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ANTHYLLIS IN THE BRITISH ISLES*

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ABSTRACT. A Flora account, accompanied by notes on reproductive biology, is given for *Anthyllis* (Leguminosae) in the British Isles.

ANTHYLLIS L.

Sp. Pl. 719 (1753). (Type species: *A. vulneraria* L.)

Shrubs or prostrate to erect annual or perennial herbs. Leaves stipulate with caducous stipules, imparipinnate, the lower often reduced to a terminal leaflet, or with the terminal leaflet much larger than the others (inequifoliolate), rarely all unifoliolate or trifoliolate, entire. Flowers rarely in fascicles, more usually in many-flowered heads, each usually subtended by 2 palmately lobed bracts; several heads may occur on one stem, when they tend to coalesce. Calyx tubular, 5-toothed, zygomorphic or more rarely ± actinomorphic, white or yellow, often flushed red towards the apex. Corolla with the keel petals strongly united and the long-clawed wings and standard free, whitish, yellow or red to purple, the petals often varying in colouration. Stamens 10, monadelphous or the upper filament free for about ½ its length (this condition increasing with the age of the flower), alternate filaments longer and shorter. Ovary sessile or stipitate, ± linear. Fruit a 1–several-seeded, sessile or stipitate legume, dehiscent when many-seeded, indehiscent and enclosed in the persistent calyx when 1–2-seeded. Seeds hard, round, 1–1·5mm diam. greenish or yellowish. Chromosome number 2n = 12.

Habitat & Distribution. The genus is found throughout Europe (including Iceland), north Africa (extending as far south as Ethiopia in the east), and south western Asia, extending as far east as the Caucasus. The main development of taxa is in the west Mediterranean area (Spain, Morocco, Algeria). All of the species occur in dry, somewhat open places, extending from sea level to 3200m in Turkey

Reproductive Biology. Most of the species have not been investigated. The following observations refer to *A. vulneraria* only, though floral structure suggests similar processes in the other species.

The flowers are protandrous; an insect (usually various kinds of bees) landing on the lower part of the flower, mainly the wings, causes a piston action whereby the anthers, which are packed tightly in the tubular keel, force the slightly sticky, whitish pollen through the small hole in the apex of the keel to form a small coil which sticks to the lower part of the insect's abdomen. Later, similar action causes the elongated style to be pushed through the hole in the keel, bringing the stigma into a position where it collects the pollen.

*This account was prepared for the now discontinued *Flora of Great Britain and Ireland* project. The information was obtained from various sources and is published here since it is not available elsewhere in a collected form. The format closely follows that of the projected Flora.

The 1-seeded indehiscent legume is surrounded by the dried out, persistent calyx, which is blown about by the wind. The legume is leathery and the seed very hard, so germination is presumably considerably delayed in the wild (in cultivation rapid germination may be obtained by removing the seed from the legume and scarifying it). In a few species from the western Mediterranean area the legume is several-seeded, and dehisces in a normal manner. No means of vegetative propagation are known in the wild, but the perennials can be propagated by cuttings (usually branches from near the basal rosette) in gardens.

Taxonomy & Biosystematics. The genus consists of about 25 species, arranged in four subgenera which are sometimes regarded as separate genera (cf. Hutchinson, 1964, where the genera *Anthyllis s.s.*, *Physanthyllis* Boiss., *Dorycnopsis* Boiss. and *Cornicina* (Boiss.) DC. are recognized).

The one widespread species, *A. vulneraria* L. is taxonomically very complex, consisting of numerous intergrading races which are ecologically and geographically separated to some extent. In the latest revision of the group (Cullen, 1976) 35 subspecies are recognized, some of them further divided into varieties. As far as is known, all of these are diploid ($2n = 12$), and all apparently interbreed (at least, intermediates are usually found in the zones of overlap). Five of the subspecies are found in the British Isles, three of them native (one apparently endemic), two introduced.

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1. A. vulneraria L., Sp. Pl. 719 (1753).
Vernacular names. Kidney Vetch, Ladies' Fingers.
Illustrations. Sowerby, *English Botany* 2:t. 104 (1793); Ross-Craig, *Drawings of British Plants* 7:t. 42 (1954).

