Kent Rare Plant Register
Draft species accounts
O (first part: Oe-Orc)

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

Kent rare plant register

This section of the register covers:

In Part Oe-Orc:

Oenanthe fistulosa
Oenanthe lachenalii
Oenanthe silaifolia
Onobrychis viciifolia
Ononis spinosa
Ophrys fuciflora
Ophrys insectifera
Ophrys sphegodes
Orchis anthropophora
Orchis purpurea
Orchis simia

In Part Ore-Oxy:

Oreopteris limbosperma
Orobanche caryophyllacea
Orobanche elatior
Orobanche hederae
Orobanche picridis
Orobanche rapum-genistae
Osmunda regalis
Oxalis acetosella
Oxybasis chenopodioides
Oxybasis glauca

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, generally not specific sites with no 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:

AC Andrew Craven
AG Alfred Gay
AW Tony Witts
BS Bob Smith
CJ Clive Jermy
CJC & AP James Cadbury & A. Parker
CO Colin Osborne
DM Daphne Mills
DS David Steere
EGP Eric Philp
FR Francis Rose
GK Geoffrey Kitchener
GT Gill Tysoe
HP Mrs H. Pollard
IB Ian Beavis
JH Jan Hendey
JP Joyce Pitt
JRP John Palmer
JS Judith Shorter
JW Jo Weightman
KR K.D. Rowlands
LF Lynn Farrell
LH & DH Lorna & Derek Holland
LM Lesley Mason
LR Lliam Rooney
MC Mick Crawley
MF Mary Fuller
MJ M. Jones
MP Mary Page
ND Nick Delaney
NJ Nick Johansson
OL Owen Leyshon
PC P.D. Carey
PG Phil Green
PS Philip Sansum
RC Ray Clarke
RF Rosemary FitzGerald
RHW R.H. Woodall
RM Richard Moyse
RMB Rodney Burton
SB Sue Buckingham
SC Steve Coates
SH Stuart Headley
SL Stephen Lemon
ST Samuel Thomas
TM T. Miller
WEC Wally Coultrop

Other abbreviations:

BPS British Pteridological Society
KBRG Kent Botanical Recording Group
KFC Kent Field Club
KWT Kent Wildlife Trust
LNHS London Natural History Society
MNE Maidstone Museum herbarium
NNR national nature reserve
RNR roadside nature reserve

Oenanthe fistulosa L. (Tubular Water-dropwort)

Draft account.

vc 15 and 16

Rarity / scarcity status

Oenanthe fistulosa is locally frequent in wet places in the British Isles, although almost absent from Scotland. It is treated as a UK Biodiversity Action Plan priority species, because of threats from drainage, eutrophication, weed control and conversion to arable. Its conservation risk status in Great Britain as a whole and in England is as **Vulnerable** to the risk of extinction. This, for England, is because its area of occupancy is taken to have declined by 35% in comparing records for the periods 1930-69 and 1987-99. A comparison of Kent records between 1971-80 and 1991-2005 indicates a decline, based on tetrad occurrences, of 60%. Accordingly, whilst the species is neither rare nor scarce in the county, it must be considered as at risk.

Account

The first record for Kent is that by Thomas Johnson in his *Descriptio Itineris* (1632), together with a number of other species of marshes and ditches encountered between Sandwich and Canterbury. The route from Sandwich, exiting by the Canterbury Gate, would in those days have been via Ash and Wingham, in the course of which Johnson's botanical party would have passed by ditches associated with the North Poulders Stream, where *Oenanthe fistulosa* is still (2015) present.

Harty Ferry, Oare. Photos by Lliam Rooney, 6 July 2010

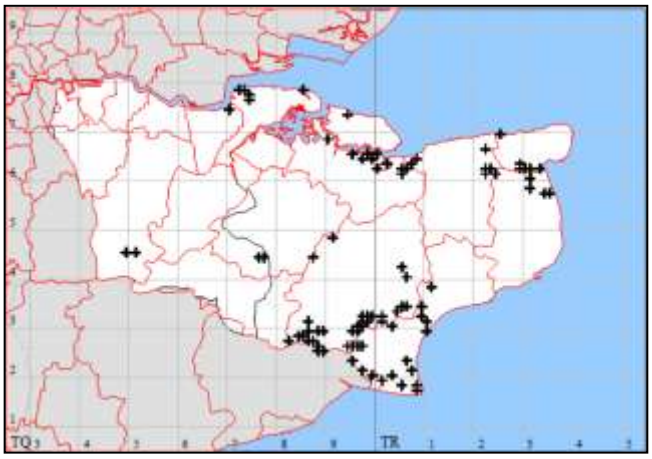
Hanbury and Marshall (1899) obtained records from every botanical district where there were marshy places (so that waterless parts of the North Downs were excluded) and regarded it as 'not very common, though pretty general in its distribution'. In particular, the species was present along the north Kent marshes of the Thames estuary and coast; in the Stour catchment and the levels around Thanet; on Romney Marsh; and inland areas, such as around Ashford (including Hothfield Heath) and stations along the Medway (Snodland, Tonbridge).

Francis Rose recorded it widely in a range of wet habitats, for example: Lower Stoke (brackish marsh, c.1949); Hacklinge Marsh (fen-meadow, 1946); Stodmarsh (marsh dikes, 1949); Sandwich Bay (ditches at rear of dunes, 1954); Fordwich (alluvial marshes, 1954); Gibbin's Brook (weakly acid bog / marshy pond edge on Gault, 1954); Sandhurst levels (alluvial marsh dikes, 1954). In the Romney Marsh area, including this last record, he noted it in seven hectads, as a plant of brackish, calcareous and weakly acid waters, usually stagnant. The 1971-80 survey (Philp, 1982) showed Tubular Water-dropwort

to be 'Rather local although quite frequent in some coastal areas' and gave 104 tetrads, mostly in Romney Marsh and the levels around Deal, Sandwich, Ash and the Wantsum. The 1991-2005 survey (Philp, 2010) indicated a remarkable reduction in those core areas, with only 42 tetrads recorded, the species being found in emergent and fringing vegetation in marsh dykes near the coast, and occasionally in similar habitats by ponds and rivers further inland.

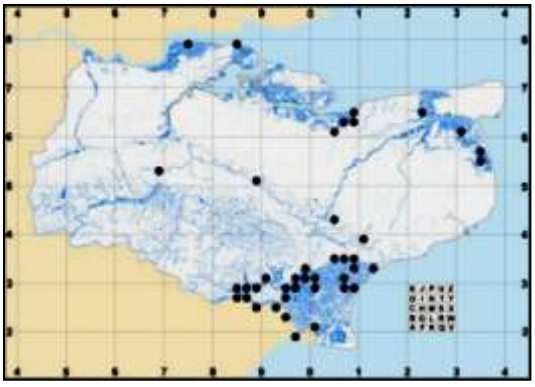
Seasalter levels, habitat. Photo by Lliam Rooney, 23 June 2014

No cause was assigned by Philp (2010) to this apparent decline. Records for 2010-20 amount to 73 tetrads (equivalent to 92 monads), so that Philp (2010) appears to have been overstating the change. As *Oenanthe fistulosa* 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).



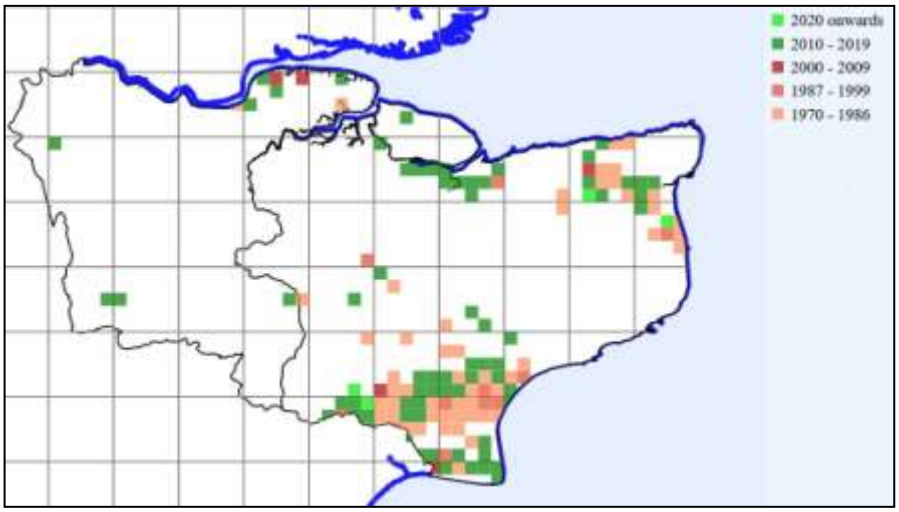
Oenanthe fistulosa **(Tubular Water-dropwort) 2010-20**

Oenanthe fistulosa **(Tubular Water-dropwort) 1991-2005**



Oenanthe fistulosa favours seasonally flooded ground subject to grazing or cutting regimes which reduce the effect of more vigorous competitors. Nevertheless, it appears more resistant than many plants to changes in land use affecting its habitat. An experiment was undertaken at Romney Marsh in the 1980s, seeking data as regards the effect on ditch flora of change from adjoining pasture use to arable. A ditch in arable land was cleared and species typical of shallow pasture ditches were introduced in order to ascertain how they would fare. All were well established a year after introduction, but disappeared within three years once the adjoining land was sown to rape, having previously been used for cereals, except that *Oenanthe fistulosa* survived and spread. It is therefore unlikely that such land use change alone might cause significant deterioration, unless the effect is to bring about domination by

Phragmites australis (Common Reed), with which few species can compete[1]. There is potential for *Oenanthe fistulosa* to be affected by changes in drainage, given that our Kent records appear mostly to relate to ditches and dyke margins where there are changes in water level with winter flooding. The accompanying flora varies, and Alex Lockton has noted it in a variety of plant communities at Stodmarsh NNR, being often abundant in A3 *Hydrocharis morsus-ranae* (Frogbit) ditches, MG13 *Alopecurus geniculatus* (Marsh Foxtail) grassland, and S5 *Glyceria maxima* (Reed Sweet-grass), S6 *Carex riparia* (Greater Pond-sedge), S13 *Typha angustifolia* (Lesser Bulrush) and S22 *Glyceria fluitans* (Floating Sweet-grass) swamps.



Oenanthe fistulosa tetrad records (to 2021) from BSBI database

While recent records do not support continuing decline, the losses after the 1971-80 survey were substantial. The accompanying map of historic tetrad distribution shows that there are concentrations of loss, especially in inland Romney Marsh and the low ground west of Thanet. In these respects, there are similarities with the losses of *Hydrocharis morsus-ranae* (Frogbit) – see the account for that species – which might represent under-recording or reflect conversion from grazing to arable.

Stodmarsh, globose fruiting heads.
Photo by Sue Buckingham, 30 July 2014

Oenanthe fistulosa may be separated from other *Oenanthe* species by:

- its somewhat inflated hollow **stems** (those of *O. lachenalii* and *O. pimpinelloides* are solid, with pith);
- the absence of **bracts** (as distinct from bracteoles), a character shared by *O. silaifolia*, but not by *O. crocata*, *O. lachenalii* and *O. pimpinelloides*
- its ultimate clusters of fruit being globose with all fruits sessile (not so, with *O. crocata*, *O. silaifolia*. *O. pimpinelloides* and *O. lachenalii*);
- the fruits being less than 4mm long (more, with *O. crocata, O. fluviatilis*);

O. aquatica may be separated by its thick shiny stems and finely divided leaves.

[1] Although it should be noted that, on a national basis, most sites from which *O. fistulosa* has disappeared in recent times were water margin habitats which had become choked by tall dense vegetation as a result of a lack of grazing or a cessation of ditch clearance (Walker, K.J., Stroh, P.A. & Ellis, R.W. (2017), *Threatened plants in Britain and Ireland*, Botanical Society of Britain and Ireland, Bristol).

In practice, the species to distinguish most carefully are *O. fistulosa* and *O. lachenalii* because of their overall similarity and frequent overlap of habitat and distribution; they have been recorded as growing together, e.g. in ditches inland of Greatstone / Lydd-on-Sea..

Hernhill. Basal leaf; photo by Lliam Rooney, 22 April 2012

Oenanthe lachenalii C.C. Gmel. (Parsley Water-dropwort)

Draft account

vc 15 and 16

Rarity / scarcity status

Oenanthe lachenalii is scattered but widespread in coastal areas of the British Isles, more or less absent from the north east coast and east Scotland. Whilst its conservation risk status in Great Britain as a whole has been one of 'Least Concern', a more recent assessment for England has identified the species as **Near Threatened**. This is because its area of occupancy in England is taken to have declined by 24% in comparing records for the periods 1930-69 and 1987-99. A comparison of Kent records between 1971-80 and 1991-2005 indicates a decline, based on tetrad occurrences, of 41%. It is neither scarce nor rare in Kent.

Account

As with *Oenanthe fistulosa* (Tubular Water-dropwort), the first Kent record was published by Thomas Johnson in his *Descriptio Itineris* (1632). *Oenanthe lache*nalii, however, was found on a different route, from Margate to Sandwich, and in a more coastal habitat, although before reaching the seashore. The journey would have taken Johnson by Pegwell Bay and the former shingle beach of Stonar, now quarried away. The species is still present (2013) by the south part of Pegwell Bay (TR3462).

Sandwich Bay. Photo by Lliam Rooney, 20 July 2011

The distribution of *Oenanthe lachenalii* seems always to have been similar to that of *O. fistulosa*, but the former is more tolerant of brackish conditions, and less likely to be found inland. Hanbury and Marshall (1899) regarded it as locally abundant in marshes, especially near the sea. They cited records scattered along the north Kent estuarial or coastal marshes, by the tidal Medway near Burham, in north east Kent at Pegwell Bay and Sandwich; and Marshall saw it in plenty near Appledore. Most records were in the Romney Marsh area. This general distribution continued with Francis Rose's findings: the species was still in brackish meadows at Burham (1953) as well as, on the west side of the river, Holborough marshes (1944) and more or less brackish marshes south of Snodland. Along the north coast it was at Higham and east of All Hallows (brackish marsh dike edges, 1944 and 1954); in north east Kent at Stodmarsh (swampy fen-meadow, 1955), Chislet (by alluvial marsh dikes, 1952) and north of Sandwich (dunes behind marsh, 1946); in south east Kent it was found by springs on an old sea cliff at Oxney (1958), near Dymchurch in damp, brackish, sandy ground behind the sea wall (1947) and at Potmans Heath in old clay pits (1958).

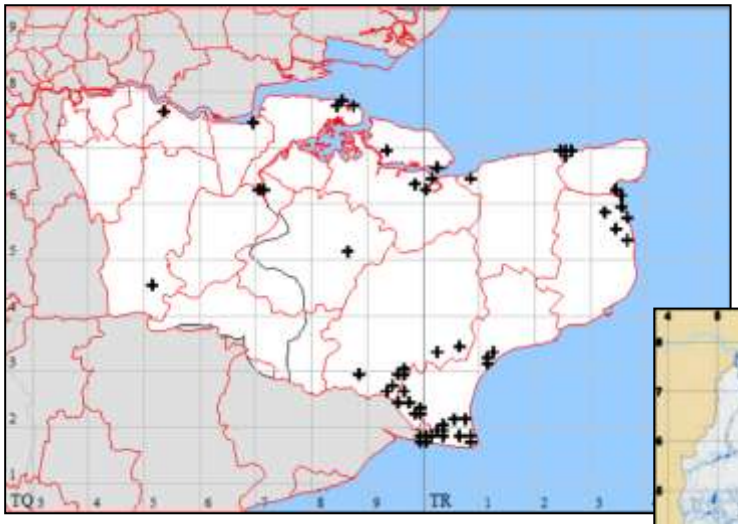
Sandwich Bay. Photo by Lliam Rooney, 20 July 2011

Philp (1982) recorded it in 71 tetrads, with the same general distribution, most densely in Romney Marsh, as a plant of marshes and damp meadows on clay soils, particularly near the coast, where it was locally frequent. The survey of 1991-2005 (Philp, 2010) showed considerable thinning out, and a reduction to 42 tetrads

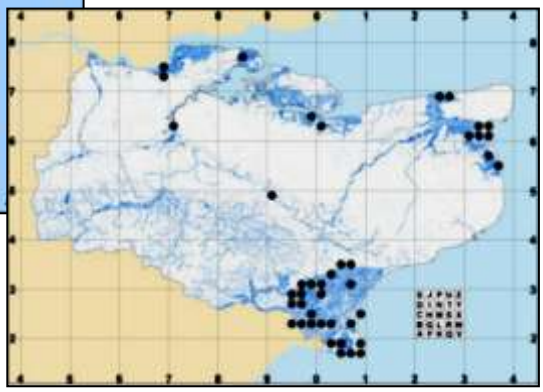
Crayford Marshes, habitat. Photo by Geoffrey Kitchener, 23 July 2020

Our 2010-20 records amount to 53 tetrads (representing 62 monads), so that the decline is not so much as might have been supposed. Anomalous inland records are slightly less common than with *O. fistulosa* but occur, nonetheless: in 2015 it was recorded by Brian Woodhams in damp grassland in the Len valley south of Harriesham, and in 2013 a Kent Field Club meeting found it in the Eden valley, cow-trodden marshy ground near a field edge (det. Rodney Burton). As *Oenanthe lachenalii* is 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).

