

Kent Rare Plant Register

Draft species accounts

S (second part: Serr-Su)



Compiled by Geoffrey Kitchener and the Kent Botanical Recording Group
Issue date: February 2021

Kent rare plant register

This section of the register covers:

In Part Sa-Sera:

Sabulina tenuifolia
Sagina nodosa
Salicornia disarticulata
Salicornia emerici
Salicornia fragilis
Salicornia obscura
Salix purpurea
Salix repens
Salsola kali
Salvia pratensis
Salvia verbenaca
Sambucus ebulus
Sanicula europaea
Sarcocornia perennis
Saxifraga granulata
Scandix pecten-veneris
Schoenoplectus tabernaemontani x triqueter
Scleranthus annuus
Serapias vomeracea

In Part Serr-Su:

Serratula tinctoria
Sibthorpia europaea
Silene conica
Silene flos-cuculi
Silene gallica
Silene noctiflora
Silene nutans
Sium latifolium
Solidago virgaurea
Sonchus palustris
Sparganium natans
Spartina maritima
Spergula arvensis
Spiranthes spiralis
Stachys arvensis
Suaeda vera
Succisa pratensis

It is issued in draft, pending further development. Records, photographs and information regarding the occurrences of these plants in Kent will be welcome.

The register accounts give priority to data from 2010 onwards, but some historic data are also included (however, in the data tables, generally no specific sites without post-1970 records) so as to indicate trends and where the plant may yet be discovered or rediscovered. Distribution maps for records from 2010 onwards show vice counties 15 and 16 separated by a black line. See the Kent webpage of the BSBI website at <https://bsbi.org/kent> for the full Kent rare plant register list, the introduction to the register and a list of 'probably extinct' Kent plants.

Abbreviations used in the text:

Recorders' initials:

ACH Andrew Henderson
 AGS Trudy Side
 AL Alex Lockton
 AM Alison Mitchell (Plantlife)
 AS Mrs A. Smith
 AW Tony Witts
 BBa Brian Banks
 Bbe Ben Benatt
 BP B. Pardon
 BW Brian Woodhams
 CEC Carter Ecological Consultants
 CO Colin Osborne
 CR Chris Rose
 DC Danny Chesterman
 DG Doug Grant
 DM Daphne Mills
 EGP Eric Philp
 FB Fred Booth
 FR Francis Rose

GK Geoffrey Kitchener
 GPR G.P. Radley
 GS Geoff Smith
 JA Jan Armishaw
 JBe Jim Bevan
 JM Joumana Mobarak
 JP Joyce Pitt
 JRP John Palmer
 JS Judith Shorter
 JW Jo Weightman
 KCS Ken Side
 KWL K.W. Lite
 LR Lliam Rooney
 MAS Mark Spencer
 OL Owen Leyshon
 RG Bob Gomes
 RM Richard Moyse
 RMB Rodney Burton
 RoF Lady Rosemary FitzGerald
 RR Rosemary Roberts
 SB Sue Buckingham
 SCW S.C. Woolvden

SD'A Stephanie D'Agorne
 SL Stephen Lemon
 SMH Stuart Hedley
 SP Sue Poyser
 TI Tim Inskipp
 WJM W.J. Morgan

Other abbreviations:

CGE University of Cambridge
 herbarium
 KBRG Kent Botanical Recording Group
 KFC Kent Field Club
 KWT Kent Wildlife Trust
 LNHS London Natural History Society
 MOD Ministry of Defence

***Serratula tintoria* L. (Saw-wort)**

Draft account: Kent close-up and habitat photos needed and records from old sites

vc 15, 16

Rarity / scarcity status

Serratula tintoria is a widespread perennial of grassland, open scrub and woodland and other habitats; absent from Ireland and most of Scotland, and from much of East Anglia and Kent. Its threat status for conservation purposes is one of 'Least Concern'. In Kent it is **scarce**.

Account

The first published Kent record for Saw-wort was by Edward Jacob in his *Plantae Favershamienses* (1777), as uncommon '*Near the late Decoy Ponds at Graveney*'. This location would appear to be at TR 0328 6418, within the area of the proposed Cleve Hill Solar Park, and what would in Jacob's time have been brackish grazing marshes. There do not appear to have been other similar habitat records in the county, but the underlying Thames Group geology (London Clay) has been shared by Francis Rose 1954 records near Bromley Common and at Lodge Hill, Chattenden. The first of these may be the same area as was given earlier by Hanbury and Marshall (1899), and as recorded subsequently under the description of the clayey northern edge of Crofton Wood. The second may be the same as found by John Stuart Mill in 1863.



Roger's Rough Road. Photo by Sue Buckingham, 15 August 2013

Account:

Hanbury and Marshall (1899) treated the species as rare, in woods, heaths and grassy places. They gave also records at Keston Common, Hayes, and near Dover. This last location (if the plant was correctly identified) suggests an affinity with basic soils which is recognized in some occurrences elsewhere in the British Isles involving grassland on chalk or limestone, but is anomalous as regards the Kentish distribution. This distribution, setting aside the London Clay records, has become increasingly focussed on the acid High Weald soils. Marshall himself recorded Saw-wort in several woods around Cranbrook; and other pre-1899 sightings were reported at Soper's Lane and near Hensill, both near Hawkhurst. These last locations may have continued: Francis Rose's manuscript *Flora of Kent* gives a 1949 record for a lane near Sisley (this could be Soper's Lane) and a 1955 report at a path bank south west of Hawkhurst, TQ 753 303 (this is near Hensill). Other High Weald records given by Rose for the 1940s and 50s include:

- (1) a lane bank south west of Mopesden (this is likely to be in TQ7331, the old lane running north east from what is now marked Little Pix Hall Farm on the Ordnance Survey);
- (2) Old Park Wood, east border (presumably TQ7537 or TQ7538);
- (3) Combwell Wood, on heathy land on the north border but with a south aspect (if Combwell Wood is treated as including Park Wood to the north, this is bounded by Roger's Rough Road, where the plant is currently known);
- (4) south east of Kilndown (N.B. Roger's Rough Road extends here; perhaps the same location);
- (5) Rosemary Lane, Flimwell (see table entries below);
- (6) Chittenden Wood and hedgebanks to the east (eastwards is Causton Wood, and perhaps this was being treated as the same wood).

These locations are given in detail to encourage re-finding, and because later records are mostly at no better than tetrad resolution. All the High Weald records are within TQ73 and TQ83, and all are on Tunbridge Wells Sandstone.

Philp (1982) gave seven tetrad records for 1971-80, all within High Wealden hectads TQ73 and TQ83, except for Chattenden on the Hoo peninsula, and for a record in TQ63E which, although within the administrative county of Kent, is believed to have been in vc14, East Sussex. The species was described as rather rare, on roadsides and woodland margins and rides. Philp (2010) gave the same tetrads for 1991-2005, except that the plant was not found at Chattenden. There was accordingly no evidence of material decline.

However, our 2010-20 records have been limited to 2013 and 2017 sightings at Roger's Rough Road near Kilndown where overshadowing by trees and shrubs from adjoining woodland appears to be detrimental. Plants were on a roadside with acid soil, the underlying geology being Tunbridge Wells Sandstone, and accompanied by other species characteristic of good quality habitat in such a situation, all being designated Kent axiophytes: *Betonica officinalis* (Betony), *Solidago virgaurea* (Goldenrod) and *Succisa pratensis* (Devil's-bit Scabious). It may be premature to assume that there has been a sudden recent decline elsewhere; further search needs to be made of earlier locations.

Serratula tinctoria is able to accommodate to a wide range of soils, from acid to moderately alkaline (which may be reflected in differing genotypes) and generally with low levels of soil fertility, with a wide range also of water conditions¹; in Kent, however, it is currently limited to acid soils. It is a perennial spreading within a limited distance by wind-dispersed seed, but with only a short term persistent seed-bank; it can also propagate vegetatively by forming rosettes at the end of short stolons. Seedling establishment appears to require some open ground resulting from disturbance, and high nutrient availability discourages seedlings. Maintenance of populations is assisted by some form of management such as cutting or grazing, but not July-September when flowering and seed development takes place. It is generally regarded as an indicator of semi-natural habitats of high biodiversity and appears in most British county axiophyte lists (but not Kent, where its scarcity limits its usefulness for this purpose).

Site	Grid reference	Site status	Last record date	Recorder	Comments
Forest Hill (metropolitan vc16)	TQ37L		1974	KWL	Railway bank.
Crofton Heath (metropolitan vc16)	TQ46I		1987	JP	TQ433660. Edge of wood on clay, over 40 plants. There are older records for north side of Crofton Wood.
Flimwell	TQ73A		27 August 2004	SB	Recorded as part of Local Change survey and believed to have been in TQ7031, roadbank on east side of Rosemary Lane between Downash House bridleway and Bewl Water (administrative county of East Sussex, but vc16).
Kilndown south east	TQ73C	KWT roadside nature reserve	(1) 30 July 2019 (2) 15 August 2013 (3) 1991-99 (4) Before 1981, after 1970	(1) SL (2) SB (3) EGP (4) Philp (1982)	(1) Prior's Heath Wood, south facing bank along Rogers Rough Road (KWT Roadside Nature Reserve), TQ 7085 3474, where bank faces entrance gates to Combwell Wood and only semi-shaded. The rest of the bank shaded by trees facing it along the edge of Combwell Wood. Three

¹ Jefferson, R.G. & Walker, K.J. (2017): Biological Flora of the British Isles: *Serratula tinctoria*. *Journal of Ecology* **105**: 1438-1458.

					<p>non-flowering plants, one each at base, middle and top of bank.</p> <p>(2) Three plants on roadside bank north side of Roger's Rough Road at TQ 70864 34746 on KWT Roadside verge, under oak and with <i>Betonica officinalis</i>, <i>Solidago virgaurea</i> and <i>Succisa pratensis</i>. More plants have been recorded further east on roadside in TQ7134 but bank there is now shaded by trees and shrubs from adjoining woodland.</p> <p>(3) & (4) TQ73S.</p>
East of Bedgebury Forest	TQ73L		(1) 1991-99 (2) Before 1981, after 1970	(1) EGP (2) Philp (1982)	(1) & (2) TQ73L.
Hocker Edge	TQ73U		(1) 1991-99 (2) Before 1981, after 1970	(1) EGP (2) Philp (1982)	(1) & (2) TQ73U.
Chattenden	TQ77L		Before 1981, after 1970	Philp (1982)	TQ77L, by AGS, KCS & GS. Records for Lodge Hill, Great Chattenden Wood go back at east to 1899.
SE of Sissinghurst	TQ83D		(1) 1991-99 (2) Before 1981, after 1970	(1) EGP (2) Philp (1982)	(1) & (2) TQ83D. This tetrad includes Chittenden Wood, which has old records.
Causton Wood	TQ83I		(1) 20 May 1999 (2) 1991-99 (3) 6 September 1986 (4) 1985 (5) Before 1981, after 1970	(1) JP & JW (2) EGP (3) CJ (4) JP (5) Philp (1982)	(1) TQ 820 362 (this may be a generic LWS gridreference). (2) TQ83I (3) TQ 820 362. (4) TQ 820 362, decreasing - hangs on in a few places in broad-leaved strips along northern perimeter of Local Wildlife Site. (5) TQ83I.

Sibthorpia europea L. (Cornish Moneywort)

Draft account

vc 16

Rarity / scarcity status

Sibthorpia europea, a small, creeping perennial, grows in damp acidic habitats in south west England, Wales and Ireland and in the Channel Islands. The only exception to this distribution has been the Sussex Weald, where it may be regarded as part of the western Atlantic flora which has persisted in appropriate microhabitats. Its conservation risk is, in England and in Great Britain as a whole, one of 'Least Concern'. In Kent, it was unknown until 2017 (other than, for a while, as a lawn weed of doubtful status), but may still have native status here as an outlier of the Sussex Wealden populations. Restricted to one locality in the county, it is very rare.

Chingley Wood. Photo by Liam Rooney,
11 August 2018

Account:

The first Kent record for Cornish Moneywort is as a lawn weed, given without comment as to status, although assumed here to have been introduced, but by unknown means. It was discovered about 1968 by K.E. Bull at Bayhall Road, Tunbridge Wells (TQ5939) and was at first named as *Hydrocotyle microphylla*. It persisted at least until 1975, when it was named by E.J. Clement as a small-leaved and compact form of *Sibthorpia europea*².

Its first Kent discovery in a location which is suggestive of potential for native status was made by Stephen Lemon on 14 August 2017 (with further observation on 17 and 26 August) at Chingley Wood, which comprises acid woodland managed as Sweet Chestnut coppice, on Tunbridge Wells Sand Formation. It was confined to a

90 or
100

metre stretch of a wayleave area below power lines, which had been kept open by mowing, and where it flowered abundantly, in places forming sprawling patches up to a couple of metres across, particularly on barer soil around vehicle tracks. The population could not be assessed as individual plants, due to the interconnection of the patches. Plants growing at the edge of the wayleave area were often larger, possibly due to the effect of Bracken over-shading.

Chingley Wood. Photo by Stephen Lemon, 17 August 2017



Associated species were characteristic of acid woodland rides: *Blechnum spicant* (Hard-fern), *Galium palustre* (Marsh-bedstraw), *Gnaphalium uliginosum* (Marsh

² E.J. Clement (1975): Adventive News 4. *BSBI News* 11: 10-12.

Cudweed), *Hypericum pulchrum* (Slender St John's-wort), *Hypericum humifusum* (Trailing St John's-wort), *Juncus bulbosus* (Bulbous Rush) and larger *Juncus* spp., *Lythrum portula* (Water-purslane), *Persicaria hydropiper* (Water-pepper), *Potentilla erecta* (Tormentil), *Potentilla x mixta* sens. lat. (Hybrid Cinquefoil), *Prunella vulgaris* (Selfheal) and *Scutellaria minor* (Lesser Skullcap); also the liverwort *Pellia epiphylla*. The unmown edges of the wayleave area were dominated by *Pteridium aquilinum* (Bracken). *Calluna vulgaris* (Heather), *Carex pilulifera* (Pill Sedge) and *Galium saxatile* (Heath Bedstraw) were also in the mown wayleave land on dryer ground to the south east, away from the *Sibthorpia*.

From Chingley Wood. Photo by Stephen
Lemon, 14 August 2017



The south eastern end of the colony began with stragglers at TQ 69147 34163, just beyond a newly coppiced area of Sweet Chestnut along the side of the wayleave area. From this point the colony was bordered on both sides by tall trees, mostly mature Sweet Chestnut coppice. The ground gently slopes to the south west and the colony was focussed along a shallow dip where the ground is damp, roughly on the OS map 80 metre contour line. The north western edge of the colony ended quite abruptly, c. TQ 6908 3422, near where the ground along the wayleave area rises slightly and becomes more dominated by grasses. The association with damp ground is characteristic of the species, and the Sussex occurrences have been described as in 'Moist shady places, usually by streams'³; Francis Rose also referred to the species as present in the wooded gills of the High Weald, e.g. at Nap Wood, Darlington Forest (stony stream banks), and in flushed areas and wet trackways of Heathfield Park⁴. Chingley Wood affords a degree of parallel to these other acid Wealden localities, although the *Sibthorpia* site is not as close to the stream areas in the wood as might offer the closest parallel, and search has not produced finds along its gill stream banks and other trackways. Despite the Sweet Chestnut plantings, it appears to be ancient woodland, the wood name going at least back to the first half of the sixteenth century and woodland being depicted here in the 1797 Ordnance Survey drawings.

What is not clear, however, if *Sibthorpia* is taken to have native status here, is the manner of continuity of habitat from before the establishment of the current wayleave area which aerial surveys show as being present at least back to 1990. Whilst the species appears suited to semi-shade conditions, it is, where growing in open habitats, at risk of being out-competed by other vegetation if the openness ceases to be maintained⁵, and Bracken could well dominate the wayleave area if not mown back. *Sibthorpia* is, at least in the Azores⁶, capable of forming a large and persistent seed-bank, and of germinating and establishing following disturbance. This behaviour may have offered scope for continuity through changes in the Chingley Wood environment. However, the current absence from any streamside habitat in Chingley Wood is a factor pointing against native status.

It may be regarded as surprising that a native, if that is the species' status here, may have persisted without detection. However, Chingley Wood is privately owned without public access. *Sibthorpia* may readily be overlooked for a range of unrelated species, especially when they are in a seedling state, including *Alliaria*

³ Hall, P.C. (1980): *Sussex Plant Atlas*. Borough of Brighton, Booth Museum of Natural History.

⁴ Rose, F. (1995): *The Habitats and Vegetation of Sussex*. Borough of Brighton, Booth Museum of Natural History

⁵ Stroh, P.A. 2015. *Sibthorpia europaea* (L.). Cornish Moneywort. Species Account. Botanical Society of Britain and Ireland.

⁶ According to studies cited by Stroh (vide supra).

petiolata (Garlic Mustard), *Chrysosplenium* spp. (Golden-saxifrages), *Filipendula ulmaria* (Meadowsweet), *Geum urbanum* (Wood Avens), *Glechoma hederacea* (Ground-ivy) and *Lamiastrum galeobdolon* subsp. *montanum* (Yellow Archangel)⁷. It is distinguishable from *Hydrocotyle vulgaris* (Marsh Pennywort) by the latter having rounder leaves, held aloft on longer petioles, rather than kidney-shaped leaves held low as part of a creeping mat.

Habitat, Chingley Wood. Photo by Stephen Lemon,
17 August 2017

The alternative explanation for its presence in Kent, viz. by way of introduction on equipment used in the maintenance of the power lines and their associated wayleave area, would require seed transmission from one of the very few Sussex sites, or otherwise from as far away as Somerset. This is not impossible, although fairly unlikely.

This account has benefited greatly from the assistance of Stephen Lemon.



⁷ Pryce, R. & Chater, A. (2000). Overlooking *Sibthorpia*, *BSBI News* **84**: 50-51, 82.

Silene conica L. (Sand Catchfly)

Draft account, habitat photo needed

vc 15; only ever a casual in vc 16, long since gone

Rarity / scarcity status

Silene conica is a nationally scarce annual of sandy habitats, mostly coastal in southern Britain, and is considered **Vulnerable** to the risk of extinction in England, as a comparison over the periods 1930-1969 and 1987-1999 showed that its area of occupancy had declined so that there was a calculated 51% reduction in the likelihood of recording the species. In Kent it has only ever been found (other than as a casual) in two areas, Deal/Sandwich and Littlestone/Greatstone, although there has been variability in the extent of records at each location, with Philp (1982) giving three tetrads and Philp (2010) giving seven. Accordingly, there does not seem to be evidence of decline in parallel with the national position, and for the period 2010-20, there were still records for six tetrads (eight monads). The species should be regarded as **scarce** in Kent.



Littlestone. Photo by Lliam Rooney, 5 June 2010

Account

The first published Kent record is in the third edition of Ray's *Synopsis Methodica Stirpium Britannicarum* (1724), edited by Dillenius, a record contributed by James Sherard and Isaac Rand, 'A little to the North of Sandown Castle, plentifully'. This appears to correspond to the area of dunes called Tenant Hills (TR3754), where the plant may still be found, and there is a long sequence of historical records running back to Sherard and Rand. Dillenius may have acquired the record via a specimen marked "A new *Lychnis* found at Dover by Mr Sherard in 1715", contained in the Du Bois Herbarium at Oxford, assuming that the note conflated Deal and Dover⁸. The Littlestone area has also long been known, J.E. Smith reporting it in his *Flora Britannica* (1800, vol.2, p.470) as 'Opposite the Warren house at New Romney, Kent. Rev. Mr. Stacey.' Warren House is still there, at TR 0767 2593 on Dymchurch Road, and opposite it are old fixed dunes near Romney Marsh visitor centre. It was seen here in 1946 by Francis Rose, by the New Romney-Dymchurch road, and again in 1986; but more recent sightings are on the coastal parts of the Warren.

In fruit, Littlestone. Photo by Lliam Rooney, 11 June 2011

Hanbury and Marshall (1899) considered it to be generally very rare; so did Francis Rose, albeit treating it as very locally frequent on sand-dunes, especially in slightly disturbed ground. There is a suggestion in Stace (2019)⁹ that all British populations, other than at the Brecklands, may be non-native (the species' core distribution being south-western and central Europe, especially around the Mediterranean). There are indeed widespread British records of introductions, marked as such in



⁸ Druce, G.C. (1928). British Plants contained in the Du Bois Herbarium at Oxford, 1690-1723. *B.E.C. Report for 1927*, 8: 463-493.

⁹ Stace, C. (2019). *New Flora of the British Isles*, 4th edn. Cambridge University Press, Cambridge.

the mapping of Briggs (1994)¹⁰, although the Kent records are treated as native. Not only do the Kent populations appear in very appropriate habitat for native status, but the 1715/1724 records are the first for the British Isles. The coastline at Deal/Sandwich and Littlestone/Greatstone has, however, changed greatly in historic times and before, so that current sites for the species would not all necessarily have existed as land even in the mediaeval period, but presumably plants could have moved with shifting habitat.

Within the two areas of long-established distribution, Philp (2010) recorded it on stabilised dunes and sandy shingle, although an apparent increase of records since the 1971-80 survey of Philp (1982) looks as though it represents more intensive recording rather than an expansion of the plant's presence.

Our 2010-20 records show a broadly similar distribution, on sandy banks and dune slopes, especially where bare ground is present. This period included searches in connection with the BSBI's Threatened Plants Project, which involved checking on the survival of plants at selected sites with previous records. The information generated enabled various conclusions to be drawn. A bare, sandy footpath margin across the fixed dunes at Prince's Golf Course, Sandwich generated three plants in 2011 where 150 had been seen the year before. Population fluctuations are not unexpected with annuals. *Silene conica* is a winter annual germinating in late summer, with cotyledons over-wintering, and the low numbers were considered to be perhaps the consequence of the exceptionally dry spring of 2011. This affected many annuals, and could have prejudiced *Silene conica* even though the species can apparently cope with a spring water deficit (although numbers can be affected by a wet winter causing mortality, or a previous summer being insufficiently hot to ripen seed). *Silene conica* benefits from bare ground or open turf for seedling establishment and avoidance of competition; the Sandwich site was kept bare and suitable by the passage of golf course vehicles and buggies. A second Sandwich site was investigated in 2013, fixed dune grassland owned by St. George's Golf Course, but not used or maintained other than for sheep-grazing. A few plants were closely grouped at an area of bare sand beside a rabbit burrow. The general shortening of turf by grazing together with the ground disturbance created by rabbits appears beneficial to survival of *Silene conica*, even though the rabbits had part-chewed the plants.

Another Threatened Plants Project site was at Littlestone Greens where a few plants were re-found on a semi-bare sandy bank supporting Grand Parade and adjoining flat sandy coastal grassland. Here there was an issue as regards whether encroaching vegetation might require artificial disturbance to maintain bare ground, a problem not shared by a nearby site with 34 plants on the top and sides of sandy banks, probably the site on an old building and more likely to be disturbed by public passage.

Littlestone. Photo by Liam Rooney, 5 June 2010



At all four sites (two at Sandwich; two at Littlestone), *Silene conica* grew with associated species *Elymus athericus* (Sea Couch) and *Koeleria macrantha* (Crested Hair-grass), both plants that may grow in fixed dune habitats. Also present at both Sandwich and Littlestone were *Hypochaeris radicata* (Cat's-ear), an effective coloniser especially tolerant of poor or nutrient-deficient soils; *Plantago coronopus* (Buck's-horn Plantain), another coloniser of bare sandy or gravelly soils; and *Plantago lanceolata* (Ribwort Plantain), a ubiquitous coloniser. Particularly indicative of habitat were *Carex arenaria* (Sand Sedge) and *Phleum arenarium* (Sand Cat's-tail) at St. George's; *Cerastium semidecandrum* (Little Mouse-ear) and *Erodium cicutarium* (Common

¹⁰ Briggs, M. *Silene conica* L. Sand catchfly. In (eds.) Stewart, A., Pearman, D.A. & Preston, C.D. (1994) *Scarce Plants in Britain*, JNCC, Peterborough.

