Kent Rare Plant Register

Draft species accounts

C (first part: Ca)

Compiled by Geoffrey Kitchener and the Kent Botanical Recording Group
Issue date: February 2018

Kent rare plant register

This section of the register covers:

In Part Ca:

Callitriche truncata
Calluna vulgaris
Calystegia soldanella
Campanula glomerata
Campanula rotundifolia
Cardamine bulbifera
Cardamine impatiens
Carex canescens
Carex divisa
Carex echinata
Carex elata
Carex elongata
Carex extensa
Carex lepidocarpa
Carex nigra
Carex panicea
Carex pulicaris
Carex rostrata
Carex vesicaria
Carex vulpina
Carlina vulgaris
Catabrosa aquatica

In Part Ce-Ch:

Centaurea calcitrapa
Centaurea cyanus
Centunculus minimus
Cephalanthera damasonium
Cerastium arvense
Chaenorhinum origanifolium
Chamaemelum nobile
Chenopodium bonus-henricus
Chenopodium chenopodioides
Chenopodium glaucum
Chenopodium murale
Chenopodium vulvaria

In Part Ci-Cy:

Cichorum intybus
Cicuta virosa
Cirsium eriophorum
Cladium mariscus
Clinopodium acinos
Clinopodium calamintha
Comarum palustre
Crassula tillaea
Crepis foetida
Cruciata laevipes
Cuscuta epithymum
Cynoglossum officinale

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. 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:

Recorders' initials:

AC Andrew Craven
AG Alfred Gay
AH A.C.B. Henderson
AS Alan Showler
AW Anne Waite
AWi Tony Witts
BF Brian Ferry
BG Bob Gomes
BW Brian Woodhams
CD Chris Dyson
CEC Carter Ecological Consultants
CH C.Harris
CJC & AP James Cadbury & A. Parker
CP Chris Pogson
CR Chris Rose
CTP Cecil Prime
DG Doug Grant
DM Daphne Mills
DMcC David McClintock
DN David Nicolle
DS David Steere
DW D. Worsfold
EGP Eric Philp
ES E. Scott
FB Fred Booth
FR Francis Rose
FRB F.R. Bryson
GB Gill Brook
GK Geoffrey Kitchener
HM Helen Morley
HP Helen Proctor
JA Jan Armishaw
JEL J.E. Lousley
JH J.Hendey
JL J.Lockward
JLM J. Le Mesurier
JP Joyce Pitt
JS Judith Shorter
JW Jo Weightman
KF Kenneth Fox
L&DH Lorna & Derek Holland
LBB L. Breda Burt
LM Lesley Mason
LR Lliam Rooney
MG Margot Godfrey
MH Margaret Holdaway
MN Martin Newcombe
MP Mike Porter
MCS Mary Clare Sheahan
MW M. Waite
NH N. Holmes
NS Nick Stewart
PH Peter Hodge
PHe Peter Heathcote
PS Philp Sansum
RB R.A. Boniface
RC Ray Clarke
RD Dick David
RE Rosie Earwaker
RF Lady Rosemary FitzGerald
RG Bob Gomes
RM Richard Moyse
RMB Rodney Burton
RP R.D. Porley
RS R.M.Stokes
RW R.H. Woodall
SB Sue Buckingham
SC Steve Coates
SK Sarah Kitchener
SL Stephen Lemon
TR Tim Rich

Other abbreviations:

KBRG Kent Botanical Recording Group
KFC Kent Field Club
KWT Kent Wildlife Trust
MNE Maidstone Museum Herbarium
RNR roadside nature reserve
WFS Wild Flower Society

Callitriche truncata Guss. (Short-leaved Water-starwort)

Draft account: records for 2010+ needed to confirm continued presence; also habitat photo.

vc 15; and possibly still present in vc 16

Rarity / scarcity status:

Callitriche truncata is treated as nationally **scarce,** although its conservation status is one of 'Least Concern' in both England and Great Britain as a whole. Its main distributional area is in Lincolnshire and through the Midlands; but it is also present in Dorset / Somerset / Devon; Anglesey; Co. Wexford; and the south east – Essex and Kent. It has not been seen recently in West Kent (vc16), although its east Kent occurrences in the Dungeness / Lydd area rank it as **scarce**.

Account:

The first published Kent record is by W.H. Beeby in the *Journal of Botany* (1886). He had identified a specimen collected by G.E. Smith from the Darent between Brasted and Westerham in 1837, albeit that this had only one immature unwinged fruit. Investigating the locality in June 1886, he found that it was still there. Hanbury and Marshall (1899) were not aware of it elsewhere, although this may have been a failure to recognise. It has formerly persisted along the Darent, being collected by Francis Rose in 1945 at Chipstead and recorded by Ray Clarke in Philp (1982) at Sundridge; but has not been seen recently[1]. The species has a habit of reappearing after absence and can be encouraged by major management changes (just as it can be found in newly created waters); and so the possibility of a return to the Darent should not be disregarded.

As well as being found in streams, *C. truncata* occurs in ponds and larger water-bodies, and in Kent this is the case in flooded gravel pits in the Dungeness / Lydd area, where it may also be found in marsh dykes (Philp, 2010). Otherwise in East Kent, it has only been found in the dykes or ditches of the Hacklinge/Worth area and the Seasalter Levels (first noted in 2008). Some wet open locations in the area of Boulderwall Farm, Dungeness where it was present in the 1990s appear since to have become dominated by *Phragmites au*stralis (Common Reed) and the presence of the Water-starwort may be transitory, dependent on the condition of the habitat.

Our plant is subsp. *occidentalis*, which has unwinged fruits and leaf-bases joined by a ridge of tissue across the node, the leaves being short, more or less parallel-sided and truncate or notched at the apex. The fruit is also wider than long, forming a cross when seen from above: this combination is not seen in other British species. The need for ripe fruit limits opportunities for identification, but while this may lead to under-recording of *Callitriche* spp. generally, this species appears to be genuinely scarce.

This Water-starwort is often little-branched and long-stemmed, growing in water to a maximum depth of 1.5m. It fragments with the first frosts and the floating pieces may overwinter; the mericarps apparently sink when shed, so that seed spread is unlikely to be far from the parent, although spread by wildfowl is possible.

Site	Grid reference	Site status	Last record date	Recorder	Comments
East of Crockham Hill	TQ4550		30 August 1971	RC	TQ 456 505: there is a very small stream running south at this location. [Searched for, 2015, but only *C. platycarpa* found. SL.]

[1] Searched for near Westerham, including by SL in 2016, but river bed appeared devoid of vascular plants.

Sundridge	TQ45Y		After 1970, before 1981	RC in Philp (1982)	
Denge Beach	TR0517		28 June 1996	EGP	Marsh dyke. Specimen In MNE. Reported in *Watsonia* (2001) **23**: 557.
Dengemarsh Farm	TR01P		25 June 1998	EGP	
Boulderwall Farm, Dungeness	TR0619		6 June 1999	WFS meeting led by RMB	TR 062 197. In small pond down the track across the road from Boulderwall Farm. The pond was thought to have been recently created by the RSPB, giving credence to the idea that the species can be distributed by birds.
Boulderwall Farm, Dungeness	TR01U		26 June 1996	EGP	
Near Lydd airport	TR02Q		After 1990, before 2006	EGP (Philp, 2010)	
Seasalter Levels	TR0864		15 July 2008	CJC & AP	At TR 0800 6432 (occasional in main drain); and rare in ditches at TR 0870 6429, TR 0819 6243.
Hacklinge / Worth	TR3456 & TR3556		16 July 2008	CJC & AP	In two ditches on Blue Pigeon Farm in Lydden Valley, TR 3492 56441 (occasional) and TR 3506 5637 (rare), between railway and North Stream; not fruiting.

Specimens from Denge Beach, 1996, reproduced by permission of Maidstone Museum

Calluna vulgaris (L.) Hull (Heather)

Draft account

vc 15 and 16

Rarity / scarcity status:

In the context of the British Isles as a whole, it may seem incongruous to treat Heather as in any way rare, and the extent of any risk to the species in Great Britain is regarded as of 'Least Concern'. In England, however, there has been much loss of heathland, and heavy grazing may also have produced a decline in some upland areas (conversely, lack of grazing in some lowland areas may have produced losses through shrub and tree encroachment). A comparison of its area of occupancy in England over the periods 1930-1969 and 1987-1999 produced a calculated decline of 21% in the likelihood of recording the species. This reaches the threshold for designation as **Near Threatened**, and so approaches qualification status for a level of risk of extinction in the wild. In Kent, Heather is neither rare nor scarce. The level of decline reflected in a comparison between the county surveys of 1971-1980 and 1991-2005 is 11%, less than the calculated English decline, but this covers a shorter timespan than the English data. Nevertheless, in historic terms, heathland has diminished considerably in Kent, and Heather may be regarded as part of a community which has become at risk.

Pembury Walks. Photo by John Buckingham, 16 August 2014

Account:

Historic[2] recognition of Kent Heather is preserved in place-names such as Hothfield (given as Hathfelde in *Domesday Monachorum*, c.1100, and deriving from hāþ-feld, open land or common pasture covered with heather). However, this usage may lump ericaceous species together. The long-term presence of Heather at Dungeness is attested by pollen found in 11th to 13th century contexts at Muddymore Pit (TR 062 176)[3]; but the first botanical record of *Calluna vulgaris* in Kent was made on 16 July 1629 by Thomas Johnson (*Iter Plantarum*, 1629), probably at Dartford Heath. Hanbury and Marshall (1899) considered it to be common, chiefly on sandy ground, throughout the county, especially in the south and west, but apparently absent from Thanet.

In Philp (1982) the species is noted as locally common, on heaths, commons and woodland rides on sandy soils. Its distribution is shown with concentrations at the Blean on the Plateau Gravels; across the county following Upper and Lower Greensands (from the Sevenoaks area in the west, where there are remnants of heather on cherty ground where woodland has taken over in the last 70 years or so, extending across to Hothfield Common in the east); the High Weald on Ashdown and Tunbridge Wells Sands (including Pembury Heath); and on the Eocene Sands and gravels of the north western corner of the administrative county (including Dartford Heath). The Keston Common area (on Blackheath Beds) was omitted as outside the administrative county, albeit within vice county 16. The distribution given in Philp (2010) is similar, but with records at Dungeness and Sandwich noted as in unusual habitats but said to be looking completely native

[2] So far as concerns heather's prehistoric presence, a few pollen grains were recorded at a camp on Hayes Common excavated in the 1930s (A.H.A. Hogg, B.H. St.J. O'Neil & C.E. Stevens (1941). Earthworks on Hayes and West Wickham Commons. *Archaeologia Cantiana* **54**: 28-34). Pollen was also found at the Iron Age fortress, Caesar's Camp at Keston, very sparsely in the initial phase of construction, when the site had probably been covered with forest, but more extensively in a later phase of rampart elevation, suggesting that topsoil was brought in from a more open area, but that continuous heath was not present in the vicinity (G.W. Dimbleby, report in N. Piercy Fox (1969) *Archaeologia Cantiana* **84**: 185-199).

[3] Scofield, J.E. & Waller, M.P. (2005), A pollen analytical record for hemp retting at Dungeness Foreland, UK. *Journal of Archaeological Science* **32**: 715-726.

there. This is presumably so as regards Dungeness, where very thin peaty soils with low nutrient value have established over shingle; however, there is room for more than one opinion on the status of Heather on the shingly coastal embankment near Sandwich. The later survey produced 140 tetrad records, as against a total of 157 for the earlier survey. Given the different recording approaches between Philp (1982) and (2010), the former being the product of co-ordinated recording by Kent Field Club members and the latter being a single person's survey, it is difficult to be confident whether the compared results indicate a material decline between the two surveys.

Heathland in Kent has, however, until recently long been in decline. This has been coupled with a decline in Heather itself, although it is not confined to heathland, e.g. being a subordinate part of woodland communities on sandy ground. Heathland was formerly much more widespread in Kent, with some 1910ha being present in 1798. The vast majority of this habitat has since gone; there are numerous 'Heath' placenames in the county without any sign now of Heather. The amount remaining is assessed at 73.4ha in the *Kent Habitat Survey 2012 Change Analysis and Results*, but taking the heathland habitat as defined for the purposes of the UK Biodiversity Plan, the 2005 revision of the Kent Plan recognizes some 85ha remaining by 2005, rising to 110-145ha on the Kent BAP website (2014). Further analysis of the BAP habitat position[4] shows that there have been Kent heathland losses between 2003 and 2012 (3.9ha), largely as a result of conversion to woodland, which may be part of a progression via bracken, scrub and tree invasion in the absence of management. However, these have been much outweighed by gains (20.8ha), mainly from woodland.

Lydd Ranges, shingle habitat. Photo by Sue Buckingham, 7 August 2012

This appearance of gain may in part be an artificial construct from the change analysis methodology, but it also reflects restoration efforts around Tunbridge Wells, Pembury, Mereworth, Bitchet Green and the Blean. Restoration has also been undertaken at Hayes and Keston Commons[5], which do not feature in the Kent Habitat Survey as they are in metropolitan vice county 16, outside Kent administrative county boundary. On Hayes Common, restoration included *Calluna vulgaris* re-seeding from non-local seed.

Pembury Walks, cleared woodland on Tunbridge Wells Sand Formation. Photo by John Buckingham, 16 August 2014

In other locations, restoration appears to have been a matter of restoring open ground with minimal soil cover, for Heather to return naturally. At Hothfield, the process has involved tree clearance followed by soil scraping to remove soil/bracken mulch. Scraping is dependent on the availability of heavy machinery, in the absence of which clearance has been by hand-cutting and raking (as has also been done at Brenchley Wood and Cinderhill

[4] *Change Analysis of UKBAP priority habitats 2003-2012*.
http://www.archnature.eu/assets/files/Activity%201/ChangeAnalysisUKBAP_habitats2003_2012.pdf

[5] John, J. & Price, J. (2014). Heathland restoration at Keston and Hayes Commons: Part of Darwin's landscape laboratory. *Kent Field Club Transactions*. **19:** 75-99.

Wood). The seeds require light for germination and hence removal of vegetative cover. Although Heather has returned to cleared areas at Hothfield, so have birch seedlings, and these have to be prevented from establishing. Heather at Hothfield has not readily taken a hold where mature grassland exists. At Clowes Wood, Covert Wood and part of Hemsted Forest the restoration process by the Forestry Commission has involved first identifying a suitable area with gaps where Heather is already present. This is then mechanically cleared and the debris is shredded, with the shreddings pushed aside if necessary so as to expose the mineral soil. Heather regeneration has then generally taken place quite readily. Subsequent management with autumn use of a forage harvester has encouraged varied-age plants, with some areas of younger Heather and others permitted to mature. The autumnal work also helps spread the seed, for further regeneration. Ordinary forestry operations, however, where tree clearance is involved on thin soils, e.g. the cherty ground on the Greensand Ridge, can be seen to result in a sudden flush of *Calluna* seedlings.

Hunstead Woods. Photo by Lliam Rooney, 9 September 2010

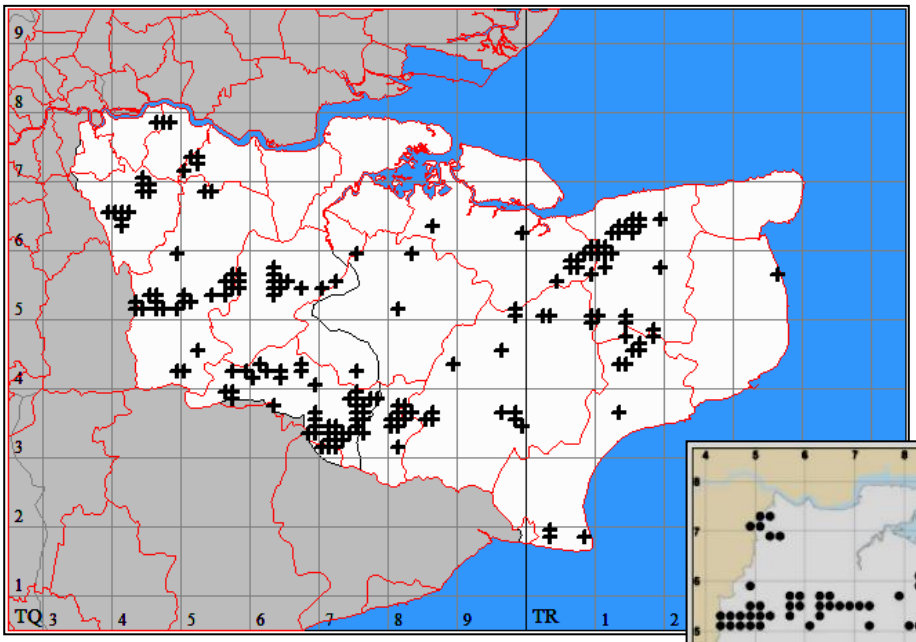
Effective heath restoration appears best undertaken on podzolised soils (viz. generally acid, silicaceous soils from which organic material and soluble minerals have been leached and deposited lower in the soil profile), with surface humose layers removed. This is discussed by C.P.Burnham (2014)[6], who points out that, in contrast, deep rootable subsoils may favour the spread of bracken, as has occurred in some Kent areas of heath restoration. He updated the position on some experimental restorations undertaken from 1993 to 1996 at Yew Tree Farm, Pembury on pasture with topsoil removed, with different plots receiving different treatments, part of which including spreading heathland clippings from the Ashdown Forest. Heather was still present at the three sites concerned in 2013, but two of them sloped down to land with deeper soils and some waterlogging, where rushes and birch were predominating. A further experiment, begun at Newbars Wood in 1992 following pine clearance, was intended to compare the effects of removing the litter layer only with removing litter and humose layers (in both cases with or without the addition of clippings). The treatment involving removal of only litter was apparently the most effective in initial establishment of Heather, but after 12 years the vegetation in all plots was dominated by Heather. By 2013, however, leggy heather remained dominant in the upper part of the site, but the lower part had been invaded by bracken. Burnham attributes this to soil conditions, the upper part being occupied by podzols over sandstone, suitable for Heather; and the lower part comprising stagnogleyic brown earths with poorly drained flushes, a rootable subsoil suitable for bracken spread.

Heather produces a massive amount of tiny (0.6 x 0.35mm) seed in autumn. Not all seeds germinate in the first season and many remain in the soil as a seed bank which persists for up to 40 years. For a plant growing in extensive stands, a strategy of large seed production and persistent seed bank might seem to be inappropriate. However, before forest clearance *Calluna vulgaris* would have used this approach to take advantage of temporary open space in woodland. Germination when it does occur is rapid, in six to eight weeks, and produces well established seedlings before the onset of cold weather.

The current recording position is shown on the accompanying 2010-17 map, in which records are given for monads (1km squares) across both vice counties, and so extending beyond the administrative county towards London. Records are given equivalent to 122 tetrads (cf. 140 in Philp, 2010). This indicates that further recording is needed in order to achieve comparable coverage with the 1991-2005 distribution data (whose

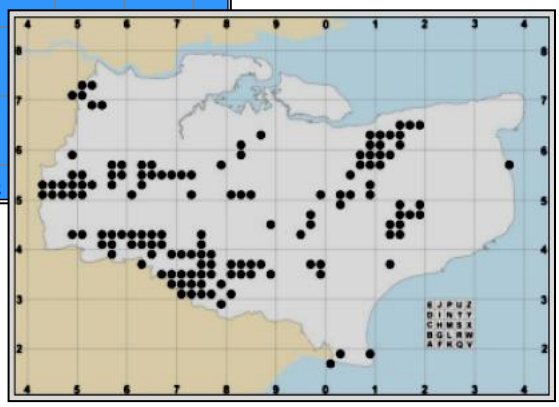
[6] C. Paul Burnham (2014). The geology and soils of heathland in Kent. *Transactions of the Kent Field Club* **19** (Kent's heathlands) 14-38.

map is reproduced by kind permission of the late Eric Philp and the Kent Field Club) and it should not be taken as any evidence of recent decline.



***Calluna vulgaris* (Heather) 2010-17**

***Calluna vulgaris* (Heather) 1991-2005**



Calluna vulgaris grows on acid infertile soil, generally sand or gravels from which any nutrients have been leached and although damp-tolerant, it seeks the higher ground in wet areas. Unsurprisingly, such barren ground includes land outside cultivation which has historically been common land or manorial waste. Heather has benefited when this land has been maintained open by grazing or (as occurs on Dartford Heath) fires. The diminution in common land grazing over the 20th century is a factor in the decline of Heather, as tree cover (frequently with *Vaccinium myrtillus* (Bilberry) as a replacement understorey) or bracken has superseded it in many places, leaving Heather often as a marginal plant by rides and glades.

Heather can be distinguished from *Erica* spp. which may grow in the vicinity by virtue of having leaves in pairs, not whorls; and having flowers with a petal-like calyx coloured similarly to the corolla, not with a small green calyx and a bell-shaped or inflated corolla.

This account has benefited greatly from the assistance of Sue Buckingham.

Calystegia soldanella (L.) R. Br. (Sea Bindweed)

Draft account

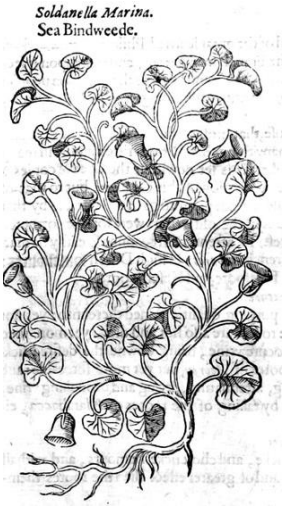
vc 15 and 16

Rarity / scarcity status:

Calystegia soldanella is widespread along the coasts of the British Isles, although with a limited presence in Scotland. In Great Britain as a whole, the risk of extinction is regarded as of 'Least Concern'. However, in England there is some evidence of decline, as a comparison of its area of occupancy in England over the periods 1930-1969 and 1987-1999 produced a calculated decline of 30% in the likelihood of recording the species. This reaches the threshold for designation as **Vulnerable** to the risk of extinction in the wild. In Kent, this decline is not reflected in a comparison between the county surveys of 1971-1980 and 1991-2005, and the species falls just short of fulfilling the criteria for being treated as scarce in Kent as a whole.

Account:

The first published record for 'Sea Bindweede' in Kent is by John Gerard in his *Herball* (1597), where he describes it as growing 'in most places of the Isle of Thanet, and Shepie'. Thomas Johnson listed it at Westgate Bay in his tour of 1632 and there are various historic records for the Sandwich/Deal area, Dover/Folkestone and New Romney. Its West Kent presence had been limited to sighting on the Isle of Grain in the 1940s, but not afterwards. However, with the benefit of access to Yantlet range for survey purposes, Ben Benatt in 2017 found a good-sized colony on an east-facing beach at TQ 88280 77610. Hanbury and Marshall (1899) considered it to be local on sandy or shingly sea-shores in East Kent.



