

VARIATION IN ANTHYLLIS VULNERARIA IN SICILY AND S ITALY

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ABSTRACT. An account is given of variation in *Anthyllis vulneraria* L. (Fabaceae) in Sicily and Calabria, with reference to the pattern of variation in this polymorphic species in other parts of Italy, N Africa and the Balkan peninsula. *A. vulneraria* subsp. *maura* (G. Beck) Lindb. var. *ajmasiana* Pau, reported here from Sicily and from one station in Calabria, has not previously been recorded in Europe. This variant is also more widespread in N Africa than has been previously reported. The combination *A. vulneraria* subsp. *maura* var. *busambarensis* (Lojac.) Akeroyd is made.

INTRODUCTION

Anthyllis vulneraria L. (Fabaceae) displays a seemingly bewildering range of variation throughout its range in Europe and adjacent parts of N Africa and western Asia. The species exhibits distinct regional and ecological facies of variation and, where variants of intermediate morphology occur, exists as stable and more or less homogeneous populations. Although treated at different ranks by a number of authors, variants of *A. vulneraria* are most appropriately treated at subspecific rank (Cullen, 1968, 1976), with minor regional variants accommodated as varieties.

Pignatti (1982) identified 18 subspecies of *A. vulneraria* in Italy, a good proportion of the 30 or so subspecies that have been recognized in Europe. During two visits to Italy in 1983, to Sicily in early June and to Sicily and Calabria with S. L. Jury and others in July, I collected material of *A. vulneraria* in order to compare S Italian plants with plants that I had studied from Greece, where at least six subspecies occur (Akeroyd, 1986). S. L. Jury and others made further collections of *A. vulneraria* in Sicily and Calabria in July 1984, and I have also examined herbarium collections of the species from N Africa, Sicily and Calabria made by P. H. Davis and colleagues. The collections studied belong to five taxa of *A. vulneraria*, which can be separated by the key set out below.

KEY TO TAXA OF ANTHYLLIS VULNERARIA IN SICILY AND S ITALY

- 1a. Basal leaves with 1-5 ovate to elliptic leaflets; calyx 7-10mm; hairs on calyx subspreading or spreading subsp. **pulchella**
- 1b. Basal leaves with 1-3(-5) elliptic leaflets; calyx 11-18mm; hairs of calyx appressed, shining 2
- 2a. Calyx 11-13mm; leaves borne mostly on lower third of stem subsp. **praepropera**
- 2b. Calyx 14-18mm; leaves borne along length of stem 3
- 3a. Basal leaves with 1(-3) broadly elliptic leaflets; lower part of stem with patent hairs; corolla yellow subsp. **maura** var. **busambarensis**

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- 3b. Basal leaves with 1-3(-5) narrowly elliptic leaflets; lower part of stem with appressed hairs; corolla pink, purple or yellow . . . 4
 4a. Corolla pink or purple subsp. *maura* var. *maura*
 4b. Corolla yellow subsp. *maura* var. *ajmasiana*

VARIATION

Most of the material of *A. vulneraria* that I and colleagues from Reading have observed in the field in Sicily and Calabria is referable to subsp. *maura* (G. Beck) Lindm. var. *maura*. This subspecies is generally rather robust, ascending to erect or sometimes procumbent in habit, with appressed-hairy cauline leaves along the whole length of the stem. The combination of large calyces with their distinctive appressed, shining indumentum, and the usually purplish-pink corolla distinguish this variant from other subspecies, although it can be confused with subsp. *praepropera* (A. Kerner) Bornm. (subsp. *rubriflora* (DC.) Arcangeli) which also has a shining indumentum on the calyx. Subsp. *praepropera* is present in S Italy (Fenaroli (1970) cites many records from the Gargano peninsula), but is the more typical pink-flowered lowland variant of C and N Italy (Cullen, 1976, fig. 3). It occurs locally at low altitudes on Sicily (e.g. Syracuse: 6km north-west of Avola, 14 v 79, Davis *et al.* 63098, BM, E).

Subsp. *maura* is the principal variant of the species in S and E Spain, S Italy and N Africa from Morocco to Libya. Much material from Sicily, including two gatherings that I made in June 1983 in the Madonie Mts (*Akeroyd* 411, 425), has yellow corollas and belongs to subsp. *maura* var. *ajmasiana* Pau, reported previously only from Morocco. The presence of this variety in Sicily is not unexpected, as the island has many floristic links with N Africa.

I have subsequently seen a number of other collections of this variety from Sicily and Calabria; also from Morocco, where it was known from the mountains around Chechaouen in the north-west of the country (Cullen, 1976), and from Algeria and Tunisia. These are mapped in Figure 1; European collections of var. *ajmasiana* are listed in the Appendix. I have not had the opportunity to examine any material that may be present in N African or French herbaria.

