

## Norfolk Flora Group - Winter Newsletter 2016-17

### Welcome to the NFG Winter Newsletter

Amazingly, and despite the state of dormancy which many of us enter into at this time of year, a number of you read the inaugural edition; and some of you even seemed to enjoy it (or at least were too polite to say otherwise). Anyway; we were sufficiently encouraged that we decided to produce Issue No. 2.

**In this issue** ... we find out about Robin's very large vegetable. There have been rumours, but we now have photographic evidence. Our esteemed Dr Leaney tells us about all the things we secretly wanted to know (but have always been too shy to ask) about glands; Richard discusses problems with *Poa*; the eagerly awaited results of 'Norfolk Flora Group Pub of The Year' are finally made public; Mike C goes fishing; and much, much more.

We again take a quick look back at some of the more interesting moments from the 2016 botanising season, and preview some of the events planned for the 2017 season.

Contributors to this edition are Suki Pryce, Janet Higgins, Bob Leaney, Mike Crewe, Robin Stevenson and myself, together with our glorious 'leaders', Richard Carter and Bob Ellis; and our mysterious crossword compiler.

Feedback on the content, types of articles etc would be very welcome. If anyone would like to prepare something for the 2017-18 edition, or nominate a 'friend', or even someone you dislike intensely, to write something (they need never know), I would be delighted to hear from you.

### Thank you

Our particular thanks go to the various landowners who allowed us access in 2016 (and especially those willing to have us back a second time). I would also like to thank the Ted Ellis Trust for allowing us to use the Wheatfen study room for workshops, NT Sheringham Park for use of their classroom, and Linda Laxton and British Wildflower Plants <http://www.wildflowers.co.uk/> for giving us pot-grown examples of some of the medicks and trefoils. If you have never been to BWP, then go: it's an amazing place and well worth a visit.

### Jo Parmenter

The views and opinions expressed in this Newsletter are those of the individual authors, not of the Norfolk Flora Group, nor its membership in general.



## A FIRST FOR BRITAIN .... AND KING'S LYNN

Earlier this year I noticed an obvious member of the *Cucurbitaceae* growing on the edge of a pile of organic waste material near King's Lynn. I returned later, hoping to make a positive ID, and expecting a courgette or marrow but - to my surprise - saw that the plant in question was undoubtedly a Butternut Squash. A sample was duly collected, to present to my wife as evidence of my hunter-gatherer foraging skills, and I then turned to Stace in order to name it. It was not listed and I had to turn to Wikipedia to find its scientific name - *Cucurbita moschata*, for those (if any) who are interested. Passing the record on to Owen Mountford, he informed me that it was not on the BSBI database either, so it looks as if my find represents a New to Britain record. I suspect most of you will be totally underwhelmed by this news, but I'm quite chuffed - I'm happy to enjoy life's simple pleasures.

However, given that the Butternut Squash is to be found on the shelves of almost every supermarket these days, and given that a proportion of them are likely to get tossed out (by disgruntled carnivores), it seems unlikely that it has not 'escaped' and managed to reproduce itself elsewhere. Finding it as a first is, alas, probably due more to sheer luck than skill. My only hope is that, in the not-too-distant future (?) when Global Warming has really kicked in and the Butternut Squash has established itself as a familiar feature of our flora, that the records will still register the fact that it was first found in King's Lynn, and by me.

**Robin Stevenson**



The aforementioned vegetable.

Technically a fruit, of course, but that would have spoiled the build-up! JP



## BOTANICAL HIGHLIGHTS WITH THE NORFOLK FLORA GROUP

Here are a few of the many highlights from the meetings I attended, together with a summary of the four excellent workshops, which are always a great opportunity to learn from the experts.

The season started with an urban meeting in Dereham. The most interesting find here was *Rorippa amphibia* (Great Yellow-cress) looking very atypical poking up above the water in a ditch (Jo immediately recognised it from a photo). This excitement was followed by a couple of hours searching for a rumoured *Taraxacum palustre* (Fen Dandelion) on Potter and Scarning Fens. We



found a potential candidate with appressed ovate outer bracts but it was later identified as *Taraxacum nordstedii*. My next meeting was the first of our archaeological sites, Binham Priory where we were pleased to find that *Galium parisiense* (Wall Bedstraw) could still be found growing on the old walls along with *Saxifraga tridactylites* (Rue-leaved Saxifrage).

Most of the day was spent in a nearby tetrad where we found *Petroselinum segetum* (Corn Parsley) growing along the edge of a disused airstrip.



Now into May, it was a good time to survey some of the woodlands. My group visited Hall Plantation and Street Plantation, near Bracon Ash. The woodland floor was carpeted with *Eranthis hyemalis* (Winter Aconite), which unfortunately was past its best but still easily recognisable. We then set out

for the coast; this time Bob Ellis was on a mission to find missing Spring Species. We were pleased to find *Cerastium diffusum* (Sea Mouse-ear) and *Cerastium semidecandrum* (Little Mouse-ear),



but my real treat was to see *Vicia lathyroides* (Spring vetch) with its tiny purple flowers growing on the path amongst the yellow flowers of *Trifolium micranthum* (Slender Trefoil). We next journeyed back into the west for the archaeological sites around Castle Acre, where we found some chalk-loving plants; *Scabiosa columbaria* (Small Scabious) and the two Oat-grasses: the softly hairy *Avenula pubescens* with 2-3 flowers per spikelet and the glabrous *Avenula pratense* with 3-5 flowers per spikelet.

The early season *Trifolium* and *Medicago* workshop was held in the learning centre at Sheringham Park, courtesy of the National Trust. Bob Ellis started by introducing us to the important parts of the plant for identification, notably the stipules, calyx teeth and petiolule (leaflet stalk), followed by Bob Leaney, who took us through his visual key to the 16 *Trifolium* and 5 *Medicago* species found in Norfolk. Jo had grown some lovely clovers, my favourite was *Trifolium ochroleucon* (Sulphur Clover) with a pair of sessile leaves just below the pale yellow flowerhead. In the afternoon, we went clover hunting around Gramborough Hill at Salthouse, finding *Trifolium fragiferum* (Strawberry Clover)



which was easy to recognize (even though it was too early for the strawberry-like fruits), as it roots at the nodes and the lateral veins of the leaflets are thickened and recurved at the margins.

Towards the end of June was the time to start venturing into the tall herb fen: an opportunity to see the leaves of the shy-flowering *Viola palustris* (Marsh Violet) and *Lathyrus palustris* (Marsh Pea) scrambling up *Phragmites australis* (Common Reed). We also found a wide variety of sedges including *Carex pulicaris* (Flea Sedge) and *Carex lepidocarpa* (Yellow sedge).



The annual bramble workshop was led this year by our local batologist, Alex Prendergast, who spent the day discussing prickles, acicles and red-based styles with Bob Ellis. I just enjoyed the day getting tangled up [one assumes both literally and metaphorically! JP] in a few of the 100 Norfolk *Rubus* microspecies, first in Pope's wood, Hempnall where we re-recorded our target species, *Rubus subtercanens*, then to Tyrrells Wood, Pulham in the afternoon. I can now recognise the invasive Himalayan Giant, *R. armeniacus*, *R. ulmifolius* with its big prickles and waxy stems and Dewberry, *R. caesius* with its ternate leaves and large drupelets.