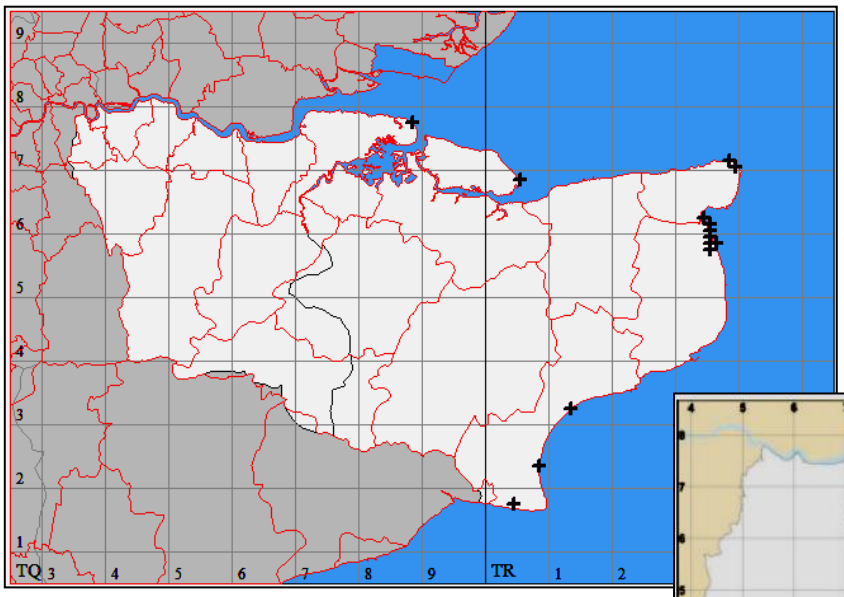
From Gerard's Herball (1597)

Many of the historic East Kent localities still persisted at the time of the 1971-1980 survey published as Philp (1982), which gave sites at Shellness, Sandwich/Deal and New Romney, also adding a Dungeness site. However, only eight tetrads then yielded records, a number which, if replicated now, would cause the species to be assessed as scarce in Kent. Whilst the Dungeness site was not found for Philp (2010), this later survey restored knowledge of presence of the species on the north coast, including the Isle of Thanet, as also the Dover/Folkestone area. With further discoveries in the Sandwich/Deal area, Philp (2010) produced a total of 13 tetrads, an increase of 62% (see accompanying 1991-2005 distribution map, reproduced by kind permission of the late Eric Philp and the Kent Field Club).

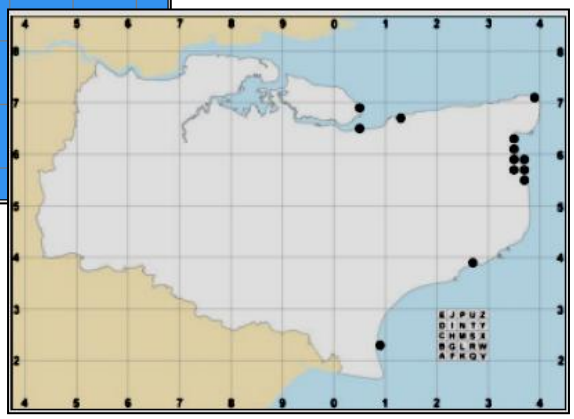
Sandwich Bay. Photo by Lliam Rooney, 22 June 2010

However, this increase related broadly to areas where the species had been known in the not-too-distant past and so may perhaps represent improved recording in relation to the previous survey. The current recorded position is shown on the accompanying 2010-17 distribution map (giving monad records, equivalent to 11 tetrads). Sea Bindweed has been newly found at Hythe and Lydd Ranges in 2013, and added at Grain (see above) – all MOD sites. Whilst these may represent a further expansion of range, the absence of previous record may instead be indicative of difficulties of access to land which has long been used for military purposes.

Sea bindweed is a plant of sandy or shingle beaches and of sand dunes. Recent Kent records on dunes have been made at Foreness Point and the back of Kingsgate Bay (both on Thanet) and at Sandwich Bay. It is a species not readily confusable with others.



Calystegia soldanella **(Sea Bindweed) 2010-17**



Calystegia soldanella **(Sea Bindweed) 1991-2005**

Sandwich Bay. Photo by Lliam Rooney, 22 June 2010

Campanula glomerata L. (Clustered Bellflower)

Draft account

vc 16; probably gone from vc 15

Rarity / scarcity status:

Widespread in Britain, although often only in small populations, Clustered Bellflower is considered to be of 'Least Concern' in terms of threats to its survival, both in England and in Great Britain as a whole. In Kent, however, it is very limited in its occurrence, and so is **scarce**.

Halling. Photo by Lliam Rooney, 28 June 2010

Account:

John Gerard in his *Herball* of 1597 says that this "smaller kind of Throtewoort...groweth...upon the chalkie hils about Greenehyth in Kent; and in a fielde by the high waie as you go from thence to Dartforde". The chalk of north west Kent is the centre of historic county records, where Marshall in the *Victoria County History of Kent* (1908) described it as abundant. The East Kent populations noted in Hanbury and Marshall (1899), e.g. at Dover and Ramsgate, have long since gone and while the BSBI database holds records for TQ76 of uncertain date in the second half of the 20th century, the species appears no longer to be found as a native in vc15.

Philp (2010) gives three tetrad records in the Cuxton / Halling area (plus an introduction elsewhere), an apparent reduction of over half against the nine tetrads[7] given in Philp (1982), although it since appears that the species has not become extinct in all these. The distribution picture therefore seems to be one of retreat to a core area of chalklands just to the west of the Medway. This could be its very long-term native locale in Kent, given that post-glacial afforestation may have been incomplete, with erosion of chalk slopes on the valley sides. The species favours chalk grassland banks, and will be at risk where these scrub over or are otherwise managed inappropriately, although it is capable of growing in shade – less so than *Campanula trachelium* (Nettle-leaved Bellflower), which favours partly shaded chalk banks in similar areas, but whose flowers are not sessile.

Site	Grid reference	Site status	Last record date	Recorder	Comments
Biggin Hill (metropolitan vc16)	T4057		1975	JP	Chalk slope near Lusted Hall.
Near Chelsfield (metropolitan vc16)	TQ46N		1988	JLM	In a lane. Likely to be an escape, although recorded between Orpington and Chelsfield in 1793.
Birling Hill / Holly Hill	TQ6762		7 August 2011	SB	Estimated 50+ plants, chalk slope among scrub; TQ 67448 62414 to TQ 67647 62389.

[7] The 'lost' tetrads are TQ66D or E (garden escape, map and text references are at variance); 66M (Meopham), 66Q (Birling), 66R (Holly Hill – since re-found, see table), 66S (Great Buckland - Luddesdown), TQ87M (garden escape).

Ladd's Farm	TQ6763		6 July 2012	LM	68 plants recorded over field, TQ 677 634, TQ 678 634, TQ 678 635, TQ 679 635 (mostly with 10-figure grid references).
Ladd's Farm	TQ6862		(1) 19 June 2016 (2) 28 June 2012	(1) DS (2) LM	(1) South of Crookham Wood, just two very small flowering plants seen at top of chalk grass slope. (2) One plant in field at TQ 68016 62713. In another field, 23 plants recorded at TQ 680 627, TQ 683 628, TQ 684 628 (mostly with 10-figure grid references).
Ladd's Farm	TQ6863		27 June 2012	LM	200-300 plants in field, TQ683737 and TQ 683 637 (10-figure grid references recorded for 30 sites). Also 250-500 plants in another field, TQ 683 636. This site and/or the preceding entry may correspond to the record for TQ66W in Philp (2010), made after 1990, before 2006.
Luddesdown	TQ6666		15 August 1995	JP	Large colony in chalky field at TQ 664 666.
Upper Halling	TQ6964	KWT RNR	28 June 2010	JA	20 plants along grass verge, TQ6901 64387. Assumed to correspond to TQ66X record in Philp (2010).
North west of Halling	TQ6965		24 August 2016	GK & LR	Great quantities on floor of White Pit, mostly in open on semi-bare chalk, scrubbing up, but also in more shaded and vegetated areas. Often very small in more open situations.
Cobham Park	TQ6968		11 August 2012	BW	Edge of wood.
Cuxton	TQ 7067	Ranscombe Farm reserve, owned by Plantlife and Medway Council	(1) 7 August 2014 (2) 2013 (3) 10 September 2011 (4) 2005	(1) & (2) RM (3) L&DH (4) JP, AW & HM	(1) TQ 703 672, 168 spikes in Mill Hill north. (2) The Ranscombe Farm count was 119 for 2013, 20 for 2012. The increase appears to have followed some small tree and scrub clearance at the eastern end of their grassland patch. (3)TQ 70069 67440. Mill Hill Wood; one plant still in flower. (4) TQ70319 67305, chalk grassland glade dominated by rank Tor-grass but still with diverse relict flora.
Ditton Quarry	TQ75D	Ditton Parish Council reserve	(1) 28 October 2014 (2) After 1990, before 2006	(1) L&DH (2) EGP (Philp, 2010)	(1) TQ 71544 57391, one spike in former quarry area. (2) Grid reference corrected from that given in Philp (2010).

Halling, chalk roadside bank (KWT Roadside Nature Reserve): Photo by Geoffrey Kitchener, June 2009

Campanula rotundifolia L. (Harebell)

Draft account

vc 15 and 16

Rarity / scarcity status:

Campanula rotundifolia is recorded across the British Isles in dry, open, infertile habitats, and in Great Britain as a whole it is not regarded as at risk, its conservation status being of 'Least Concern'. However, in England there is some evidence of decline, and it is considered to be **Near Threatened**. A comparison of its area of occupancy in England over the periods 1930-1969 and 1987-1999 produced a calculated decline of 23% in the likelihood of recording the species. In Kent, it is neither rare nor scarce but, comparing the periods 1971-1980 and 1991-2005, Philp (2010) shows a drastic decline in tetrad records of 57% over those given in Philp (1982).

Account:

The first Kent record is that made by Thomas Johnson in his *Iter Plan*tarum (1629). On 16 July 1629 he noted it near Dartford on returning to London from his Kent botanical excursion, at a location called Chalkedale packed with many rare plants ('locum multis & raris plantis refertum') which had formerly been quarried for making quick-lime. Francis Rose (in his notes to the 1972 edition of Johnson's *Journeys*) somewhat enigmatically noted that he thought he knew where this may have been and that the site probably still existed, but he did not state where. Harebell was recorded by other early authors, for example, John Jacob (in *Plantae Favershamienses*, 1777) considered it to be not common '*By Way-sides at* Ospringe *and* Boughton'; Thomas Forster (*Flora Tonbrigensis*, 1816) knew it on Tunbridge Wells Common; and Matthew Cowell (*A Floral Guide for East Kent*, 1839) mentions it at Old Park, Canterbury and Broome Park, Barham. Hanbury and Marshall (1899) gave a minimal account of the species, regarding it as common: it had been recorded in habitats such as downs, dry banks and heaths across the county.

Temple Ewell. Photo by Lliam Rooney, 4 September 2010

By the time of Philp (1982), Harebell was considered to be locally frequent on open chalk downland and dry sandy heathland, with records made in 127 tetrads. However, in the course of the 1991-2005 survey published as Philp (2010), many former sites could not be re-found and appeared to have been lost through building development or the ploughing up of grassland. As a result, the number of tetrad records plummeted to 54, a loss of over half. This represents a decline over twice as fast as the overall English decline, and over a shorter period. Even where habitat disruption due to development or ploughing has not taken place, it may be that habitat modification is taking place. *Campanula rotundifolia* has been found to be negatively associated with nitrogen deposition from the atmosphere affecting community composition in acid grassland, presumably as a result of competition from increased lush growth of surrounding grasses[8].

[8] Stephens, C. et al. (2011), Changes in species composition of European acid grasslands observed along a gradient of nitrogen deposition, *Journal of Vegetation Science* **22**: 207-215.

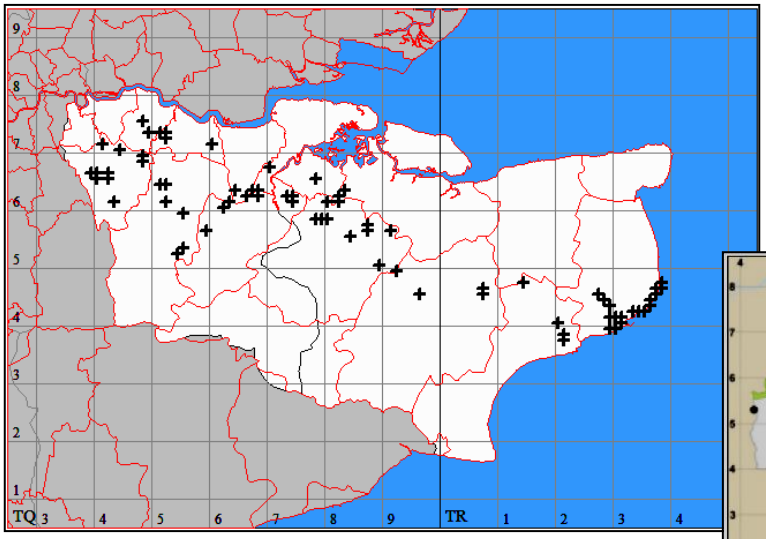
Harebell grows in a wide range of habitats, ranging from chalk (as with Johnson's first Kent record) to acid sand (as with Forster's record at Tunbridge Wells). It can grow in wet conditions, but in Kent is generally seen on dry ground, where its tap root helps it to cope with drought. More significant than the wetness or otherwise of its environment is likely to be the effect of nutrient-richness on the surrounding floral composition, so that damp fertile clays, for example, may encourage too much competitive growth. It reproduces both by seed and by vegetative growth; the former may be advantageous in broken ground, the latter under grazing pressure. As the species has not been regarded as particularly uncommon in Kent hitherto, observations as regards the different communities within which it grows here have been limited.

Dartford Heath. Photo by David Steere, 24 October 2016

Temple Ewell. Photo by Lliam Rooney, 4 September 2010

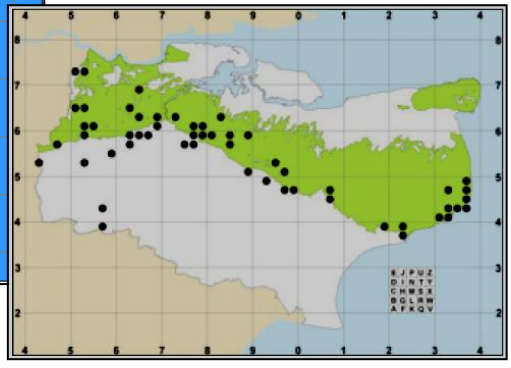
Campanula rotundifolia is not readily confusable with other species in the British Isles, although there are taxonomic complexities as regards its wider European status. Two British subspecies have been described, the tetraploid subsp. *rotundifolia* and the hexaploid subsp. *montana*. The latter is primarily an upland western taxon and it is unlikely that this is present in Kent. Under-recording may occur because the species is not always easy to see in mixed grassland when not in flower.

The following map (distribution 2010-2017) depicts 73 monad (1km square) records, equating to 60 tetrad records. Although a number of these records are in metropolitan West Kent (particularly from acid grassland in commons and cemeteries), not covered by Philp (2010), it does not look as though there has been continued decline from the situation shown in the 1991-2005 distribution map (reproduced below by kind permission of the late Eric Philp and the Kent Field Club), in which the 54 dots each represent a tetrad record.



***Campanula rotundifolia* (Harebell) 2010-2017**

***Campanula rotundifolia* (Harebell) 1991-2005**



Cardamine bulbifera (L.) Crantz (Coralroot)

Draft account

vc 15 and 16

Rarity / scarcity status:

Although nationally **scarce**, being as a native more or less restricted to chalk woodland slopes in the Chilterns and to clay woodlands in the Weald, Coralroot is not regarded as being subject to particular risk, whether in England or in Great Britain as a whole. In Kent, whilst not common, it has no rarity status.

Account:

The first recognized Kent record is in Thomas Forster's *Flora Tonbrigensis* (1816), where it is said to be found "in shady places, rarely; on the North sides of the High Rocks; on the rocks by the Little Rivulet in abundance; in a wood near Mount Sion, and near Mayfield". Mount Sion, Tunbridge Wells at least is in Kent and the Little Rivulet may have been so[9]; High Rocks are the Sussex side of the vc border (but the north side could be in vc16); and Mayfield is in East Sussex. The species is still present on Tunbridge Wells Common. There is an earlier reference in Ray's *Catalogus Plantarum Angliae* (1670) to the plant (as *Dentaria major*) on a ditch bank near Sittingbourne; but this was discounted by Hanbury and Marshall (1899) on the grounds that it was likely to have been a mistake, no other botanist having found it near there. This appears to be a reasonable inference, although the more recent discovery of plants near Littlebourne in north east Kent indicates that anomalous distribution is possible.

High Wood, Tunbridge Wells. Photo by David Steere, 27 April 2015

Hanbury and Marshall's assessment of its late 19th century status was that it was rare and very local, confined to the south and south west parts of the county. This (subject to the Littlebourne discovery) is a fair assessment of its current status. It frequents ancient damp woodland on acid to neutral soils, Weald Clay or Wadhurst Clay, and follows the East Sussex boundary from Tunbridge Wells east to Rolvenden, being present along the Sussex side as well. Sometimes it is found growing on sandy soils (High Rocks and Tunbridge Wells Common).

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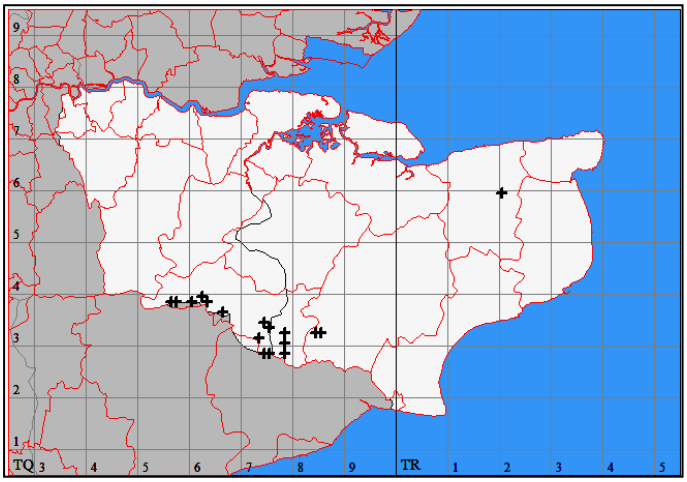
[9] Celia Fiennes, in her travel memoirs of 1697, later published as *Through England on a Side Saddle in the time of William and Mary* , wrote that at Tunbridge Wells "There is a Little rivulet just by the wells w^{ch} divides y^{e} Countys so that y^{e} buildings are some in Kent some in Sussex".

Coralroot generally grows in small localised patches, and populations are probably in general fairly stable: there is an increase in the number of tetrad records between the surveys in Philp (1982) and Philp (2010) from 9 to 14, but this may have been a product of the research into sites undertaken in connection with the paper published by Showler & Rich (1993)[10].

High Rocks Lane, Tunbridge Wells. Photo by David Steere, 27 April 2015

The plant is particularly noticeable when (and if) the purple flowers are out in May, especially where there is limited understorey vegetation, but it does not often set seed. Reproduction is by blackish bulbils which form in the axils of the stem and drop off when developed, but the plant can also spread through creeping rhizomes (the 'coralroot'). On stream banks, it may be that water assists dispersal of the bulbils. Its association with ancient woodland was studied in Showler & Rich (1993), who found that of 22 sites in East and West Kent, 15 were in semi-natural ancient woodland, six were in replanted ancient woodland and one was unclassified. This woodland is often broken into strips between fields, uncleared because of the steep-sided streams or gills, with a tree canopy of pedunculate oak, ash and hornbeam, with hazel and midland hawthorn below. Coralroot often grows in the lower levels of the gills, where damper, as indicated by the presence of *Carex pendula* (Pendulous Sedge). It is sometimes found on damp sloping roadverges, generally at woodland margins and with some association with ditches or water seepage. It is responsive to coppicing[11], and the decline of coppicing in the High Weald may have contributed to a diminution in the amount of *Cardamine bulbifera* at some sites.

***Cardamine bulbifera* (Coralroot) 2010-2017**



Whilst a data table is being maintained as part of this account, the accompanying 2010-17 distribution map gives an overview of recent occurrences, emphasising how the species clusters along the county border.

Site	Grid reference	Site status	Last record date	Recorder	Comments
Tunbridge Wells, High Rocks	TQ5638	Includes KWT RNR	(1) 17 May 2015 (2) 8 May 2015 (3) 27 April 2015 (4) 4 March 2013 (5) 25 April 1992	(1) KBRG meeting (2) GK & HP (3) DS (4) GK & SK	(1) (a) TQ 5650 3849, copse on south side of High Rocks Lane, over 50 spikes. (b) TQ 5641 3851 to TQ 5644 3850, shaded northern bank of High

[10] A.J.Showler & T.C.G. Rich (1993), *Cardamine bulbifera* (L,) Crantz (Cruciferae) in the British Isles. *Watsonia* 19: 231-245.

[11] C.A Stace (1994), Observations on *Cardamine bulbifera* around Tunbridge Wells, W. Kent. *BSBI News* 67:13.