Prostrate to erect perennial herbs (annuals occur in the Mediterranean area) with basal rosettes of leaves. Stems variously hairy (see below), branched or not, (5–)10–70(–100)cm. Rosette leaves inequifoliolate with large terminal leaflet and 0–3 pairs of lateral leaflets; cauline leaves equifoliolate or inequifoliolate with 5–15 leaflets, evenly distributed along the stem, or concentrated in the lower part; all leaflets sericeous beneath. Inflorescence of 1–several heads, often somewhat coalescent. Bracts (3–)5–7-lobed, lobes exceeding the calyces, obtuse or acute. Calyx tubular-campanulate, zygomorphic, unequally 5-toothed at the apex, (8–)9–11 × 3–5mm, sericeous or pilose, whitish or yellowish, usually with a red tip. Standard and wings cream to yellow, more rarely red or red-streaked, keel yellow, sometimes with the tip reddish, more rarely entirely red. Ovary linear, stipitate. Legume short, pouch-like, stipitate, dark brown or black when ripe, 1-seeded, borne in the persistent, papery calyx.

The subspecies of *A. vulneraria* fall into 2 'aggregates' (Cullen, 1976), distinguished as follows: 'Vulneraria aggregate'—cauline leaves equifoliate, bract lobes ± acute, calyx 3–4·5mm broad with the lateral teeth obscure, overlapping the bases of the upper; 'Alpestris aggregate'— cauline leaves inequifoliolate, bract lobes ± obtuse, calyx 4·5–5mm broad with lateral teeth distinct, not overlapping the upper. Of the five British subspecies mentioned below, i–iii belong to the Vulneraria aggregate, iv–v to the Alpestris aggregate.

i. subsp. **vulneraria.**
A vulneraria var. *kerneri* Sagorski, *Deutsch. Bot. Monattschr.* 8:136 (1890). (Type: none cited).
A. vulneraria Unterrasse *A. linnaei* Sagorski, *Allg. Bot. Zeitschr.* 14:152 (1908) (Type: none cited); *A. linnaei* (Sagorski) Juzepczuk in Komarov, *Fl. S.S.S.R.* 11:265 (1945); *A. vulneraria* subsp. *linnaei* (Sagorski) Jalas, *Ann. Bot. Soc.* '*Vanamo*' 24:29 (1950).

Perennial. Stems decumbent to ascending, sericeous or canescent-sericeous, rarely hirsute below. Leaves evenly distributed along the stem. Calyx usually with a red tip. Corolla red or yellow.

a. var. **vulneraria** (Type: 'Habitat in pratis Europae borealioris').
Corolla yellow; most leaves equifoliolate; stems sericeous, rarely hirsute

below, rarely branched in the upper part, branches, when present, shorter than the leaves which subtend them.

Habitat & Distribution. V.c.'s 1, 2, 3, 4, 6, 7, 8, 12, 13, 15, 16, 17, 20, 22, 23, 24, 26, 29, 33, 50, 52, 57, 64, 66, 67, 68, 70, 83, 90, 95, 101, 104, 106, 111, H9, 14, 17, 18, 28, 40, S. Found more or less throughout the British Isles, in open, usually calcareous grassland in the south, also on sand dunes in Scotland. Northern France, Holland, Belgium, Germany, Denmark, southern Sweden, Southern Finland, Estonia.

Variation. A fairly uniform variety which grades into var. *langei* in suitable habitats near the sea in England, Wales and Ireland. Occasional plants are found with the stems hirsute below. These have been named forma *polyphylloides* Sagorski.

b. var. **langei** Jalas, *Ann. Bot. Soc. 'Vanamo'* 24:31 (1950). (Type: as for var. *stenophylla*, below).
A. vulneraria var. *stenophylla* Lange, *Haandbok i den Danske Flora*, ed. 4, 825 (1886–8) non Boissier. (Type: Denmark, Sjaeland, Esbjerg, *Lange*).
A. maritima sensu auct. mult. Brit. et Eur., non Schweigger ex Hagen.

Corolla yellow; most leaves equifoliate; stems canescent-sericeous, always branched above, the branches exceeding their subtending leaves.

Habitat & Distribution. V.c.'s 1, 2, 3, 4, 9, 10, 14, 15, 27, 28, 35, 45, 48, 49, 50, 51, 52, 59, 60, 67, 68, 69, 70, H1, 3, 9, 16, 28, 38, 39, 40, S. Found on sand dunes and more rarely on sea cliffs in England, Wales and Ireland. Also found on the coasts of Holland, Belgium and Germany, and possibly France. In the older literature this variety is usually referred to as *A. maritima* Schweigger ex Hagen, or *A. vulneraria* var. *maritima* (Schweigger ex Hagen) Koch, but these names refer to a rather similar race endemic to the southern coasts of the Baltic Sea.

c. var. **coccinea** L., *Fl. Suec.* ed. 2, 249 (1755). (Type: In Oelandia, prope tumulum lapillosum Borckholmensen).

