

Kent Rare Plant Register

Draft species accounts

P (first part: Pa to Polyga)



Kent rare plant register

This section of the register covers:

In Part Pa – Polyga

Parapholis incurva
Parentucellia viscosa
Pedicularis sylvatica
Persicaria mitis
Persicaria minor
Peucedanum officinale
Phelipanche purpurea
Phleum arenarium
Pilosella peleteriana
Plantago media
Platanthera bifolia
Platanthera chlorantha
Poa bulbosa
Poa infirma
Polycarpon tetraphyllum
Polygala amarella
Polygala serpyllifolia

In Part Polygo – Py

Polygonum oxyspermum subsp. *raii*
Polygonum rurivagum
Polypodium cambricum
Polypogon monspeliensis
Potamogeton acutifolius
Potamogeton coloratus
Potamogeton friesii
Potamogeton obtusifolius
Potamogeton pusillus
Potentilla anglica
Potentilla argentea
Potentilla erecta
Prunus cerasus
Puccinellia fasciculata
Puccinellia rupestris
Pyrola rotundifolia
Pyrus pyraeaster

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

The register accounts give priority to data from 2010 onwards, but some historic data are also included (however, generally not specific sites with no post-1970 records) so as to indicate trends and where the plant may yet be discovered or rediscovered. Distribution maps for records from 2010 onwards show vice counties 15 and 16 with the mutual boundary given by a black line. See the Kent webpage of the BSBI website at <https://bsbi.org/kent> for the full Kent rare plant register list, the introduction to the register and a list of 'probably extinct' Kent plants.

Abbreviations used in the text:

Recorders' initials:

AL Alex Lockton
 AW Tony Witts
 CO Colin Osborne
 DC Danny Chesterman
 DM Daphne Mills
 EGP Eric Philp
 FB Fred Booth
 GK Geoffrey Kitchener
 GTh G. Thornton
 HF H. Fuller
 HS Heather Silk
 HW Hector Wilks
 JP Joyce Pitt
 JR Jon Riley

JPtt J. Platts
 JRP John Palmer
 LR Liam Rooney
 ME Mike Easterbrook
 MPh Mike Phillips
 MS Mark Spencer
 PH Peter Heathcote
 RF Rosemary FitzGerald
 RM Richard Moyse

Other abbreviations:

BM Natural History Museum
 herbarium
 BSBI Botanical Society for Britain &
 Ireland (and predecessor)
 CGE University of Cambridge
 herbarium
 KBRG Kent Botanical Recording Group
 KFC Kent Field Club
 MNE Maidstone Museum herbarium
 MOD Ministry of Defence
 WFS Wild Flower Society

Parapholis incurva (L.) C.E. Hubb. (Curved Hard-grass)

Draft account: records needed for Sheppey, Cliffe, Medway estuary

vc15 and 16

Rarity / scarcity status

Parapholis incurva is a coastal plant of saline conditions, and also found by inland roads affected by de-icing salt, with its main British distribution along the south and east coasts of England and the south coast of Wales. It is a nationally **scarce** plant whose conservation risk status in both England and Great Britain as a whole is one of 'Least Concern'. It is reasonably well represented in Kent, particularly along the north coast from Seasalter to Thanet, and is neither rare nor scarce in the county.

From Seasalter. Photo by Liam Rooney, 22 March 2017

Account

Early records of *Parapholis* (given under *Rotbollia* or *Lepturus*) are not easy to interpret: the separation into which we now call *Parapholis strigosa* (Hard-grass) and *Parapholis incurva* was not well understood. Hanbury and Marshall (1899) identify the first published Kent record of a *Parapholis* species as being by Thomas Johnson in his *Descriptio Itineris* (1632), when in the course of botanising on the shore and steep cliffs near the (then) fort at Margate he recorded 'Gramen parvum marinum spica loliacea'. This, in the edition edited by J.S.L. Gilmour, in which he had the assistance of Francis Rose in identifying current plant names, was taken to be *Agropyron pungens* (Pers.) Roem. & Schult., or possibly the hybrid with *A. junceiforme* (*A. x acutum* auct.). These taxa have since been called *Elymus athericus* (Sea Couch) and *Elymus junceiformis* (Sand Couch), with their hybrid, *Elymus x obtusiusculus*. The assumption that a couch grass was involved has not been followed elsewhere.



Seasalter. Photo by Liam Rooney, 22 May 2015

Hanbury and Marshall (1899) doubted that Kent records of *Parapholis* generally were anything other than what we now call *Parapholis strigosa*. They hesitated a little over G.E. Smith's description (in his *Catalogue of rare or remarkable phaenogamous plants, collected in South Kent, 1829*) of Hard Grass growing 'Upon the shore, and in dry salt marshes at Dimchurch: upon the shore, Folkestone West', where he saw plants 'with an elongated straight stem and spike' and others 'with a very different habit, and besides its obvious, pale green color...remarkable and deeply striated'. Whilst he was clearly seeing *P. strigosa* and perhaps *P. incurva* as well, Smith felt he did not have enough experience to say if they were separate species. Indeed, in his 1830-33 manuscript notes to his own copy of the *Catalogue*, from observations at Shoreham, Sussex, and Freshwater, Isle of Wight, he took the view that upright growth was a consequence of crowding, and the *incurva* habit ('resembling a small reversed birds' nest') was associated with growing detached from other plants.

Returning to Johnson's Margate find, David Pearman (*The Discovery of the Native Flora of Britain and Ireland*, 2017) took this to be *P. strigosa*, although John Edgington¹ had considered it to be *Parapholis incurva*. Fortunately we have more evidence of what Johnson found, as he wrote it up in his 1633 edition of Gerard's *Herball*. He says 'The last yeare at Margate [this would be 1632] in the Isle of Tenet, neere to the seaside and by the chalky cliffe I observed a pretty little grasse which from a small white fibrous roote sent up a number of stalke of an unequall height; for the longest, which were those that lay partly spred upon the ground, were some handful high, the others that grew straight up were not so much; and of this, one inch and a half was taken up by the spike or eare, which was not thicker than the rest of the stalke, and seemed nothing else but a plaine smooth stalke, unless you looked upon it earnestly, and then you might perceive it to be like Darnell grasse wherefore in the journall that I wrote of this Simpling voyage [the *Descriptio Itineris*], I called it *pag* .3. *Gramen parvum marinum spica Loliacea*'.

There can be no doubt from this description that he saw *Parapholis* (in which the flowers appear as though hidden in the culm) and that Gilmour and Rose were wrong in supposing that it was a couch grass. As to whether it was *P. strigosa* or *P. incurva*, Johnson refers to the longest stalks as partly spread on the ground (which they do in *P. incurva* before spreading upwards and incurving) and other shorter stalks as growing straight up (which sounds like *P. strigosa*, but the central stalks of *P. incurva* can do this as well, especially when young).

For further evidence of identity we need to consider also habitat, Johnson's find being near to the shore and by the chalky cliff. There is no suggestion of salt marsh (the upper parts of which would be suitable for *P. strigosa*), nor does the present coastline here (the former fort promontory near the harbour) render it likely. The presence of cliffs points more to *P. incurva*, which prefers drier ground, often within reach of sea spray. In habitat terms, *P. incurva* appears more likely and, indeed, was recorded for the tetrad including Johnson's site, in Philp (1982). More recently (2019) it has been recorded for what, making allowances for reclamation and sea defence works since the 17th century, must be virtually the exact spot of Johnson's find, insofar as it can be reconstituted – remarkable persistence on the part of an annual. *Parapholis strigosa* has also been recorded further west and although both species are present along the continuation of the north Kent coast westwards,



P. strigosa was probably the more common species in Johnson's day beyond Seasalter, when one would have left behind the chalk cliffs and, without the benefit of sea defences, have come to the flat lands with the residual Wantsum channel cutting off the Isle of Thanet. But as regards Johnson's site at the chalk coastline by Margate harbour, *Parapholis incurva* is the more likely species to have encountered, then and now. If this accepted, the Kent record is also the first British record.

Margate, Johnson's 1632 location. Photo by Sarah Kitchener, 16 July 2019

¹ Edgington, J.A. (2010). First British record of *Nardus stricta*. *Watsonia* 28: 123-127. David Pearman (pers. comm.) has since acknowledged that there is a case for Johnson's find indeed being *Parapholis incurva*.

North of Graveney Marshes, habitat. Photo by Liam Rooney,
3 August 2011



Francis Rose knew of *Parapholis incurva* on the north Kent coast at Grain north and south beaches (1945, 1955); near Upnor (1951 and 1960) Shellness (Sheppey, 1956); west of Minnis Bay (1961); and Westgate (1946); also at Oare Creek and at Cuxton near the tidal Medway. On the east coast, it was found at Shellness (Sandwich, 1952) and by J.P.M. Brennan in 1937 at the foot of the chalk cliffs between Folkestone and Dover. There were a couple more finds in a habitat much like the last – on a shingly bank behind the cliff base sea-wall at Lydden Spout (1953-55) and similarly below Abbot's Cliff (1960). Some of these locations were still extant for Philp (1982), in which 24 tetrads were recorded with a distribution from the tidal Medway, around Sheppey, along the north coast, around Thanet, between Dover and Folkestone, and an outlier at Dungeness. Its habitat was given as on bare ground along sea-walls and on cliffs in coastal areas, often growing in a narrow band along an area that will be reached by the salt spray during rough weather. The position was very broadly similar in Philp (2010), although with 21 tetrads, including additional records in the Cliffe and Dungeness areas, but less on Sheppey, the north coast through to Thanet and the Dover/Folkestone area.



Parapholis incurva (Curved Hard-grass)
2010-20

Parapholis incurva (Curved Hard-grass)
1991-2005



The distributional data maintained in this register for *Parapholis incurva* will be at 1 km square (monad) level, which entails recording at a finer scale than the tetrads given in Philp (2010), from which the accompanying 1991-2005 distribution map is taken (with kind permission of the late Eric Philp and the Kent Field Club). The 2010-20 records cover 23 tetrads (equivalent to 29 monads), slightly exceeding the 1991-2005 total, but with a somewhat different distribution. The likelihood is that the difference is a product of the manner of survey, given that habitats are unlikely to have changed enough. The north Kent coast from Seasalter eastwards to Thanet appears well recorded; Sheppey and its environs lack records now, as also the Cliffe area.

There is, however, an interesting development mainly in West Kent, where the grass is now increasingly encountered away from the coastal spray zone and on inland roads affected by de-icing salt. There are

roadside records by the A20 near Farningham; by the A226 south of Northfleet; on the A228 verge near Holborough (and again near High Halstow); by the B2001, Grain Road; and in East Kent, by the A2990, Whitstable. Older roadside records not included here are in the centre reservation of the A21 Tonbridge bypass from 1984 to 1994, when it was lost by roadworks substituting a surfaced centre with crash barriers; and by the A229 at Blue Bell Hill (East Kent) in 2009. While a number of salt-tolerant grass species have made the transition from coastal saltmarshes to their artificial inland linear equivalent, *Parapholis incurva* does not seem to have done so in Kent as successfully as some others, such as *Parapholis strigosa* (Hard-grass), *Puccinellia* spp. (Saltmarsh-grasses) and *Catapodium marinum* (Sea Fern-grass). The reason for this is not evident, except that the rarer the grass in its coastal habitats, presumably the fewer are the opportunities to spread, if hitching a lift on vehicle tyres is the means of doing so. It has been noted in some coastal localities on shingle stabilised with sandy soil, to which vehicles have access.

It is an annual, subject to population fluctuations from year to year. Accompanying species noted in Kent include *Catapodium marinum*, *Parapholis strigosa* and *Spergularia marina* (Lesser Sea-spurrey). Because of the unusual flower structure, the only other species (except for rare aliens) with which it might be confused is *Parapholis strigosa*. However, *Parapholis incurva* is generally shorter (rarely over 10cm high) with strongly curved culms and with shorter anthers. Anther length is 0.5-0.81(1.1)mm in *P. incurva*; (1.5)2.2-3.1(3.5)mm in *P. strigosa*. Anther length is recommended for determination, as inland plants are likely to adopt a slender, perfectly upright habit similar to that of *P. strigosa*²; the author has replicated this growth habit by transplanting Kent material into garden soil. However, it is not so apparent that *P. strigosa* may be affected by growth conditions so as to mimic the short, incurved habit of *P. incurva*; so anther length is more relevant to confirmation of the identity of *P. strigosa*. There may have been some under-recording of *P. incurva* due to reluctance to record outside the flowering season (early June to mid-July), when anthers are present.

Folkestone Warren, flower spike with anthers exserted.
Photo by David Steere, 9 June 2018



² Cope, T. & Gray, A. (2009). *Grasses of the British Isles*. Botanical Society of the British Isles, London.

Parentucellia viscosa (L.) Caruel (Yellow Bartsia)

Draft account

vc15 and 16

Rarity / scarcity status

Yellow Bartsia as a native plant is widespread in the British Isles, found especially in damp, sandy, open grassland in south west England and Dorset/Hampshire. Its northerly occurrences are often attributable to introduction with grass seed and it is in general sufficiently frequent that its conservation risk assessment is of 'Least Concern', both in England and Great Britain as a whole. It is, however, currently present in only one site in West Kent, where it was introduced, and is **scarce** in the rest of the county.

Ashford. Photo by Daphne Mills, 3 June 2007

Account

Parentucellia viscosa was not recognized as a Kent plant by Hanbury and Marshall (1899), and its first occurrences in West and East Kent are surprisingly late, for such an obvious plant. That for West Kent was a note by Frederick Hanbury in the *Journal of Botany* (1927) 65: 319: 'A few days ago the Honourable Mr. Justice G.J. Talbot sent me a specimen of the above gathered in a rough pasture near Cowden. This I believe to be the first record of the occurrence of this species in Kent. There were many other specimens of the plant in the same field. The finder would prefer not to give any more detailed information as to its exact locality'. Presumably, the plants were on Talbot's Falconhurst estate in the Cowden Pound/Markbeech area and he was unwilling to encourage botanical trespassers. It would have been



on either Wadhurst Clay or (more likely) the Ashdown Formation – it has been found in Sussex on the latter. The first East Kent find was by Francis Rose at Sandwich Bay in 1960, where the fixed-dune grassland in dryish dune-slacks is a well-known habitat in other parts of the British Isles; it has persisted in the Sandwich area since.

Ashford. Photo by Daphne Mills, 3 June 2007

There have been relatively few records subsequently, mostly at Sandwich Bay, but also at inland sandy locations especially on the Folkestone Formation. There is a record near Westerham (1952) which may have the same geology but is without detail and so cannot be put into context. Philp (1982) gave it only at Joyden's Wood (presumably on sand/gravel) and Sandwich Bay; Philp (2010) gave it at Sandwich Bay, near Ashford, Lenham, and probably introduced at Ditton Quarry. There has been continuity

for these last locations despite *Parentucellia viscosa* seeming a potentially ephemeral plant because it is an annual, reliant on open ground or disturbance for re-establishment each year, and so at risk from the sward closing up with rank vegetation. This risk is probably less on sandy soils, because of stress on competitive plants generated by the soils' lesser nutrient content and free-draining nature. Recent records have also included a new site (2014) on the Folkestone Formation at Hurst Wood, Charing, which appears to be associated with the construction of the High Speed 1 rail link. It is possible that the means of introduction was grass seed sowing; the seed of *Parentucellia viscosa* is extremely small and may well escape any seed cleansing process. Introduction of some sort must also account for a casual record at Bluewater shopping centre in 2008; this is in a chalk pit which normally would seem inappropriate for the species. A site found in 2018 related to a brackish lake and embankment created on the Hoo peninsula (the lake between 2011 and 2013; the bank a little later) for commercial development: recent habitat with open ground, but especially favourable for *Parentucellia viscosa* in the lake draw-down zone, where enormous branched plants were growing up to 90cm high (the norm is up to 50cm).



Ashford, habitat. Photo by Daphne Mills, 3 June 2007

Yellow Bartsia is hemiparasitic and may germinate without host; it parasitises other plants, but can also derive energy from photosynthesis and so is not as dependent upon parasitism as some other members of the family Orobanchaceae such as broomrapes. It is compatible with a wide range of host plants, in particular grasses and legumes: Japanese studies³ note haustorial connections with *Lolium perenne* (Perennial Rye-grass), *Picris hieracioides* (Hawkweed Oxtongue), *Rumex acetosa* (Common Sorrel) *Trifolium dubium* (Lesser Trefoil), *Trifolium pratense* (Red Clover) and *Trifolium repens* (White Clover), but host selectivity may vary across the geographic range of *Parentucellia viscosa*. None of our recent records includes any observations on possible host plants (species growing within 15cm).

³ Suetsugu, K., Takeuchi, Y., Futai, K. & Kato, M. (2012). Host selectivity, haustorial anatomy and impact of the invasive parasite *Parentucellia viscosa* on floodplain vegetative communities in Japan. *Botanical Journal of the Linnean Society* **170**: 69-78.

Site	Grid reference	Site status	Last record date	Recorder	Comments
Eltham, Pippenhall Meadows (metropolitan vc16)	TQ4374		(1) 8 July 2006 (2) 2002 (3) 29 July 1990	(1) MS (LNHS meeting) (2) MS & JR (3) RMB	(1) Still abundant and in one field dominant, but overgrazed (by horses). (2) Several thousand plants. (3) TQ 438 743, c.30 dry fruiting plants at north margin of south field.
Joyden's Wood	TQ47V		(1) 31 August 1981 (2) After 1970, before 1981	(1) JRP (2) Philp (1982)	(1) Open dampish grassy place not far from shaded ponds c. TQ 499 713. (2) Heathy area in Joyden's Wood.
Blewater	TQ5773		12 July 2008	FB & DM	TQ 579 739, survey included fenced-off area with several plants by path leading up steep bank on north side of shopping centre site; thought to have become overgrown since.
Ditton quarry	TQ75D		(1) 4 July 2012 (2) 16 June 2004 (3) 1991-2000	(1) & (2) ME (3) EGP in Philp (2010)	(1) re-found (ME first found here what was the origin of Eric Philp providing a tetrad record in the 2nd Kent Atlas), 1 spike in quarry at TQ 715 575. (2) TQ 715 575. (3) Landscaped former ragstone quarry, almost certainly introduced.
North Street, Hoo	TQ8173		(1) 25 June 2018 (2) 22 June 2018	(1) & (2) GK	(1) From TQ 81529 73459 to TQ 81647 73473, plentiful along northern side of brackish lake, in upper draw-down zone, most on still damp ground, some dried out higher up. Well grown plants, up to 90cm high and branched. This lake appears to have been created between 2011 and 2013. (2) TQ 8144 7344, many plants (25 June 2018 - over 125) along c.15m of semi-bare (unsown) embankment, not long since created, on top and south-facing side. Area has been cleared and is marketed as development site.
Lenham, south east of Sandway	TQ8950		(1) 2 July 2019 (2) 26 July 2011 (3) 13 July 2008 (4) After 1990, before 2006	(1) DC (2) SB (3) RM (4) Philp (2010)	(1) TQ 89537 50661. (2) Two plants on sandy bank above a pond, TQ 89538 50668 and TQ 89529 50676. (3) Chilston pines, TQ 897 507. (4) Given as TQ85V, sandy heathland, and assumed to be this monad.
Hurst Wood, Charing	TQ9348		(1) 7 June 2015 (2) 29 August 2014 (3) 4 July 2007	(1) KFC meeting, comm. JP (2) AG, JP & MPh (3) DM	(1) Colony in damp young alder scrub on slope, where seen in 2014, TQ 9307 4841. (2) TQ9307 4841, 24 plants in small glade of Hurst Wood, grassy / scrubby bank close to HS1 railway line, on Folkestone Sands. (3) Newlands Road pit, TQ 9370 4859 (also noted by JP as present, 2009).
Eureka Park, Ashford	TR04C		(1) 7 June 2018 (2) 24 June 2015 (3) 8 June 2007 (4) 3 June 2007	(1) SB (2) FB & DM (3) EGP (4) DM	(1) 100+ flowering plants on sand at TRv0059 4514, close to a car park just off Lower Pemberton. This colony just a hundred yards or

			(5) 7 August 2005	(5) HS	<p>so from 2013 record.</p> <p>(2) Eureka Park, 36+ plants at TR 00806 45084, and 30+ plants at TR 00735 45074. As regards this last grid reference, there is a small ditch that runs in between the main site and the A259 footway. The plants were on the edge of the ditch on the main site side. This (broadly) is the site found by HS in 2005.</p> <p>(2) Given as TR04C, assumed to be TR0045.</p> <p>(3) TR 0073 4504.</p> <p>(4) At least 700 plants in light grassland on sand, part of an area scheduled for business development. The main grouping was generally within an area of 35x35m centred on TR 0082.4507. This colony is unlikely to survive redevelopment, although some plants may continue on the road verge. <i>Filago germanica</i> and <i>Logfia minima</i> were also present.</p>
Sandwich Bay	TR35N, includes TR3557		<p>(1) 1 August 2011</p> <p>(2) 1991-1998</p> <p>(3) After 1970, before 1981</p>	<p>(1) SB</p> <p>(2) EGP</p> <p>(3) Philp (1982)</p>	<p>(1) (a) One plant in dune grassland at TR 35858 57517.</p> <p>(b) Another in sandy dune grassland at TR 35867 57522.</p> <p>(2) TR35N</p> <p>(3) TR35N, damp grazing meadow.</p>
Sandwich Bay	TR35T, includes TR3656, TR3657,		<p>(1) 19 June 2020</p> <p>(2) 1 August 2011</p>	(1) & (2) SB	<p>(1) Enlarged bird scrape.</p> <p>(2) (a) Estimated 100 plants on banks of bird scrape TR 36141 56993, area managed by Sandwich Bay Bird Observatory.</p> <p>(b) Estimated 50 plants on banks of bird scrape TR 36099 57062.</p>



Hoo peninsula, habitat damp ground by brackish lake. Photo by Geoffrey Kitchener, 25 June 2018

Pedicularis sylvatica L. (Lousewort)

Draft account. Habitat photo needed.

vc15 and 16

Rarity / scarcity status

Lousewort is widespread in the British Isles, on damp heaths and moorlands, but is largely absent in Eastern England and is in decline in the south as well as regards its residual eastern presence. Although its threat status for conservation purposes is treated as of 'Little Concern' in Great Britain as a whole, a recent assessment for England has classified it as **Vulnerable** to the risk of extinction. This is on account of its area of occupancy in England being taken to have declined by 39%, and its extent of occurrence by 30%, in comparing



records for the periods 1930-69 and 1987-99. In Kent, the number of tetrad records for the species has declined by 58% between 1971-80 and 1991-2005. So, while the species is still neither rare nor scarce in the county, its rate of decline is concerning.