				(5) AS	Rocks Lane, just going over flowering, c. 400 spikes. (c) TQ 5618 3850, High Rocks Lane, on shady banks extending into wooded areas beyond, c.50 spikes on south side, over 50 spikes on north side. (2) TQ 5609 3855, 36 spikes on shaded south bank of Tea Garden Lane, extending into adjoining copse, 13 spikes on north bank. (3) (a) TQ 561 385, Tea Garden Lane, over 20 plants, not counted in full, plants flowering with bulbils clearly seen both sides of road when it passes through wooded area. (b) TQ563 385, over 200 plants, High Rocks Lane, dense stands along northern road verge for 100m, very occasional plant on southern verge. (4) TQ 5633 84 to TQ 564 384; shaded northern bank of High Rocks Lane, young leaves seen in two places on KWT RNR. (5) TQ 561 385. It appears that the populations here are likely to span the vc boundary. This may also apply to TQ 555 382, near Friezland Wood (JP, 25 March 2012).
Rusthall Common	TQ5639		19 November 2003	JP	
Tunbridge Wells	TQ5738		(1) 8 May 2015 (2) 18 May 2012 (3) 28 April 1991	(1) GK & HP (2) GK (3) AS	(1) TQ 5744 3861, grassland on common opposite the end of Cabbage Stalk Lane, 22 scattered plants. Also 9 more nearby, on The Cottage side of north-south footpath. (2) TQ 57422 38601, six flowering plants, shaded pathside on slope in woodland near garden boundary. (3) TQ 574386, 300 flowering plants in dry woodland, Hungershall Park. {Not the same as the site for Tunbridge Wells Common, whose records need updating.)
Hawkenbury	TQ6038		(1) 8 May 2016 (2) 27 April 2015 (3) 6 April 2010 (4) 25 April 1990	(1) & (2) DS (2) GK (3) AS	(1) Population half that of 2015, likely due to late mowing of verge, probably less than 50 plants in total. (2) TQ605 387, over 100 plants, bulk of population along High Wood Lane where it transects High Wood, most on northern verge, scattering along southern verge. (2) TQ 60428 38756 in fair quantity, woodland either side of footpath. TQ 60341 38733, small patch on

					side of High Woods Lane, woodland edge. (3a) TQ 608 381, south of Hawkenbury Wood, near Palmer's Farm, c.100 flowering plants in ancient woodland. (3b) TQ 606 386, Hawkenbury or High Wood, 60 flowering plants on verge, 100 in cleared strip, 300 on dry sandy trackside in ancient woodland, 130 in deep grass on cleared woodland edge.
Mouseden, south of Pembury	TQ6139		28 April 1991	AS	TQ 616 394, on stream banks in fragments of ancient woodland, 3 groups with 17, 12 and 75 plants.
South of Pembury	TQ6239		27 April 2012	SB	In good quantity on north bank of stream both under woodland at TQ 62165 39791 and continuing westwards outside woodland under bramble and scattered alder for about 150 metres.
Dundale	TQ6338		11 May 2010	GK	TQ 63458.38137, 10 flowering plants in ash - hazel - dog's mercury woodland. TQ 63321.38207, four flowering plants.
Lamberhurst	TQ6636		(1) 17 May 2013 (2) 17 June 1995	(1) GK & HP (2) JP	(1) About 100 spikes in a group in shady woodland near the R. Teise (vc border), with *Anemone nemorosa* and *Allium ursinum,* TQ 668 362. (2) TQ 665 367.
Bokes Farm, Horns Corner	TQ7329		2011	JP	In gill. Recorded as TQ 735 290, but this may be an approximation. Also seen by JP on 12 July 1999.
Little Pix Hall. Farm / wood north of Seacox Heath	TQ7331		(1) 6 May 2014 (2) 28 April 1991	(1) GK (2) AS	(1) In gill woodland, both sides of stream and on wooded slopes above, in many locations. These included (a) TQ 7365 31501, where scattered by stream along 25m with *Hyacinthoides non-scripta*, *Anemone nemorosa*, *Ficaria verna*, *Narcissus pseudonarcissus*, *Mercurialis perennis*, *Coryllus avellana*, (b) TQ 73781 31472, scattered towards top of woodland valley slope, (c) several plants at TQ 73659 31377 (this is about as far west in the gill valley as found), (d) several plants at TQ 73786 31512. (2) TQ 737 314: only two flowering plants seen.
Bedgebury	TQ7333		May 1999	JP	TQ 735 330.
Goudhurst – Bedgebury. Blackbush Wood	TQ7335		12 May 1991	AS	TQ 730 354.
Goudhurst – Bedgebury. Furnace	TQ73H		1990 or 1991	AS	South side of Furnace Wood, one dense patch with 30 flowering plants and a few stragglers in

Wood and Wet Wood					woodland by track. In Wet Wood, several plants near stream in replanted wet ancient woodland.
South west of Hawkhurst, The Moor	TQ7428		9 May 2011	SB	30 plants on roadside under hazel, east side of A229 TQ 74249 28643, just in Kent. Estimated 200 plants on 150m stretch of roadside bank TQ 74239 28652 to TQ 74292 28687, west side of A229, could be threatened by *Vinca minor*.
South west of Hawkhurst	TQ72P (including TQ741285)		28 April 1990	AS	There may be overlap with the TQ7428 and 7528 entries, but records are given for: (a) Kent Bridge Farm, 1120 plants on wood ditch-bank, 40+ plants on shaded road-verge to north. (b) Winch's Plantation, 80 flowering plants in ancient woodland, well above stream level. (c) Peagle Wood, several plants on Kent side of Kent Ditch. (d) ditto ,Merriments Shaw.
Hawkhurst, Horns Corner	TQ7429		28 April 1991	AS	TQ 74 1292
West of Hartley	TQ7434		(1) 1 May 2013 (2) 12 May 1991	(1) SB (2) AS	(1) TQ 7432 3450, on stream bank by bridge and alongside public footpath to TQ 7431 34487 under oak woodland, around 150 plants. (2) 42 plants on edge of ride just clear of conifers in Forestry Commission wood, TQ 747 347.
Bedgebury Forest	TQ73M		(1) 12 May 1991 (2) 28 April 1990	AS	(1) TQ 743 334, Hedgingford Wood: North side, two patches in woodland near stream; another to the south with 650 flowering plants; and north east corner, 23 plants by stream in hornbeam wood. (2) TQ 745 344, north east corner of forest.
Sandhurst	TQ73V		5 April 1995	JP	Roughland Wood
Parsonage Wood	TQ73W		28 April 2000	PH & EGP	
The Moor	TQ7528		(1) 28 May 2013 (2) 9 May 2011 (3) 1990	(1) KF (2) SB (3) JP	(1) 28 plants at TQ 757 284, off Merriments Lane. (2) 30 plants on bank of ditch, north side of Merriments Lane at junction with B2244, TQ 75914 28227. Associated with hazel. (3) TQ 758 283, on corner nearby road; also common, TQ 755 283.
South of Hartley	TQ7533		3 April 2017	JP	One or two plants in damp broad-leaved tree area.
Great Wigsell	TQ7627		1986	JP	TQ 760 279, in woodland beside A229.
Downgate Farm	TQ7828		26 May 2015	JP	Relict flora under hazel/alder, several colonies.
Field Green	TQ7830		26 May 2015	JP	Meadow Sweet farm, adjacent wood.

Hawkhurst, White Chimney Wd.	TQ7832		(1) 25 March 2017 (2) 23 June 2011	(1) KBRG/KFC meeting (2) JP	(1) Banks of ghyll stream at southern end of wood, TQ 78585 32059. Extensive area of plants in leaf on western bank beside edge of wood and public footpath. (2) Also recorded 29 April 1999, JP.
Rolvenden	TQ8432, TQ8532		9 May 2011	SB	Four plants at TQ 84986 32284, near stream; two plants by stream at TQ 85004 32298; all in Winser Gill, under oak, beech and hornbeam. These sites are probably those recorded by AS in 1991 with 50+ and 17 flowering plants, and may be the area mentioned as Little Oven Wood in Hanbury and Marshall (1899).
Littlebourne, east of Trenleypark Wood	TR2059		(1) 7 May 2013 (2) 26 April 2012 (3) 17 April 2011	(1) CO (2)PS (3) SB	(1) c.TR 201 590 23 plants in two close patches on NW facing steep roadside bank, five in full flower, most of rest in bud. (2) TR 2010 5902, 15-20 plants, several in flower, 1 with hoverfly in corolla. (3) 13 plants on steep roadside bank, Swanton Lane TR 20100 59015. An anomalous location away from the Weald, discovered by DW according to Philp (2010).
Various	TQ53P, U; TQ63E, J, M, N; TQ72P, T, Z; TQ73F, V, W; TQ83S, TR25E		After 1990, before 2006	EGP (Philp, 2010).	Some of these locations are likely to be represented by the sites described above.
Various	TQ63D; TQ72U; TQ73K, Q; TQ83B		After 1982, before 2006	JP	These sites represent additions to the previous entry (and to the records in Philp, 1982) and some of them are likely also to be represented by the other sites described further above.

Swanton Lane near Trenleypark Wood, Littlebourne. Photo by Lliam Rooney, 26 April 2011, showing bulbils

Cardamine impatiens L (Narrow-leaved Bitter-cress)

Draft account

vc 15 and 16

Rarity / scarcity status:

Cardamine impatiens is fairly widespread, although not common, in England and Wales, but is absent from easternmost parts, other than Kent. It is classified in risk terms as '**Near Threatened**' in Great Britain, although the evidence of population fluctuations representing current national decline appears limited, and in England its risk status is one of 'Least Concern'. In Kent, it may be taken to be locally **rare**, on the basis of the records in Philp (2010), but the existence of further records means that it is better categorised as **scarce.**

Leigh. Photo by Lliam Rooney, 7 June 2011

Account:

The first record for Kent was made by W.H. Beeby, who in the *Journal of Botany* (1880) mentioned finding *Cardamine impatiens* in spring that year occurring abundantly in hedge-banks near Edenbridge, noting it south of the railway by the Edenbridge-Penshurst road[12]. This is in terms as though it were a new find for Kent; but there is also a note in the Botanical Society and Exchange Club's Report for 1879 that he had sent in material from near Maplehurst, which has led to some confusion, especially as Hanbury and Marshall (1899) cited it as a Kent record. It relates, however, to Maplehurst in Sussex.[13]

By 1899, Hanbury and Marshall had recognised the species as local and rare in the south west part of the county, by the Eden between Penshurst and Chiddingstone (where it still is), around Edenbridge (where it was re-found in 2014) and near Bough Beech. Philp (2010) regarded it as a plant of banks and damp meadows along the Medway Valley, in decline according to the survey records of Philp (1982) since only found in three tetrads instead of the earlier 15 tetrads (which were largely along the Medway). This apparent decline may not be so extensive: certainly the species continues in the Eden catchment as well as the Medway. There are also East Kent records from the 1980s, near Bethersden, which provide an exception to the Medway/Eden distributional monopoly and which warrant re-investigation.

Leigh. Photo by Lliam Rooney, 7 June 2011

The Narrow-leaved Bitter-cress is a biennial of varied habitats, including damp shady woods, river and stream banks and damp roadsides. The ripe seeds are dispersed from explosive capsules and require open ground for establishment. The species may therefore take advantage of

[12] There is a sheet in SLBI which includes a specimen collected by Beeby and marked as 9/5/1880 from near Edenbridge.

[13] Beeby clarified the origin of the find in a short note at p.342 of the Journal of Botany (1879), vol. 8 N.S. (Stephen Lemon has kindly drawn attention to this reference).

temporary open conditions, as reported by Pitt (2000)[14] in relation to the woodland below Hubbards Hill, Sevenoaks, where the species appeared following damage by the 1987 storm until shaded out by regeneration. It has also been pointed out that a colony near Vexour bridge, Chiddingstone in a riverside shaw (see following table) probably benefits from cattle disturbance following a hay cut being taken in the adjoining field, provided that the timing does not result in plants being grazed off; and another site near Chiddingstone was found to carry the species on barer riverside ground with reduced competition, including where erosion has taken place.

Site	Grid reference	Site status	Last record date	Recorder	Comments
Edenbridge	Probably both TQ4446 and TQ4447		10 July 1971	KFC meeting	Shown to KFC meeting by RC, near the lane to Skinners Farm east of Edenbridge. RC and CTP had found one plant here earlier in the year, and the meeting (comm. RMB) found two more.
Edenbridge	TQ4546		11 May 2014	SL	TQ 45295 46525, 14 plants near south west side of pond (south of Skinners Farm) in shade of coppiced field maple, 13 plants on south side of pond in more open / thickly vegetated bank. None in flower.
North east of Chiddingstone	TQ5045		5 June 2013	SL	TQ 50453 45649 (11 plants), TQ 50456 45632 (20+ plants) and TQ 50462 45631 (2 plants) in now dry oxbow lake situated at edge of River Eden north east of Chiddingstone village. Quite small area and heavily wooded, although OS map does not show it as such. Just coming into flower in three patches along the edge of the wooded core of the ox-bow and the river edge, on barer ground with little competition from other plants, some in areas of erosion.
Near Vexour Bridge, Chiddingstone	TQ5145		(1) 7 June 2015 (2) 8 May 2011	(1) & (2) SL	(1) c. TQ5121 4558, small riverside shaw, good numbers of plants in flower, highest numbers since flowered in 2011. (2) Growing under trees in a small shaw within a bend of the R.Eden, a short distance along from Vexour Bridge between TQ 511 456, TQ 512 456, TQ 511 455 and TQ 512 455. Canopy is mainly ash and the floor is dominated by *Anthriscus sylvestris*, but there is a mixture of other plant species, including Ramsons. At least 400 plants, with most nearest the river and some in flower. Ground disturbance by cows after neighbouring hay cut may be beneficial.
Chiddingstone	TQ54C		After 1990, before	EGP (Philp,	May be same site as TQ5045,

[14] Pitt, J. 2000. *Vascular Plants*, in Waite, A (ed.) *The Kent red data book: a provisional guide to the rare and threatened flora and fauna of Kent*. Kent County Council.

			2006	2010)	TQ5144 or TQ5145 entry.
West of Penshurst	TQ5143		16 August 2011	GK	TQ 51647 43254 - several dozen plants under *Prunus spinosa* by west bank of R. Eden near footpath, one outlier about 70m west along path.
West of Penshurst Place	TQ5144		1 June 2013	SL & RE	Spread along the R. Eden bank in association with *Allium ursinum*, TQ 51596 44107.
Between Leigh and Haysden	TQ5545		16 June 2010	SB	TQ 55778 45910; 15 plants beneath a hawthorn in cow pasture in the Medway Valley. Only 3 had escaped being largely grazed off. TQ 55772 45926, three plants beneath a hawthorn in cow pasture, all partially grazed.
Haysden Park	TQ54T		After 1990, before 2006	EGP (Philp, 2010)	Little Haysden.
Hubbards Hill, Sevenoaks	TQ55G		c. 1990	JP	Appeared for 2 or 3 years following storm damage to woodland in 1987. Seen here by FR in 1955.
Aylesford	TQ7358		After 1990, before 2006	EGP (Philp, 2010)	TQ 7304 5884; by the Medway banks near the Aylesford Bridge, on the vc15 side. [Not found, June 2013; overgrown.]
Bethersden	TQ9239		(1) 14 May 2013 (2) 1 June 1987	(1) SB (2) LBB & RF	(1) (a) 30 to 40 plants, prior to flowering, on banks of a shaded pond at TQ 92676 39402 and on nearby stream bank at TQ 92655 39399. Entire area sheep grazed. (b) 17 small non-flowering plants in small wooded area by stream at TQ 92590 39337. Area grazed by sheep. (2) TQ 926 395, south of Low Wood Farm in damp wood with ponds. TQ 927 394, south of Bull Green in wet woodland. N.B. FR also recorded this species from the Beult south east of Buckhall near Bethersden in 1962.

Chiddingstone. Photo by Stephen Lemon, 8 May 2011

Carex canescens L. (= *Carex curta*, White Sedge)

Draft account

vc 15, long gone from vc 16

Rarity / scarcity status:

White Sedge is fairly common in the north and west of the British Isles in bogs and heaths, and so its national risk status for both England and Great Britain as a whole is of 'Least Concern'. The paucity of such habitats in Kent, with the species being reduced to one station according to Philp (2010), led to an initial assessment of its status as being rare. However, further discoveries since then have caused it to be re-assessed as very **scarce** in the county.

Account:

The first county record for *Carex canescens* is given by Hanbury and Marshall (1899) as being in Thomas Forster's *Flora Tonbrigensis* (1816), where it is said to grow in "watery and damp places, rarely; in the damp parts of the woods near Frant [this must be in Sussex]; and in the little wood behind the Sussex Tavern, where the spring rises which runs to the Wells". The Sussex Tavern appears to be another name for the Royal Victoria and Sussex Hotel at the Pantiles, and at the 1851 census (around the time when the vice county boundary was established) its occupants were declared as part of the Frant, Sussex census. The wood behind it is therefore likely to have been in vc14, not the West Kent vice county. This is supported by current vice county boundary mapping facilities, which show the boundary along the front of the building itself, albeit with c. 50 metre accuracy.

Orlestone Forest. Photo by Lliam Rooney, 24 May 2011

As the only examples given by Forster are Sussex ones, it accordingly appears that the first record should be assigned to Matthew Cowell's *Floral Guide for East Kent, etc.,* (1839) where under a listing for "Willesboro Leas" there is a reference to this species growing on a bank at the east side of the Lees[15]. Cowell's mention of the sedge as also growing in the Fir walk, Faversham was, however, rejected by Hanbury and Marshall (1899) as almost certainly in error. The latter authors regarded White Sedge as rare in Kent, in boggy pasture and thickets, and preferring a peaty soil. The Willesborough Lees site persisted, with records by Francis Rose from 1945 to 1955; by Eric Philp in a small boggy area by a stream in 1977; by a KFC meeting in 1987 ('a fine patch'); and by Joyce Pitt in 2006 when it was in a very

[15] This is flagged as given on the authority of the *Catalogue of rare or remarkable phaenogamous plants collected in South Kent* (G. E. Smith, 1829). However, it is not in the printed Catalogue, but in Smith's manuscript notes (1830-33), where it is also said to grow there with *Carex rostrata* (Bottle Sedge).

overgrown alder carr. After then, it appears not to have been seen until 2014, when found by Stephen Lemon in an area where there had been tree felling the previous winter. He draws attention to the parallels with clearance here recorded in June1955[16] when, next to a boggy field which carried one of two plants of *C. canescens* in a ditch, cleared woodland was found to be intersected with runnels fringed and carpeted with *C. canescens* and *Juncus bulbosus* (Bulbous Rush). Whilst the 1955 cleared woodland is unlikely to have the same footprint as that of 2014 (which probably includes part of what was originally the boggy field), it looks as though disappearance and reappearance of the sedge is a repeated pattern.

Willesborough Lees. Photo by Stephen Lemon, 16 August 2014

The only other recent records have been in Wealden woodland south of Ashford. These are at Norland Wood north of Ruckinge; Courthope Wood, Shadoxhurst; and in Longrope Wood, Orlestone Forest. It has been more widely known here in the past, however, having also been recorded at a pond border near Spot House Farm to the west of Orlestone Forest in 1955.

Carex canescens is generally regarded as a plant both of high altitude nutrient-poor mires and of lowland mesotrophic bogs. At Willesborough Lees it grows in modified valley bog. In Orlestone Forest it grows on the margins of shaded woodland pools and on small islands of peat-covered tree roots. The Norland Wood site has some similarities as this comprises a series of peaty/muddy woodland pools; also the Courthope Wood site is the margin of a woodland pool and an inaccessible island within it. The species is distinctive for its pale whitish-green spikelets, at least when young, hence the name, White Sedge. The presence of stomata on the upper leaf surface is a characteristic which, amongst Kent sedge species, is shared only by *Carex rostrata* (Bottle Sedge) and *Carex nigra* (Common Sedge). *C. rostrata* is separable as being rhizomatous, not tufted, and the leaves of *C. canescens* are lighter green and softer in texture than *C. nigra*.

Site	Grid reference	Site status	Last record date	Recorder	Comments
Courthope wood east, Shadoxhurst	TQ9636		9 May 2015	SL & SB	TQ 96914 36294, at least 10 clumps on edges of and on inaccessible island at pond not mapped on OS map, also contained *Riccia fluitans* (Crystalwort). Tussocks included another GPS reading, of TQ 96884 36269.
Longrope Wood, Orlestone Forest	TQ9835, TQ9836		(1) 9 May 2015 (2) 24 May 2011	(1) SB, SL (2) JA, LR, SB	(1) Two tussoscks at margin of woodland pool at TQ 96884 36269, a total of at least ten clumps around pool and on inaccessible island, TQ 96914 36294, pool also contained *Riccia fluitans*. (2) (a) TQ 98206 35834, six plants on small islands made of peat-covered tree roots in a shaded woodland pool.

[16] E. Scott, Botanical Notes from the Ashford District, in the *Report of the Folkestone Natural History Society for 1955*, pp.14-15.

					(b) TQ 98230 36005, c. 40 plants both on the margins of a shaded woodland pool and on islands made of peat-covered tree roots (c) TQ 98345 35555, four plants at margin of island in large shaded woodland pool.
Norland Wood, Ruckinge	TR0235		9 May 2015	SL	TR 02328 35243: at least 40 clumps in flower with *Carex elongata, Carex pseudocyprus, Carex remota* and the moss *Calliergon cordifolium*, growing on sphagnum peat in one end of a series of interconnected swampy ponds in Norland Wood. Inclining to the shade from *Betula* trees, slightly less than that from that from *Salix*, also growing in the vicinity. This area appears to have developed tree growth after clearance of conifers following the 1987 Storm.
Willesborough Lees	TR0342		(1) 1 August 2015 (2) 16 August 2014 (3) 2006 (4) 21 April 2002 (5) 2 August 1987 (6) 24 June 1977	(1) SL, LR (2) SL (3) JP (4) JW (5) EGP (6) KFC meeting	(1) Boggy area coppiced Winter 2014, most plants heavily rabbit grazed, growing with *Carex echinata*, TR 038904 2525 / TR 03926 42544 / TR 03811 42537. (2) Approximately 12 small, grazed, non-flowering plants spread over two metres in short turf below power lines at TR 03889 42527. Associates: *Hydrocotyle vulgaris*, *Potentilla erecta* and *Juncus bulbosus*. Within a larger open area created by felling trees in the previous winter. Plants possibly germinated this year following the tree felling, benefiting from combined effects of power lines and felling. (3) In very overgrown alder carr. (4) TR 039 424. (5) In small boggy area by stream; specimen in **MNE**, given as TR04G. (6) No grid reference given in meeting report, a fine patch with growth stronger than previously seen.

Orlestone Forest. Photos by Lliam Rooney, 24 May 2011

Abaxial sideof leaf, showing stomata, from Willesborough Lees material. Photo by Stephen Lemon, August 2014.

Carex divisa Huds. (Divided Sedge)

Draft account

vc 15 and 16

Rarity / scarcity status:

Carex divisa is regarded as **scarce** and **Vulnerable** in Great Britain, primarily a plant of the south east, with potential to be affected by coastal development or conversion of grazing marshes, and it is treated as a UK Biodiversity Action Plan priority species (so as to make available agri-environment options for farmers to deliver the species' needs, and to ensure those needs are taken into account in coastal defence strategies and that planning steps are taken to guard against further losses of its grazing marsh habitat). In spite of this, its risk status in England is one of 'Least Concern'. Indeed, in Kent it is quite common in low coastal areas and no county designation of scarcity is appropriate.

Grain marshes. Photo by Geoffrey Kitchener, 10 May 2011

Account:

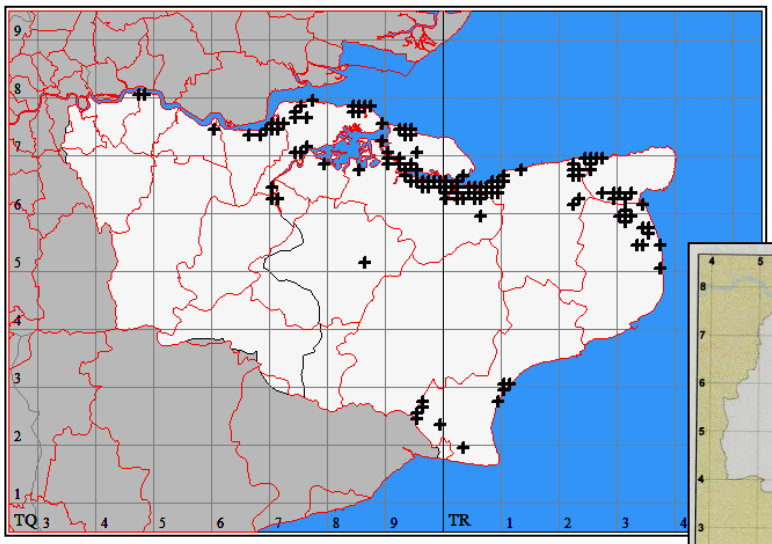
In Kent, *Carex divisa* is first mentioned in John Ray's *Synopsis* (3rd edition, 1724) as the "*Marsh Cyperus-grass...with a divided head*... (by *Hithe* in *Kent; Mr. J. Sherard*)". Hanbury and Marshall (1899) regarded it as very common in the Thames valley and Romney Marsh, frequenting marshes near the sea and tidal rivers. Philp (2010) recorded it in 95 tetrads, with a primary focus on the north Kent coast from Gravesend to Whitstable. Although this is a reduction from 113 tetrads in Philp (1982), it may not represent a diminution on the ground.

Divided Sedge may typically be found on flat, somewhat brackish grazing marshes, seldom above 10 metres altitude. It may be at the edge of ditches or in more open areas, often in or at the margin of slight depressions, but not in permanent standing water. It forms large patches and it is often difficult to identify

where one plant ends and another begins. These patches may be somewhat darker than the neighbouring sward and may be picked out from a distance, even if only vegetative. The species is distinctive by virtue of its somewhat compressed panicle, normally overtopped by the lowest bract.

