

Kent Rare Plant Register

Draft species accounts

O (second part: Ore-Oxy)



Compiled by Geoffrey Kitchener and the Kent Botanical Recording Group
Issue date: March 2019

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
Orobanchaceae caryophyllacea
Orobanchaceae elatior
Orobanchaceae hederaceae
Orobanchaceae picridis
Orobanchaceae 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 in white (the boundary between is a black line) and local authority boundaries by red lines. See the Kent webpage of the BSBI website at <http://www.bsbi.org.uk/kent.html> for the full Kent rare plant register list, the introduction to the register and a list of 'probably extinct' Kent plants.

Abbreviations used in the text:

Recorders' initials:

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 Liam 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 Coulthrop

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

Oreopteris limbosperma All. Holub (Lemon-scented Fern)

Draft account

vc 15 and16

Rarity / scarcity status

Lemon-scented Fern is fairly common in damp shady places in north and west Britain, although with a limited Irish distribution. It is largely absent from central and eastern England, and in the south east it is little found outside acid wooded areas of Sussex, Surrey and Hampshire. Its conservation risk status in England and in Great Britain as a whole is of 'Least Concern'; but in Kent it appears to be declining and is **scarce**.

Kilndown Wood. Photo by Stephen Lemon, 12 August 2017

Account

The first published record for Kent is likely to be Thomas Forster's reference in his *Flora Tonbrigensis* (1816) to the fern being 'On heaths and sides of ditches; very common among the rocks and ditches all round the Wells, and elsewhere: the smell of the leaves when touched is very fragrant'. Forster's *Flora* was subtitled *A Catalogue of plants growing wild in the neighbourhood of Tonbridge Wells*, and a plant attributed to the Wells was as likely to be in what is now botanical Sussex as Kent; but the entry for the fern certainly seems to include Kent, although Hanbury and Marshall (1899) observe that most of the stations in this neighbourhood appear to be in Sussex. They also comment on it being a rare plant of heaths and give only a few records, with a concentration in West Kent from the Greensand Ridge (Bayley's Hill) south to Rustall Common.



Bedgebury pinetum. Photo by Stephen Lemon, 28 August 2017

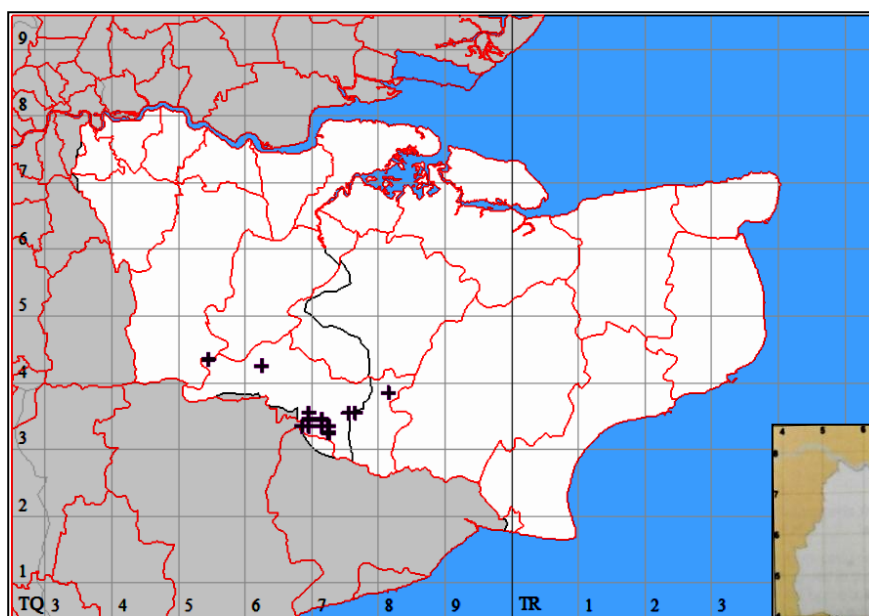
Francis Rose in his manuscript *Flora* described it as a plant of damp heathy woodland rides on acid soils, and in boggy hollows in woods, frequent locally in the High Weald. In revising the *Flora* he truncated reference to the High Weald sites which in the original manuscript were as follows (with details added in square brackets from specimens at **MNE**): 'Redleaf Wood, Penshurst

[damp ground at foot of sandstone rocks]; Ferndale, Tun. Wells, CAS; Hayes Wood, Pembury [boggy woodland valley]; Furnace Pond, Horsmonden [in boggy wood]; N. of Lamberhurst Quarter [woodland ride]; Furnace Wood [Lamberhurst, damp loamy ride]; Gt Sandhurst Wood [by ride on sandy loam]; E. side Bayham Woods; N.E. of Kippings Cross; Kilndown Wood [damp sandy loam of woodland ride on Tunbridge Wells Sand]; Combwell Wood, abundant [In Sphagnum bog in wood on Tunbridge Wells Sand]; Bedgebury Pinetum [boggy woodland ditch-sides]; Bedgebury Forest; Angley Wood [fresh-cut chestnut coppice on acid sandy loam]; Old

Park Wood [by damp sandy ride]; Sissinghurst Park Wood [boggy hollow in woodland ride on Tunbridge Wells Sand]'. In contrast, there were relatively few records elsewhere: a sprinkling along wetter parts of the West Kent Folkestone Formation extending to the chartlands over the Hythe Formation: Parson's Marsh (a singleton on damp bank of track on Hythe Beds drift) and Scord's Wood, Brasted, Seal Chart (boggy wooded valley in SW corner) and Ightham Common (shady pond bank. There were outliers at Joyden's Wood (a singleton in a damp sandy wood), Ryarsh Wood (very rare), Knockheath east of Tenterden (an acid boggy wood), Cole Wood Woodchurch, and Willesborough Lees where it was present by a peaty ditch or steamlet across bog remnants from 1944 to 1955, where seen by G.E. Smith in 1829¹.

Those outliers were, except for Cole Wood, missing from Philp (1982) which otherwise captures well for 1971-80 the concentration in the High Weald and the sprinkling in the Westerham / Brasted / Ide Hill chartlands. There were, however, new outliers in TR14 (north of Lyminge in East Kent) which are surprising, and which may represent isolated occurrences on acid superficial soils in plateau woodlands: otherwise the geology appears inappropriate and wet habitats limited. Notwithstanding the 23 tetrads recorded in Philp (1982), the total dropped to eight tetrads in Philp (2010). Although a special effort had been made to record this species, it appeared then to be missing from a number of former localities: even if overlooked at some of them, it was considered that there had been a serious decline, without a cause being identified. There do not seem to be any general habitat changes in the intervening period which can have affected occurrence. The species is, however, growing in Kent at the edge of its UK range, away from its wetter heartlands in the north and west. That marginality is emphasised by the relative absence of records in France until one comes to the Alps and Pyrenees. It may be that the species in Kent is disproportionately affected by any significant period of reduction in rainfall.

Where found, it was in acidic or humus-rich soils in open woodland, alongside drainage ditches and on streamsides. 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).

Oreopteris limbosperma
(Lemon-scented Fern)
2010-18

Oreopteris limbosperma
(Lemon-scented Fern)
1991-2005



In view of the extent of decline, this register includes a data table for recent records, but records for 2010-18 are mapped as well, given at

¹ Smith, G.E. (1829), A Catalogue of rare or remarkable phaenogamous plants collected in south Kent. The location was opened up again by tree felling in 2014, but the fern was not seen here when searched for, in 2018, here and in wet woodland to the west.

1 km square (monad) level, which entails recording at a finer scale than the tetrads of Philp (2010) and showing presence in 13 monads (ten tetrads). The 2010-18 records are consistent with the decline shown by Philp (2010), and the apparent retreat to the High Weald, but further search would be desirable.

Habitat-related data from recent records show the fern being found in acid woodland, especially on the Tunbridge Wells Sand Formation, on banks or by ditches alongside paths or rides. The banks and ditches presumably provide a degree of water movement around the roots. Where it is seen spread out alongside tracks, it may be that there is a need for balance between conditions which provide a degree of light, or at any rate light shade, but not so open as to encourage excessive ground cover competition.



Chingley Wood, habitat. Photo by Stephen Lemon, 13 August 2017

Lemon-scented fern may be overlooked for *Dryopteris filix-mas* (Male-fern) but below the middle of the frond, the pinnae taper gradually to the base. The pinna segments (the smallest divisions of the frond) may turn downwards at the margins, protecting the sori which line the margins underneath, instead of being held centrally as with *Dryopteris filix-mas*. The fern's lemon scent comes, if the frond is lightly brushed, from minute glands on the frond underside.

Bedgebury pinetum, frond showing sori on underside.

. Photo by Stephen Lemon, 28 August 2017



Site	Grid reference	Site status	Last record date	Recorder	Comments
North west of Westerham	TQ45H		After 1970, before 1981	Philp (1982)	[Half of this tetrad is in Surrey.]
Hosey Hill area	TQ45L		(1) 1981 (2) After 1970, before 1981	(1) RC (2) Philp (1982)	
Brasted	TQ45S		After 1970, before 1981	Philp (1982)	
Ide Hill area	TQ45V		After 1970, before 1981	Philp (1982)	
Stone Cross	TQ53J		(1) 10 July 1994 (2) After 1990, before	(1) EGP (2) Philp	(1) Newpark Wood, specimen in MNE .

			1999	(1982)	(2) -
Rusthall Common	TQ53U		After 1970, before 1981	EGP, WEC & MP in Philp (1982)	
Tunbridge Wells	TQ5739		July 1974	WEC	
Between Chiddingstone and Penshurst	TQ54C		After 1970, before 1981	Philp (1982)	
Ashour Wood	TQ5443		11 March 2017	SL	Open area of track in chestnut/conifer dominated woodland, on slope west of ghyll stream, TQ 5457 4379. Dead fronds of two plants on track, 3rd plant above these at side of track, with dead fronds of Bracken and Lady Fern.
West Sevenoaks	TQ55C		After 1970, before 1981	Philp (1982)	
North of Little Bayham area	TQ63I		After 1970, before 1981	Philp (1982)	[Probably Furnace Wood area; most of the tetrad is otherwise in Sussex.]
Bayham –Stubbs Wood	TQ6537		6 September 1990	FR	On ride.
Bayham Abbey area	TQ63N		After 1970, before 1981	Philp (1982)	
Pembury Walks	TQ6142		9 August 2012	JP & JH	TQ 619 424
Pembury Walks	TQ6242		(1) 9 August 2012 (2) After 1970, before 1981	(1) JP (2) Philp (1982)	(1) - (2) Given as TQ64G, so may relate to an adjoining monad.
Bewl, Chingley Wood (west)	TQ6833		(1) 11 August 2018 (2) 13 August 2017 (3) 2 August 2012 (4) 4 June 2001 (5) 6 September 1990	(1) KBRG/KFC meeting (2) SL (3) JP (4) EGP (5) FR	(1) Chingley Wood. (2) Chingley Wood, north facing edge of Sweet Chestnut coppice along a former ride, recently re-landscaped into a much wider open area, TQ 688 337 to TQ 689 337. Numerous plants along north facing edge with small area dominated by them within open clearance. (3) Throughout Chingley Wood, TQ 682 377. (4) Given as TQ63W, so may belong in adjoining monad. (5) Locally frequent.
Bewl, Chingley Wood (east)	TQ6933		(1) 13 August 2017 (2) 2 August 2012	(1) SL (2) JP	(1) Chingley Wood, north facing edge of Sweet Chestnut coppice along a former ride, recently re-landscaped into a much wider open area, smaller rising track off this to the south, TQ 690 337 to TQ6 91 337. Abundant plants all along north facing edge, scattered plants within open cleared area, abundant plants lining narrow track. (2) Throughout Chingley Wood.
Kilndown (south west)	TQ6934		(1) 11 August 2018 (2) 2 September 201 (3) After 1970, before 1981	(1) KBRG/KFC meeting (2) JP (3) Philp (1982)	(1) Chingley Wood path side at TQ 6909 3406. (2) Kilndown Wood. (3) Given as TQ63X, so may relate to an adjoining monad.
Kilndown to Scotney	TQ6935		(1) 12 August 2017 (2) 16 September 2004	(1) SL (2) JP	(1) Kilndown Wood. TQ 69281 35010 to TQ 69307 35035: six plants in and beside ditch with old bank along east side of ride where not dominated by Bracken. TQ 69339 35071: two plants further

					along at edge of ditch where enters pipe. (2) Kilndown Wood, TQ696350.
Combwell Wood area	TQ73B		After 1970, before 1981	Philp (1982)	
Kilndown	TQ73C		(1) 4 September 1990 (2) After 1970, before 1981	(1) FR (2) Philp (1982)	(1) (a) Kilndown Wood, TQ7035, locally frequent below yews. (b) Combwell Wood, TQ7133, on rides (and by FR in this monad, 26 July 1979). (2) -
Bedgebury forest	TQ73F		(1) After 1990, before 1999. (2) After 1970, before 1981	(1) EGP (2) Philp (1982)	
Bedgebury – west pinetum	TQ7133		(1) 28 August 2016 (2) 5 September 2015	(1) SL (2) SB	(1) 5 metre strip of plants along ditch beside path, TQ 7191 3326. (2) A few plants beside the lake nr Pinetum entrance, TQ 7159 3328, and also among redwoods at TQ 7172 3336.
Combwell Wood	TQ7134		(1) 11 August 2018 (2) 16 June 2018	(1) SL (2) SL	(1) Combwell Wood, Park Wood, damp peaty stream with sphagnum between TQ 7112 3448 and TQ 7111 3453. New colony of four plants along stream edge. Others nearby: four plants at TQ 7112 3452 and 11 plants at TQ 7113 3453. All plants in company with Lady Fern, Bracken and <i>Dryopteris carthusiana</i> . In contrast the colony discovered nearby along edges of track on 16 June 2018 now mostly has dead/brown fronds, presumably suffering from prolonged dry period. (2) Combwell Wood, Park Wood, track running south west to north east, through sweet chestnut coppice, TQ 71087 34376 to TQ 71118 34397: 12 plants, TQ 71147 34413: four plants, TQ 71157 34426 & TQ 71182 34439: single plants. Track through hollow in birch woodland, TQ 71263 34513: 15 plants. No plants found far from the track or seen elsewhere in wood.
Bedgebury forest	TQ7232		17 August 2017	KBRG meeting	At margin of two wide rides at TQ 7252 3247, TQ 7276 3237 and TQ 7288 3239.
Bedgebury forest	TQ7233		(1) 28 August 2016 (2) 10 August 2011 (3) 3 August 2010 (4) 12 April 2005 (5) After 1990, before 1999 (6) After 1970, before 1981	(1) SL (2) KBRG (3) SB (4) JP (5) EGP (6) Philp (1982)	(1) Pinetum: three separated patches of plants along sloping bank next to path (TQ 72074 33573), four plants under light shade behind bank/path with <i>Blechnum spicant</i> and <i>Polytrichum commune</i> (TQ 72078 33559), six plants in shady grassland with <i>Solidago virgaurea</i> and <i>Succisa pratensis</i> (TQ 72085 33611), two large plants in bramble scrub (TQ 72089 33632), two or three plants on bank of stream (TQ 721 335). (2) Many plants on low bank at TQ 7213 3370; and a few scattered plants at TQ 7209 3360. (3) TQ 721 337, Fine colony on a bank by Marshall's Lake.

