Kent Rare Plant Register

Draft species accounts

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Compiled by Geoffrey Kitchener and the Kent Botanical Recording Group

Issue date: February 2018

Kent rare plant register

This section of the register covers:

Malva setigera
Medicago minima
Medicago polymorpha
Melampyrum pratense subsp. *pratense*
Melampyrum pratense subsp. commutatum
*Mentha arvensis**
Mentha pulegium
Minuartia hybrida
Misopates orontium
*Moenchia erecta**
Myosotis secunda
Myrica gale
Myriophyllum verticillatum

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

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

Abbreviations used in the text:

Recorders' initials:

ACH Andrew Henderson
AL Alex Lockton
BW Brian Woodhams
CD Chris Dyson
CEC Carter Ecological Consultants
CO Colin Osborne
CW Cyril West
DCh Danny Chesterman
DN David Nicolle
EGP Eric Philp
FR Francis Rose
GK Geoffrey Kitchener
JBed John Bedford
JC Juliet Cairns
JES J.E. Smith
JM J. Mobarak
JP Joyce Pitt
JRP John Palmer
JW Jo Weightman
LR Lliam Rooney
MC Professor Mick Crawley
ML Mel Lloyd
NS Nick Stewart
PW Phil Williams
RM Richard Moyse
SA Sheila Anderson
SB Sue Buckingham

Other abbreviations:

BM Natural History Museum herbarium
CGE University of Cambridge herbarium
KBRG Kent Botanical Recording Group
KWT Kent Wildlife Trust
MNE Maidstone Museum herbarium
SLBI South London Botanical Institute herbarium

Malva setigera Schimp. & Spenn (*Althaea hirsuta* L.) (Rough Mallow)

Draft account

vc 16; gone from vc 15

Rarity / scarcity status

Malva setigera would not normally qualify for a rare plant register as it is neither native (according to current thinking) nor an archaeophyte (ancient introduction). It accordingly has no national conservation risk rating, although when it was considered likely to be native, it was rated as Endangered. There have been many casual records in Great Britain, as distinct from the more persistent long-term populations in Somerset, Oxfordshire and Kent. As regards Kent, *Malva setigera* has been growing near Cobham, the Ranscombe Farm area, since first discovered in 1792, and this is also the generally accepted[1] first record for the British Isles. So the species is considered to merit special treatment here as a **Kent heritage plant**, and is **rare** in the county.

Account

The first published record for Kent (and, it is always said, for the British Isles) was by the youthful Rev. Jelinger Symons who, in his *Synposis Plantarum* (1798) stated that the distinguished investigator ('clarissimus indagator') Jacob Rayer had found a station for plants of this species in a field near Cobham in Kent in 1792. Its subsequent presence there is well documented, for example in the *Proceedings of the Botanical Society of London* in 1838, where an account is given of a members' '*Botanical Excursion to Cobham and Cuxton, Kent',* which is a plea for greater precision in identifying plant sites by use of compass directions. The then traditional site description for *Malva setigera* (and *Salvia pratensis*, Meadow Clary) was 'Near the junction of the three parishes of Cobham, Cuxton and Stroud', and these directions quite defeated five members on their first excursion. A second trip was required, by which the members were able to record that 'Entering the Park by the gate nearest to Cobham, we passed by the road near the Mausoleum to the large beech tree which forms the point of junction of the three parishes I have named, following this road to the border of the wood, we inclined to the right, along the upper edge of the field to which it leads, and here in a spot directly North of Cuxton Church, both plants occurred in abundance'.



Great Wood. Photo by Stephen Lemon, 16 June 2012

Hanbury and Marshall (1899) said that the Kent plant had from time to time been reported as extinct; but that like many other annuals, it varied greatly in quantity

[1] Whilst this is the universally accepted view, it is curious that no mention has been made of John Parkinson's *Theatrum Botanicum* (1640). In this, he splits up mallows into three divisions, of which what appears to be Hairy Mallow ('Alcea minor villosa. Small hairy rough Vervaine Mallow') is the fourth of the second division. When he comes to treat of distribution (p.306), he deals with the first three mallows and then says 'the next two are also sometimes found wild with us', before dealing with more specific foreign localities : 'The fourth groweth at the foote of the mountain *Iura* in *Helvetia*' (it is indeed part of the Swiss flora). The reference to 'sometimes found wild with us' is a somewhat throwaway line, but if 'Alcea minor villosa' is to be equated with *Malva setigera* this would advance the wild status of this species by 150 years, which would add support to a reclassification as native or archaeophtye. It would also pre-date the first British record of the species in cultivation, in Edinburgh Physic Garden (James Sutherland, *Hortus medicus Edinburgensis*, 1683). Parkinson, however, was apparently inclined to attribute wild status to casual escapes and this may well be the case here, particularly as the reference to this plant is coupled with one to *Alcea Aegyptia moschata* (apparently *Malva aegyptia*, which has had no better status than casual in the UK).

from year to year, and had been found growing plentifully by Henry Lamb as recently as 1894 (there are also gatherings by Lamb dated 1880 and 1890 in **MNE**). C.E. Salmon (1902)[2] found it here, not very plentifully, in 1895; and 'It grew on the rough ground one so often finds in and on the borders of fields that are let go out of cultivation on the chalk downs, and was associated with many of the usual plants of that formation, such as *Echium vulgare*, *Origanum*, *Ajuga Chamaepitys*, etc. We could see no obviously introduced plants near, but *Salvia pratensis* was in abundance not very far away'.

J.E. Lousley (1956)[3] wrote of the species in this location, perhaps from recollection of a visit in 1933, when he collected specimens now in **SLBI** and elsewhere; and he commented on the fluctuations in its occurrence and its proximity to other uncommon plants of the chalk. Francis Rose (specimens in **MNE**) collected it 1945-55, as from 'South of Great Wood, on downland and in chalky arable field' and similarly described habitat.



Great Wood. A plant still flowering at the end of October, when the remains of 304 flowers were present. Photo by Richard Moyse, 2011

The status of the plant was much the same when described by Philp (1982) as on 'Edges of fields and disturbed ground in the Cobham-Cuxton-Strood area TQ/66Y, 66Z and 76E'. The area, part of an SSSI whose notification reasons included arable weeds and 'perhaps of greatest interest' *Malva setigera*, subsequently became the subject of a management agreement with English Nature. Then the species was adopted by Plantlife under its 'Back from the brink project', an interest which (in conjunction with the presence of other plants of national interest at Ranscombe Farm) eventually led to the acquisition of Ranscombe by Plantlife in 2005. The attention which *Malva setigera* received as part of the 'Back to the brink project' and the management activities on the part of Plantlife have resulted in much data becoming available, e.g. Rich & King (1993), Rich & Ulf-Hansen (1994, 1995), Rich, Ulf-Hansen & Goddard (1996) and FitzGerald (1998)[4]. Some of this information is set out below together with subsequent records from other sources.

c.1980	Many hundreds of plants after pipeline dug across field.
1985	225 plants (Joyce Pitt)
1987	97 plants (Joyce Pitt)
1988	55 plants I(Joyce Pitt)
1989	2 plants (Joyce Pitt)
1990	few
1991	24 plants (Joyce Pitt)
1992	No plants seen in usual field, but one plant (Peter Marren & Jane Smart) seen at a field edge c. 200 yds below, TQ 701 677 (viz. in TQ76D).

[2] C.E. Salmon (1902). *Althaea hirsuta* in Surrey. Journal of Botany **40**: 409-412.

[3] J.E. Lousley (1950). *Wild Flowers of Chalk & Limestone*. New Naturalist series, Collins.

[4] Rich, T.C.M. & King, M. (1993). Hairy Mallow *Althaea hirsuta* L. at Cobham Wood SSSI, Cuxton, Kent. Plantlife report.
Rich, T.G.C. & Ulf-Hansen, P.F. (1994). The status of hairy mallow (*Althaea hirsuta*) in Britain in 1994. Plantlife project report no. 35.
Rich, T.G.C. & Ulf-Hansen, P.F. (1995). Hairy mallow (*Althaea hirsuta*) in Britain in 1995. Plantlife project report no. 58.
Rich, T.G.C., Ulf-Hansen, P.F. & Goddard, E. (1995). Hairy mallow (*Althaea hirsuta*) in Britain in 1996. Plantlife project report no. 77.
Fitzgerald, R. (1998). *Althaea hirsuta* – Hairy Mallow – Status of British records between 1792 and 1997. Plantlife report no. 98.

1993	Over 250 plants in the woodland area and a few more in adjacent rape field. Field edge rotovated, March 1993, to create suitable conditions where lack of disturbance was believed to have resulted in a decline. Further cultivation into the field edge as far as the old hedgerow boundary was inhibited by a rabbit fence present 1.5m into the field, behind which a fairly closed turf canopy (Brachypodium pinnatum, agg., Tor-grass) had developed. However, a small area behind the fence was forked over.
1994	Over 100 plants (Joyce Pitt). Also 15 plants found by P.F. Ulse-Hansen on field edge where dug over in 1993; and another singleton. Further small areas of grassland dug over behind fence. Seedlings and young plants observed on pipeline, and one plant still in flower.
1995	A good year for the species (possibly due to weather), site visited by Tim Rich and Eric Philp in June (the species was given in Philp (2010) as present in TQ66Y and 66Z). Seven small plants seen on field margin near where seen in 1994, a bare area by the rabbit fence. Also, 171 plants seen on and near the corner of the ride inside the pipeline, many small but some very large. No plants along the edge of lower field or field to the east where previously seen, or in the areas where dug over in 1994.h
1996	Site visited by Tim Rich and Andy McVeigh in May; and by Tim Rich and Ruth Davis in June. A total of 477 plants recorded, but likely to have been more. These included plants where dug over in October 1994 (showing response to disturbance work is c.18 months); plants on pipeline route, abundance attributed to hot summer of 1995; plants on site of burnt out stolen car, attributed to germination enhanced by fire.
1998	100+ plants (Joyce Pitt).
1999	60+ plants in gas ride above field; several large branching plants with flowers and fruit (Joyce Pitt)..
2000	One or two plants in western side of main ride edge (Joyce Pitt).
2004	One plant (Eric Philp & Peter Heathcote).
2005	Present at headland between TQ 70259 67732 and TQ 70276 67716, just after intensive arable cultivation ceased; also recorded quite often at eastern ride margin between TQ 69914 68061 and TQ 69977 68208 where less vegetated (Joyce Pitt & Anne Waite).
2010	On 24 June, about 15 plants along footpath at TQ 713 681 and a couple more a few yards away; not a usual site. Also 8 July, one plant up trackway from Kitchen Field, TQ 699 681 (Lliam Rooney). On 30 June, six small plants on bare ground patches under trees, top edge of Kitchen Field, TQ 69808 68111 (Sue Buckingham).
2012	134 plants (Richard Moyse)
2014	On 5 August, two plants above Kitchen Field, TQ 699 680; three plants in Kitchen Field at edge, TQ 698 680; 117 plants in disturbed grassland at edge of Kitchen Field, TQ698680. Total Ranscombe count, 123 plants (Richard Moyse).
2015	Field margin rotovated, avoiding plants which had germinated in previous season. Total Ranscombe count, 207 plants (Richard Moyse).

The Ranscombe site may be seen in the context of the species' wider distribution, which in Europe is mostly southern, but extends northwards as far as Germany, Britain being at the north western limits of its distribution. Accordingly, climate constraints are likely to affect the persistence of its survival in Britain, and Ranscombe provides well-drained, warm, calcareous soils. Some of the variability in the size of populations from year to year presumably reflects adverse weather conditions – a hard winter or wet, cold conditions at germination time will be damaging. The other main cause of fluctuation in numbers is likely to be the disturbance regime. As an annual (normally), *Malva setigera*, requires open conditions: these may require disturbance to be maintained, which can be supplied by agricultural activities, by the use of paths or (recently) by conservation work. Disturbance will also assist by bringing the seed bank up to the surface, dramatically illustrated by pipeline works c. 1980. It is said that seed viability may reach 180 years[5]. Plants usually germinate in the autumn, overwintering and flowering from May to July although, if not cut short by a dry summer, they may flower for much longer.

[5] www.plantlife.org.uk/publications/ARABLE_PLANTS_-_a_management_guide.pdf. This may be an allusion to Forey, E & Dutoit, T. (2012). Vegetation, soils and seed banks of limestone grassland are still impacted by former cultivation one century after abandonment. *Community Ecology* **13**: 194-202. The seed-bank in a French former field cultivated in the 19th century and abandoned was found still to contain *Malva setigera* seeds, an indicator of its arable history.