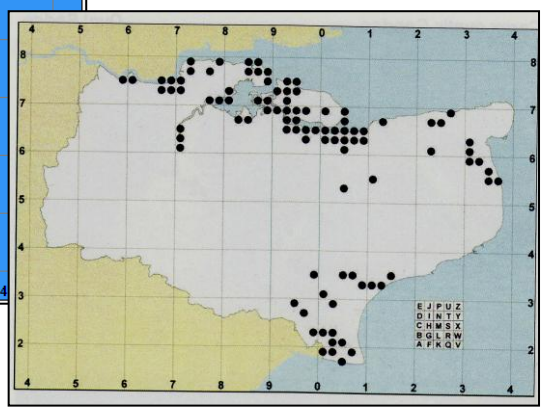
Seasalter. Photo by Lliam Rooney, 7 May 2010

The Kent records are primarily coastal, but not invariably so. Nationally, inland records have been known on a historic basis, but these have largely disappeared. In Kent, however, there are several atypically inland sites. Its appearance in the gutter of the M20 between Ashford and Maidstone (RD, 1975 at, TQ792573) appears to be related to the saline habitat created by highway de-icing salt. But other post-1970 locations are not necessarily of this character: the Stour Valley at Chartham (TR15C); by the A252 between Chilham and Molash (TR0542); a wet sheep pasture at Hernhill (TR 068 599); a damp field south of Harrietsham (TQ8651); and two sites at Linton near Maidstone (TQ74P). These records (other than Chartham) indicate an ability to grow on substrates other than coastal alluvium, as also its presence at the bottom of a disused chalk pit at Swanscombe (TQ 607 745) to which it appears to have migrated from grassland habitat (since overgrown) around the top.



***Carex divisa* (Divided Sedge) 2010-17**

***Carex divisa* (Divided Sedge) 1991-2005**



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 have already covered much of what was previously recorded and include some sites unrecognised in Philp (2010), but clearly there is still work to be done at Romney Marsh to build up the current equivalent of 81 tetrad records towards the 95 represented in Philp (2010), unless any further decline prevents this.

Carex echinata Murray (Star Sedge)

Draft account

vc 15 and 16

Rarity / scarcity status:

Widespread in the British Isles other than in the Midlands and far south east, *Carex echinata* requires no special conservation status considered over Great Britain as a whole, but in England its categorisation is as a **Near Threatened** species. In Kent the loss of sphagnum bog habitats has led to it qualifying as **scarce** on the basis of assessment criteria using the number of sites listed in Philp (2010), although discoveries or rediscoveries since that survey would instead rank the species as near scarce.

Hothfield. Photo by Lliam Rooney, 19 May 2011

Account:

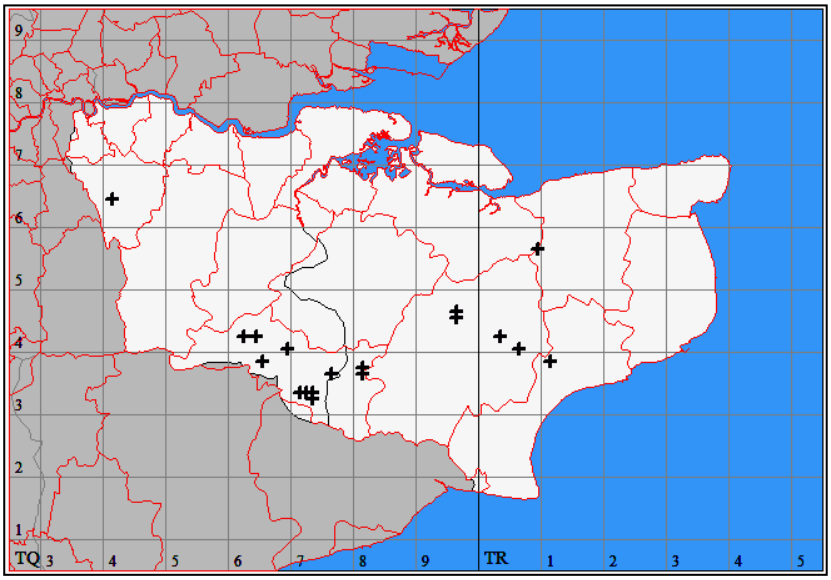
Star Sedge was first recorded for Kent in Thomas Forster's *Flora Tonbrigensis* (1816) as sufficiently common in bogs and marshy places that any specific listing of localities was unnecessary. By the time of Hanbury and Marshall (1899), however, it was treated as rather uncommon in the county. In the mid-20th century there were still sufficient bog habitats for Francis Rose to have collected specimens (now in **MNE**) from many locations across the county[17]. However, only five tetrads are listed in Philp (2010), a decline from 11 tetrads in Philp (1982), which might be capable of interpretation as the consequence of an on-going loss of habitat. A reversal of such a trend has been shown at Pembury Walks, where the removal of conifers by the RSPB has enabled sphagnum moss to regenerate, with the Star Sedge appearing (2013) in the most open area of sphagnum. However, the total number of Kent tetrad records for the period 2010-17 is 15, equivalent to 18 monads, and it is likely that there has been no decline since 1971-80, but that the species has been sought more intensively since 2010.

Pembury Walks, habitat. Photo by Stephen Lemon, 21 June 2010

Carex echinata is readily identified by the mature utricles which spread out so as to form a short series of star-shaped clusters. There is a recognised plant community of which this is characteristic, *Carex echinata - Sphagnum recurvum / auriculatum* mire, although it is said that there are few constants in the community other than those species, but that grasses such as *Agrostis canina, Molinea caerulea* and *Anthroxanthum odoratum* can be frequent and the community lacks calcicolous species and the deeper swamp flora. Whilst it is a plant of wet ground, it has been seen, e.g. at Hatch Park and

[17] Including Moorden near Penshurst; Seal Chart; Ightham Common (probably Fishponds); Chingley Wood near Bewl; Sandway; Willesborough Lees; Dungeness; north side of Bigberry Wood; Monks Horton; Harbledown; Ham Fen.

Gibbin's Brook, growing more at the margins of such areas. The largest Kent populations are those in the bogs at Hothfield; but in terms of the spread of records, it appears that the Bedgebury – Cranbrook – Goudhurst triangle still holds the most, although further east there is an association (from TQ94 through to TR13, and of which Hothfield is part) with the Folkestone Formation and its junction with the Sandgate Formation.



No distribution map was given in Philp (2010) in view of the paucity of records made, but the number of sightings since then warrants the inclusion of a map here.

***Carex echinata* (Star Sedge) 2010-17**

Site	Grid reference	Site status	Last record date	Recorder	Comments
Keston Bog (metropolitan vc16)	TQ4164	Common owned by L.B. of Bromley	(1) 6 August 2016 (2) 15 July 2011 (3) 13 June 2007	(1) SL (2) & (3) JP	(1) Small valley bog between TQ 4170 6423 and TQ 4171 6434. (2) TQ 41706 64285, bog, in water retained by top dam. A site of long standing.
Pembury Walks	TQ6242		(1) 5 April 2014 (2) 21 June 2013	(1) SP & DG (2) SL	(2) In sphagnum bog on valley slope above stream, TQ 6211 4235, a cluster of plants with a few singles nearby, confined to an open area of sphagnum surrounded by regenerating birch/willow. The species was also recorded at Pembury Woods (grid reference not known) in a KFC meeting on 6 July 1985.
Old Swan Farm, Lamberhurst	TQ6438		(1) 9 July 2000 (2) 6 July 1999	(1) AC (2) JP	(2) TQ 649 388.
Brenchley Wood	TQ6442	KWT managed reserve	(1) 14 June 2010 (2) 13 August 2005	(1) SB (2) JP,BW	(1) Occasional in sphagnum bog. (2) TQ 649 423. [Also given in the next tetrad, TQ64K, in Philp (1982)]
Old Swan Farm, Lamberhurst	TQ6538		13 June 2015	KBRG meeting	TQ 6511 3882, c. eight plants at spring-line where alders are cut back below power lines. Associated spp included *Carex laevigata, Cirsium palustre, Juncus effusus, Lotus pedunculatus, Alnus glutinosa*.
Horsmonden	TQ64V		(1) 15 June 2013 (2) June 1978	(1) SL (2) JL	(1) TQ 69276 40933, south of Furnace Pond, a plant with three spikes on a small patch of sphagnum in boggy area of Shirrenden estate, probably benefiting from recent coppicing.

					(2) Furnace Pond, recorded by FR in 1954 as sphagnum bog by lake.
Bedgebury Forest	TQ73B &G (TQ7133, TQ7232, TQ7332, TQ7333)		(1) 28 August 2016 (2) 26 July 2016 (1) 5 September 2015 (2) 2 July 2015 (3) 29 May 2014 (4) 29 July 2013 (5) 10 August 2011 (6) 28 July 2011	(1) SL (2) SB & OL (1) SB (2) SL (3) SB (4) JP (5) SB / KBRG meeting (6) SB	(1) Salix/Rhododendron swamp (mostly densely shaded) bordering northern end of Louisa Lake, TQ 732 329. (2) Stone Hole Pond at TQ 73513 33684. (1) A few plants on sphagnum beside lake at entrance to Pinetum, TQ 71587 33293. (2) Swampy bog on slope fed by main stream beside track, TQ 72114 33244, group of plants. (3) In a very wet area by Marshalls Lake at TQ 72039 33805 with *C. remota*, *Veronica beccabunga*, *Ranunculus flammula*. (4) TQ7332. (5) About 12 plants beside lake TQ 73222 32932. (6) Wet, wooded area near Louisa Lake TQ73247 33028; also several plants by small ditch TQ 73129 32692.
Bedgebury Park School	TQ7234		6 June 1997, 12 May 1999	JP	Resurveyed in 2010, but boggy area on south of lake was very overgrown with sallows and young alders.
Angley Wood, Cranbrook	TQ73N, TQ73T		(1) 12 July 2015 (2) May 1995	(1) KBRG meeting (2) JP	(1) Angley Wood, a single plant at TQ 76478 36819. Seen also by SL on 3 July 2015 recorded as in *Betula*-shaded spring flushes on slope above main alder carr. Also recorded in Angley Wood by FR in 1955 as in sphagnum bog at edge of fen, Tuckers Pond.
Chittenden Wood, Hemsted Forest	TQ83D		(1) 14 July 2016 (2) After 1970, before 1981	(1) JP (2) Philp (1982)	(1) TQ 817 366, edges of ride. Also recorded by FR in 1944 in a boggy ride.
Hemsted Forest	TQ8137		6 August 2017	SL	Hemsted Forest (Chittenden Wood), sphagnum filled pond in mature plantation, TQ 819 370. Scattered plants.
Hothfield Common	TQ9645 & TQ9646, TQ9745	KWT managed reserve	(1) 30 June 2016 (2) 21 May 2016 (3) 8 August 2015 (4) 9 September 2011 (5) 25 May 2010 (6) 12 July 2000	(1) AWi (2) SL (3) BW (4) SB (5) GK (6) JS	Present before 1899. (1) TQ970457 [query if this and (6) below are the same]. (2) Flushed boggy grassland in northern bog, TQ 9661 4600. (3) TQ9645. (4) TQ96748 46101, sphagnum bog, Hothfield Common. (5) Abundant in main and southern bogs, TQ9645, and frequent in northern bog, TQ9646. (6) TQ 969 456.
Dungeness	TR01	RSPB reserve	2003	JP	In cleared area on west side of main sallow area. Associated species included *Carex nigra, Ranunculus flammula, R. lingua*.

West of Chartham Hatch	TR05Y		After 1970, before 1981	Philp (1982)	May be same as the following TR0956 record. Philp (1982) has a further record in the adjoining tetrad, TR15D.
Willesborough Lees	TR0342		1 August 2015	SL, LR	Boggy area coppiced Winter 2014, most plants heavily rabbit-grazed, growing with *Carex canescens*, TR0389042525 / TR0392642544.
Hatch Park	TR0640		21 July 2016	KBRG meeting	(a) c. TR 0648 4067 scattered, and in places frequent, towards margin of mire at eastern end of Boating Pond. (b) TR 06684 40631, one plant at north east margin of Heron Pond, damp rising ground close to fringing bracken.
Hunstead Wood	TR0956		(1) 7 June 2015 (2) 31 May 2014 (3) 12 June 2010	(1) LR (2) BW (3) LR	(1) Two clumps in Alder carr in sphagnum at TR 09283 56864. (2) Same as 2010 sighting. (2) Hunstead Wood, TR 094 568. Also recorded at this wood by FR in 1956 in a bog amongst alders.
Gibbin's Brook	TR1138	CROW access land, SSSI	(1) 30 June 2013 (2) 17 July 2011	(1) KBRG meeting (2) KFC meeting, comm. JP	(1) In the bog north of the road across Gibbin's Brook, frequent along the eastern margin, where more open/drier, but sphagnum forming (TR11637 38673 north-eastwards). In the bog south of the road, it was very abundant over a wide area, this being relatively drier and more open.

Hothfield Photos by Lliam Rooney,19 May 2011 and 4 July 2010

Carex elata All. (Tufted-sedge)

Draft account

vc 15

Rarity / scarcity status:

Widespread in England, Wales and Ireland, Tufted-sedge's conservation status over Great Britain as a whole is one of 'Least Concern'. However, a trend of decline in England has led to it being considered as **Near Threatened**. Its main strongholds lie no further south than East Anglia, and in Kent it is very local, mainly in the Worth / Hacklinge area, but also at Preston Marshes and Dungeness, and so it is treated as locally **scarce**.

Worth. Photo by Sue Buckingham, 19 April 2011

Account:

The first Kent record for *Carex elata* was by J. T. Boswell-Syme in *The Phytologist* (1855), when he noted it as "abundant near Sandwich and Deal". Hanbury and Marshall (1899) assessed it as the commonest sedge in the low-lying ground stretching northwards from Deal nearly to Pegwell Bay, where it occurred in the greatest profusion. This does not seem to have remained the case north of Sandwich, and Philp (1982 and 2010) noted it no further north than TR35I, N and T which (with TR35H and M, all contiguous tetrads in the area of Ham, Worth, Hacklinge and the Lydden Valley) was thought (per Philp, 2010) to constitute the only area in which it was to be found in Kent. However, it appeared to have been overlooked that Francis Rose[18] gave this species in a list for Wingham Fen, whose flora was said to be highly reminiscent of that of fenland at Worth Minnis. It transpired that this similarity extended further downstream, as in 2016 a KBRG meeting found the sedge by a ditch at Preston Marshes, some 500m from the confluence of the Wingham River and the Little Stour. There was also a single plant of the rare hybrid with *Carex acuta* (Slender Tufted-sedge), *Carex x prolixa*, a first Kent record.

In 2010 the species was identified as present also in a wet area of a freshwater lake on the Dungeness shingle where the plants had been known for some years, but had not been recognised as *Carex elata* – a significant extension of its distribution, as understood up till then.

Tufted-sedge in north east Kent forms large tussocks at the margins of dykes, sometimes near continuously along the lower parts of the dyke banks. In Ham Fen, however, it is not so much a marginal plant as a component of open swampy willow carr; and this is echoed in its occurrence at Dungeness in an area cleared of willow, where it grows in a swamp on a peaty substrate subject to variable inundation, both seasonally and from year to year.

Site	Grid reference	Site status	Last record date	Recorder	Comments
Dungeness	TR0717, TR0718	SSSI	(1) 10 July 2016 (2) 15 June 2010	(1) KBRG meeting (2) GK & RG	(1) TR0717, Open Pit no. 1; TR0718, Open Pit No. 8. (2) TR 072 182, five tussocks, one perhaps a multiple tussock, in wet area of pit no. 8 with *Iris*

[18] Rose, F. (1950). The East Kent Fens. *Journal of Ecology* **38**: 292-302.

					pseudacorus, where cleared of *Salix*. See *Kent Botany* 2010.
Preston Marshes	TR2360	SSSI	5 July 2016	KBRG meeting	A number of plants along the margins of a ditch at TR 232 600 and at TR 2335 5995.
Ham	TR35H	KWT reserve	(1) 19 July 2017 (2) 13 July 2013 (3) 18 May 2002 (4) 1982	(1) SL & SB (2) KFC meeting (3) EGP (4) AH	(1) Ham Fen. A few small non-fruiting plants at TR 3305 5529 in shallow water on calcareous peat. (2) Six plants recorded in true fen at TR 33443 54925 and TR 33448 54918, probably more plants in the vicinity, obscured by thick vegetation. Associated flora included *Thelypteris palustris, Carex paniculata, C. acutiformis* and *C. riparia*. (3) recorded only as TR35H. (4) TR3354, west of Hacklinge; and TR3355, near Ham Brooks wood.
Sandwich and Worth	TR35I		(1) 3 June 2010 (2) 1982	(1) GK (2) AH	(1) Banks of watercourse from TR 33317 57097 to 33127 57401, thence alongside Deal Road / Dover Road to TR 33123 57655 (almost as far into Sandwich as the railway). Also frequent on banks of the Delf from TR 33990 56724 to TR 33867 56818, then TR 33675 56748 (where watercourse moves away from road and visibility). (2) TR3356.north of Worth Hill.
	TR35M		(1) 5 September 2013 (2) 19 April 2011 (3) 1982	(1) RG, LR & GK (2) SB (3) AH	(1) TR 348 559, several plants alongside Pinnock Wall dyke. (2) Margin of marsh dyke at TR3422 5566, Worth Minnis (3) TR3455, near Hacklinge and TR3555, Lydden Valley.
Worth	TR35N		(1) 5 July 2011 (2) 19 April 2011 (3) 3 June 2010 (4) 22 June 2002 (5) 1982	(1) KBRG meeting (2)SB (3) GK (4) EGP (5) AH	(1) On bank of The Delf dyke TR34446 56518. (2) Plentiful alongside northern extension of Delf dyke from Brewers Bridge TR 34412 56685. (3) TR 34000 56722 and eastwards along the banks of the Delf (4) Old Downs Farm, TR35N. (5) TR3456, near Temptye; and TR3556, east of Blue Pigeons.
Worth / Lydden	TR3655 (35S)		16 July 2008	CJC & AP	One tussock, s bank of ditch, Willow Farm, TR 3616 5526.
Sandwich Bay / Lydden	TR35T		(1) 13 April 2017 (2) After 1990, before 2006	(1) SB (2) EGP (Philp, 2010)	(1) A good number of tussocks in dune slack with *C. riparia* at TR 3625 5726.

Dungeness. Photo by Bob Gomes, 2010.

Worth. Photos by Lliam Rooney, 30 April 2012

Carex elongata L. (Elongated sedge)

Draft account.

vc 15 and 16

Rarity / scarcity status:

Carex elongata is scattered and not particularly common in Wales, north Ireland and some parts of Scotland and north west England. It is locally present in south east England, and as its populations in Great Britain have been broadly stable since 1930, it is not regarded as being at risk in Great Britain as a whole. However, in England it is considered as being **Near Threatened**. In Kent it has always been regarded as rare and the indications were that it was perhaps increasingly so, with only one record in Philp (2010). Hence in the first issue of this account, the species was regarded as rare in West Kent and perhaps gone from East Kent. However, the checking of old sites and some new discoveries have resulted in it being now classed as **scarce** in the county.

Leigh. Photo by John Buckingham, 23 April 2011

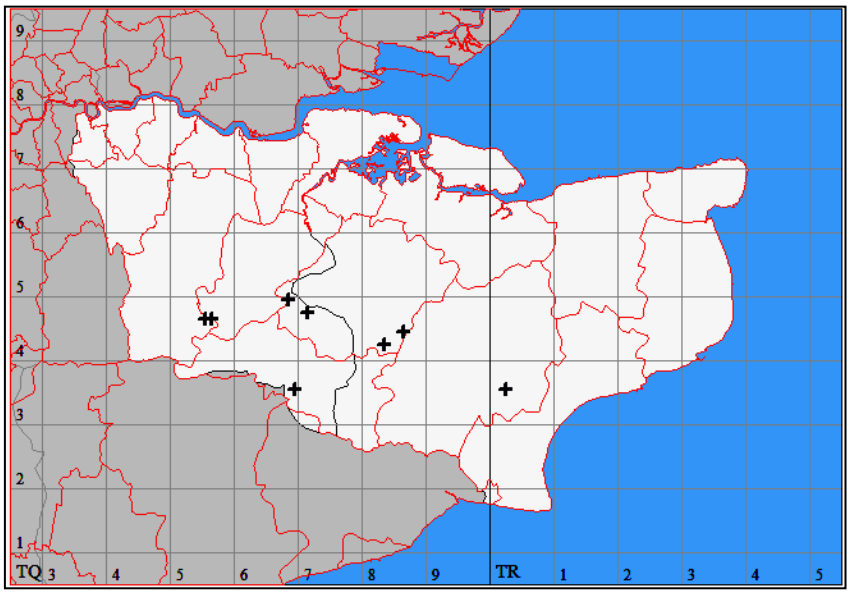
Account:

Elongated Sedge was first published as present in Kent in H.C. Watson's *Topographical Botany* (1874). It had, however, been identified as present in the county before then, as it was collected by W. Borrer at Tonbridge in May 1844. There is a handful of 19th century records, mostly around Tonbridge on Weald Clay, where Hanbury and Marshall (1899) referred to it by rivers and ditches, and in damp copses – very rare in the county, although claimed to be plentiful in Tonbridge Marshes. Early East Kent records are fewer: Wolley-Dod claimed it from Ham Marshes in 1892 and E. Bartlett (the Maidstone Museum curator) found at Maidstone in 1882 a plant which is still at the Museum, although neither of these records featured in Hanbury and Marshall (1899).

Leigh. Photos by Lliam Rooney, 7 June 2011

Dick David (in litt. to Francis Rose) summarized the status of the species in Kent after a weekend exploration in June 1968. It was, he considered, the most precarious of British sedges, and 'tragically diminished in the Tonbridge marshes', with only three clumps seen. He missed it near the railway bridge above Tonbridge, but found it securely established south of Yalding station and still present at Stubbs Cross. Philp (1982) lists the sedge for five tetrads across the

administrative county, but in the later survey (Philp, 2010) only one extant site could still be traced, despite disproportionate search – this was at Leigh, near Tonbridge (TQ54T). It since transpires that this is not the only surviving Kent location; and during 2010-17 it was seen in eight different monads (equivalent to the same number of tetrads) spread across the Weald, as shown in the accompanying distribution map.



Carex elongata (Elongated Sedge) 2010-17

It is a densely tufted sedge, in Kent found in boggy woodland, ditches, riversides and pond margins, often perched as a tussock on a root or dead wood, not in the wettest areas, but affording root access to water. Its requirements are exacting: minimum competition and abundant moisture without water-logging. It may be recognized by the rigidly angled zig-zag spikes of the inflorescence, with dark brown mature fruits, whose clearly ribbed utricles arch outwards. In a vegetative state, the yellow-green leaves arching outwards from the compact tuft are distinctive.

Site	Grid reference	Site status	Last record date	Recorder	Comments
Penshurst	TQ54C		1944	FR	River Eden at Gilridge [and so may be TQ5144] – FR in 1944 referred to a small marsh on a hillside. Could not be found by RD in 1973, nor by SL in 2013.
Leigh, near Tonbridge	TQ5546		(1) 25 April 2015 (2) 8 June 2013 (3) 7 June 2011 (4) 27 June 2010 (5) 9 May 2010	(1) BW (2) SL (3) SB & LR (4) LNHS meeting (5) SB	(2) Many tussocks usually in small groups at the edges of ponds, spread over wettest parts of the woodland, first noted at TQ 55745 46193 with two very large tussocks rising from the water at TQ 55927 46177. (3) Six large tussocks in partially shaded marshy area, TQ 55727 46125. (4) TQ 55722 46115, 16 plants with *C. vulpina* and other *Carex* spp. in a very wet shaded marsh. (5) TQ 55765 46194, One plant only on margin of woodland pool, about a hundred yards away from the LNHS meeting site.
Leigh, near Tonbridge	TQ5646		23 April 2011	SB	One plant by stream in wet woodland, TQ 56006 46189. There may be a relationship with a 1972 record by RC in a swampy copse near Ramhurst Manor.