We next ventured into the wild west to survey some low-lying tetrads with Owen Mountford as part of the Fenland Flora project. This was a good opportunity to familiarise myself with members of the Amaranthaceae family; the Goosefoots, *Chenopodium polyspermum* (Many-seeded Goosefoot) and *C. rubrum* (Red Goosefoot), the Pigweeds, *Amaranthus retroflexus* (Common Amaranth) with its dense much-branched inflorescence and dehiscent fruit, and *A. bouchonii* (Indehiscent Amaranth) with a less dense inflorescence and indehiscent fruit and an orache, *Atriplex littoralis* (Grass-leaved Orache).

Our third workshop, by my request, was on willows. Wheatfen provided excellent facilities to learn about willows both in the study centre and around the reserve. Bob Ellis provided a very clear introduction to the nine native Norfolk willows, noting the salient features. However, all is not quite so simple as we'd hoped, as willows hybridise freely, and so we are often presented with a confusing mixture of characteristics. Time for a 'Bob Leaney visual key' which very comprehensively took us through many of the common hybrids we might encounter in Norfolk.

Late August was the time to start rummaging around in some ditches on the grazing marshes, not the best places for diversity, but the challenging of finding our way around the dykes whilst avoiding the bulls is always a good recipe for a fun day out. As for the plants, we found many members of the Potamogetonaceae, including two very similar submerged grass-like pondweeds, the common *Potamogeton pectinatus* (Fen Pondweed), having a fan-shaped appearance and the opposite leaved *Zannichellia palustris*, (Horned Pondweed).



There were still some new plants for me to see in September, with *Althaea officinalis* (Marsh-mallow), blowing around gently in the wind along the edge of the ditches at Halvergate Marshes with its velvety leaves and large



pink flowers. We also found the potentially invasive, *Nicandra physalodes* (Apple-of-Peru), looking majestic on some waste ground near Gresham.



Our final meeting was a workshop on Peas (*Lathyrus*) and Vetches (*Vicia*) at the Norwich Castle Museum Study Centre. We focused on the paripinnate (equal number of leaflets, the terminal leaf being replaced by a simple or branched tendril) members of the Tribe Fabeae. We had an entertaining afternoon doing a herbarium quiz: Bob L had covered up the names of the specimens which we were only allowed to reveal once we decided on an identification. Even distinguishing *Lathyrus* from *Vicia* was difficult for some of the specimens as it was not always clear whether the stems were winged or not and the stipules could be difficult to find. It was a great opportunity to see a wide range of species, some which have not been recorded recently in Norfolk. We spent a lot of time examining the calyx-teeth of *Vicia lutea* (Yellow-vetch), *Vicia parviflora* (Slender Tare) and *Vicia sylvatica* (Wood Vetch). A fitting end to a very busy season.

### Janet Higgins



Lunchtime at Catfield Fen (Wild Flowers Revealed, June 2016)



## HOW TO CAUSE BEWILDERMENT AND CONSTERNATION AMONGST THE PUBLIC AT LARGE

Many of us manage to do this on a regular basis simply by behaving 'normally' (for botanists), and it is sometimes only when we practice our craft in a public location that we realise that, actually, we might be seen as a bit odd.

We were wandering along a suburban thoroughfare, minding our own business, noting down the odd verge plant, and occasionally looking over garden walls, as one does. Having picked up the bad habit of peering down drains from Mary, I tend to scrutinise the urban surface drainage network quite carefully these days. One never knows what one is going to find, and this particular drain did not disappoint: *Lemna* !! This was of course very exciting, as it had been a particularly dry tetrad thus far, and the count of 'soggies' (as Bob terms them) was very low. However - the *Lemna* in question was a good 75cm out of reach. What to do?

Fortunately, we had Mike Crewe with us that day. For those of you who don't know him, Mike spend quite a lot of time doing fairly intrepid things in far-flung places and generally being resourceful; and he is definitely your man if you ever want someone to traverse a ditch, forge through soggy or prickly herbage, or fearlessly fling themselves into the unknown; and he rose to this particular challenge magnificently.



Mike scanned the surrounding environment, and very rapidly crafted a special dipping device from the only vaguely useful materials available (it being a very tidy area):- a short stick and some bright pink reinforced packing tape. Then we went fishing.....

It took a little while to perfect the highly specialised technique .....

... but he got there after several very tense minutes .....

**SUCCESS!**



Yes... that looks like a reasonable sample



It turned out to be *Lemna minor*. Could drains be one of the last bastions of this seemingly declining species?

By this time, of course, we were attracting a degree of attention from passers-by, but being British, everyone was far too polite to ask what we thought we might be doing. Or too afraid to ask .....

**Jo Parmenter**



## PROBLEMS AND PITFALLS WITH POA - IDENTIFICATION ISSUES

The common, native, lowland species of *Poa* (Meadow-grasses) present a few identification problems that can mostly be traced back to mishandling of the keys in British Floras. Once a few common pitfalls have been learned, they aren't that difficult to circumnavigate. The species discussed here include the *Poa pratensis* aggregate, which includes *Poa pratensis* (Smooth Meadow-grass), *Poa angustifolia* (Narrow-leaved Meadow-grass) and *Poa humilis* (Spreading Meadow-grass), and then four other species - *Poa annua* (Annual Meadow-grass), *Poa trivialis* (Rough Meadow-grass), *Poa nemoralis* (Wood Meadow-grass) and *Poa compressa* (Flattened Meadow-grass). Occasionally you will see some of these (especially the last) wrongly assigned to the *Poa pratensis* aggregate, but they are quite distinct.

The treatment of the *Poa pratensis* aggregate given here is that of Stace (2010). The three taxa are often recognised only at sub-species level as in Cope & Gray (2009), but regardless of the nomenclature it is always essentially the same taxa that are in view. So *Poa humilis* (Spreading Meadow-grass) is the same thing as *Poa pratensis* ssp. *subcaerulea* (the name Hubbard used) and *Poa pratensis* ssp. *irrigata* (the name Cope & Gray use). Within the *Poa pratensis* aggregate, there can sometimes be real difficulty in assigning difficult plants to one of the three taxa. Such problems of critical taxonomy are not tackled here.

For reasons to be discussed, *Poa compressa* (Flattened Meadow-grass) is so distinct from all the other species that it could be taken out at any point in a *Poa* key.

With that proviso, what do the keys in British Floras do? Most begin by separating out the *Poa pratensis* aggregate on the basis that its members have spreading rhizomes. In fact *Poa compressa* (Flattened Meadow-grass) also does, so if it has not already been eliminated in a particular key it may be grouped with the *Poa pratensis* (Smooth Meadow-grass) aggregate. Here I suspect begins some of the trouble, because - unless you are going to dig plants up - it is not always easy to tell whether or not they have rhizomes. And to make matters worse, two members of the aggregate (*P. angustifolia* and *P. pratensis*), though they *do* have rhizomes, also have stems in clumps so that that it looks as if they might not have rhizomes. So checking this point needs a bit of care, and - perhaps more practically - if you decide there are no rhizomes and head off into the lower parts of the key, it is as well to remember that you could easily have gone wrong at this step, so you may need to review the matter later on.

