

Kent Rare Plant Register

Draft species accounts

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Kent rare plant register

This section of the register covers:

Helianthemum nummularium

Helleborus foetidus

Helosciadium inundatum

Herminium monorchis

Himantoglossum hircinum

Hippophae rhamnoides

Hippuris vulgaris

Hordeum marinum

Hottonia palustris

Hydrocharis morsus-ranae

Hyoscyamus niger

Hypericum elodes

Hypericum maculatum

Hypericum montanum

Hypochaeris glabra

Hypopitys monotropa

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 with the mutual boundary given by a black line. See the Kent webpage of the BSBI website at <https://bsbi.org/kent> for the full Kent rare plant register list, the introduction to the register and a list of 'probably extinct' Kent plants.

Abbreviations used in the text:

Recorders' initials:

AB Alan Blackman

AG Alfred Gay

AH Tony Harwood

AL Alex Lockton

AW Tony Witts

BB Brian Banks

BBu Bryan Bullen

BL Brian Laney

CB Charles Boxer

CO Colin Osborne

DCh Danny Chesterman

DG Doug Grant

DJ David Johnson

DK Fr Dunstan Keauffling

DM Daphne Mills

DML Duncan McLean

DS David Steere

DW David Watson

EGP Eric Philp

ES Ewan Shilland

EW Elizabeth Winterbourne

FB Fred Booth

FJR Fred Rumsey

FOH Fred O'Hare

FR Francis Rose

GH Graham Harlow

GK Geoffrey Kitchener

GT Gill Tysoe

SLBI South London Botanic Institute

HE Hubert Elgar

HW Hector Wilks

IJ Ian Johnson

IS Ian Sapsford

JA Jan Armishaw

JB John Badmin

JBM John Braybrooke Marshall

JD John Dicker

JM JM Joumana Mobarak

JP Joyce Pitt

JPu John Puckett

JR John Roberts

JRP John Palmer

JS Judith Shorter

JSw John Swindells

JW Jo Weightman

LM Lesley Mason

LR Liam Rooney

MA Martin Allison

ML Mel Lloyd

MN Martin Newcombe

MP Mike Phillips

MT Mick Tilley

NS Nick Stewart

OL Owen Leyshon

P&PH Pauline & Peter Heathcote

PG Peter Gay

PH Peter Heathcote

PHa Peter Hall

PB P. Buckley

PBa Pauline Bateson

PG Phil Green

PGI P. Glading

R&PB Richard & Peter Black

RE Ruth Eastwood

RM Richard Moyse

RMB Rodney Burton

RoF Lady Rosemary FitzGerald

RR Rosemary Roberts

SB Sue Buckingham

SC Steve Coates

SD Selwyn Dennis

SK Sarah Kitchener

SP Sue Poyser

SW Stefan Walton

TI Tim Inskipp

VAJ V.A. Johnstone

WR Bill Ridley

Other abbreviations:

BM Natural History Museum
herbarium

KBRG Kent Botanical Recording Group

KFC Kent Field Club

KWT Kent Wildlife Trust

MNE Maidstone Museum herbarium

NNR National Nature Reserve

OFC Orpington Field Club

RNR Roadside Nature Reserve

Helianthemum nummularium (L.) Mill. (Common Rock-rose)

Draft account

vc 15 and 16

Rarity / scarcity status

Helianthemum nummularium is widely distributed over the British Isles, the spread being somewhat patchy in view of its predilection for calcareous soils, although in Scotland it extends onto mildly acid ground. In Great Britain as a whole, its conservation status is one of 'Least Concern'. In England, however, there is some evidence of decline, and it is treated as **Near Threatened**. A comparison of its area of occupancy in England over the periods 1930-1969 and 1987-1999 produced a calculated decline of 22% in the likelihood of recording the species. There have been losses since the 1950s through the conversion of chalk grassland to arable and its reversion to scrub. In Kent it is not uncommon, but there has been a decline of 24% in the number of tetrad records between the county surveys of 1971-80 (Philp, 1982) and 1991-2005 (Philp, 2010).



Wye Crown habitat. Photo by Liam Rooney, 14 June 2012

Account

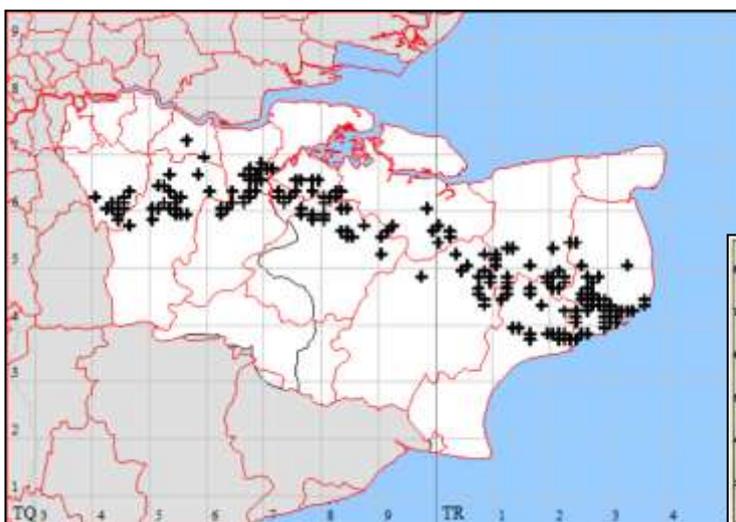
The first published Kent record for Common rock-rose is by John Gerard in his *Herball* (1597), in which he states that 'I have found them in verie many places, especially in Kent, upon the chalkie banks about Gravesende, Southfleete, and for the most part all the way from thence unto Canterburie and Dover'. Although Gerard's originality has been questioned generally, this comment suggests a degree of familiarity with the Watling Street route between London and Dover. Some of this route was replicated by Thomas Johnson, who saw the species in travelling between Gravesend and Rochester in both 1629 and 1632 (*Iter Plantarum* 1629 and *Descriptio Itineris* 1632). Any early botanist encountering chalk terrain in Kent is likely to have come across this plant, just as Edward Jacob described it in the Faversham area, 'on dry chalky Banks – very common' (*Plantae Favershamienses*, 1777). Hanbury and Marshall (1899) treated *Helianthemum nummularium* as very common on downs, banks, etc. on the chalk and had record of it in all botanical districts except for metropolitan West Kent, where the authors nonetheless felt that it surely occurred. In that, they were right, as the *Woolwich Surveys* (1909) confirmed it as plentiful on chalk banks in portions of West Wickham, Hayes and Keston parishes. This is only an occasional geology for the south of those parishes, and Francis Rose referred to the ability of the species to grow, not only on chalk, but on sunny south-facing banks of calcareous Thanet Sand, which lies directly over the chalk.



Queendown Warren. Photo by Liam Rooney, 18 June 2010

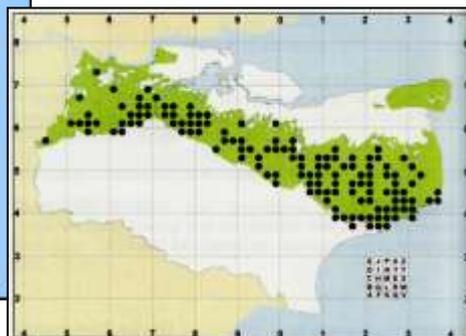
By the time of the 1971-80 county survey (Philp, 1982), the species remained common in suitable habitats and was found in 176 tetrads on downland, open scrub and roadside banks on the chalk. The 1991-2005 survey (Philp, 2010), however, gave only 134 tetrads. New locations had been found (for example, on the Hoo peninsula), but on the whole there was a retrenchment of outlying records (so that it was no longer recorded on the Thanet chalk) and a general thinning-out, noticeable in West Kent. No reason was suggested, but one is bound to consider whether this is a product of habitat changes. Historically, there have been considerable losses of chalk grassland in the county through agricultural changes and scrubbing over, but in more recent times (2003-12) there appear to have been gains rather than losses¹. The position is not straightforward because of different definitions applicable to the

broad type of habitat, but the most useful definition appears to be that governing the BAP priority habitat, lowland calcareous grassland. This is because *Helianthemum nummularium* is regarded as one of several indicator species, of which a number have to be frequently or occasionally present before a habitat may be classified as this type. Being a BAP priority habitat should be helpful, in focusing a planning need to encourage the habitat via agri-environmental schemes. It is questionable, however, how readily *Helianthemum nummularium* may be capable of returning to land which, through restoration work, is otherwise treated as a gain to the county's chalk grassland total.



Helianthemum nummularium (Common Rock-rose) 2010-20

Helianthemum nummularium (Common Rock-rose) 1991-2005



As this species is not uncommon in Kent, the distributional data maintained in this register will be at 1km square (monad) level. This will entail recording at a finer scale than the tetrads given in Philp (2010), from which the accompanying 1991-2005 distribution map is taken (with kind permission of the late Eric Philp and the Kent Field Club). The 2010-20 data confirm the earlier distribution pattern, with the species following chalk strata across the county. However, the 2010-20 map gives monads (198) equivalent to 140 tetrads (cf. Philp (2010), with 134), which does not necessarily indicate an increase,

¹ Change Analysis of UKBAP priority habitats 2003-2012.

http://www.archnature.eu/assets/files/Activity%201/ChangeAnalysisUKBAP_habitats2003_2012.pdf

given that the 140 tetrads include 13 attributable to metropolitan West Kent, which Philp (2010) did not cover. But our 2010-20 data show some thinness of cover between Wye and Harrietsham, which may respond to further survey.

Common Rock-rose is an evergreen perennial shrub with woody or wiry stems, low-growing and fairly compact in open conditions, somewhat straggly when vegetation is taller. It may be found in Kent particularly on open very steep ground towards the top of chalk slopes, where the thinner soils may have an effect on competition. In coarser vegetation it may spread by layering, but ultimately is unlikely to thrive; it does not grow in strong shade. Optimal growth appears to be achieved under grazing regimes, reflecting its association with ancient chalk grassland. Not only does grazing keep competing vegetation under control, but it also provides open conditions for seedling establishment. Germination of Common rock-rose seed is significantly more successful than with most other tested species when the seed is consumed and excreted by herbivores². The species is well-represented on Kent nature reserves, pointing to the importance of chalk grassland in Kent (comprising a significant proportion of the UK total lowland calcareous grassland) and to the representation of Common Rock-rose in the most species-rich of these locations.



Ranscombe. Photo by Sue Buckingham, May 2012

Helianthemum nummularium is easily recognised, especially when in flower, and is not readily confused with any other species to be found in Kent.

² E.Cosyns, A. Delporte, L. Lens & M. Hoffmann (2005). Germination success of temperate grassland species after passage through ungulate and rabbit guts. *Journal of Ecology* **93**: 353-361.

Helleborus foetidus L. (Stinking Hellebore)

Draft account

Vc 15 and 16

Rarity / scarcity status

The native range of Stinking Hellebore runs down the Welsh Border, across the Severn Vale and Cotswolds, and from Dorset to Kent. It is local throughout, but its conservation status in England and Great Britain as a whole is treated as of 'Least Concern'. It is widely naturalized as a garden escape outside its native range and so the position in Kent is not straightforward, since the presumed native occurrences, centred around the North Downs where breached by the Lower Medway Valley, are to a degree obscured by garden escapes elsewhere and the potential for garden escapes within the native area. Whilst Philp (2010) gives 15 tetrad records, over half of these were reckoned to be non-native, but established, colonies in the wild. Accordingly, this species is treated as **scarce** in Kent, even though there are more records than would normally justify this. However, the difficulty in separating amongst many records presumed native occurrences and escapes is such that the value of including the species in this register is limited.

Boughton-under-Blean. Photo by Liam Rooney, 3 March 2011



Account:

In Kent, Stinking Hellebore was first published (as Great Bastard black Hellebore or *Helleboraster maximus*) by John Blackstone in his *Specimen Botanicum* (1746) as found 'Among the Cliffs between Northfleet and Gravesend' by Dr. Wilmer and Mr. Watson. Hanbury and Marshall (1899) regarded the species as being rare and local in bushy places on chalk. As the localities given by them (including what were then historic records) are likely to represent native occurrences, it is worth setting these out: a wood in Chevening Park; chalk hills, Birling; near Cobham; near the large chalk-pit at Halling; Greenhithe; Boxley Hill; by the roadside up the chalk-hill about a mile N.W. from Charing; copses, S. of Rainham. These are all associated with chalk in the north of the county. Boxley and Halling remained the main areas in which records continued to be made (there are specimens in **MNE** from the former location in 1939 and from the latter in the 1940s).

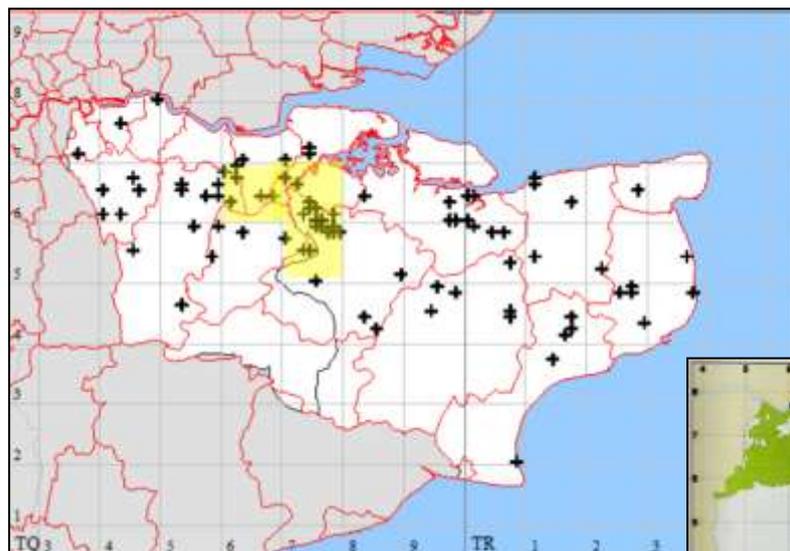


Westfield Wood. Photo by Sue Buckingham, 28 March 2010

Philp (1982) assessed the species as local and rather scarce, being found in woods and scrub on chalk in the western half of the county, but probably introduced in two localities near Lydden, in the east. Philp (2010) gives a wider scatter of records, some of these fairly random, as might be expected from garden escapes. The species is described as native on the chalk downland around Halling (TQ66S & X), Bluebell Hill (TQ76K) and Boxley (TQ75U & Z), with other colonies probably the result of escapes from gardens, where it is frequently grown and readily sets seed. It is possible that Eric Philp was being selective in only recording well established colonies, as Philp (2010) gives 13 tetrad records overall for 1991-

2005 (fairly constant in relation to the 15 tetrads recorded for 1971-1980); but our 2010-20 records amount to many times this, so that either the species is becoming more frequent as an escape, or we are recording what there is more thoroughly (or with a more elastic recognition of what is recordable). These recent records are given in the accompanying 2010-20 distribution map which, however, plots records at monad level, giving 83 different monads. For comparison, the 1991-2005 distribution map provides tetrad data from Philp (2010), with the kind permission of the late Eric Philp and the Kent Field Club.

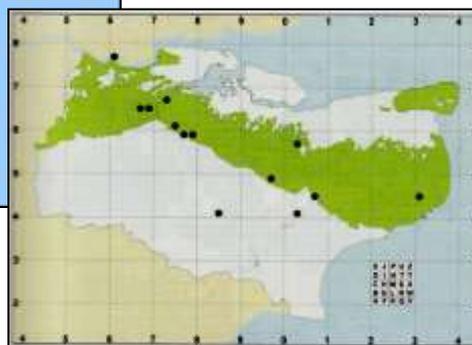
Records are also given in the following data table, which is restricted to chalk areas of hectads TQ66, 75 and 76 (shown tinted orange on the distribution map), plus selected records from TQ86, on the basis that these are



most likely to include occurrences of native status.

Helleborus foetidus (Stinking Hellebore)
2010-20

Helleborus foetidus (Stinking Hellebore)
1991-2005



*Helleborus foetidus*³ is a short-lived perennial, generally dying after four or five years. It spreads by seed, and reproduction may be adversely affected by mice eating buds, flowers and young seed pods, as well as die-back from fungal attack. Seeds fall immediately around the parent plants, but may be spread short distances by ants. It grows on thin calcareous soils and in Kent grows in and on the edge of woodland as well as grassland with sparse scrub, often on steep slopes. It is evidently shade-tolerant in view of its woodland sites, but it responds well to the source of shade being removed and this may also encourage germination. Substantial increase in numbers may take place after coppicing, followed by a gradual decline with the return of shade, as observed along the edge of woodland above Upper Halling by Joyce Pitt.

Boxley Warren Woods, habitat. Photo by David Steere, 6 April 2014



It may be distinguished from our other native Hellebore, *Helleborus viridis* (Green Hellebore),

³ See Rice, G. (1994). *Helleborus foetidus* L. in (eds. A. Stewart, D.A. Pearman & C.D. Preston) *Scarce Plants in Britain*.

which may grow in similar habitats, and from escaped garden species by virtue of bearing palmate leaves on stems (i.e. not basal leaves only) which last through the year.

Escaped garden plants of *Helleborus foetidus* may lack the purple rim around the flower, but this is not definitive and the rim appears on the garden escape at Boughton illustrated here.

Boughton-under-Blean. Photo by Liam Rooney, 3 March 2011



There is a fly *Phytomyza hellebori* Kaltenbach, 1874 (Diptera, Agromyzidae) which is mainly associated with *Helleborus foetidus* and was added to the British list in 2000 by two independent authors⁴. While the adult flies are small and cannot be identified in the field, the leaf-mines are conspicuous. They were first seen in Kent in 2003 on garden plants, and subsequent Kent records are virtually all from gardens. Mines have, however, been noted on *Helleborus foetidus* at Downe Bank nature reserve in 2010, albeit that this is outside the area which, for the purposes of this account, is taken to be the focus of native occurrence in Kent.

The entomological aspect of this account has benefited from the assistance of Laurence Clemons.

Site	Grid reference	Site status	Last record date	Recorder	Comments
Hartley	TQ6068		(1) 6 April 2020 (2) 2 April 2014 (3) 4 March 2012	(1) & (2) DS (3) RR	(1) Known clump at Rectory Meadow on chalk grassland (2) TQ 602 685, Rectory Meadow LNR, 2 plants in woodland edge and one in copse. (3) TQ 603 685, Rectory Meadow, Hartley, chalk grassland, two flowering plants. Status uncertain.
North of Stansted	TQ66B		After 1970, before 1981	Philp (1982)	
Ridley	TQ6163		(1) 17 April 2018 (2) 15 November 2015	(1) GK & SK (2) DS	(1) TQ 6142 6372, bottom of wooded/scrubby slope adjoining arable on chalk, groups of 6 and 24 plants looking wild. (2) 50+ plants in bud along chalky border between field and wood edge. Not near habitation or fly tipping, presumed native. TQ 61423 63717.
Hartley Bottom	TQ6267		21 February 2016	DS	Hartley Bottom. 2 flowering plants in chalky road verge, not near any habitation. TQ 62191 67515.
New Barn	TQ6269		20 March 2016	DS	Single plant on chalk under shade on unmade road verge, not near gardens.
Meopham Green	TQ6464		22 February 2001	JP	TQ 640 645, Steele's Wood, Happy Valley.
Ryarsh	TQ66Q		After 1970, before 1981	Philp (1982)	Also recorded in chalk scrub, Ryarsh Downs 1945-51 by FR.
Holly Hill	TQ66R		After 1970, before 1981	Philp (1982)	
Great Buckland	TQ66S		(1) 29 November 2015 (2) Between 1991 and 2000.	(1) DS (2) EGP (Philp, 2010)	(1) TQ6664, in bud, 5 plants, not near gardens. (2) Recorded as TQ66S.

⁴ Stubbs, A.E. (2000) The hellebore leaf-miner *Phytomyza hellebori* Kaltenbach (Diptera, Agromyzidae) new to Britain. *Dipterists Digest (Second series)* 7: 33-35 and Welch, R.C. (2000) *Phytomyza hellebori* Kaltenbach (Dip.: Agromyzidae), a recent addition to the British fauna: further records in East Northamptonshire, Huntingdonshire and Cambridgeshire. *Entomologist's Record and Journal of Variation* 112: 163-166.

