

Kent Rare Plant Register

Draft species accounts

I, J & K



Compiled by Geoffrey Kitchener and the Kent Botanical Recording Group
Issue date: February 2020

Kent rare plant register

This section of the register covers:

Iberis amara

Inula crithmoides

Isolepis cernua

Jacobaea aquatica

Jasione montana

Juncus acutus

Juncus compressus

Juncus ranarius

Juncus squarrosus

Juncus subnodulosus

Juniperus communis

Knautia arvensis

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

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

Abbreviations used in the text:

Recorders' initials:

ACH Andrew Henderson

AL Alex Lockton

AP Alan Parker

BB Brian Banks

CEC Carter Ecological Consultants

CJ Clive Jermy

CJC James Cadbury

CO Colin Osborne

DM Daphne Mills

DP David Penney

DS David Steere

EGP Eric Philp

SLBI South London Botanical Institute

FR Francis Rose

GK Geoffrey Kitchener

IB Ishpi Blatchley

JA Jan Armishaw

JBe Jim Bevan

JCo Jeremy Cotton

JJ Judy John

JN Josie Newman

JP Joyce Pitt

JPu John Puckett

JS Judith Shorter

LR Liam Rooney

LS Leonie Seymour

OL Owen Leyshon

Pho Paul Holt

RG Bob Gomes

RMB Rodney Burton

RoF Lady Rosemary FitzGerald

SB Sue Buckingham

SL Stephen Lemon

TI Tim Inskipp

Other abbreviations:

KBRG Kent Botanical Recording Group

KWT Kent Wildlife Trust

MNE Maidstone Museum herbarium

SLBI South London Botanical Institute

***Iberis amara* L. (Wild Candytuft)**

Draft account. Kent records and photographs required.

vc 15 and 16, but possibly gone from both

Rarity / scarcity status:

Wild Candytuft is a nationally scarce native of south central England which grows on bare calcareous ground, currently regarded as casual elsewhere in the British Isles. It is considered to be **Vulnerable** to the risk of extinction, both in England and in Great Britain as a whole, with losses having taken place when myxomatosis reduced populations of rabbits which were maintaining disturbed open conditions. The species is **rare** in Kent and may already be extinct in the county.

Account:

The first published record for Kent was by Christopher Merrett in his *Pinax rerum naturalium Britannicarum* (1666), where he described it as 'On the Clifts beyond Deal Castle in Kent'. There are only a handful of other historic records. Daniel Cooper included the species amongst plants seen in gravel-pits at the back of Castle Wood, Shooter's Hill (*Flora Metropolitana*, 1836). There is also a record in a list of plants seen by William Pamplin at the 'Hills surrounding the lower Bell and overlooking Kits Cotty House, near Aylesford' published by Matthew Cowell in *A Floral Guide for East Kent etc.* (1839). It was collected by Edward Edwards at Shorne in 1843 (specimen in Manchester Museum); and Messrs. C.W. and H.N. Ridley contributed a record from Cobham to Hanbury and Marshall's *Flora of Kent* (1899).

Discounting a 1938 specimen from East Peckham in **MNE** (probably cultivated), there are only two modern localities for the plant in Kent.

The first of these is on the eroded chalk of the downland scarp at Cherry Garden Hill, Folkestone (probably TR2937). This appears to have been first found by Vera Day in June 1951, recorded as at Folkestone water-works. Francis Rose saw it in June and July 1954, and found it still to be locally abundant in June 1986. Whilst it was seen by Joyce Pitt in the 1990s and noted by Eric Philp at some time during 1991-98 for publication in Philp (2010), since then the open character of the terrain has declined, and there appear to be no recent records. Search in 2013 found the area heavily scrubbed over; some clearance has since been carried out, but search in 2015 did not reveal that it had returned. It is possible that the earlier presence of the species here had an origin from cultivation, when the Cherry Garden area was occupied and tended. Phil Green (pers. comm.) points out the coincidence of this historic usage, reflected in the continued presence of garden spring bulbs in the vicinity, coupled with the absence of Candytuft records on the neighbouring downs away from vicinity of former dwelling sites.

The second site was discovered by Geoffrey Kitchener in June 1995, on a bare chalk slope below rabbit burrows in Holborough Quarry, recorded as at TQ76B but, as far as can be interpreted against changes in the landscape, this was around TQ 700 627. Eric Philp subsequently (but before 1999) also found it at TQ66W in the same quarry; and the last sighting at TQ76B appears to have been by him and Doug Grant in July 2001. This eastern part of the quarry was sold off for housing and is now the Holborough Lakes development. The location is now no longer suitable for the species, although it is just possible that some residual terrain exists, a chalk cliff inaccessible behind security fencing.

Iberis amara is (normally) an annual and is fairly intolerant of competition, favouring bare ground accordingly. It appears to flourish on the well-drained substrate on steep slopes, as with the Kent sightings at Deal, Kit's Cotty, Folkestone and Holborough. All these sites are on chalk, although the historic Shooter's Hill gravel-pit

site suggests that it is not necessary for the habitat to be both well-drained and calcareous. There appears to be an association with rabbits, Showler (1994)¹ mentioning the presence of the plants at rabbit scratchings. One might suppose that this could in some cases relate to the disturbance required to provide bare ground for annual germination; but the Holborough site below rabbit burrows constituted bare ground without apparent need for intervention by rabbits. Showler (1994) also refers to the seed being long-lived and responding to vegetation removal and ground disturbance, so there may yet be scope for the Folkestone population to re-appear.

Iberis amara is capable of being confused with the perennial *Iberis umbellata* (Garden Candytuft), also a plant found on disturbed ground, but as a garden escape. They are separated by annual Wild Candytuft having an inflorescence which lengthens when in fruit; also its fruits are smaller (most or all 3–6mm, in contrast with 7–10mm for Garden Candytuft). *Iberis amara*, however, has also long been grown as a garden plant.

¹ Showler, A.J. (1994), *Iberis amara* L. in eds. Stewart, A., Pearman, D.A. & Preston, C.D., *Scarce Plants in Britain*, JNCC.

Inula crithmoides L. (Golden-samphire)

Draft account.

vc 15 and 16

Rarity / scarcity status:

Inula crithmoides is a local plant of coastal habitats in southern parts of the British Isles. Its conservation status is regarded as one of 'Least Concern', both in England and Great Britain as a whole; but it is a nationally scarce species. North Kent is one of the areas in which it is most abundant, and it warrants no particular rarity/scarcity designation in the county.

Account:

Golden-samphire enjoys very early notice in the county, being recorded by John Gerard in his *Herball* (1597) as *Crithmum Chrysanthemum* or Golden Sampier which 'groweth in the mirie Marsh in the yle of Shepey, as you go from the Kings ferrie to Sherland house' (presumably Shurland Hall, Eastchurch). Except for orthography, this description of distribution remained unaltered in Thomas Johnson's 1633 edition of the *Herball*. Johnson had himself seen it at Sheppey, listing it in his *Iter Plantarum* (1629) amongst plants such as *Atriplex portulacoides* (Sea-purslane) and *Salicornia* sp. (Glasswort) around Sheerness, after his botanical party had survived interrogation by the Mayor of Queenborough, who was suspicious of the group's motives.

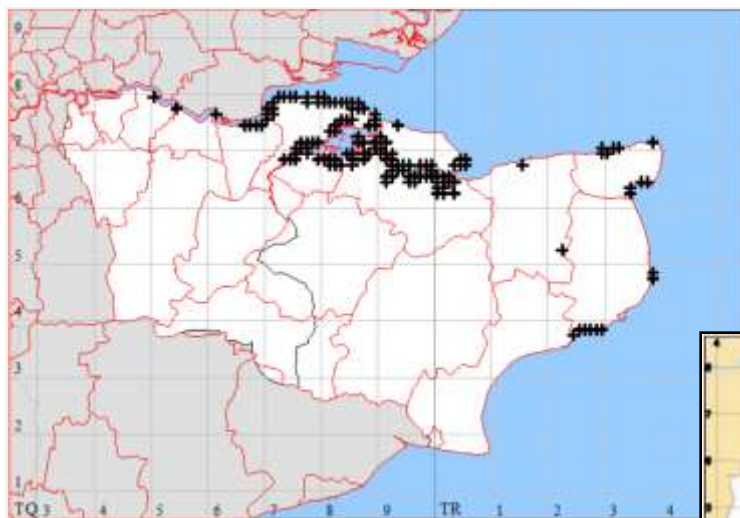
Oare. Photos by Liam Rooney, 19 August 2010.



Hanbury and Marshall (1899) regarded *Inula crithmoides* as rare and very local on muddy coasts, listing it (as well as at Sheppey) on the mainland coast in locations from Rainham to Faversham and Seasalter. Habitats included creeks and ditches, and it was reported by C.P. Hurst for the 1899 Flora as being abundant at Conyer's Creek. Abundance below Rainham can also be inferred from the Flora's listed records, although these do not include a collection by Joseph French in 1848 at the marshes there (specimen in the University of Birmingham herbarium).

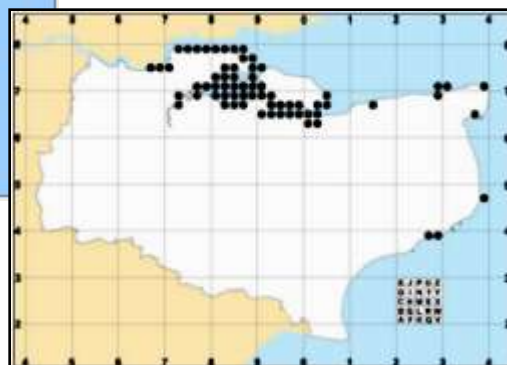
By the time of the 1971-80 county survey (Philp, 1982), it would have been inappropriate to treat the species as rare in Kent, and Eric Philp described it as very local, but often frequent where it does occur. That survey gave records for 63 tetrads, and the 1991-2005 survey (Philp, 2010) evidenced a fairly similar distribution, with 67 tetrads. The position is again broadly similar as regards 2010-19 records, with 78 tetrads (141 monads), so that the distributional status is fairly stable and, if anything, increasing.

As Golden-samphire is not uncommon in Kent, the distributional data maintained in this register will be at 1km square (monad) level. This will entail recording at a finer scale than the tetrads given in Philp (2010), from which the following 1991-2005 map is taken (with kind permission of the late Eric Philp and the Kent Field Club).



Inula crithmoides (Golden-samphire) 2010-18

Inula crithmoides (Golden-samphire) 1991-2005



It may be that the species has become more common in Kent since 1899 (or, indeed, 1930), since its presence was not then recognized along the Thames estuary on the north of the Hoo peninsula and towards Eastcourt Marshes; nor on Thanet and down the coast as far as Folkestone. It is possible that sea wall construction or improvement has provided suitable habitat for Golden-samphire, although the reverse might have been expected, and it does not provide an explanation for some of the newer locations.

Inula crithmoides is frequently found in linear populations along the north Kent coast, particularly by the Thames, Medway and Swale estuaries just within reach of high tides. These populations may be extensive: in 2010 it was recorded as an almost unbroken chain along the coastline between Harty Ferry (Oare) and Conyer Creek. It may be found within the north Kent saltmarshes, amongst saltmarsh plants such as *Atriplex portulacoides* (Sea-purslane) *Limonium vulgare* (Common Sea-lavender) and it may line the channels there.

More often, however, it is seen growing along the upper reaches of saltmarsh, merging into the spring high tidemark habitat where it also grows extensively in the absence of saltmarsh. It has been recorded at the base of sea walls (on the maritime side); within the sea wall sloping stone batter; and at the crest, where land vegetation begins. Occasionally, it appears alongside saline ditches landward of the sea wall, and it has been recorded further inland near Faversham, by a sandy track over 400m inland from Oare Creek.



Hoo, shoreline habitat. Photo by David Steere, 31 July 2015.