Sandwich Bay. Photo by Lliam Rooney, 20 July 2011



***Oenanthe lachenalii* (Parsley Water-dropwort) 1991-2005**



***Oenanthe lachenalii* (Parsley Water-dropwort) 2010-20**

Parsley Water-dropwort is characterized by solid stems (with pith), and rays and pedicels scarcely thickened in fruit.

Oenanthe silaifolia M. Bieb. (Narrow-leaved Water-dropwort)

Draft account

vc 15 and 16

Rarity / scarcity status

Oenanthe silaifolia is a plant of damp floodplain meadows and stream-sides, scattered in south east and central England, absent from Scotland and Ireland. It is a nationally scarce species but its conservation risk assessment is of 'Least Concern' in both Great Britain as a whole, and in England, the latter on the basis that no significant and substantial (greater than 20%) decline had been identified. Ostensibly, there has been a decline of 43% in Kent between 1971-80 and 1991-2005, but this is not fully borne out by subsequent investigations, although it remains **scarce** in the county.[2]

Seasalter levels. Photo by Lliam Rooney, 2011

Account

The first Kent record of Narrow-leaved Water-dropwort is in G.E. Smith's manuscript notes of 1829-33, in which the plant is said to be 'By the canalbanks in several places between Seabrook & Appledore'. It has not been seen anywhere near there since, and there are other *Oenanthe* species present, so there may be an issue of identification. Other early records were at a roadside between Sheerness and Queenborough (1855, J.T. Syme), in marshes at Sarre (1847); and abundant in wet meadows near the Eden below Chiddingstone (Marshall in Hanbury and Marshall, 1899). This last find presumably prompted Marshall's observations: 'Occurring mostly in meadows, and flowering when the hay is about ready to be cut, *O. silaifolia* is very liable to be passed by. The finely divided early root-leaves, which wither before it blossoms, are quite unlike those of our other Water-dropworts, and it is a perfectly distinct species'. Hanbury and Marshall (1899) had no other records, and treated the species as very rare, unless overlooked, in fresh-water marshes.

Seasalter levels. Photo by Lliam Rooney, 1 June 2011

It has remained recorded in very few areas There have been further finds in Sheppey (from a marsh near a stream at Minster, Trudy Side, 1965, and in the Scrapsgate area) and at Harty (Joyce Pitt, 1991), and across the Swale on the mainland, at the damp meadows of the Seasalter levels, where it grows in abundance. But undoubtedly the core distribution area has been in the Eden valley and along the Medway below its confluence with the River Eden. There are specimens in **MNE** collected by Francis Rose from alluvial meadows by the River Eden both west of Edenbridge (1947) and east (1958), including in a hay meadow at Delaware (1950); and in meadows west of Penshurst, where abundant (1944). After the Eden joins the Medway, Clive Stace recorded it in the 1950s and 60s in a meadow south east of Leigh and in a ditch just north of the Straight Mile by the path to Leigh. More recent records are given in the table below.

[2] The record in M.H. Cowell's *A Floral Guide for East Kent* (1839) is taken from the same source.

Philp (2010) described the species as rare and decreasing, in damp meadows that usually flood in the winter months, with only four tetrad records for 1991-2005, in comparison with seven for 1971-70 (Philp, 1982). However, with seven tetrad records made in the period 2010-20 (equivalent to ten monads), recent decline has not been substantiated, and there may yet be scope for more re-finding in the Edenbridge to Tonbridge area. Mapping show how much rare this is than the other *Oenanthe* species in this register.

Oenanthe silaifolia **(Narrow-leaved Water-dropwort) 2010-20**

Sightings in hay meadows are, as Marshall found, obviously dependent on being made before cropping; sightings in pasture are generally reliant on light or interrupted grazing, or are of plants with a degree of protection.

Oenanthe silaifolia has stems which are hollow at maturity with thin walls; all leaflets narrow and pointed; generally no bracts; fruits not exceeding 3.5mm, with styles almost as long; rays and pedicels thickening in fruit.

Seasalter levels. Photos by Lliam Rooney, 1 June 2011

Site	Grid reference	Site status	Last record date	Recorder	Comments
Edenbridge	TQ4445		Between 1980 and 1986	FR	TQ 441 453.
East of Edenbridge	TR4545		Between 1970 and 1986	FR	TQ 458 458. Probably where also recorded by FR in 1950.
Chiddingstone	TQ4945		7 June 2015	SL	TQ491457 / TQ492457, marshy field corner (now dry underfoot), c. 50 flowering plants in several loose patches in *Juncus* dominated areas.
Chiddingstone	TQ44Y		After 1970, before 1981	Philp (1982)	
Chiddingstone	TQ5045		29 June 2016	ST (det. JP)	TQ 50314 45804, occasional to frequent towards the back of the Eden floodplain meadow at Somerden Farm, this being lower

					away from the channel and so wetter. Associated spp. *Ranunculus flammula*, *Achillea ptarmica*, *Juncus spp.* Material coll. 29 June, but found earlier in the year.
Chiddingstone, Vexour Bridge	TQ5145		(1) 8 June 2019 (2) 12 June 2016 (3) 3 May 2014 (4) 16 June 2012 (5) 14 May 2011 (6) 14 June 2010	(1) (2) (3) (4) & (5) SL (6) GK	(1) Moorden, Chiddingstone Causeway, formerly wet field corner near River Eden, TQ 517 458 / TQ 516 458. Flowering in good numbers. (2) Moorden Meadow LWS (SE21), marshy field corner now being significantly drained following surrounding ditches being deepened last year, TQ 51690 45916. Plant now flowering in large numbers around edge of marshy area, higher than in previous years, most likely attributable to the cessation of grazing. (3) TQ 516 459 to TQ 517 458, about a dozen non-flowering plants, mostly at eastern end of flooded area, corner grazed by cattle, west of Moorden, by River Eden. (4) 102 flowering *O. silaifolia* in and around the *Carex nigra* flooded field corner at TQ 516 458 and TQ 517 458 and a further 42 flowering *O. silaifolia* in the field at Vexour Bridge at TQ 510 456 and TQ 511 456. (5) 45 plants in flower in the first meadow downstream of the bridge, centred c. TQ 510 456, TQ 511 456 and TQ 511 457. Also a half dozen flowering plants in the wet field corner centred c. TQ 516 458 and TQ 517 458, but cows were grazing this group of fields down and the only surviving plants are those protected by rush / spearwort tussocks. (6) (a) marshy field corner and surrounding pasture: (1) 2 plants at TQ 51661 45886 (2) 1 plant at TQ 51662 45900, (3) 2 plants in marsh at TQ 51669 45918, (4) 3 plants at TQ 51662 45885, (5) 63 plants centred on TQ51713 45874 [full count limited by presence of bull]. (b) Large hayfield near Vexour Bridge: (1) 6 plants from TQ 51201 45724 to TQ 51224 47739, (2) 1 plant at TQ 51160 45798, (3) 2 plants at TQ51166 45803, (4) 1 plant at TQ 51137 45798, (5) 1 plant at TQ 51141 45759, (6) 23 plants centred on TQ 51142 45745, (8) 13 plants centred on TQ 51131 45727, (9) 1 plant at TQ 51126 45567, (10) 1 plant at TQ 5116 4579.
East of Penshurst	TQ5344		12 June 1992	JP	TQ 536 441 (Medway floodplain).
Leigh	TQ54M, N		(1) Between 1991 and 1999	(1)EGP (Philp, 2010)	(1) TQ54M, N. (2) TQ 552 460.

			(2) 14 June 1986 (3) After 1970, before 1981	(2) RF (3) Philp (1982)	(3) TQ54N.
Leigh / Haysden	TQ54S		After 1970, before 1981	Philp (1982)	
Haysden	TQ54T		Between 1991 and 1999	EGP (Philp, 2010)	
Haysden	TQ5646		(1) 16 June 2010 (2) July 1986 (3) 12 June 1972	(1) SB (2) RF & JP (3) RC	(1) (a) TQ 56118 46089, 9 plants in Medway floodplain grassland with *Phalaris arundinacea*, Country Park. (b) TQ 56130 46086, Country Park, 60 plants in Medway floodplain grassland with *Filipendula ulmaria* and *Lythrum salicaria*. (c) TQ 56174 46093 Country Park. 2 plants in Medway floodplain grassland very close to A 21 road bridge (2) TQ 549 460, near R. Medway, Leigh. (3) TQ 561 460, Medway junction.
East of Tonbridge	TQ64D		After 1970, before 1981	Philp (1982)	
Hale Street	TQ6849		(1) 23 May 2020 (2) 1999 (2) 1986 (3) 12 June 1983	(1) SL (2) AC & JP (2) FR (3) JP	(1) Hale Street, small field east of Medway View and railway, TQ 6837 4923. Scattered flowering plants mostly on western and southern sides of the field in rank grassland slowly scrubbing over. (2) TQ 684 493. (2) TQ683 493, East Peckham. (3) TQ 684 493.
Smarden	TQ8842		6 July 2004	JS	By pond, TQ 88314 42921.
Queenborough, Sheppey	TQ9271		23 June 2014	LM	TQ 922 712. Associated plants were *Carex divisa, Hordeum secalinum, Ranunculus sardous, Lathyrus nissolia, Alopecurus geniculatus, Galium palustre, Rapistrum rugosum* and (rare) *Polypogon monspeliensis*.
Scrapsgate, Sheppey	TQ9474		1986	FR	TQ 940 747
South Scrapsgate / Minster, Sheppey	TQ97L		After 1970, before 1981	Philp (1982)	
Seasalter	TR0863, TR0963		31 May 2011	LR	TR 09024 63861 to TR 08814 63928, hundreds of plants filling a wet grazing meadow off Seasalter Lane.
Seasalter	TR0864, TR0964		(1) 6 July 2011 (2) 1 June 2011 (3) 25 May 1999 (4) 7 June 1995 (5) Between 1991 and 1999	(1) CJC & AP (2) LR (3) JP (4) JP (5) EGP	(1) Present on Seasalter RSPB reserve in field B (c. TR 087 642, where scarce), field D (c. TR 080 641, where rare), field N (c. TR 084 642, where 4 plants). Not recorded in field C, where locally frequent in July 2008 (TR 0862 6426). (2) TR0864 and TR0964. Meadow off Seasalter Lane. Scattered plants, 20+, more or less confined to straight wet gullies that went across the field. (3) TR 082 643. (4) TR 085 640. (5) TR06X, damp grazing marsh, maybe one of these monads.

Omalotheca sylvatica (L.) Sch. Bip. & F.W. Schultz (*Gnaphalium sylvaticum* L.) (Heath Cudweed)

Draft account

vc 15 and 16

Rarity / scarcity status

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

Account

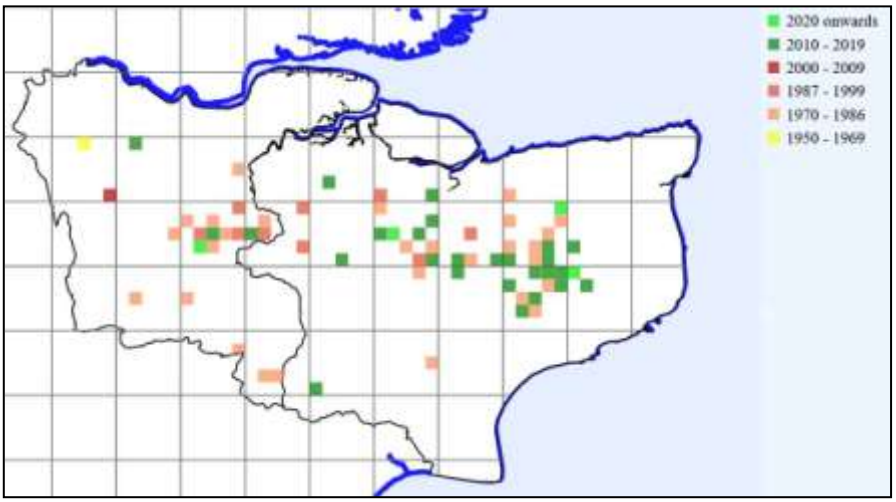
The first Kent record for Heath Cudweed was made by Thomas Johnson in the course of his journey of 1623 (published as *Descriptio Itineris Plantarum*), where the plant is listed amongst those recorded on approaching Canterbury from Sandwich (Francis Rose remarks in the 1972 edition of this work that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

Atchester Wood. Photos by Sue Buckingham, 1 July 2011

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

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

is possible that this has had some impact on Kent records, as historically the county has had significant amounts of coppice – 44,000 acres in 1991 according to Roberts (1999)[3], who points out the volume of potential output in the 1990s well exceeded demand, which does not encourage coppice maintenance (although an increasing interest since then in wood as fuel may provide some counter to this). However, since a decline has taken place nationally, including areas where coppicing has not been as significant as in Kent and other parts of south east England, it is likely that other factors are operating as well as any decrease in coppicing.



Omalotheca sylvatica tetrad records (to 2021) from BSBI database

Historic tetrad records from the BSI database show where apparent losses have taken place, with the pale pink squares (1970-86) nearly all reflecting 1970-81 survey records not seen since. It seems particular issue for West Kent.

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

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

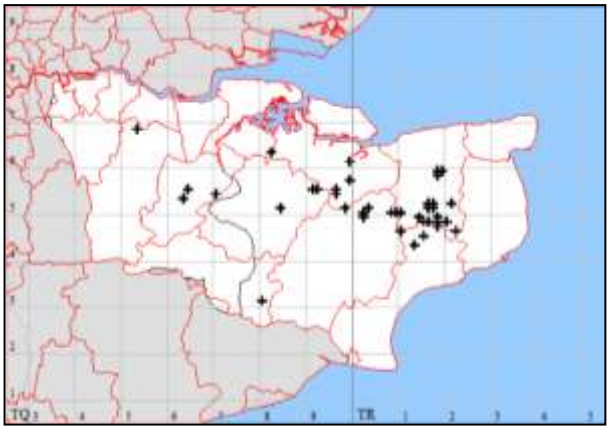
Omalotheca sylvatica is readily distinguished from other cudweeds by its generally tall (up to 60cm) erect unbranched flowering spike, with stem leaves diminishing in size up the stem. It is recordable in winter months by virtue of its distinctive dried fruiting spikes (illustrated above).

In view of the number of records for this species in Kent, the distributional data maintained in this register will be at 1km square (monad) level. This will entail recording at a finer scale than the tetrads given in Philp (2010), from which the 1991-2005 distribution map is taken (with kind permission of the late Eric Philp and the Kent Field Club). The records made from 2010 onwards (30 tetrads, representing 39 monads) show distinct clustering in some areas, which would not be so apparent in recording at tetrad level, and they have exceeded

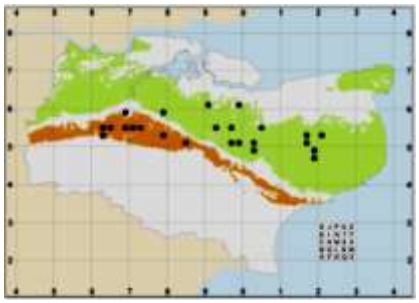
[3] G. Roberts (1999). *Woodlands of Kent*.

the level of Philp (2010) (24 tetrads). However, they are still only just over half the number recorded in 1971-80, so there has been a substantial decline which may have levelled off.

Omalotheca sylvatica **(Heath Cudweed)**
2010-20



Omalotheca sylvatica **(Heath Cudweed)**
1991-2005
(related to soils over chalk (green)and Folkestone Formation sands (brown))



Onobrychis viciifolia Scop. (Sainfoin)

Draft account.

vc 15 and 16

Rarity / scarcity status

Sainfoin is locally frequent in Britain as far north as central Scotland. It is regarded **Vulnerable** to the risk of extinction in Great Britain as a whole and in England, where its area of occupancy is taken to have declined by 35%, and its extent of occurrence by 31%, in comparing records for the periods 1930-69 and 1987-99. In Kent, the number of tetrads in which it was recorded fell by 46% between 1971-80 and 1991-2005. It is neither rare nor scarce in the county, but its appearance on the register is justified by the wider pattern of decline.

Queendown. Photo by Lliam Rooney, 18 June 2010

Account

The first published Kent record[4] of Sainfoin was by Thomas Johnson in his *Iter Plantarum* (1629), made in the course of travelling between Gravesend and Rochester. This was presumably the native form: the sowing of Sainfoin as a crop began in England on a tentative basis in the 1620s and 1630s, more fully on the Kentish downlands in the late seventeenth century[5] It was used as a nitrogen-fixer as part of crop rotation, and also to provide a fodder crop for mowing. Evidence of early use appears in farmers' probate inventories, e.g. Thomas Young of Hartley died 1688, possessing 20 bushels of sainfoin seed and 'clover and sainfoin on the ground which is to be mowed'. Usage continued through the 18th and 19th centuries: William Boys' General View of the Agriculture of the County of Kent (1796) mentions sainfoin as much grown on the chalk-land of the eastern part of the county, mown for hay and capable of lasting for ten or twelve years, although sometimes grown on the down-land for five to ten years as part of a rotation of oats, fallow, oats, sainfoin (the latter generally started off sown in conjunction with a cereal crop). It is still (2017) grown as a fodder crop for horses in East Kent.

John Samuel Raven. Study (1857) for 'Saintfoin in Bloom', a view near Cobham in Kent.