Upper Halling	TQ6864		(1) 13 February 2013 (2) 4 February 2013 (3) 6 April 1992	(1) IS (2) SB (3) VAJ	(1) Halling Woods, TQ 68646 64421 - one plant in flower, three well grown, non-flowering plants nearby, with another 5 non-flowering plants/seedlings further up the bank. Also three more well-grown, non-flowering plants at TQ 68575 64414. (2) (a) 25 plants seen scattered between TQ 68581 64411 & TQ 68587 64343 on steep scarp slope under mixed woodland with <i>Mercurialis perennis</i> , <i>Iris foetidissima</i> , <i>Taxus baccata</i> etc. Probably more plants but terrain steep and difficult. (b) 31 plants around TQ 68405 64227, near foot of scarp slope in sparse scrub. Associates - <i>Iris foetidissima</i> , <i>Primula vulgaris</i> , <i>Corylus avellana</i> , <i>Taxus baccata</i> , etc. (3) TQ 687 644. Philp (1982 & 2010) recorded this species for TQ66X.
East Malling	TQ7057		1 March 2019	BW	
Ranscombe	TQ7067		(1) May 2020 (2) 14 April 2016 (3) 2013 (4) 9 August 2005	(1) RM (2) P (3) RM (4) JP	(1) Woodland south of Ranscombe reserve. No count, but plants still present around TQ 702 672. (2) 40 plants in dense secondary woodland south of railway. (3) 71 plants in woodland at TQ 701 672, outside reserve boundary. (4) TQ 702 672
Borstal	TQ7266		2 March 2010	SP	TQ 72768 66577, several plants on roadside bank. Status uncertain. Philp (2010) recorded this species for TQ761.
South east of Burham	TQ7631		3 June 2017	LR & GK	c. 50 plants on disused chalk quarry floor, of which maybe a dozen had flowered.
Bluebell Hill	TQ7460	KWT RNR	6 March 2010	DM	TQ749607.
Bluebell Hill	TQ7462		12 March 2017	LR & JB	One plant noted at TQ 7460 6262 on the verge of the A229.
Walderslade	TQ7463		7 April 2010	SP	Bridgewood roundabout. Status uncertain.
Westfield Wood, Kits Coty	TQ7560	KWT reserve	(1) 6 April 2014 (2) 7 February 2013 (3) 28 March 2010	(1) DS (2) SB (3) SB	(1) TQ 753 604, over 20 plants at recently tree cleared woodland edge, Westfield Wood. (2) (a) Nine large flowering plants and up to 100 small non-flowering scattered on scarp slope in Westfield Wood from TQ 75453 60382 to TQ 75510 60363, benefiting from recently cleared ash wood and scrub. (b) Four patches of plants around TQ 75632 60470 Westfield Wood in a clearing with around 50 small non-flowering. It appears that plants respond well to clearance of the surrounding dense ash/yew woodland. (3) TQ 75682 60926, Westfield Wood. One plant only, steep slope in chalk woodland. Philp (1982 & 2010) recorded this species for TQ76K.
Walderslade	TQ7562		7 April 2010	SP	Two plants at Walderslade junction

					of A2. Status uncertain.
Boxley Warren, including Boarley Warren	TQ7659		(1) 18 June 2015 (2) 7 February 2013 (3) 26 June 2010 (4) 28 April 2002	(1) KBRG meeting (2) SB (3) LM (4) JP & DG	(2) 30 large plants and many seedlings on steep chalk grassland slope and among scattered brambles from TQ 76718 59889 to TQ 76789 59866, Boarley Warren. (3) TQ 766 598, on steep south-facing chalk grassland slopes. (4) TQ 765 598, Boarley Warren. There are many historic records for Boxley Warren (extending also to TQ7759) and Philp (1982 & 2010) includes TQ75U.
North of Boarley farm	TQ7660		18 June 2015	KBRG meeting	
Detling, the Larches	TQ7858		11 February 2014	DS	TQ 788 588, two plants on woodland edge bordering chalk grassland.
Detling	TQ7859		(1) 19 June 2015 (2) 10 June 2013 (3) 1998	(1) DS (2) SB (3) KCC	(1) TQ 78701 59056, top of chalk grassland slope in scrub edge. (2) Three mature plants and many small seedlings in recently cleared area at TQ 78673 59024. (2) Nine plants at TQ 7867 5903.
Detling	TQ7958	KWT RNR	8 March 2011	LR	TQ 79595 58494, Detling Hill, east bound side of the A249. Ten plants, although probably more, on the chalk embankment. Philp (1982 & 2010) includes TQ75Z, and there is a 1952 record for this monad.
Westfield Sole	TQ7861		20 February 2020	DS	Several clumps growing on central reservation of M2 motorway. Seen whilst stationary in traffic. On chalk soil, apparently not planted.
Cox Street	TQ8060 & TQ8160		(1) 6 May 2002 (2) 10 May 1989	(1) JP (2) JP, JW & PB	(1) Beaux Aires and Sherway Wood, TQ 816 607. (2) TQ 8099 6078, although this grid reference may be a 'start point'. A record for TQ86A is given in Philp (1982). Also, FR recorded this species in open woodland amongst bushes on chalk, north east of Lower Cox Farm in 1960.

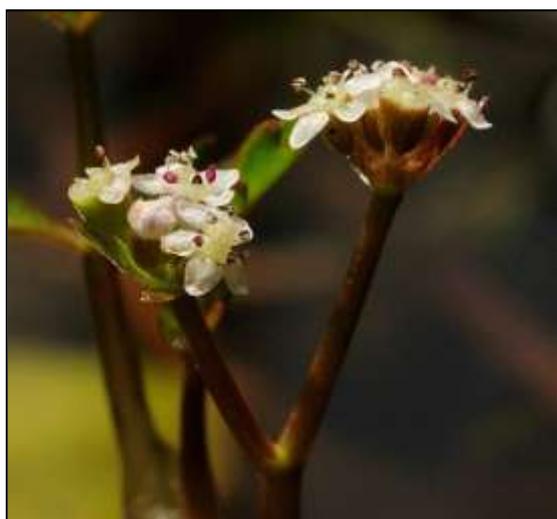
***Helosciadium inundatum* (L.) W.D.J. Koch (*Apium inundatum* (L.) Rchb. f.)
(Lesser Marshwort)**

Draft account

vc 15; may be gone from vc 16

Rarity / scarcity status:

Scattered over most of the British Isles where there are shallow waterbodies, *Helosciadium inundatum* gives rise to no general conservation issues for Great Britain as a whole (where its risk is treated as of “Least Concern”). The rate of decline in England, however, means that it is regarded as **Vulnerable** here; and In Kent it is **rare**.



Lenham. Photos by Liam Rooney, 24 May 2015



Account:

In 1777, Edward Jacob described *Helosciadium inundatum* as not common in the dykes of Nagden Marsh. Nor does it ever seem to have been particularly common on a wider county basis, Hanbury and Marshall (1899) describing it as well distributed, but rather rare. Francis Rose considered it rare, much more so (in the 1940s and 50s) than formerly. He noted it at Chislehurst Common (1946), Hale Street (1954), Godmersham (1944), Hinxhill (1956), Lamberhurst (1938-56) and New Romney Warren (1950). Philp (2010) recorded it from only two tetrads, but different ones from the three tetrads given in Philp (1982), emphasizing the scattered nature of its county distribution. Since 2010, it has only been recorded in one of the Philp (2010) tetrads and one of the Philp (1982) tetrads.

It is a small plant which grows in shallow water, including muddy edges subject to drying out. It is at risk over the decline of such habitats or their eutrophication. The introduced *Crassula helmsii* (New Zealand Pigmyweed) would appear capable of occupying intensively the same type of habitat, as has happened at a pond at Hinxhill, where *Helosciadium inundatum* has not been re-found recently. The surviving site at Lenham is owned by Heaths Countryside Corridor and is maintained so as to control vegetation encroachment. The other surviving site, two stations at Appledore, is a ditch (the Government Drain) running parallel to the Royal

Military Canal which is variably maintained (although 2019 clearance may have affected the continued presence of *Helosciadium*) and includes sections with a good quality flora.

Site	Grid reference	Site status	Last record date	Recorder	Comments
Lamberhurst	TQ63Y		After 1970, before 1981	Philp, 1982	[There are earlier records, 1938-1956, from which it appeared that it grew in a ditch near the River Teise, south of Lamberhurst Church.]
Chilston Pines and Ponds, Lenham	TQ 8950	Heaths Countryside Corridor site	(1) 24 May 2015 (2) 26 July 2011. (There are previous records.)	(1) LR & SL (2) SB	(1) In flower, TQ 891 507, abundant in shallow margins of circular pond, associating with liverwort <i>Riccia fluitans</i> . (2) TQ 89148 50767: about 2000 small non-flowering plants around muddy margin of round shallow pool (the former ice pond of Chilston Manor Estate) between Lenham Heath Road and the M20; some submerged plants with fruits. Associated flora included <i>Ranunculus aquatilis</i> and <i>Myosotis laxa</i> .
Hale Street	TQ6848		1983	JP	[Also recorded in 1954 by FR from a pond on gravel, TQ 683 493.]
Woodchurch	TQ93L		After 1970, before 1981	Philp, 1982	
Appledore	TQ93Q		(1) 15 July 2019 (2) 7 June 2019 (3) After 1970, before 1981	(1) JP (2) DM at KFC meeting (3) Philp, 1982	(1) TQ9731. [A week later, JP found that the ditch had been dug out., with no trace of <i>Helosciadium</i> remaining.] (2) TQ 97466 31021, and TQ 97426 30975, two patches in ditch on the north side of the Royal Military Canal (3) TQ93Q.
Plumpton Farm, Hinxhill	TR0542		(1) After 1990, before 2006 (2) 2001 (3) 1988	(1) EGP (Philp, 2010) (2) JP (3) PGI	(2) c. TR 0587 4267: in shallow pond on gault clay. (3) TR 058 427. [There are records for Hinxhill back to 1956 (FR).] In 2011 the shallow pools were reported as covered with <i>Crassula helmsii</i> .



Lenham, vegetative *H. inundatum*. Photo by Liam Rooney, 9 September 2011



Lenham. Photo by
Liam Rooney,
24 May 2015

Lenham, habitat.
Photo by
Geoffrey Kitchener,
1 December 2015



Herminium monorchis (L.) R. Br. (Musk Orchid)

Draft account

vc 15 and 16

Rarity / scarcity status

Herminium monorchis is local in south England, absent from the south west. A continuing decline, only partly off-set by new colonisation, has led to the species being regarded as **Vulnerable** to the risk of extinction in the British Isles. However, an assessment of English data (albeit that Musk Orchid does not currently grow in other parts of the British Isles) has resulted in it being considered **Endangered** and so facing a high risk of extinction in the wild. A comparison of its area of occupancy in England over the periods 1930-1969 and 1987-1999 produced a calculated decline of 54%, a dangerously high amount, in the likelihood of recording the species. This decline (although measured over a different period and on a different model) is also reflected in the 50% reduction in tetrad records between the county botanical surveys of 1971-80 (Philp, 1982) and 1991-2005 (Philp, 2010), and the species is **scarce** in Kent.



Birling Hill. Photo by Liam Rooney, 28 June 2010

Account:

In Kent, the first published record for Musk Orchid is by Christophe Merrett as Frisland Lady-traces 'on *Gads-hill* in *Kent*, and near *Greenhith*' (*Pinax rerum naturalium Britannicarum*, 1666). Hanbury and Marshall (1899) summarized its status as not uncommon, though local, on grassy banks and downs on the chalk. From the (then) historical records and those provided for their *Flora of Kent*, it is apparent there was a distributional focus in north west Kent, not just in the Halling/Cuxton area, where it may still be found, but scattered along the North Downs escarpment (east to west) from Birling through to Wrotham, then west of Otford, where the River Darent breaks through the chalk hills and to a chalk pit at Morant's Court Hill above Dunton Green. The pre-1899 escarpment pattern could have been extended to Chevening if Hanbury and Marshall had been aware of the Rev. H.L. Jenner having collected the species there, where he was curate, in 1845⁵. This downland distributional focus included the steep-sided chalk valleys running northwards along the downs dip slope, which may account for the record at Halstead (a specimen collected by the pioneer photographer, Anna Atkins) and would certainly account for the record between Cudham and Downe. The latter site presumably corresponds to Darwin's Orchis Bank, from which the observations on the structure and pollination of Musk Orchids in his writings⁶ are drawn. The Halling/Cuxton concentration was also noted as spreading east of the River Medway, where it breaches the North Downs, so as to include Boxley and the chalk hills between Rochester and Maidstone. The second main area of distribution was in East Kent, along the downs from Wye, including the Kneading Trough, to Stowting; and extending northwards where the

⁵ Specimens at Kew and University of Birmingham.

⁶ C. Darwin (1862). *The various contrivances by which orchids are fertilised by insects*. The second edition (1877) includes an expanded commentary as regards how his son, George, had made out the details of the fertilisation process, involving very small insects crawling backwards into the flower and picking up pollinia on their front legs, which then get carried to other flowers. George is mentioned as having brought home insect specimens illustrating the process. The Orchis Bank, as being near to home, would have been the obvious place for study and the presence of the orchid there is attested by Darwin's daughter, Henrietta Litchfield ('Here grew bee, fly, musk, and butterfly orchises') in her account of her mother, *Emma Darwin Wife of Charles Darwin a Century of Family Letters* (1904). The site for Darwin's Musk Orchid appears to have been north of the current KWT reserve, as mentioned in F H. Brightman (1963), Darwin's musk orchid bank at Downe, Kent, *Trans. Kent Field Club*, 1:150-154 (which contains an account of an abortive attempt to restore the species here by raking off moss and matted grass).

Great Stour cuts through the North Downs so as to include Chartham Downs and Crundale; together with the chalk valleys running northwards along the Downs dip slope – between Lyminge and Elham (where the species is still present, at Park Gate), to Bishopsbourne and Barham. There were also some outliers: on the downs about St Margaret's, and (perhaps not a trustworthy record) from Thanet.



Ladd's Farm. Photo by Liam Rooney, 29 June 2013

Much of this range of occurrence continued through the 1940s and 1950s and, in a somewhat attenuated form, into the 1970s. Francis Rose's records included sightings along the downs scarp from east to west at: Chevening Park (short *Festuca ovina* turf on chalk slope with west aspect, 1951-4); Polhill (chalk downs near railway tunnel, 1949); Wrotham (downs to the east, 1945); Trosley Downs above Wrotham Water (1950); and Hollingbourne Hill (short turf on an old spoil heap, 1959). These and others of his records are evidenced by specimens at MNE, where there are some 65 pressed spikes. In his manuscript Flora he referred to there being 23 localities, although listing more than 23. By the time of the county survey of 1971-80, the extant Kent sites were reduced to 12 tetrads, but still spread out from Chevening in the west to Park Gate in the east. The 1991-2005 survey showed a comparatively skeletal distribution of six tetrads, no further east than Wrotham Water/Trottscliffe. This appears to be a fair assessment of the current position, given that 2010-20 records amount to only five tetrads (seven monads). Tetrad records, however, do not give much of an impression of local frequency; and whilst they show some clustering across the downs on the east side of the Medway Gap, it should be noted that this area is one in which there are a number of colonies, which appear to have increased with chalk grassland restoration, part of the Valley of Visions project (2007-2013). The largest Kent populations appear to be here and at Park Gate.

Holly Hill, habitat. Photo by David Steere, 15 June 2014

Herminium monorchis is a small plant, generally no more than 15 cm high, requiring a calcareous habitat where it is not out-competed by taller vegetation. This may be where chalk turf is maintained low through grazing, or on steep slopes where other vegetation is slow to take hold. Numbers of plants are generally assessed by counting inflorescences, but what constitutes an individual is not necessarily



straightforward, given its ability to spread through tubers forming at the end of rhizomes from the originating plant. The result may be a clumped colony; David Johnson has referred (pers. comm.) to having encountered above Wrotham in 1986 several clumps of between 20 and 35 flowering plants. Flowering may vary from year to year, and study of out-county populations has shown that flowering individuals do not exceed just over a third of the population and the species is adversely affected by drought and high temperatures in the preceding summer, perhaps reducing leaf area and drying up leaves so that energy reserves are insufficient to

promote full growth in the following year⁷. For example, a colony at Birling Hill bore over 50 flowering spikes in 2009; five in 2010; and only one in 2011. Musk Orchid may be overlooked when in flower, due to its small size. When present as a non-flowering rosette it is exceedingly difficult to find, unless the exact spot is already known.

Site	Grid reference	Site status	Last record date	Recorder	Comments
Downe (metropolitan vc16)	TQ4461		1996	JP	TQ 440 613, Gorrings Farm slope, north of Downe Bank KWT reserve.
Polhill	TQ5060	Operational railway land.	17 June 1986	RoF	TQ 506 603, railway tunnel. Also claimed here May 2004 (Anon.) at TQ 505 619 on very bare chalk cliff above tunnel.
West of Trottscliffe	TQ6260		6 July 2013	IJ	
West of Trottscliffe	TQ6360		(1) 16 June 2018 (2) 3 July 2014 (3) 1 July 2013	(1) GH (2) & (3) DJ	(1) comm. DJ, 9 spikes found TQ 630 607, with 3 <i>Ophrys apifera</i> and 50+ <i>Gymnadenia conopsea</i> in vicinity. (2) Two small plants still at TQ 630 607. (3) National Trust slopes above Wrotham Water, c. TQ 6305 6067. First appearance in this area for some time, comprising 47 spikes in three groups of five, one group of nine at TQ 63048 60671 and a group of 14 at TQ 63046 60680. Presumably similar site to that recorded by FR in 1950 and by JBMin 1936 (dry bushy bank between Hogmore Lane [this is the track through Hogmore Wood] and Pilgrims Road).
Crookham Wood and Birling Hill	TQ6762		(1) various, 2010-18	(1) various	There are a number of sites within this monad, which accounted for many records during the period 2010-15, which can only be summarised here. The original data give many individual plants, with ten-figure grid references. This is an exceptional location, both for the number of plants and their widespread occurrence. (a) Ladd's Farm field at TQ 673 629, 158 plants, in scattered locations, 2012. The KWT count for plants in this area in 2013 was 384. (b) South-facing scarp slope at Birling Hill, TQ 675 623, near a <i>Sorbus aria</i> tree. Over 50 flowering spikes in 2009; five in 2010; one spike in June 2011; groups of five and three in June 2012; groups of five, two and a singleton in 2013; three spikes in 2014, one in 2015. Initially unaffected by scrub clearance c. 2012, but by 2015 tall grasses and a thick thatch had developed, so the habitat was less suitable. In 2018, 2 spikes c.1m apart in quite thick, long grass (not

⁷ T.C.E. Wells, P. Rothery, R. Cox & S. Bamford (1998). Flowering dynamics of *Orchis morio* L. and *Herminium monorchis* (L.) R. Br. At two sites in eastern England. *Botanical Journal of the Linnean Society* **126**: 39-48.

					found in 2016, 2017). (c) TQ 678 629, Valley clearing in mixed deciduous woodland, opened up by footpath crossing vehicular access-way, with tree/scrub clearance in vicinity of junction. Very thin soil over chalk. In 2010, two groups of three and two singletons. In 2011, only one trodden spike, the area being used as an ad hoc picnic site. Six recorded in 2013 appear also to belong to this site. (d) Ladd's Farm field between Crookhorn and Hangingfield Woods, TQ 675 632, three plants in 2012.
North of Crookham Wood	TQ6763		(1)15 June 2014 (2) 6 July 2012	(1) DS (2) LM	(1) TQ 676 633, two plants together, one with a sawfly caterpillar, on a chalk grassland slope. Also present: <i>Ophrys insectifera</i> , <i>O. apifera</i> , <i>Dactylorhiza fuchsii</i> , <i>Anacamptis pyramidalis</i> , <i>Neottia ovata</i> , <i>Cephalanthera damasonium</i> , <i>Gymnadenia conopsea</i> . (2) Ladd's Farm field with south east facing slope, TQ 675 632; 13 scattered plants (10 figure grid-references given).
Crookham Wood and Birling Hill	TQ6862		(1) 19 June 2016 (2) 18 June 2012 (2) 2012	(1) DS (2) LM (2) FB, DM, JS	(1) South of Crookham Wood. Known site, 30+ spikes seen among <i>A. pyramidalis</i> and <i>D. fuchsii</i> . (2) An area closely associated with TQ6762 and TQ6763 above. Ladd's Farm field with south-east facing slope, TQ 683 628, 82 plants, in scattered locations, in 2012. (2) 202+ plants seen c. TQ 684 628 under two pylons in meadow south of Ladd's Farm.
Hollingbourne Hill	TQ8555		(1) 1998 (2) After 1990, before 2006	(1) BB (2) EGP (Philp, 2010)	(1) TQ 8516 5583, 90 flowering spikes counted on path across chalk pit, hundreds present in chalk pit. (2) Given as TQ85M, and assumed to be this monad.
Wye Downs NNR	TR0745	NNR	AG	23 July 2011	Devil's Kneading Trough, TR 0773 4509, one spike in flower in short grass on a very steep terrace halfway down the eastern arm of the Kneading Trough just above an isolated wayfaring tree. Recorder saw seven spikes here in 2008 but none in 2010. It was noted here (two flowering spikes) as TR 0778 4500 in 1980.
Crundale Downs	TR0847	SSSI	9 July 2009	AG	Fanscombe Bank near Pett Street Farm, TR0 0811 4731, two flowering spikes and two blind rosettes in a small patch of short herb-rich grassland on Tor-grass dominated east-facing slope. There is a 1946 record by FR from Pett Street Down.
Park Gate	TR1646	KWT reserve	(1) CO (2) AG (3) WR	(1) 2 July 2012 (2) 8 August 2011 (3) 3 July 2011	(1) At least 500 flowering spikes, third paddock. [The KWT 2010 count for the reserve was 850.]