Whether or not this population is a native one has long been the subject of differing views. It was accepted onto the British List (*A Catalogue of British Plants*, 2nd edition, 1835) by Henslow, who collected it himself in 1827, as 'Naturalized species, certainly not indigenous'. Syme in English Botany (vol.2, 1864) was also fairly forthright ('Very rare, and no doubt introduced'). There was an inheritance of views through the mainstream floras to Bentham's Handbook of the British Flora (1858 edition: 'Probably introduced as such into Kent, where it is said to have fully established itself near Cobham', although the Handbook was expressing less scepticism as regards the Somersetshire population by its 1887-1924 editions).

Hanbury and Marshall (1899) considered the species to be a native or denizen in Kent, and that the status at Cobham was as persuasively native as in Somerset: 'It has certainly held its ground for more than a century, and is quite as likely to have spread *into* the cultivated ground as *from* it'. The standard British Floras from 1952 to 1987 gave the species as 'doubtfully native'; but from 1991 onwards, 'probably introduced' or 'introduced-naturalised'. The vascular plant red data book (editions from 1977 to 1999 only) inclined towards acceptance of its being native in Kent and Somerset. The *New Atlas of the British and Irish Flora* (2002) gave the species as a neophyte (post-1500 introduction).

The most substantial arguments for native status are its relationship with European distribution, albeit on the margins, and the company it keeps in Kent, namely a number of species which are rare in Britain, generally with their main distributions focussed further south in Europe, and accepted as natives or archaeophytes in Britain. These are plants such as native *Ajuga chamaepitys* (Ground-pine); archaeophyte *Filago pyramidata* (Broad-leaved Cudweed); and native *Salvia pratensis* (Meadow Clary). The most substantial arguments for introduction are probably that it seems dependent on disturbance (but this would not preclude archaeophyte status); and that there is a relatively late date for its first discovery which amply post-dates its date of first cultivation in Britain. However, this last point seems weaker if is accepted that *Malva setigera* has been known in the wild in Britain by 1640 (see earlier footnote). Also relevant is that there have been frequent introductions of this species in Britain, which have generally been casual and impersistent. Casual occurrences in Kent are set out in the following table. Not all of them are 'one-off' – the species returned at Haysden after 13 years, and at Bredhurst the records spanned 37 years.

Early casual records are likely to derive from animal foods, foreign cereal seed or the product of seed-cleaning used as chicken-feed. Modern casual records may well have a relationship with introduced seed or represent the return from the seed bank of an older, perhaps undocumented, occurrence.

Malva setigera is a distinctively bristly (not downy) mallow with an epicalyx (the bracts outside the true calyx) of 6-10 lobes.

Site	**Grid reference**	**Last record date**	**Recorder**	**Comments**
West Wickham (metropolitan vc16)	TQ36	1883	A. Bennett	Garden weed
Nr. Chislelhurst station (metropolitan vc16)	TQ46	Before 1892	W.W. Reeves	Given in Hanbury and Marshall (1899). Soon disappeared.
Badgers Mount	TQ4962	1989	JES, JP	One well grown plant.
Haysden	TQ5645	4 July 2004	SB	TQ 5633 4565, soil bank by lake access west of A21. A re-appearance following previous sighting here in July 1991. Soil likely to have been imported.
Maidstone Market	TQ75	1950	FR & CW	This may be a follow-up to CW's find of a casual plant in 19548 near Maidstone east.
Wouldham	TQ76	1840		Specimen in **BM**. May be some relationship with the Cobham locality, but this is on the other side of the

				Medway.
Bredhurst	TQ76 or TQ86	(1) July 1938 (2) July 1901	(1) John Braybrooke Marshall (2) John Masters (his son)	(1) Bottom of hedgebank, growing almost in wheel ruts of trackway from St Peter's Church to Bredhurst Hurst. (2) A few plants at the edge of a cultivated field (formerly laid to Sainfoin) a quarter of a mile south east of Bredhurst Church, on grassy bank, looking unlikely to set seed.

Medicago minima L. (Bartal.) (Bur Medick)

Draft account

Vc15; continued presence in vc16 requires confirmation

Rarity / scarcity status

Medicago minima is predominantly a coastal plant of sand and shingle, sometimes inland heaths, local in east England from Kent through East Anglia, including Breckland. It is regarded as **Vulnerable** to the risk of extinction, both in England and Great Britain as a whole. Its area of occupancy in England is taken to have declined by 44% in comparing records for the periods 1930-69 and 1987-99. In Kent, there appears to have been a decline of 56% between the surveys in Philp (1982) and Philp (2010), but some of that decline is due to the discontinuance of a source of introduced seed. Bur Medick falls just short of qualifying as scarce in the county, but its decline warrants its future being monitored.

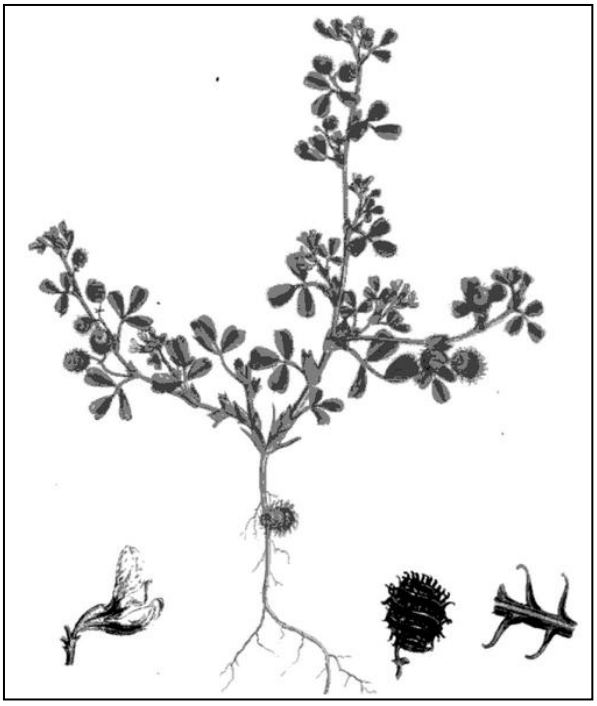


Illustration by James Sowerby of the first collected Kent specimen of *Medicago minima*.

Account

The first published record for Kent appears in Gerard Smith's *Catalogue of rare or remarkable phaenogamous plants collected in South Kent* (1829) as 'Upon sandy ground between Sandwich and Pegwell, abundant'; he also added a manuscript note to his own copy, 'at New Romney, Mr. Borrer'. The note probably derives from the publication in 1831 of the *Supplement to the English Botany of th*e late Sir J.E. Smith and Mr. Sowerby, which illustrates a plant gathered by William Borrer in June 1828 at Romney Warren. Smith further described the find location as part of a tract which 'is sandy, running from Cliff-end, westwards to Sandwich; where it is interrupted, but resumed again upon the shore as far as Deal, constituting the Sand Hills'. Hanbury and Marshall (1899) considered Bur Medick to be a rare species of sandy and gravelly ground, especially near the sea, noting other records at Hythe, Seasalter, Sheppey and, somewhat more inland, Blackheath.



Littlestone. Photo by Lliam Rooney, 5 June 2010

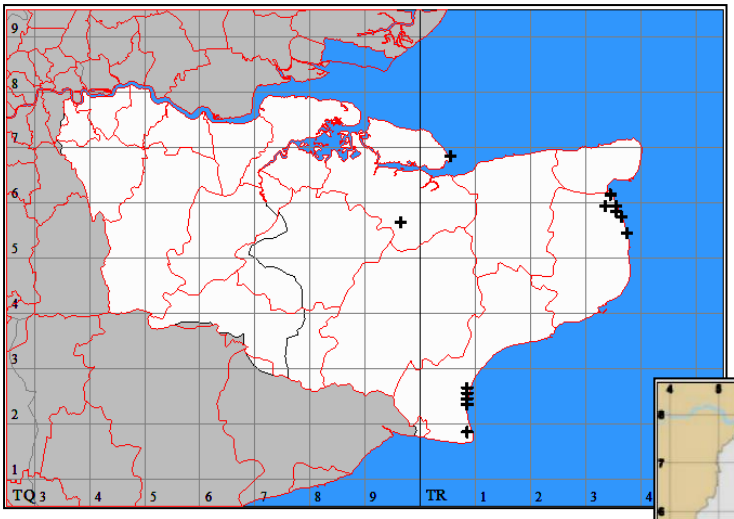
Whilst it continued to be seen in coastal sites, Philp (1982) shows at least eight tetrad records (out of 25 tetrads) as being inland, and it is said to have been found in arable fields and the like, mostly introduced with wool-shoddy, a waste material from woollen mills used agriculturally to improve nitrogen content and water-retaining properties of soil. This source of foreign seeds came to the attention of English botanists in the late 1940s and

Francis Rose and E.C. Wallace were the first to find shoddy plants in Kent, at Hextable in October 1948. A week later, David McClintock made a collection from the same site, which included var. *recta* of *Medicago minima.*[6] He also found the species as a shoddy alien at Birchington (1960), Sandwich (1959 and 1960) and Wrotham (1960) – specimens are in **MNE** – and finds at Bat and Ball, Sevenoaks; at Bourne Farm, Crouch; and at Knole (all 1960) look to be of the same nature. A similar origin may have applied to Clive Stace's 1960 record by a cultivated field on a farm in Yalding. The bur fruits seem well adapted to animal dispersal, including by sheep.



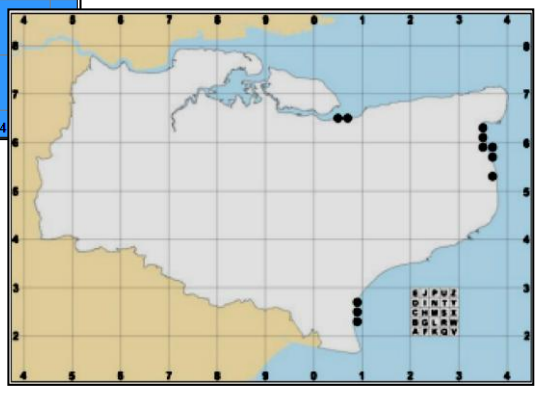
Littlestone. Photo by Lliam Rooney, 5 June 2010

By the 1991-2005 survey, published as Philp (2010), the use of wool shoddy had been discontinued, and the species no longer appeared in inland fields. Its distribution, on sandy or gravelly places on the coast, appeared limited to Greatstone/Littlestone; from Deal to Pegwell Bay; and near Seasalter, and is shown on the accompanying 1991-2005 map, included by kind permission of the late Eric Philp and the Kent Field Club. Records for 2010-17 are here mapped separately at the finer resolution of 1km square (monad) level, which is the level at which the register data will be maintained. These recent records at present amount to 11 tetrads (deriving from 13 monads), and match the 11 tetrads of Philp (2010), but are not all identical although they cover broadly similar locations so far as concerns the east coast. They have not yet resulted in the re-finding of plants near Seasalter; but the sighting on the east side of Sheppey appears new, and there is an inland record which may represent a residue of the old shoddy-derived occurrences. If the species is to be re-found at all now in West Kent, the Isle of Grain is perhaps the most likely place.



Medicago minima **(Bur Medick) 2010-17**

Medicago minima **(Bur Medick) 1991-2005**



Medicago minima is a prostrate annual, requiring open ground, both for seed establishment and avoidance of competition from taller vegetation. It germinates in autumn, the winter growth strategy fitting in with the ability to flower before summer drought, which may be more relevant to the Mediterranean part of its wider

[6] Lousley, J.E. (1949). Botanical Records for 1948, in *The London Naturalist for the year 1948*, **28**: 26-36.

distribution. Its current Kent habitats are largely on sandy shingle or dunes with associated grassland, often near roads or paths where the grass is kept low and there may be some disturbance. At Sandwich Bay it has been seen in closely mown grassland on roadsides and on a golf practice range, the grass being maintained low enough to avoid competition from taller vegetation. At Littlestone, it has been seen well scattered along the sandy shingle at the top of the beach – a relatively new habitat formed by sea defence works, so the species may act as a colonist.



Bur Medick is one of a number of medicks which may appear in its coastal habitats. *Medicago lupulina* (Black Medick) may be distinguished by its spineless fruits, black when ripe. *Medicago arabica* (Spotted Medick) has blotched leaves. *Medicago minima* (spiny fruits, leaves without blotches) is perhaps closest to *Medicago polymorpha* (Toothed Medick), with which it can grow, e.g. at Sandwich Bay estate. Both have coiled spiny fruits with at least three coils, although *M. polymorpha* occasionally lacks spines; but *M. minima* is generally a smaller plant, very downy throughout (*M. polymorpha* is glabrous or sparsely hairy), and with untoothed stipules (the other has deeply cut stipules).