Unusually, it appears scattered on the East Kent chalk cliffs, a habitat which was not observed at all by the earlier botanists in Kent and which appears² to be a habitat type found in Kent and westwards in Great Britain from Purbeck. The earliest such sighting appears to have been by Francis Rose, who collected material in 1947 from chalk cliffs by the sea at East Wear Bay, Folkestone; and this may have been the location within the more exposed cliff zone subject to spraydrift with halophyte vegetation mentioned in Rose & Géhu (1964)³. We now have records from 2010 onwards, not only for the base of chalk cliffs at East Wear Bay, but also at Samphire Hoe, Ramsgate, Cliftonville, Westgate, Birchington and at the base of cliffs on the edge of a small salt marsh created by a break in sea defences at Kingsdown. Rodwell (2000)⁴ points to the possibility of there being distinct ecotypes of *Inula crithmoides* in view of the striking difference in distribution of the saltmarsh and maritime cliff vegetation communities.

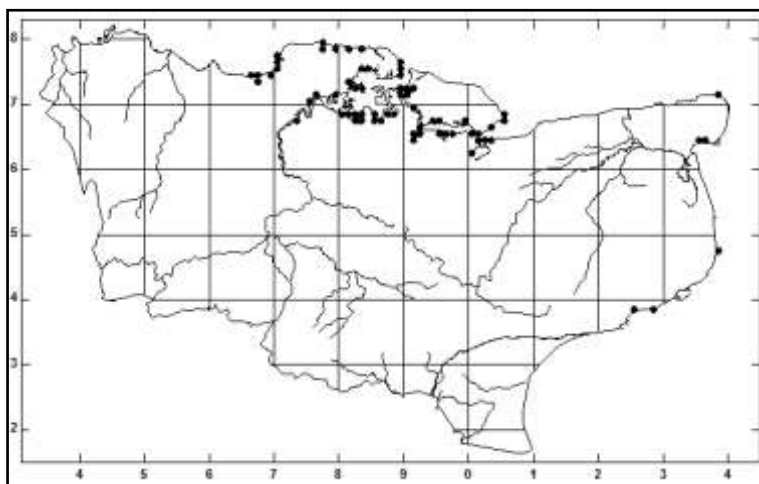


Grain, sea wall habitat. Photo by David Steere, 23 June 2015.

Inula crithmoides should not be capable of confusion with other species, but a non-flowering plant might resemble *Suaeda vera* (Shrubby Sea-blite), which is rare in Kent. Both have succulent leaves (as with many plants which need to store water in a saline environment), but those of *Inula crithmoides* are somewhat toothed.

A fly, *Myopites eximius* Ségué (sometimes given as *eximia*), known globally only from the coasts of northern France, including the Channel Islands, and the coasts of southern England and Wales, is associated exclusively with *Inula crithmoides*. Larvae form galls in the capitula, which become thickened and enlarged, with a hard woody texture, within which the larvae are cocooned. The first known Kent record was in 1939, and after 1950 there appears to have been a gap in sightings until 1982. The cumulative position to 2015 as regards Kent records is illustrated in the accompanying monad map which necessarily is also a record for the presence of *Inula crithmoides*.

This account has benefited greatly from the assistance of Laurence Clemons as regards the insect associations of the plant.



² Malloch, A.J.C. (1994), *Inula crithmoides* L. in eds. Stewart, A., Pearman, D.A. & Preston, C.D., *Scarce Plants in Britain*, JNCC.

³ Rose, F. & Géhu, J.M. (1964), Essai de phytogéographie comparée. La végétation du Sud-Est de l'Angleterre et ses analogies avec celle du Nord de la France. *Bulletin de la société botanique de France 90ème session extraordinaire*: 38-70.

⁴ Rodwell, J.S., ed., *British Plant Communities* vol.5, Maritime communities and vegetation of open habitats.

Isolepis cernua (Vahl) Roem. & Schult. (Slender Club-rush)

Draft account

vc 15

Rarity / scarcity status:

Slender Club-rush is a generally coastal plant in the British Isles, frequent in Ireland and western Britain, extending eastwards to the New Forest where it is locally common, with an outlier in Norfolk. Its conservation status in both England and Great Britain as a whole is accordingly of 'Least Concern'. Its presence at only three locations in Kent has only been recognised recently and its county status is **rare**.

Account:

Isolepis cernua does not feature as a Kent plant in Hanbury and Marshall (1899) and was unknown to Francis Rose in the county, although he noted that it formerly occurred in Surrey and might yet exist in the littoral marshes in Pas de Calais. It is surprising, therefore, that there is mention in John Parkinson's *Theatrum Botanicum* (1640) of what appears to be this species (under the name *Gramen Junceum maritimum exile Plimostii*), said to be at both Plymouth and Dover 'in their wet grounds'. If this is correct, then presumably the habitat was in marshy ground associated with the valley of the River Dour. In terms of modern records, according to Philp (2010), *Isolepis cernua* was first found in Kent by James Cadbury on 5 September 2006, a single plant at Worth Minnis. This led to a check of all herbarium specimens labelled as the very similar species, *I. setacea*, including specimens from Worth Minnis, but all proved to have been correctly named. Not widely known at the time was the listing of this species in a related ditch system, in the course of the Hacklinge



Ditch Survey of 2003. The location was explored in 2011 by Bob Gomes, who came across a single tussock, from which verification by way of a smooth nutlet was derived. A more extensive assessment of the presence of the species was undertaken in 2013 by Bob Gomes, Liam Rooney and Geoffrey Kitchener. It was found that the pastureland south west of Great Wood at Worth was dissected by several internal ditches, open to access by cattle from both sides (unlike the boundary ditches, which were in part protected from grazing by electric fencing, albeit that it was the boundary ditches which appear to have been covered by the 2003 survey). Slender Club-rush was found to be well distributed along these internal ditches.

Worth, habitat. Photo by Geoffrey Kitchener,
5 September 2013

Isolepis cernua grew on the muddy tussocks created by cattle trampling down ditch margins, sometimes growing in isolation, otherwise generally with *Juncus* spp. Other

species of interest in the vicinity included: *Baldellia ranunculoides* (Lesser Water-plantain), *Juncus subnodulosus* (Blunt-flowered Rush), *Oenanthe lachenalii* (Parsley Water-dropwort) and *Utricularia vulgaris* sens. str. (Greater Bladderwort). The southern ditch consists of two arms, joining at right angles, and Slender Club-rush was frequent along both. The northern ditch held less Slender Club-rush, but this appeared to be a consequence of being steep-sided for part of its length so as not to provide the cattle-trampled marginal

habitat which the species favoured elsewhere. Accordingly, the continued presence of the species is likely to be sensitive to ditch maintenance activities and the continuation of cattle grazing so as to provide the open muddy ground for establishment from seed. The site was significantly altered in 2019 by the construction of a bird scrape, so it remains to be seen whether this site has ceased to be suitable for the species.

A second site, 1.5km to the south, was found by Stephen Lemon in August 2016. This was at a site near Hacklinge, c.1.5km away, TR 34058 54243. One fruiting patch was seen growing in a damp, closely grazed sward of marshy, sedge-rich fen pasture in the Ham valley. Associated species included *Hydrocotyle vulgaris* (Marsh Pennywort) and *Calliergonella cuspidata* (Pointed Spear-moss). It was not seen along the muddy poached edge of a nearby dyke, which would have afforded habitat similar to that at the Worth site.

The third site is part of Ham Fen KWT reserve, in the same general area as the others, and was discovered as two elements, part by Stephen Lemon in June 2018 and part by a KBRG meeting in July 2018. At the latter find location there was a colony of at least 40 plants, with one outlying specimen, in the cattle-trampled ground alongside a fen pasture ditch. Associated species included *Anagallis tenella* (Bog Pimpernel), *Carex distans* (Distant Sedge), *Juncus articulatus* (Jointed Rush), *Phragmites australis* (Common Reed), *Ranunculus flammula*



(Lesser Spearwort), *Triglochin palustris* (Marsh Arrowgrass). Three of these are rare plant register species, an indicator of the quality of habitat, although the presence of young *Phragmites* suggests that continued grazing and trampling is necessary to keep this at bay.

Worth. Photo by Bob Gomes, 5 September 2013

The species is inconspicuous, showing up only as small light green or yellowish-green tufts or patches at the base of other ditch vegetation, and could easily have been overlooked as a native of long standing in this area. If a means of introduction is to be sought, in view of the distance of these locations from other populations, then there is no obvious vector, other than birds. The species is known horticulturally, as a plant for bog gardens and pond edges, sometimes under the name of fibre-optic grass. However, whilst there is a public footpath in the vicinity of the Worth site, there is no public access through the fields at Worth and Hacklinge where it grows, and the Ham KWT reserve is not generally accessible, so the deliberate planting or abandonment of the species at any of these locations seems implausible. Other British occurrences tend to be in the vicinity of the coast, and the Worth, Hacklinge and Ham sites are located only 2.6, 3.4 and 3.5 km respectively from the sea.

Isolepis cernua is most readily seen by virtue of its bright green colour, but it needs to be distinguished from its relative, *I. setacea*, which is occasional in Kent in damp areas on heaths, woodland rides and at pond margins. The most obvious distinction is that the bract of *I. cernua* is usually shorter than the inflorescence, where in *I. setacea* it overtops. But this is not conclusive, and not all the *Isolepis* at Worth and Ham bore shorter bracts. The surface of the nuts is, however, diagnostic and it is smooth in the case of the Slender Club-rush, rather than ridged as with *I. setacea*.

Worth. Spikelet showing unridged nuts.
Photo by Bob Gomes, 5 September 2013





Ham, habitat.
Photo by Geoffrey
Kitchener,
21 July 2018

Site	Grid reference	Site status	Last record date	Recorder	Comments
Ham Fen	TR3354		(1) 21 July 2018 (2) 17 June 2018	(1) KBRG / KFC meeting (2) SL	(1) Ham Fen. At least 40 clumps of plants in an area of cattle-poached peat at TR 3379 5444. Associated flora included <i>Lysimachia tenella</i> , <i>Juncus articulatus</i> , <i>Ranunculus flammula</i> and <i>Triglochin palustris</i> (2) Hacklinge, west side of A258 (Ham Fen KWT), flooded ditch, cattle poached bare ground along south side (Unit 53: Ham Fen Fields), TR 33819 54463: one patch, another two nearby, TR 33805 54450: approximately 30+ patches some large.
Worth	TR3455, TR3456	SSSI	(1) 5 September 2013 (2) 30 June 2011 (3) 5 September 2006 (4) 2003	(1) RG, LR & GK (2) RG (3) CJC (4) CEC	(1) Found along ditches in pasture (i.e. both sides of ditches accessible to cattle) south west of Great Wood, Worth. Growing on muddy tussocks where margin poached, either in isolation or amidst <i>Juncus</i> spp. Seen at TR 34294 55750 (3 plants and another 3m away), TR 34283 55767 (1 plant and another 4m away), TR 34278 55772 (many plants), TR 34272 55781 extending to TR 34268 55791 (several plants), TR 34236 55834, TR 34216 55826 (several plants), TR 34196 55807 and for at least 10m westwards (many plants). And along a deeper ditch further north, TR 34137 55947 (2 plants), with further records in adjoining monad, TR3456. These were, at TR 34184 56003 and for 15m further north east, and at TR 34218 56040 (several plants). (2) TR 3426 5579, growing in a shallow, senescent ditch crossing a grazing marsh field west of the

					Great Wood at Worth Minnis. The bottom of the ditch held some shallow water and was in places poached by cattle that were grazing the field at the time. (3) Location as TR35M (4) TR 34071 55864 (ditch 121) and TR 34236 55675 (ditch 119).
Hacklinge	TR3454	SSSI (unit 56)	13 August 2016	SL	Cattle-grazed, marshy, sedge-rich fen pasture in Ham valley, on west side of A258 south of Hacklinge Farm; area south of the dividing dyke, TR 34058 54243. One fruiting patch in damp closely grazed sward by dyke, with <i>Hydrocotyle vulgaris</i> and <i>Calliergonella cuspidata</i> . Searched for but not found along muddy poached edge of dyke.

***Jacobaea aquatica* (Hill) P. Gaertn., B. Mey & Scherb. (*Senecio aquaticus* Hill.)
(Marsh Ragwort)**

Draft account.

vc 15 and 16

Rarity / scarcity status

Jacobaea aquatica is a plant of marshes and damp meadows across much of the British Isles, but much less frequent in the east. Its threat status for conservation purposes is regarded as of 'Least Concern' in Great Britain as a whole. In England, it is **Near Threatened**, as a comparison of its area of occupancy over the periods 1930-1969 and 1987-1999 produced a calculated decline of 24% in the likelihood of recording the species. There appears to have been a greater decline in Kent over a shorter period, and the species is now **scarce** in the county.