Stork's-bill) at both Sandwich sites; and *Cerastium diffusum* (Sea Mouse-ear) and *Salvia verbenaca* (Wild Clary) at Littlestone.

The Threatened Plants Project surveys were of relatively small numbers. Larger colonies have been noted, e.g. 200 plants at the Royal Cinque Ports Golf Course in 2016, and the largest count has been in 2019 at Greatstone dunes, 2520 plants. Seeds are small and seed production is large (8335 ± 848 per plant in German investigations); seed spread is likely to be by wind, but propagules can attach to animals and have germinated after passage through sheep (Stroh, 2015, and sources cited there¹¹).

Silene conica is a distinctive plant by virtue of its swollen, glandular-haired calyx with c.30 distinct raised veins. It may be missed because of its small size, often bearing only a single inflorescence.

Site	Grid reference	Site status	Last record date	Recorder	Comments
Littlestone south / Greatstone Dunes	TR0823	Dungeness NNR	(1) 5 July 2019 (2) 11 June 2011 (3) 5 June 2010 (4) 18 June 2005 (5) 1991-99 (6) After 1970, before 1981	(1) SD'A (2) KBRG meeting (3) KBRG meeting (4) JP (5) EGP (6) Philp (1982)	(1) 2520 plants, both flowering and non-flowering, on Greatstone Dunes. (2) (a) 24 plants at TR 08294 23542, 5 at TR 08284 23545, 50 at TR 08280 23531, 12 at TR 08275 23501, all on top or sides of low sandy, part-vegetated humps in dunes. (b) TR 08356 23956, top and sides of sandy banks, possibly old site of building, 34 plants in area 1.5m x 4m. (3) Two patches at south end of Littlestone Green on sandy banks, one 2 x 4m. at TR 08352 23956 with hundreds of plants, the other a few metres westwards, 5 x 2m. with few plants. (4) Large population 200 + plants at TR 08287 23518. (5) & (6) Given as TR02W, but assumed to be monad TR0823.
Littlestone	TR0824		(1) 11 June 2011 (2) 5 June 2010 (3) 1991-99 (4) After 1970, before 1981	(1) KBRG meeting (2) KBRG meeting (3) EGP (4) Philp (1982)	(1) TR 08324 24028, 14 plants on sandy embankment below road. (2) At TR 08323 24023, in barish parts along 15m of bank to south end of Littlestone Green, 50 plants. (3) & (4) Given as TR02X, but assumed to be monad TR0824.
Romney Warren	TR0826		(1) 5 June 2010 (2) 8 June 1986	(1) (a) JS (b) DM (2) RF	(1) (a) TR 0876 2614. (b) TR 0870 2601. (2) Romney Warren, NW of main road.
Sandwich Bay estate west	TR3557	SSSI	(1) 17 June 2013 (2) 22 June 2002 (3) 2 March 1983	(1) SB (2) EGP (3) ACH	(1) 42 plants in 2 x 2m. area of sand around rabbit burrow. Dune grassland, part of SSSI owned by St George's golf course. Associated plants - <i>Erodium cicutarium</i> , <i>Galium verum</i> , <i>Phleum arenarium</i> , <i>Cerastium arvense</i> . (2) Given as TR35N; assumed to be monad TR3557. (3) TR 353 578. Sandwich & Pegwell Bay survey.
Sandwich Bay	TR3461		2 March 1983	ACH	TR 349 618. Sandwich & Pegwell Bay survey.
Sandwich Royal	TR35P		(1) 16 June 2020	(1) SB	(1) On Prince's golf course, on sand

¹¹ Stroh, P.A. (2015). *Silene conica* L.. Sand Catchfly. Species Account. Botanical Society of Britain and Ireland.

St. George's	Includes TR3558 and TR3559		(2) 28 May 2016 (3) 11 June 2013 (4) 23 May 2011 (5) 24 June 2010 (6) 22 June 2010 (7) 1991-99 (8) 4 August 1996 (9) 2 March 1983	(2) AW (3) CO (4) SB (5) SB (6) LR (7) EGP (8) FR (9) ACH	beside track at TR 35371 59911 flowering and fruiting in spite of drought. (2) TR3559. (3) All in c. 2 sq. m. side of sand hummock on beach car park at TR 359 586. Survived to seed stage 16/07/13, 60+ plants. (4) Three plants on bare sand by footpath at TR 35268 59819. (5) (a) TR 35275 59841, 150 plants on sandy bank beside footpath across Prince's golf course. (b) TR 35428 59179, seven plants on sand bank beside public footpath between Prince's and St George's golf courses (6) 1 plant, TR 359 585. (7) TR35P. (8) TR3559, on shore by toilet. (9) TR 355 585. Sandwich & Pegwell Bay survey.
Sandwich Prince's golf course	TR3560		(1) 5 July 1987 (2) 2 March 1983	(1) EGP & RoF (2) ACH	(1) TR 353 603 (2) TR 353 605. Sandwich & Pegwell Bay survey.
Sandwich Bay estate	TR35T Includes TR3656, TR3657		1991-98	EGP	TR35T.
Sandwich Bay estate	TR3658		1991-98	EGP	Recorded as TR35U, but the only land monad is TR3658.
Deal –Sandown Castle to Royal Cinque Ports golf course	TR35S Includes TR3755, TR3754		(1) 19 July 2016 (2) 31 August 2014 (3) 1991-98 (4) 11 September 1989 (5) 2 March 1983	(1) SB (2) SB (3) EGP (4) SMH, GPR, SCW (5) ACH	(1) (a) Scattered plants in seed on Tenant Hills by public footpath wherever the sand is bare from TR 37358 54902 to TR 37340 54972. Associated species: <i>Trifolium arvense</i> , <i>Phleum arenarium</i> , <i>Galium verum</i> , etc. (b) This a particularly good year for this plant and at least 200 plants in seed on sandy banks beside public footpath from TR 3717 5545 to TR 3710 5563. (2) South-facing dune slope at TR 3726 5523 over 3 x 1 m. area. (3) TR35S. (4) TR 373 553. (5) TR 376 557. Sandwich & Pegwell Bay survey.

Silene flos-cuculi (L.) Clairv. (Ragged-Robin)

Draft account. Recording potential in TQ66, TQ65 and TQ55 worth checking.

vc 15, 16

Rarity / scarcity status

Silene flos-cuculi is widespread in damp grassland and marshy areas across the British Isles. Whilst not yet generally scarce, it is one of a number of species which have been placed in a risk category of **Near Threatened** in England, due to the rate of decline, probably due to habitat loss (e.g. drainage, eutrophication, loss of grazing). A comparison over the periods 1930-1969 and 1987-1999 showed that its area of occupancy had declined so that there was a calculated 25% reduction in the likelihood of recording the species. In Kent there is evidence of a 39% decline between 1971-80 and 1991-2005, attributed to drying out or development of its habitat. The species is, however, as yet neither rare nor scarce in the county.



Gibbin's Brook, Sellindge,
habitat (KBRG meeting).
Photo by Geoffrey Kitchener,
30 June 2013

Account

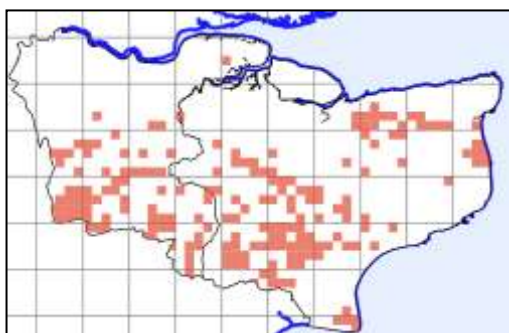
Seeds of *Silene flos-cuculi* have been found in iron Age peat deposits and channel fills at the moated mediaeval farm complex excavated at Parsonage Farm, between Hothfield and Westwell, in advance of railway construction¹²; also material from late Roman deposits in a well at Thurnham Roman Villa¹³. However, the first published reference to this species as a botanical record is by Thomas Johnson in his *Iler plantarum* (1629): he encountered it near the public highway between Gillingham and the Isle of Sheppey. It is now conspicuously absent from this part of Kent. He also found it in 1632 en route to Canterbury from Sandwich, listed with many other species of wet habitats. Hanbury and Marshall (1899) regarded it as a common and generally distributed plant of moist meadows, streamsides, etc. For Francis Rose it was a very common plant (except in chalk districts) of streamsides, marshes, fens and wet woodlands, both in alder swamps and wet rides. Records which he collected included Keston and Frizley Bogs; Sandwich dune slacks; Berengrave pit (this is on

¹² A. Davies [sic] (2006). *The charred and waterlogged plant remains from Parsonage Farm, Westwell, Kent (ARC PFM98)*. CTRL Specialist Report. London & Continental Railways.

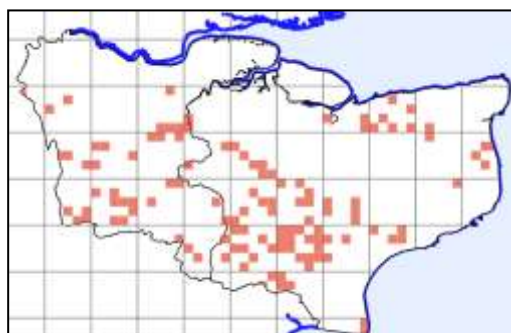
¹³ J. Giorgi (2006). *The waterlogged plant remains from well 11010 at Thurnham Roman Villa, Kent (ARC THM 98)*. CTRL Specialist Report. London and Continental Railways.

chalk); meadows by the Darent and the Stour; Snodland and Holborough Marshes; Horish Wood, a ride on Gault; Hoppen Pits Dungeness; fens at Ham and Brook; and various wet or boggy woods, often acid.

This breadth of distribution was still apparent from the 1971-80 county survey published as Philp (1982), when 190 tetrads were recorded, usually on more clayey soils. This reduced to 115 tetrads in the 1991-2005 survey (Philp, 2010), considered to be the result of habitat loss. For the period 2010-20, however, the species was found in 117 tetrads (135 monads), although these figures are not fully comparable, as Eric Philp's records were restricted to the administrative county of Kent, excluding metropolitan north west Kent. Nevertheless, the London records are not numerous and in some cases represent the use of *Silene flos-cuculi* as a 'wildflower' for amenity planting¹⁴.



Silene flos-cuculi, 1970-86 tetrad records

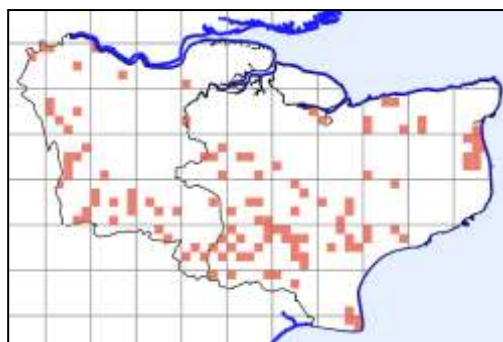


Silene flos-cuculi, 1987-2009 tetrad records

Silene flos-cuculi, 2010-20 tetrad records

Mapped data are given here, taken from the BSBI database, from which it can be seen that:

- All recording periods show the species as largely avoiding the chalk downs (where there are few damp habitats), the north Kent marshes and Romney Marsh (where its absence seems to demand explanation, although the grassland there is more species-poor than is generally encountered with *S. flos-cuculi*).
- the 1970-86 records, which include those in Philp (1982) as well as others, are the 'high point' of recording; subsequently it has only been possible to find a much more attenuated distribution.
- While the overall numbers for 1987-2009 (which include those for Philp, 2010) are fairly similar to those for 2010-20, there are differences which would make further field investigation worthwhile, e.g. the block of 10km squares TQ66, TQ65 and TQ55 (west and south west of Maidstone) accounted for 11 tetrad records in the earlier period, one in the most recent one. Is there really so much habitat loss in this area?

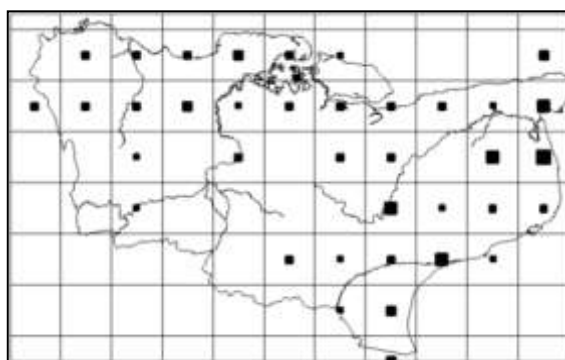


Hothfield. Photo by Liam Rooney, 19 May 2011

¹⁴ The use of *Silene flos-cuculi* appears to be more significant as a plug plant for wet habitat creation than general seed sowing. 170,500 plug plants were reported sold annually by 15 commercial wildflower providers in the UK: Walker, K.J., Hodder, K.H., Bullock, J.B., Pywell, R.F. (2004). *A review of the potential effects of seed sowing for habitat re-creation on the conservation of intraspecific biodiversity*. Defra Contract BD1447. Centre for Ecology and Hydrology, Monks Wood.

Silene flos-cuculi is a perennial with stems 30-75cm high and so, if it is to develop mature seed, it is best suited to a habitat in which it may reach this stage of growth, e.g. a late-cut hay meadow or damp ground subject to an appropriate grazing regime. It is also capable of spreading vegetatively: one or two side rosettes may be produced in the first year of growth and a flower stalk is initiated from the main rosette, usually not until the second year, with smaller plants postponing for at least another year. Secondary flower stalks may grow from one or more of the side rosettes, but rosettes die off after flowering, with growth resumed from surviving side rosettes. Trials of plants grown in the Netherlands along a gradient of natural soil fertility from a nutrient-poor location at a brook valley flank down to the streamside habitat dominated by tall herbs showed the greatest plant biomass achieved in an intermediate site (in terms of vegetation density and soil fertility), but with the highest mean water table during the growth period¹⁵. In the same trials it was found that larvae of the Lychnis moth *Hadena bicruris* consumed the contents of 49.5% of the seed capsules in the various sites (range 23-87%). The moth is recorded in Kent (see accompanying distribution map, which covers 996 sightings), but the records do not map well against *Silene flos-cuculi*, which may in part be due to the locations of trapping facilities, but also because the larvae predate other *Silene* species as well. We have no data on its predation of *Silene flos-cuculi* seed capsules in Kent.

Kent distribution of *Hadena bicruris*, 2010-19,
by kind permission of Karen Hodgson, Kent Moth Group



Silene flos-cuculi is not readily confused with any other species, at least when in flower. So far as concerns its range of variation, we have occasionally encountered white-flowered forms and *The New Atlas of the British and Irish Flora*¹⁶ refers to a dwarf form (var. *congesta*) as having been found in exposed coastal grassland in E. Kent, Caithness, Sutherland and Shetland, and apparently retaining this character in cultivation.



Cowden. Photo by David Steere,
27 June 2016.



Hothfield. Photo by Liam Rooney, 19 May 2011

¹⁵ Biere, A. (1995). Genotypic and plastic variation in plant size: effects on fecundity and allocation patterns in *Lychnis flos-cuculi* along a gradient of natural soil fertility. *Journal of Ecology* **83**: 629-642.

¹⁶ Lusby, P.S. (2002). *Lychnis flos-cuculi* Ragged-Robin. In Preston, C.D., Pearman, D.A. & Dines, T.D. (eds.). *New Atlas of the British & Irish Flora*, Oxford University Press, Oxford.

Silene gallica L. (Small-flowered Catchfly)

Draft account

vc 15, gone from vc16

Rarity / scarcity status

Silene gallica is a **nationally scarce** archaeophyte or ancient introduction, widely but thinly scattered across the British Isles, mostly in east Anglia, south west England and south Wales. It is a UK Biodiversity Action Plan priority species and is assessed as **Endangered**, a comparison over the periods 1930-1969 and 1987-1999 having shown that its area of occupancy had declined so that there was a calculated 79% reduction in the likelihood of recording the species. This very steep decline is shared by other classic arable weeds; herbicidal treatment has much to do with this and also the use of fertilisers, given that it favours light, relatively nutrient-poor sandy or gravelly soils. In Kent, however, it has always been **rare**.

Littlestone. Photo by Liam Rooney, 20 June 2012

Account

The earliest evidence of the Kentish presence of *Silene gallica* is two capsules, calyx and seeds (det. J.R.B. Arthur) found in clay daub from the late 14th century timber-framed building known as Wealden Hall, London Road, Larkfield¹⁷. The first botanical record, however, is given by Hanbury and Marshall (1899) as attributable to G.E. Smith, published as 'South Kent, G.E. Smith' in H.C. Watson's *New Botanist's Guide* (1835), in which Watson acknowledges having received a checklist from Smith. The latter wrote in his own interleaved copy of his *A Catalogue of rare or remarkable phaenogamous plants, collected in South Kent* (1829): 'In sandy arable land between the Ridgeway at Brabourne and Kennington'. His notes cover the period 1830-33, so this presumably covers the date of record. Hanbury and Marshall also refer to a specimen in William Borrer's herbarium collected by Smith near Mersham, probably from the same station and presumably on the sands of the Folkestone Formation.



Littlestone. Photo by Liam Rooney, 20 June 2012

It should, however, be noted that *Silene gallica* var. *quinquevulnera*, a variety in which the pink or red streaks or blotches commonly seen on the petals become a conspicuous solid red (the 'five wounds') was formerly treated as a species, and the first Kent record for this is earlier, in William Hudson's *Flora Anglica*, 2nd edition, 1778: 'Habitat in arvis arenosis juxta Wrotham in Cantio' (it grows in sandy fields near Wrotham). Edward Jenner, in his *Flora of Tunbridge Wells* (1845) states in relation to a record in Sussex that it was 'shewn to me by Mr. Maddock, who cannot account for its appearance unless it was introduced with the

manure carried up from the town. This most probably was the case at Wrotham and other places where it has been found'. This is possible for manure originating in urban Tunbridge Wells, where var. *quinquevulnera* may have been cultivated as an attractive annual, but it is not so easy to make that assumption as regards

¹⁷ Grove, L.R.A (1964). Archaeological notes from Maidstone Museum. *Archaeologia Cantiana* for 1963, **78**: 188-203.

Wrotham village; the fields towards Wrotham Heath, on the sands of the Folkestone Formation, would have provided an appropriate native habitat.

Hanbury and Marshall (1899) cited only two records for var. *quinquevulnera*, regarded as a casual, and few for ordinary *Silene gallica*, which they treated as a rare colonist or casual of sandy fields. Notably sandy localities were sandy fields near Blackheath (rare, given in Alexander Irvine's *The London Flora*, 1838); Hatch Green near Harbledown (F.M. Webb); and, as *quinquevulnera*, Sandgate (*English Botany*, ed. J.T. Boswell Syme, 1873).

There is little pattern to the 20th century records noted by Francis Rose, who considered the species to be only a casual in Kent. A record by George Talbot (as *quinquevulnera*) near Edenbridge (*B.E.C. Rep.* for 1922) comes without context, but the area is unexpected, being Weald Clay. There are records from near West Wickham in 1926-27, apparently at Spring Park Wood, where there was then more open space, the geology being Harwich Formation and Lambeth Group, both of which may include sand and gravels. Its presence at Hayes is mentioned for 1936-8 (cf. *B.E.C. Rep.* 1937), recorded by David McClintock, and which L.N.H.S. records assign to Hayes Old Rectory: David's father was rector there, and it is likely to be an escape from cultivation. A record by Irene Palmer of many plants growing along a road bank at Hayes Common appears unconnected and is the last West Kent (vc16) sighting. Rose collected in 1958 from St Mary's Bay, St Mary Hoo, where there was one plant on a shell-sand beach; and another 1958 record, from near Canterbury, sounds like an escape from cultivation. This last may be the 'casual introduction' to which Philp (1982) refers, as the last record of a species then considered no longer to be found in the county.

Littlestone, habitat. Photo by Geoffrey Kitchener, 20 June 2012

Philp (2010) describes *Silene gallica* as having declined quite seriously in response to modern farming practices and now reduced to a rare casual. This is not perhaps quite accurate as regards Kent, since it was never other than rare here even before changes in farming practices. During the 1990-2005 county survey, a single plant was found on a roadside verge at Gillingham (TQ76Y) and a small colony on disturbed sandy soil at Littlestone (TR02X), which was built over in the 1990s. As regards the latter site, it transpired, however, that the seed had migrated across the road, and on 16 June 2012 a plant was discovered by Owen Leyshon on a sandy roadside bank at Littlestone Greens, opposite Armada Close, TR 08323 24018. The bank had been scarified the previous autumn, and mowing reduced, to encourage *Silene conica* (Sand Catchfly). Associated species were: *Anacamptis pyramidalis* (Pyramidal Orchid), *Cerastium semidecandrum* (Little Mouse-ear), *Echium vulgare* (Viper's-bugloss), *Elymus athericus* (Sea Couch), *Galium verum* (Lady's Bedstraw), *Hypochaeris radicata* (Cat's-ear), *Koeleria macrantha* (Crested Hair-grass), *Plantago lanceolata* (Ribwort Plantain), *Salvia verbenaca* (Wild Clary), *Sedum album* (White Stonecrop) and *Silene conica*. It is interesting that this sandy coastal flora should be so close to what would be expected of *Silene conica* as well as *Silene gallica*, although the latter would more normally be a plant of inland habitats with a different flora range there.



There has been only one other recent site, a large field bordering Westwell Lane, Tutt Hill, Hothfield, on the sands of the Folkestone Formation where good numbers of *Silene gallica* were found by Stephen Lemon on 13

August 2016 at TQ 975 465, TQ 976 465 and TQ 976 464. A grass crop had been taken and plants were spread along the margin above the High Speed Line with arable weeds such as *Anisantha diandra* (Great Brome) and *Matricaria chamomilla* (Scented Mayweed). This is a significant find, as it would appear to be of the nature of the classic sandy arable occurrences, rather than a casual introduction. Consideration was given as to whether it might have been introduced with the grass crop, but it was confined to one area of the field rather than appearing as a scattered introduction; if it had been sown as part of the High Speed Line construction, it might have been expected on the railway land as well, where it was not seen. But most tellingly, this is an area with a pedigree for rare arable weeds and it appears to be the same field which the Kent Field Club visited in September 1963 (*Kent Field Club Bulletin*, 1964, 9:34-35), finding *Glebionis segetum* (Corn Marigold),



Misopates orontium (Weasel's-snout) and *Filago lutescens* (Red-tipped Cudweed); this was probably the last time the cudweed was seen in Kent. The site was visited again on 16 July 2017, with 16 plants found, mostly in fruit, from TQ9735 4672 to TQ9759 4658. On 22 June 2019 there were 13 flowering plants at TQ 975 465, the field having been set to wheat. It is possible that farming may be modified in future so as to provide a cultivated margin for the benefit of the species.

Tutt Hill, habitat. Photo by Stephen Lemon, 13 August 2016

Silene gallica germinates primarily in autumn, but seedlings may get killed off in winter as seedlings intolerant of temperatures of -10°C.¹⁸ It sets a mean of 48 seeds per capsule, and given that the seeds do not seem adapted for transport by wind or animals, it is likely that these fall close to the plant (subject to any potential for the dried plant itself to be carried away from its site) and it would not be particularly efficient in its seed dispersal.