If you decide you are in the *Poa pratensis* aggregate, then it should be easy unless it isn't - if that makes sense. If you have an intermediate plant then identification is never going to be simple, but plants typical of the three taxa are fairly straightforward. Incidentally, the reason the aggregate is so difficult is that its members are facultative apomicts. You may already know that apomicts such as hawkweeds and brambles breed 100% true because they produce seeds without sexual recombination, so that a seedling is genetically identical to its parent, and tiny differences between plants are perpetuated creating the micro-species that experts identify. *Poa pratensis* aggregate plants also do that; and decent, respectable botanists are almost fooled into thinking there are some genuine micro-species to describe. And then - just to be annoying - the plants switch to reproducing sexually and muddle everything up again. It's hopeless.



Some pointers to the three *Poa pratensis* aggregate species are these:

- *Poa angustifolia* (Narrow-leaved Meadow-grass) has filiform leaves (up to c.1mm wide) on non-flowering tillers that look distressingly like *Festuca rubra* leaves. Don't be fooled by leaves on the flowering shoot, which can be a good deal wider (2-4mm)! If your plant is in flower, you must ferret about at the base, especially later in the year when most of the vegetative tillers have often died back. This awkward tendency is related to the fact that *P. angustifolia* usually grows on much drier soils than the other two species. It often flowers earlier than other perennial *Poa* species (early May), though it continues flowering well into the summer. It grows on light soils in Norfolk, and is often seen on well-drained wood-edge banks. Elsewhere in Britain it reaches its peak of abundance on railways where it is often the commonest fine-leaved grass. This is of small concern to us in Norfolk, where trains are a rarity, but always look twice at fine-leaved *Festuca*-like grasses on old railway ballast or similar brown-field substrates.
- *Poa humilis* (Spreading Meadow-grass) has long-spreading rhizomes, so its stems are usually solitary and never in clumps of more than 2. It is supposed to have both glumes with three nerves (where only the upper does in *Poa pratensis*), but as a distinction this is neither easy to see nor 100% reliable. Better is the presence of a few hairs where the leaf blade joins the sheath; you will need a x10 lens to see this. And the back of the ligule may be hairy. In practice you need to look for plants showing most of these characters even though you may not find all of them. The solitary flowering shoots are the easiest jizz-character for picking up likely *Poa humilis*. My impression is that several very different looking races of plants qualify as *Poa humilis*.
- *Poa pratensis* (Smooth Meadow-grass) *sensu stricto* is the central member of the aggregate and lacks the distinguishing characters of the other two species. It should have at least some of its flowering shoots in clumps of more than 3 or 4.

The main worry with this treatment is that once you accept the suite of *Poa humilis* characters, it starts to get very hard to find the supposedly commoner *Poa pratensis*!

So what of the other four common species listed above. Most of the misunderstandings come from treating a character in the key that is meant to distinguish a species from only one other species as if it were diagnostic across the board. A classic example is to get to the end of the *Poa* key where *Poa annua* (Annual Meadow-grass) is distinguished from *Poa trivialis* (Rough Meadow-grass) on the basis that the former has only 2 branches at the lowest node of the inflorescence whereas the latter has 3 to 6. But having just 2 lower branches does not distinguish *Poa annua* from species already eliminated earlier in the key. In particular, *Poa humilis* (Spreading Meadow-grass) usually has only 2, and so it gets misidentified as *Poa annua* if the material is less obviously perennial than it usually is. There is of course a very simple character that separates the two reliably - *Poa annua* always has weak stems that are decumbent at least at the base (with the possible exception of atypical forms of *Poa annua* on walls), whereas *Poa humilis* is always bolt upright from the base.

Next *Poa nemoralis* (Wood Meadow-grass) is largely confined to woods, not necessarily ancient woods, but usually at least long-established. It often has an architectural jizz, and it is very distinctive because the leaves of the flowering shoots have ligules so short as to be virtually non-existent. And really it's as simple as that. Nothing else should get mistaken for it. The only fly in the ointment is that on damp woodland floors you commonly see weak, glossy, bright-green leaves and stems of a *Poa*, often so weak that they sprawl flat on the ground. On close inspection they usually have little or no ligule, and they have smooth leaf sheaths. The commonest *Poa* across



a range of habitats including woods is *Poa trivialis* (Rough Meadow-grass), and often the first thing people learn about identifying *Poa* species is that *Poa trivialis* has a big ligule (3-4mm) and leaf sheaths that feel rough if you pull them between your fingers - this distinguishes it from the similar looking *Poa pratensis* (Smooth Meadow-grass) which has smooth sheaths and a short ligule (up to c.2mm). So this sprawling grass ought not to be *Poa trivialis* - but it is. It is just a growth form found in damp shady places. It is shy-flowering, but if you persevere and seek out a flowering shoot attached to it, then it will have the usual rough sheaths and long ligules. Since this sprawling form occurs in woods and often has no ligule, there a danger of misidentifying it as *Poa nemoralis*. It is far commoner than *Poa nemoralis*, which seldom looks bright or glossy green and usually looks more or less erect in its growth habit.

That just leaves *Poa compressa* (Flattened Meadow-grass). Once learned, it is easy to recognize by its jizz in the field. Flowering shoots are usually decumbent in the lowest three or four nodes, and then curve up to adopt an ascending or erect habit; whereas *Poa humilis* - the species most often mistaken for *Poa compressa* - is erect from the base. On compacted clays, stunted plants of *Poa compressa* may sometimes show the decumbent habit only in slight and obscure degree, while plants on railway ballast sometimes show it to such an exaggerated degree that in mass they look like a sprawl of *Agrostis stolonifera*. On walls, don't be fooled by the fact that rhizomes in *Poa humilis* may be exposed to view (as there is no substrate to cover them), so that you see creeping bits that are not in fact decumbent flowering-shoot bases. The panicle is even more distinctive, because *Poa compressa* has short patent branches giving it a parallel-sided look that contrasts with the triangular panicle of virtually all other *Poa* species. Often its panicle looks slightly small for the size of the plant (as compared with *Poa pratensis* group plants for example), and in stunted plants it may reduce to a few upswept branches giving a kite-shaped panicle around a centimetre from top to bottom.

*Poa compressa* is most often found on brown-field sites and railways. It can often be found on the bare clay of compacted road-verges in places where lorries pull off. It flowers later than most *Poa* species in Britain, and the panicle persists well, so that *Poa compressa* is often noticed long after flowering, as late as September or even October. The myth that *Poa compressa* characteristically grows on walls is widely perpetuated, and there is even a proposed NVC type centred around it (Rodwell *et al.* 2000), but several county Floras go out of their way to say that *Poa compressa* does *not* grow on walls, *e.g.* Dickson *et al.* (2000). In fact it may occasionally do so, mainly in the west of Britain and also in Norfolk, but a plant which is much commoner on walls is very widely mistaken for it. This 'pretender' is a robust plant in the *Poa pratensis* group, having broad leaves (c.3-4 mm wide), glaucous green and rough on the upper surface, and dark glossy green and smooth below. It has heavy-looking spikelets in a stocky, triangular panicle and lacks flattened culms *sensu stricto* though the base of the flowering shoot is often strongly flattened (this is explained in the following paragraphs); it is possibly close to *Poa humilis* but may deserve separate recognition. This explains why Mullin (1998) in the *Plant Crib* says that 'most *Poa* with flattened stems growing on walls is *Poa humilis*'.