Tonbridge Marshes	TQ6047		1972	RD	TQ 603 472, first ditch north of river and 20 yds west of gate to Tanyard farm track. Formerly common on marshes (FR).
Yalding	TQ6849		(1) 6 July 2013 (2) 1 May 2010	(1) SL (2)KFC meeting, comm. JP	(1) Close to a pond along a boardwalk through some wet woodland (centred at TQ 68550 49702), there were 14 tussocks west of the boardwalk and a further 19 tussocks eastwards. (2) Open, swampy willow carr. Seen 1972 by RD at TQ 681 495 on both sides of railway, but in 1986 not on the west side. It is likely that the T64Z record in Philp (1982) also belongs here.
Scotney estate	TQ6935		12 August 2017	SL	Kilndown Wood, small basin-shaped ghyll bordering western edge of wood, steep sides and a wide flat floor, with a chalybeate spring (depicted on OS map) at fault line/junction of the Tunbridge Wells Sand and Wadhurst Clay, TQ 69372 35487. Approximately 20 scattered plants forming tussocks, growing in very wet alder carr with *Scirpus sylvaticus*, *Carex remota* and *Carex vesicaria*.
Yalding (Benover)	TQ7147		(1) 15 May 2014 (2) 29 March 2014 (3) 19 July 2013 (4) 18 June 1987	(1) GK (2) & (3) SL (4) RF	(1) 18 plants in slightly raised locations within wet wooded roadside area from TQ 71023 47633 to TQ7 1015 47604. (2) A revisit to site along B2162 where recorded in 2013. Now 14 plants (perhaps more visible as other vegetation not yet grown up), ranging in size but none very large, on raised tussocks, all associated with the root plates of trees. All on the same side of the road where found in 2013, although some newly found were slightly further south along the same pond/ditch system than before, TQ 71014 47605. (3) TQ 71025 47627, western side of Benover Road, three tussocks, close to each other along the edge of a shady ditch and near the entrance of a culvert connected to pond and ditch on other (eastern) side of road. Other sedges present were *Carex remota, C. pseudocyprus, C. pendula and C. riparia*. (4) TQ 711 476 (but probably should have been TQ 710 476), Benover Road; pond and ditch east of road by orchard; at least 40 clumps present. Associates included *Carex vesicaria, Oenanthe*

					aquatica. [Not found July 2013, SL. Pond may have been dug out and is surrounded by rank vegetation.]
Waterman Quarter	TQ8342		(1) 24 July 2013 (2) 13 June 2000	(1) & (2) JP	(1) At least 4 clumps in relict heavily shaded wet wood (with alder, ash, oak and service tree) at TQ 837 426. Also another clump in a similar scrap of woodland at TQ 838 425. (2) TQ 835 427.
East of Headcorn	TQ8644		31 May 2014	SL & LR	Pond with unshaded bank along public footpath, TQ 865284 4410. Single large seeding tussock. Pond also contained rare liverwort *Ricciocarpus natans*.
Maltman's Hill	TQ8943	Local Wildlife Site	2001	JP	c. TQ 894 432, Dering Meadows, where there is a series of ponds.
South of Bethersden	TQ9237		13 June 1985	RD	Cuckold's Corner, west of Plurenden Manor, TQ 925 373, 11 or 13 plants in east sector of pond, mostly on boles or submerged *Salix* trunks. Tipping may affect. Found by LBB in 1976. May be same as TQ93I, in Philp (1982).
South of Bethersden	TQ9239		(1) 5 July 1989 (2) 1 June 1987	(1) RD (2) RF & LBB	TQ 927 391. Wet hollow in *Carpinus* woodland. May be same as TQ93J, in Philp (1982). [Not re-found (SL, 2015) and may have been affected by overshading.]
Kingsnorth	TQ9838		(1) 6 July 1987 (2) 6 May 1979	(1) RF & MW (2) RD	(1) & (2) Blindgrooms, Stubbs Cross, TQ987382, pond at north west corner of wood, 21 plants. (1) 14 plants on north side; two on south. [May be same as TQ93Z, in Philp (1982).] There is another Stubbs Cross site, TQ 985 394, middle of wet carr on west side of pool in field; two clumps seen by LBB in 1976. [At both sites, not re-found (SL, 2015) and may have been affected by overshading.]
Ruckinge	TR0235		(1) 27 June 2015 (2) 9 May 2015 (3) June 2013	(1) GK (2) SL (3) JP	(1) Around a series of shaded woodland ponds cut through by Saxon Shore way. Survey incomplete, but several tussocks seen at c. TR 02322 35234 (with *C. canescens* present here as well), six tussocks seen at TR 02288 35488, three at TR 02292 35246, four at TR 0266 35262, three at TR 02260 35266, two at TR 02277 35234. Generally perched on decumbent *Salix* branches or trunks sunk into deep mud, although the last two tussocks comprised one on a piece of wood used to demarcate the pond from path and other on the edge of the pond bank. Not much accompanying flora, but included *Lycopus europaeus* and *Carex*

					remota. *Hottonia palustris* present in a couple of the ponds. (2) TR 02273 35234 to TR 02273 35267 to TR 02328 35243: over 20 widespread tussocks across a series of interconnected swampy ponds in Norland Wood. (3) At least five clumps in Norland Wood at TR 022 353 where there is a series of wooded ponds.

Carex extensa Gooden. (Long-bracted Sedge)

Draft account

vc 15

Rarity / scarcity status:

Whilst not uncommon along the coasts of the British Isles, other than in the east, and so raising no particular conservation concerns, the Long-bracted Sedge is in Kent confined to the estuarial coast north of Sandwich, and is **rare**.

Shell Ness. Photo by Lliam Rooney, 20 July 2011

Account:

The first published record for *Carex extensa* in Kent is in 1862[19], between Reculver and St. Nicholas (at Wade). Other early records are also located near Reculver, and a specimen in the herbarium of John Stuart Mill was apparently annotated as being from the mouth of the Reculver river. Presumably this was the Wantsum River, and it is revealing that the only other discovery in Kent (where the plant still grows) is at the mouth of the Great Stour near Sandwich. The Great Stour used to discharge into the Wantsum Channel (when the Isle of Thanet was still an island) and so there was access from the Great Stour to the sea both at Reculver and Sandwich. The Channel gradually silted up, particularly during the 12th and 13th centuries: the last boat to use the Channel did so in 1672 and the closure of the northern sea wall was undertaken in 1808[20]. The likelihood is that *Carex extensa* was associated with the silty estuarine flats of the Wantsum Channel, possibly throughout from the north coast to the east, but at some point after 1899 its distribution became reduced to one end, near Sandwich.

Here it was recorded in Philp (1982) and (2010), in the latter survey found in two tetrads, an addition of one to the earlier survey, but this probably does not correspond to any population trend.

[19] Kentish Botany. A chapter on the Botany of Thanet. *Phytologist,* new series, vi: 50-57.

[20] *An Historical Atlas of Kent* (2004), eds T. Lawson & D. Killingray. Phillimore, Chichester.

Carex extensa is, as its English name suggests, characterised by the bracts subtending the spikelets which well exceed the whole inflorescence. At Shell Ness, it is abundant on the saline estuarine flats, both on bare sand and mud and also coastal grassland, and may accompany saltmarsh species such as *Atriplex portulacoides* (Sea-purslane) and *Salicornia* spp. (Glassworts).

Site	Grid reference	Site status	Last record date	Recorder	Comments
Stour Estuary	TR3360		2 March 1983	AH	TR 337 608.
Stonelees	TR3362		2 July 2013	KBRG meeting	13 plants in small saltmarsh by Line of Pillars and KWT Stonelees Reserve at TR 33949 62695.
South of Shell Ness	TR3461	SSSI	2 March 1983	AH	TR 343 614.
Shell Ness, Sandwich	TR3462		20 July 2011	SB & LR	Plants abundant and extensive, forming tussocks on bare estuarine sand and mud, TR 34840 62440. Plants extensive in saltmarsh at TR 34885 62535. Abundant in coastal grassland with *Oenanthe lachenalii* at TR 34812 62399.
Princes Golf Links, Sandwich	TR3560	SSSI	4 August 1996	FR	Locally abundant
South of Shell Ness	TR3561	SSSI	(1) 1 August 2015 (2) 20 July 2011	(1) SL & LR (2) SB & LR	(1) Sandwich Bay, south of Shellness, in a damp hollow, TR 35095 61816. (2) TR 35116 61793, a few plants in a damp sandy hollow. Plants increasing in abundance on damp sand and mud from TR 35087 61836 to TR 35052 61916 alongside saltwater pool.

Shell Ness. Photos by Lliam Rooney, 20 July 2011

Carex lepidocarpa Tausch (= *Carex viridula* subsp. *brachyrrhyncha*, Long-stalked Yellow-sedge)

Draft account

vc 15; probably long gone from vc 16

Rarity / scarcity status:

Carex lepidocarpa is a frequent plant of northern England, Scotland and Ireland, where wet areas are flushed with base-rich waters, and the risk to this species in both England and in Great Britain as a whole is regarded as of Least Concern. It is less frequent in southern England; and in Kent, Philp (2010) gives only two tetrad records, so it is treated as **rare**.

Account:

The group of sedges which has been called the *Carex flava* group, and which currently comprises *C. flava* (Large Yellow-sedge), *C. lepidocarpa*, *C. demissa* (Common Yellow-sedge) and *C. oederi* (Small-fruited Yellow-sedge), has been subject to much taxonomic uncertainty, particularly because of the variability of the different taxa and the overlap or intermediacy of many of their characters. What is recognized as a species, subspecies or variety has changed from time to time, which also presents difficulty for tracing any trends in the occurrence of *C. lepidocarpa* in Kent. Hanbury and Marshall (1899) did not recognize it as a county species, although this may also be an indicator of its rarity, but there is a specimen collected by H. Lamb in 1900, by a calcareous spring from the ragstone between Barming church and the railway[21].

Ham Fen, habitat. Photo by Lliam Rooney, 1 August 2012

Except for this record, it appears to be an East Kent plant, and a number of sightings were made by Francis Rose in the 1940s or 1950s, including, not only those given under 'Comments' in the following table, but also calcareous fen-meadows with peaty ditches at Wingham Fen and (although this may be the same as Ham Fen) Worth Minnis. A habitat theme runs through these Kent listings, of wet base-rich ground (often below chalk hills) in grassland which may be kept open by grazing or water fluctuation.

Ham Fen. Photo by Lliam Rooney, 1 August 2012

Carex lepidocarpa has yellowish-green leaves, as with the Yellow-sedges generally, and the spikelets are subtended by long bracts. Particularly characteristic is the male terminal spikelet whose penduncle is set at an angle to the stem below.

[21] Habitat since choked by *Equisetum telmateia*, *Galium aparine* and *Urtica dioica*, and so unsuitable (SL, 2016).

Site	Grid reference	Site status	Last record date	Recorder	Comments
Brook	TR04R		(1) 1 June 1999 (2) After 1970, before 1981	(1) BB & FR (2) Philp (1982)	(1) Location given as Cuckolds Coombe fen meadow, TR04. (2) Also recorded by FR in the 1940s and 1950s at Cuckoldcombe Farm, by an alkaline brook running over the gault from the chalk downs. He also referred to it in a calcareous fen-meadow below chalk springs (although it is unclear how his description of it being SE of Brook and ½ mile NE of Troy Town is self-consistent). [Not seen, SB & AG, 2014]
Etchinghill	TR13U	SSSI, at least in part	(1) After 1990, before 2006 (2) 23 June 1986	(1) EGP (Philp, 2010)	(1) Probably TR1739. (2) The Lince, TR1739, locally abundant. Also recorded by FR in the 1950s from the Lince, east of Etchinghill, in grazed calcareous spring-fed fens.
Ham Fen	TR35H	KWT managed reserve	(1) 19 July 2017 (2) 13 July 2013 (2) 1 August 2012 (3) 5 August 2001 (4) 12 June 1991 (5) After 1990, before 2006 (6) 2 March 1983	(1) SB & SL (2) KFC meeting (2) SB & LR (3) BW (4) JP (5) EGP (Philp, 2010) (6) AH	(1) Ham Fen. Plants seen from TR 33107 55238 southwards in base-rich wet peaty mire. (2) A small area at one end of a grazed mire centred around TR 33426 54908. *Anagallis tenella* also present. (2) Abundant in wet peaty area amidst low reed growth, TR3337 5489. (3) TR3354. (5) TR3354. (6) TR 339 543. Also recorded by FR in the 1950s near a dyke in a grazed fen-meadow.

Ham Fen. Photo by Lliam Rooney, 1 August 2012

Carex nigra (L.) Reichard (Common Sedge)

Draft account.

vc 15 and 16

Rarity / scarcity status:

Carex nigra is very widespread sedge in the British Isles in a range of habitats, and there are no Great British (or English) issues of risk for conservation purposes. Kent is virtually the only area in the British Isles for which this statement does not hold good. It is far from common in the county, there is evidence of decline, and although it is more widespread than had been supposed, it is to be treated as **scarce**.

Account:

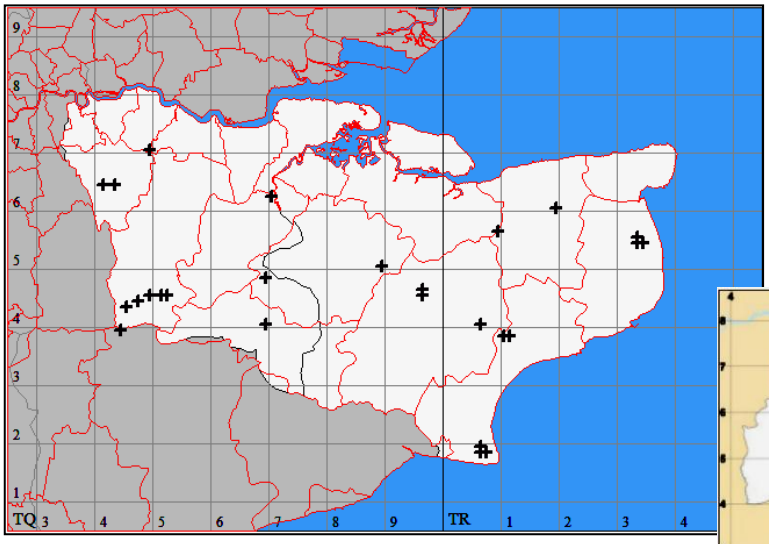
The first record for Kent was made by Thomas Forster in his *Flora Tonbrigensis* (1816), when he describes it as "On bogs and in wet groves, not uncommon". Hanbury and Marshall (1899) considered the species to be frequent, and found in every district except their district 6 (the North Downs from Wye to Rochester), adding that no doubt it also occurred there. Given that the plant avoids both extremely basic and acidic habitats, it is unlikely to have been found actually on the chalk of that district; but nonetheless it is clear that Common Sedge was formerly not uncommon throughout Kent. Even by the time of the survey published as Philp (1982), it could be found in 34 tetrads in the administrative county, generally in the Weald, along the Folkestone and Hythe Beds traversing East Kent, at Dungeness and a few in north east Kent. In the period 1991 2005, however, Philp (2010) could only trace it in nine tetrads, despite search in many former localities, so there is some evidence of a serious decline.

Hothfield. Photo by Lliam Rooney, 19 April 2011

Those nine tetrads are given asterisked in the following table. There are other recent records which take the number of sites above ten, and hence over the threshold below which a taxon is normally treated as scarce and so qualifying for inclusion in the rare plant register. Indeed, records were made in 2010-17 for 22 tetrads (26 monads). However, Common Sedge is retained in the register due to the extent of its decline, even if not as extreme as is suggested by Philp (2010). Tabular information is still being kept in the register, but the species is also mapped at 1km square (monad) level and shown in comparison with a 1991-2005 distribution map, included with kind permission of the late Eric Philp and the Kent Field Club.

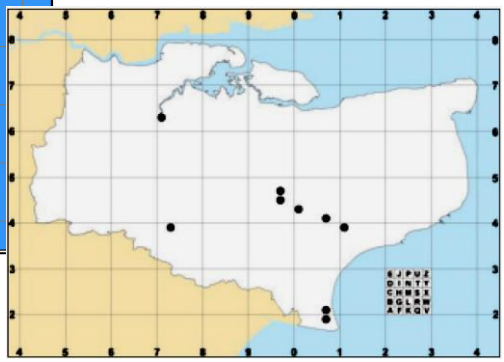
Gibbin's Brook. Photo by Lliam Rooney, 1 July 2013

The Kent habitats in which it has been found are varied and include swampy alluvial meadows, valley bog, peaty pond borders, damp heathland on Folkestone Sand, fen-meadow on calcareous peat, calcareous dune slacks. *Carex nigra* is characterised by the black, generally blunt female glumes with green midrib and can be tussock-forming. The florets have two stigmas, which help distinguish from *Carex flacca* (Glaucous Sedge) and *Carex panicea* (Carnation Sedge), both with three stigmas and which may share some of the same habitats.



Carex nigra (Common Sedge) 2010-17

Carex nigra (Common Sedge) 1991-2005



Not only is Common Sedge relatively uncommon in Kent, it also transpires (as a result of investigations by Stephen Lemon in 2015 and of the determination of material which he forwarded to Mike Porter, BSBI referee) that much of what was previously thought to be *Carex nigra*, at least in the Eden catchment, is actually its hybrid with *C. acuta* (Slender Tufted-sedge), sometimes called *C.* x *elytroides*. The hybrid is generally a larger plant than *C. nigra*, with broader leaves; and it usually has a lower bract more or less equalling the inflorescence, whereas that of *C. acuta* well exceeds it. Its intermediacy is shown by abundant stomata on both sides of the leaf surface – *C. acuta* only has stomata on the lower side and in *C. nigra* they are mostly restricted to the upper surface. So far, the hybrid has been found in four sites, in what appear to be large self-sustaining populations, but in only one of these (at Moorden) has it been found with both parents growing also in the vicinity. Records of the hybrid are included in the following table (in blue).

Site	Grid reference	Site status	Last record date	Recorder	Comments
Ravensbourne Meadows, Keston metropolitan vc16)	TQ4164		(1) 30 April 2012 (2) 17 May 2005 (3) 12 May 2001 (4) 1995	(1) and (2) JP (3) JP and KFC meeting (4) JP	(1) In wet meadow. (2) TQ 417 645. (3) much seen, at damp neutral meadow. (4) At least 12 clumps in very wet central meadow.
Holwood Park, Keston (metropolitan vc16)	TQ4263		June 1987	JP	TQ 422 637.
North of Gilridge, Edenbridge	TQ4543		(1) 7 May 2016 (2) 14 June 2015	(1) & (2) SL	(1) Cowden Pound Pasture TQ 459 432, flowering in marshy area below slope. (2) TQ 45975 43241 / TQ 45971 43238, widespread along damp edge of valley bottom but mostly in leaf with only a couple of plants fruiting, at Cowden Pound Pastures
St. Paul's Cray Common (metropolitan vc16)	TQ46P		1987	JP	
Cowden	TQ4439		2 May 2016	SL	Wet field edge below road, north of Kent Water and between Scarletts and Furnaces ponds (probable site of C.E.Salmon's 1891 record for *Persicaria bistorta*), TQ

					4470 3997, a few scattered plants in flower.
Between Edenbridge an d Hever	TQ4645		7 June 2015	SL	*C.* x *elytroides* at TQ 46923 45592, in a marsh on floodplain north of River Eden (excavated since 2009), close to Swans Nest Island, with abundant stomata both sides of leaf (det. MP). At least ten large separated patches, first found by SL on 26 April 2015. One parent (*C. acuta*) was growing within a couple of hundred metres.
Hever	TQ4744		25 May 2015		TQ4 7102 44565 / TQ4 7093 44579, loose patches across at least ten metres, with few flowers present, on flushed *Juncus* slope in area of pasture field.
Chislehurst Common (metropolitan vc16)	TQ47K		2008	JH	Locally frequent in overflow pond and swampy ground nearby.
Joyden's Wood	TQ4970		4 June 2015	RMB	Under garden fence across footpath from Joyden's Wood at TQ 4997 7097, noted by recorder as an untypical plant in an untypical habitat, but specimen is closely matched by others.
North east of Chiddingstone Castle	TQ4945		(1) 2 June 2015 (2) 3 May 2014	(1) & (2) SL	Initially recorded in 2014 as *C. nigra*, but since re-determined (from June 2015 material) as *C.* x *elytroides.* TQ 49229 45812 and TQ 49216 45753, patches spread over damp field corner with dense patches near to pond, *Oenanthe silaifolia* close by. Other species noted in general vicinity: *C. acuta*, *Ranunculus flammula* and *Oenanthe fistulosa* Damp north corner of large field, west of Mill Farm, within floodplain of River Eden. Abundant stomata on both sides of leaves.
South west of Penshurst	TQ5143		17 May 1983	JP	TQ 515 432, pasture near River Eden.
Chiddingstone, Eden valley	TQ5145		(1) 12 June 2016 (2) 7 June 2015 (3) 3 May 2014 (4) 2 April 2011 (5) 10 June 2010	(1), (2), (3) &(4) SL (5) GK	Plants at this river floodplain site were Initially recorded as *C. nigra* (entries (3) to (5) below). However, a further gathering (entry (2) below) has been determined as *C.* x *elytroides*, and this is now taken to be the identity of the previous records. (1) (a) Moorden Meadow, area of flat boggy ground under Alder trees, TQ 51940 45864. Plants here form a few tussocks (var. *cespitosa*), although tussocks heavily colonised by other plants. (b) area of open damp grassland at far end of north facing slope down to stream, TQ 51966 45888. Small

					number of non-flowering plants. (c) flat valley bottom beside public footpath, north side of stream, dominated by Juncus, TQ 519644 5916. Non-flowering plants spread over area of several metres, fine leaved with stomata on upper surface only. (2) *C.* x *elytroides* (det. MP) at TQ 516 459 to TQ 517 458, with flowering plants spread over field side of flooded area, more abundant at western end. West of Moorden within floodplain of River Eden. Abundant stomata on both sides of leaves. (3) Location details as (1) above. (4) Two isolated plants in hedge in vicinity of *Carex vulpina* (TQ 51218 45819). Also near TQ 51681 45940, dominating a 20m x 10m area. (5) Well spread in wet corner of valley pasture from TQ 51717 45882 to TQ 51655 45935, at least 50 plants in flower (following find by SL on 5 June 2010).
Moorden	TQ5245		(1) 12 June 2016 (2) 3 May 2015 (3) 17 March 1999 (4) 20 May 1984	(1) SL (2) SL (3) JP & JH (4) JP	(1) Moorden Meadow LWS (SE21), flushed ground on north facing slope, TQ 52080 45968. Large thin spread (probable) clonal patch within area of c. 3 x 4m. Stomata both sides of leaf, basal leaves wide and female glumes both pointed and with hyaline edge. Closer to *C. nigra* in size and bract size. Slightly smaller stature than the hybrid population discovered last year nearer the river. Good C. nigra populations close by. (2) TQ 52136 45997, noted in leaf (stomata above only, so not hybrid) on flushes down hillside above stream, with very few in flower: (3) TQ 521 459.
Rusthall Common	TQ5639		7 June 2009	BW	
Old Swan Farm, Lamberhurst	TQ6438		15 June 1999	JP & GB	TQ 649 388.
Hale Street	TQ6849		17 June 1999	JP & AC	TQ 684 493.
West of Horsmonden	TQ6940		13 June 2015		TQ 69279 40934 (two small plants, one in flower) and TQ 69285 40954: rough acid grassland above southern edge of Furnace Pond.
Laddingford	TQ6948		15 May 2014	GK	TQ 6991 4846, small quantity at edge of pond on south east side of Emmet Hill Lane.
Holborough	TQ76B*		(1) 26 May 2014 (2) 25 June 2013 (3) 19 July 1996	(1) GK & SL (2) GK & LR (3) PH	(1) TQ 7066 6245, *C. panicea* growing in close vicinity. (2) A loosely tufted patch, 3 x 2m, in marshes at TQ70750 62461 with

					associated species *Juncus articulatus, Ranunculus flammula, Potentilla anserina, Mentha aquatica, Carex otrubae, C. distans, Iris pseudacorus, Equisetum palustre, Juncus inflexus.*
North of Goudhurst	TQ73J*		15 May 2003	EGP & DG	
North west of Goudhurst	TQ7438		12 August 1983	JP	TQ 740 388, Knights Hole.
Sandway	TQ8950		24 May 2015	SL & LR	TQ 89146 50755: thin spread of plants, one in flower near sheep grazed edge of circular pond.
Hothfield	TQ94S*		(1) 25 May 2010 (2) 26 May 2008	(1) GK (2) DM	(1) Plentiful in main bog of Hothfield Common, TQ9645. (2) TQ 9686 4572. There is a history of occurrences here, including FR 1943-87.
Hothfield	TQ94T*		25 May 2010	GK	In northern bog of Hothfield Common, TQ9646
Boulderwall, Dungeness	TR01U*		(1) 13 May 2017 (2) 10 July 2016 (2) 13 May 2012 (3) 15 June 2010 (4) 26 June 1996	(1) SL (2) KBRG meeting (2) BB (3) GK (4) EGP	(1) Dungeness RSPB Reserve, west side of Open Pit 6 (*Cladium* Pit), TR065183. Some plants with long inflorescences, less rounded female glumes and bracts long exceeding inflorescence but with more typical stomtata. Specimens sent to Mike Porter, BSBI referee, who agreed still *C. nigra*. (2) Salix carr in north eastern corner of Open Pit 1, TR 0724 1857. Thin carpet of plants under Salix canopy, not found nearby in open thick/scrubby marsh at edge of pit. Within a short distance of where recorded on 15 June 2010. (2) TR0618, scattered individuals in *Cladium* Pit. (3) TR0619, by lake n w of footpath through ARC site, extent of population not noted. Also TR0718, in damp tussocky area around pit, covering about 5m x 1m (TR 0724 1859).
Lydd airport	TR02Q*		After 1990 and before 2006	EGP (Philp, 2010)	
Ashford	TR04B*		25 April 2002	EGP & DG	Damp area near the Great Stour.
Ashford, Willesborough Lees	TR0342		20 May 1977	EGP & FR	
Hatch Park	TR04Q*	SSSI	(1) 21 July 2016 (2) After 1990 and before 2006	(1) KNEG meeting (2) EGP (Philp, 2010)	(1) TR 0647 4067, scattered through mire at eastern end of Boating Pond in park. Also seen here historic record) by FR and ES, in a marsh bordering the main lake.
Gibbin's Brook	TR13E*	CROW access land, SSSI	(1) 30 June 2013 (2) After 1990 and before 2006	(1) KBRG meeting (2) EGP (Philp, 2010)	(1) Found at TR 11607 38679 in wet ground of northern bog, apparently far-creeping but mostly sterile shoots. Also in southern bog, with *C. panicea* at TR 11594 38591.

