

Calystegia (Convolvulaceae) hybrids in West Wales

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ABSTRACT

Intensive studies of populations of *Calystegia* (Convolvulaceae) in Cardiganshire, v.c. 46, and Merioneth, v.c. 48, have recognised *C. sepium* subsp. *sepium* and subsp. *roseata* as native taxa there while *C. silvatica* subsp. *silvatica* and subsp. *disjuncta* and *C. pulchra* are introduced and naturalised. Numerous probable hybrids between these taxa are postulated, some as single populations and others apparently having spread locally probably by vegetative means. Even back-crosses between adjacent populations may be postulated. In particular, one putative hybrid between *C. pulchra* and *C. sepium* was recognised over an area of several kilometres in Cardiganshire, resembling *C. pulchra* in general appearance but differing in having a paler pink corolla and less markedly square leaf sinus.

KEYWORDS: *Calystegia*, Convolvulaceae, hybridisation, Wales.

INTRODUCTION

Hybrids among the native and naturalised species of *Calystegia* in the British Isles have long been known (Stace 1961, 1975, 1997, Brummitt 1963, 1980, 1998). The whole genus, in which some 25 species world-wide may conveniently be recognised, is taxonomically difficult, and few if any of the species are morphologically clear-cut. They mostly vary considerably over their ranges and merge geographically one into another, and division into species and subspecies is of necessity somewhat arbitrary. In the British Isles, apart from *C. soldanella* (L.) R.Br. which is not considered in this note, there are one native and two naturalised species.

The native *C. sepium* (L.) R. Br. is represented by the widespread typical subsp. *sepium* which is white-flowered (rarely pink-flowered, f. *colorata* (Lange) Dörf.) and glabrous, and the predominantly western coastal subsp. *roseata* Brummitt which is pink-flowered and usually hairy at the shoot apices and leaf sinuses. In addition, one further subspecies, subsp. *spectabilis* Brummitt, has been recorded once as an introduction. The commoner of the two naturalised species, *C. silvatica* (Kit.) Griseb., is represented here by the typical subsp. *silvatica* from the east Mediterranean, with broad, saccate bracteoles rounded or emarginate at the apex, and subsp. *disjuncta* Brummitt from the west Mediterranean, with narrower, less saccate bracteoles, obtusely pointed at the apex (Brummitt 1996, 1998). Rather less common, though widely distributed, is *C. pulchra* Brummitt & Heywood, of unknown origin, with large pink flowers, hairy stems, petioles and pedicels, and often winged peduncles.

The following notes are based on fieldwork and specimens collected by both of us in two periods of several days in Cardiganshire, v.c. 46, and Merioneth, v.c. 48, in July 1996 and August 1998, and on various collections by A.O.C. in the former county over several years. Nearly all the recorded British taxa occur in this area, and much of the variation we found seemed likely to be the result of hybridisation. Although in the absence of experimental evidence we are unable to confirm most of our interpretations, we feel that it is worth putting our observations on record in the hope that they may be a stimulus to comparable observations being made in other parts of the country so that a more complete picture of the state of the genus in Britain can be built up. Details of the relevant specimens are given. Collections of all taxa made by us are deposited at NMW or K or both.

FIELD OBSERVATIONS

C. sepium subsp. *sepium* was widespread in the area, and the chief variation noted was that in several coastal localities plants occurred with distinctly hairy stem apices. This is unusual for this taxon, and the possibility that the hairiness is due to introgression from subsp. *roseata* must be borne in mind. Subsp. *roseata* occurred in several coastal and estuarine sites, appearing completely native in reedbeds in both the Dyfi and Mawddach estuaries. It also occurred in coastal hedges, and at one site 18 km inland in *Salix* carr by the disused railway at Cors Caron where it may have been an accidental introduction. A specimen collected in 1961 by P. M. Benoit from the railings of a waste garden at Bron Fegla near Arthog in Merioneth, now at LIV, was identified by R.K.B. as subsp. *spectabilis*, a taxon widely naturalised in Scandinavia, and is the basis for the inclusion of this subspecies in Stace (1997). The pink flowers and coastal habitat would fit well with that of subsp. *roseata*, but the large size of the flowers and the broad leaf sinus suggest that it is more likely to have been a garden introduction. Searches for the plant in 1998 by both Benoit and ourselves were unsuccessful, and we assume that it is now extinct at the locality.