The disadvantage of this might be offset if seed viability is long-lived, but there does not seem to be any available information. After germination, plants form a rosette persisting through winter in the case of autumn germination; a single erect stem elongates in early to mid-summer, then branching to flower from mid-June to August. It may be regarded as a stress-tolerant ruderal, typically growing in nutrient-poor soil where there is limited competition, from crops or otherwise.¹⁹

Tutt Hill. Photo by Stephen Lemon, 13 August 2016

Silene gallica, it has been said, might be taken for an abnormally small *Silene latifolia* (White Campion) or *Silene noctiflora* (Night-flowering Catchfly), but is indeed far smaller than could be expected for those species. Its calyx lines are



¹⁸ Smith, A. (1994) *Silene gallica* L. Small-flowered catchfly. In (eds.) Stewart, A., Pearman, D.A. & Preston, C.D. *Scarce Plants in Britain*, JNCC, Peterborough.

¹⁹ Wilson, P.J. (2005). *Silene gallica* (L.), Plantlife dossier, https://www.plantlife.org.uk/application/files/4114/7913/4089/Silene_gallica__dossier.pdf

not as numerous as those of *Silene conica* (Sand Catchfly) and might be taken for a *Cerastium*-like species at a casual glance. The illustrations in this account show flowers with differing appearances, that from Littlestone being white, and that from Tutt Hill having slightly wider petals, pink with blotches of deeper colour, but not blood-red as with var. *quinquevulnera*.

This last variety was generally treated as a species (named as such by Linnaeus) by British botanists until 1937, when a note by Ted Lousley²⁰ was published suggesting that *Silene gallica* for British plants be treated as divisible into var. *sylvestris* (otherwise, var. *gallica*, Channel Islands), var. *anglica* with dingy white (commonest in east and south east England), yellowish or pale pink petals (extending to pale purple in the south west) and var. *quinquevulnera*, although 'many intermediates and minor variations occur, and ...extreme examples are not always to be found'. The Littlestone and Tutt Hill forms appear to be at different ends of the spectrum of variation of var. *anglica*, the latter tending towards the *quinquevulnera* end, but still within var. *anglica*. It is not impossible that some of the early Kent records for var. *quinquevulnera* were instead within the var. *anglica* spectrum.

²⁰ Lousley, J.E. (1937) *Silene gallica* L., *B.E.C. Report for 1936*, 9:395-6.

Silene noctiflora L. (Night-flowering Catchfly)

Draft account

vc 15 and 16

Rarity / scarcity status

Silene noctiflora is an archaeophyte or ancient introduction of cultivated land, formerly widespread over the British Isles but now much reduced and considered to be **Vulnerable** to the risk of extinction in England. A comparison over the periods 1930-1969 and 1987-1999 showed that its overall English range had reduced by 52% and its area of occupancy had declined so that there was a calculated 57% reduction in the likelihood of recording the species. This would normally qualify such a species to be treated as Endangered rather than Vulnerable, but since 1999 there have been some signs of national recovery. The decline is generally attributed to increased use of herbicides since the 1950s and a move towards autumn-sown crops; recovery appears to be an effect of agri-environmental schemes. From 1971-80 to 1991-2005 the decline in Kent appeared catastrophic, dropping to a single site, but since then more locations have been found, and the species is to be regarded as **scarce** in the county.

St. Margaret's at Cliffe. Photo by Lliam Rooney, 17 July 2013

Account

The first published Kent record for *Silene noctiflora* is given by Hanbury and Marshall (1829) as that of G.E. Smith in his *Catalogue of rare or remarkable phaenogamous plants collected in south Kent* (1829); 'in Corn-fields upon the chalk' (Smith added against this in his own copy of the book, 'principally about Ramsgate', and Dumpton Gap is mentioned later in his book). However, this is surprisingly late, and Francis Rose considered that Thomas Johnson's note of *Lychnis silvestris parva* in his *Descriptio Itineris* (1632) should be interpreted as this species. Johnson recorded it after listing three species of sandy arable land (*Spergula arvensis*, *Spergularia rubra* and *Ranunculus arvensis*): it looks as though Johnson had at least got as far as Ash en route to Canterbury from Sandwich, so he may have been on the sands of the Thanet Formation between Ash and Wingham, or have reached Littlebourne. In the same expedition Johnson found *Silene dioica*, *S. latifolia* and *S. vulgaris*, all of which he named differently, so it cannot be any of these, and *S. noctiflora* seems quite plausible.



Hanbury and Marshall (1899) considered it to be a rare colonist or casual of fields and waste ground, giving only seven or eight records, which included both sandy and chalky locations. Francis Rose described the species as rare but widely distributed, mainly in East Kent, in cornfields on chalk and sand. In West Kent, records cited in his manuscript *Flora of Kent* included a few in the north west, e.g. a cornfield near Darrick Wood, TQ 454 649 (1959; this is now established chalk grassland); field east of Claylane Wood, Cobham, TQ 667 704 (this is in the path of the proposed Lower Thames Crossing); an arable field on chalk, north of Lower Bush, Cuxton (1952; now in or near Ranscombe Farm reserve). In East Kent, it was widely scattered on the Downs dip slopes: e.g. in cornfields south of Eastry, east of Knowlton on chalk (1958), Sutton Downs (TR 330 480; 1958), Tilmanstone (probably TR3150; 1959) and north of Dover (1944). Also, there were a number of records in Thanet in addition to G.E. Smith's mentioned above, including a chalky arable field at Joss Bay /

North Foreland (1954), cornfields in Quex Park, where plentiful (1950), a cornfield on chalk north west of Plumstone Farm, Monkton (1958), and (presumably close by) a cornfield west of Cleve Court, Minster (1963).

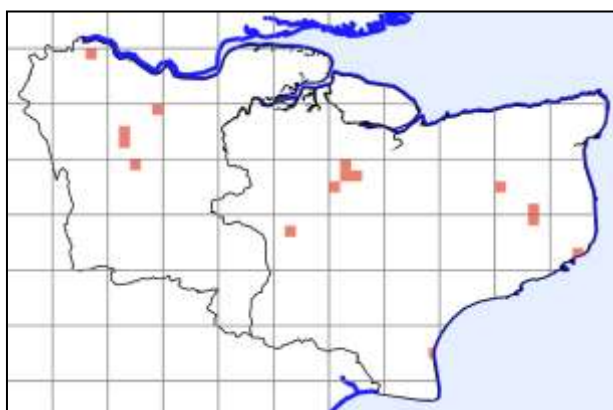
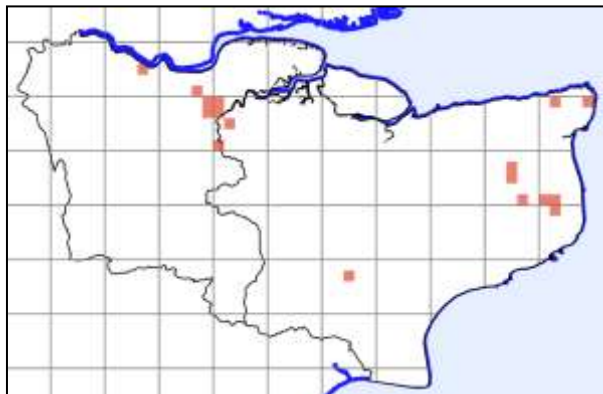
A very broadly similar distribution is shown by the records in Philp (1982): 14 tetrads mostly focused on the hinterlands of Deal and Dover, the chalk of Thanet and around Cuxton. The 1970-86 distribution map given here covers those records, plus a couple of others on the BSBI database.

Silene noctiflora, 1970-86 tetrad records.

The subsequent recording history is a little surprising. Philp(2010) noted only one 1990-2005 record, at Cuxton (TQ66Y), which indicates at least some continuity in that area; but the absence elsewhere, attributed to changes in farming methods, must in part be an artifact of recording, in view of finds by others then, as well as during the period 2010-20.

Silene noctiflora, 2010-20 tetrad records.

The 2010-20 distribution map given here (15 tetrads; monads were the same) continues to show some plants in the Deal / Dover hinterlands (but mostly different sites); there is none in Thanet; a cluster has been found in TQ95 (Doddington / Wichling); and there appears to be a cluster in TQ56 (although this is due to a large colony at Lullingstone, in a single field spanning a tetrad boundary). So a lack of overall decline



is masking a situation which is not straightforward to interpret, but may be due to a long-lived and still fairly widespread seed-bank producing plants only where accidents of cultivation (or lack of it) permit. Records show *Silene noctiflora* as largely restricted to the chalk. Exceptions in the 2010-20 records are a plant on consolidated shingle on a vacant plot at Littlestone; plants at Great Tong Farm, Headcorn, on Weald Clay which had been sown deliberately (the flowers appeared unusually yellow, which might suggest non-native provenance); and a plant in a border at Lesnes Abbey, on sands of the Thanet Formation. Seed is available commercially for growing as a 'wildflower', advertised as attracting moths, which is probably misguided.

St. Margaret's at Cliffe. Photo by Liam Rooney, 17 July 2013

Silene noctiflora is an annual, germinating mainly in spring and developing best in crops sown towards the end of March; its late flowering (normally given as from July, although some of our recent records are in June) means that seed production is most effective when crops are harvested in autumn or winter

(as with sugar beet) or stubble is left after harvest.²¹ Most of our recent records are, however, from arable margins which may afford longer opportunities for growth than the cropped field. But at Lullington, where an estimated 1,000 plants were seen in stubble in 2010, the seed-bank appears to be well within the field and plants do not reach the margins. Coupled with the tendency here to apply herbicide shortly after harvesting so that, in the case of cereal crops, the stubble does not provide a growth opportunity for long, *Silene noctiflora* is now seldom seen at this site, despite the seed-bank.

Seed production is a mean of 182 ± 3 seeds per capsule and just over 2,500 per plant.²² The species is mostly hermaphroditic but can have both female and hermaphrodite flowers on the same plant; the hermaphrodite flowers are of two types, with anthers either protruding from, or fully enclosed in the calyx tube. It is often stated that the species, having pale flowers (white to light pink above, yellowish below) with sweet fragrance which open at dusk, is pollinated by night-flying moths. It may indeed have evolved on this basis, but in the course of German studies night-active moths were never observed. The studied population also showed pseudocleistogamy, with most hermaphrodite flowers self-pollinating in bud, partly followed by flower opening, but seed ripening started immediately after seed-set at bud stage. Accordingly, the plants were mostly independent of pollinators because flowers set nearly 100% seed with only a few bumblebees occasionally visiting.²³ Breeding patterns of *Silene* species are complex and variable, and have attracted much study for their ecological and evolutionary significance. *Silene noctiflora* has one of the largest known mitochondrial genomes and this seems to bring unusually high evolutionary rates²⁴. Assuming that the Central European experience of selfing applies widely, one can only speculate as regards whether evolution away from moth pollination dependence has been to assure reproduction where pollinators have been scarce, or to avoid moth predation, or for some other cause.

Any identification issues are likely to be as between *Silene noctiflora* and *Silene latifolia* (White Campion), both of which can grow in the same habitats. Their leaves and general appearance can be very similar. They can be separated by the number of styles (3, sometimes 2, in *S. noctiflora*; 5 in *S. latifolia*, where present – male plants will not have them). Also relevant are the capsule teeth (6, more or less recurved in *S. noctiflora*; 10, ranging from sub-erect to patent in *S. latifolia*). The petals of *S. noctiflora* are noticeably narrower, but are inrolled during the day. The calyx is 10-veined in *S. noctiflora*; this applies also to male flowers of *S. latifolia*, but female flowers have 20-veined calyces.

The following table for post-1970 records omits those in Philp(1982) which are all included in the 1970-86 distribution map above and do not have detail beyond the tetrad location.

Site	Grid reference	Site status	Last record date	Recorder	Comments
Lesnes Abbey (metropolitan vc16)	TQ4778		19 August 2017	RMB (LNHS meeting)	One plant in flower bed, TQ 4786 7879.
Lullington Park	TQ5263, TQ5264		(1) 20 August 2019 (2) 13 September 2010 (3) 6 September 1993 (4) 10 August 1990 (5) 5 November 1989	(1)–(5) GK	(1) TQ 5250 6398. One plant in stubble of cereal crop, further exploration of area not undertaken. (2) Large colony in arable stubble of Lullington Park extending from TQ 52542 63945 to TQ 52595 64065, est. total of 1000 over TQ5263 and 5264. (3) 80 plants in stubble.

²¹ Smith, A. (1994). *Silene noctiflora* L. Night-flowering catchfly. In (eds.) Stewart, A., Pearman, D.A. & Preston, C.D., *Scarce Plants in Britain*, JNCC, Peterborough.

²² Salisbury, E. (1961) *Weeds and Aliens*, Collins (New Naturalist), London.

²³ Jurgen, A., Witt, T. & Gottsberger, G. (1996). Reproduction and pollination in Central European populations of *Silene* and *Saponaria* species. *Botanica acta; Berichte der Deutschen Botanischen Gesellschaft* **109**: 316-324.

²⁴ Williams, A M. et al. (2020). Long-read transcriptome and other genomic resources for the angiosperm *Silene noctiflora*. bioRxiv.

					(4) Cornfield stubble, chalky ground. (5) TQ5264 etc. (two tetrads). 82 plants in stubble of cornfield on slope between 175' and 200' contours.
Stone	TQ575		1974	JRP	Sandpit.
West of Longfield	TQ5968		23 June 2012	GK	One plant at margin of barley field, TQ 59182 68779.
Luddesdown	TQ6666		30 August 2009	GK	TQ 66647 66568, one plant in arable on chalk slope by footpath.
West of Cuxton	TQ66Y		1991-99	EGP	
Cuxton Fields	TQ6968		25 August 1985	JP	One plant.
[Great Tong Farm]	[TQ8546]		[5 June 2014]	[GK]	[Many large plants on bare soil by track just north east of Great Tong Farm, sown by farmer looked yellower than other Kentish plants seen.]
South west of Wichling	TQ9055		(1) 30 June 2018 (2) 28 June 2017 (3) 22 October 2016	(1) –(3) DC	(1) TQ 90368 55390, c.100 plants on set aside strip as in previous years. (2) TQ 90404 55527, same place as previous year, but flowering much earlier. (3) TQ 904 555, Syndale valley, several plants amongst margin of arable with <i>Chaenorhinum minus</i> .
Doddington, south west	TQ9256		17 June 2020	RM	TQ 92601 56129, several plants already flowering. This location has long been a spot where garden plants get dumped, other plants nearby include <i>Mimulus guttatus</i> and <i>Silene coronaria</i> , so recorder queries origins.
Doddington, north	TQ9258		15 August 2015	KFC meeting	TQ 93212 58968 c.30 plants, margin of cornfield on sandy clay with <i>Stachys arvensis</i> .
Doddington, east	TQ9457		15 September 2013	RM	Several plants at TQ 9432 5712, arable margin on chalk.
Littlestone	TR0824		21 June 2015	TI	On a vacant plot at Littlestone, TR 08379 24313, Grand Parade / Queen's Road.
Adisham Court west	TR2154		12 August 2019	AM	Colour in the Margins project Plantlife/RSPB, a dozen or so plants in cultivated field margin.
South of Tilmanstone	TQ2457		23 July 1986	RoF, AS	TR 249 572, arable weed survey.
Barfreestone	TR2650		(1) 24 June 2019 (2) 31 July 2013	(1) AM (2) SB	(1) Colour in the Margins project Plantlife/RSPB survey. (2) Many thousands of plants in set-aside area 40 x 50m at TR 262 508, arable headland under high level stewardship scheme.
St Margaret's at Cliffe	TR3543		17 July 2013	KBRG meeting	National Trust arable reversion, a single plant at TR 35862 43206.

Silene nutans L. (Nottingham Catchfly)

Draft account

vc 15; casual, briefly, in vc16

Rarity / scarcity status

Silene nutans is a plant of dry grassy or bare places, generally coastal but with some inland limestone locations, and is known (other than as a casual) from the English south coast and as far north as North Wales and the Peak District. In England it is considered **Near Threatened**, the extent of its occupancy in England having declined by 26% in comparing data from 1930-60 and 1987-99 respectively. It is nationally scarce, but well established on the east Kent coast, so that it is neither rare nor scarce within the county, although its Kent populations are of national significance.

Account

Nottingham Catchfly is so named from having its first generally recognised British record from the walls of Nottingham Castle (1670: John Ray's *Catalogus Plantarum Angliae*). But there is the possibility that this is anticipated by Christopher Merrett's 1666 citation (in *Pinax Rerum Naturalium Britannicarum*) of 'Behen flore albo elegantiori, three miles from Dover, in the way to Rye, on the Beach, all along betwixt Hide and Rumney'. Druce gave this reference, but it was ignored by Hanbury and Marshall (1899), and David Pearman (*The Discovery of the Native Flora of Britain & Ireland*, 2017) mentions it, but does not commit as to whether this was intended for *Silene nutans*. Hanbury and Marshall (1899) gave the first Kent record as in John Ray's *Synopsis Methodica Stirpium Britannicarum* (1690): 'Lychnis major noctiflora Dubrensis perennis...Great night-flowering Campion of Dover-Cliffs. Found by Mr. Newton'. However, this was preceded by Ray's *Fasciculus Stirpium Britannicarum post editum Plantarum Angliae Catalogum Observatarum* (1688) ('The greater perenniall night-flowering Campion. Upon Dover Castle Cliffs.') and by his *Historiae Plantarum* (vol. 2) of the same year in which a full description is given.

Long Pits, Dungeness. Photo by David Steere,
15 June 2016



Hanbury and Marshall (1899) referred to *Silene nutans* as being locally abundant on downs, chalk cliffs, etc. and gave records from the cliffs from Kingsdown to St. Margaret's and thence to Dover, Eastwear

Bay and on Sandgate Castle. The Dover colonies were very well known, the more so for being popularised in *The Flowering Plants and Ferns of Great Britain* (1855) by Anne Pratt, a Dover resident 1849-66:

'On portions of the sides of those towering and majestic cliffs which border the shore for several miles along the east of Dover, as well as at some parts of the cliffs standing to the west of the town, thousands of the pretty white starry blossoms of the Catchfly may be seen in the evening, growing on stems about a foot high. Nor do these flowers wait, as some night flowers do, for darkness ere they expand; for the author has seen them in their full glory by eight o'clock, before the soft twilight has thrown its subdued shadow over the summit of the cliffs'.

There is something about the species which attracted lyricism in 19th century botanists. G.E. Smith wrote in 1829:

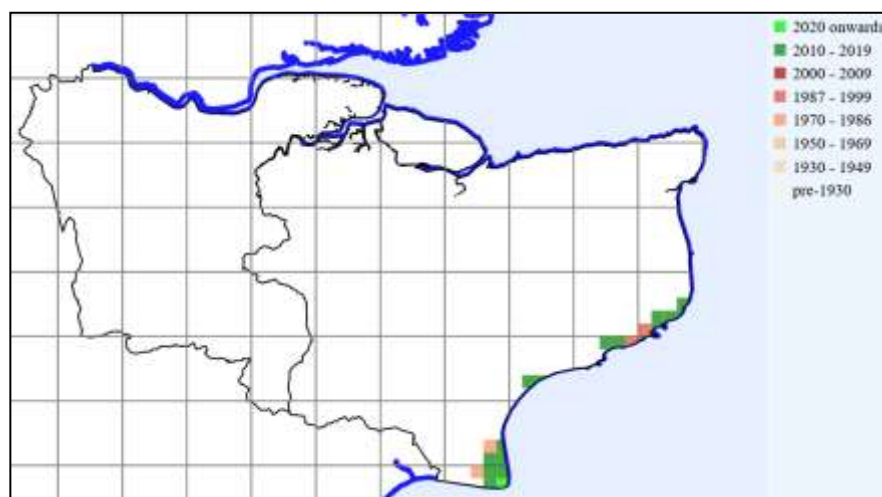
'*Silene nutans* is not abundant in open situations; upon Shorne Cliff in several spots frequented by cattle it may be collected; but no where does it flourish so well as upon the brow of the once rude, now tufted and glowing, heights of Encombe [near Sandgate]. The plant is humble, without grace, and uses no display; when night has hidden the glories of the garden, it expands its narrow petals and fills the whole air and every breeze with most delicious fragrance. What, in darkness, the distant glimmering lamp, the glow-worm, the fire-fly, are to the eye; what in still night, the sound of distant bells, of soft music, of flowing waters, is to the ear; what in night's solitude the lip of a friend is, to the sense of perception and touch, are flowers and fragrances, ...the Catchfly to the sense of smelling: when the flowers of the day are faded, and stillness and secret influence of night render sense, as well as imagination, more vivid and susceptible of agreeable, as well as more acutely impatient and conscious of displeasing or discordant, impressions'.

Dover cliffs. Photo by Liam Rooney, 20 May 2009

Turning to the other main Kent locality for the species, Hanbury and Marshall (1899) referred to George Dowker's observations of several specimens on the Dungeness shingle beach noted on an excursion from Appledore Station to Dungeness Point (*East Kent Natural History Society Report* (1867) 28-34). Marshall also found the species plentifully there in 1890, but recorded it wrongly as *Silene italica* (Italian Catchfly). These two areas, Dungeness and Kingsdown to Sandgate have remained the focus of distribution since. Francis Rose in his manuscript *Flora of Kent* described it as present at 'Dungeness beach, from near Greatstone and just west of the lighthouse inland to Boulderwall and S. of Lydd: not on the newest shingle where there is no turf or soil. It is very abundant over several square miles, associated with *Teucrium scorodonia*, *Jasione*, *Festuca ovina* ssp. *tenuifolia*, *Sedum anglicum*, *Dicranum scoparium* and *Cladonia* spp.' Further north east, he noted a 1957 record from old shingle at Willow Tree Farm, Hythe (this has since been developed as a residential park; but we have recent records from nearby Hythe Ranges). Then yet further north east, he referred to it as 'Abundant on the chalk cliffs, and on the short turf on top within a few yards of their edges, from Folkestone Warren to Dover West Cliff, and from Dover East Cliff to just S. of Oldstairs Bay, Kingsdown, more or less continuously.'



Silene nutans distribution (in tetrads), from BSBI database



This distribution is fairly represented by the 1971-80 county survey in Philp (1982), which gave records for 18 tetrads, on shingle and chalk cliffs and downs. In the 1991-2005 survey in Philp (2010), it is described as still well established in those areas, but with a tetrad total of 14. One should not read any decline into this: the 2010-20 records amount to 17

tetrads (29 monads), so that if it were to be re-found at Round Down and Western Heights, Dover (TR23Z and TR34A), which would seem possible, then would be a gain over the 1970-82 total.

Dungeness. Photo by Liam Rooney, 27 June 2012

Our recent records emphasise the vast numbers of plants growing on the stabilised shingle at Dungeness, generally in vegetated areas but sometimes accompanied by very little else. At Lydd Ranges it has also been seen as widespread, although potentially under threat from MOD vehicles. On cliff tops, it has been noted as growing on grassy slopes, and also as a chasmophyte on a shaded vertical cliff face. An unexpected habitat was along the centre reservation of the A20 dual carriageway near East Wear Bay TR268 389 (Steve Coates, 2017), although there is an old record for the roadside of the A20 east of Willesborough. Its requirements are generally



for shallow, well-drained soils which may be acidic (as at the Dungeness shingle, although at times there is little that one could call soil) or calcareous (at the chalk cliffs). It is apparently one of the species which spread in post-glacial times to occupy open areas with thin soil and generally now only survives in sites with analogous conditions²⁵, although capable of tolerating some shade. Associated species at Dungeness include: *Aira praecox*, *Anthoxanthum odoratum*, *Digitalis purpurea*, *Rumex acetosella*, *Sedum anglicum*, *Silene maritima*, *Teucrium scorodonia*. Associated species at an exposed cliff edge community at St. Margaret's Bay include: *Achillea millefolium*, *Anthyllis vulneraria*, *Beta vulgaris* subsp. *maritima*, *Brachypodium sylvaticum*, '*Bromus mollis* agg.', *Catapodium rigidum*, *Dactylis glomerata*, *Festuca rubra*, *Galium album*, *Pilosella officinalis*, *Plantago coronopus*, *Plantago lanceolata*, *Poterium sanguisorba*.²⁶



Photo by Liam Rooney, 20 June 2012

It is a long-lived perennial, spreading by seed and rhizomes, as well as being capable of rooting from fallen stems. The flowers, which may be female or (more usually) hermaphrodite, can last for three days in sheltered conditions, opening in the evening and emitting fragrance, which suggests availability for night-flying moth pollination (although *Silene noctiflora* appears similarly adapted, but does not have moth visitors). It seems that *Silene nutans* does receive moth visitors and also other insects, including day-flying *Bombus* spp.²⁷

Parasitism by *Cuscuta epithymum* (Dodder) has been observed (2014 and 2017) widely on the Dungeness shingle. *Silene nutans* also receives attention from the moth *Hadena albimacula* (White Spot), a Red Data

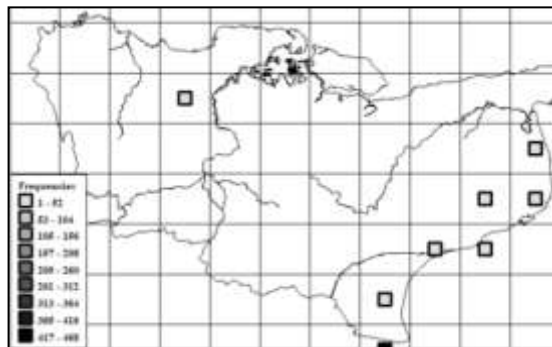
²⁵ *Silene nutans* L. Nottingham Catchfly. In (eds.) Stewart, A., Pearman, D.A. & Preston, C.D. (1994) Scarce Plants in Britain. JNCC, Peterborough.