Hothfield. Photo by Liam Rooney, 19 April 2011

Account

The first published Kent record, according to Hanbury and Marshall (1899) was by Thomas Johnson in his *Iter Plantarum* (1629). It was listed amongst a number of wetland plants encountered in marshes between Dartford Salt Marsh and Erith. Francis Rose (in the 1972 edition of Johnson's book) considered that Johnson did not distinguish between *Pedicularis sylvatica* (Lousewort) and *Pedicularis palustris* (Marsh Lousewort), and that the likely habitat here favoured the latter species instead. Both species can, however, be found in similar habitats; but *P. palustris* (now extinct in Kent) is more tolerant of a base-rich substrate, and the River

Darent, which crossed Johnson's route, is influenced by the chalk in its passage through the North Downs. So it is an open question as to whether this is the first record. Otherwise, the first is probably by Edward Jacob who in his *Plantae Favershamienses* (1777) gave both species. *P. palustris* on the coastal marshes round the Oare powder mills, and *P. sylvatica* as common in Jud's Wood (which is acid ground on Thanet Sands).

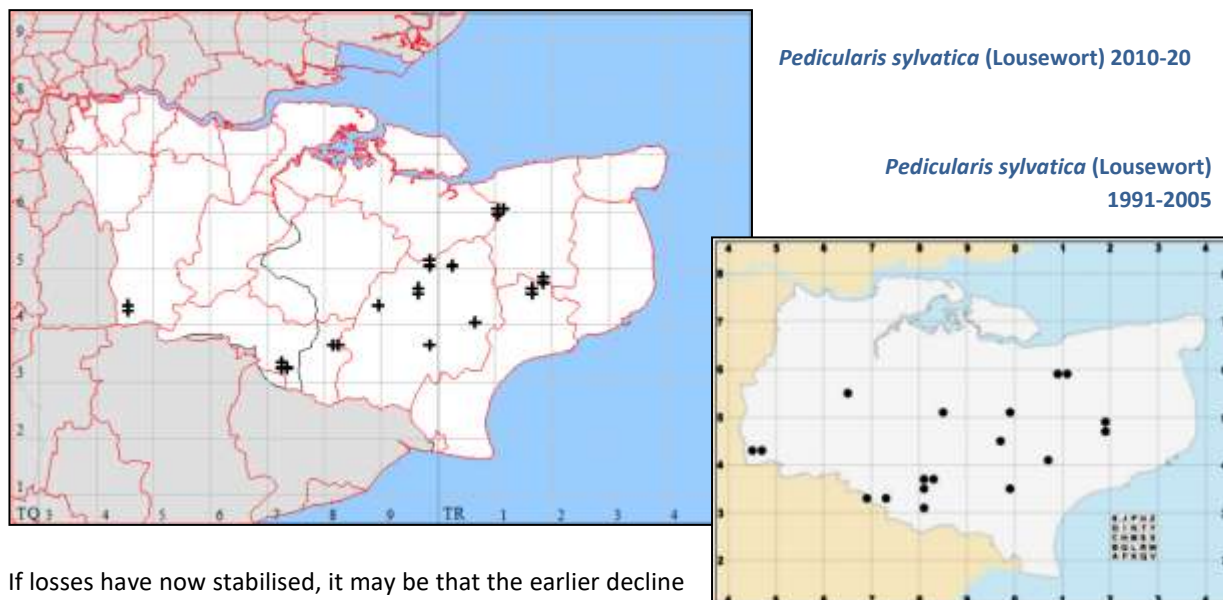
Hothfield, with peloric flower. Photo by Liam Rooney, 17 May 2011

Hanbury and Marshall (1899) considered Lousewort (they called it Dwarf Red-rattle) to be not very common in the county, a plant of heaths, open copses and damp hill-pastures. Many of the records cited by them across the county are clearly on acid ground, such as Keston Common, Chartham Hatch, West Blean Wood, Tunbridge Wells Common, Fawke Common, Hothfield Heath. Where geological conditions are not obviously acid, it will be a consequence of superficial deposits, such as gravels on top of the downs above



Charing, where Lousewort was found by Marshall. A similar picture was given by Francis Rose, considering the position 1940-60: he noted it as a native of dry and wet acid heaths, pastures and heathy woodland rides on acid ill-drained sandy or loamy soils; locally frequent in the High Weald, in several places on the Greensand (Folkestone Sand and chert-covered plateau of the Hythe Beds) and on the Pliocene loams, sands and gravels of the chalk plateau, also on the Tertiary sands and gravels of north Kent; widespread, but not a common plant. This breadth of occurrence still supported records in Philp (1982), providing a total of 43 tetrads, of which a fair quantity lay in the Weald. It was then said to be a plant of damp heaths, bogs, marshes and damp woodland. Philp (2010) commented that Lousewort appeared to have become less common in recent years, a conservative statement in view of the substantial drop to 18 tetrads. No reason was assigned, but habitat loss may well have been a function of drainage schemes, 'improvement' of acid grassland and heathland losses generally.

The distributional data maintained in this register for *Pedicularis sylvatica* will be at 1 km square (monad) level, which entails recording at a finer scale than the tetrads given in Philp (2010), from which the accompanying 1991-2005 distribution map is taken (with kind permission of the late Eric Philp and the Kent Field Club). The 2010-19 records cover 17 tetrads (equivalent to 22 monads); and so more or less holding steady at 1991-2005 levels, without the previous decline having continued. The distribution shown is essentially similar.



If losses have now stabilised, it may be that the earlier decline is related to loss of heathland or unimproved acid grassland, and that heathland restoration projects, especially in the current century (see account for *Calluna vulgaris*) have stopped or reversed the trend. Neither distribution map points to presence or losses in the north west of vice county 16; but it has been known at Crofton Woods near the site of the old fever hospital (TQ4466, in 1974); at Dartford Heath (probably TQ 518 729, in 1987); and at Hayes Common (TQ410 651, in 1987, but perhaps affected by road widening since). It now appears to be absent from the north west, and very scarce in West Kent in any event.

Pedicularis sylvatica is a biennial or perennial hemiparasite, capable of taking up nutrients via the roots of other plants, but able to photosynthesise and so not wholly reliant upon their presence. It grows in damp ground and has a high rate of transpiration, both day and night, the function of the leaf stomata being to maximize water loss (rather than the usual minimisation) and facilitate the uptake of water and soluble nutrients from host plants⁴. As regards host plants, experiments in Belgium⁵ have shown that *Pedicularis*

⁴ Press, M.C., Graves, J.D. & Stewart, G.R. (1988). Transpiration and carbon acquisition in root hemiparasitic angiosperms. *Journal of Experimental Botany* **39**: 1009-1014.

sylvatica has a significant effect on the performance of *Erica tetralix* (Cross-leaved Heath), Juncaceae spp. (rushes, etc.) and to a lesser degree *Calluna vulgaris* (Heather). Incidentally, the two heath species are known to have mycorrhizal associations, and this may complicate the impact of *Pedicularis sylvatica* if it shares mycorrhizae as an alternative means of nutrient uptake.

Our 2010-20 records include reference to associated plants being *Calluna vulgaris* and other heath species and, on a damp ride at Bedgebury, *Lysimachia minima* (Chaffweed) and *Linum radiola* (Allseed). Woodland rides or paths are the habitat most frequently noted; in more open terrain, it has been seen in grassy fields and at the margin of bogs or mires.

There are two British subspecies, but subsp. *hibernica* has a western distribution and the Kent plant is subsp. *sylvatica*. The only other native *Pedicularis* species is *P. palustris*, a larger plant, often bushy and bronzed, with darker flowers bearing two lateral pairs of teeth (one pair in *P. sylvatica*), and capsules longer than the calyx (shorter or equal in *P. sylvatica*): but it has not been seen in Kent since 1954.

⁵ Demey, A. et al. (2015). The effects of hemiparasitic plant removal on community structure and seedling establishment in semi-natural grasslands. *Journal of Vegetation Science* **26**: 409-420

Persicaria minor (Huds.) Opiz (Small Water-pepper)

Draft account: current records and photographs needed.

vc15 and 16, but in neither recently

Rarity / scarcity status

Persicaria minor has a scattered distribution across the British Isles in wet places subject to seasonal water fluctuation, but is not common. It has been considered as **Vulnerable** to the risk of extinction in Great Britain as a whole, but a more recent assessment for England treats the threat level as being one of 'Least Concern'. In Kent, it is very **rare** and, indeed, has not been seen this century.

Account

The first Kent record for Small Water-pepper was at Blackheath. Hanbury and Marshall (1899) refer to a manuscript note on a drawing of this species as from the 'Side of Kent road, Blackheath, 1802'. The drawing was engraved by James Sowerby for James Smith's *English Botany* (1802, vol. 15), the text of which says 'In Tothill-fields, Westminster, as well as about Blackheath, we find it in the greatest abundance'. Daniel Cooper mentions it in *Flora Metropolitana* (1836), but this is only a repetition of the *English Botany* record.

Blackheath, from *English Botany*, 1802.

Thomas Forster gave it as 'In moist and stony places' in his *Flora Tonbrigensis* (1816), but Hanbury and Marshall considered that this most likely referred to stations in Sussex. They had, however, received a record from Seal Chart (1874) from F.C.S. Roper; but did not include in the *Flora of Kent* a record by John Stuart Mill (1863) from Willesborough Lees.

Later records are also scanty. There is a specimen from Haysden, Tonbridge, by the Medway, found by G.E. Shaw in 1938. Francis Rose assessed the species as extremely rare on wet open ground, especially on gravel soils, by ditches and ponds. He found it at Chislehurst Common (still there in 1965) and at a freshwater pool in shingle, Halfway Bush, Dungeness, both records in the 1940s and apparently detected amongst his specimens deposited at Maidstone Museum.⁶ Philp (1982) gave a perhaps surprising number of records in view of the paucity before and since: ditches and wet fields in five tetrads, viz. Sundridge TQ45W (but printed incorrectly as TQ44W); Hildenborough TQ54U; Aylesford TQ75E, Sandhurst TQ82C; and Conyer



⁶ Rose, F. (1960) Botanical Records for Kent, 1955-58 – Vascular plants. *Kent Field Club Transactions* **1**(3): 56-65. This report gives the date of both finds as 1945, but it appears as though 1946 was intended.

TQ96M. By the time of the Philp (2010) survey of 1991-2005, all that could be found were a few plants alongside a ditch near Sandhurst, TQ82D. It has not been found since.

The Sandhurst site was selected for resurvey in 2012 as part of the BSBI's Threatened Plants Project, but water was too high in the relevant dyke for there to be hope of re-finding. Indeed, that summer was the wettest for a century and none of eastern England sites resurveyed yielded any plants. This pointed to the dependency of the species on seasonally variable water levels, and the potential for its return under appropriate conditions, given its long-lived seed-bank.⁷

The general paucity of Kent records is a reflection of its rarity; but it is also a species not easily detected since *Persicaria hydropiper* (Water-pepper) is common and grows in similar habitats. It should be sought, according to Owen Mountford⁸, in open communities developing on nutrient-rich mud as the water level of ponds and ditches falls in the latter part of summer, with plants such as *Bidens* spp. (Bur-marigolds), *Chenopodium* spp. (Goosefoots) and *Rumex* spp. (Docks). This low-competition community favours late-germinating plants with rapid growth, and the annual *Persicaria minor* shares these characteristics.

It is a small, elegant plant, a little sprawling, and bearing narrow leaves and slender, erect flower spikes, the flowers being reddish-pink (pale pink to greenish-white with *P. hydropiper*). The erect, rather than nodding spike, may be the first clue as to whether a plant found is not *P. hydropiper*, and It may readily be told apart from the latter by the absence of a peppery taste to the leaves, but this is a test where the first taste of *P. hydropiper* somewhat obscures any subsequent testing! Further points of separation of the two species involve examination of the perianth (many raised glands on the surface of *P. hydropiper*; none on the surface of *P. minor*); or of the nut (dull in *P. hydropiper*; somewhat shiny in *P. minor*). There is also another species similar to *P. minor*, and that is *Persicaria mitis* (= *P. dubia*, Tasteless Water-pepper), at one time considered probably extinct in Kent, but re-found in 2020. While it is similarly an elegant plant with pink flowers, the spike is somewhat nodding, the shiny nut is longer than 2.5 mm (mean 3.0mm), the perianths are mostly divided into four (rather than five) segments and bear a few flat glands, and its leaves are proportionately shorter/wider than those of *Persicaria minor*.

⁷ Walker, K.A., Stroh, P.A. & Ellis, R.W. (2017). *Threatened Plants of Britain and Ireland*. Botanical Society of Britain & Ireland, Bristol.

⁸ Mountford, J.O. (1994). *Persicaria minor* (Hudson) Opiz. In (eds.) Stewart, A., Pearman, D.A. & Preston, C.D., *Scarce Plants in Britain*, JNCC, Peterborough.

Persicaria mitis (Schrank) Assenov (Tasteless Water-pepper)

Draft: habitat photos needed and in-situ plant portraits

vc 15, gone from vc16

Rarity / scarcity status

Persicaria mitis is a local and often rare annual species in Britain and Ireland with scattered records from Southern England and Wales, north to Yorkshire and Cheviot. It appears with the name *P. dubia* in *BSBI Handbook No.3*⁹. It is regarded as **Vulnerable** to the risk of extinction both in Great Britain and in England. In England, this risk assessment is based on a reduction of its area of occupancy between the periods 1930-1969 and 1987-99 such that there is a 35% reduction in the likelihood of recording it. It is a declining, nationally scarce species of wet, unshaded, nutrient-rich mud and peat where it enjoys fluctuating water levels, which may be provided in habitats such as cattle poached areas of grazing marsh, shallow ditches, damp hollows and abandoned peat cuttings. It is threatened by drainage, by regulated water levels and by the erection of stock fencing which excludes cattle from ditch margins, thus preventing trampling. Recent records exist from our neighbouring counties of Surrey and Hampshire but in Kent it has been regarded as probably extinct in the absence of any finds since 1955. However, in September 2020 it was found by Sue Buckingham in the floodplain of the Little Stour, west of Preston. It is accordingly very **rare** in Kent.

Photos by Sue Buckingham, 10 September 2020

Account

In Hanbury and Marshall (1899), *Persicaria mitis* is listed as *Polygonum mite* Schrank and is described as a rare native species of



ditches and wet places. It was first recorded in the county in 1855 by A. G. More¹⁰ from a marsh below Fisher's Castle, Tunbridge Wells where one plant was growing amid a quantity of *Persicaria maculosa* (Redshank). Other nineteenth century records include finds by Anna Atkins at Lewisham (specimen in **NHM**); by F.J. Hanbury from Chislehurst Common and also from near Minster, Sheppey; and (if correct) by Miss Peers, a single plant at Spring Field, Hadlow. The last Kent record for *Persicaria mitis* is by Miss C.A. Swain (incorrectly Swann in the BSBI database), det. F.H. Perring, from a clayey woodland path south west of Petts Wood station with a voucher specimen in **MNE**. The BSBI database allocates TQ4366 as the grid-reference; this may be so, but if it was retrospectively assigned to the location by virtue of its being Pokeridden Wood (as given in Francis Rose's manuscript *Flora of Kent*), then monads TQ4265, TQ4266 and TQ4365 are all possibilities as well. Rose also includes an undated record by J.P.M. Brennan from a wet ride in Angley Wood. No distinct pattern emerges from this distribution.



⁹ Akeroyd J.R. (2014). *Docks and Knotweeds of Britain and Ireland* (edn. 2). Botanical Society of Britain and Ireland, London. The author (pers. comm.) since then has preferred *P. mitis* as name.

¹⁰ More, A.G. *On some Uncommon Plants observed at or near to Tunbridge Wells, Kent, in 1855*. *Phytologist* (1855-56) N.S. 1: 292-295.

The few plants seen in September by Sue Buckingham were growing on mud in a small, somewhat disturbed area of cattle pasture beside a ditch in the Deerson Valley at TR 23659 60293. This may have previously been the site of a cattle feeding station. The flowers were bright pink and the plants' habit was suggestive of a slender and somewhat elegant *Persicaria maculosa* (Redshank) but without the conspicuous black marks on the leaves which are usual in that species. A specimen was collected, pressed, and later sent to the BSBI referee, Dr J. R. Akeroyd, who confirmed it as *Persicaria mitis*. Other plants noticed from the vicinity were *Cerastium fontanum* (Common Mouse-ear), *Carex riparia* (Greater Pond-sedge), *Carex spicata* (Spiked Sedge), *Helminthotheca echioides* (Bristly Ox-tongue), *Mentha aquatica* (Water-mint), *Ranunculus sceleratus* (Celery-leaved Buttercup) and *Sparganium erectum* (Branched Bur-reed).

Deerson Valley is adjacent to and east of the Little Stour and west of the village of Preston. The land is low-lying, prone to extensive winter flooding and is intersected by numerous ditches which have an abundance of *Hydrochaeris morsus-ranae* (Frogbit) and a good range of other aquatics. The geology is alluvium overlain with seasonally wet deep clay. Typical habitat for *Persicaria mitis* is described as wet, nutrient-rich mud and peat that is exposed in the summer months as water-levels fall. In Wales, the best sites are said to be very damp and dynamic, with disturbance generated by trampling livestock at drinking holes¹¹. Although conditions in Deerson Valley may be very suitable, other sites in the county would seem to be equally so, and it could be that this species is being overlooked.

Flowering is from June to September and reproduction is entirely by seed. Germination of viable seed requires bare warm wet soils and open conditions created by flooding and standing water in winter and spring, followed by a rapid drawdown in summer. As an annual, *Persicaria mitis* is a poor competitor unable to survive shading by tall emergent species. The fruit is a blackish-brown to black nut, 2.8-3.5(-4) mm long and fairly shiny. Studies have shown that wetland *Persicaria* seeds with their hard, smooth cases can well survive endozoochorous dispersal (passing undamaged through the gut of an animal or bird), and can thus be transported from one site to another. Within a site or catchment, seeds may be spread by winter flooding due to their buoyancy.