			(4) SB	(4) 23 June 2011	(2) TR 168 460, 234 spikes. (3) 88 spikes at and around TR 168 460. (4) Five spikes on chalk grassland bank at TR 16870 46041. There are many records for Park Gate, including FR, 23 June 1981, 266 inflorescences.
Covert Wood	TR1848		KFC meeting, FR	22 June 1985	A few young plants on sheep-grazed chalk bank accessed from Forestry Commission car park.

Himantoglossum hircinum (L.) Spreng. (Lizard Orchid)

Draft account

vc 15 and 16

Rarity / scarcity status

Himantoglossum hircinum was in the British Isles restricted to Kent until the early 20th century, when it expanded its range as far as Yorkshire in the north and Devon in the west. It declined after 1934 and is now an uncommon plant of south east England and the Channel Islands, being regarded as a nationally scarce **Near Threatened** species in Great Britain as a whole, but as one whose conservation risk is of 'Least Concern' in England. The number of sites for this species in Kent is such that it does not qualify as rare or scarce in the county, but the most important population in the British Isles is at Sandwich. The concentration of records generally in Kent is also exceptional on a national basis.

Sandwich Bay. Photo by Liam Rooney, 22 June 2010

Account:

The first record for this spectacular species in Kent (and the British Isles) was by Thomas Johnson in his *Mercurius Botanicus* (part 2, 1641) as 'nigh the highway betweene Crayford and Dartford'. The species remained present in various locations in the Dartford area for at least 200 years according to Good, 1936⁸. There are examples credited by John Ray in his *Synopsis Methodica Stirpium Britannicarum* (1724) to the London apothecary, William Rouse: 'From the Street named *Lofield* in *Dartford*, is a Place called *Fleate-Lane*, and about a Bow-shot on the left Hand are several Plants of it. Also beyond *Dartford* is a place named the *Brent*, and on the right Hand a great High-way going to a Village called *Grimsteed Green* [Green Street Green], a little way on the right Hand you may also find it.'



Good (1936) considered that this first distributional phase ended with a Dartford record in 1867, although this approach disregards, or treats as casual or peripheral, some later finds, e.g. at Greenhithe in 1878-9 and 1883. Good's second distributional phase, partly overlapping the first, relates to sporadic, mostly transitory records between 1796 and 1899 in East and West Kent, and other south eastern counties. This phase ends with the assessment for Kent by Hanbury and Marshall (1899) that the species had always been very local and was then verging on extinction. The third phase was one of expansion, beginning in the 1900s and gathering pace from 1919 and reaching a peak in the early 1930s with new localities in many counties, but particularly in East Kent.

The explanation given was that the Lizard Orchid was in England at the northern limit of its Continental distribution and it occurred most abundantly in west central France, where the climate is typically oceanic. An increase in winter and spring temperatures and rainfall in central and southern England during the period 1901-30 in comparison with 1851-1900 suggested that, for a species on the borderline of climatic tolerance in south east England, this increase, tending towards a more oceanic climate, was of major significance. Not only did Kent become more suitable, but so did much more of the country.

⁸ R. Good (1936). On the Distribution of the Lizard Orchid (*Himantoglossum hircinum* Koch). *New Phytologist* **35**: 142-170.

The position was re-assessed by Carey (1999)⁹ in the light of a decline in the fortunes of the species from the 1930s at least until 1975. He affirmed that climate change was significant, but also found that two successive wet growing seasons (viz. September to August) that were not followed by severe drought were required to produce viable seeds. It subsequently appeared that these conclusions might not be fully transferrable to plants outside Kent, and that plant size in the year of flowering was critical for seed production generally, although in Kent the plant size during the previous year was important as well (hence the two wet growing seasons). Other factors identified by Carey as favourable to *Himantoglossum hircinum* include the change of attitude towards the collection of wild plants, which may have given rise to the greater persistence of populations since the Second World War, so providing the opportunity of spread from a core-population. This is particularly relevant to a site such as at Sandwich, by far the largest in England, albeit that Carey's modelling of spread predicted that seed dispersal by wind would normally be up to a few hundred metres. It may be that this modelling does not cater sufficiently for exceptional dispersal events, although Carey offered as an alternative distribution vector the activities of golfers in transferring adhesive seeds from golf courses where the species was present.

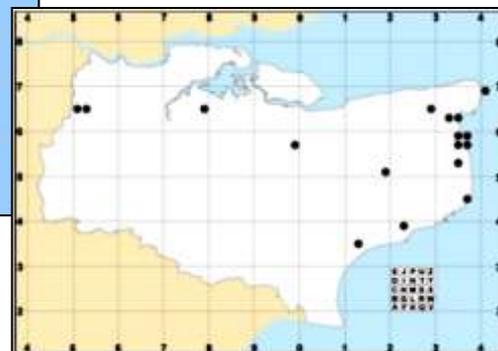
The surveys published in Philp (1982) and Philp (2010) indicate an expansion after the 1970s. The former survey (1971-80) located the species in only six tetrads, and described the plant as one of fixed sand-dunes and occasionally present by woodland margins or in scrub. The only population then regarded as regular was at Sandwich Bay, where the numbers of flowering plants varied greatly from season to season, and this accounted for five of the six tetrads, the remaining record being on chalk downland at Otford in 1978, an example of the 'come and go' characteristic appearances of this species. However, during the course of the 1991-2005 survey, 17 tetrad records were made as a result of the species appearing in a number of new localities, with the result that the overall population was probably then the highest ever known in the county. Carey & Farrell (2002)¹⁰ considered that the turn-around point for the fortunes of this species in England was around 1994. This trend of new appearances has continued since, as may be seen from the 2010-20 distribution map, which gives 27 tetrads (represented by 32 different monad records), but not all the same ones as in the 1991-2005 distribution map (reproduced by kind permission of the late Eric Philp and the Kent

Field Club). The species has even (2019) appeared near Chelsfield Station in metropolitan West Kent. There are also (see table below) further records which fell between the 1991-2005 survey and the beginning of surveying for BSBI date class 2010-20.



Himantoglossum hircinum (Lizard Orchid) 2010-20

Himantoglossum hircinum (Lizard Orchid) 1991-2005



⁹ P.D. Carey (1999). Changes in the distribution and abundance of *Himantoglossum hircinum* (L.) Sprengel (Orchidaceae) over the last 100 years. *Watsonia* **22**: 353-364.

¹⁰ P.D. Carey & L. Farrell (2002). *Himantoglossum hircinum* (L.) Sprengel (Biological Flora of the British Isles). *Journal of Ecology* **90**: 206-218.

Seven current populations warrant further remark: those at Lullingstone, Boxley, Faversham Golf Course, North Foreland, Betteshanger, Great Stonar and Sandwich Bay. The Lullingstone Park colony is at present the only West Kent population (if the single Chelsfield plant is not yet to be regarded as a population), and has shown persistence, having first been discovered in 1993, when there were three flowering spikes¹¹. The site, within a golf course, is known as the orchid bank, several other species being present, most notably *Anacamptis pyramidalis* (Pyramidal Orchid) in thousands and *Orchis anthropophora* (Man Orchid). It is a south-facing grassy chalk bank in a dry valley leading off the Darent Valley and it escaped ploughing and agricultural 'improvement' in the 1950s, and scrubbing over plus tree planting (since removed) in the 1970s. The bank has generally been cut and cleared with conservation in mind since then, and *Himantoglossum hircinum* has been a regular feature, albeit always with more rosettes in March than flowering spikes in summer. There have been occasional years without flowering, including 1996 and 1997 which correspond to the crash in Sandwich Bay numbers (see below); and 2017 was a year in which no rosettes were seen, let alone flowering plants (David Johnson, pers. comm.). Individual plants may in any event be erratic in flowering: David Johnson noted a Lullingstone Park plant flowering in 2007 which appeared to be the same as one which had flowered in 2000, but not since¹².



Boxley, roadside habitat. Photo by David Steere, 25 June 2014

Boxley is an example of a sudden, seemingly random, appearance of the species in a new location and was first discovered in 2012 on a roadside which had been realigned in the course of the construction of the High Speed 1 rail route, 1999-2003. There were two flowering spikes, which would be similar to many impermanent occurrences of the odd plant or two. However, in 2014 there was a population explosion, with 80 rosettes seen,

resulting in 35 flowering spikes. If these derived from seedlings produced from a plant or plants in situ, then those plants would have to have been present and flowering for at least six years before initial discovery to permit germination and maturation. The expansion continued in 2015, with 99 flowering spikes, two of which were on adjoining railway property, settling back in 2016 to 60 spikes, although extending in area. Again, this is a site with other orchid species present, including *Anacamptis pyramidalis* (Pyramidal Orchid) and *Orchis anthropophora* (Man Orchid), which may be relevant for mycorrhizal associations. The expansion has a more recent parallel in a roadside colony near Discovery Park, Sandwich, which went from eight plants in 2016 to 133 in 2017.

Faversham Golf Course seems never to have held many plants at any one time, but the first record here was in 1922 and the species has been seen here at intervals up to 2012. Whether these intervals are related to sporadic appearance or sporadic survey is not clear; but there is evidence of long persistence.

¹¹ The Lullingstone Park colony is described by:

(1) David Johnson (2005). Lizard Orchid *Himantoglossum hircinum* at Lullingstone Park, West Kent (v.c. 16). *Kent Field Club Newsletter* 61: 2-4;

(2) Joyce Pitt (2007). Chalk Bank in Lullingstone Park, *Kent Field Club Newsletter* 66: 3-4.

¹² David Johnson (2008). The Lizard Orchid *Himantoglossum hircinum* at Lullingstone Park. *Kent Field Club Newsletter* 67: 6-7.

At North Foreland is a colony deriving from two plants found in 1996. It is located in chalk grassland between Cliff Promenade and the coastal cliffs, sometimes with plants at the cliff edge. Numbers grew (pers. comm., David Johnson) to 75 flowering plants by 2006 and 102 by 2009. A count in 2013 gave 116 flowering plants, which, at least for that year, may have made this the third largest colony in the British Isles, after Newmarket and Sandwich Bay. Whilst numbers of flowering plants had fallen to 106 in 2015, this may have reflected dry weather in late May and June, as the area of the colony seems nonetheless to have expanded.

Betteshanger, like Boxley, is a colony which has recently appeared and has expanded very rapidly. It is probably unrelated to a 2007 sighting in the same monad and was first noticed as 61 flowering spikes in 2016, becoming 145 in 2017. It grows on sharp-draining colliery spoil, extending the range of substrates on which it has been observed in Kent.



Great Stonar is a colony of which the first (eight) plants were found in 2016 and which expanded with extraordinary rapidity to at least 2019 flowering spikes by 2020. It is in a habitat of chalk road-verges which was only created around 2004 and relates to the A256 and the road system serving Discovery Park, Sandwich. It may be regarded as distinct from the Sandwich Bay aggregate of colonies and, as such, is (2020) the second largest population in the county.

Sandwich Bay, dune habitat. Photo by Sue Buckingham, June 2009

The Sandwich Bay population is, by a long way, the largest in the British Isles. It is spread over a large area, primarily the Royal St George's and Prince's Golf Courses and their surrounds (including Sandwich Bay estate lawns and road-verges) and, whilst it might be regarded as a series of sub-populations extending over several monads, there is a case for treating at least the main concentrations as a single population, described in Carey & Farrell (2002) as covering an area of 1 x 0.5 km and containing over 5,000 flowering plants in 2000. If one extrapolates on the basis that only 14.5% of rosettes may flower, this total implies a population in 2000 of 27,500 plants. Carey & Farrell (2002) give flowering plant data from 1950: numbers did not exceed 1,000 until the late 1980s, rising to over 3,000 in the early 1990s, falling to 1,500 in 1995, then a population crash in 1997 due to exceptionally low winter rainfall in 1995-6 and 1996-7, recovering to record levels by 2000. The population is thought to be of pre-war origin: there is a 1924 specimen in BM collected by G. Field-Marsham from golf links near Sandwich; and St George's Links is mentioned in a 1944 record by Moore-Brabazon



(presumably Baron Brabazon of Tara, of Sandwich, a keen golfer). It looks as though it may originally have been known better here by golfers than botanists.

Sandwich Bay, lawn habitat. Photo by Sue Buckingham, June 2010

Himantoglossum hircinum grows mostly on chalk grassland or on calcareous dunes. The Boxley population at first sight might appear to be an exception, in an area of Gault Clay, but the substrate has been affected by the import of materials in

the course of road and rail construction works. The species has been characterised as one of tall sparse grassland associated with an annual or biennial cutting regime, particularly in rough grassland adjoining intensively managed grassland (such as golf courses) or adjoining linear features such as roads. All these habitat characteristics are reflected in various Kent occurrences. Additional protection may be afforded at golf courses. Carey and Farrell (2002) refer to the practice, when plants grow on golf courses close to areas of play, of surrounding them by 'ground under repair' hoops, so that any ball landing near the plants can be moved by the player without penalty. They also refer to a management plan at Sandwich whereby nutrient enrichment of the dunes is minimised by depositing grass cuttings in specially dug pits or removing them altogether.

The species over-winters as a rosette of grayish-green leaves, appearing from September onwards. Flowering in Kent is from early June into July, and David Johnson considers that the flowering season in Kent has moved forward a week since the 1970s. The flowers possess long lips with side lobes that are supposed to give the appearance of the legs and tail of a lizard clambering up - 'in forme like unto a lizard, because of the twisted or writhen tailles and spotted heads' according to John Gerard in his *Herball*, 1597, an account which is likely to have been based on Continental material, rather than supplying evidence of early occurrence in Kent.

Data for this species are here presented in both map and tabular form. In view of the number of finds (and the 'come and go' nature of the species, the table is focused primarily on records for 2010 onwards, with some earlier occurrences for those sites to indicate trends or first records. Records are also included for locations post-dating the 1991-2005 survey in Philp (2010).

Site	Grid reference	Site status	Last record date	Recorder	Comments
Chelsfield station	TQ4664	L.B. Bromley public open space	13 February 2019	ES	TQ 46736 64101, in the triangular public open space (mown grass and trees) opposite the Chelsfield pub, c. 1 metre in from the tarmac footway which forms the south eastern boundary. A rosette of basal leaves a few inches across. Seen, GK, 19 Feb 2019.
Lullingstone Park	TQ5264	Golf course / country park owned by Kent C.C., leased to Sevenoaks D.C. [Orchid site is outside SSSI.]	(1) 21 June 2019 (2) 20 June 2018 (3) 27 June 2015 (4) 10 June 2014 (5) 22 June 2013 (6) 25 June 2012 (7) 10 June 2011	(1) – (7) DJ	(1) TQ 520 643, four flowering plants at golf course (there were none in 2016, 2017). (2) Three flowering, one good spike standing 50+ cm and two rather small stunted specimens at and around TQ 520 643. (3) c. TQ 520 643, four flowering spikes of which two were very small, two modest (35-40cm), although 11 rosettes were seen by recorder on 11 March 2015. Site has had most of hawthorn and other scrub removed over previous winter. (4) TQ 520 643, one poor flowering plant with about half a dozen florets, with a couple of gone-over <i>Orchis anthropophora</i> . Four rosettes seen in late February. Orchid bank looked to be scrubbing over and may not have had winter cut. (5) c. TQ 5204 6428, three plants flowering, only about half open at this time and one spike did not mature. On 3 March there were 16 rosettes, 9 of which were small.

					<p>(6) Three plants flowered around TQ 5204 6428 including one superb spike 70cm tall. In March there were 18 rosettes.</p> <p>(7) Four flowering spikes, after 17 rosettes had been counted on 8 March.</p> <p>First discovered 1993.</p>
Longfield	TQ5969		<p>(1) 17 June 2020 (2) 14 June 2019</p>	(1) & (2) DS	<p>(1) Recorder watched an emerging spike growing and beginning to put up a flower spike from early May, only for it to completely die off due to drought. Dead by 17/06/20 prior to flowering. Same plant as seen in 2019.</p> <p>(2) One flowering spike c. TQ 59783 69612 bordering the HS1 railway link line. Not seen at this location before nor since 1921 in Dartford Borough.</p>
Boxley	TQ7758		<p>(1) 24 June 2016 (2) 29 June 2015 (3) June 2014 (4) July 2013 (5) June 2012</p>	<p>(1) & (2) DJ (3) & (4) Various botanists (5) AH</p>	<p>(1) 60 spikes (several in range 75-95cm), less than 2015, but now present (1 plant) on opposite side of road. <i>O. apifera</i> now present in main colony.</p> <p>(2) Roadside colony continues dramatic expansion. Recorder counted 97 flowering on roadside and two further spikes over fence on railway property. Remarkably robust, some five or six plants exceeded a metre in height, with actual flowering spikes of 35-40cm, and many others were over 75cm tall. There were also c.50 <i>Anacamptis pyramidalis</i> spread along verge and two <i>Orchis anthropophorum</i> in the middle of the colony.</p> <p>(3) The same roadside site as recorded in 2012-13, but now 35 spikes flowering (from 80 rosettes in spring), best 80cm high but many in range 60-70cm. Concentrated along 10 metres or so of lightly scrubbed roadside verge with one flowering on far side of railway fence. <i>Orchis anthropophora</i> and <i>Anacamptis pyramidalis</i> also present.</p> <p>(4) The two 2012 plants flowered again, even larger: one 69 cm tall with a flowering spike of 30 cm and the other 97 cm tall with a 46 cm spike. Location variously given as TQ 77028 58419 or TQ 77032 58410.</p> <p>(5) Highway verge on east side of Boxley Road, near rail link. Shortly afterwards, noted by DJ as comprising two fine spikes 80cm and 60cm tall at TQ 7701 5842. This location is on the Gault Formation, but the superficial geology has been affected by rail and road construction (1999-2003). There is probably no connection, but the orchid was reported from Boxley in 1909 (<i>East Kent Scientific</i></p>