					(4) TQ 724 338. (5) & (6) Given as TQ73G, so may relate to an adjoining monad.
Bedgebury forest	TQ7333		(1) 2 July 1999 (2) 26 June 1992	(1) JP & JW (2) JP	(1) & (2) TQ 735 330.
Angley Wood	TQ7535		17 June 2017	SL	(a) Minor track through mature sweet chestnut coppice, north of small stream, TQ 75998 35833 to TQ 75997 35812. Two plants spread out along track where less ground cover/competition with three more further along same track but in different monad, whole colony spanning 45 metre length of the track. Associate species <i>Hyacinthoides non-scripta</i> , <i>Blechnum spicant</i> , <i>Dryopteris dilatata</i> , <i>Rubus fruticosus</i> agg, <i>Athyrium filix-femina</i> , <i>Castanea sativa</i> . (b) Main track running north eastwards on high sandy plateau, approx TQ 7583 3589. Single plant on open/managed verge along northern side of main track.
Iden Green area	TQ73N		After 1990, before 2000	EGP	
Angley Wood	TQ7635		(1) 17 June 2017 (2) After 1990, before 2000	(1) SL (2) EGP	(1) Continuation of colony from TQ7353. (2) Given as TQ73T, so may relate to an adjoining monad.
Goddards Green, Hemsted Forest	TQ83C		(1) after 1990, before 1999 (2) 21 June 1972	(1) & (2) EGP	(1) – (2) Benenden School grounds, specimen in MNE .
Sissinghurst Castle	TQ8138		(1) 25 August 2011 (2) After 1970, before 1981.	(1) SB (2) Philp (1982)	(1) 6 plants Beside woodland ride, six plants at TQ 81225 38041 and two at TQ 81182 37983. (2) Given as TQ83E, so may relate to adjoining tetrad.
Hemsted Forest	TQ8236		(1) 30 June 2006 (2) 6 September 1986	(1) JP & DM (2) CJ	(1) TQ 820 362; a 1985 record by JP also refers to occurrence along damper, shady stream- and ditch-sides (2) TQ820362..
Woodchurch	TQ93M		After 1970, before 1981	Philp (1982)	[There is an old record for Cole Wood.]
Rhodes Minnis	TR14L		After 1970, before 1981	Philp (1982)	[An unexpected location]
North of Stowting	TR14G		After 1970, before 1981	Philp (1982)	[An unexpected location]
East of Stelling Minnis	TR14T		After 1970, before 1981	Philp (1982)	[An unexpected location; presumably Elhampark Wood, specimen coll. Miss B. Nash 2 September 1972 in MNE .]

Orobanche caryophyllacea Sm. (Bedstraw or Clove-scented Broomrape)

Draft account

vc 15

Rarity / scarcity status

Orobanche caryophyllacea grows as a parasite on the roots of, mainly, *Galium album* (Hedge Bedstraw, formerly *G. mollugo*), but also *Galium verum* (Lady's Bedstraw). Despite the host plants being widespread, the native distribution of *Orobanche caryophyllacea* is restricted to East Kent. It appears that earlier records elsewhere have been errors or at best dubious. In conservation risk terms, it is regarded as **Near Threatened** in England and Great Britain as a whole; and it is a nationally rare plant, protected from sale, picking and uprooting under Schedule 8 of the Wildlife and Countryside Act 1981. In Kent it is **scarce**, although very locally frequent.

Sandwich Bay. Photo by Liam Rooney,
22 June 2010



Account

The first Kent (and British) record of Bedstraw Broomrape is by G.E. Smith in Loudon's *Magazine of natural history and journal of zoology, botany, mineralogy, geology and meteorology* Vol.1. He wrote to the editor from Sandgate in August 1828 stating that the species 'occurred rather abundantly, in May, in hedges at the foot of the chalk in this neighbourhood, parasitical upon *Galium mollugo*, *Rubus fruticosus*, etc.'. This description is elaborated in his *Catalogue of rare and remarkable phaenogamous plants, collected in south Kent* (1829), where he refers to it 'in hedges and waste ground below Caesar's Camp Hill, the Sugar-loaf Hill, in Eastwear Bay, near Lydden Spout, and eastwards, to Dover'. The *Magazine* note was evidently put forward by Smith in order to secure early recognition of this remarkable discovery (and also to draw attention to features



of *Medicago denticulata*, now *Medicago polymorpha* (Toothed Medick), which had particularly interested him) but it also supplies evidence of the *Catalogue* publication being then (August 1828) 'from necessity, delay[ed] for a few months'. Whether or not the late discovery of *Orobanche caryophyllacea* was one of the causes of delay, he was still working on the plates in February 1829, one of which included the stamens, style, calyx and stem section (reproduced here)². It shows clearly the characters of purple stigma-lobes and filaments hairy from base to apex.

From G.E. Smith's *Catalogue* (1829)

The *Orobanche* continued to be seen in the area, for example by the author of a *List of Plants collected about Dover, Walmer, Folkestone, and Sandgate from the middle of May to the beginning of July, of*

² A more professional illustration, prepared by James Sowerby junior in May 1830, was published in Hooker, W.J. et al. (1831) Supplement to the English Botany, Vol. 1, London.

the past year, 1860³ who found that 'It is certainly very abundant, almost covering the piece of waste ground between the Shakespeare's and Abbott's Cliff tunnels, and extending up the side of the latter nearly to the top. It was so matted together with *Lotus corniculatus* and *Galium Mollugo*, that I had some trouble to find out on which it was parasitic. After several ineffectual attempts with the trowel, I at length succeeded in digging one out with the *Galium* attached to it'. This site would have related to a time when the chalk rubble works platform for railway construction was fairly new and perhaps lightly vegetated, in effect a new section of undercliff. It was since altered and extended using materials unsuitable for a chalk flora, and reducing the impact of sea spray; and afterwards extended even further by the creation of Samphire Hoe with chalk spoil on which, however, the Broomrape has not yet been found.

The species grew very close to the sea in this area. Rosemary FitzGerald⁴ noted that Frederick Hanbury had found it 'close to high water mark' in 1873, and Arthur Bennett on herbarium labels remarked on favourite sites having been washed out to sea. The early Dover-Folkestone records point to a favoured habitat being the bases of chalk hills and cliffs, where erosion leads to instability and open conditions. So it may be that construction of concrete sea defences protecting the undercliff from here to Lydden Spout has similarly since reduced the availability of open and unstable chalk surfaces providing habitat for *Orobanche caryophyllea*. As regards the inland chalk hill base habitat, Henry Ullyett says in relation to Castle Hill in his *Rambles of a Naturalist round Folkestone* (1880) 'All along the hedgebank at the foot we find the parasitic Broomrapes (*Orobanche*)'. When we put this together with G.E. Smith's account, it is a reasonable assumption that the reference is to *Orobanche caryophyllacea* (Phil Green, pers. comm.), apparently in abundance.



Sandwich Bay. Photo by Lliam Rooney, 22 June 2010



Sugarloaf Hill, Folkestone, with pollinating Bumble Bee.
Photo by Phil Green, 9 May 2014

It was found early on that the range of the species was wider than G.E. Smith's original account: to the west, he collected it at Sandgate, and to the north east it was by 1839 found as far as the undercliff of St Margaret's. It was also – and this is significant for the different habitat and for the current continuance of the species in Kent – found, according to Hanbury and Marshall (1899), at the Deal sandhills. Hanbury himself collected it on sandhills near Sandwich (since part of the Royal St George's golf course), and there is an 1878 specimen of his at Manchester Museum. The Hanbury and Marshall assessment was that it was rare but locally plentiful on banks, cliffs and

sandhills near the coast. The sandhills, or sand-dunes, habitat has since become the more important, in terms of the number of plants.

³ Phytologist, N.S. 5: 33-45.

⁴ FitzGerald, R. (January 1988). *Orobanche caryophyllacea* Smith Bedstraw Broomrape (unpublished NCC report).

Philp (1982) noted odd plants at Folkestone (TR23D), Dover (TR24W & TR34B) and presence regularly in good numbers at Sandwich Bay (TR35P, T & U): a total of six tetrads, making the species very local and rare. The tetrad total, however, reduced to four in Philp (2010) because the three Dover/Folkestone tetrad occurrences had reduced to one (TR23I). Reliance on the Philp (1982) and Philp (2010) surveys enables ready comparison, but the data were collected in different ways, and do not by any means capture all the records in the relevant periods. The BSBI database has records for 14 different tetrads during the period 1970-2010, with a greater spread in the Folkestone/Dover area, but it still appears as though *Orobanche caryophyllacea* has been declining there. Our 2010-17 records cover five tetrads (equivalent to six monads), as a result of being able to add back another tetrad at the Folkestone Downs in addition to those given in Philp (2010); but nonetheless they emphasise the fragility of the originally recognised distribution relating to the base of chalk hills and cliffs.

When Rosemary FitzGerald surveyed c.1986, she found five sites on the chalk around Dover and Folkestone, each holding from one to 60 plants. The sand-dune site at the Royal St George's golf course, Sandwich, however, was estimated to hold nearly 1,000 plants. It remains the key population in the British Isles. It was assessed in 2013 at over 250 plants, but in 2018 Sue Buckingham carried out a survey from which she estimated a total of 1,000 in the beach dunes plus up to 400 on the roughs at St Georges.



The Broomrape grows here on both *Galium album* and *G. verum* (Lady's Bedstraw). The degree of salt tolerance required here is less than would have obtained in the old chalk undercliff sites. The substrate is also somewhat calcareous, in view of the shell content, and the terrain is not thickly vegetated, as has happened with increased *Brachypodium rupestre* (Tor-grass) dominance in some former chalk sites.

Sandwich Bay, on *Galium verum*. Photo by David Steere, 6 June 2015

Orobanche caryophyllacea may readily be identified by its light colour (a range of cream and pink, sometimes reddening) and the clove-scented flowers. The characters of the stigma-lobes and filaments (see G.E. Smith's drawing above) are also relevant; and the shape, illustrated in Stace (2010)⁵ and Rumsey & Jury (1991)⁶. *Orobanche minor* (Common Broomrape) also grows extensively at Sandwich Bay, parasitic especially on *Eryngium maritimum* (Sea-holly) and so generally growing nearer the beach; but should not be confusable, at least while colouration is retained. Other than in colour, *Orobanche caryophyllacea* is not particularly variable, although three plants of unusual form were found at Sandwich Bay in 2002, in which the flora parts had been replaced by structures resembling typical calyx lobes⁷.

⁵ Stace, C. (2010). *New Flora of the British Isles*, 3rd edition. Cambridge.

⁶ Rumsey, F.J. & Jury, S.L. (1991). An Account of *Orobanche* L. in Britain and Ireland. *Watsonia* **18**: 257-295.

⁷ Rumsey, F.J. & Rumsey S.M. (2003). An unusual floral mutation in *Orobanche caryophyllacea*. *BSBI News* **93**: 79.