Littlestone. Photo by Lliam Rooney, 11 June 2011

Medicago polymorpha L. (Toothed Medick)

Draft account

Vc15 and 16

Rarity / scarcity status

Medicago polymorpha as a native plant is scattered on sandy ground along the south coast and the East Anglian coast. Its conservation risk rating is one of 'Least Concern', both in England and in Great Britain as a whole. In England, that rating reflects an analysis of change recorded for period 1930-99, but a 50% decline was detected when analysing 1987+ data as proportion of all records including pre-1930 data. In Kent, there appears to have been a 53% decline between the surveys of 1971-1980 and 1991-2005; but virtually all that loss is likely to be attributable to the discontinuance of the use of wool shoddy contaminated with seeds as field manure (see also the account for *Medicago minima* (Bur Medick), whose distribution and history is very similar). In any event, the survey data for 2010-17 are not as pessimistic as the 1991-2005 records and do not support such a decline. Toothed Medick is not sufficiently uncommon in Kent to merit a rarity or scarcity rating; but it is a nationally scarce species.



Littlestone. Photo by Lliam Rooney, 11 June 2011

Account

The first published record for Toothed Medick in the county is by Christopher Merrett in his *Pinax rerum naturalium Britannicum* (1666), given as Sea-Medick 'At *Rumney* betwixt the Town and *Cony-Warren'.* There are of course several 'warren' place-names along Dymchurch Road north east of New Romney, culminating in sandy area known as 'The Warren', and *Medicago polymorpha* remains present (2010) at least as near as Littlestone Greens.



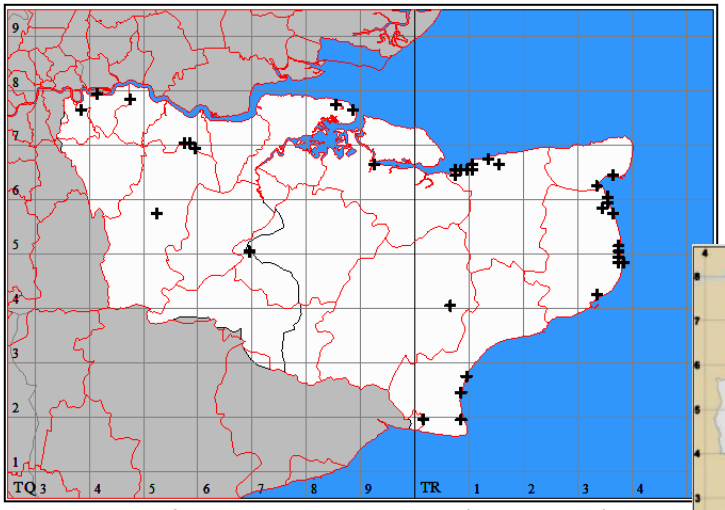
Pegwell Bay. Photo by Sue Buckingham, 26 May 2016

Hanbury and Marshall (1899) assessed the species as rather rare, growing on 'sandy or gravelly ground, chiefly maritime', although there were historic inland records for Blackheath. They also gave an anomalous record from J.E. Little as from 'Medway Valley, between Penshurst and Maidstone, on sand of the Lower Greensand, and also on gravel above clay' which was somewhat misleading, and actually should have stated the find as being on railway ballast between Hildenborough and Tonbridge (1879,when Little was a schoolboy)[7]. Coastal records given included Crossness, Sheerness, Whitstable, Thanet, Pegwell Bay/Sandwich/Deal/Walmer, Folkestone, Hythe/Dymchurch and Dungeness.

Coastal habitat details were noted by Francis Rose for collected specimens in **MNE**, e.g. sandy cliff tops, Folkestone Leas (1945); dune grassland, Littlestone (1946); consolidated shingle beach west of Hythe (1955);

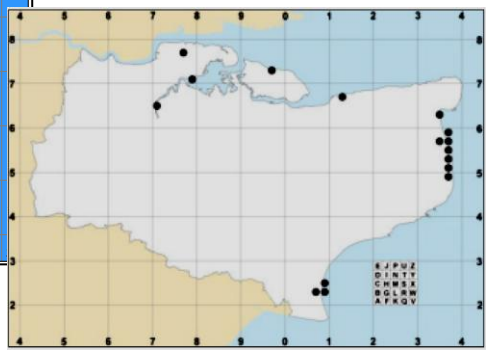
[7] Corrected in correspondence between J.E. Little and C.E. Salmon in 1929, held by GK.

and shingle beach by road across Hythe Ranges (1958). At that time also, records were beginning to appear for plants from seed introduced from wool shoddy spread in fields, just as with *Medicago minima*. David McClintock found such introductions at Wrotham station (where shoddy was presumably off-loaded) and Basted, both in 1960. Clive Stace found in 1961 (as he had for *Medicago minima* in 1960) the species growing at the edge of a cultivated field at Yalding. Such inland occurrences were still taking place during the survey for Philp (1982), which recorded the species in 32 tetrads. Toothed Medick was then said to be rare on sandy or gravelly ground near the coast in the Sandwich-Deal-Walmer area and in the Greatstone-Littlestone area; elsewhere in Kent sometimes introduced with wool shoddy, although at some localities it had been known for many years.



Medicago polymorpha
(Toothed Medick) 2010-17

Medicago polymorpha
(Toothed Medick) 1991-2005



By the time of the 1991-2005 survey (Philp, 2010), the number of tetrads had reduced to 15, but most of this change was due to the discontinuance of wool shoddy, so that the distribution reverted to the basic native coastal occurrences. However, more recent records, shown on the accompanying 2010-17 distribution map (with 31 tetrad records, so reverting to 1971-80 recording levels) still give some inland occurrences. The record at TQ6950 was from recently disturbed ground at a former arable field, Yalding (2012) and may represent survival in the seed bank from old shoddy-related presence. Those at or near Green Street Green, Longfield (TQ5870, TQ5969) and a supermarket car park near Sevenoaks (TQ5357) do not have an obvious origin, but the finding by Juliet Cairns of one plant of *Medicago polymorpha* on the south west edge of Blackheath (TQ3876) may be a relict of historic inland presence, echoing the record of this for Blackheath by Alexander Irvine in his *Illustrated Handbook of the British Plants* (1858) and by 'E.J.' in 1855 (*The Phytologist* N.S. 1:166).



Littlestone. Photo by Lliam Rooney, 11 June 2011

The distribution and habitat preferences of *Medicago polymorpha* broadly resemble those of *Medicago minima* (see account for that species), with which it has been found growing, e.g. at Sandwich. Similarly, it is a winter annual, whose growth begins with rain in autumn, flowering with us from May. It appears from the species' behaviour in California, where it is an introduction (indeed, it is used for nitrogen-fixing and as a component of pasturage in semi-arid areas), that 40% of the viable seed in its seed bank remains dormant and carries forward, so that germinating individuals in large part derive from seed of previous years. Open ground presumably meets its requirements for seedling establishment and avoidance of competition. This may be through trampling and other disturbance by coastal paths and roads, or through summer scorching of plants generally on sandy coastal terrain.

For identification issues in relation to coastal medicks, see the account for *Medicago minima*.

Melampyrum pratense L. (Common Cow-wheat)

subsp. pratense

subsp. commutatum (Tausch ex A. Kern.) C.E. Britton (Chalk Cow-wheat)

Draft account

Vc15 and 16

Rarity / scarcity status

Melampyrum pratense is a hemiparasitic plant widespread in the British Isles, although less so in central England and some parts of the east. It is not regarded as being at risk in Great Britain as a whole (its threat status being of 'Least Concern'), but in England it is treated as **Near Threatened** as there is evidence of losses: its area of occupancy in England is taken to have declined by 28% in comparing records for the periods 1930-69 and 1987-99. The position in Kent also appears to be one of decline, with 48% fewer tetrad records made in the 1991-2005 county survey (Philp, 2010) than during 1971-1980. There are two subspecies with distinct habitat preferences: subsp. *pratense* (acid ground) and subsp. *commutatum* (base-rich). There are not given separate conservation status, due to the limited information regarding their occurrence. Similarly in Kent, although we know that both subspecies are present, and we could guess the subspecific identity of many records from the geology of their location, we have limited confirmed data as regards their respective abundance. Both subspecies were placed on the county rare plant register in order to encourage their recording and no rarity or scarcity designation is currently made for them in Kent. The species as a whole is not uncommon in the county.



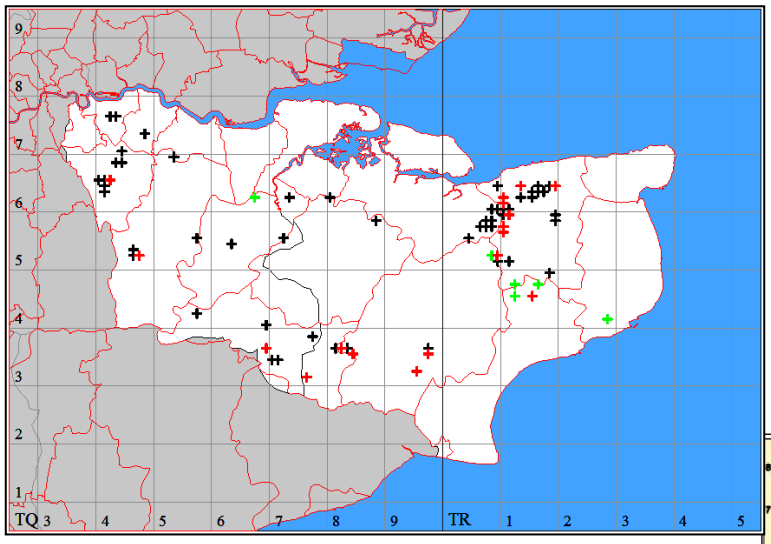
Brasted Chart, subsp. *pratense*. Photo by David Steere, 31 May 2015

Account

The first published notice of the species in Kent was by Thomas Johnson who, in his *Iter Plantarum* (1629), mentioned it as encountered in travelling by the main road from Gravesend to Rochester. Johnson listed *Melampyrum* next to *Cirsium acaule* (Dwarf Thistle) and *Carlina vulgaris* (Carline Thistle) and if they were growing together, it will have been chalk, which is the underlying geology of much of the route – so the possibility is that the plant was subsp. *commutatum*. Hanbury and Marshall (1899) considered Common Cow-wheat indeed to be very common in the county as a whole, except Thanet, in woods and copses and so they supplied no individual records for the normal form. Individual records are given there, however, for var. *latifolium*, a taxon which was taken off the British list after Gustave Beauverd published his *Melampyrum* monograph in 1916. By the time of Philp (1982), *Melampyrum pratense* remained locally common, being found in 153 tetrads in the period 1971-1980. These tetrads showed particular concentrations in Wealden wooded areas on Tunbridge Wells sand, the London Clay of the Blean woodlands, the chalk around Elham valley and some records along the Folkestone and Hythe Beds of west Kent. The plant was relatively absent from more treeless areas –the Hoo peninsula, Sheppey, Thanet and Romney Marsh/Dungeness. However, by the 1991- 2005 survey (Philp, 2010) the number of tetrads recorded had dropped to 79. The previous concentrations remained, but in attenuated form. It was noted that subsp. *pratense* occurred on the more neutral and acid soils, and that subsp. *commutatum* was found on chalky soils, but they were not mapped separately.

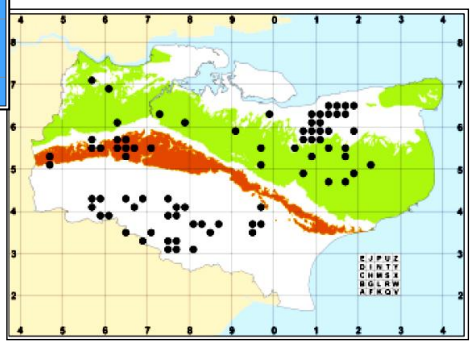
For the period from 2010 to 2017, as shown on the accompanying distribution map, records were made in 74 monads, equating to 57 tetrads. Data for this register will be maintained at 1km square level, which is at finer resolution than the mapping for Philp (2010), reproduced here for comparison with the kind permission of the late Eric Philp and the Kent Field Club. It will be noted that the latter map does not cover metropolitan west Kent and hence omits records for the acid woodland of north west Kent, which appear in the 2010-16 map. Our recent records are mapped with subspecies shown where identified, and their locations follow the underlying geology as might be expected; but in most cases recorders have simply recorded the species. Although the relatively few recent records might suggest further decline, a sufficient survey period has probably not yet elapsed for a view to be formed.

We have many records from the Blean, where there are abundant colonies, encouraged by wood management for its benefit, as it is a food plant, together with *Digitalis purpurea* (Foxglove), for the larvae of the Heath Fritillary butterfly. Conservation effort was driven particularly by the butterfly having approached near extinction in the 1970s.



