

# Kent Rare Plant Register

## **Draft** species accounts

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Compiled by Geoffrey Kitchener and the Kent Botanical Recording Group  
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## Kent rare plant register

This section of the register covers:

*Galeopsis angustifolia*

*Galium parisiense*

*Galium pumilum*

*Galium uliginosum*

*Gastroidium ventricosum*

*Genista anglica*

*Genista tinctoria*

*Gentianella anglica*

*Gentianella amarella*

*Geranium purpureum* subsp. *purpureum*

*Glaucium flavum*

*Glebionis segetum*

*Gnaphalium luteoalbum*

*Gnaphalium sylvaticum*

*Groenlandia densa*

*Gymnadenia densiflora*

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 in white (the boundary between is a black line) and local authority boundaries by red lines. See the Kent webpage of the BSBI website at <http://www.bsbi.org.uk/kent.html> 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:

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SB Sue Buckingham  
SC Steve Coates  
Sp Sue Poyser  
TI Tim Inskipp  
TCGR Tim Rich  
TR T.Ruck

#### Other abbreviations:

BAP Biodiversity Action Plan  
BBG Bradford Botany Group  
BM Natural History Museum  
herbarium  
CGE Cambridge University herbarium  
KBRG Kent Botanical Recording Group  
MoD Ministry of Defence  
NNR National Nature Reserve  
NR nature reserve  
pers.comm. = personal  
communication  
RSPB Royal Society for the Protection  
of Birds  
SLBI South London Botanical Institute  
herbarium  
s.s = *sensu stricto*, in the strict sense  
WFS Wild Flower Society

## *Galeopsis angustifolia* Erh. Ex Hoffm. (Red Hemp-nettle)

Draft account

vc 15; appears to have gone from vc 16

### Rarity / scarcity status:

Red Hemp-nettle was formerly widespread in the British Isles as an annual of cornfields, waste and open ground. It has contracted in range considerably with changing agricultural methods, including increased fertiliser and herbicide applications, earlier ploughing of stubble and an increase in winter sowing of crops, rather than spring. As a result, it is considered to be **Critically Endangered** both in England and in Great Britain as a whole, at extremely high risk of immediate extinction in the wild, and it is a UK Biodiversity Action Plan priority species. Planned actions include monitoring, targeting agri-environment options for farms with current or historic occurrences and ensuring survey of arable plant priority areas before certain schemes are undertaken. In Kent, however, where the species is **scarce**, these actions have limited relevance to what is now a plant of shingle at Dungeness.



### Account:

The first published Kent record is by Thomas Johnson in his *Iler Plantarum* (1629), as found on 13 July that year in travelling between Gravesend and Rochester. Hanbury and Marshall (1899) regarded Red Hemp-nettle as frequent in Kent, giving stations for it in all ten botanical districts into which they divided the county. Most of their cited records are for cornfields, but there are references to its occurrence on downs and in a chalk pit. This diversity continued to be shown in records during the 1940s and 1950s with, for example, sightings in a cornfield margin at Downe (1943); in an arable field on chalk north west of Eynsford (1954); on open chalk on downland north of Kearsney, Temple Ewell (1949); in open chalk soil on cliffs at Kingsdown (1946); and on shingle at Dungeness (1946-56).

Dungeness. Photo by Owen Leyshon, 2011

By the time of Philp (1982), however, *Galeopsis angustifolia* had become largely restricted to Dungeness, elsewhere being a scarce weed, very local in cornfields on the chalk. The last focus of cornfield records appears to have been in East Kent, in the Tilmanstone / Studdall / Ringwould area. During the 1991-2005 county survey (which saw a reduction to four tetrad records from 17<sup>1</sup> recorded during 1971-80) the species was no longer to be found as an arable weed. Recording in 2010-17, however, has restored the level to seven tetrads (ten monads), all as a shingle plant

Red Hemp-nettle is an annual germinating fairly late in spring, requiring well-drained soil with limited competition. Fertilised crops may out-compete it, but the shingle of Dungeness can provide a sufficiently sparsely vegetated habitat that the species can thrive, particularly in disturbed terrain, where it acts as a pioneer species. Once succeeded by grasses or other shingle plants such as *Centranthus ruber* (Red Valerian), *Echium vulgare* (Viper's-bugloss) or *Senecio jacobaea* (Common Ragwort), it appears to be out-competed, so a

<sup>1</sup> The non-Dungeness tetrad records were for TQ56M, TQ66W, TQ76H, TR14H, TR25Q, V, W, X, TR34J & P, TR35F.



level of repeated disturbance appears to be required in order that Red Hemp-nettle may thrive. Accordingly, the established vegetated shingle ridges do not normally support it.

*Galeopsis angustifolia* has been known at Dungeness at least from the 1860s and has been recorded frequently from there since. There have been recent records from easternmost Dungeness (particularly the sides of the road south from the Pilot and the lifeboat station down to the old lighthouse car park, along which vehicles frequently get stuck, with shingle disturbance arising as they are dug or pulled out) and as far west as the Lydd Ranges. Between these, just inland of the southern coastline, it may be seen in the vicinity of the power station, reflecting the existence of good colonies within the secure areas which are not accessible by the public, particularly between the perimeter security fences of the operational compound for (the non-generating) Dungeness 'A' power station where it has been monitored at least between 2007 and 2010. The regular strimming applied to this zone to aid the security laser beams presumably maintains the disturbed conditions needed by the species. Other parts of the power station complex apparently carry a scattering of occurrences on disturbed shingle or in the cracks of car park hard-standing or road surfaces. There appears to have been a decline in numbers within the power station complex since the 1990s/early 2000s.



Dungeness. Photo by Owen Leyshon, 2012

The Red Hemp-nettle follows the Dungeness shingle up the Coast Drive to Lade, either on the seaward side of the road (in small numbers due to the thicker vegetation) or on the shingle patches in front of the houses, where occupiers prefer the appearance of bare shingle and keep turning it over to discourage vegetation establishment.

Whilst Dungeness has over the decades since the 1940s seen much shingle disturbance in terms of wartime defences construction, gravel extraction, railway works, building new power stations and new houses, the level has diminished with stricter conservation designations. However, the coastal strip from Greatstone to Dungeness has around 1,000 homes and accepts about 600,000 visitors per year to the Point, so that management of the National Nature Reserve entails a degree of restraint on shingle disturbance which might otherwise arise through motorbikes, quadbikes, fly-tipping, off-road 4x4 vehicles and other activities, although the fortunes of the Red Hemp-nettle follow the balance between restraint and disturbance. It is unsurprising to find that its current distribution correlates with the areas of highest inland shingle disturbance, from Lade down the housing development onto the Point and around the power station complex across onto Lydd Ranges.

Site	Grid reference	Site status	Last record date	Recorder	Comments
Lydd Ranges (South Brooks)	TR0217	MoD land	(1) 6 August 2012 (2) 30 May 1993	(1) OL, GK, TI & SB (2) EGP & JBe	(1) On disturbed shingle by military road (South Brooks Road) and railway at TR 02248 17747 from corner scattered over c.30m north eastwards. (2) Given as TQ011.

Dungeness, Pen Bars	TR0516		9 August 2012	TI	TR 05961 16844 to TR 06045 16871 (568 plants).
Dungeness, west of power station	TR0616		(1) 7 August 2017 (2) 9 August 2012	(1) BBe (2) TI	(1) TR 063 169, in lichen heath/shingle vegetation. (2) TR 06110 16874 to TR 06041 16839 (517 plants).
Dungeness, ARC site	TR0619		8 August 2012	TI & SB	One plant by path at T R06449 19886.
Dungeness, power station	TR0716, TR0717, TR0816, TR0817		(1) 22 June 2014 (2) 5 August 2010 (3) 20 July 2010 (4) 20 & 21 July 2010 (5) After 1990, before 2006	(1) KBRG meeting (2) DJ (3) Monitoring survey (4) ditto (5) EGP (Philp, 2010)	(1) TR0817. A few seedlings on shingle within boundary of power station, TR 0808 1710. TR0717. A single plant on bare shingle, recently disturbed TR 07976 17100. (2) TR0716. On shingle outside Power Station wall, approx. 150-200 plants, full flower, covering 2 square metres, given as TR0775 1657, probably TR0775 1662. (3) TR0817. Extensive populations in zone between northern perimeter security fences of 'A' power station (eastern end of power station site). (4) TR0716, TR0717, TR0816, TR0817. Within the 'B' power station complex, a generally very sparse and thinly distribution, usually as isolated or small groups of plants, always associated with patches of bare shingle or cracks in hard standing/road surfaces. Largest concentration of plants was c. TR 082 171 where deliberately disturbed in 2008 and subsequently kept open by trampling. (5) Recorded as TR01Y.
Dungeness, old lighthouse	TR0816		(1) 20 August 2011 (2) 2010	(1) SB (2) TI	(1) 30 plants on 4 square metres of shingle and sand, TR 08429 16632.
Dungeness, Long Pits	TR0818		(1) 3 July 2011 (2) 27 July 1996	(1) TI (2) EGP	(2) May be same monad, but given as TR01Z, Lydd-on-Sea.
Dungeness, Lydd-on-Sea	TR0819		(1) 23 August 2013 (2) 10 August 2013 (3) 2012 (4) 8 August 1986	(1) CO (2) TI (3) OL (4) AGa	(1) Frequent by kerbs and on shingle. (2) One plant. (3) TR 08390 19743, Coast Drive just north of Lade car park (the most northern recent record). (4) TR 085 191 and TR 084 190 (both near Kerton Road).
Dungeness, lifeboat station	TR0918		3 July 2011	TI	TR 092 185, 5 plants on a mound of recently disturbed shingle and soil.
Lade	TR0820		(1) 2010 (2) After 1990, before 2006	(1) OL (2) EPG (Philp, 2010)	(1) In the middle of an active shingle quarry (Kerton Road Quarry) at TQ 08403 20957 (site may since be under water). (2) May be this monad, but recorded just as TR02V.

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

## *Galium parisiense* L. (Wall Bedstraw)

Draft account

vc 15 and 16

### Rarity / scarcity status:

*Galium parisiense* is primarily a plant of East Anglia, with a scattering of records across south east England and outliers in Devon. Historic losses appear to derive from 'improvement' of the infertile soils which it favours and changes to walls on which it grew; and its conservation status in England and in Great Britain as a whole is **Vulnerable**. In Kent, it has been considered scarce, but it appears commoner than this.

### Account:

The first county record for Wall Bedstraw is in the third edition (1724) of John Ray's *Synopsis Methodica Stirpium Britannicarum*, where the least Goose-grass is said to have been 'At *Eltham* on a Wall going to the Court, and in many other Places; *Mr. J. Sherard*'. The Court was presumably the outer court of the decayed Eltham Palace, then occupied as a farm and with walling of mediaeval origins. According to Wolley Dod, the species was still there in 1894. It is, however, unlikely to have survived the restoration and new building works undertaken in the 1930s. Another early record with long continuity is that of William Hudson in the second edition of *Flora Anglica* (1778), where he refers to the small Ladies Bedstraw as present on top of a wall in Farningham Castle. This is at present a bumpy field north east of Farningham High Street, but in the mid-18<sup>th</sup> century it would have constituted the remains of a 1740 manor house which had burned down before completion of construction and which was on the castle site. On the opposite side of the High Street is now



the current Manor House with a long brick wall, 18<sup>th</sup> or early 19<sup>th</sup> century in appearance, and *Galium parisiense* is still present here, despite some vigorous re-pointing of the wall in 2000, having crossed the road. Hudson also recorded it between Dartford and Northfleet, and Dartford is the location for perhaps the earliest known specimen, collected by Samuel Dale (1659-1739), **BM**.

Lullingstone. Photo by Lliam Rooney, 18 June 2011

Hanbury and Marshall (1899) cited few Kent records apart from these, regarding the species as very rare and local; neither had actually seen it in the county, except at Farningham. There are other mural records for north west Kent which can no longer be found: a wall in Bromley noted by Milne and Gorden in their *Indigenous Botany* (1793) and old walls near Orpington Church (1843, specimen in CGE). Further records on old walls have since been noted and may have been overlooked before. It has been present on an old wall at Chelsfield Church, the boundary with Court Lodge (an 18<sup>th</sup> century building, the wall appearing no older),

at least since 1945 (Francis Rose). It was recorded on an old wall at Lesnes Abbey in 1954. It is also present in various places on the walls of the gardens at Lullingstone Castle – these are listed buildings, described in the listing as structures dating from the 17<sup>th</sup> to the 19<sup>th</sup> century – but it may have been introduced here. W.H. Griffin referred to Wall Bedstraw in the Woolwich Surveys (1909) as on garden walls in Lullingstone Park since 1905, but a specimen in **SLBI** labelled by him as from Lullingstone Castle on 27 July 1904 is annotated 'seed planted 28.3.1904'. Whilst this could indicate that the specimen was cultivated from seed obtained at



Lullingstone Castle in 1904, his record from 1905 might be interpreted as suggesting that there was seed sowing in 1904 which could only be fairly recorded once it had reproduced on its own account so as to re-appear next year.



Chelsfield Church. Photos by Geoffrey Kitchener, July 2011



Farningham. .Photos by Geoffrey Kitchener, 2011



Lullingstone Castle .Photo by Geoffrey Kitchener, 2011



Setting aside botanists' introductions, it is unclear how Wall Bedstraw got to old walls in the first place. Rodney Burton<sup>2</sup> suggests that, given the age of some old walls in Britain where it is present, it is tempting to speculate that a warmer climate between 1150 and 1300 may have enabled a rapid spread northwards in western and central Europe. The mechanism of spread is uncertain. It may have been an undetected quarry plant reaching walls via lime and sand mortar; or it may have arrived with birds although the fruits themselves (except for a mainland European variant of Wall Bedstraw with fruits having hooked bristles) do

not have a means of anchoring themselves to birds, unless a fragment of the stem, which is rough and bristly, bearing fruits becomes hooked up in plumage. It is, however, apparent that old wall tops provide a very suitable habitat – well-drained and with minimal competition for this small annual. In particular, the sloping

<sup>2</sup> Galium parisiense L. in (ed.) Stewart, A., Pearman, D.A. & Preston, C.D. (1994) *Scarce Plants in Britain*, JNCC, Peterborough.

batter at or towards the top of walls shown in the illustrations for Chelsfield, Farningham and Lullingstone is well favoured by this species.

Wall Bedstraw, however, is also found as a plant growing on bare, well-drained ground, and not just where it may have seeded into gravel or the like below walls. William Hudson's 1778 records include mention of the plant between Dartford and Northfleet, without reference to any wall, and although this may not necessarily be an example of continuity, the species has been known at least since 2003 at Northfleet Green, on the semi-bare ground of a disturbed roadside, the soil being somewhat flinty, with sandy tertiary drift and some calcareous influence. Other relatively recent ground-growing sightings include a former ragstone quarry at Ditton (somewhat equivocal in view of a number of introduced species at that locality) and extensive populations on compacted sand over shingle on MoD land at Lydd Ranges. A habitat which does not seem to have been replicated since is at Lydden Spout, published by G.E. Smith in 1829 (*A Catalogue of Rare or Remarkable Phaenogamous Plants collected in South Kent*), although it is unclear whether Smith was referring to the foot, sides or top of the chalk cliffs. He remarked on this find being of the 'hairy variety' (presumably with bristly fruits)<sup>3</sup>. Bristly fruited *G. parisiense* is very rare in Britain, although it is the norm in, e.g. Spain, and forms part of Linnaeus' description of the species.<sup>4</sup>

Northfleet Green, habitat. Photo by Geoffrey Kitchener, 13 July 2011



There are also occurrences in more artificial habitats, which admit of no easy explanation. It has been known as a railway ballast plant in Kent, being at Sandwich railway station (at least 1946-56) and by the railway at Snodland in the 1930s and Chilham station platform in the 1940s, leaving an open question as regards whether it came with railway materials or with transported goods. Its presence on the margin of a tarmac footpath at a Tonbridge roundabout (2011) is mysterious, but could be an introduction from mainland Europe on vehicle tyres. The *Galium parisiense* discovered in Fowlmead County Park (2012) has no obvious origins, but the sharply draining colliery spoil, whose lack of nutrients keeps ground free from competitive plant growth, indicates a very suitable habitat. This suitability is echoed by its discovery on colliery waste in West Lothian in 2013.

As Philp (1982) and Philp (2010) give only three tetrad records for this species (albeit only two of these are the same), this would have led to an assessment of the species' status as rare, but for its presence in metropolitan

<sup>3</sup> Authorities have assumed the accuracy of the identification by Smith, who was a very reliable botanist. Smith in his annotated copy of the *Catalogue* referenced this plant to the relevant plate and short description in Sowerby's *English Botany* (given there as *G. anglicum*) and may not have known the plant otherwise. *English Botany* also has a short description and somewhat scrappy plate of *G. pumilum* (given there as *G. pusillum*) and this species is a much more likely one to have been found – being a location west of Dover analogous to the *Galium pumilum* site at Langdon cliffs to the east. If there was a misidentification, then this would have arisen from inadequacies of the *English Botany* descriptions; the plants would have to have been in fruit rather than flower (*English Botany* is clear about the small greenish-white flowers of *G. parisiense* and the conspicuous milk-white flowers of *G. pumilum*) and Smith would have had to have taken the fruits of *G. pumilum* (which are covered in fine papillae) as the hairy-fruited form of *G. parisiense*. However, the discovery in 2014 of *G. parisiense* on concrete and gravel at Samphire Hoe shows that it is capable of turning up on this general section of coast, and so the likelihood of misidentification is not high.