Site	Grid reference	Site status	Last record date	Recorder	Comments
Sandgate	TR1935		(1) 1991 (2) 22 June 1986 ((1) Anon. (2) FR & RF	(1) TR 193 352, site discovered to be in course of development and tipped over; original turf and topsoil rescued but no reappearance of plants reported. (2) TR193 352, eight flowering plants at Hospital Hill, Sandgate on <i>Galium mollugo</i> . [There is also a 1982 record of a patch of 3 tall spikes and another of 4 smaller ones, recorder may not be correctly assigned.]
Folkestone Downs	TR2138		1991	NJ	TR 212 382, Folkestone Escarpment,- Environmental Management & Monitoring Programme
Sugarloaf, Folkestone Downs	TR2237		(1) 9 May 2014 (2) 1992 (3) June 1985	(1) PG (2) ND (3) JP	(1) TR 223378 just above lower footpath which runs above the scrub at the base of Sugarloaf Hill. Two flower spikes about an inch apart, with pollinating bumble bee (maybe <i>Bombus pratorum</i>) in recently trimmed bramble with scrub behind, recorder has seen it in same scrub patch for c.20 years, always at base of the hawthorn bushes (and also saw it around 1989 for a few years very close by, but below path, now gone for many years). Recorder considers the effect of recent scrub clearance will not be beneficial for plant's survival, the only site known to him on Sugarloaf. (2) Three flowering spikes. Seen in 1994? (3) TR 223 378, Sugarloaf Hill, 3 spikes at hill foot above hedge line.
Folkestone Downs	TR2238		24 June 2013	SB	Single plant at TR 22999 38031 beside public footpath on Creteway Down. South-facing chalk grassland slope with <i>Galium album</i> , <i>Origanum vulgare</i> , <i>Lotus corniculatus</i> , <i>Trisetum flavescens</i> etc. Plant 15 cm tall with 8 flowers.
Folkestone Downs	TR2337		(1) June 2014 (2) 20 May 2014	(1) OL (2) SB	(1) (a) TR 23050 37985 - 2 spikes; TR 23045 37981 - 2 spikes; TR 23023 37972 - 1 spike. Believed by recorder to be different from those found previously by SB, being further up slope and to the west. (b) TR 23084 37976 - 3 spikes; TR 23082 37969 - 1 spike over; TR 23081 37968 - 2 spikes; TR 23081 37978 - 1 spike. At bottom of the chalk scrubby grassland close to the houses at the bottom, where previously found by SB. (2) Eight plants with total of 12 flowering spikes. All at the foot of Creteway Down amid scrub of <i>Crataegus</i> and <i>Viburnum lantana</i> . Plants from TR 23023 37972 to TR 23077 37968.
West of Hougham	TR2740		(1) 1988	(1) SH	(1) TR 272 404. Elms Farm,

Woods			(2) 31 May 1988	(2) NCC England Field Unit	Chilverton, 22 spikes. (2) TR 272 402, Chalk Grassland Plants Survey. [Also identical record under SH's name.] [These may all be the same record.]
Abbot's Cliff	TR2838		8 July 1986	RF & MJ	TR 284 388, one flowering spike near an adit from Eurotunnel.
West of Dover	TR2840		(1) 1990 (2) 1 June 1988 (3) 1988 (4) 7 July 1986	(1) JP & JW (2) NCC England Field Unit (3) SH (4) RF & MJ	(1) TR 288 408, Farthinghoe Downs. (2) TR 289 403, West Down, Chalk Grassland Plants Survey. [Also identical record under SH's name.] (3) TR 288 403, Farthinghoe Down, 12 spikes. (4) TR 281 408, at least 60 plants along a hedge at the north end of an arable field west of Elms Farm, Chilverton. [It may be that (2) & (3) are the same record.]
Kearsney	TR2914		1972	KR	TR291437, reappeared in a field, where pipe-laying was thought to have destroyed it in 1971, but on the other side, on railway bank.
Temple Ewell	TR2944		(1) 1991 (2) 7 July 1986	(1) TM (2) RF & MJ	(1) TR 292 441, near Temple Ewell Down, eight plants. (2) TR 292 441, at least 20 plants in privately owned Malvern Meadow in the village kept as an open space.
Kearsney	TR3045		(1) 1972 (2) 1971	(1) & (2) KR	(1) TR 301 435. (2) TR 301 435, foot of chalk down behind land formerly used for allotments, likely to be developed.
Sandwich Bay estate (west)	TR3557		(1) 13 June 2018 (2) 27 May 2017	(1) & (2) SB	(1) 79 flowering spikes counted, of which most were in a small private, fenced area at TR 362 578. With those in the two adjoining monads TR3558 and TR3658, the count totalled 1277. However, recorder considers the figure best given as an estimate of 1000 on the beach dunes and up to 400 in the roughs on St Georges. (2) Three flowering spikes together in an old dune slack at c. TR 357 575 (bird observatory's ringing field).
Sandwich Bay – Royal St George's	TR3558		(1) 13 June 2018 (2) 11 June 2013 (3) 25 June 2010 (4) June 1978 (5) 1978	(1) SB (2) CO (3) SB (4) MF (5) LF	(1) 1064 flowering spikes counted, of which 856 were in the dunes on the beach and 208 in the rough of Royal St Georges golf course, where many more were likely to have been hidden in the long grass. (2) Mainly in carpark area but also strip adjoining west side of road including golf links, 250+ plants. (2) (a) TR 35791 58922, 170 plants, many multi-stemmed, in 150 x 24m of dune grassland, probably vulnerable from vehicles parking for the beach, but increasing nonetheless. (b) TR 35784 58943, 77 plants in a 150m stretch of dune grassland, probably vulnerable as with (a) above. (3) & (4) Present.

Sandwich Bay	TR3559		(1) 3 July 2016 (2) 6 June 2015 (3) 24 June 2010 (4) 29 June 2008 & 11 June 2006	1) AW (2) DS (3) SB (4) DM	(1) Present. (2) TR 35756 59014, etc., scattered populations along much of beach road area on obvious Bedstraw plants. (3) TR 35658 59153, two plants at edge of Royal St Georges golf course in stabilized sand dune. (4) TR 3561 5965
Sandwich Bay – Royal Cinque Ports	TR3655		22 June 1999	PC	TR 369 558.
Sandwich Bay estate (north)	TR3658		(1) 13 June 2018 (2) 16 July 2013 (3) 3 June 2010 (4) 31 May 2010 (5) 9 June 2001	(1) SB (2) CO (3) GK (4) SC (5) RHW	(1) 134 flowering spikes counted, of which 111 were in the dunes on the beach and 23 in the rough of Royal St Georges golf course, where more were likely to have been hidden in the long grass. (2) Present. (3) A few plants at TR 36160 58137. (4) TR 361 582. (5) Several plants along roadside just north of village.

Orobanche elatior Sutton (Knapweed Broomrape)

Draft account

vc 15 and 16

Rarity / scarcity status

Orobanche elatior grows as a parasite on *Centaurea scabiosa* (Greater Knapweed) on chalk and limestone in south and east England, reaching its northern limit in Yorkshire. Its conservation risk in England is regarded as one of 'Least Concern', based on records between 1930 and 1999, but if records after 1987 are assessed in relation to all records, including those before 1930, then a 31% decline is shown. In Kent, it has been regarded as very rare, but is currently **scarce**.

Longfield. Photo by David Steere, 16 June 2014

Account

The first published account of Knapweed Broomrape in Kent is usually given as by Thomas Forster who, in his *Flora Tonbrigensis* (1816), described it as 'In fields and margins; in the way to the High Rocks through Mr. Fry's Farm'. The *Flora* covers plants in Sussex as well as Kent, but it appears that the way mentioned was from Tunbridge Wells, and so is likely to have passed along the Kent side of the county boundary until High Rocks (in Sussex). It is not now an area within the usual distribution of the host plant, *Centaurea scabiosa*, but Forster said that the latter was then not uncommon in his area, in cornfields and field margins. Still, some doubt must attach to this record, not least in that there is a specimen of *Orobanche rapum-genistae* (Greater Broomrape) in **MNE** from High Rocks (1849), which would be more likely. Hanbury and Marshall (1899) considered *Orobanche elatior* to be a very rare plant of banks and field-borders and gave only eight records, one of them (at Bigberry Woods) considered dubious and the only one with any detail (from Daniel Cooper's *Flora Metropolitana*, 1836) refers to fields in the Woolwich area where the substratum appears to be sand and gravel, which is not promising. On the whole, none of these records is particularly satisfactory except, perhaps, for one near Dover. Francis Rose thought the High Rocks, Bigberry and Woolwich records more likely to be *Orobanche rapum-genistae*.



Longfield. Photo by David Steere, 16 June 2014

It is a plant more to be expected on the chalk and so discoveries along the Pilgrim's Way at the foot of the chalk downs provide a much more plausible pattern. In 1913 it was collected by H. Elgar by Pilgrim's Way between Detling and Boxley; in 1915 he found it along the section north of Trottscliffe church, which may well be the Trottscliffe site mentioned by Marshall in the *Victoria History of the Counties of England: Kent* (1908); and in 1923 it was reported by Miss Cobbe along the road at Westwell. There is continuity in that the Trottscliffe site was known to Francis Rose in 1945, 1955 (when there were 29 spikes) and 1957; Owen Davis saw it there, 1958-61; and Lorna and Derek Holland found plants just north of the road, 2010-11. Also in 2010-11, it turned up on a KWT roadside nature reserve at Pilgrim's Way, Westwell, demonstrating over 80 years' continuity. Francis Rose regarded it



as very rare on grassy banks, scrub, and old pits on chalk, citing further records at Stone, Bean, Cliffe, Cuxton, Wouldham, Kingston, Bekesbourne, Adisham, following the chalk across the county. Philp (1982) showed a comparable spread for 1971-80 with eight tetrad records; but for 1991-2005, Philp (2010) the number had reduced to two, at Westwell (TQ94Z) and Dover (TR34G), so that it was then ostensibly very rare. However, it looks as though this apparent decline is an artefact of recording, as our 2010-18 records have reverted to eight tetrads. Three of the 2010-18 sites corresponded with those in the 1971-80 survey so, again, there is some continuity, although limited.



Lower Higham. Photos by Lliam Rooney, 19 July 2011



Any identification issues with *Orobanche elatior* in Kent usually revolve around whether the plant is a small version of *Orobanche elatior* or a vigorous specimen of *Orobanche minor* (Common Broomrape). The latter species is extremely variable, but the calyx-lobes supply a distinction: in *O. elatior* the two bi-lobed segments are touching or fused at their base under the corolla.

Site	Grid reference	Site status	Last record date	Recorder	Comments
Longfield / Fawkham	TQ5968		(1) 11 August 1985 (2) After 1970, before 1981	(1) GK (2) Philp (1982)	(1) Chalk grassland of hedge-bank. (2) Given as TQ56Z in Atlas. Atlas correspondence indicates this is a record by P.C. Hall in 1972, below hedgerow across chalky hillside opposite Fawkham Church, TQ 595 682. [Probably better given as TQ 5968 6825.]
Longfield	TQ5969	KWT managed reserve	(1) 20 June 2015 (2) 19 June 2014 (3) 16 May 1986	(1) DS (2) DS & GK (3) RF	(1) TQ 59645 69088, one plant in completely different place to 2014. None of the plants seen in 2014 have re-appeared. (2) TQ 5963 6907 and TQ 5963 6908, one plant at each, found by DS earlier in June, when there was a third plant, since disappeared. A fourth plant seen by DS on 25 June 2014, c. 20 yds away from the rest, with <i>Centaurea scabiosa</i> close by. Chalk grassland. (3) TQ596691, associated species with <i>Cerastium brachypetalum</i> .
Darenth Wood	TQ57R & W		(1) 9 June 2001 (2) 1985	(1) JP (2) JRP	(1) Opposite Darenth Wood, south-facing road-verge, A296 above

					Bluewater pit. (2) TQ57R, edge of large pit, N of old A2.
Trosley Country Park	TQ6461	KCC managed park	(1) 4 June 2011 (2) 28 July 2010 (3) 19 July 1986 (4) After 1970, before 1981	(1) & (2) LH & DH (3) WFS meeting (4) Philp (1982)	(1) TQ64717 61230, three large plants and a small one (further up quarry not explored). (2) TQ64721 61221, three dead spikes. (3) Former chalk pit just north of Pilgrim's way. (4) Given as TQ66K, so possibly an adjoining monad.
Upper Halling	TQ66W		After 1970, before 1981	Philp (1982)	
Ranscombe	TQ7168		26 June 2015	DS	TQ 71019 68688, three plants gone over but distinctively different from <i>O.minor</i> . On HS1 railway line verge, stunted Knapweed at base of each.
Rochester (vc15)	TQ76I		After 1970, before 1981	Philp (1982)	
Lower Higham	TQ7172		13 July 2011	BS (det. SB)	25 spikes on <i>Centaurea scabiosa</i> , alongside public footpath.
Hartlip – Yelsted area	TQ86G		After 1970, before 1981	Philp (1982)	[Not stated, but presumably Queendown Warren, which has reserve records 1970-77.]
Westwell	TQ94U	KWT RNR	(1) May 2011 (2) 8 June 2010 (3) After 1970, before 1981	(1) & (2) GT (3) Philp (1982)	(1) Broomrape spike at TQ 983478 984479 quite close to road, as in previous year. In bud, 19 May 2011. (2) TQ98387 47898, one spike just starting to flower at RNR perilously close to road. Visited by GK later in 2010 and conf., but spike broken off. (3) [Atlas correspondence says 'fairly common along the Pilgrims Way on Westwell Down'] [There is a 1923 record for Westwell.]
Dunn Street	TQ94Z		(1) After 1990, before 2000 (2) After 1970, before 1981	(1) EGP (2) Philp (1982)	(1) – (2)) [Atlas correspondence says 'fairly common along the Pilgrims Way on Westwell Down']
West of Barham	TR1849	Private land	10 June 2014	SB	11 flowering spikes on privately owned chalk grassland bank, scattered from TR 1864 4994 to TR 1870 4997 on <i>Centaurea scabiosa</i> . The site protected and managed by the owner.
Kingston	TR15V		(1) 25 June 2016 (2) 10 June 2014 (3) After 1970, before 1981	(1) SC (2) SB (3) Philp (1982)	(1) TR 186 501. (2) 20 flowering spikes on privately owned chalk grassland bank, scattered from TR 1873 5003 to TR 1878 5007 on <i>Centaurea scabiosa</i> . The site protected and managed by the owner.
Monkton chalk pit	TR2865	Nature reserve and Local Wildlife Site	2 August 2005	JW	TR 284 656.
Dover	TR34G		After 1990, before 2000	EGP	

Orobanche hederæ Duby (Ivy Broomrape)

Draft account

vc 15 and 16

Rarity / scarcity status

Ivy Broomrape is widespread but scattered in the British Isles, primarily a southern and western plant, barely reaching Scotland. It grows as a parasite on *Hedera helix* (Common Ivy) and on *Hedera hibernica* (Atlantic Ivy). Its conservation risk status in England and Great Britain as a whole is one of 'Least Concern'. In Kent, its previous history and the existence of only two sites recorded in Philp (2010) would lead one to suppose that it is rare, but as a result of subsequent recording it is being treated as **scarce**. Indeed, strictly it is now more common than the criteria for scarcity (ten sites or less) admit, but the species is retained on the register in view of its history of rarity.