Persicaria mitis is somewhat similar to *P. hydropiper* (Common Water-pepper) in general appearance but, although mildly peppery, it is never acrid or burning to the taste¹². The perianth glands are few (0-15, mean c.12 per flower); those of *P. hydropiper* are numerous (mean c.83 per flower). It also differs from *P. hydropiper* in its more erect and elegant inflorescence and its conspicuous purplish pink flowers rather than greenish or reddish-coloured. However, it has been observed that *P. mitis* flowers can vary to greenish-white¹³. It differs from *P. maculosa* in the perianth glands (absent in *P. maculosa*); the absence of a black spot on the leaves which *P. maculosa* normally has; and the narrow, somewhat interrupted inflorescence (dense and continuous in *P. maculosa*). *Persicaria minor* (Small Water-pepper) is a plant of similar habitats to *P. mitis* but differs by having much narrower leaves (usually not exceeding 8mm wide) and is a much-branched plant with a shorter, more erect inflorescence, eglandular perianth segments and smaller nuts not exceeding 2.5mm, mean c.2.2mm).

SB

¹¹ Stroh, P.A. 2015. *Persicaria mitis* (Shrank) Assimov. Tasteless Water-pepper. Species Account. Botanical Society of Britain and Ireland.

¹² With reference to the taste of *Persicaria* species, tasteless or not, note the comment in R.V. Lansdown, R.V. (2008) *A Field Guide to the riverine plants of Britain and Ireland*: 'it is extremely unwise to taste aquatic plants due to the risk of contracting water-borne diseases'.

¹³ Akeroyd, J.R. (1998) *Persicaria*, riparian species, in (ed.) Rich, T.G.C. & Jermy, A.C. *Plant Crib 1998*. Botanical Society of the British Isles, London.

Peucedanum officinale L. (Hog's Fennel)

Draft account

vc15, extinct in vc16 (if it ever occurred there)

Rarity / scarcity status

Hog's Fennel is in the British Isles confined to coastal banks, grassland and saltmarsh in East Kent, Essex and Suffolk. It is nationally **rare**, but its conservation risk category is one of 'Least Concern'. Its European distribution is extraordinarily disjunct: the nearest continental localities are at Cap Fréhel on the north coast of Brittany west of Dinard, and in Alsace. In Kent, it is **scarce**.

Account

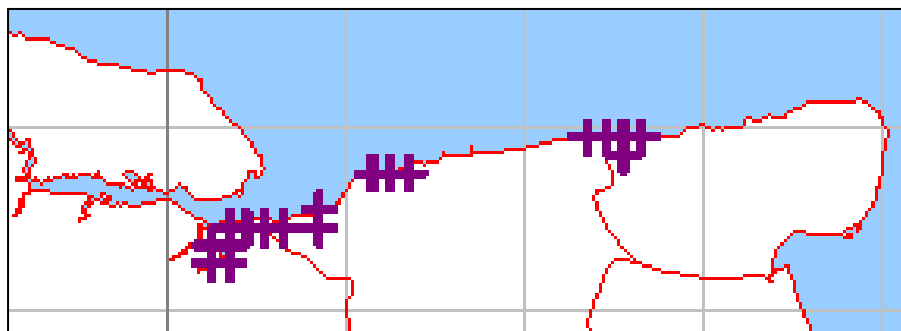
John Gerard, in his *Herball* (1597), gave the first British records for 'Sulphurwoort or Hogs Fennell', showing knowledge of both Kent and Essex sites (it was not found in Suffolk until 1990). As regards Kent, he stated that it 'groweth...at Whitstable in Kent in a meadow neere to the sea side, sometime belonging to Sir Henrie Crispe, and adjoining to his house there. It growth also in great plenty at Faversham in Kent, neere unto the haven upon the bankes thereof, and the meadows adjoining.'.



Faversham. Photo by Lliam Rooney, 31 July 2017

These are still the core Kent locations, although there is now more extended presence along the north Kent coast between Faversham and Birchington. There is no indication that it has grown elsewhere in the county other than a reference in John Ray's *Catalogus Plantarum Angliae* (1677) to it growing at 'the River Thames in many places', which might well apply to West Kent. Given that there is no other such record, however, this must be regarded as questionable, although Hanbury and Marshall (1899) were of the view that 'The plant is quite likely to have grown by the river at that time, and to have become extinct owing to the erection of the existing high embankments and the drainage of the marshes'.

The current distribution (2010-19) is shown below, and this is likely to be as extensive as it has ever been, except for losses around Herne Bay. The status of the various populations is considered below in sections: Faversham; Faversham to Graveney Marshes; Seasalter/Whitstable; Whitstable/Tankerton to Swalecliffe;



Reculver to Birchington.

Peucedanum officinale
(Hog's Fennel) 2010-20

Faversham

This is a much-visited and extensive population. Historic records include John Blackstone's *Specimen Botanicum* (1746) in which he refers to it 'On the Sea-wall leading from *Feversham* to *Thorne*, abundantly' – this is where Thorn Creek meets the east side of Faversham Creek, and it still grows there, although much of section from there to the centre of Faversham has been developed since. It is also present along the continuation of the sea wall coastwards, and Hanbury and Marshall (1899) refer to comments by A. Wolley Dod that it could be found as 'Abundant on the east side of Faversham Creek from the brickfields [these were



between Thorne Creek and Faversham] to Nagden'. A visit communicated to the *Phytologist* (1861) 5: 107-113 under the title *An account of a few hours' Observations in and about the ancient town of Faversham, Kent* also described what the botanical tourist might see: 'But the pride and the glory of the Faversham Flora is the *Peucedanum officinale*, a plant in these isles, almost exclusively confined to Kent; and this is the better known of its two Kentish reported stations. We hesitated about going to Whitstable in search of it, but ultimately concluded that our time would be better spent in searching the coast further south. This rare species still grows plentifully on the high bank which skirts the creek on the Faversham side of the river. If the tourist goes on straight to the harbour, and then follows the dike towards the east, leaving the creek on his right, he will soon see plenty of this plant'.

Faversham. Photo by Liam Rooney, 23 July 2008

There are many later records, not adding a great deal of information other than simple presence, the most informative including:

- An estimate by Rosemary FitzGerald and C. Appleby on 14 June 1985 of as many as 10,000 plants along the seawall, TR 023 622.
- A count in 1989 communicated by Hector Wilks, of 8,000 plants for TR0262 and TR0362, but including the area enclosed as part of the old Nobel explosives factory only insofar as could be estimated by looking over the fence.
- G. Thornton, 1990, sightings at TR 023 619; TR 023 620; TR 024 620; TR 025 620; TR 025 621; TR 026 622; TR 028 624; TR 029 625; TR 030 625; TR 031 625 (these range from the outskirts of Faversham, beyond Thorn Creek but not as far as Nagden).

Some 2010-20 records are included in the data table below.

[Note: in this and subsequent data tables, only a selection of recent records is included.]

Site	Grid reference	Site status	Last record date	Recorder	Comments
Faversham Creek south	TR0262		(1) 10 May 2014 (2) 5 May 2014 (3) 18 August 2010 (4) 30 April 2010	(1) GK (2) GK (3) SB (4) GK	(1) Still present along south side of creek from TR 0236 6213 to TR 029 625, with occasional gaps, sometimes in great abundance and locally dominant. (2) TR 02824 63373, several plants on sea defence embankment, <u>west</u> side of creek. (3) TR 02365 62136, plants ± continuous and closely spaced on

					both slopes of sea wall, Saxon Shore Way, for 300m. Then TR 02859 62442, plants ± continuous similarly northwards for 600m. (4) Many hundreds of plants by creek from TR 0236.6213 to TR 0300 6253 and beyond, also branch creek to TR 0235.6192, in rough tussocky grassland, except absent from a short section TR0266.6231 to TR0281.6239, less common further north.
Faversham Creek Sandbanks	TR0362		(1) 10 May 2014 (2) 5 May 2014 (3) 15 August 2010 (4) 30 April 2010	(1) GK (2) GK (3) SB (4) GK	(1) Scattered along east side of creek, including TR 033 628, and most northerly on a grassy bank at TR 0328 6595. (2) TR 0303 6296, on grassy sea defence embankment, <u>west</u> side of creek. (3) TR 03279 62972 , Faversham Creek, east bank, south of Nagden Cottages, Plants densely spaced and continuous on grassy banks of sea wall (Saxon Shore Way) southwards for approx 170m. (4) Scattered plants alongside Faversham creek (east side) on or by rough grassy bank at least from TR 0300 6253 to TR 0310 6257.
Faversham Creek, Nagden	TR0363		14 March 2013	LR	Scattered plants along the <u>west</u> side of Faversham Creek along the Saxon Shore Way.
Faversham Creek – Nagden Marshes	TR0263		5 May 2014	GK	TR 02824 63373, several plants on sea defence embankment, <u>west</u> side of creek, downstream of Nagden.



Faversham.
Photo by
Liam
Rooney, 23
July 2008

Faversham to Graveney Marshes

These are scattered plants running from the mouth of Faversham Creek towards Whitstable Bay; but the western section (TR0364, TR0464 and TR0564) does not seem to have records before 2010.

Site	Grid reference	Site status	Last record date	Recorder	Comments
Castle Coote	TR0364		27 May 2011	LR	TR 03744 64642, one plant, behind the sea wall, by the South Bank of The Swale Nature Reserve (Castle Coote).
Cleve Marshes	TR0464		12 August 2010	GK	TR 04999 64911, behind estuarial wall.
Cleve Marshes	TR0564		7 August 2011	KFC meeting	TR 0556 6482.
Graveney Marshes	TR0664		21 July 2010	LR	TR 0625 6478, Faversham Road near the Sportsman Pub: several plants.

Seasalter/Whitstable

Records from Seasalter go at least back to 1889 (specimen in **CGE** collected by G. Dowker). Historic records for Whitstable may relate to the TR0965 location, but where any detail is given on nineteenth century herbarium labels, they seem more likely to relate to the coast east of Whitstable, including Tankerton and Swalecliffe, dealt with separately below. The original Gerard site at Whitstable, the meadow near the sea side at one time belonging to Sir Henry Crisp (died 1575) and adjoining his house, appears from Hasted's *History and Topographical Survey of the County of Kent* (1799) to have applied to a place called Grimgill. A farm of this name (or Crimgill) exists on 18th and 19th century maps (located in TR1065), and was nearer the influence of the sea in Gerard's time, when Lower Island was separated from Whitstable Street by the Salts.

Site	Grid reference	Site status	Last record date	Recorder	Comments
Seasalter	TR0864		29 September 2011	CO	Along roadside.
Seasalter	TR0865		(1) 29 July 2017 (2) 23 June 2012 (3) 1989 (4) 7 August 1985 (5) c. 1974	(1) AL (2) LR (3) comm. HW (4) RF (5) Philp (1982)	(1) TR 0823 6501, behind the sea wall at Seasalter. (2) TR 08223 65020. 10+ plants on a wide roadside verge, Faversham Road, Seasalter. (3) 7 plants. (4) TR 083 650, on dry roadside bank near sea wall by caravan site: a patch 2.7m x 8.8m containing seven plants of which four were in flower; not in good condition as bank had been mown. Associated species: <i>Centaurium erythraea</i> , <i>Daucus carota</i> , <i>Linum bienne</i> , <i>Trifolium pratense</i> , <i>Helminthotheca echinoides</i> , <i>Leontodon saxatile</i> , <i>Senecio jacobaea</i> , <i>Hypochaeris radicata</i> , <i>Plantago lanceolata</i> , <i>Festuca rubra</i> , <i>Holcus lanatus</i> , <i>Cynosurus cristatus</i> . (5) Given as TR06X, but was the same site as last.
Seasalter / Whitstable	TR0965		(1) 1990 (2) 1989 (3) 24 September 1985	(1) GTh (2) comm. HW (3) RF	(1) TR 097 655. (2) One plant, TR 097 655. (3) TR 097 655, one plant with fruiting stems on a rough grassy bank on the landward side of the sea wall between Whitstable and Seasalter. Associated species were: <i>Senecio erucifolius</i> , <i>Lotus</i>

					<i>corniculatus</i> , <i>Lepidium draba</i> , <i>Trifolium pratense</i> , <i>Rubus caesius</i> , <i>Helminthotheca echioides</i> , <i>Festuca</i> <i>rubra</i> , <i>Lathyrus nissolia</i> , <i>Daucus</i> <i>carota</i> , <i>Rumex crispus</i> .
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Whitstable/Tankerton to Swalecliffe

This has long comprised a major population, or series of populations, based on the slopes running down to the sea either derived from, or still constituting, slumped London Clay cliffs. *Peucedanum* was noted by the Rev. W. Wood at the undercliff between Whitstable and Herne Bay (given in Matthew Cowell's *A Floral Guide for East Kent*, 1839); but literature references are greatly outnumbered by collected specimens. The more informative herbarium labels tell us: 'Undercliff on broken ground, between Whitstable and Stud Hill Bay' (A. Bennett, 1873); 'Tankerton Bay, Whitstable to Herne Bay...Abundant towards "The Rock" [=Long Rock?]' (S. Wood & W. West, 1897); 'Broken ground near the sea near Whitstable' (J. Groves, 1902); 'London Clay Cliffs E of Whitstable' (A.O. Hume, 1903); 'Extremely abundant on the slopes facing the sea at Tankerton, near Whitstable' (J.E. Lousley, 1930); 'Tankerton Cliffs E. of Whitstable. Slipped London Clay cliffs' (Francis Rose, 1950). This abundance was affected by drainage schemes which began in the 1920s and 1940s, with a particularly damaging scheme put forward in the 1960s involving 'landscaping' and drainage which destroyed about half of the *Peucedanum* population. The remaining patches owe much to lobbying by Hector Wilks of the (then) Kent Trust for Nature Conservation and have since been protected by SSSI status, designated because of the *Peucedanum* population. Subsequent drainage works have been more circumspect, as needing to take account of approvals required by that status, and there is evidence that seedling appearance has increased after approved drainage works. In 1986 at the instigation of the owners, Canterbury City Council, some 400,000 seeds and many container-grown plants were planted out in trial plots on the slopes. The seed was obtained from Tankerton in 1985, and treated in Wye College to encourage germination. However, the transplants and seeds apparently did not establish well in areas where there was existing vegetation. Whether because or in spite of these attempts, the total population in 1989 was assessed at 2,500 (TR1167 and TR1267). The slopes are currently managed by Canterbury City Council under a management plan¹⁴ which attempts to reconcile a wish to ensure that instability does not result in regression of the top of the slopes into the amenity land and roadway above against the conditions which suit *Peucedanum*, an environment of tension cracks and shallow surface movements. These aims are not necessarily consistent: the area of the slopes with the most *Peucedanum* is opposite Pier Avenue and apparently has no drainage.

Seeds. Photo by Liam Rooney, 10 September 2012



Further east of the Tankerton slopes, the coast juts out at Long Rock, Swalecliffe. This area held many plants in 1897, and there appears to have been an inland presence as well, in rough pastures on clay, ½ mile south west of Swalecliffe church (E.C. Wallace, 1945). There were still a couple of Long Rock plants in 1960, when recorded by Hector Wilks (salting north of Kite Farm), and more recent sightings are given in the data table below.

There are old records further east along the coast, at Herne Bay: a specimen collected by W. Christy (CGE, 1838) and a reference in James Smith's *English Flora*, vol. 2, 1824 ('on a cliff, by the sea, at Hearn, 6 miles from

¹⁴ *Queen Elizabeth II Diamond Jubilee Field: Tankerton's Coastal Park Management Plan 2014-2024*. Canterbury City Council. This includes management actions such as the removal of encroaching scrub; hand-pulling of *Smyrniololus atrum* (Alexanders); limited mowing alongside footpaths, avoiding damage to *Peucedanum*; and leaving an unmown buffer zone at the top of the slopes.

Whitstable. *Mr. Crow of Feversham.*). Marshall in the *Victoria History of the Counties of England: Kent* (1908) considered it was still there. Plants in this area may have long been lost to erosion.

Site	Grid reference	Site status	Last record date	Recorder	Comments
Whitstable/West Tankerton	TR1167	Includes SSSI	(1) 18 August 2010 (2) 29 July 2010	(1) & (2) SB	(1) TR 11990 67314, Tankerton Slopes, spread of plants c. 450m eastwards (into TR1267) on grassy clay slope, 50m above the promenade, sometimes very densely spaced with 7-8 plants per 10m and also with gaps of no or very few plants. Plants terminate where beach huts begin at TR 12391 67321. Kent Wildlife Trust keeps the slope clear of invasive <i>Smyrnium olusatrum</i> . (2) TR 11958 67295, c. 70 plants on clay slope above promenade.
Tankerton	TR1267		(1) 28 September 2019 (2) 9 April 2015 (3) 18 August 2010	(1) AW (2) JP (3) SB	(1) TR 123 673, Tankerton Slopes. (2) Survey of slopes and beach below Marine Parade. Several young plants now on edge of shingle. (2) TR 12128 67324, Tankerton Slopes, Spread of plants (from TR1167) c. 300m eastwards, details as above in relation to TR1167.
Swalecliffe	TR1367		(1) 28 June 2011 (2) 1990 (3) 1989 (4) 31 December 1987	(1) LR (2) GTh (3) comm. HW (4) RF & JPt	(1) TR 1369 6754. 20+ plants at Swalecliffe. (2) TR 136 675. (3) 37 plants at TR 136 675. (4) TR 1366 6754 [inferred]. Over 20 plants on ditch bank bordering disturbed ground. Associated species: <i>Anthriscus sylvestris</i> , <i>Artemisia vulgaris</i> , <i>Cirsium arvense</i> , <i>Dactylis glomerata</i> , <i>Daucus carota</i> , <i>Elytrigia repens</i> , <i>Melilotus</i> sp., <i>Pastinaca sativa</i> , <i>Helminthotheca echioides</i> , <i>Senecio erucifolius</i> .

Reculver-Birchington

There are no early records for the coastline between Reculver and Birchington up to and including the 1971-80 survey of Philp (1982). The first appears to have been Rosemary FitzGerald's visit to Minnis Bay in 1987, when over 30 plants were seen around the sea defences. It has since been recorded in five tetrads and appears to be spreading.

Site	Grid reference	Site status	Last record date	Recorder	Comments
Reculver	TR2369		(1) 9 September 2010 (2) 29 July 2010	(1) CO (2) SB	(1) One plant on slope of sea wall. Recent colonist from Coldharbour (TR2569). (2) One plant each on landward slope of sea wall at TR 23432 69426, TR 23778 69430, TR 23979 69428, TR 23993 69429.
Knock Point, Reculver	TR2469		12 April 2016	SB	Single plant at TR 24300 69401.
South of Coldharbour	TR2568		(1) 2 July 2013 (2) 2 August 2010	(1) CO (2) SB	(1) Inland, near junction of railway embankment and track to sea, one plant.

lagoon					(2) One plant each on grassy bank by dyke, TR 25110 68738, TR 25170 68920.
Coldharbour lagoon	TR2569		(1) 29 July 2010 (2) 16 August 1987	(1) SB (2) RF & HF	(1) (a) TR 25205 69263, dense stand of plants >80m x 10m. (b) TR 25224 69244, dense stand >100m x 25m on grassy bank of sea wall, south facing. (c) TR 25306 69262, plants scattered for further 70m eastwards on north facing side of sea wall. (2) TR 2525 6924 [inferred], over 30 plants scattered around the junction of embanked paths (sea defences) from railway and along coast, south of lagoon. Associated species: <i>Achillea millefolium</i> , <i>Cirsium arvense</i> , <i>Daucus carota</i> , <i>Elytrigia repens</i> , <i>Heracleum sphondylium</i> , <i>Melilotus alba</i> , <i>Medicago lupulina</i> , <i>Ononis spinosa</i> , <i>Pastinaca sativa</i> , <i>Picris hieracioides</i> , <i>Phragmites australis</i> , <i>Rumex crispus</i> , <i>Sonchus arvensis</i> , <i>Senecio erucifolius</i> , <i>Tripleurospermum maritimum</i> .
North of Wade Marsh	TR2669		(1) 5 September 2013 (2) 23 September 2011 (3) 30 September 2010	(1) CO (2) CO (3) SB	(1) One patch at eastern end on landward side of seawall at c. TR 267 692. (2) One plant on seaward side of seawall at diversion round lagoon c. TR 267 692. (3) TR 26746 69196, seven plants, top of landward side of sea wall.