***Melampyrum pratense* (Common Cow-wheat) 2010-17**
Orange = subsp. pratense
Green = subsp. commutatum
Black = undifferentiated records.

***Melampyrum pratense* (Common Cow-wheat) 1991-2005**



Common Cow-wheat is an annual[8], germinating in December so as to develop an extensive root system but showing little vegetative growth until March. Rapid growth appears to take place towards the end of March if a relationship is established with a suitable host plant, and then flowering takes places within six to eight weeks. In the absence of contact with a suitable host, the plant withers away after production of a few small stem leaves. Its hemiparasitic nature enables it to thrive on nutrient-poor soils, since in these locations its nutrients are at least in part being derived from its host, generally a woody plant. The relationship also seems to enable the acquisition of a water supply from the host: Smith (1963) remarks on a dry period in summer 1959, when a healthy population was seen in a wood on Keston Common, where other herbaceous plants were dead or dying. Our recent records include limited data as regards the most frequent host plants, but where a population is growing in relatively bare terrain, it should be possible to assess the most likely candidates amongst nearby trees or shrubs. We have noted *Quercus* sp. (Oak) and elsewhere *Corylus avellana* (Hazel) coppice (in which *Orchis purpurea* (Lady Orchid) and *Ophrys insectifera* (Fly Orchid) were also present), but most of our data as regards associates comes from the 1950s. It is harder to form a view about the host plant in those locations on chalk where a chalk grassland flora is present, but Chalk Cow-wheat has been noted in *Brachypodium pinnatum* agg. (Tor-grass) grassland in which scrub was spreading out from an adjoining wood; and it is likely that the scrub species (*Corylus avellana* (Hazel)

[8] Smith, A.J.E. (1963). Variation in *Melampyrum pratense* L. *Watsonia* **5**: 336-367.

and *Viburnum lantana* (Wayfaring-tree) were acting as hosts. It may be that growth of the Common Cow-wheat is also enhanced by fungi associated with host plants – increased performance has been observed in Scandinavia in the presence of *Pinus sylvestris* (Scots Pine) with ectomycorrhizal fungi associated with their root systems[9]



Holly Hill, subsp. *commutatum* on Hazel.
Photo by David Steere, 5 August 2015

The two subspecies are distinguished (apart from habitat preferences) mainly by leaf shape. The uppermost leaves of subsp. *commutatum* (i.e. below the bracts) are wider – ovate-lanceolate, mostly 3-8 times longer than wide (cf. subsp. *pratense*, lanceolate to linear-lanceolate, mostly 7-15 times as long as wide). Its corolla tube is often longer, at 13-15.5mm (cf. subsp. *pratense* at mostly 12-14mm), but there is overlap between the taxa. The position as regards leaves is not straightforward in Kent, as Smith (1963) remarks on Kentish populations inter-grading in leaf shape where there are plants growing in calcareous and non-calcareous habitats in the same area, and Francis Rose said that there were similar populations in the Pas de Calais. The cause may have been introgression as between two originally distinct populations, or it may have been selection still in progress for broad-leaved forms in calcareous habitats where only an originally narrow leaved population was present. As a result of Smith's studies, nearly all the Kent *Melampyrum pratense* specimens in MNE are determined to subspecific level and many were collected by him. His specimens generally have a record of associated species and it is noticeable that those for subsp. *pratense* may include *Castanea sativa* (Sweet Chestnut) and *Quercus robur* (Pedunculate Oak), whilst those for subsp. *commutatum* may include *Sorbus aria* (Common Whitebeam) and *Viburnum lantana* (Wayfaring-tree). *Corylus avellana* (Hazel) often accompanies either. Plants intermediate between the two taxa were found near Selling in a coppiced wood with fairly neutral soil (at ph 6.8); on a sunny chalk bank at Maxted Street, Elsted; and on chalk grassland at Yockletts Bank.



Brasted Chart habitat, subsp. *pratense*.
Photo by David Steere, 31 May 2015



Bredhurst habitat, subsp. *commutatum.*
Photo by David Steere, 22 July 2015

[9] Salonen , V. & Setälä, H. (2000). The interplay berween *Pinus sylvestris*, its root hemiparasite, *Melampyrum pratense*, and ectomycorrhizal fungi: Influences on plant growth and reproduction, *Écoscience* **7**: 195-200.

Mentha arvensis L. (Corn Mint)

Draft account.

Vc 15 and 16

Rarity / scarcity status

Mentha arvensis is fairly common throughout the British Isles in fields, wood margins, clearings and by ponds and ditches. In Great Britain as a whole, its conservation risk status is one of 'Least Concern', but in England, its rate of decline is such that it has been assessed as **Near Threatened**. Its area of occupancy in England is taken to have declined by 25% in comparing records for the periods 1930-69 and 1987-99. In Kent, there has been a reduction of 41% in tetrad records as between the surveys of 1971-80 (Philp, 1982) and 1991-2005 (Philp, 2010). However, it is still neither rare nor scarce in the county.



Meopham. Photo by David Steere, 24 July 2016

Account

The position is not straightforward as regards the first publication of a Kent record for *Mentha arvensis*. Hanbury and Marshall (1899) say that it was by Thomas Johnson in his *Iter Plantarum* (1629) in course of travel from Grain to Cliffe via Stoke, High Halstow and Cooling. The plant was called by Johnson '*Calamintha aquatica Belgarum*' Lob., and the question arises as to what species Johnson meant by this. Francis Rose in the 1972 edition of *Iter Plantarum* said that Gerard's illustration appeared to be *Mentha arvensis* (as indeed it does), but that *Mentha aquatica* was also possible. The identity of the illustration in Gerard's *Herball* is very relevant, as Johnson edited the second edition, and so might be supposed to have the same view as Gerard that this illustration indeed represented *Calamintha aquatica Belgarum* Lob. However, it is in fact the same illustration that was used in de l'Obel's *Icones Stirpium* (1591) for a plant under the same description (so this ties in with Johnson having given de L'Obel (Lob.) as authority). This is another pointer to *Mentha arvensis* being intended.

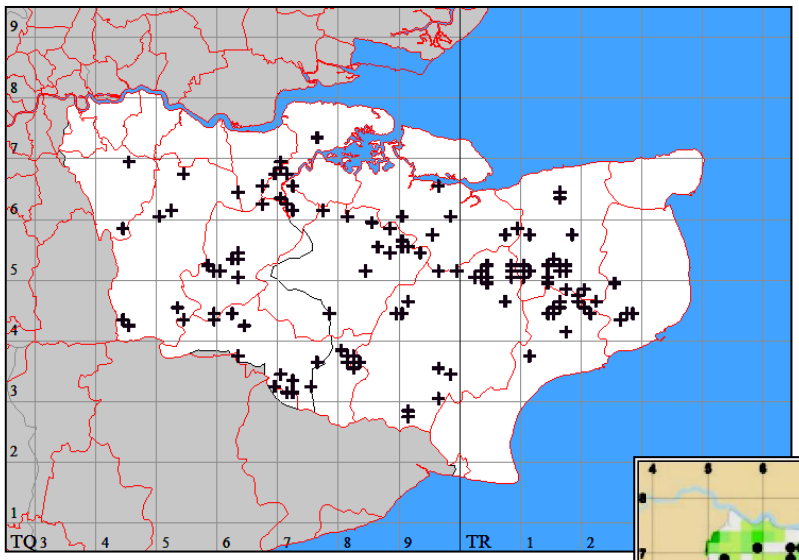


Brenchley. Photo by Sue Buckingham, 2012

Hanbury and Marshall (1899) regarded the species as being very common in fields, waysides, etc. and to be found across the county. They gave specific record details for a number of varieties, but because of the number of named varieties and the existence of intermediates between them, these are no longer regarded as having much taxonomic significance. Philp (1982) gives 286 tetrads in which the species was found during the period 1971-80; it was considered to be locally frequent in arable fields and woodland rides. There were distribution gaps in

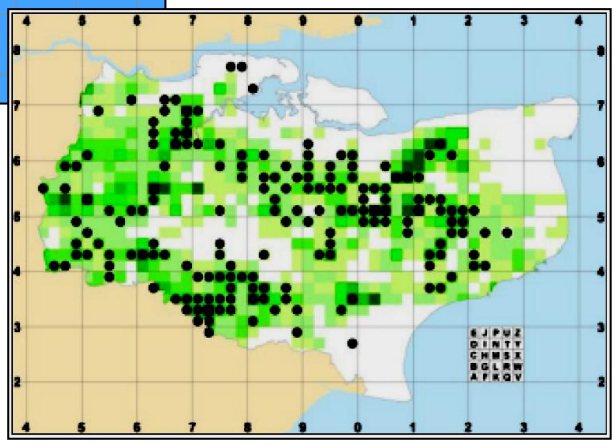
the Hoo peninsula, Sheppey, north east Kent (Thanet and environs), Romney Marsh and TQ74 and TQ84 in the low Weald. These gaps were still substantially present in Philp (2010) in which, however, only 170 tetrads were recorded for 1991-2005. It was then said to be a plant found in woodland rides and open wet areas within woods, 'Also as a weed of arable fields where it has become less frequent in recent years'. This last point was reinforced by the 1990-2005 distribution map (given here with kind permission of the later Eric Philp and the Kent Field Club) plotting records against the density of woodland cover (as shown in shades of green).

Records for 2000-17 show a similar pattern, but with only 116 tetrads, represented by 146 monads or 1km squares, which are the recording units adopted for this species in the register and are shown on the accompanying 2000-15 distribution map. The map also shows metropolitan vc16 (not covered by Philp 1982 or 2010), which is another area apparently lacking recent records. The apparent decline generally evidenced from 1971-80 to 1991-2005 may well be continuing.



***Mentha arvensis* (Corn Mint)**
2010-16

***Mentha arvensis* (Corn Mint)**
1991-2005



Mentha arvensis is a perennial, sometimes annual, plant still present in some arable habitats, such as afforded by Ranscombe Farm, but when in perennial mode, presumably requiring some herbicide-free marginal terrain. In a woodland context, it appears to favour dampish areas, seasonally flooded, with a reasonable amount of light, and its associates include *Juncus* spp. (rushes) and *Persicaria hydropiper* (Water-pepper). There it will overlap with *Mentha aquatica* (Water Mint), although the latter generally grows in more permanently wet conditions. They may be distinguished through Corn Mint possessing whorls of flowers up the stem, terminating with leaves or a very small whorl. Water Mint has a large, rounded terminal head of flowers.

The hybrid, *Mentha x verticillata*, is recorded occasionally in Kent: eight tetrad records in Philp (1982), nine in Philp (2010) and eleven for the period 2010-17. Recent records include plants growing close to either *Mentha arvensis* or *Mentha aquatica*, but with the other parent present in the vicinity; and also in the absence of both parents. The hybrid generally appears somewhat like very robust *Mentha arvensis*, with numerous whorls of flowers diminishing in size up the stem, generally without a terminal flower head; or if there is one, then it is very small. The hybrid usually has stamens not projecting from the flowers, and narrowly triangular calyx-teeth (cf. the shallow, blunt calyx-teeth of *Mentha arvensis*).

Mentha pulegium L. (Pennyroyal)

Draft account

vc 16; apparently gone from vc 15 except as a casual escape

Rarity / scarcity status

Pennyroyal is in the British Isles very local as a native plant, growing on damp trampled ground, especially heaths and common land. As an introduced grass-seed contaminant, it is much more widespread. It is treated as a UK Biodiversity Action Plan priority species and is assessed as **Endangered** in Great Britain, but in England it has seen drastic decline and its conservation risk status is **Critically Endangered**. These assessments relate to its native status. Its area of occupancy in England is taken to have declined by as much as 84% in comparing records for the periods 1930-69 and 1987-99. In Kent, the historic native sites all appear to have gone and there are only three current stations for the species, whose native or introduced status is considered below. In Kent, the species is **rare**.

Account

The first published record for Kent is by Edward Jacob in his *Plantae Favershamienses* (1777) where he describes 'Penny-royal, or Pudding-grass' as *'In a small Pond at* Elvyland *in* Ospringe – *uncommon*'. This presumably relates to the Elverland estate, south west of Painter's Forstal. There were a few early records for damp areas on the acid soils of north west Kent, especially Chislehurst Common. For example, it was. recorded by Joseph Woods junior as 'very plentiful' in Turner and Dillwyn's The Botanist's Guide through England and Wales, 1805; and it was given by W.H. Griffin as still surviving in 1906 'in shallow pond on Chislehurst Com. but prob. less pl. than formerly', (*Woolwich Surveys*, 1909). Hanbury and Marshall (1899) assessed the species as rare, growing on 'Damp ground and pondsides, especially on heaths'.