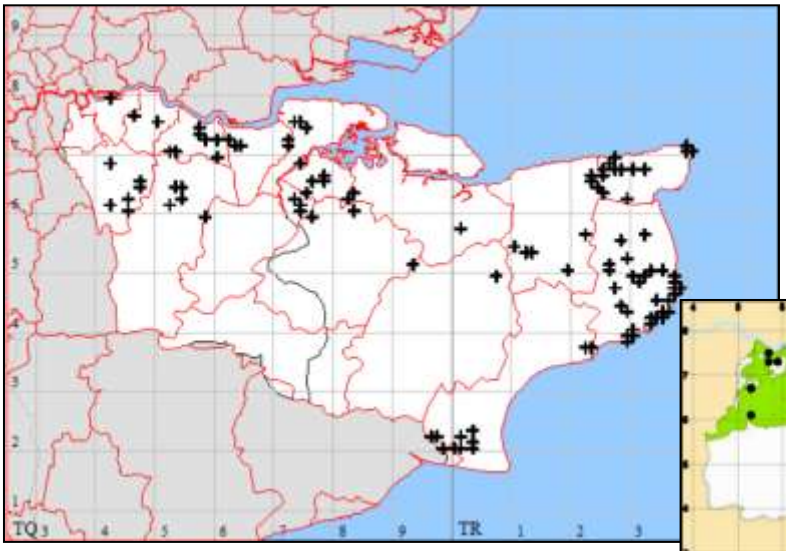
[4] Setting aside any archaeological appearance, e.g. a few seeds are said to have been found in 15th century contexts in Barber, L. & Priestley-Bell, G. (2008). *Mediaeval Adaptation, Settlement and Economy of a Coastal Wetland: the evidence from around Lydd, Romney Marsh, Kent*. Oxbow Books.

[5] Thirsk, J. (1997). *Alternative Agriculture A History*. OUP Oxford.

A consequence of this widespread cultivation has been to obscure the species' native status. Hanbury and Marshall (1899) said: 'On the chalk hills this handsome vetch has every appearance of being aboriginal; but it is so generally grown for fodder that, unless this cultivation could be shown to date from comparatively recent times, some slight doubt about its genuine wildness must remain'. Off the chalk (on sand or clay), they regarded the species as introduced or a relic of cultivation. Francis Rose collected it widely from chalk grassland and regarded it as a native, colonist or planted; but it is unclear how far he was able to differentiate, one problem being that the very habitat in which Sainfoin is most likely to be native, the poorest of chalk soils, is a habitat in which it was likely to be employed in cultivation.

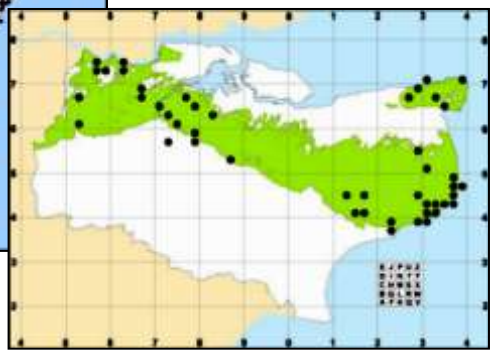
Habitat, presumed native; South Foreland, Dover.
Photo by David Steere, 7 May 2016

Philp (1982) recognised the native/introduced dichotomy, and gave the species as present in 85 tetrads, including where it had been naturalised on roadside verges as a chance or purposeful introduction with grass seed. An example of the latter situation is the M2 motorway on the chalk cutting immediately south of the Medway crossing, where *Onobrychis viciifolia* and other calcicolous species were sown in the hope of establishing vegetation appropriate to the area[6]. However, such sowings have been widespread for a number of purposes, for example the species has been a component of the pollen and nectar seed mix (WM2, AB1) recommended under successive Countryside Stewardship Schemes; it is part of wildflower seed mixes generally and has been used for amenity land and developments such as Bluewater shopping centre. Philp (2010) found it present in only 46 tetrads and considered it in decline through loss of habitat, but as our 2010-20 records amount to 86 tetrads (106 monads), evidence of decline is lacking. Admittedly, the recent records include data from metropolitan West Kent which Philp (2010) did not cover (eight tetrads); but new records will continue as long as introductions take place.



***Onobrychis viciifolia* (Sanfoin) 2010-20**

***Onobrychis viciifolia* (Sanfoin) 1991-2005 (related to chalk (green))**



As *Onobrychis viciifolia* is 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

[6] Way, J.M. (1976). *Grassed and planted areas by motorways*. Institute of Terrestrial Ecology.

Kent Field Club). It will be seen that the 2010-20 distribution is broadly similar to, but fuller than, that for 1991-2005 except for the Walland Marsh area near Dungeness, where it has been widely sown as part of a seed mix, and for hectad TR14, where we have not picked up any records at all.

There appear to be no Kent records for any of the subspecies, although there is clearly variation in gthe plant as found in the county. Stace (2019) indicates that recognition of separate subspecies is probably not feasible or helpful. However, Sell & Murrell's *Flora of Great Britain and Ireland* states that subspecies *collina* (slender stems, prostrate, leaflets 5-15 x 2-5mm) is the native plant on remnants of chalk grassland; subspecies *decumbens* (stems decumbent to ± erect, slender to robust, leaflets 10-35 x 4-8mm, corolla 10-12mm) is in wild flower seed mixes and likely to be spread on mowers; and subspecies *viciifolia* (stems ± erect, robust, leaflets 15-35 x 4-8mm, corolla 12-16mm) was formerly grown as a hay crop.

Bluewater, derived from amenity sowing.
Photo by David Steere, 25 April 2014.

Dover, White Cliffs; presumed native form.
Photo by David Steere, 7 May 2016.

Ononis spinosa L. (Spiny Restharrow)

Draft account.

vc 15 and 16

Rarity / scarcity status

Ononis spinosa is locally frequent in Great Britain north to south Scotland, particularly in south and central England, but excluding the south west. Whilst its conservation risk status in Great Britain as a whole has been one of 'Least Concern', a more recent assessment for England has identified the species as **Near Threatened**. This is because its area of occupancy in England is taken to have declined by 25% in comparing records for the periods 1930-69 and 1987-99. In Kent, there is evidence of a 49% decline in tetrad records between 1971-80 and 1991-2005, although the species is still neither rare nor scarce in the county.

Sandwich. Photo by David Steere, 30 July 2016

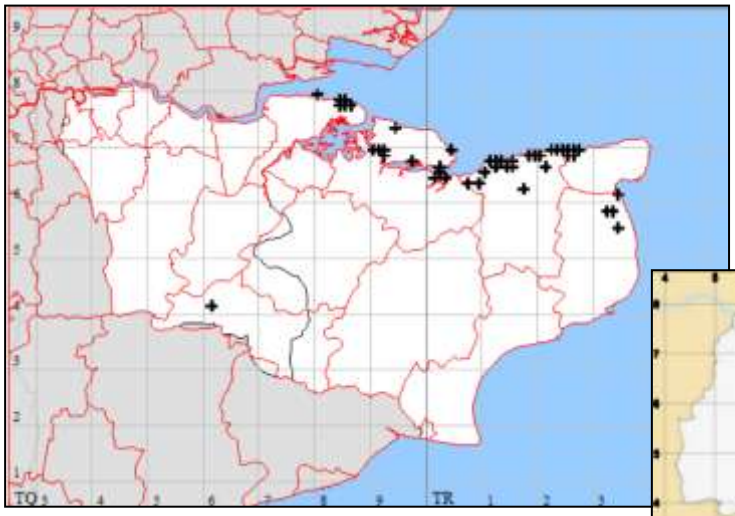
Account

Hanbury and Marshall (1899) give the first Kent record as by de L'Obel (*Stirpium Adversaria Nova*, 1570), who stated that it was present in some wet coastal meadows, especially at Bristol and near London. The honours for the latter locality, however, could belong to Kent or Essex. The next Kent records in point of time are by Thomas Johnson: a plain record for *Ononis* at Chatham (*Iter Plantarum*, 1629) is likely to be *Ononis repens* (Common Restharrow); but a find of *Anonis sive Ononis spinosa* (*Descriptio itineris*, 1632) made whilst travelling westwards from Ash towards Canterbury is clearly intended for Spiny Restharrow. Hanbury and Marshall also listed a range of other records, historic and (then) recent, summing up the species as a plant of roadsides and waste places, especially on stiff soils; not uncommon, but by no means as abundant as *O. repens*. Some records they felt were in doubt, as perhaps belonging to the latter species and this has been a perennial problem, because *O. repens* and *O. spinosa* do not always separate satisfactorily. There are some inland records which one might be inclined to dismiss, given that more recent records have been coastal, but that they include ones made on good authority, and there is a strong inland distribution in south central England on infertile calcareous grasslands, including on clay.

The clay association is evident with many of the finds by Francis Rose, such as in pasture on London Clay east of All Hallows (1954); a low bluff on London Clay at Harty Isle (1955); dry banks on alluvial clay behind the sea wall at Lower Stoke (1959); a roadside on clay near the sea at Pegwell Bay (1946); and on banks, clayey grassland west of West Stourmouth (1956).

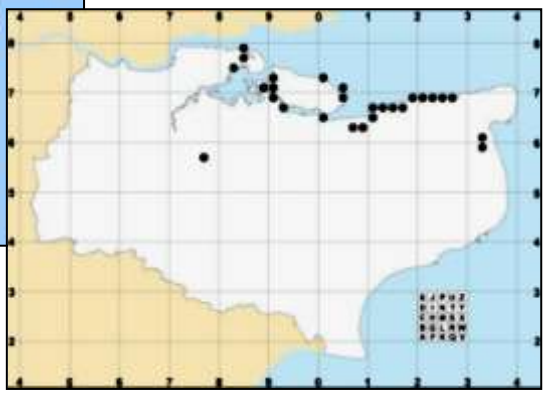
Philp (1982) regarded Spiny Restharrow as rather local, on roadsides, sea-walls and waste places, with 83 tetrad records for the period 1971-81, mostly coastal, from the Hoo Peninsula to Folkestone. By the 1991-2005 survey (Philp, 2010) the number of tetrads had reduced to 27, and the coastal distribution no longer continued south of Sandwich / Deal. The reduction was in spite of the occasional plant being noted where a wildflower seed mix had been sown. Although the species has since been found as far south along the east coast as Dover, our 2010-20 records amount to 29 tetrads (equivalent to 45 monads); so this provides some

endorsement for the existence of a decline before Philp (2010), but not since. However, the records are still sufficiently numerous 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 which the accompanying 1991-2005 distribution map is taken (with kind permission of the late Eric Philp and the Kent Field Club). Both maps show a strong relationship with areas of London Clay along the Kent north coast. The anomalous 2020 Wealden record is alongside car park access at Pembury hospital, and taken to have arrived with seed mix when the hospital was built, 2008-11.

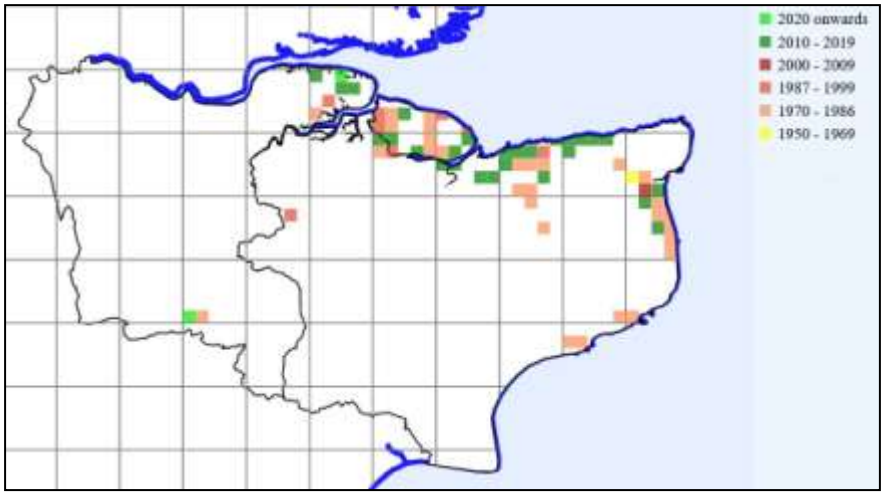


Ononis spinosa **(Spiny Restharrow) 2010-20**

Ononis spinosa **(Spiny Restharrow) 1991-2005**



Ononis spinosa tetrad records (to 2021) from BSBI database



For an overview which shows where the putative losses have occurred since the 1970-81 survey, the accompanying historic distribution plan shows them by pale pink squares (included under 1970-86). This is intriguing: there is suitable territory at Sheppey which seems to have carried much in the past, but it is more surprising that so many east coast records should not have been re-found, these being well-botanised areas. The east coast locations have, however, since produced *O. repens* records, which raises the question of whether *O. spinosa* was accurately recorded. (Eric Philp was a complier of the 1970-81 results, by no means the sole recorder, and was not wholly satisfied with the outcome for some species.)

Mainstream botany treats *O. spinosa* and *O. repens* as separate species, as we have done here, on the following basis:

- *O. repens*: usually procumbent (to ascending); stems rooting above the base, more or less hairy all round (but perhaps sparsely so); pod shorter than calyx, 1-2 seeded.
- *O*. spinosa: usually erect or ascending; stems not rooting above base, mainly hairy along one side or two opposite sides; pod exceeding calyx, 2-4 seeded.

The presence or absence of spines is not diagnostic: *O. repens* is often spiny (var. *horrida*) and *O. spinosa* may lack them (var. *mitis*). Sell and Murrell in the *Flora of Great Britain and Ireland*, however, place them under one species, *O. spinosa*, with four subspecies. These are: subsp. *spinosa* (equivalent to *O. spinosa*, and a plant of clay soils); subsp. intermedia (equivalent to *O. spinosa x repens*, a fertile hybrid); subsp. *procurrens* (equivalent to *O. repens*, and a plant of dry calcareous grassland); and subsp. *maritima* (equivalent to *O. repens* subsp. *maritima*). This last taxon is one of shingle beaches and cliff tops and sounds much like a 'peculiar shaggy plant, found in some plenty by *Marshall* in 1894 on the beach W. of Sandgate' mentioned in Hanbury and Marshall (1899).

Sandwich. Photo by David Steere, 30 July 2016

Ophrys fuciflora (Crantz) Moench (Late Spider-orchid)

Draft account

vc 15; records for vc 16 are assumed to be in error

Rarity / scarcity status

Ophrys fuciflora is one of Britain's rarest orchids and is restricted to a few localities in East Kent; records from elsewhere appear to be misidentifications. It is considered to be **Vulnerable** to the risk of extinction in England and Great Britain as a whole, in view of the small number of adult plants. The total was assessed by Francis Rose at c. 100 in 1981 (although there have been occasions in the 1940s and 1950s where single locations held 100 plants), and more recently given as c.360 in the *Vascular Plant Red List* [7], and experts consider the 2017 position to be 550-600 plants (Phil Green) or 485-795 (Alfred Gay). The number of plants, because of those vegetative or dormant, is of course not necessarily the same as the number of flowering plants, which varies from year to year and averages around 200 (counts by Alfred Gay are 309 for 2016; 338 for 2014; and 170 for 2013). The orchid is protected from picking or uprooting, under Schedule 8 of the Wildlife and Countryside Act 1981 as amended, but notwithstanding this, damage has occurred. Accordingly, detailed grid references have been redacted from the information provided in this account. It is a nationally rare species, but in Kent it is **scarce**.

G.E. Smith's own illustration of *O. fuciflora*, from his personal copy of the 1829 *Catalogue*

Account

The Late Spider-orchid was first published as present in Kent – and Britain – as a late addition to the second edition of Sir James Smith's English Flora (1828), as a result of its recent discovery by G.E. Smith (no relation), who found it to be 'Plentiful on the southern acclivities of the chalky downs near Folkestone, Kent. The conical hill which forms the north-west boundary of the Cherry-Garden, near that town, abounding in its upper half with this species...'. G.E. Smith had recognised it as a distinct species, although then unaware that it had been described on the Continent (as *Ophrys arachnites*). This publication was quickly followed by G.E. Smith's own, *A Catalogue of rare or remarkable Phaenogamous Plants, collected in South Kent* (1829), in which he mentioned that Mr Andrew Matthews (who must be credited as the first discoverer) had collected specimens 'several years since' at Ospringe, and that Smith's own encounter with the species was also the first time that he had seen *Ophrys. apifera,* (Bee Orchid) which was growing nearby. He also speculated as regards a hybrid between *Ophrys fuciflora* and *O. sphegodes* (Early Spider-orchid) being the identity of a plant collected by Mr Lee on downs between Newington and Lyminge: simultaneous flowering of Late and Early Spider-orchids was observed by Smith on 17 May 1828.

Wye. Photo by Lliam Rooney, 15 June 2010

Hanbury and Marshall (1899) considered the species to be very

[7] Stroh, P.A. et al. (2014). *A Vascular Plant Red List for England*. Botanical Society of Britain and Ireland. Bristol.

rare and local on downs, rough banks, etc. on the chalk, with most records along the downs eastwards from Wye to Folkestone. Over the years there have been over 20 recorded populations, of which Francis Rose, writing of the period from the 1940s to the 1960s, considered that it was then confined to about 16 localities; but currently it may be considered as having 11 populations. Losses have been attributed to agricultural 'improvement' and reduced grazing (whether by livestock or, post-myxomatosis, rabbits) since c.1960. Reduction of grazing is significant, because the orchid tends to grow on slopes where *Brachypodium pinnatum* agg. (Tor-grass) is present, and if this is unchecked, the grass becomes tussocky and dominant, whereas the orchid needs a fairly open habitat with moderate disturbance, even though it is capable of growing in swards up to 15cm high. Philp (1982) gave nine tetrad records; Philp (2010) gave ten. Overall, its population status now seems fairly stable, although there are fluctuations at individual sites. Most are on steep downland slopes, often as much as 1 in 1.5, and plants favour the terracettes along the contours, formed by solifluxion and the passage of grazing stock, which tend to provide some bare ground. All are now on SSSIs or Local Wildlife Sites.