Stone. Photo by David Steere, 22 June 2015

Account

Hanbury and Marshall (1899) give the first published Kent record for *Orobanche hederæ* as a find by Borrer in East Kent mentioned in Watson's *Topographical Botany* (1873), but the publication was not until the enlarged second edition of 1883. That publication was preceded by John Stuart Mill's 1868 gathering of a specimen in a wood on the side of the chalk hills near Shoreham. Otherwise, Hanbury and Marshall knew of no other Kent records except a claim by George Wollaston who gave no details and died as the Flora was being prepared for publication. It was also extremely rare when Francis Rose was gathering records for his unpublished Flora. He noted it as found in West Kent in 1948 by Mounts Road, Greenhithe (one spike). In East Kent, it was recorded among ivy in woods east of the A2 at Kearnsey, Dover by Miss J. Gibbons; Rose also saw it on ivy in a chalk hedgebank at Knowlton, north of Dover, 1949-50 (one spike), and among Ivy at Willow Wood north of



Sutton (north of East Studdal would be more accurate) in 1955 (one spike).

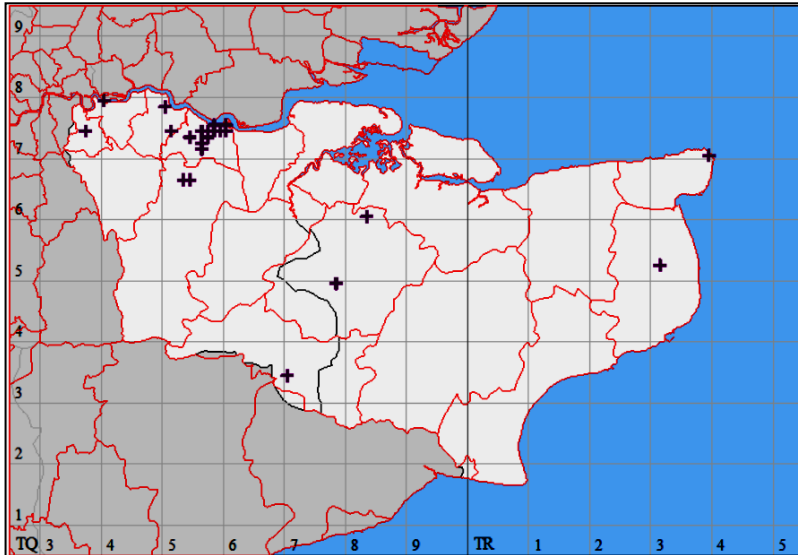


Greenhithe, habitat. Photo by David Steere, 27 June 2014

Its rarity continued into the survey period of Philp (1982), 1971-80, when it was seen in two tetrads in the general area of Francis Rose's 1948 find: on scrubby roadsides at Stone (TQ57S) and on the side of a chalkpit at Greenhithe (TQ57X). The Stone site continued so as to contribute to Philp (2010) for the period 1991-2005, and there was also a sighting in East Kent, a laneside at Stockbury (TQ86F). Remarkably, that position has changed: for 2010-18 there have been 16 tetrads records, the equivalent of 21 monads. Some records have been made in metropolitan West Kent, which was not covered by

either of Eric Philp's Kent surveys, but the increase is independent of their contribution. It is not easy to assign a reason for this increase. There has probably been an increase in amenity planting using *Hedera hibernica*

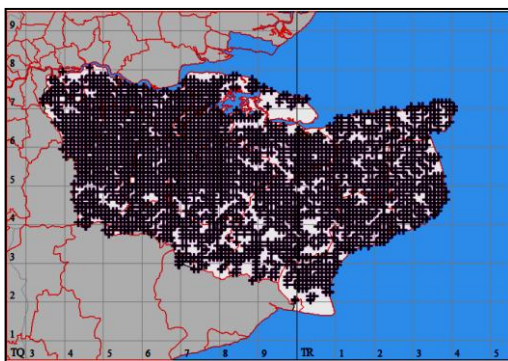
and various ivy cultivars (the Broomrape has been seen on variegated ivy at Darenth Valley hospital), which offer more scope for *Orobanche hederæ* in built-up areas, but this does not account for the general increase as ivy habitats are so widespread. The number of recent records in the area of Dartford, Greenhithe, Stone and Swanscombe suggests that once the plant has become sufficiently established, then the potential for the tiny, wind-borne seeds to give rise to associated colonies increases exponentially. Observations were made of the North Foreland colony, which began as seven spikes in 1986 and started to expand around 2001, although not included in Philp (2010), and attained about 600 spikes in 2011.



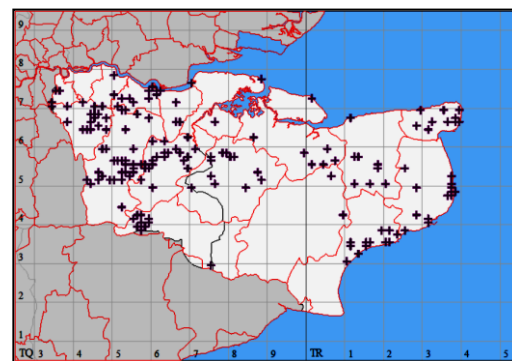
***Orobanche hederæ* (Ivy Broomrape) 2010-18**

In view of their number, current records are being maintained on a map basis, given here, and it will be seen that the main cluster is in the north west of the county. All are on chalk, except for two anomalous records, one being a roadside colony on the Hythe Formation at Wierton, the other on a roadside bank at Kilndown on the Tunbridge Wells Sand Formation.

Setting these anomalies aside, the preference of *Orobanche hederæ* for chalk of course appears unrelated to the distribution of its host, *Hedera*, which grows across the county except for some of the marshland of Dungeness and the north Kent coast. Ivy Broomrape is said to have a preference for *Hedera hibernica* as a host, which may explain the western bias of both species' national distribution. Of our 2010-17 records, five monads had *Hedera hibernica* as the host, and a similar number had *Hedera helix* sensu stricto; so we do not have evidence of any particular preference. Nor do the respective distributions of those two taxa (see maps) shed any particular light on the Ivy Broomrape's distribution (note that the *Hedera hibernica* map is very different to that in Philp (2010), which admitted to under-recording).



***Hedera helix* (Common Ivy) 2010-17**



***Hedera hibernica* (Atlantic Ivy) 2010-17**

In contrast to the single spikes recorded in Francis Rose's data, we now have about ten colonies carrying at least 50 spikes each. The variety of ivy habitats is also reflected in the variety of the Broomrape habitats. Our 2010-18 records show it in artificial sites (amenity plantings) and 'natural' woodland; on roadsides and pathsides; and on exposed, open coastal cliff slopes and well into shady woodland. There is one case, however, at Erith in 2017, where no ivy was seen in association and, indeed, no potential host plant was evident at all.

An initial identification of *Orobanche hederæ* will normally be from its association with ivy, and in shady localities there may well be little else present by way of potential host. Features which may confirm that identity, and in particular distinguish it from *Orobanche minor* (Common Broomrape), include the narrowing of the corolla shortly before the mouth and the normally yellow colour of the stigmas (although the stigmas of *O. hederæ* can sometimes be pink-tinged and there is a form of *O. minor* with yellow stigmas). *O. hederæ* is



often much taller than *O. minor*, and tends to flower all the way up from the base, so having a much more spread-out inflorescence, and is topped by a 'bud' of unopened flowers. However, the differences between *O. hederæ* and *O. minor* are not great, and it has been questioned whether it should be given specific or subspecific rank.⁸

Kingsgate. Photo by Liam Rooney, 7 August 2012. Note the constriction in the centre of the corolla.

Material from Kingsgate. Photo by Liam Rooney, 8 August 2012. Left to right: bract; calyx-segments; stigma (yellow lobes); corolla, showing stamens inserted well above the base.



⁸ Rumsey, F.J. (1998). Taxonomic problems in the *Orobanchaceae* – the British perspective, *The Naturalist / Yorkshire Naturalists Union* **123**: 50-53.

Orobanche picridis F.W. Schulz (Oxtongue Broomrape)

Draft account

vc 15

Rarity / scarcity status

Orobanche picridis grows as a parasite, lacking chlorophyll, mainly on *Picris hieracioides* (Hawkweed Oxtongue) in the Isle of Wight and East Kent. It was thought to be more widespread earlier on, but many of those records are probably in error. It is nationally **rare** and treated as an **Endangered** species in Great Britain and **Vulnerable** to the risk of extinction in England. Protection from sale, picking and uprooting is afforded by Schedule 8 of the Wildlife and Countryside Act 1981, and it is a UK Biodiversity Action Plan priority species with planned actions to undertake management at sites to prevent scrubbing up of undercliff areas which will shade populations on cliff faces and, where populations occur in cliff-top situations, to maintain or restore light grazing management. It is **scarce** in Kent, along just over 8km of the coast, and the populations are of national significance.

Kingsdown, with *Picris* leaves. Photo by Sue Buckingham,
3 July 2011

Account

The first publication of Oxtongue Broomrape in Kent was in *English Botany* (3rd edition, vol. 6, 1866, ed. J.T. Boswell), where it is described as 'very abundant on the undercliff between St. Margaret's Bay and Kingsdown, South Kent... Probably frequently passed over as *O. minor*'. Hanbury and Marshall (1899) gave this record and one from Deal (by H.C. Watson), but nothing else: presumably collected material (including by Hanbury in 1878) was regarded as falling within the description of the first record, but it does appear that there are specimens going back to 1840, before the taxon had been recognised in the British Isles. Francis Rose saw



plants only on the ledges of steep chalk cliffs, including at Dover East Cliff

(where it was reported in 1947, with records in most years to 1962) and at St. Margaret's Bay, where it was abundant in 1957, and a site ¼ mile north east, where present in 1946 and 1947, but not seen in 1953. He also received reports of the Broomrape's presence on waste ground south of Ebbsfleet House, Richborough Port by various botanists in 1949 and 1962.

Dover. Photo by Liam Rooney, 12 July 2010

The 'classic' Dover site continue to provide finds for visiting botanists, but records tailed off in the St. Margaret's area and from around 1960

it was considered lost there - Philp(1982) says that repeated searches had failed - until 1986, when Rosemary FitzGerald saw about ten plants on the steep ledges of the undercliff. There were none in either site in 1987



and, while it is fair to say that there are population fluctuations from year to year, she pointed out⁹ that the species seemed to have been more abundant before, at least in the 19th century and the reasons for its apparent decline were then not completely clear. The position for the period 1991-2005, as far as known to Eric Philp, was assessed in Philp (2010) as one where 'At Dover TR34F & 34G ...numbers can vary between 1 and 50, and on the cliffs at Oldstairs Bay TR34Y...up to ten flowering spikes most years'. However, the pattern of occurrence is considerably more variable than indicated by this comment and colonies had been overlooked.

There is now a considerable amount of distributional data from the 1990s onwards, thanks to the work of Fred Rumsey, and the rest of this account borrows heavily from this. Indeed, there is much more than could be included here without this account becoming disproportionately large in relation to other accounts.¹⁰

Dover Patrol (The Cut) cliff-top habitat. Photo by Fred Rumsey, 13 July 2007.



In 1991, Fred Rumsey became aware, through his discovery of c.23 flowering plants on ledges at the eastern end of St. Margaret's Bay, that the species, although extremely rare, was being overlooked. This was reinforced by a request for an identification check in relation to plants on a trackway above Dover Harbour, which turned out to be *O. picridis*. These events provided an impetus for annual surveying, which began in 1997, initially covering the then known areas of recent occurrence from Dover Harbour to just past Dover Patrol, and after 2004 extended to the Kingsdown ranges. Surveying is undertaken in late July / early August, at the end of the flowering period, and when damage to emerging plants may be avoided; and the Broomrape is often best found by targeting its host plant, *Picris hieracioides*. Nevertheless, plants are easily overlooked, being small (in the books, to 60cm, but in practice often less than 12cm), with few flowers (often less than ten) and in cliff edge and ledge habitats not always readily accessible.

A summary table for Kent surveyed populations is given at the end of this account. It will be seen that there are considerable fluctuations from year to year, with a low of 73 (1997) and an exceptional high of 1,120 (2007). The average from 1997 to 2016 was 321 plants, affected by a couple of very plentiful years, 2005 and 2007. Even before then, when 195 plants were seen in 2004 in eight locations, this was far more than had been recognised before systematic survey and was regarded as a cause for celebration, with the majority of individuals occurring on National Trust properties where sympathetic management programmes were in place (i.e. scrub reduction and *Brachypodium* control) and the remainder growing immediately adjacent to these¹¹.

⁹ FitzGerald, R. (January 1988), *Orobancha loricata* Reichenb Oxtongue Broomrape (unpublished NCC report).

¹⁰ The standard account for this species is in Rumsey, F.J. & Jury, S.L. (1991). An Account of *Orobancha* L. in Britain and Ireland. *Watsonia* **18**: 257-295. But there is a wealth of data and comment in Rumsey, F.J. (2015). *Orobancha picridis* F.W. Schultz in Kent: Annual Survey 2015 (unpublished report).

¹¹ Chandler, P. (2005). Oxtongue Broomrape *Orobancha picridis* in the Dover area. *Kent Field Club newsletter* **61**:1.