The problem rests with the key character for *Poa compressa*, which all Floras give as compression, *i.e.* flattening, of the culms. In most British Floras, what normally seems to be meant by the word 'culm' is the flowering shoot from the ground up - the flowering equivalent of a tiller; thus



*Poa pratensis* is said in the key in Stace (2010) to have 3-8 culms. Some British Floras even hint that in *Poa compressa* the compressed-culm character should be checked towards the base of the plant. However, most *Poa* species have folded leaf-blades with boat-shaped tips. The corollary is that the leaf-sheaths are flattened too, and the broader the blade the more conspicuously flattened the leaf sheath - a simple matter of cause and effect. Thus the large-leaved grass *Dactylis glomerata* has the most conspicuously flattened sheaths of any UK grass, yet in the south of Spain *Dactylis glomerata* ssp. *hispanica* with narrow leaves hardly shows the flattened-sheath character at all. So in general the overlaying of several flat sheaths leads to conspicuous flattening at the base of the flowering shoot in all broader-leaved *Poa* species, *Dactylis glomerata* and other species. In the *Poa pratensis* group, broader-leaved variants of *Poa humilis* have conspicuously flattened bases to their flowering shoots, while the narrow-leaved *Poa angustifolia* does not. Paradoxically, *Poa compressa* tends to have somewhat narrow leaves, and so it is not much flattened at the base. If a *Poa* is strongly flattened at the base then the chances are that it is not *Poa compressa*.

Now, the sense in which British Floras use the word 'culm' to mean 'flowering shoot' is actually rather loose - a kind of culm *sensu lato*. Technically the botanical definition of a culm, as given in botanical glossaries, e.g. Hickey & King (2000), is 'a jointed stem with nodes' - you get culms in grasses and some other monocotyledons. And in *Poa compressa* it is the culm *sensu stricto* that is flattened. In our Floras the key couplets talking about 'flattened culms' in *Poa compressa* are referring to the culm *sensu stricto* even though they give no warning that the word 'culm' is also used in the same key in the *sensu lato* flowering-shoot sense (which you may very well feel to be a bit naughty). So to see whether *Poa compressa* has flattened culms - unless you are going to dissect away enveloping leaf sheaths to uncover the culm - you must look at the stem where it is bare of leaf sheaths between the flag leaf and the lowest branch of the panicle. In *Poa compressa* this part is oval in cross-section and all but keeled, like the shape of a human eye. It can be seen more-or-less clearly with the naked eye, and easily with a lens. Best of all, it can be detected by rolling the upper sheath-free stem between the finger tips.

Flattened culms *sensu stricto* are as far as I know unique to *Poa compressa* among British grasses (I suppose I am inviting correction here). Once during a survey at Sittingbourne a friend left a note with a mystery grass for identification under my windscreen wiper. I read the note quickly, but I was running late and the specimen stayed put. It hammered reproachfully against the windscreen all the way home, where I forgot it again. Despite my good intentions, for the next week it hammered against the windscreen up and down the motorways of Britain. When at last I went to remove it, the leaves were completely gone, the inflorescence was completely gone - it was straw. Luckily, as I threw it away it rolled between my fingers, and I was able to report confidently that it was *Poa compressa*.

Several authors say how easy the compressed stem character is to use - Crawley (2005) refers to rolling the stem between the fingers - but the issue is that it must be the correct bit of stem, and that is not always clear from the existing Flora accounts. Checking towards the base of the plant is sure to lead to confusion. In Norfolk *Poa compressa* is not common, and most records are from walls (inviting a little doubt). If having read the above you are sure of *Poa compressa* somewhere we certainly want to know. By all means check walls, but also look for it in industrial areas and around main roads, especially in early autumn.



- COPE, T. & GRAY, A. (2009). *Grasses of the British isles*. Botanical Society of the British Isles, London.
- CRAWLEY, M.J. (2005). *The Flora of Berkshire*. Brambleby Books, Harpenden.
- DICKSON, J.H., MACPHERSON, P. & WATSON, K.J. (2000). *The Changing Flora of Glasgow*. Edinburgh University Press, Edinburgh.
- HICKEY, M. & KING, C. (2000). *The Cambridge Illustrated Glossary of Botanical Terms*. Cambridge University Press, Cambridge.
- MULLIN, J.M. (1998). *Poa compressa/P. humilis*. *Plant Crib* (eds. T.C.G.Rich & A.C.Jermy), p356. Botanical Society of the British Isles, London.
- RODWELL, J.S., DRING, J.C., AVERIS, A.B.G., PROCTOR, M.C.F., MALLOCH, A.J.C., SCHAMINÉE, J.H.J. & DARGIE, T.C.D. (2000). *Review of Coverage of the National Vegetation Classification*. Joint Nature Conservation Committee, Peterborough.
- STACE, C.A. (2010). *New Flora of the British Isles*, 3rd edition. Cambridge University Press, Cambridge.

**Richard Carter**

## SEEKING NORFOLK RARITIES 2016

Besides botanising with the NFG, I often go out with my naturalist friend Tony Eadson seeking rare plants or species-rich sites. I have also been helping the Breckland Flora Group (BFG) - so have had my first sight of many Breckland rarities as part of this work. In addition, I attended two Wild Flower Society (WFS) field trips in Norfolk this year. As a result, I've been lucky enough to see the following special/rare/new-to-me plants in 2016:

**Bowthorpe, Norwich** early May: *Lathraea clandestina* Purple Toothwort (abundant in part of an urban fringe wood)

**Thetford Innovation Centre** BFG meeting, 7<sup>th</sup> May: *Medicago minima* Bur Medick (in lawn)

**Weeting Heath** BFG field day 9<sup>th</sup> May: *Carex ericetorum* Rare Spring Sedge

**Salthouse Heath** May: *Maianthemum bifolium* May Lily (plentiful in one smallish area)

**Friary Hills, Blakeney** 18<sup>th</sup> May: *Trifolium subterraneum* Subterranean Clover (I think)

**Buxton Heath** June: *Convallaria majalis* Lily-of-the-valley (locally plentiful)

**Hevingham Woods** 6<sup>th</sup> June: *Convallaria majalis* Lily-of-the-valley (plentiful along main path)

*Hottonia palustris* Water Violet (plentiful in the ponds)

*Milium effusum* Wood Millet

**Santon Downham (S), Cranwich Heath (CH)** with BFG expert volunteer Rob Dyke, 24<sup>th</sup> June:

*Arabis glabra* Tower Mustard (S)

*Filago lutescens* Red-tipped Cudweed (S)



*Herniaria glabra* Smooth Rupturewort (CH)

*Lathyrus sylvestris* Narrow-leaved Everlasting-pea (S)

*Phleum phleoides* Purple-stem Cat's-tail (CH)