Reculver to Birchington. Photo by Sue Buckingham, 2 August 2010

The restriction of Hog's Fennel to these sites and coastal Essex and Suffolk suggests that a Continental climate favours the species, with relatively high summer temperatures and coastal prolongment of the growing season being required for seed to ripen fully. Our sites are on London Clay, most frequently on embankments, but also on damp ground below. It may be that the embanked clay habitats

provide opportunities for seed establishment where summer baking of the clay opens up crack and winter rain erodes; and the classic slumping clay cliff habitat offers similar opportunities, due also to instability from drainage-related movement. It appears that Hog's Fennel grows typically where the summer water table is near the surface or less than 50cm below, but our embankment plants grow well where this is unlikely to be the case, which may be due, at least when established, to the massive and far-reaching tap root. Our plants on lower ground are clearly capable of tolerating the saline conditions of upper saltmarsh; this is particularly evident along parts of Faversham Creek.

The *Biological Flora of the British Isles* account¹⁵ mentions plants at Tankerton slopes as being the tallest in Britain, with many plants over 2m high and bearing as many as 50 flowering stems per plant in 1990. These large clumpy plants may be of considerable age and although there is no direct evidence of life expectancy, a sample mature plant excavated has been considered to be at least 25 years old. Shoots may emerge through root extension up to 50cm from a mature plant. Hog's Fennel may also spread by seed, with potential for up to 500,000 seeds from the largest plants. It is tempting to think of coastal spread as occurring by water, such as with the tides along Faversham Creek and thence into the Swale. But the seeds apparently have a flotation time of 4-6 days if undisturbed and this does not seem capable of affording any satisfactory explanation of coastal spread: the only young plants on shingle which have been noted recently have evidently spread from the land above, and most of our plants (except, perhaps, for Faversham) are on banks or cliff slopes, where spread of seed by wind is more relevant. But it is of course possible for seed which has fallen into the water of ditches and sunk to be spread on ditch banks in the course of ditch clearing. Similarly, coastal defence maintenance or construction works resulting in the movement of soil may distribute seed or rootstock.

Peucedanum officinale is the sole host plant in Great Britain for larvae of the micromoth *Agonopterix putridella*, recorded at Tankerton Slopes and Coldharbour. *Gortyna borelii lunata* (Fisher's estuarine moth) uses it as its main host plant and about 20% of moth's UK population is at Tankerton/Swalecliffe.

It is unlikely that *Peucedanum officinale* will be confused with any other British plant, except perhaps for *Foeniculum vulgare* (Fennel) which can occupy similar coastal habitats but which is less robust and has filiform (rather than linear) leaflets which smell of aniseed when crushed.

Faversham. Photo by Lliam Rooney, 23 July 2008



¹⁵ Randall, R.E. & Thornton, G. (1996). Biological Flora of the British Isles: *Peucedanum officinale* L. *Journal of Ecology* **84**: 475-485.

***Phelipanche purpurea* (Jacq.) Soják (*Orobancha purpurea* Jacq.) (Yarrow Broomrape)**

Draft account. Kent records and photos required.

vc 15

Rarity / scarcity status

Phelipanche 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 *Orobancha 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 1955¹⁶. 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 (*Orobancha 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.

Phelipanche 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 Broomrapes have no bracteoles and so are placed in the genus *Orobancha* rather than *Phelipanche*).

¹⁶ 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.

***Phleum arenarium* L. (Sand Cat's-tail)**

Draft account. Habitat photo needed.

vc15 and 16

Rarity / scarcity status

Sand Cat's-tail is a generally coastal grass, widespread around the British Isles on sand dunes and sandy shingle, except for north and west Scotland. Its threat level for conservation purposes is one of 'Least Concern' in Great Britain as a whole, but a more recent assessment for England treats it as **Near Threatened**, on account of its area of occupancy having been taken to have declined by 27% in comparing records for the periods 1930-69 and 1987-99. In Kent it is restricted in its distribution and is near scarce.

Littlestone. Photo by Lliam Rooney, 5 June 2010

Account

The first Kent record is 'Betwixt Deal and Sandwich' in Christopher Merrett's *Pinax rerum naturalium Britannicarum* (1666), which has remained its most abundant locality since. Hanbury and Marshall (1899) regarded it as a grass of maritime sands; rare, but locally plentiful. They mention it as on the north coast east of Whitstable; on the east coast still near Sandwich and with scatterings further south at Hythe, Sandgate, Lydd, New Romney and Dymchurch. Francis Rose described it as growing on sand dunes, particularly on looser sand; rare, but locally abundant. His locations were the shell sand beach at Shellness, Sheppey (1945-62), and Seasalter beach on the other side of the Swale (1951); Deal links (1954) and



Sandwich Bay to Shellness, Pegwell Bay, where it was abundant on loose sand but rarer on fixed dune sand (1945-63); and along the south east coast at Greatstone dunes, Littlestone beach and near Romney Warren (1945-62). These locations are more or less replicated in Philp (1982), with a total of 21 tetrads recorded, including an additional site at Grain south beach. This total had reduced by the time of the 1991-2005 survey published as Philp (2010), with a lack of any records on Sheppey or at Grain. However, this appears to have been a consequence of survey limitations rather than actual decline, as our 2010-20 records restore the position to 18 tetrads (equivalent to 24 monads).

Littlestone. Photo by Lliam Rooney, 5 June 2010

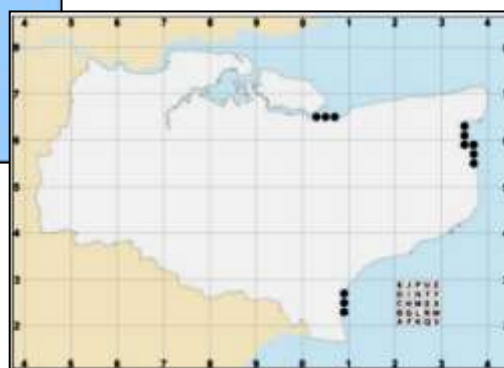
The distributional data maintained in this register for *Phleum arenarium* will be at 1 km square (monad) level, which entails recording at a finer scale than the tetrads given in Philp (2010), from which the accompanying 1991-2005 distribution map is taken (with kind permission of the late Eric Philp and the Kent Field

Club). The limitations on *Phleum arenarium* records are mostly those of availability of suitable habitat, but there are also considerations of access, the north Grain (2017) and Lydd ranges (2012) records being products of permitted surveys on MOD land. A new location, at the coastal lakes of Cliffe, was discovered by Joyce Pitt in 2014.



Phleum arenarium (Sand Cat's-tail) 2010-20

Phleum arenarium (Sand Cat's-tail)
1991-2005



Phleum arenarium is an annual, whose seed germinates in late summer/autumn when sand temperatures drop below 10°C and sufficient moisture is present and remains. Subsequent drought may be lethal, so a dry spring can have a catastrophic effect on the appearance of this grass, whose seedlings overwinter close below the sand surface. In its coastal sand habitat, with its neat panicle, it is not readily mistaken for anything else, and it is the only annual amongst the British *Phleum* species, losing its greenish colour soon after maturity and drying to a straw-yellow.

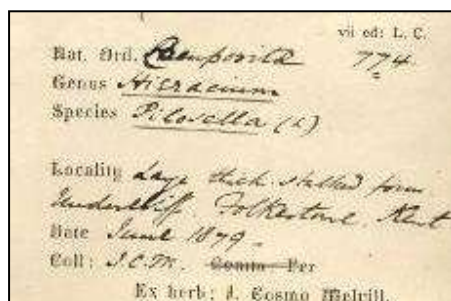
Pilosella peleteiana (Mérat) F.W. Schultz & Sch. Bip. (Shaggy Mouse-ear-hawkweed)

Draft account: current records and photos of plant and habitat needed.

vc15

Rarity / scarcity status

Pilosella peleteriana is a creeping perennial, common on granite in the Channel Islands, but on the mainland very local on steep, well-drained, often calcareous slopes. There are three subspecies, of which subsp. *peleteriana* grows in Dorset and on the Isle of Wight; it has also been recorded in East Kent, but is generally supposed to be extinct. However, this account is predicated on the basis that this is not the case although, if present, it will be very **rare** in Kent. In Great Britain as whole it is assessed as **Near Threatened** for conservation risk purposes. A more recent assessment for England considers the threat status to be one of 'Least Concern' in the absence of sufficient mapping data.



Account

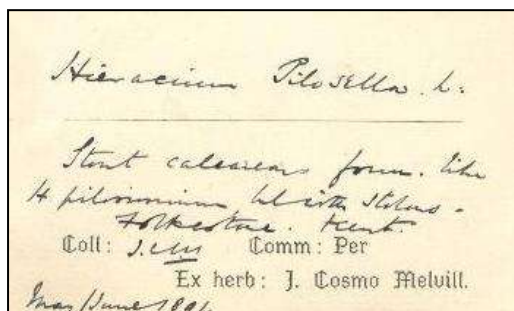
Neither Hanbury and Marshall (1899) nor Philp (1982) recognised the species as Kentish. Philp (2010), without further detail, referred to it as having been recorded from the Folkestone-Dover area in the past, but not found in the 1991-2005 survey. Therefore, what is known about the plant in Kent has to be pieced together from records.

There is a series of specimens at the National Museum of Wales collected from Folkestone over some years by the Manchester-based botanist J. Cosmo Melvill, and labelled *Hieracium pilosella* which were re-determined as *Pilosella peleteriana* by Peter Sell and Cyril West in 1957. The first was gathered in June 1879 as a 'Large thick-stalked form. Undercliff, Folkestone, Kent'. A further gathering was made in May/June 1891 as 'Stout calcareous form, like *H. pilosissimum* but with stolons. Folkestone, Kent'. A third gathering, in September 1893, is labelled as a variety of *Hieracium pilosella*, 'In chalk & gault, Undercliff, Folkestone, E. Kent'. These specimens, located by Tim Rich, make it clear that the statement in the *Hybrid Flora of the British Isles*¹⁷ that there are no confirmed records from the Folkestone area is incorrect. That statement was made in the context of an account of the hybrid *Pilosella peleteriana* x *officinatum*, for which it appears there is a record from Folkestone by the Rev. F.R. Tennant in 1890. The other parent, *Pilosella officinarum* (Mouse-ear-hawkweed), is abundant along the Folkestone cliffs. The (incorrect) statement about the absence of *Pilosella peleteriana*



¹⁷ Stace, C.A., Preston, D. & Pearman, D.A. (2015). *Hybrid Flora of the British Isles*. Botanical Society of Britain & Ireland, Bristol.

from Folkestone is also made in relation to the hybrid record by the Flora of Great Britain and Ireland¹⁸, somewhat surprisingly given that Peter Sell was the author of the statement and the co-determiner of Melvill's specimens. The hybrid specimen, in **CGE**, is perhaps a further pointer to the early locations for *Pilosella peleteriana*, having been found at Folkestone cliffs above Old Pepper Rock eastwards. This last location has not yet been traced, but the references to chalk and gault and to the undercliff suggest Folkestone Warren would have been a site for *Pilosella peleteriana*.

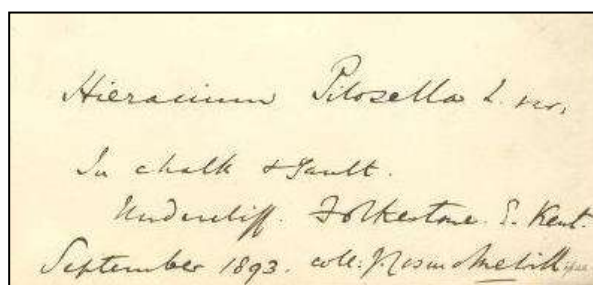


It is possible that *Pilosella peleteriana* may also have been known from the Lympne escarpment SSSI, but no specimen or record detail has been traced.

If it were only for these historic records, then *Pilosella peleteriana* might have been written off as probably extinct in the county; but there is a more recent find, on 9 June 2001, by Bob Woodhall, Brian Laney and Dave Horton at Langdon Cliffs TR 335 421 (this may have been TR 3350 4205). No voucher specimen was taken,



but the taxon was familiar to the finders. It was noted at the top edge of vegetation at the foot of the cliffs, but the foot in this case was apparently located along Cliff Road half-way up the cliffs overlooking Dover Harbour, which is an access way levelled off as part of railway construction at the end of the nineteenth century, so as to form what is now a grassy plateau about 80m above sea level, with chalk cliffs both above and below. The site is on chalk, with a southerly aspect.



Given the frequency of *Pilosella officinale* on the Dover/Folkestone cliffs generally, the only identification issues are in separating *Pilosella peleteriana* from that species. Both are plants which spread stoloniferously with single yellow flower heads arising from rosettes of hairy lanceolate leaves; but *P. peleteriana* is more robust, with larger flower heads (over 12mm across excluding ligules), and shorter and thicker stolons often ending in a rosette of large crowded leaves with a shaggy-haired appearance.

¹⁸ Sell, P. & Murrell, G. (2006). *Flora of Great Britain and Ireland*, vol. 4, Cambridge University Press, Cambridge.

Plantago media L. (Hoary Plantain)

Draft account

vc15 and 16

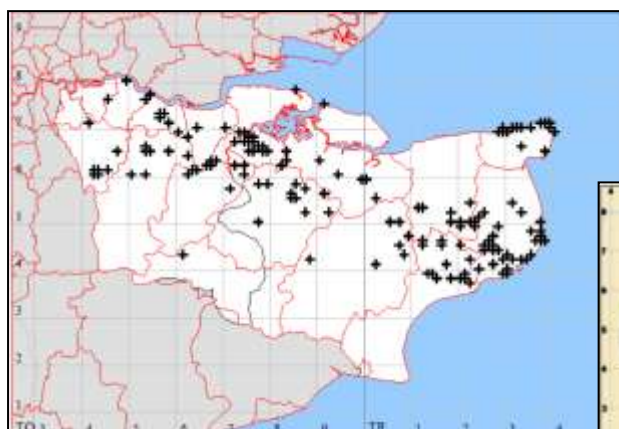
Rarity / scarcity status

Hoary Plantain is a perennial of shortish grassland, generally basic, widespread in the south, except for the south west and the Weald, and no longer to be found in much of East Anglia. While it is generally not uncommon within its range and has a threat assessment of 'Least Concern' in Great Britain as a whole, a more recent assessment for England treats it as **Near Threatened** (just), on account of its area of occupancy having been taken to have declined by 22% in comparing records for the periods 1930-69 and 1987-99. In Kent, its frequency means that it is far from being treated as rare or scarce; but there has been an ostensible decline of 42% in its tetrad records between 1971-1908 and 1991-2005, so this rate of decline is of concern.

Wye Downs. Photo by Liam Rooney, 4 June 2010

Account

Plantago media is first mentioned in Kent by Edward Jacob in his *Plantae Favershamienses* (1777) as 'By Road sides – common' and it was sufficiently widespread and frequent that Hanbury and Marshall (1899) gave no other records, saying that it was a plant of dry pastures, etc., very common on the chalk and found in all botanical districts. The scope for the plant to be found off the chalk is indicated by Thomas Forster's *Flora Tonbrigensis* (1816), which covers an area generally of acid soils and at best neutral: he describes the species as 'On the Common at Tonbridge Wells; and elsewhere frequent'. It appears to be no longer there. As a common plant, it did not subsequently attract much botanical notice; but for the period 1971-80, Philp (1982) recorded the species in 222 tetrads, finding it to be frequent in suitable habitats in dry grassy areas, usually on the chalk. For 1991-2005, however, the county distribution is shown in Philp (2010) as much thinned out, reduced to 129 tetrads: see the accompanying 1991-2005 distribution map (included with kind permission of the late Eric Philp and the Kent Field Club).



Plantago media (Hoary Plantain) 2010-19

Plantago media (Hoary Plantain) 1991-2005 (related to chalk (green))



By way of comparison, our 2010-20 records are given here also, the register data being maintained at 1 km square (monad) level, which entails recording at a finer scale than the tetrads given in Philp (2010). These records amount to only 128 tetrads (equivalent to 162 monads) and appear to indicate further decline and at

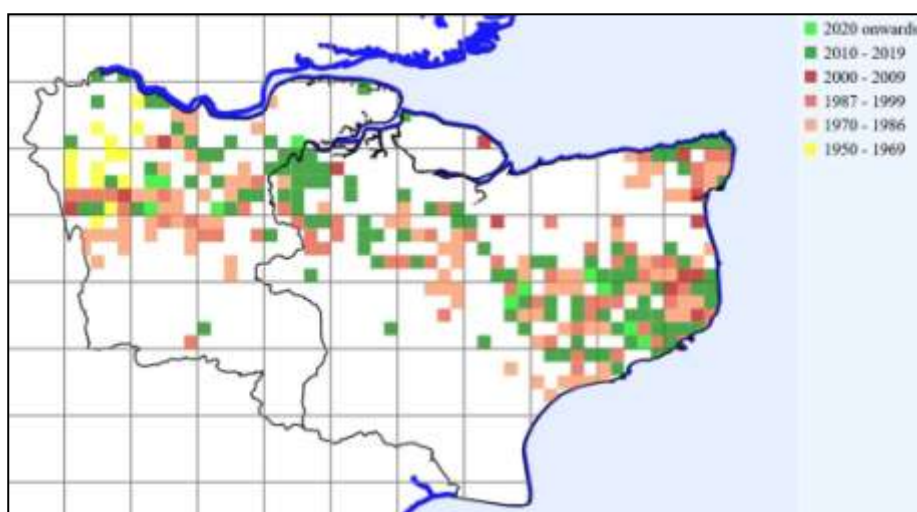
least confirm the earlier drop, especially as they include metropolitan West Kent records 9 tetrads), which the Philp surveys did not.

Strood, rosette. Photo by David Steere, 20 May 2016



It seems unlikely that permanent loss of calcareous grassland can have accounted for all this loss, although it may be relevant to part of the species' history of decline. *Plantago media* may well be one of those species which are adversely affected by the increased deposition of atmospheric nitrogen. Studies in Belgium¹⁹ of a chalk grassland plant community of which *Plantago media* is a typical member showed a decrease in species richness with the application of nitrogen, even within a four-year period, where there was a lack of management. Grazing or, to a lesser degree, mowing reduced the effect. Nitrogen enrichment tends to favour tall growth of grasses and so reduce light at ground level, with potentially adverse results for rosette plants.

The Belgian study did not involve a grassland community including *Brachypodium rupestre* (Tor-grass). In East Kent, where this grass can readily become dominant on chalk downland in the absence of grazing or mowing, it is possible that *Plantago media* could be crowded out, without the additional factor of atmospheric nitrogen deposition. This, however, does not seem to be a factor by which one could demonstrate greater decline in the east: the BSBI historical tetrad data (given in the distribution map below), if anything, show proportionately greater decline in West Kent, where *Brachypodium rupestre* is uncommon. Almost total loss appears to be demonstrated along the chalk downs scarp from Wrotham westwards to the county boundary, although it is not devoid of residual unimproved chalk grassland.



Plantago media tetrad records (to 2021) from BSBI database

Although the geological position can largely be inferred from the 2010-20 distribution map, many of our recent records expressly mention the habitat as being chalk grassland, sometimes on cliff tops. Churchyards are also a habitat, where the grass is kept fairly short. Records off the chalk are exceptional, but there are a couple on the Hythe Formation, which may supply some base influence. In a habitat where grass grows tall, the growth habit of *Plantago media* may change (var. *lanceolatifolia* and var. *longifolia*) so that, instead of forming a rosette appressed to the ground, the leaves may be erect, narrower and with a petiole more or less as long as the leaf blade. We do not have Kentish observations of this²⁰. It will be appreciated that such a plant will

¹⁹ Jacquemyn, H., Brys, R. & Hermy, M. (2003). Short-term effects of different management regimes on the response of calcareous grassland vegetation to increased nitrogen. *Biological Conservation* **111**: 137-147.

²⁰ This and following information taken from Sagar, G.R. & Harper, J.L. (1964). Biological Flora of the British Isles: *Plantago major*, L., *P. media* L. and *P. lanceolata* L. *Journal of Ecology* **52**: 189-221.

resemble *Plantago lanceolata* (Ribwort Plantain). *Plantago media* is a perennial, probably long lived, spreading both by seed (occasionally, in small open areas of ground) and (more frequently) vegetatively: up to twelve daughter crowns may be produced per season, developing from axillary buds.

Eynsford. Photo by Sarah Kitchener, 5 July 2020

If plants are in flower, there are no identification issues involved in separating *Plantago media* from other British species of *Plantago*: the pinkish stamens on purple stalks are very distinctive. When in leaf only, then it needs to be borne in mind that *Plantago media* leaves can be drawn up to a narrow, erect form resembling *P. lanceolata*, as mentioned above. Normally, however, they are distinct in being ovate, rather than lanceolate. The leaves also differ from those of *Plantago major* (Greater Plantain) in being distinctly hairy, often with a petiole which is purplish at the base, and having opaque main veins (if viewed as held up to the light).