The large counts, together with increases seen in the Isle of Wight populations, however, have resulted in the down-grading of the species' threat status from Endangered in Great Britain to Vulnerable to the risk of extinction in England.¹² This is not to say that the threats to the Broomrape are less than they have been previously, but the annual fluctuations in numbers, presumably climate-related, may obscure the longer-term vulnerability.

Dover Docks habitat. Photo by Fred Rumsey, from 2015 survey report

There have probably been four types of threat involved: over-collection; trampling; plant succession resulting in unsuitable habitat for both host and Broomrape; and cliff erosion.

Over-collection now belongs to the past, but was probably a real issue for this rarity

in the days of private herbaria. Lousley, in *Wild Flowers of Chalk and Limestone* (1950) referred to cliff falls threatening plants, but also 'Fortunately there are times (as in 1939) when they are quite inaccessible, and these give them a breathing space to recover from periods when it can be reached and picked'.



Trampling is not an issue for most plants, although the Broomrape has occurred under the rise of an old step on a well-used path and scramblers could affect a grassy section of undercliff with access from beach level. There are both negative and positive aspects, given that trampling and scrambling can assist in keeping ground open so as to prevent succession and permit colonisation by the host plant, *Picris hieracioides*.



Dover Docks trackway habitat, beginning to scrub up, grass thickening. Photo by Fred Rumsey, from 2015 survey report.

Plant succession is a material threat. Rosemary FitzGerald considered that cliff top grassland and undercliffs at least near Dover Docks had become more rank and overgrown. Fred Rumsey recognises plant succession as having affected the suitability of the trackway above the Docks for *Picris* where a large population of *Orobanche picridis* existed in association in the 1990s. He remarks also on the growth of trees against the

undercliff at St. Margaret's Bay casting shade on the cliff ledges, and *Clematis*, etc. spreading so as to reduce the open area: factors greatly reducing suitable habitat. The top of the cliffs above, accessed through the Leas, has also become overgrown (no plants observed 2015-16).

Cliff erosion has resulted in the loss of many cliff edge sites during the survey period, without necessarily creating fresh habitat which both host plant and Broomrape may be able to colonise. The balance between stability and instability providing suitable habitat appears to be a fine one. *Picris hieracioides* is biennial or

¹² Stroh, P.A. et al. (2014) *A Vascular Plant Red List for England*, Botanical Society of Britain and Ireland, Bristol.

perennial; but *Orobanche picridis* is annual and so needs to re-establish each year. This annual hurdle is presumably a factor in the wide variation in population counts from year to year.

What is suitable habitat for *Orobanche picridis* in conjunction with its host is best illustrated by persistent populations which indicate that the Broomrape grows best on sunny south-facing, exposed sites, such as ledges with shallow soils, cliff edges or steeply sloping upper cliff terrain, where plant succession is inhibited by exposure, drought and heat-stress and a degree of disturbance. Some adaptability is indicated by changes in the Kingsdown population since 2004, where numbers have diminished on the ledges of the slumped east-facing cliff and have increased on the consolidated shingle below as this has begun to develop vegetative cover.



Kingsdown, slumped cliff habitat. Photo by Fred Rumsey, 2007

Orobanche picridis is related to the common and variable *Orobanche minor* (Common Broomrape) and their distinguishing characters overlap. Both species grow in the same general area and apparently intermediate plants have occurred on tracksides around Hope Bay, Kingsdown, but molecular investigation has not provided evidence of introgression or hybridisation. *Orobanche picridis* is (before going over flowering and quickly turning brown) a pale ivory colour overall, often tinged purplish, with stigmas of an intense dark purple. The calyx segments are all more filiform than those of *O. minor*; the bracts are longer and may exceed the corolla (which those of *O. minor* do not); the corolla is longer, with a slightly more upwardly directed upper lip; the



filaments have long, white hairs (glabrous or sparsely hairy in *O. minor*) and are inserted somewhat higher in the corolla tube (3-5mm) than normal with *O. minor* (2-3.5mm). *Orobanche minor* is able to parasitise a considerable range of species (although it has varieties which have adapted to particular hosts): *Orobanche picridis* is virtually confined to *Picris hieracioides*, but at St. Margaret's, there is a record on *Pilosella officinarum* (Mouse-ear-hawkweed).

Dover Photo by Liam Rooney, 12 July 2010

Summary of survey data (1997-2015)

[Where not searched for, this is indicated by: -]

Locality	1997	1999	2001	2002	2003	2004	2005	2006	2007	2008	2009	2012	2015	2016
A2 Embankment	-	-	12	2	2	2	3	1	2	0	3	1	0	
West of A2	-	-	-	-	-	0	17	5	5	1	0	1	11	
Under A2 cliff top TR 33074 41833	-	2	1	14	9	8	30	7	12	13	6	18	4	
Dover cliff tops TR 3316(to 3330) 4192 (to 4199)	10	13	14	9	6	4	33	11	9	1	0	6	0	
Ramp above Tramway	0	2	3	5	1	7	6	0	0	3	0	4	0	
Tramway	62	126	94	259	48	53	57	32	24	3	46	41	2	
Ramp end to Railings			7	38	5	3	23	-	15	0	0	12	9	
TR 3406 (to 8)-4231 (to 2)		49	18	2	1	12	36	-	12	7	2	25	4	
By paths TR 332 419									3	0	1	1	4	
NT White Cliffs Booth TR 33348 42125				1	0	0	0	0	0	0	0	0	0	
Dover Total	72	193	149	330	72	89	205	56	82	28	58	109	34	56
Lighthouse Down, St. Margaret's		6	1				14	0	19	1	0	9	5	
St. Margaret's Bay & the Leas	1	7	10	4	1	0	0	5	3	3	3	2	0	
Undercliff east of bay	-	-	-	-	-	-	-	-	15	3	-	11	-	
St. Margaret's Bay Total	1	13	11	4	1	8	14	5	37	7	3	22	5	1
The Cut TR 3752 4541		18	21	22	1	8	42	10	16	6	0	11	9	
Hope Point area	-	-	-	-	-		14	6	43 (+8?)	11	11	43 (+5?)	23	
Kingsdown – Cliff tops TR 3800 (to 3803) 4680 (to 4699)	-	-	-	-	-	19	124		239	20	23	55	18	
Slope to range entrance TR 37989 47752	-	-	-	-	-	10	45		41	18	8	8	3	
Range TR3802 (to 3807) 4758 (to 4717)	-	-	-	-	-	69	407		662	95	185	136	100	
Dover Patrol to Kingsdown Total	-	18	21	22	1	98	632	68	1001	150	227	253	153	190
Kent Total	73	224	181	356	74	195	851	129	1120	185	288	384	192	247

***Orobanche purpurea* Jacq. (Yarrow Broomrape)**

Draft account. Kent records and photos required.

vc 15

Rarity / scarcity status

Orobanche purpurea is a nationally rare and very local Broomrape, parasitic on *Achillea millefolium* (Yarrow), with a scattered distribution including Pembrokeshire, Norfolk and the Isle of Wight. It is treated as **Vulnerable** to the risk of extinction in England and Great Britain as a whole, but it is possible that up-to-date data could lead it to be reclassified as Endangered in England. It has been known for a very long time at one site in East Kent, although not recorded there since 1992, so it is either extremely rare in the county, or may be removed from the register as probably extinct.

Account

Remarkable persistence was shown by this plant given that it occupied the same Kentish station for at least 170 years from first publication. In *The Magazine of Natural History* ('conducted by J.C. Loudon') (1830) **3**: 435, an anonymous correspondent from Bishopsbourne wrote to mention the spontaneous appearance of 'what I suppose to be the *Orobanche caerulea*, and which, in the year 1821, I found abundantly in some of the low pastures, and also some specimens in an elevated dry chalky situation at Bishopsbourne, in Kent. I had for many years preceding been an assiduous collector of plants in this and various parts of Kent, and never before saw it, nor have I met with it again, although my attention has been directed to the fields in which I found it'. It is curious that the knowledge of this occurrence seems to have sunk: Hanbury and Marshall were apparently unaware of the species as a Kent taxon. Jocelyn Brooke came to live in what was originally his family's summer residence at Bishopsbourne, and became aware of the Broomrape, at least by 1955¹³. Francis Rose saw it in that year and in 1958, when it was plentiful on *Achillea millefolium* in neglected allotments in Bishopsbourne village. Part of the rough field was ploughed in 1958. Afterwards in that year and in 1959, the plant was much more abundant in the section of field that had been ploughed than that which had been left. In 1960 the field had been set to grass and the Broomrape was not seen; in 1961 there was one plant by a hedge; in 1962, none. Again, the Broomrape fell out of view, but Philp (2010) notes that there were 21 flowering spikes in 1991 (*Orobanche minor* was also present) and with a few in 1992 but none since. From aerial photographs, the area east and south east of the village hall which in the 1940s was used as allotments had contracted by 1960 and has diminished considerably since then, most being laid to grass or overgrown.

It is an erratic and declining species in the British Isles, found mainly in dry, unmanaged and slightly basic grasslands and may cope with quite rank swards. Despite a preference for undisturbed ground, it is also found in disturbed habitats which perhaps better suits the Kent habitat description in later years. It is thought that the seed can remain viable for long periods in the soil.

Orobanche purpurea is readily separated from other broomrapes. The stem is distinctively tinged bluish, and the corolla is generally bluish-purple, flushed yellow towards the base. In side view, there is an appearance (on each side) of three calyx teeth, although one of them is a bracteole - there being two bracteoles, one each side of the corollas, and a larger bract underneath (other British species have no bracteoles).

¹³ Record given in *Proc. BSBI* (1956) **2**:36; and in Rose, F. (1960), *Botanical Records for Kent, 1955-58 – Vascular Plants*. *Kent Field Club Transactions* **1**: 56-65.

Orobanche rapum-genistae Thuill. (Greater Broomrape)

Draft account

vc 15; gone from vc16

Rarity / scarcity status

Orobanche rapum-genistae is widespread but local in the British Isles, extending as far north as south Scotland, but most frequent in Wales and south west England, growing as a parasite mainly on *Ulex europaeus* (Gorse) and *Cytisus scoparius* (Broom). Its conservation risk status is **Near Threatened** in Great Britain as a whole, but **Vulnerable** to the risk of extinction in England, its area of occupancy in England having declined by 41% in comparing records for the periods 1930-69 and 1987-99. While it is nationally scarce, its limitation to one site in Kent renders it very **rare** in the county.

Account

The first published Kent record for Greater Broomrape is by John Gerard in his *Herball* (1597): 'The Broome Rape is not to be found but where Broome doth grow; it growth in a Broome fielde at the foote of Shooters hill next to London... and divers other places'. This appears to be the only British broomrape recognized at the time, and hence the association of the name with broom (*Rapum genistae*, the turnip-root of broom, according to Gerard) rather than the range of species with which *Orobanche minor* (Common Broomrape) is associated. The latter species was not recognized in Kent (and, indeed, the British Isles) until 1724, which is likely be related to its repeated introduction with fodder crops; and *Orobanche rapum-genistae* would have been the common broomrape, in Kent and elsewhere, before then.



Eyhorne Street. Photo by Liam Rooney, 24 July 2013

Most of the early records cited by Hanbury and Marshall (1899) are probably occurrences on sandy or gravelly ground, where Broom is most likely to grow; and sometimes the presence of Broom is explicitly recorded, e.g. T.H.M. Bartlett's find of '*Orobanche major*, on broom' at Covert Wood (given in M.H. Cowell's *A Floral Guide for East Kent*, 1839) and Thomas Forster's record 'In bushy places where Broom grows, not uncommon' (*Flora Tonbrigensis*, 1816). Hanbury and Marshall considered it to be local in the county, growing on 'Heaths, etc. on Broom and Furze'.

Francis Rose's assessment was 'Parasitic on *Sarothamnus* [now *Cytisus*] *scoparius*, more recently on *Ulex europaeus*: formerly not uncommon, now very rare in a few bushy places and woodland rides'. The species had long since ceased to be found on the north west Kent gravels, and he recognised it as in five areas in East Kent. One was a gravel pit at Swanton Farm, Littlebourne (1956, which is likely to be the current Court Hill transmitter site at TR 203 591, a former *Lotus angustissimus* (Slender Bird's-foot-trefoil) location, which has changed considerably. Another was at West Wood, Stowting, TR 137424, on Broom in a ride on Pliocene sand (1958). It was also present at the edge of Bourne Wood, Orlestone (Hamstreet) in 1946 and, not far away, in a ride at the south end of Horns Wood, Ruckinge (probably TR0334) in 1957-58. Perhaps the best location was on a heathy ridge on Folkestone Sand north of the A20, a mile [south] west of Hollingbourne, where it grew on Broom and Gorse from 1951 to 1962, with about 100 spikes present in 1951.

After the 1950s-60s, the species seems to have become very rare in Kent. For 1971-80, Philp (1982) gives only two sites: Eyhorne Street and Canterbury. The latter site (TR15U) is probably TR1758, which looks to be the location reported by John Kesby in 1976 ('Canterbury golf course, dry sandy plateau at edge of woodland, and with abundant Broom'); it may have a similar geology to the Littlebourne site, about 2.5km away. There are a



handful of other reports in the 1980s and 1990s: one in scrub near Bewlbridge reservoir in 1984, on Broom; another in 1999 in a chestnut coppice clearing at Milstead Woods, Torrey Hill estate (TQ95E) where shown to Joyce Pitt, parasitic on Broom; and another on waste ground west of Westbere School, presumably TR1961; but the only persistent site is at Eyhorne Street, a sandy bank on the Folkestone Formation.