					Also recorded here by FR back to 1945.
South east of Fordwich	TR1858		12 May 2005	JP	TR 186 587.
Trenleypark Wood complex	TR1958		12 May 2005	JP	TR 191 585 (may be a generic site reference).
Westbere	TR1960		2 May 2016	AL & TR	
East Blean	TR1864		19 March 1972	MN	TR 1883 6443, East Blean Wood.
Stodmarsh NNR, Hersden	TR2161	NNR	June 1991	CD	TR 2117 6166.
Ham	TR3354	KWT managed reserve	13 July 2013	KFC meeting	A cluster of plants at TR 33598 54819 in meadow at Ham Fen.
Ham	TR3355	KWT managed reserve	19 July 2017	SB & SL	Ham Fen. Scattered plants seen around TR 3315 5517 on wet calcaeous peat.
Ham/Hacklinge	TR3454		(1) 31 August 2016 (2) 24 July 1991	(1) SL (2) FR	(1) Cattle-grazed marshy sedge-rich fen pasture in Ham valley, on west side of A258 south of Hacklinge Farm. Area south of the dividing dyke, TR 3406 5423; in damp closely grazed sward with *Hydrocotyle vulgaris*.

Holborough marshes, habitat of species.
Photo by Geoffrey Kitchener, 27 June 2011

Moorden, Chiddingstone, habitat of hybrid.
Photo by Stephen Lemon, June 2014

Carex panicea L. (Carnation Sedge)

Draft account.

vc 15 and 16

Rarity / scarcity status:

Carnation Sedge is common and widespread throughout the British Isles, except for south east England, where there has also been some decline since the 1950s. The risk of threat to this species is regarded as of Least Concern in England and in Great Britain as a whole. However, in Kent it is **scarce**.

Hothfield. Photo by Lliam Rooney, 19 May 2011

Account:

The first mention of *Carex panicea* in Kent is of its presence as the Round-grained Bog-Cyperoid "On *Chislehurst* and other *Bogs*" in James Petiver's *Graminum, Muscorum, Fungorum, Submarinorum etc. Britannicorum Concordia* of 1716. Forster's view of its status in the Tonbridge area in 1816 was that it was very common in moist fields and pastures. Hanbury and Marshall (1899) assessed it as rather common in Kent, to be found in heaths, meadows and swamps. It has declined substantially since then, being reduced to nine tetrads in 1971-80 (Philp, 1982), and with only five recorded in Philp (2010) for 1991-2005. In the period 2010-17 it was recorded in seven tetrads (equating to the same number of monads), so it is not necessarily the case that the decline is continuing.

Cowden, habitat. Photo by Stephen Lemon, May 2016

The sedge may be found in a variety of damp or wet habitats, and on substrates with varying base content, favouring areas with sloping flushes where water flows through. In Kent it has been recorded in wet alluvial meadows, calcareous fen-meadows on peat, flushed bog with some base enrichment, a boggy ditch on Tunbridge Wells Sand, and peaty fen over shingle. Carnation Sedge is so named for its greyish stems and its leaves which are glaucous on both sides, whereas *Carex flacca* has leaves which are only glaucous above. When in fruit, its spikelets are distinctive for the relatively few, separated fruits, the utricles being inflated with their apex pointing outwards.

Site	Grid reference	Site status	Last record date	Recorder	Comments
Keston Bog (metropolitan vc16)	TQ4164	Common owned by L.B. of Bromley	13 June 2007	JP	TQ 41715 64325, edge of bog just above bottom dam.
Cowden	TQ4741, TQ4841	SSSI	(1) 21 June 2015	(1) SL	(1) TQ 48043 41461, most plants in

Pastures			(2) 12 June 1982	(2) JP	leaf some seeding, top of flushed slope near trees with *Bolboshoenus maritimus* and *Carex flacca*. (2) TQ 479 415.
Bassett's Mill / Farm, near Cowden	TQ44V	SSSI	(1) 2 May 2016 (2) After 1990 and before 2006	(1) SL (2) EGP (Philp, 2010)	(1) Cowden Meadows, TQ 48063 41450, open area of flushed ground between encroaching Alder trees, scattered plants in flower. (2) Valley in either TQ4841 or TQ4941.
Chiddingstone Causeway	TQ5147		4 June 2017	SL	Chiddingstone Old Clay Pits, TQ 51112 47104. Area of flushed ground in north western corner of a clay pit. Several patches fruiting over a couple of metres with associates *Carex flacca* and *Carex demissa*. Searched for here since 2007 but not found until now. Probably has grown more noticeable or perhaps resurrected from seed bank following the cutting back of shading tree growth since 2007 and a more consistent annual cut and rake of the sward since 2012, preventing a build-up of thatch and **Juncus** domination. Previously recorded by JP nearby in a different clay pit on 28 June 1994, c. TQ 5112 4700, but subsequent searches there have been unsuccessful.
Chiddingstone Causeway	TQ5249		13 August 1983	JP, KFC meeting	c. TQ 520 459, west of Moorden. North-facing slope above stream; peaty flushes on clay with springs from base of Tunbridge Wells Sand. [Not found, 2012.]
Old Swan Farm, Lamberhurst	TQ6438		(1) 9 July 2000 (2) 6 July 1999	(1) AC (2) JP & GB	(1) & (2) TQ 649 388.
Holborough	TQ7062	KWT reserve	(1) 26 May 2014 (2) 2 June 2013	(1) GK & SL (2) SL	(1) TQ 7066 6245, *C. nigra* growing in close vicinity. (2) One large patch, 4 x 4 metres, at TQ 70665 62327 with smaller patches close by at TQ 70670 62329 growing with *Carex flacca*. This was is the first field next to the railway track and close to the edge by the railway.
Bedgebury Park School	TQ7234		12 May 1999	JP	TQ 724 344.
Chittenden Wood	TQ8136		4 July 2001	EGP & BW	Main ride of wood.
Hemsted Forest	TQ8236		20 May 1999	JP & JW	TQ 820 362
Hothfield	TQ94S		(1) 8 August 2015 (2) 15 June 2010 (3) 25 May 2010	(1) BW (2) JA, LR (3) GK	(1) TQ9645. (2) Main bog; a few plants at TQ 96827 45639. (3) TQ9645, present in main bog.
Gibbin's Brook	TR13E	CROW access land, SSSI	(1) 30 June 2013 (2) After 1990 and before 2006	(1) KBRG meeting (2) EGP (Philp, 2010)	(1) In northern bog, at TR 11607 38679. In southern bog, at TR 11594 38591. Leaves noted more extensively, but little seen flowering/fruiting.

Ham	TR3354		2003	CEC	TR 33550 54770, Hacklinge Ditches Survey.
Ham	TR3355	KWT managed reserve	19 July 2017	SB & SL	Ham Fen. Populations seen around TR 3305 5529 and elsewhere within an area of wet calcareous peat.
Northbourne Fen	TR3453		After 1990 and before 2006	EGP (Philp, 2010)	
South east of Worth Minnis	TR3455		2003	CEC	Ditch, TR 34579 55517, Hacklinge ditch survey.
Worth Minnis	TR3456		2003	CEC	TR 34386 56260, ditch north of Great Wood, Hacklinge ditch survey.
North of Betteshanger (formetly Fowlmead) Country Park	TR3654		2003	CEC	Ditches, TR 36748 54792, TR 36859 54673and TR 3690 654813, Hacklinge ditch survey.
East of Lydden Valley	TR3655		2003	CEC	Ditches, TR 36277 55107 and TR 36523 55493, Hacklinge ditch survey.

Carex pulicaris L. (Flea Sedge)

Draft account.

vc 15; gone from vc 16

Rarity / scarcity status:

Widespread in northern and western Britain and in Ireland, Flea Sedge is not regarded as being at risk over Great Britain as a whole, although it has declined in south and east England, with habitats lost through drainage and so is considered to be **Near Threatened** in England. In Kent, it is restricted to one site, and so is **rare**.

Account:

Carex pulicaris was first recorded in Kent by Lewis Dillwyn as part of a list of rare plants in the Dover area submitted to the Linnean Society in 1801 (published 1802) and he cited it as in "Boggy ground about Ham Ponds". In Kent, it has never been in more than a handful of locations and was already regarded as rare at the time of Hanbury and Marshall (1899). Its current site at Hothfield had even then been known for some time, as material of that provenance was held in the herbarium of John Stuart Mill (1806-1873).

Hothfield. Photos by Lliam Rooney, 19 May 2011 (l.) and 24 July 2013 (r.)

In West Kent, it has not been seen for a very long time, assuming that identification of species and location was correct in the first place. Edward Jenner, in his *Flora of Tunbridge Wells* (1845) regarded it as common in bogs, etc., although these could have been East Sussex localities. Its last appearances at Hawkenbury Bog (TQ5937), where it was recorded in 1966 and 1969, are for an East Sussex site (sometimes incorrectly attributed to West Kent). In East Kent it was, apart from Hothfield, most recently known at Gibbin's Brook (TR1138), where Francis Rose found it in 1954 on damp grass-heath at the edge of a valley bog; at Willesborough Lees, where there is a history[22] of its presence and it was last seen in 1984 by Joyce Pitt; and at Chittenden Wood (TR8136) in a boggy ditch on Tunbridge Wells Sand (1944, Francis Rose). Flea Sedge occurs in a range of habitats in the British Isles; in Kent, it favours boggy ground, generally with some base enrichment. Its few-flowered spike, with fruit deflexing when mature, cannot be mistaken for any other sedge in the county.

Site	Grid reference	Site status	Last record date	Recorder	Comments
Hothfield	TQ9645	KWT managed reserve	(1) 19 May 2011 (2) 12 July 2000	(1) LR (2) JS	(1) TQ9682 4564. Main Bog, two flowering spikes noted (thorough search not made). (2) TQ 969 456.
Willesborough Lees	TR0342		1 November 1984	JP	TR 039 424.

[22] The history is not altogether a clear one, as Matthew Cowell mentioned in his Floral Guide for East Kent (1839) that the species was present at Willesboro Leas on the authority of the *Catalogue of rare or remarkable phaenogamous plants collected in South Kent* (Gerard Smith, 1829). However, Smith's Catalogue gives the species as present upon turfy bogs, without any location cited, nor is the location given in his manuscript notes under *Carex*.

Carex rostrata Stokes (Bottle Sedge)

Draft account.

vc 15; gone from vc 16

Rarity / scarcity status:

Carex rostrata is quite frequent in upland Wales, northern England, Scotland and Ireland. Overall, there are no conservation concerns, whether in England or in Great Britain as a whole, but in south east England there has been a decline, due to habitat loss. In Kent, there is also evidence of decline, and it is **rare**.

Hothfield. Photo by Lliam Rooney, 5 July 2013

Account:

The first published county record for Bottle Sedge is by G.E. Smith, in his *Catalogue of rare or remarkable phaenogamous plants collected in South Kent* (1829). He refers to this species as "By the side of a ditch at the foot of Caesar's Camp, near Folkestone". His manuscript notes (1830-33) also include a reference to the species as growing at Willesborough Lees. Hanbury and Marshall (1899) refer to the species as local in boggy ground and by ponds, with records scattered across the county. In the 1940s and 1950s, FR collected it widely in vc15, including from Chartham Hatch, Hacklinge, Wingham Fen, Westbere Marshes, Hothfield Common (where there was a long history of occurrence from before 1899), Gibbin's Brook and Friezley (near Cranbrook). By the time of Philp (1982), the species was regarded as very local and scarce (eight tetrads[23]), with a main distribution from Cranbrook across mid-south Kent to Etchinghill, although survival in the Little Stour catchment was not then recognized). Although particularly searched for in the 1991-2005 survey (Philp, 2010), the species yielded only one tetrad record, at Dungeness.

The Bottle Sedge is a plant of swamps, normally regarded as preferring acid habitats, but is also capable of being accommodated in base-rich wet areas. In the past, Kent has demonstrated this range: in the 1940s and 1950s, Francis Rose collected it widely in vc15 from habitats described as a swampy hollow in open sphagnum / alder carr; swamp and dyke in fen meadow; calcareous fen ditch; swamp in valley bog; and weakly acid valley bog. The species is notable for its fruits (yellow-green and flask-shaped – hence "Bottle Sedge"); it may be confused with *C. vesicaria*, but has less tapered fruits; rounded, rather than acute, ligules; and glaucous dark green (as distinct from mid- or yellowish green) leaves.

Dungeness. Photo by Brian Banks, 13 May 2012

At Dungeness, it was present in 1983[24]) in the Open Pits (no. 1 in TR0718 and no. 6 in TR0618), being rare in swamp-marsh margin. By 1998 It had gone from pit 1 (comm. BB),

[23] TQ83E, TQ84R, TQ94T, TR04L, TR04Q, TR05Y, TR13E, TR13U.

[24] B. Ferry & A. Henderson (1984): The vegetation of natural freshwater pits at Dungeness – I: Higher plants. *Transactions of the Kent Field Club* 9: 143-153.

which had become increasingly dominated by willow carr; but the restoration of open fen conditions at pit 6 has encouraged this species, with seed germination having taken place following clearance of shading willows.

In recent times (post 2010), as well as continuing at Dungeness, it has been found still persisting at Hothfield and Ham Fen, and is present in wet peaty ground in Hunstead Wood, particularly where the woodland has been opened up but is regenerating.

Site	Grid reference	Site status	Last record date	Recorder	Comments
River Beult	TQ84		2 August 1980	NH	Within 5km lengths of river either side of TQ 865 425.
Blean Woods south	TQ8057		March 1984	JP	TR 080 575.
Wattle Wood, Tenterden	TQ8735		7 May 1987	FR & JP	TQ 870 354 or TQ 870 352.
Hothfield	TQ9645, TQ9646	KWT reserve, SSSI	(1) 5 July 2013 (2) 21 June 2012 (3) 23 May 2004	(1) LR (2) SB (3) BW	(1) TQ 96689 46088. (2) Patch in standing water at TQ 9668 4608 which covers about 20 x 20 metres. (3) TQ9645.
Trenleypark Wood complex	TR1958		12 May 2005	JP	In drying out pond with *C. nigra*, TR 191 585 (may be a generic site reference).
Hunstead Wood	TR0956		(1) 16 May 2015 (2) After 1970, before 1981	(1) SL (2) Philp (1982)	(1) In open regenerating birch/rhododendron along east facing slope of peaty mire, replaced by *Carex laevigata* in mature Alder carr. Found at TR 09233 56849 (small thin patch in *Sphagnum* pool); TR 09219 56853 (seven metre strip along runnel with *Betula*, *Calluna vulgaris, Carex laevigata*, *Rhododendron* and *Sphagnum* moss); TR 0924 5685 (12 metre patch under high Alder scrub, not flowering); TR09261 56863 (seven metre circular patch under light shade of regenerating Alder). (2) Given as TR05Y.
Dungeness	TR01U		13 May 2004	EGP (Philp, 2010)	A small area of fen. Likely to be the same area as the next entry.
Dungeness	TR0618	SSSI	(1) 13 May 2017 (2) 10 July 2016 (2) 13 May 2012	(1) SL (2) KBRG meeting (2) BB	(1) Dungeness RSPB Reserve, west side of Open Pit 6 (*Cladium* Pit), TR 065 183. (2) Only non-flowering plants found, in *Cladium* pit. (2) TR 0659 1835, locally frequent at *Cladium* Pit (pit no. 6), assessed to be more widespread than at any time since the clearing of shading willows allowed it to reappear from the seed-bank fourteen years before. Scattered individuals of *Carex nigra* also present.
Wickhambreaux	TR2359		5 April 1996	NS	North half of gravel pit lake east of Frognall Fruit Farm.
Newnham Valley	TR2360		20 September 1997	NS	

Ham Fen	TR3355		19 July 2017	SB & SL	Ham Fen. A patch in standing water at TR 3319 5512 at the margin of open fen peat area and adjacent to woodland edge.

Hothfield. Fruiting spike and habitat. Photos by Sue Buckingham, 21 June 2012 and 18 August 2012

Carex vesicaria L. (Bladder Sedge)

Draft account

vc 15 and16

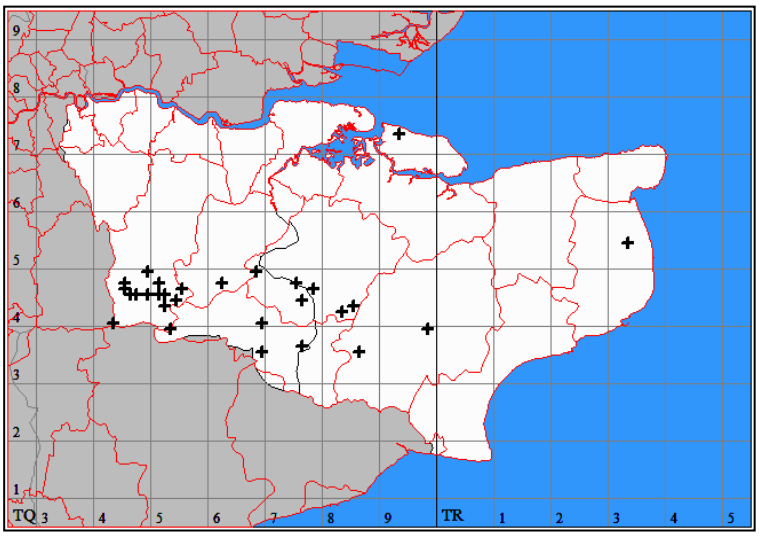
Rarity / scarcity status:

Bladder sedge is not uncommon generally, being scattered through the British Isles, although less frequent in central England and in the south west. Although its conservation status in Great Britain is still ranked as of 'Least Concern', there have been losses in England and south east Ireland due to habitat changes, and the species is now regarded as **Vulnerable** to the risk of extinction in England. This is a consequence of a decline in the species' area of occupancy in England of 34% between the periods 1930-69 and 1987-99. This trend is not fully supported in Kent; at any rate, it requires a level of interpretation. The species would fall to be treated as **scarce** in the county on the basis of the records given in Philp (2010), but it appears that this understates the extent of its distribution, as since recorded.

Leigh / Haysden. Photo by Lliam Rooney, 7 June 2011

Account:

It has been said that Edward Jenner first listed *Carex vesicaria* for the county, in his *Flora of Tunbridge Wells* (1845). He referred to it "in Benhill mill pond and elsewhere". If this is to be equated with Benhall Mill, between Tunbridge Wells and Frant (the remains were demolished in 1964, but the name is preserved in Benhall Mill Road), then the pond lay in vice county 14, outside West Kent. It is not possible to say whether the occurrences "elsewhere" were in Kent, so there is some doubt about the first published record. The next earliest is probably a reference to its presence in a pond at Camden Park, Tunbridge Wells in the *Phytologist* (1855), although earlier preserved material may exist.



Carex vesicaria (Bladder Sedge) 2010-17

Hanbury and Marshall (1899) regarded the species as frequent in the Weald, being a plant of river-banks, marshes and wet copses in the southern half of the county. The distribution was fundamentally the same by 1971-80 (Philp, 1982), but the plant was then regarded as rather local and uncommon (present in 15 tetrads). That survey appears to understate the position, since none of these tetrads was located in TQ73 (Cranbrook / Bedgebury), but Joyce Pitt subsequently recorded the sedge in six of the 25 squares within that hectad. In the 1991-2005 survey published as Philp (2010), Bladder Sedge was only recorded in four tetrads which would be suggestive of continued decline; but in the light of subsequent finds, some of which are new, and in particular in the light of survey work by Stephen Lemon, this assessment appears to be overly pessimistic. Indeed, as the equivalent

of 26 tetrad records (28 monads) were found in the period 2010-17, it appears that Philp (1982) has given a better picture of distribution than Philp (2010), albeit that neither survey matches up to what is now known.

Since the sedge is a patch-forming species, in the absence of widespread hydrological change, it is likely that the fluctuation in records does not necessarily represent real change, in spite of the picture of national decline; it may simply be that the species has been more effectively recorded recently – indeed, as at the end of 2015, 48% of all Kent records on the BSBI database were dated 2010 or later. Whilst this account includes a data table of occurrences, the species is sufficiently frequent to warrant its distribution being shown by map also (above).