Platanthera bifolia (L.) Rich. (Lesser Butterfly-orchid)

Draft account

vc15 and 16

Rarity / scarcity status

Platanthera bifolia is locally common in the British Isles, especially in the north, although largely absent from central England and East Anglia. Nevertheless, it has been in decline and is treated as **Vulnerable** to the risk of extinction in Great Britain as a whole and **Endangered** in England. This latter designation is on account of its area of occupancy in England being taken to have declined by 54%, and its extent of occurrence by 52%, in comparing records for the periods 1930-69 and 1987-99. It is a priority species under the UK biodiversity action plan on account of its decline and being an indicator species for conservation issues in relation to wet oligotrophic habitats (eutrophication, drainage, overgrazing and cessation of traditional management) which need to be better understood. On the whole, the issues regarding wet oligotrophic habitats are not particularly relevant to its current occurrences in Kent, which are in or at the edges of calcareous woodland. The general decline is not replicated in Kent records since 1971. It is a plant verging on **scarce** in Kent.

Covet Wood. Photo by Lliam Rooney, 17 May 2011



Account

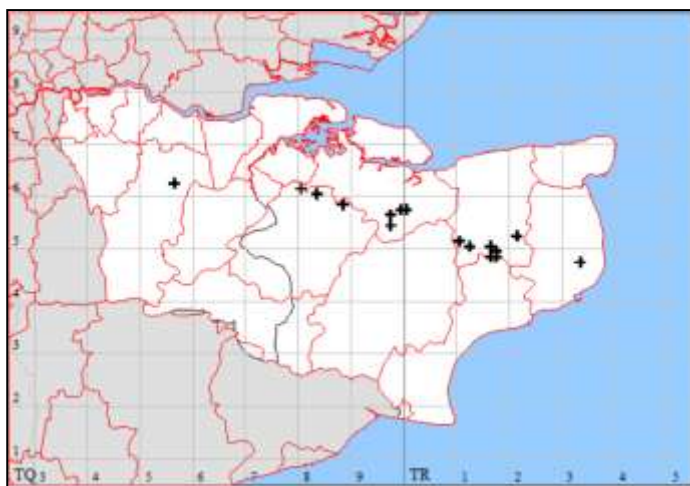
The first Kent record appears to be that of Edward Jacob who in his *Plantae Favershamienses* (1777) mentions it as 'In Badgen and Cockset Woods – not common'. Unless an early record has been made by an author for both *Platanthera bifolia* and *Platanthera chlorantha* (Greater Butterfly-orchid), as did Jacob, it is not always possible to be confident that the two species have been distinguished. W.J. Hooker's *British Flora* (1838), a standard accessible Flora of its time which eventually developed into '*Bentham & Hooker*', lumped both species together. Later versions were still grudging about any distinction, even the 1924 edition giving an entry for *P. bifolia* (then *Habenaria bifolia*) only, but as having two 'forms', of which *Habenaria bifolia* was the 'proper' one. This was a view which influenced British recording during the currency of that Flora, although Darwin (*The various contrivances by which orchids are fertilised by insects*, 1877) disagreed strongly with *Bentham & Hooker* as regards failure to separate the species. Hanbury and Marshall (1899) accepted that there were two species and considered the Lesser Butterfly-orchid to be a plant of copses, etc., generally distributed, but not very plentiful. They were not confident that all the records which had they had collated were *Platanthera bifolia* to the exclusion of *Platanthera chlorantha*.

Francis Rose treated it as a plant of woodlands, mostly coppice, but also of beech, growing on chalk or on overlying loam (which presumably includes clay-with-flints), rarely on Gault Clay (e.g. Horish Wood, between Detling and Maidstone). He considered it (1940s to 1960s) to be very rare in West Kent, but fairly frequent in East Kent, on the chalk east of the Medway to the coast. He noted that it had been present at Keston Bog up to about 1930, but as an ovate-leaved form; our normal Kent form being with elliptical-lanceolate leaves. Philp (1982) gave it as very local and scarce, in hedgerows and open woodland on chalk, with ten tetrads recorded 1971-80. It seems likely, both from Philp (2010) and from records made in the interim by Joyce Pitt, that the position was significantly understated in East Kent. Philp (2010) still has only ten tetrads, but eight of

these are different. The scattered records are stated to be of small colonies or of single plants in open scrub and woodland on the chalk, but becoming less frequent.

Covet Wood. Photo by Lliam Rooney, 17 May 2011

A decline is not evident from the mapping alone, particularly as our 2010-20 records amount to 14 tetrads (equivalent to 16 monads) and include sites in neither Philp (1982) nor Philp (2010) as well as one which was in the former but not the latter. This total brings the species just over the ten sites maximum which would qualify it as being treated as scarce in the county (as it would have been on the basis of the Philp surveys). It could be maintained that the mapping alone does not provide evidence of an overall decline and, with records often being of a single plant or very few, perhaps it is being overlooked or does not appear every year. However, David Johnson (*Wild Orchids of Kent*, 2019) has seen a colony of 25 or so at West Kingsdown decline from the 1980s from scrubbing over, so that while records of occasional plants may continue in the general neighbourhood, the colony itself has gone. The decline of a woodland colony near Sittingbourne may be related to picking and digging up; but there are also general issues in Kent of rabbit grazing in relation to wood margin plants and deer grazing of plants within woodland. So a dot on a map does not necessarily indicate continued health of a population. Indeed, over 70% of our 2010-20 records which give plant numbers are for finds of five plants or less.

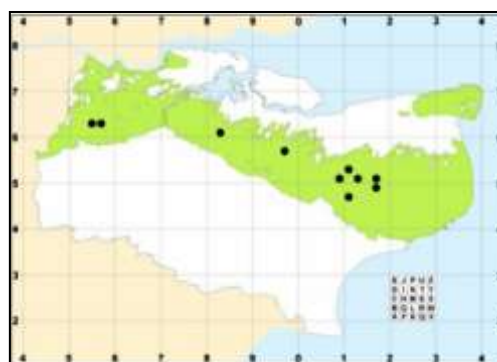


Platanthera bifolia (Lesser Butterfly-orchid) 1991-2005

While Francis Rose mentioned beechwood as a habitat, our recent records refer to ash/hazel woodland, ash/hornbeam, hazel coppice, hazel/hornbeam coppice, hornbeam coppice, and hazel/ash/sweet chestnut woodland. Often there is little understorey and *Platanthera bifolia* may be growing with

Our 2010-20 records are given in the accompanying distribution map, at 1km square (monad) level, not tetrads as in the 1991-2005 distribution map (included with kind permission of the late Eric Philp and the Kent Field Club).

Platanthera bifolia (Lesser Butterfly-orchid)
2010-20



other orchids, including *Platanthera chlorantha*. The coincidence of habitat, at least in Kent, (as well as general distribution) is a pointer to how little different the two species are.

They are primarily separated on the basis of the alignment of the two vertical pollinia: parallel in *P. bifolia*; diverging downwards in *P. chlorantha*. More generally, *P. bifolia* is not as tall; is smaller in its parts; and there are differences in the length and curvature of the spur. Despite these differences, however, molecular analysis²¹ showed no genetic distinction by which the species might be separated. Material used for molecular analysis included *P. bifolia* from a coppice north west of Sheldwich and from Stockbury Hill Wood; and *P. chlorantha* from Broad Downs (Wye), Park Gate Down and Yockletts Bank. These results suggest that the two taxa are in course of separation as species so that they have physical differences which are not yet reflected in genetic change which can be read through typical DNA barcoding, although they may be expressed in DNA sequences not normally sampled. *P. chlorantha* may well be a taxon which has evolved, or is still in the course of evolving, out of *P. bifolia*. For hybridisation with *P. chlorantha*, see the next species account.



Stockbury Hill Wood. Photo by David Steere, 26 May 2015²²

²¹ Bateman, R.M., James, K.E. & Rudall, P.J. (2012). Contrast in levels of morphological versus molecular divergence between closely related Eurasian species of *Platanthera* (Orchidaceae) suggests recent evolution with a strong allometric component. *New Journal of Botany* **2**: 110-148.

²² The plant illustrated has not been seen at this location since 2015 and is believed to have been dug up.

Platanthera chlorantha (Custer) Rchb. (Greater Butterfly-orchid)

Draft account

vc15 and16

Rarity / scarcity status

Greater Butterfly-orchid is widespread in the British Isles, more common than the related *Platanthera bifolia* (Lesser Butterfly-orchid), except in Scotland and Ireland. It is treated as **Near Threatened** in Great Britain as a whole, having suffered in the 20th century from felling, disturbance and coniferisation of woodland and the agricultural 'improvement' of pasture and scrubland. A more recent assessment for England alone takes its threat status for conservation purposes as being one of 'Least Concern'. In Kent, it is neither rare nor scarce, and an ostensible decline since the 1970s does not seem to be borne out by recent evidence.

Account

The species was first published for Kent (and, together with Hampstead Heath and Highgate, for the British Isles) by John Gerard in his *Herball* (1597), where he says 'That kinde [of Orchis] which resembleth the white Butter-flie, groweth...in the wood belonging to a worshipfull gentleman of Kent named master *Sidley* of South-fleete, where doe grow likewise many other rare and daintie Simples, that are not to be found elsewhere in a great circuit'. The reference to other rarities includes *Neottia nidus-avis* (Bird's-nest Orchid), which apparently was growing in the vicinity together with *Sanicula europaea* (Sanicle) in the middle of woodland near Howcke greene (Hook Green at Southfleet, not the Meopham or Wilmington ones).

Great Buckland. Photo by David Steere, 29 May 2016

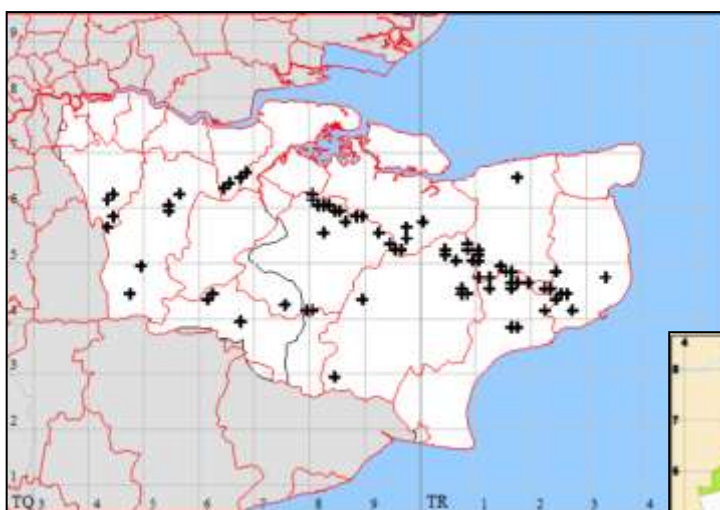


As mentioned in the account of *Platanthera bifolia*, early records do not always clearly separate these species. G.E. Smith, in *A catalogue of rare or remarkable phaenogamous plants, collected in south Kent* (1829) gives an extended and lyrical description of its insect pollination coupled with an illustrated account of a monstrous form. However, he followed Sir James Smith's *English Flora* in calling it *Habeneria* [= *Platanthera*] *bifolia*, so as to cover both species. G.E. Smith's manuscript notes show that he was well aware that *Platanthera chlorantha* could be regarded as separate, but considered that careful and extended observation was needed to resolve the position, especially he had seen an occasional degree of variation in the diagnostic positioning of the pollinia which seemed to connect their distinctive appearance in both taxa. Although the academic botanists may have bracketed the species together under the influence of W.J. Hooker, perpetuated through the standard floras which developed into '*Bentham & Hooker*', the popularizing botanical writer Anne Pratt was comfortable in treating *Platanthera chlorantha* separately, recognizing it as taller and stouter, with larger flowers, and she drew upon her Kentish knowledge: 'we have observed it, in copses about Waldershare in Kent, attaining such luxuriance that its white flowers could be seen by moonlight, growing among ferns and bushes, as we passed the high road by the wood' (Waldershare was 7km or so from where she lived in Dover, 1848-66).

Hanbury and Marshall (1899) treated it as a separate species, frequent in woods, etc., especially on the chalk across the county. Because of this frequency, they scarcely bothered to give any records from the chalk, mentioning rather those which appeared to be growing on other substrates. These included Edward Jenner's record (in his *Flora of Tunbridge Wells*, 1845) of the orchid 'in the hedges about Bidborough, and in an old marlpit in the meadow left of the road from Southborough to Tunbridge'. The latter sighting (probably just north of Bidborough Corner) looks likely to have been on Wadhurst Clay, but with some base content if workable for marl. Jenner was another botanist who thought that Hooker was wrong, as the Greater Butterfly-orchid differed from the Lesser 'not only in the diverging anthers, but in the leaves and colour, and is much larger'.

Luddesdown, habitat. Photo by
David Steere, 1 June 2015

Francis Rose noted *Platanthera chlorantha* as a plant of woodlands and scrub on chalk and on base-rich clays and loams – quite a wide habitat range – widespread and fairly frequent in the county, and locally in abundance. It was, at least in the 1940s-60s, unrecorded in the marsh districts of north Kent, the Lower Stour and Romney Marsh; and rare in the extreme north west Kent and the Weald. He listed over 110 sites, including a number in the Weald, and some Gault clay sites, such as Cadman's Wood, Brabourne; Westerham Wood; Cockney's Wood, Kemsing; and Ryarsh Wood. Although a tetrad record might cover more than one of these sites, the 1971-80 survey in Philp (1982), only accounted for 50 tetrad records ('Scattered... and locally frequent').



Platanthera chlorantha (Greater Butterfly-orchid) 2010-20

Platanthera chlorantha (Greater Butterfly-orchid) 1991-2005
(related to chalk (green))



A disturbing trend appears, at first glance, to be indicated by Philp (2010), in which only 34 tetrads are given, a drop of 32%. However, this is not a trend confirmed by our 2010-20 records, which give 63 tetrads (equivalent to 76 monad records). The distribution is shown in the accompanying 2010-20 map with 1km (monad) records, the level at which data will be maintained in this

register. For comparison, the 1991-2005 distribution map is provided here, with kind permission of the late Eric Philp and the Kent Field Club. The difference between the two maps – and, indeed, between Philp (1982) and Philp (2010) – may be because, as the latter states, the orchid is ‘Usually in small numbers and easily overlooked’ (and orchids in particular seem to be more fully recorded by a network of botanists, as took place in 1971-80 and 2010-19, rather than by a single recorder).

Something of the habitat range of the Greater Butterfly-orchid is indicated by our 2010-20 observations. Whilst it has been found in ancient woodland on chalk, there are records for secondary woodland and at Hever for a wood only planted some 20 years before, on what was until planting a farmed field. It has been noted under beech, yew, oak, hazel, hazel/ash coppice, ash/hornbeam/hazel/field maple; but has also been seen growing in scrubby chalk grassland, a meadow on chalk, a steep chalk grassland-slope and damp acid/neutral soils on Weald clay. In the more open habitats, the flowering spikes tend to be shorter and more compact (David Johnson, *Wild Orchids of Kent*, 2019). Singletons or small populations were seen less than in the case of *Platanthera bifolia* and some populations were sizeable: over 60 plants near Culverstone Green in 2010 of which more than half were in flower; and at Bonsai Bank, Denge Wood, the number of flowering spikes has been estimated as in hundreds in some years.

Darwin’s studies pointed to the specific differences between *Platanthera chlorantha* and *Platanthera bifolia* being related to differences in pollination. Both species offer a nectar reward as well as being (differently) scented, but the difference in alignment of the pollinia was found by Darwin to result in pollination of *P. chlorantha* being effected by attachment of pollinia to the eyes of moths, whereas *P. bifolia* pollinia attached

to the proboscis. This has led to the assumption that speciation may be driven by differences in pollinators, evidenced by differences in spur length, which could accommodate different species of pollinator. However, there is a case that that spur length of both species is related to the geographical latitude of the plant measured, and does not provide substantial evidence of evolutionary selection pressure through pollinators²³; but there are a number of studies which consider that such pressure exists.



Yocketts Bank. Photo by Liam Rooney, 21 May 2009

For the differences between *Platanthera chlorantha* and *Platanthera bifolia*, see the register account of the latter. It has been suggested, however, that central European *Platanthera* falls into three, not two, gene pools and that plants with intermediate pollinia positioning (called *P. bifolia* subsp. *latifolia* or *P. fornicata*) can on the basis of both morphological and molecular study be treated as a third genetic entity, not necessarily of hybrid origin²⁴. This, for Kent, then raises the issue as regards how far any such intermediates may be present here, and whether G.E. Smith’s observations mentioned above (which will have been around 1830-33) relate to just such an intermediate entity. At present, however, one can only acknowledge that *P. bifolia* itself appears to cover a significant range of variation and through this may include

²³ Bateman, R.M., James, K.E. & Tudall, P.J. (2012). Contrast in levels of morphological versus molecular divergence between closely related Eurasian species of *Platanthera* (Orchidaceae) suggests recent evolution with a strong allometric component. *New Journal of Botany* 2: 110-148.

²⁴ Durka, W., Baum, A., Michalski, S.G. & Baum, H. (2017). Darwin’s legacy in *Platanthera*: are there more than two species in the *Platanthera bifolia/chlorantha* group? *Plant Systematics and Evolution* 303(3): 419-431.

some intermediates, but there are unresolved issues as regards attribution of specific status to other populations²⁵.

As regards hybrid intermediacy, we have one record of a cross, a find in June 2020 in woodland near Martin Mill where there was a mixed population of *P. chlorantha* and *P. bifolia*, including at least one plant with the delicate general appearance of *P. bifolia* but possessing clearly divergent pollinia and which, with a spur length of 24mm (which is at the meeting point of the two species' measurement ranges), suggested a hybrid with *P. chlorantha*. Hybrid identity was confirmed by Richard Bateman from photographs.

Platanthera bifolia x *chlorantha*, Martin Mill.

Photo by Sue Buckingham, 9 June 2020



²⁵ Tyteca, D. & Esposito, F. (2018). Recent proposals in *Platanthera* (Orchidaceae) systematics in Western Europe, with focus on intermediate looking plants. *J. Eur. Orch.* **50**: 393-408.

***Poa bulbosa* L. (Bulbous Meadow-grass)**

Draft account. Coastal habitat photo needed.

vc15 and16

Rarity / scarcity status

Poa bulbosa is a generally coastal grass of the Channel Islands, southern England and Wales, virtually absent from Ireland. Its distribution appears stable and its threat status for conservation purposes is regarded as one of 'Least Concern' in England and in Great Britain as a whole. It is listed as nationally scarce, but in Kent it qualifies as neither rare nor scarce.

From Seasalter. Photo by Lliam Rooney, 29 April 2016

Account

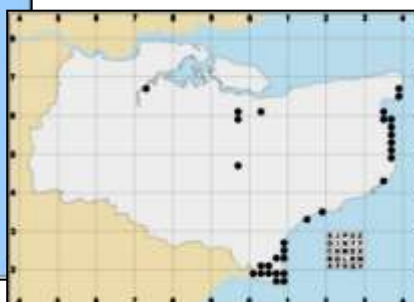
It is first mentioned for Kent by Lewis Dillwyn in his *Catalogue of the more rare Plants found in the Environs of Dover, with occasional Remarks* (1802) as 'Among the sand-hills between Deal and Sandwich', where it is still frequent. Hanbury and Marshall (1899) thought it very rare and gave only one other definite record, between Sandwich and Pegwell Bay. They mentioned another near the top of Shooter's Hill in 1793, which they dismissed (although it is not out of question an error) and a report by J.E. Little between Penshurst and Maidstone (a 'most unlikely station' – which it is, and Little subsequently disowned this, a schoolboy record for which he had not sought publication).