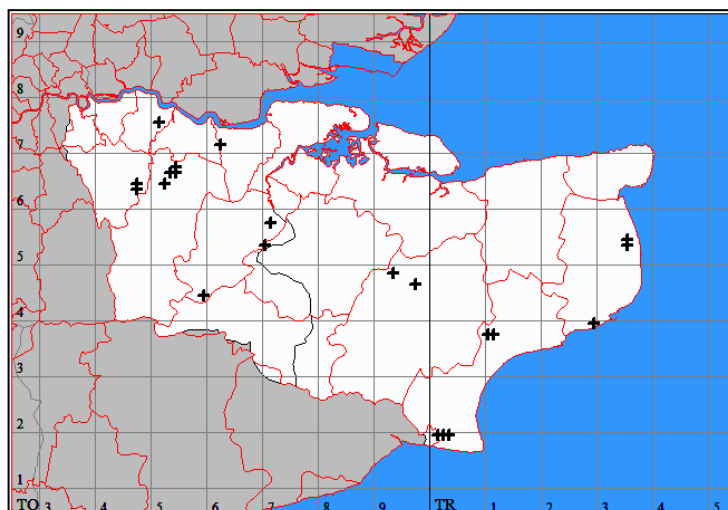
<sup>4</sup> Edgington, J. (2016). *Galium parisiense* (Wall Bedstraw) – a fruity story. *BSBI News* **134**: 12-14.



vc16, not covered by those publications. For initial purposes of this register, the species was assessed as scarce. However, the extent of new Kent finds during the period 2010-17 has transformed this picture. Rodney Burton (as national referee) points to some new finds nationally since 2004 by experienced botanists and to the potential for this rather insignificant plant to be overlooked. The national risk categorisation was formulated by reference to data before any emerging trend for new finds. A comparison of Wall Bedstraw's area of occupancy in England over the periods 1930-1969 and 1987-1999 produced a calculated decline of 45% in the likelihood of recording the species, and this is what gave rise to its assessment as Vulnerable. In Kent, the species has been recorded in 21 monads (equivalent to 18 tetrads) during the period 2010-17 as indicated in the accompanying distribution map, a sharp contrast to the three tetrads in Philp (2010).

#### *Galium parisiense* (Wall Bedstraw) 2010-17

The expansion seems largely to be related to its discovery as a ruderal, appearing on artificial surfaces or sharply draining substrates where disturbed by human activity. It appears currently more common in the county than at any other time from which adequate records are available. It may be that the increase represents increased survival of casual introductions with climate change (noted in Belgium from c. 2010, where the species is an alien).<sup>5</sup>



Site	Grid reference	Site status	Last record date	Recorder	Comments
Chelsfield Church (metropolitan vc16)	TQ4763		(1) 16 June 2014 (2) July 2011 (3) 22 March 2009	(1) JP (2) GK (3) JP	(1) TQ 479 639, over 1000 plants on the rear churchyard wall at St Martins. Recent clearance of shrubs and ivy has exposed the wall top to light and recorder supposes that seeds were dormant below the ivy covering (perhaps in the mortar?) Also, the ivy has recently been cleared from the brick wall opposite the porch and at least 100 plants were present here on ledges and wall top, not seen here by recorder before. (2) TQ 4793 6402, growing on sloping brick cap to churchyard western wall. (3) Noted as on top of wall which was more open following ivy removal. Present at least since 1945 (FR) with several records in the 1980s.

<sup>5</sup> Verloove, F. (2014). *Galium parisiense*, in Manual of the Alien Plants of Belgium. <http://alienplantsbelgium.be/content/galium-parisiense> (accessed 3 February 2017). See also Edgington, J. (2017), *supra*.

					Re-pointing and subsequent ivy growth appeared to have diminished its extent until 2014, as RMB found it along 30 yards of wall-top in 1987.
Lullingstone Castle	TQ5264 & TQ5364	Walls are listed buildings.	(1) 4 July 2013 (2) 18 September 2011 (3) 19 August 2011 (4) 15 June 2011 (5) 26 September 2010 [1986, 5364]	(1) & (2) RMB (3) & (4) GK (5) RMB	(1) c.20 plants on ground by gatehouse on the left as you go in, 6 on top of high wall facing the golf course near N corner of walled garden and up to 200 on wall by access road to The Bothy. (2) On internal walls of Lullingstone world garden, a small patch at TQ 5294 6449 and another at TQ 52995 64524. (3) TQ 52943 64558, 46 young plants on sloping ledge of old west-facing wall for c. 10m. TQ 52948 64561, large number of plants, continuous along ledge of old north-facing wall, for c.15m. (4) 300 plants on sloping ledge 150cm above ground on N-facing outside wall of castle walled garden, extending about 18m from NW corner (TQ 5294 6456) , and 5 plants on ledge 110cm above ground on N tower of castle gatehouse, on side facing castle (TQ 5293 6441). Present at Lullingstone since 1904/5, with frequent records since, extending also to monad TQ5364 (RF, 1986), into which the garden walls run.
Farningham	TQ5466, TQ5467		(1) 13 May 2017 (2) 19 August 2015 (3) 18 July 2014 (4) 2 August 2013 (5) 1 July 2013 (6) 5 April 2013 (7) 16 August 2012 (8) 18 April 2012 (9) 19 June 2011 (10) 5 May 2011 (11) 3 July 2000	(1), (2), (3), (4) & (5) RMB (6) GK (7)-(11) RMB	(1) None on wall-top now, but plenty of young plants at base of wall. (2) Under threat on wall at TQ 5465 6698 because of spread of <i>Solanum jasminoides</i> , still flourishing in front of stone bench at TQ 5470 6695 (3) TQ5466. At least 22 plants in front of stone seat, 42 on wall in front of village hall and 44 on Manor House Wall. (4) TQ5466. Several plants on wall of Manor House at south east corner, one on churchyard wall next to west gate. (5) TQ5466. NE side of High Street opposite bank in front of stone seat in wall. (6) TQ5467. Last year's dead growth on top of brick/flint wall, TQ 546 670, in High Street opposite Manor House wall. (7) TQ5466. 36 plants: 22 on slope of wall in front of Parish Council notice board, 14 on wall of Manor

					<p>House, some of them large, 0 in front of stone bench.</p> <p>(8) TQ5467. Manor House wall (the north western end falls within this monad).</p> <p>(9) TQ5466. 12 plants on NE side of High Street opposite bank in front of stone seat in wall - area cleared of weeds by parish council volunteers on 15/8/2011. Seed scattered here and on Manor House wall by RMB on 3/10/2011.</p> <p>(10) TQ5466. One plant on Manor House wall, and two on outside wall of churchyard 3m up side road from gate.</p> <p>(11) The population was recorded as in two parts: the larger part is on the sloping top of the wall in front of the manor house (TQ 546 669), and until 3 July 2000 numbered many hundreds of plants growing almost continuously for about 40m x 20cm. On that day, as the recorder arrived to estimate the numbers, the last of the plants was being stripped off ready for the wall to be re-pointed. However, plants remained on the narrow wall-top and the population could be expected to recover, as it has done before. [In fact, the recovery has not been good.] There was a secondary population further east on the other side of the road at TQ547669, opposite gate of glebe house, numbering about 10 plants. There are many earlier records for this site, which has historic origins – see text of account.</p>
Tonbridge	TQ5944	Highway	24 August 2011	SB	14 plants on ground at margin of tarmac footpath, Vauxhall Lane 'roundabout', TQ 59468 44689.
Northfleet Green	TQ6271	Highway	(1) 13 July 2011 (2) 3 October 2003	(1) GK (2) EGP & PHe	(1) TQ 62791 71537, spread along c.15m of roadside bank thrown up from adjacent ditch. Flinty soil, somewhat sandy (from tertiary drift) and some calcicole flora (e.g. <i>Blackstonia</i> ) in vicinity. <i>Galium</i> plentiful and (low) bushy in places. (2) Recorded as TQ67F.
Bayham Abbey	TQ63N		After 1970, before 1981	RC in Philp, (1982)	An old wall in Bayham Abbey grounds (although the old abbey ruins are outside both vc16 and the administrative county of Kent).
Teston	TQ7053		10 June 2014	DM	A few plants at TR 7073 5312 in a grassy area near Country Park car park and Teston Lock. This area had apparently been the parking area for heavy machinery used in



					recent reconstruction of the lock.
Ditton Quarry	TQ7157	Ditton Parish Council nature reserve	(1) 17 June 2014 (2) 15 June 2004	(1) DM (2) SB, PJ, JLo, KK	(1) TQ 71512 57409, an area c. 11.5 x 1.5metres, in upper part of quarry next to a path. Also in upper part of quarry: TQ 71678 57271, in flat short grassland area 20 x 30 metres and TQ 71557 57397, area approximately 7 x 9 metres. (2) Growing on ground in open, well-drained plateau area of former ragstone quarry.
Tutt Hill	TQ7946		(1) 16 July 2017 (2) 10 June 2017	(1) KBRG meeting (2)> SL	(1) Plants spread over a couple of metres of the sloping bank south of the High Speed Railway at TQ 9777 4640. (2) Tutt Hill, HS1 railway bank along edge of public footpath in large arable field, near Ripple Wood, TQ 9776 4641. Plants spread over a few metres on hardcore/sand next to fence line. Presumably introduced here recently when HS1 embankment constructed on arable field.
South of Charing Heath	TQ9348		(1) 7 June 2015 (2) 29 August 2014	(1) KFC meeting (2) AG, JP & MPh	(1) comm. JP, found on anthills and bare rabbit-disturbed ground. Several colonies, one at TQ 93020 48415, others nearby. (2) High Speed 1 railway verge near Hurst Wood, TQ 9304 4840; several plants noted on ant hills and grassy bank.
East of Lydd Ranges	TR0119		11 May 2014	TI	About 5 small plants at TR 01917 19544 between cycle track and road.
Lydd Ranges	TR0219	Dungeness, Romney Marsh & Rye Bay SSSI (MoD firing range)	6 August 2012	OL, GK, TI, SB	On compacted sand on shingle by military road, e.g. at TR 02984 19844 and TR 02987 19850. Also on compacted sand over shingle at TR 02789 19654 and nearby around TR 02819 19686 in light (but closed) sward on banks near lake.
Lydd Ranges	TR0319	Dungeness, Romney Marsh & Rye Bay SSSI (MoD firing range)	6 August 2012	OL, GK, TI, SB	Frequent around TR 03154 19685 in area of compacted sand on shingle, used for movement of sand in relation to adjoining sand heap. Also present on top of this, centred on TR 03132 19693.
South of Sellindge	TR1037		(1) 8 July 2017 (2) 10 June 2016	(1) BW (2) SB	(1) On compacted tracks, very scattered, not common. (2) Dense spread of plants for 40 yards on sandy banks of the M20 alongside a footpath at TR 1079 3772.
South of Sellindge	TR1137		8 July 2017	BW	On compacted tracks, very scattered, not common.
Samphire Hoe	TR2939		10 July 2014	SB & class	Many plants spread over several square yards of concrete and gravel at TR 2953 3927, just west of

					the tunnel entrance.
Betteshanger (formerly Fowlmead) Country Park	TR3553, TQ3554	Owned by Hadlow Group and managed as a country park	(1) 27 May 2014 (2) 12 June 2012	(1) & (2) SB	(1) Abundant at the margins of the car park and alongside the cycle track nearby. (2) More than 100 plants in c. 1 x 0.5 metres of bare slag at TR 35794 53773.

## *Galium pumilum* Murray (Slender Bedstraw)

Draft account

vc 15 and 16

### Rarity / scarcity status:

*Galium pumilum* is a plant of chalk and limestone grassland in southern England, apparently in decline through loss of habitat and so regarded as **Endangered** in England and in Great Britain as a whole. Philp (2010) feared that this species was lost to Kent, searches having been made at previously recorded locations without success ('a tale of being ploughed up, scrubbed up, or grazed off'), but subsequently it has been found or re-found in four sites, and is treated as very **scarce** in the county.

### Account:

Early Kent records are confused with *Galium saxatile* (Heath Bedstraw)<sup>6</sup>, from which Slender Bedstraw was not always distinguished, although it is possible to surmise that a record from the chalk is likely to be the latter. This may be the case with several *Galium saxatile* records cited by Hanbury and Marshall (1899), such as a find on the Downs west of Folkestone by G.C. Walton. A discovery by Marshall of *G. saxatile* was cited from 'Between Lyminge and Paddlesworth, and in Paddlesworth Wood', which probably corresponds to a specimen in SLBI collected by him in 1893 which he annotated 'Abundant for a few yards in an apparently unbroken pasture; just outside & east of Paddlesworth Wood, E. Kent, on chalk. Looking quite indigenous.' He also indicated that he had not obtained a name for it, but it seemed to be a form not previously found in this county: 'Is a difficult plant!' This specimen is *Galium pumilum*.

Since then, there has been a thin scattering of occurrences on the chalk across the county, from Dover and Folkestone in the east, through to Parkgate Down (1986, Rosemary FitzGerald); the east side of Elhampark Wood (1950-57, Francis Rose); Juliberry Downs, Chilham (1945, Francis Rose); and west as far as Francis Rose's records at Romney Street (north of that hamlet, in scrub on loam, 1952); and on downs grassland north of Pilgrim House, Westerham (1955). Except for Dover, these sites are now lost, but indicate a degree of continuity of earlier distribution along the North Downs, picked up later at Colley Hill, Reigate in Surrey.



Temple Ewell/Lyddon. Photo by Liam Rooney, 22 June, 2011

The most consistent sightings, however, have been in three locations. At Langdon cliffs it has been seen sporadically from 1950 to 2011, despite competition from *Brachypodium rupestre* (Tor-grass). On the downs at Temple Ewell there are records from 1945 (by Francis Rose) to 2013. At Purple Hill near Kemsley Street it has been known at least from 1960 to 2011. All these sites have in common an open aspect on sloping, well-drained chalk terrain, generally bearing short turf. They are fairly species-rich sites. At Purple Hill, some 20 species were recorded in 2011 within one metre of a sample plant, generally of usual chalk grassland plants such as *Briza media* (Quaking-grass), *Origanum vulgare* (Wild Marjoram) and *Thymus polytrichus* (Wild Thyme). The rare species *Polygala amarella* (Dwarf Milkwort) is also present on the same hill, but not in the immediate vicinity. The turf there (in 2011) was maintained open by rabbit-grazing and occasional horse-

<sup>6</sup> See also the account of *Galium parisiense* for the possibility of early confusion with that species.



grazing and there was a degree of light erosion, which may explain the number of seedlings found at that site (seedling establishment being apparently fairly rare in Britain). At Temple Ewell, in the 2011 the grazing regime appeared to restrain the influence of *Brachypodium rupestre* (Tor-grass) and there were good chalk grassland species such as *Genista tinctoria* (Dyer's Greenweed) and *Polygala calcarea* (Chalk Milkwort) in the immediate vicinity of the Slender Bedstraw. At Langdon cliffs, the species grew (2011) on a south-facing chalk grassland slope, with calcicoles such as *Hippocrepis comosa* (Horseshoe Vetch), *Origanum vulgare* (Wild Marjoram) and *Poterium sanguisorba* (Salad Burnet). However, *Brachypodium rupestre* (Tor-grass) was abundant, sometimes dominant, and Slender Bedstraw appeared to fare much better where there was less



Tor-grass and more grazing and disturbance by rabbits.

Purple Hill.

Photo by Geoffrey

Kitchener, 23 June, 2011

An unexpected new site was found by David Steere in 2015, at Rectory Meadow,

Longfield. This is a remnant of chalk grassland with a good flora, including *Orchis anthropophora* (Man Orchid) and much *Genista tinctoria* (Dyer's Greenweed), currently maintained as a local nature reserve, with coarse grass and scrub, which had developed from about 1990, kept at bay. Given the degree of public access, it might be considered surprising that the species has been so long overlooked, but it is very inconspicuous, even when in flower.

An interesting connection between *Galium pumilum* and *Euphorbia cyparissias* (Cypress Spurge) was noted by Francis Rose and Jean-Marie Géhu<sup>7</sup> in the context of plants known in Kent but lacking in Pas-de-Calais -that there were formerly five East Kent localities in which both species were found growing together. This observation would not appear to detract from the native status of *Galium pumilum*, but may support the case for that status also applying to East Kent *Euphorbia cyparissias*.

Slender Bedstraw is distinguishable from other white-flowered Kent bedstraws by a combination of smooth-angled stems and mucronate-tipped leaves with at least some backwardly-directed prickles on the margins. It is not easy to pick out from the vegetation of chalk turf, especially when grazed down, and is most easily seen when coming into flower and before *Galium album* (Hedge Bedstraw) has provided too many distracting patches of white flower. Different populations appear to come into flower at different times.

Site	Grid reference	Site status	Last record date	Recorder	Comments
Rectory Meadow, Longfield	TQ6068	Local nature reserve	(1) 4 June 2015 (2) 28 May 2015	(1) DS & GK (2) DS	(1) At least four diffuse patches of plants, at TQ 60350 68576, TQ 60334 68561, and TQ 60350 68563

<sup>7</sup> F. Rose & J.M. Géhu (1960). Comparaison floristique entre les comtés anglais du Kent et du Sussex et le département français du Pas-de-Calais, *Bulletin de la Société de Botanique du Nord de la France*, 13: 125-139. This association is also remarked upon by Rosemary FitzGerald (1994). *Galium pumilum* Murray Slender Bedstraw, in ed. Steward, A., Pearman, D.A. & Preston, C.D., *Scarce Plants in Britain*, JNCC.