Among the populations of *C. silvatica* examined, 30 were considered to be clearly subsp. *disjuncta*, 23 subsp. *silvatica* and 5 were intermediate. 13 plants were assumed to be hybrids between *C. sepium* and *C. silvatica*. The name *C. × lucana* (Ten.) G. Don is available for this interspecific cross, but since there is a wide range of morphological forms resulting from the cross, R.K.B. prefers not to apply a binomial (see Brummitt 1998 and further notes below). The putative hybrid Cardiganshire populations varied considerably in morphology of the bracteoles, and in a few cases this was extreme enough to suggest whether it was subsp. *silvatica* or subsp. *disjuncta* that was involved. A preponderance of hybrids among collections made late in the season suggests that they may continue flowering later into the autumn than the parents.

C. pulchra appeared fairly uniform in West Wales, with deep pink flowers, notably square leaf sinuses and large rounded bracteoles. However, in the lower Teifi valley, in an area bounded by Cardigan, Penparc and Cenarth, and particularly conspicuous at intervals along the A484 road, we found plants (some of which had been previously recorded as *C. pulchra*) with paler pink flowers, more rounded leaf sinuses and somewhat irregularly shaped bracteoles. Morphologically they appeared to be intermediate between *C. pulchra* and *C. sepium* subsp. *sepium*, which was frequent in the same area, and we assumed that they were a hybrid between these two taxa. The name *C. × scanica* Brummitt is available for this interspecific cross, but the plant to which this name was originally applied, naturalised in several places in southern Sweden, is very different, having white flowers, bracteoles less strongly overlapping, and large leaves with a very characteristic shape. The differences between these nothomorphs is at least as great as the difference between the parent species, and again R.K.B. prefers not to refer to "the hybrid" with a binomial but regards these Cardiganshire populations as "a hybrid" presumably between *C. pulchra* and *C. sepium*. At one roadside hedge and scrub site near Llandygwydd where both this hybrid (Brummitt 20058 & Chater) and *C. sepium* subsp. *sepium* (Brummitt 20057A & Chater) occurred, we found a white-flowered plant similar to *C. silvatica* subsp. *disjuncta*, but with very pointed bracteoles and narrowly pointed leaves (Brummitt 20057B & Chater); morphologically this looked very likely to be a back cross between the putative *C. pulchra/sepium* hybrid and *C. sepium* subsp. *sepium*.

Near Aber-porth we found a single plant or small population in a roadside hedge (Brummitt 19513, 20054 & Chater) rather like Brummitt 20057B & Chater. The corolla was white or very slightly flushed pink inside, and with pink mid-petaline bands outside like those often found on *C. silvatica* subsp. *disjuncta*, with the dull green, matt leaves of *C. pulchra* and some stem apices glabrous and others hairy. It too may have been a back cross between the *C. pulchra/sepium* hybrid and *C. sepium* subsp. *sepium*, or possibly a hairy form of *C. silvatica* subsp. *disjuncta* showing some introgression from *C. pulchra*.

Near Newcastle Emlyn and at Llandysul, 8 and 15 km further up the Teifi valley respectively, plants with white flowers and grotesquely misshapen bracteoles occurred (Brummitt 20064A, 20064B, 20065 & Chater) which appeared to be a white-flowered nothomorph also resulting from hybridisation between *C. pulchra* and *C. sepium*. At Llandysul these plants grew in close association with the putative parents. Further north in Cardiganshire, in a roadside hedge at Ffos-y-ffin, was a mixed population of *C. pulchra* (Brummitt 20066B & Chater) and white-flowered plants. Some of the latter were glabrous and some had pubescent stem apices, while the bracteoles

were very variable though not grotesquely enlarged and distorted as in the Llandysul and Newcastle Emlyn plants. They appeared to us to be a mixture of *C. sepium* subsp. *sepium* (Brummitt 20067A & Chater) and a white-flowered hybrid between *C. pulchra* and *C. sepium* (Brummitt 20067B & Chater).