Subsequently, there seems to have been little by way of record until the 1950s. In August 1952, D.P. Young recorded it at West Wood, Flimwell. This (TQ 722 306) appears to be more or less the site as for *Lobelia urens* (Heath Lobelia), in the administrative county of East Sussex. In September 1954, Francis Rose and David McClintock found it in an old gravel pit in Bigbury Wood, TQ 114 575, then reckoned to be the first occurrence of *Mentha pulegium* as a native plant in Kent for about 50 years.



Dartford. Photo by Roger Wright, 28 September 2011

Then there have been four more recent sightings. The first of these is the record for north of Dartford, TQ57H, given in Philp (2010), following a visit in August 1999. This was pin-pointed more precisely by Margot Godfrey in September 2011 as at TQ 53756 75627, with plants growing at the base of a fence bordering on a footpath before it passes under the bridge by which the A206 is taken over the River Darent. They were associated with the banking which would have been constructed with the road c.1993. The likelihood is that Pennyroyal was introduced here as a grass seed contaminant when the road was originally laid out. In July 2015 it was still present, one patch c. 1 x 0.5m, with 20 spikes in bloom and many small ones coming through. The 1990s saw increased awareness generally of the presence of Pennyroyal in grass seed, and it was appearing in

sowings in other parts of Great Britain at the time of the A206 laying out[10]. The site, although raised from the Darent floodplain, does not seem to be subject to seasonal inundation and otherwise lacks characteristics of native sites.



Dartford. Photo by Chris Cook, 8 July 2015

The next site is Sevenoaks Wildlife Reserve where in September 2008 Geoff Joyce found *Mentha pulegium* on the sandy margin of the east lake, at TQ 5244 5699. This is a former gravel pit, opened as a wildfowl reserve in 1956. It was still present at the lake in October 2012, being scattered on the shore at TQ 5205 5683 with one plant at the eastern lake margin at TQ 52010 56846; it was also the dominant plant on man-made islands at TQ 5192 5684, accessed by dinghy. It is not known that there is any particular association with sown grassland at the reserve. There are no obviously sown grass banks bounding the lakes from which Pennyroyal might have originated and thence spread along margins and islands. The most likely origin of the plant here is by having been brought here by birds. Whilst this would amount to spread without human intervention, the likelihood also is that birds would have brought it from a location to which it also been introduced by human intervention, such as Ardingly reservoir in East Sussex or (possibly) Bewl Bridge reservoir – in which case it could still not be regarded as native.

The third site is Bewl Bridge reservoir, a waterbody which extends into both vc16 (West Kent) and vc14 (East Sussex), and where Pennyroyal was found to be abundant on the upper shoreline by Geoffrey Kitchener and Lliam Rooney in August 2011 (TQ6932; it was also found with similar status in TQ6931 in September 2011). It was not possible to determine whether there was any particular association with what might have been sown grassland when the reservoir was constructed in 1973-75; or whether the likelihood was introduction via birds. There is an interesting parallel here with Ardingly reservoir, 33km westwards, constructed in 1978 and where *Mentha pulegium* was found near the water's edge in September 1979 and thought to have been introduced with grass seed apparently originating from North America, a seed mix which was sold as particularly suitable for areas with fluctuating water levels[11]. This may have been the source of avian introduction of Pennyroyal to Bewl Bridge; or else both sites, being near contemporaneous in creation, may have had similar sources of grass seed.

There is a degree of analogy between the reservoir/lake habitats and what are regarded elsewhere as native sites, in that they are open, close to water, there is a degree of fluctuation of water levels and the plant grows at the normal upper point of fluctuation where the ground is bare lower down and disturbed at the margin.

The fourth site was for a casual record noted by Lliam Rooney in August 2017, when two plants were found growing from the kerbside of Arthur Salmon Close, Faversham at TR 0072 6112. These may have originated from cultivation.

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[10] Kay, G.M. (1996). *Mentha pulegium* in grass seed. *BSBI News* **72**: 46.
Leach, S. (1996). Contaminants in grass seed. *BSBI News* **73**: 23-25.

[11] Briggs, M. (1997). Non-native *Mentha pulegium* (Pennyroyal). *BSBI News* **74**: 50.

Introduced plants are often considered to be more erect (var. *erecta*) than the prostrate native (var. *decumbens*) and DNA sequencing has indicated that there is a genetic distinction (and that a hybrid population is also identifiable)[12]. Whilst the erect form has been associated with grass seed introductions, it may be simplistic to regard it as always non-native. Both forms were illustrated in English Botany[13] (var. *erecta* with stouter stems, not rooting at the nodes, with whorls more numerous and closer together, calyx-teeth longer and more acute) and var. *erecta* was said to have been collected in Ireland. Whilst it has always been the more usual form in cultivation, this does not preclude it from having had a wild origin; and Alex Lockton[14] points out that Pennyroyal coming from North America, where it is not native, might well have been introduced there by early settlers and so would be returning to us.

Mentha pulegium is distinguishable from *Mentha aquatica* (Water Mint) through having a whorled inflorescence without a terminal head of flowers. In this it resembles *Mentha arvensis* (Corn Mint) and *Mentha* x *verticillata* (*M. aquatica x arvensis*); but it differs from those in having calyces with hairs in the throat and calyx-teeth of which the lower two are narrower and slightly longer than the upper three.

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12 Stroh, P.A. (2014). *Mentha pulegium* L., Pennyroyal. Species Account. Botanical Society of Britain and Ireland.

13 (ed.) Syme, J.T.B. (1867). *English Botany*, vol 7, London.

14 Lockton, A. (2002). A Pennyroyal Question. *BSBI News* **89**: 8-9.

Minuartia hybrida (Vill.) Schischk. (Fine-leaved sandwort)

Draft account

vc 16; apparently gone from vc 15

Rarity / scarcity status

Fine-leaved Sandwort is a fairly local plant, scattered in England and Wales, largely from Hampshire through to West Norfolk. It is considered to be **Endangered**, both in England and in Great Britain as a whole. In England, the extent of its occurrence, or geographical spread, was taken to have declined by 65% in comparing records for 1930-69 and 1987-99. Also – although this did not form part of the justification for its risk assessment – it was calculated that the likelihood of finding the species had declined during this period, by 48%. In Kent, it has always been **rare** and it is currently found in only one area.



Eynsford Baptist Church. Photo by Lliam Rooney, 13 May 2012

Account

The first printed reference to the occurrence of *Minuartia hybrida* (as *Alsine tenuifolia*) in Kent is in the third edition of John Ray's *Synopsis Methodica Stirpium Britannicarum* (1724, edited by Dillenius), as 'In a Close on the left Hand going down a Hill a Mile from *Deptford* [sic] towards Southfleet; Mr. *Newton*'. Deptford is evidently in error for Dartford, and the hill may have been Fleet Downs. James Newton knew John Ray, but his information was presumably not available for Ray to have included in earlier editions. Hanbury and Marshall (1899) refer to manuscript notes by Newton c.1680 in a copy of Parkinson's *Theatrum Botanicum,* giving a version of this record and referring to Darford [sic]. Puzzlingly, the historical summary in Hanbury and Marshall (1899), which was written by the remarkably erudite B. Daydon Jackson, does not refer to the annotated Parkinson as a source, but rather to an annotated copy of the second edition of Ray's *Synopsis* (1696), in Jackson's possession.

The sandwort was still in the Southfleet area, as a specimen collected by Pocock in 1825 is held at **CGE**. But on the whole, the records for Kent, both historic and recent, are few, scattered and do not seem to represent stations of long persistence. This sort of pattern seems more applicable to a series of introductions than to continued native presence, although Hanbury and Marshall (1899) considered it to be a rare native of dry sandy or chalky ground. They gave records from near Hayes; rocks at Ephraim Mount, Tunbridge Wells; from Cranbrook; and the Isle of Thanet. It is not known whether there is any continuity between the last of these (collected by Alexander Irvine, who died in 1873; but also reported by Canon Aubrey Moore, who died in 1890) and a 1963 find by Miss B. Nash near Acol, Thanet. Her discovery was on a high north-facing wall at Cleve Court, TR3166, where it survived long enough to be recorded for Philp (1982).

The status of *Minuartia hybrida* as a current Kent species rests on populations found at Eynsford by Rodney Burton. In 1994, he discovered a substantial population on the mediaeval flint walls of Eynsford Castle. Factors which may have favoured its appearance and a great increase in *Saxifraga tridactylites* (Rue-leaved Saxifrage) were disturbance caused by maintenance work and also the cessation of herbicide spraying. In May 2012 there were some 130 plants, of which at least 110, mostly tiny, were on the north west side of the hall ruin, from TQ 54164 65839 to TQ 54164 65837. Other locations included 2.5m above the bottom step up from

the solar undercroft (TQ 54165 65871) and three metres above ground in an opening of the curtain wall at TQ 54150c65797. There were no plants on the north west side of the curtain wall. In April 2013, there were about 320 plants, spread over many parts of the castle; it was still present in 2016. In April 2007, Rodney Burton found a further site, 90m to the south east, on the flint and brick boundary wall south west of Eynsford Baptist Church. The sandwort appeared to have arrived within the preceding three years, and was already densely massed along about four metres of the wall. On 9 May 2012, he recorded c.400 plants on the top and the south west wall face along five metres centred on TQ 54235 65737; and on 25 May, a further c. 650 plants along the north east side from TQ 54233 65741 to TQ 54241 65735. Populations fluctuate from year to year: in July 2013 only 90 plants were seen on the wall, and no *Saxifraga tridactylites*; but in July 2016 it extended along the front wall.



Eynsford Castle. Photo by Lliam Rooney, 13 May 2012

The natural habitat of *Minuartia hybrida* is supposed to be dry, weathered calcareous rocky slopes[15], but the data on previous Kent sites are insufficient to identify habitat corresponding to this, and the historic record for rocks at Mount Ephraim suggests wider tolerance, as the Ardingly sandstone outcrops are acid in nature. The mortar of walls provides an artificial proxy for its natural habitat. This habitat preference is shared with species such as *Galium parisiense* (Wall Bedstraw) and *Saxifraga tridactylites*, although only the latter appears to have a degree of association. *Minuartia hybrida* is an annual, and population fluctuations presumably indicate unfavourable conditions for germination or growth. The longer term risks for the species are likely to be any need to repair or re-point its walling, or any wish to do away with wall vegetation generally.



It is unlikely to be confused with anything other than the much more common *Arenaria serpyllifolia* (Thyme-leaved Sandwort) or *Arenaria leptoclados* (Slender Sandwort). The latter two, however, have ovate (rather than linear) leaves; and *Minuartia hybrida* is more upright in habit.

Eynsford Baptist Church. Photo by Lliam Rooney, 13 May 2012

[15] J.O. Mountford (1994). *Minuartia hybrida* (Villars) Schischkin. In (eds.) Stewart, A., Pearman, D.A. & Preston, C.D., *Scarce plants in Britain*, JNCC.

Misopates orontium (L.) Raf. (Weasel's-snout)

Draft account

vc 15 and 16

Rarity / scarcity status

Misopates orontium is an archaeophyte, or ancient introduction, which grows as a weed of cultivated ground in the British Isles, primarily in southern England and Wales. It has declined considerably, which has led to it being considered **Vulnerable** to the risk of extinction both in England and in Great Britain as a whole. Its area of occupancy in England is taken to have declined by 35% in comparing records for the periods 1930-69 and 1987-99. In Kent, the number of tetrad records has diminished by 71% in comparing the surveys of 1971-80 and 1990-2005 (Philp, 1982 and 2010), and it is currently **rare**.



Upper Halling. Photo by Sheila Anderson, 4 August 2016.

Account

The first published notice of Weasel's-snout in Kent was by Thomas Johnson in his *Iter Plantarum* (1629), travelling by the main road from Gravesend to Rochester. He was also to record it in his *Descriptio Itineris* (1632), when making the journey in the reverse direction, from Canterbury to Gravesend via Sittingbourne and Rochester. Hanbury and Marshall (1899) regarded it as uncommon, though widely distributed in the county, in fields and garden ground. Where their cited records include habitat detail, it is generally said to have been growing in cornfields (Snodland, Luddenham, Maidstone), although also mentioned growing at cliffs between Sandgate and Folkestone, and on the walls of the old church at Margate. The *Woolwich Surveys* (1909) refer to it in cultivated fields at Hayes and West Wickham in 1897; seen once or twice in potato crops below Fox Hill, Keston in 1900; and as a garden weed near Hayes village in 1901. By the 1950s it was still being seen, and there is a sequence of records following the sands of the Folkestone Beds from near Harrietsham (weedy field, seen 1958 by Francis Rose with J.F. and P.C. Hall), through to Lenham Forstal (weedy cabbage field, seen 1958 by Francis Rose), to Hothfield (sand arable, seen 1954 by Francis Rose), to below Westwell (arable field on sand, seen 1958 by Eric Philp) and to Potters Corner (sandy verge of the A20, seen 1954 by Francis Rose).