It is improbable, however, that *Poa bulbosa* was then confined to the Deal/Sandwich/Pegwell Bay area and Francis Rose, writing in the 1940s/60s, recognised it as a grass of fixed dunes and old dune pastures, turfed shingle beach and sandy cliffs, being locally abundant further down the east coast, as well as at Swalecliffe beach in the north. It was abundant at the west end of Folkestone Leas in 1946; west of Hythe; by the A259 at Romney Warren (1947-62); on Littlestone beach; and abundant north of Dungeness lighthouse 1948-68. The distribution given in Philp (1982) for 'firm sandy areas near the coast' is not fundamentally different, but a great deal more was found in the Dungeness area – extending to eight out of the ten tetrads in TR01 which include at least some land. An overall total of 21 tetrads was recorded. The grass appeared to have spread, or become better recognised, by the 1991-2005 survey of Philp (2010), when 31 tetrad records were made, an increase of 52%. It had now been found on Thanet, at Rochester (VC15) and at several sparsely vegetated firm sandy areas inland. The 1991-2005 distribution is mapped here, with kind permission of the late Eric Philp and the Kent Field Club.



Poa bulbosa (Bulbous Meadow-grass) 2010-20



Poa bulbosa
(Bulbous
Meadow-grass)
1991-2005

Our 2010-20 records are maintained in this register on a 1km square (monad) base and are mapped here as 39 monads, equivalent to 29 tetrads. This does not appear to be indicative of any decline: the failure to pick up more recent records at Dungeness is likely to be an issue of recording, given that the habitat is unlikely to have changed materially; also, we have not been able to locate some of the earlier inland records. However, the grass has now been seen for the first time in West Kent (made chalky/gravelly ground on the west bank of the Medway at Holborough, 2014, followed by further sightings elsewhere); and is on Sheppey (coastal path, upper beach and inland road verge) and the Hoo peninsula. It is difficult to know how far new populations have simply been overlooked and how far, given that well-trodden paths are a frequent habitat, it may have been introduced by the passage of feet or wheels, the latter almost certainly the case with inland roadside plants at Queen Street, Paddock Wood (2019).



Var. vivipara, from Sandling. Photo by Daphne Mills, 29 April 2019

It is a small and very inconspicuous perennial which starts growth in autumn, triggered by short day-periods, flowers early (March to May) and withers rapidly afterwards, so that only the swollen bulb-like stem bases remain. It is these which are most frequently seen and by these the plant is identified. The 'bulbs' are capable of being dispersed by wind some tens of metres²⁶, if the grip of the roots is loosened by decay, erosion of the substrate or disturbance. The flowers may be normal or proliferous; the latter (*var. vivipara*) has been recorded inland, at Sandling (2019).



Queen Street, Paddock Wood, roadside. Photo by Sarah Kitchener, 5 May 2019



Littlestone. Photo by Liam Rooney, 5 June 2010

²⁶ Gray, A.J. (1994). *Poa bulbosa* L. Bulbous meadow-grass. In (eds.) Stewart, A., Pearman, D.A. & Preston, C.D. *Scarce Plants in Britain*, JNCC Peterborough.

Poa infirma Kunth (Early Meadow-grass)

Draft account

vc15 and 16

Rarity / scarcity status

Poa infirma was a grass of the Channel Islands, rare on the mainland in Cornwall, which in the 1990s apparently began a remarkable expansion along the south coast of England, reaching Kent by 1999. (There is also an alternative explanation that the increase in records is due to an expansion of botanical expectations and recognition.) Its threat status for conservation purposes is one of 'Least Concern', both in England and in Great Britain as a whole. The definition of a nationally scarce species is that it is recorded in 16 to 100 hectads (10km ordnance survey map squares). Since 2000 up till 2020, however, it has been recorded in 268 hectads in the British Isles, so the species' current status as nationally scarce is out of date. It is now neither rare nor scarce in Kent. Its inclusion in the rare plant register is a product of its nationally scarce status, which will doubtless change. Accordingly, the significance of this account is as regards how quickly the recognised distribution of a plant can be fundamentally transformed; there is no particular conservation value attached to this species in Kent.

Boughton. Photo by Lliam Rooney, 7 May 2011

Account

The first find in Kent, according to Philp (2010) was on the Isle of Grain in 1999 and by the end of the survey period for that work (1991-2005) it had been found in 23 tetrads, spread along the north Kent coast with one roadside site well inland. Between 2005 and 2010 there appear to have been no records, and it was with the formation of the Kent Botanical Recording Group in 2010 that interest picked up again. The unfolding position was reported in the annual Kent Botany report until the number of records was such that the grass was a regular part of the county flora.



Whitstable. Photo by Lliam Rooney, 8 April 2011



Kent Botany 2010 reported 37 records for that year, covering 19 monads; new locations were already being picked up south of Sheppey. Kent Botany 2011 credited this species with more records for 2010-11 (68) than any other rare plant register species. In Kent Botany 2012, the beginnings of a metropolitan West Kent distribution were reported, plants were found increasingly inland, and it was found in flower beyond the usual February to mid-April period, lasting until mid-May or later. Kent Botany 2013 reported the total number of records for 2010-13 to be 152 and the species

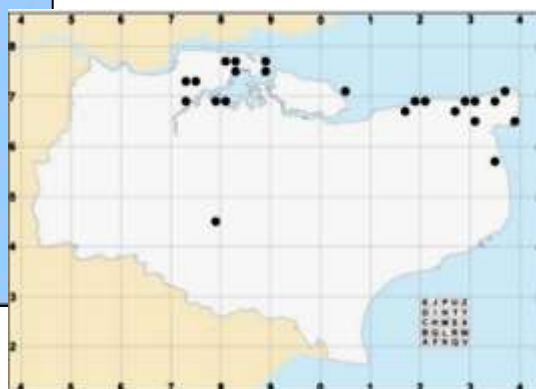
was showing signs of all year round flowering, as with *Poa annua* (Annual Meadow-grass). The favoured habitats remained pavements, roadsides and car parks – there seems a strong possibility that much spread is by seed on vehicle tyres. It was surmised that in bare soil areas, such as its discovery as the dominant species on the bare soil under trees in an orchard, there may be a relationship with the herbicide regime, providing a

window for establishment and spread through the absence of competition. This could also be relevant to many urban sites by road kerbs or street furniture and under street or park trees.



Poa infirma (Early Meadow-grass) 2010-20

Poa infirma (Early Meadow-grass)
1991-2005



Our records for 2010-20 cover 170 tetrads (equivalent to 227 monads), 7.4 times the extent recorded up to 2005. It is now a commoner plant than, say, *Impatiens glandulifera* (Indian Balsam). The comparison with an alien invader is deliberate because, although *Poa infirma* is regarded as a native, albeit at the edge of its range as a Mediterranean species, it appears to be behaving in a way comparable with invading species such as *Conyza sumatrensis* (Guernsey Fleabane) and *Senecio inaequidens* (Narrow-leaved Ragwort). Why it should do that is not apparent, although as discoveries on the British mainland were beginning to emerge in the 1990s it



became clear that the species had been to a degree overlooked by botanists, not just because they were not expecting to see it (and it can be small and resemble *Poa annua*), but also because it was capable of flowering in January and February when botanical activity is likely to be low²⁷. The recording pattern must in some degree reflect this. The absence of Kent records from 2005 to 2010 was presumably because no-one was looking. Records for the year 2010 reflect one recorder's interest; the subsequent influx of records follows the inclusion of the species on a widely circulated list of rare plant register species.

Upper Harbledown, habitat. Photo by Liam Rooney, 27 March 2013

However, the impression is still that there is an expansion of range taking place in Kent, and this is reinforced by the almost complete absence of sightings in 'natural' environments: it is almost always in artificial habitats, in places where there is much coming and going, with opportunities for transfer of seeds.

While we have a coastal cliff top record and one from sand at the base of cliffs, more usual records include street pavements, especially where they meet a wall base; surfaced and unsurfaced car parks; roadside kerbs, gutters or banks; driveways; grass verges in residential areas; lay-bys; vehicular entrances; bare ground under park trees; track margins; around street furniture and street trees; front gardens near pavements; on railway

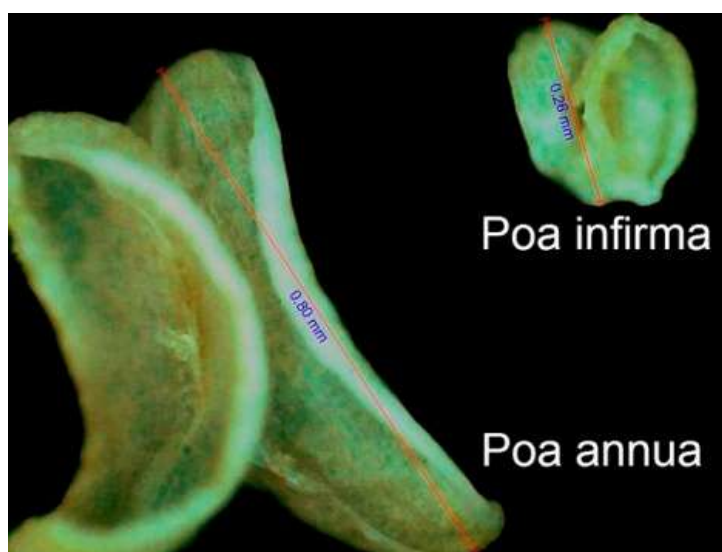
²⁷ Takagi-Arigho, R. (1994). *Poa infirma* – flourishing?.... or fleeing? *BSBI News* 65: 14-18.

track at a station; and footpaths (especially to/from car parks). Tellingly, even some very rural locations have an association with vehicles: the grass was present by a quiet country lane, but it was where a vehicle parked; and a find in the corner of a farm field was accompanied by a sighting of the farmer driving his landrover round the edge of the field. The evidence seems strong that the grass spreads primarily by vehicles, but also on footwear. While the species' spread is echoed elsewhere in the south of the British Isles, it appears to be more extensive in Kent than in other counties.

There is a parallel with *Polypogon viridis* (Water Bent), another grass (albeit introduced) with no records in Philp (1982), just 13 in Philp (2010) and 223 tetrad records for the period 2010-19, an increase of 1,615%. Despite a degree of resemblance to *Agrostis stolonifera* (Creeping Bent) it is not as readily capable of being overlooked for that species than is *Poa infirma* for *Poa annua*, and it is not necessary to postulate that it was there all the time before botanists started taking an interest in it. The dramatic spread of two Mediterranean species at the same time is suggestive of a common cause, perhaps related to climate, whether coastal or urban.

Poa infirma is an annual grass, quite similar to *Poa annua*, which is thought to have originated from a cross between *Poa infirma* and *Poa supina* (a plant of the mountains of northern and central Europe), and so would have related genetic content. *Poa infirma* is generally yellowish-green, which is not normally a colour assumed by *Poa annua* unless affected by herbicide. It has a weaker (or infirm!) appearance, particular when shedding seed and the more distant nature of the florets becomes apparent. However, the anthers are diagnostic: 0.6-0.8 (1.0)mm long and at least twice as long as wide in *Poa annua*; 0.2-.0.5mm long and scarcely as long as wide in *Poa infirma*.

From Boughton, anthers. Photo by
Liam Rooney, 2 May 2013



***Polycarpon tetraphyllum* (L.) L. (Four-leaved Allseed)**

Draft account.

vc15 and16

Rarity / scarcity status

Four-leaved Allseed is a tiny annual of bare coastal ground, known from the Channel Islands, the Isles of Scilly and scattered on the south west mainland. Records elsewhere are said to be casual, but in very recent years there has been a significant expansion along the south coast, particularly in Kent where it is now on the north coast as well, and into the urban environment of Greater London: these occurrences seem more than casual. Its threat status for conservation purposes is one of 'Least Concern', both in Great Britain as a whole and in England. It is treated as **nationally rare**, which would mean a presence in not more than 15 hectads (10km ordnance survey map squares). Since 2000, however, it has been recorded in 117 hectads in the British Isles, so unless some distinction is made between the original 'native' sites and the recent extension, then its national status, whether as rare or scarce, will need to be removed. Following discovery in Kent in 2012, the plant was added to the rare plant register in 2013. It is already sufficiently frequent to be neither rare nor scarce in the county and once the national position is recognised, it will not warrant register status..

Account

The first record of *Polycarpon tetraphyllum* in Kent is given in the BSBI database as by Nick Bertrand on 28 August 2011 at Deptford, TQ3777. In metropolitan north west Kent, this is about as far away in the county as one can get from Lydd, in the south east. But the latter location was where the second record was made, on 8 August 2012, by Tim Inskipp (published in Kent Botany 2012 as the first record, in the absence of knowledge of its Deptford discovery). It was present as a street weed at the junction of New Street, Ness Road and Church Road, in Lydd, TR 04392 20988. Plants then continued for 100 metres along Eastern Road to TR 04493 21056 and 50 metres south-westward along New Street. There was no obvious source of introduction, but it had then recently appeared on the Sussex coast (Eastbourne, 2009; Hove, 2011) as well as the Essex side of the Dartford Crossing (2012), so it was not unexpected that it had also arrived in Kent. However, it appeared that the species had been present earlier in the county, but overlooked by botanists. In 2015, Sue Poyser and Doug Grant found it growing between block pavers at Chatham Maritime, some plants being by an old boat containing a flower display. The gardener of that display said she had known it there for at least seven years.

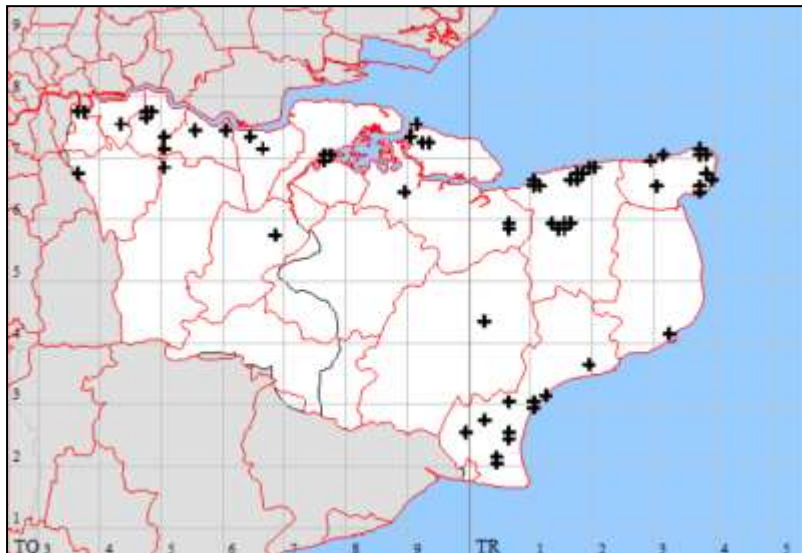


Lydd. Photo by Sue Buckingham, 9 August 2012

In 2013, finds were made at Sheerness High Street and at Dover. By 2015, it was well established at Thanet, seen on brick drives, kerbsides and pavements at Cliftonville, on or by garden walls and pavements at Birchington and on pavements, block-paved drives and a street gutter at Ramsgate. The last site was near where foreign students, mostly Spanish, are regularly dropped off and picked up in their parents' vehicles, which at least suggests the possibility of direct introduction from the Continent by car tyres, although

alternative origins including spread by car from other south coast sites have to be considered as well. By 2016, *Polycarpon tetraphyllum* was beginning to be found inland, with sightings on a weedy bank by an Ashford car park and on a block-paved drive and pavements at Canterbury. That year it was first found in West Kent, as a metropolitan street weed, at New Cross in the course of a London Natural History Society meeting, reported

by Rodney Burton, who also found it on crazy paving at Bexleyheath and between forecourt paving blocks at Eltham. Another 2016 West Kent record was Daphne Mills' discovery of it in block paving and a road gutter at West Malling.



Polycarpon tetraphyllum (Four-leaved Allseed) 2012-20

Our 2012-20 records are shown on the accompanying distribution map, data for this register being maintained at 1km (monad) level.

In eleven seasons, the plant has shown impressive spread, reaching 48 tetrads, i.e. 66 monads, 2010-20. At present the distribution is primarily coastal, especially in built-up areas; but it has also shown potential as an urban weed in metropolitan West Kent and in Canterbury. It is a Mediterranean species, with Britain at the edge of its range, so that there may be climatic reasons for the initial spread being coastal and urban. This spread is very similar to that of *Poa infirma* (Early Meadow-grass), which had 13 years' start, and it may be that it will develop in a similar way, with inland sites following distribution by vehicles.

Lydd. Photo by Liam Rooney, 16 July 2015

The manner in which we have become aware of *Polycarpon tetraphyllum* spreading in Britain seems to suggest that it has come from the south west, where it is native. But because it was extremely rare in Cornwall before expansion, it is quite possible any origin from there has been supplemented or superseded by direct introduction, whether by vehicles from the Continent (which may be suggested by the present density of records in Kent in comparison with other southern coastal counties) or (and this is particularly relevant to urban records) through the horticultural trade importing containers of Mediterranean plants, such as olives, figs and palms²⁸.



²⁸ *Polycarpon tetraphyllum* was shown to be a frequent constituent of plant containers from Spain and Italy by Hoste, I., Verloove, F., Nagels, C., Andriessen, L. & Lambinon, J. (2009) De adventievenflora van in België ingevoerde mediterrane containerplanten. *Dumorteria* 97: 1-16.

We have no records from any 'natural' habitats, although even in its core British native area, the Isles of Scilly, it is now mostly associated with man-made habitats. Virtually all our records relate to street pavements and gutters, and to block-paved drives, forecourts and car parks. These supply warm, open habitats with limited competition and often have access to a sandy substrate in which paving-stones or paviors may have been bedded. It is a similar habitat to that which *Laphangium luteoalbum* (Jersey Cudweed) has adopted as an urban weed. As with that species, while *Polycarpon tetraphyllum* behaves as an urban weed, there is little, if any, value for conservation purposes in including it in the rare plant register.

Because *Polycarpon tetraphyllum* is very small and its most conspicuous aspect may be its clustered flowers, there is a passing similarity to *Linum radiola* (Allseed). The latter, however, frequents damp acid forestry tracks, so there should be no confusion between the two, their habitats being so different.



West Heath. Photo by Mike Robinson, 1 November 2017

Polygala amarella Crantz. (Dwarf or Kentish Milkwort)

Draft account

vc15 and 16

Rarity / scarcity status

Polygala amarella is the name currently used to cover a taxon with a very local and disjunct distribution in the British Isles, found in the Craven district of Yorkshire, limestone areas near Orton in Cumbria, the 'sugar limestone' of Upper Teesdale and the chalk downs of Kent. In the past, taxonomic treatment has varied, with the northern plants at one time called *Polygala amara* L. and the southern plants, *Polygala austriaca* Crantz; but after the publication of Fearn (1975)²⁹, it has been usual to treat all together, undifferentiated, under *P. amarella*. The conservation risk rating for *P. amarella*, in England and in Great Britain as a whole, is **Endangered**, which is supported by its area of occupancy having been taken to have declined by over 50% in comparing records for the periods 1930-69 and 1987-99. Also concerning is its limitation to 15 locations and a population of about 950 plants, but these factors alone would not drive so high a risk rating. If the northern and southern plants were to be treated as separate taxa, *P. amarella* subsp. *amarella* and *P. amarella* subsp. *austriaca*, then their respective threat assessments would have been Vulnerable (northern populations) and Critically Endangered (Kent populations)³⁰. Accordingly, whilst the Kent plant is **rare** in any event, if there were to be a taxonomic re-assessment so as to give more distinct status to the Kentish Milkwort, it would be of national concern as Critically Endangered.