Close to Morfa Mawddach Station, near Arthog in Merioneth, we noted three populations in subcoastal habitats typical of where *C. sepium* subsp. *roseata* grows. One was white-flowered and was clearly introduced *C. silvatica* subsp. *disjuncta* (Brummitt 20051 & Chater). The others were pink-flowered, one (20050A) growing among brambles together with the white flowered 20051, and the other 50 m away climbing up *Phragmites* (20050B). The latter in particular was in typical habitat of subsp. *roseata* and looked very like it, but our suspicions were raised by the unusually broad bracteoles and flowers rather large for *C. sepium*. There is a possibility that both the pink-flowered plants were hybrids of *C. sepium* subsp. *roseata* with *C. silvatica* subsp. *disjuncta*. On the other hand, the leaf sinus is narrowly V-shaped, and rather large bracteoles like these may be found in subsp. *roseata* more often than in subsp. *sepium*, and hybridisation is by no means proven.

In the genus as a whole, abnormal bracteoles appear often to be an indication of hybridity, and perhaps a quarter of all putative hybrids have the bracteoles of some flowers variously unequal in size or shape, more or less leaflike, not opposite, or puckered or distorted.

DISCUSSION

The pattern emerging from our fairly intensive survey of the genus in one area of Wales probably reflects the situation over much of northern Europe. Different taxa have been introduced, probably originally as garden plants, and have become established in the wild through their vigorous vegetative reproduction. They have then hybridised with native taxa and other introduced taxa. In some cases these hybrids may be restricted to single populations, but in a few cases they appear to have spread - probably by vegetative means, although little is really known about how the rhizomes are moved from one locality to another - and one clone may be recognised in numerous populations over one area. The putative hybrid between *C. pulchra* and *C. sepium* which we saw frequently in different colonies over an area of several kilometres in Cardiganshire is probably as morphologically distinct and almost as widely distributed as the putative hybrid between *C. silvatica* and *C. pulchra* which is well established at different localities in eastern Nottinghamshire and adjacent Lincolnshire and which was named as *C. howittiorum* by Brummitt (1980). There should probably be a limit, however, to the number of such clones which are given formal names, and we decline to describe this Cardiganshire hybrid as a new taxon. The uncertainty about the actual parentage of such plants is an additional reason for not applying formal binomial nomenclature to putative hybrids, at least until much more is known about their origins and reproductive behaviour.

SELECTED HERBARIUM SPECIMENS (ALL DET. R. K. BRUMMITT).

C. SEPIUM SUBSP. *SEPIUM* × *C. SILVATICA*

- v.c. 46, Cards., among *Phragmites* at N end of boardwalk just E of A467 bypass, Teifi Marshes Reserve, Cardigan, altitude 4 m (SN/182.458), 22 September 1995, A. O. Chater (NMW).
- v.c. 46, Cards., among *Fallopia japonica* on waste ground, NW corner of Glanyrafon Industrial Estate, Llanbadarn Fawr, 7 m (SN/608.803), 7 July 1995, A. O. Chater (NMW). *C. sepium* subsp. *sepium* × *C. silvatica* subsp. *silvatica*.
- v.c. 46, Cards., upper part of salt marsh 100 m S of Isolation Flats, Ystwyth estuary, 4 m (SN/580.805), 7 September 1995, A. O. Chater (NMW).
- v.c. 46, Cards., abundant on shingle beach opposite mouth of Aberystwyth harbour, 3 m (SN/580.803), 11 September 1995, A. O. Chater (LTR, NMW). 22 July 1996, R. K. Brummitt 19505 & A. O. Chater (K). *C. sepium* subsp. *sepium* × *C. silvatica* subsp. *disjuncta*.
- v.c. 46, Cards., scrub by road bridge E of Rhoscellan-fawr, 1.5 km N of Llangorwen, 70 m (SN/599.854), 12 September 1995, A. O. Chater (NMW).
- v.c. 46, Cards., N hedge of A487 at Penffynnon, Penparc, 135 m (SN/217.481), 13 September 1995, A.O. Chater (NMW).