Stodmarsh, habitat. Photo by Liam Rooney, 11 July 2015

Account

The first published record for Marsh Ragwort in Kent is by Edward Jacob in his *Plantae Favershamienses* (1777): '*In the Brents – common*' (this was low-lying land adjoining Faversham Creek). Hanbury and Marshall (1899) regarded it as so common that this was the only record they gave. The only area where they did not know it was north west Kent, where, in any event, 'it doubtless grows'. Other early Flora writers tended not to mention it, unless they were covering common plants, as did Thomas Forster in his *Flora Tonbrigensis* (1816) in which he described Marsh Ragwort as 'In wet marshy places every where'. With the drainage of its habitats, it became scarcer, and Philp (1982) recorded it in only 35 tetrads, at the edge of streams, in marshes and in wet meadows. Its core distribution was then in West Kent, from Sevenoaks southwards to the border with east

Sussex; otherwise, there was just a scattering in the Weald, the East Stour catchment, the Little Stour and near Sandwich.

This local and scarce distribution had, by the time of Philp (2010) become very scarce, with four tetrad records only: near Cowden, Sevenoaks and Westbere. Our 2010-19 records are different, except for Westbere, but still only amount to four tetrads: Foots Cray, Westbere, Newnham Valley and Stodmarsh. These last three locations all lie in the catchments of the Great and Little Stour rivers, which now provide the Kent focus for the species. While continued habitat loss in Kent may have taken place, with drainage works, it seems appropriate to seek further causes for this marked decline since 1980. Some losses may be due to herbicide controls, as with *Jacobaea vulgaris* (Common Ragwort) in grazing fields (and perhaps confusing one species with the other, although both are toxic to livestock). There may also be aspects of climate change, given that its limited distribution in east England suggests that lower rainfall will be detrimental.



Stodmarsh. Photos by Lliam Rooney, 11 July 2015



Marsh Ragwort is a biennial, germinating rapidly from seed, especially when exposed to light, but apparently favouring a period of seed burial of at least one or two years as cold/wet stratification⁵. This suggests an ability, via a persistent seed-bank, to take advantage of gaps in grassland which may take place through mowing or grazing.

While Common Ragwort normally occupies drier ground than Marsh Ragwort, where they meet hybrids may arise (*Jacobaea x ostenfeldii*). These have not been recorded in Kent, but may well occur. They should have an intermediate degree of leaf dissection and inflorescence branching, minutely pubescent disc flower achenes (less dense than that of

Common Ragwort), low fertility and more numerous flowers (e.g. over 90) than Common Ragwort.

In view of the number of tetrad records (35) for 1971-80 in Philp (1982), only records for 1981 onwards are given in the following table.

From Stodmarsh, lower leaves showing large end-lobes and degree of dissection. Photo by Lliam Rooney, 14 July 2015



Site	Grid reference	Site status	Last record date	Recorder	Comments
Cowden pastures	TQ4741		12 June 1982	JP	c. TQ479415.

⁵ Suter, M. & Lüscher, A. (2012). Rapid and high seed germination and large soil seed bank of *Senecio aquaticus* in managed grassland. *The Scientific World Journal* **2012**: 723808.

Bassett's Mill	TQ44V		1991-98	EGP	
Foots Cray	TQ4770		30 June 2010	RMB	Hales Field, several plants in centre of site TQ 47491 70528. Hales Field is horse-pasture by the River Cray across the A20 from Ruxley Lakes.
Chiddingstone Hoath	TQ5141		1989	JP	TQ 517 415, Tubbs Hole Pastures.
Riverhead	TQ55D		1991-99	EGP	
North Sevenoaks	TQ55I		21 June 2004	EGP, PH	
Lamberhurst Quarter	TR6438		15 June 1999	GB & JP	Old Swan Farm,
Westbere	TR1960		(1) 24 June 2010 (2) 23 June 2010 (3) 1991-98	(1) CO (2) CO (3) EGP	(1) (a) South of river on wet meadows as before TR 196 603 to TR 199 604, frequent. (b) Two plants on newly cleared wet scrub area north of river c. TR 197 605. (2) On south river bank, but mainly marsh/grazing meadows on south side of river TR 196 603 to TR 199 604 (3) Given as TR19V only; assumed to be this monad.
Stodmarsh	TR2060		(1) 2 May 2016 (2) 11 July 2015 (3) 13 June 2015	(1) AL & TGCR (2) LR (3) CO	(1) TR2060. (2) Thousands of plants from the south bank of the River Stour covering hundreds of square metres north of Greater Puckstone Farm in wet grazing meadows. (3) Plants on south side of river, continuing from TR1960.
Stodmarsh	TR2161		(1) 2015 (2) June 1991	(1) AL (2) CD	(1) Rare by the river near the colliery, TR 211 617. (2) TR 2097 6122, TR 2117 6166.
Stodmarsh	TR2162		June 1991	CD	TR 2185 6207, TR 2224 6223.
Lydden Valley	TR3653		1982	ACH	TR 36065 53160, ditch 523 in Hacklinge Ditch Survey.

Jasione montana L. (Sheep's-bit)

Draft account.

vc 15 and 16

Rarity / scarcity status

Jasione montana is in the British Isles a locally common plant of acid ground, whose distribution is primarily western; its eastern distribution is largely related to the East Anglian, Surrey and Hampshire heaths. Whilst its conservation status in Great Britain as a whole is of 'Least Concern', in England it is considered to be **Vulnerable** to the risk of extinction. A comparison of its area of occupancy in England over the periods 1930-1969 and 1987-1999 produced a calculated decline of 39% in the likelihood of recording the species, which may relate to losses of lowland heath habitat and to the growth of coarser vegetation following a decline in rabbit grazing. In Kent, except for an outlier near Sevenoaks, Sheep's-bit is confined to the Lydd/Dungeness area. On the strength of the data given in Philp (2010) it would be regarded as scarce; but from the number of records made since, it is a little commoner than would warrant scarcity ranking.

Long Ponds Dungeness. Photo by
David Steere, 4 July 2015



Account

Jasione montana-type pollen has been identified from deposits formed around 1160-1250 in Muddymore Pit, Dungeness (TR 062 176) and presumably the species formed part of the surrounding shingle ridge flora⁶. In terms of conventional botanical publication, however, Sheep's-bit may have been first recorded in Kent by Thomas Johnson (*Iter Plantarum*, 1629); at any rate, Hanbury and Marshall (1899) thought that this was the case. However, Johnson gave the (then) name of Sheep's-bit, *Scabiosa montana minima*, but attributed its site to Chalkedale near Dartford, a former chalk-pit quarried for quick-lime. This is a quite inappropriate habitat, so that at best, all one can say (as Francis Rose noted in the 1972 edition of *Iter Plantarum*) is that Johnson would more likely have seen *Scabiosa columbaria* (Small Scabious); and that, if he saw Sheep's-bit, he must have confused this record with one made at his next port of call, Dartford Heath, where it was known by de Crespigny before 1899. If Johnson's record is disregarded, the earliest publication was in 1763 by Thomas Martyn (*Plantae Cantabrigienses*), who listed it for Bexley. This would have been part of a pattern of occurrences on the acid soils of north west Kent: Hanbury and Marshall (1899) also list records from Blackheath, Lock's Bottom, Bromley Common, Lee, Charlton, Hayes Common and east of Plumstead Common. All these sites have gone, the last probably being a south-facing sandy railway cutting just west of Bromley South station, from where it was collected by Francis Rose in 1946 (specimen in **MNE**) and where it was still flourishing in 2002 (Rodney Burton, pers. comm.).

Hanbury and Marshall (1899) regarded the species as locally plentiful on sandy soils of banks and heaths, listing sites including Dunkirk; Sandwich; Tunbridge Wells and Rusthall Commons (where it was plentiful in Thomas Forster's day (*Flora Tonbrigensis*, 1816); along the Folkestone or Hythe Beds (Sevenoaks, Stone Street,

⁶ Scofield, J.E. & Waller, M.P. (2005), A pollen analytical record for hemp retting at Dungeness Foreland, UK. *Journal of Archaeological Science* **32**: 715-726.

Ightham Common, Addington, Leybourne, Bearsted; a scattering in the Weald (Hawkhurst, Staplehurst, Cranbrook); and in the Dungeness / Lydd / Dymchurch / Hythe / Sandgate area. Open heathland habitat has declined considerably in Kent since then, but some of this breadth of distribution still remained in the 1940s. As well as the Bromley record mentioned above, Francis Rose found Sheep's-bit three-quarters of a mile west of Wrotham Heath, in an old sand pit (Folkestone Sands) north of the railway in 1942 and 1946. He also collected from Friezley Wood, Cranbrook, by the sandy bank of a track in the wood in 1949, as well as at Dungeness, where it still subsists.



Jasione montana (Sheep's-bit) 2010-19

The distribution had shrunk further by 1971-80, and Philp (1982) assessed the species as very local and scarce: 'Still common in the Lydd-Dungeness area but appears just about to have disappeared from its former inland localities'. Presence was recorded in 16 tetrads, including one inland site, at Riverhead (Sevenoaks). By 1991-2005, the inland site remained, but nearly 50% of the Lydd-Dungeness tetrads were without

record, giving a total for the county of nine tetrads. Recording for the period 2010-19 indicates that the extent of loss may be overstated by Philp (2010), as the species has been found in 14 tetrads (or 24 monads). Accordingly, it is unclear whether there has been a decline in real terms from the 1970s.

Riverhead, former sand pit. Photo by
Geoffrey Kitchener, 19 July 2016

Jasione montana is normally a biennial, overwintering as a rosette and flowering/setting seed within a year of germination. It occurs as isolated plants at varying levels of density on open ground. It appears to respond to higher rainfall levels than are usual in Kent (and hence is a more westerly distributed plant in the British Isles), but is intolerant of waterlogging. Weather patterns may affect its frequency in any one year, as was observed in the Lade/Greatstone area in 2011. In the British Isles generally, it is said⁷ to be found on consolidated sand dunes, on cliff tops, on maritime heath and in semi-natural sites such as walls, hedgebanks and roadverges.



Our Kent locations are largely related to maritime heath, at Dungeness; and our inland site at Riverhead may be regarded as semi-natural (although it is not clear whether other historic sites along the Folkestone Sands may be considered as similar). The Riverhead site is a former sand pit used as a recreation ground, partly scrubbed and wooded, and Sheep's-bit just hangs on in trodden ground above the former sand working face, where vegetative succession is slow, partly because of the minimal soil cover on the free-draining sand, but is

⁷ Parnell, J.A.N. (1985), *Jasione montana* L., Biological Flora of the British Isles, *Journal of Ecology* **73**: 341-358. Some other general ecological information in this account is also taken from this source.

increasingly threatening any open areas; also there is the odd plant on the steep working face itself. It has in addition been known from the sandy railway cutting on the other side of Shoreham Lane to the main site. The Dungeness plants generally grow on the stabilised shingle with a very thin, acid, nutrient-poor, free-draining soil. Where noted, the flora is consistent with such a habitat, e.g. *Rumex acetosella* (Sheep's Sorrel) *Silene uniflora* (Sea Campion), *Teucrium scorodonia* (Wood Sage) and lichens (*Claydonia* spp.), but we could do with more data on associates.



Habitat, Littlestone. Photo by David Steere, 19 August 2015



Jasione montana, although somewhat scabious-like, is unlikely to be confused with other British species when in flower. There is some infraspecific variation in the British Isles: Sell & Murrell (*Flora of Great Britain and Ireland*, vol. 4) list five varieties, although no data as regards the occurrence of any in Kent can be traced, albeit that var. *montana* is the designation for anything which cannot be assigned to another variety.