					<p>in Lower Meadow, and TQ 60327 68508 in Upper Meadow, in total amounting to a fairly wide spread through the more open areas of this two hectare local nature reserve. Accompanied by good chalk grassland flora, including much <i>Genista tinctoria</i>.</p> <p>(2) Discovered at TQ 60336 68496 etc., over 20 small plants scattered in grass meadow, flowering.</p>
Purple Hill	TQ8162		<p>(1) 23 June 2011 (2) 16 June 2010 (3) 29 May 1986</p>	<p>(1) GK (2) FJR (3) FR &amp; RF</p>	<p>(1) Abundant on upper slopes of chalky hill, in short turf becoming scrubbed with hawthorn, <i>Cotoneaster horizontalis</i> and <i>Rosa micrantha</i>, over about 25m x 15m between co-ordinates TQ 81294 62132, TQ 81303 62134, TQ 81299 62155, TQ 81291 62160, TQ 81286 62150 and TQ 81289 62136. Many patches, at times continuous in short sward. Just coming into flower. Many seedlings. Over 1000 plants.</p> <p>Also at TQ 81304 62162, an outlier from main colony, a patch in horse-grazed field to east, c.30cm x 50cm.</p> <p>(2) TQ 812 621, a very healthy population on upper parts of chalk slope, with the odd plant in the adjacent field to the west.</p> <p>(3) TQ 813 621 (or 2), in less grazed patch of down in north west corner of chalk pit.</p>
Temple Ewell / Lydden	TR2745	NNR	<p>(1) 11 June 2013 (2) 26 May 2012 (3) 22 June 2011 (4) September 1996 (5) 5 June 1995 (6) 25 May 1986</p>	<p>(1) JA (at KBRG meeting) (2) BBG meeting (3) KBRG meeting (4) NF (5) FR (6) RF</p>	<p>(1) Well established at TR 27727 45255.</p> <p>(2) c. TR 2762 4526. Quite a lot just coming into flower, seemingly not uncommon (perhaps the wet weather earlier in May and throughout April had helped). From the wooden gate separating compartments 1 and 2 there is a small copse of mixed bushes c. 50m to the right (looking uphill). To the right of this, another 30m or so there were many scattered plants, also further down the slope and towards the old burnt spot.</p> <p>(3) TR 27721 45252, spread over about 2 x 2m of west-facing grazed downland slope, in area dominated by tor-grass, with associates as per BSBI TPP survey, about 10m north east of path, in fruit only. Shown by SB, by whom it was found a few days before.</p> <p>(4) TQ 276 453.</p> <p>(5) Locally abundant, TQ2745.</p>

					(6) TR 277 452, lower part of lands east of entrance.
Park Gate Down	TR1645, TR1646	KWT managed reserve	(1) 1999 (2) 11 June 1998 (2) 2 June 1986	(1) HH (2) FR & PG (2) RF	(1) Three clumps. The location has since become completely scrubbed over with <i>Prunus spinosa</i> (SB, 2011). (2) TR1645. (3) TR 168 461 (or 2), north compartment.
Langdon cliffs, Dover	TR3342	SSSI	(1) 9 June 2011 (2) 9 June 2001 (3) 30 May 1986	(1) SB (2) RW (3) FR & RF	(1) At TR 3347 4221, estimated 60 plants on rabbit-grazed chalk grassland slope. Also, at TR 33485 42219 estimated 300 - 500 plants in similar habitat; and at TR 3351 4224, estimated 30 plants on chalk slope in dense Tor-grass. Overall population within 50 x 20m area. (2) A few plants on bank on north side of car park, TR 335 422. (3) TR 334 411, below Langdon Barracks in chalk grassland above the cliffs, and in spots further east.



## *Galium uliginosum* L. (Fen Bedstraw)

Draft account

vc 15 and 16

### Rarity / scarcity status:

Fen Bedstraw is widely distributed in the British Isles in base-rich marshes and fens and, although the species has been in decline generally since 1950, its risk status is regarded as of 'Least Concern', both in England and, more widely, in Great Britain. This decline appears also to have taken place in Kent where, however, it has always been uncommon and is currently treated as **scarce**.

Gibbin's Brook. Photos by Liam Rooney, 30 June, 2013

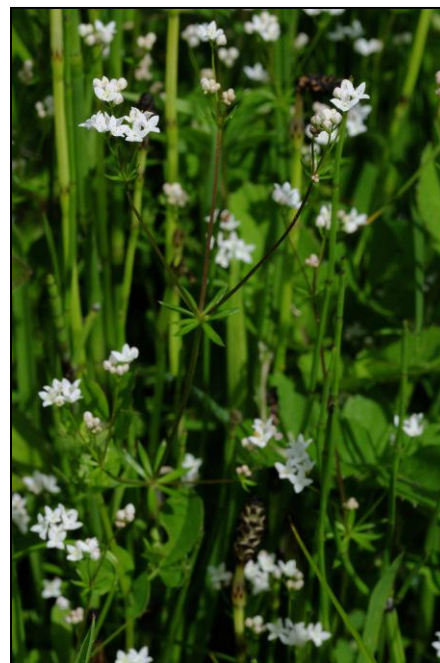
### Account:

The first published record in Kent is given in the third edition of John Ray's *Synopsis Methodica Stirpium Britannicarum* (1724, revised by Dillenius), 'On the *Lower Bog* at Chisselhurst; Mr. J. Sherard'. Hanbury and Marshall (1899) treated it as local and rather rare, in marshes and damp ground and themselves contributed a number of records, of which Hanbury's Ham Ponds discovery at least has been persistent.

By the 1971-80 survey published as Philp (1982), there were 15 tetrad records scattered across the country from extreme west to



east, but the species appeared to be absent from northern Kent. In Philp (2010), however, the number had reduced to only five scattered tetrads with base-rich marsh or fen habitats (these tetrads including only one in vc16 West Kent, but now extending to a north Kent location, at Graveney), which suggests a serious decline. It does seem, however, that the trend is not quite as abrupt, given that there have been other sightings, both during the period of survey for Philp (2010) and after. The total for 2010-17 is 9 monads (equivalent to 8 tetrads).



From the name, Fen Bedstraw, one would expect the species to be found in neutral or basic wetland, with some mineral enrichment, and frequently this is the case in Kent. The Lullingstone and Snodland/Holborough sites are directly related to river valleys breaking through the chalk downs and so subject to basic influence. The cluster of records inland of Deal and Sandwich relate to an area well-known for its peaty substrate with calcareous drainage. The species is widespread here alongside ditches, evidenced in particular by surveys in 1982 and 2003 which located it in 12 monads; this concentration is not shown so well when records are made or displayed at tetrad level only. Fen Bedstraw is also capable of growing in mildly acid conditions, especially if mineral enrichment has taken place. Its presence at Hothfield, where Francis Rose knew the species between 1943 and 1960, appears to indicate considerable acid-tolerance. The acidity may have been alleviated to a minor degree by flushing at the spring line at the bottom of the

Folkestone Beds overlying the silty clay of the Sandgate Beds, but the Folkestone Beds themselves are base-poor. It is likely that the first Kent record for the species (1724), at Chislehurst, was similarly in a more acid habitat than would normally be expected for Fen Bedstraw.

*Galium uliginosum* in Kent is more likely to be confused with *Galium palustre* (Marsh Bedstraw) than other bedstraws. Fen Bedstraw, however, is a rougher plant to touch; its flowers are generally slightly smaller; and the backwards-directed prickles on the leaf margins are stronger. The key difference normally given is that *Galium uliginosum* leaves terminate in a small point, as distinct from *G. palustre* leaves, which are obtuse or acute. It does, not help, however, that a very small mucro may occasionally be found at the tips of young *G. palustre* leaves, but the distinction will normally hold good.



Site	Grid reference	Site status	Last record date	Recorder	Comments
Otford	TQ5258		20 June 1988	JP	Sheep pasture, TQ 527 588.
Lullingstone	TQ5364		2 June 1987	JP	TQ 5319 6454, Laundry Field, Lullingstone Castle.
Yalding Fen	TQ6849		(1) 25 July 2010 (2) 9 July 2009 (3) 17 June 1999 (4) 19 September 1992	(1) KFC meeting (2) JH & JP (3) AC & JP (4) JP	(1) TQ6842 4975, regenerating plentifully by willow carr and along edge of small pond. (2) (3) TQ684493 (site reference). (4) Reserve
Snodland / Holborough Marshes	TQ76B	KWT managed reserve	(1) After 1990, before 2006 (2) 23 July 1995 (3) 23 June 1980	(1) EGP (Philp, 2010) (2) JP (3) FR	(2) TQ7062. (3) Fen meadow, north east of Snodland, TQ7062.
East Benenden	TQ8233		19 May 2011	JP	Nine Acre Wood.
Lenham Heath	TQ9148		13 September 2011	JLa	TQ 917 489, 25 clumps in area of about 1.5 sq metre in boggy pasture near River Stour.
Charing	TQ9549		(1) 14 July 2014 (2) 21 July 2001	(1) JLa (2) RM	(1) TQ 956 490, on both sides of path, in front of tall vegetation ( <i>Filipendula ulmaria</i> , <i>Pulicaria dysenterica</i> , <i>Mentha aquatica</i> ) and scrambling up. Patchy for about 30m. (2) TQ 9572 4909, in open fenny area of alder carr.
Charing	TQ94P		9 May 2002	EGP & DW	In Philp, 2010. May be TQ9549 location above.
Graveney Marshes	TR06R		27 March 2002	EGP & BW	In Philp, 2010.
Gibbin's Brook	TR1138	CROW access land, SSSI	(1) 30 June 2013 (2) 17 July 2011 (3) 6 July 2008	(1) KBRG meeting (2) KFC meeting (3) JP	(1) Widespread in taller vegetation of bogs both sides of road. Sample location at TR 1162 3868. (2) Plants scattered over fen part of fenced area between TR 11590 38611 and TR 11584 38555. Also along edge of large drying-out pond at TR 11683 38732.

Brockhill Country Park	TR1435		29 March 2012	JP	
Westbere (south)	TR1960		9 July 2017	DCh	TR 19683 60123, widespread in marshy field.
Finglesham	TR3353		2 March 1983	AH	TR 339 543.
Ham Fen	TR3354	KWT managed reserve, SSSI	(1) 13 August 2016 (2) 1 August 2012 (3) 26 August 2006 (4) After 1990, before 2006 (5) 29 June 2003 (6) 2 March 1983 (7) 1982	(1) SL (2) SB, LR and JP (3) KFC meeting (4) EGP (Philp, 2010) (5) RM (6) & (7) AH	(1) Cattle-grazed rank fen pasture in Ham Valley, east of Finglesham (Unit 57 / South of Ham Fen Nature Reserve in the Hacklinge Marshes SSSI), TR 338 540 / TR 339 540. (2) Abundant on reserve, TR333 549. (3) TR3309 5483. (4) Recorded as TR35H. (5) TR3354. (6) TR337547. (7) TR 33390 54880, TR 33511 54784, TR 33523 54669, TR 33837 54396, TR 33885 54292, TR 33905 54118, TR 33920 54218.
Ham Brooks	TR3355		(1) 19 July 2017 (2) 5 August 2002, 25 July 1991 (3) 1982	(1) SB & SL (2) JP (3)AH	(1) Ham Fen. Frequent throughout a wet peaty mire centred on TR 331 552. (2) - (3) TR 33227 55246, near Ham Brooks Wood.
Northbourne (east)	TR3452		1982	AH	TR 34545 52918.
Northbourne (north east)	TR3453		(1) 21 July 2011 (2) After 1990, before 2006 (3) 2 March 1983 (4) 2003 (5) 1982	(1) SB (2) EGP (Philp, 2010) (3) AH (4) CEC (5) AH	(1) In fen along 35 metres of public footpath from TR 34500 53264 to TR 34535 53284. Fen vegetation was so dense elsewhere that plants might only survive where there is sufficient light along footpath. Also, Several plants in rough grass of grazing meadow at TR 34582 53307. (2) Recorded as at Northbourne Fen, TR35L. (3) TR 344 535. (4) TR 34104 53951, TR 34187 53783. (5) TR 34574 53308, TR 34856 55397.
Hacklinge	TR3454	SSI	(1) 13 August 2016 (2) 24 July 1991 (3) 1982	(1) SL (2) FR (3) AH	(1) Cattle-grazed marshy sedge-rich fen pasture in Ham valley, on west side of A258 south of Hacklinge Farm (Unit 56 M877within Hacklinge Marshes SSSI). Area south of the dividing dyke, TR 340 542 / TR 341 542 / TR 340 541 / TR 341 541.  (3) TR 34463 54497.
Worth Minnis	TR3455		1982	AH	TR 34130 55940, TR 34648 55238.
Worth Minnis	TR3456		1982	AH	TR 34231 56047.
Lydden Valley	TQ3555		2003	CEC	TR 35760 55600, TR 35930 55500, TR 36835 55034.
Lydden Valley	TQ3556		2003	CEC	TR 35540 56040.
Lydden Valley	TQ3654		2003	CEC	TR 36626 54960, TR 36446 54587,

(north east Deal)					TR 36496 54916, TR 36793 54901, TR33836 54551.
Lydden Valley (east)	TQ3655		2003	CEC	TR 36602 55465, TR 36628 55356, TR 36659 55239, TR 36416 55420, TR 36482 55107, TR 36835 55171, TR 36589 55164.

## ***Gastridium ventricosum* (Gouan) Schinz. & Thell. (Nit-grass)**

Draft account

vc 15; gone from vc 16

### **Rarity / scarcity status:**

Nit-grass is an annual of south west England, south Wales and the Channel Islands, sometimes native and sometimes introduced. Overall in both England and in Great Britain as a whole, it is not regarded as attracting any particular conservation concerns, although it is currently neither common nor widespread. There are old records in south east England, from which it has almost disappeared; but there still remains a single site in Kent. The species is therefore currently **rare** in the county.



### **Account:**

The first recorded Kent discovery of this species appears to have been by Samuel Doody, published in John Ray's *Fasciculus Stirpium Britannicarum* (1688) as 'Near Tunbridge Wells in Kent'<sup>8</sup>. Not all early records of plants from the Tunbridge Wells area are necessarily in West Kent (vc 16) rather than East Sussex, and it is possible that this reference was to Tunbridge Wells being in Kent, rather than the plant. However, Wolley Dod in his *Flora of Sussex* (1937) refers to E. Forster's notes of 1805 and T.F. Forster's *Flora Tonbridgensis* (1816) which respectively mention the species in cornfields between Tonbridge Wells and Eridge Rocks, and in cornfields about High Rocks; and he concludes that Nit-grass was certainly in Kent and probably also in Sussex. This would add support to the 1688 record being in Kent. The

record also appears to be the first for Britain<sup>9</sup>.

Chattenden Wood. Photos by Liam Rooney, 9 August 2011

Early Kent records – of which there are not many – include its presence elsewhere as a weed of arable ground, Hanbury and Marshall (1899) including a reference to Nit-grass being sometimes plentiful in hop-gardens. It also appears to have been a plant of marshy coastal ground. Charles Johnson in his publication *The Grasses of Great Britain* (1861) referred to it having been at Margate in a location so wet in winter that he had more than once passed over the site by boat. Gerard Smith also recorded it, probably between 1829 and 1833, at the 'Edges of the low



<sup>8</sup> This precedes what Hanbury and Marshall (1899) give as the first record, as being in William Hudson's *Flora Anglica* (1762), and also the date of 1690 given in Philp (2010) and elsewhere, which may derive from Ray's *Synopsis Methodica Stirpium Britannicarum* (1690), although this does not mention the Tunbridge Wells discovery.

<sup>9</sup> Trist, P.J.O. (1986). The distribution, ecology, history and status of *Gastridium ventricosum* (Gouan) Schinz & Thell. in the British Isles. *Watsonia* (16): 43-54.



marshy ground above the sea shore, mid-way in Eastwear-bay<sup>10</sup>. Marshall (in the *Victoria History of the County of Kent*, 1908) regarded it as more plentiful in the Weald than elsewhere, probably as a result of his own finds at Staplehurst (1893) and Headcorn given in the *Flora of Kent* (1899).

Chattenden Wood, habitat.  
Photo by Sue Buckingham, 9 August 2011

During the 20<sup>th</sup> century the species became rare in Kent and, with a long gap following a sighting at Chattenden Wood in 1954, where it grew in rutted woodland rides, it was re-found by Eric Philp alongside Chattenden Wood at TQ77L in the 1991-2005 survey published in Philp (2010). The location, at TQ 74297 72915, was re-visited on 9 August 2011 by Sue Buckingham and Lliam Rooney, where about 75-100 plants were seen along 5 metres of woodland edge bordering arable clay. This population is interesting, not only for its persistence, but also the replication of the habitat assessment for Nit-grass given by Hanbury and Marshall (1899), viz. local in fields and wood-borders. It is not a habitat representative of current, probably native occurrences elsewhere in Britain, where it grows in short open turf over chalk or limestone, generally near the coast. The Chattenden Wood habitat is more closely related to the species' historic status as an arable colonist, generally on clay soils, which has otherwise virtually ceased in Britain. The marginal character of the habitat may assist in providing semi-open conditions required for annual reproduction. Also, Nit-grass germinates in autumn and is apparently susceptible to frost, from which a woodland boundary may perhaps provide some protection. The field/wood margin is, however, susceptible to becoming overgrown, as may be seen from the July 2014 photograph, on which occasion, however, nine plants were found.



Chattenden Wood, habitat. Photo by Owen Leyshon, 4 July 2014



The grass is inconspicuous and amongst other vegetation may be passed by as exhibiting contracted panicles from a distance somewhat like late-flowering *Anthoxanthum odoratum* (Sweet Vernal-grass) or even *Agrostis stolonifera* (Creeping Bent). The flower structure, however, is very distinct: the combination of awns on some of the lemmas with shiny swollen bases to the glumes supposedly suggesting nits in hair.

<sup>10</sup> In his annotated copy of his *Catalogue of rare or remarkable Phaenogamous Plants, collected in South Kent* (1829), on which M.H. Cowell drew for his version of this record in *A Floral Guide for East Kent* (1839).

## ***Genista anglica* L. (Petty Whin)**

Draft account

vc 15 and 16

### **Rarity / scarcity status:**

*Genista anglica* is a small shrub which is widespread, albeit patchily distributed, in Great Britain. It appears to have been declining, perhaps due to loss of heathland habitat through agricultural improvement or becoming overgrown, and consequently in conservation terms is regarded as **Near Threatened** in Great Britain as a whole; **Vulnerable** in England. In Kent there is little heathland, and the species is **rare**.