The 1971-80 survey (Philp, 1982) picked up eight tetrad records, only three of which look as though they relate to the Folkestone Beds, and the rest are widely scattered. *Misopates orontium* was then considered rather rare, on cultivated or disturbed soil. During the 1991-2005 survey, however, it was only recorded from freshly disturbed roadside soil near Vintner's estate, Maidstone (2005) and on disturbed soil from the construction of the High Speed 1 rail route at Tutt Hill, Hothfield (the latter providing perhaps a degree of continuity from the 1950s records). The position since then has been broadly similar, in that very little has been seen of the species, and its occurrences are disparate. An odd casual plant has been seen in a small front garden at Upper Sydenham in 2011, without any indication of origin. However, a record for Shalmsford Street, south west of Canterbury, in July 2013 appears to represent a continuation of the species' classic arable status. Here some 40 to 50 plants were growing at an untreated corner of an arable field with scattered plants along the field margin. In contrast to the usual sandy substrate, this population was on a light soil over chalk and was

accompanied by other arable weed species such as *Anagallis arvensis* (Scarlet Pimpernel), *Euphorbia helioscopia* (Sun Spurge), *Fumaria officinalis* (Common Fumitory) and *Viola arvensis* (Field Pansy). It has continued here through into 2017. A further quasi-arable site was discovered by Sheila Anderson in August 2016, in a field near Upper Halling which is often ploughed out of season and left to seed for pheasants.

Misopates orontium is a spring-germinating annual and the trend towards autumn sowing of crops, together with agricultural intensification, has been considered contributory towards its decline. Where introduced into a garden at Halstead (TQ4861, not given in table below) in the late 1990s it has been found (up to 2017, and despite weeding out in the interim) to continue germinating well into summer, developing fruit into autumn, and (unless controlled) able to dominate open ground. What initially appears to be quite an attractive small pink snapdragon, in the later stages of development becomes more coarse and wiry, interlacing over large areas.



Halstead. Photo by Lliam Rooney, 18 June 2011

The name Weasel's-snout (from the appearance of the green hairy fruits) is relatively modern in its application to *Misopates orontium* and is not particularly Kentish. Indeed, in Kent it has been applied to *Linaria vulgaris*[16], although the more general English application in the 19th century was to *Lamiastrum galeobdolon* (Yellow Archangel)[17]. *Misopates orontium* is not readily confused with other species in Britain except, perhaps, for *Misopates calycinum* (Pale Weasel's-snout), which has a paler flower, is a bird-seed alien and has not been recorded in Kent.

Site	Grid reference	Site status	Last record date	Recorder	Comments
Upper Sydenham (metropolitan vc16)	TQ3472		17 September 2011	MC	Fransfield Grove, one plant, appearing casual in one of the few small front gardens which held soil rather than hardstanding.
South Norwood Country Park	TQ3568		1997	JBed	With other cornfield species, apparently introduced for habitat creation.
Bexley (metropolitan vc16)	TQ47W		2 July 2001	DN	Parkhill Road, in garden, but later weeded out.
west Sevenoaks	TQ55C		After 1970, before 1981	Philp (1982)	
Great Buckland / Upper Halling	TQ6764		4 August 2016	SA	Near North Downs Way through field between Ten Acres wood (south) and Horseholders Wood (north), often ploughed out of

[16] Parish, W.D. & Shaw, W.F. (1887). *A Dictionary of the Kentish Dialect and Provincialisms in use in the County of Kent*. London (English Dialect Society).

[17] 'Yellow weasel-snout' in Pratt, A. (1873). *The flowering plants, grasses, sedges, and ferns of Great Britain,* vol. 4. London. 'Weasel-snout' in Cowell, M.H. (1839). *A Floral Guide for East Kent, etc.* Faversham.

					season and left to seed for pheasants.
Northfleet	TQ67G		After 1970, before 1981	Philp (1982)	
Barming	TQ7356		9 September 2016	BW	Ground disturbed by works.
Aylesford	TQ75J		After 1970, before 1981	Philp (1982)	
Maidstone	TQ75T		27 July 2005	EGP & BW (Philp, 2010)	Freshly disturbed roadside soil near Vintner's estate
Bearsted	TQ85C		After 1970, before 1981	Philp (1982)	
Hollingbourne	TQ85H		After 1970, before 1981	Philp (1982)	
south east of Shadoxhurst	TQ93X		After 1970, before 1981	Philp (1982)	
Tutt Hill	TQ94T		1999	EGP (Philp, 2010)	On disturbed soil from the construction of the High Speed 1 rail route.
Dunn Street, Westwell	TQ94Z		After 1970, before 1981	Philp (1982)	
Shalmsford Street	TR1053	Private farmland subject to High Level Stewardship scheme	(1) 17 July 2017 (2) 2 July 2016 (3) 29 July 2013	(1) DCh (2) SC & ML (3) SB	(1) TR 10757 53276. (2) TR 1029 5365, c.100 plants in rape field corner. Also TR 106535, scattering of c. 100 plants along field margin and maybe 40 plants in arable reversion. (3) 40-50 plants mostly at TR 07 534, at untreated corner of arable field alongside public footpath across private farmland; plus scattered plants along field margin. Light soil over chalk; associated species *Anagallis arvensis, Euphorbia helioscopia, Viola arvensis* and *Fumaria officinalis*.
north east Canterbury	TR15U		After 1970, before 1981	Philp (1982)	
Fordwich	TR1859		7 October 2009	CO	4 plants at TR 185 597 in newly disturbed soil amongst new planting of trees for nursery production. Up to 40cm high, 8-11 flowers each. Not seen there by recorder before or since.

Moenchia erecta (L.) P.Gaertn., B. Mey. & Scherb. (Upright Chickweed)

Draft account.

vc 15 and 16

Rarity / scarcity status

Moenchia erecta is a plant of semi-bare or short-turfed sandy or gravelly places, local in England and Wales. Its conservation threat status in Great Britain as a whole is regarded as of 'Least Concern', but in England it is **Vulnerable** to the risk of extinction. Its area of occupancy in England is taken to have declined by 47% in comparing records for the periods 1930-69 and 1987-99. In Kent, there has been a decline of 25% in the number of tetrad records, comparing the surveys of 1971-80 and 1991-2005. Whilst far from common, it does not qualify as rare or scarce within the county.



Dartford Heath. Photo by David Steere, 6 May 2016

Account

In Kent, the first published record for Upright Chickweed is that given in John Ray's *Synopsis Methodica Stirpium Britannicarum* (1724, edited by Dillenius), where the least Stich-wort is said to be 'Common in the Spring on *Black-heath*'. The other north west Kent heaths and commons also provided early records, with nineteenth century sightings on the sands and gravels of Chislehurst Common, Hayes Common, Paul's Cray Common and Dartford Heath. Hanbury and Marshall (1899) treated it as a local plant of dry banks and sandy heaths. They received a pre-1892 report of its presence at Tunbridge Wells Common but apart from this and the north west Kent records, the distribution which they identified was essentially coastal. This included records for the sandhills between Deal and Sandwich; and a scattering along the south east coast - sandy ground at Sandgate, between Dymchurch and Hythe, and an abundance of plants on the sandhills at New Romney. Curiously, *Moenchia erecta* at Dungeness is not mentioned, but it will surely have been present. Also not mentioned is a distribution located by Francis Rose along the sands of the Folkestone Beds from Ryarsh (The Roughetts, short turf on sand, 1945-55); to Ashford Warren (1960); thence to Hothfield (short dry turf on sand, 1952); and as far as Mersham le Hatch (dry turf on sandy soil, 1960).



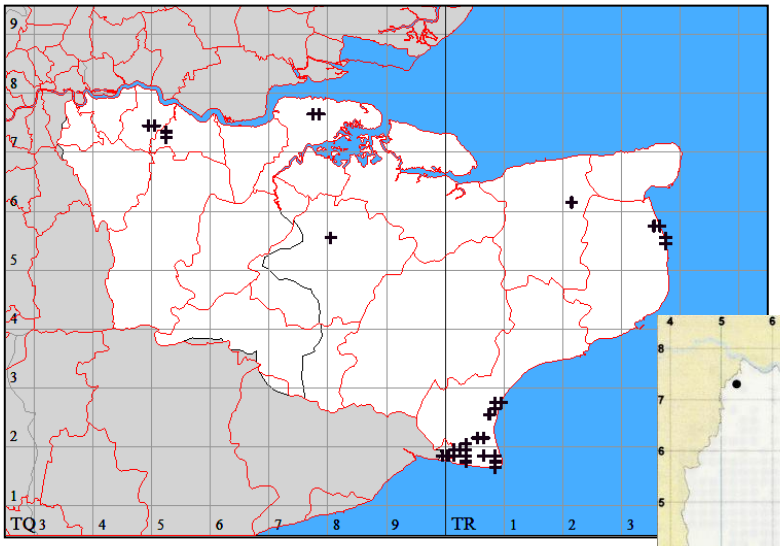
Dartford Heath. Photo by David Steere, 6 May 2016

It seems likely that the broad county distribution found in 1971-80 (Philp, 1982) did not show the species as being much scarcer than in previous times (although it excluded metropolitan vc16, where much of the commons had become tree covered, albeit that there was still a presence at Keston Common war memorial area, where known at least since 1946). It was present in 25 tetrads and considered to be rather local on dry banks, sandy heaths and sand dunes, although particularly frequent over the shingle areas near Dungeness.

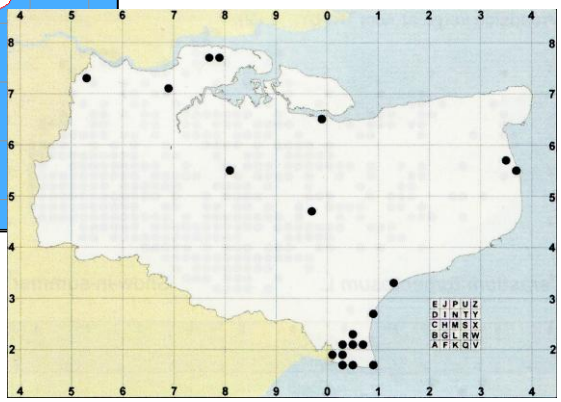


Habitat, Dartford Heath. Photo by David Steere, 6 May 2016

Whilst the distribution given in Philp (2010) had reduced to 20 tetrads, the overall pattern remained fairly similar, although with a reduced number of sightings in the Dungeness and Dartford Heath areas. It is possible that some of these changes do not reflect loss, but rather the ease with which such an inconspicuous plant may be overlooked. Records for the purposes of this register will be maintained at monad (1 km square) level, a finer resolution than the tetrads used in Philp (2010), from which the accompanying 1991-2005 distribution map is taken (with kind permission of the late Eric Philp and the Kent Field Club) and shown here in comparison with 2010-17 data. The 2010-17 map exceeds the earlier total, with 22 tetrads (equivalent to 30 monad records) and these are generally in fairly similar locations, although metropolitan West Kent is covered, which Eric Philp's surveys omitted. What might appear to be a geologically unexpected site on the 2010-17 map at Stodmarsh (TR2161) actually relates to the plant's presence (along 40m of track) on deposited former colliery spoil.



***Moenchia erecta* (Upright Chickweed) 2010-17**



***Moenchia erecta* (Upright Chickweed) 1991-2005**

Moenchia erecta is an annual, relying on a degree of open ground for continued establishment, and usually germinating in spring. The openness of the terrain may be maintained by shallow soils and summer drought affecting vegetation on sharp-draining sand, gravel or consolidated shingle; the plant flowers early, beginning in April, setting seed and dying by mid-summer. It is a short species, growing from 3-12cm and generally in the lower part of that range; it would appear to dislike competition, and the turf within which it grows is always short, whether through the hostility of the substrate,

through exposure to coastal winds, through grazing or (as at Keston war memorial and at Rugby Portobello trust lands at St Mary's Bay) mowing. Its national distribution has diminished through the reduction of grazing on lowland heaths and commons[18]; this may not have affected Kent so much, in view of its limited heathland habitat.

As the flowers are usually closed except in bright sunlight, the plant is often inconspicuous growing in turf of its own height. The waxy grey flower buds may with practice be picked out, including when growing with *Cerastium* and *Sagina* spp, for example on the consolidated shingle of Dungeness.