Typical shingle ridge habitat, Dungeness. Photo by Owen Leyshon, December 2015

Site	Grid reference	Site status	Last record date	Recorder	Comments
Bromley south (metropolitan vc16)	TQ4068		14 August 1987	RMB	TQ 403 687, top of railway bank west of Bromley South station. Also seen by RMB making a good show in 2001 and 2001, but not since, in spite of looking out for it. The site is [2015] seriously overgrown with <i>Clematis vitalba</i> and brambles.
Riverhead	TQ5156		(1) 19 July 2016 (2) 20 July 2011 (3) 1991-99 (4) After 1970, before 1981 (5) 13 July 1978	(1) & (2) GK (3) EGP (Philp, 2010) (4) Philp (1982) (5) RMB	(1) TQ51667 51682, one plant on hummock in steep face of former sand pit, on virtually bare sand. Associated spp. <i>Anthoxanthum odoratum</i> , <i>Agrostis capillaris</i> , <i>Aira caryophyllea</i> , <i>Ulex europaeus</i> . Also at TQ 51627 56165, a patch c. 1 sq metre, maybe 6-10 plants, skeletal soil on sand. Fairly open ground, but potentially invasive shrubs/trees beginning growth nearby. Associated spp. <i>Anthoxanthum odoratum</i> , <i>Aira caryophyllea</i> , <i>Ulex europaeus</i> , <i>Trifolium arvense</i> , <i>Cytisus scoparius</i> , <i>Achillea millefolium</i> ,

					<i>Hedera helix</i> , <i>Quercus robur</i> . (2) TQ 51628 56142, a small patch on open sandy ground above former pit in Bradbourne Sandpits recreation ground. (Full search not made.) (3) & (4) Recorded as TQ55D. (5) Seen on railway cutting from train.
Dungeness: Jury's Gap	TQ9918		7 August 2012	OL, GK, TI & SB	
Dungeness, The Wicks	TR01D		30 May 1993	EGP & JBe	Relates either to TR0017 or TR0117.
Lydd Ranges	TR0018	MOD land	7 August 2012	OL, GK, TI & SB	On shingle at TR 0011 1833.
Lydd Ranges	TR0118	MOD land	9 August 2013	OL, GK & TI	
Dungeness, Lydd Ranges	TR0317		(1) 8 August 2012 (2) 30 May 1993	(1) SB & TI (2) EGP (Philp, 2010)	(1) Shingle at TR 0392 1717. (20 Recorded as TR02I, so relates to TR0317 or TR217.
Lydd Ranges	TR0318	MOD land	28 April 2014	OL, TI & SB	
Lydd Ranges	TR0319		7 August 2012	OL, GK, TI & SB	Sandy/shingly ground at TR 038 198 with <i>Teucrium scorodonia</i> .
Lydd Ranges	TR0417		8 August 2012	SB & TI	
Lydd / Denge	TR01P		After 1970, before 1981	Philp (1982)	
Dungeness	TR0516		9 August 2012	TI	
West Lydd	TR02F		After 1970, before 1981	Philp (1982)	
Lydd north east	TR0521		(1) 27 June 2012 (2) 15 July 1999 (2) 7 August 1986	(1) OL (2) JP (3) FR	(2) TR 0509 2180. (3) Abundant.
Dungeness power station	TR0616		20 August 2011	SB	Abundant on shingle TR 0699 1687.
Dungeness power station	TR0716		22 June 2014	KBRG meeting	
Dungeness power station	TR0717		(1) 22 June 2014 (2) 20 June 2000	(1) KBRG meeting (2) JS	(2) TR 079 177.
Dungeness reserve	TR0718	RSPB reserve	(1) 4 July 2015 (2) 3 July 2011	(1) DS (2) TI	(1)TR 07866 18986, over 100 plants, more flowering than in 2014, over area to north of Long Ponds.
Dungeness, north of Denge beach	TR0719		(1) 4 October 2013 (2) 3 July 2011	(1) DS (2) TI	(1) TR 078 190, near layby for anglers, Long Pits, over 20 plants in shingle vegetation.
Dungeness, old lighthouse	TR0816		(1)3 July 2011 (2) 23 June 2010 (3) 21 June 2008	(1) TI (2)SB (3) DM	(2) TR08742 16913, 12 plants on stabilised shingle.
Dungeness, north of old lighthouse	TR0817		(1) (2) 8 June 2004	(1) DS (2) JP	(1) Dungeness, power station East. Small group of flowering plants in short turf, TR 08594 17040. (2) Behind old lighthouse, stated as TR 085 175.
Dungeness, Long Pits	TR0818		(1) 23 August 2013 (2) 3 July 2011 (3) 1 November 1977	(1)CO (2) TI (3) CJ	(1) Almost over. (3) TR 018 180.
Lade, Greatstone	TR0820, TR0821		(1) 22 August 2011 (2) After 1970, before 1981	(1) OL (2) Philp (1982)	(1)Found throughout the square from TR 081214 (west of the houses at Channon Road) south through TR 083208 to south of Pleasance Road North at TR 086201. All in flower at present and species appears to be more widespread in 2011 compared to recent years. Weather/rainfall is driving factor. (2) Recorded as TR02V.
Dungeness	TR0916		27 July 2014	JP	

Dungeness – lifeboat station	TR0918		3 July 2011	TI	
Hythe Ranges	TR1433	MOD land	(1) 29 June 2013 (2) 31 May 2001 (3) 31 August 1995	(1) SB & OL (2) IB & JP (3) JP	(1) Frequent on scattered patches of undisturbed established shingle heath at TR 146 335 and TR 146 334, with <i>Cladonia</i> lichens, <i>Silene uniflora</i> , <i>Rumex acetosella</i> , etc. Population potentially at threat from vehicle disturbance. (2) & (3) TR 144 335.

Juncus acutus L. (Sharp Rush)

Draft account

vc 15

Rarity / scarcity status

Juncus acutus is a plant of coastal sand and saltmarsh, very local in the south of the British Isles, principally on the Welsh coast and the eastern coast of Ireland. Its conservation status in England and in Great Britain as a whole is of 'Least Concern', but its limited distribution means that it is nationally scarce. It is also **scarce** in Kent.

Account

Hanbury and Marshall (1899) note that although the first printed record for Kent was thought to be in Turner and Dillwyn's *The Botanists's Guide through England and Wales* (1805) – in which it was recorded by Joseph Woods junior at Sand hills near Deal – they had found earlier mention in a manuscript by James Petiver and James Sherard. This was an account published in the *Phytologist* N.S. (1862) as the *Journal of a Botanical Journey from London to Dover, the Isle of Thanet, Rochester, etc., by Tunbridge and Hastings*. Petiver and Sherard, on 23 August 1714, walked from Knowlton Court to Deal and, sending their servant on ahead, continued for four or five miles to Sandwich, keeping near to the sea. On the sandy downs near Sandowne Castle, they met with 'Junc. capitulis, Sorghi' [*Juncus acutus*]. The species is mentioned amongst others which are characteristic of sand dunes, although the dunes or downs were also covered with broom, a great quantity of which they saw laid out on the beach to dry, to make 'Bas belts' (presumably bass, a term for plant fibres).

It is, however, quite possible that these records were anticipated by Thomas Johnson in 1632, when travelling from Margate to Sandwich. Francis Rose makes a case (in the 1972 translation of Johnson's *Descriptio Itineris*)⁸ for his record of *Juncus major durior* as relating, not to *Juncus maritimus* (Sea Rush) – as Hanbury and Marshall (1899) had supposed – but at least in part to *Juncus acutus*. Johnson's journey would have taken him past where *Juncus acutus* has long been known, including a relict dune-slack at Ebbsfleet which appears to be pre-eighteenth century at least.



Sandwich. Photo by Liam Rooney, 22 June 2010

Sharp Rush was considered by Hanbury and Marshall (1899) to be very rare, on sandhills and in marshes near the sea. Records were limited to the Deal / Sandwich / Pegwell area; and a claim from Dungeness was discounted. This has remained the area of Kent distribution ever since. Philp (1982) and Philp (2010) give it here in eight tetrads, seven of which are identical. So far, recording in the period 2010-19 has produced records from ten tetrads (15 monads). The distribution accordingly appears at least stable.

⁸ Accepted in Pearman, D. (2017). *The Discovery of the Native Flora of Britain & Ireland*. Botanical Society of Britain and Ireland, Bristol.

Its habitat in Kent has been noted as including the edge of dykes or ditches; wet sandy soil behind dunes; damp saline dune slacks or sandy brackish hollows; rough pasture or fixed dune grassland; and at Shellness it has been seen at the highest tide limit, some washed loose by storm surges. Whilst Sharp Rush grows in damp areas, it appears not to be so tolerant of permanent waterlogging as is *Juncus maritimus* (Sea Rush)⁹. Although the habitat is normally saline, Francis Rose observed that its Kent occurrences included older dunes which are



no longer saline, but of a fen character, the soil being highly calcareous with much colloidal black peat in the top inch. In the marginal zone of the more saline slacks, where it may be locally abundant or even dominant, Francis Rose described its associates as including *Carex extensa* (Long-bracted Sedge), *Limonium binervosum* (Rock Sea-lavender), *Parapholis incurva* (Curved Hard-grass) and *Sagina maritima* (Sea Pearlwort). Where saline water levels are higher, and *Juncus acutus* is not found, one might expect to find *Juncus maritimus* (Sea Rush), *Juncus gerardii* (Saltmarsh Rush), *Spergularia marina* (Lesser Sea-spurrey) and *Triglochin maritima* (Sea Arrowgrass). In an older, non-saline slack he found Sharp Rush only sparse or locally frequent, and then associated with *Potentilla anserina* (Silverweed), *Parentucellia viscosa* (Yellow Bartsia), *Salix repens* (Creeping Willow) and *Juncus articulatus* (Jointed Rush). In drained or filled-in slacks modified by golf courses and buildings, Sharp Rush was found growing with *Ammophila arenaria* (Marram) and *Festuca arenaria* (Rush-leaved Fescue).

Sandwich. Photo by Liam Rooney, 22 June 2010

Juncus acutus generally grows as scattered plants, conspicuous through their size, but can become dominant over small areas. The size, toughness and dense prickliness of the tussocks render the species resistant to trampling, grazing and uprooting; and so plants may survive changes in land use. The tufted character means that the shortness of rhizome internodes inhibits spread where the movement of sand threatens to overwhelm a plant. The large tussocks may represent plants several decades old.

Pegwell Bay, old hoverport. Photo by Sue Buckingham, 23 September 2016

A large plant of *Juncus acutus* is unlikely to be confused with anything else. A smaller one may be confused with *Juncus maritimus* which, however, does not have so stiff and tufted a habit. *Juncus acutus* flowers earlier (June, rather than July to August) and its red-brown capsules are almost twice the length of the tepals (cf. light brown capsules of *Juncus maritimus*, about equal to the length of the tepals).



⁹ General ecological information is given by Jones, V. & Richards, P.W. (1954). *Juncus acutus*, L., Biological Flora of the British Isles, *Journal of Ecology* **42**: 639-650.