Dartford Heath. Photos by David Steere, 10 April 2017

### **Account:**

The first published Kent record for Petty Whin appears to have been by Edward Jacob in his *Plantae Favershamienses* (1777), in which he refers to it, without assigning a location, as 'Amongst Furze which grows on wet land – not common'.

Hanbury and Marshall (1899) treated it as a local plant of moist heaths and they mentioned records spread across the county. These included at Hayes and Keston Commons, where the species continued to be recorded until the late 1940s and early 1950s respectively. They also cited Francis Bossey's encounter of Petty Whin at Dartford Heath in 1839, between the Folly House and Wilmington workhouse; it still persists at Dartford Heath. Hothfield is a location given in Hanbury and Marshall (1899) which survived at least until relatively recently, being given in Philp (1982), from which it is clear that there had been searches at several other former county locations from which the plant had gone. Current populations appear to be reduced to Dartford Heath and Gibbin's Brook, although the latter requires confirmation of the species' continued presence.

Both these locations are heathy, on sandy or gravelly soils. The presence of Petty Whin in Kent is limited by the availability of heathland habitat, maintained open. As the species does not normally grow higher than 50cm, it is readily capable of being crowded out by *Ulex europaeus* (Gorse), which grows in similar places. In the absence of grazing, other than by rabbits, heath fires may act as a gorse suppressant, enabling Petty Whin to flourish, as was noted in 1989/90 at Dartford Heath.



Petty Whin is not readily confused with other species in Kent. *Ulex minor* (Dwarf Gorse) may grow in similar habitats (it is present on Dartford Heath) but has branched spines, more crowded than the sparse spines of *Genista anglica*.

Site	Grid reference	Site status	Last record date	Recorder	Comments
[Hawkenbury Bog]	[TQ5937]		[After 1970, before 1981]	[Philp, 1982]	Then a few plants, but lost some time after 1976 as a result of changes in the habitat. This site, however, was in vc14, East Sussex.
Dartford Heath	TQ57B & TQ57G	Dartford Borough Council managed open space	(1) 10 April 2017 (2) 16 May 2010 (3) After 1990, before 2006 (4) 17 June 1997 (5) 27 April 1997 (6) 1990 (7) 1990	(1) DS (2) KFC meeting (3) EGP (Philp, 2010) (4) JP (5) RMB (6) RMB (7) JRP	(1) TQ5137, usual site. (2) TQ 51290 73143, scattered over heathy area of 7 x 10m. Area is maintained clear, but <i>Ulex europaeus</i> has been closing in on surrounds, and there are also brambles, birch and hawthorn springing up. (3) Both TQ57B & TQ57G. (4) TQ524734. (5) TQ 5121 7313, flowering well. (6) TQ 511 733. (7) TQ57B; very prolific after gorse above it burned back in 1989
Hothfield	TQ94S	KWT managed reserve, SSSI	After 1970, before 1981	Philp, 1982	Scattered plants. [Not found where indicated by KFC Bulletin accounts, SL, 2016.]
Gibbin's Brook	TR13E	CROW access land, SSSI	After 1990, before 2006	EGP (Philp, 2010)	





## *Genista tinctoria* L. (Dyer's Greenweed)

Draft account

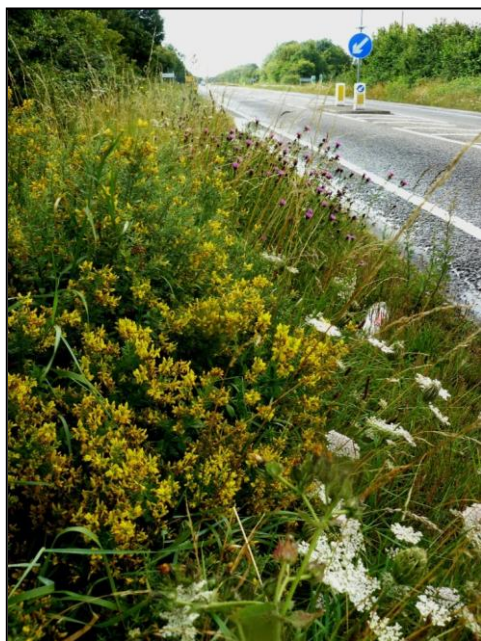
vc 15 and 16

### Rarity / scarcity status:

*Genista tinctoria* is a locally common, low-growing shrub widespread in England and Wales, just reaching into south Scotland. Its conservation status in Great Britain overall is regarded as of 'Least Concern', but in England there is sufficient evidence of decline for it to be treated as **Vulnerable** to the risk of extinction in the wild. A comparison of its area of occupancy in England over the periods 1930-1969 and 1987-1999 produced a calculated decline of 38% in the likelihood of recording the species. In Kent, the decline in tetrad records between 1971-80 and 1991-2005 given in Philp (1982) and Philp (2010) has been 53% so that, although not as yet rare or scarce, it would appear to be at risk.

### Account:

Hanbury and Marshall (1899) gave the first published Kent record of Dyer's Greenweed as by Edward Jacob in his *Plantae Favershamienses* (1777), where he refers to it as 'in the Marshes near Holly Shore — not common'. This location is now known as Hollowshore, near the junction of Oare and Faversham Creeks. However, the first record was instead made by Thomas Johnson in his *Iter Plantarum* (1629). Johnson encountered it as *Genestella infectoria* in an after-dinner journey from Stoke to Cliffe, via High Halstow and Cooling, his exhausted companions, bar one, having given up botanising in favour of a lift to Rochester in a brewer's dray. Francis Rose, in the 1972 edition of that work, remarks that the species was still abundant south of Cliffe. Hanbury and Marshall noted a series of records near the north Kent coast, also in the Dover/Folkestone area and a scattering across the Weald, with occasional occurrences elsewhere. They ranked it as frequent in several districts and to be found in fields, banks and wood-borders, usually on clay.



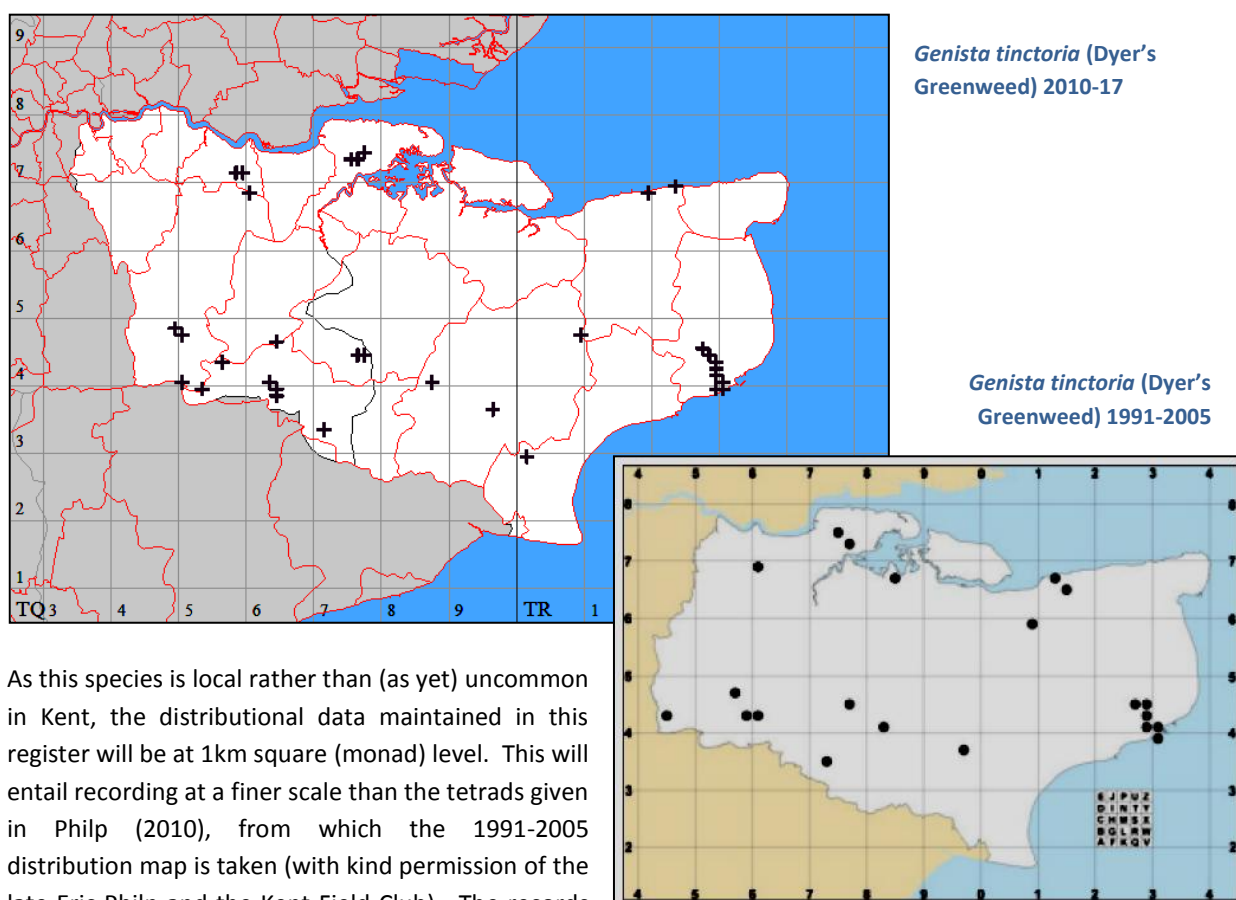
Snave. Photo by Heather Silk, 27 August 2012

Broadly speaking, that distribution has continued, although there have been many apparent losses since the 1930s. Philp (1982) treated the species as rather local, echoing Hanbury and Marshall's reference to fields, banks and wood-borders; and noting that it was occasionally to be found on chalk or sand, albeit usually on clay. The total of 45 tetrad records for the 1971-80 survey, however, had reduced to 21 by 1991-2005, and Philp (2010) considered that there had been some loss of habitat — rough pastures, old meadows and grassy roadside banks.

The greatest concentration of records in Philp (2010) is in the Dover area, from the coastal chalk cliff-top grassland running inland towards Lydden and the downland slopes of the NNR. This habitat is probably less at risk than rough pasture or old meadow habitats. If the latter are equated with neutral grassland habitat, then the Kent Habitat Survey (2003) shows an

overall habitat decline from 6% total county coverage in 1995 to 3.2% in 2003, which occupies the core period of recording in Philp (2010) and is particularly evident in the Weald. However, the neutral grassland category is a wide one (12,850 hectares in 2003), and a closer match for potential Dyer's Greenweed habitat would be

provided by the 71 hectares of lowland hay meadow and 587 hectares of species-rich ‘other neutral grassland’ recorded by the 2003 Kent Habitat Survey. The best focus perhaps is provided by the UK BAP designation of Lowland Meadow priority habitat, for which *Genista tinctoria* is one of the indicator species to qualify for designation. The amount of such habitat and changes in it are not easy to interpret. This is because, although the 2012 Kent Habitat Survey found just 27.7 hectares of Low land Meadow priority habitat out of the county’s 28,531 hectares of neutral grassland<sup>11</sup>, a subsequent validation exercise added 429 hectares of Lowland Meadow. It is also because a related change analysis<sup>12</sup> showed both losses and gains between the 2003 and 2012 Habitat Survey, but although the gains appeared to outweigh the losses, this may have been an artefact of the survey methodology. We can, however, conclude that there is very little Lowland Meadow left in the county; that much of what there is lies in the Weald; that gross losses (of 121.3 hectares) between the 2003 and 2012 Kent Habitat Surveys were attributable to a change to neutral grassland (implying a loss of species richness, probably due to management changes, such as cessation of grazing resulting in rank vegetation) and a very small proportion to woodland (implying scrubbing over, if not planting).



As this species is local rather than (as yet) uncommon in Kent, the distributional data maintained in this register will be at 1km square (monad) level. This will entail recording at a finer scale than the tetrads given in Philp (2010), from which the 1991-2005 distribution map is taken (with kind permission of the late Eric Philp and the Kent Field Club). The records for 2010-17 show a total of 31 monads equating to 28 tetrads (as compared with 21 tetrads in Philp, 2010) and so have already exceeded the coverage found for the county in 1991-2005. However, whilst the broad distribution is similar, the individual sites are often different, not just in relation to the 1991-2005 distribution, but also in relation to that for 1971-80 (which gave many more records for the Seasalter area and south west Kent). This is surprising for a species which might be regarded as growing in habitats with historic continuity, rather than acting as a colonist.

<sup>11</sup> ARCH Kent Habitat Survey 2012 Final Report, Results 5.2.5.3.

<sup>12</sup> Change Analysis of UKBAP priority habitats 2003-2012.

[http://www.archnature.eu/assets/files/Activity%201/ChangeAnalysisUKBAP\\_habitats2003\\_2012.pdf](http://www.archnature.eu/assets/files/Activity%201/ChangeAnalysisUKBAP_habitats2003_2012.pdf)



The 2010-16 records illustrate distinct habitats, albeit all grassland. They include the Dover records on chalk grassland, whether coastal on cliff-tops or inland on downland slopes (plant community CG5, *Bromopsis erecta-Brachypodium pinnatum* agg.). There are also roadside records on varying soils without discernible distribution pattern, nor necessarily of a character which suggests preservation of old grassland (e.g. the species has been recorded on the highway bank of the A2070 near Snave apparently created by highway widening/reconstruction from the early 1990s onwards, and by the A21 near Pembury it is present by a widened sliproad at its junction with a modern road route). There is a record for rough grassland by a brackish dyke near Reculver, which echoes Edward Jacob's old Faversham discovery. Also, there are records in grassy fields on clay in the western Weald, such as at Polebrook Farm SSSI, where the field layout is believed to go back at least seven hundred years and *Genista tinctoria* grows accompanied by plants of long-established grassland such as *Anacamptis morio* (Green-winged Orchid) and *Ophioglossum vulgatum* (Adder's-tongue).



Beacon Wood, Bean. Photo by David Steere, 18 July 2013

*Genista tinctoria* is a non-spiny perennial shrub of which two subspecies grow in the British Isles. Our Kent plant is subspecies *tinctoria*, which is supposedly erect or ascending, the other British subspecies, *littoralis*, being prostrate with wider leaves. Where grazed or cut back, however, subsp. *tinctoria* appears low-growing. In Kent, the species is unlikely to be confused

with other plants, at least when in flower. Dyer's Greenweed is a traditional dye-plant, affording a yellow dye; but there does not appear to be evidence of its cultivation in Kent for this purpose, unlike *Reseda luteola* (Weld or Dyer's Rocket), which was cultivated in the 16<sup>th</sup>, 17<sup>th</sup> and 18<sup>th</sup> centuries, especially in north east Kent, as a yellow dye-plant<sup>13</sup>, although also available in the wild. In addition to Weld, *Isatis tinctoria* (Woad) and *Rubia tinctorum* (Madder) appear to have been the principal dyestuffs grown in Kent.<sup>14</sup> *Genista tinctoria* does not seem to have been regarded as of the same standing, although it should have been readily available in the wild for the Kent woollen broadcloth industry in the Weald, encouraged by Edward III.



Staplehurst/ Marden, habitat (lowland neutral meadow). Photo by Lesley Mason, 1 June 2011

<sup>13</sup> J. Thirsk (1997). *Alternative Agriculture; a history*.

<sup>14</sup> T. Young (2013). *Clothes and Domestic Textiles in the Community of Staple and its Environs: Constructing the Forgotten Fabrics of the Sixteenth Century Yeoman*. Ph D thesis, University of Southampton

## *Gentianella amarella* (L.) Börner (Autumn Gentian)

Draft account

vc 15 and 16

### Rarity / scarcity status:

*Gentianella amarella* is distributed widely over the British Isles where well-drained basic soils are present, and in Great Britain as a whole its conservation status is regarded as one of 'Least Concern'. In England, however there is some evidence of decline, and it is considered to be **Near Threatened**. 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 over the periods 1930-1969 and 1987-1999 showed that its overall range had reduced by 21% and its area of occupancy had declined so that there was a 24% reduction in the likelihood of recording the species. In Kent it is not yet rare or scarce, but has exhibited a decline in tetrad records of 40% between 1971-80 (Philp, 1982) and 1991-2005 (Philp, 2010).

Burham. Photo by David Steere, 3 August 2014

### Account:

The first published Kent record for Autumn Gentian is by Thomas Johnson in his *Iter Plantarum* (1629). On 16 July 1629, he found it at Chalkdale, a former quarry from which chalk had been extracted for quick-lime, in the company of many rare and beautiful plants, apparently a classic chalk flora. The species was commented on by a number of subsequent authors in botanising on chalk in the county: Gerard Smith (*A catalogue of rare or remarkable phaenogamous plants collected in South Kent*, 1829) noted it as abundant upon turf and dry chalky spots: 'The variety with a single flower may frequently be gathered: in favourable situations this plant presents an acute cone of flowers; most elegant, from the saffron green color [sic] they acquire, when dried'. Hanbury and Marshall (1899) regarded *Gentianella amarella* as common on the chalk, in dry pastures, etc.