[18] Chatters, C. (1994). *Moenchia erecta* (L.) Gaertner, Meyer and Scherb., in (eds.) Stewart A., Pearman, D.A. & Preston, C.D. Scarce Plants in Britain, JNCC.

Myosotis secunda Al. Murray (Creeping Forget-me-not)

Draft account.

vc 15 and 16

Rarity / scarcity status

Myosotis secunda is a plant of wet or boggy places, common in much of the British Isles but rare or absent in central and eastern England. Its conservation status in Great Britain as a whole and in England is of 'Least Concern', but it is **scarce i**n Kent.



Hothfield. Photos by Lliam Rooney, 19 May 2011

Account

The first published record for Kent is noted in W.J. Hooker's *Supplement to the English Botany*, vol. 2, 1834[19], which used the name *Myosotis repens,* of which the author was George Don. His younger brother, David Don, is credited in the *Supplement* as finding the species in Kent, and presumably this resulted in the 1831 specimen from Keston Common which found its way to **BM**. Victorian botanists were not always sure about separating this species from *Myosotis palustris* (now *M. scorpioides*, Water Forget-me-not), so the assessment by Hanbury and Marshall (1899) was that it was 'likely to prove not uncommon... though local' in wet places, especially on heaths and in wealden copses. They credit a record by the Rev. H.A. Stowell published in 1857 under the heading *Plantae rariores Favevershamienses*[20] for marshes-dykes near Graveney and about Uplees, which sounds very much like *Myosotis laxa* (Tufted Forget-me-not) instead, but otherwise the records are for the most part Wealden.



Similarly, Francis Rose's searches in the 1940s and 1950s produced records at East Peckham (pond east of Hale Street, 1956); Chittenden Wood (small bog valley, 1944); west of Moorden, Penshurst (marshy valley, 1944, 1949); west of Ellis Wood, Lamberhurst (boggy field, 1946; this has since been dammed and is a lake); Bedgebury upper lake (1946); and Angley Wood (fen by Tuckers Pond, 1955). He also found it in sites more related to the Folkestone Sands than to the Weald – in the valley bogs at Hothfield and Gibbin's Brook, in both of which locations it still continues. In the 1971-80 survey (Philp, 1982), it was regarded as rather local and uncommon in Kent in wet peaty places, with nine tetrad records. By the 1991-2005 survey (Philp, 2010), however, tetrad records had dropped to five, and only three of these were the same as those in the earlier survey. Records for 2010-17 comprise five tetrad records, which would

[19] Not 1837 as given in Hanbury and Marshall (1899).

[20] *The Phytologist* (1857-8) Vol. 2 N.S, p.153.

suggest no further loss, but these are not all for the same sites as before.

Myosotis secunda can be annual or more long lived. It prefers wet acid peaty soils, through which its stolons will spread. Francis Rose described its associates at Hothfield as including *Anagallis tenella* (Bog Pimpernel) and *Galium palustre* (Marsh-bedstraw)[21]; and in Bull Wood, Sissinghurst it was seen in 2015 growing in the same boggy glade as *Wahlenbergia hederacea* (Ivy-leaved Bellflower). It may be distinguished from other Kent Forget-me-nots found in damp habitats by the combination of appressed calyx hairs; style shorter than the calyx tube at flowering; calyx with narrow teeth having a base shorter than the sides; and lower part of the stem with projecting hairs.



Site	Grid reference	Site status	Last record date	Recorder	Comments
South west of Cowden	TQ43P		After 1970, before 1981	Philp (1982)	Presumably the Kent Brook valley; very little of this tetrad is in vc16.
West of Cowden	TQ44K		After 1970, before 1981	Philp (1982)	
Near Bough Beech reservoir	TQ44Z		(1) 1991-99 (2 After 1970, before 1981	(1) EGP (Philp, 2010) (2) Philp (1982)	
Brasted	TQ45S		After 1970, before 1981	Philp (1982)	
Chiddingstone Hoath	TQ5141		(1) 28 June 2006 (2) 1989	(1) & (2) JP	(1) & (2) Tubbs Hole Pastures, TQ 517 415.
North east of Penshurst	TQ54C		After 1970, before 1981	Philp (1982)	Probably west of Moorden, where recorded by FR in 1944, 1949.
Southborough	TQ54W		After 1970, before 1981	Philp (1982)	
Near Bayham	TQ63I		After 1970, before 1981	Philp (1982)	
Chingley Wood, Bewl Water	TQ63W		4 June 2001	EGP	
Sissinghurst	TQ7937		26 May 2015	GK	TQ 7974 3797, patch in boggy glade of Bull Wood.
Sissinghurst	TQ83E		(1) 15 August 2012 (2) 1991-99	(1) KBRG meeting, det.SB (2) EGP Philp (2010)	(1) Patch at TQ 80095 38684 in mud 2 x 1 metres along small stream under sweet chestnut coppice in private woodland. (2) Roundshill Park Wood
South east of Sandway	TQ8950		12 October 2011	BW	

[21] Rose, F. (1949). A Bryophyte Flora of Kent 1, *Transactions of the British Bryological Society* **1(3)**: 202-210.

Hothfield	TQ94S and TQ94T	KWT managed reserve and SSSI	(1) 19 May 2011 (2) 25 May 2010 (3) 1991-99 (4) After 1970, before 1981	(1) LR (2) GK (3) EGP (Philp, 2010) (4) Philp (1982)	(1) TQ9646 (2) TQ9646,in northern bog (3) & (4) TQ94S and TQ94T.
Gibbin's Brook	TR1138	SSSI	30 June 2013	KBRG meeting	In bog south of road crossing Gibbin's Brook, small patch at TR 11594 38586, and a larger one c. TR 1158 3851. Known at this site by FR, 1954.

Myrica gale L. (Bog-myrtle)

Draft account.

vc 15, of questionable status; probably gone from vc 16

Rarity / scarcity status

Bog-myrtle is widespread in bogs and wet moorland or heathland across the British Isles, often abundant in the north west. This led to its conservation risk assessment as being of 'Least Concern' in Great Britain as a whole; but it is largely absent from central and south east England; and a decline in the area of its occupancy in England generally of 23%, comparing records for the periods 1930-69 and 1987-99, means that it is now considered to be **Near Threatened** in England. It was thought to be lost in Kent, where there is little suitable habitat anyway; but it is currently growing in one site and is very **rare.**



Hothfield. Photo by Lliam Rooney, 20 April 2011

Account

The species may well have featured in Kent under different climatic conditions. Possible (but unconfirmed) seeds were found amongst material from species of woodland and wetland – but apparently not bogland, which casts doubt on identification –deriving from borehole sampling (7080-6770 BC) from the Isle of Grain in 2006.[22] Bog-myrtle pollen has been found in peat deposits at Lydd between two and three thousand years ago, but this might be interpreted as originating from strong populations in the Walland Marsh area in Sussex.[23] However, peat formation in parts of Romney Marsh about four thousand years ago was associated with an acid flora including *Myrica gale*, at Brookland and Snargate[24], although there is no habitat continuity to the present.

The first published notice of this species in the county was by John Parkinson in his *Theatrum Botanicum* (1640), who said that it 'groweth in many places of our owne Land... as in... Kent'. It was subsequently seen at Tunbridge Wells, a record given by the Rev. Thomas Martin in his *Plantae Cantabrigienses* (1763), although this might have been in Sussex, just as might have been Forster's record near a stream in the horseway from the Frant Road to Bayham Abbey, in great abundance (*Flora Tonbrigensis*, 1816) – the stream may have been the (vice) county boundary[25]. However, Hanbury and Marshall credit it to south west Kent, having received a report of sighting by G.B. Wollaston (1814-1899). In east Kent, Edward Jacob (*Plantae Favershamienses*, 1777) recorded it as '*On* Willsborough Lees, *near* Ashford – *plentifull*y'. It was not noted there by G.E. Smith, who knew the area in the 1820s and 1830s, but he was selective in what he recorded.

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[22] Wessex Archaeology (2008). *BritNed Interconnector Isle of Grain Archaeological stage 3 sample assessment*. (accessed via Archaeology Data Service).

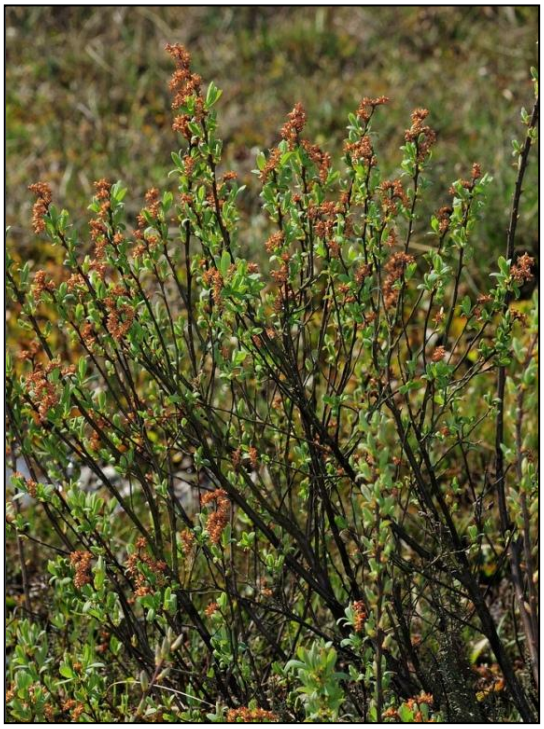
[23] Kirby, J., Clarke, D., Shaw, T. & Toole, E. (2010). The mid-late Holocene Evolution of Southern Walland Marsh and the origin of the 'Midley Sand'. In (eds.) Waller, M., Edwards, E. & Barber, L. *Romney Marsh: Persistence and Change in a Coastal Lowland.*

[24] Long, A., Waller, M., Hughes, P. & Spencer, C. (1998). The Holocene depositional history of Romney Marsh proper. In (eds.) Eddison,J., Gardiner, M. & Long, A. *Romney Marsh: Environmental Change and Human Occupation in a Coastal Lowland*.

[25] A.H. Wolley-Dod (Flora of Sussex, 1937) , in giving this record for Sussex, speculated that it might be the same as a record on each side of the stream above Benhale [Benhall] Millpond, but this looks well distant.

Hanbury and Marshall (1899) gave no other records, and regarded it as a very rare species of boggy heaths. It is surprising – as Rodney Burton points out in his *Flora of the London Area* (1983) that none of the older botanists commented on *Myrica gale* at Keston Bog. The earliest evidence for its presence there is 1920, the date of a specimen in **SLBI** collected by Marjorie Bostock, and apparently it did not last beyond 1957, probably due to tree growth overshading the bog and reducing water availability as well as increasing nutrients from dead leaves.

There is a further West Kent (vc16) station, attested by a 1960 specimen in **MNE** gathered by Francis Rose. This is marked as from a wood west of Flimwell and south of the A21, in a boggy heathy area on Tunbridge Wells Sand 'now in E. Sussex'. The boundaries in this area have long given rise to complications, given that the vice county boundary is not in accord with the administrative county boundary, but this location (given as TQ 711 315 in a record by W.J. Davies in December 1957) would appear to be mature woodland through which the administrative county border runs but which is within vice county 16 (West Kent). It can no longer be found here.



Hothfield. Photos by Lliam Rooney, 20 April 2011

The only current known Kent location is at Hothfield Common, where it was first recorded by a survey team on the KWT reserve in 2010. When revisited the next year, there was a sizeable patch, c.1.5 x 2m, with many dozens of stems derived from the species' suckering habit, located in the main bog, about $^{1}/_{3}$ of the way between the board walk at the top of the bog, and about 4-5m from the northern edge of the bog, TQ 9689 4569. Only male catkins were present so, as the species is normally (but not invariably) dioecious, this is probably a single clone. It remains present (2016).

Whilst the habitat at Hothfield is entirely appropriate for this species, what is surprising is that it has escaped attention in such a well-botanised location until now. For much of the year it is not a particularly prominent plant, but in spring the red-brown buds and flowers are noticeable; and if it had been native here, one would have expected historic records. It is difficult to conceive how seed might have arrived in recent times, as it is normally spread by water from plants already present; but in any event, seedlings are supposed to be rare in the field.[26] The likelihood is that it has been planted, just as *Sarracenia purpurea* (Pitcherplant) was there in 1996, and *Pinguicula vulgaris* (Common Butterwort) in the 1940s.

Bog-myrtle is not readily confusable with other species, although from a distance, it may appear to be a young *Salix* bush.

[26] Skene, K.R., Sprent, J.I., Raven, J.A. & Herdman, L. (2000). *Myrica gale* L., Biological Flora of the British Isles. Jounnal of Ecology 88: 1079-1094.