²⁶ *Silene nutans* L. (Biological Flora of the British Isles) (1956) *Journal of Ecology* **44**: 693-700.

²⁷ Stroh, P.A. 2015. *Silene nutans* L. Nottingham Catchfly. Species Account. Botanical Society of Britain and Ireland.

Book species whose larvae feed only on its seeds and seed-capsules. The moth distribution is a little wider than that of *Silene nutans*, but is known to breed at Dungeness (supposedly the largest population in the country), Hythe Ranges and Samphire Hoe.

Kent distribution of *Hadena albimacula* by kind permission of
Karen Hodgson, Kent Moth Group



Silene nutans is reasonably distinct from other British *Silene* species which may normally be encountered, with its delicately-flowered, drooping, lax inflorescence. However, it has in the past been confused with *Silene paradoxa*, a Mediterranean species, and *Silene italica* (in Kent, only present at Mounts Road, Greenhithe: it has a calyx exceeding 13mm; that of *S. nutans* is less).

It is a very variable species, including as to flower colour, leaf shape, hairiness and capsule size. Botanists have over the years compared the Kent plants with other populations, e.g. John Stuart Mill in the *Phytologist* of 1861 remarked on the Dover variety on the cliff at St. Margaret's being a very coarse, large and rough-leaved form, differing from the delicate form at Nottingham Castle and also from that on the Isle of Wight. Hepper (1951)²⁸ considered that the species could be regarded as divided into two varieties, var. *salmoniana* and var. *smithiana*. The former was the plant of Dungeness, Lydd, Hythe and Sandgate²⁹. The latter variety could be regarded as having six forms of which one comprised the other East Kent colonies, in particular that at Kingsdown. Recording such variants has fallen out of use, although Sell & Murrell (2018)³⁰ give them: var. *salmoniana* having narrow and sparsely hairy leaves, carpophores 3-4mm and capsules 11-14mm; var. *smithiana* having broader and more hairy leaves, carpophores 2-3mm and capsules 8-10mm.



Dover, White Cliffs. Photo by David Steere,
7 May 2016

²⁸ Hepper, F.N. (1951). The variations of *Silene nutans* L. in Great Britain, *Watsonia* 2: 80-90.

²⁹ It is also stated to be a West Kent plant, but there are no native colonies there, and it may be that this is an allusion to a casual found on a bank at Lesnes Abbey in 1948.

³⁰ Sell, P. & Murrell, G. (2018). *Flora of Great Britain and Ireland*, vol.1. Cambridge University Press, Cambridge.

Sium latifolium L. Greater Water-parsnip

Draft account.

vc 15; long gone from vc16

Rarity / scarcity status

Sium latifolium is a plant of fens and ditches, largely reduced after substantial decline to south-east and east England together with central Ireland. It is a UK Biodiversity Act Plan priority species, classified in both England and Great Britain as a whole as **Endangered**, and so at very high risk of extinction in the wild. This risk assessment is based on a reduction both in the overall geographical extent of its occurrence and in the area of occupancy within that range. A comparison for England over the periods 1930-1969 and 1987-1999 showed that its overall range had reduced by 77% and its area of occupancy had declined so that there was a calculated 60% reduction in the likelihood of recording the species. In Kent, there is possible evidence of decline, a 36% reduction in tetrad records between 1971-80 and 1991-2005, but these figures may in part be an artifact of recording. It is nationally **scarce** and in Kent it verges upon being scarce and is very local.

Bilsington. Photo by Owen Leyshon, 23 July 2019

Account

The first supposedly Kentish record for *Sium latifolium* is stated by Hanbury and Marshall (1899) as being around 1700, a record of *Sium majus latifolium* in the ditches between Redriff and Deptford given in manuscript notes of the collection of Samuel Doody in the Sloane herbarium. This must be the same as that given by Dillenius in the third edition of John Ray's *Synopsis Methodica Stirpium Britannicarum* (1724): 'In the Ditches between Rotherhithe and Deptford. Mr. Doody'. It must be doubtful, however, that this was actually in Kent:



most of the land between Deptford and Rotherhithe

(Redriff) was in Surrey. The first unambiguously Kentish record, therefore, was at Faversham by Edward Jacob (*Plantae Favershamienses*, 1777): 'In marshy Ground, and by the River side – common'. This continued in marsh dikes at least until the time of the Rev. H.A. Stowell, who found it to be more frequent than *Berula erecta* (Lesser Water-parsnip)³¹; it is surprising that it seems to have gone since. But this seems to have been the fate of all Kent sites (ditches in marshes by the Thames from Deptford to Gravesend, by the Ravensbourne and River Cray, the Stour above Canterbury, Willesborough and (if correct) Tonbridge) – except for Romney Marsh and the Rother catchment. The last of the now-extinct sites was the ditches by the railway south of South Willesborough, TR 017 403, where found by Francis Rose in 1950, but not seen since c.1960, after which the area changed, even more so recently.



The Dowells. Photo by Lliam Rooney, 27 June 2012

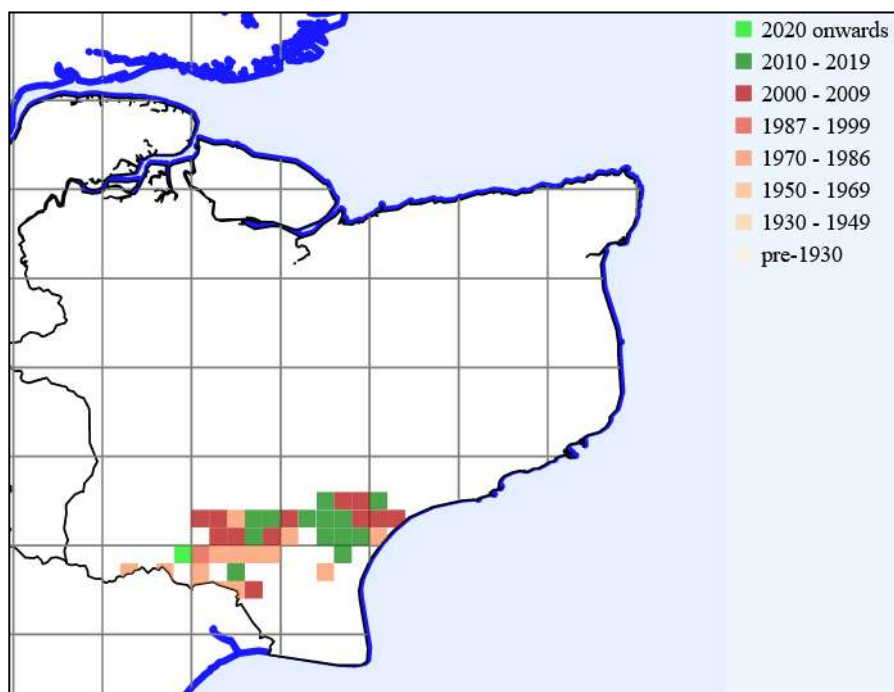
³¹ Stowell, Rev. H.A. (1857). Faversham Plants, *The Phytologist* 2: 100. It is as well that he also mentioned *Berula erecta*, and so distinguished the two species, given that early botanists sometimes confused them; it is surprising that, given its present-day frequency, Jacob did not record *Berula*.

Hanbury and Marshall (1899) regarded the species as very local in ditches and marshes, and decreasing. They noted it as extinct in most, if not all, of the north west Kent localities. The most recent records made by, or reported to, them were at Romney Marsh (e.g. Frederick Hanbury noted it as abundant in trenches by the road between Hamstreet and Ivychurch) and nearby (e.g. the Bottoms, Tenterden, noted by J.G. Prebble); also a surprising one (if correct) at Cranbrook. Francis Rose described it as a native of 'marsh dikes; rare and very local; at the present day [c.1960] nearly confined to Romney Marsh and its adjacent alluvial levels...where, however, it is still widespread, frequent and locally plentiful'. He produced a list of 23 sites (of which one may be a duplicate) for the period 1945-65. This is close, in terms of overall cover, to the total of 25 tetrads listed in Philp (1982) for 1971-80.

From The Dowells. Photo by Liam Rooney, 17 July 2015



However, Philp (2010) gave only 14 tetrad records for 1991-2005, stating that in spite of some conservation measures, this plant still seems to be in decline. One should not rely too much upon a comparison between those two surveys. The 1991-2005 data in fact only included Eric Philp's finds during 1991-99. In 2000 a targeted survey was carried out by Peter Wells on behalf of the Romney Marsh Countryside Project³², as a result of which there are 94 records listed in the BSBI database for 2000, found in 20 tetrads (32 monads, although the individual records were made as six, eight or ten figure grid-references and input to the BSBI at six figures). The survey report is considered further below. Our more recent records, for 2010-20, covered 14 tetrads (20 monads), which could be interpreted as indicating decline, although no different in total for the Philp (2010) figures. But it is probably better to view this as the product of a general survey, which would not be expected to be as thorough as the targeted 2000



survey. It is concluded that there appears to have been some decline since 1971-80, but it is not readily quantified and is certainly not as much as suggested by Philp (2010). In view of the overall quantity of records, this register account treats them as mapped, rather than in tabular form.

Sium latifolium distribution
(in tetrads), from BSBI
database

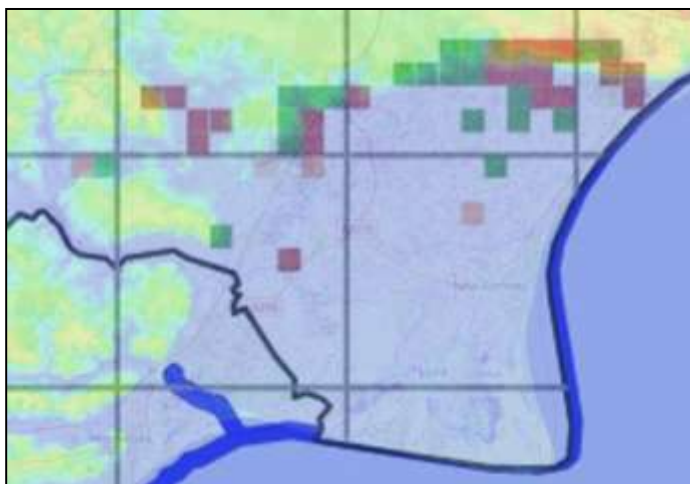
Records as a whole are
not related to the

³² Wells, P. (December 2000). A survey to determine the abundance and distribution of Greater Water Parsnip *Sium latifolium* in the Romney Marsh Natural Area. Unpublished report prepared for the Romney Marsh Countryside Project, based on a survey commissioned by (then) English Nature.

present-day coast, but follow more closely ditches spreading across the land under the high ground which was the coastline in Roman times. As *Sium latifolium* is not normally a plant of brackish waters, any increased brackishness would presumably discourage its spread nearer the present coastline.

Sium latifolium distribution (in monads), from BSBI database. This shows much greater precision than the preceding map, but at the expense of omitting older records as very few pre-2000 sightings are recorded at monad level). Note the clustering below high ground.

As *Sium latifolium* is not normally a plant of brackish waters, any increased brackishness would presumably discourage its spread nearer the present coastline. It is possible that its origins lay with parts of the Roman coastline which were low enough to provide flattish land with freshwater drainage, and also with the levels associated with the Rother catchment, where peat formation in fen carr was taking place c.6250 to c.3600 BP³³ (the carr itself would have been too shaded for *Sium*, but any open areas may have held the species). The history of changes in land levels, drainage and marine transgression is quite complex in this area, but the Walland Marsh, from which *Sium* appears absent, was more recently reclaimed than Romney Marsh proper, which includes *Sium* habitat and has much less residual brackish influence.



The 2000 survey found a minimum of 2,017 plants recorded at 128 locations. Healthy populations were found in a broad corridor from West Hythe westwards to Appledore, with locations north and south of the Royal Military Canal; there were clusters at Warehorne, Bilsington, Burmarsh and also on Shirley Moor. In 2001, survey was extended to the Rother Levels adjacent to Romney Marsh and a further 99 plants were recorded at nine sites. Additional finds followed, including in 2006, when six sites containing 61 plants were noted on the levels east of Smallhythe, so that for the period 2000-2006 a total of 2,369 *Sium* plants were found in Kent at 146 sites (and 142 in seven sites in Sussex, where the Rother Levels also extend).

The number of plants found at individual locations varied considerably. Whilst 75% of the reported colonies in the 2000 survey consisted of five or less plants, 5% of the colonies consisted of more than 50 specimens. The survey also highlighted that clusters of 100 plants were found at six localities, accounting for 80% of the plants recorded in that survey.

The natural habitat of *Sium latifolium* is the very wet, species-rich, tall-herb community that develops as a semi-floating raft at the edges of lakes and large rivers, but loss of this habitat in Britain has left the species most frequently growing in drainage ditches. *Sium latifolium* prefers shallow, still or slow-moving waters which are alkaline, nitrogen-rich and on a peaty or alluvial soil. Plants are long-lived and can survive in tall stands of *Phragmites australis* (Common Reed) for over ten years and can also live for some years submerged.

³³ Long, D., Waller, M. & McCarthy, P. (1998). The Vegetation History of the Lower Rother Valley: Stratigraphy and Pollen Data for the Shirley Moor Region. In (eds.) Eddison, J., Gardiner, M. & Long, A.) *Romney Marsh: Environmental Change and Human Occupation in a Coastal Lowland*, OUCA Monograph 46: 31-44. Pollen data summarised here does not mention *Sium latifolium*: all Apiaceae pollen was undifferentiated.

Mountford (1994)³⁴ considered that the species is most common in ditches which do not adjoin pasture, as it is intolerant of grazing and frequent cutting; ditch management by occasional cutting, however, may help in keeping water open, and unless there is ditch clearance at some stage, the opportunities for establishment of seedlings may be limited. The issue of land use adjoining ditches is not straightforward, however: Williams et al. (2000)³⁵ found that *Sium latifolium* was restricted to a relatively small number of freshwater ditches and these tended to be in pasture, despite conversion to arable in Walland Marsh being likely to have focused on better-drained, less low-lying fresh water areas, leaving more saline areas as pasture.



Burmarsh. Photo by Sue Buckingham, 6 August 2013

The 2000 survey showed that ditch management has a major impact on the plant and the plant was uncommon in the larger ditches managed annually by the water bodies (Environment Agency and the Romney Marsh Internal Drainage Board). It was seen in these frequently maintained ditches that the plant survived in awkward corners and under bankside bushes, usually *Crataegus monogyna* (Hawthorn),

which a reed cutting machine could not reach. Ditches near footbridges or culverts were also frequent sites for *Sium*, where care is required for machine operation. In the survey (excluding the Royal Military Canal which is the largest water-body and is weed-cut by boat and so an exception), the percentage of *Sium* plants in Environment Agency managed ditches was 3% of the total population and in the Romney Marsh Internal Drainage Board ditches it was 2.4%. This may be compared to 94.6% of plants in private ditches, highlighting vulnerability to annual ditch management. Known *Sium* populations in annually maintained ditches on the Romney Marsh which have had a de-silting operation did not respond well and most populations have not reappeared after 10 years from de-silting.

A study site was set up in collaboration with the Environment Agency to see how *Sium* reacted on a long standard stretch of the back ditch (Government Drain) of the Royal Military Canal which stretched for 1.3 km with different weed cutting regimes. This ditch is historically weed-cut every late summer and it was hoped to vary the intensity of the weed cutting and monitor the recruitment and plant numbers of *Sium* over time. The study showed a 66% increase in plants over three years (2008-2010 inclusive) along the 1.3km section of ditch with particular increases in a non-intervention control section and a medium weed-cut section. Decreases were seen in a heavy weed-cut section of the same ditch. The study did not lead to recommendations or actions, but it is possible to conclude from this and other evidence that the species does not thrive with intrusive annual ditch management regimes; its niche seems to require limited ditch maintenance to control reed domination, the avoidance of overgrazing and freshwater, rather than brackish, drainage and there is little evidence of its ability to spread.

³⁴ Mountford, J.O. (1994). *Sium latifolium* L. Greater water-parsnip. In (eds.) Stewart, A., Pearman, D.A. & Preston, C.D. , *Scarce plants in Britain*, JNCC, Peterborough.

³⁵ Williams, R., Banks, B., *Sonchus palustris* Cameron, R. & Cooke, R. (2000). *Ditch monitoring at Walland Marsh SSSI 1993/4*. English Nature Research Report 132.

Our Kent records for 2010 onwards are focused on recording location and its general character (e.g. ditches, marsh dikes, stream and the banks of the Royal Military Canal); also plant numbers, which range from single plants to 51, and records of patches without differentiation of plant numbers. We have not sought to record the character of adjoining land (arable or pasture) although records include parts of The Dowels which are pasture. Access was not achieved in relation to many areas where the 2000 survey reached, and land use has moved on considerably since then, with continued change (Owen Leyshon, pers. comm.) from grazing to arable. We have also not sought to record associated flora, although the 2000 survey provides data.

The 2000 survey showed that 53% of the recorded sites were found with adjoining arable land use, compared with 26% on grazing pasture. The arable land was more than twice as likely to support small populations of the plant, whilst large populations were twice as likely to be found on pasture. The survey assessed 55 *Sium* locations for habitat character, showing that it was found most frequently growing among emergent vegetation within ditches, associated with a range of emergent fen species. Out of the 55 locations the plant was found actually in the ditch in 50 locations and in only five locations was the plant found on the ditch banks. So far as concerns associated flora, the most frequent emergent companion species were *Sparganium erectum* (Branched Bur-reed, in 46% of quadrats), *Glyceria maxima* (Reed Sweet-grass, 36%) and *Alisma plantago-aquatica* (Water-plantain, 28%). The most frequently associated floating and aquatic plants were *Lemna minor* (Common Duckweed, 48% of samples) and *Lemna trisulca* (Ivy-leaved Duckweed, 22%). Numbers tended to be lowest amongst dense stands of *Phragmites australis* (Common Reed) and greatest in younger fen communities or successional communities with less shade.

Sium latifolium is distinctive, being a tall (to 2 metres) umbellifer of wet habitat with large, coarse simply-pinnate leaves (other than the spring submerged leaves, which are more finely divided). *Berula erecta*, which grows in similar habitat, is no more than half the size, with smaller umbels (having 7-14 rays as compared with the other's 20-30 rays). The other principal tall umbellifer of ditches is the common *Oenanthe crocata* (Hemlock Water-dropwort), whose 3-4 pinnate leaves are more parsley-like.

Kenardington. Photo by
Sue Buckingham,
25 July 2012



This account has benefited greatly from the assistance of Owen Leyshon.

Solidago virgaurea L. (Goldenrod)

Draft account. Data on habitat and associated species would be helpful in future recording.

vc 15 and 16

Rarity / scarcity status

Solidago virgaurea is frequent across the British Isles in a wide range of habitats, open or shaded, basic or (more usually) acid. Its inclusion in this register is as a result of its designation in 2014 as **Near Threatened**, the extent of its occupancy in England having declined by 24% in comparing data from 1930-60 and 1987-99 respectively. There is evidence of decline in Kent, with a 28% drop in total tetrad records between 1971-80 and 1991-2005, and this appears to have continued. The species is still neither rare nor scarce in Kent, but the decline is concerning.



Boughton under Blean. Photos by Lliam Rooney, 6 September 2010

Account

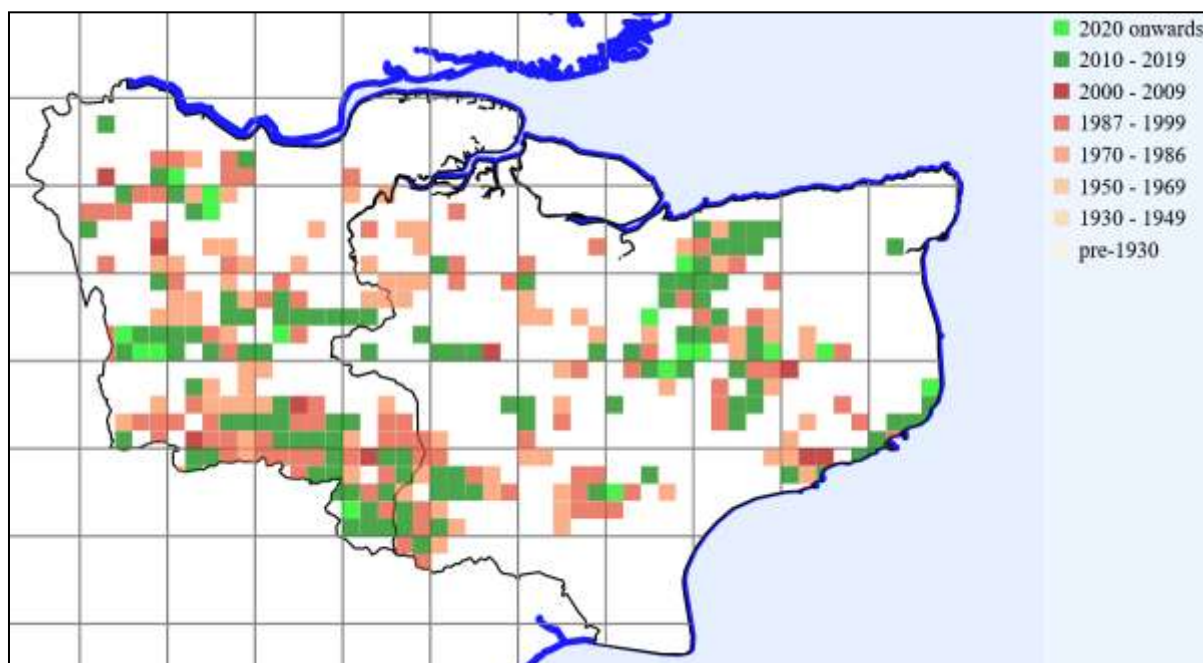
The first published Kent record is in John Gerard's Herball (1597), 'in Southfleete, and in Swanscombe wood also neere unto Gravesend'. Almost all of Swanscombe Wood was destroyed in the excavation of the Eastern Quarry (since being developed as Ebbsfleet Garden City), but *Solidago virgaurea* was recorded as still here in 1946 and again in 2011. The first East Kent record was by Thomas Johnson (*Descriptio Itineris*, 1632) in a wood near Faversham to which he was guided by a local apothecary. *Solidago virgaurea* is given by Hanbury and Marshall (1899) as common on woods and banks in every botanical district, so no specific records were given, other than Gerard's. That frequency and ubiquity is attested by local Floras: Edward Jacob gave it as '*In Woods and Hedges – Common*' (*Plantae Favershamienses*, 1777); Thomas Forster found it 'In woods and groves; on the commons, forests, and elsewhere, very common', noting also a small variety with flexuose stalks in dry places in forests (*Flora Tonbrigensis*, 1816); Daniel Cooper noted it on a range of substrates, generally acid but

also basic - on the gravels of Blackheath, at Castle Wood atop Shooters Hill and in a gravel pit behind, at Charlton Wood, at Darenth Wood, and at Stone chalk pit (*Flora Metropolitana*, 1836).