Site	Grid reference	Site status	Last record date	Recorder	Comments
Lydden Valley	TR3354		2003	CEC	TR 33836 54551, Hacklinge Ditch Survey.
Stonar Cut	TR3360		(1) 13 October 2016 (2) 2 March 1983	(1) SB (2) ACH	(2) TR 337 608, saltmarsh, Stour estuary.
Stonar Cut	TR3361 TR36F		(1) 30 May 2002 (2) 1991-98	(1) JP (2) EGP (Philp, 2010)	(1) TR 3333 6101, Thanet waste Management Site; also given as TR 334 610. This site has since been developed. (2) Recorded as TQ36F and may relate to this monad.
Stonelees NR	TR3362		28 July 1999	FR	In big pit dug in 1988.
Lydden Valley	TR3452		2003	CEC	TR 34545 52918, Hacklinge Ditch Survey.
Sandwich Bay	TR3458		18 August 2007	JS	TR 349 587.
Lydden Valley	TR3460		(1) 13 October 2016 (2) 2003	(1) SB (2) CEC	(2) TR 34830 60930, TR 34961 60043, Hacklinge Ditch Survey.
Sandwich Bay	TR3461		(1) 14 May 2011 (2) 2 March 1983	(1) SB (2) ACH	(1) Plants continuous along 200 metres of ditch from TR 3450 61519 to TR 34697 61635. (2) TR 343 614, TR 349 618.
Pegwell Bay	TR3462		(1) 22 September 2015 (2) 2 March 1983	(1)KBRG meeting (2) ACH	(2) TR 343 627.
Great Stonar	TR35J		After 1970, before 1981	Philp, 1982	
Cliffsend south	TR3463		20 September 2016	CO	On edge of saltmarsh by main road at TR 346 639
Sandwich Bay	TR3557		(1) 3 June 2010 (2) 1982	(1) GK (2) ACH	(1) TR 3572 5764, one clump in rough pasture. (2) TR 35591 57640.
Sandwich Bay	TR3558		(1) 2003 (2) 2 March 1983	(1) CEC (2) ACH	(1) TR 350315 8888 (2) TR 355 585, Royal St George's Golf links.
Sandwich Bay	TR3559		(1) 9 July 2010 (2) 24 June 2010 (3) 29 June 2008	(1) JA (2) SB (3) DM	(1) Eight clumps at TR 35386 59162. (2) TR 35391 59160, five large plants in a dune slack. (3) TR 3561 5965.
Sandwich Bay	TQ3560	SSSI	(1) 4 August 1996 (2) 2 March 1983	(1) FR (2) ACH	(1) (a) One clump in slacks by pool. (b) Abundant. (2) TR 353 605, Prince's Golf Links.
Sandwich Bay	TR3561	SSSI	(1) 1 August 2015 (2) 9 June 2010 (3) 5 July 1987	(1) LR & SL (2) JA (3) EGP & RoF	(1) South of Shellness, damp hollow, TR 35095 61816. (2) 200+ plants at TR 35039 61999. (3) TR 350 619.
Pegwell Bay	TR3562	SSSI	(1) 23 September 2015 (2) 15 April 2015	(1) KBRG meeting (2) SB	(1) Plants at the very highest tide limit at TR3 501 6257, some had been washed loose by storm surges.
Lydden Valley	TR3654		(1) 23 September 2016 (2) 2003	(1) SB (2) CEC	(1) A single large fruiting plant on the concrete apron of the old hoverport TR 35068 64012. Ten seedlings from this plant within a few metres, one with an infructescence. (2) TR 36626 54960, TR36496 54916, Hacklinge Ditch Survey.
Lydden Valley	TR3655		2003	CEC	TR 36220 55380, TR 36482 55107, TR 36360 55039, TR 36373 55495, TR 36520 55600, TR 36532 55398, TR 36731 55427, Hacklinge Ditch Survey.

Sandwich Bay south	TR3656		29 October 2011	SB	Two plants at TR 36545 56276.
Sandwich Bay estate	TR3657		1 August 2011	SB	
Stonelees	TR3662	KWT reserve	(1) 2 July 2013 (2) 18 October 2011	(1) KBRG meeting (2) SB	(1) TR 3385 6249.
Deal – Sandown Castle	TR3754		3 January 2011	SB	(a) TR 37211 54391, one plant at edge of golf course, opposite club house and other single plants nearby at TR 37187 54471, TR 37162 54659 and TR 37165 54684. (b) 27 plants in a hollow in fixed dune grassland at TR 37387 54341. Also 4 plants, edge of Royal Cinque Ports golf course at TR 37345 54321 plus (same grid reference) one plant fenced off with wood and wire. (c) One plant in fixed dune grassland at each of TR 37467 54403, TR 37440 54497, TR 37442 54490, TR 37387 54406. Also two and five respectively at TR 37378 54364 and TR 37375 54340. (d) TR 37145 54946, single plants in dune grassland. Also TR 37103 55002, single plant here and at TR 37090 55036. Also TR 37083 55051, three plants in grassland, edge of golf course.
Deal north	TR3755	7	(1) 3 January 2011 (2) 1997 (3) 2 March 1983	(1) SB (2) BB (3) ACH	(1) TR 37306 55089, landward side of shingle sea bank. Also approx 15 plants beside pond on edge of golf course (same grid reference given). (2) TR 372 552, brackish slack. (3) TR 376 557, Royal Cinque Ports Golf Links.

Juncus compressus Jacq. (Round-fruited Rush)

Draft account/ Photos, close-up and whole plant, needed.

vc 15

Rarity / scarcity status

A plant of marshes and wet meadows, Round-fruited Rush is found in southern, central and north west England and scattered elsewhere in the British Isles. It is regarded as **Near Threatened** in Great Britain and **Vulnerable** to the risk of extinction in England, albeit more frequent there than in Wales, Scotland and Ireland, in all of which it is rare. The assessment of Vulnerable is based on a reduction both in the overall geographical extent of its occurrence in England and in the area of occupancy within that range. A comparison over the periods 1930-1969 and 1987-1999 showed that its overall range had reduced by 37% and its area of occupancy had declined so that there was a 34% reduction in the likelihood of recording the species. There has been a substantial decline in Kent also, and its presence was reduced to six tetrads in the 1971-80 county survey and then it could not be found at all in the 1991-2005 survey. It survives, however, but is **rare** in Kent.

Account

Juncus compressus was first recorded in Kent by Thomas Forster in his *Flora Tonbrigensis* (1816) as growing 'On moist meadows and heaths'. It should not be supposed from this that it is a plant of acid ground; the reference to heaths is a little surprising. Hanbury and Marshall (1899) considered it to be a scarce plant of marshy ground, with few, but widespread, records – some inland, but most fairly coastal. These records included Plumstead Marshes; a meadow near Herne Bay; a grassy flat by the shore near Whitstable; east of Sheerness; Pegwell Bay; Romney and Hythe/Dymchurch; and a cluster of records west of Ashford (Sevington, Stanford and near Stowting, apparently on the gault clay, a little below the chalk hills). The Stowting site (communicated to Hanbury and Marshall by William Beeby, who collected there in 1887) survived long enough for Francis Rose to collect the rush in 1947 and 1954, in a calcareous fen meadow below the village, by chalk springs. Analogous East Kent locations where Francis Rose found *Juncus compressus* were fen meadows at Wingham (1946) and Worth Minnis (1951); a calcareous spring in fen meadow at Cuckolds Coomb above Brook (1946 and 1950); and a wet, calcareous meadow on gault below chalk springs and south of Brabourne Church (1954). In West Kent¹⁰, he found it in 1944 abundant at Halling Marshes; Cuxton; Upnor; Shorne Marshes; apparently replacing *Juncus gerardii* (Saltmarsh Rush) by the tidal Medway, where he had not seen the latter for certain.

These sites generally do not feature in Philp (1982), where the records are all inland, mostly relating to gault or Wealden clay. And even those sites could not be found in the surveys for Philp (2010), several having been destroyed by land drainage (although Francis Rose still found it to be locally frequent in 1986 at Cuckolds Coomb); so that it was then considered that the species might be extinct in the county. However, it was subsequently discovered at Seasalter Levels, a site which may bear a relationship to de Crespigny's pre-1895 record at a grassy flat near Whitstable; and the species remains on the county current listing.

Round-fruited Rush is a plant of weakly acid to weakly basic soils, in pasture, meadow or grassland, often in areas which rapidly dry out after inundation during winter and early spring¹¹. The Seasalter Levels match this habitat description well. The Francis Rose East Kent descriptions largely seem to apply to habitats with soils more alkaline than weakly basic, although once calcareous flushing has reached gault clay, its effect may be

¹⁰ BEC report for 1943-44 (1946): 12: 760.

¹¹ Stroh, P.A. 2014. *Juncus compressus* Jacq.. Round-fruited Rush. Species Account. Botanical Society of Britain and Ireland.

diluted. Conditions for seed germination require localised disturbance to open the seed bank, and bare, moist soil for access to light and warmth. These conditions may be achieved under livestock grazing.

Seasalter Levels, habitat. Photo by
Liam Rooney, June 2013



Coastal locations, where water may be brackish, give rise to difficulty in picking out *Juncus compressus* from the very similar *Juncus gerardii* (Saltmarsh Rush), which is not confined to saltmarsh, so that their habitats may overlap outside. The species are best not separated on one character alone. *J. compressus* is tufted, forming only small patches; *J. gerardii*, with its creeping rhizomes, tends to form larger patches. *J. compressus* has a curved, somewhat flattened stem; that of *J. gerardii* is stiffly erect and more three-angled. The lowest bract is usually shorter than the inflorescence in *J. compressus*; longer in *J. gerardii*. The near-globose capsule is 1½ times the size of the pale brown tepals in *J. compressus*; the capsule is oval and pointed, scarcely, if at all, longer than the very dark brown or blackish-edged tepals in *J. gerardii*. (Beware of different-shaped *J. gerardii* capsules leading to an expectation that the fuller ones must represent Round-fruited Rush: this may simply reflect the fact that some plants have set seed better than others.) The anthers of *J. compressus* (which may remain, tucked behind the tepals, after flowering) are 0.5-1mm long and up to twice the length of the filaments below; those of *J. gerardii* are 1-2mm long and two to three times the length of the filaments. (These anther measurements are for fresh anthers; spent or dried ones may require wetting before examination.) The style of *J. compressus* is 0.1-0.3mm, less than half as long as the stigmas; that of *J. gerardii* is 0.5-0.8mm, about as long as the stigmas. The seeds of *J. compressus* are 0.35-0.5mm long; those of *J. gerardii* are 0.5-0.7(-0.85)mm. The anther, style and seed characters are regarded as the most diagnostic.

The hybrid between *J. compressus* and *J. gerardii* was claimed by J.E. Lousley in 1934 at Pegwell Bay (specimens in SLBI), where a patch of *Juncus* was observed between the putative parents, with intermediate leaf colour and a markedly infertile weakly general appearance¹². The record was published subject to qualification, and is treated as unsatisfactory in the *Hybrid Flora of the British Isles*, as with all other British records¹³.

Site	Grid reference	Site status	Last record date	Recorder	Comments
Edenbridge	TQ44I		After 1970, before 1981	Philp (1982)	
Brasted	TQ45S		After 1970, before 1981	Philp (1982)	
Thamesmead West (metropolitan vc16)	TQ4580		(1) 6 August 1985 (1) 20 May 1984	(1) WFS meeting (2) BSBI meeting	(1) TQ 459 808, on west margin of the more northerly of the Twin Tumps, two oval canals. May have been only two plants. (2) Same site, said to have been almost inaccessible.

¹² Lousley, J.E. (1935). *Juncus compressus* x *Gerardi*. *Rep. Bot. Soc. Exch. Club Brit. Isles* **10**: 986-987

¹³ Stace, C.A., Preston, C.D. & Pearman, D.A. (2015). *Hybrid Flora of the British Isles*. Botanical Society of Britain & Ireland, Bristol. The position is further confirmed by Wilcox, M. (2015). Recording *Juncus gerardii* and *J. compressus*. *BSBI News* **130**: 57.

					This site became over-shaded by bushes (per RMB). Historic records for Plumstead Marshes may be relevant.
Cross Ness (metropolitan vc16)	TQ4781		8 May 1984	RMB and JCo	TQ 478 811, east of Crossways Lake. Four old clumps. Site destroyed in 1986 (per RMB).
Holborough Marshes	TQ7062	KWT managed reserve	1989	DP	TQ 706 622 (this may be a generalized grid reference). Confirmation desirable, but it would accord with FR's 1940s records.
South of Harrietsham	TQ85Q		After 1970, before 1981	Philp (1982)	
Bethersden	TQ93E		After 1970, before 1981	Philp (1982)	
Hamstreet	TR03B		After 1970, before 1981	Philp (1982)	
Cuckolds Coomb, nr Brook	TR04		15 July 1986	FR	Locally frequent, inferred to be at TR0744.
Molash	TR05F		After 1970, before 1981	Philp (1982)	
Seasalter Levels	TR0864	KWT managed reserve	6 July 2011	CJC & AP	(a) Coastal marsh, but not brackish. Estimated 101-300 plants, locally frequent. TR 0842 6429, 'field N', hay meadow, aftermath grazed. Generally associated species: <i>Carex divisa</i> , <i>Oenanthe silaifolia</i> , <i>Lotus glaber</i> and <i>Ranunculus sardous</i> . (b) Coastal marsh, but not brackish. Estimated 1-10 plants, rare. TR 0809 6416, 'field D', grazed by suckler herd of cattle. <i>Carex divisa</i> also present at ditch margin, <i>Oenanthe silaifolia</i> rare in field. (c) C. Coastal marsh, but not brackish. Estimated 1-10 plants. TR 0850 6413, 'field C', hay meadow. <i>Carex divisa</i> also locally frequent, <i>Lotus glaber</i> abundant in field. (d) Coastal marsh, but not brackish. Estimated 11-100 plants. TR0878 6421, 'field B', hay meadow with immediate associates <i>Alopecurus geniculatus</i> F, <i>Agrostis stolonifera</i> F, <i>Ranunculus sardous</i> O, <i>Elytrigia repens</i> O. <i>Carex divisa</i> also abundant in field, <i>Oenanthe silaifolia</i> scarce, <i>Lotus glaber</i> abundant.
Seasalter Levels	TR0964	KWT managed reserve	13 June 2013	RG, LR & GK	Small amount in grassy field at TR 09085 64292.