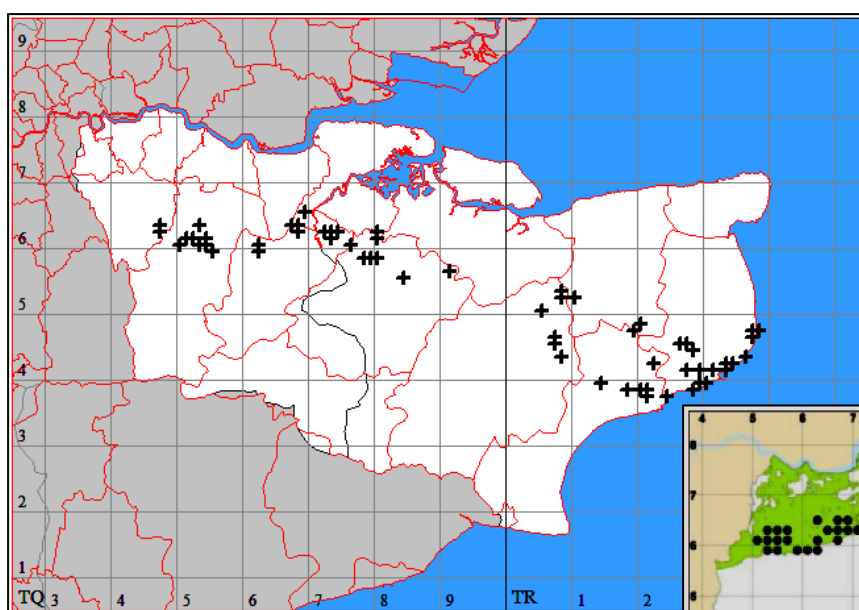
Philp (1982) gave Autumn Gentian as common on chalk downland, chalk quarries and roadside banks on the chalk and present in 97 tetrads, almost entirely confined to the North Downs, a chalk band running across the county, widening out in the east to show concentrated presence from Walmer to Folkestone and inland. This last area appeared much depleted in the 1991-2005 survey published in Philp (2010), in addition to a general thinning out of occurrences, and the total number of tetrad records had reduced to 58. No cause of decline was noted, but it appears to be shared by some unrelated species also confined to the chalk: between Philp (1982) and Philp (2010) tetrad records of *Poterium sanguisorba* subsp. *sanguisorba* (Salad Burnet) declined by 26% and *Thymus polytrichus* (Wild Thyme) by 70%. This suggests that the cause is a general one, capable of affecting all, and that either habitat changes or an artefact of the recording process are possible explanations.

Whilst historically, much loss of chalk downland came about through agricultural changes or scrubbing over, the effect of myxomatosis on rabbit grazing being significant, it does not seem straightforward to equate further decline with the reduction in tetrad records of Autumn Gentian and other chalk grassland species. The Kent BAP for 1997 recognised 1503 hectares of unimproved chalk grassland; the Kent Habitat Survey (2003) gave 1658 hectares of lowland calcareous grassland; and the Kent Habitat Survey (2012) identified 1929

hectares of calcareous grassland (of which 1159 hectares was unimproved). Change analysis<sup>15</sup> for the period 2003-2012 in relation to lowland calcareous grassland (BAP priority habitat) identified losses, mostly to woodland and neutral grassland, but also over-compensating gains, mostly from improved grassland, neutral grassland and crop. The differing definitions of grassland used at various times obscure identification of trends relevant to the periods of county botanical survey, although it looks as though there could have been a decline in better quality habitat during the later part of the 1991-2005 botanical survey, but that there has been an improvement in total BAP priority habitat since.

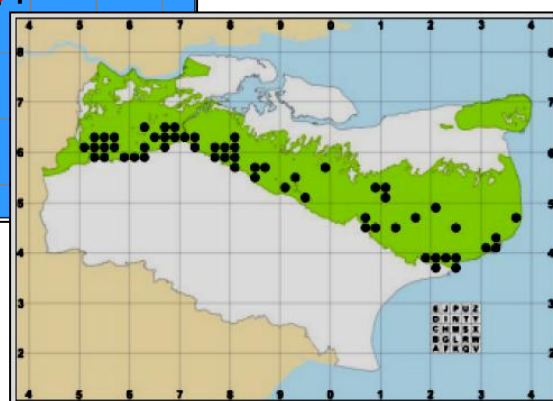
Devil's Kneading Trough, Wye. Photo by Liam Rooney, 21 September 2010

As this species is local rather than (as yet) uncommon in Kent, the distributional data maintained in this register will be at 1km square (monad) level. This will entail recording at a finer scale than the tetrads given in Philp (2010), from which the 1991-2005 distribution map is taken (with kind permission of the late Eric Philp and the Kent Field Club). The records for 2010-17 show a total of 60 monads equating to 49 tetrads and, whilst the distribution of the 58 tetrads given by the 1991-2005 survey is broadly confirmed, it is too early to ascertain whether the earlier decline is continuing.



*Gentianella amarella* (Autumn Gentian) 2010-17

*Gentianella amarella* (Autumn Gentian)  
1991-2005



*Gentianella amarella* is an annual or biennial, normally flowering in August and September (hence Autumn Gentian) in grazed, or otherwise short, turf in open habitats. It is fairly short (to 30 (50) cm, but generally much shorter) and requires opportunities to re-establish itself by seed, so that it may be crowded out by rank vegetation or scrub growth. Long seed dormancy and changes in available open ground would account for the

<sup>15</sup> Change Analysis of UKBAP priority habitats 2003-2012.

[http://www.archnature.eu/assets/files/Activity%201/ChangeAnalysisUKBAP\\_habitats2003\\_2012.pdf](http://www.archnature.eu/assets/files/Activity%201/ChangeAnalysisUKBAP_habitats2003_2012.pdf)



tendency of the species to ‘move around’ within an area. The taxonomic position of this and related *Gentianella* species is not straightforward, but from a Kent viewpoint there are only three issues to be considered. The first of these is the relationship with *Gentianella anglica* (Early Gentian). The latter is treated separately in this register, but there is a growing consensus that it is no more than an early flowering form of *Gentianella amarella* linked (in Kent) by intermediates, which would be interpreted as hybrids if separate species are maintained. The second issue is a historic one, that *Gentianella germanica* (Chiltern Gentian) appears to have been formerly present in the county, leaving traces by way of hybrids with *Gentianella amarella* collected in 1885 from a chalk bank at Lyminge and in 1902 from a similar habitat at Deal<sup>16</sup>. The third issue is entirely historic, and is the need to disregard old claims for the northern species, *Gentianella campestris*, as indeed did Hanbury and Marshall (1899).



Polhill Bank, habitat.  
Photo by David Steere,  
19 July 2014

<sup>16</sup> A. McVeigh, J.E. Carey & T.C.G. Rich (2005). Chiltern Gentian, *Gentianella germanica* (Willd.) Börner (Gentianaceae) in Britain; Distribution and current status. *Watsonia* **25**: 339-367.

## ***Gentianella anglica* (Pugsley) E.F. Warb. (Early Gentian)**

Draft account

vc 15 and 16

### **Rarity / scarcity status:**

*Gentianella anglica* is a plant of short calcareous grassland in southern England and Wales, and grows nowhere else in the world. It has not been assigned a formal risk status for conservation purposes, but has been placed on a waiting list pending resolution of the question as to whether it is a true species. As an endemic, it is treated as a UK Biodiversity Action Plan priority species (with planned actions for maintenance and restoration of its habitat and for population monitoring). Despite the uncertainties of its species status, it is classified as a European protected species, and so is afforded the protection of The Conservation of Habitats and Species Regulations 2010. In Kent, it is scarce.

### **Account:**

The Early Gentian was first described as a separate taxon in 1883, from the Isle of Wight, but was treated as part of the *Gentiana amarella* (Autumn Gentian) aggregate until carved off as a separate species in 1936. Its first discovery in Kent was by Francis Rose and David McClintock on 12 May 1946. They found two plants on a chalk grassland slope at the downs above Kemsing, TQ5559. Searches in 1947 and 1948 yielded no result and subsequently the downland became heavily scrubbed up. When revisited by the Kent Field Club in 1971, the site was found to have been cleared, scraped, ploughed and put to grass, whilst 'dosed with chemicals'<sup>17</sup>.



Magpie Bottom. Photo by Fred Rumsey, 26 May 2013

The presence of the taxon in Kent has been examined thoroughly by Tim Rich and Eric Philp (1995)<sup>18</sup>, considering its history in seven sites: at Kemsing Down, Shoreham Downs, Trottiscliffe, Eccles, Wye Downs, Dover and St. Margaret's Bay. Since then, three new sites have been reported: Shorehill at Kemsing, Magpie Bottom near Shoreham and another site at Dover. All these new sites are broadly within the scope of the previously known distribution, along the North Downs.

Early Gentian grows in Kent on calcareous ground, generally on south or south-west facing slopes, which suggests a need for light and warmth; and many of its sites also contain a species-rich chalk grassland flora, including orchids. It is considered to be a biennial, perhaps annual at times, and so requires a degree of open ground for establishment, perhaps facilitated by sloping terrain. It is a short plant, and benefited by short turf. It is distinguished from 'normal' *G. amarella* by its early flowering (said to be from March, although we have no Kent record earlier than May), although there is overlap with *G. amarella* from July; and by the number of internodes and proportionate length of the apical pedicel. *G. anglica* is treated as having 0-3(4) internodes and an apical pedicel which is less than 35% of the total plant height to the top of the pedicel; 'normal' *G. amarella* has (2)4-9(11) internodes and an apical pedicel which is at least 40% of the total plant height.

<sup>17</sup> David McClintock (1972). *Gentianella anglica*, *Kent Field Club Bulletin* 17: 36-37.

<sup>18</sup> Tim Rich & Eric Philp (1995). Early Gentian (*Gentianella anglica*) in Kent in 1994. *Plantlife project report no.48*.



The history of its Kent occurrence is largely one of the discovery of one or very few plants at a location where it cannot be found in subsequent years, even when the follow-up is sufficiently quick that the habitat ought not to have changed materially. The most constant populations have been at Trottiscliffe, but there the plants have been interpreted as mostly hybrids. This enigmatic come-and-go behaviour, coupled with the Early Gentian's tendency to grow with *G. amarella* has encouraged differing views as regards the taxon's status. David McClintock, the co-finder of the first county record, considered that the taxon in Kent might only be an incipient species, derived from *G. amarella*, but at least in Kent not of sufficient viability to sustain itself. Eric Philp (in Philp, 2010) took it, at least in Kent, to be merely an early flowering form of *G. amarella*, on the basis that in some years, a few seeds germinate earlier than normal. As *G. amarella* appears normally to germinate in spring and then to overwinter and flower in the following year, it may be that he was suggesting that the early flowering form was an annual, germinating in early spring (or perhaps the previous autumn, in spite of the limited time to form a rosette and as overwintering underground bud) to flower in May/June. He mentions the Trottiscliffe site as apparently exhibiting good *G. anglica* in May, then in mid-June showing flowers which Tim Rich interpreted as mostly *G. anglica x amarella*, and then later in the year carrying flowers entirely of good *G. amarella*. This observation was set out in the context of Eric Philp's view that *G. anglica* was not a good species; but it is entirely compatible with what one might expect in a population of mixed species with hybrids. On the other hand, if the underlying genetic resemblance between all the individuals in such a population is sufficiently identical that they might be regarded as a single species, then this observation would indeed be one demonstrating a range of variability of *G. amarella*.



Dover, habitat. Photo by Owen Leyshon, 11 June 2013

This now seems to have come to pass, in that Winfield & Parker (2000)<sup>19</sup> and Winfield et al. (2003)<sup>20</sup> refer to genetic analysis of non-Kent material indicating that *G. anglica*, *G. amarella* and *G. uliginosa* are all closely grouped (separately from *G. campestris* and *G. germanica*) and that individuals of *G. anglica* and *G. amarella* in mixed populations were genetically more similar to each other than they were to individuals of the same species in different populations.

If Early Gentian is not a separate species, then whatever its appropriate taxonomic level (perhaps *Gentianella amarella* subsp. *amarella* var. *praecox*), it still exhibits differences in appearance and behaviour from 'normal' Autumn Gentian such that there is value in continuing to maintain and update information by way of this register account.

Site	Grid reference	Site status	Last record date	Recorder	Comments
Shoreham Downs	TQ5261	SSSI	May 1994	SB, EGP, GK	TQ 529 611 (a more accurate reference than originally given), a west-facing chalk downs slope, with scrub recently cleared from

<sup>19</sup> M. Winfield & J. Parker (2000). A molecular analysis of *Gentianella* in Britain. *English Nature / Plantlife report no. 155*.

<sup>20</sup> M.O. Winfield, P.J. Wilson, M. Labra & J.S. Parker (2003). A brief evolutionary excursion comes to an end: the genetic relationship of British species of *Gentianella* sect. *Gentianella* (Gentianaceae). *Plant Syst. Evol.* **237**: 137-151.

					vicinity. One plant found by SB with W.E.A. class on 14 May 1994; two more seen by SB & GK on 21 May 1994; one plant and six possible young ones seen by EGP on 30 May 1994. Not found, 1995 (EGP & TCGR).
Shorehill Down, Kemsing	TQ5459	KWT and Parish Council nature reserve	8 June 2006	JP	TQ 548 593, one plant in bud. South-facing chalk downs slope, a similar location to the original Kemsing location, but further west.
Magpie Bottom	TQ5461		(1) 26 May 2013 (2) 9 June 2009	(1) & (2) FJR	(1) Two plants, at TQ 5440 6120 and TQ 5441 6119, on south-west facing chalk downland side of dry valley on North Downs dip slope. Growing near <i>Polygala amarella</i> in an area differentiated by some broken bare ground and the presence of rosette-growing plants and finer grasses than in the general neighbourhood. (2) One plant, identified from accidental inclusion in photograph of <i>Polygala amarella</i> .
Kemsing Down	TQ5559	KWT and Parish Council NR	1946	FR & DMC	See text of account above. Inferred to have been at Greenhill.
Trottiscliffe, Wrotham Water	TQ6260	SSSI	(1) 1995 (2) 3 May 1993 (3) 1992 (4) 18 June 1988 (5) 27 May 1980	(1) TCGR (2) EGP (3) TR (4) AB (5) PWh	This location is a south-west facing steep grassland slope on the North Downs scarp. (1) The population appeared predominantly intermediate with <i>G. amarella</i> , and about 30 plants in two groups were taken to be the hybrid, with three to five plants being <i>G. anglica</i> . <sup>21</sup> (2) TQ 629 605, two flowering plants with three probable young plants. (5) TQ 629 605, one plant.
Eccles	TQ7261		7 June 1994	EGP	One possible plant at the edge of a clay pit amongst much <i>G. amarella</i> , TQ 725 611. May have been an early flowering <i>G. amarella</i> with a virtually non-existent terminal internode <sup>22</sup> . Not found, 1995 (EGP).
Wye Downs	TR0745	SSSI	16 June 1984	JPu	One plant. Not found, 1995 (EGP).
Dover (west)	TR3141		11 June 2013	KBRG meeting	Two flowering plants and one probable non-flowering rosette at TR 31358 41025 and TR 31359 41015, on steep chalk slope with associated rich flora including <i>Anthyllis vulneraria</i> , <i>Lotus corniculatus</i> , <i>Arabis hirsuta</i> , <i>Bromopsis erecta</i> , <i>Briza media</i> .

<sup>21</sup> P.J.Wilson (1999). The distribution and Status of *Gentianella anglica* (Pugsley) E. Ward. *Plantlife report no. 119*. Also, T.C.G. Rich, D.T. Holyoak, L.J. Margetts & R.J. Murphy (1997). Hybridisation between *Gentianella amarella* (L.) Boerner and *G. anglica* (Pugsley) E.F. Warb. (Gentianaceae). *Watsonia* **21**: 313-325.

<sup>22</sup> T. Rich et al. (1996). Early Gentian (*Gentianella anglica*) in 1995: now you see me, now you... *Plantlife project report no.59*.

Dover (east)	TR34424	SSSI	5 May 1980	RB	TR 341 422, one plant on chalk cliffs above Dover Harbour. Not found 1984, 1986 and 1994 (although some areas with shorter turf may be suitable).
St Margaret's Bay	TR3744	SSSI	22 June 1974	JK	TR 373 449, one small plant, short turf on cliff-top footpath. Not found 1994 (TCGR) and on previous occasions (EGP). Limited suitable ground except cliff edge.

## *Geranium purpureum* subsp. *purpureum* Vill. (Little-Robin)

Draft account

vc 15 and 16

### Rarity / scarcity status:

Little-Robin is an annual of south west England and southern Ireland growing near the sea (and in the case of subsp. *forsteri*, on shingle beaches). It is local, but not uncommon in its core distributional areas in West Sussex, Hampshire, Devon and Cornwall. In conservation terms, its risk status is one of 'Least Concern' both in England and in Great Britain as a whole, even though it is nationally scarce; but in Kent, which is outside its normal range, the species is **scarce**.



Haysden. Photo by Sue Buckingham, 23 April 2011

### Account:

Hanbury and Marshall (1899) under their account of *Geranium robertianum* (Herb-Robert) give records for a taxon named '*c. purpureum*' for which there were a number of sightings on shingle beaches, beginning with J.T.B. Syme's record at Kingsdown mentioned in *English Botany* (vol. 2, 1864, 3<sup>rd</sup> edition), which equates his var.  $\gamma$  *purpureum* with *G. purpureum*. Syme seems to have been the source of the general confusion in older literature between *G. purpureum* and the prostrate maritime form of *G. robertianum*.

Purported occurrences of *G. purpureum* on Kent coastal shingle can be discounted.

Holborough, habitat. Photo by Geoffrey Kitchener, 19 June 2012

Subject to an unconfirmed vc15 record, the first occurrences of this species in the county have been railway-related, likely to be an introduction related to railway ballast. Rodney Burton found it on the railway tracks at St Mary Cray station in 2002, where still present in 2017, and drew attention<sup>23</sup> to an analogous occurrence in Germany. It is also mentioned in the Sussex rare plant register as having been present on railway tracks at Lewes station, despite spraying. In 2007 it was found by Sue Buckingham below a railway bridge at Haysden and subsequent observations have shown it to be present elsewhere on the railway line itself. An occurrence 850m south of the railway raises questions as regards the means of dispersal, given that the explosive capsule ejection in *Geranium* spp.



<sup>23</sup> R.M.Burton (2003). Botanical records for 2002, in (ed.) K.H. Hyatt, *The London Naturalist* **82**: 253-260. For railway associations in the Czech Republic, see also Pyšek, P. et al., 2012. Catalogue of alien plants of the Czech Republic (2nd edition): checklist update, taxonomic diversity and invasion patterns. *Preslia* **84**: 155–255, at p.207. What is actually responsible for the coincidence with railways in Kent is unclear: although railway ballast looks likely to be responsible, the species does not seem to be recorded from the main suppliers' quarries. However, this does not preclude presence at its storage locations.