*Potentilla argentea* Hoary Cinquefoil (S)

*Scleranthus perennis* ssp *prostratus*, and *S. annuus* Perennial and Annual Knawel (S)

**Holme Dunes** with WFS, led by Vol. Warden Adrian Winnington. New-to-me plants included:

*Corynephorus canescens* Grey Hair-grass

*Hypochaeris glabra* Smooth Cat's-ear

*Leonurus cardiaca* Motherwort (by Visitor Centre)

*Ophioglossum vulgatum* Adder's-tongue

*Trifolium suffocatum* Suffocated Clover (in car park)

*Triglochin maritimum* Sea Arrowgrass

**Sheringham Common (SC) and Beeston Bump (BB)** with WFS, led by our own Bob Ellis and Voluntary Warden Francis Farrow, 11<sup>th</sup> July:

*Dryopteris cristata* Crested Buckler Fern, + hybrids with *D. carthusiana* Narrow B. Fern (SC)

*Eleocharis quinqueflora* Few-flowered Spike-rush (SC)

*Orobanche purpurea* Yarrow Broomrape (BB)

*Silene conica* Sand Catchfly (BB)

**Weaver's Way nr Felmingham** 13<sup>th</sup> July: *Silene gallica* Small-flowered Catchfly

**Thetford Heath** with BFG's Rob Dyke, 25<sup>th</sup> July: *Thymus serpyllum* Breckland Thyme

**Holkham Woods** 4<sup>th</sup> Aug: *Monotropa hypopitys* Yellow Bird's-nest

*Goodyera repens* Creeping Lady's-tresses (we counted 200+ spikes)

**Cranwich Camp, Mundford** early Sept: *Petrorhagia prolifera* Proliferous Pink (seeding itself merrily about the car park ditches).

For further information, feel free to contact me: [sukipryce@hotmail.co.uk](mailto:sukipryce@hotmail.co.uk) 01263 510292

**Suki Pryce**



The rather glamorous purple toothwort



## ROAD-TRIP RECORDING

This spring, I got a technologically 'advanced' phone capable of giving me a 6 figure grid reference. A week or so later I found myself stuck in the massive queue of traffic trying to get off the A47 at Postwick, and noticed a few 'dottable' species by the side of the road. To while away a few idle moments, I checked the grid reference, and scribbled them down. A few days later, I had to go into Suffolk, and returned via the A11 as a passenger. As we whizzed up the A11, I noted down a few more bits and pieces. Shortly after that, I realised that if I could cope with my regular rail-travel companions realising I was even stranger than they had hitherto suspected, I could do the same on my daily commute from Reedham to Norwich. On the plus side, they have become quite engaged by the idea of mistletoe-spotting.

Recording whilst travelling proved to be a surprisingly effective way of recording at least the larger or more obvious taxa, in habitat along main roads which is not usually accessible without risk of getting squashed, or along railway lines, which are even less accessible - and it makes the journey fly by. In one of the monads I travel through on a regular basis I have picked up over 60 'dottables' and 'griddables' in this way, and the total count of such species for the year is over 1000 records. It also means I am no longer bored when travelling, at least in Norfolk and David is allowed to drive slightly more often than was previously the case.

Things I have learned:

1. Do not try this while control of a vehicle (unless car is stationary and in a safe location);
2. Driver must not try 'helping' as it frightens passengers;
3. Easily recognised things like *Ulex*, *Pteridium*, *Typha latifolia* etc. can be recorded on family outings. Makes a change from I-Spy, anyway.
4. A phone app is required (GPS screen too small to glance up and down at quickly);
5. Important to keep checking grid regularly throughout monad;
6. Doesn't work well above about 60mph;
7. Unsuitable for anyone suffering from travel sickness;
8. You may be taken for a train spotter. This could be more socially acceptable than the truth.

## Jo Parmenter

The author and NFG accept no liability for injury or damage to person or property which might arise from any activity undertaken in connection with this article.



.... and now we hear from Mike, who has only been back in the UK a few months and has already been lured into joining our select band of social misfits. Before anyone starts muttering about being so described, I am proud to be able to include myself in that group. Who wants to be 'normal'! JP

## DIGITAL BOTANY

Having recently returned to the UK after six years living in the USA, it has been an unexpected bonus to have chanced upon the Norfolk Flora Group (NFG) by way of an opportune email to Bob Ellis. Spending time in the field during 2016 with the NFG has enabled me to get back up to speed with the local botany scene and it is encouraging to see so much activity going on as we gather data to work towards the next national flora atlas. During my six-year absence, there have, of course, been changes and the one that immediately struck me was how social media and, in particular, the digital world that we now live in, has been used to improve field botany.

In days gone by, field trips included any amount of specimen collection and preparation so that tricky species or identification issues could be run by the local expert for confirmation. With plant populations continuing to decline, it seems that removing specimens purely for identification should be considered a last resort these days - enter the digital world. With cameras getting ever more portable and even embedded in our phones, snapping a picture or three of confusing specimens has never been easier and post field trip identification sessions consist increasingly of trawling through phone photos as well as the usual plastic bags of green bits.

So, other than saving plants from being beheaded, how else can this technology help us? Being a good field botanist is very much dependent on good identification skills, often involving plants that need to be identified even when they are not showing their best attributes (which usually means when they are not in flower!). This can greatly limit the number of people that feel confident enough with their plant identification to get out regularly in the field and record. But now, such people can feel more confident when armed with an array of readily-available resources, right at their fingertips. So, what resources are there and how can they help?

Well, firstly, there's the camera itself. Digital means, of course, that there is no concern over 'wasting' film, so you can take almost limitless numbers of pictures - so long as you have the storage space for them! Pretty much any camera will do for plant photography, but my only proviso would be to suggest getting one that has a good close-focus capability. Since you will be taking photos for identification purposes, it is likely that close-ups of specific features will be required and your chances of a correct identification will be far greater if you can produce a good, sharp image of the salient bits. An extra benefit of many digital cameras - and even phones these days - is the ability of the equipment to add location data to the picture. This includes GPS co-ordinates which can not only ensure that your find is readily 'mappable' and therefore of greater value to your local recorder, but can also make it easier to re-visit the plant at another time should this be required. Another great benefit of digital cameras over older film models is that you can review your pictures on the rear screen to check that you have got what you need.

Having taken your pictures (and perhaps some notes if considered necessary), you now have a permanent record of your find. Back at home, the pictures can be downloaded to a computer and the identification process can begin.



If you feel sufficiently competent, the process of searching through books or online can begin; but you also have other options. The pictures can be sent to the local recorder, other experts, or even friends who can help with the identification. Sending pictures to the local recorder can also be a useful way to back up claims of something out of the ordinary, too. More recently, a variety of 'crowd sourced' options have appeared online. A number of wildlife-oriented Facebook pages are used by large numbers of people to post requests for identification, while the Open University initiative called ISpot ([www.ispotnature.org](http://www.ispotnature.org)) is now very popular. All work very well so long as you have taken photos that are good enough for identification.

As an indication of the usefulness of this technique, here's some photos of tricky species groups to show how a picture can 'speak a thousand words'. Happy plant hunting!