Plants observed and collected in the Madonie Mts were mostly decumbent in the field, whereas the subspecies generally tends to be more or less ascending in habit. However, herbarium material from Sicily and N Africa is variable in habit. Var. *ajmasiana* has stems 20-40cm and is perhaps a little less robust than var. *maura*. It is frequently montane (300-1500m) in distribution. The only consistent difference between vars *maura* and *ajmasiana* is, nevertheless, the colour of the corolla. Some gatherings of var. *ajmasiana* (e.g. *Akeroyd* 425) have petals flushed with pink, and there is some gradation in the shade of yellow, from pale lemon- to orange-yellow. The calyx may be concolorous but is more usually pink or red at the distal end.

In the mountains of Calabria, subsp. *maura* varies towards subsp. *pulchella* (Vis.) Bornm., a subspecies that is widespread in the mountains of the Balkan peninsula (*Akeroyd*, 1986), but which also occurs in the

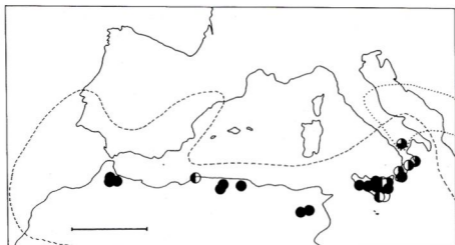


FIG. 1. Distribution of *Anthyllis vulneraria* subsp. *maura* var. *ajmasiana*. ● var. *ajmasiana*; ◐ plants intermediate between var. *maura* and var. *ajmasiana*; ◑ plants intermediate between var. *ajmasiana* and subsp. *pulchella*; ● plants intermediate between var. *maura* and subsp. *pulchella*; --- limits of distribution of subsp. *maura*; . . . limits of distribution of subsp. *pulchella*. Scale-bar = 500km.

central Apennini (Pignatti, 1982), the Gargano peninsula (Fenaroli, 1970), and in Anatolia and Krym (Cullen, 1976). Subsp. *pulchella* is somewhat woody at the base, procumbent to ascending in habit, and the stems and leaves have a dense appressed-sericeous indumentum. The calyx is small (7–10mm), with more or less spreading hairs; the flowers are purplish-pink or cream flushed with pink. A gathering of subsp. *pulchella* from 1570m on Mte Pollino, Basilicata, just to the north of Calabria (Akeroyd *et al.* 3935), which extends southwards the known distribution of this variant, differs from material collected in the Gran Sasso d'Italia (Akeroyd *et al.* 4218, Jury *et al.* 6543, RNG) and Greece (Akeroyd 1986) by its taller and more ascending habit, leafier stems and more appressed hairs on the calyx, i.e. it shows characters of subsp. *maura*. By comparison, a gathering of subsp. *maura* from 1800m on Montalto (Aspromonte) in the extreme south of Calabria has somewhat spreading hairs on the calyx, and pink to cream flowers. This population contained many dwarfed plants, although this may to some extent be a result of grazing. However, the variation in the direction of subsp. *pulchella* correlated with the morphological pattern observed on Mte Pollino to the north. Two collections from the Sila Mts of Calabria, at 1200–1250m, (Davis *et al.* 65241, 65388) and another from Aspromonte at c.1950m (Davis *et al.* 64916), have somewhat spreading hairs on the calyx, and basal leaves with broadly elliptical to suborbicular leaflets. Davis *et al.* 65241 has small calyces, c.12mm, and the flowers are yellow: it is thus intermediate between *A. vulneraria* subsp. *pulchella* and subsp. *maura* var. *ajmasiana*. Davis *et al.* 65012, from c.1500m on Aspromonte, has yellow corollas and appressed hairs on the calyx, and appears to be var. *ajmasiana*, the first record of this variant on the mainland of Italy.

Other 'pure' populations of this plant should be sought elsewhere in the mountains of Calabria.

Gatherings of subsp. *maura* from a stony bank at 900m near Avellino, Campania (Akeroyd *et al.* 3313) and from a sandy slope at 600m west of Reggio di Calabria (Davis *et al.* 64907) were referable to var. *maura*, which is undoubtedly the common variant of *A. vulneraria* at lower altitudes in Calabria. As my visits to S Italy and Sicily were made during June and July, most populations observed were well in fruit or were withered, and it was difficult to assess flower colour. On the basis of the collections of Davis and colleagues examined, var. *ajmasiana* may be slightly commoner on Sicily than var. *maura*.

THE POPULATION OF *A. VULNERARIA* ON ROCCA BUSAMBRA

I did not observe or collect the plant referred by Pignatti (1982) to *A. vulneraria* subsp. *busambarensis* (Lojac.) Pign. in the Madonie Mts, although I have since examined three sheets, including the type, all from the *locus classicus* on Rocca Busambra to the west (see Appendix). This plant is robust, up to c.40cm, with very large basal leaflets that are broadly elliptical in shape, and an indumentum of patent hairs on the lower third of the stems. The calyx is 15–16mm, with the appressed, shining indumentum characteristic of subsp. *maura*; the corolla is yellow. Pignatti (1982) states that this variant also occurs on the Madonie Mts, but notes that there it differs somewhat from the Busambra population. This robust plant clearly falls within subsp. *maura*, but does not seem to constitute a very distinct population. I prefer to retain it at varietal rank, at which it was originally described (Lojacono Pojero, 1891) and make the appropriate combination below. Should further study suggest that it is but an insignificant variant of var. *ajmasiana*, the epithet '*busambarensis*' does of course have priority.