Carex vesicaria is restricted neither to acid nor base-rich wetlands and in Kent has been recorded in a variety of habitats, especially the swampy margins of ponds, rivers, streams and lakes; seasonally or permanently wet grazing fields; marshy ground and ditches; and wet woodland — i.e. wet areas often with a degree of fluctuation in levels. It grows in both shaded and open areas, but does not set seed well under shade. The species is characterised by the long utricles, tapering gradually into the beak. In a vegetative state, it is best recognised by the long, thin, generally light green leaves and creeping habit, confirmed by the purple-red sheaths and long, acute ligule. Any potential confusion with vegetative *Carex otrubae* (False Fox-sedge) in wet habitats may be avoided by virtue of the latter's slightly wider leaf and non-creeping habit. *Carex hirta* (Hairy Sedge), when growing larger than usual, may approximately resemble *Carex vesicaria* in general vegetative appearance, but is hairy, has obtuse ligules and bears sterile shoots appearing as false stems.

Site	Grid reference	Site status	Last record date	Recorder	Comments
Sundridge Park, Bromley (metropolitan vc16)	TQ4171		1985	JP	
West of Cowden	TQ4340		23 November 2014	SL	Alder Carr west of Mill Pond, dominated by *Carex paniculata* herb layer, north of Kent Water, TQ 439 401. Small thin patches under Alder away from dominant *C. paniculata* tussocks.
Westerham Woods	TQ4355		17 June 1982	FR	In wet hollow.
East of Edenbridge	TQ4546, TQ4547		(1) 25 July 2015 (2) 11 May 2014	(1) & (2) SL	(1) (a) Collection of damp wooded clay pits at junction of four monads in depression within field of rape seed, north of Cauk Wood: TQ 45972 46989, patches growing with *Carex remota* and *Carex strigosa* at edge of pit. (b) Site as described in (a) above, TQ 45943 47044, two small thin clumps, one flowering, with *Carex remota* and *Scirpus sylvaticus*, in slightly less shaded area of a pit otherwise densely shaded by *Salix cinerea*. (2)(a) TQ 45292 46556, Approx 10 x 10 metre flowering patch in open western area of pond south of Skinners Farm. (b)TQ 45344 46402, 1 metre flowering patch at the edge of the river, on north bank in sheep grazed pasture directly south of

					Skinners Farm.
North east of Hever	TQ4645		26 April 2015	SL	Five separate patches in flower emerging from water (TQ 46917 45530, TQ 46919 45543, TQ 46924 45531, TQ 46934 45582, TQ 46955 45574), flooded marsh north bank of River Eden (excavated since 2009), close to Swan Nest Island.
North east of Hever	TQ4745		3 May 2015	SL	Small non-flowering patch under young sallows near edge of flooded marsh, TQ 47015 45596.
Chiddingstone Castle	TQ4945		3 May 2014	SL	TQ 49193 45795, ten metre strip in flower along edge of flooded ditch below hedge. Wide ditch along north side of large field, west of Mill Farm, by River Eden.
Bough Beech	TQ4949	KWT reserve	7 June 2015	SL	TQ4951 4939, Bough Beech KWT Visitor Centre pond dipping area. Originally planted but naturalised well along edge of pond.
Chiddingstone (Vexour Bridge)	TQ5145		(1) 12 June 2016 (2) 3 May 2014 (3) 25 August 2013 (4) 2 April 2011 (5) 5 June 2010	(1) & (2) SL (3) KFC meeting (4) & (5) SL	(1) Moorden Meadow, ditch dividing from marshy field corner that was deepened last year (to 6 feet) into v-shaped channel and now significantly draining marshland, TQ 51710 45855. Small patch of sedge remaining on side of ditch from original larger population there prior to ditch excavation last year. Other patches in nearby marshy field corner not detected and possibly buried under ditch excavations. (2) TQ 51733 45502, six metre square patch in flower with *Carex vulpina*, at northern edge of *Carex riparia* marsh under light shade of mature poplar plantation, The Grove, by River Eden. Also, TQ 516 459 to TQ 517 458, flowering patches of plants, spread around perimeter of flooded area, field corner grazed by cattle, west of Moorden, by River Eden. (3) Moorden valley. (4) Three clumps growing in the ditch to the east of the wet area of grassland (TQ 51695 45845, TQ 51644 45776 and TQ 51640 45756). Also, a 2m x 1m clump of within the wet grassland on its western edge (TQ 51681 45940); associated species include *Carex nigra.* (5) Spread out tussocks in flooded grassland in corner of field, approx TQ 516 459.
Chiddingstone Causeway	TQ5147		(1) 17 August 2010 (2) 15 July 2007	(1) GK (2) JP	(1) TQ 51114 47067, patch c.2m x 1m in wet woodland clearing, site of former brick works (SL has noted a 10m x 4m patch at this location).

					(2) TQ511471.
Penshurst	TQ5243		6 September 2015	SL	Field along River Eden floodplain, west of Penshurst, ditch along north side of field, TQ 52207 43984, seven metre strip of plants along sides of shallow water-filled ditch with *Lemna minor*, partly shaded above by Hazel, Hawthorn and Elm.
Chiddingstone Causeway	TQ5245		24 June 2010	GK	TQ 52021 45934, patch 3m x 4m in *Juncus* spp. on damp flushed slope above stream with alders.
Langton Green	TQ5339		21 May 2015	JP	
Penshurst	TQ5444		8 June 2013	SL	TQ 54270 44730, close to the River Medway near Ensfield Bridge, marked Chalybeate Spring on OS. 10 x 15 metre open area dominated by *C. vesicaria*, accompanied by *Iris pseudacorus*. Site is on river alluvium, beside a wooded hillside on the Ashdown beds fed by a spring running off the slope, damp under foot rather than wet but presumably is very wet through the late winter / early spring.
Leigh / Haysden	TQ5546		(1) 15 August 2015 (2) 20 July 2013 (3) 8 June 2013 (4) 27 June 2010	(1) JP (2) & (3) SL (4) SB	(2) Two linear patches in ditch south of and parallel to railway, spread out between TQ55292 46058 and TQ55342 46062 (also *C. vulpina* site). (3) Several sites in wet wood north of railway, including TQ 55736 46175 (large spreading area on wet ground under trees with a few seed heads); TQ55713 46196, (single seeding clump in a pond with *Carex pseudocyprus, C. remota, Oenanthe aquatica, Alisma plantago-aquati*ca); and a few non-flowering patches in other shaded areas within wettest parts of the woodland. (4) LNHS meeting: TQ 55722 46115 (north of railway). Several plants with *Caltha palustris* and other *Carex* spp in very wet shaded marsh.
East of Tonbridge	TQ6247		26 April 2014	SL	TQ 62962 47419, two spreading patches growing in between *Carex vulpina*, wet field ditch beneath hedge along east side of road, just north of Hartlake Bridge. TQ 627 473, single long patch (6m x 1m) along stream edge, growing with *Carex riparia*, Mill Stream, close to its junction with River Medway, west of Hartlake Bridge.
Hale Street / Yalding	TQ6849		(1) 6 July 2013 (2) 12 June 1983, 1989	(1) SL (2) JP	(1) A 4m x 4m patch at TQ 68538 49704 west of boardwalk near pond.

					(2) Pond and marshy area.
Scotney estate	TQ6935		12 August 2017	SL	Kilndown Wood, small basin shaped ghyll bordering western edge of wood, steep sides and a wide flat floor, with a chalybeate spring (depicted on OS map) at fault line/junction of the Tunbridge Wells Sand and Wadhurst Clay, TQ 69372 35487. Colony growing in very wet alder carr with *Scirpus sylvaticus, Carex remota* and *Carex elongata*.
Horsmonden	TQ6940		(1) 13 June 2015 (2) 15 June 2013 (3) After 1990 and before 2006	(1) & (2) SL (3) EGP (Philp, 2010)	(1) TQ 69313 40985, small patch with one seed head and another ten metres away under shade of alder carr on southern edge of Furnace Pond. (2) A 5metre patch, thinly spread under alders by a fence line at TQ69047 40941. Further patches in carr near lake at TQ69240 40951 and another patch (the only one with fruit) at TQ 69270 40944 in more open coppice re-growth. (3) Edge of Furnace Pond.
Bedgebury Park School	TQ7234		12 May 1999	JP	
Bedgebury Forest	TQ7333		(1) 2004 (2) 26 June 1992 (3) 26 August 1986	(1), (2), (3) JP	Louisa Lake margin; given as TQ 735 330, but TQ 732 329 appears more likely.
Chattenden Barracks	TQ7573		(1) 30 July 2003 (2) 1 June 2002	(1) JS (20 JP & JS	(1) TQ 7499 7335. (2) TQ 755 730 (this may be a generic site reference).
Angley Wood, Cranbrook	TQ7636		(1) 22 March 2015 (2) 1 August 2007	(1) SL (2) JP	(1) (a) TQ 7641 3625, willow carr / sphagnum swamp near public footpath. Multiple small regenerating patches. (b) TQ 7653 3681 to TQ 7644 3686, alder carr / sphagnum swamp. Multiple regenerating spread-out patches including a large patch at TQ 76497 36838. (2) TQ 764 366.
Near Cranbrook	TQ73N, TQ73S		15 May 1995	JP	
Marden Meadow	TQ74S	KWT managed reserve, SSSI	(1) 4 June 2015 (2) 16 August 2008, 26 May 2003, June 1983. (3) After 1990 and before 2006	(1) SL (2) JP (3) EGP (Philp, 2010)	(1) New *C. vesicaria* pond at reserve, overgrown pond in the far little field of the reserve north east corner, next to railway, TQ 76604 44583. Half dozen small/young patches on approx two year *Salix* coppiced, sparsely vegetated northern bank of pond with young *C. vulpina*, *C. otrubae*. Alo at TQ 76611 44566 to TQ 76585 44569 was a long-spreading continuous patch running from north east corner to south western corner with abundant *C. vesicaria* and *C. otrubae*. (2) TQ 763 446. (3) By pond.

Stile Bridge	TQ7547		2 May 2015	SL	Small flowering patch in stand of *Iris pseudocorus* at edge of pond just south of River Beult (v.c. 16) at Stile Bridge road junction, opposite pub/restaurant, TQ 75900 47775.
River Beult, near Stile Bridge	TQ74T		5 August 2004	EGP & DG	TQ7647, river edge.
Chattenden	TQ77L		1 August 2002, 1 June 2002	JP	Bank and ditch below High Camp.
Cross-at-Hand	TQ7846		7 April 2014	SL	TQ 78266 46799, TQ7 8296 46754, TQ 78325 46715, north bank of River Beult, first field east of Hertsfield Bridges. Three thin patches in flower at river edge and in damp ditch, two growing with *Schoenoplectus lacustris*.
South of Frittenden	TQ8139		14 February 2001, 26 June 1999.	JP	Brick Pit Wood.
Waterman Quarter, Headcorn	TQ8342		(1) 24 July 2013 (2) 9 June 2000	(1) & (2) JP	(2)
Headcorn Aerodrome	TQ8543		14 July 2013	SL	Four patches by R. Beult, TQ 85772 43137 (in the open on western side of river, some sheep-trampled), TQ85770 43168 (clump on western side within area dominated by *Schoenoplectus lacustris*), TQ 85797 43098 (small clump growing just below footbridge over river, in light shade on eastern side) and TQ 85777 43163 (growing along eastern edge of river in open, no seed).
Parkgate, Tenterden	TQ8635		2 May 2015	SL	Three patches in alder carr on Wadhurst Clay: TQ 86516 35287, TQ 86520 35251, TQ 86535 35247.
High Halden	TQ8737		29 July 1999	JP & GB	TQ 870 375 (query if TQ 873 376 intended).
North of Stubb's Cross, Ashford	TQ9839		11 April 2015	SL	TQ 98597 39414 and TQ 98601 39425, two thin patches under the shade of mature *Quercus*, presumably declining due to increasing shade, in more open south eastern corner of a pond isolated within an arable field. Pond was bordered on southern edge by woods containing ancient woodland indicator species. Shallow middle of pond was mostly dominated by *Salix*.
South Willesborough	TR04A		19 July 2006, July 1995.	JP	Dykes.
Blean Woods south	TR0857		20 May 1988	JP	TR 080 575, in swampy peaty conditions.
Tolsford Hill / Summerhouse Hill	TR1638		11 July 1985	JP	

Chiddingstone. Photo by Stephen Lemon, June 2010

Chiddingstone. Photo by Stephen Lemon, June 2010

Near Penshurst. Photo by Stephen Lemon, June 2013

Carex vulpina L. (True Fox-sedge)

Draft account.

vc 15 and 16

Rarity / scarcity status:

Carex vulpina is local in south east England, with very few occurrences elsewhere in the British Isles. It is regarded as rare and **Vulnerable** in terms of risk to the species in England and in Great Britain as a whole. For Kent, it was initially assessed as rare for the purposes of the rare plant register (three tetrad records in Philp, 2010); but enough other sites exist for it to be regarded as neither rare nor scarce. The Kent occurrences are, however, of national significance, the Weald being its headquarters in the British Isles.

It is a UK Biodiversity Action Plan priority species, with identified threats as to habitat loss or degradation through natural succession (it can be shaded out), inappropriate ditch management and agricultural drainage, although the planned actions are limited to research and monitoring.

Wanhurst Green. Photo by Lesley Mason, 11 May 2011

Account:

Historic trends in the Kent occurrences of *Carex vulpina* are difficult to elucidate, as it was not until 1939[25] that it was clearly separated in Britain from *Carex otrubae* (False Fox-sedge). Earlier literature references to *Carex vulpina* being common in Kent are references to the status of *C. otrubae*, although where preserved specimens exist it is possible to recognize its earlier occurrence. For example, E.S. Marshall collected material by the Eden below Chiddingstone in 1894, probably around TQ 513 457, where it was found by Francis Rose in 1944, although now (2013) apparently no longer present. Francis Rose's assessment[26] from the 1940s and 1950s was that it was frequent in pond-borders, ditches and sallow-carrs on the Weald Clay tract from south east of Ashford to the Surrey border, but unknown elsewhere in Kent. Philp (1982) gave nine tetrad records, all in the Weald; but these were reduced to three in Philp (2010)[27], despite specific searches in several former localities without result. Whilst this might suggest a decline, surveys by Stephen Lemon 2013-15 have shown that this was clearly an understatement of extant locations. Many of the old sites still exist and new ones have been found. We now know more about its Kent status than at any time since Francis Rose's investigations. The table of sites has been expanded to include some pre-1970 locations which have been re-assessed or investigated, in order to give a full picture.

Plants can be difficult to see where vegetation has grown up within a carr or on both sides of a ditch, and winter searching may be more effective, backed up by a subsequent visit when flowering spikes are available.

Carex vulpina prefers somewhat wetter conditions than does *C. otrubae*, so that it is likely to be found in a ditch, whilst *C. otrubae* would favour the bank above. In consequence, *C. vulpina* is susceptible to over-vigorous clearing out of ditches. This is not a straightforward issue, however, as we have evidence that the

[25] E. Nelmes (1939). Notes on British Carices - IV. *Journal of Botany* 77: 259-266.

[26] From the lost manuscript of the *Flora of Kent*. There still exists a list of 29 Kent sites known to FR, with 6-figure grid references.

[27] Subsumed in the following table: at Leigh / Haysden, East Peckham and Marden Meadow.

sedge can act as a pioneer species. Four plants, including a young one, were found in 2014 in a ditch which had only been dug in 2005, linking two established field boundary ditches. It was also found in 2015 at a marsh habitat near Hever which appears not to have existed before 2009. *C. vulpina* usually grows on heavy clay soils, which the Weald affords, weakly acid to neutral, and essentially inorganic.

The two species, *C. vulpina* and *C. otrubae*, are not easy to separate, although *C. vulpina* may appear more thick-set, more strongly winged along the stems, and wrinkled across the inner face of the leaf sheath. Also its ligule is truncate (acute in *C. otrubae*), although Kent material appears variable as to ligule shape, sometimes pointed, sometimes asymmetrical. The ligule should also be shorter than the leaf width and with a free border overlapping the leaf edge (at least as long as leaf width and not overlapping the leaf edge in *C. otrubae*). There are differences in the cell shape of the utricle surface and in the anatomy of transverse leaf sections.

Chiddingstone (Vexour Bridge). Photo of ligule by Stephen Lemon, May 2010

The position is complicated by the potential for hybridization between the two species, as the cross *C. vulpina x otrubae* was tentatively identified by E. Nelmes from the Medway near Tonbridge[28]. Apparently intermediate plants have been found in mixed populations since (e.g. Hever, 2015; Stubb's Cross, 2015), but the hybrid has not yet been conclusively proved present in Britain.

Site	Grid reference	Site status	Last record date	Recorder	Comments
Edenbridge	TQ4345		1947	FR	Site described by FR as TQ 435 450 by River Eden, above Edenbridge. Investigated by SL, 20 April 2013: the existing field boundary ditch banks were very heavily shaded by trees and thick nettles and the ditch floor was devoid of any vegetation (other nearby ditches on the way down from Edenbridge were in a similar state). The ditch that ran into the River Eden has been filled in and a landing strip for light aircraft runs across it with a Pill Box as the only remaining feature.
North west of Hever	TQ4645		26 April 2015	SL	TQ 46912 45533, one large deer-grazed clump amidst *Juncus* spp., inflorescence just starting to emerge. Flooded marsh north bank of River Eden (excavated since 2009), close to Swan Nest Island.
Chiddingstone (Vexour Bridge)	TQ5045 and TQ5145		(1) 25 August 2013 (2) 2 April 2011 (3) 10 June 2010	(1) KFC meeting (2) SL (3) GK	(1) c.TQ 511 458 under S side of hedge N of Vexour Bridge c.50 metres from road. (2) In addition to plants noted in 2010-11; another located at TQ 51208 45823 in the eastern section

[28] Nelmes, E. (1939). Notes on British Carices – IV. *Carex vulpina* L. *Journal of Botany* **77**: 259-263.

					of hedge after it splits in the middle. This was growing within the bushy growth of the hedge and evidently set seed, the hedge preventing cattle grazing them before the seed dropped (other plants were eaten down). (3) (a) TQ 50973 45829, three plants in meadow hedge with ditch beneath, by seasonally flooded depression. Reported first by SL as 'three mature plants with flower spikes, along ditch below hedgerow in area flooded through winter, 05.06.2010'. (b) one plant in south side of meadow hedge with ditch beneath, TQ 51032 45847. [FR also recorded it in 1944 as at TQ 513 457, but (2013, SL) the likely location, by the stream feeding into the Eden, is heavily shaded by scrub and trees along both banks.]
West of Penshurst	TQ5143		17 May 2014	SL	(a) TQ 51902 43781, one large clump. (b)TQ 51894 43782, three clumps (pointed ligules with wrinkled / overlapping sheaths). (c) TQ 51833 43753, three clumps. (d)TQ 51833 43753, single clump. All clumps in flower in ditch below hedge at field edge, close to Salmons Farm track, west of Penshurst. Ditch dry and quite shaded, with lots of *C. otrubae*.
Gillridge, Penshurst	TQ5144		1944	FR & JEL	Site described by FR as TQ 515 441, marsh below Gillridge, west of Penshurst. [Not re-found, SL, June 2013: is a very small marshy area within woodland, completely shaded by large trees.]
Chiddingstone (Vexour Bridge)	TQ5145		3 May 2014	SL	TQ 51733 45502, Five large clumps in flower (with pointed or asymmetric ligules) at northern edge of *C. riparia* marsh under light shade of mature poplar plantation with five smaller clumps set back in slightly more shade, growing with *C. vesicaria* and one small clump of *C. otrubae*. The Grove, by River Eden.
Penshurst	TQ5243 & TQ5244		(1) 28 May 2013 (2) 19 May 1973	(1) SL (2) RW	(1) Two clumps close to each other, straddling the monad boundary – TQ 52112 43997 and TQ 52112 44000. One larger than the other, both around a small pool which is part of a flooded ditch system running along the back of the field and mostly is heavily shaded by trees.

					(2) TQ 520 438, River Eden Bridge. [Not re-found, 2013, SL. There was also a 1961 record by FR, TQ 521 438, also not re-found.]
Leigh / Haysden	TQ5546		(1) 25 April 2015 (2) 15 August 2014 (3) 20 July 2013 (4) 8 June 2013 (5) 27 June 2010 (6) 10 June 2001 (7) 1991 (8) 14 June 1986	(1) KFC meeting (2) JP (3) & (4) SL (5) SB (6) RW (7) JP (8) BSBI sedge course	(1) (a) TQ 550 460, a single clump at the edge of the west side of a water-filled ditch under light shade of trees, flowering in ditch running north/south, parallel with public footpath, south of railway, north of River Medway. (b) TQ 55255 46148, a single low /weakly growing plant found in an atypical habitat , a raised path next to railway in field near entrance gate into marsh. (2) Apparently land north of railway. (3) Eight small clumps, all along northern edge of dry ditch south of and parallel to railway, spread out between TQ 55292 46058 and TQ 55342 46062 (cf. 2001 and 1986 sightings). All of the clumps were heavily grazed and only three small seed heads were found on one of the plants. Heavy grazing probably meant some plants were missed. The grazing must help prevent rank vegetation taking over the ditch but inhibit reproduction by seed in the long term. There may be a culvert link to the northern side of the railway where there are other records. (4) TQ 55767 46193, single large clump at edge of pond with a few seed heads. (5) LNHS meeting. TQ 55698 46125, seven plants with *C. pseudocyperus* in a very wet shaded marsh. (6) TQ 552 460, some 20 plants along drainage ditch. (7) c. TQ 550 462, north of railway [not re-found, 2014, SL]. (8) TQ 553 460; c. 15 flowering spikes surviving cattle grazing; dryish ditch parallel to railway.
Haysden	TQ5746		14 November 2014	SL	Single clump growing at waters' edge of the Ballast Pit, immediately south of railway at TQ 57218 46002. Associates: *Mentha aquatica* and *Crassula helmsii* with a nearby clump of *Carex otrubae,* and *Carex pendula* and *Carex remota* on the bank above at north western most point of Ballast Pit close to entrance gate from public footpath. Second smaller clump nearby at TQ 57269 46005 further along wooded northern edge of pit

					between fishing swims under light shade of mature *Quercus robur* and clumps of *Carex otrubae* close by. All further clumps examined around whole Ballast Pitt edge were *C. otrubae*.
Tonbridge	TQ5846	Council-owned sportsground	(1) 1 July 2016 (2) 21 June 2013	(1) & (2) SL	(1) Tonbridge Racecourse Sportsground: hedge, bank and ditch dividing sportsground, TQ 58422 46533. Furthest outlying plant (away from river). (2) At least 120 plants (the precise number being unascertainable due to tussocks growing bunched together) in a ditch at the Racecourse Sportsground near the Medway. The location is from TQ 58460 46472 to TQ 58618 46276, roughly from a sports building to the mouth of a brick-lined ditch by the river. Most plants were growing along the ditch-side with a hawthorn hedge above and presumably gaining protection from this; only a few plants were on the other, mown side of the ditch, which feeds into the Medway via a connecting drain. Plants dominated where the ditch floor is damp to water-filled, being reduced to just a couple of plants where bank becomes brick-lined. Tonbridge & Malling Council have agreed to take the sedge into account in their management plan.
Below Tonbridge	TQ5946		8 July 1944	JEL	Since 1944 there has been much urban development, including an industrial estate, around streams and river systems, which have also developed significant marginal tree cover. There is [SL, 2014] little prospect of a successful search. A further record (TQ 599 467) by FR described as below Tonbridge in side ditches of Medway could not be refound [SL, 2013]. The ditch running from the road into the southern side of Medway was heavily shaded and ditch banks for most part could not be seen. Fields on either side of ditch were starting to scrub over.
Below Tonbridge	TQ5947		May 1963	RW	Given as at TQ 598 478, although the area is within a housing estate north of Tonbridge and contains recreational grassland and a small woodland, apparently little changed since 1960. [Investigation by SL, 2014.]
East of Tonbridge	TQ6046		12 August 1998	RP	TQ 602 468, one clump on riverbank.