Francis Rose regarded it as in Kent a plant of dry woods and hedgebanks on various non-calcareous soils, very common in most parts of Kent other than the marsh districts, but never found on calcareous soils inland, though on chalk sea-cliffs and adjacent downlands (e.g. St. Margaret's Bay, Abbot's Cliff, Lydden Spout and Langdon Bay) it could be found as a small form, perhaps, he surmised, as a result of exposure or being a different ecotype. (It will be noted, however, from the distribution map below that there are many inland records in areas where the underlying geology is chalk, but it is possible that these are a result of an overlay of acid soils from Tertiary drift deposits; geology noted by Francis Rose in relation to records included drift at Newnham, as well as the more expected Folkestone Sand, Hythe Beds and Weald Clay elsewhere.)

Philp (1982) recorded it for 1971-80 in 272 tetrads across the county, but with concentrations in the Weald, the west Kent Lower Greensand, the terrain on the Thanet and Lambeth Group Formations in the north west and the Blean (Thanet Group Formation). However, in the 1991-2005 survey of Philp (2010) presence in only 195 tetrads was noted, and in the period 2010-20 we have recorded it in just 134 tetrads (181 monads). This last figure represents a drop of over 50% in the last 40 years or so; this is to a degree understated, since four of those tetrads belong to metropolitan West Kent, which was excluded from Eric Philp's surveys. The reason for decline is not obvious, but the species is one of a number of fairly common species exhibiting a preference for infertile and moderately acidic soils which have shown recent decline sufficient to attract Near Threatened status. The distribution map, given below, shows the apparently county-wide losses. Records from Philp (1982) fall within the 1970-1986 category and there are numerous ones which have not been overlain by more recent discovery; Philp (2010) records are split between the date classes of 1987-1999 and 2000-2009, although of the latter there are only four which went into that publication.

Soligago virgaurea distribution (in tetrads), from BSBI database



Our recent records, other than for the east coast chalk grassland, have (where noted) generally been in acid woodland or forest rides, glades or margins where there is partial shade; also on shaded roadside or pathside banks on sand or Weald Clay, sometimes with little other vegetation, depending on the amount of shading. In

the very shaded laneside locations, it is sometimes accompanied by *Hieracium* spp. (Hawkweeds). Most of our records, however, have no indication of habitat, and we have no material data on associated species. The accompanying habitat photo from Underriver shows a Weald Clay roadside location which is wetter and more open than is often the case; this may be why only a single plant is present, because of the competition from *Brachypodium sylvaticum* (False-brome) and *Carex pendula* (Pendulous Sedge). The coastal form (see habitat photo from Kingsdown cliff-tops) is, however, capable of withstanding competition from *Brachypodium rupestre* (Tor-grass).

Habitat, Underriver.

Photo by David Steere, 28 August 2016



Habitat, Kingsdown coastal cliff grassland.

Photo by Sue Buckingham, 4 September 2010



Solidago virgaurea is not readily mistaken for any other species, and the panicles with the remains of the white pappus from previous flowering/seeding are very visible for winter recording. It is, however, a very variable species. Most variation has been observed in relation to differences in altitude, but a very untypical appearance can be seen from the clump illustrated here from an anomalous beach habitat

Kingsdown beach. Photo by Sue Buckingham, 31 August 2011



Sonchus palustris L. (Marsh Sowthistle)

Draft account: further investigation of current limits of Medway population needed.

vc 15 and 16

Rarity / scarcity status

Sonchus palustris is a tall perennial of marshes and riversides in south east England, especially East Anglia, the Thames valley and Kent, with only a scatter elsewhere. It is nationally scarce, but its threat status is one of 'Least Concern'. In Kent, it is **scarce**.

Stodmarsh. Photo by Liam Rooney, 11 August 2010

Account

The first published record for Marsh Sowthistle in Kent – and, indeed, in the British Isles – is by Christopher Merrett in his *Pinax Rerum Naturalium Britannicarum* (1666): 'In the Meadows betwixt Woolwich and Greenwich by the banks of the Thames'. Knowledge of it by the Medway (where it still grows) came much later: Alexander Irvine's *The Illustrated Handbook of the British Plants* (1858) states: 'In the river Medway, between Aylesford station and the village – W.P. [William Pamplin] and A.I., Sept. 5, 1857. As this is the first time this plant has been observed during the last twenty-five years, the time of its discovery is precisely entered. It was observed in the Medway, opposite Halling, in 1831, when the observer did not know that it



was one of the very rarest of British plants.' That observer may well have been Irvine himself, who included the record in his *The London Flora* (1838).³⁶



Hanbury and Marshall (1899) referred to it as being a rare and local plant of river-sides and thickets. Both co-authors went to see it: Marshall saw it on the right bank of the Medway, about a mile above Aylesford; Hanbury recorded it on the edge of copses by the large wet meadow south of Snodland, and at what appears to have been a different Snodland location further north in reeds by the river, also in the reed-beds of the river near Burham. By then Marsh Sowthistle was extinct at Merrett's original site and they were sceptical about claims for Woolwich, Keston, Minster, Monkton, St. Nicholas and near Stourmouth (this last perhaps should not, it transpires, have been discredited).

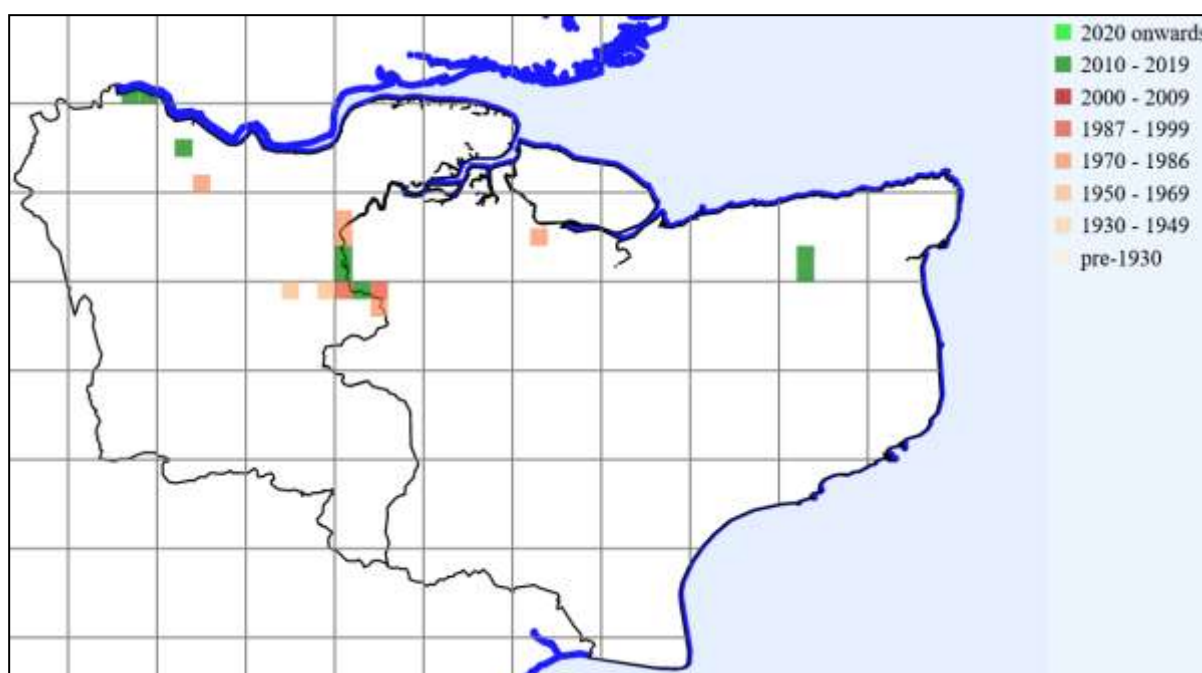
Stodmarsh. Photo by Sue Buckingham, 30 July 2014

³⁶ There is, however, a specimen at the Perth Museum and Art Gallery which is attributed to this species, from the herbarium of Professor J.H. Balfour, collected at Wouldham on 5 September 1825. Balfour was a Scottish botanist and would have been 17 at the time, but was already collecting specimens. Herbaria United data show his numerous Scottish specimens around that date, but only two Kent plants – the *Sonchus* from Wouldham and *Artemisia maritima* later in September from Northfleet, so they can scarcely have been collected by Balfour. The (East Kent) Wouldham location is apparently the same as Irvine's, Wouldham being 'opposite Halling', and Irvine's *The London Flora* was misleading in this respect as just referring to Halling (West Kent). There is also a specimen at CGE from Wouldham dated 16 July 1827.

Francis Rose noted *Sonchus palustris* as a plant of tidal reed swamps along the upper part of the tidal Medway, rare and extremely local, but locally abundant. He made counts of 200 spikes on the left bank below New Hythe towards Snodland (1945), and over 500 on the right bank (1945-53); west of Eccles were 20 spikes (1945) and in an island site west of Burham cement works there were 200-300 spikes (1945). Records extended from ¼ mile below Allington Lock to Burham Marshes. There were anomalous outliers at Leybourne Castle lakes (1958) and Wouldham (one roadside plant, 1946).

Philp (1982) shows thorough surveying of the Medway banks and associated marshes (eight tetrads); and there were two further records. One was near Sittingbourne (TQ96H, no details but probably associated with Milton Creek or Murston Lakes) and the other was planted (but considered naturalised) in an arm of the River Darent at St John's Jerusalem TQ57K). Philp (2010) gave six tetrads, of which four related to the Medway (a drop from the eight tetrads given in the earlier survey, which may or may not represent actual losses) and two from a new location at Stodmarsh. The environs of the tidal Great Stour do not seem unlikely for the species, although Hanbury and Marshall (1899) dismissed George Dowker's record from near Stourmouth as probably luxuriant *Sonchus arvensis* (Field Sow-thistle). However, Eric Philp's Stodmarsh records identify a presence which Alex Lockton has noted³⁷ as having spread considerably in recent years in fields which have been flooded and ungrazed following coal mining subsidence and which have developed a species-poor community almost entirely dominated by *Phragmites australis* (Common Reed). This includes vegetation communities S4 (*Phragmites australis* swamp and reed-beds) and S26 (*Phragmites australis* – *Urtica dioica* Tall-herb fen). Within this habitat, *Sonchus palustris* has developed as occasional clumps, most abundantly towards the Grove Ferry End, but scattered through most areas of reed-bed.

Sonchus palustris distribution to 2021 (in tetrads), from BSBI database



Our 2010-20 records (see distribution map) recognise the continuation of the Stodmarsh colony, but give only three tetrads (equivalent to four monads) for the Medway populations. The drop from eight tetrads (1971-80) to four (1991-2005) and then to three appears concerning, but it is not obvious what may have prompted a decline. It is clear that there have been substantial changes in habitat at the Medway upper reaches since Francis Rose's searches in the 1940s; it is not so clear how far habitat there may have been compromised since

³⁷ Lockton, A. (2020). *The Flora of Stodmarsh National Nature Reserve*.

the 1971-80 survey. However, the river banks in TQ76C and TQ76D, i.e. north of Halling and Wouldham, which were not in Francis Rose's list, but which did appear in Philp (1982), should be comparatively less affected. If the decline is an artefact of recording, this would not be surprising given the difficulty of accessing some parts of the reed-beds and riverbanks.

The distribution map also requires interpretation as regards recent north-west Kent records. In 1963, J.F. and P.C. Hall found a large clump in a reed-bed by the River Cray before it joins the River Darent (TQ 533 758; noted as TQ 532 756 in 1980) which was thought might have arrived with barge traffic between the Medway and Cray. It continued to be seen at least until 2002, although reduced in quantity to five flowering stems; it was not reflected in Philp (1982) and Philp (2010) because it was located outside the administrative county boundary, although within vc16. It had gone by 2005, swamped by reeds and/or burnt. Seed was saved, thanks to Mark Spencer, and resultant cultivated seedlings were introduced by Chris Rose into various metropolitan north west Kent locations, suitably distant from the original site. The main location is 630m away, at the Thames Road Wetland, Bexley, where plants were introduced in 2011 and by 2020 had produced self-sown seedlings which reached flowering size, with many small seedlings present. Other Kent introduction sites have been at Crossness (TQ 49168 80330 and another planting nearby), Erith Marshes (TQ 4799 8044) and (within reach of the tidal waters) Deptford Creek (TQ 37630 77307). Plantings at Erith Marshes south of Eastern Way / A2016 have been unsuccessful; one set of plants was destroyed by horses.

Mountford (1994a)³⁸ describes *Sonchus palustris* as in England generally a plant of tall vegetation by major lowland rivers, by the Thames (and this could have been applied to the Medway as well) amongst *Phragmites australis* in strips of marshy land fringing the river's lower reaches, growing in wet peat or alluvial soils which range from neutral to alkaline and rich in nitrogen, and being moderately tolerant of salinity. Along the Medway it may typically be found in the riverine strips separated from adjoining land by flood embankments, where little else grows in the muddy, tidally affected margins other than *Phragmites australis*. Flowering stems of *Sonchus palustris*, however, reach the same height as, or overtop, the reeds so that wind dispersal of the seeds is facilitated.

Stodmarsh. Photo by Sue Buckingham, 30 July 2014



Sonchus palustris is capable of being confused with tall *Sonchus arvensis* growing in similar habitat. It may be distinguished by the pointed (not rounded) auricles of its stem-leaves and by its straw-coloured (not bright brown) achenes. It can reach taller than the tallest *Sonchus arvensis* and exceed the 2.5m height which normal Flora descriptions give.

[Note: in this table the tetrad records from Philp (1982) are assigned a vice county in the BSBI database (or both vice counties) where the tetrad straddles the Medway (which here divides vc15 and vc16). However, this does not seem reliable, and so is not given in this table, otherwise misleading assumptions might be made as regards which riverbank is indicated.]

³⁸ Mountford, J.O. (1994a). *Sonchus palustris* L. Marsh sow-thistle. In (eds.) Stewart, A., Pearman, D.A. & Preston, C.D. , *Scarce plants in Britain*, JNCC, Peterborough.

Site	Grid reference	Site status	Last record date	Recorder	Comments
[Erith Marshes] (metropolitan vc16)]	[TQ4780]		[4 July 2015]	[RMB]	[TQ 4799 8044, planted by CR.]
[Crossness Nature Reserve (metropolitan vc16)]	[TQ4980]	[Nature Reserve]	[30/10/2012]	[CR]	[TQ49168 80330, planted by CR in 'ridge and furrow' area within fenced part of nature reserve, grown from seed from plants introduced to Thames Road Wetland in 2011.]
[Barnes Cray (metropolitan vc16)]	[TQ5275]	[Bexley Council owned wetland]	[(1) 7 June 2018] [(2) 25 October 2012] [(3) 27 May 2011]	[(1), (2) & (3) CR]	[(1) Self-sown seedlings now present from planted specimens.] [(2) TQ 52788 75264, Thames Road Wetland, additional 15 small plants (cultivated from seed derived from plants introduced here in May 2011) planted out by CR on west end of northernmost ditch bund.] [(3) Seven plants cultivated from seed from defunct TQ5275 wild colony planted out by CR on Thames Road Wetland.]
Barnes Cray (metropolitan vc16)	TQ5375		(1) 2002 (2) 2000 (3) 5 September 1992 (4) 1 September 1991 (5) 1985 (6) 5 July 1980	(1) MAS (2), (3) & (4) JRP (5) BP (6) LNHS	(1) TQ5375, Crayford Creek (tidal), only five flowering stems. {Gone by August 2005.} (2) TQ5375, still there. (3) TQ5375, seems reduced in quantity. (4) Bank of R. Cray. (5) Still going strong. (6) Increasing. [See main text for earlier records.]
Sutton-at-Hone	TQ57K		27 August 1975	JRP	Arm of R. Darent at St John's Jersusalem, where naturalised from planting.
West of Aylesford	TQ75E		Before 1981, after 1970	Philp (1982)	Vc16.
Aylesford	TQ75J, includes TQ7358		(1) 18 July 2018 (2) 19 August 2016 (3) Before 1981, after 1970	(1) DM (2) BW (3) Philp (1982)	(1) TQ 7310 5877 to TQ 7312 5874, quite a lot of plants, vc15. (2) TQ7358. (3) TQ75J.
Allington	TQ75N		Before 1981, after 1970	Philp (1982)	TQ75N.
Allington Lock	TQ75P		Before 1981, after 1970	Philp (1982)	TQ75P.
Snodland / Burham	TQ76A, includes TQ7161, TQ7160		(1) 30 September 2016 (2) 2 October 2015 (3) 14 November 2011 (4) 15 August 2011 (5) 2004 (6) & July 2001 (7) 1991-99 (8) 1 July 1987 (9) 3 June 1980 (10) Before 1981, after 1970	(1) SP & DG (2) SP & DG (3) SB (4) RR (5) DG (6) EGP (7) JP (8) EGP & JB (9) FR (10) Philp (1982)	(1) TQ 714 611, thinly scattered, vc16. (2) TQ7161, thought to be spreading over the years, vc15. (3) Estimated 50 plants west of sea wall at margin of reed bed, spread over 200 metres between TQ 71493 61713 to TQ71540 61507 on KWT reserve, vc15. (4) Between TQ 715 619 and TQ 715 6015, Burham Marshes KWT reserve, on west side of sea wall for a depth of 1 to 2 metres, many plants flowering, vc15.. (5) TQ76A, vc not specified. (6) TQ76A, vc15. (7) TQ 709 605, Local Wildlife Site TM30. (8) TQ 716 602, Eccles, vc15. (9) TQ76A [tetrad assumed], tidal reed bed – upper edge, Snodland, vc16. (10) TQ76A.
Holborough / Wouldham	TQ76B, includes TQ7062, TQ7063,		(1) 4 August 2013 (2) 15 August 2011	(1) SP & DG (2) SP & DG	(1) TQ 7086 6239 to TQ 7098 6254, scattered all along riverbank,

	TQ7161		(3) 1993-94 (3) 26 July 1988 (4) 25 August 1985 (5) Before 1981, after 1970	(3) FB (3) GK (4) GK (5) Philp (1982)	Holborough vc16. (2) TQ 708 639 to TQ 706 638, frequent along riverbank, Wouldham Marshes, vc15. (3) TQ 716 612, Burham Supply Site (Southern Water Services), vc15. (3) TQ76B, reed-beds by river near Snodland, vc16. (4) TQ76B, Holborough Marshes, reed-beds by river, vc16. (5) TQ76B.
Halling / Starkeys	TQ76C		Before 1981, after 1970	Philp (1982)	TQ75C.
Cuxton / Wouldham Marshes	TR76D		Before 1981, after 1970	Philp (1982)	TQ75D.
Eccles	TQ7261		1993-94	FB	TQ 723 611, Eccles Lake.
Murston	TQ96H		Before 1981, after 1970	Philp (1982)	TQ96H
Stodmarsh	TR26F, includes TR2261		(1) 8 September 2015 (2) 30 July 2014 (3) 7 August 2013 (4) 25 July 2013 (5) 1991-99 (6) 1996	(1) AL & JM (2) SB & LR (3) CO (4) AL & JM (5) EGP (6) un-attributed EN record	(1) TR 2246 6199, several plants. (12 TR 22562 61312, a single plant along footpath, in reeds. (3) TR2261, common along track near Marsh Hide and adjacent reed beds. (4) TR 2263 6178, in S26, <i>Phragmites australis</i> – <i>Urtica dioica</i> tall-herb fen. (5) TQ26F (6) TR 222 168.
Upstreet	TR26G, includes TR2262, TR2263, TR2362, TR2363		(1) 29 June 2017 (2) 21 April 2017 (3) 4 August 2016 (4) 28 July 2016 (5) 7 July 2016 (6) 20 January 2015 (7) 7 August 2013 (8) 7 August 2011 (8) 27 March 2011 (9) 3 August 2010 (10) 1991-99 (11) 1996	(1) DC (2) AL & JM (3) AL (4) AL & JM (5) AL & JM (6) AL & JM (7) CO (8) DM (8) SB (9) JA (10) EGP (11) un-attributed EN record	(1) TR 23125 62510. (2) TR 2304 6282, one seedling by the river; not seen in this area by recorders before. (3) TR 2243 6217, a few plants. (4) TR 2323 6241. (5) TR 232 625, by the lake in front of the Feast Hide. (6) TR 2346 6271, dozens of plants in <i>Phragmites</i> fen, the largest patch seen. (7) TR2362, reed-beds adjacent to river, abundant. (8) TR 23076 62524, two of last year's dead stems standing above reeds. (9) TR 23031 62835, twenty plants by R. Stour. (10) TR26G.] (11) TR 231 628.

Sparganium natans L. (Least Bur-reed)

Draft account. Kent records and photos needed.

vc 15, long gone from vc16

Rarity / scarcity status

Sparganium natans grows in lakes, pools and ditches scattered across most of the British Isles, but is largely absent from southern and central England. It is regarded as **Vulnerable** to the risk of extinction in England. This risk assessment is based on a reduction both in the overall geographical extent of its occurrence and in the area of occupancy within that range. A comparison for England over the periods 1930-1969 and 1987-1999 showed that its overall range had reduced by 35% and its area of occupancy had declined so that there was a calculated 38% reduction in the likelihood of recording the species. In Kent, it has always been, and remains, rare.

Account

The first Kent record for *Sparganium natans* is a specimen in the herbarium of Dillenius (1684-1747)³⁹, noted as 'Near Tunbridge Wells'; it is always possible that this could have been Sussex, but no later records for this area have been noted in either county. Otherwise, Kent records are restricted to the north-east of the county. It was given for ditches at the Brooks, Margate by Dr. R.E. Hunter (d.1824), apparently an interesting habitat, although Hunter's records are not always to be trusted. The classic area, however, is around Ham and Worth Minnis. G.E. Smith noted it in dykes at Ham Ponds, also with *Nymphaea alba* (White Water-lily), in his *A Catalogue of rare or remarkable phaenogamous plants, collected in South Kent* (1829), where later it was still seen by one of the authors of Hanbury and Marshall (1899). They regarded it as a rare plant of ditches and pools and also cited records from the marshes at Sholden and near Deal (these could be the same area).

Sites near Worth Minnis, 1982-83.

Francis Rose described it in his manuscript *Flora of Kent* as a native of dikes in calcareous fens, very rare, but still locally abundant between Worth and Hacklinge, a relic of the flora of the primaeval fens of this area. In his paper *The East Kent Fens*⁴⁰, he does not mention the species in the ditch flora lists, and it looks as though he became aware of it after then, and continued to see it in a fen dike at least up to 1960, when he also recorded it in a dike, ½ mile east of Hacklinge. Philp (1982) gave it as very rare, then only known in a few marsh dykes at a tetrad near Worth Minnis; the position was unchanged in



Philp (2010). Between them, the two Philp surveys understate the position, as *Sparganium natans* was found in two neighbouring tetrads in the 1980s. However, the last Kent record was in 2003, so current status in the

³⁹ G.C. Druce, ed. S.H. Vines (1907). *The Dillenian Herbaria. An account of the Dillenian collections in the Herbarium of the University of Oxford*. It is given here as growing 'loco udo rivuloso (in a boggy place betwixt Hills)', but 'Hills' would much better read 'rills', as Hanbury and Marshall (1899) indicate. Dillenius remarks that the plants were small; he had seen much larger ones in ditches.