### Gallant Soldier versus Shaggy Soldier

With a lot of experience, the two *Galinsoga* can often be told apart by their general appearance, but to be certain, close scrutiny of the flowering head is critical. Small scales set amongst the individual florets are used to separate the two species, but knowing that you have located them and then discerning the difference can be difficult, both to achieve and to communicate to others, without practice. Here, digital photos can help:



A nice *Galinsoga* shot -  
But which species is it?



A *Galinsoga* flowerhead,  
cut in half to show the  
florets and the position  
of the scales between  
them.



*Galinsoga parviflora* scale  
with three-lobed tip.



*Galinsoga quadriradiata*  
scale with single, unlobed  
tip.

### Conyza Fleabanes

Time was when you could put *Conyza canadensis* down on your list and move on, but not anymore! A number of other *Conyza* species have sneaked into the area while we were all looking the other way and now we need to check these urban weeds very closely. As well as details of the basal leaf hairs, a good starting point is the florets, with each species showing subtly different characteristics in the phyllaries - those greenish outer sections to the compound heads of members of the daisy family.



Again, good photos, close enough to show the salient points will be much appreciated by your recorder or local expert:



Classic *Conyza canadensis* has relatively narrow, smooth, flower heads and narrow phyllaries.



*Conyza floribunda* has slightly 'chunkier' flower heads with noticeably broader phyllaries.



*Conyza sumatrensis* has very stocky flower heads which are clearly very hairy.

## Mike Crewe

Our next article came about as the result of a slightly tongue-in-cheek suggestion from Bob Ellis. I am not sure he really expected anything to come of it, but Bob Leaney rose to the challenge beautifully, and will now share with you his thoughts on glands. As you will see, he evidently spends quite a lot of time thinking about them. JP

## DR LEANEY'S GUIDE TO GLANDS

It has been suggested that I should write something to brighten the gloomy winter months on the subject of glands, it being felt that as a medical man, I might be considered especially qualified to hold forth on such a subject.

Human glands are complex multi-cellular organs that produce either hormones regulating metabolism or reproduction (the endocrine glands) or secretions such as sebum, sweat, or saliva (the exocrine glands). In doing so, they are responsible for such outcomes as blackheads, boils, breasts, babies and baldness.

In contrast, plant glands are simple, one- or two-celled structures that do not produce hormones; auxins, for instance, are produced by the growing tip of the aerial shoot



In fact, on reflection, I can find few parallels between mammalian glands, and plant glands. Plant glands are somewhat akin to exocrine glands in that they may produce sticky or aromatic secretions, but it is often difficult to see what function these secretions actually have. *Cerastium semidecandrum* has stalked glands which produce a sticky substance which might protect the delicate young leaves and buds from insect attack; however *Cerastium diffusum*, a plant of very similar habitats, has no such glands. Much the same goes for *Silene noctiflora* and *Silene latifolia*. And what is the protective function of aromatic secretions from glands, such as those of *Ribes nigrum*, except to delight the discerning nostrils of female botanists. Similarly, one wonders if the red secretions of some glands, e.g. *Geranium rotundifolium* could contain toxic anthocyanins or similar substances which are being 'excreted' by the plant, but there is little evidence for this hypothesis that I am aware of.

These profound and troubling doubts as to the function of plant glands is reflected in unsatisfactory definitions, which usually amount to a statement that glands are structures that secrete something. More helpful are the morphological definitions which describe glands as 'roughly round structures secreting a substance, with or without a stalk, sometimes known as glandular hairs if stalked'.

This definition gives rise to a further problem though: why are hydathodes, which are thought to secrete water or electrolytes surplus to the plant's requirements, given a specific name and not simply referred to as glands? Hydathodes always occur at the leaf tip or at the tip of a leaf tooth or lobe and are usually found at the termination of a minute vein. For botanists, they are helpful in the vegetative identification of members of certain plant families; for example the elongated white sausage-like structures on the margins of the leaves of *Jasione montana*, the 'teat-like' glands of some of the Scrophulariaceae, or the often purple hydathode of members of the Compositae.

A further problem I have had with glands results from the fact that none of the standard floras make a distinction between glands producing intracellular secretions and those producing extracellular secretions, although presumably a gland cannot be sticky unless in the latter category.

I used to assume that a glandular hair (or stalked gland) always had a separate, more or less spherical cell at its tip, containing the secretions, but this is not necessarily the case; in *Epilobium* the glandular hairs are unicellular, with a bluntly rounded and only very slightly clubbed tip, and there is no partition between the stalk and its gland (in other words no separate terminal cell). The glistening glandular tip seen on the young glandular hairs of this genus are made up mostly of a droplet of secretion which later dries out, so older hairs are no longer obviously 'glandular', but appear as simple patent hairs. Older members of the NFG will remember that this phenomenon caused much consternation for a time, with some observers of the same plant seeing glandular hairs and some not, depending upon the age of the glandular hairs in question.

For me, the biggest problem with glands is how small they are. Stalked glands can usually be seen quite easily at x10, but unstalked glands on the leaf lamina (e.g. in *Rosa* or *Agrimonia*) may not be readily visible even at x20; and unless one is aware of how minutely the leaf surface needs to be inspected, the glands may be missed, and since they show up mainly because they are shiny, they may not be visible at all in poor light.



Although unstalked glands on the leaf lamina are best viewed from above, either in good light or with LED illumination, stalked glands are best seen in silhouette, either against the sky, or, in bright sunlight, against a dark background, which better shows the glistening tip.

It may be helpful to set out the genera (or key couplets) where the presence or absence of glands is useful in identification, together with common problems encountered.

### ***Rosa***

Here, glands are usually long-stalked on the pedicels and/or hips (e.g. *R. arvensis*, *stylosa*, *rubiginosa*), or more or less sessile on the leaf edge and lamina (e.g. *R. rubiginosa*, *micrantha*, *agrestis*), often producing an apple scent. In the downy roses (*R. mollis*, *sherardia*, *tomentosa*) it should be remembered that brownish glands as well as hairs are present on the lamina. Glands can also occur in *R. obtusifolia*. Glandular hairs on hips and pedicels are a useful spotting feature for a species which is something other than *R. canina*.

### ***Verbascum***

Glandular hairs are present in quite a number of *Verbascum* species but are especially useful in the identification of *V. blattaria*, where they occur only on the upper parts of the plant.

### ***Oenothera***

Stalked glands on the fruit are said to be of use in separating *O. x fallax* from *O. biennis*, with the glands only occurring on the uppermost capsules. However I can find only one type of hair on the capsules, this being short, stout and blunt-tipped, lacking any obvious glandular tip. The length of capsule and presence or absence of red coloration on the sepals and upper stem are more useful characters in separating the species.

### ***Agrimonia***

The glands to look for in confirming *A. procera* are on the leaf undersurface. They are tiny, glistening, slightly yellowish spheres. If the leaf lamina is folded so that the midrib can be viewed against the light, it is possible to also find glands amongst the long eglandular hairs. The leaf undersurface in *A. eupatoria* is usually much more densely eglandular-hairy than in *A. procera* and glands will not be visible.