Juncus ranarius Songeon & E.P. Perrier (Frog Rush)

Draft account

vc 16, apparently gone from vc15

Rarity / scarcity status

Frog Rush is a plant of damp brackish coastal habitats, typically on mud- and sand-flats above the high-water mark, and is widely scattered in the British Isles, extending to inland salted roadsides in recent years. Its conservation risk status is considered to be one of 'Least Concern'. It was not generally recognized in the British Isles as a species separate from *Juncus bufonius* (Toad Rush) until 1978¹⁴ and has only one record since then until found in 2019. It is very **rare** in Kent, with only one current known location.

Crossness. Photos by Rodney Burton, 7 August 2019

Account

Philp (2010) refers to the species (under *Juncus ambiguus*) as last recorded in Kent in 1862, from Deal. This was apparently found by James Boswell Syme. There was, however, a later record represented by a specimen gathered in 1947 at Sandwich Bay, now at the National Museum Wales as part of collection donated by Barbara Welch and presumably a find of hers. Both Deal and Sandwich have much suitable terrain for this species and it is



possible that



it could be re-found there, overlooked as *Juncus bufonius*. More to the point as regards the subsequent history of the species as a Kent plant, there exists a record card for its finding by Ro Fitzgerald in 1986 by a track across Crayford Marshes at a grid-reference which is probably best interpreted as TQ 533 778.

Frog Rush was assumed to be 'probably extinct' in the county until its discovery by Rodney Burton and Juliet Cairns on 7 August 2019¹⁵ at the Crossness Nature Reserve (sample grid reference, TQ 4939 8048). Many patches were found in a horse-grazed enclosure (West Paddock), at the edge of muddy depressions which are often water-filled, groundwater levels being usually governed by the operation of a wind pump. Associated plants included *Rorippa palustris* (Marsh Yellow-cress), dwarfed *Veronica anagallis-aquatica* (Blue Water-speedwell) and *Spergularia marina* (Lesser Sea-spurrey); *Plantago major* subsp. *intermedia* was also plentiful all around. The last two plants are particularly indicative of salinity, the tidal Thames being some 300m away. The presence of a small amount of *Puccinellia fasciculata* (Borrer's Saltmarsh-grass) at the

¹⁴ Cope, T.A. & Stace, C.A. (1978) The *Juncus bufonius* L. aggregate in western Europe. *Watsonia* 12: 113-128.

¹⁵ The species narrowly escaped earlier discovery, since a 2013 find at the site was taken to be *J. bufonius* and a specimen gathered in 2018 was mislaid before identification.

site is similarly indicative. There are brackish dikes around the enclosure(s) here and the ground is shown as open at least back to ordnance survey maps of the 1870s. Eighteenth century maps show parcel layouts of varying consistency with the subsequent pattern, but the present site can be inferred to be a survivor of long-term open grazing marshes. It is of course not necessary to assume long-term continuity of the species here in view of the possibility of transmission by birds.

The Frog Rush at Crossness appears to have a distinct relationship with the ground kept open by changing water levels, with colonization following the edges of slightly higher ground, where there is still the opportunity of bare soil for germination (the species being an annual), but not penetrating far into more permanent vegetation. Openness is maintained, not just by the limitations which the habitat places on the establishment of perennials, but also by the cracking of the mud in drying out, and by horse-trampling. The Frog Rush sometimes grows as distinct tufts on the broken dried mud surface and sometimes as a patch comprising a dense mat or sward, occasionally as an understorey to sprawling plants of *Spergularia marina*. The dense sward, illustrated in one of the accompanying photos, may be a product of seeding from individual tufts the previous year, which has found open ground not subsequently broken up. The plants in such a patch are small, atypically one-stemmed and more or less erect, with relatively few flowers and hence reduced seed production per plant; however, there must be hundreds in any one such patch.

Tufted growth, Crossness. Photo by Rodney Burton, 7 August 2019



Frog Rush seeds apparently germinate most effectively after dormancy is broken by cold, indicating spring germination. Exposure to light (e.g. in disturbed open terrain) also encourages germination, which is compatible with saline conditions and, although an increase of salinity beyond a certain concentration results in a lowered germination rate, ungerminated seeds have been found to be undamaged by the increased salinity. Higher salinity is more likely to obtain in summer, after evaporation, so germination compatibility with modest salinity again points to spring germination.¹⁶

Any apparent *J. bufonius* in a saline habitat should be considered for potential identification as *J. ranarius*, although the differences are not straightforward, as the *J. bufonius* aggregate as a whole is very variable, demonstrating considerable plasticity in many of its characters¹⁷. *J. ranarius* may have shorter stems (i.e. not exceeding 17cm), but most *J. bufonius* does not exceed this anyway. *J. ranarius* flowers bunch together, usually 2-3 together at the tip of an ultimate branch; *J. bufonius* flowers tend to be more spaced out, although small plants may be congested. The *J. ranarius* capsule is usually blunt, as long as, or longer than the inner tepals; the *J. bufonius* capsule is generally somewhat pointed (subacute) and as long as, or shorter than the inner tepals (so length does not help where inner tepals and capsules are equivalent). The inner tepals of *J. ranarius* are blunt, often emarginate with a mucronate tip; those of *J. bufonius* are more or less acute. The determination of Crossness material by Tom Cope was based on 'the blunt inner tepal, blunt capsule (perhaps a little too short) and dumpy barrel-shaped seeds'.

¹⁶ Kolodziejek, J. & Patykowski, J. (2015). Germination and Dormancy in Annual Halophyte *Juncus ranarius* Song & Perr. *Notulae Botanicae Horti Agrobotanici Cluj-Napoca*, **43(2)**: 439-446.

¹⁷ Cope, T.A. & Stace, C.A. (1983). Variation in the *Juncus bufonius* L. aggregate in western Europe. *Watsonia* **14**: 263-272.

There is potential for further discoveries along the Thames estuary, given that it has also been recorded as abundant over a wide area of saline marsh at Aveley Marshes, on the Essex side of the river. It is not just saline marsh where it should be sought. Also, although not bordering the Thames, Essex discoveries at Jaywick in 2007-08 point to compatibility with more developed habitats: inside the sea wall adjoining a holiday park and a car park, and on a pavement. However, the 1986 record for Crayford Marshes, i.e. grazing marshes close to the estuary subject to brackish influence, is one which points to further potential terrain with similarities to the Crossness site.

This account has benefited greatly from the involvement of Rodney Burton.

Juncus squarrosus L. (Heath Rush)

Draft account

vc 15 and 16

Rarity / scarcity status

Juncus squarrosus is a common plant of wet heath and moorland, especially in northern England, Wales, Scotland and Ireland, and is sometimes dominant in wet upland acid grassland. In southern England its distribution is patchier, in line with the availability of lowland heath. Its conservation risk status in Great Britain as a whole and in England is one of 'Least Concern'. Due to the lack of suitable habitat, in Kent it is **rare** or possibly very **scarce**.

Hothfield. Photo by Sue Buckingham,
21 June 2012



Account

Even when more suitable habitat was present in Kent, it seems not to have been a common plant and was not noticed before Matthew Cowell's *A Floral Guide to East Kent* (1839) published records taken from Gerard Smith's manuscript notes (1830-33). Smith had seen it on Willesboro' Lease (Willesborough Lees near Ashford) and 'In Sandling Park, among heath & furze'. Hanbury and Marshall (1899) considered it to be a rare plant of moors, heaths and sandy wastes. The only other sites which they mentioned were at Keston Common (reported by Walter Reeves, before 1892); sandhills between Deal and Sandwich (found by Elizabeth Harvey, before 1873); on the commons (near Tunbridge Wells) (attributed to Forster, although Forster's *Flora Tonbrigensis* refers to the rush as 'on heaths every where', which doubtless includes Sussex as well); and Hothfield Heath (reported by William Jeffrey, before 1899).

Hothfield. Photo by Liam Rooney, 19 May 2011



Contemporaneous with the publication of Hanbury and Marshall (1899) was the discovery of a further site by Henry Lamb, at Ightham Common, in a boggy place by Oldbury Camp. The rush was still present when visited by Francis Rose in 1944, at a damp, heathy beechwood by ponds near Crown Point (presumably there were open areas in the canopy and perhaps bracken was not then so extensive as now). Rose also found a further site in 1946 south of Wrotham Heath and the railway (Valley Wood), by a path and a small area of damp *Calluna* heath. The Wrotham Heath site persisted at least until the 1971-80 survey published as Philp (1982), when presence in only four tetrads was recorded in the administrative county. These records exclude metropolitan vc16, where the acid soils of Keston and Chislehurst

Commons still accounted for two further tetrad records. By the time of the 1991-2005 survey (Philp, 2010), only the two Hothfield tetrads remained for this species in the administrative county (although at least Keston Common continued in vc16 as well), so the history of Heath Rush in Kent has been one of decline. The position is the same as regards our 2010-19 records.

Juncus squarrosus requires wet open conditions, although ground may be seasonally wet and the species is intolerant of complete submergence¹⁸. Its slow growth, need for light and inability to grow upwards with an accumulation of soil-raising litter means that it is a poor competitor, but on the other hand, it is little affected by grazing and trampling. This gives it an advantage in trodden areas, such as by pathways at Hothfield Common. It spreads vegetatively by the emergence of new shoots at the margin of a rosette extending at the rate of 1-2cm a year, and so gradually resulting in formation of a patch. Seed requires light for germination and hence bare ground. The seeds are mucilaginous, according to Green (1969)¹⁹ who suggested that this might facilitate carriage by birds. It might equally be inferred, however, that there is a potential for spread by animals and people using tracks by which the plant is growing. It is a short wiry rush, distinct from other British species.



Hothfield. Photo by Liam Rooney, 19 May 2011

Site	Grid reference	Site status	Last record date	Recorder	Comments
Keston Common (metropolitan vc16)	TQ4164		(1) 6 August 016 (2) 13 June 2007 (3) 20 April 1987 and 8 August 1987	(1) SL (2) JP (2) RMB	(1) Keston Bog, small valley, TQ 4171 6434. Patch of plants on bare peat cleared of trees at northern edge of bog. Also on larger of two open grassland heaths on high plateau. (2) Main heathland area west of lake. (3) TQ 418 640, c. 150 plants.
West of Farnborough (metropolitan vc16)	TQ4364		2015	JJ	Bassetts Campus, a small patch of acid grassland just north of junction of Starts Hill Road and Acorn Way, an area being developed (2017). The outlook for the species here is not promising; and its survival even to this point in such a built-up area is surprising.
Chislehurst Common (metropolitan vc16)	TQ4369		20 June 1988	RMB	TQ 436 769, west of cricket ground. [Not found when re-visited in 2004 (RMB).]
Wrotham Heath	TQ65I		After 1970, before 1981	Philp (1982)	A few plants in a small area. Presumably the 1946 FR site (see main text).
Sandway	TQ85V		After 1970, before 1981	Philp (1982)	A few plants in a small damp area.
Hothfield	TQ9645	KWT managed reserve, SSSI	(1) 21 May 2016 (2) 25 May 2010 (3) 12 July 2000 (4) 6 August 1995 (5) 1991-99	(1) SL (2) GK (3) JS (4) JPu (5) EGP (Philp, 2010)	(1) Edge of fenced-off acidic meadow off western side of public footpath, TQ 9652 4596. (2) Frequent within this 1km square on the common, particularly on trodden areas. (3) TQ 969 456. (4) TQ 969 458. (5) Recorded as TQ94S. These are sample records only, this location having been visited by many botanists.
Hothfield	TQ9646	KWT managed reserve, SSSI	(1) 25 May 2010 (2) 1991-99	(1) GK (2) EGP (Philp, 2010)	(2) Recorded as TQ94T.