- v.c. 46, Cards., NW hedge of road 500 m WSW of Brynlllynan, Y Ferwig, 95 m (SN/185.484), 13 September 1995, *A. O. Chater* (NMW).
- v.c. 46, Cards., forming dense growth over rank grass by road and ditch adjacent to refuse tip, 300 m S of Borth church, 4 m (SN/611.894), 25 July 1996, *A. O. Chater* (NMW); and *ibid.* 12 August 1998, *R. K. Brummitt 20049B & C & A. O. Chater* (K, NMW).
- v.c. 46, Cards., abundant by track in conifer plantation, Long Wood, 1.4 km S of Llangybi, 210 m (SN/610.515), 1 August 1996, *A. O. Chater* (NMW). *C. sepium* subsp. *sepium* × *C. silvatica* subsp. *disjuncta*.
- v.c. 46, Cards., in scrub on sandy soil 300 m from coast, 100 m W of Ty-gwyn, Mwnt, 30 m (SN/197.518), 15 August 1996, *A. O. Chater* (NMW).
- v.c. 46, Cards., roadside hedgebank 600 m S of Temple Bar crossroads, 170 m (SN/533.537), 21 August 1996, *A. O. Chater* (NMW).
- v.c. 46, Cards., in hedge and rank marsh 100 m NW of Pentre, Llundain-fach, Abermeurig, 75 m (SN/559.567), 8 September 1996, *A. O. Chater* (NMW).
- v.c. 46, Cards., scrub at edge of wood 200 m S of Aberaeron church, 35 m (SN/456.626), 2 July 1997, *A. O. Chater* (NMW).
- v.c. 46, Cards., hedge on N side of garden, Wallog house, 10 m (SN/590.857), 3 October 1998, *A. O. Chater* (K).

POSSIBLY *C. SEPIUM* SUBSP. *ROSEATA* × *C. SILVATICA* SUBSP. *DISJUNCTA*

- v.c. 48, Merioneth., among brambles 150 m SE of Morfa Mawddach Station, Arthog, 5 m (SN/6297.1401), 12 August 1998, *R. K. Brummitt 20050A & A. O. Chater* (K, NMW).
- v.c. 48, Merioneth., On *Phragmites* 100 m SSE of Morfa Mawddach Station, 5 m (SN/6290.1405), 12 August 1998, *R. K. Brummitt 20050B & A. O. Chater* (K, NMW).

C. PULCHRA × *SEPIUM*, PALE PINK NOTHOMORPH

- v.c. 46, Cards., hedge and scrub on N side of B4570/A484 road junction, 800 m E of Cardigan church, 5 m (SN/189.460), 13 August 1998, *R. K. Brummitt 20055 & A. O. Chater* (K, NMW).
- v.c. 46, Cards., hedge on S side of A484 road by Llechryd waterworks, 10 m (SN/230.435), 13 August 1998, *R. K. Brummitt 20056 & A. O. Chater* (K, NMW).
- v.c. 46, Cards., scrub on S side of A484 road 800 m SE of Llwyndurris, 12 m (SN/244.427), 13 August 1998, *R. K. Brummitt 20058 & A. O. Chater* (K, NMW).
- v.c. 46, Cards., S hedge of A487 road 150 m WSW of crossroads in Penparc village, 130 m (SN/211.479), 19 August 1998, *A. O. Chater* (K, NMW).

C. PULCHRA × *SEPIUM*, WHITE NOTHOMORPHS

- v.c. 46, Cards., hedgebank on SW side of road T-junction 600 m SW of Aber-porth church, 111 m (SN/250.507), 23 July 1996, *R. K. Brummitt 19513 & A. O. Chater* (K, NMW). 13 August 1998, *R. K. Brummitt 20053 & A. O. Chater* (K, NMW). Possibly a back cross between *C. pulchra* × *sepium* and *C. sepium* subsp. *sepium*.
- v.c. 46, Cards., scrub by lay-by at bottom of wooded slope on N side of A484 road 800 m SE of Llwyndurris, 12 m (SN/244.427), 13 August 1998, *R. K. Brummitt 20057B & A. O. Chater* (K, NMW). Probably a back cross between *C. pulchra* × *sepium* and *C. sepium* subsp. *sepium*.
- v.c. 46, Cards., scrub at NE corner of Rugby Club car park, 500 m E of Newcastle Emlyn bridge, 25 m (SN/314.409), 13 August 1998, *R. K. Brummitt 20061 & A. O. Chater* (K, NMW).
- v.c. 46, Cards., rank vegetation and wall between S part of Llandysul churchyard and Teifi river, 60 m (SN/419.406), 13 July 1998, *R. K. Brummitt 20064B & A. O. Chater* (K, NMW).
- v.c. 46, Cards., scrub by gardens 150 m N of Llandysul church, 70 m (SN/418.408), 13 August 1998, *R. K. Brummitt 20065 & A. O. Chater* (K, NMW).
- v.c. 46, Cards., W hedge of A487 road 350 m SSE of Henfynyw church, Ffos-y-ffin, 115 m (SN/449.609), 13 August 1998, *R. K. Brummitt 20067B & A. O. Chater* (K, NMW).

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