					& Natural History Society Report for year ending 30 September 1909).
A249, Stockbury	TQ8360	KWT RNR	14 June 2014		One plant on chalk bank by the A249 at TQ 83238 60358, with <i>Orchis anthropophora</i> and <i>Anacamptis pyramidalis</i> . Reported as not flowering, 2015. DJ (pers. comm.) suggests the possibility that KWT wardens or volunteers may be unwitting vectors of the adhesive seeds, to give rise to this occurrence.
Queendown Warren	TQ8363	KWT reserve	(1) 25 June 2016 (2) 29 June 2015 (3) 2014 (4) 30 June 2013	(1) (2) & (3) DJ (4) SD	(1) Flowering for 4th consecutive year. (2) TQ 831 631, the plant previously recorded flowered for third consecutive year. (3) The plant recorded in 2013 flowered again. (4) A single flowering plant at TQ 8311 6308, in short grassland at top of main bank of reserve, said to be the first since 1966.
Faversham Golf Course (Belmont Park)	TQ9956, TQ9957		(1) 31 May 2012 (2) 1997 (3) 4 March 1987 (4) 1959 (5) 1922	(1) LR (2) NS (3) RoF (4) FR & HW (5) HE	(1) TQ 99242 57003, one plant. (2) TQ 9912 5692, nine rosettes. (3) TQ 992 570, two plants. (4) TQ 993 571, Belmont Golf Club.
Pedlinge	TR1335		(1) 8 June 2016 (2) 4 January 2015 (3) 11 July 2013 (4) 15 July 2006	(1) SC (2) GK & SK (3) LR, GK & AG (4) PB	(1) TR139357, four plants. (2) One rosette on church lawn, TR 1397 3571. (3) On church lawn, one flowering spike and another eaten off, despite protection. (4) Two plants, reported to have been present since 2004.
Hythe Ranges	TR1533	MoD land	29 June 2013	SB & OL	One plant with three flowering spikes at TR 15377 33999.
Etchinghill escarpment	TR1639		June 2007	BL	TR 167 393, mainly single plants.
Holy Well, Folkestone	TR2237		June 2007	BL	TR 226 377, mainly single plants.
Folkestone Downs	TR2238		2012	PG	TR 223 382, also flowered c.5 years beforehand.
Lydden Hill	TR2546		March 2011	GT	Three rosettes on the central reservation RNR along Lydden hill at TR 2537 4612 within two metres of road. Last flowering here was 2007.
Monkton	TR2465	Nature reserve	2005	KWT	TR 284 656, present in small numbers in chalk pit.
Tilmanstone	TR3051		(1) 21 June 2018 (2) 5 June 2016	(1) SC & ML (2) GH	(1) Four at TR 30 519. (2) TR 305 515, one plant.
Sandwich south west	TR3256		28 May 2020	AB	TR 3220 5670, one flowering spike on A256 (more than 2.5 miles from nearest plant in the large Great Stonar A256 colony).
Great Stonar, Discovery Park	TR3259, TR3358		(1) 28 May 2020 (2) 22 July 2018 (3) 8 June 2017 (4) 22 May 2016 (5) 12 May 2016	(1) AB (2) DCh (3) AB (4) SC (5) AB	(1) 219 flowering spikes on A256 between TR 3295 5980 and TR 3215 5920, and Monks Way between TR 3265 5960 and TR 3330 5890. Count relates to what can be seen from road and verge, may be more beyond, behind scrub. (2) TR 32690 59600, five plants on waste ground near roundabout. (3) 133 flowering plants along the

					A256 in Sandwich, TR 321 591 to TR 328 597. (4) TR 329 590, four on new road verge. (5) Eight plants in tight bud on the road verge and adjacent area of the A256 near Discovery Park in Sandwich. They are c. 2 miles from the large colonies on the golf courses. Inside the crash barrier, so some protection from mowing, and also on a flat lower area which looks as though created to take excess rain water from the A256.
North Stonar	TR3360		28 May 2020	AB	TR 3335 6080, twelve flowering spikes at Richborough Recycling Centre.
Sandwich Bay	TR3458		16 June 2013	CO	Flowering by ditch on SE side of straight river embankment c TR 340 584.
Pegwell Bay	TR3463	NNR	23 June 2009 11 June 2004	MT JP	TR 344 630. TR 34209 63186, large plants in flower.
Betteshanger (formerly Fowlmead) Country Park	TR3553		(1) 26 June 2016 (2) 23 June 2007	(1) SB (2) BL	(1) 61 flowering spikes in grassland counted by DML on 15 June 2016. 12 of these seen by SB on June 26 between TR 3521 5377 and TR 3527 5363. (2) TR 35519 53400, one plant in full flower.
Betteshanger CP	TR3654		15 June 2016	DML	TR362541, gridref inferred from map dated 15 Jun 2016 by recorder, far east side of country park, one plant.
Sandwich Bay	TR3557		3 June 2010	GK	Scattered on dunes of Royal St George's golf course, TR 35993 58045 (21 plants), TR 35999 58054 (six plants).
Sandwich Bay	TR3558		(1) 11 June 2013 (2) 24 June 2010	(1) CO (2) SB	(1) Abundant in car park area. (2) TR 35824 58847, 42 plants scattered in dune grassland east of Princes Drive southwards for 200ms. Also TR 35864 58553, 36 plants in dune grassland in 'rough' of Royal St George's golf course.
Sandwich Bay	TR3559		(1) 16 June 2020 (2) 3 July 2016 (3) 11 June 2013 (4) 23 May 2011 (5) 24 June 2010	(1) SB (2) AW (3) CO (4) & (5) SB	(1) In a hollow with <i>Epipactis palustris</i> , TR 35506 59579. (2) Present. (3) A few plants on sand dunes close to beach at south end of monad. (4) One plant on dune grassland of Prince's Golf Club at TR 35426 59832. Another at TR 35301 59981. (5) TR 35168 59280, four plants in stabilized dune grassland.
Sandwich Bay	TR3560		23 May 2017	SB	In good numbers alongside the road to Princes golf club at TR 3523 6023.
Nash (Thanet)	TR3568		13 August 2017	SC & ML	Two spikes on old bank TR 35564 68423.
Sandwich Bay	TQ3655		(1) 30 June 2019 (2) 8 June 2019	(1) SB (2) DS & EW	(1) A single plant beside the Ancient Highway TR 3676 5573 near the reservoir. (2) Single, but large flowering plant on east road verge c. TR 367 558.
Sandwich Bay	TR3656		9 April 2017	SB	Two rosettes on a sandy bank by the sea at TR 3674 5663, looking to

					be as the result of some disturbance at the margin of the golf course. One more at TR 3643 5692 by a footpath.
Sandwich Bay	TR3657		(1) 24 June 2020 (2) 18 February 2011 (3) 24 June 2010 (4) 3 June 2010	(1) SW (2) & (3) SB (4) GK	(1) A single pale flowered specimen at TR 3624 5755 in a private field on the Sandwich Bay estate. (2) Approx 200 rosettes on roadside verge at TR 36213 57686, King's Avenue, later mown off before flowering. (3) TR 36049 57578, 17 plants on lawn in Sandwich Bay estate. (4) Verge and gardens in King's Avenue, Sandwich Bay estate.
Sandwich Bay	TR3658		(1) 6 June 2015 (2) 26 June 2013 (2) 3 June 2010	(1) DS (2) SB (3) GK	(1) TR 36105 58224, etc., over 200 plants at known site, along beach to end car park and on house lawns by beach approach road. (2) KWT count of plants on coastal stretch of dunes from new hotel to Sandwich estate - 900 plants.
St Margarets Bay	TR3745		23 June 2007	BL	TR 37353 45249, one non-flowering plant in cage by monument.
Walmer	TR3750		1 June 2012	KBRG meeting	Two plants in grassland behind beach at TR 37834 50034.
Deal	TR3752		3 June 2010	DJ	Dover Patrol Memorial, TR 373 452, one sturdy plant, spike emerging, in cage.
St Augustine's monastery, Ramsgate	TR3764		2007	DK	TR 376 643, more than 100 rosettes.
East Cliftonville	TR3870		18 January 2015	GK & SK	TR 382 702, a large rosette, one smaller and at least three seedlings, in private lawn (formerly grassland of field), where it has flowered in recent years.
North Foreland	TR4069		(1) 29 June 2015 (2) 5 July 2013 (3) 25 June 2012 (4) 5 June 2012 (5) 1996	(1) & (2) DJ (3) CO (4) SB (5) FB	(1) TR 402 698 to TR 401 690, 106 plants in flower, having spread c.50m towards Joss Bay from where recorder had last seen, in 2013. Plants were very scorched and dried-up, presumably reflecting dry weather in late May and June, as reported also from Sandwich Bay (but contrasting with inland colony at Boxley where presumably weather conditions differed). (2) Known colony, est. at least since 1996. TR 402 697 to 401 690, recorder did a count from the pathways and noted 116 flowering plants. Probably capable of being exceeded, but already a record count. Recorder considers this must now be the third best site in Britain after Sandwich and Newmarket Race Course. (2) On chalk grassland at cliff edge: KWT RNR, 17 flowering spikes. (3) Two plants at TQ401 692, chalk grassland at very edge of cliff; also 9 or more spikes in bud at TR 40155 69743 in cliff top chalk grassland. (4) Two plants.

Hippophae rhamnoides L. (Sea-buckthorn)

Draft account

vc 15 and 16

Rarity / scarcity status

Hippophae rhamnoides is widespread in the British Isles and is often planted as an amenity species, particularly by the coast. Its conservation status in England and Great Britain is one of 'Least Concern' as regards risk to its survival. Indeed, it is regarded in the British Isles as having potential to be invasive, to the detriment of other flora, for example where planted to stabilise sand-dunes. There is therefore a degree of incongruity in including this species in the county rare plant register, the criteria for which would normally be expected to result in the selection of plants which have a degree of 'worthiness' in being native (or ancient introductions) and under threat. The inclusion of Sea-buckthorn is in consequence of its being **nationally scarce** as a native. Whilst it is actually quite common in the British Isles, the only populations considered native are along the east coast from close to the Scottish border down to Dungeness / Camber Sands. The species was an abundant coloniser in late glacial times (and, indeed, is known on the Continent as a sub-alpine shrub); but, being shade-intolerant, it was out-competed by the spread of forests and so retreated to open coastal habitats. In Kent, even ignoring inland introductions, it is neither rare nor scarce.

Seasalter. Photo by Lliam Rooney, 9 October 2010

Account

The first evidence of Sea-buckthorn in Kent appears to be a single pollen grain, presumably emanating from a coastal site, but extracted from a block of peat dating between 530 and 1020 BC excavated at the inland Seabrook valley near Folkestone in 1958¹³. The first conventional botanical reference, however, for Kent (and, indeed, the British Isles) was by Christopher Merrett, who referred to it as 'betwixt *Sandwich* and *Deal*' in his *Pinax rerum naturalium Britannicarum* (1666). Early records are worth noting as they are most likely to be of native, unplanted occurrences, although Frederick Hanbury remarked on planted Sea-buckthorn near Faversham (Hanbury and Marshall, 1899). The species was recorded¹⁴ in a saltmarsh two miles from Sheerness (1746, perhaps Rushenden?); Deal (from at least 1829 onwards; 19th century herbarium specimens refer to Deal sandhills, and this may be Merrett's locality as well); Walmer (before 1899); west of St Margaret's Bay (1802); Lydden Spout, on chalk (1829); Dover (1882); Folkestone cliffs (1849; this may be the same as Folkestone Warren); Folkestone Warren (1876; an 1895 specimen is annotated as on cliffs and landslips by the sea); below Folkestone church, on the greensand (1829); between Folkestone and Sandgate (1801); New Romney, sandhills (1875). Sea-buckthorn's predilection for open coastal habitats seems to override any particularity as regards soil, these records relating to saltmarsh, sand, chalk and Gault Clay.



Most of these locations have demonstrated continuity, for example with Francis Rose having collected from sandy cliffs at Folkestone Leas in 1945 and sand-dunes at Sandwich Bay in 1946 (specimens in **MNE**) and with

¹³ H. Godwin (1962). Vegetational History of the Chalk Downs as seen at Wingham and Frogholt. *Veröffentlichungen des Geobotanischen Institutes der Eidg. Tech., Hochschule, Stiftung Rübel*, in Zürich **37**: 83-99.

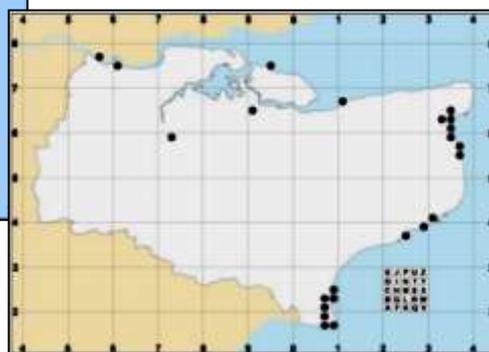
¹⁴ The following list derives from a variety of sources, including E.W. Groves (1958). *Hippophae rhamnoides* in the British Isles. *Proceedings of the Botanical Society of the British Isles* **3**: 1-21. Groves provided an early assessment of native status.

records made to date. In the county survey of 1971-80 (Philp, 1982), the species was located in 18 tetrads, on fixed sand-dunes and in waste places, usually near the coast. In addition to the presumed native sites, it was regarded as almost certainly introduced or bird-sown in some localities. By 1990-2005 (Philp, 2010), its extent had expanded to 23 tetrads, being noted as occasionally planted as an amenity shrub inland, becoming established and reproducing itself on roadside verges or waste land. The position as regards 2010-20 data is not dissimilar, although coverage has extended to 56 tetrad (75 monads). As this species is not uncommon in Kent, the distributional data maintained in this register will be at 1km square (monad) level. This will entail recording at a finer scale than the tetrads given in Philp (2010), from which the accompanying 1991-2005 distribution map is taken (with kind permission of the late Eric Philp and the Kent Field Club).



Hippophae rhamnoides (Sea-buckthorn)
2010-20

Hippophae rhamnoides (Sea-buckthorn)
1991-2005



Eastern Quarry, Bean, inland chalk habitat. Photo by David Steere, 26 August 2019



Reasons for planting may vary. The species demonstrates attractive silver-bronze foliage and, where male and female plants are grown together, orange berries (supposedly with health benefits). The male plants are also attractive in winter, with clusters of bronze-metallic buds. In Britain, there have been plantings for sand-dune stabilisation, which also provides food and shelter for birds. There is a balance to be struck here, however, given that sand-dune growth may also be invasive beyond what may serve the purposes of stabilisation, supposing that it is desirable to arrest

change in a mobile dune system.

At Greatstone dunes, Sea-buckthorn has been present at least since 1947 (when noted as abundant by E.C. Wallace, specimen in **BM**). It is not clear whether this is the same location as the pre-1899 New Romney record, but the plant appears to act as stabilisation coastwards of residential development started from the 1920s, adjoining the narrow strip of the Greatstone Dunes. The narrowness of the dunes, however, places their diversity at risk from dominant Sea-buckthorn expansion, and from 2011-12 onwards, following earlier infestation by Brown-tail moth caterpillars (whose food plant is Sea-buckthorn), work was undertaken by Shepway District Council and Romney Marsh Countryside Partnership to remove 85% of the bushes. Another location where invasion has been considered an issue is at Sandwich / Pegwell Bay, where the Hippophae

Study Group in 1972¹⁵ considered that there was a high risk of invasion and it was recommended that seedlings be uprooted and growth cut back in selected areas, with selected growths allowed to mature.



Male flowers

Female flowers

Seasalter. Photos by Liam Rooney, 8 April 2011



Hippophae rhamnoides dune scrub is a recognised plant community (SD18)¹⁶, although where the species is dominant through its vigorous suckering from horizontal root growth producing thick thorny bushes, little else will grow. Fixation of atmospheric nitrogen by root nodules may lead to a marginal nitrophilous flora, e.g. *Urtica dioica* (Common Nettle), *Galium aparine* (Cleavers) and *Arrhenatherum elatius* (False Oat-Grass). Where it is not dominant, the flora tends to relate to what was there before invasion. Pearson & Rogers (1962)¹⁷ give a list of associates for the (relatively unusual) habitat of Gault Clay, on which a small thicket of Sea-buckthorn was growing at the East Cliff Folkestone. These included *Equisetum arvense* (Field Horsetail) and *Tussilago farfara* (Colt's-foot), which might be expected on the damp mobile clay; but also some plants indicating the nearby presence of chalk - *Poterium sanguisorba* (Salad Burnet) and *Carlina vulgaris* (Carline Thistle).



Hippophae rhamnoides is a distinctive shrub, not readily confusable with any other species.

Samphire Hoe.
Photo by Liam Rooney, 19 May 2010

Dungeness, habitat.
Photo by Heather Silk, 6 April 2014



¹⁵ D.S. Ranwell (ed.) (1972). *The management of Sea Buckthorn Hippophaë rhamnoides L. on selected sites in Great Britain* (report). The Nature Conservancy.

¹⁶ This is also equivalent to the European Habitat Directive (designation of priority habitats for conservation) H2160 'dunes with *Hippophae rhamnoides*' habitat.

¹⁷ M.C. Pearson & J.A. Rogers (1962). *Hippophae rhamnoides* L. (Biological Flora of the British Isles). *Journal of Ecology* **50**: 501-513.

Hippuris vulgaris L. (Mare's-tail)

Draft account

vc 15 and 16

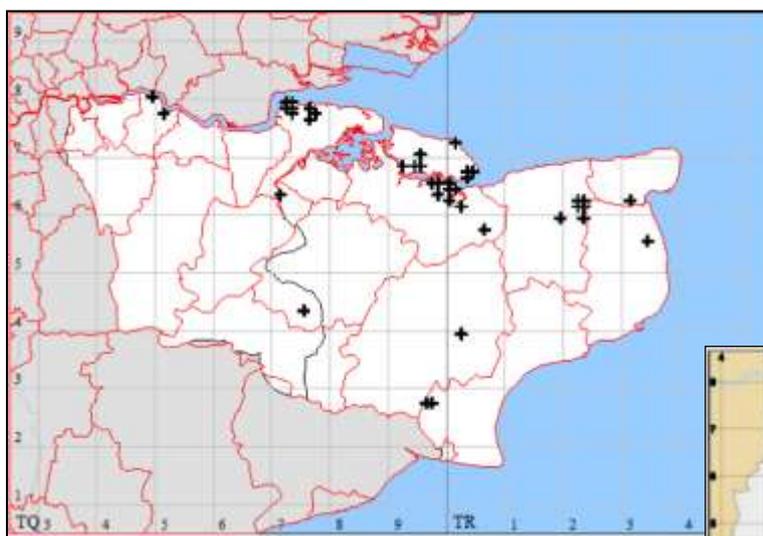
Rarity / scarcity status

Hippuris vulgaris is locally frequent in aquatic habitats throughout the British Isles, especially where waters are base-rich. Its conservation status in England and Great Britain as a whole is one of 'Least Concern'. Its inclusion in the county rare plant register arose because of the relatively few sites listed in Philp (2010), viz. nine tetrads, and the steep decline from the earlier survey in Philp (1982). The first of these reasons may no longer hold good and, with 28 tetrad records in the period 2010-19, it looks as though the second might not either; so this species, apparently neither rare nor scarce in Kent, is being held temporarily in the register pending further assessment.

Account:

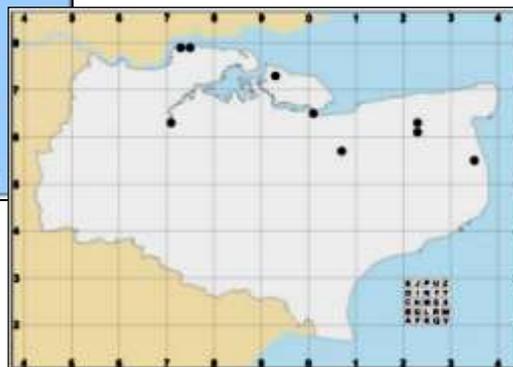
The first Kent record is by Thomas Johnson in his *Descriptio Itineris* (1632), in travelling from Margate to Sandwich, and is accompanied by several plants of ditches and wet ground, so by this point the botanical party had evidently left Thanet. Hanbury and Marshall (1899)'s set of records is primarily coastal, including in marshes alongside the tidal Thames and Medway, and extended from near Charlton to Folkestone Warren, with only a couple of records well inland (Ashford and Goudhurst). They regarded the species as frequent in marshes and ditches. Philp (1982) gave Mare's-tail in 21 tetrads, being very local in marsh dykes and flooded gravel pits, with a concentration on the Hoo peninsula (Egypt Bay saltings has been a traditional location). There were smaller groupings of records near Sittingbourne; by the Stour; and in the Worth / Hacklinge area. However, Philp (2010) found that it had gone from some earlier sites and only nine tetrads were found to contain the species. These are shown in the accompanying 1991-2005 distribution map (provided here with kind permission of the late Eric Philp and the Kent Field Club). Whilst this ostensibly provides evidence of decline, the diminution is not at all supported by 2010-20 data and due to the number of recent records, the

register site information will accordingly be maintained at 1km square (monad) level.