¹⁸ General ecological information is given by Welch, D. (1966). *Juncus squarrosus* L., Biological Flora of the British Isles. *Journal of Ecology* **54**: 535-548.

¹⁹ Green, H.E. (1969). *Juncus squarrosus* L. – Dispersal of seeds. *Proc. Bot. Soc. Br. Isles* **7**: 562.

Juncus subnodulosus Schrank. (Blunt-flowered Rush)

Draft account

vc 15 and 16

Rarity / scarcity status

Juncus subnodulosus is a plant of fens and marshes, locally frequent in England, especially in East Anglia, present also in Wales and central Ireland but barely reaching north to Scotland. Its conservation risk status in both Great Britain as a whole and England is one of 'Least Concern'. In Kent there appears to be evidence of rapid decline, leading to the species becoming **scarce** (but further recording may yet demonstrate that the species should only be regarded as uncommon, verging on scarcity).



Ham Fen. Photo by Liam Rooney, 13 July 2013

Account

Blunt-flowered Rush (then known as *Juncus obtusiflorus*) was first published for Kent by Thomas Forster in his *Flora Tonbrigensis* (1816), in which he described it as 'On bogs, not uncommon' which, if it were to imply acid ground, seems not entirely apt, as the species is more frequently known where there is some base enrichment. The habitat description by Edward Jenner 'Wet pastures and other places, frequent' in his *Flora of Tunbridge Wells* (1845) seems more appropriate. Whilst there have been further Wealden records, the distributional assessment by Hanbury and Marshall (1899) as 'local (chiefly submaritime)' in marshes, seems fairly representative of the position then and now. Records mentioned by them include marshes above Woolwich, sites near Oare and Faversham; Sandwich; Deal; Ham Fen; Eastwear Bay; and Preston (near Stodmarsh).

Much of this breadth of range was known to Francis Rose in the 1940s and 1950s, when he found *Juncus subnodulosus* at a flooded gravel pit near Oare Creek (1959); in a wet dune slack north of Deal (1946); in mixed fen with *Cladium mariscus* (Great Fen-sedge) at Ham Ponds (1946); in fen meadow at Wingham Fen (1946); in calcareous fen-meadow at Worth Minnis (1947); in flush areas over gault clay at East Wear Bay, Folkestone (1947). Rose also came across the species in a much wider range of localities, amongst which were: fen developing on a sandy lake shore at Leybourne Castle (1958); by a ditch in alluvial marshes at Barnes Cray (1944) ; in calcareous fen meadow at Holborough Marshes (1944; still there, 2013); in calcareous spring-fen on ragstone at Whitenbrooke, Seabrook near Hythe (1954); in calcareous spring-fen at The Lince, Etchinghill (1958; still in the vicinity, 2014); and in wet shingle pits north of the old railway station at Dungeness (1953).



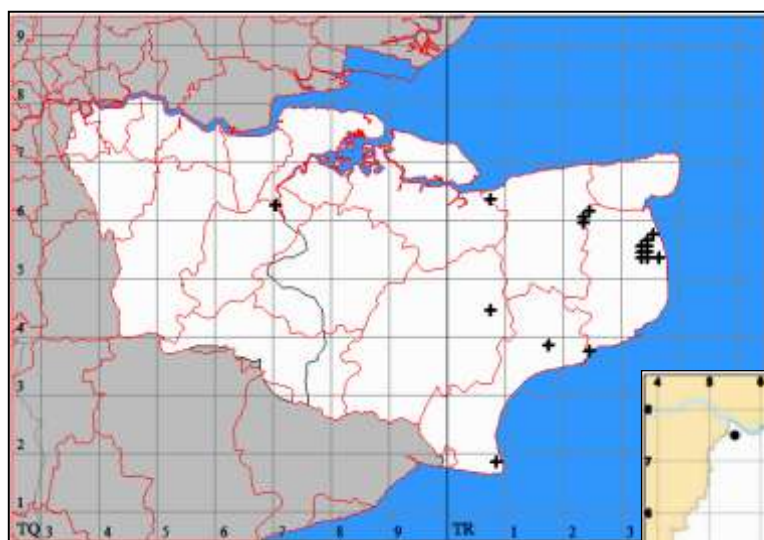
Worth Minnis. Photo by Liam Rooney, 5 July 2011

This fairly wide county distribution persisted until the county survey of 1971-80 published as Philp (1982), where the species was described as one of fens, marshes and dyke edges in areas with basic ground water, rather local and such that it could only be called frequent in the marshes just inland between Deal and Sandwich. Sightings were recorded in 21 tetrads and these included a few in the south west of the county, reminiscent of the early 19th century Tonbridge / Tunbridge Wells records, although that for TQ45V below Ide Hill contributed by Ray Clarke should be disregarded (the supporting specimen in **MNE** is not this species). However, the 1991-2005 survey (Philp, 2010) only relocated six of these 21 tetrad records, adding three more, suggesting a decline of 57% overall, and indicating almost complete loss from West Kent.

Whether this is a real decline remains to be tested further by current recording, but for the period 2010-19, *Juncus subnodulosus* has been located in 15 tetrads (18 monads), only one of which is in West Kent; so at least there does not appear to be evidence of further losses overall.

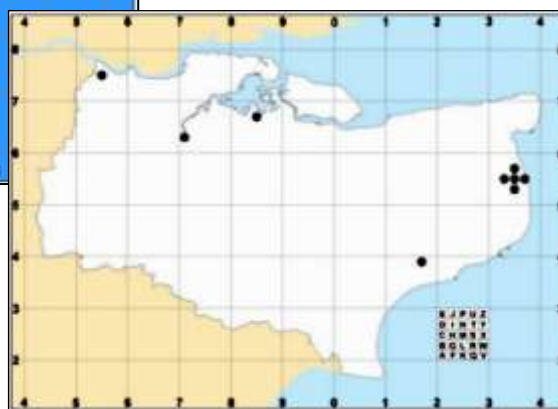
As Blunt-flowered Rush is not rare in Kent, and may fall short of being scarce, the distributional data maintained in this register will be at 1km square (monad) level. This will entail recording at a finer scale than the tetrads given in Philp (2010), from which the following 1991-2005 map is taken (with kind permission of

the late Eric Philp and the Kent Field Club).



Juncus subnodulosus (Blunt-flowered Rush) 2010-19

Juncus subnodulosus (Blunt-flowered Rush) 1991-2005



Juncus subnodulosus is a patch-forming perennial, with far-creeping rhizomes which may be matted below the surface, often present with other rushes, such as *Juncus inflexus* (Hard Rush) and *Juncus articulatus* (Jointed Rush). It forms part of, and may be dominant in, the *Juncus subnodulosus*-*Cirsium palustre* fen-meadow plant community (M22). This community, where ungrazed, commonly reaches 50-80cm in height, but *Juncus subnodulosus* may be noticeably taller (40-130cm). The assemblage indicates soils which are kept reasonably moist for most of the year and have a moderate to high base-status, and may be represented on terrain which is sloping, with seepage lines where ground waters reach impervious substrates; or on flat ground in badly drained hollows or valley bottoms, which may accumulate peat below. Rodwell²⁰ refers to such communities as being secondary, derived and maintained by mowing and/or grazing; and *Juncus subnodulosus* is often one of the strongest threads of continuity from the precursor community, being adapted to survive both the former traditional annual summer mowing and grazing.

²⁰ J.S. Rodwell (ed.)(1991) British Plant Communities, vol. 2, Mires and heaths. Cambridge University Press, Cambridge.

Whilst the species is especially associated with calcareous peat, it may also grow on alluvium or sand, and it shows some salt tolerance²¹. It is noticeable as having pale florets when young. These darken later, but then the inflorescence is distinctive with its branches diverging widely and reflexed. The leaves are distinctive as having both cross-partitions – as do *Juncus articulatus* (Jointed Rush) and *Juncus acutiflorus* (Sharp-flowered Rush) – and longitudinal partitions (which they do not).

²¹ Richards, P.W. & Clapham, A.R. (1941). *Juncus subdodulosus* Schrank. (*J. obtusifolius* Ehrh.). Biological Flora of the British Isles. *Journal of Ecology* **29**: 383-391.

Juniperus communis L. (Common Juniper)

Draft account.

vc 15 and 16

Rarity / scarcity status

Juniper is a very local shrub or small tree throughout much of Britain and Ireland, absent from much of the south west and from central and eastern England. It has been in decline through the loss of scrub communities by over-grazing, burning or woodland succession/afforestation. Regeneration from seed is often poor. It requires the presence of both male and female plants, the availability of bare ground and the absence of grazing-off seedlings. Juniper is treated as a UK Biodiversity Action Plan priority species. Planned actions are targeted towards maintaining the species' current range and overall population size, achieving natural regeneration at sites under conservation management, and maintaining or re-establishing populations at sites not under direct conservation management.

From William Turner's Herball, 1562.



The lowland plant is *Juniper communis* subsp. *communis* and, whilst its conservation risk status in Great Britain as a whole is of 'Least Concern', in England it is considered to be **Near Threatened**. The assessment of



Near Threatened is based on a reduction both in the overall geographical extent of its occurrence in England and in the area of occupancy within that range. A comparison over the periods 1930-1969 and 1987-1999 showed that its overall range had reduced by 24% and its area of occupancy had declined so that there was a 20% reduction in the likelihood of recording the species. Viewed on a much wider timescale²², the number of 10km squares in which it was recorded in the period 1987-99 had in East Kent declined to four (from 11 over all time before), a loss of 64%; and in West Kent the decline was from seven 10km squares to five, a loss of 29%. However, in Kent, Juniper falls short of qualifying as rare or scarce, because of the number of extant sites; but it may be regarded as at risk because of the earlier decline and the ageing of colonies without recruitment of young plants.

Dover. Photo by Liam Rooney, 5 July 2011

Account

²² Ward, L. (2007) *Juniperus communis* L. Plantlife dossier, http://www.plantlife.org.uk/wild_plants/plant_species/juniper accessed 14/11/2015

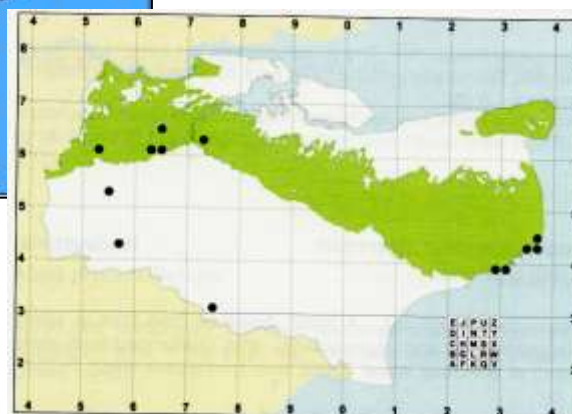
Juniper has a very early first published county record, that of William Turner in Part 2 of his *Herball* (1562), in which he states that 'In England it groweth most plentuously in Kent'. This abundance is still reflected in the account by Hanbury and Marshall (1899), who regarded it as locally common, but sufficiently frequent along the North Downs across Kent that they did not enumerate individual records for that area. The only areas where it was not to be found were what is now metropolitan north west Kent; Sheppey and the adjoining mainland; and Thanet.

This distribution has shrunk considerably since then, in particular as regards the North Downs from Burham eastwards to the coast. Sites in this latter area were known to Francis Rose, such as at Yocketts Bank (1958); Fanscombe Wood, east of Wye (1959); and Petham (1959). In the 1971-80 county survey (Philp, 1982), 13 tetrad records were made. The species was considered to be declining: many of the adult bushes appeared to be suffering from the effects of a fungus and there were no recent reports of any seedlings in the country. Apart from a few bushes on Southborough Common, all other localities were on the chalk.



Juniperus communis (Juniper) 2010-19

During 1990-2005, again 13 tetrad records were made, although only eight represented the same tetrads. By then, some known shrubs had died as a result of fungal infection, and others on the cliff tops in the east of the county had been lost through erosion.



Juniperus communis (Juniper) 1991-2005,
showing affinity with chalk (green)

Surveys of 26 colonies were noted by Plantlife (Ward, L., op. cit.) as having been carried out in 1971 and 1999, resulting in estimates of 183 and 138 bushes respectively, a decline of 26%. Plantlife's assessment was that Juniper on the North Downs is in a terminal state of decline with only small numbers in Kent; but holding its own in low numbers on the eroding chalk cliffs on the east coast of the county where it is less dependent on agricultural practices.