Anthyllis vulneraria* L. subsp. *maura* (G. Beck) Lindm. var. *busambarensis* (Lojac.) Akeroyd, **comb. nov.*

Basionym: *A. heterophylla* Moench var. *busambarensis* Lojac., Fl.Sic. 1(2):47 (1891).

Syn.: *A. vulneraria* L. subsp. *busambarensis* (Lojac.) Pign., Giorn. Bot. Ital. 111:46 (1977).

Type. In rupibus calc. montani Busambra, iv 1880, M. W. Lojacono. Pl. Sic. Rar. Cent. IV. No.377 (iso., BM).

ECOLOGY

A. vulneraria is generally a plant of open, well-drained habitats, often on limestone. The collections of subsp. *maura* from Sicily were from dry, stony or rocky garigue and grassland, screes or clearings in *Fagus sylvatica* and *Quercus* woodland, principally on limestone but also on marl, shale or sandy soils. The altitudinal range is 300–1500m and flowering is from March to June. In N Africa, both subsp. *maura* var. *maura* and subsp. *maura* var. *ajmasiana* occur in a range of dry, open habitats that include banks, rocky slopes and wadis, clearings in forests of

Quercus suber and *Cedrus atlanticus*, maquis and garigue communities, on a number of soil and rock types (sands, shales, schists, limestones and igneous formations).

Subsp. *pulchella* is characteristically a plant of rocky limestone grassland and open, stony ground above 1400m. Flowering is from June to September. The populations in Calabria that are intermediate between this subspecies and subsp. *maura* occur at 1200–1800m in montane vegetation communities that are less dried-up at the end of July than the lowland communities in which subsp. *maura* most typically occurs.

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APPENDIX

European collections of *Anthyllis vulneraria* subsp. *maura* var. *ajmasiana*.

ITALY. Calabria: Aspromonte, 8km E of Gambari, c.1500m, 12 vi 79, P. H. Davis, D. & S. Sutton 65012 (BM, E); Aspromonte, c.45km E of Reggio di Calabria, c.1950m, 12 vi 79, P. H. Davis et al. 64916 (E); inter subsp. *pulchella* et var. *ajmasiana*; Silo Piccolo, c.40km N of Catanzaro, c.1250m, 16 vi 79, P. H. Davis et al. 65241 (E); Sila, c.18km SE of Giovanni in Fiore, towards Cotronei, c.1200m, 17 vi 79, P. H. Davis et al. 65388 (E).

SICILY. Agrigento: Mte Cammarata, c.50km N of Agrigento, c.900m, 20 v 79, P. H. Davis et al. 63448 (BM, E); below Rocca Ficuzza, c.10km NE of Sciacca, 300m, 19 v 79, P. H. Davis et al. 63358 (BM, E). Catania: 15km S of Piazza Armerina, 400m, 17 v 79, P. H. Davis et al. 63282 (BM, E); inter vars *maura* et *ajmasiana*. Messina: between Taormina and Castel Mola, 300m, 12 v 79, P. H. Davis et al. 62912 (BM, E); c.8km NW of Cesarò, 1300m, 31 v 79, P. H. Davis et al. 64165 (BM, E); c.20km NE of Randazzo, c.1200m, 1 vi 79, P. H. Davis et al. 64271 (BM, E); Rocca Novera, c.7km S of Novera di Sicilia, c.1300m, 6 vi 79, P. H. Davis et al. 64587 (BM, E). Palermo: c.27km S of Cefalù, c.1400m, 26 v 79, P. H. Davis et al. 63837 (BM, E); Madonie Mts, vi 1879, M. W. Lojaccono s.n., 'var. fl. luteis' (CGE); Polizzo Generoso, 900–1000m, 17 viii 64, P. H. Davis 40077 (E); Madonie Mts, Mte Quacella, 1200m, 8 vi 83, J. R. Akeroyd 411 (BM, RNG); Madonie Mts, 1km E of Portella Manderini, 1400m, 9 vi 83, J. R. Akeroyd 425 (BM, RNG); inter vars *maura* et *ajmasiana*).

Collections of *Anthyllis vulneraria* subsp. *maura* var. *busambarensis* examined.

SICILY. Palermo: Busambra, 'in rupib. calc. montani', iv 1880, *M. W. Lojacono* s.n. (BM); Rocca Busambra, above Ficuzza, limestone cliffs, in rocks, [Material not in flower, but robust with patent hairs on lower part of stem], 1100m, 14 viii 64, *P. H. Davis* 40016 (E); Mte Busambra, lower slopes above Ficuzza, in and near Bosca della Ficuzza, 800-1000m, 28 v 72, *C. A. Stace & R. Cotton* 399 (BM, LTR).