Hippuris vulgaris (Mare's-tail) 2010-20

Hippuris vulgaris (Mare's-tail)
1991-2005



Whilst the general focus of distribution remains in the north of the county, including well spread in Sheppey, new finds have been made around Fairfield in Romney Marsh. The Erith site appears to be a planted one, a 'wild life' pond and so should be disregarded as part of the natural distribution. A couple of other sites are artificial waterbodies, and

one cannot be confident about origins, but the species can evidently colonise new sites, as in 2012 it was found in a pool of very recent formation in a fold of the mobile, slumping London Clay cliffs on Sheppey.

Oare. Photo by Liam Rooney, 6 July 2010

Mare's-tail's usual Kent habitat, however, is in brackish dykes, fleets or lagoons on grazing marshes, sometimes on the muddy margins or in depressions where the thick, wandering rhizomes may be exposed with changing water levels. The tolerance to changing levels is shared by *Rumex maritimus* (Golden Dock), as at Cooling Marshes. It is the luxuriantly flaccid submerged shoots which most aptly fit both English and Latin names for Mare's-tail. The colonies, due to perennial rhizomatous spread, can be quite extensive: in 2011 it was seen along about 30m of ditch at Stodmarsh, together with *Hydrocharis morsus-ranae* (Frogbit).



Mare's-tail might be taken for one of the Horsetails (*Equisetum* spp.), but has its flowers at the base of the leaf whorls and does not bear terminal cones.

Fairfield, Romney Marsh. Photo by Geoffrey Kitchener, 4 August 2013



Worth Minnis. Photo by Geoffrey Kitchener,
5 September 2013

Hordeum marinum Huds. (Sea Barley)

Draft account

vc 15 and 16

Rarity / scarcity status

Hordeum marinum is an annual grass of southern England and Wales, generally confined to coastal areas, especially along the Essex coast, the north Kent coast and Severn estuary, but also present by inland roads treated with de-icing salt. It is regarded as **Vulnerable** to the risk of extinction in the wild, both in England and in Great Britain as a whole. Its vulnerability is indicated by a comparison of its area of occupancy in England over the periods 1930-1969 and 1987-1999, which produced a calculated decline of 40%, in the likelihood of recording the species. This is attributed to habitat changes: the rebuilding of sea defences, infilling of pools and ditches and the cessation of grazing, with or without conversion of the grazing land to arable. In Kent, although largely concentrated on land adjoining the Thames and Swale estuaries, it is neither rare nor scarce.



Shellness Hamlet, Sheppey. Photo by Liam Rooney, 22 August 2011

Account

According to Hanbury and Marshall (1899), the first Kent notice of Sea Barley is given by Dawson Turner and Lewis Dillwyn in their *Botanist's Guide through England and Wales* (1805), in which they refer to the species as found at 'Salt marshes at Seabrook, near Hithe', on the authority of Mr Joseph Woods, junior. It is perhaps a little surprising that this ostensible first sighting was in the south east of the county, where there have been relatively few records since, instead of the north coast of Kent between Gravesend and the eastern mouth of the Swale where it is currently centred. However, the 1805 record is preceded by one made by Pehr Kalm, a pupil of Linnaeus, in 1748 at Gravesend in his diary, the relevant part of which was

not translated into English until 2013¹⁸. There are other somewhat later historic records away from what we would now regard as the main distribution area: Matthew Cowell, in his *Floral Guide for East Kent* (1839), refers to records at the sandhills between Deal and Sandwich (Miss Hervey) and at the salt pans between Sandwich and Pegwell. Hanbury and Marshall (1899) refer to the species as frequent in pastures, on banks and waste ground near the sea and tidal rivers, extending up the Thames to Greenwich and the Medway nearly to Burham; this reference provides a clearer indication of the importance of north Kent coastal areas.



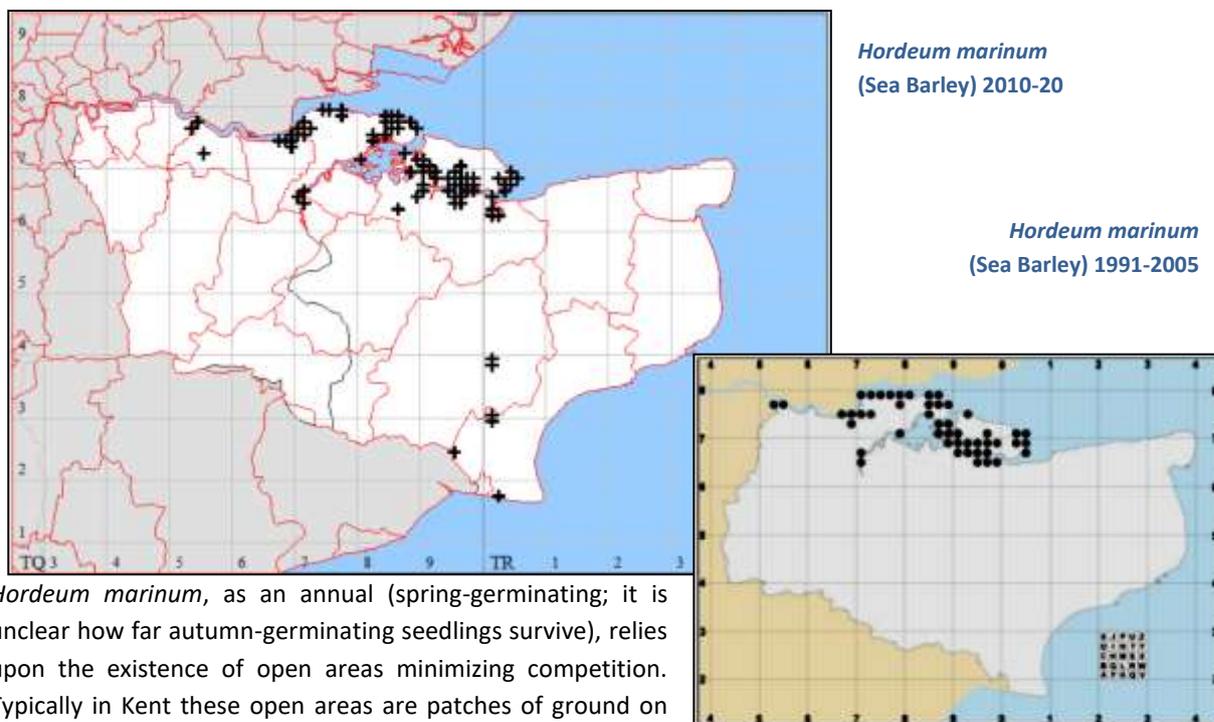
Rushenden, Sheppey, trackside habitat.

Photo by Geoffrey Kitchener, 21 August 2012

¹⁸ Edgington, J. (2017). Agrarian practices and the flora of London in the eighteenth century. *The London Naturalist* **96**: 54-62.

Philp (1982) regarded Sea Barley as fairly common along the north Kent coast between Gravesend and Whitstable, but scarce elsewhere. A couple of new habitats had emerged inland: an orchard where wool-shoddy had been used¹⁹, and the edge of the M20²⁰ together with other halophyte species. It was seen in 60 tetrads, whereas during the subsequent 1991-2005 survey published as Philp (2010), only 48 tetrad records were made, which gives some support for the national picture of decline. It was then described as growing on bare vegetated patches on sea walls and coastal tracks and on trampled margins of dried up coastal pools and ditches; no inland habitats were noted. Such inland habitats, however, do figure in 2010-20 data, as Sea Barley has been seen during that period alongside the A249 for several kilometres southwards from the Sheppey Crossing, and also scattered alongside the A2070 (Ashford to Brenzett road), and at the M25/A2 junction, in each case colonising semi-bare habitats subject to saline influence.

The distributional data maintained in this register will be at 1 km square (monad) level, which entails recording at a finer scale than the tetrads given 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. In comparison with the 48 tetrad records given in Philp (2010), there have been sightings for 52 tetrads (relating to 85 different monads). This does not indicate a continuation of decline since the 1991-2005 survey and it may be that more intensive survey of the Hoo peninsula would bring records back to the 1971-80 level of 60 tetrads.



Hordeum marinum, as an annual (spring-germinating; it is unclear how far autumn-germinating seedlings survive), relies upon the existence of open areas minimizing competition. Typically in Kent these open areas are patches of ground on on London Clay on the landward side of sea walls where through the existence of seepage or depressions, the salinity has prevented growth of perennial vegetation. Presumably, germination follows a temporary reduction in salinity after winter rains; and these areas generally dry out in spring and set hard in summer. Ground kept open by cattle trampling or rutting by vehicles, often around entrances to fields in brackish grazing marshes, also provides typical habitat; and the grass may be found ringing brackish pools, where the mature spikelets will have broken up and have been dispersed along

¹⁹ It is possible that this occurrence was of subsp. *gussoneanum* (Mediterranean Barley), although not named as such; our usual plant being subsp. *marinum*.

²⁰ In contrast with abundant *Puccinellia distans* (Reflexed Saltmarsh-grass), only one small colony of *Hordeum marinum* was noted in J. Feltwell & E. Philp (1980). Natural History of the M20 motorway. *Transactions of the Kent Field Club* 8: 101-114. A scattering was also seen in the centre reservation of the A2 in 1982 – G.D. Kitchener (1983). Maritime plants on inland roadsides of West Kent. *Transactions of the Kent Field Club* 9: 87-94.

the winter flood-line levels. It may also be found in the spray zone, for example along the south shore of Sheppey lining the Swale.

Allhallows. Photo by David Steere, 19 August 2018

Several sites were surveyed in 2010 for the BSBI Threatened Plant Project. There was evidence for the loss of the species where under-grazing had permitted coarse perennial vegetation to invade sea wall slopes and the intervening ground between them and parallel drainage dykes; but there were also management steps being taken to restore heavier



grazing. The most frequent associates were: *Agrostis stolonifera* (Creeping Bent), *Elymus athericus* (Sea Couch), *Lolium perenne* (Perennial Rye-grass), *Parapholis strigosa* (Hard-grass), *Plantago coronopus* (Buck's-horn Plantain), *Plantago major* (Greater Plantain) and *Polygonum aviculare* (Knotgrass). Occasionally, other rare plant register species of saltmarsh or brackish grazing marshes were noted in the immediate vicinity: *Carex divisa* (Divided Sedge), *Inula crithmoides* (Golden-samphire), *Puccinellia fasciculata* (Borrer's Saltmarsh-grass) and *Rumex palustris* (Marsh Dock).



Rushenden, Sheppey, pool margin habitat.
Photo by Geoffrey Kitchener, 21 August 2012

Hordeum marinum is not readily confusable with other British species except, perhaps, depauperate *Hordeum murinum* (Wall Barley). However, Sea Barley is a smaller, stiffer species, bluer-green, and with shorter spikelets, the awns being wide-spreading and the glumes of the central spikelet of each triad being scabrid (rather than ciliate).

Hottonia palustris L. (Water-violet)

Draft account

vc 15 and 16

Rarity / scarcity status

Water-violet grows in shallow ponds and ditches, scattered across England and Wales but with very little presence elsewhere in the British Isles. Hence its conservation risk assessment for Great Britain has been brought into lines with that for England, in which the species is treated as **Vulnerable** to the risk of extinction in the wild. This is a consequence both of a contraction of its range and a diminution in the area of occupation within that range. A comparison over the periods 1930-1969 and 1987-1999 showed that its overall range had reduced by 37% and its area of occupancy had declined so that there was a 33% reduction in the likelihood of recording the species. In Kent, there has also been a significant decline, albeit measured over a different period, the number of tetrad records having halved by comparing the 1991-2005 county survey with that of 1971-80. Whilst Water-violet is as yet neither rare nor scarce in Kent (at least, East Kent), the outlook for the species is unpromising.

Marden Meadow. Photo by Liam Rooney, 23 May 2013

Account

The first Kent record for *Hottonia palustris* was made on 4 August 1632, recounted by Thomas Johnson in his *Descriptio Itineris* (1632) as seen in travelling from Sandwich to Canterbury, apparently in the dykes with other aquatics before reaching Ash. Hanbury and Marshall (1899) considered the species to be locally



common in ditches and ponds, citing many historical records from all botanical districts except in north Kent from the current London boundary to Rochester and thence along the chalk to Wye (this chalk area is deficient in ponds). There are occasional comments remarking on its abundance: one or other of the authors had seen it as abundant in Ham and Deal marshes; and W.R. Jeffrey of Ashford, a contributor to the 1899 Flora, had reported it as common in ponds all around Ashford. Francis Rose noted it as a native of ponds and marsh ditches; still locally common on the eastern half of the Weald Clay, and Romney Marsh, and on the Gault about Ashford; now (c.1960) rare elsewhere, appearing to be extinct in north west Kent and extremely rare in north east Kent despite many earlier records.

The Dowels, Romney Marsh. Photo by Liam Rooney, 27 June 2012

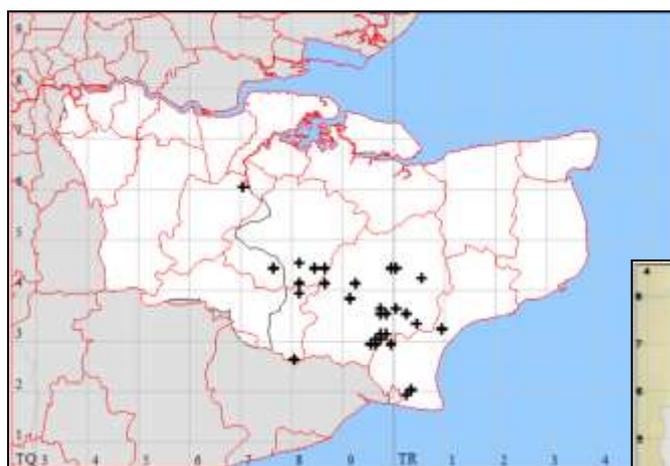
Philp (1982) reported *Hottonia palustris* in 32 tetrads, primarily in the East Kent Weald, extending also down into Romney Marsh. It was then regarded as rather local and declining

through loss or destruction of suitable habitats. Those 32 tetrads were reduced to 16 in Philp (2010), in which the slow decline was expressed to be continuing, for the same reasons. The greatest losses appear to have

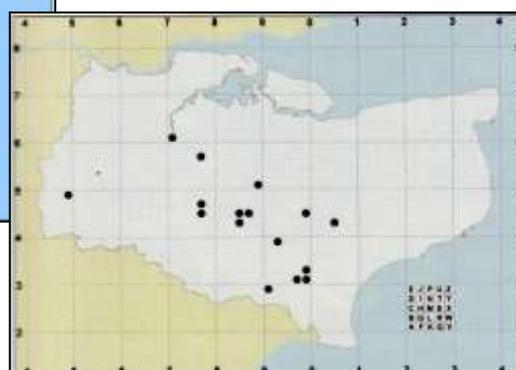


occurred in the Kent part of hectad TQ92, which covers the Rother Levels and the western part of Romney Marsh, where nine tetrads had diminished to one.

Our 2010-20 data for the same hectad, however, has the species in three tetrads. The 2010-20 map given here is based on the collection of distributional data for this register species at 1 km square (monad) level, which entails recording at a finer scale than the tetrads given in Philp (2010). The latter publication is the source of the accompanying 1991-2005 distribution map, reproduced with kind permission of the late Eric Philp and the Kent Field Club. The current position is by no means as pessimistic as the 1991-2005 survey indicates, and is little short of the 1971-80 total, with the 2010-20 data covering 28 tetrad records (for 30 different monads). The general distribution area is also fairly similar; but only a minority of 2010-20 and 1990-2005 sightings actually coincide. Given the quantity of ditches and ponds in the Weald, this may just be a function of different sampling.



Hottonia palustris (Water-violet)
2010-20



Hottonia palustris (Water-violet)
1991-2005

Hottonia palustris is a perennial of still, shallow, clear water which is not eutrophic. It has been said to favour base-rich waters, but in Kent it has been found in waterbodies on a variety of geological formations where waters may be expected to range from base-rich to neutral or slightly acid. Francis Rose collected specimens (in **MNE**) from ponds on Weald Clay (near Headcorn, 1949); on Gault Clay (Nackholt, 1958); on Wadhurst Clay (East Oxney, 1958); on the Lower Greensand (Mersham le Hatch, 1960); and in alluvial marsh dykes (between Appledore Station and Kenardington, 1959) as well as in a peaty fen dyke, presumably with calcareous influence (Worth Minnis, 1956). (His manuscript *Flora of Kent* has a high proportion of records with six-figure grid-references, and it would be possible to trace the range of 1940s-60s occurrences with their related geology more thoroughly.) Our 2010-20 records, found in ponds and ditches also show a range of substrates, and the species was sometimes seen in considerable quantity, e.g. prolific for several hundred metres of dyke at Lydd Ranges in 2014.



The Warren, Ashford. Photo by David Steere,
10 May 2014

The flowers are borne on leafless emergent stalks, but the species is more usually seen and identified in a vegetative state, with its distinctive narrow, pinnate leaves, appearing whorled. There is a 'land form' with smaller, more rigid leaves, which may result from being stranded by changing water levels. Such changes may be beneficial to the species, because falling water levels in late summer offer opportunities for establishment of seedlings on the exposed mud. As well as reproducing by seed, Water-violet can establish from fragments when the flowering stems disintegrate or through dispersal by birds or ditch/pond clearing machinery. Our recent data include no obvious cases of deliberate introduction, but the species is used as for aquascaping by aquarists and so there is potential for release into the wild with other aquarium contents (this may involve foreign material; it is sometimes sold as originating from Asia, although it is primarily a European species with very little presence in western Asia).



The Warren, Ashford. Photo by David Steere, 10 May 2014

Hydrocharis morsus-ranae L. (Frogbit)

Draft account

vc 15 and 16

Rarity / scarcity status

Hydrocharis morsus-ranae is locally frequent in parts of England and Ireland, with a scattering in Wales. It is treated as **Vulnerable** to the risk of extinction in the wild, in both Great Britain as a whole and in England. Its vulnerability is indicated by a comparison of its area of occupancy in England over the periods 1930-1969 and 1987-1999, which produced a calculated decline of 46%, in the likelihood of recording the species. There is some evidence of decline in Kent with changes in habitat, with the number of tetrad records having fallen by 12% between the county surveys of 1971-80 and 1991-2005. However, Frogbit is neither rare nor scarce in Kent.

Brook Bridge, Graveney. Photo by Liam Rooney, 17 July 2010

Account

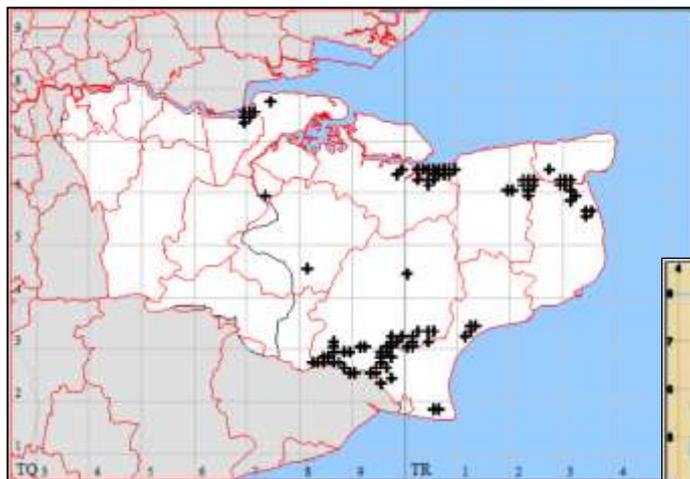
The first Kent record of Frogbit was made, as with the preceding register account (for *Hottonia palustris*), by Thomas Johnson in 1632, in the marsh dykes west of Sandwich. Hanbury and Marshall (1899) regarded the species as common, present in ditches, pools and slow streams in all the botanical districts of the county, especially in marsh-dykes near the sea and tidal rivers. They did not enumerate any records, but it was evidently present in areas away from its current distribution, e.g. in the south west of the county Thomas Forster regarded it as not uncommon in ditches and slow running rivers (*Flora Tonbrigensis*, 1816). More recent records in the Weald are decidedly uncommon: there is the occasional tetrad marked in Philp (1982) and Philp (2010). Francis Rose considered it to be locally frequent to locally common in alkaline fresh waters of marsh dikes and ponds in the Stour catchment from Stodmarsh eastwards, in the Beult basin and at Romney Marsh.