Godmersham. Photo by Alfred Gay,
26 June 2014

Account

The first published account of this milkwort in Kent was a note by J.F. Duthie in the *Journal of Botany*, referring to *Polygala austriaca* 'which I had the good fortune of discovering on June 5th [1871] on Wye Down. ...On June 17th I again, in company with another botanist, found it plentifully growing in two narrow strips of rough, chalky ground on the border of copsewood. There must

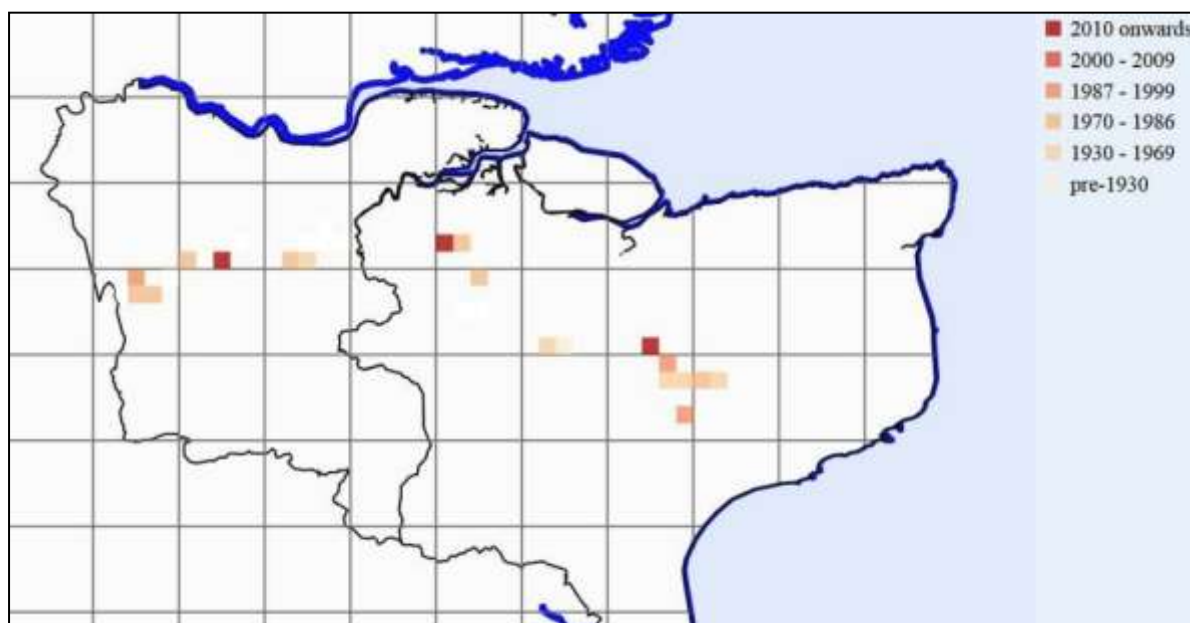


surely be more of it on other parts of the downs, which are very extensive.' It is a late date for the discovery of a native plant, but it is normally very inconspicuous. Duthie was fortunate to see unusually large plants, some between four and five inches high, according to Henry Trimen, one of the Journal editors. A subsequent site description by Duthie was of a rough bank at the edge of copse wood above Coombe Farm.

²⁹ Fearn, G.M. (1975). Variation of *Polygala amarella* Crantz in Britain. *Watsonia* **10**: 371-383.

³⁰ Stroth, P. et al. (2014). A Vascular Plant Red List for England. Botanical Society of Britain and Ireland, Bristol.

This discovery was followed by others, once botanists knew what to look for and, indeed, new sites continued to be found until 1988. It is at times difficult to know to what a historic site description relates and whether two ostensibly different descriptions may actually relate to the same site, but the accompanying map,



prepared from the BSBI database (but correcting some of the data), gives the distribution on a tetrad basis. What is immediately striking is the extent of loss of sites from 1970-86 onwards, with only three current sites remaining. This high rate of attrition seems in part to be due to ploughing up, but mostly because of changes in habitat, with grass density increasing, scrubbing over and tree canopy forming, whereas the Kentish Milkwort requires open conditions.

The sites follow the line of the North Downs, from near Hastingleigh in the east to near Westerham in the west, stopping at the county border although there is a long extinct site at Caterham in Surrey. They are of two types: records relating to the line of the downs escarpment and records in the downs hinterland. The latter are sites of chalk slopes on dry valleys, most of which run south-north down the downs dip slope, so that the aspect for the milkwort is either east or west facing. However, there are also sites, such as Queendown Warren or Purple Hill, where the valleys curve round to provide a more or less southerly aspect. All sites are well-drained and the norm is for fairly skeletal soils on slopes, with the milkwort generally growing in short, old, semi-open turf or fairly bare, disturbed chalk ground.

A further feature of the Kent sites is the number recorded as relating to old chalk workings and their immediate surrounds. This was the case at Westerham, Brasted, Polhill railway tunnel, Trottiscliffe, Purple Hill, Charing Hill and Bavinge Farm (in part). It is highly improbable that this points to the plant being introduced with mining activity; but rather that the opening up of the bare chalk creates an open habitat without even the limited soil cover which would support competitive vegetation. This absence or restriction of competition appears to be favourable to the milkwort. Unfortunately, chalk workings are in general not highly regarded by conservationists, and farmers are likely to fence them off from grazing. Ultimately, even with slowed succession because of the absence of soil, such habitats may well become tree-dominated and unsuitable for the milkwort, albeit that the milkwort appears to favour pit surrounds rather than pit faces. Tree cover has taken over at Westerham, Brasted, Trottiscliffe and Bavinge Farm (in part). This may of course take place on downland as well, particularly if grazing is discontinued; but chalk workings would appear to be at greater risk.

The extent of decline of Kentish Milkwort and the limited amount which we know about it, in comparison with the northern form, *P. amarella* subsp. *amarella*, warrants some more detailed consideration of the historic colonies. Surveys of ten historic sites by Alfred Gay in 2013-2014 found that some suitable habitat survives at five of these, although not necessarily at the precise locations where the plant formerly occurred. In the following section, information is given as regards historic sites generally, and these are ordered from west to east, except for the Wye area where the colonies will be dealt with in clusters. After that, the three extant colonies of Magpie Bottom, Purple Hill and Godmersham Downs are considered.



Godmersham, with developing seed capsules.
Photo by Alfred Gay, 28 June 2014

Historic sites

Blackbush Shaw or Berry's Green Wood (1946-1993)

Kentish Milkwort was discovered here (TQ 442 591[or 3]) by R.G. Spooner in 1962, when also seen by Francis Rose and noted as locally abundant. It was on the east-facing side of a dry chalk valley now in the London Borough of Bromley. Aerial photographs show some scrub and tree development in 1960, which had become apparently dense secondary woodland by 1990. The milkwort was within a small clearing, where encouragement was given c.1980 by scraping off a bare patch, so that, when viewed by Joyce Pitt in July 1985, there were some 31 plants present. Further work was undertaken, clearing the scrub re-growth and raking grass, with the result that 218 plants were counted by Joyce Pitt, Francis Rose and Rosemary Fitzgerald in May 1986, concentrated in a scarified patch but also scattered elsewhere; there may have been up to 300 plants in all. In 1989, 50 plants were seen and a further scrape made that autumn. Joyce Pitt counted 10 plants in 1993, but could not find any in 1995, so the milkwort seems to have gone by then. When the site was sought by Fred Rumsey in 2009³¹, the glade was thought to be more or less lost to nitrophilous species such as *Urtica dioica* (Common Nettle) and *Galium aparine* (Cleavers); but it is possible that this was not the precise site or sites (Joyce Pitt recollects three locations) – it since retains an appearance of chalk grassland, with several orchid species, but only *Polygala vulgaris* (Common Milkwort), rather than the rare species.

Pilgrim House, near Westerham (1971-72)

Records from this site (TQ 448 565) come from Ray Clarke, who found the milkwort in 1971 on the Downs escarpment above Pilgrim House, north of Pilgrim's Way (not to be confused with Pilgrim House, Trottiscliffe, mentioned later). The habitat was an old chalk working site, with ten plants or more not only on the site platform (as at the Nower), but on steepish slopes below. The 1909 ordnance survey map shows what could be chalk workings at TQ 4496 5652, but there is tree cover at present. The milkwort apparently did well again in 1972, but could not be re-found by Rosemary FitzGerald in 1986; nor by Joyce Pitt in 1986 and 1981 (who found the area very scrubbed up and the lower part of the grassland ploughed); nor could it be found in 2009 by Fred Rumsey, who found the turf 'improved' here.

The Nower, Brasted (1957-1972)

³¹ For information here and in many other respects, this account is indebted to Fred Rumsey and his paper: Rumsey, F.J. (2009). A survey of Kentish Milkwort (*Polygala amarella* Crantz subsp. *austriaca* (Crantz) Dostál) with recommendations for management. Unpublished report.

A find was made by Ray Clarke in autumn 1957 in chalk turf on the downs at the Nower, Brasted (TQ 460 571). The Kent Field Club visited the site on 31 May 1958 under the leadership of Francis Rose, and saw the species in abundance on the downs³² – there were over 100 plants. J.E. Lousley described the location as one on ‘steps’ in a steep chalk slope associated with old chalk workings (1958), which are indeed present, but now long covered with trees. Aerial photographs from 1960 show more open ground at the foot of the scarp above arable fields than exists now, but in 2015 there was also land opened up which was under tree cover in 1960 and there is an area of chalk grassland slope with some broken ground which seems suitable, within the scope of the original grid-reference. However, Ray Clarke apparently considered it gone by 1972 and a search here in 2020 was unsuccessful.

Polhill railway tunnel (1972-1986)

Kentish Milkwort was recorded by Ray Clarke on the bare chalk edge above the railway tunnel in July 1972, only one specimen being visible at this late date. Joyce Pitt also saw it (c. TQ 506 603) in 1985 and the last sighting, in very small quantity, was in 1986. This was the year of opening the Swanley-Sevenoaks section of the M25, constructed on steep embankment by the tunnel portal. This will have affected aspect and probably other features of the habitat. Aerial photographs show considerable bare chalk ground above the tunnel, a reduction with scrubbing over being evident from 1990 photographs. Whilst periodic scrub reduction takes place on the cuttings, as with railway property generally, there is no evidence of continuance of the plant, although the site of course presents access issues.

Trottiscliffe (1950-1960 [1971])

The milkwort was found by D.P. Young in 1950 at an old chalk pit near Trottiscliffe and there are subsequent records in the 1950s, assigned varying grid references in the BSBI database. In view of the ambiguities, it is allocated two tetrad squares in the accompanying distribution map. However, if these are all the same site, then a record by Francis Rose with Joyce Pitt for 1960 to which TQ 634 608 is allocated seems the most persuasive identification – a chalk pit off Taylors Lane on the downs escarpment which was open ground in 1960 but since tree-covered. This would correspond to a description in Francis Rose’s unpublished Flora, ‘about 20 plants, on side of ancient chalk pit w. of Pilgrim House, Trosley’ (although he gave TQ 635 608). The most recent record does not seem to be quite the same location – this was made by Ray and Phyll White in June 1971, two spikes on an ungrazed tussock in a severely grazed field at the Trosley scarp.



Queendown Warren (1898-1979)

Dr Druce gathered material at Queendown Warren in 1898 (**BM**). A collection of very vigorous plants was also made here by Cecil Hurst on 24 May 1901 (**SLBI**). It is given a record in Philp (1982), whose survey period includes 1979, when seen by Francis Rose with the Kent Field Club at TQ 830 629. This long gap raises questions as to how the milkwort continued, whether through prolonged seed dormancy, evidence for which is otherwise in short supply, or whether through being overlooked due to its inconspicuousness.

Godmersham.

Photo by Liam Rooney, 13 June 2012

South Green (1952-1955)

³² Rose, F. (1960). Botanical Records for Kent, 1955-58 – vascular plants. *Transactions of the Kent Field Club* 1: 56-65. Also, Reports of field meetings [1958]. *The Bulletin of the Kent Field Club* (1959) 4: 10.

There are records for Rumsted Court or south west of South Green by Francis Rose from 1952, to which a grid reference of TQ 847 599 has been assigned (and is noted in Francis Rose's MS Flora), maybe on the basis of J.E. Lousley's 1953 description of 'Hillside ¼ mile west of South Green, Stockbury'. However, this location was, from aerial photographs for the 1940s onwards, in cultivation; and more likely territory was rising chalk pasture 600-700 yards south west of South Green, around TQ 844 597 to TQ 845 598. A 1955 record by P.C. Hall for 'Rough chalk down near Rumsted court' would have suited this (better than the grid reference of TR 847 598 assigned in the BSBI database, which in any event is a location which has since been under plough). This is a downs hinterland site, of more or less eastern aspect. It was searched in June 2017 (Geoffrey Kitchener and Liam Rooney) without success: a limited chalk grassland flora remains, and there is broken ground from cattle trampling and rabbit activity, so occurrence is not out of the question, especially as a find of *Arabis hirsuta* (Hairy Rock-cress) was made there the same year (TQ 845 598).

Cobham Farm, Lenham (1906-1950)

Kentish Milkwort was first found here on 22 May 1906 by Hubert Elgar, a curator at Maidstone Museum, on 'chalk hills between Lenham and Charing', so this would be a downs escarpment site. The *Woolwich Surveys* (1909) place the site between Lenham and Maidstone, but this is not in accord with the herbarium specimen label (**SLBI**). Elsewhere, Elgar's find is noted as at Pilgrims Road, east of Lenham, Cobham Farm (this would be TQ9351, as also appears from 1945 and 1946 records by Francis Rose, 'Downs NE of Cobham Farm'). More precision is given in relation to material collected by D.P. Young in 1950 from Foxbury Wood (this is at TQ 936 514). It is noted against the 1946 specimen at **MNE** (and in Francis Rose's MS Flora of Kent) that the site was ploughed in 1958.

Charing Hill (1890)

A specimen at **BM** collected in 1890 by John Leitch from Quarry, Charing, will have been further east (TR9550). The most likely site is a chalk quarry on the escarpment north of the North Downs Way (TQ 9537 5028), but the 1897 ordnance survey map shows the quarry to have been much more extensive to the east of what can currently be accessed.

Wye to Crundale

(a) Longport Down/Warren Wood, Crundale (1890-1997)

Although it is not clear how this might fit into the account in Hanbury and Marshall (1899), Marshall seems to have found the milkwort in 1890, between Wye and Crundale (**BM** specimen). This may relate to Longport Down/Warren Wood, which lies directly between. Warren Wood in effect is a continuation of the Wye Downs chalk escarpment facing westward to the Great Stour valley, although it is on a ridge with a valley to the east as well. The west facing slope alongside Longport Road, from aerial photographs, shows a progression from scrubby grassland in 1940 through to full tree cover by 1990, although there has been some opening out of the main wood after 2011. Francis Rose had a 1951 record for 'Down at Longport near Crundale' and returned there for a 1964 record, given as TR 076 485. G.M. Fearn found about 50 plants in total, spread in two locations, TR 074 487, one on each side of Warren Wood but at the same latitude (which may imply east and west aspects, the wood being on a ridge). A site on east-facing downland (and so maybe east of Warren Wood) is mentioned in Francis Rose's MS Flora, west of Crundale, where the milkwort was abundant with over 150 plants seen in several years during the period 1950-64, a few of them being white-flowered. When Rosemary FitzGerald visited in May 1987, plants were found around narrow steps up west-facing Longport banks, TR 074 488, about five to seven metres above Longport Road. There was a sighting was two years later, by B. Pardon (there are also claimed but unattributed 1989 records for Black Edge Wood, which is on lower ground to the west). The final record appears to be that of Francis and Pauline Rose with John Ockenden, two plants west of Longport Road, TR074 488, in June 1997.

(b) Pett Street Down (1901-1960)

John Percival found Kentish Milkwort in 1901 on the Wye Downs near (south of) Marriage Farm, which may well coincide with where, in 1946, Francis Rose found a few plants growing on 'Downs west of Pett Street' (Pett Street Down, c. TR 081 474, which is east-facing downland on a ridge between dry valleys). His is also the last record, in 1960.

Wye

It appears that the plant was in several stations at or in the vicinity of the Wye Downs; it is not always possible to identify to which a record may belong. Frederick Hanbury (in Hanbury and Marshall, 1899) describes it as 'Near Amage Farm; about Bavin's Farm, 3½ miles E. of Wye; and on some rough ground near the base of the downs about 3 miles from Wye, towards Hastingleigh', i.e. three sites.

(a) Wye Downs, Amage Farm (1871-1951)

The first of these sites, the Amage Farm location, is from that description likely to have been in TR0745 or TR0746. It may also be the same as the first (1871) Kent find site, and when Dr Druce collected from Wye Downs in 1898 ('from the chalk downs above Brook') he was not sure, stating in a letter at **BM**: 'Conceivably the same spot as the old record. In one spot quite plentiful. *Orchis purpurea*, *ustulata*, *aranifera* turned up plentifully, too.' Collections from 'near Wye' were made by both Hanbury (1883) and Marshall (1888, 'grassy banks of copses near Wye, in 3 or 4 stations, abundant in one of these'; this may have been a sweep round all sites, not necessarily restricted to Wye Downs. R.A. Graham found it in 1951, the location being assigned as TR 073 466, which would be east of Wye Crown, north of Amage Farm.

(b) Bavinge (main site 1875-1948; Podlinge 1948; Little Gains 1954-1958)

The second site, Bavin's Farm, Bavan's or Bavinge, is at TR1046, this colony being one of the North Downs dip slope hinterland sites, as distinct from an escarpment site, to which the other sites (a) and (c) presumably belong. The Bavinge occurrences were apparently in several stations, scattered over about a mile (according to Hanbury and Marshall). Hanbury visited with Duthie on 10 June 1875 and, after viewing the original Wye Downs locality, 'we came across it in still greater abundance on chalk banks in a little valley known as Bavin's Farm, which is about three miles east of the original locality. On one bank especially the plants were very fine and abundant, and mixed with other rarities, including *Orchis fusca* and *Herminium monorchis*' (*Journal of Botany*, 1875, **13**: 237). J.E. Lousley collected a sheet full of material from what was present 'In small quantity, amid coarse grass in small chalk pit near Bavin's Farm', and repeated this in 1937. Apparently this is not the pit in Doves Wood west of Bavinge Farm, since Francis Rose in 1945 found it in a 'Chalkpit north of Bavinge Farm', and H.W. Pugsley annotated his own copy of the Flora of Kent that the plant was round the side of a chalkpit north west of Bavinge Farm. Such a pit is shown in open ground on the 1898 ordnance survey between Woolfinch and Bavinge Woods, c. TR 104 469 (this is the grid reference given in Francis Rose's MS Flora). It was visited by Rosemary FitzGerald in 1986; the site was thought to be no longer suitable and currently appears to be tree-covered. The chalk pit (from which the last record traced is 1948), however, was only one of the Bavinge cluster of stations. Another station is likely to be 'Chalk Down near **Podlinge** Farm' (Francis Rose, 1948, taken in the BSBI database to be TR 111 469, although TR 112 471 is given in his MS Flora. Gill Fearn apparently noted (1978) that the site had been ploughed up. When Francis Rose and Rosemary Fitzgerald visited in 1986 they found the whole of this fine valley had been converted to arable or re-seeded, even though the down where the species had been was so steep that the modern grasses could not thrive. There is also a record by Len Margetts (Francis Rose's MS Flora) for Whiteacre Farm, Waltham (at the north end of a valley which branches south east to the Podlinge site). Further south west is **Little Gains**, a locality

taken from Francis Rose's unpublished Flora and attributed to Ray Clarke (1954), also recorded by Francis Rose (1958): this place name is applied to a valley north east of Spong Wood, c. TR 127 461.

(c) Wye Downs towards Hastingleigh: Fishponds (before 1899)

This site, given by Hanbury and Marshall (1899) as at the base of the downs about 3 miles from Wye, looks likely to lie south east of Wye Downs and their continuation, Broad Downs. C.E. Salmon and John Percival collected from Wye Downs in 1900, 'Rough ground on Downs SE of Cocklescombe' – this must be a version of Cuckoldscombe, now Fishponds Farm, TR0844. Paul Stanley's 1987 record at TR 084 437 is at the base of the downs and south east of Fishponds, and is almost exactly three miles by road from Wye church, so it would fit well the historic descriptions. He did not re-find it in 1996, although plenty of *Polygala calcarea* (Chalk Milkwort) was present.

Extant sites

Magpie Bottom, Shoreham (1897 to date)

In the *Journal of Botany* (1897) is a note by G.L. Bruce that 'On June 19th the Toynbee Natural History Society found *Polygala austriaca* in a new station, on the downs N.E. of Otford, Kent'. This clearly sparked immediate interest: Dr Bruce came the next day and found it abundant, noting that it was clearly the same as the Wye Downs plant. Hanbury and Marshall (1899) identified the location as Magpie Bottom, where it was plentiful in 1898, but very scarce and local when found by A.J. Wilmott in 1911. There are subsequent records at intervals with varying quantities of plants seen, e.g. about 50 (Francis Rose, 1956), eight (G.M. Fearn, 1968, in very sparse turf, particularly in bare patches), four (Rosemary FitzGerald and Francis Rose, 1986), 46/30/61 (Fred Rumsey, 2009/2012/2013); none in 2020 (Geoffrey Kitchener and Joyce Pitt).