Is normally limited to a few metres, and attachment to a bird or animal may be implied. A 2012 discovery at Holborough is about 60m from a railway, but the species has not been found there on the railway itself. Also, in 2017, Lliam Rooney found plants by a railway foot bridge at Faversham station.



Native occurrences of subsp. *purpureum* in south west England are generally on rocky or stony places, cliffs or Cornish hedgebanks. The Kent habitats amount to an artificial proxy for such an environment.



Holborough. Photos by Lliam Rooney, 19 June 2012

*G. purpureum* may be distinguished from *G. robertianum* by having yellow anthers (Herb-Robert's are orange or purple except in white-flowered forms), by its generally smaller flowers (petals 5-9mm in comparison with Herb-Robert's 8-14mm) and more wrinkled fruits.

Site	Grid reference	Site status	Last record date	Recorder	Comments
St Mary Cray	TQ4668	Railway land	(1) (2) 23 April 2015 (3) 2003 (4) 2002	(1), (2), (3) & (4) RMB	(1) St Mary Cray Station, very abundant on track by platform 3, in quantity not seen since 2002/3. (2) 100 plants at up end of station, on track by platform 3 and on or near cess of track by platform 4. (2) More plentiful on platform 3-4 tracks than in 2002. (3) About 1000 plants on railway tracks (up-direction) at west end of St Mary Cray station, one plant on platform 3, TQ 4667 6829.
Haysden	TQ5546	Railway land	27 June 2010	SB	TQ 55947 46069, plants seen in flower through fence along railway line but inaccessible.
Haysden	TQ5646		(1) 25 May 2010 (2) 29 April 2009 (3) 25 May 2007	(1) SB (2) BW (3) SB	(1) TQ 56034 46053, 11 plants on concrete base of railway bridge. (2) TQ 565 460. (3) TQ 5603 4607, several plants on concrete at foot of railway bridge-support over the River Medway.
Haysden	TQ5745		13 May 2012	WFS meeting	Single plant at margin of arable field TQ 57017 45124. This site is 850m from the railway line which carried the TQ5546 and TQ5646 records.
Holborough	TQ7062		(1) 24 May 2016 (2) 19 June 2012	(1) GK (2) GK & LR	(1) Still present and more abundant. (2) Scattered along footpath between stream and commercial / industrial site. From TQ 70485 62690 to TQ 70539 62670, about



					70 plants. Associates were weeds of waste areas - <i>Hirschfeldia incana</i> , <i>Plantago lanceolata</i> , <i>Geranium pyrenaicum</i> , <i>Anisantha sterilis</i> , etc.
Faversham	TR0160		22 May 2017	LR	Seven plants on the west side of a foot bridge over the railway line at Faversham station, TR 01704 60862.
Ashford	TR0243		3 August 1998	MN	TR 029 432; unconfirmed.

## *Glaucium flavum* Crantz. (Yellow Horned-poppy)

Draft account.

vc 15 and 16

### Rarity / scarcity status:

Yellow Horned-poppy grows around the coasts of the British Isles, although largely absent from north east England, from Scotland (except for the south west) and from north west Ireland. Its risk status in Great Britain is one of 'Least Concern'; but in England there is just sufficient evidence of decline, probably as a result of coastal defence works and trampling of beaches by tourists, for the species to be treated as **Near Threatened**.

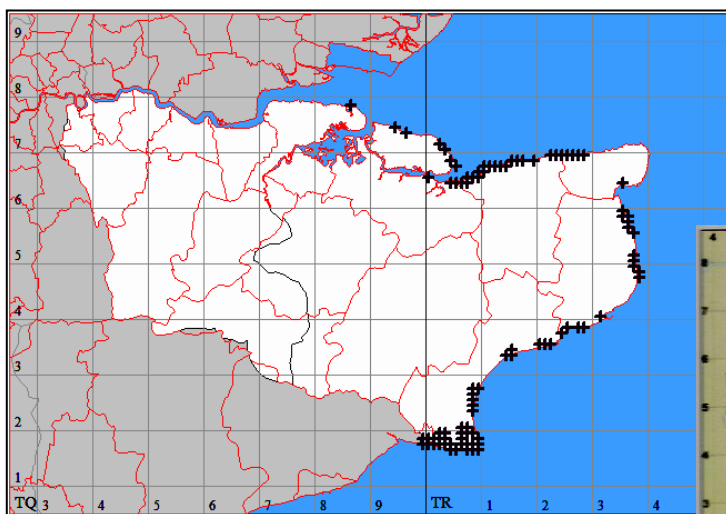


A comparison of its area of occupancy in England over the periods 1930-1969 and 1987-1999 produced a calculated decline of 20% in the likelihood of recording the species. In Kent, the species is neither rare nor scarce and, contrary to wider trends, showed a marginal increase of 4% in the number of tetrad records as between 1971-80 (Philp, 1982) and 1991-2005 (Philp, 2010).

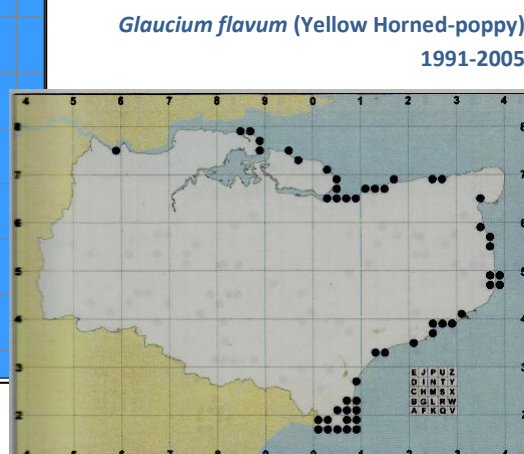
Oare. Photo by Liam Rooney, 29 August 2008

### Account:

The Kent presence of *Glaucium flavum* was first mentioned by William Turner in *The Names of Herbes* (1548): 'Papauer corniculatum is called... in englishe horned poppy or yealow poppy... It growthe in Douer clyffes, and in many other places by the sea side'. It is still (2014) present at Dover. Such a distinctive plant is well remarked by later botanists, e.g. Thomas Johnson at Sheppey (1629) and Thanet (1632); William Pamplin at Eastwear Bay (given by Cowell in his *Floral Guide to East Kent*, 1839); T. Hunt at Herne Bay (also given by Cowell, 1839). Hanbury and Marshall (1899) considered it to be frequent in all the East Kent botanical districts which included sea-shores, where it was especially to be found on shingle. It was then also known as an introduction inland with railway ballast, but such ballast has long since ceased to be shore-derived. The only recent inland occurrence is a record at Newenden (Philp, 1982); otherwise the species appears to be almost exclusively coastal (including the inland Dungeness shingle) in Kent.



*Glaucium flavum* (Yellow Horned-poppy)  
2010-17



*Glaucium flavum* (Yellow Horned-poppy)  
1991-2005

For the 1971-80 survey, Philp (1982) assessed Yellow Horned-poppy as frequent on fixed shingle and occasionally sandy beaches with an East Kent distribution, other than on the Isle of Grain. The 1991-2005 survey results (Philp, 2010) were very similar, very often comprising the same tetrads, and gave the species as found on shingle banks and stony beaches, the population appearing relatively stable, with 51 tetrad records, as against 49 for the earlier survey. There is a major concentration on the Dungeness shingle in both surveys. Minor changes included a lack of record for easternmost Thanet and an additional West Kent sighting, at Greenhithe.

As this species is not uncommon in Kent, the distributional data maintained in this register will be at 1km square (monad) level. This will entail recording at a finer scale than the tetrads given in Philp (2010), from which the 1991-2005 distribution map is taken (with kind permission of the late Eric Philp and the Kent Field Club). The records for 2010-17 show a total of 91 monads equating to 54 tetrads. This total exceed those for the earlier surveys and include records for tetrads not given in either of them, indicating that further spread is taking place in suitable locations.

Dungeness, habitat. Photo by Lliam Rooney, 22 June 2014



*Glaucium flavum* is a short-lived (up to five years) perennial with a strong tap-root for penetration through shingle, but which goes hollow with age. Scott (1963<sup>24</sup>) has a number of observations drawn from Kent data, including the ability of the species to grow on chalk (being present on the bare, fine chalk debris of a Folkestone chalk pit approximately one mile inland in 1959, and also found in a mixture of chalk and cinders near the railway at Folkestone Warren) and its tendency on Dungeness shingle to seek the higher ground and to avoid dips which may be subject to waterlogging or flooding. Where the shingle becomes consolidated, as indicated by lichen growth, it may persist, but not establish new plants. There is a preference for a basic substrate, which presumably includes shelly sand as well as chalk, although it has been seen at Dungeness in soil with pH as low as 5.0 as well as a site with pH values ranging from 6.1 to 6.85 and bearing an acid-tolerant flora including *Rumex acetosella* (Sheep's Sorrel) – Scott (1963) suggests that this reflects the nature of humus derived from earlier vegetation and may not reflect the acidity level prevailing when the plants became established. *Glaucium flavum* does not seem to be restricted to a community of particular species; rather, it is to be found in company with whatever else happens to be growing on the sandy/shingly open ground which it requires for establishment, although this results in a degree of association with shingle plants such as *Rumex crispus* (Curled Dock) and *Solanum dulcamara* (Bittersweet). Whilst it may grow within reach of sea spray, the leaves have a waxy coating, providing a glaucous appearance, which render them unwettable, by fresh or salt water. The species spreads by seed, which are dispersed by the pods shaking in the wind, or by sea, although the seeds do not float in calm water. At Dungeness, plants were assessed as bearing an average of just over 20 pods per season; this may translate to over 5,000 seeds per plant.

*Glaucium flavum* is not readily confused with any other species in the British Flora, but a red flowered form has been seen at Sandwich 2011-2014, which may be distinguished from casuals of the southern European

<sup>24</sup> G.A.M. Scott (1963). *Glaucium flavum* Crantz. (Biological Flora of the British Isles). *Journal of Ecology* 51: 743-754.



species *Glaucium corniculatum* (Red Horned-poppy) by the latter having hairy pods and stems, and flowers generally smaller.

Sandwich, red flowered form. Photo by Mel Lloyd, 5 June 2011



Dungeness. Photo by Liam Rooney, 22 June 2014

***Glebionis segetum* (L.) Fourr. (*Chrysanthemum segetum* L. or *Xanthophthalmum segetum* (L.) Sch. Bip.) (Corn Marigold)**

Draft account.

vc 15 and 16

**Rarity / scarcity status:**

Corn Marigold is an archaeophyte, or ancient introduction, found in arable fields and disturbed areas on sandy or light soils across the British Isles. It has diminished greatly in quantity since the 19<sup>th</sup> century, due to agricultural changes: improved seed cleaning, the use of herbicides, lime-spreading and a move to autumn-sown crops (Corn Marigold is mainly a spring-germinating plant). The extent of decline over Great Britain as a whole is such that the species is regarded as **Vulnerable** to the risk of extinction in the wild. This is also the risk category assigned in England, where a comparison of its area of occupancy over the periods 1930-1969 and 1987-1999 produced a calculated decline of over 30% in the likelihood of recording the species. In Kent, it is verging on scarce, and there is a decline of 57% in tetrad records between the county surveys of 1971-80 (Philp, 1982) and 1991-2005 (Philp, 2010).

Harrietsham, from cornfield, 1843, collected by the Maidstone Natural History Society. Reproduced with kind permission of Maidstone Museum

**Account:**

The earliest evidence of *Glebionis segetum* in Kent appears to be its presence amongst charred cereal remains in a Roman pit dating back to 80-150 A.D. at Smeeth<sup>25</sup>. In terms of more conventional botanical publication, the first record belongs to Thomas Johnson in travelling between Stoke and Cliffe (*Iter Plantarum*, 1629) as well as at Thanet (*Descriptio Itineris*, 1632). Hanbury and Marshall (1899) considered the species to be common in cultivated fields and found in every botanical district. Cornfields are particularized in the *Woolwich Surveys* (1909), which covered north west Kent, and where Corn Marigold was regarded as fairly frequent.



St Nicholas at Wade. Photo by Colin Osborne, 3 May 2016

By the time of Philp (1982), however, the frequency of the plant had evidently diminished considerably and it was assessed as rather local in arable fields on sandy soil. It was also found at times on disturbed motorway verges, such as parts of the then recently constructed M20 motorway. Much

of the M20 tracks the sand of the Folkestone Beds and the 1971-80 distribution largely follows a similar

<sup>25</sup> C. Stevens (2006). *The charred plant remains from Bower Road, Smeeth, Kent (ARC 440/99)*. CTRL Specialist Report (Archaeology Data Service, distributor).



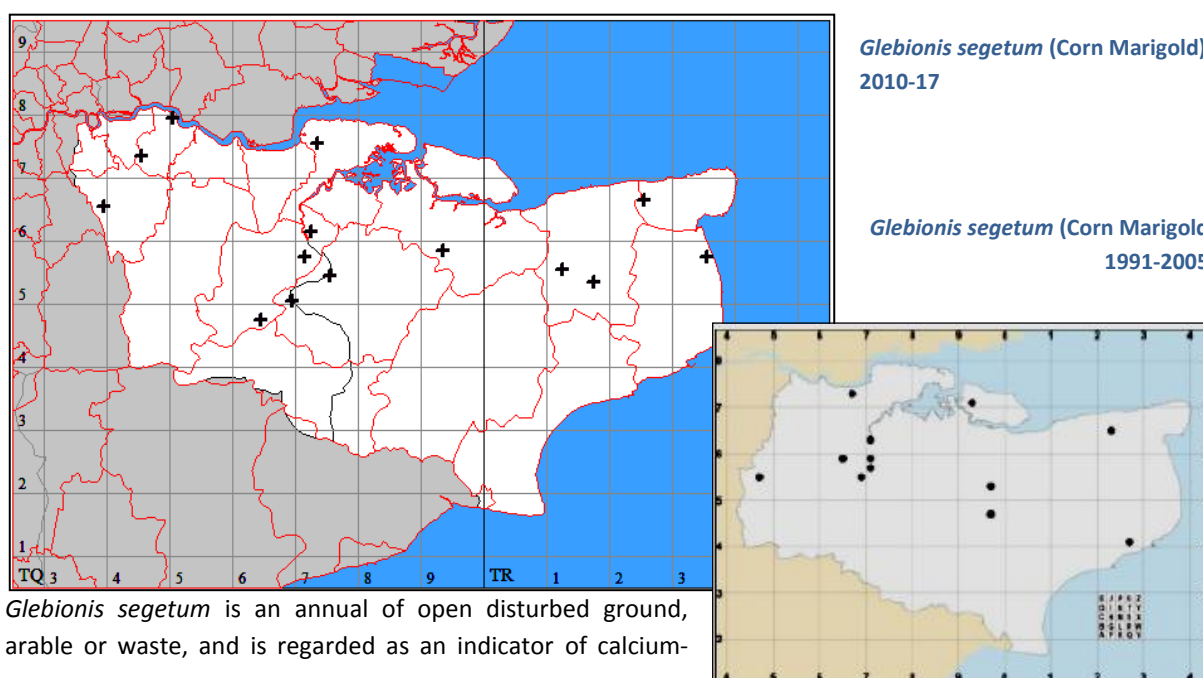
pattern. The 28 tetrads of the 1971-80 survey, however, had diminished to 12 tetrads by the 1991-2005 survey (Philp, 2010), when the species was considered scarce. Mapping for the latter survey is given here by kind permission of the late Eric Philp and the Kent Field Club. Except for a concentration in TQ65 and 75 (west of Aylesford), there was no particular distribution pattern, other than an avoidance of Wealden clay.

This decline appears to be continuing. The 2010-17 records, mapped here, are few and widely scattered. Tellingly, none of these represents a clear survival of former cornfield populations on sandy or light soils. A find at Burham in 2015 by Doug Grant and Sue Poyser growing on chalky soil disturbed by road construction in an area which has generally carried a range of arable weeds at first seemed promising; but subsequent evidence of wildflower seed mix sowing has obscured the seed-bank status of plants appearing in this area. Seed-bank status might, however, apply to a 2016 sighting by Colin Osborne of several plants on a freshly made earth mound by a farm road at St Nicholas at Wade.



Burham. Photo by Sue Poyser, 23 August 2015

There are two metropolitan West Kent finds, one of which (near Blackfen, 2011) looked to be derivative from wildflower meadow sowing, and the other (at Belvedere, 2010) was a single plant on a roadside bank in an industrial estate, albeit found there also ten years before. It has been recorded at Ditton Quarry (2010), but this site carries a number of introduced species; also at south of Barnes Street (2014), where the co-presence of *Agrostemma githago* (Corncockle) suggested sowing of wildflower seed; and on heaps of dumped soil and concrete at Sandwich Bay (2014), indicating a non-arable origin. Corn Marigold is widely available as seed, including general wildflower mixes, so all future records need to be considered with caution



deficient soils. Amongst cereals it may be injurious through the semi-succulent leaves inhibiting the drying out of the crop. Normal germination is March-May, flowering in June-August. Spread by seed is limited, subject to the action of ploughing: ray fruits may be carried a short distance by wind, disc fruits will drop from the plant.



The seed bank is thought not to remain viable after 15 years.<sup>26</sup>

Dungeness. Photo by Owen Leyshon,  
14 September 2015

It is to be distinguished from *Anthemis tinctoria* (Yellow Chamomile) by its coarser leaves, toothed rather than pinnate, woolly beneath (hairless in *A. tinctoria*) and clasping the stem.

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<sup>26</sup> Information in this paragraph is derived from S.E. Howarth & J.T. Williams (1972). *Chrysanthemum segetum* L. (Biological Flora of the British Isles). *Journal of Ecology* **60**: 573-584.