### ***Ribes***

In *Ribes nigrum* it is usually sufficient to just crush the leaf to identify the plant by the characteristic scent, but if one's sense of smell is at all compromised then it is best to look for the shiny yellowish or brown unstalked glands on the leaf surface.

### ***Cerastium***

We are always looking for glandular hairs to aid in the determination of *C. semidecandrum*, but it is important to beware confusion with tiny specimens of *C. glomeratum*; the latter being a similar pale yellowish green and also often having a profusion of glands on the sepals. In confirming *C. semidecandrum*, it is essential to also look for the 'half-scarious' bracts just beneath the flower clusters, usually confusingly hidden beneath the very small and bract-like terminal leaves.

### ***Salix***

Meikle's 'minute blackish glands' on the leaf surface of *S. cinerea oleifolia* are not really glands, to my mind, being very dark brown, roughly spherical bodies about halfway up the length of an otherwise typical looking rusty hair; and I think these 'glands' are simply a visible accretion of the reddish-brown substance that produces the diagnostic rusty colour of the hairs. The 'blackish glands' are, indeed, often absent and thus not particularly helpful in determination.



### ***Epilobium***

After going through the usual routine of examining stigma type, leaf shape, leaf insertion and petiole length, one usually has to look at the stem hairs to complete the identification. If one finds strictly appressed hairs, one has a choice between four species: *E. tetragonum* and *E. obscurum* which only have appressed hairs; and *E. ciliatum* and *E. roseum* which also have patent glandular hairs, at least on the upper stems and fruits. In older plants, the shiny droplets of glandular secretion may have dried out, but it is only necessary to identify a mixture of appressed and straight patent hairs (whether or not these have a glandular tip).

*E. montanum* and *E. palustre* are said by some authorities to have a mixture of appressed eglandular hairs and patent glandular hairs on the stem; however to my mind, the feature useful in identification is a mixture of arching hairs and short patent hairs, the latter being no longer than the arched hairs and therefore difficult to discern, and without a glandular tip that I can see.

It is in the determination of *E. obscurum* that glands are most useful. In this species, the glandular hairs are strictly confined to the floral collar and lower portion of the sepal lobes. Occasionally, one or two glands may be present on the very uppermost part of the fruit, but a larger number would indicate a *ciliatum* or *roseum* hybrid.

Another problem encountered is when plants of *E. tetragonum* are examined after rain or heavy dew, or after being enclosed in a plastic bag for several days. A few of the appressed hairs on the curved part of the floral collar can appear semi-patent and, when these pick up water droplets can be taken for the glandular hairs of *E. obscurum*.

I used to consider *E. obscurum* was over-recorded for this reason, but now realize that it is quite a frequent species and that I was not looking often enough for the floral collar glands. One needs a spotting feature to prompt examination for the glands, and I was looking for long stolons, said to be a diagnostic feature, but seen infrequently in Norfolk plants. Better spotting features are an elliptic-lanceolate leaf shape and particularly the short fruits.

### ***Silene***

In confirming *S. noctiflora* it may be sufficient, with experience to find a sticky (glandular) calyx, although male *S. latifolia* can have a similar narrow and few-veined calyx which also features glandular hairs, although these are not generally sticky. *S. noctiflora* should also have a pale pink coloration to the upper surface of the petals and is also hermaphrodite, although I hesitate to suggest dissection unless there are a number of plants present.

*Silene gallica* can be surprisingly similar to *Parentucellia viscosa* when the two plants are in fruit, although there are differences in the calyx lobing and structure of the fruit. However, *Parentucellia* is densely covered with glandular hairs even at this stage; while glandular hairs are absent in *S. gallica*, although CTW notes the latter may be 'viscid'.

Senior members of the group, including myself, have had some sticky moments with glands over the years. I hope that this article will help newer members to avoid such difficulties. Glands, although of little apparent use to the plants on which they occur, can be of very great value to the botanist, provided they are examined carefully, and used with discretion and in proper combination with other characters.

**Bob Leaney**



### NORFOLK FLORA GROUP PUB OF THE YEAR!!!!

The time has come to reveal, in all its glory, the NFG Pub of the year for 2016.

The survey scored pubs on a total of 10 categories, with a maximum score of 5 and a minimum score of 0 available for each of these. The total was divided by the number of categories given a score (we didn't often eat, and if staying indoors were not able to fairly assess the quality of the garden etc.).

It didn't all go to plan. Sometimes we didn't end up quite where we'd expected to be and on one occasion our chosen hostelry had closed down.

I know there has been a lot of muttering about the categories used for scoring, and I realised part-way through that certain persons were just telling me the score was '3' without giving the matter the proper degree of consideration [you know who you are, and I hope you have taken time to reflect on your misdemeanour]. They have been duly chastised and hopefully will be better behaved in 2017. However, whatever your various misgivings as to the scoring, the winner of the NFG Pub of the Year Award for 2016 is.....

\*\*\*\*\*THE WHITE HORSE, NEATISHEAD!\*\*\*\*\*

This pub, unusually in the era of the gastro-pub, has hit the perfect balance between good beer (and somewhere relaxed to sit and enjoy it), and being able to offer reasonably priced food which I am told is very good. It offers a phenomenal selection of beers for a village pub, including beers from the on-site brewery and top quality 'guest' beers, and was the only pub to score full marks on beer choice and quality. We found out at the end of the season that not only had we rated it as our top pub, but it had also turned out to be the winner of the Norwich & Norfolk CAMRA Rural Pub of the Year 2016 Award, and was also a National Finalist in the Great British Pub Awards for 'Best Freehouse'. This does tend to validate the scoring system just a little bit, doesn't it Bob?

Our runners-up were the *Bird in Hand* at *Wreningham* and the *Hoste Arms* in *Burnham Market*.

Full scores are given below....

It's been fun. Thank you all for taking part.