Magpie Bottom, habitat. Photo by
Fred Rumsey, June 2009

Magpie Bottom is a dry chalk valley in the downs hinterland running south-north. The currently known site is north of the road with a western aspect on rising chalk grassland. It has been described as in 2013 notionally lying within a quadrilateral between TQ 54395 61201; TQ 54407 61211; TQ 54410 61202 and TQ 54410 61202. Most of it is just above a small bare scrape and is related to a slight change in level



which is detectable on aerial photographs as following the contour of the valley slope. Fred Rumsey remarks that this area is different in character from the rest of the site in that the turf is of finer grasses lacking the coarser species such as *Bromopsis erecta*, and that the turf is much lower with more rosette-leaved herbs – *Pilosella officinale*, *Cirsium acaule*, etc. with some small patches of bare ground between them. He suggests that it might have been chalk spoil dumped there from workings long, long ago, whereas the rest of the site has the original downland turf. It is also possible that it is a degraded lynchet from ploughing to a vanished field boundary, although that would probably have been represented more by soil than chalk; or it may be the site of a grubbed-up hedge, which would have displaced chalk to the surface to yield the present feature. No internal field boundary, however, is shown here on the 1840 tithe map. This feature suggests that there may be something in common with other historic sites related to old chalk workings. Joyce Pitt in 2014 recorded the associated flora as including *Anacamptis pyramidalis* (Pyramidal Orchid), *Avenula pratensis* (Meadow Oat-

grass), *Avenula pubescens* (Downy Oat-grass), *Briza media* (Quaking-grass) locally dominant, *Carex flacca* (Glaucous Sedge), *Euphrasia pseudokernerii* (Chalk Eyebright), *Helianthemum nummularium* (Common Rock-rose), *Hippocrepis comosa* (Horseshoe Vetch), *Polygala vulgaris* (Common Milkwort), and *Succisa pratensis* (Devil's-bit Scabious) along the top edge. *Gentianella anglica* (Early Gentian) has also been recorded in very close proximity. The milkwort does not appear, or at any rate is not found, every year: while over 100 plants were noted in 2015, it was not seen in 2019 and 2020 (the latter year had a very dry spring and the location was scrubbing up despite having been cut back two years before; rabbit activity also appeared to have diminished).

There have in previous years been two other stations at Magpie Bottom, known to Francis Rose and Joyce Pitt, and one of which appears to have been seen by G.M. Fearn in May 1968, as she recorded a grid reference, TQ 547 609, south of the road on a west facing chalk hillside. This was also related to an old chalk workings feature, which has acquired tree cover within memory; the margins remain a good potential habitat (2020). The other station, originally found by Joyce Pitt, lay north of the road on a similar slope (TQ 5464 6100).

Purple Hill, Bredhurst (before 1899 to date)³³

Hanbury and Marshall (1899) mention a communication by George Bruce of the Toynbee Natural History Society (this must have been made quite close to *Flora* publication, as it is given under 'additions' in the 1899 *Flora*) that the society had found the milkwort plentiful over a small area about a mile west of Queendown Warren. It is likely that this was the current Purple Hill site. Some backing to this is given by an annotation 'On Purple Hill Nr Bredhurst 1904' in a copy of Hanbury and Marshall (1899) in the possession of Lliam Rooney (original owner unknown). It was seen by Francis Rose in 1959, when there were over 50 plants at TQ 813 621; and by G.M. Fearn in 1968, by whom TQ 814 622 is given as the grid reference, although somewhat to the north east of where it is currently known. However, Rosemary FitzGerald's record with Francis Rose at TQ 813 621 in May 1986 (approximately 90 plants on the edge of a disused chalk pit just north of Magpie Farm) corresponds very closely to the present location. More recent sightings include 18 plants seen by Fred Rumsey in June 2010 (14 at TQ 8129 6209, two at TQ 8128 6212, one at TQ 8217 6213 and one at 8129 6213; two plants seen by Geoffrey Kitchener in June 2011 (on the eroded short turf of the downs slope between a path and an old chalk pit, TQ 8129 6209); and 17 by Fred Rumsey in 2012; but only one plant seen by Alfred Gay in June 2013 (near the bottom of the slope close to the path, TQ 81288 62097), although numbers had recovered to one plant in bud and six rosettes in June 2014 (TQ 81288 62097). It was assumed that the dip in plant numbers for 2013 was due to heavier grazing than usual. Four plants were present in an area 50 x 50cm in June 2015 (Fred Rumsey). It was still present in 2020.

Purple Hill, habitat. Photo by
Geoffrey Kitchener, 23 June 2011



Purple Hill is a downs hinterland site, a steep chalk valley slope facing southwards. There are other notable species in the grassland flora, such as *Cuscuta epithymum* (Dodder) and *Galium pumilum* (Slender Bedstraw). The milkwort is associated with small steps or terraces of eroded ground, presumably kept open partly by the steepness of the slope but mainly by the passage of grazing stock, avoiding the

³³ For information in relation to this site, Godmersham and other matters relating to the Kentish Milkwort, this account is indebted to Alfred Gay and his report: Gay, Alfred (2015). Dwarf milkwort (*Polygala amarella*) Results from first two years of project (2013-2014). The Species Recovery Trust report.

proximity of an old chalk pit. So this is another case of a chalk workings related site and, again, it is the surrounds on which the milkwort is found, rather than the pit itself. The slope has been scrubbing over from what was relatively clear ground in 1940 aerial photographs, building up consistently in the pit since then, less so on the hillside, but following a clearance to the west of the pit between at some time between 1990 and 2003, hillside invasion also gathered pace. *Cotoneaster horizontalis* (Wall Cotoneaster) and *Crataegus monogyna* (Hawthorn) were recently the principal invaders and some clearance was carried out in February 2014, albeit that with re-growth, this would need to be a repeated exercise.



Godmersham, habitat. Photo by Alfred Gay,
20 June 2013

Godmersham (1988 to date)

Kentish Milkwort was first recorded here in May 1988 by Stuart Hedley as part of a NCC England Field Unit survey, when some 295 plants were seen at TR 058 502. The next year, B. Pardon noted at least 50 plants on an east facing slope, TR 058 503. Subsequent records included: presence noted by Eric Philp in 1996, published in Philp (2010); a sighting by Joyce Pitt c. 1993 at TR 057 701; very locally frequent

(Francis and Pauline Rose, 2000); five plants found after two hours' search in June 2010 (Alfred Gay, TR 059 502); 46 plants in June 2012 (KBRG meeting, the majority within a 10 metre radius of TR 05886 50192); 163 plants in June 2013 (Alfred Gay, one flowering plant north of a small coombe at TR 05914 50298, and the rest scattered between TR 05889 50229 and TR 05845 50088, with hotspots at (1) TR 05890 50222, (2) TR 05886 50192 and (3) TR 05848 50092); 92 plants on three survey dates in June 2014 (Alfred Gay, echoing the 2013 distribution, with the single plant, the scattering of the rest and the presence of hotspots being similarly located); 36 flowering plants in June 2016 (Fred Rumsey and Alfred Gay); still present, 2018. The most recent data are (comm. Tony Witts) for 196 plants in 2019, comprising 50 at TR 05841 50084; 37 at TR 05839 50079; 25 at TR 05836 50099; seven at TR 05852 50112; 72 at TR 05838 50091; one at TR 05853 50113; and four at TR 05880 50173 – it is apparently responding well to conservation measures.

The site comprises chalk grassland on the east facing slopes of the North Downs where cut through by the Great Stour valley. It is sheep grazed, although cattle have been used in the recent past (the latter may have been more effective for the purposes of the Kentish Milkwort). The sward length has increased in places in recent years but at least in 2013, this has coincided with a substantial increase in the number of flowering Kentish Milkwort plants. However, the sward was in places noticeably higher in 2014 and this may be the cause of the diminution in the total number of plants for that year. There is a risk that *Brachypodium pinnatum* agg. (Tor-grass) may swamp less vigorous species, especially if there is a relaxation of the grazing regime. At the time of the 2013-14 surveys, *B. pinnatum* agg. was mostly confined to ridges along the terracettes, between which are extensive patches of short herb-rich grassland. The milkwort favours these patches of shorter grass where it often grows in association with *Carex caryophyllea* (Spring Sedge) and *Hippocrepis comosa* (Horseshoe Vetch). However, some plants do occur on the edge of the *B. pinnatum* agg. stands, perhaps where there has been some recent disturbance and the existing grass stands provide some protection from grazing animals.

Ecology³⁴

³⁴ Much of the information in this paragraph is based on the following sources:

Polygala amarella is a small, short-lived perennial which has been more thoroughly studied in its northern England populations. There, most plants start flowering in their second and third years; they have a mean age of six to seven years. Flowering in the northern populations is from May to July, subject to variation according to altitude; in Kent, the flowering period is similar, but can get delayed by a late spring, as in 2013. Spread is by the relatively heavy seed, which may fall round the plant or be dispersed further by ants or grazing stock. The capsules drop intact with their seeds, in Kent often while the uppermost flowers have yet to open. Most seeds apparently germinate in the year after seed is set. So far as experience goes in relation to northern populations there is little innate dormancy in the seeds, but it may be that the filtration of red light by the vegetation of a closed sward could inhibit germination. There have been losses in northern populations through over-grazing. In Kent, under-grazing is a more likely cause, where leading to scrub colonisation or the loss of open habitat through the spread of *Brachypodium pinnatum* agg.

Description

Polygala amarella in Kent, it has to be said, is a small, generally rather dingy and inconspicuous plant, with pale mauve to greyish-white flowers. One population near Wye has apparently shown a wider variation, of white through pale pink to the normal pale greyish lilac. *Polygala amarella* is distinguished from other milkworts by having a basal rosette whose leaves are much larger than the leaves growing above; by the veins on the inner sepals not dividing up and rejoining very much; and by the flowers measuring no more than 5mm. The Kent populations differ from those growing further north by the dingier flower colour, and by other features. Fearn (1975) mentions that the wing sepals (2.6-4.2 mm) and capsules (2.4-3.8 mm) can be shorter than those of other populations, but there is overlap. She concluded that the Kent plants are morphologically distinct from the northern populations sampled, and that most of this variation is maintained in cultivation. Comparing with the intergrading of variation on the Continent, she considered that *Polygala amarella* was a single, polymorphic species with a number of races and that the degree of variation did not warrant giving subspecific status to the Kentish Milkwort. Nevertheless, there would seem value in doing so, to encourage the preservation of the genetic diversity of this distinctive plant.

Acknowledgements

The compilation of this account has drawn, apart from various record sources, in particular upon the help provided by Alfred Gay and Fred Rumsey (papers as cited in footnotes).

Fordham, R.C. (1979). *An analysis of the population dynamics of Draba incana, Polygala amarella and Gentiana verna in upper Teesdale*. MSc thesis, Durham Theses, Durham University.
 Walker, K.J. (2015). *Polygala amarella* Crantz Dwarf Milkwort. Species Account. Botanical Society of Britain and Ireland.

Polygala serpyllifolia Hosé (Heath Milkwort)

Draft account: habitat photo needed.

vc15 and 16

Rarity / scarcity status

Heath Milkwort is frequent throughout the British Isles on acid grassland and heathland. Its threat status for conservation purposes in Great Britain as a whole is of 'Least Concern'. However a more recent assessment for England treats the species as **Near Threatened** (just), on account of its area of occupancy having been taken to have declined by 22% in comparing records for the periods 1930-69 and 1987-99. In Kent there is evidence of a decline of 66% between 1971-80 and 1991-2005 so that, while it is neither rare nor scarce in the county, the trend is concerning.

Brenchley Wood. Photo by Liam Rooney, 12 May 2011

Account

The older botanists tended to lump milkworts together under *Polygala vulgaris*, in Britain at least until 1846. One could surmise that some such records, when associated with an appropriate habitat, should be *Polygala serpyllifolia*, for example those in Daniel Cooper's *Flora Metropolitana* (1836) relating to Blackheath, Dartford Heath and Keston Mark or Common. Our first record looks as though it is by Thomas Johnson in his *Descriptio Iter* (1632) noted on his journey between Canterbury and Faversham. It was listed by him with plants of acid ground, *Digitalis purpurea* (Foxglove) and *Hypericum pulchrum* (Slender St John's-wort); and Francis Rose in the 1972 edition of Johnson's work points out that his 'Polygala flo. caeruleo, Amarella Gesn. flos Ambervalis Dod.' is almost certainly *Polygala serpyllifolia*, not *Polygala vulgaris*, in the acid Blean Woods past which Johnson's journey, presumably along Watling Street, would have taken him. The first published record in which the milkwort was consciously distinguished (using the name *Polygala depressa*) from *Polygala vulgaris* was given in one of the instalments published in the *Phytologist* (1861)³⁵ of 'Notes and Observations made during a Week's Botanizing in South Kent...By a Correspondent', as found on the way along the sandhills from Sandown Castle to Deal.



Hanbury and Marshall (1899) regarded it as a not uncommon plant of damp heaths and gravelly ground, and probably much commoner than the reports from their correspondents indicated. There are records from obviously acid heathy areas such as Hayes Common, Bostall Heath, the Blean, Rusthall Common, Westerham Common, Rusthall Common, Penenden Heath and Hothfield Heath. Marshall found it on gravel capping the chalk, which would have been acid, and this would also explain Duthie's record for Wye Downs (i.e. not the downland itself – Francis Rose saw it here in 1943 at a leached area on a plateau). Rose assessed it as a native of heathland, grass-heath and woodlands on acid soils with raw humus; very common in suitable places, but naturally absent from the marsh districts of the county and most of the chalk and clay areas. His records from the 1940-60s were, subject to those limitations, widespread across the county. On the north west Kent gravels it was present at Hayes Common, Keston Common, Chislehurst Common, St Paul's Cray Common, Joyden's

³⁵ Vol 5; at p213, not 210 as given by Hanbury and Marshall (1899).

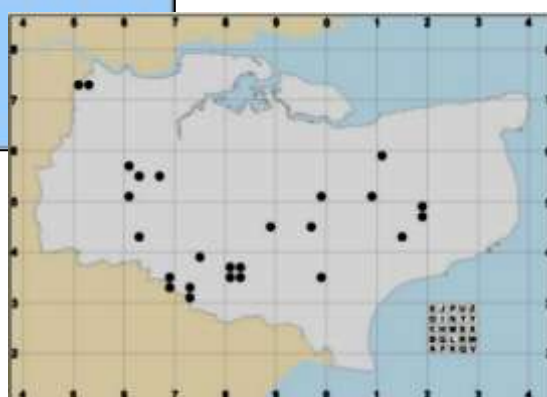
Wood, Farningham Wood, Hollows Wood and Dartford Heath. There were a number of locations on acid soils around Canterbury such as the Old Park golf course, West Blean Wood, west of Rough Common and grass-heath north of Dunkirk. In 1946 it was recorded at Darenth Wood on the Blackheath Member of the Lambeth Formation and at Shorne Ridgeway, where the geology is similar. There were occasional sites ostensibly on chalk, but where acid conditions actually prevailed, such as drift deposits at Magpie Bottom and leached chalk heath between Ringwould and St Margaret's. The Lower Greensand of West Kent provided sites at Crockham Hill Common, Brasted Chart, Seal Chart, Whitley Forest, Bitchet Common, Ightham Common, Oldbury Hill, Knole Park, Mereworth Woods and Oaken Wood Barming (this last site showed continuity from a specimen collected by H. Lamb in 1898 through to Francis Rose's sighting in 1956). Records also followed the acid sands of the Folkestone Formation from Wrotham Heath eastwards to Pendenden Heath, Hothfield, Ashford Warren, Willesborough Lees, Meresham-le-Hatch and Gibbon's Brook. The geology of south west Kent is also acid, accounting also for records made or collected by Francis Rose at locations such as Rusthall Common, Pembury Woods, Combwell Wood, Ellis and Tongs Wood Lamberhurst, Anglely Wood and (where frequent in 1954) Bedgebury Forest.

This range is reasonably represented by 75 tetrad records in Philp (1982), when the species was reckoned to be locally frequent but never abundant, on heaths and woodland rides on sandy or gravelly soils. However, with the 1991-2005 survey of Philp (2010) the extent of occurrence is drastically depleted, with only 25 tetrad records. The impression is one of thinning out, but there are 13 hectad (10km squares) in which the milkwort could no longer be found at all in the county: TQ44, TQ45, TQ53, TQ54, TQ55, TQ74, TQ75, TQ92, TR03, TR04, TR16, TR24, TR25.



Polygala serpyllifolia (Heath Milkwort) 2010-20

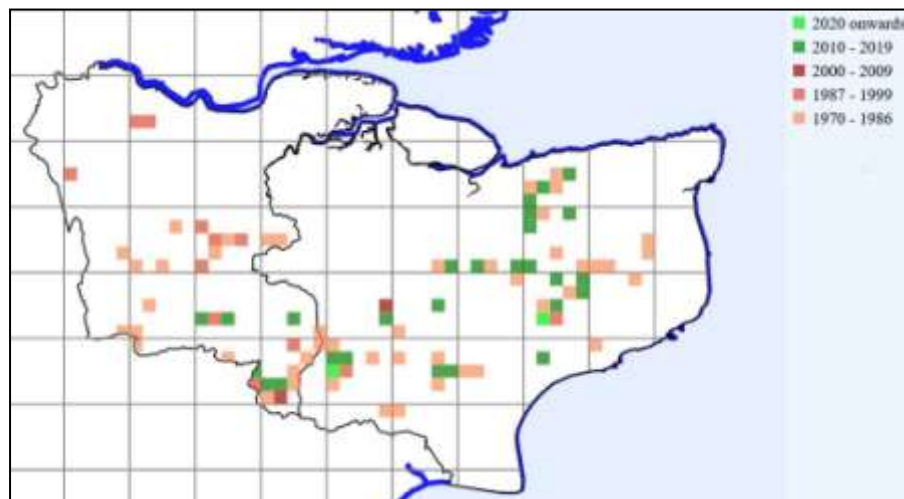
Data for this register will be maintained by mapping at monad (1km square) level and our 2010-19 records are shown here alongside the tetrad mapping taken from Philp (2010) with kind permission of the late Eric Philp and the Kent Field Club.



Polygala serpyllifolia (Heath Milkwort) 1991-2005

In overall terms, the 2010-20 records show no further decline, totaling 29 tetrad records (equivalent to 33 monads) in comparison with the 25 tetrads given by Philo (2010). However, there is a clear discrepancy in that we are missing recent West Kent records other than for Bedgebury, Pembury and Marden Thorn. It would seem surprising that there is nothing for the north west Kent gravels or for the West Kent Lower Greensand; and rather than assume absence, it is probably appropriate to undertake further survey. However, the results in general appear to affirm the comparison between earlier records (Philp (2010) coupled with the 1940s/60s records of Francis Rose) and later ones (Philp, 1982) in showing a decline. The decline in earlier years may at least in part relate to loss of heathland habitat, although that trend was latterly reversed

(see the account for *Calluna vulgaris*). Further aspects of the decline may be related to increasing deposits of atmospheric nitrogen, which has been found to affect plant physiology and species diversity in acid grassland. Payne et al. (2011)³⁶ consider that *Polygala serpyllifolia* would make a good indicator species for low-nitrogen deposition habitats. It is negatively affected by atmospheric nitrogen deposition and by soil nitrate content³⁷.



Polygala serpyllifolia tetrad records (to 2021) from BSBI database

The historic position given by the BSBI database tetrad records, mapped here, shows a general scatter of sites in East Kent not re-found and is compatible with a general cause of decline such as nitrogen deposition. However,

the deficiency of re-found records in West Kent may be an artifact of recording.



Brenchley Wood. Photo by Liam Rooney, 12 May 2011

Our recent records contain limited information as regards habitat, although it is clear that the plant is associated with acid grassland or woodland rides, including where clearance has been undertaken. Associated species include: *Calluna vulgaris* (Heather), *Hypericum pulchrum* (Slender St John's-wort) and *Potentilla erecta* (Tormentil). Because of habitat preferences, there is only one other British species with which it is likely to be confused, *Polygala vulgaris* (Common Milkwort). They are most readily separated by the lower stem-leaves, which are opposite or near-opposite in *P. serpyllifolia* (evidenced by the position of the leaf scars if the lower leaves have dropped), alternate in *P. vulgaris*. The three outer sepals are usually acute at the apex; usually obtuse in *P. vulgaris*.

36

Payne, R., Stevens C.J., Dise, N.B., Gowing, D.J., Pilkington, M.G., Phoenix, G.K., Emmett, B.A., & Ashmore, M.R. (2011). Impacts of atmospheric pollution on the plant communities of British acid grasslands, *Environmental Pollution*, **159** (10): 2602-2608.

37 Pannek, A., Duprè, C., Gowing, D.J.G., Stevens, C.J., & Diekmann, M. (2015). Spatial gradient in nitrogen deposition affects plant species frequency in acidic grasslands *Oecologia* **177**: 39–51.