Wye

Ophrys fuciflora was first recorded on Wye Downs in 1889. The populations at Wye have been much studied. The Wye NNR warden, J. Duffield, undertook detailed recording in the period 1965-78 at the Devil's Kneading Trough and New Barn Coombe (otherwise Bulltown). These observations ('the 60s/70s Wye studies') are further mentioned below. Wider recording was subsequently undertaken by D.A. Stone and R.V. Russell[8] (see later in this account, 'the 80s/90s Wye studies') and covered what they recognised as six colonies, carrying 50% of the UK plants. They included sites at the Devil's Kneading Trough; Fishponds Down; Aldglose Down; and New Barn Coombe (Bulltown, two colonies). Overall, after there had been a growing set of colonies during the period 1987-98, this growth does not appear to have continued exponentially. In 2014, however, 58 flower spikes were seen at Aldglose Down (nine in 2016), some showing signs of hybridisation with *O. apifera*; also 21 at the site above Fishponds Farm (seven in 2016) and ten at the Kneading Trough (none in 2016; this seems to have been only a small colony for a long time, between 1965 and 1978 carrying between zero and six inflorescences). Also, in 2016 there were 31 flower spikes at Bulltown.

Wye (Bulltown), habitat. Photo by David Steere, 28 May 2016

Postling Downs

Presence on the downland dates at least back to 1853 and is plentifully represented by herbarium specimens since. The site was spray-fertilised in the 1970s and the species was supposed to have disappeared around that time. A single plant appeared in June 2005 around where Francis Rose knew it in the 1940s and 1950s, but was not seen to recur. The same month, Peter Gay found a colony on the south side of a small valley, counted at 79 spikes in 2010 (102 in 2016). A further colony of 49 spikes less than 100m away on the north

[8] Stone, D.A. & Russell, R.V. (2000). Population biology of late spider orchid *Ophrys fuciflora* – A study at Wye National Nature Reserve 1987-1998. *English Nature Report 389*. Peterborough.

side of the coombe valley was found by Alfred Gay in June 2009, 76 spikes in 2010 (84 in 2016). In 2014 the total number of inflorescences, in three locations, was 121; many were grazed off by cattle during the flowering season. *O. apifera* grows here as well, and four hybrid spikes were seen in 2010. The presence of *O. apifera* renders it difficult to count non-flowering plants of *O. fuciflora*; there may be some 200 plants, as distinct from spikes.

Postling Downs, habitat. Photo by Alfred Gay, 7 June 2011

Parkgate Down (KWT reserve)

This is a dry valley of the Downs dip slope, 4½ miles from the escarpment which is the usual habitat of the Late Spider-orchid. Records go back at least to 1926, but it has been a small colony, occurring intermittently (perhaps at best 20 spikes in 1958, but two spikes in 2010, none in 2016), and the few recent plants are considered by Richard Bateman to be hybrids with *O. apifera*. It is possible (Phil Green, pers. comm.) that the soil here is a little too acid for the orchid: a period of good growth followed burning which would have left an alkaline ash residue, after which the colony's vigour fell back again. The site also lacks a full southern aspect for the orchids, however, which may be influential.

Great Shuttlesfield Down

A small colony, known at least back to 1938 (when material was collected by Francis Rose), grows on MOD land, a south-facing chalk grassland slope, with flowering spikes generally in single figures each year (four in 2014; but none in 2016), although more numerous in the past, when up to 20 inflorescences were recorded in most years; 20 is now probably the number of plants present, as distinct from spikes. *O. fuciflora x apifera* has been recorded here and a specimen taken for DNA analysis was interpreted as showing signs of introgression with *O. apifera*.[9]

Shuttlesfield, habitat. Photo by Alfred Gay, 5 July 2013

Arpinge

This site is on a gentle downland slope, south west facing, which is part of a MOD training area. Late Spider-orchid has been known here at least back to 1958. From 1987 to 2006, it produced around 25 to 50 spikes per annum, with a maximum of 56 spikes in 1999. After 2006, the rabbit population increased greatly with the result that very few flowering spikes could be found (e.g. four in 2010; ten in 2014; none in 2016). *O.*

[9] Devey, D.S., Bateman, R.M., Fay, M.F. & Hawkins, J.A. (2009). Genetic structure and systemic relationships within the *Ophrys fuciflora* aggregate (Orchidaceae: Orchidinae): high diversity in Kent and a wind-induced discontinuity bisecting the Adriatic. *Annals of Botany* **104**: 483-495.

sphegodes grows with *O. fuciflora*, and this may well be the locality where Mr Lee's putative hybrid was found; the cross was found here by L. Margetts in 1958. *O. apifera* is also present, sometimes in abundance.

Arpinge, habitat. Photo by Alfred Gay, 23 June 2013

Folkestone Downs

The chalk downs above Folkestone, especially from Cheriton Hill eastwards (with the original site at Cherry Garden) via Castle Hill to Holywell and Sugarloaf Hill were the subject of collections from the 19th century onwards.

Folkestone Downs, habitat. Photo by Alfred Gay, 25 November 2016

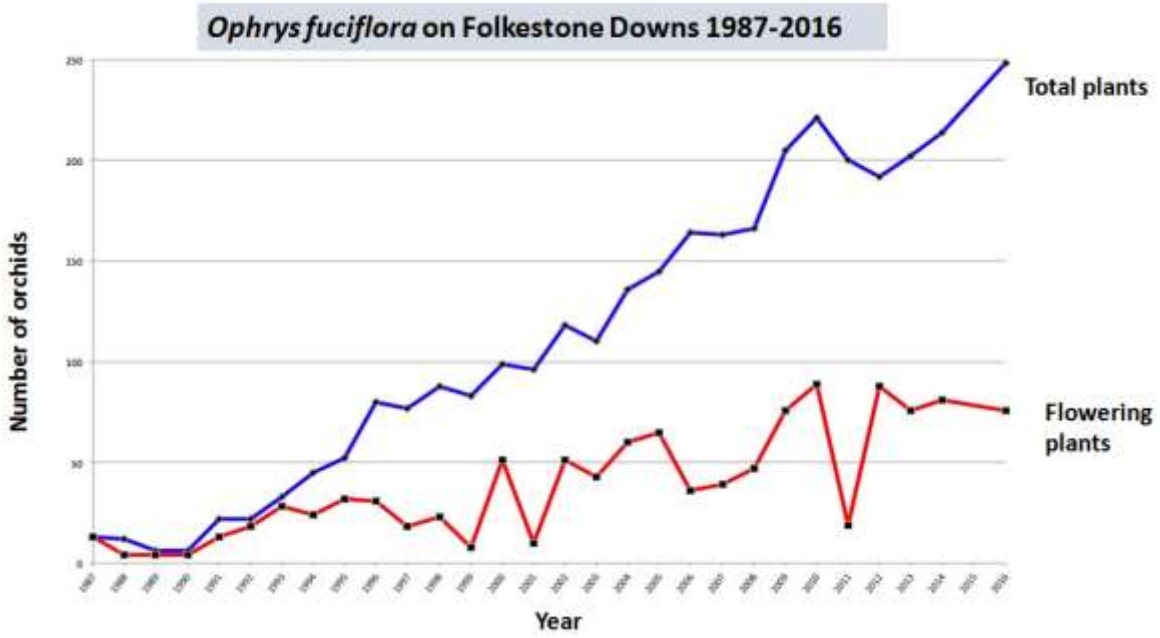
A colony at Cheriton Hill was known to Francis Rose from 1939 to 1945 (when there were 27 plants), but was later ploughed up. Either plants or seeds are presumed to have survived in the uncultivated grassy edge and when one plant was found in 1999 and a second at the other end of the bank in the following year, the site was monitored and plants were cross-pollinated. The colony revived to become the strongest and largest Folkestone population, with 217 rosettes present at Cheriton Hill in 2016 (201 plants in 2013; 221 in 2010). Its main focus is towards the top of the hill, where there were 134 plants in 2016, especially along the south-facing downland bank alongside the North Downs Way on the east side of Cheriton Hill. By 2014 there had been summer cattle-grazing for 10-15 years which appears to have encouraged colony growth. Flower spikes here tend to be taller than with other populations; carrying 6-11 flowers is normal (whereas most flower spikes elsewhere are around 8-12cm tall with an average of about four flowers). This may be a consequence of proximity to the road, with a more nutrient-rich and moist soil. The site is perhaps the most accessible one for the species. Further down Cheriton Hill, at a site west of Cherry Garden, is another focus of distribution.

To the east, Castle Hill was, at least in the 1970s and 1980s, regarded as perhaps the best Kentish site with up to 100 plants 1953-62 on a steeply terraced south south-east facing slope which curves round towards Round Hill ('the Horseshoe); but the site scrubbed up and is now mature ash woodland. Holywell itself is a damp area, the orchid having been recorded on adjacent dry, steep downland (24 plants in 1974; 12 inflorescences in

2014; 31 plants producing only two inflorescences in 2016). Nearby Round Hill (south east facing slope) has also had records, and Sugarloaf Hill held the orchid in three sloping areas (facing west, south and south south-east) but from 40 plants in 1970 the colony deteriorated to a last record in 1976.

Folkestone Downs. Photo by Lliam Rooney, July 2013

The Folkestone populations overall show an encouraging trend of increase since 1987. This is illustrated by the table below, supplied by Alfred Gay. It is notable that the number of flowering plants is only a limited measure of the health of the set of populations, measured by the total number of plants, including those not flowering. Also, what may appear to be a poor year from the perspective of visible flower spikes may have very little bearing on how the populations are developing.



There is much variation in the appearance of the flowers of Kent Late Spider-orchid, most markedly in the lip colour, shape and patterning. Philp (1982) mentioned that in recent years some plants had been noted with affinities to Continental *Ophrys scolopax* (Francis Rose recorded '*scolopax* type' at Shuttlesfield and Park Gate in 1987) and that either this species, or presumably a genetic contribution from it, might need to be recognised, or *Ophrys fuciflora* was more variable than generally realised. The answer looks to be one of variability, and it is notable that the degree of genetic variability (not necessarily to be fully equated with morphological variability, however) of Kent populations is higher than might have been supposed. Material from the Arpinge, Bulltown, Channel Tunnel (presumably Folkestone Downs) and Holywell populations has been subjected to AFLP genetic fingerprinting[10], and it was found that their genetic variability was greater than that of the rest of the central European populations (extending to Austria in the east and to Sicily in the south). This may represent more than one Kent post-glacial re-colonisation event by members of different genetic

[10] Devey, D.S. et al. (2009), *vide supra*.

lineages. It is primarily a Mediterranean species, with the warm, south-facing chalk escarpment of the Kent downs being at the fringe of its distribution, rare (if still present) in the Pas de Calais but fairly plentiful in the Somme valley, where the chalk again faces south.

'Abnormal' variation in *Ophrys fuciflora* flowers

Photo by Phil Green

Photo by Phil Green

Wye. Photo by Ian Hadingham

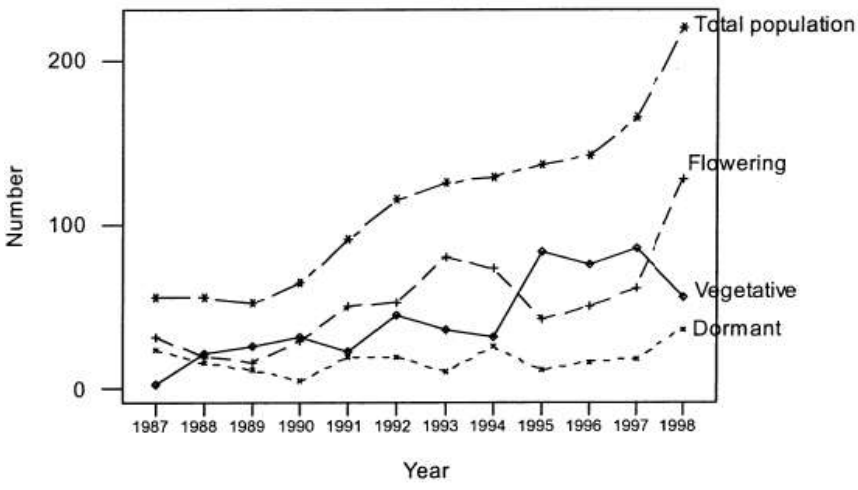
Genetic analysis also indicates a degree of both distinctiveness and similarity between the sampled Kent populations, such as to suggest some, albeit restricted, gene flow between them. Setting aside any deliberate hand pollination between different populations (which has, occurred, e.g. between the Wye (Bulltown) and Shuttlefield populations), genetic transmission will be either by pollen or seed. *Ophrys fuciflora* appears to lack a specific pollinator in Britain; the bee species observed effecting pollination on the Continent are generally not present with us, except for *Eucera longicornis*, which is very scarce. However, whether by pollen beetles or otherwise, cross-pollination presumably must be effected, or hybrids would not have been formed. Developed seed capsules are uncommon, but even one capsule will provide very large numbers of small seeds for wind distribution, so wider spread is possible. The 60s/70s Wye studies found that seed-set without intervention was an unusual event – 3.9% of florets produced naturally set seed capsules (30 from a total of 806 florets in the study period, deducting 34 florets out of that total which were hand-pollinated). Although *Ophrys fuciflora* clearly does not have the facility of self-fertilisation possessed by *Ophrys apifera*, nevertheless, seed capsules may, at least sometimes, instead be the product of selfing: Alfred Gay (pers. comm.) has found plants with dislodged pollinia, apparently the result of accident, and sometimes a swollen seed pod was found later, usually only one flower being affected, which does not suggest a consistent self-pollination strategy[11]. Phil Green (pers. comm.) believes that when only a few flowering spikes are present, there is normally no pollination, unless through disturbance. But when a good number are close by, then 'casual' insect visits occur, by which natural cross-pollination takes place. Few seed pods are produced even so, but these should be enough to sustain a healthy population of this relatively long-lived species. However, conversely, if the number of plants producing flowering spikes together drops, then the insect attraction of the group presumably diminishes so as to reinforce colony decline. An occasional cause of pollination appears to be deliberate acts by persons other than managers of the relevant site; this may be detectable by the amount of pollen appearing to have been transferred.

[11] This is notwithstanding that self-pollination is said not to occur (which is evidently the case in normal circumstances) in Stone, D.S. & Taylor, P.A. (1999). *Ophyrys fuciflora* (Crantz) Moench & Reichenb. (Orchidaceae). In (ed.) Wiggington, M.J., *British Red Data Books 1 Vascular Plants (3rd edition)*. JNCC.

The 80s/90s Wye studies suggested that (based on over 8,000 measurement of distance between recorded plants at Wye) vegetative reproduction in the UK does not readily take place and is not part of the species' survival strategy. Alfred Gay, however, considers that vegetative reproduction may not be uncommon in relation to the Folkestone plants. Such reproduction may (as with self-fertilisation) tend to preserve, to a limited degree, local variation in flower characteristics. Phil Green has seen the annual production of new tubers sometimes result in a clonal group, rather than simple replacement of the plant. Generally there are groups of two or three identical plants, but up to five have been recorded. This appears to be the only way in which this very variable species produces plants with fully identical flowers. But it is not vegetative reproduction in the sense of a widening clonal clump; rather it may extend the life of the original genetic entity, without spreading further than the small clump which often dies back to one plant and may eventually die out altogether.

Wye. Photo by Lliam Rooney, 13 June 2012

The 80s/90s Wye studies drew a number of conclusions from the populations monitored. *Ophrys fuciflora* in Kent has a preference for disturbed, free-draining soil of low fertility, which is afforded by the thin rendzina soils over chalk on the steep slopes of the downs escarpment; these slopes should face so as to provide warm winter soils. Ground disturbance may be particularly relevant to establishment, with the potential for more mature grassland to develop around a plant during its lifetime. There is some evidence from Wye for the value of disturbance (Alfred Gay, pers. comm.), with one colony being on an old spoil heap, another very close to a rabbit warren and a third including the site of a tumulus which had been ploughed out in 1958, but which has been re-colonised. At Wye, the 80s/90s studies describe it as growing in two communities: *Brachypodium pinnatum* agg. grassland (CG4) and *Festuca-Avenula* grassland (CG2), with intermediates. Plants existed in a vegetative, flowering or (underground) dormant state and moved between them. The dormant state did not last more than two years at a time, assuming that the plant had already gone through an above-ground stage. The proportions of plants in different states vary considerably, as shown by the accompanying table (© English Nature, 2000), which makes it clear that firm conclusions about population trends cannot always be reached by counting flower spikes alone (as may also be seen from the Folkestone Downs data above) – or it would be supposed that the period 1992-94 was one of decline, whereas it was one of net gain.