Corolla red: plants usually small and very sparsely sericeous.

Habitat & Distribution. V.c.'s 1, 45. Found only on a few sea cliffs in Cornwall and Pembrokeshire. Of sporadic occurrence within the general area of subsp. *vulneraria*, and found in Denmark and particularly Sweden, where it is a characteristic component of the vegetation of the islands of Öland and Gottland.

ii. subsp. **polyphylla** (DC.) Nyman, *Consp.* 164 (1878).
A. vulneraria var. *polyphylla* DC., *Prodr.* 2:170 (1825). (Type: none cited);
A. polyphylla (DC.) Kit. ex G. Don fil., *Gen. Syst.* 2L 166 (1832).

Upright perennial. Stems hirsute below, sericeous above. Leaves mostly equifoliolate with 9–15 leaflets, evenly distributed along the stem. Calyx usually without a red tip. Corolla pale yellow.

Habitat & Distribution. V.c. 95. Found only occasionally in Morayshire, growing in disturbed habitats. Native of Central and eastern Europe (Northern Italy, Jugoslavia, Austria, Hungary, Czechoslovakia, Romania,

Poland, U.S.S.R.) and south west Asia (Turkey, Caucasus). Formerly cultivated as a forage crop in central Europe, and perhaps introduced into Britain with clover seed.

iii. subsp. **corbierei** (Salmon & Travis) Cullen, *Watsonia* 6:295 (1967).
A. maritima var. *corbieri* Salmon & Travis, *Journ. Bot.* 55:320 (1917). (Type: Anglesey, South Stack, vi 1916, *Travis*).

Upright perennial. Stems hirsute over their whole length. Leaves somewhat fleshy, concentrated in the lower part of the stem. Calyx usually not red-tipped. Corolla clear yellow.

Habitat & Distribution. V.c.'s 1, 52, S. Known only from four localities in Anglesey, Cornwall and the Channel Islands (Sark), and apparently endemic to Britain, though further examination of the French coast may reveal its presence there. In Anglesey it grows on grassy sea cliffs below the South Stack lighthouse, and in a few similar localities to the east. It may well be found in other suitable places in Wales and south west England.

iv. subsp. **carpatica** (Pant.) Nyman, *Consp. Suppl. 2,* 1:87 (1889) var. **pseudovulneraria** (Sagorski) Cullen, *Notes RBG Edinb.* 35:29 (1976).
A. vulneraria Unterrasse *A. psuedovulneraria* Sagorski, *Allg. Bot. Zeitschr.* 14:129 (1908) pro max. parte (Type.: '... aus England, Frankreich von zahlreichen Stellen, aus der Schweiz, Südtirol, Istrien, Kroatien, Dalmatien, Albanien ... und Niederösterreich').

Upright perennial to 100cm. Stems sparsely sericeous. Leaves usually concentrated towards the base of the stem, mostly inequifoliolate. Calyx red-tipped. Corolla yellow or whitish.

Habitat & Distribution. V.c.'s 9, 19, 22, 23, 24, 26, 27, 29, 33, 45, 57, 59, 63, 69, 71, H14. Introduced and occurring in marginal and disturbed habitats, rarely persisting for long. Native of Central Europe (Austria, Switzerland, south Germany), and formerly cultivated there for forage. Probably introduced into Britain with clover seed, and, by now, quite widespread, though sporadic.

v. subsp. **lapponica** (Hylander) Jalas, *Ann. Bot. Soc. 'Vanamo'* 24:38 (1950).
A. vulneraria var. *lapponica* Hylander, *Upps. Univ. Arrskr.* 7:226 (1945). (Type: a photograph, f. 70 of Lagerberg, Svenska Fjällblommor, vol. 2, 1940).

Habitat & Distribution. V.c.'s 68, 69, 82, 88, 90, 92, 101, 103, 104, 108, 111, 112, H (Sligo). Found only in the mountains of northern England, Ireland and Scotland, where it occurs in open grassland and on cliffs and ledges. Also native in Norway, Sweden and Finland.