[Eyhorne Street, habitat.](#) Photo by Lliam Rooney, 24 July 2013

This location was mentioned in Philp (2010) as carrying a few plants in most years and it remains the only current site. The sandy bank on the Folkestone Formation was possibly created as part of the Maidstone bypass works around 1960 and was severely affected by the construction of the junction 8 to 9 section of the M20, which opened in 1991 (access to a working site was taken along the bank). The roadworks may, however, have been to a degree beneficial as creating a bare sand surface on which plant succession

is very slow, because of heat and drought stress over summer. *Ulex europaeus* grows here in quantity, and acts as host plant for the Broomrape. Our most detailed survey information comes from Alfred Gay, Owen Leyshon and Lliam Rooney on 24 July 2013, when 36 spikes were recorded. Five of these were at TQ 82402 54635; 23 were at TQ 82406 54686; and groups of two each at TQ 82410 54688, TQ 82418 54652, TQ 82402 54690 and TQ 82403 54692. In 2018 there were 24 spikes (Owen Leyshon).

Orobanche rapum-genistae is a tall, robust yellowish red-brown broomrape, usually over 40cm high but known up to 90cm. It has yellow stigma lobes and the filaments are glabrous in their basal third and are attached to the corolla tube at no more than 2mm from the tube's base.

[Eyhorne Street.](#) Photo by Lliam Rooney, 24 July 2013



Osmunda regalis L. (Royal Fern)

Draft account

vc 15 and 16

Rarity / scarcity status

Royal Fern is widespread in the British Isles, principally in the wetter western parts, but extending into the Sussex Weald. Its threat status in England and in Great Britain as a whole is one of 'Least Concern'. In Kent, it is at the edge of its range and is **scarce**.

Account

Several sources place the earliest Kent records at Woolwich. Philip Miller's *Botanicum Officinale* (1722) says 'It grows in marshy boggy Places, particularly in a Bog at the backside of *Woolwich*, near the Warren'. Dillenius in his third edition of John Ray's *Synopsis Methodica Stirpium Britannicarum* (1724) included an observation of Royal Fern at Woolwich heath by Samuel Doody (died 1706). Also, Christopher Merret (died 1695) wrote – according to Hanbury and Marshall (1899) – a marginal note in his own copy of his *Pinax rerum naturalium Britannicarum* (1666) that it grew 'in y^e bogs nigh to y^e windmill by Woolwich'.

Orlestone Forest. Photo by Alfred Gay, 15 October 2017



By the time of Hanbury and Marshall (1899) it was regarded as a plant of boggy heaths and copses, but rare, 'eradicated in most of its stations'. This eradication is associated with the pteridomania of the mid-nineteenth century, when a widespread obsession with ferns gave wild plants commercial value. *Osmunda regalis* was at particular risk, as it had potential as a striking garden or conservatory plant, but also the fibrous roots were broken up and, called osmunda fibre, were used as a growing medium for epiphytic orchids. Both amateur collection for the garden and wholesale collection for commercial sale are illustrated in the biography of Benjamin Harrison of Ightham¹⁴: Harrison made

'a fern-collecting expedition to the moorland of Rose Wood, a couple of miles south-west of Ightham. The area was in 1854 an almost impenetrable bog, and he described how, in his search for ferns, he jumped from stub to stub in his efforts to avoid plunging into the moorland pools. Amongst other trophies he brought home specimens of *osmunda regalis*, one of which he replanted in his garden, where it still survives. Harrison stated that in the middle of the nineteenth century the hollow sandy lanes around his home were draped with ferns... Shortly afterwards, collectors for Covent Garden market invaded the district and stripped the banks of nearly all their choice ferns and plants; and except in a few protected spots, the countryside became almost fernless'.

Neither the habitat nor the *Osmunda* exists there now, but this sounds very much a native occurrence.

Re-colonisation by *Osmunda* was recognized by the 1940s and 1950s but, as Francis Rose mentioned, one cannot be sure whether large plants in natural-looking sites, such as wet cars, acid bogs and pond margins, especially in former estate grounds, are relict natives; survivors or descendants of old plantings; or recent

¹⁴ Sir Edward Harrison (1928). *Harrison of Ightham*, O.U.P.

invaders through the spread of spores. He considered that the most likely natural sites were in boggy woods (the fern being moderately shade-tolerant), and the possibly natural re-invasions of damp walls and rocks, especially around Tunbridge Wells. He noted that there were plants in the south eastern corner of the lower pond at Keston Common from 1947 onwards and that Hanbury and Marshall (1899) had drawn attention to its occurrence at Keston heath vouched by Edward Newman (*A history of British ferns*, 1840), while supposing it no longer to be present in 1899. As it was still there in the 1980s, there is a question as to how far there has been continuity since 1840 in view of widespread fern theft in Victorian times, the failure of the species to form a viable spore bank, and the intervention of planting on the Ravensbourne estate. Philp (1982) recognised the fern as persisting and reproducing itself in a few damp areas on more acid soils, giving seven tetrad records in the south west of the county for the period 1971-80, most near the Sussex border. In Philp (2010), the number of tetrads had reduced to four, with a note as to it being open to debate whether the plants were truly native or a result of being originally planted.

Orlestone Forest. Photo by Sue Buckingham, 22 October 201

Records for the period 2010-18 are also limited to four tetrads, excepting a couple of metropolitan West Kent records for which a better understanding of status is needed: only one of those four tetrads is the same as in Philp (2010). The recent four well illustrate the difficulties of judging whether wild plants are involved, whether of native stock or re-colonising back from gardens:



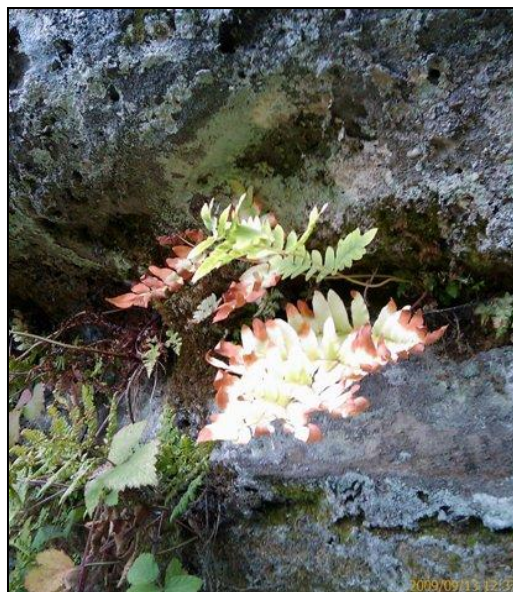
- Brabourne Lees. Five crowns by alder carr, with various plantings of ferns and other plants naturalising in the boggy ground adjoining garden. Likely to have been planted, established but without further spread.
- Bedgebury pinetum. Origin uncertain, but known at the pinetum, at least 1947-54, after which considered frequent in a boggy valley at the pinetum, which was later affected by drainage works, leaving the occasional plant in ditches in the wider Bedgebury Forest¹⁵, suggestive of possible native status. A 2018 find related to what had been a small landscaped pond and so its presence may be associated with human intervention.
- Orlestone Forest. A large plant 2-3 metres across, hollowed in the middle, indicative of considerable age; in pond system which appears to go back well into the nineteenth century. There is a history of the species at Longrope Wood (part of the same complex) probably going back to the 1950s, but Francis Rose's *Flora*, before revision, said 'reputedly planted'; the withdrawal of that comment from the revised version may have meant uncertainty, or a view that it did not really matter. However, it is perhaps the best current (post 2010) example of possible origin from native stock.
- Rusthall Common. Present on rock face on common land at least since 1949. Not recognized here in the early Tunbridge/TunbridgeWells Floras, albeit that Newman's *History of British ferns* (1840) refers to the species as present in the neighbourhood of Tunbridge Wells. Likely to have originally been introduced or to have spread from gardens. Many plants of all sizes growing on a rock face, clearly reproducing in situ in the wild.

¹⁵ Pitt, J. 2000. *Vascular Plants*, in Waite, A (ed.) *The Kent red data book: a provisional guide to the rare and threatened flora and fauna of Kent*. Kent County Council.

It is possible that spores from Rusthall Common account for a young plant on a similar sandrock outcrop less than 1.3km away on Tunbridge Wells Common seen in 2009, although one cannot rule out that it might also been grown in a garden within that range. Establishment from spores would require rapid germination since *Osmunda regalis* is a green spore species with very limited spore longevity, measured in weeks.

Tunbridge Wells Common. Photo by Philip Sansum,
13 September 2009

The large size of the mature fronds, their coarse cut and the absence of sori underneath (spores are carried in sporangia clustered round reduced pinnae mid-ribs at the top of the tallest fronds) make *Osmunda regalis* fairly unmistakable. However, young plants may resemble *Onoclea sensibilis* (Sensitive Fern) but have veins on the pinnae which fork to the margin; those of *Onoclea* are netted.



Site	Grid reference	Site status	Last record date	Recorder	Comments
Keston Common (metropolitan vc16)	TQ4164		(1) 8 August 1987 (2) 1987 (3) 21 September 1986 (4) 17 June 1978	(1) RMB (2) & (3) JP (3) LNHS	(1) TQ 418 645. (2) SW corner of lower pond, TQ 418 641. (3) TQ 415 643, clump at southern end of middle lake in peaty ground. (4) TQ 4181 6415, SW corner of lower pond, 2 plants. Formerly also in Keston Bog. There are also many records for Ravensbourne meadows over a long period, where generally recognised as former estate plantings or naturalised from them, including the occasional small plant.
Holwood Park	TQ4163		17 July 2016	MC	Given as in parkland, but no indication of status. [It is an 18 th /19 th century landscaped park with many plantings. <i>Osmunda</i> probably one of them and recorded here at intervals from 1948 (when in a swampy pool in the north east part of the park with <i>Menyanthes</i> and considered by FR to be possibly relict here in part)].
Chevening Park	TQ4857		1982	RMB	TQ 4899 5747, in outflow stream of lake. [Presumably derived from estate planting; RMB recorded a planted specimen in 1978 at TQ 489 577.]
Burrswood Estate, Groombridge	TQ5137		4 August 2007	KFC meeting, comm. JP.	TQ 5173 3782, ditch at edge of ride in linear woodland (Burrswood), 'appeared genuinely native' (IB in Kent Field Club Bulletin (2008) 53: 32).
Tunbridge Wells	TQ5538		11 June 2005	BPS meeting	Tea Garden Farm, Tunbridge Wells Sandstone. <i>BPS Bulletin</i> 6(4): 296. [Not found, 2018, SL.]

Rusthall Common	TQ5639	Managed by Tunbridge Wells Commons Conservators	(1) 20 May 2017 (2) 25 May 2011 (3) After 1970, before 1981	(1) SL & KFC meeting (2) GK (3) Philp (1982)	TQ 56671 39617 to TQ 56662 39628, Rusthall Common, north east facing rock face opposite housing along Apsley Street. Many plants growing along rock face, ranging from tiny to tall/robust with larger plants 10 foot high on sandy/peat. Most plants followed certain lines of strata/bedding planes along rock face. (2) Along north-facing sandstone vertical faces, at north side of Rusthall Common near Denny Bottom, where the rocks arc round a valley with cottages lacking road access, TQ 5672 3950 (or TQ 5665 3963 according to different measure) to TQ 5666 3962. One main colony with at least 12 large plants around cleft; a couple of young plants 5m west; and three more young ones 10m further on.
TunbridgeWells Common	TQ5739	Managed by Tunbridge Wells Commons Conservators	13 September 2009	PS	TQ 5791 3938, a single small plant in bedding plane of sandrock outcrop below Mount Ephraim.
TunbridgeWells Common	TQ53U		(1) After 1989, before 2000 (2) After 1970, before 1981	(1) EGP (Philp, 2010) (2) Philp (1982)	(1) & (2) [Probably TQ5639]
Stonewall Park	TQ54B	Private estate	August 1974	HP in Philp (1982)	[This is parkland with a stream valley and estate plantings.]
High Brooms area	TQ54V		After 1970, before 1981	Philp (1982)	
Scotney / Kilndown area]	TQ63X		(1) 5 May 2005 (2) After 1970, before 1981	(1) EGP & DG (Philp, 2010) (2) Philp (1982)	[Philp (1982, 2010) covered the administrative county of Kent and so would have included Scotney, where the fern has been cultivated and spread within the area of cultivation. But the 2005 record appears likely to have been a wild plant in TQ6935, in vc16 - see below.]
Kilndown Wood	TQ6935		16 September 2004	JP	Two plants in ride at TQ 69493 34694.
Kilndown	TQ7035		4 September 1990	FR	By ride.
South east of Tonbridge	TQ64C		After 1970, before 1981	Philp (1982)	
South west of Hawkhurst	TQ72P		After 1970, before 1981	Philp (1982)	
The Moor, Hawkhurst	TQ7629	KWT managed reserve	1984	JP	Collingwood nature reserve, TQ 760 292. [Part of Collingwood estate which had been planted up with exotic species, perhaps including the <i>Osmunda</i> .]
Bedgebury / Combwell area	TQ73B		(1) 24 July 2002 (2) After 1970, before 1981	(1) EGP (Philp, 2010) (2) Philp (1982)	[Formerly frequent in a boggy valley in the pinetum, according to JP, but pond construction since rendered the valley floodplain very dry.]
Bedgebury pinetum	TQ7233	Forestry Commission owned and managed	(1) 12 May 2018 (2) 10 August 2011	(1) SL (2) SB & KBRG meeting	(1) Bedgebury Pinetum, edge of small landscaped pond incorporated into stream, c. TQ 7226 3353. Two very large/old plants. (2) TQ 72329 33548, origin uncertain. [Also known to JP along a ditch on the south side of a track, TQ 726 332(-4).]