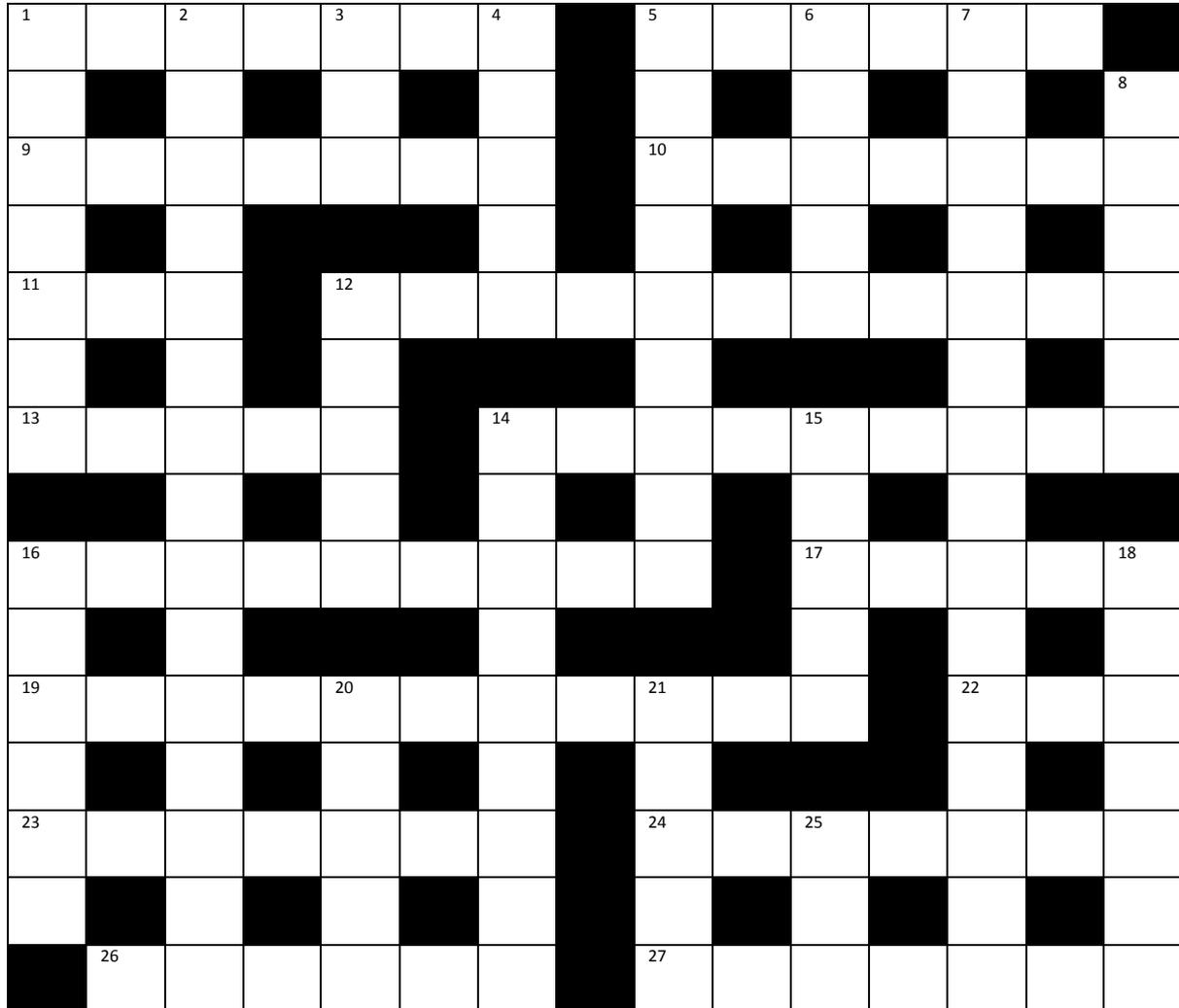
Jo Parmenter



## A NORFOLK FLORA GROUP CROSSWORD

The enigmatic and elusive Sedge Warbler has prepared a fiendish floristic puzzle for us. Answers next time..... JP

### THE CROSSWORD



HANDY SPACE FOR SCRIBBLINGS (we think of everything, you see)



## THE CLUES.....

**Across**

1. Purple-headed beauties. (7)
5. The seaweeds to put in your bath (apparently). (6)
9. People in NFG. (7)
10. How many stigmas in the florets of *Carex nigra*? (3,4)
11. King of Begonias! (3)
12. See how we carry out our Flora Group activities. (11)
13. Initially, you use cold compressed aloe for plant with sword-shaped leaves. (5)
14. Confused 'sarr sedge', found rarely in Norfolk. (9)
16. Sounds like a small success of acid-loving plant. (5,4)
17. Conifer in particular churchyard. (5)
19. Upset leprosy riot and fall over backwards. (11)
22. Tree found in steel making district. (3)
23. Lives in water and sounds like a reliable person, but not saintly. (7)
24. Transportable shade. (7)
26. African palm found in graph I admire. (6)
27. Hair of creeping ladies. (7)

**Down**

1. Reach for this if you break your leg. (7)
2. Small, hastate-leaved plant found in acidic places. (5,10)
3. In case of emergency. (3)
4. Goes with 'mellow fruitfulness'. (5)
5. Break up the newer raft - like a red carpet. (5,4)
6. Time at the Town Hall. (5)
7. The worse flowering plant. (7,8)
8. Ye conifers in thy USA. (6)
12. After pollination and fertilization, this part of a flower develops into a fruit. (5)
14. Experimental hot beverage for lovers of garden Asteraceae. (6,3)
15. Old name for wallflower. (5)
16. This tree is well-loved without you. (6)
18. I hear it's not funny brewing with this. (7)
20. An era, more than an echo. (5)
21. Move the plants on. (5)
25. Long-awned cereal (3)

**Sedge Warbler**

NB - Due to fear of persecution from grumpy botanists unable to complete the crossword, Sedge Warbler wishes to maintain anonymity JP





## ..... AND IN 2017?

Highlights for the coming field season include.....

**Sunny Hunny!** What better way to start the year.

**A few more ditches** - Last time, in order to avoid disappointment, I told you that they wouldn't be very interesting. This could be the case in 2017, but there will also be some nice ditches. I am not going to tell you which: you will just have to attend all the meetings and then you won't miss them!

**Bashing the Borderlands** - we will continue the joint E-W initiative to look at under-recorded tetrads on the vice-county boundary.

**Mid Norfolk Railway** - Part II. The northern sections proved to be extremely diverse last time so we have high hopes.

**Dangerous swampy places** - Sadly, I seem to have temporarily run out of mosquito-infested places to visit in the Broads, but if we are very lucky, Richard might come up with some lovely pingoes.

**Watton.** Most people have heard of it. Few have been there (or have more than a vague idea of its whereabouts). Some have had trouble finding their way out again. Come and see for yourself!

**Workshops** - brambles, charophytes, and, by popular demand (people are indeed strange), a selection of the Chenopodiaceae and MORE...

**Fenland Flora** - in an effort to prove that The Fens aren't necessarily flat and boring, we have some very nice tetrads planned for this year, and may reach the dizzy heights of...ooh...10 metres or so!

**Wild Flowers Revealed** - BobL only managed to miss part of one of his 2016 meetings (that old "I think I've lost my wallet: you just carry on without me" ploy - we won't fall for it a second time, though) and we have another two planned for 2017 in partnership with NNNS, at Cawston & Marsham Heaths and along the Tas Way.

**More cake** (of course). Volunteer bakers welcomed!

**More beer** - we had so much fun sending Mike Crewe in with his camera so that those of us too nervous to venture into the rarified atmosphere of the men's toilet at the Victoria could share in the excitement, that we are going to do it all again in 2017 (the pub of the year survey that is, not the photographing of toilets, although it was very interesting). Bob Ellis wants me to stick to beer, but I think pubs mean many things to many people, and, although beer is, of course, important, personally I place a high value on the brand of crisps on offer.

Seriously though, the pub garden is by far the best place for our large groups to do essential debriefing after the day's work and to allow time for ID work on difficult plants - all pubs serve tea and coffee, while tea shops seldom seat more than 4 at a table, and strangely object to our draping soggy specimens across the tablecloths and cleaning x10 lenses with the doilies while conversing garrulously in botanical Latin.

**Christmas!** Yes, I know we've only just had one, but there's another one coming up towards the end of 2017, apparently, and what better way to start the festive season than to spend a lovely afternoon and evening at the NFG AGM and dinner.

Jo