## ***Gnaphalium luteoalbum* L. (Jersey Cudweed)**

Draft account.

vc 15 and 16

### **Rarity / scarcity status:**

Jersey Cudweed is regarded as native in the Channel Islands, where it was first recorded in 1690. Its mainland occurrences are much later, and most are casual introductions; but a history of East Anglian occurrences has led to a surviving population in Norfolk also being treated as native. Although the *British Red Data Books 1 Vascular Plants* (1999) treated the species as a Critically Endangered native, *The Vascular Plant Red Data List for Great Britain* (2005) does not give any assessment of conservation status, but places it in the 'parking list', apparently through uncertainties regarding the species' native/introduced standing generally. A *Vascular Plant Red List for England* (2014) ignores it. Indeed, there is a case for saying that, although it may have arrived naturally so as to be capable of being treated as a native, it 'is categorically unworthy of special protection'.<sup>27</sup>

In Kent, there are two localities where the species has been seen since 1996 and where it may be supposed to have arrived probably without introduction by man, and hence would enjoy native status. It is accordingly regarded as **rare** in Kent, although there are many more locations where, as an urban casual, its status is more equivocal.

Dungeness. Photo by Sue Buckingham, 25 July 2102

### **Account:**

The first Kent record for *Gnaphalium luteoalbum* is at Dungeness on 19 September 1996, and there is an account of the species at that site by Mark Gurney (2004<sup>28</sup>), from which many of the following details are drawn. When first found, by Eric Philp, the colony amounted to several hundred plants growing on an area of pumped silt at TR0618 which had been deposited in a shingle excavation between 1993 and 1994. In 1997 it was found in several scattered locations on the margins of flooded gravel pits, one of them over 1km from the 'original' site. By 1999 it had established itself on the margins of most pits in the area known as the New Excavations, together with the western shores of Burrowes Pit and parts of the ARC Pit, with an estimated total of 100,000 plants. In 2001, there were over 20,000 plants by one of the pits in the New Excavations; and south east of the ARC pit, about 350,000 plants turned the ground grey. The number of plants and their flowering time, however, appear to be influenced by fluctuations in water levels affecting the damp margins, and the ARC pit site numbers dropped in 2002 to 3,000 (in September, none having been visible in May). The species has been recorded in TR0518, TR0618, TR0619, TR0620, TR0718, and TR0719, and the data presented below becomes patchier after systematic recording in 2007-08 although there is no reason to suppose that the species has not remained present in quantity since



<sup>27</sup> Pearman, D.A. (2007). 'Far from any house' – assessing the status of doubtfully native species in the flora of the British Isles. *Watsonia* **26**: 271-290.

<sup>28</sup> M. Gurney (2004). Jersey Cudweed *Gnaphalium luteoalbum* L. at Dungeness RSPB Reserve, East Kent. *Watsonia* **25**: 107-113.



Gurney (2004) canvassed the possibility that seed may have arrived at Dungeness as contamination with the silt pumping equipment, some of which probably came from Germany, where the species is local but widespread. There is also the possibility of wind-dispersal from the Continental side of the English Channel, where it grows. However, the discovery of the plant on an RSPB reserve emphasises the potential for a natural introduction by birds. Thus Wiggington (1999)<sup>29</sup> mentions in this connection that terns, at least, are known to 'commute' between their colonies at Dungeness and those on the coast near Calais.



Sevenoaks. Photo by Sue Buckingham, 2 October 2012

On 8 September 2008, the species was also found by Geoff Joyce at Sevenoaks Wildlife Reserve, TQ 5247.5697, where it was abundant on the sandy edge of the east lake. It has since been seen on sandy man-made islands at the lakes, as well as on the shore. This reserve is over 70km from the Dungeness reserve, but is also very much orientated towards observation and encouragement of birds. It is possible that seed may have travelled with a birdwatcher, but

relatively unlikely that the birdwatcher will have reached a part of the reserve where the seed may have germinated on the shoreline. Accordingly, there is a case for regarding the species as having reached this location also by non-anthropogenic means.

By contrast, where Jersey Cudweed occurs as an urban street weed, the potential for this having arisen as an introduction by man is a great deal higher and creates a parallel with the species' occurrence elsewhere in the world as a fairly cosmopolitan urban (and frequently agricultural) weed. Mark Spencer (2010)<sup>30</sup> points out a recent increase in appearances, which include metropolitan vc16 finds at Hither Green in 2007 and Deptford in 2008; and since then it has been seen at Charlton (2012), Northumberland Heath (2014), Barnehurst (2016), Eltham (2016), West Heath (2016), Bexleyheath (2016) and other localities thereafter.



Chatham, as pavement weed.  
Photo by Sue Poyser, 2017

The habitat preferences of Jersey Cudweed at Dungeness and Sevenoaks are for damp sandy ground, subject to changing water levels. A degree of bare ground, encouraged by seasonal flooding, appears to be required for establishment, the species generally behaving as an annual. Its germination behaviour is variable, so that it

<sup>29</sup> M.J. Wiggington (1999). *Gnaphalium luteoalbum* L. (Asteraceae). In (ed. M.J. Wiggington) *British Red Data Books 1 Vascular Plants*.

<sup>30</sup> M. Spencer (2010). Botany report for 2008 and 2009. *The London Naturalist* **89**: 117-131.



may behave as a winter annual, germinating in autumn, overwintering as a rosette and flowering in summer; or it may germinate in early summer, flowering in autumn or even as late as December. Both patterns of behaviour have been exhibited at Dungeness and the large quantities of plants found near the ARC Pit in 2001 appears to have been correlated with exceptionally high water levels in the winter of 2000-2001 inundating sand which had been dry for some years and stimulating spring germination.



Dungeness. Photo by Sue Buckingham, 25 July 2012

The metropolitan occurrences have some parallels in terms of habitat characteristics in that their appearance on pavements and between brick paviors of driveways is in open habitats with limited competition (although there may be an issue of the effectiveness of different species in coping with weedkiller regimes) and often with access to a sandy substrate in which paving-stones or paviors may have been bedded. Whilst the occurrence of the species in Becontree, Essex has been correlated with the laying of brick paviors in front gardens at a time, neither recent nor old, when laying contractors may have

used bedding-in sand with a seed-bank of Jersey Cudweed<sup>31</sup>, we do not have data enough for evidence of similar origins in vc16.

Site	Grid reference	Site status	Last record date	Recorder	Comments
Deptford (metropolitan vc16)	TQ3772		2008	NB	TQ375772, a single plant outside the Creekside Centre.
Hither Green (metropolitan vc16)	TQ37		2007	NB	
Charlton (metropolitan vc16)	TQ4177		(1) 22 July 2015 (2) 26 April, 16 May, 28 May 2012	(1) & (2) JC	(1) Over 300 plants along Canberra Road. (2) TQ414775 to TQ417775. On pavements at Canberra Road, outside nos. 25-33 and 42 (26 April) and on brick paviors of front gardens at nos. 39, 42 and 53 (16 May). Pavement plants weed-killed by Council and in part concreted over.
Eltham Park	TQ4375		27 July 2016	RMB	Paving blocks in front of 180 Glenesk Road, Eltham NE.
Bexleyheath	TQ4776		(1) 14 August 2017 (2) 16 July 2016	(1) MR (2) RMB	(1) TQ 47267 76940, Okehampton Crescent, mostly growing in paved front gardens although there were a few on the pavement and a singleton in an alleyway. Present in the garden of No. 97, then (west to east), scattered about up to No. 121, which may be a point of origin, then from No.145 to No. 149 inclusive, No. 157, No. 165 and No. 211.

<sup>31</sup> M.J. Crawley (2016). *Urban botanising I and II: Welwyn Garden City 6<sup>th</sup> September (v.c.20); and Becontree 13<sup>th</sup> September (v.c.18)*. Field meeting reports 2015. *BSBI Yearbook* 2016.

					(2) TQ 4759 7613 - many on brick paving at 133 Gipsy Road and crazy paving at no.135, 1 at no.157.
Bexleyheath	TQ4777		16 July 2016	RMB	Crazy paving of 197 Axminster Crescent TQ 4768 7710.
Bexleyheath	TQ4876		(1) 15 August 2017 (2) 8 August 2017	(1) & (2) MR	(1) TQ 4844 7634, paved front garden of 7 Stanhope Rd. (2) TQ 48445 76894, three plants on central island of roundabout connecting Long Lane, Hythe Avenue and Pickford Lane.
Bexleyheath	TQ4877		(1) various dates, July 2017 (2) 17 May 2016	(1) & (2) MR	(1) a singleton, Stapleton Rd; a singleton, Clovelly Rd; a few scattered along Pembury Rd; a singleton, Chessington Avenue; a singleton, Westbourne Rd; a few at Cumberland Drive. (2) TQ 48229 77391, a handful of plants beside residential road, north side of Barry Avenue near junction with Cumberland Drive.
Bexleyheath	TQ4976		3 September 2016	CR	TQ 49719 76001, Silverdale Road, Bexleyheath, street weed.
Barnehurst	TQ5076		25 October 2016	CR	One plant near the junction of Parkside Avenue and Old Manor Way, Barnehurst, at TQ 50651 76087. Also, c.12 in front garden paving at No. 27 Parkside Avenue at c. TQ 50731 76099
Northumberland Heath (metropolitan vc16)	TQ5077		26 July 2014	LNHS meeting	Residential frontage in Hind Crescent, TQ 5051 7741.
Sevenoaks Wildlife Reserve	TQ5256, TQ5257	KWT managed reserve	(1) 29 September 2016 (2) 2 October 2012 (3) 8 September 2008	(1) DCh (2) SB (3) GJ	(1) TQ 568 520, all over sandy areas next to lake. (2) Prolific on sandy man-made islands in the lake at TQ 5206 5684 and also on the shore at TQ 5245 5698 and TQ 52448 57001. (3) Abundant on the sandy edge of the east lake, TQ 5247.5697.
Stone Marshes	TQ5775		25 July 2015	RMB	TQ 5776 7520, between paving blocks of unused vehicle holding area at east end of freightliner terminal.
Istead Rise	TQ6369		18 August 2016	RMB	Pavement, 25-31 Castlefields. Istead Rise.
St Mary's Island	TQ7770		7 September 2017	SP & DG	50+ plants growing among block paving at TQ 7706 7084 over c. 20sq m; 1 plant at TQ 7716 7024; and 1 plant at TQ 7717 7061
Dungeness	TR0518, TR0618, TR0619, TR0620, TR0718, TR0719	RSPB reserve	(1) 25 July 2012 (2) 28 August 2010 (3) 19 July 2010 (4) 5 November 2008 (5) 30 October 2008 (6) 7 October 2008 (7) September 2007 (8) September 2007	(1) SB (2) TI (3) JA and LR (4) PA (5) PA (6) PA (7) DR (8) RG	There are numerous records from 1996 onwards of which the following are the more recent, data for earlier surveys being given in the account text above, based on Gurney (2004) and deriving ultimately from RSPB surveys. (1) Present, TR 065 184. (2) TR0719. (3) 150 plants coming up not yet in

					<p>flower TR 06753 18118.</p> <p>(4) TR 059181, 1500 plants growing on top of three islands at east end of excavation area.</p> <p>(5) TR 064180, 150 plants at south end of lake on pumped silt.</p> <p>(6) TR 075193, 6210 plants; TR 0666 2008, 10 plants at water tower pits; TR 064183, 50 plants at new excavations; TR 065195 (centroid), Pete Akers, 50 plants on sandy land near pools beside road near ARC hide; TR 0666 1982, Pete Akers, 500 plants scattered on sandy areas at base of peninsula.</p> <p>(7) TR 070185, 4,300 plants at Burrowes Pit; TR 067197, 23,065 plants at west end of ARC pit.</p> <p>(8) TR 075193 (centroid), 25,000 plants at east end of ARC pit.</p>
Lade	TR0820		<p>(1) 27 August 2016</p> <p>(2) 29 July 2015</p> <p>(3) 5 September 2013</p>	<p>(1) &amp; (2) DS</p> <p>(3) TI</p>	<p>(1) Only 3 plants seen, appears to have been sprayed with weedkillers recently on the RH&amp;DR railway tracks. TR 08446 20655.</p> <p>(2) TR 08448 20651, three plants flowering by railway tracks.</p> <p>(3) Alongside railway line at Lade – a potentially significant extension from the gravel pit-related sites at Dungeness.</p>

## *Gnaphalium sylvaticum* L. (Heath Cudweed)

Draft account

vc 15 and 16

### Rarity / scarcity status:

Although Heath Cudweed has many historic records across the British Isles on open dry acidic ground, it has declined substantially and is regarded as **Endangered**, both in England and in Great Britain as a whole. This decline also appears to be occurring in Kent, although it does not qualify for scarcity status.

### Account:

The first Kent record for Heath Cudweed was made by Thomas Johnson in the course of his journey of 1623 (published as *Descriptio Itineris Plantarum*), where the plant is listed amongst those recorded on approaching Canterbury from Sandwich (Francis Rose remarks in the 1972 edition of this work that the species was known to him as still occurring in the woods to the east of the city). Hanbury and Marshall (1899) described the species as not uncommon in woods, heaths and rough grassy places, although woodlands appear to be the most frequently cited habitat. So in Kent, 'Heath Cudweed' is perhaps an inappropriate name, because of the county's lack of heathland. The latin name, *Gnaphalium sylvaticum* (= Wood Cudweed) is much more appropriate. Francis Rose knew it in the 1940s and 1950s in localities such as Chartham (by a track in a dry wood on Thanet sand); Fawke Common (old chert pits); Elham (in dry open coppiced woodland); Teston (by a woodland track on acid sandy loam); north of Penshurst Park (in a dry wood on Tunbridge Wells Sand); on the Isle of Oxney (in woodland on Ashdown Sand and on sandy soil in coppice).



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Atchester Wood. Photos by Sue Buckingham, 1 July 2011

In the course of the 1971-80 survey published as Philp (1982), 52 tetrad records were made across the county; but Philp (2010) gives only 24 for 1991-2005. The Philp (2010) distribution (see map below) shows retrenchment from the earlier survey to a core line across the county, apparently following the Folkestone and Hythe Beds and the Chalk. There the species is shown in reduced numbers, and with 1971-80 outliers in the Weald and the north west of the county absent. The appearance on the Chalk is deceptive: these occurrences are on superficial deposits of an acid character.



The reason for decline is unclear. *Gnaphalium sylvaticum* is a short-lived perennial requiring open ground for establishment. Accordingly its woodland appearances are most likely to be along rides where there is disturbance and open marginal ground, and in areas recently cleared of trees or coppiced. A reduction in coppicing or a lengthening of coppicing intervals is likely to affect occurrence, so that it is possible for the species to appear to come and go as a function of habitat suitability. It is possible that this has had some



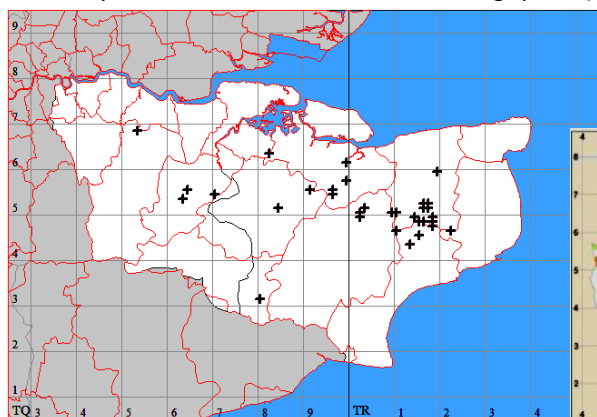
impact on Kent records, as historically the county has had significant amounts of coppice – 44,000 acres in 1991 according to Roberts (1999)<sup>32</sup>, who points out the volume of potential output in the 1990s well exceeded demand, which does not encourage coppice maintenance (although an increasing interest since then in wood as fuel may provide some counter to this). However, since a decline has taken place nationally, including areas where coppicing has not been as significant as in Kent and other parts of south east England, it is likely that other factors are operating as well as any decrease in coppicing.

Records from 2010 onwards reinforce the relationship between this species and wood clearance. It was seen in 2010 at Covert Wood (TR1847 and TR1848) along many of the rides where a wide band along the edges been cleared and disturbed, and in 2011 at Witchling Wood (TQ9155), where a ride had recently been cleared and associated species of acid ground were also present, such as *Agrostis capillaris* (Common Bent) and *Galium saxatile* (Heath Bedstraw). Heath Cudweed was also found in a recently cleared area of Atchester Wood (TR1648) in 2010; in recently cut chestnut coppice in King's Wood (TR0249) in 2013; and on a sandy track at Gorsley Wood (TR1751 and TR1752) in 2013 where chestnut had been coppiced two winters before, so opening up light levels.

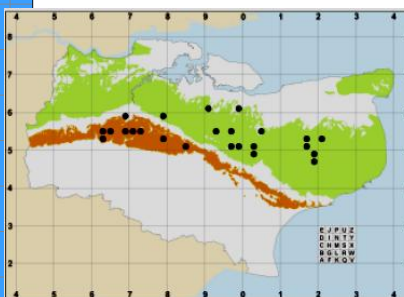
King's Wood. Photo by Sue Buckingham, 10 November 2013



*Gnaphalium sylvaticum* is readily distinguished from other cudweeds by its generally tall (up to 60cm) erect unbranched flowering spike, with stem leaves diminishing in size up the stem. It is recordable in winter months by virtue of its distinctive dried fruiting spikes (illustrated above).



*Gnaphalium sylvaticum* (Heath Cudweed) 2010-17



*Gnaphalium sylvaticum* (Heath Cudweed) 1991-2005

In view of the number of records for this species in Kent, the distributional data maintained in this register will be at 1km square (monad) level. This will entail recording at a finer scale than the tetrads given in Philp (2010), from which the 1991-2005 distribution map is taken (with kind permission of the late Eric Philp and the Kent Field Club). The records made from 2010 onwards (42 records from 32 monads) show distinct clustering in some areas, which would not be so apparent in recording at tetrad level; and they have not yet succeeded in replicating the amount found earlier in TQ65 and TQ75 (probably Oaken Wood near Maidstone and Mereworth Woods). Recording in 2010-17 (26 tetrads) has exceeded the level of Philp (2010) (24 tetrads), but is still only half the number recorded in 1971-80, so there has been a substantial decline which may have levelled off.