Bedgebury / Flimwell area	TQ73F		After 1989, before 1999	Philp (2010)	
Bedgebury Forest	TQ7330		(1) 2 July 1999 (2) 9 May 1999 (3) 26 August 1986	(1) & (2) JP & JW (3) JP	(1)-(3) TQ 735 330, along ditch on south side of east-west track.
Hemsted Forest	TQ8136		23 August 2009	RM	TQ 8199 3623, small plant.
Knockwood, Tenterden	TQ8935		20 September 1992	JP & JW	TQ 896 353. Recorded in this wood, possibly inaccurately, as TQ8934, for 1956 when considered by FR as here being 'possibly native' (MS Flora) or 'almost certainly native' (herbarium specimen).
Orlestone Forest	TQ9735		(1) 27 August 2018 (2) 8 April 2018 (3) 15 October 2017	(1) OL (2) KFC meeting (3) AG	(1) Still present at TQ 97678 35908, Baylad Wood, part of Orlestone Wood, in old pond (dried up). (2) TQ 9766 3593. Same plant as discovered last year, showing only dead fronds, isolated on island in pond and inaccessible due to high water level. (3) TQ 9766 3593, a single large plant in a dried up peaty pool at the edge of <i>Carpinus betulus</i> woodland. Visited by SB on 22 October 2017, noting associated plants: <i>Hottonia palustris</i> , <i>Solanum dulcamara</i> , <i>Galium palustre</i> , <i>Urtica dioica</i> . The plant was 2-3 metres across but made up of a ring of eight individual tussocks with bare peat at the centre which appears to be suggestive of a great age.
South of Brabourne Lees	TR0389		(1) 1 August 2015 (2) 24 October 2014	(1) KBRG / BPS meeting (2) GK	(1) Probably planted and now established, five crowns noted (four seen previous year, but one may have been overlooked). (2) TR 0826 3391, four crowns together in wet alderwood near other escaped/planted non-native ferns just outside garden fence boundary of Bog Farm, presumed introduced but established.

Oxalis acetosella L. (Wood-sorrel)

Draft account, Kent habitat photo needed, records needed for 10km squares TQ67, TQ74, TQ96,

vc 15 and 16

Rarity / scarcity status

Wood-sorrel is common in moist shady habitats throughout the British Isles except for parts of east England where rainfall is limited to 60 to 80cm per annum. Its risk status in Great Britain as a whole has been one of 'Least Concern', but for England it was assessed as **Near Threatened** in 2014, due to its rate of decline. Its area of occupancy in England is taken to have declined by 20% comparing records for the periods 1930-69 and 1987-99. In Kent, it appears to have declined by 30% between 1971-80 and 1991-2005. It still remains sufficiently common that it does not qualify to be treated as either rare or scarce in the county.

Upper Ensign. Photo by Lliam Rooney, 7 January 2010

Account

Oxalis acetosella is a native plant, and its seed has been found in peat excavated at Frogholt near Folkestone dating back some 3,000 years¹⁶. The species was first published for Kent by Thomas Johnson. On 4 August 1632 (*Descriptio Itineris*, 1632), he noted it in the course of his party's journey from Sandwich to Canterbury, probably in the woodlands bordering the road west of Littlebourne as they approached Canterbury. In terms of habitat, it is no surprise that several mosses are listed in proximity to the *Oxalis*. Johnson was then also preparing a revised edition of Gerard's *Herball*, published in 1633, in which he inserted the following comment: 'My oftmentioned friend Mr. *George Bowles* sent me some plants of this with very faire redde floures, which hee gathered in Aprill last, in a wood of Sir *Thomas Walsinghams* at Chisselhurst in Kent, called Stockwell wood, and in a little round wood thereto adjoining'. These have been given varietal status as *var. subpurpurascens*.

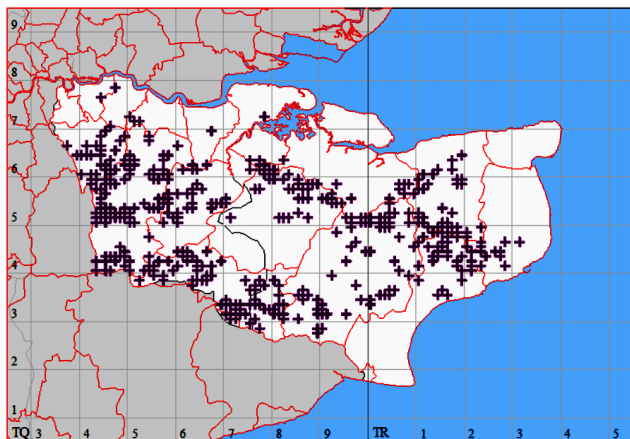


The early writers of Floras relating to parts of Kent unsurprisingly do not have much, if anything, to say about the species, other than that it was common, or very common, in woods. Hanbury and Marshall (1899) treated it as a common plant of shady banks and woods (especially beech). Francis Rose in his manuscript *Flora* wrote of it as a native of 'dry woods and shaded banks, on loam, sand, gravel, and more rarely on shallow chalk rendzinas; very common in all wooded districts (absent from the Hoo peninsula, Grain, Sheppey, Thanet, the Lower Stour valley, and Romney Marsh)'. Philp (1982) gave 384 tetrad records, finding it to be common in suitable habitats and hence showing the same absences as had been flagged by Francis Rose together with a distribution gap in the Low Weald, presumably again reflecting a relative lack of woodland. However, Philp (2010) gives a more attenuated distribution with a substantial drop in the number of records, to 269 tetrads, noting that it does not appear to colonise disturbed or open ground. Whether that has bearing on the apparent decline is an open question: the species appears to be benefited by coppicing cycles, where these take place, and permanent woodland loss and/or development does not seem sufficient during that period for

¹⁶ H. Godwin (1962). Vegetational History of the Chalk Downs as seen at Wingham and Frogholt. *Veröffentlichungen des Geobotanischen Institutes der Eidg. Tech., Hochschule, Stiftung Rübel*, in Zürich 37: 83-99.

a decline of this extent to have arisen through a combination of such habitat loss and an inability of the species to recruit or recover via the resultant disturbed or open ground.

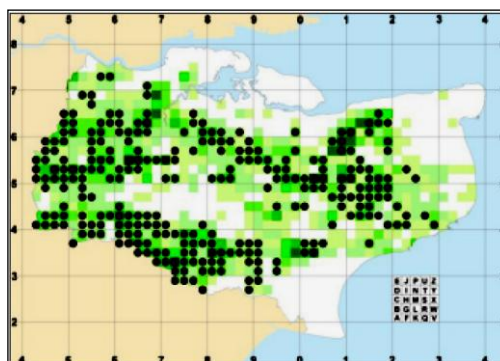
The recent distributional data maintained in this register will be at 1km square (monad) level. This will entail recording at a finer scale than the tetrads given in Philp (2010), from which the following 1991-2005 map is taken (with kind permission of the late Eric Philp and the Kent Field Club). By comparison, our 2010-18 data mapped here (equivalent to 282 tetrads) shows no material change from the position given in Philp (2010), having regard that the maps cannot be equated exactly, as the later map includes metropolitan West Kent records in addition.



Oxalis acetosella (Wood-sorrel) 1991-2005

Whilst the 2010-18 records appear denser, because they are at monad level, the coverage appears more or less the same, although this would not be so at 10km mapping resolution

Oxalis acetosella (Wood-sorrel) 2010-18



because of the absence of record for some 1991-2005 outliers, so that 10km squares TQ67, TQ74, TQ96, TR06 and TR25 may have lost the species since then, or it has been overlooked.

Paddock Wood. Photo by David Steere,
29 April 2016

Where in 2010-18 records we have noted any observations, these tend to relate to the habitat being generally woodland, sometimes ancient woodland, occasionally noted as damp. The 1991-2005 distribution

map clearly relates its presence to woodland (shown coloured green). It is regarded as a species indicator of ancient woodland in south east England¹⁷. Much information regarding its ecological requirements is given in *The Biological Flora of the British Isles* account¹⁸, which describes its growth needs. It grows best under light shading (27% of available light), but its optimal conditions of light and temperature suit many other species as well and it competes successfully in many of its natural habitats because it can tolerate greater shade (6% of available light) than most other plants. Although Francis Rose mentioned it as a plant of dry woods, there is evidence that it does not grow well in dry conditions (at least other than in areas of high rainfall), so it will give preference to areas of impeded drainage such as by paths, where woodland is otherwise well-draining.. Moist

¹⁷ Rose, F. (1999). Indicators of ancient woodland, *British Wildlife* **19**: 241-251.

¹⁸ Packham, J.R. (1978). Biological Flora of the British Isles: *Oxalis acetosella* L. *Journal of Ecology* **66**: 669-693.

woodlands under moderate shade will suit, and it is able to photosynthesise later into winter than most other plants; conversely, growth is affected adversely by high summer temperatures, so it might be the case that climate change bringing warmer, wetter winters and hotter, drier summers would decrease its competitiveness in both seasons, which could underlie any long term decline. The effectiveness of winter growth is indicated by the photograph at the beginning of this account, taken on 7 January! Normally it is a spring flowerer (April-May), at least as far as concerns the normal, chasmogamous flowers. Most viable seed is produced by summer or early autumn by cleistogamous flowers, which do not draw attention in the same way: they tend to bury themselves in surrounding moss or leaf litter.

Paddock Wood. Photo by David Steere, 29 April 2016



Oxybasis chenopodioides (L.) S. Fuentes, Uotila & Borsch (*Chenopodium chenopodioides* (L.) Aellen) (Saltmarsh Goosefoot)

Draft account.

vc 15 and 16

Rarity / scarcity status:

Saltmarsh Goosefoot is nationally **scarce**, being largely restricted to Essex, so that the Thames estuary represents its core distribution. As it has diminished in its East Anglian range and is a characteristic species of good quality coastal grazing marsh and saltmarsh, it is perhaps surprising that its conservation status in England and in Great Britain as a whole is one of 'Least Concern', but this presumably reflects a view regarding the stability of its populations. In Kent, it is not common, but is locally frequent where it does occur, and does not warrant designation for rarity or scarcity.

Account:

The first Kent find of *Oxybasis chenopodioides* appears to have been by J.T.B. Syme in 1852 at Gravesend¹⁹. It may be conjectured that in the distant past it may have been a feature of the tidal marshes up the Thames to London, given that its pollen has been identified in the excavation of Roman material at Finsbury Circus. The pollen may not have originated in situ, of course, and could have arrived by various means, even (per Francis Rose, perhaps somewhat fancifully, *in litt.*) with oysters, gathered by the Romans off north Kent and transported! Marshall (in the Victoria History of the County of Kent, 1908) stated that it "only grows in the



Thames salt-marshes and near Sandwich"; and the assessment of Hanbury and Marshall (1899) was that it was rather rare. There are specimens from the Pegwell Bay area near Sandwich gathered from the 1850s to the 1870s, but this does not seem to have been a locality which has persisted. Thereafter, the main concentration of records appears to have been from Shorne to Grain, although Francis Rose in the 1940s to the 1960s took the distribution eastwards to the Swale. There was also an odd eastern outlier in a brackish dike north of Stuart, St Nicholas at Wade.

Uplees Marshes. Photo by Lliam Rooney, 5 October 2010

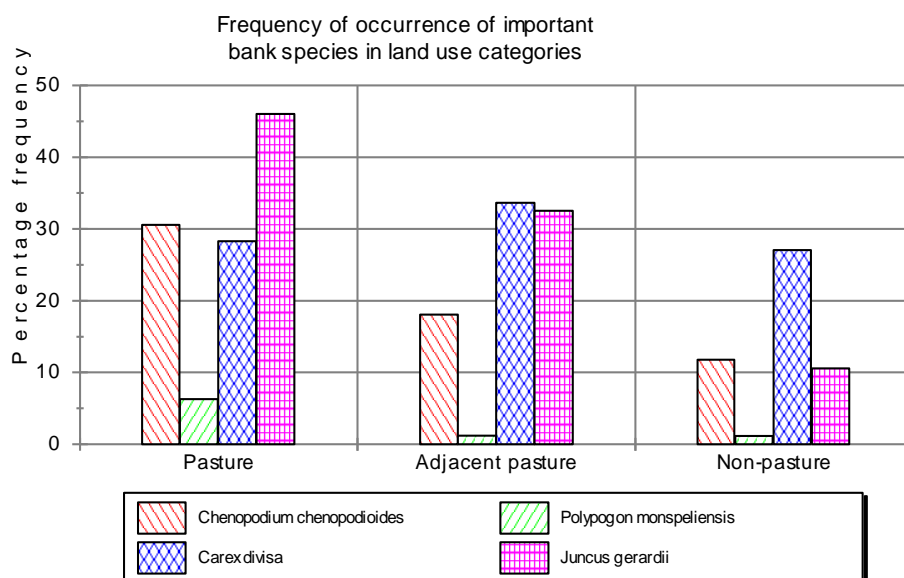
Philp (1982) for the period 1971-80 gave 21 tetrad records in the administrative county, almost all spanning the same part of the north Kent coast, and with concentrations at Grain and in south Sheppey. These records occur with greater continuity along the coast in Philp (2010), where 29 tetrad records are mapped. It is likely that the increase in records does not reflect a population increase, but rather relates to targeted recording. (The same is probably due of the coastal populations of *Oxybasis glauca* – see separate account.) Nevertheless, there were during the survey period (1991-2005) further records not mapped in Philp (2010), arising in the course of a 1995 survey by Phil Williams²⁰. of the ditches of the North Kent Marshes SSSIs, the first such comprehensive survey, and including the South Thames Estuary & Marshes SSSI, the Medway Estuary & Marshes SSSI and the Swale SSSI which together carry a drainage system of over 2,000 ditches. This survey covered *Oxybasis chenopodioides* records in 47 monads, which equate to 14 tetrads additional to the 29 tetrads given in Philp (2010).

¹⁹ Mentioned in the Botanical Exchange Club Curator's Report for 1863 (1864), reviewed in Journal of Botany (1864).

