacus**

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