⁴⁰ Rose, F. (1950). The East Kent Fens, *Journal of Ecology* 38: 292-302. Rose's copy of Hanbury and Marshall (1899) has a note 'Worth Minnis, Wilson, [19]50 ([19]50!) [locally] abund[ant]'. The original finder could have been L.W. Wilson, who contributed many north-east Kent records to Francis Rose.

county is not known. This may be a consequence of a lack of targeted recording, since some earlier sites are known to the level of 10-figure grid references and so could be targeted.

Sparganium natans grows in acid or alkaline lakes, pools or ditches with high organic content, but currently in Kent is limited to ditches over peat, with calcareous drainage, providing fen conditions with possibly some former brackish influence. It normally grows in 10-50cm of water, producing flat leaves floating on the surface, very rarely erect. The principal identification issue in Kent is separating it from *Sparganium emersum* (Unbranched Bur-reed) which also usually has floating leaves (*Sparganium erectum* (Branched Bur-reed) seldom does). The leaves of *S. natans* have a flat (not triangular) cross-section and are relatively short at 30 (-50) cm long, and narrow – only 2-6(7)mm wide, whereas those of *S. emersum* are 4-5(10) mm wide and those of *S. erectum* 7-10(18)mm. *S. natans* and *S. emersum* both have unbranched inflorescences, but the latter has 3-10 male heads well separated and *S. natans* has 1-3(4) male heads clustered close together.

Site	Grid reference	Site status	Last record date	Recorder	Comments
Worth, north east	TR3456		(1) 2 March 1983 (2) 1982	(1) ACH (2) ACH	(1) TR 343 560, Sandwich & Pegwell Bay survey. 2) (a) TR 34065 56006, Hacklinge ditch survey, ditch 366. (b) TR 34317 56186, Hacklinge ditch survey, ditch 392.
Hacklinge	TR35M, includes TR3454, TR3455		(1) 2003 (2) 23 June 2002 (3) unknown (late 1990s / early 2000s) (4) 24 July 1991 (5) 2 March 1983 (6) 1982 (7) Before 1981, after 1970	(1) CEC (2) EGP (3) BBa (4) FR (5) ACH (6) ACH (7) Philp (1982)	(1) TR 34071 55864, Hacklinge ditch survey, ditch 121. (2) TR35M. (3) TR 34301 55534, Minnis Sewer, with <i>Potamogeton acutifolius</i> . (4) Ham Fen, TR3454. (5) (a) TR3455, Sandwich & Pegwell Bay survey. (b) TR 347 546, Sandwich & Pegwell Bay survey. (6) (a) TR 34259 55574, Hacklinge ditch survey, ditch 369. (b) TR 34175 55790, Hacklinge ditch survey, ditch 329. (c) TR 34430 55230, Hacklinge ditch survey, ditch 336. (d) TR 34340 55441, Hacklinge ditch survey, ditch 338. (7) TR35M.
Lydden valley	TR3655		2 March 1983	ACH	TR 360 355, Sandwich & Pegwell Bay survey.

Spartina maritima (Curtis) Fernald (Small Cord-grass)

Draft account

vc 15, gone from vc16

Rarity / scarcity status

Spartina maritima is a coastal or estuarial plant, whose main current distribution is in Hampshire, including the Isle of Wight; Essex; Suffolk and the Wash. It was formerly much more widespread, but its range has contracted such that its status is now **Endangered**, the extent of its occupancy in England having declined by 57% in comparing data from 1930-60 and 1987-99 respectively. In Kent, there was an absence of sightings after 1990 which led to it being placed on the 'probably extinct' list; but it was re-found in 2020 and is to be regarded as very **rare**.



Account

The first Kent record of this species is probably by Thomas Johnson in his *Iler Plantarum* (1629), where he mentions *Spartum nostras parvum* along the seashore.⁴¹ Otherwise, it is not noted until the early nineteenth century. Samuel Goodenough, Bishop of Carlisle, noted it as plentiful on Sheppey Isle (given in Sir James Smith's *English Flora*, vol. 1, 1824). Matthew Cowell's *A Floral Guide for East Kent, etc.* (1839) attributed to the Rev. W. Wood a record of the Cord-grass between Whitstable and Seasalter; and referred to it also being alongside Oare Creek and at Harty Ferry. Hanbury and Marshall (1899) gave only these records, and described it as rare and very local on muddy sea-shores.

Castle Coote. Photos by Liam Rooney,
26 October 2020

Francis Rose in his manuscript *Flora of Kent* mentioned it as rare in St Mary's Bay, St Mary Hoo in 1958; this appears to be the last vc16 record. He also noted it as still present in some of the historic sites: it was still present at Sheppey (Shellness, 1946-60; East Harty Marshes, 1946; West Harty Marshes, 1947; and Windmill Creek at the east end of Elmley, 1949) and also on the mainland across the Swale, viz. at Nagden Marshes (1924 and 1945-60) as well as the west side of Oare Creek. Philp (1982) described it as a very rare plant of mudflats, then only known from one locality along the Swale off Nagden Marshes (TR06H). The reference to "off" Nagden Marshes suggests that this was Castle Coote (South Bank of Swale Nature Reserve) because this low-lying area projects into the Swale north of the marshes. At this location it was sighted by a WFS meeting on 12 August 1990⁴² (subsequently confirmed by Eric Philp from material collected then). Whilst it was apparently also seen by Eric Philp at Harty Ferry in 1988, in Philp (2010) he declared that, although specifically searched for, it could not be found in any of its previous known localities during his 1991-2005 survey and might be extinct.



⁴¹ The identity is not beyond doubt. This Latin name has elsewhere been applied to *Nardus stricta* (Mat-grass), which can scarcely have been present here. Francis Rose considered that there was a possibility that *Elymus athericus* was intended, although *Spartina maritima* was more likely.

⁴² Local meetings, 1990, in *Wild Flower Magazine* (1991) **420**: 12.

The species was subsequently placed on the county 'probably extinct' list and it was not until 2020 that it was seen again, in one of the traditional localities, at Castle Coote. This sighting was made on 23 October by Fred Rumsey, Lliam Rooney and Caroline Ware, and the latter two revisited the next day to gather further data. Plants were seen at TR 03447 64736, which is a relatively high, dry and flat area of saltmarsh in the *Puccinellia maritima* (Common Saltmarsh-grass) zone, containing a few shallow pools. *Spartina anglica* (Common Cord-grass) was also present, mostly around the pool margins. Other associated species were those to be expected in such a saltmarsh habitat, including *Salicornia ramosissima* (Purple Glasswort) and *Salicornia disarticulata* (One-flowered Glasswort). The *S. maritima* plants were noticeable as being in tightly clustered spiky tufts with upright leaves, narrower than those of *S. anglica* in not exceeding 6mm across (those of *S. anglica* are 6-11mm across when flat). *S. anglica* should be capable of being differentiated by the long terminal bristle extending the rachis of the inflorescence (1.8-5(5.5)cm, compared with 0.8-1.8(2.1) cm for *S. maritima*), but this could not be observed consistently because of the loss of *S. anglica* bristles. Ligules also differ between the species, with that of *S. anglica* being (1)1.4-3.2mm long and *S. maritima* 0.3-0.8mm; in this case, the ligules were so small as to be scarcely observable.

Habitat, Castle Coote (note the presence of *Limonium vulgare* as well). Photo by Caroline Ware, 24 October 2020



As well as being the smallest European *Spartina* species, *S. maritima* has an appearance of weak growth amongst other saltmarsh vegetation, contrasting with the larger and more vigorous *S. anglica*, which often forms large

colonies on otherwise bare coastal or estuarial mud. Marchant & Goodman (1969)⁴³, however, refer to a wider amplitude of habitat for *S. maritima* elsewhere, including soft mud within gullies or alone in saltmarsh pans flooded at each high tide, as well as long-established turf of the upper saltmarsh. Gray (1994)⁴⁴ describes its upper saltmarsh habitat as one where the lower turf, with its wetter, possibly more saline depressions is preferred: *Limonium vulgare* (Common Sea-lavender) is a constant companion, and the presence of *Tripolium pannonicum* (Sea Aster) and *Atriplex portulacoides* (Sea-purslane) at more than a low density may show that it is too wet for *S. maritima*.

Small Cord-grass may spread by its relatively short rhizomes, or from vegetative fragments. Seed is probably very rare in Britain and this, coupled with its lack of vigour, may be a consequence of its being at the northern edge of its range. Gray (1994) refers to it being a tall, sward-forming plant in Spain and the southern part of its range, and possessing a method of photosynthesis more typical of tropical species. Always rare in Kent, it is

⁴³ Marchant, C.J. & Goodman, P.J. (1969). *Spartina maritima* (Curtis) Fernald. Biological Flora of the British Isles. Journal of Ecology **57**: 287-291.

⁴⁴ Gray, A.J. (1994). *Spartina maritima* (Curtis) Fern. Small cord-grass. In (eds.) Stewart, A., Pearman, D.A. & Preston, C.D. (1994) *Scarce Plants in Britain*, JNCC, Peterborough.

unlikely that it has been ousted by *S. anglica*; Raybould et al. (1991)⁴⁵ attribute much of its British decline to physical erosion of its habitats, which may produce bare mud suitable for colonisation by *S. anglica*. It is possible that other successional changes could occur affecting growth conditions, such as the invasion of tall *Atriplex portulacoides* (Sea-purslane).

S. maritima and *S. anglica* are both related. *S. maritima* was originally the only British Cord-grass, but it encountered introduced *Spartina alterniflora* (Smooth Cord-grass) in Southampton Water before 1870, and the two species hybridised. By 1892 a new fertile form had arisen there of allopolyploid origin, although not named as a species (*S. anglica*) until 1978. All Kent records of *S. maritima* x *alterniflora* (*S. x townsendii*) are likely to be of *S. anglica*, which has been planted to consolidate mud-flats as well as having spread on its own account.

It will be worthwhile searching the other historic sites mentioned above in order to see if *S. maritima* has been overlooked elsewhere. In order to focus on appropriate habitat, it is suggested that attention is directed to where *Salicornia disarticulata* may be found. The accompanying map shows East Kent monads where the *Salicornia* has been found 2010-20; a yellow star marks the *Spartina maritima* site; and green dots encircle the historic sites for that species, where search may be concentrated.



⁴⁵ Raybould, A.F., Gray, A.J., Lawrence, M.J. & Marshall, D.F. (1991). The evolution of *Spartina anglica* C.E. Hubbard (Gramineae): genetic variation and status of parental species in Britain. *Biological Journal of the Linnean Society* **44**: 369-380.

Spergula arvensis L. (Corn Spurry)

Draft account

vc 15 and 16

Rarity / scarcity status

Spergula arvensis is widely distributed in the British Isles, especially on cultivated ground but has been designated as **Vulnerable** to the risk of extinction in both England and Great Britain as a whole. In comparing data from 1930-60 and 1987-99 respectively its area of occupancy within its range in England has been found to have declined such there was a calculated 46% reduction in the likelihood of recording the species. The decline is particularly marked in Kent where there is a 72 % drop in records between surveys of 1971-80 and 1991-2005. It is neither rare nor scarce in Kent, but its decline is concerning.

Hernhill. Photo by Liam Rooney, 14 April 2012

Account

Because of its association with light cultivated soils, *Spergula arvensis* seed has been found in a range of archaeological contexts. A Mesolithic pit at Lenham yielded seed amongst charred plant remains, as also possible *Buglossoides arvensis* (Field Gromwell), although contamination of the feature was possible⁴⁶. It was present in a cremation cemetery at Manston in a late Iron Age to early Romano-British context.⁴⁷ At Northfleet it was found associated with a late Iron Age hearth or oven⁴⁸ and at Cuxton, together with *Buglossoides arvensis* in early Iron Age pitfill.⁴⁹ Late Bronze Age material yielded seeds from investigations relating to the CTRL construction of Saltwood tunnel, together in a pit with the remains of a broad bean crop.⁵⁰ It has also been found at a late Bronze Age hut site at Minnis Bay, where it may have represented weed residue from threshing crops, although the species has been noted as a possible food plant (the same site also



yielded a seed of *Coriandrum sativum* (Coriander), which is a surprisingly early record).⁵¹

Hernhill. Photo by Liam Rooney, 6 June 2012

The first Kent botanical record for the species is by Thomas Johnson on 13 July 1629 (*Iter Plantarum*) as part of a list made between Gravesend and Rochester. Amongst other early records Edward Jacob (*Plantae Favershamienses*, 1777) found it 'On sandy Grounds in Hern-Hill [Faversham] – common; and Thomas Forster (*Flora Tonbrigensis*, 1816) described it as 'In cornfields and on heaths, not uncommon'. Hanbury and Marshall (1899) treated it as a native of fields and waste

⁴⁶ Giorgi, J. (2006). The charred plant remains from Sandway Road, Lenham, Kent. CTRL Specialist Report.

⁴⁷ Stevens, C.J. Kentish Sites and Sites of Kent. A miscellany of four archaeological excavations. Charred plant remains from the route of the Weatherlees – Margate – Broadstairs wastewater pipeline.

⁴⁸ Smith, W. Charred plant remains. In (eds.) Wheaton, K., Hardy, A. & Norton, A. Excavations of Bronze Age, Roman and Medieval Settlement on land at Wingfield Bank, Northfleet, Kent 2008.

⁴⁹ Davies [sic], A. (2006). The charred plant remains from Cuxton, Kent. CTRL specialist report, London and Continental Railways. Accessed via Archaeology Data Service (distributor).

⁵⁰ Stevens, C. (2006). The charred plant remains from Saltwood Tunnel, Kent. CTRL Specialist Report. London and Continental Railways.

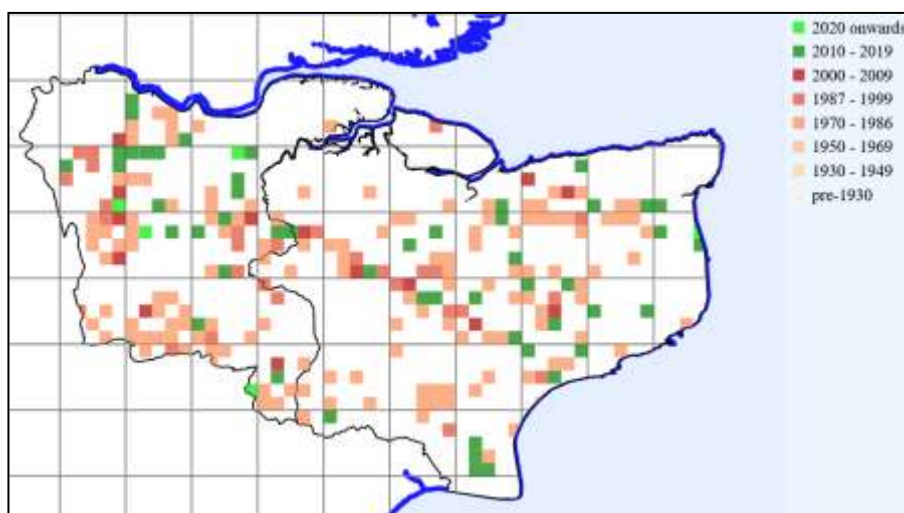
⁵¹ Conolly, A.P. (1941). A report of plant remains from Minnis Bay, Kent. VII. Data for the study of post-glacial history. *New Phytologist* 40: 299-303.

ground, chiefly on a sandy soil, rather common and found in all the botanical districts, so they did not give records other than where varieties could be distinguished. Francis Rose found it locally frequent on arable and waste ground, mostly on sandy soils and not (1950s/1960s) recently recorded for Thanet, Grain or Sheppey. Those areas have since remained nearly devoid of records.

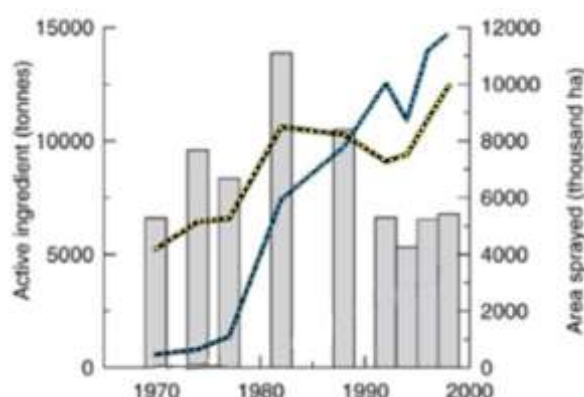
However, the wide extent of records elsewhere in the county which Francis Rose found and which is also evidenced by the 183 tetrad records given in Philp (1982) for 1971-80 has since become drastically depleted. Only 51 tetrad records were given by Philp (2010) for 1991-2005, with the suggestion that changes in farming practice were a probable cause. This does not seem to be an artefact of the Philp (2010) recording process: our 2010-20 records amount to only 55 tetrads (60 monads), so the position is comparable. Indeed, as four 2010-20 tetrads were within the Greater London boundary and so excluded from Eric Philp's surveys, there is exactly the same number of tetrad records (51) made in 2010-20 as in 1991-2005. They are not necessarily in the same places, but it looks as though the level of loss may have stabilised somewhat after the major losses of the 1980s.

Spergula arvensis distribution to 2021 (in tetrads), from BSBI database

Farming changes over the 1980s included increases in autumn-sown cereals and in the application of herbicides. The former is less significant for *Spergula arvensis*, as it germinates in spring, but may still result in shorter periods for fruiting before the ground is ploughed. However, increased herbicide applications are likely to have been a



material factor. The accompanying chart, adapted from Robinson and Sutherland (2002)⁵², gives in bars and left axis the weight of herbicide applied in England and Wales; the yellow dotted line and right axis give the area sprayed with herbicide; and the blue dotted line and right axis give the area sprayed with fungicide. The bars show a strong increase in the amount of herbicide applied leading up the 1980s, reducing after 1990. This may give some explanation for the scale of losses of *Spergula arvensis* in the 1980s, although not ruling out the possibility that particular herbicides in use then may have been especially effective against the species.



Although it is primarily an arable plant, we have also recorded it on sandy golf course land and around rabbit diggings at Sandwich Bay; on a Canterbury roadside where soil had been disturbed by development; on a hay field margin; in an old sand quarry at Addington; on a

⁵² Robinson, R.A. & Sutherland, W.J. (2002). Post-war changes in arable farming and biodiversity in Great Britain. *Journal of Applied Ecology* **39**: 157-176.

rubble mound at Barnehurst golf course; and abundantly on the draw-down margins of Bough Beech reservoir. It also appears regularly in flower- and vegetable-beds in a Halstead garden, which were arable fields until the mid-1960s.



Typical habitat, Upper Goldstone. Photo by Mel Lloyd, 13 July 2016

Atypical habitat, Bough Beech reservoir.
Photo by Sarah Kitchener, 4 September 2020



It is never a member of a closed community, and New (1961)⁵³ describes the species as showing no particular association with any one crop. Our recent records have been made in crops of maize, sunflowers, hops, broad beans, wheat, barley, flax, rhubarb, onions, melons and courgettes. So far as concerns associations with other species, we have noted it with *Persicaria maculosa* (Redshank) near Covet Wood; with *Stachys arvensis* (Field Woundwort) near Selsted, Swingfield Minnis; with *Stachys arvensis* and *Kickxia spuria* (Round-leaved Fluellen) above Temple Ewell; with *Papaver rhoeas* (Common Poppy) at Sandwich Bay; with *Gnaphalium uliginosum* (Marsh Cudweed) and *Juncus bufonius* (Toad Rush) near Bean; and with *Crassula helmsii* (New Zealand Pigmyweed) and *Potentilla anserina* (Silverweed) at Bough Beech. New (1961) considered the most frequent associates in a sample of arable across the British Isles to be: *Stellaria media* (Common Chickweed), *Polygonum aviculare* (Knotgrass), *Persicaria maculosa* (Redshank), *Persicaria lapathifolia* (Pale Persicaria) and *Chenopodium album* (Fat-hen).

Its preference for sandy soils is shown on the tetrad distribution map by the degree of coincidence with the Thanet, Tunbridge Wells Sand, Folkstone and Hythe Formations and the Lambeth Group, but there is a wider scatter elsewhere, and we have recorded it on clay-with-flints.

Spargula arvensis is an annual spreading by seed which germinates mostly from mid- to late April, later if seeds are brought to the soil surface subsequently by cultivation, flowering at eight weeks afterwards with first seed production following in a fortnight or so. The flowers never open before about mid-day. Seed viability in the soil is affected by the depth of burial and less than 1% remained viable after 9.7 years in Alaskan experiments⁵⁴; a viable seed has been found in the soil of pasture which was arable 50 years before⁵⁵, but this does not suggest a remaining seed-bank of material size.

⁵³ New, J.K. (1961). *Spargula arvensis*. Biological Flora of the British Isles. *Journal of Ecology* **49**: 205-215.

⁵⁴ Conn, J.S. & Deck, R.E. (1995). Seed viability and dormancy of 17 weed species after 9.7 years of burial in Alaska. *Weed Science* **43**: 583-585.

⁵⁵ Chippindale, H.G. & Milton, W.E.J. (1934). *Journal of Ecology* **22**: 508-531.

Four infraspecific taxa are recognised, variously treated at subspecific or varietal level. These are var. *arvensis* (= *vulgaris*) with papillate seeds; var. *nana*, a dwarf form from the Channel islands also with papillate seeds; var. *maxima*, also with papillate seeds but which are slightly larger, as are the capsules; and var. *sativa* with smooth seeds. New (1961) claimed that the frequency of the varieties followed a cline, so that var. *arvensis* was the predominant form in the south of the British Isles. Hanbury and Marshall (1899) gave records for the first and last of these varieties. Var. *sativa* has also been recorded at Knockholt (1941) and Pembury (1943); and var. *arvensis* (*vulgaris*) at Dodhurst Farm, Hawkenbury (1944). Our only recent records are for var. *arvensis*: over 60 plants on disturbed soil from a newly planted orchard at Dawes Farm, Mount Ephraim, Hernhill (TR 06472 60427, Lliam Rooney, 15 November 2011) and plants in a sandy waste area near Swanley (TR 5003 6847, Rodney Burton at an LNHS meeting, 30 May 2015).

The conspicuous whorled clusters of linear leaves render *Spergula arvensis* conspicuous and unlikely to be confused with other British plants.

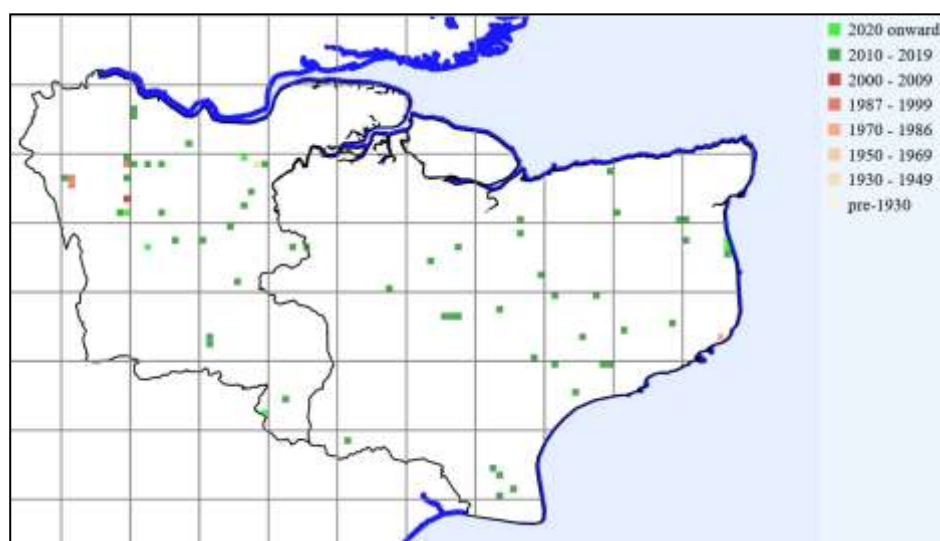


Hernhill. Photo by Lliam Rooney, 6 June 2012

Rare plant register data for this species is being maintained at monad resolution, as given in the accompanying distribution map.