²⁰ Williams, P. (1996). *A survey of the ditch flora in the North Kent Marshes SSSIs, 1995*. English Nature Research reports no. 167.

There are occasional anomalies of Kent finds away from the Thames / Swale estuaries. Francis Rose recorded the species north west of Greatstone, in saltmarsh with *Bolboschoenus maritimus*, the site of the old Rother estuary. Both Philp (1982) and (2010) give an inland Romney Marsh record at TQ96T, which represents a population at Fairfield with records from 1962 (K.D. Rowlands, near the church, TQ966265) onwards. (The Fairfield site is 8 km inland, but the ditches are saline, which may be associated with the unusual thinness at this point of the layer of silty clay over peat, and with the possibility of the peat substrate holding salt from historic marine transgressions²¹.) However, these are very much exceptions to the Thames / Swale focus of this species.

Saltmarsh Goosefoot is annual of brackish mud where exposed in late summer at the edge of coastal dikes or ditches, or in depressions in grazing marshes. Germination appears to require emergence of the mud from winter inundation (the water levels normally falling progressively through summer, drying out some ditches and increasing their salinity), so that the mud with its seed-bank is exposed to light and air. This may not be until July, so that the plant does not always reach full vigour until autumn. In a wet summer its numbers may be considerably reduced. Cattle or sheep stocking helps keep the mud open, trampling down the edges of ditches, and (observed by Rosemary FitzGerald at Swale NNR in 1986) creating through hoof-prints ephemeral habitats in which small plants may appear. The effect of poached ditch margins is borne out by Williams (1995) through an assessment of the frequency of the species in North Kent ditches adjoining different land uses. Saltmarsh Goosefoot was found to be most frequent in ditches adjoining pasture on both sides; less frequent in ditches adjoining pasture on one side; and least frequent in ditches adjoining non-pasture uses (see table below, reproduced with kind permission of Phil Williams and Natural England, in which the plant is given under its former name of *Chenopodium chenopodioides*). Population fluctuations may relate to the extent of disturbance (not just by cattle, but, including the excavation of mud when ditches are cleaned), or to the timing of mud drying out and warming up.



The more brackish ditches in the grazing marshes can be well populated by *Chenopodium chenopodioides*. Williams (1995) found it occurring in over 40% of the ditches in the Neatscourt to Spitend Marshes, in nearly 25% of the ditches in the Swale NNR and Capel Fleet (and along the entire length of Capel Fleet). Associated species are given by FitzGerald (1994)²² and are mostly annuals reflecting the salinity of Saltmarsh Goosefoot's favoured habitats, including *Oxybasis rubra*, *Parapholis strigosa*, *Salicornia* spp. and *Suaeda maritima*;

²¹ Soil cross-section given in R.D. Green (1968). *Soils of Romney Marsh*, Agricultural research Council, Harpenden, pp. 32-33.

²² *Chenopodium chenopodioides*, in Scarce Plants in Britain (1994), ed. A. Stewart, D.A. Pearman and C.D. Preston, JNCC, Peterborough.

perennials include *Lysimachia maritima*, *Juncus gerardii* and *Spergularia* spp. At Shornmead fort (which Wolley Dod in 1893 supposed could have been Syme's original 1852 find location) it was found in October 1986 (Rosemary FitzGerald and Alan Leslie) in proximity to *Rumex palustris*, which also favours trampled ditch margins. At Grain, south of the A228 inside the sea wall of Colemouth Creek, it was in the same month recorded as associated with abundant *Polypogon monspeliensis*, which has similar habitat requirements, and was so plentiful that the course of the dried-up shallow fleets could be traced by its characteristic autumn red.

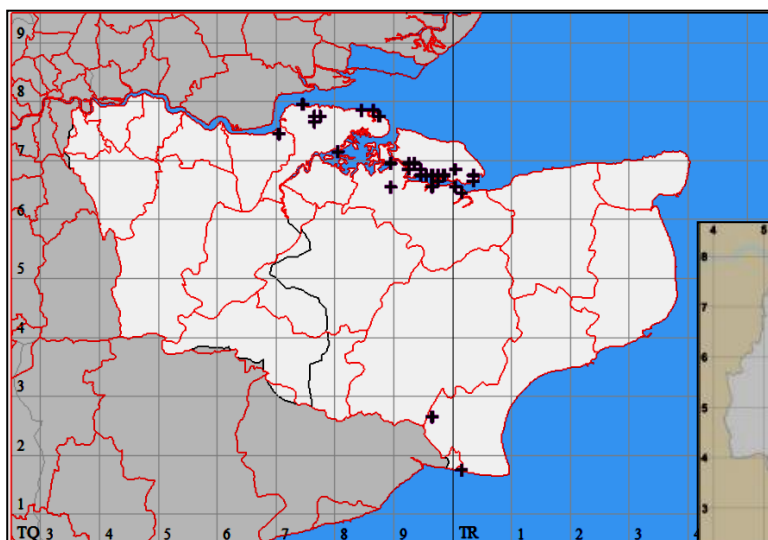
The frequent co-presence of *O. rubra* necessitates distinguishing its dwarf semi-prostrate forms from Saltmarsh Goosefoot. Typical Saltmarsh Goosefoot is more or less prostrate, red (at least on stem and leaf undersides) and with fleshy leaves, rounded-triangular and hardly (if at all) toothed. *O. rubra* is generally more erect, but often also red and with less fleshy leaves more toothed. The tepals of the lateral fruits in each cluster are in *O. chenopodioides* fused fully so as to hide the seed; in *O. rubra* they are fused half-way, so that the seed is visible.



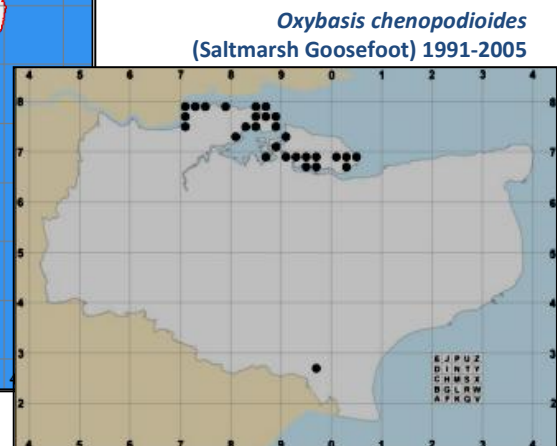
Fairfield. Photo by Owen Leyshon, September 2013

As this species is not uncommon in Kent, the distributional data maintained in this register will be at 1km square (monad) level. This will entail recording at a finer scale than the tetrads given in Philp (2010), from which the accompanying 1991-2005 distribution map is taken (with kind permission of the late Eric Philp and the Kent Field Club). Records for 2010-18 have picked up well the concentration around the Swale and have added a site at Dungeness (although Philp (1982) indicates that more occurrences

were known there in the past); but have not yet reached the same level of coverage for the Hoo peninsula. Weather conditions in 2012 were not conducive for this species, as summer and autumn rainfall kept water levels in ditches above where Saltmarsh Goosefoot would normally be growing.



Oxybasis chenopodioides
(Saltmarsh Goosefoot) 2010-18



Oxybasis chenopodioides
(Saltmarsh Goosefoot) 1991-2005

Oxybasis glauca (L.) S. Fuentes, Uotila & Borsch (*Chenopodium glaucum* L.) (Oak-leaved Goosefoot)

Draft account.

vc 15 and 16

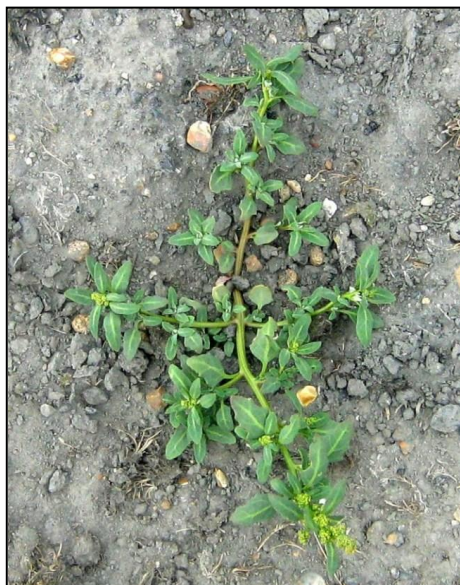
Rarity / scarcity status:

Oak-leaved Goosefoot is an archaeophyte, or ancient introduction, with scattered records in England and very few in Scotland, Wales and Ireland. It is nationally scarce and there has been a marked decline in the last fifty years as a result of which it is classed as **Vulnerable** both in England and in Great Britain as a whole, although there are data interpretation issues because of the difficulty in distinguishing casual occurrences from permanent populations. It is comparatively well represented in Kent, and so no rarity or scarcity status is given to it.

Account:

The first reference to *Oxybasis glauca* in Kent was by Milne and Gordon in their *Indigenous Botany* (1793), relating to their botanical investigations during 1790-93. The plant was then said to be not uncommon, especially in the neighbourhood of London, being found “plentifully about *Deptford* and *New-Cross*; in *Lee-Lane*; in the lanes leading from *Deptford* to *Brockley*”. It was thought to be extinct at these stations by the time of Hanbury and Marshall (1899), presumably as a result of development; but those authors did not know of it otherwise than near London, and considered it to be extremely rare.

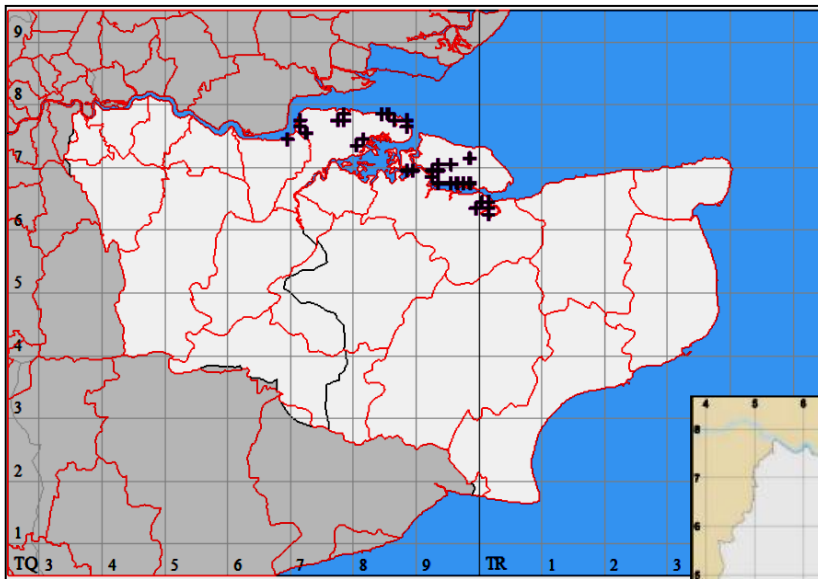
Manor Way, Halstow Marshes. Photo by Geoffrey Kitchener, 29 July 2010



It is an annual of manure heaps and nutrient-rich disturbed areas, often impermanent, and also known from damp coastal ground. It appears that the early records are of the former sort, and there was not then any awareness of it as a Kent coastal plant. Subsequent inland records included introduction with wool shoddy, when this was used as manure.

However, by the time of Philp (1982), it was only known in Kent as a plant of coastal waste ground at Yantlet, Conyer (two tetrads) and Lydd (two tetrads). In contrast, Philp (2010) identified 17 tetrad records in the administrative county, around farm buildings, along tracks and on disturbed soils. Some of these were inland and considered to be casuals from former introductions, such as with wool shoddy. Most were by the north Kent coast, and assessed as constituting stable and regular populations on and near the Thames, Medway and Swale. The major increase in records appears to contrast with its national status as a species in decline. However, the increase is not necessarily representative of growing populations, but may rather represent more effective targeting of its coastal habitats. Nevertheless, recording for 2010-18 (23 tetrads) indicates that even Philp (2010) understates the amount of this species which can be found, especially around the Swale. Some of its North Kent occurrences may not be regular, as requiring timely exposure of mud at the margins of brackish coastal waterbodies, where there have been enormous quantities on occasion, but not every year may be suitable.

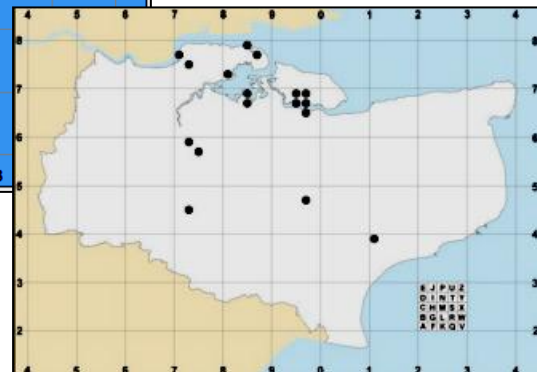
As this species is not uncommon in Kent, the distributional data maintained in this register will be at 1km square (monad) level. This will entail recording at a finer scale than the tetrads given in Philp (2010), from



which the accompanying 1991-2005 distribution map is taken (with kind permission of the late Eric Philp and the Kent Field Club).

Oxybasis glauca (Oak-leaved Goosefoot) 2010-18

Oxybasis glauca (Oak-leaved Goosefoot) 1991-2005



Luddenham Court. Photos by Liam Rooney, 26 July 2012



The 2010-18 records reported fall within the north Kent coastal distribution pattern, but point to Sheppey being more populated than was previously assumed. They include presence on cindery or gravelly rabbit-disturbed tracks, subject to some compaction; and in a manured area around a cattle feeding station on the grazing marshes; and on drying mud at the margins of brackish dykes and waterbodies. Some of the more inland sites on Hoo and Sheppey were roadsides.

Chetney Marshes. Photo by Geoffrey Kitchener, 27 August 2013