By the 1971-80 county survey, the species was largely restricted to three areas in Kent: Romney Marsh (especially the inland parts, including the levels around the Isle of Oxney); the Seasalter Levels to Oare Marshes (with an outlier further west along the Swale); and from Deal/Worth/Sandwich across the low land (the former Wantsum Channel) around Thanet and up the Stour valley. It was regarded as rather local, but often quite common where it did occur. The 89 tetrads recorded, however, had reduced to 60 in Philp (2010) and it was noted that Frogbit had been lost from some sites where adjoining grazing fields had been turned into arable. This is particularly relevant to losses at Romney Marsh, considered further below and where a quarter of the records had gone between the surveys of Philp (1982) and Philp (2010); and there had also been substantial losses in the area inland of Thanet.

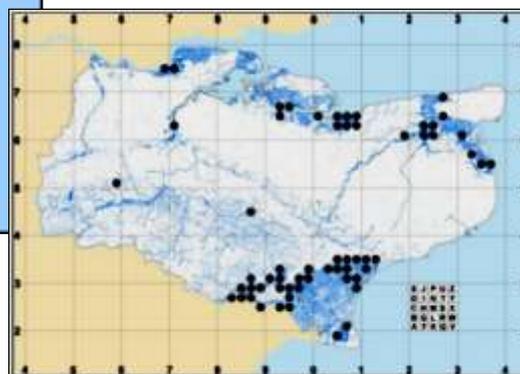
The Dowels, habitat. Photo by Geoffrey Kitchener, 27 June 2012

As *Hydrocharis morsus-ranae* is still not uncommon in Kent, the distributional data maintained in this register will be at 1 km square (monad) level, which entails recording at a finer scale than the tetrads given 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). In comparison with the 60 tetrad records from 1991-2005, recording in 2010-20 has identified the presence of Frogbit in 68 tetrads (represented by 98 different monads). The results do not provide evidence of further decline since 1991-2005, although they do affirm a decline after 1971-80 search in 2010-20 has clearly been more successful than Philp (2010) in the Seasalter area (but not the Swale outlier) and around Higham Marshes.



Hydrocharis morsus-ranae (Frogbit)
2010-20

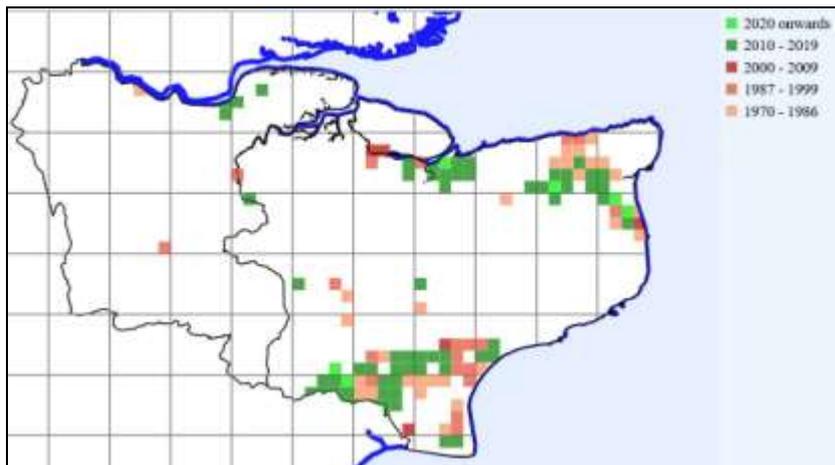
Hydrocharis morsus-ranae (Frogbit)
1991-2005



Frogbit at Romney Marsh was studied by Mountford & Sheail (1989)²¹, who found that it could be treated as an indicator species of the effects of change from pastoral to arable use. The tithe commutation survey maps of 1837-44 showed 88% of Romney Marsh agricultural land as pasture or meadow, and even by the first Land Use Survey of the early 1930s over 90% of the Marsh was described as grassland. The removal of many sheep in the 1940s coupled with the wartime need to increase arable production resulted in the proportion of arable rising from 9% to 37%. A further change occurred in the 1960s as a result of drainage schemes, which made arable cultivation more feasible, the amount of permanent grassland declining from 43% to 31% between 1965 and 1969. These changes continued into the 1980s, when Mountford & Sheail were carrying out their Romney Marsh fieldwork, and have had adverse consequences for the habitat favoured by Frogbit, in a number of ways. After conversion to arable, some ditches may be infilled to make it easier to move farm machinery. Small shallow ditches may become redundant and dry out through under-drainage schemes and the deepening of main drains. The cessation of grazing removes a means of keeping ditch margins open without invasion of coarse, tall vegetation; and if replaced by heavy ditch clearance operations with ditches being enlarged and banks steepened (or alternatively, ditch management ceases altogether and vegetation succession takes place), the effect is to reduce the number of plant species, including Frogbit. In an arable landscape with few large, open drains and the smaller ditches either overgrown or eliminated, Frogbit may only survive in marginal areas of drains where machinery cannot reach.

These changes may be reflected in the pale pink (1970-86) squares in the distribution map taken from BSBI database tetrad records below; the absence of records since for much of the low ground around Birchington, St Nicholas at Wade and Sarre may represent under-recording or also reflect conversion from grazing to arable.

²¹ J.O. Mountford & J. Sheail (1989). *The effects of agricultural land use change on the flora of three grazing marsh areas*. NCC.



Hydrocharis morsus-ranae tetrad records (to 2021) from BSBI database

Hydrocharis morsus-ranae prefers shallow, still, unshaded water. Its needs are best met by small pasture ditches less than one metre deep, where livestock suppress marginal growth and where management work is not radical. It does not cope with

ditches which dry out; with ditches dominated by reed or the like; or with large expanses of open water subject to strong wind or water movement. It often grows with other floating species, including *Lemna gibba* (Fat Duckweed), *Lemna minor* (Common Duckweed) and *Spirodela polyrhiza* (Greater Duckweed). These, and *Berula erecta* (Lesser Water-parsnip), *Glyceria fluitans* (Floating Sweet-grass), *Lemna trisulca* (Ivy-leaved Duckweed) and, more rarely, *Wolffia arrhiza* (Rootless Duckweed), are a recognized plant community, the *Spirodela polyrhiza* - *Hydrocharis morsus-ranae* community (A3). The accompanying photograph of habitat at the Dowells shares some characteristics of that community, with *Wolffia* present, although much of the surface duckweed was *Lemna minuta* (Least Duckweed). *Hydrocharis morsus-ranae* normally, if not almost invariably, spreads vegetatively, with new plants developing as buds at the end of floating stolons, overwintering and then germinating in spring.

Hydrocharis morsus-ranae is not readily confusable with any other British species except, perhaps, non-flowering *Nymphoides peltata* (Fringed Water-lily), which favours somewhat deeper, more open water and which generally has larger leaves and is rooted in the substrate rather than being fully floating.

Hyoscyamus niger L. (Henbane)

Draft account

vc 15 and 16

Rarity / scarcity status

Hyoscyamus niger is an archaeophyte, or ancient introduction, scattered through lowland areas of the British Isles. It is considered to be **Vulnerable** to the risk of extinction in the wild, both in England and in Great Britain as a whole. In England, this is a consequence both of a contraction of its range and a diminution in the area of occupation within that range. A comparison over the periods 1930-1969 and 1987-1999 showed that its overall range had reduced by 46% and its area of occupancy had declined so that there was a 39% reduction in the likelihood of recording the species. In Kent, there has apparently been an even steeper decline, albeit measured over a different period, Henbane tetrad records having fallen by 71% between 1971-80 and 1991-2005. On the basis of Philp (2010), it would be regarded as being scarce in the county, but in view of records made since, it is not quite so uncommon.



Lullingstone. Photo by Sue Buckingham, 16 June 2009

Account

Henbane seeds have been found in a Neolithic / Early Bronze Age pit at Willesborough, Ashford, excavated in 2001²², as part of what appeared to be waste disposal of burnt hearth residues and possibly other plant material. Charred cereal grains, weed seeds associated with cultivation or human disturbance and, significantly, *Chenopodium album* (Fat-hen), *Sambucus nigra* (Elder) and *Urtica dioica* (Common Nettle) were also present. These last species, with Henbane, are associated

with nitrogenous ground affected by human activity, such as middens, which gives further context for this early Kent occurrence. There has been a comparable find²³ in a late Roman context, in the fill from a well at Thurnham Roman Villa where, with charred cereal grains and weed seeds and waterlogged remains of *Hyoscyamus niger*, *Chenopodium* sp. (a Goosefoot), *Sambucus nigra* and *Urtica dioica*, a similar pattern of crop-processing activities and the presence of disturbed, nutrient-rich ground is indicated. Seeds were also found in an early to middle Iron Age context in a pit at White Horse Stone where they accounted for between 25% and 45% of all weed seeds in the relevant samples; it was thought that they had just been burnt along with other crop-processing waste, rather than having been gathered because of the plant's medicinal

²² Report by A. Davis, in E. Eastbury & L. Blackmore (undated). *Excavations at Boys Hall Road, Willesborough, Ashford*. Museum of London.

²³ Giorgi, J. (2006). *The waterlogged plant remains from well 11010 at Thurnham Roman Villa, Kent (ARC THM 98)* (CTRL Specialist Archive Report, provided by Archaeology Data Service).

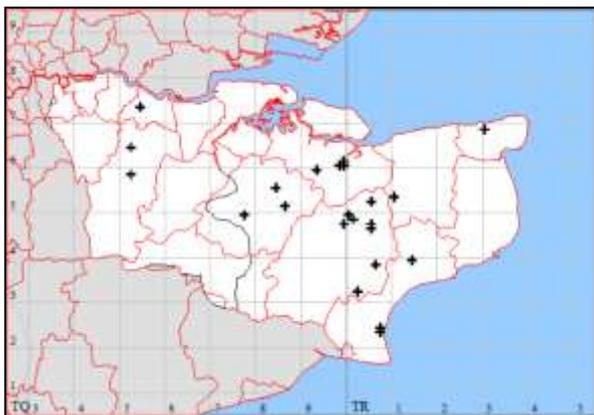
properties.²⁴ Late Bronze Age material yielded seeds from investigations relating to the CTRL construction of Saltwood tunnel, together in a pit with the remains of a broad bean crop.²⁵

Littlestone, sand/shingle habitat. Photo by Owen Leyshon, 9 October 2012

The first Kent botanical record is by Thomas Johnson: it was one of the plants first listed by him as encountered on travelling from Gravesend, after dinner on 13 July 1629, by the main road to Rochester (*Iter Plantarum*, 1629). As an apothecary, he would have been interested in the medicinal aspects of this species, dealt with by the early herbalists, including John Gerard, whose *Herball* was re-issued edited by Johnson in 1633 (this edition carries forward Gerard's description, not confined to Kent, of the plant as growing 'almost every where by highways, in the borders of fields about dunghills and untoiled places'). Other early Kent records include Edward Jacob's mention of it as 'By Road sides near the Town [Faversham] – common' (*Plantae Favershamienses*, 1777); Milne & Gordon's reference to the species as on dunghills about Brockley (*Indigenous Botany*, 1793); and Thomas Forster's record of the plant growing on rubbish at Summer Hill [Somerhill] House, Tonbridge (*Flora Tonbrigensis*, 1816). Hanbury and Marshall (1899) regarded it as often only sporadic, but frequent on banks and in bushy places on chalk, also near the sea. Their listings include many sites on chalk, but also gravel (at Dartford Common and near Sandwich) and on sand (Tunbridge Wells Common) and presumably shingle (Dungeness and beaches near Dover and between Whitstable and Seasalter).

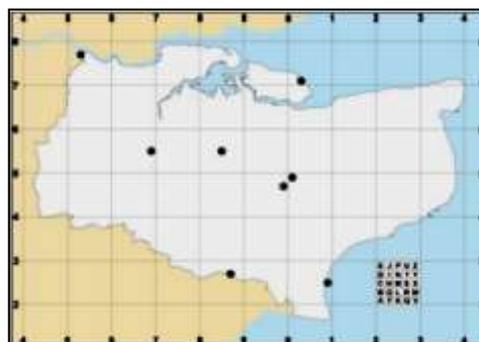


Philp (1982) regarded *Hyoscyamus niger* as rather local and erratic in its appearance, being found on well-manured fields, on chalky banks and on disturbed waste ground, particularly where there are rabbit warrens. The total of 28 tetrad records found in the 1971-80 survey, however, reduced to eight tetrads for 1991-2005 (Philp, 2010). This was attributed to being probably due to more efficient farming practices. The habitats where it was encountered remained similar, but included also coastal sandhills (as had some of the 19th century records).



Hyoscyamus niger (Henbane) 2010-20

Hyoscyamus niger (Henbane) 1991-2005



The Kent status of *Hyoscyamus niger* is such that the distributional data maintained in this register will be at 1 km square (monad) level, which entails recording at a finer scale than the tetrads given in Philp (2010), from

²⁴ Giorgi, J. (2006) The plant remains from White Horse Stone, Pilgrim's Way and Boarley Farm, Aylesford and Boxley, Kent. CTRL Specialist Report. London and Continental Railways.

²⁵ Stevens, C. (2006). The charred plant remains from Saltwood Tunnel, Kent. CTRL Specialist Report. London and Continental Railways.

which the accompanying 1991-2005 distribution map is taken (with kind permission of the late Eric Philp and the Kent Field Club. It will be seen that the 2010-20 data, also mapped below, shows a fairly random spread across the county, but the number of records has far exceeded those given in Philp (2010) – there are now 19 tetrad records (represented by records for 23 different monads). Only three of these appear to represent locations featuring in both maps: a rabbitied chalk slope at Hollingbourne; a field margin at Westwell; and sandy/shingly disturbed ground at Littlestone.

On the other hand, none of the tetrad records in Philp (1982) is repeated in Philp (2010), which accords with the species' reputation for turning up unexpectedly and then disappearing. The limited clustering of records, i.e. there are few monad records sufficiently close to each other that they fall within one tetrad, also emphasises the randomness of spread.

However, despite the generally sporadic nature of the species' occurrence, some of our sites have considerable continuity: for example, although the sighting by Alfred Gay of six rosettes at Postling Downs in 2011 was his first since 2005, Francis Rose had found it here in 1946, abundant on the chalk slopes by rabbit burrows. Also, our record on a chalk slope in Lullingstone Park in 2011 near rabbit diggings probably corresponds to that by W.H. Griffin in 1905, when the species was seen well established on a chalk slope in the park (*Woolwich Surveys, 1909*)²⁶. This pattern of behaviour would be consistent with erratic germination²⁷ of seeds with long-term viability.

The association with rabbits (also applicable to the Boughton Monchelsea site illustrated below, where seen by Brian Gomm at least from 2005 to 2016) appears to reflect the species' preferences for disturbed, well-drained ground and the absence of competition (by virtue of soil disturbance and of rabbits apparently grazing other plants instead, presumably as a result of Henbane's toxic properties) required for re-establishment, Henbane being normally a biennial, although there is an annual form. There may also be a relationship with nitrogen soil content from rabbit droppings, given the historic records for dunghills. However, a material proportion of our recent records have been from arable land, and agricultural operations are likely to lead to less continuity of occurrence in any event.



Hyoscyamus niger is not readily confusable; there are other species of *Hyoscyamus* which have rarely occurred as casuals in the British Isles, but not, it seems, in Kent.

Boughton Monchelsea deer park, by church. Photo by Brian Gomm, July 2005.

²⁶ This is not the only site in Lullingstone Park. It has also been recorded at a knoll south of the golf course (e.g. in 1995).

²⁷ Germination appears to be affected by double dormancy and a partial requirement for darkness – C.Çirak, K. Kevseroğlu & B. Sağlam (2004). Physical and Physiological Dormancy in Black Henbane (*Hyoscyamus niger* L.) Seeds. *Journal of Plant Biology* **47**: 391-395. Seed viability may extend up to 650 years - S. Odum (1965). Germination of ancient seed. *Dansk Botanisk Arkiv* **23**: 1-70.

Hypericum elodes L. (Marsh St John's-wort)

Draft account

vc 15 and 16

Rarity / scarcity status

Marsh St John's-wort is locally frequent in south and west Britain and in Ireland, where suitable bog habitat is available. Its conservation status in Great Britain as a whole is of 'Least Concern'. However, in England it has been assessed as **Near Threatened**. A comparison of its area of occupancy in England over the periods 1930-1969 and 1987-1999 produced a calculated decline of 24% in the likelihood of recording the species. In Kent, there is now very little suitable habitat, and it is **rare**.



Hothfield. Photo by David Steere, 6 July 2014

Account

The first Kent record is to be found in John Ray's *Synopsis Methodica Stirpium Britannicarum* (1724, the third edition, edited by Dillenius), 'In the little Bog near *Charlton*'²⁸. Early records are limited in the main to four areas: the acid heaths of north west Kent (including Charlton, Chislehurst, Hayes and Keston); Tunbridge Wells and Rusthall Commons ('On all the bogs, very common', Thomas Forster,

Flora Tonbrigensis, 1816); at Hothfield; and at Willesborough Lees. There is also an isolated record for a bog at Degg's Wood, Colliers Green (TQ7538) contributed by A.W. Hudson of Cranbrook to Hanbury and Marshall (1899), who considered the species to be very local in Kent, in spongy bogs on heaths.

Hothfield, main bog, habitat. Photo by David Steere, 2 July 2013

Bog habitat in Kent has diminished since then. The north west Kent records became reduced to Keston Bog, from which Marsh St John's-wort disappeared at some time after 1950. In the Tunbridge Wells area, it was still present at Hawkenbury Bog (TQ5937), at least until the county survey of 1970-1981, published as Philp (1982); but this very small site was actually in East Sussex, vc14, and subsequently became over-vegetated and dried up, with the loss of this and other bog species. At Willesborough Lees, *Hypericum elodes* was present before 1829, but does not seem to have been seen since; currently, tree cover has



²⁸ Hanbury and Marshall (1899) attribute this find to Samuel Doody, but this is not what the *Synopsis* actually says, Doody's find being one at Bagshot Heath, in Surrey.

modified the nature of the habitat. At Gibbons Brook, the species has not been recorded since 1925 (J. Walton). In the High Weald, the Colliers Green site has not been re-found, but has been compensated by the discovery of the *Hypericum* in 1941 (subsequently noted by Francis Rose with *Sphagnum subsecundum*) in an acid swamp by Louisa Lake, Bedgebury.



Hothfield, with *Juncus bulbosus* (Bulbous Rush).

Photo by Liam Rooney, 4 July 2010

Philp (1982) gave Bedgebury, Hothfield and Hawkenbury Bog (although in vc14) as current sites. With the loss of the last of these, only Bedgebury and Hothfield remained for Philp (2010) and these are the only Kent sites now. Its future at Hothfield, on a managed reserve, appears reasonably secure. Survival at Bedgebury depends on scrub maintenance in order to avoid being shaded out.

Hypericum elodes grows on damp mud or in shallow water (rarely up to 50 cm deep) over acid ground and spreads via creeping or submerged shoots. Normal plants are hairy, which distinguishes the species from others in the British Isles except for *Hypericum hirsutum* (Hairy St John's-wort), a plant of dry habitats. The rounded stems, leaves without black glands and sepals with fringing reddish glands distinguish *Hypericum elodes* from other St John's-worts of wet habitats.

Site	Grid reference	Site status	Last record date	Recorder	Comments
Bedgebury	TQ7322		2 April 2011	KFC meeting	Eastern edge of Louisa Lake in sphagnum flushes. Benefiting from some work undertaken by Forestry Commission (prompted by JP) for clearance of encroaching sallow and <i>Rhododendron ponticum</i> .
Hothfield	TQ9645 and TQ9646	KWT managed reserve, SSSI	(1) 11 July 2019 (2) 1 July 2019 (3) 2 June 2019 (4) 17 September 2018 (5) 17 July 2016 (6) 8 August 2015 (7) 6 July 2014 (8) 9 September 2011 (9) 15 June 2010 (10) 25 May 2010	(1) AL (2) AL & JM (3) & (4) AW (5) DS (6) BW (7) DS (8) SB (9) JA (10) GK	(1) TQ 9673 4610, in Bog 4, M29 <i>Hypericum elodes</i> soakaway. (2) TQ 9697 4568, top of Bog 2, M29 <i>Hypericum elodes</i> soakaway (3) & (4) TQ9645, (5) TQ9645, main bog. (6) TQ9645. (7) Hundreds of flowering stems in small area of main bog. (8) Area of plants 2 x 3 metres at TQ 96735 46100 in northern bog (no. 6). (9) Sample record: a plant just in flower plus seven linked patches by bridge walkway over bog no. 2 at TQ 96826 45659. (10) In main bog (nos. 3, 4) and southern bog (no. 2), and bog between main and northern (no.5).