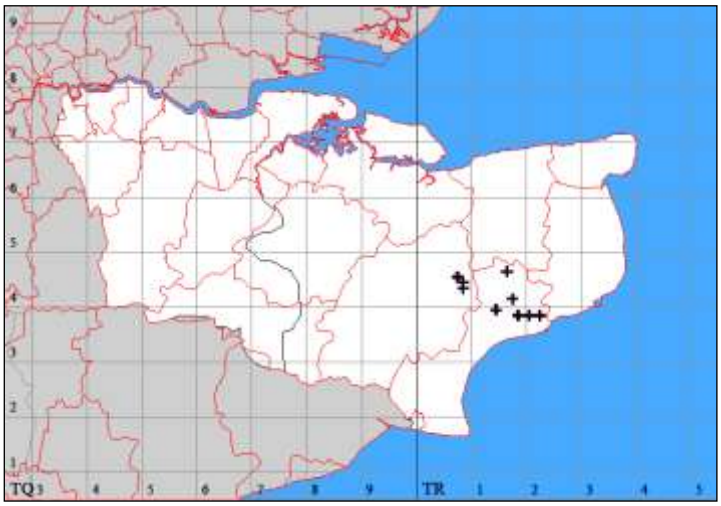
It will also be seen that there was a growth in total population over the period of study (this is against a background of low mortality). This seems to have been encouraged around 1991-92 by winter grazing and some strimming of rank vegetation.

The species is also fairly long-lived. The mean half-life of *Ophrys fuciflora* (the time taken for a population to fall by 50%, assuming that environmental conditions remain constant and favourable) was calculated at 12.5 years, starting from adult plants. Survivorship of the 1998 population cohort was calculated at 60 years (i.e. without recruitment it would take that time for a population to be reduced to one individual). The 60s/70s Wye studies found four plants which lived throughout the 14 year duration of the survey period. As regards Folkestone populations, Phil Green considers that, against a background of plants being able to live for 25 years, the orchid's normal flowering life is 10 to 15 years, although it is frequent for plants not to flower every year and, indeed, they might cease producing even leaves for two or three years. It was possible to confirm that it was the same plant reappearing after that cessation because he undertook fixed point recording (until 2014) and photographed each flowering plant (each individual is sufficiently different that it can be identified on reappearance).

The 80s/90s Wye studies also found *Ophrys fuciflora*, far from being sensitive, exhibited the characteristics of a stress-tolerant species, one which is opportunistic but easily out-competed for resources and so adapted for environmental conditions where competition is reduced. Ideal management according to the 80s/90s Wye studies should maintain nutrient removal, achieve a uniform sward and provide 5-10% bare ground, with grazing timing that avoids cropping flowering or seeding spikes. There is room for more than one view as regards the timing of grazing. Phil Green (pers. comm.) points to the effectiveness of low levels of mostly summer grazing by cattle over 15 years as having increased the colony at the top of the east Cheriton Hill slopes from none to c. 100 plants, even though this coincides with flowering/fruiting. *Brachypodium pinnatum* agg. (Tor-grass) growing on the Folkestone Downs, has potential to crowd out the orchid. Winter grazing only reduces the height of the grass, which is then left unchecked to grow, flower and set seed in summer; whereas summer grazing will stress this and other tall grass species and favour shorter fine-leaved grasses. Any loss of flower spikes through the presence of cattle does not result in the loss of the plant, but winter grazing would probably give rise to greater risk, given that the orchid leaves are produced in late autumn, exposed all winter to trampling / grazing, and die back around flowering time.

Undergrazing is a serious threat to *Ophrys fuciflora*, were it to occur. The coarse dense cover of Tor-grass if unchecked, may overbear adult plants and leave no opportunity for seedling recruitment. Eventually it leads to vegetative succession, with scrub building up, and then woodland. Conversely, over-grazing can be an issue, but this is primarily as regards rabbits. Loss of flower spikes may also occur through slugs (encouraged if Tor-grass becomes dense) and unfortunately loss of whole plants may occur through criminal activity: three were dug up at Cheriton Hill in 2016.

Ophrys fuciflora is closely related to *Ophrys apifera* (Bee Orchid), with which it hybridises, the only known British crosses not surprisingly being from East Kent. Hybrids, generally the odd plant or two, have been recorded from more or less the whole range of *O. fuciflora*: Wye, Postling, Parkgate Down, Shuttlesfied, Arpinge and the Folkestone Downs (most recently at Wye Bulltown in 2010 and 2014; and at Postling in 2010). They are not easy to identify, especially in view of the variability of *O. fuciflora.* The species themselves may be separated by *O. fuciflora* having a larger, squarer lip, generally with more elaborate patterning, and a forward-pointing yellow appendage at the tip of the lip (the appendage points backward in *O. apifera* and so is scarcely visible from the front of the flower. The upper sepals of *O. fuciflora* are also more widely triangular.



For an overview of status, the accompanying distribution map, representing records at monad level, is taken from 2010-20 records, and the status table derives from data kindly provided by Alfred Gay.

Recent (2016) status of *Ophrys fuciflora* populations		
Site	**Population estimate**	**Status**
Wye- Devil's Kneading Trough	5-10	Recent decline
Wye - Fishponds Down	20-30	Stable
Wye - Aldglose Down	50-100	Stable / possible increase
Wye - New Barn Coombe (Bulltown)	50-100	Recent decline
Postling	150-200	Increasing
Parkgate	0-5	Decline/still present
Shuttlesfield	10-20	Stable
Arpinge	20-30	Recent decline
Folkestone - Cheriton Hill	100-150	Increasing
Folkestone - Cherry Garden	50-100	Increasing
Folkestone - Holywell	30-50	Stable/possible decline

This account has benefited from the assistance of Alfred Gay, David Johnson and Phil Green who, between them, have very extensive experience of this species.

Ophrys insectifera L. (Fly Orchid)

Draft account

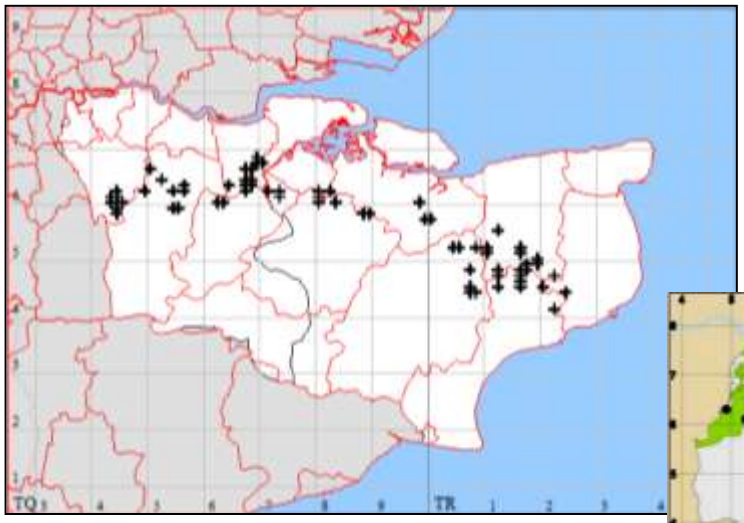
vc 15 and 16

Rarity / scarcity status

Ophrys insectifera is fairly frequent in south England, with a scattered distribution reaching northern England, but largely absent from the south west and virtually so in Wales; present in central Ireland. It is treated as a UK Biodiversity Action Plan priority species, with the maintenance of open conditions at sites where it is known to occur being encouraged. The species is considered to be **Vulnerable** to the risk of extinction in England and Great Britain as a whole, its area of occupancy in England being taken to have declined by 37% in comparing records for the periods 1930-69 and 1987-99. It is supposed that losses are attributable to woodland clearance and to scrub encroachment and the closing of woodland canopies, although it grows well in dappled shade in Kent. There is some evidence of decline in the county, with a 42% reduction in tetrad records between 1971-80 and 1991-2005, although it is not yet rare or scarce.

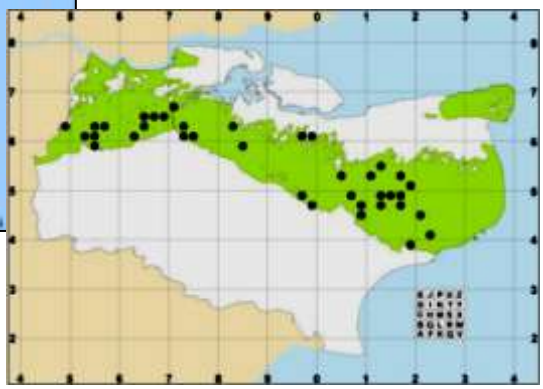
Account

The first published record for the county was by John Gerard in his *Herball* (1597) where, with other orchids, it is said to 'growe upon barren chalkie hils and heathie grounds, upon the hils adioining to a village named Greene-hithe, upon long field downes by South-fleet, two miles from the same place, and in many other places of Kent'. The reference to 'heathie grounds' is a little difficult to understand in relation to this calcicole, but as Gerard was also referring to other orchids, amongst them the 'Butter-flie Satyrions', he may have included *Platanthera bifolia* (Lesser Butterfly-orchid), which has wider habitat tolerances. Clearly he regarded the Fly Orchid as not uncommon in Kent, and so did Hanbury and Marshall (1899), who considered it to be abundant in four of the ten botanical districts in the county, a common plant of woods, thickets, and their outskirts, on and near the chalk. From such abundance it came to be merely a locally frequent plant in Philp (1982), with records in 57 tetrads, following the chalk downs from one end of the county to the other. A further reduction, to 33 tetrads, came with the 1991-2005 survey published as Philp (2010), but this appears to be unduly pessimistic.



***Ophrys insectifera* (Fly Orchid) 2010-20**

***Ophrys insectifera* (Fly Orchid) 1991-2005 (related to chalk (green))**



The accompanying 1991-2005 distribution map (taken from Philp (2010) with kind permission of the late Eric Philp and the Kent Field Club) may be compared with our 2010-19 records. They are mapped for the purposes of this register at 1 km square (monad) level, which entails recording at a finer scale than the tetrads of Philp (2010). Our 2010-20 records cover 53 tetrads (the equivalent of 70 monads) over a broadly similar

distribution, but also show a cluster just within metropolitan vc16, an area not included in the 1991-2005 map. So the evidence still points to minor decline since 1971-80, but nothing like what Philp (2010) suggests, and the picture is probably more complex than this. David Johnson (*Wild Orchids of Kent*, 2019) has noted the loss of several colonies in north Kent in recent years, and a contraction in many extant populations; but this has been to some extent compensated by the establishment of some important populations in old chalk quarries and workings, especially in the Medway gap, although such areas themselves have been increasingly developed. The species may suffer from rabbit predation, at least as regards flowering stems: when rabbit fencing was installed at Mill Hill Wood, Ranscombe, 60 plants flowered in 2019 where no flowers survived in 2018.

Yockletts Bank. Photos by Lliam Rooney, 21 May 2009

Ophrys insectifera is currently noted in Kent normally as no more than half a dozen flowering spikes at a time; but there are larger populations, e.g. 90 at Mill Hill, Ranscombe (2013); over 50 at Trundle Wood (2010); about 50 near Broad Downs, Wye (2020); 37 at Burham Pit (2010); and 35 at Park Gate Down (2014). Counting plants is not straightforward as they are so inconspicuous, even when in flower. Our recent records are all on chalk (including clay-with-flints over chalk), mostly in light woodland, often on or towards the edge, or in scrub; chalk grassland is a habitat, but generally at the margins with scrub or woodland. In other counties, it may be found in calcareous fen, but this does not appear to be the case in Kent. In woodland, it may be accompanied by *Mercurialis perennis* (Dog's Mercury); we have noted it with ash, beech and in hazel coppice. Sometimes it may be in quite dark habitats, but this is possibly a matter of survival from when light was not excluded to the same degree, e.g. as woodland grows out into a scrubby margin of chalk grassland. In lighter habitats, there may be issues of competition from rank vegetation if not restrained by the thinness of the soil over chalk or the management regime. Dappled shade in woodland or scrub with little under-storey appears to suit; but as with many other orchids, the significance of habitat may relate as much to the species' associated mycorrhizal fungus as to the plant itself. These recent habitat observations accord well with those noted by Francis Rose in the 1940s and 1950s in relation to his specimens in **MNE**: finds were made mostly in coppice on chalk or in chalk scrub, but were also noted on chalk downs, in open chalky beechwood and in one case in coppice on Gault (Ryarsh Wood, 1936). Richard Moyse (pers. comm.) has noted at Ranscombe that Fly Orchid occurs under secondary woodland (at Mill Hill, this is woodland and scrub post-dating the 1987 storm), so that woodland management might best be served by managing a dynamic scrub/woodland succession, accepting that individual populations may wax and wane as succession proceeds.

Cross-pollination is well-known to be effected by male digger wasps (in Kent, by *Argogorytes mystaceus*), which are deceived by the flowers in attempting to mate with them and so pick up and transfer pollinia from flower to flower. The deception appears to arise both from the physical resemblance of the flower to a female wasp and to the emission of floral scent which has the effect of a sexual pheromone. This pseudo-copulation has been observed many times in Kent, in particular at Downe Bank KWT reserve (Johnson, 2008)[12] - ironically, in view of Darwin's failure to do so here. He was puzzled by the apparent lack of attractiveness of the flowers to insects, so far as his observations went, with relatively few flowers having had pollinia removed and with only a seventh of the flowers examined maturing into a capsule. Something, he felt, 'seems to be out of order

[12] See the amply-illustrated account in Johnson, D. (2008). Wasp visits Fly at Downe Bank. *Kent Field Club Newsletter* **68**: 2-6.

in its mechanism or in its conditions'.[13]. The low seed set, however, appears to be characteristic of *Ophrys insectifera*; and it would have been a matter of chance whether Darwin might have been able to pursue more successful observations. Surprisingly, it appears that male digger wasp visits appear to be most frequent late in the Fly Orchid's flowering season in Kent[14], even though the legitimate distraction of female digger wasps (which emerge some two weeks later than the males) would presumably be more available than earlier; so it may be that the pheromone effect of the floral scent intensifies as the orchid matures.

Ophrys insectifera hybridizes with *Ophrys sphegodes* (Early Spider-orchid), in spite of their habitat differences (the former being shade-tolerant and the latter preferring open chalk grassland), their differing flowering times and different pollinators. The only known British occurrences have been in East Kent, with discoveries at Wye Downs in 1905 and 1906 and by Francis Rose at Winchcombe Downs, Crundale in 1957.

Ophrys insectifera is not readily capable of being confused with other British orchids, although there is occasional variation in flower shape or colour.[15]

[13] Darwin, C. (1862). *The various contrivances by which orchids are fertilised by insects*. London: John Murray.

[14] According to observations at Downe Bank by Grant Hazelhurst, noted in Johnson (2008), *vide supra*.

[15] Johnson, D. (2007). *Ophrys insectifera* var. *ochroleuca* in Kent. *Bulletin of the Kent Field Club* **52**: 89-92. Johnson, D. (2008a). Ophrys insectifera var. ochroleuca the "Yellow" Fly Orchid. *Kent Field Club Newsletter* **67**: 7-10. Johnson, D. (2008b). More Kentish orchid variants. *Kent Field Club Newsletter* **68**: 11-15.

Ophrys sphegodes Mill. (Early Spider-orchid)

Draft account

vc 15; formerly in vc16

Rarity / scarcity status

Although it was formerly more widespread, Early Spider-orchid is now primarily a plant of coastal calcareous grassland, especially in Kent, East Sussex and Dorset. It is nationally scarce and protected from picking and sale under Schedule 8 of the Wildlife & Countryside Act 1981. It has been regarded as a Red Data Book species with Near Threatened status, but its current conservation risk is one of Least Concern, both in England and in Great Britain as a whiole. This reflects the relative stability of its distribution for the period 1930-99, although the inclusion of pre-1930 data would show substantial historic decline. In Kent, there are some 25 or so colonies and the species is neither rare nor scarce, albeit very local.

Langdon Cliffs. Photo by Sue Buckingham, 28 April 2009

Account

The first published record for Early Spider-orchid in Kent could well be John Ray's reference to *Orchis arachnitis* at '*Northfleet in Kent*' in his *Catalogus Plantarum Angliae* (1670), although this is treated separately from a Cambridgeshire taxon which clearly fits the Early Spider-orchid, viz. the '*Humble Satyrion with green wings',* (so differentiating from *Ophrys apifera* (Bee Orchid) with its pink sepals). Later on, in the third edition of Ray's *Synopsis Methodica Stirpium Britannicarum* (1724), edited by Dillenius, *Orchis arachnitis* is omitted, but the Northfleet location is attributed to the "*Humble Bee Satyrion with green Wings*", said to be flowering in April and common enough on chalk hills around Northfleet. So it may be that we should read all these as references to the same taxon. The position is not helped by the confusion between Early and Late Spider-orchids which subsisted until sorted out by G.E. Smith in his *Catalogue of rare and remarkable Phaenogamous Plants, collected in South Kent* (1829), following an examination of over 200 specimens, mostly gathered from Hartlip (presumably Queendown Warren). His conclusions were that the Early Spider-orchid covered a range of variation into which should be sunk what botanists had been treating as a separate species, *Orchis fucifera* (Drone Orchid); but that there was also another taxon present, the Late Spider-orchid (then called *Ophrys arachnites*), which was added to the British flora as a result of Smith's researches.