Recording in the period 2010-19 has produced 14 monad records, disregarding some of unclear status, but including two bushes planted at Downe Bank and 30 or so presumed planted at Kingsdown. Only some of those 2010-19 records come from the same tetrads as the 1991-2005 records; so, although it appears from total numbers that occurrence in the county has been broadly constant since 1971, the total has been maintained by new discoveries. These are not necessarily 'new' plants, although it is possible that there is recruitment of bird-sown plants, particularly on migratory routes. Many of our records are of single bushes,

probably of considerable age, and unable to reproduce because both male and female bushes are required. A lone bush noted at Burham in 2012 was understood to be one which Eric Philp had recorded for 40 years and which had hardly changed in that time. If the strategy of juniper is one of a mobile plant, exploiting favourable situations for colonisation within the area of bird dispersal movements, then this is likely to be ineffective with us when the seed resources are insufficient to result in both males and female bushes arriving in proximity. Bushes may appear in unlikely places: there is one (found 2000 and still present in 2015, 3m high; also 2020), rooted above the reach of tides, at the Thames estuary near Cross Ness.

As Juniper in Kent does not (yet) quite qualify as rare or scarce, the distributional data maintained in this register will be at 1km square (monad) level. This will entail recording at a finer scale than the tetrads given in Philp (2010), from which the accompanying 1991-2005 map is taken (with kind permission of the late Eric Philp and the Kent Field Club).

Although tabular information regarding sites is not being included here, conservation interest in this species is such that it is worth providing information as regards selected colonies.

Shoreham, TQ 528 612 and 529 612. Mentioned by de Crespigny in *A New London Flora* (1877) as present east of Shoreham; recorded also in 1929; and said by Francis Rose to be abundant in 1945, with about 40 plants in 1952 and 20 in 1963, plus many dead. On 5 July 2010, the colony was noted (GK) as consisting of five individuals growing on a chalk slope with a western aspect. These appeared perhaps healthier than they have



been at times before, except for one with a damaged stem, although the quality of the surrounding downland flora had declined, with increasing tree and shrub seedlings, despite some scrub cutting. There were two males and three females, ranging from 1.75 to 6m high. All (but one) were over-shaded, partly to severely, two with scrub growing up from their rooting points. There was no sign of regeneration.

Shoreham. Photo by Geoffrey Kitchener, 21 November 2015

Folkestone Warren, TR 248 380. Present at least since 2007 (and clearly much older than this), one male bush, 3.5m high by 2.5m wide, was noted on 3 August 2010 (LS, JN) in Folkestone Warren SSSI (TR 2483 3801), growing on the chalk cliff with a south western aspect in an area of undercliff characterised by slumps and steep cliffs. In front of the bush was rabbit-grazed chalk grassland, but its immediate surroundings, particularly behind, were in need of scrub control, massive scrub encroachment having taken place in the area since removal of grazing animals, even the steeper, more exposed parts of cliff being swamped by *Betula pendula* (Silver Birch), *Buddleja davidii* (Butterfly-bush), *Cornus sanguinea* (Dogwood), *Crataegus monogyna* (Hawthorn), *Ilex aquifolium* (Holly), *Ligustrum vulgare* (Wild Privet).

Samphire Hoe (Shakespeare Cliff), c. TR2927 3918. This site may correspond to the reference in Rose & Géhu (1964)²³ to Juniper being rare at the edge of cliff-tops between Folkestone and Dover (although Francis Rose listed it in 1955 as at the cliff edge, TR 305 396). It is an area difficult to survey in its entirety because of the precipitous cliff. When observed by SB through binoculars from below at Samphire Hoe on 10 July 2014, many bushes appeared diseased, with large patches brown and bare of leaf. The population comprised 31 plants (PHo, pers. comm.) and included male and female bushes.

Dover (Langdon Hole), TR3442. This may be the same site as given by Matthew Cowell in *A Floral Guide for East Kent* (1839) as contributed by Miss Elizabeth Harvey for a location between Dover and St Margaret's Bay. Francis Rose also saw seven bushes at the Langdon Bay cliff tops in 1953 (TR 345 425). It was recorded by a KBRG meeting on 12 July 2010 as a small wind-sculpted bush on the very cliff edge at Langdon Hole, TR 34449 42505. There are more plants: on the public footpath which drops down the vertical cliff-face, at TR 34559 42540, KBRG meeting attendees were able to look up and back at the vertical cliff face and, with binoculars, see four plants (it was understood that eight are known).

These sample site records exemplify a number of themes: the small size of some populations; the potential for loss through disease or erosion (although conversely erosion may provide open ground for regeneration); the competition arising in some locations from encroaching scrub; and the absence of record of recruitment.

Juniper is tolerant of frost, nutrient-poor soils and (except when young) drought²⁴. It may be browsed, but is apparently not very palatable to herbivores (although seedlings are vulnerable). In consequence, it may act as nurse to other trees or shrubs which may establish themselves in its shelter. It shows some tolerance to scrub which may grow around it; and, although not able to cope with deep shade, it will survive and grow in levels of a fifth of normal sunlight. Its life span, however, is likely to be shortened by shading. Seed viability may be affected by the age of the bush, its nutritional status, insect predation and seeds not fully formed; and for those seeds which are sufficiently formed, delayed germination of three to five years is common. Blackbirds, mistle thrushes and song thrushes are considered to be the main dispersal agents of the cones (berries) in Britain, although the results do not appear to be particularly effective in Kent for colony expansion. Life span on the southern chalk is reckoned to be 100-120 years.



Shoreham. Photo by Stephen Lemon, 16 July 2014

²³ Rose, F. & Géhu, J.M. (1964). Essai de phytogéographie comparée. La végétation du Sud-Est de l'Angleterre et ses analogies avec celle du Nord de la France. *Bulletin de la société botanique de France* 90ème session extraordinaire 38-70.

²⁴ General ecological information from Ward, L. (op.cit.) and from Thomas, P.A., El-barghathi, M. & Polwart, A. (2007) *Juniperus communis* L. Biological Flora of the British Isles. *Journal of Ecology* 95: 1404-1440.

***Knautia arvensis* (L.) Coult. (Field Scabious)**

Draft account.

vc 15 and 16

Rarity / scarcity status

Field Scabious is frequent in grassland over most of the British Isles, but absent from most of north and west Scotland. Despite this, its conservation risk status is assessed as of 'Least Concern' in Great Britain as a whole, but in England it is considered to be **Near Threatened**. A comparison of its area of occupancy in England over the periods 1930-1969 and 1987-1999 produced a calculated decline of 23% in the likelihood of recording the species; and it is the rate of decline, rather than absolute numbers of the species remaining, which causes this reassessment. In Kent, there appears to have been a decline of 37% over shorter time, between the periods 1971-80 and 1991-2005. Accordingly, although the species can be ranked neither rare nor scarce in the administrative county, its status is one for concern.

Account

The first printed record of Field Scabious for the county is by Thomas Johnson, who recorded it whilst travelling along the main road between Gravesend and Rochester (*Iter Plantarum*, 1629). On his next journey, in 1632, he remarked on a white form of this species en route from Margate to Nash. The species appears to have been generally common enough that it was more worthy of remark when an unusual form was found, as with Edward Jacob (*Plantae Favershamienses*, 1777), who remarked on a plant with proliferous flowers in Badgen Wood; and Thomas Forster (*Flora Tonbrigensis*), who saw white, red and blue flowered plants. Hanbury and Marshall (1899) considered *Knautia arvensis* to be very common throughout the county, at banks, cliffs, fields and pastures.



Bredhurst, habitat. Photo by David Steere, 22 July 2015

Philp (1982) recorded the species in 382 tetrads, finding it in dry grassy fields, at roadsides and on cliffs, being common on the chalk. It was noticeably missing from Dungeness and nearly all of the Weald. A similar distribution was shown by Philp (2010), but significantly thinned out, so that only 243 tetrads were given. The

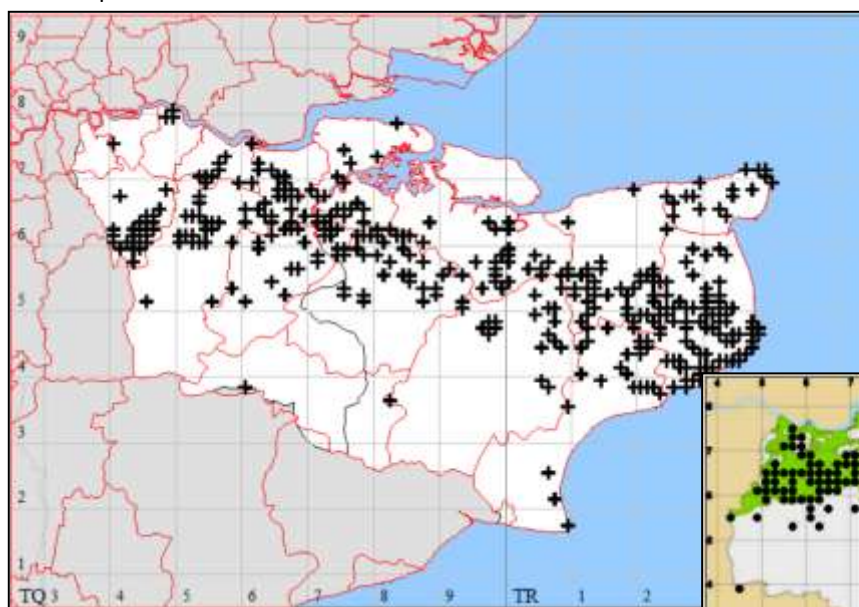
species was noted as a plant of rough pastures, hedgerows, wood borders and roadside verges, particularly on the chalk; but no suggestion was given as regards potential causes of decline, nor are these apparent.



Nashenden. Photo by David Steere,
18 October 2015

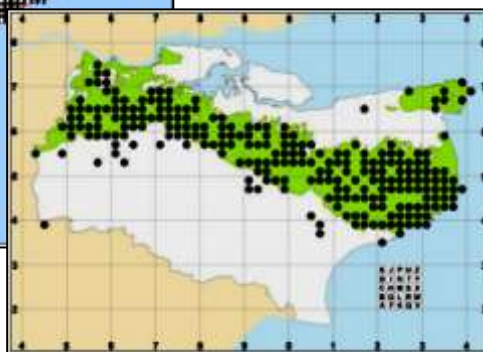
As Field Scabious in Kent does not qualify as rare or scarce, the distributional data maintained in this register will be at 1km square (monad) level. This will entail recording at a finer scale than the tetrads given in Philp (2010), from which the following 1991-2005 map is taken (with kind permission of the late Eric Philp and the Kent Field Club). Comparison with 2010-18 records indicates further thinning out, although there are some occasional records beyond the range of the 1991-2005 finds, e.g. at Dungeness

and the Hoo peninsula. It is not noted in the record details for those particular outliers, but anomalous distribution is possible through inclusion of the species in some wildflower seed mixes and this is the suspected origin of some metropolitan West Kent sightings. While the 2010-19 records (260 tetrads) have overtaken the 1991-2005 total of 243, the recent dataset includes metropolitan West Kent and so overstates the comparison.



Knautia arvensis (Field
Scabious) 2010-19

Knautia arvensis (Field
Scabious) 1991-2005, showing
affinity with chalk (green)



Knautia arvensis is a perennial with a strong tap root. It is pollinated by butterflies and bees, and in southern Sweden, has been considered as a potential indicator for species-richness in bees. It may be distinguished from *Succisa pratensis* (Devil's-bit Scabious) by the latter generally having dark bluish-purple flowers (those of *Knautia arvensis* are usually bluish-lilac) and more or less untoothed, entire stem-leaves (those of *Knautia arvensis* are

mostly pinnatifid). It may be distinguished from *Scabiosa columbaria* (Small Scabious) by the latter's smaller, slenderer appearance with corollas 5-lobed (4-lobed in *Knautia arvensis*).

Stem leaves, Bredhurst. Photo by
David Steere, 10 July 2015



Variation in *Knautia arvensis*. Photos by
David Steere: (top) Cuxton 26 June 2013;
(bottom) Shoreham, 30 August 2015