<sup>32</sup> G. Roberts (1999). *Woodlands of Kent*.

## ***Groenlandia densa* (L.) Fourr. (Opposite-leaved Pondweed)**

Draft account.

vc 15 and 16, but requiring current confirmation in the former

### **Rarity / scarcity status:**

*Groenlandia densa* is an aquatic whose status in England and in Great Britain as a whole is **Vulnerable**, at high risk of becoming extinct in the wild, due to losses from urbanisation, eutrophication and the reduction in base-rich spring-fed streams following falling water levels. In Kent, it is **scarce**.

### **Account:**

Hanbury and Marshall (1899) cite on a somewhat speculative basis Gerard's Herball (in the 1633 edition edited by Thomas Johnson) as potentially containing a first record for this species, as referring to it 'growing in many ponds & ditches of this kingdome both about London & elsewhere'<sup>33</sup>. This provides no assurance of a Kent record, however, and in the alternative they cite as a Kentish 'first' a record by W.W. Saunders in the River Dour, given by M.H. Cowell as *Potamogeton densus* in *A Floral Guide for East Kent* (1839). This may be so, depending on when Saunders actually made the find before communicating the information to Cowell for publication; but for East Kent there is a specimen dated August 1838 in **BM** found by Daniel Cooper (det. J.E. Dandy and G. Taylor) at Faversham, and for West Kent there is a specimen dated June 1834 in **BM** found by T.R. Tuck in Erith Marshes (also det. J.E. Dandy & G. Taylor).



Holborough Marshes. Photo by Liam Rooney, 26 May 2014

Hanbury and Marshall (1899) regarded the Opposite-leaved pondweed as not uncommon in rivers, ditches and ponds, being found throughout Kent except for the North Downs between the Medway Valley and the Great Stour Valley. In Philp (1982), 25 tetrad records are given, rating the species as local, but not infrequent. There was a cluster in

the Dartford area, some in the Medway gap, a few isolated records elsewhere, but the main concentration was in north east Kent – the Stour Valley, including the Little Stour, and the Worth-Hacklinge area. This last area has been particularly rich, as was shown by surveys of Hacklinge ditches in 1982 and 2003. Philp (2010), however, shows only a skeletal distribution in comparison with the 1982 publication, stating that the decline in abundance across the county has mainly been due to habitat loss. Given that there were records during the period 1991-2005 which were not seen by Eric Philp personally and so are not reflected in Philp (2010), the losses may not be as extensive as envisaged. However, only one record has been made for the period 2010-17 – the position needs to be tested further by targeting previous sites, particularly in the Little Stour catchment and Worth/Hacklinge.

<sup>33</sup> At p823, not p283 as given by Hanbury and Marshall.

The plant's preference for base-rich waters not subject to eutrophication accounts for it being found where there is run-off from the chalk, as at Snodland/Holborough and in north east Kent, where chalk contributes to



the waters of the Stour and to drainage around Thanet, where it is the underlying formation, and to the Worth/Hacklinge area, where calcareous water over peat has give rise to fen conditions in places. Other geological formations may supply bases; and presumably ragstone within the Hythe Formation provided suitable conditions for the occurrence of Opposite-leaved pondweed at Loose.

Holborough Marshes, habitat. Photo by Geoffrey Kitchener, 26 May 2014

*Groenlandia densa* is readily distinguished from most other aquatics by its opposite leaves. The only other confusable waterweed with opposite leaves is *Zannichellia palustris* (Horned Pondweed) and these species may be keyed apart as follows:

Leaves lanceolate to ovate, 1.5-13mm wide, 2-9x as long as wide, flowers bisexual. **Groenlandia densa.**  
Leaves linear,  $\leq 2$ mm wide,  $>10$ x as long as wide; flowers unisexual. Cross section of leaves with two large hollows. **Zannichellia palustris.**



From Holborough Marshes. Photos by Lliam Rooney, 8 June 2014



Site	Grid reference	Site status	Last record date	Recorder	Comments
River Cray: Barnes Cray - Crayford	TQ5275		23 August 1983	JRP	[R. Cray in TQ5174 searched in 2013 for a 1964 records, but not found, GK. Observations in 2009 indicate that the river was then heavily polluted.]
Dartford Marshes	TQ5477		(1) 12 August 1985 (2) 1973	(1) JP (2) JRP	(2) Grid reference given as TQ57N. There is a 1962 FR record for 'the far ditch' at TQ 543 772.
Stone Marshes	TQ57		5 July 1975	JRP	Presumably TQ57S, now Crossways

					Business Park.
East Wilmington	TQ57L		After 1970, before 1983	JRP & EGP (Philp, 1982)	
Loose	TQ75Q		19 October 1976	EGP	Small stream-fed lake.
Snodland	TQ76A		(1) 10 August 1982 (2) 7 June 1991 (3) 1987	(1) CSu (2) JP (3) EGP & JBe	(1) TQ 7070 6098, Snodland mill stream. (2) TQ705604.
Holborough	TQ76B	KWT managed reserve	(1) 26 May 2014 (2) 2001 (3) After 1990, before 2006 (4) 1998 (5) 23 July 1995	(1) SL & GK (2) DP (3) EGP (Philp, 2010) (4) ESL (5) JP	(1) TQ 70700 62695, a couple of plants in clear water of ditch on marshes with slight flow from piped section. (2) TQ 7094 6265 &/or TQ 727 626, TQ 728 626. (3) Probably TQ7062. (4) TQ 7104 6293. This reference appears to be a little too far east. (5) Holborough mill stream, TQ 7073 6265. [Not found 2014, GK.]
South of Graveney	TR06K		26 May 2005	EGP & DG	
Littlebourne	TR2157		15 October 1991	CD	TR 2102 5725. [TR 2147 5707 also given in source data, but this seems unlikely.] May be same location as TQ25D in Philp, 2010.
Seaton, Wickhambreaux	TR2258		October 1991	CD	TR 2256 5870, Little Stour river corridor survey.
Wenderton, Wickhambreaux	TR2359		21 October 1991	CD	TR 2333 5938, Little Stour river corridor survey.
Preston Marshes	TR2360	SSSI	7 June 1983	RK & GP	c. TR 231 602.
Preston Marshes	TR2461		1998	JP	TR 240 610.
Grove	TR2361		4 May 1996	NS	West side of flood plain, south east of Parsonage Farm.
Preston, Wickhambreaux	TR2359		11 July 1991	CSu	TR 2348 5984, Blackhole Dyke, Little Stour valley.
Monkton Marshes	TR265		18 July 1973	EGP	In marsh dykes.
Great Brooksend Farm	TR2868			AJ & JM	TQ286686.
Lower Goldstone	TR2960		(1) 29 July 1993 (2) 19 August 1992	(1) & (2) CSu	(1) TR 2981 6095, River Snipe. (2) TR 299 608, River Snipe.
Minster	TR36C		After 1990, before 2006	EGP (Philp, 2010)	
West of Hacklinge	TR3354		1982	AH	TR 33332 54449, TR 33462 54599, TR 33637 54494.
North east of Northbourne	TR3453		1982	AH	TR 34331 53616.
Hacklinge	TR3454		(1) 2003 (2) 2 April 1993 (3) 1982	(1) (1) NS & RS (2) AH	(1) TR 34052 54450. (1) TR 348 549. (2) TR 34320 54050, TR 34876 54909, TR 34052 54450. TR 34340 54190, TR 34590 54150, TR 34473 54202, TR 34742 54425, TR 34854 54896. Also, a TQ35M record from Philp (2010) may belong here.
Worth Minnis	TR3455		1982	AH	TR 35000 55710, TR35170 55710.
Worth Temptye	TR3456		1982	AH	TR 34424 56571, TR 34710 56100, TR 34532 56302.



East of Sandwich	TR3458		2003	CEC	TR 34914 58657.
Sandwich	TR3459		2 March 1983	AH	TR348595, described as North Stream, so TR348585 may have been intended.
South of Betteshanger (formerly Fowlmead) C.P.	TR3553		1982	AH	Near Cottington Court Farm, TR 35730 53230.
Roaring Gutter	TR3555		2 April 1993	NS & RS	TR 351 555, second to west of four parallel ditches.
Old Downs Farm, Worth - Sandwich	TR35N		22 June 2002	EGP	

## ***Gymnadenia densiflora* (Wahlenb.) A. Dietr. (Marsh Fragrant-orchid)**

Draft account. Current records and Kent photos of plant and habitat needed.

Current occurrence in vc 15 and 16 requires confirmation

### **Rarity / scarcity status:**

*Gymnadenia densiflora* has not been assigned a threat status in Britain for conservation purposes, as not enough is known about it to do so. As a taxon, it has been carved out of *Gymnadenia conopsea* (Fragrant Orchid), which was long recorded as a single species in Britain. The standard Floras often mentioned a variety, *densiflora*, but it was not until 1991 that it was generally recognised that the Fragrant Orchid should be regarded as covering three taxa, after then treated as subspecies: *borealis*, *conopsea* and *densiflora*. This was a division promoted by Francis Rose, who considered that they might well merit specific rank, eventually. The adoption of specific status in the 3<sup>rd</sup> edition of Stace's *New Flora of the British Isles* (2010) has meant that Marsh Fragrant-orchid cannot any longer be swept under the carpet in recording Fragrant Orchid; but it does not follow that we currently have clear data about its occurrence, whether in Kent or Britain as a whole. This taxon was included in the rare plant register as a consequence of a passing mention in Philp (2010) and on the basis of comments by Francis Rose (pers. comm.) as regards *Gymnadenia densiflora* occurring in Kent. It has, however, not yet been possible to verify its current status, and whether it is indeed at present a Kent species. This account must be regarded as an interim note and further investigation would be desirable.

### **Account:**

No localised published records for Kent have yet been traced, but it is possible to make some inferences from citations of Fragrant Orchid occurrences. Christopher Merrett in his *Pinax Rerum Naturalium Britannicarum* (1666) refers to '*Orchis* Caryophyllata spica longissima rubra, In many Chalkey grounds, bogs and old pastures betwixt North-fleet and Thames in Kent'. *Gymnadenia conopsea* (in the strict sense, Chalk Fragrant-orchid) would account for the bulk of records for the chalky grounds and old pastures, but not those for bogs. Any marshy ground between Northfleet and the estuary would at this point have been highly calcareous, as the chalk approaches close to the river, although much quarried away since the seventeenth century. The three Fragrant Orchid taxa have differing habitat preferences. *G. conopsea* (s.s.) is a plant of dry chalk or limestone grassland. *G. densiflora* grows in base-rich fens and has also been claimed for north-facing chalk grassland, with a fairly wide scatter of records in Sussex. *G. borealis* is generally a northern plant of acid hilly grassland, but can occur in base-rich grassland, and atypical occurrences are known in Hampshire and East Sussex: that is, on base-rich clays in the New Forest; in *Molinia caerulea* (Purple Moor-grass) flushes on heathy soils in the Ashdown Forest; and on the north-facing Alfriston Downs. Accordingly, Merrett's reference to plants in bogs between Northfleet and the Thames is most likely to have been to *G. densiflora* (*G. borealis* seems comparatively improbable).

G.E. Smith, in his manuscript notes (1830-33) to *A Catalogue of rare or remarkable phaenogamous plants collected in South Kent* (1829) refers to *Orchis conopsea* and that 'The flowers, when in bog-land acquire the hyacinthine scent; as on the Aldington bog' (south east of Ashford). This could well have been *G. borealis*. Hanbury and Marshall (1899) cite a couple of other occurrences which may be unusual in terms of habitat. They mention a specimen at North Cray Brooks which, if from damp ground, may be suggestive of *G. densiflora*; and a specimen in Dillenius' herbarium from Chislehurst which is less likely to carry normal *G. densiflora* habitat, although the acid terrain may instead suggest *G. borealis*. However, Marshall himself was acquainted with *G. densiflora*, since there is a specimen in **CGE** from West Kent (TQ56) gathered on 9 July 1898. It is not mentioned in the 1899 Flora, for Marshall regarded it as being no more than a variety, in a district where Fragrant Orchid was common. There is also an East Kent (TR23) specimen in **CGE**, collected by

the theologian, the Rev. Frederick Tennant, in June 1890. In MNE, there is material gathered by Davis in 1916 from Keston Common and labelled as var. *densiflora*; although the habitat suggests *G. borealis*, the specimens resemble more *G. densiflora*. The record of *Orchis conopsea* by Miss Sankey in Cowell's *Floral Guide to East Kent* (1839) at Little Britain, Wingham may also have been *G. densiflora*, given the presence of calcareous fen, and its apparent accompaniment by *Epipactis palustris* (Marsh Helleborine). At Ham Fen, it is supposed to have been seen c. 1920, but its location completely changed afterwards, according to Francis Rose's manuscript Flora.

*G. densiflora* was listed for the rare plant register as an expected current plant, particularly having regard to Francis Rose's belief that he had found it in considerable quantity in East Kent (pers. comm.), although his manuscript *Flora of Kent*, drafted earlier, treated it as probably extinct. It appears that a site which he had in mind was at Park Gate, and this was investigated by Alfred Gay in 2013, consulting with Richard Bateman. He found many robust plants with characters consistent with *G. densiflora*, such as the number of flowers on the inflorescence (often 80 to 100), the shape of the labellum (noticeably wider than long, with large lateral lobes), the long inrolled lateral sepals, and presence of several bracteoid leaves. However, there were inconsistent characters as well: the flowers of *G. densiflora* might have been expected to have been darker with paler centres and with shorter spurs (Richard Bateman, pers. comm.), and the flowering period of *G. densiflora* is often regarded as being later than the early to mid-June peak exhibited by this colony in 2013 (coincident with the flowering of neighbouring *G. conopsea* s.s.<sup>34</sup>). In terms of habitat, the location did not correspond to the north-facing downland of Sussex, which Francis Rose regarded as a habitat for *G. densiflora* 'in many ways 'a different world' ecologically'<sup>35</sup> from chalk downland receiving direct sunlight. The Park Gate colony grows on warm, thin, dry soils in a south-facing chalk pit. The flower odour was perceived as being sweet and faintly sickly, although Francis Rose apparently considered that the odour for this colony was that characteristic of *G. densiflora* (spicy to carnation-like). It appears that this colony is, overall, not a clear candidate to be *G. densiflora*. Richard Bateman also referred to similar plants at Crundale Down which could not be clearly assigned to *G. densiflora* on morphological grounds. Alfred Gay's observations in 2013 show that other similar robust, many flowered, broad-lipped plants are present at several other Kent sites (including at Lydden NNR, Elmsted and Cheriton Hill at Folkestone) all growing amongst normal *G. conopsea* s.s. and in its typical habitat. The Park Gate population was also assessed by David Johnson on 5 June 2014, when the plants were in full flower. On the basis of this early flowering and the flower colour being not as deep nor the lip as broad as might be expected, he also was not satisfied that the population was *G. densiflora*, although plants were somewhat different in stature and colour intensity from *G. conopsea* s.s. elsewhere in the reserve.

Potentially better candidates for *G. densiflora* were encountered by Alfred Gay on the eastern arm of the Kneading Trough at Wye which appeared to have a more pleasant (less sickly, albeit not noted as clove-like) fragrance and which were in flower quite late in the season (July 10th 2013). Aside from the flowering time and fragrance, the flowers were also a deeper pink than usual but with a paler centre, providing a better match for *G. densiflora*. The inflorescences did not have quite as many flowers as the Park Gate plants (60-70 at most), but the labella on some were just as wide (7mm) and curiously were often slightly turned up at the edges. They were also growing within a much larger population of normal *G. conopsea* s.s. which had almost entirely gone over, so that there would be a genetic isolating effect of flowering times; but there is a question

<sup>34</sup> The coincidence of flowering is not necessarily material, as overlap might be expected, but the later flowering of *G. densiflora* is something which appears to have been widely observed, including in the south eastern Europe, where *G. densiflora* does not start before 10 June – K. Marhold et al. (2005) Morphological and karyological differentiation of *Gymnadenia densiflora* and *G. conopsea* in the Czech Republic and Slovakia. *Preslia* 77: 159-176. However, C. Stark et al. (2011), cited below, mention Continental studies indicating that flowering depends on ploidy level (*G. conopsea* s.s. is diploid or tetraploid; *G. densiflora* is diploid) and does not provide a clear distinction.

<sup>35</sup> Francis Rose (1995). *The Habitats and Vegetation of Sussex*.

as regards whether some gene-flow is accountable for plants which do not accord fully with the characters to be expected of *G. densiflora*.

Future investigations in Kent may perhaps be best directed, not just to this last population, but to any locations away from chalk, especially if damp. Philp (2010) refers to *G. densiflora* (regarded as a subspecies) being noted on occasion, but without detail as to the sites. However, the TR05Y record in that publication is for a tetrad which contains very little chalk and may contain one of those sites. Philp (1982) also includes records for tetrads off the chalk, e.g. from Sandwich Bay TR36K (there is calcareous ground here, but generally damp), the Isle of Sheppey TQ97W (London Clay/Bagshot Sands), near Westerham TQ45G (Lower Greensand) and near Halls Green TQ54J (Wealden Clay).

Whilst DNA analysis should be capable of determining the position regarding the Park Gate and Wye colonies<sup>36</sup>, the characters and behaviour of the plants here as yet are insufficiently clear cut for a conclusive understanding as to whether *G. densiflora* is to be treated as a taxon currently present in Kent.

This account has benefited greatly from the assistance of Alfred Gay.



The Park Gate *Gymnadenia*. Photo by Sue Buckingham, 17 June 2012

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<sup>36</sup> They are well differentiated in Germany by DNA sampling, according to C. Stark et al. (2011), Strong genetic differentiation between *Gymnadenia conopsea* and *G. densiflora* despite morphological similarity. *Plant Systematics and Evolution* **293**: 213- 226. In that study, only 77% of *G. densiflora* material could be assigned to its correct identity on morphological characters alone.