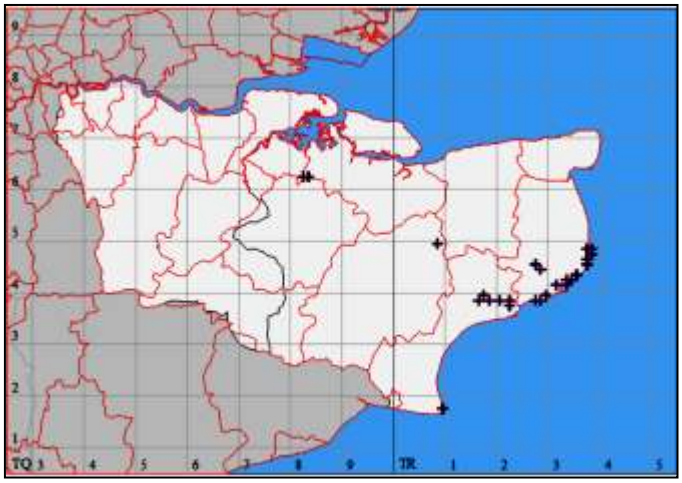
As well as receiving Queendown Warren specimens, Smith was aware of Early Spider-Orchid growing on the Folkestone Downs near Cherry Garden; on the chalk slopes by Lydden Spout and beyond St Margarets Bay. Other early records indicate a range across the county including, in West Kent, the chalk at Greenhithe (Pocock, 1820); and in East Kent, Selling, near Faversham (Jacob, 1777). Hanbury and Marshall (1899) regarded it as locally plentiful on downs, rough banks and pits on the chalk. Francis Rose, writing in the 1940s-60s, considered it then rare, but locally very abundant at Queendown Warren (where there were usually 500-1,000 plants, 1938-62) and present near Wye and in many places near the coast between Etchinghill and Deal. It was then apparently extinct in West Kent, the last record being a report from South Street, Biggin Hill, in 1947. High counts were noted by Francis Rose at Abbot's Cliff (hundreds on rifle range above, 1943-53); the downs on top of Shakespeare Cliff (hundreds, 1948-62); Temple Ewell (hundreds, 1948-60 and 2,000 flowering

plants in 1989). In spite of the number of records given by Francis Rose, mostly for the 1940s and 1950s, this was a time when arable cultivation had increased, accounting for the loss of the orchid's downland habitat, and afterwards modern farming methods enabled the plough to come closer to the cliff edge, with the loss of some Kentish cliff-top colonies (David Johnson, *Wild Orchids of Kent*, 2019).

Samphire Hoe. Photo by Lliam Rooney, 19 May 2010

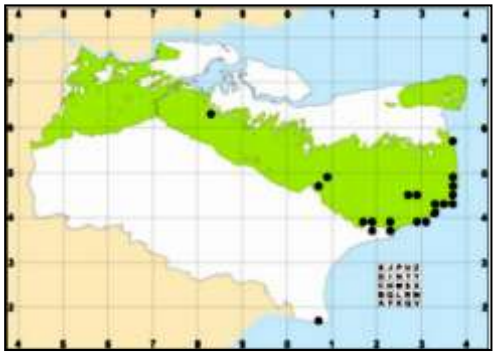
The general trend in historic Kent occurrences has accordingly been a reduction in the number of sites to Queendown Warren, Wye and the east coast, with Philp (1982) treating the species as very local and rather rare, the number of flowering spikes varying from year to year. Just after the end of the 1971-80 survey published as Philp (1982), Francis Rose prepared a *Report on the populations of Ophrys sphegodes in south east England in May 1983* (unpublished), based on an attempt to survey every known population in East Sussex and East Kent over four days, in most cases by lining up helpers along a base line and getting them to walk in parallel across the site. Possible sites amounted to 27 in East Kent with definite records since 1945, but only 11 were visited in the course of the survey, with plants seen at ten sites[16]. The estimated total number of plants for East Kent was 3,780.

The total of tetrad records given in Philp (1982) was 16; in Philp (2010), it was 21, with basically the same distribution. The accompanying 1991-2005 distribution map (taken from Philp (2010) with kind permission of the late Eric Philp and the Kent Field Club) may be compared with our 2010-20 records.



***Ophrys sphegodes* (Early Spider-orchid) 2010-20**

***Ophrys sphegodes* (Early Spider-orchid) 1991-2005**



They are mapped for the purposes of this register at 1 km square (monad) level, which entails recording at a finer scale than the tetrads of Philp (2010). Our 2010-20 records have exceeded both earlier surveys, with 24 tetrads (from 31 monads), which appears to suggest a degree of stability in distribution, maybe some improvement; but there are both negative and positive qualifications to this.

[16] The ten sites were: Queendown Warren, TQ830630 (300 plants est.); Winchcombe Down, TR088494 (300 plants); Wye Crown Down, TR071466 (11 plants); Dover Hill Folkestone, TR237376 (2 plants); Farthinghoe Down, TR297395 (366 plants); Langdon Cliffs, TR333420 to TR345425 (850 plants est.); Temple Ewell Down, TR279451 to TR276455 (1653 plants); Old Park Hill, TR300434 (40-50 plants); South Foreland, TR366436 (237 plants); Dover Patrol Memorial, TR375452 (14 plants). Data are also given for the 16 unvisited sites with post-1945 records, many of which were suspected still to carry plants.

First, data based on presence/absence alone do not register the strength of a population; and it is apparent that the Queendown Warren colony is declining. Despite the numbers given by Francis Rose (up to 1,000 plants) and the statement in Philp (1982) that this was the strongest colony in the county, the annual count is now less than 20 plants (David Johnson, *Wild Orchids of Kent*, 2019). Conversely, a monad at Kingsdown where the species has been recorded without numbers, in 2020 was found to harbour 585 flowering spikes, perhaps the second largest colony in the county.

Secondly, on the positive side, a new colony has developed at Samphire Hoe, now one of the largest in the British Isles. This is an undercliff area of 30 hectares reclaimed from the sea by the deposit of chalk spoil from the construction of the channel tunnel. Work began in 1988, the last spoil lagoon was completed in 1990, landscaping took place in 1993 and the area was opened as a country park in 1997. The first *Ophrys sphegodes* here was found in 1996, which gives very little time for it to have germinated and reached flowering stage, particularly if the 'start date' should be regarded as in 1993. Orchids often develop in their early stages with the benefit of mycorrhizal associations, and the bare chalk seems unlikely to offer much of this nature, but *Ophrys sphegodes* is capable of germinating asymbiotically, at least in the laboratory (albeit responding to nutrients unlikely to be present in the bare chalk), which is suggestive in relatiharbour a private lawn with on to Samphire Hoe, and various chalk-pit records. However, the standard ecological account of this species[17] notes the presence of mycorrhiza on the roots of *Ophrys sphegodes,* so this may have a part to play after all. Following germination (one to two months in the laboratory), it can take up to two years as an underground protocorm before first emergence (by no means as long as many orchids) and then is fairly short lived. Accordingly, its strategy appears to be that of a weedy species, relatively quick to take advantage of bare ground.

The single orchid became 61 plants in 1998[18], with 25% of the capsules setting seed (there can be 5,000 to 10,000 seeds per capsule). There were over 12,000 by 2006 and still 11,500 by 2012; 10,300 by 2014. The total of 3,500 in 2015 was adversely affected by rabbits; and a count of 4,500 in 2016 represents a degree of recovery. The site may offer advantages through the species being more salt spray-tolerant than had previously been considered, although of course cliff populations need such tolerance. A further advantage is the nutrient-poor, sharp-draining substrate which reduces competition as well as enabling the Early Spider-orchid to complete its cycle of flowering, seed setting and dying back to a dormant state before the warmest part of the year when the stresses of the habitat will be greatest.

Samphire Hoe. Photo by LliamRooney, 19 May 2010

The Samphire Hoe habitat in a sense extends the characteristics of the more usual Kent locations of very short grassland on south-facing slopes with some exposure of the chalk substrate, whether due to erosion or to grazing activities and light stock trampling (noting, however, that in Sussex, cattle grazing has proved damaging to colonies whereas sheep grazing, other than in the period of flowering and seed set, is beneficial). But Early Spider-orchid is in Kent also capable of colonising stabilised shingle, as it has been present in this habitat at Kingsdown at least since 1998 and in various places at

[17] Jaquemyn, H. & Hutchings, M.J. (2015). Biological Flora of the British Isles: *Ophrys sphegodes. Journal of Ecology* **103**: 1680-1696. This paper has also been the source of much other information in this account.

[18] Gay, P. & Philp, E. (1999). Early Spider Orchids at Samphire Hoe, Dover. *British Wildlife* **10***:* 165.

Dungeness since 1995. Recognised grassland communities in which the species may occur include *Festuca ovina–Avenula pratensis* grassland (CG2), especially the *Succisa pratensis–Leucanthemum vulgare* (CG2b) subcommunity, although further Kent data would be useful. We have a *Brassica oleracea* maritime cliff-edge grassland community (MC4), of which there is an *Ononis repens* (MC4b) subcommunity, found only in Kent and Dorset, and of which *Ophrys sphegodes* is an occasional constituent. *Ononis repens* (Common Restharrow), *Centaurea scabiosa* (Greater Knapweed), *Rumex acetosa* (Common Sorrel) and *Silene nutans* (Nottingham Catchfly) are constant associates.

Despite the early flowering of Early Spider-orchid, hybrids have been recorded in Kent (and nowhere else in Britain) with *Ophrys insectifera* (Fly Orchid) at Wye Downs (1905 and 1906), Olantigh, Wye (1913); and Crundale (1956-60). Crosses are also known from Kent (but again not elsewhere in Britain) with *Ophrys fuciflora* (Late Spider-orchid), first recorded by G.E. Smith as collected by a Mr Lee on the downs between Newington and Lyminge. Smith then remarked that he had seen both species flowering at the same time on 17 May 1828 (an experience replicated by E.S. Marshall on 1 June 1882), whereas normally their flowering periods would be distinct (April to mid-May v. late May to July). A Folkestone plant (1930) may have been this cross, as also plants reported to Francis Rose at Cheriton Downs (1945) and east of Etchinghill (L.J. Margetts, 1958); and this identity has also been claimed for a plant photographed, perhaps at Wye, in 1984. The hybrid between *Ophrys sphegodes* and *Ophrys apifera* (Bee Orchid) was, according to Hanbury and Marshall (1899), considered to be the identity of fresh plants sent in 1889 by G.L. Bruce of the Toynbee Hall Natural History Society (part of a movement to encourage education and citizenship in London's East End), gathered at Magpie Bottom, Shoreham. This find is very surprising, given the absence of any other record of *Ophrys sphegodes* from that locality or anywhere near it; although the same recorder was responsible for the perceptive discovery of *Polygala amarella* (Dwarf or Kentish Milkwort) at that location. Nevertheless, the record is generally treated as unconfirmable and the cross does not appear in modern Floras, although France Rose in his manuscript Flora noted it at Folkestone Downs and Cheriton Downs, without comment, and considered that a plant which may have been the cross grew at Brook Hillock, Wye, 1942-58.

For hybrids to arise, evidently cross-pollination must occur, and the usual pollinator for *Ophrys sphegodes* is the male solitary bee *Andrena nigroaenea*, of which numerous specimens were seen during the 1998 investigations at Samphire Hoe. They were reported as flying fast and erratically about the orchid colony, engaging in pseudocopulation and showing evidence of attachment of pollinia. The attraction to the male bees is principally the scent of the flowers, which mimics that of females and so encourages an attempt at mating which may bring about pollen transfer. Indeed, there are scent differences between pollinated and unpollinated flowers, which make this quite a sensitive mechanism. However, this could be threatened by climate change resulting in warmer springs, as it seems that flight emergence of female bees is more responsive to spring temperature than the flowering of *Ophrys sphegodes*; so that if female bees have emerged before orchid flowers, male bees may be less likely to be deceived into pseudocopulation with the flowers.

Samphire Hoe. Photo by David Steere, 22 April 2016

Ophrys sphegodes is quite variable in the shape and colouration of the lip of the flower which, as with other *Ophrys* species, resembles the abdomen of an insect. The lip, however, lacks the light-coloured markings of *O. apifera* and *O. fuciflora*, and the sepals are yellowish-green, rather than the pink of the other two species.

Orchis anthropophora (L.) All. (Man Orchid)

Draft account

vc 15 and 16

Rarity / scarcity status

Man Orchid grows locally on chalk or limestone in south east England, with few records further north, but not beyond Lincolnshire. It is treated as an **Endangered** species in both England and Great Britain as a whole, on account of its area of occupancy in England being taken to have declined by over 50%, with a downward trend also in extent of occurrence, in comparing records for the periods 1930-69 and 1987-99. However, if one takes data from 1987 onwards as a proportion of all records (including those before 1930); then the national decline would be assessed at 70%. It is treated as a UK Biodiversity Action Plan priority species threatened by loss of woodland glades, eutrophication and overgrazing. Planned action includes maintaining or restoring traditional pasture management for extant sites, with scrub management undertaken sensitively as the species often benefits from the protection afforded from overgrazing by scrub margins. Whilst it is nationally scarce, In Kent the species is still widespread and fairly frequent, and so it does not qualify here as rare or scarce. The orchid's importance in the county is as supplying the core territory for the species in the British Isles.

Mill Hill, Ranscombe. Photo by LliamRooney, 9 June 2010

Account

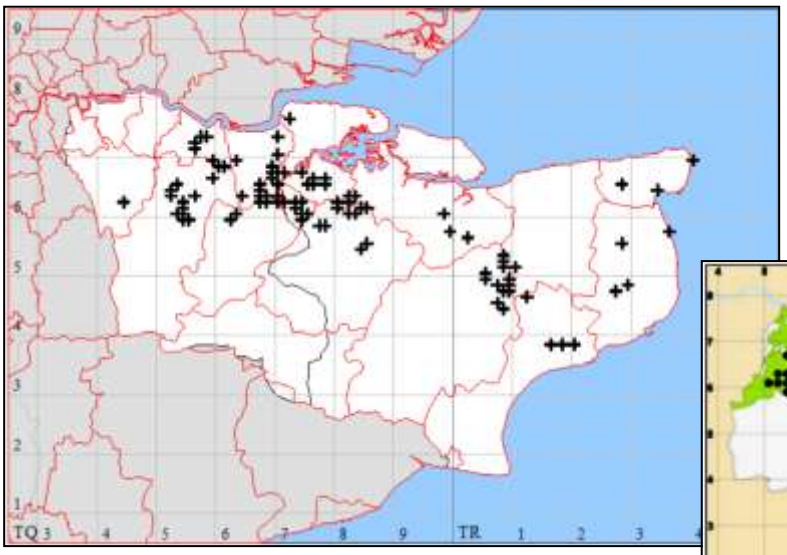
The first published Kent record is given in the third edition of John Ray's *Synopsis* edited by Dillenius: the '*Man-Orchis with a ferrugineous and sometimes a green Flower* ...At *Greenhithe* and Northfleet in *Kent*, with...Mr. *J. Sherard'.* Hanbury and Marshall (1899) considered the species to be locally abundant in woods, thickets and downs on the chalk, so that they did not give any individual records for the botanical districts covering the North Downs across the whole county, where it was said to be frequent. For Francis Rose, writing in the 1940s-60s, the orchid was widespread on the North Downs and quite common from the Surrey border to a line from Wingham to Denton, Elmsted and Wye, but rare east of this. It was, he considered, very common locally, with greatest abundance being on the chalk from the Darent valley to the Wye downs towards the coast. He knew of 142 localities on the Kent chalk. Philp (1982) treated it as locally frequent, found in 65 tetrads in rough grassland on downland, wood margins, along hedgerows and roadside banks, and occasionally in open woodland. Philp (2010), however, found presence in only 45 tetrads, with some sites having lost the species through ploughing, spray drift or inappropriate management.

Luddesdown. Photo by David Steere, 10 May 2015

Those records are shown in the accompanying 1991-2005 distribution map (taken from Philp (2010) with kind permission of the late Eric Philp and the Kent Field Club). Records for 2010-20 are mapped for the purposes of this register at 1 km square (monad) level, which entails

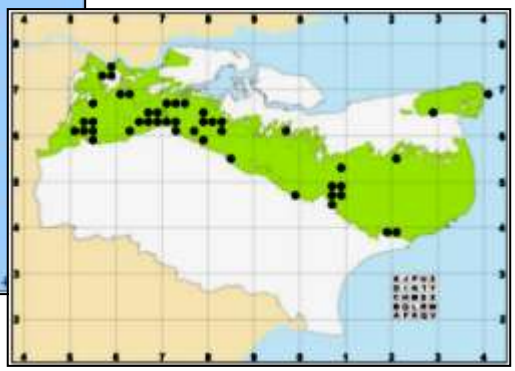
recording at a finer scale than the tetrads of Philp (2010). They amount to 106 monads, but are the equivalent of 75 tetrads, somewhat more than was recorded in the 1971-80 survey.

Whilst losses had no doubt occurred, it is likely that some of the apparent change between 1971-80 (Philp, 1982) and 1991-2005 (Philp, 2010) is a product of recording methods. The former survey was undertaken by a network of Kent Field Club recorders and the latter by Eric Philp alone: orchid records in particular appear likely to be collected more thoroughly by crowd-sourcing. However, there may be fresh recruitment: the 2010-20 records include some locations which were in neither earlier survey.