These records are almost entirely from 2000 onwards.

Previous recording was, at least from the 1970s, at tetrad level, and this is why the earlier distribution map was given in tetrads, so as to be able to compare trends over time.



Spergula arvensis distribution to 2021 (in monads), from BSBI database

Spiranthes spiralis (L.) Chevall. (Autumn Lady's-tresses)

Draft account

vc 15 and 16

Rarity / scarcity status

Spiranthes spiralis is an orchid locally frequent in the southern British Isles, mostly on chalk or limestone. It is, however, considered to be **Near Threatened**, as a comparison over the periods 1930-1969 and 1987-1999 showed that its area of occupancy in England had declined so that there was a calculated 27% reduction in the likelihood of recording the species. In Kent, there appears to be evidence of a decline in records of 35% as between 1971-80 and 1991-2005, but this is not borne out by subsequent records which indicate an increase instead; the orchid is often irregular in appearance and perhaps unreported from private lawns, so that its continuance is not always readily assessed. Whilst very scarce in West Kent, it is across the county as a whole uncommon, but neither rare nor scarce.

Lydden reserve. Photo by Liam Rooney, 4 September 2010

Account

The first published notice of this species in Kent is by Edward Jacob in his *Plantae Faveshamienses* (1777): 'In Ospringe Parsonage Meadows – uncommon'. Another early record is that of G.E. Smith, who recorded it 'Upon turfy ground, above the shore between Sandgate and Folkestone; and at the foot of the chalk downs above Newington, upon Folkestone-hill, &c. abundant' (A catalogue of rare or remarkable phaenogamous plants, collected in South Kent, 1829). It was frequent on downs and in chalk-pits and old pastures, according to Hanbury and Marshall (1899), although some of the records which they cited were on sand or gravel, e.g. sandpits between Greenwich and Woolwich (Cooper, 1835), Dartford Heath (Pamplin, 1835) and Keston Common. Thomas Forster's record in *Flora Tonbrigensis* (1816) is omitted by them, also on sand: ('In meadows, pastures, and heaths...by the sides of the path over the Common to the Wells from Vale Royal, and elsewhere'), but presumably this is because it was in one of the botanical districts where the orchid was sufficiently frequent that records did not warrant individual mention. Chalk is a more usual habitat, and Anne Pratt, a Dover resident, mentioned that 'On some of the grassy hill-sides of Dover it is common'⁵⁶.



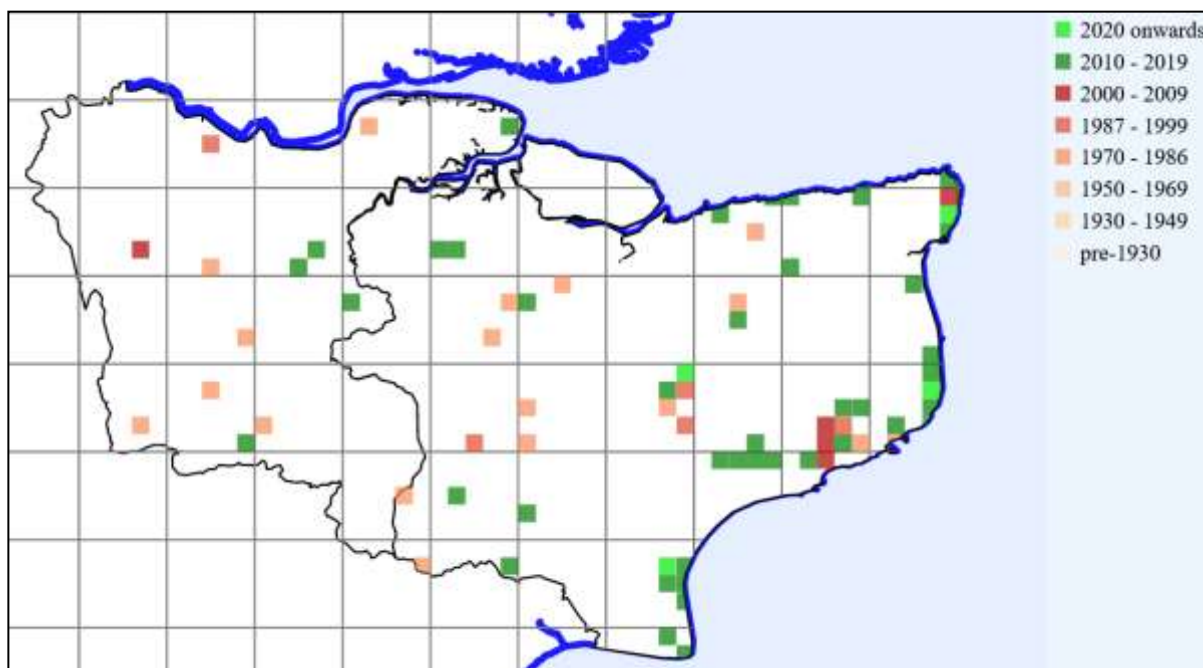
Francis Rose described it in Kent as a native of dry short grassland, frequent locally on the chalk, rare and scattered elsewhere, but often abundant in its localities, sometimes appearing suddenly in quantity on garden lawns. He listed some 53 sites, some historic, most from the 1930s to the 1960s, and the highest number of plants given being 100 at Cliffe chalk pit, where the species was known from 1945 to 1962. During the Kent Field Club's 1971-80 survey (Philp, 1982), *Spiranthes spiralis* was recorded as being rather local and uncommon, in grassy areas on downland, damp meadows and coastal dunes, and at times on garden lawns and grass tennis courts: a total of 31 tetrads. In Eric Philp's 1991-2005 survey (Phip, 2010), however, it was

⁵⁶ Pratt, A. (1873) *The Flowering Plants, Grasses, Sedges, and Ferns of Great Britain*, vol. 5. She also referred to finding it in profusion in dry meadows around Tunbridge Wells, presumably a sandy locality, perhaps coming to her attention after moving to East Grinstead in 1866.

only recorded from 20 tetrads, but with this caveat: 'The number of plants showing each year is very variable and much dependent on how much rainfall there has been earlier in the year. Also the sites where this plant grows are often those that are regularly mowed, which tends to make recording very difficult, and the real distribution is likely to be wider than that shown'. This seems a very appropriate qualification given that our 2010-20 records amounted to 48 tetrads (equivalent to 59 monads) so the species appears far from being in decline, considered on the basis of tetrad numbers. The low numbers in the 1991-2005 survey may also be in part be attributable to this being a solo recorder survey, whilst the earlier and later record sets are both crowd-sourced, the earlier by the Kent Field Club, the later by the Kent Botanical Recording Group.

The accompanying distribution map shows the spread of these records, with 2010-20 sightings particularly focused on the east Kent coastal chalk on Thanet (North Foreland to Ramsgate) and from Kingsdown to Folkestone; the North Downs running inland from Dover; and the consolidated sand/shingle of Littlestone / Greatstone and Dungeness. Although these records may be construed as a 29% increase over the 1971-80 position, the distribution map shows that there are seven 10km squares which had records in 1970-86 (and so including the 1971-80 survey) but which do not have records since. This appears to suggest a contraction of range; however, it would better be viewed as a variation in range, as we have since offset this by finding the plant in 'new' 10km squares. While seed dispersal, which is by wind, has been observed experimentally to be limited mostly to within a couple of metres of the parent plant, it is apparent that seed is capable of reaching new habitats from a distance. (Germination and development of course require the presence of appropriate mycorrhizae at the new habitat.)

Spiranthes spiralis distribution to 2021 (in tetrads), from BSBI database



The largest colonies in recent times appear to be those at:

- Ramsgate cemetery, c.100 flowering spikes in 2020;
- Dungeness, 136 spikes on short turf on consolidated shingle in 2019;
- Kingsdown, Oldstairs Bay, 150 spikes on lawn on chalk in 2010;
- Littlestone, Madeira Road, over 100 spikes on short mown turf on sandy ground in 2016; records in 2006 along lawns and verges noted densities ranging from ten to over 500 spikes per 20 x 20m square;

- Stodmarsh national nature reserve, 170 flowering spikes on colliery spoil in 2014;
- Kingsdown chalet park, est. 200 plants on chalk grassland slopes, reckoned from surviving spikes and taking account of where mown off, in 2015;
- Kingsgate, Castle House, est. 200 spikes in private grounds, coastal on chalk, in 2010;
- St Margaret's at Cliffe, est. 200 spikes in short chalk turf around war memorial in 2010;
- North Foreland, Cliff Promenade, mown verges and lawns including one with at least 300 flowering spikes in 2013;
- Benenden Hospital grounds, 344 spikes in grass over Tunbridge Wells Sand Formation in 2013;
- Chestfield church lawn, 430 spikes in relict neutral grassland on London Clay, possibly with Head deposits overlay (known also for *Anacamptis morio*, Green-winged Orchid) in 2013;
- Postling, several hundred flowering spikes on chalk downland in 2013;
- Shuttlefield Down, at least 300 spikes on chalk downland in 2013;
- Birchington, c.1,200 spikes in cliff-top chalk grassland in 2015;
- Kingsdown, The Lees, at least 1000 spikes on lawn of cliff-top house, on chalk, with as many again seen on the grass verge outside (but mown off) in 2013.



Note that counts of flowering spikes are just that, and the true number of plants should be higher because of non-flowering plants, including those which are dormant underground (the mean percentage of emergent plants which flower in a season may be in the 30s).⁵⁷

Lydden reserve. Photo by Liam Rooney, 4 September 2010



These major colonies confirm preference for short turf, generally on chalk, but also less frequently on other substrates, especially where well drained (Chestfield appears anomalously damp, however). There have been losses in the past: Francis Rose listed sites from the 1950s for which there are no current records, including downland which has been ploughed out or 'improved', and David Johnson (*Wild Orchids of Kent*, 2019) refers to chalk pits with plants in the 1970s and 1980s which have since suffered from scrub encroachment. Any withholding of grazing may well have brought about the same result elsewhere, but against this one must offset the effect of the availability of lawns and verges which provide the short turf needed to enable sufficient light to reach the orchid rosettes which lie very close to the ground surface.

Spiranthes spiralis with tubers, collected by W.H. Griffin, September 1903. 'Until '03 plentiful in meadow opposite the "Fox," Keston, now being covered with cottages and gardens' (*Woolwich Surveys*, 1909).

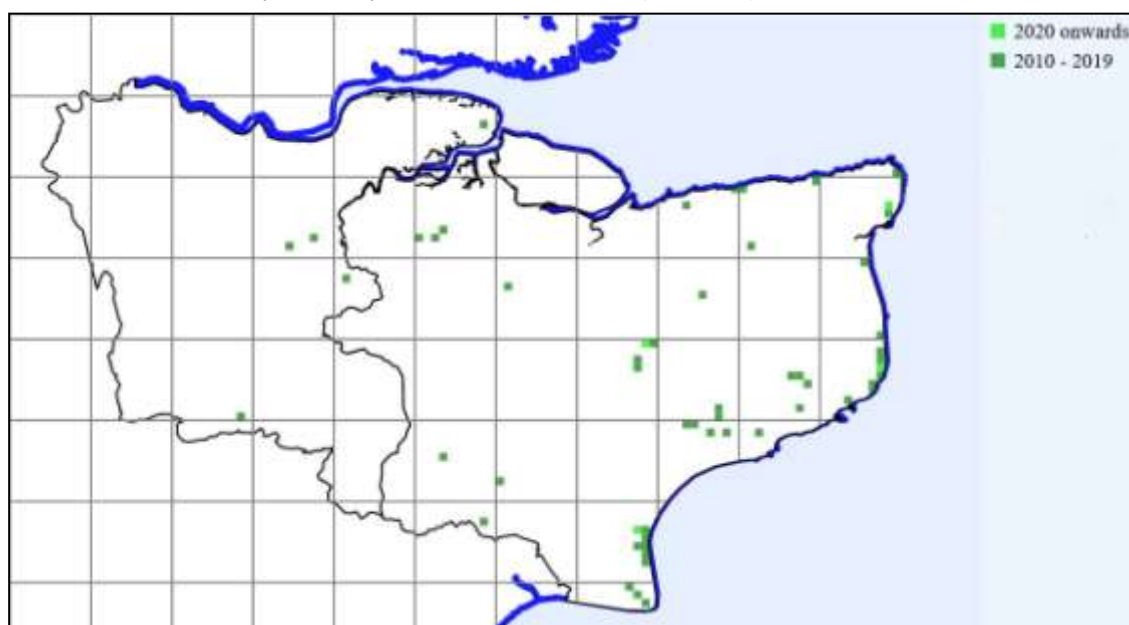
The rosettes sit sufficiently low to avoid grazing, whether by stock or rabbits, and Bedfordshire studies indicate that the risk of grazing damage to plants is to the inflorescences (August to September flowering; October to November fruit development), a loss of 30% of the inflorescences having been observed with sheep grazing at a density of

⁵⁷ Data from Bedfordshire and Dutch populations gave means of 32.9% and 37.6%, but with wide annual variation.

ten per hectare.⁵⁸ This does not necessarily imply loss of the plants, since the underground tuber remains. Normally each year, the tuber is replaced by at least one new tuber, so that two are present: the new one which will produce next year's growth and the old one, which becomes exhausted and shrivels up. Sometimes, however, only a part of the old tuber's reserves are exhausted and such tubers can last for several years⁵⁹. We have not been able to trace any literature on the potential for the tuber whose inflorescence is removed by grazing or mowing to continue as perennial given that its resources are no longer being applied to flowering and fruiting. A number of our records recognize that mowing takes place and flower spikes are lost in consequence. However, the loss of opportunity of reproduction and dispersal by seed may receive some compensation through limited vegetative spread by the growth of a lateral bud on the underground stem to produce a new plant which forms its own tubers, and eventually becomes fully separate.

Rare plant register data for this species is being maintained at monad resolution, as given in the accompanying distribution map. These records are almost entirely from 2000 onwards. Previous recording was, at least from the 1970s, at tetrad level, and this is why the earlier distribution map was given in tetrads, so as to be able to compare trends over time.

Spiranthes spiralis distribution 2010-20 (in monads), from BSBI database



Kingsdown ranges, habitat of coastal species-rich turf on chalk, although becoming a little overgrown.

Photo by David Steere, 26 August 2018.

⁵⁸ Wells, T.C.E. (1967). Changes in a population of *Spiranthes spiralis* (L.) Chevall. at Knocking Hoe National Nature Reserve, Bedfordshire, 1962-65. *Journal of Ecology* **55**: 83-99.

⁵⁹ Hutchings, M.J. (2010). Biological Flora of the British Isles: *Spiranthes spiralis* (L.) Chevall. *Journal of Ecology* **98**: 1253-1267.

Stachys arvensis(L.) L. (Field Woundwort)

Draft account

vc 15 and 16

Rarity / scarcity status

Stachys arvensis is an archaeophyte or ancient introduction of cultivated and waste ground, scattered across much of the British Isles. It is considered to be **Near Threatened** in both England and Great Britain as a whole. A comparison of English records over the periods 1930-1969 and 1987-1999 showed that its area of occupancy had declined so that there was a calculated 30% reduction in the likelihood of recording the species. In Kent, In Kent, there is evidence of a decline in records of 79% as between 1971-80 and 1991-2005, and although it is as yet neither rare nor scarce, the decline is concerning.

Near Lynstead. Photo by Liam Rooney, 2014/15

Account

The first records of the species, in Kent and in the British Isles, are by Thomas Johnson. He mentions it as found between Margate and Sandwich in his *Descriptio Itineris* (1632), but it was a plant already familiar to him as he refers to it also in his 1633 edition of John Gerard's *Herball*: 'I first found it in August 1626 in floure and seed amongst the corne in a field joining to a wood side not far from Greene-hive [Greenhithe] in Kent'. Up to the twentieth century it was clearly widespread and common. Hanbury and Marshall (1899) gave no records other than Johnson's, because of its ubiquity: 'Fields and waste ground; common throughout the county'.

By the 1950s-60s, it looks as though that distribution was being perceived as a little more patchy. Francis Rose in his manuscript *Flora of Kent* noted it in 'Cultivated fields on a variety of soils, particularly on chalk and sand: widespread, but sparsely distributed and only common locally, particularly in the eastern Weald about Ashford..., and the east Kent chalk..., rather rare in W. Kent'. This last comment is not wholly borne out by the Kent Field Club's 1971-90 survey (Philp, 1982), which, although yielding almost total absence in north west Kent, found many records in the south west. Overall, *Stachys arvensis* was then described as rather local and uncommon in arable fields and waste ground, but still present in 108 tetrads.

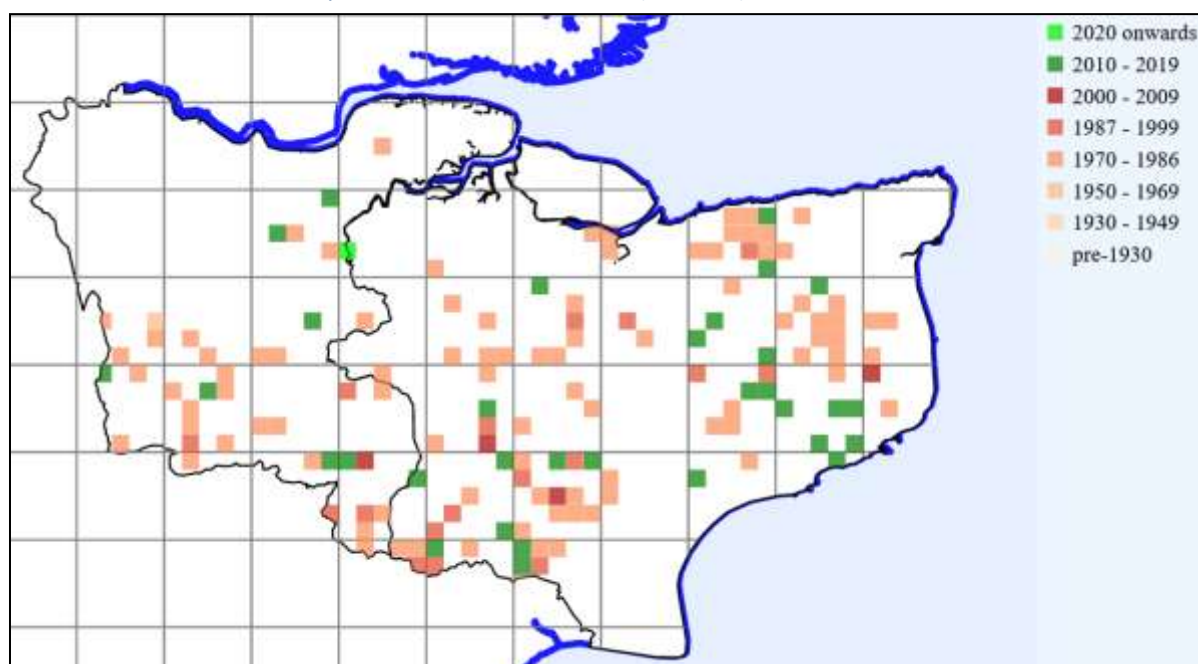


From near Lynstead. Photo by Liam Rooney, 2014/15

The position in 1991-2005 (Philp, 2010), however, appears to be one of major decline, down to only 23 tetrads. The decline may have been a little overstated, given that our 2010-20 records cover 33 tetrads (equivalent to the same number of monads, which suggests a very scattered distribution, nowhere concentrated). But even a decline from 108 to 33 is severe, and there seems to be a parallel with other arable weeds, such as

Spergula arvensis (see its species account above, where its decline in the 1980s is related principally to increased herbicide applications).

Stachys arvensis distribution to 2021 (in tetrads), from BSBI database



The accompanying distribution map shows the decline clearly. Some of the 2010-20 records will overlap and obscure those for 1987-99 and 2000-09 (records for the two latter periods can be taken as equivalent to Philp (2010) coverage, except for one). The great majority of squares depicted are for 1970-86 (mid-pink), and all but one of these are squares recorded for Philp (1972) and so fall within the earlier part of the range, after



which changes in farming practices apparently have fuller effect.

Near Lynstead. Photo by Liam Rooney, 2014/15

Stachys arvensis is a spring-germinating annual with a long flowering period (April to November). In Kent cultivated land there does not seem to be any particular crop association other, perhaps, with game bird food sowings (which are, of

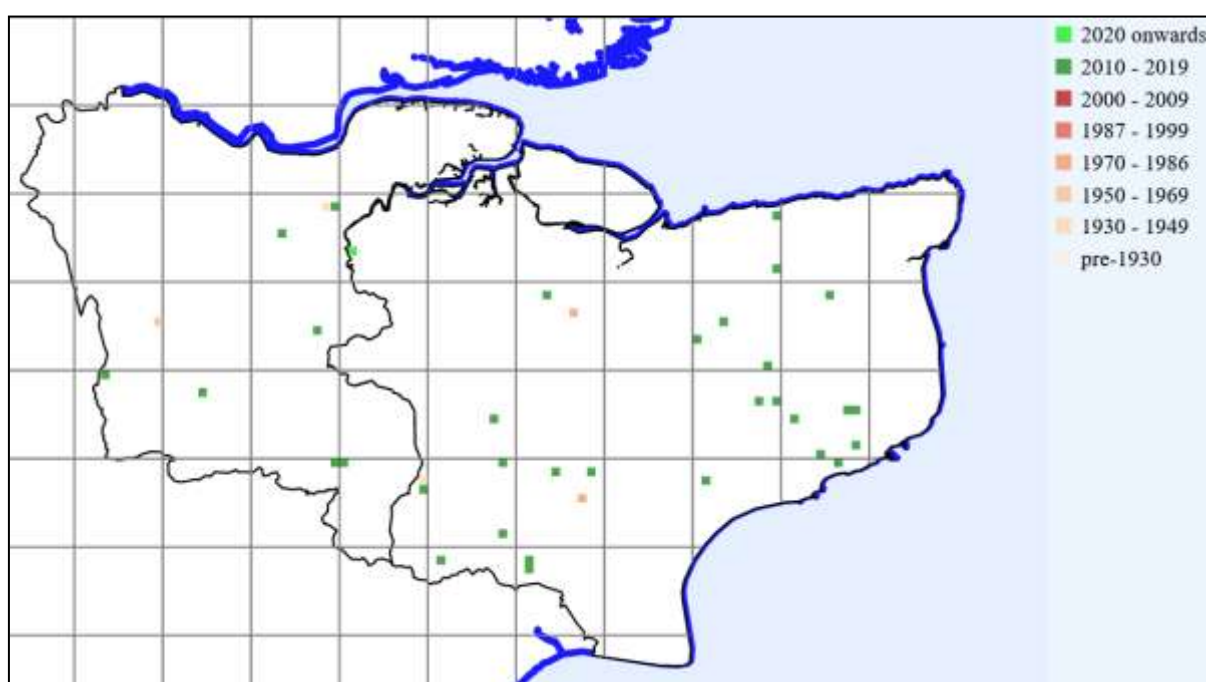
course, not usually subjected to herbicidal treatment): we have recorded it otherwise with maize, cereals, broad beans and flax; also in orchards and a newly planted hop field. Where we have noted the geology, it has been non-calcareous, e.g. Weald Clay, sandy clay, sandy head (although ragstone at the last site may have modified the acidity) and even in a case where the site was clearly a chalk valley slope, the nearby presence of *Pteridium aquilinum* (Bracken) suggested possible downwash of less basic soil (drift or clay-with-flints). Most

of our records are without counting numbers, and the highest we have noted is about 100 in a flax crop near Capel-le-ferne in 2019 and colonies of over 40 and 50 north of Doddington in 2014.