					Not re-found, SL 2014. There has been a change in land use from cattle grazing in 1980s to arable around this grid reference and some loss of ditches between 1990 and 2003.
East of Tonbridge	TQ6047		12 August 1998	RP	TQ 604 470. East of Tonbridge (the former Tonbridge Marshes area) appears to have been affected by land use changes from cattle grazing to arable (with some associated ditch and hedge removal), and increased domination of ditches by trees. [Not found, 2013 and 2014, SL, as also FR 1950 record TQ 604 672.]
East of Tonbridge	TQ6247		(1) 12 June 2014 (2) 26 April 2014 (3) 11 August 1998	(1) KBRG meeting (2) SL (3) RP & CP	(1) In a field ditch at TR 62962 47424 with *C. vesicaria*, an old FR record (2)(a) TQ 62691 47194, seasonally flooded shaded hollow beside public footpath and River Medway, west of Hartlake Bridge. One large clump and two small, ground bare other than *Iris pseudacorus*, due to shading by a ring of trees around hollow. [This may correspond to FR's 1952 record under the description of hollow by River Medway.] (b) TQ 62962 47419, wet field ditch beneath hedge along east side of road, just north of Hartlake Bridge. Three clumps close together growing beside to *Carex vesicaria*. [FR probably saw it in the same ditch in 1952, but recorded it as TQ 603 473 when TQ 630 473 was probably intended.] (3) TQ 626 471, Hartlake Bridge, about 10 clumps. There is also a 1961 record (RD) for TQ 628 473 on north river bank, Hartlake Bridge, which could not be re-found by SL in June 2014. Bank here is mostly wooded, but was clear in 1960.
East of Tonbridge	TQ6347		1 June 2014	SB & SL	A cluster of non-flowering plants at TQ 63610 47236 in a wooded area, Ottershaw.
North of Five Oak Green	TQ6446		12 June 2014	KBRG meeting	Four or five young plants along a ditch a ditch from TQ 64033 46859 to TQ 64015 46917. The ditch was dug in 2005, indicating the potential for severe clearance of rank vegetation from ditch banks among modern agricultural fields.
Whetsted	TQ6542		1944/1961	FR	TQ 658 642. [Not found 2014, SL].
Broadbridges	TQ6748, TQ6848		1948 & 1944	FR	1. Site (1948) described by FR as TQ 677 483, gravel pits east of Broadbridges. This grid reference is incorrect as no gravel pits existed

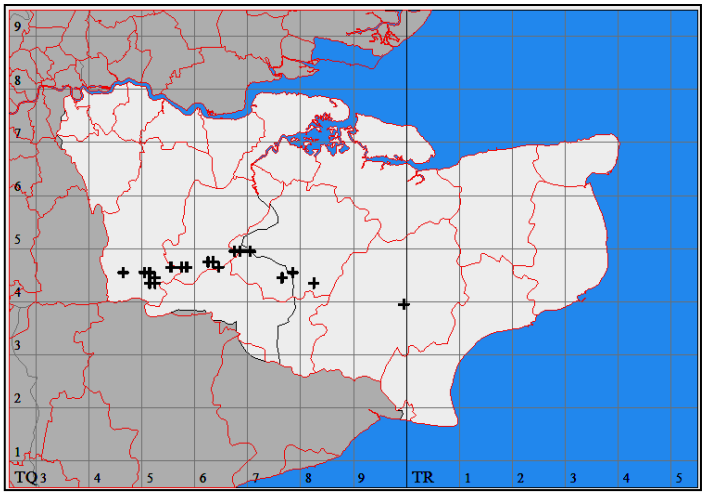
					here in 1940 or 1960. The only gravel pits hereabouts in 1940 were centred around TQ 683 484. It is likely this was the site that operated as Yalding Rubbish Tip during the late 1960s and most of the pits are now infilled and capped. Only those at the northern end remain and are now almost completely wooded. The pits at the western end still exist and are not completely wooded but did not exist in 1940 and are not accessible, being fenced fishing lakes. [Investigation by SL, 2014.] 2. Site (1944) described by FR as TQ 674 482, ditches south of Broadbridges. The roadside stream is the only obvious ditch at this grid reference and was searched (2014) from where it crosses the road, south to where it splits at the end of the wood next to the A228. Not obviously unsuitable in places but since 1944 the area to the west of the ditch has been converted from fields to gravel pits and then to an Industrial Estate. [Not re-found, 2014, SL.].
near East Peckham / Hale Street	TQ6749		(1) 18 June 2016 (2) 15 August 2014 (3) 14 July 2013 (4) 13 July 2013 (5) After 1990 and before 2006 (6) 2 May 1998	(1), (2), (3) & (4) SL (5) EGP (Philp, 2010) (6) RS	(1) Flooded silt dump in quarry workings. Single tussocks at TQ 67876 49656 and TQ 67914 49487 still present along eastern edge of silt dump and area becoming dominated by *Salix*. Tussock previously recorded along western side at TQ6 7855 49562 could not be re-found. (2) Single new large clump at northern edge of silted pond close to stream inlet at TQ 67876 49656. Associates *Lythrum salicaria, Lycopus europaeus, Mentha aquatica* and *Alisma plantago-aquatica*. (3) Two tussocks near edge of silt dump area, one next *to C. otrubae*, TQ 67855 49562 and TQ 67914 49487. (4) TQ 67945 49531, a single plant growing in a damp strip of land used as silt dump. Apparently near a 1998 record, but landscape here has changed completely. (5) Given as in a ditch near East Peckham TQ64U. (6) TQ 679 496. [Not re-found, 2013, SL; likely to have been in a hedgerow since grubbed out and site buried by quarry works.]
Yalding	TQ6849		(1) 25 April 2015	(1) SL	(1) Yalding Fen (TQ 68477 49670):

			(2) 4 May 2014 (3) 28 July 2011 (4) 11 August 1998 (5) 13 June 1985	(2) SL (3) LM (4) RP & CP (5) RD	one clump, 20 metres from existing known clump but flowers less advanced, both growing in *C. acutiformis* stand. (2) The 2011 site revisited, TQ 68472 49684, in northernmost field at southern edge of *C. acutiformis* dominated swamp. (3) TQ 6847 4968 next to *Carex acutiformis* swamp; there is a history of sightings. (4) TQ 680 496, some 50-60 plants, vulnerable to development. [The field/ditch layout here has disappeared with clearance and spreading of excavated material, so this site is destroyed, 2013 (SL).] A 1968 record for TQ 683 497 could also not be traced (SL, 2014), the relevant ditch being heavily shaded, banks with rank vegetation and fallen willows. (5) TQ 681 495, carr. (FR recorded it at a pond and wet copse for this grid reference from 1948 to 1985.) [Not found, but heavily shaded, 2013, SL.]
Yalding	TQ7048		1944		FR record for TQ 709 481, ponds by B2162 south of Yalding. [Not re-found (2013, SL), grid reference does not match well, and nearby ponds with limited or no access, some converted to garden or heavily shaded.]
Yalding	TQ7049		(1) 17 July 2013 (2) May 2012	(1) SL (2) PS	(1) Four tussocks centred on TQ 70042 49792 in 5m x 5m break in woodland canopy under power lines through damp hollow, a small wooded area next to sports field. Tussocks not robust, but competing with *Iris pseudacorus* and their habitat surrounded by trees and rank vegetation, mostly *Urtica dioca* and *Filipendula ulmaria*. (2) Suspected sighting, for which full referee confirmation could not be obtained.
North of Marden	[TQ7445]		[1952]		Assumed to be (as TQ 746 459) the correct location for what FR gave as TQ 789 459, pond one mile north of Marden. [Not re-found, SL, 2014.]
Marden (south of railway)	TQ7644	KWT reserve	(1) 4 June 2015 (2) 13 April 2014 (3) 2001	(1) SL (2) SL (3) EGP & MP	(1) New *C. vulpina* pond at Marden Meadow KWT reserve, discovered by JP (on 1 June 2015, one clump in marshy grass on the south side of an overgrown pond in the far little field of the reserve north east corner) when visiting with her class. Subsequent visit by SL noted

					the pond was next to the railway and had the following *C. vulpina* population, (a) TQ 76586 44562, one clump on vegetated south side of pond (probably clump seen by JP on her visit) *with C. vesicaria* and *C. otrubae*, (b) TQ 76608 44578, single small young clump on approx. two year *Salix* coppiced, sparsely vegetated northern bank of pond with young *C. vesicaria* and *C. otrubae*, (c) TQ7 6609 44565, eight large fruiting clumps clustered together in densely vegetated north eastern corner of pond with abundant *C. vesicaria* and *C. otrubae*. (2) TQ 76291 44593, growing in the open near the western edge of a pond which sits beside the railway and is fed from a stream running parallel with the railway. One large clump with a few spikes and 3 or 4 much smaller satellite clumps immediately around it towards the pond edge. (3) Pond at Marden Meadow.
Marden (north of railway)	TQ7644		10 May 2011	LM	Wanshurst Green, off Battle Lane at TQ 7611 4473, three large healthy clumps in damp tussocky grassland amongst willow scrub, on the opposite side of the railway to the well-known Marden Meadow site.
Stile Bridge	TQ7747		1946	FR	Site described by FR as TQ 770 471, ditch by A229 south east of Stile Bridge, Marden. A garden centre occupies the site of this grid reference and there is no ditch next to the road here. In 1940 it was a field with a hedge and wide road side verge, so the original site is presumed destroyed (SL, 2014).
Cross-at-Hand, Staplehurst (vc16)	TQ7845		27 April 2014	SL	TQ 78438 45410, ditch by wide verge along western side of A229, at Sweetlands Farm junction, north of Staplehurst. One large clump at the southern end of a water filled ditch with abundant *C. otrubae*. FR recorded it here in 1946 at TQ 784 455 as a ditch by A229, Sweetlands Corner.
Cross-at-Hand, Staplehurst (vc15)	TQ7846		1979 and 1991	EGP	Hertsfield Bridges, River Beult. [Not found by SL, 2014, but may have been at wet ditch parallel to northern approach to bridge, in first field east of Hertsfield Bridges.]
Leighbridge	TQ8145		1979	EGP	FR also recorded it from a ditch at TQ 814 454 in 1962. [Not found 2014, SL; ditch may have formed

					part of a wooded field boundary since grubbed out.]
South west of Headcorn	TQ8243		23 March 2014	SL	In ditch beside hedge along eastern side of Water Lane, where roadside grass verge widens out. Small clump on bed of muddy ditch with flower spike starting to emerge, TQ 82356 43274. Larger clump on edge of same muddy ditch with no flower spikes and a small clump a metre away with flower spike, TQ 82366 43255. Re-finding of old RC record.
North west of Smarden	TQ8643		1949	DMcC	TQ 863 438, roadside ditch north of Marley Farm. [Not re-found, SL, 2014; some suitable sections of ditch present, others shaded.]
North of Tenterden	TQ8735 or TQ8634		1987	FR & JP	Marsh north of Breaches Pond, given as TQ 872 353, but TQ 867 349 is more likely. [Not re-found 2014.]
West of Smarden	TQ8742		1956	FR	TQ 877 423, River Beult. [Not re-found 2014, SL: north side of river inaccessible, both banks steep and thickly vegetated, more trees than at time of record.]
East of Langley, Smarden	TQ8940		1956	RC	TQ 893 406. [Not re-found, 2014, SL. Tree-lined shallow ditch is present, short-grazed by horses and shaded in places.]
South of Bethersden	TQ93J		After 1970, before 1981	Philp (1982)	[Not re-found April 2017, SL.]
East of Vitters Oak, Bethersden	TQ9540		1955	ES	Roadside ditch, east of Vitters Oak. [Not re-found 2015, SL; *C. otrubae* present.]
South of Willowbed Farm, Ashford	[TQ9838]		5 July 1989	RWD	Grid reference given (TQ 989 385) is in an unsuitable area, with a shallow pond but no ditches. [Not re-found 2015, SL; and may be in error for TQ 989 395 (see TQ9939 below).]
Shadoxhurst, Birchett Wood	TQ9935		(1) 1945, 1985 (2) 19 June 1970 and 1979	(1) FR (2) RD	(1) TQ 992 358, by former B2070 near Orlestone. (2) TQ992359.
Stubb's Cross, Ashford (south of Willowbed Farm)	TQ9939		(1) 9 May 2015 (2) 1 June 1987	(1) SL (2) RF & LBB	(1) TQ 99003 39568: ditch along north side of field, east of Long Length road, Stubb's Cross, south of Willowbed Farm, Ashford. One large clump on along field ditch along the north side of the field, close to the first large oak tree. Many intermediate fox sedges and *Carex otrubae* in same ditch surrounding and in the nearby ditch along the western side of field. C. vulpina was in full flower in contrast to other fox sedges present which were slightly behind. Re-finding of 1987 record. (2) TQ 990 395, field ditch east of Long Length road; one clump near

					road; six more near the first large tree in field boundary running south east. Associated species included *Alisma plantago-aquatica, Alopecurus geniculatus, Carex otrubae, C. spicata, Glyceria fluitans, Juncus effusus, Mentha aquatica, Myosotis laxa, Oenanthe crocata, Ranunculus repens.* There are earlier records for this area.
Headcorn	TQ8243		23 March 2014	SL	In ditch beside hedge along eastern side of Water Lane, where roadside grass verge widens out. Small clump on bed of muddy ditch with flower spike starting to emerge, TQ 82356 43274. Larger clump on edge of same muddy ditch with no flower spikes and a small clump a metre away with flower spike, TQ 82366 43255. Re-finding of old RC record listed by FR.
Tenterden	TQ8735		1987	FR & JP	c. TQ 872 353.



We now have sufficient data from 2010-17 recording to provide meaningful mapping of the current county distribution of *Carex vulpina*, and the result contrasts with the three records given in Philp (2010).

Hale Street. *Carex vulpina* (the stouter plant with dark brown inflorescence) and *C. otrubae*. Photo by Stephen Lemon, 14 July 2013.

Chiddingstone (Vexour Bridge). Photos by Stephen Lemon, May 2010

Carlina vulgaris L. (Carline Thistle)

Draft account

vc 15 and16

Rarity / scarcity status:

Widely distributed in England, Wales and central Ireland, but with a more attenuated, generally coastal distribution, elsewhere in the British Isles, *Carlina vulgaris* is not regarded as at particular risk in Great Britain as a whole, where its status is one of 'Least Concern'. However, in England there is some evidence of decline, and it is considered to be **Near Threatened**. A comparison of its area of occupancy in England over the periods 1930-1969 and 1987-1999 produced a calculated decline of 25% in the likelihood of recording the species. In Kent, it is neither rare nor scarce but, comparing the periods 1971-1980 and 1991-2005, Philp (2010) shows a decline in tetrad records of 20% over those given in Philp (1982).

Dover. Photo by Geoffrey Kitchener, 12 October 2014

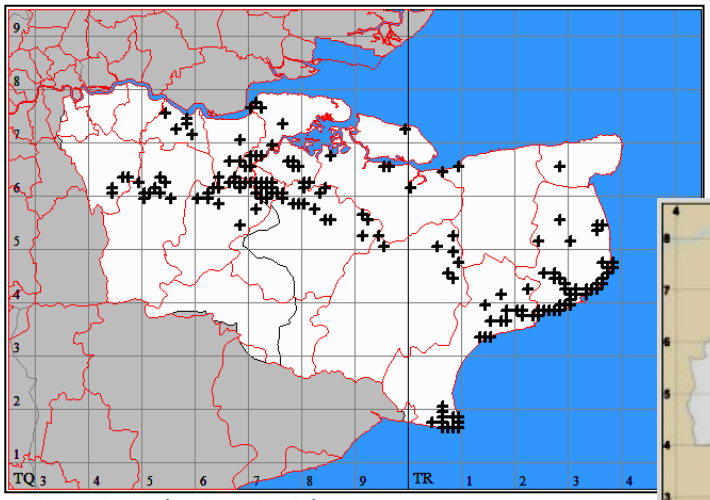
Account:

The first published Kent record for Carline Thistle was Thomas Johnson's encounter with this species between Gravesend and Rochester on 13 July 1629, given in his *Iter Plantarum* (1629). Johnson was also responsible for the preparation of an expanded version of John Gerard's *Herball* published in 1633, in which he described the species as growing 'upon Black-heath and in many other places in Kent'. Hanbury and Marshall (1899) referred to *Carlina vulgaris* as plentiful on downs, banks, roadsides, etc., especially on the chalk, in north west Kent and in the east and south east of the country. Despite the reference to chalk, however, at least half of the records cited by Hanbury and Marshall are from sand: Blackheath (mentioned above); Seasalter (given by Matthew Cowell in his *Floral Guide for East Kent*, 1839, 'on the sands nr. the Preventive [Coastguard] Station'); Tunbridge Wells Common ('very plentifully' according to Thomas Forster in his *Flora Tonbrigensis*, 1816); Rusthall Common, where reported by Walter Reeves of Brixton; and Hawkhurst, where seen by the collector J. Cosmo Melvill. It is surprising that most of these sand-derived records are from locations where there is unlikely to be any calcareous influence, but this appears to be part of the potential of *Carlina vulgaris* which has been manifested more in the past than it is at present (and is also reflected in some records in the older Floras for neighbouring counties). At any rate, *Carlina vulgaris* can no longer be found at Blackheath, Hawkhurst, Rusthall Common and Tunbridge Wells Common.

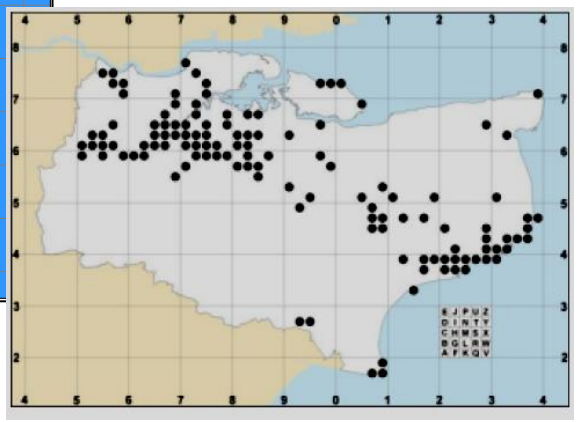
Habitat, chalk cliff slopes above Samphire Hoe.
Photo by Geoffrey Kitchener, 12 October 2014

In Philp (1982), Carline Thistle was noted in 154 tetrads, being locally common on grassland or undisturbed waste ground on the chalk and occasionally in similar habitats on other calcareous soils. Records had reduced

to a total of 123 tetrads in Philp (2010), in which the county distribution is shown as being broadly similar, on the chalk on dry, rather infertile grassland, cliffs and quarries, and occasionally on sand-dunes and other calcareous soils. Records for 2010-17, given in the accompanying map, amount to 158 monads (albeit translating to 117 tetrads), and so nearly catching up with the 1991-2005 position. This does not provide evidence of further decline. The broad thrust of the distribution given in Philp (2010), shown in the 1991-2005 distribution map reproduced with kind permission of the late Eric Philp and the Kent Field Club), has largely been replicated in the current records.



***Carlina vulgaris* (Carline Thistle) 2010-17**



***Carlina vulgaris* (Carline Thistle) 1991-2005**

Burham Downs. Photo by David Steere, 3 August 2014

Carline Thistle is a biennial, and so requires regular re-establishment by seed. Eroded chalk slopes provide opportunities for this; otherwise, it is a poor competitor, and in closed turf is assisted by heavy grazing. It may struggle to find suitable habitat where ungrazed Tor-grass dominates East Kent chalk slopes, although it can be seen sparsely dotting such habitats. Open ground is provided by some less common habitats, such as consolidated shingle at Dungeness.

Unlike the position in relation to many thistles, wind dispersal of fruits is not particularly effective: the plants are low, the fruits are relatively heavy and their pappus is easily detached. The fruits may also be susceptible to small mammal predation[29]. These factors point to a limited ability to spread beyond a local distribution.

[29] Greig-Smith, J. & Sagar, G.R. 1981, Biological causes of local rarity in *Carlina vulgaris*. In (Synge, H., ed.) *The Biological Aspects of Rare Plant Conservation*.

Carline Thistle is not readily confusable with other species in the British Isles.

Dungeness. Photo by Tim Inskipp

Catabrosa aquatica (L.) P. Beauv. (Whorl-grass)

Draft account

vc 15 and 16

Rarity / scarcity status:

Whorl-grass is a creeping grass of wet areas widely, but patchily, distributed in the British Isles, but declining due to drainage works and the infilling of ponds. However, it is still sufficiently frequent that its conservation status in Great Britain is one of 'Least Concern', although in England the trend of decline has been sufficient to rank it as **Vulnerable** to extinction. In Kent its decline appears to have been largely pre-1970, and it currently ranks as **scarce**.

Northbourne. Photos by Sue Buckingham, 21 July 2011

Account:

The first published record for *Catabrosa aquatica* in Kent is by Colin Milne and Alexander Gordon in vol. 1 of their *Indigenous Botany* (1793), the result of botanising in 1790-1793. It was then found "on the outer wall of the wharf, opposite *Norfolk College*, near *Greenwich*". Hanbury and Marshall (1899) regarded the species as common in ditches and muddy swamps, and found across the county. By the time of Philp (1982), it was reduced to nine widely scattered tetrad records, EGP considering that it appeared to dislike modern farming methods, particularly chemical fertilisers. Philp (2010) recorded it in only seven tetrads[30] – but these are all different ones from the previous survey, which is perhaps a pointer to the uncertainty of its occurrence.

Catabrosa aquatica is in Kent a plant of muddy margins of ponds, ditches and shallow streams where water movement is slow, and the grass may form floating mats. It is succulent, and susceptible to cattle grazing.

Site	Grid reference	Site status	Last record date	Recorder	Comments
South west of Hothfield	TQ9544		9 October 1991	CD	TQ 9584 4404, Great Stour river corridor survey.
East of Faversham	TR0261		23 May 2017	LR	One small patch in a dyke at TR 03782 61779.
East of Faversham	TR0361		24 May 2017	LR	Two patches in a dyke within a solar farm, a large colony at TR 02973 61796 by a foot bridge and another smaller colony at TR 02985 61821.
Shalmsford Street	TR0854 and TR0955		August 1991	CD	TR 0896 5485 and TR 0918 5524, Great Stour river corridor survey.
Thanington	TR1256 and TR1357		(1) 21 August 1991 (2) 20 August 1991	(1) & (2) CD	(1) TR 1344 5705 and (2) TR 1297 5688, Great Stour river corridor survey.
Wickhambreaux and Seaton	TR2258		October 1991	CD	TR 2213 5860 and TR 2256 5870, Little Stour river corridor survey.

[30] These are: TQ56G, TR04B, TR04P, TR25D, TR25Z, TR35H and TR35L.

Ham Fen	TR3354		1 August 2012	SB & LR	Dyke at TR 3347 5458.
Northbourne	TR3452, TR3453		(1) 21 July 2011 (2) 1982	(1) SB (2) AH	(1) Plants forming rafts on margins and in centre of North Stream from foot bridge at TR 34474 53248 to TR 34532 53000. Stream had been dredged in last 2 or 3 years. (2) TR 34743 52367, Hacklinge ditches survey.