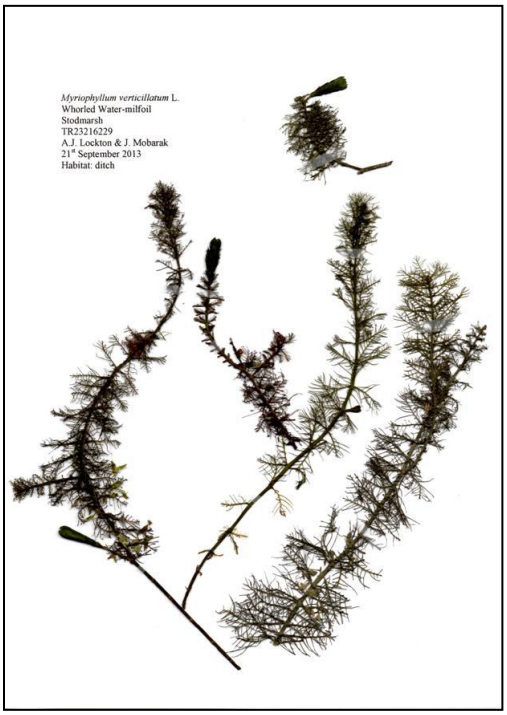
Myriophyllum verticillatum L. (Whorled Water-milfoil)

Draft account.

vc 15 and 16

Rarity / scarcity status

Myriophyllum verticillatum is an aquatic species scattered in England (mostly east), Wales and Ireland. Its conservation threat status in Great Britain as a whole is regarded as **Endangered**, but in England (where most populations lie) it is **Vulnerable** to the risk of extinction. Its area of occupancy in England is taken to have declined by 29% in comparing records for the periods 1930-69 and 1987-99. In Kent, there has been a decline of 67% in the number of tetrad records, comparing the surveys of 1971-80 and 1991-2005, but this may overstate the position. Its county status would be rare, if based on the records in Philp (2010), but enough is now known to treat it as **scarce**.



Stodmarsh, herbarium specimen, 2013, Alex Lockton & J. Mobarak

Account

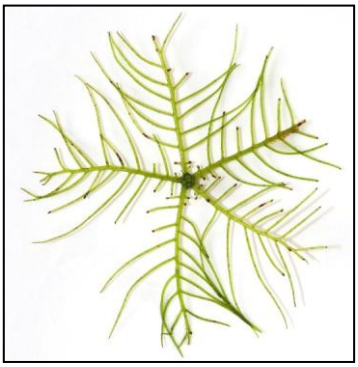
The first publication of this species for Kent was in Edward Jacob's *Plantae Favershamienses* (1777), when he described it as '*In the ditches of* Graveney Marsh – *not uncommon*'. It may well have persisted in this area: Philp (1982) included a record for TR06B, which could have been either side of Faversham Creek. Hanbury and Marshall (1899) considered it to be local in ponds and ditches, with records ranging along the north of the county from Greenwich to Thanet, and in the Deal/Sandwich area; also a couple in the Weald, and a comment (1805) that it was plentiful in Romney Marsh. Francis Rose considered it to be 'very rare now' (MS Flora of Kent), but had seen it still in the Faversham area (in freshwater in a flooded gravel pit east of Oare Church, 1959) and in several places in the East Kent fens: Ham Fen (1991); fen dykes at Wickham Fen (1946) and east of Little Britton Farm (1947), and north east of Wickhambreaux. In the Weald, he knew it at Leigh Bridge near Headcorn in a pond on Weald clay (1949); in a similar pond 2 miles east of Frittenden (1954); in flowing water, River Sherway, Sherway Bridge north of Smarden (1982, 1984); and in an alluvial marsh dyke on the Sandhurst levels (1954).

Philp (1982) regarded the species as very scarce and decreasing, with nine tetrad records during 1971-80[27]. These had reduced to three in the 1991-2005 survey (Philp, 2010): Dartford Marshes (two tetrads) and Worth Marshes. However, it is worth noting that in 1982 and 2003 the Hacklinge Ditches Surveys (the latter commissioned by English Nature / Environment Agency) recorded *M. verticillatum* in numerous ditches in the Worth Minnis / Hacklinge / Lydden Valley area, with findings in eleven monads, so the single tetrad record there in Philp (2010) may not be fully representative. However, whilst we have subsequent records for some of these monads, it would require another intensive survey over a large area to demonstrate that this sort of frequency continues.

[27] These were for TQ74E, TQ57N, TQ93Q, TR06B, TR26F TR26U, TR26Z, TR35R, and TR35M (not given in the following data table).

Recording for 2010-17 has redressed some concerns regarding decline, in that the species is now known from eight tetrads (deriving from the same number of monads). Presence at Dartford continues, in ditches not far from the R. Darent (continuity for which goes at least back to a specimen gathered by H. Lamb in 1898, in **MNE**). The East Kent fens and the related Stour valley area are represented by finds at Stodmarsh, Preston Marshes and Worth (thence south of Worth as far as Betteshanger Country Park). In order to get on terms again with the recorded 1971-80 distribution, if it did better justice to the position in the field than the 1991-2005 survey did, which looks to be the case, we need to establish if presence of M. *verticillatum* still continues in some of the older locations such as the dykes around Wade Marshes and Birchington.

Myriophyllum verticillatum grows in both still and flowing waters, and so in Kent has been found in ditch, pond and river habitats, primarily in marsh dykes not far from coast or estuary. There appears to be some overlap between its ecological requirements and those of the much commoner *Myriophyllum spicatum* (Spiked Water-milfoil). Indeed, most of our current sites for *M. verticillatum* also have the commoner species in the same tetrad. *M. verticillatum* is supposed to have a preference for calcareous water, and this accounts for many of our East Kent records, but does not explain its presence in other non-calcareous habitats. *M. spicatum* is supposed to be found often in calcareous waters, but to grow in meso-eutrophic or eutrophic waters, and it may that it has a greater tolerance of the effects of nutrient run-off from land serving the water supply.



Stodmarsh. Photos by Lliam Rooney, 11 October 2013 (on the right is a turion).



The two species are separated by *M. verticillatum* having generally five leaves in a whorl, and *M. spicatum* having four, but there is some overlap. The uppermost bracts of *M. spicatum* are entire or just serrate; those of *M. verticillatum* are dissected or deeply serrate. The presence of turions – club-shaped shoots formed late in the year appressed to the stems, which are capable of detaching for dispersal and growth elsewhere – is diagnostic for *M. verticillatum.*

Site	Grid reference	Site status	Last record date	Recorder	Comments
Dartford Marshes	TQ5377, TQ5477		(1) 4 August 2016 (2) 12 August 1985 (3) 1971	(1) KBRG meeting (2) JP (3) JRP	(1) In TQ5377 and at in a ditch just outside shooting club car park TQ 5428 7714. (2) TQ545770. (3) TQ57N,dyke.
Stone Marshes	TQ57T		1972	JRP	
Appledore Heath	TQ9630		16 July 2015	KBRG meeting	Ditch at TQ 96743 30343 with *Utricularia australis*.
Teynham Marshes	TQ9664		1 August 1997	RM	TQ 968 645. Plants identified in a 50m stretch of watercourse, 25m each side of the intersection of the watercourse with a 100m OS gridline.
Teynham Marshes	TQ9763		1 August 1997	RM	TQ 972 639, TQ 975 636, TQ 977

					637. Plants identified in a 50m stretch of watercourse, 25m each side of the intersection of the watercourse with a 100m OS gridline.
Teynham Marshes	TQ9764		1 August 1997	RM	TQ 972 640, TQ 975 647, TQ 977 642. Plants identified in a 50m stretch of watercourse, 25m each side of the intersection of the watercourse with a 100m OS gridline.
Teynham Marshes	TQ9964		1 August 1997	RM	TQ991 640. Plants identified in a 50m stretch of watercourse, 25m each side of the intersection of the watercourse with a 100m OS gridline.
Stodmarsh	TR2261	NNR	1996	PW	TR 2287 6189, TR 2265 6192.
Stodmarsh	TR2262	NNR	1996	PW	TR 2266 6207, TR 2285 6207, TR 2287 6189, TR 2291 6213, TR 2292 6206.
Preston Marshes	TR2359, TR2360		(1) 5 July 2016 (2) 1997 (3) 20 September 1997 (4) 22 October 1991	(1) KBRG meeting (2) PW (3) NS (4) CD	(1) In a ditch at TR 230 599, and at TR2360. (2) TR 2346 5991. (3) TR2360. (4) TR 2378 6090, River Corridor Survey, Little Stour.
Stodmarsh	TR2361	SSSI	1996	PW	TR 2352 6184.
Stodmarsh	TR2362	NNR	(1) 21 September 2013 (2) 1996	(1) AL & JM (2) PW	(1) Ditch, TR 2321 6229. Also (not necessarily this date) the lake in front of Feast's Hide, TR 232 626. (2) TR 2312 6234.
Preston Marshes	TR2461		1998	JP	TR 240 610.
Elmstone valley, near Preston	TR2660		18 July 2000	JP & JW	TR 266 609.
Worth	TR3356		(1) 30 April 2012 (2) 1982	(1) LR (2) ACH	(1) TR 33579 56907, in dyke near bridge. Four-leaved whorls but fragment produced turion when grown on. (2) Hacklinge Ditch Survey: ditches at: TR 33697 56863, TR 33824 56799.
Worth Minnis	TR3454		(1) 24 July 1991 (2) 2 March 1983 (3) 1982	(1) FR (2) & (3) ACH	(2) Sandwich & Pegwell Bay ditch survey: TR 347 546. (3) Hacklinge Ditch Survey: ditch at TR 34590 54150.
Lydden Valley	TR3455		(1) 2003 (2) 2March 1983 (3) 1982	(1) CEC (2) & (3) ACH	(1) Hacklinge Ditch Survey: ditches at TR 34400 55818, TR 34466 55514, TR 34472 55879, TR 35729 55296, TR 34071 55864, TR 34094 55797, TR 34620 55652, TR 34236 55675. (3) Sandwich & Pegwell Bay survey. (3) Hacklinge Ditch Survey: ditches at TR 34130 55500, TR 34175 55790, TR 34648 55238, TR 34538 55598, TR 34577 55882, TR 34620 55652, TR

					34234 55417, TR 34790 55180.
Lydden Valley	TR3456		(1) 1983 (2) 1982	(1) & (2) ACH	(1) Sandwich & Pegwell Bay survey: TR 343 560. (2) Hacklinge Ditch Survey: ditch at TR 34329 56782
Lydden Valley	TR3553		(1) 2003 (2) 1982	(1) CEC (2) ACH	(1) Hacklinge Ditch Survey: ditches at TR 35730 53230, TR 35636 53349, TR 35901 53096. (2) Hacklinge Ditch Survey: ditch at TR 35730 53230.
Lydden Valley	TR3554		1982	ACH	Hacklinge Ditch Survey: ditch at TR 35626 54867.
Lydden Valley	TR3555		(1) 2003 (2) 1982	(1) CEC (2) ACH	(1) Hacklinge Ditch Survey: ditches at TR 35951 55231, TR 35760 55640. (2) Hacklinge Ditch Survey: ditches at TR 35930 55500, TR 35951 55231, TR 35000 55170, TR 35610 55550, TR 35723 55158, TR 35724 55372, TR 35000 55710, TR 35760 55600, TR 35760 55640, TR 35820 55214.
Lydden Valley	TR3556		1982	ACH	Hacklinge Ditch Survey: ditches at TR 35272 56788, TR 35310 56080, TR 35540 56040.
Lydden Valley	TQ3653		1982	ACH	Hacklinge Ditch Survey: ditch at TR 36017 53190.
North east of Betteshanger C.P.	TR3654		(1) 12 August 2015 (2) 2003 (3) 1982	(1)SB (2) CEC (3) ACH	(1) With turions in Penfield Sewer at TR 3638 5410. (2) Hacklinge Ditch Survey: ditch at TR 36021 54680. (3) Hacklinge Ditch Survey: ditches at TR 36496 54916, TR 36906 54813, TR 36644 54444, TR 36260 54830, TR 3674 454315, TR 36021 54680, TR 36582 54741.
Lydden Valley	TR3655		(1) 2003 (2) 2 March 1983 (3) 1982	(1) CEC (2) & (3) ACH	(1) Hacklinge Ditch Survey: ditches at TR 36030 55120, TR 36532 55398. (2) Sandwich & Pegwell Bay survey: TR 362 555. (3) Hacklinge Ditch Survey: ditches at TR 36427 55633, TR 36602 55465, TR 36659 55239, TR 36277 55107, TR 36731 55427, TR 36754 55197, TR 360405 5550, TR 36520 55600.