A characteristic of the Kent *Stachys arvensis* sites is that plants are sometimes accompanied by other 'high quality' arable weeds: *Ranunculus arvensis* (Corn Buttercup) near Headcorn in 2019, *Silene noctiflora* (Night-flowering Catchfly) near Doddington in 2015, and *Spergula arvensis* (Corn Spurrey) above Temple Ewell in 2017.

Rare plant register data for this species is being maintained at monad resolution, as given in the accompanying distribution map. These records are almost entirely from 2000 onwards. Previous recording was, at least from the 1970s, at tetrad level, and this is why the earlier distribution map was given in tetrads, so as to be able to compare trends over time.

Stachys arvensis distribution to 2021 (in monads), from BSBI database



Stachys arvensis in some degree resembles *Clinopodium ascendens* (Common Calamint), although they are normally in different habitats and the Calamint is a perennial, but the odour of the leaves when crushed is very different: musty and foetid in the former, aromatic and minty in the latter.

Suaeda vera Forssk. ex J. F. Gmel. (Shrubby Sea-blite)

Draft account

vc 15; gone from vc16

Rarity / scarcity status

Suaeda vera (Shrubby Sea-blite) is a perennial shrub which grows as a native sparsely along the coasts of south and east England, on shingle beaches beyond normal tidal reach, the drift line at the base of dunes, edges of tidal creeks and upper saltmarshes where the substrate becomes sandy or shingly. It is **nationally scarce**, but in England its risk assessment is one of 'Least Concern'. In Kent it is **very scarce**.

Lydd. Photo by Liam Rooney, 28 June 2011

Account

Grain. The first Kent record for Shrubby Sea-blite appears to be a specimen at the University of Reading herbarium collected by Ted Lousley on 30 June 1935 on the Isle of Grain, near Grain Fort. It has not been recorded there since. *Suaeda vera* seeds spread by water and are washed up and accumulate amongst drift-line litter, germinating in spring; vegetative fragments detached by storms may also be capable of establishing as new plants.⁶⁰ There is also evidence that seeds may survive ingestion by birds such as mallard and grey-lag geese⁶¹, although north Kent plants generally appear more likely to derive from drifted seed than bird-borne seed. With drifted seed, there is always the possibility of a 'come and go' site such as this arising.



Lydd. Francis Rose in his manuscript *Flora of Kent* noted a report that the Lydd Ranges warden planted it; Rose was aware of it in 1947 as being well naturalised and spreading round a salt-water lagoon at the Midrips on muddy shingle. The administrative county boundary runs east of the Midrips and the colony was thought to be in vc14 East Sussex, but the vice county boundary is separate and does not take in any of Lydd Ranges, so this is all in vc15 East Kent. The table below gives a selection of records for this site, or complex of sites spreading across six monads. The spread of *Suaeda vera* here is facilitated by not being directly exposed to the sea, so that seeds are generally retained within the area, but its habitat is affected by saline seepage and varying potential for sea incursion. Plants are located both inland and seaward of the green wall, which is a secondary sea defence barrier of clay. They grow in hollows, which may be winter-wet, and at the margins of saline lagoons, on shingle with clay and/or peat. Where numbers are recorded, they tend to be individual plants or small groups, but there are a couple of sightings of over 100 plants, seaward of the green wall.

Upchurch peninsula. *Suaeda vera* was recorded by Eric Philp in 1964 at TQ86P near Ham Green, at the tidal River Medway estuary. This is mentioned by Philp (1982) as having since gone.

⁶⁰ Leach, S.J. (1994). *Suaeda vera* Forsskål ex J. Gmelin Shrubby sea-blite. In (eds.) Stewart, A., Pearman, D.A. & Peston, C.D. *Scarce Plants in Britain*, JNCC, Peterborough.

⁶¹ García-Alvárez, A. et al. (2015). Internal transport of alien and native plants by geese and ducks: an experimental study. *Freshwater Biology* **60**: 1316-1329.

Shellness, Sheppey. On 13 January 2005, Eric Philp and Doug Grant found it at the shell sand beach at the south eastern end of Sheppey, a location which appears very suitable for the deposit of drifting seeds. Further recording in 2010 noted the presence of one large bush together with three small ones two to eight metres distant. More than one seed stranding event seems improbable, and the small plants were taken to be seedlings from the original large one. On a visit in January 2019 it was found that the top of the beach had been cut into by at least one exceptionally high tide and all plants appeared to have been swept away.

Reculver. Photo by Sue Buckingham, 29 July 2010



Reculver. A plant about 2m tall was found by Sue Buckingham on 29 July 2010 growing on the shingle beach with coastal defence rocks, at the foot of the clay cliffs. This is an area subject to erosion generally, and in early October 2013 the bush was found to have been bent over but had re-rooted, remaining healthy and producing fruits. The storm of 10 October 2013, however, washed the plant away.



Birchington Photo by Colin Osborne, 20 July 2020

Birchington. A bush was found by Colin Osborne in 2010 growing at the back of the sea wall defences forming a promenade at Birchington, at the foot of the chalk cliffs; this would be in the spray zone in some weather/tidal conditions, but not ordinarily within reach of tides. It was still present in July 2020.

Beltinge. A further bush was discovered by Colin Osborne in April 2020 on shingle amongst sea defence boulders deposited on the upper beach at some time between 1990 and 2003. The boulders are capable of trapping seeds and other material from the tides and the bush is located high enough up the beach for a sparse drift line flora including *Beta vulgaris* subsp. *maritima* (Sea Beet) to be present.

Beltinge. Photo by Colin Osborne, 24 June 2020



Accordingly, in Kent there is a pattern of infrequent appearance of individual plants along the northern coast, presumably from seed borne on very high tides. While such plants may produce seeds to spread further along the coast (although only one case of proximate seedlings has been reported), otherwise the nearest potential parent colonies appear to be those in Essex, the Rivers Crouch and Blackwater estuaries. *Suaeda vera* exhibits a preference for fairly well-drained habitat, whether silt or shingle, and has great power of rejuvenation by the development of roots and shoots from shingle-buried branches⁶². The flowers do not appear insect-attractant, but are hermaphrodite and apparently capable of self-pollination or wind-pollination.

⁶² Chapman, V.J. (1947). *Suaeda fruticosa* Forsk. (Biological Flora of the British Isles), *Journal of Ecology* **35**: 303-310.



They open between mid-July and October, with fruits being dispersed from September to early November and germination taking place from March.

Lydd. Photo by Liam Rooney, 28 June 2011

Although we have limited information about associated species in Kent (and *Suaeda vera* appears to grow where very little else does), there are two species of similar habitats with which it might be confused. One is *Suaeda maritima* (Annual Sea-blite) which differs by being an annual, less woody at the base and has two stigmas (*Suaeda vera* has three or five). The other is *Limbarda crithmoides* (*Inula crithmoides*, Golden-samphire), a perennial with a woody stock, totally different when in flower, and bearing succulent leaves which are 2–4.5cm long or more; those of

Suaeda vera are normally 0.3-0.7cm, and although variants with leaves 0.5-1.1cm long may occur, we do not have Kentish data for these.

Site	Grid reference	Site status	Last record date	Recorder	Comments
Lydd Ranges west	TQ9917	MOD property	(1) 9 August 2013 (2) 7 August 2012	(1) OL, GK & TI (2) OL, GK, TI, SB	(1) Landward of sea wall, TQ 99900 17936. (2) Below Green Wall at TQ 99897 17939.
Lydd Ranges-Midrips and The Wicks	TR01D, includes TR0017 & TR0117	MOD property	(1) 1 September 2017 (2) 9 August 2013 (3) 9 August 2012 (4) 30 May 1993 (5) 1999 (6) Before 1981, after 1970	(1) BBe (2) OL, GK & TI (3) TI (4) EGP & JBe (5) BBa (6) WJM	(1) (a) TR 00200 17864, western-most occurrence on site, a few plants. (b) TR 01217 17663, behind coastal embankment. (2) (a) Inland of green wall, TR 00584 17842, many plants in winter-wet hollow, shingle on peat. (b) Inland of green wall, TR 00653 17859, on shingle/peat by saline lagoon, one large plant and many smaller. (c) Inland of green wall, TR 00221 17894, plants on clay with shingle in and around a channel conducting sea water seeping through shingle into two shallow lagoons. (d) Between green wall and shallow lagoons, TR 00349 17870, on clay. (3) (a) TR 01357 17641 (furthest east before gap till TR0217). (b) TR 00093 17885 (furthest west). (4) TR 008 178, south of The Wicks. (5) TR 0112 1768, three plants on shingle. (6) Given in Philp (1982) as on county border, and so would be at The Wicks, TR0017 or TR0117.
Lydd Ranges-South Brooks	TR01I, includes TR0217 & TR0317	MOD property	(1) 1 September 2017 (2) 8 August 2012 (3) 7 August 2012 (4) 28 July 2006	(1) BBe (2) SB & TI (3) TI (4) EGP	(1) (a) TR 03460 17240, several. (b) TR 03460 17240, several behind coastal embankment. (2) (a) 100+ plants south of Green Wall at TR 02232 17571. (b) By Wickmaryholm Pit, one large bush at TR 03391 17283, two more at TR 03451 17249, one at TR 03461 17237. (3) TR 02118 17486. (4) TR01I.

Lydd Ranges- Wickmaryholme	TR01N, includes TR0417	MOD property	(1) 9 August 2012 (2) 16 November 2007 (3) 28 June 1996	(1) TI (2) RG (3) EGP	(1) TR 04392 17137. (2) TR 045 171. (3) TR01N.
Shellness, Sheppey	TR06N		[20 January 2019] (1) 19 January 2017 (2) 14 October 2010 (3) 3 June 2010 (4) 13 January 2005	[SB] (1) DC (2) SB (3) SP & DG (4) EGP & DG	[There is plenty of evidence from the way the top of the beach there has been cut into that there has been at least one exceptionally high tide and the entire bush, roots and all appears to have been swept away.] (1) Present. (2) TR 0522767603, one large plant on shell sand beach, somewhat undermined by rabbits. Three small plants 2 to 8 ms distant appear to be seedlings.. (3) TR 05226 67605, one large plant and three small ones between large plant & blockhouse. (4) TR06N, one mature bush.
Beltinge	TR1968		24 June 2020	CO	One plant amongst sea defence boulders, beach below Beltinge Cliffs, c. TR 1976 6858.
Reculver	TR2269		(1) 1 October 2013 (2) 16 October 2011 (3) 27 August 2011 (4) 29 July 2010	(1) CO (2) CO (3) DM (4) SB	(1) One plant just hanging on earlier in year, but appears to have re-rooted where bent over and looks healthy again with some fruits produced. Washed away by storm of 10th Oct 2013. (2) c. TR 223 693, one sizable plant on pebbly upper beach. [TR 223 692 would be closer.] (3) TR 22266 69212. [location should be just south of this grid reference.] (4) TR 22278 69195 on beach at foot of clay cliff, plant very woody at base, c2m tall, 3-styled.
Birchington	TR2969		(1) 20 July 2020 (2) 16 September 2013	(1) & (2) CO	(1) One large bush still present, between the concrete surface of the promenade/sea wall and chalk cliff behind. (2) One large bush at base of cliffs on sea wall defences at c. TR 2929 6995.: has been present, similar size, since first noticed in 2010

Succisa pratensis Moench (Devil's bit Scabious)

Draft account

vc 15, vc 16

Rarity / scarcity status

Succisa pratensis is a plant of grasslands of varied nature, wet or dry, calcareous or acid, and is widespread across the British Isles. Despite this ubiquity, its risk assessment in England is one of **Near Threatened**. A comparison of English records over the periods 1930-1969 and 1987-1999 showed that its area of occupancy had declined so that there was a calculated 20% reduction in the likelihood of recording the species. This may be related to loss of its wetter habitat on infertile soils with causes including eutrophication, loss of grazing and hydrological changes. There is also evidence of decline in Kent, although the species is as yet neither rare nor scarce in the county.

Photo by Liam Rooney, 12 September 2008

Account

The first published Kent record is by John Parkinson in his *Theatrum botanicum* (1640): 'growing wild about *Apple dore*, neere *Rye* in *Kent*'. He introduces Devil's-bit by observing 'Fabulous antiquity (the Monkes and Fryers as I suppose, being the first inventors of the Fable) said, that the Devill enying the good that this herbe might do to mankind, bit away part of the roote, and thereof came the name *Succisa*, Devils bit, which is so grosse and senslesse a relation, that I merveile at the former times stupidity, to receive as true such a fiction'. The plant was regarded as so common by Hanbury and Marshall (1899), in pastures and woods, especially on clay and chalk, that they gave no records, other than Parkinson's.



Being so common, many other historic botanists did not mention it. Amongst those who did, Edward Jacob (*Plantae Favershamienses*, 1777) referred to it as *In Bysing Wood and the Abbey Meadows – common*'; Richard Deakin (*The Flowering Plants of Tunbridge Wells and Neighbourhood*, 1871) described as being in 'Meadows and on the forests, common'; and J.F. Bevis and W.H. Griffin give it in north west Kent as a plant of 'Woods, pastures, open spots in moist woods; v.com.' (*Woolwich Surveys*, 1909).



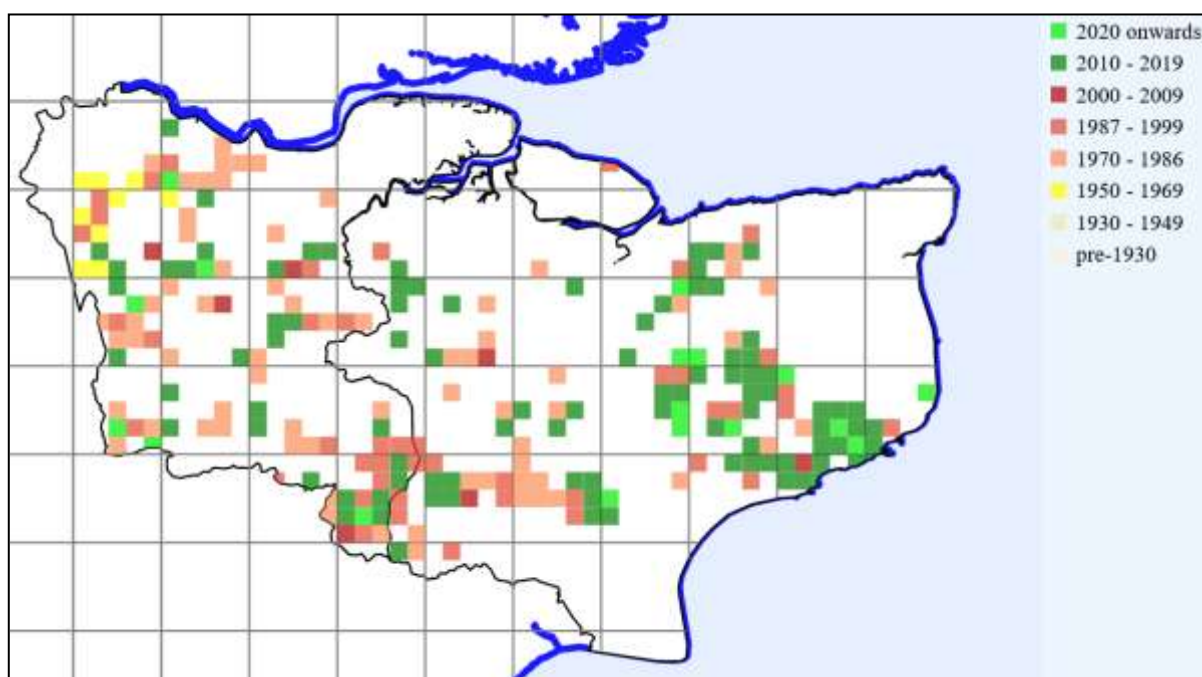
Photo by Liam Rooney, 22 September 2017

Francis Rose noted it as a native of chalk grassland, frequent in less dry places; meadows, grasslands, scrub, open woodlands and woodland paths on clay and Hastings Sands, very common; fens, meadows and valley bogs on peat, locally common. This wide range of habitats was echoed by Philp (1982), encompassing 'damp meadows, marshes and woodland rides, and at times on open downland on the chalk', locally frequent and found in 166 tetrads during the period 1971-80. By the time of the 1991-2005 survey (Philp, 2010), however, it was found in only 95 tetrads. The severity of this decline (43%) is perhaps overstated, in that our 2010-20 records amount to 110 tetrads (equivalent to 147 tetrads), which is 34%. Admittedly, four of those tetrads were in metropolitan vc16, outside

the administrative county of Kent to which the Philp (1982 & 2010) surveys were confined, but this makes little difference. Accordingly, it appears that there has been a major decline since the 1970s, but one which has leveled off.

The causes assigned to the national decline (including eutrophication, loss of grazing and hydrological changes) may be relevant, but it is not straightforward analyzing these, because of the range of differing habitats, which would be affected differently by such causes. From the distribution map below, the 'losses' may be regarded as concentrated in several areas. The first of these is north west Kent (TQ45, TQ46, TQ47 and TQ57). The losses in TQ46 and TQ47 shown yellow precede 1970: they are in Greater London and probably relate to loss of habitat generally with urbanization. The losses in TQ57 around Dartford may reflect general pressures on natural habitats. Those in TQ45 around Westerham would involve both chalk grassland and sandy terrain, also (Westerham Wood) Gault clay; there seems to be no single answer for causation of loss, and there may be some under-recording. This is also possible as regards Wealden woodland and meadows in TQ73, TQ83 and TQ84: Bedgebury through to Hemsted Forest and thence east of Tenterden, even though there are areas which have been well worked in 2010-20, and the species re-found. It may be that these are losses relating to agricultural 'improvement' of grassland. There is also a line of formerly recorded tetrads from the east end of Mereworth Woods running past Oaken Wood to Barming Heath which probably represents currently under-recorded woodland habitat.

Succisa pratensis distribution to 2021 (in tetrads), from BSBI database



Succisa pratensis can spread vegetatively by rosettes forming on the longer stolons, or by lateral shoots, including those formed where a flower stem is checked early in its development⁶³. However, the usual means of reproduction is by seed. Flowering is relatively late, generally from August and continuing into September and October, and seed dispersal by wind takes place only over short distances. The seeds are plumeless and their ability to be dispersed by wind relies on being carried in the dry, hairy and persistent calyx which adds surface area without much weight, and the flowering stems, up to 1m high, which provide release height. Most seed, however, lands within 4m of the parent plant. Studies in the Netherlands of the seed dispersal of

⁶³ Adams, A.W. (1955). *Succisa pratensis* Moench (Biological Flora of the British Isles). *Journal of Ecology* **43**: 709-718.

Succisa pratensis as a sample species of nutrient-poor semi-natural grasslands illustrated the problems of connectivity where habitats have become highly fragmented, and decreased population sizes coupled with higher nutrient input will both reinforce decreased colonisation capacity.⁶⁴ The probability of colonization of new or restored sites is therefore very low, unless adjacent to existing occupied sites or seed dispersal is artificially assisted.⁶⁵

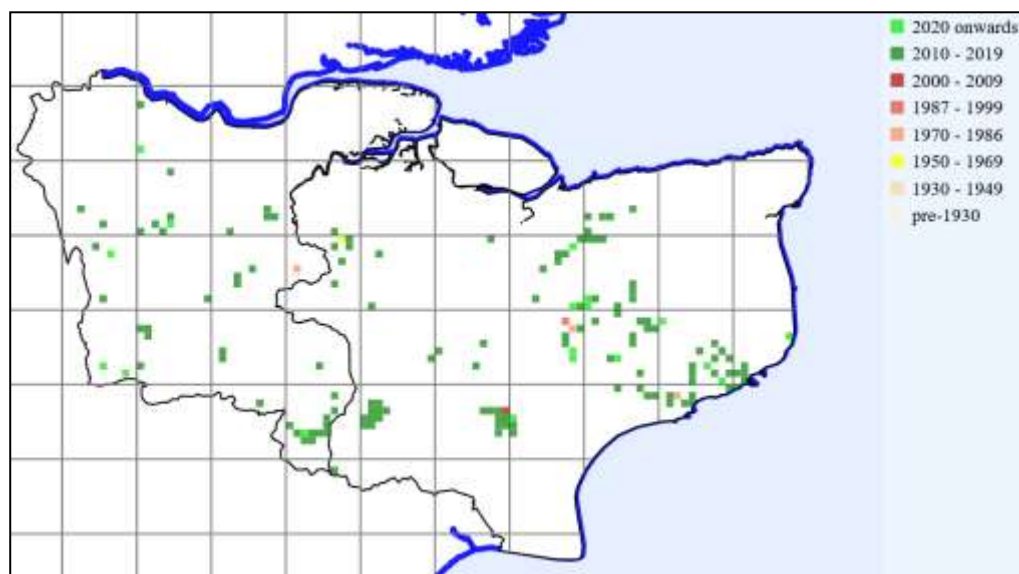
Photo by Liam Rooney, 22 September 2017



We have very limited data on associated flora in Kent, although the species is listed as a Kent axiophyte, indicative of habitat which is important for conservation. Its axiophytic function, however, is not straightforward because of the variety of habitats it occupies, and the corresponding variation of associated flora; the Biological Flora of the British Isles account lists six very different associated groups of plants for six different habitats. We have noted it in chalk grassland, including in dense *Brachypodium rupestre* (Tor-grass) on cliff-tops at Dover. The chalk grassland of the castle slopes at Castle Hill, Folkestone may offer an example of the sort of site to which the Biological Flora of the British Isles refers as formerly disturbed (such as the mounds at Avebury and other once occupied sites on the chalk, where it is absent from adjacent grassland). By contrast, we have also noted it in *Salix/Rhododendron* swamp (mostly densely shaded) at Bedgebury; in sphagnum bog under birch coppice and also on a trackside by chestnut coppice, both at Anglely Wood; along an acid shaded roadside near Kilndown with *Betonica officinalis* (Betony), *Solidago virgaurea* (Goldenrod) and *Serratula tinctoria* (Saw-wort); in churchyards at Dunkirk and Northumberland Heath; in damp pasture on Ashdown Formation at Gilridge; but most frequently along woodland rides..

Rare plant register data for this species is being maintained at monad resolution, as given in the accompanying distribution map. These records are almost entirely from 2000 onwards. Previous recording was, at least from the 1970s, at tetrad level, and this is why the earlier distribution map was given in tetrads, so as to be able to compare trends over time.

*Succisa
pratensis*
distribution to
2021 (in
monads), from
BSBI database



⁶⁴ Soons, M.B. & Heil, G.W. (2005). Reduced colonisation capacity in fragmented populations of wind-dispersed grassland forbs. *Journal of Ecology* **90**: 1033-1043.

⁶⁵ Soons, M.B. *et al.* (2005). Habitat fragmentation reduces grassland connectivity for both short-distance and long-distance wind-dispersed forbs. *Journal of Ecology* **93**: 1214-1225.

Succisa pratensis is recorded as having five varieties in the British Isles, most of which have a restricted distribution not known to include Kent, and our plants are assumed to be var. *pratensis*. However, var. *grandifolia*, a tall plant with many flower heads with distinctly toothed stem leaves, is known from a peaty woodland swamp in Sussex, and var. *ovalis*, flowering from May to July, has been grown as wildflower seed and so could be introduced. *Succisa pratensis* is only likely to be confused with *Knautia arvensis* (Field Scabious) or *Scabiosa columbaria* (Small Scabious). Its purple-blue flowers are normally distinctive, but it does possess a colour range; its leaves have narrow cartilaginous margins turning reddish, are sometimes purple-blotched and their petiole is often purplish near the base – none of these characters apply to the other species, which also differ in having divided stem leaves.

Oxford Hills. Photo by
David Steere, 29 August 2016