Hypericum maculatum Crantz (Imperforate St John's-wort)

Draft account

vc 16; gone from vc 15

Rarity / scarcity status

Hypericum maculatum is common in Wales and West Midlands, with a widespread distribution across the remainder of the British Isles albeit with some gaps, of which Kent is one. Its conservation status in England and in Great Britain as a whole is of 'Least Concern', but in Kent it was considered possibly extinct when the list of plants to be covered by this register was first prepared (2010), leaving only a genetic trace in its hybrid, *Hypericum x desetangsii*. However, since then its continued presence has been confirmed, and it is treated as



rare.

Preston Hill. Photos by Geoffrey Kitchener,
21 August 2014

Account

The first published Kent record for Imperforate St John's-wort is by Daniel Cooper in his *Flora Metropolitana* (1836), which he lists as *Hypericum dubium* at Charlton Wood. However, it is not always possible to be certain of the intention of early literature references, where *H. quadrangulum* was applied to both Imperforate St John's-wort and the Square-stalked St John's-wort (*H. tetrapterum*). Hanbury and Marshall (1899) regarded it as rare in Kent on the basis of known records, in hedges or on stream-sides, usually on a stiff soil. They believed, however, that it ought to be found more frequently in the west or central Weald than the relatively few records cited. This is to a degree borne out by Philp (1982), which gives eight tetrad records from damp woods, hedgerows and streamsides in the west of the county, largely in the Weald. There appear to be no validated East Kent records other than one from near Folkestone by B.D. Jackson, in Hanbury and Marshall's listing.

The eight tetrad records from Philp (1982), however, became nil in the 1991-2005 survey published as Philp (2010), with the supposition that the species might well be extinct in the county. There is no apparent reason why this should be so, nor have any national trends of decline been identified. The continuity of record at the Preston Hill, Shoreham site from 1966 to 2014 suggests that it may be worth reviewing other sites for continued presence.





Hypericum maculatum is a perennial favouring damp and/or shaded habitats, which may be of a marginal character. A clay soil may assist in providing the damp substrate, and the two records given below where plant grew over chalk (Preston Hill and Pratt's Bottom) seem to have involved a superficial layer of clay as well. The species may be distinguished from *H. tetrapterum*, which generally grows in damper habitats, by the latter having more broadly winged stems, smaller flowers and sepals which are as long as the petals (half as long in *H. maculatum*). From *H. perforatum* it may be separated by possessing a 4-lined stem (*H. perforatum*'s stem is 2-lined), more rounded leaves without the abundance of pellucid glands in *H. perforatum*'s 'perforated' leaves and broader sepals.

However, plants intermediate between *H. maculatum* and *H. perforatum* are found, being the hybrid, *H. x desetangsii*.

This is partly fertile and persists or spreads in the absence of the Imperforate St John's-wort. Philp (2010) gives three locations for the hybrid and more recent finds have been made at TQ 7216 3100 near Flimwell, TQ 51805 43311 in the R. Eden catchment near Penshurst and TQ 63092 47335, near the R. Medway east of Tonbridge, both in 2011; also TQ 4602 4601, near the R. Eden east of Edenbridge and TQ 53214 42549, near the R. Medway by Penshurst, both in 2016. There appears to be an association with the Eden and Medway rivers. There are older records in both East and West Kent, well distant from anywhere with records of *H. maculatum*.

Site	Grid reference	Site status	Last record date	Recorder	Comments
Westerham	TQ45H		After 1970, before 1981	Philp (1982)	Recorder was RAC, according to LNHS records.
Toy's Hill	TQ45Q		After 1970, before 1981	Philp (1982)	
Toy's Hill	TQ45R		10 August 1986		Border in Emmetts Gardens; LNHS records give GDK as recorder, but no recollection of this.
Pratt's Bottom (metropolitan vc16)	TQ46Q		(1) Probably between 1988 and 1991 (2) 27 August 1988 (3) 12 July 1987	(1)EGP (2) GK (3) JP	(2) Rushmore Hill Wood, TQ 475 619, path where clearance had been undertaken for utilities, on chalk with clay overlay.[since become closed canopy woodland, 2020]. (3) Birthday Wood, TQ 475 619, appeared in gas main clearing, intermittently along 30 yds of open ride.
Well Hill	TQ46W		After 1970, before 1981	Philp (1982)	Hollows Wood, JP, 1978 according to LNHS records.
Oxleas Wood (metropolitan vc16)	TQ4475		18 May 2010	JSw	TQ 440 758, south east[?] boundary of Oxleas Wood, LNHS meeting. [Not refound, Aug 2020, RMB]
Preston Hill Country Park	TQ5336		(1) 21 August 2014 (2) 1966 to 27 June 2013 (3) After 1970, before 1981	(1) GK & SK (2) RMB (3) Philp (1982)	(1) 13 plants/clumps seen, along sides of path through mixed deciduous woodland where there are breaks in the canopy, scattered from TQ 5312 6336 (alt. 121m.) to TQ 5322 6324 (alt. 144m), from

					<p>single-stemmed to c.12 stems. Soil is over chalk, with some clay overlay. Path was subject to encroachment by brambles, and plants sometimes growing through these, they may rely on periodic clearance. Associated ground floor flora included: <i>Agrimonia eupatoria</i>, <i>Brachypodium sylvaticum</i>, <i>Clematis vitalba</i>, <i>Geum urbanum</i>, <i>Hedera helix</i>, <i>Heracleum sphondylium</i>, <i>Rubus fruticosus</i> agg., <i>Tamus communis</i>, <i>Viola</i> sp. One plant of <i>Hypericum perforatum</i> was found in the vicinity, but hybrids were not identified. <i>H. hirsutum</i> was also present.</p> <p>(2) Presence at this site (given as TQ 533 632) has been recorded by RMB since 26 June 1966, with a sighting again in 1980 and (non-flowering) in 1994. The 2013 sighting was at Preston Hill Country Park, by path where it climbs into woodland, TQ 53 2634, where there were three clumps with 11 stems.</p>
Chiddingstone Hoath	TQ54B		After 1970, before 1981	Philp (1982)	
Hall's Green	TQ54J		After 1970, before 1981	Philp (1982)	
Rusthall	TQ54K		21 June 1991	JP	Rusthall cemetery / Shadwell Wood.
[Lamberhurst]	[TQ63S]		[After 1970, before 1981]	[Philp (1982)]	This is probably in vc14, but within the administrative county of Kent.
Pembury	TQ64G		After 1970, before 1981	Philp (1982)	

Hypericum montanum L. (Pale St John's-wort)

Draft account.

vc 15 and (lacking recent confirmation) 16

Rarity / scarcity status

Hypericum montanum is a plant growing generally on chalk and limestone and in the British Isles confined to England and Wales, where it is fairly widespread but local. In Great Britain as a whole it is treated as **Near Threatened**; for England, however, its conservation status is currently one of 'Least Concern'. In Kent, it is **rare**.

Account

Pale St John's-wort was first mentioned for Kent by Christopher Merrett (*Pinax rerum naturalium Britannicarum*, 1666) as 'on the Hedge side beyond Lew[i]sham'. Hanbury and Marshall (1899) regarded the species as rare, growing on banks and in bushy places, and gave a number of records, all of them in West Kent (except for Bysing Wood, Faversham, 1746). They considered that it preferred the borderline between sand and chalk, 'i.e., a somewhat cretaceous sand or a somewhat sandy chalk'.



Snowdown. Photos by Alfred Gay, 25 July 2017



This geological preference was also indicated by some of Francis Rose's records in the 1940s and 1950s. These included a sunny hedgebank at a wood border on the junction of chalk and Thanet Sand (west edge of small wood, Well Wood, near Nash, Keston, 1954-55); the roadside bank of the A2 [now the A296], again on the junction of chalk and Thanet Sand, bordering The Thrift, Stone [but presumably nearer Bean], 1945; and in open scrub on a slightly sandy, but chalky bank at the north end of Darenth Wood by the A2 [now the A296], 1946. All these are represented by specimens in

MNE, but Francis Rose also referred²⁹ to three 1946 localities about Darenth Wood, and their correspondence to a site in a wood between Greenhithe and Southfleet, noted in manuscript by Samuel Doody (1656-1706), demonstrating long continuity. Chalky ground with an overlay of loam in places also provided another of Francis Rose's sites (1957-65), at Longreach Wood, Stockbury, where he found the species in roadside scrub in

²⁹ *Botanical Society and Exchange Club Report for 1946-47 (1948)*: 13: 286.

open glades and at the edge of beechwood (this may have been near the current RNR by the A249 at TQ8360, although the road was enlarged here on the north western side after 1960 when dualled)³⁰. The geology is similar at the Snowdon site, mentioned below, where the soil is sand over chalk with a thin layer of humus from a nearby beech tree.



Darenth Wood (TQ57R) and East Hill, West Kingsdown (TQ56R) were the only localities mentioned in Philp (1982), and a woodland ride near Woolage Village (Snowdown) is the only site given in Philp (2010) and the only confirmed recent (2017) site, so the species has remained rare in Kent.

Snowdown - habitat. Photo by Sue Buckingham, 25 July 2017

Hypericum montanum is a stiffly erect perennial of warm, well-drained soils. It perhaps most closely resembles *Hypericum hirsutum* (Hairy St John's-wort), which occupies similar habitats. It is, however, a less hairy plant overall, the stems (in Britain) are glabrous, the broader leaves are virtually hairless above and have a row of black glands along the margins beneath. The flowers are pale yellow (hence, Pale St John's-wort).

Site	Grid reference	Site status	Last record date	Recorder	Comments
Elmstead Woods (metropolitan vc16)	TQ4270		(1) 1990 (2) 1987	(1) RMB (2) JP	TQ 422 706, on steep bank of Station Approach. Smothered by gorse, 1998; no longer present in 2003 (bank dominated by ivy); but present on 2 August 2014 as a cultivated plant in garden in Elmstead Lane (LNHS meeting). Recorded on Thanet Sand at lane hedgebank in Elmstead Lane by FR in 1943. (2) Sundridge Park golf course, behind the mansion on scrubby wooded slopes near the railway line. Also 1985 in wooded area near railway.
West Kingsdown	TQ56R		(1) 26 June 1987 (2) 1976 (3) After 1970, before 1981	(1) & (2) JP (3) Philp (1982)	(1) Scrubby grassland at Hog Wood/High Castle Wood, East Hill (this refers to the High Castle Wood side of the footpath, on the slopes). [Not seen in 2009.] (1) High Castle Wood, East Hill. One plant at edge of ride on north side. (2) Scrubby grassland on thin sandy soil overlying the chalk.
Darenth Wood	TQ57R		(1) After 1970, before 1981 (2) 1976	(1) Philp (1982) (2) JRP	(1) Scrubby grassland on thin sandy soil overlying the chalk. (2) 'A new locality', near the 'motorway'. [HM Pratt described a 1955 location as very few plants by a manhole cover on south verge of

³⁰ In litt., 1998, Owen Davis referred to the former site as at TQ 828 602, but the *Hypericum* then no longer to be found, impenetrable brambles and scrub being present. Francis Rose's MS Flora refers to about 15 plants in 1965, on steep scree in chalk scrub on the north side of the main road.

					Watling Street at north boundary of Darenth Wood; his map would place it at c. TQ 5799 7312.]
Darenth Wood	TQ57W		1984	FR	By A296 (former A2).
Painters Forstal	TQ9958		17 May 2012	MP	Churchmans Farm, TQ 991 584; record needs confirmation.
Seasalter	TR0963		30 June 1990	JP	TR 095 635.
South of Snowdown, west of Woolage Village	TR2450		(1) 15 August 2020 (2) 25 July 2017 (3) 17 July 2000 (4) Between 1991 and 2000 (5) 20 June 1985	(1) SB (2) KBRG meeting (3) JP (4) EGP (Philp, 2010) (5) JP	(1) At least 4 robust plants viewed in same place as seen in 2017. Probably more plants out of view. (2) Nine plants scattered over c. 10m of mostly bare unshaded ground at TR 2509 5005 at the edge of a wood and above a deep railway cutting. Plants varied in height from c. 15 to 40 cm and were mostly in fruit. The soil is sand over chalk with a thin layer of humus from a nearby beech tree. Associated plants: <i>Luzula forsteri</i> , <i>Inula conyzae</i> , <i>Veronica officinalis</i> , <i>Potentilla sterilis</i> , <i>Viola reichenbachiana</i> and <i>Viola hirta</i> . This narrow strip of ground appears to be cut regularly as part of routine railway maintenance, keeping it from scrubbing over. (2) Woods south of Snowdown (a small wood west of the railway line). (3) Small colony in woodland ride near Woolage Village, given as TR25K. There is a 1966 record by FR and his MS Flora mentions a sighting by PG of 2,000 plants in seven localities in this area.

Hypochaeris glabra L. (Smooth Cat's-ear)

Draft account.

vc 15; probably gone from vc 16

Rarity / scarcity status

Hypochaeris glabra is an annual of nutrient-poor soils, frequent in East Anglia and the Channel Islands, but otherwise locally scattered in the British Isles. It is regarded as **Vulnerable** to the risk of extinction in England and in Great Britain as a whole. A comparison of its area of occupancy in England over the periods 1930-1969 and 1987-1999 produced a calculated decline of 31% in the likelihood of recording the species. In Kent it is less widespread than it was in the 1940s. It would have been considered rare in the county on the basis of the data given in Philp (2010), but more records have been made since, and it is to be treated as a **scarce** Kentish plant.

Account

The first Kent record appears to have been published by William Curtis in his *Flora Londinensis* (vol. 3, 1778-1781), where he describes the species as having flowers the size of a silver threepence and seen by him 'in tolerable abundance on *Black-heath*, particularly under Greenwich Park Wall, on the South-side'. Subsequent



historic records also indicate terrain of a gravelly or sandy nature: Woolwich Warren (where seen by Nathaniel Winch, published in Turner and Dillwyn's *The Botanist's Guide through England and Wales*, 1805); sandhills (*Phytologist*, N.S. vol.5, 1861) and rough fields near the Chequers (1878, specimens in **SLBI** and elsewhere), both between Deal; sandy ground near Sevenoaks (1837). Tunbridge Wells and Rusthall Commons (Edward Jenner's *Flora of Tunbridge Wells*, 1845); on dry sandy heaths and fields (Thomas Forster's *Flora Tonbrigensis*, 1816); and Frederick Hanbury's records given in Hanbury and Marshall (1899) at Rodmersham (the underlying geology in this area is mostly chalk, but the site may have been on

Thanet Formation sands) and on sandy ground near New Romney.

Lydd Ranges. Photos by Sue Buckingham, 7 August 2012

Smooth Cat's-ear was reckoned by Hanbury and Marshall (1899) to be rare and this has remained the case, but by the 1940s and 1950s it was still present in a range of sites across the county. There are specimens in **MNE** gathered by Francis Rose west of Farningham Wood in open heath on Thanet Formation sands (1945, also seen by R.A. Boniface in 1948 at TQ 533689); south of Joydens Wood in open sandy grass heath on Blackheath Beds (1948); north of Deal on fixed dunes not far from the sea (1949); at Hothfield Common in open grass heath on Folkestone Sand (1948, 1954); at Romney Warren, growing up to 33cm high, in old fixed dune pasture (1946); at Greatstone on fixed dunes (1950); and at Lydd Common in ancient fixed dune pasture (1954). After 1954 there is a gap



in sightings. The 1971-1980 county survey (Philp, 1982) did not locate any plants, but it is likely that plants were simply overlooked as they are not easy to see when the flowers are closed – they only open in the morning, in full sun. Francis Rose was still able to find plants at Farningham Wood in 1982 and at Romney Warren in 1986. The 1991-2005 county survey (Philp, 2010) recorded plants in three tetrads (TR02K, Lydd, and TR02X/Y, St Mary's Bay), but it has since become apparent that the species is much more extensive in the Dungeness/Lydd area, with sightings in ten monads (equating to seven tetrads) during 2010-19.

Hypochaeris glabra (Smooth Cat's-ear)
2010-20

It is possible that the plant still remains undetected at other historic sites, such as between Deal and Sandwich.

Hypochaeris glabra is an annual, requiring open conditions for establishment and is described by

Stroh (2015)³¹ as an early colonist of periodically disturbed, dry, nutrient poor sandy or gravelly acidic soils in areas that have open, sunny and warm aspects. The relationship with periodical disturbance is tied with historic arable records which are, however, decreasingly applicable in the British Isles; and in Kent were limited in any event (see above for Tonbridge area, 1816, and Deal, 1878). Periodic disturbance is not so evident in relation to current Kent sightings. Many of our recent records are on consolidated sandy shingle with a



relatively undisturbed cover of mosses and lichens, and the lack of nutrients slows down natural succession. If it were appropriate to regard the species as an early colonist, this would have to be in the context that colonisation by vascular plants generally in this habitat is a long-protracted process.

Lydd Ranges, habitat, in moss/lichen over consolidated shingle. Photo by Sue Buckingham, 7 August 2012

The species ought not to be confusable other than with *Hypochaeris radicata* (Cat's-ear), with

which it sometimes grows. The leaves of *H. glabra* differ in being generally hairless, or nearly so; the florets barely exceed the involucre bracts (whereas those of *H. radicata* exceed considerably); and the plant as a whole is usually smaller. The flowers are generally smaller: 4-15(21)mm across, in comparison with 14-27mm for *H. radicata*. The hybrid between these species has not yet been recorded in Kent, although unconfirmed candidates have been noted. Confirmation would benefit from the presence of sterile achenes, given that intermediacy in flower size is obscured by the overlap of measurements.

³¹ Stroh, P. (2015). *Hypochaeris glabra* L. Smooth Cat's-ear. Species account. Botanical Society of Britain and Ireland. www.bsbi.org.uk/Hypochaeris_glabra_species_account.pdf, accessed 25 September 2015.