***Orchis anthropophora* (Man Orchid) 2010-19**

***Orchis anthropophora* (Man Orchid) 1991-2005 (related to chalk (green))**



So far as losses are concerned, the persistence of old colonies was tested in the BSBI's Threatened Plant Project, in which recorders were invited in 2012 to re-find the species at the site of old records randomly selected. Five sites in West Kent were allocated, and six in East Kent. Only two out of the six East Kent sites yielded the orchid (one a golf course, the other a KWT reserve); no pattern of loss was identified, but one former quarry had become a landfill site. All the West Kent sites were re-found, even one which had presumably been originally an open chalk roadside bank but which had since become completed covered by scrub with ivy ground cover and no grass; several Man Orchids still survived there. The re-finding proportion (64%) was better in Kent than sites selected in other counties where the find rate appears to have been four out of eleven (36%)[19]. It is curious that the success rate in re-finding, as also the concentration of records (if one includes the area just east of the Medway valley as well), is greater in West Kent than East. As a species with a European distribution which is primarily southern (Italy, Spain, Portugal and south France), it reaches the edge of its range with the British Isles. One might therefore expect it to be more common in East Kent and indeed the Sussex Downs, but the anomaly is greater than this, in view of its scarcity in northern France.

Darland Banks – habitat.
Photo by David Steere, 4 May 2014

[19] This produces the 50% overall figure (11 out of 22) given in Walker, K.J., Stroh, P.A. & Ellis, R.W. (2017), *Threatened plants in Britain and Ireland*, Botanical Society of Britain and Ireland, Bristol).

The relatively healthy position of Man Orchid in the county is also reflected in the colony at Darland Banks KWT reserve, perhaps the largest in Britain now the main Northamptonshire colony has declined: regularly numbering in the thousands, with over 7,000 plants recorded in 2009, and over 4,000 in 2012 and 2013. Darland Banks presumably represents ideal habitat: steep, south west facing chalk slopes with short, conservation-grazed turf. Elsewhere in Kent it is often found at the top of chalk grassland slopes where scrub is creeping out from woodland above; this transitional zone may move down if the scrub is unchecked and the orchid may then be subsisting in an increasingly shady habitat, for which it has some tolerance. At Ranscombe it has even been seen (2015) flowering in heavy shade under beech, in spite of the received wisdom that it is rarely found in situations in which the relative illumination falls to below 70% of full sunlight[20], but it may be that flowering activity in this case was affected by behaviour of a fungal symbiont. Although the great majority of occurrences are on chalk, Francis Rose noted it in 1961 at the old ragstone quarry at Dry Hill, Sundridge and (undated) as reported from a railway cutting on Gault Clay near Leeds. He also knew it on the calcareous fixed dune grassland at Sandwich Bay from 1951 to 1999 and G.E. Smith recorded it (c. 1830-32[21]) on the Greensand between Malling and Maidstone, two to three miles from the chalk.

Eynsford. Photo by David Steere, 13 May 2016

The Darland Banks population has been the subject of varying grazing regimes in different compartments[22]. Over much of the site, traditional winter grazing has sufficed to keep scrub and rank grasses under control. In other parts, however, a more intensive grazing regime (winter to late spring and late summer grazing) has been considered necessary to cope with the greater vigour of the plants requiring control. Monitoring of Man Orchid numbers over the period 2014-17 indicates that, although there are fluctuations from year to year, most likely influenced by general climatic conditions, these are proportionate as between the areas subject to different grazing regimes. Accordingly, it would appear that the severity of grazing does not affect the numbers of orchids, at least in the short term (the longer term position as regards continued recruitment of a population remains to be tested).

Kent populations often show a degree of clustering within their larger extent, sometimes involving quite dense aggregations. For example, a roadside colony near Bluewater has produced over 100 flowering spikes in an area not exceeding three square metres (David Johnson, *Wild Orchids of Kent*, 2019). The natural assumption would be that this is a result of vegetative reproduction, although the Biological Flora of the British Isles[23] account considers that the species shows limited or no vegetative spread, each plant's tuber being wholly replaced by a new one annually while the plant survives, only 'in some cases' does the old tuber persist so as to produce a new rosette as well as the new tuber.

Associated plants growing with Man Orchids found in the course of the BSBI's Threatened Plant Project (TPP) survey (2012) of Kentish sites were characteristic of chalk grassland with a scrub component. All sites held *Brachypodium*, but in the case of West Kent it was *Brachypodium sylvaticum* (False-brome) and for East Kent it

[20] Jacquemyn, H.. Brys, R. & Hutchings, M.J. (2011). Biological flora of the British Isles: *Orchis anthropophora* (L.) All. (*Aceras anthropophorum* (L.) W.T. Aiton). *Journal of Ecology* **99:** 1551-1565.

[21] In manuscript notes to his copy of a *Catalogue of rare or remarkable Phaenogamous plants collected in South Kent* (1829).

[22] Rutyer, A. (2018). Man Orchids at Darland Banks. In *KWT: Ecology and evidence, winter newsletter 2017/18.*

[23] Jacquemyn, H. et al., cited above.

was *Brachypodium pinnatum* agg. (Tor-grass). All but two sites held *Origanum vulgare* (Wild Marjoram), *Crataegus monogyna* (Hawthorn) and *Rosa* sp. (sometimes identified to *R. canina* or *R. canina* agg.), and the next most often recorded taxa were *Carex flacca* (Glaucous Sedge) and *Poterium sanguisorba* subsp. *sanguisorba* (Salad Burnet). Among British plant communities, Man Orchid is considered[24] to be mostly confined to *Festuca ovina–Avenula pratensis* grassland (CG2), especially the *Succisa pratensis–Leucanthemum vulgare* (CG2b) subcommunity, which consists of a mainly closed sward in which *Cirsium acaule* (Dwarf Thistle)*, Asperula cynanchica* (Squinancywort) and *Hippocrepis comosa* (Horseshoe Vetch) are frequent species. However, these community characteristics do not give sufficient weight to the scrub component observed in the TPP survey, and none of the last three species (or the species after which the subcommunity is named) was observed in the immediate vicinity of the targeted orchid, except (twice) *Hippocrepis comosa*, although all species would not have been out of place.

Man Orchid may be found growing with other orchid species, and in Kent has been found to hybridise with two of them, both in the genus *Orchis*, and so implying a closeness of relationship which supports the transfer of Man Orchid from *Aceras* to *Orchis*.

A cross with *Orchis simia* (Monkey Orchid) at the latter's native site near Faversham was found by Richard Bateman in 1985[25]; the two parents were known to have flowered a few centimetres apart for several years. Two hybrid plants were still present in 1992, but some doubt always attached to hybrid origin, as hand-pollination of the *Orchis simia* population had been carried out into the 1980s which could have given rise to artificial cross-pollination. However, the occurrence of a further hybrid in 2016 strengthens the case for natural hybridisation.

Man Orchid has also hybridised with *Orchis purpurea* (Lady Orchid) in private woodland with glades on chalk in East Kent, the only site in the British Isles, where two plants were discovered by Francis Rose and Owen Davis in 1998. Hybrid plants have continued at this location, at least two for many years, increasing to five, then (2018) seven, perhaps benefited by wire mesh fencing from rabbit depredations; then nine (2019). The seven 2018 plants included two colour forms, one rose-pink and the other(equating to Francis Rose's description) purple, suggesting at least two hybridisation events. The two additional 2019 plants were different in colour and lip shape, suggesting two further hybridisation events. The parents have been abundant in the vicinity, a count at the site when there were five hybrids giving 275 *Orchis purpurea* and 121 *Orchis anthropophora*.

Orchis anthropophora is not readily confused with any other British orchid. Although *Coeloglossum viride* (Frog Orchid) – considered extinct in Kent – has flowers which can be similarly yellowish-green, their lip is only shortly divided, whereas the lip of *O. anthropophora* has the terminal and lateral lobes which are the 'man' of Man Orchid. The Frog Orchid's inflorescence is also much shorter. There is a degree of colour variation in the Man Orchid flowers, which are normally greenish-yellow, often with a reddish-brown tinge; but they have been seen rarely in Kent as lacking anthocyanin, and so with the 'hood' or 'helmet' plain green and the lip yellow; or, more frequently, with a high quantity of anthocyanin, when the lip may be suffused red. The variation does not seem to have taxonomic significance (although the anthocyanin-lacking plant has been given a varietal name); and is not obviously induced by habitat conditions – a possible association with open ground has not been borne out by David Johnson's observations in Kent (*Wild Orchids of Kent*, 2019).

[24] Jacquemyn, H. et al., cited above.

[25] Bateman, R.M. & Farrington, O.S. (1997). A morphometric study of X *Orchiaceras bergonii* (Nanteuil) Camus and its parents (*Aceras anthropophorum* (L.) Aiton f. and *Orchis simia* Lamarck) in Kent. *Watsonia* **16**: 397-407.

Near Faversham, *Orchis* x *bergonii* (*O. simia* x *anthropophora*). Photo by LliamRooney, 16 May 2016

East Kent, *Orchis* x *meilsheimeri* (*O. purpurea* x *anthropophora*). Site and photographer details are redacted.

Orchis purpurea Huds. (Lady Orchid)

Draft account

vc 15 and 16

Rarity / scarcity status

Orchis purpurea has only a very few scattered sites in southern England outside Kent, and its rarity elsewhere contrasts strongly with its frequency in Kent. It is treated as **Vulnerable** to the risk of extinction in England and in Great Britain as a whole. The vulnerability designation in England arises on account of its area of occupancy being taken to have declined by 44%, and the extent of its occurrence having fallen by 34%, in comparing records for the periods 1930-69 and 1987-99. It is a **nationally scarce** plant and although there may have been some decline in Kent, mainly before 1930, it is locally frequent in the county. The importance of its conservation in Kent lies in the significance of its populations in the context of the British Isles as a whole. In 2020 it was appointed under the Kent Biodiversity Strategy as a Kent-specific threatened and iconic species.

Bonsai Bank. Photo by David Steere, 29 May 2014

Account

The first published record in Kent is probably that by Christopher Merrett in his *Pinax rerum naturalium Britannicarum* (1666): '*Orchis* militaris polyanthos, on *Gad's-hill* in *Kent*'. The Military Orchid and the Lady Orchid were not well distinguished at the time and although Merrett appears to be naming the former, it is far more likely that the latter was encountered (not necessarily by Merrett: he took many of his localities from manuscripts of John Goodyer and investigations by others). Indeed, the woodlands nearest to Gadshill (i.e. within 1km) are currently Court Wood, Peartree Wood and Great Crabbles Wood, at the latter of which Francis Rose knew the orchid from 1944 to 1955, noting it there in 1991 also. David Johnson and Eric Philp, following up a record in Philp (1982), found a non-flowering rosette at Peartree Wood in 1997. The original 1666 site was likely to have been north or north east of the current extent of Great Crabbles Wood and closer to the Gravesend-Rochester road at Gadshill (judging from Robert Pocock's 1812 finds[26], one by a chalk pit, another at Chapel Wood which adjoined the road, both since lost to development), and Peartree Wood is likely to have been very close: such continuity is remarkable. If, however, one sets aside the 1666 record for ambiguity, the next earliest record is given in Dillenius' third edition of John Ray's *Synopsis Methodica Stirpium Britannicarum* (1724): 'At *Northfleet* near *Gravesend*…Mr. *J. Sherard*'. A specimen is in Dillenius' herbarium, which G.C. Druce confirmed and took to be gathered from the same place.[27] These historic records are the earliest for the British Isles as well as Kent.

---

[26] Arnold, G.M. (1883). *Robert Pocock: The Gravesend Historian, Naturalist, Antiquarian, and Printer*.

[27] G.C. Druce (1907). The Dillenian herbaria : an account of the Dillenian collections in the herbarium of the University of Oxford, together with a biographical sketch of Dillenius, selections from his correspondence, notes, &c. There was, however, also a specimen from Northfleet which Druce identified as *Orchis militaris* (Military Orchid), so the position is not straightforward.

Hanbury and Marshall (1899) assessed *Orchis purpurea* as still locally plentiful in woods and on bushy banks on the chalk 'although, like all the choicer orchids, it is much less common than formerly'. They gave many localities, but in the case of the botanical districts covering the North Downs and their hinterlands from Rochester to Dover, these were too numerous to mention individually. Another measure of its abundance was that Anne Pratt wrote of it as 'often carried into the towns in baskets for sale'[28], but what is really surprising is that Jocelyn Brooke echoed that experience so much later in his *The Wild Orchids of Britain* (1950), claiming that this was 'a regrettable practice which still, unfortunately, survives among the local hawkers, who sell this beautiful orchid at street corners (at sixpence a bunch)'. Francis Rose in his manuscript Flora reckoned that there were some 130 localities in Kent where the plant still occurred. It is not clear exactly when this statement was written: probably around 1960, certainly later than 1948, when he wrote[29] that there were over 90 localities. In about 25 of the 130 localities, Lady Orchid was abundant, with 100-400 flowering spikes in 'good' seasons. It grew in scrubland, woodland (both beech forest and coppice), and, more rarely, grassland on chalk, being widespread on the North Downs from near Knockholt in the west to Betteshanger , Waldershare and Dover in the east, and locally frequent and locally abundant near the Medway Valley and on the chalk from Wye to the coast. Exceptionally, it was known on Gault Clay in a wood west of Brabourne (1946-61) and at Postling Wents (c.1990); but it is possible that downwash from the chalk may have influenced surface geology. It had then become very rare from Meopham westwards, and absent from much of the chalk between Frinsted and Milstead on the west and Challock on the east.

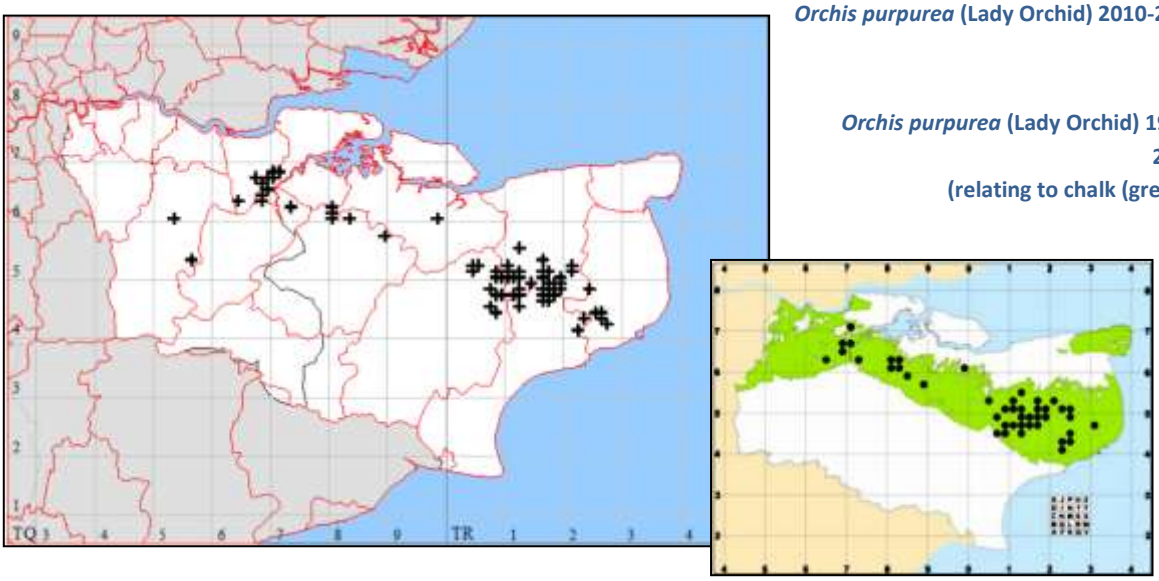
Bredhurst. Photo by David Steere, 7 May 2015

Philp (1982) stated that the species had recently disappeared from several localities, mainly through destruction of its habitat, remaining present (sometimes quite frequent) in 48 tetrads. Those 48 had become 44 by the time of the 1991-2005 survey published as Philp (2010), although no comment was made as regards decline. Those records are shown in the accompanying 1991-2005 distribution map (taken from Philp (2010) with kind permission of the late Eric Philp and the Kent Field Club). Records for 2010-20 are mapped for the purposes of this register at 1 km square (monad) level, which entails recording at a finer scale than the tetrads of Philp (2010). They give 47 tetrads (the equivalent of 67 monads) and so suggest relative stability of distribution. The recorded tetrads are, however, not identical as between 1991-2005 and 2010-19. In particular, there are two recent West Kent records outside the earlier distribution. One is on the chalk near Otford and is far more westerly than usual, although there are older records in that neighbourhood and near Knockholt. The other, a single plant at One Tree Hill, Sevenoaks, (2011-12) is truly anomalous, being well away from the chalk, on the lower slopes of the Greensand Ridge, on the Hythe Formation. The constituent rocks can include some calcareous content, but it was not evident that any other flora had been influenced by this.

---

[28] Pratt,A. (n.d., but first published 1866). *The Flowering Plants and Ferns of Great Britain*, vol.5.

[29] Rose, F. (1948). Biological flora of the British Isles: Orchis purpurea Huds. *Journal of Ecology* **36**: 366-377.