Littlestone Warren, growing with *Hypochaeris radicata* (the large flower in the foreground). Photo by Sue Buckingham, 2 June 2014

Site	Grid reference	Site status	Last record date	Recorder	Comments
Lydd Ranges	TR0219		16 June 2018	SB & OL	On sandy ground at TR 027 196 with <i>Trifolium scabrum</i> and <i>T striatum</i> .
Lydd Ranges	TR0319	MoD land	(1) 13 June 2013 (2) 7 August 2012	(1) OL (2) OL, GK, TI, SB	(1) Around 60 plants along old shingle ridges near to a footpath adjacent to conifer plantation and near to populations found in August 2012 within the Lydd MOD Ranges. TR 03869 19599. (2)(a) Flattish, rabbit-grazed, semi-bare acid ground at TR 03828 19326 (1 plant) and TR 03859 19913 (1 plant). (b) Over 30 plants scattered mostly at TR 036194 and TR 035194, but also in TR 036195. On sandy heathy ground over shingle, semi-bare or shortly vegetated (particularly with moss/lichen layer), heavily rabbit-grazed, often slightly hummocky (plants being both on humps and in shallow hollows), on both sides of a military road near pine plantations. Associates include <i>Rumex acetosella</i> , <i>Sedum acre</i> , <i>Sedum anglicum</i> , <i>Agrostis</i> spp, <i>Teucrium scorodonia</i> , <i>Calluna vulgaris</i> . Plants recorded at TR 03685 19427 (3 plants), TR 03568 19417 (2), TR 03565 19466 (1), TR 03555 19459 (1), TR 03564 19460 (2), TR 03586 19478 (1), TR 03588 19472 (3), TR 03595 19471 (1), TR 03584 19433 (1), TR 03601 19469 (1), TR 03609 19463 (1), TR 03636 19448 (7), TR 03642 19480 (1), TR 03642 19484 (1), TR 03654 19494 (1), TR 03653 19510 (1), TR 03662 19522 (1), TR 03678 19535 (1), TR 03670 19556 (1), TR 03678 19575 (1), TR 03673 19579.
Lydd south	TR0419		2 June 2013	OL	
Dungeness reserve	TR0619	RSPB reserve	(1) 8 August 2012 (2) & (3) 12 May 2011	(1) SB & TI (2) EGP & DG (3) TI	(1) One plant at TR06416 19877, two at TR06438 19914, one at TR0666 1994, on thin sand/peat/

					shingle. (2) TR064 198 approx at ARC pits, 20 plants. (3) TR06388 19839 - 160 plants, TR06458 19884 - 18 plants, TR06678 19945 - 26 plants.
Dungeness	TR01Y		27 June 1996	EGP	Not included in Philp (2010), for reasons unknown.
Lydd (west)	TR0203	MoD land	8 August 2012	SB & TI	Seven plants on mown lawn by barracks, TR 0355 2002.
Lydd (east)	TR0521		(1) June 2014 (2) 11 June 2013 (3) 2001 (4) Between 1991 and 1998	(1) FJR (2) OL (3)&(4) EGP (Philp, 2010)	(1) TR 0517 2197, TR 0518 2198, TR 0519 2193, TR 0519 2194, T R0519 2199, TR 0520 2198, TR 0520 2199, TR 0521 2196, TR 0522 218, TR 0522 2194, TR 0524 2195; TR 0524 2196, all from survey of Lydd airport lands. (2) Around 40 plants along two old shingle ridges adjacent to the approach road to Lydd. Understood to be a site found by Eric Philp and that there were a few plants about 10 years ago. TR 05071 21845. (3)TR 0504 2179, growing along either side of road at East Ripe, within 10m. (4) Recorded as TR02K.
Dungeness	TR0618		June 2014	FJR	TR 06393 18864.
Dungeness	TR0620		15 June 2013	TI	
Lydd Airport	TR0621		June 2014	FJR	Plants at TR 0681 2168, TR 0682 2170, TR 0682 2171, TR 0682 2172, TR 0682 2174, TR 0682 2175, TR 0683 2172, TR 0683 2186, TR 0684 2176, TR 0685 2172, all from survey of Lydd airport lands.
Littlestone – St Mary’s Bay	TR02T		(1) 18 May 2008 (2) 18 July 2007	(1) JP, BW (2) JP	(1) TR076262, Romney Warren Country Park. (2) TR077260, Romney Marsh Visitor’s Centre.
Littlestone	TR02X		(1) 7 July 2002 (2) 23 June 2002 (2) 13 June 2002	(1) & (2) BW (2) EGP & DG	(1) TR0825. (2) TR0824.
Littlestone Warren	TR0826		(1) 28 April 2019 (2) 2 June 2014 (3) 5 June 2010 (4) 18 May 2008 (5) 28 May 2006	(1) GK (2) SB & AG (3) KBRG meeting (4) JP, BW (5) JP	(1) TR 08789 26380, on consolidated sandy ridge, sparse vegetative cover, abundant, beginning to flower. (2) Thousands of plants, carpeting the Warren. (2) On consolidated sandy ridges at TR 08890 26770 and elsewhere on the Warren. Extent not readily ascertained, as no flowers expanded. (Seen also by GK at TR 08888 26784 on 15.06.2010.) (3) TR 088 262. (4) TR 088262, abundant.
St Mary’s Bay	TR02Y		13 June 2002	EGP & DG	May relate to TR0826 entry above.
Romney (Littlestone) Warren	TR0927		28 May 2006	JS	TR 0915 2746.

Hypopitys monotropa Crantz (= *Monotropa hypopitys* L.) (Yellow Bird's-nest)

Draft account.

vc 15 and 16

Rarity / scarcity status

Hypopitys monotropa is infrequent in England and Wales, rare in Scotland and Ireland, and is regarded as an **Endangered** species in both England and Great Britain as a whole. In England, a comparison of records over the periods 1930-1969 and 1987-1999 produced a calculated decline of 52% in the extent of geographical areas occupied. A similar decline in the number of sites in the administrative county of Kent has been noted



over the shorter comparison periods of 1971-80 and 1991-2005, although whether this actually represents a decline is questionable; indeed, the species, although uncommon in the county, falls somewhat short of qualifying as scarce. It is treated as a UK Biodiversity Action Plan priority species, with a need to understand the reasons for its decline.

The Larches, Detling. Photo by David Steere, 14 July 2013

Account

Yellow Bird's-nest was first mentioned for Kent by John Blackstone in his *Specimen Botanicum* (1746) as reported by Mr. Jarvis ('an eminent Surgeon and curious Botanist') from 'In a Wood near *Maidstone, Kent*'. Historical records refer to its presence under various trees: in woods of beech and fir (near Cobham, given by H.C. Watson in *The New Botanist's Guide*,

1835, as found by William Pamplin); below ashes and alders (at Stowting, given in the same publication, as found by Sir William Hooker); in fir woods near Barfreston (reported by the Rev. S.H. Cooke for the 1899 *Kent Flora*); in a fir copse near Ringwoud (noted by Frederick Hanbury, before 1899); and under beech on the Wye hills (recorded by John Jeffrey, curator at Edinburgh Royal Botanic Garden, before 1899). The predominance of locations under conifers and beech indicates the species' preference for deep shade.

High Elms. Photo by Fred O'Hare, 17 July 2012.

Hanbury and Marshall (1899) regarded the species as uncommon, citing records from across the county. This cross-county distribution was still shown by data in Philp (1982), with records from 12 tetrads following the chalk of the North Downs. The 1991-2005 survey published in Philp (2010), however, gave only half this number of tetrads, nearly all in West Kent.

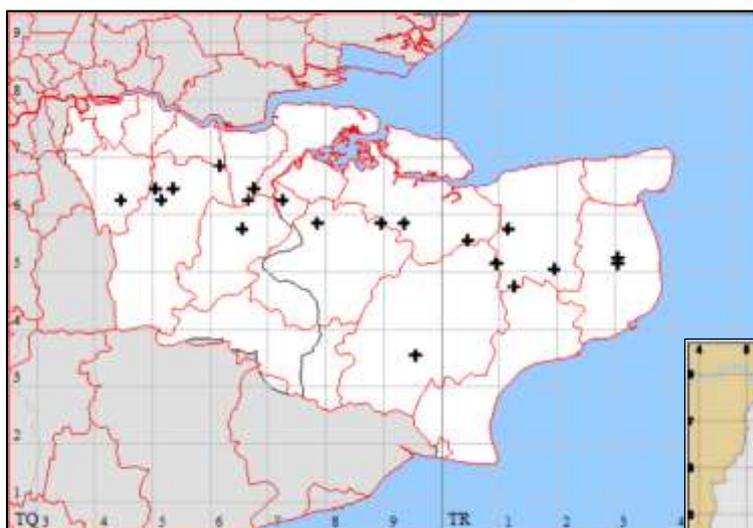


The species was then assessed as a rare plant usually found in woodland with deep leaf litter and appearing to be in considerable decline. This, however, is not supported by records for the period 2010-20 which relate to

20 tetrads spread across the county almost equally as between East and West Kent, and exceeding the number for both earlier surveys, albeit relating to a larger area as one of these tetrads falls within metropolitan West Kent. The fact that 2010 are for the same number of monads and tetrads suggests that populations are relatively small and discrete, without ever amounting to enough in any one locality to extend across a monad boundary in the same tetrad.

The 2010-20 tetrads show very little coincidence with those featuring in the 1991-2005 survey, and the latter included none of those given in the 1971-80 survey. Accordingly, the evidence of population trends in Kent is not straightforward.

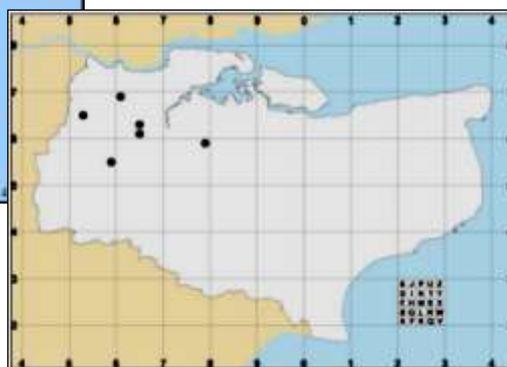
There is, however, some evidence of a degree of continuity of occurrence at sites, but this may be variable or intermittent. An example is a site at Lullingstone (TQ5364), in a tree belt of beech and other species, where Yellow Bird's-nest was seen in 2000 and 2004, did not show during searches in 2006 and 2013, but put forth two spikes in 2014. A site at Cuckoo Wood, Downe (TQ4462) with records from c. 1920 onwards has been known for the appearance of one or two spikes in 'normal' years, but often none: from June to August 2012, however, a succession of spikes occurred, the earliest gone before the last broke ground, with a total of at least 1,000. That year, 2012, seems to have been a successful one for the species, with six sites reported in the county. The dull, wet summer may have been a factor in this success, with the species' woodland habitats being even darker than usual; but in ascertaining what is beneficial for, or detrimental to, Yellow Bird's-nest, it



is probably at least as relevant to ascertain what affects the growth of associated fungi.

Hypopitys monotropa (Yellow Bird's-nest)
2010-20

Hypopitys monotropa
(Yellow Bird's-nest) 1991-2005



Hypopitys monotropa, which lacks chlorophyll such as would enable it to photosynthesize as vascular plants normally do, was previously thought to be saprophytic, gathering nutrients from decaying organic matter. It is now, however, considered to obtain its energy from neighbouring trees via *Tricholoma* fungi³². Yellow Bird's-nest has been found in relationships with species of *Tricholoma* varying with the associated species of tree, e.g. *T. terreum* in the case of *Pinus sylvestris*. The relationship between the plant and fungus in Kent is being investigated by Joyce Pitt, who has known *Tricholoma orirubens* growing for several years with Yellow Bird's-nest in beech plantations on chalk at High Elms; the plantation has some pine also present. In 2015, she noted the species as accompanied by *Tricholoma scalpturatum* at Hartley Wood under secondary hornbeam.

³² Leake, J.R., McKendrick, S.L., Bidartondo, M. & Read, D.J. (2004). *New Phytologist*. Symbiotic germination and development of the myco-heterotroph *Monotropa hypopitys* in nature and its requirement for locally distributed *Tricholoma* spp.

Hypopitys monotropa, because of the absence of chlorophyll, is not readily confusable with any other species in Britain except, perhaps, *Neottia nidus-avis* (Bird's-nest Orchid) or *Lathraea squamaria* (Toothwort). Neither of these, however, has the drooping flowers of Yellow Bird's-nest (although these turn upright in fruit) and their flowering spikes tend to be more substantial; Toothwort's is one-sided. As a species of deep shade in leaf litter, Yellow Bird's-nest tends to grow without the accompaniment of other vascular plants, other than the trees which shade it. If it reaches fruiting stage, it may therefore be as readily discovered in autumn as earlier; and indeed, the dead spikes may be capable of being observed through winter into spring.



Woodchurch. Photo by Charles Boxer, June 2015

Hypopitys monotropa has two subspecies, *monotropa* and *hypophegea*. These are usually separated on the basis of the petals, stamens and carpels being hairy in subsp. *monotropa* and glabrous in subsp. *hypophegea*; and the style being equal or longer than the ovary in the case of the former, but equalling or shorter in the latter. The subspecies apparently are not always distinct, but both have been recorded in Kent, generally from a period when they were treated as separate species, and there was a greater incentive to distinguish between them. '*Hypopitys hypophegea*' ceased to be treated in standard British Floras as a full species from 1987.

Site	Grid reference	Site status	Last record date	Recorder	Comments
High Elms, Cuckoo Wood (metropolitan vc16)	TQ4462	L. B. Bromley-owned country park and local nature reserve, SSSI	(1) 23 July 2015 (2) 18 July 2012 (3) 20 June 2012 (4) 17 June 2012 (5) 5 November 2011	(1) & (2) DJ (3) JP (4) FOH (5) JP	(1) c. TQ445625, across the pathway and around an old tree stump, about 50 plants, quite robust and about 15 cm tall, going over but recognisable. (2) TQ4465 6234, three singles flowering under beech. (3) In beech plantation below orchid bank. (4) At least 1000 spikes (according to recorder, in a normal year one or two specimens, often none). (5) Fruiting in beech/pine plantation below main orchid bank. Records from Cuckoo Wood go back to c. 1920.
Halstead	TQ4861		22 June 2003	GK	TQ 482 614, one plant in beechwood west of former school buildings; the area has since been redeveloped but the plant's site is relatively unaffected, although not found since.

Ightham Common	TQ55X		After 1990, before 2000	EGP	
Shoreham	TQ56A		(1) 21 Sept 2004 (2) 1992 (3) 1981-87 (4) After 1970, before 1981 (5) 1976	(1) JW (2) & (3) JP (4) Philp (1982) (5) JP	(1) TQ 512 618, Meenfield Wood. (1) Meenfield Wood, on west side of path. (2) TQ 505 619, Andrews Wood. (4) Recorded only as TQ56A. (5) Two groups of plants in one location at Meenfield Wood; tetrad inferred. Records here go back to c. 1950. JP also refers to a site at TQ 508 642, which may have been affected by dense secondary scrub arising after the 1987 storm.
Lullingstone Park	TQ5064		1 August 2015	JP	One plant under hornbeam.
Lullingstone Park	TQ5164	Kent C.C.-owned Country Park	(1) 17 October 1993 (2) 1980	(1) & (2) JP	(1) & (2) Grid reference have been given for these records probably better represented by TQ 510 643, in a beech/hornbeam plantation on a south-facing slope overlooking the 9 hole golf course (JP, pers. comm.).
Eynsford-Lullingstone	TQ5364		(1) 24 July 2014 (2) 23 July 2009 (3) 21 July 2004	(1) DJ (2) GT & DW (3) EGP	(1) Two spikes, amongst trees towards the railway fence above the <i>Epipactis phyllanthes</i> colony, where known before by recorder (in 2004 and other years). Searched for by RMB in 2006 and GK in 2013 without success. (2) TQ 53348 64343, RNR. (3) Recorded as TQ56H and may relate to this site.
Eynsford, Austin Lodge Valley	TQ5463		(1) 1986 (2) 21 June 1981 (3) After 1970, before 1981	(1) JP (2) KFC (3) Philp (1982)	(1) TQ 546 637. (2) West side of path between Romney Street and Upper Austin Lodge. [There is some ambiguity as regards the grid reference data, which may relate to TQ546623. Some tree cover here was lost to golf course construction after 1990.] (2) Recorded as TQ56L and may relate to this site.
Fawkham	TQ5968		(1) 31 July 1982 (2) 27 June 1981 (3) After 1970, before 1981 (4) c.1970	(1) OFC (2) LNHS (3) Philp (1982) (4) PHa	(1) Churchdown Wood. (2) TQ 5959 6839, west side of path in Churchdown Wood. (3) Recorded as TQ56Z; may relate to this monad and to the following site. (4) TQ 5939 6859 (originally recorded as TQ593685Z). This is Churchdown Wood.
Crockhurst Street	TQ6244		1991	MA	TQ 623 444 given as centroid of site being surveyed, Nightingale Wood.
Hartley Wood, Longfield	TQ6168		(1) 2014 (2) 31 July 2012 (3) 1 August 2004 (4) After 1990, before 2000	(1) JP (2) RR (3) JP (4) EGP	(1) Under young hornbeam. (2) In Hartley Wood, 24 spikes at TQ 61363 68242 shown to recorder by P&PH. One week later, recorder revisited, and the number had risen to 37. (3) Under secondary hornbeam, shown to recorder by PH, TQ616678 (4) Recorded as TQ66E, Longfield, and may relate to this site.
Trosley Country Park	TQ66K		After 1990, before 2001	EGP (Philp, 2010)	

Offham	TQ6557		15 June 2011	FB	Three spikes beside one of the paths at TQ 655 578, Moorlands Wood.
Harvel	TQ66L		After 1990, before 2001	EGP (Philp, 2010)	
Holly Hill	TQ6662		June 2011	JD	TQ 66663 62719, woodland, conf. SB.
Upper Halling - Luddesdown	TQ66X		After 1970, before 1981	Philp (1982)	
Great Buckland	TQ6764	Private garden	5 August 2012	BBu	c. 50 spikes, amongst leaf litter and twigs in north-east corner of private garden, TQ 671 644, on west facing slope of North Downs.
Burham	TQ7262		1 August 2015	DC	TQ 727 628, growing under yew.
The Larches, Detling	TQ7858, TQ7859	KWT managed reserve	(1) 30 July 2016 (2) 19 July 2015 (3) 31 July 2013 (4) 14 July 2013 (5) 7 August 2010 (6) 13 June 2010 (7) 4 July 2009 (8) After 1990, before 2001	(1) BW (2) (3) & (4) DS (5) JS (6) DM (7) RM (8) EGP (Philp, 2010)	(1) TQ7858. (2) TQ 78517 58968, three flowering spikes under Beech in heavy Beech litter. Also, Q 78571 58934, group of 10 emerging spikes under an old Beech and young Yew tree in heavy Beech litter. (3) TQ 783 589, three spikes by path in open area of beech leaf litter, away from tree. (4) TQ 784 589, five spikes by path in leaf litter of large beech and small yew. (5) TQ 7815 5950. (6) TQ 7858 5889. (7) TQ 7853 5896. (8) Recorded as TQ75Z and may relate to this site.
Burham	TQ76G		After 1970, before 1981	Philp (1982)	
Dering Wood, Pluckley	TQ8945		4 August 1997	JP	Found under over-stood hornbeam coppice, TQ 895 455.
Trundle Wood	TQ8958	Private woodland	(1) 2013 (2) 26 August 2012	(1) JP (2) RE, R&PB	(2) Fruiting.
Queen Down	TQ86G		After 1970, before 1981	Philp (1982)	
Charing	TQ94U		After 1970, before 1981	Philp (1982)	
Dunn Street	TQ94Z		After 1970, before 1981	Philp (1982)	
Torry Hill	TQ9056		10 July 1995	MN	TQ 902 562, Sweets Wood, one plant.
Erriot Wood	TQ9358		(1) 15 August 2015 (2) 30 September 2014 (3) 19 June 2014	(1) KFC meeting (2) LR & JPu (3) JPu	(2) TQ 93297 58693, remains of two flower spikes. (3) c. TQ 934 587 in fruit in Erriot Wood on sandy clay overlying chalk, mainly poor sweet-chestnut with oak and hornbeam standards.
Woodchurch	TQ9535		June 2015, 2016	CB	TQ 953 350, Cole Wood, in Hornbeam leaf litter of ancient/semi-natural woodland, understorey largely absent. Did not flower in 2017.
Perrywood	TR0455		11 October 2015	KFC meeting	Four fruiting plants under chestnut coppice at northern edge of lane, TR 04529 55589.
Mystole	TR0951		18 June 2016	KBRG meeting	A cluster of some 40 flowering spikes at TR 09617 51895 under mixed woodland of <i>Carpinus betulus</i> , <i>Acer campestre</i> and <i>Castanea sativa</i> .
Chartham	TR15B		After 1970, before 1981	Philp (1982)	
Bigbury	TR1157		31 July 2014	AL	About six spikes in chestnut

					coppice by the roadside at TR 1191 5769. (recorder noted dead spikes from previous year in spring 2014).
Yockletts	TR1247	KWT reserve	3 August 2012	LR	TR 12482 47566, in reserve. 33 flowering spikes on the south side of footpath under <i>Fagus sylvatica</i> . Associated species were <i>Corylus avellana</i> , <i>Crataegus monogyna</i> , <i>Fraxinus excelsior</i> (seedling), <i>Hedera helix</i> , <i>Rubus</i> agg., <i>Euphorbia amygdaloides</i> , <i>Carex sylvatica</i> and <i>Geum urbanum</i> .
Kingston	TR1950		(1) 28 July 2010 (2) After 1970, before 1981	(1) AG (2) Philp (1982).	TR 197 506, a wood near Heart's Delight Farm. 12 spikes growing beside path under beech and pine. Recorder has seen it more widespread in other parts of the wood in the past. (2) Recorded as TQ15V.
Tilmanstone	TR3051		(1) & (2) 13 August 2019 (3) 11 August 2019	(1) & (2) SC & ML (3) GH	(1) 31 spikes at TR 30670 52049 and 45 spikes at TR 30671 52064. (2) 51 spikes at TR 30665 52016 under sycamore. (3) 23 spikes at TR 30634 51763.
East Langdon	TR34I		After 1970, before 1981	Philp (1982)	
Sutton	TR34J		After 1970, before 1981	Philp (1982)	There seems very little suitable habitat here, both now and earlier.