***Orchis purpurea* (Lady Orchid) 2010-20**

***Orchis purpurea* (Lady Orchid) 1991-2005 (relating to chalk (green))**

From the 2010-20 records the most substantial colony was at Bonsai Bank near Petham (TR1051) where there were thousands of plants in 2010 on a chalk bank, responding to recent scrub clearance, and still 3,481 plants in 2013. However, there were also at least 300 flowering plants in private woodland in TR0452 in 2016; 299 at Stockbury (TQ8360) in 2017; 200-300 at Yockletts (TR1247) in 2010; 110 rosettes and 35 flower spikes at Burham Downs (TQ7362) in 2010); and 100 in woodland near Adisham (TR2152) in 2012. Most recent records were in woodland, often the edge or in glades; some were in chalk grassland or scrub. The type of woodland, or nearest associated trees, comprised beech (especially), chestnut, yew, whitebeam, ash coppice, hazel coppice, hornbeam and hawthorn scrub. As regards associates other than trees, Francis Rose mentions[30] *Daphne laureola* (Spurge-laurel), *Mercurialis perennis* (Dog's Mercury), *Sanicula europaea* (Sanicle) and various orchid species. He considered[31] that the Lady Orchid grows mainly in two types of habitat: in dense chalk scrub or coppice, supplying shelter and moderate light; and in the lower edges of escarpment beechwoods, where it usually grows on the terraces formed by the trees' surface roots or else on the crests of chalky banks in these woods, but may often occur just outside woods. However, as it seems more at home in scrub than in beechwood, less scattered and flowering more freely, and does not flourish on open downs, he speculated that the native origins of the species may lie before the post-glacial arrival of beech in Britain. In consequence of this habitat preference, Gay (2013)[32] suggests that *Orchis purpurea* colonies may fluctuate (although seldom disappearing completely) as woodland is coppiced and then allowed to mature; so that the most suitable woodlands are probably those with a high degree of structural diversity, with some open grassland and with scrub.

Orchis purpurea is a distinctive orchid with unspotted leaves, often tall and robust, with flowers whose sepals form a brownish-purple hood (hence the former name of Brown-winged Orchid), below which the wide labellum, with arm-like side lobes, is usually whitish or pink-flushed with dotted red papillae, giving the impression of a bonneted Victorian lady in a spotted dress. There is, however, much variation in appearance, and Francis Rose thought that there were two geographical types, divided by the Stour Valley between Ashford and Canterbury. The western type was supposed generally to be less tall, with a shorter and denser

[30] Rose, F. (1994), Orchis purpurea Hudson, Lady orchid, in (ed.) Stewart, A., Pearman, D.A. & Preston, C.D. *Scarce Plants in Britain*, JNCC.

[31] Rose, F. (1948), as above.

[32] Gay, A. (2013). Further Notes on *Orchis purpurea* Herbivory and Conservation. *Journal of the Hardy Orchid Society* **10(1)**: 12-16.

inflorescence, a shorter ovary (≤1.9cm), the red labellum spots more prominent and anthocyanin pigments rose to purple (rather than salmon to brownish-red).

Molecular analysis does not yet fully support genetic differentiation of such variants, but the position is far from straightforward, and is bound up with the close relationship between *Orchis purpurea*, *Orchis simia* (Monkey Orchid – present in Kent, but very rare) and *Orchis militaris* (Military Orchid – formerly present in Kent). *O. militaris* and *O. simia*, from genetic analysis appear to be well-defined species, but the situation with *O. purpurea* is not so clear. With ITS (internal transcribed spacer) and with AFLP (amplified fragment length polymorphism) analysis, there is a suggestion that this species as currently circumscribed includes two genetic entities: many English populations always believed to be *O. purpurea* contain individuals with the ITS type normally associated with *O. militaris*, a genetic signature also associated with some French populations and possibly obtaining elsewhere in Europe[33].

Yockletts Bank. Photo by Lliam Rooney, 21 May 2009

A study of *purpurea*/*simia* hybrids at Goring, Oxfordshire[34] indicated that *O. purpurea* from Stockbury Hill Wood (East Kent, but in Francis Rose's western group) differed genetically from other Kent samples (including from Covet Wood, in Francis Rose's eastern group, which showed differences in floral shape, orientation and colour). The possibility that genetic traces of *O. militaris*, despite its disappearance from the county, still remain in some *O. purpurea* populations here, through past hybridisation and introgression, is also suggested by resemblances to *O. militaris* in plants encountered from time to time. This is dealt with more fully in David Johnson's *Wild Orchids of Kent* (2019). The introgression, if that is what it is, is shown particularly by plants having smaller flowers in which the divisions of the labellum are narrower than usual *O. purpurea,* so as to exhibit an especially slim 'lady' appearing very much like the 'soldier' of *O. militaris*, although hooded sepals retain the appearance of the lady's bonnet rather than the military helmet. C.G. Druce described[35] such a form as var. *pseudo-militaris*, remarking that it had been the cause of a number of mistaken identifications of *O. militaris*. Various observers have since seen plants with similar characteristics, both east and west of the Stour.

Ignoring the shape of the labellum, normally one can separate *O. purpurea* from *O. militaris* (and *O. simia*) by the outer perianths-segments of the *O. purpurea* 'bonnet' being much darker than the labellum (paler, in the other species) and short-pointed oval in shape (long-pointed oval-lanceolate in the other species).

While its Kent populations seem broadly stable, the main threat appears to be grazing. Francis Rose in his 1948 account recognized rabbit nibbling as serious, with most or all spikes in many localities eaten or smashed off by late May / early June, damage being worst in open habitats. There would presumably have been some respite after the introduction of myxomatosis, but rabbits have come back since and continue to cause damage. Deer have potential to be the greater problem now, with deer populations in the UK in largely

---

[33] Fay, M.F., Smith, R.J., Zuiderduin,K., Hooper, E., Samuel, R., Bateman, R.M. & Chase, M.W. (2007). How does hybridization influence the decision making process in conservation? The genus *Orchis* (Orchidaceae) as a case history. *Lankesteriana* 7(1-2): 135-137.

[34] Bateman, R.M., Smith, R.J. & Fay, M.J. (2008). Morphometric and population genetic analyses elucidate the origin, evolutionary significance and conservation implications of *Orchis* × *angusticruris* (*O. purpurea* × *O. simia*), a hybrid orchid new to Britain. *Botanical Journal of the Linnean Society*, **157**: 687–711.

[35] Druce, C.G. (1928). ORCHIS PURPUREA Huds., nov. Var. PSEUDO-MILITARIS, Plant Notes, etc, for 1927. *B.E.C. report* for 1927.

wooded landscapes being perhaps at their highest level since human agricultural activities began to affect the landscape, bringing consequential effects on woodland understory; but Alfred Gay (pers. comm.) considers that their threat to *Orchis purpurea* is not substantiated. The orchid is primarily a plant of East Kent, and deer populations seem more substantial in West Kent[36] – whether of Roe, Fallow, Sika or Reeve's Muntjac (Red Deer do not appear to have a significant presence in Kent). Fallow deer are present in low density at Denge Wood (Bonsai Bank) where the very large *Orchis purpurea* colony has been flowering untouched. Fallow are also present at very high density at Cutler's Wood near Challock, creating a noticeable browse line, but without a corresponding effect on *Orchis purpurea* colony there. Near total browsing of a large *Orchis purpurea* colony in East Kent each year from 2007 to 2012 has led to speculation as regards the identity of the herbivore concerned, although with rabbits being more likely than deer. Gay (2013)[37] points out that a particular type of damage observed at this site, with individual florets nipped off, rather than whole stems, suggests the actions of birds or invertebrates; and the most likely cause may be the rearing and feeding of pheasants in the near vicinity, although slugs and snails are not ruled out.

In 2020, the Kent Botanical Recording Group began survey and study of known populations for the purposes of assessing what might serve the purposes of its Kent Biodiversity Strategy status. The initial report is given in the KBRG October 2020 newsletter (http://www.bsbi.org.uk/kent).

[36] Distribution given in Thompson, S., Newcombe, M. & Puckett, J. (2015). *Mammals of Kent*, Broadstairs.

[37] Gay, A. (2013), as above.

Orchis simia Lam. (Monkey Orchid)

Draft account

vc 15; long gone from vc16

Rarity / scarcity status

Orchis simia is in Britain restricted to sites on the chalk in Kent and Oxfordshire (the latter holding c.93% of the overall population) and is regarded as **Vulnerable** to the risk of extinction. It is nationally rare and protected from sale, picking and uprooting under Schedule 8 of the Wildlife and Countryside Act 1981. It is treated as a UK Biodiversity Action Plan priority species, although planned actions seem of limited relevance to Kent. Stroh et al. (2014)[38] gave an estimate of 372 plants in England, based on a ten-year mean (2003-13), from which were excluded plants deriving from a Kent site to which the species had been introduced. There is one native site in the county, and another to which the species was introduced; so the Kent status of *Orchis simia* is very **rare**.

Park Gate Down. Photo by David Steere, 10 May 2014

Account

While all early records require some interpretation because of the close relationship between *Orchis simia* and *Orchis militaris* (both treated under the same name by Linnaeus), Monkey Orchid was first recorded in Kent by Edward Jacob in his *Plantae Favershamienses* (1777) '*On chalky bushy Banks beyond* Whitehill, Ospringe – *not common*'. Whitehill is a hamlet south of Ospringe and, as Jacob was writing about plants of Faversham presumably 'beyond' implies further away from Faversham and hence south or south west of Whitehill, perhaps TQ9958 or TR0058, just under 2.5km from the present native site. There is another early record, published in 1802 by Lewis Dillwyn as *O. militaris* 'near Chilton, on the side of the path leading from Bushy Rough to Alkham' (presumably TR2743)[39]. Otherwise, there are several early nineteenth century records in north west Kent: at Stonewood near Bean, Lullingstone, Maplescombe, Eynsford (may be the same as either of the last two), and near Dartford. These seem to have suffered the same fate as most populations in the Thames valley between Marlow and Wallingford, where it was common until the 1840s, afterwards disappearing except for one Oxfordshire colony.

By the time of the Flora of Kent (Hanbury and Marshall, 1899) it was noted as a plant of wood borders and rough bushy banks on the chalk, but very rare, perhaps extinct. It made an appearance at Charlton Park, Bishopsbourne in very rough, coarse grass on a chalk slope, four or five plants growing with *Anacamptis morio* (Green-winged Orchid) and *Orchis anthropophora* (Man Orchid), but only until 1923. No more than two plants flowered at any one time, and at least four were picked, which would not have assisted continuity. Jocelyn Brooke[40] considered that the plants differed from Oxfordshire *O. simia*, in lip shape, colour and other features, approaching (but not identical to) the normal Continental type. A possible sighting at Burham Down c. 1930 went unconfirmed. Then the last West Kent find was made, at Shoreham Road, Otford, well south of the older records: in 1952 a solitary spike was found on a disused tennis court, then rough chalk grassland, at the

[38] Stroh, P.A. et Al. (2014). A Vascular Plant Red List for England. Botanical Society of Britain and Ireland, Bristol.

[39] Dillwyn, L.W. (1802). Catalogue of the more rare Plants found in the Environs of Dover, with occasional Remarks. *Transactions of the Linnean Society* **6:** 177-184

[40] Brooke, B.J. (1938). Notes on the occurrence of Orchis simia Lamarck in Kent, *Journal of Botany* **76**: 337-341

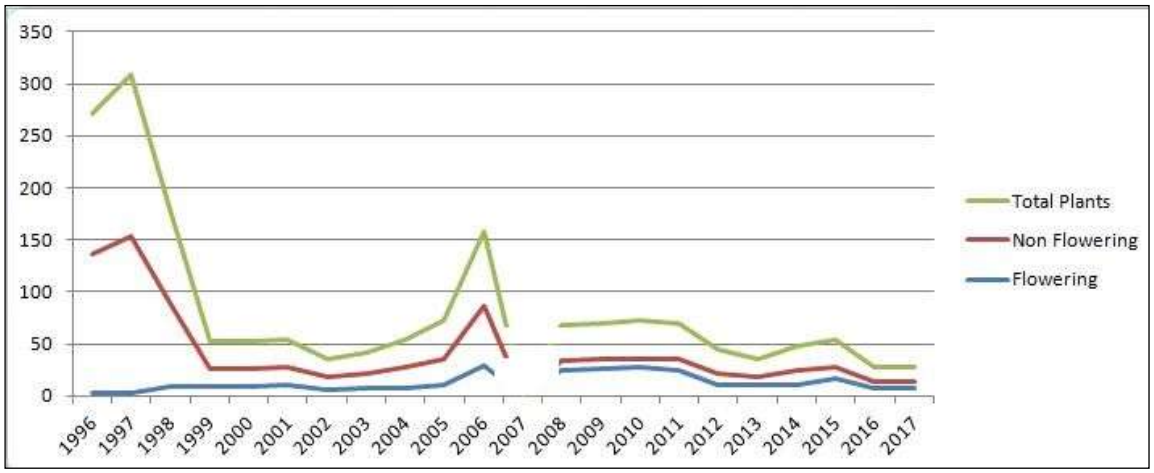
vicarage. Upon the Rev. A.E. Elder's retirement, the plant with two seedlings was moved to a 'safe' place, at Dunstall Woods, where it produced a fine flower spike in 1957, but there is no subsequent record.

Park Gate Down. Photo by Lliam Rooney, 28 May 2009

The present status of *Orchis simia* in Kent derives from its rediscovery in 1955 by Hector Wilks near Putt Wood, Ospringe, not far from Edward Jacob's 1777 published record. He found a single flower in full bloom on a rough chalk down with a south easterly aspect, but also open to the south and south west, the soil being very shallow humus over almost pure weathered chalk. Although sheltered from the north by a tuft of *Bromopsis erecta* (Upright Brome), the plant did not survive to set seed, perhaps being predated by a slug. The next year, the same plant flowered, in company with four more plants, but all failed to set seed. In subsequent years, numbers increased, and plants spread into the adjoining woodland, as far as 25ft in, growing in fairly deep shade, which appeared to affect their prospects of flowering. The colony achieved 220[41] inflorescences by 1965; and from 1958 the poor rate of seed set, even in open conditions, was addressed by hand pollination, although this still did not always result in good seed set. Some seed was allowed to fall in situ, with sowings also made in six selected places elsewhere in Kent.

One of these was the KWT Park Gate Down reserve, and by this means a second Kent population has been established, albeit introduced. The 1958 sowing resulted in a first appearance of three flower spikes in 1965, increasing to nine (1979), 14 (1980), 23 (1984), 36 (1988), 59 (1990), 44 (1995), 100 (1999) and at least 550 in 2013. There are fluctuations, however.

The original colony at Ospringe is managed, although not publically accessible as is the Park Gate Down reserve, but the overall number of plants dropped significantly towards the end of the 1990s. The chart below shows this, and a level of fluctuation since (the interruption in 2007 is due to the absence of data), but still an overall downward trend, from 26 plants (including 9 flowering) in both 1999 and 2000, thence to 14 in both 2016 and 2017 (of which 8 and 7 were flowering in those respective years).



Orchis simia counts at Ospringe, from data supplied by Kent Wildlife Trust

[41] 220 plants, according to Francis Rose's manuscript Flora; another source says 205.

Accordingly, the Park Gate Down reserve holds larger numbers by far. This offers some potential for further spread: a single flowering plant was found at a nearby site in 1993, thereafter reverting to a vegetative state.

Ospringe, habitat. Photo by David Steere, 14 May 2016

The overall picture of *Orchis simia* occurrences, historic and recent, appears to be in general sporadic, except perhaps for the early nineteenth century cluster of records for north west Kent and even for those there is no evidence of sustained populations. This would be consistent with random introductions by seed blown over from the Continent, limited only by the need for chalk habitat and mycorrhizal presence. Even the native Ospringe colony could well have been such a random introduction, in spite of the nearby 1777 record, given the absence of any evidence of continuity. Material from Ospringe and from a relict population at Goring, Oxfordshire, was studied[42] in the 1980s to test the hypothesis that relict and recent populations would show effects of differences in their origins and/or periods elapsed since founding. Although there appeared to be some morphological differences between the populations – the Goring plants were overall shorter, less robust with narrower stems, and fewer, smaller basal leaves – the population differences did not enable individual plants to be distinguished. However, the greater mean vegetative vigour and anthocyanin content of the Ospringe population compared with Goring gave some support to the hypothesis that it originated from similar Continental populations. Surprisingly, both colonies showed fairly similar levels of intra-population variation in their vegetative characters. One would have expected the Goring population to show the greater variation of a diverse and stable gene pool deriving from an originally extensive population with a long recorded history; and the Ospringe population, if recently founded, should for the first few generations show low genetic diversity. While there were other possible explanations, including the Ospringe population being established earlier than supposed, the probability was that the Ospringe population had been founded relatively recently (although before c. 1945), but there had been a loss of genetic diversity in the Goring population as a result of its re-establishment from a few individuals after being ploughed up in 1949 and 1950.

Although the Ospringe plants required initial hand-pollination, and this applied also to the Park Gate colony in its early stages, it appears from the latter's development as though there may be a 'critical mass' for an improvement in a population's rate of natural seed set to arise, as the number and density of plants presents a greater attraction to pollinators. Evidently *Orchis simia* shares a pollinator in common with *Orchis anthropophora* (Man Orchid), for their hybrid to have arisen on more than one occasion at Ospringe (see the account for *Orchis anthropophora*).

[42] Bateman, R.M. & Farrington, O.S. (1989) Morphometric comparison of populations of *Orchis simia* Lam. (Orchidaceae) from Oxfordshire and Kent. *Botanical Journal of the Linnean Society* **100:** 205-218.

Park Gate Down, habitat. Photo by Lliam Rooney, 7 June 2010

It is a distinctive orchid, and confusion is only likely to arise with the closely related species *Orchis purpurea* and *Orchis militaris* (extinct in Kent). It is, however, a smaller and more slender plant than *Orchis purpurea,* whose labellum lacks the very thin arm and leg lobes of the *Orchis simia* 'monkey'. *Orchis militaris* is closer in appearance, but the leg lobes are broader and diverge widely.