Flora News

Hampshire & Isle of Wight Wildlife Trust

Newsletter of the Hampshire & Isle of Wight Wildlife Trust's Flora Group

No. 57 Autumn 2019 Published September 2019

In This Issue

Dear Flora Group member

In this issue we have details of events to be held during autumn/winter 2019.

Martin Rand has kindly arranged a visit on Saturday 2 November to Portsmouth City Museum to see the important herbarium and hear a talk about the museum and the history of its collections. Please see the forthcoming events section of this newsletter for further details about this event.

On Saturday 16 November 2019 we will hold our ever-popular, annual Flora Group/BSBI Exhibition Meeting at Testwood Lakes Education Centre, so do join us for this sociable opportunity to catch up with fellow botanists during the dark days of winter and look forward to botanising in the year ahead. Please note that this year the Exhibition Meeting is being held in November rather than December.

We are very grateful to everyone who helps to organise Flora Group events and, as usual, we welcome your suggestions for Flora Group activities. Please raise your ideas with any of the Committee members – Sarah Ball (Chairman), Catherine Chatters, Clive Chatters, Andy Cross, Isobel Girvan, Gareth Knass, Tony Mundell, John Norton, Martin Rand or Neil Sanderson.

We are always keen for more people to provide contributions to *Flora News* on any relevant botanical topics. If you have enjoyed any of the Flora Group events and would like to write a report we would be very pleased to receive it. Please send your articles, notes or reports to Catherine Chatters (Flora Group Secretary) at **Catherine.Chatters@hiwwt.org.uk** or to her home address which is given at the end of this newsletter.

Catherine Chatters
Flora Group Secretary

John Norton
Editor

Cover photo: Adder's-tongue Spearwort (flower and foliage) and Starfruit (fruit, left hand side of picture); both victims of the shrinking open Forest. Photographed in cultivation in a Hampshire garden, May 2019 *(Clive Chatters)*. *See article, p. 19.*

Forthcoming Events

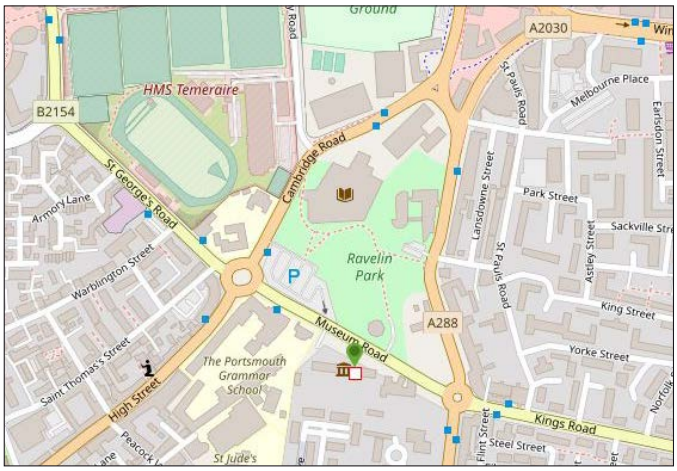
Please note that for some Flora Group events prior booking is required. If so, this will be stated clearly in the text relating to that particular event. It would be useful if you could let the leader know if you are intending to participate in an event. The leader would then be able to inform you if the event has to be cancelled or let you know about any other unforeseen circumstances. Bring a packed lunch and suitable footwear to all meetings.

Saturday 2 Nov 2019, 10.15am–3.45pm
Herbarium Visit
Portsmouth City Museum, Museum Road, PO1 2QQ
Leaders: Martin Rand and Christine Taylor

This is an opportunity to get to know Hampshire's other public institutional herbarium; it has an important collection of specimens from Sussex and Hampshire, some of great historical interest. Please book with Martin Rand (details on back page) so that we have an idea of numbers.

The day will start with a talk by Christine Taylor, Natural Sciences curator at Portsmouth Museums, on the museum and the history of the collections. There will then be a chance to examine material at leisure and learn some new skills. Volunteers to support the curation of the herbarium are always welcome, and there are several tasks you might like to become involved in subsequently, including cataloguing specimens onto computer, checking identifications, and repairing and remounting material in poor condition.

If travelling by car, please come to the gate at the east end of the site and park at the back of the museum building. Note that this is the City Museum; don't make for the Natural History Museum (Cumberland House). Portsmouth and Southsea Station is about 1km away on foot, and numerous bus services run nearby, including connections with the National Express coach to Portsmouth Harbour. On arrival, come to the main



reception desk and say you are there for the meeting with Christine Taylor.

There is a small café on site serving sandwiches, drinks and light lunches; otherwise bring a packed lunch, or make use of food stores a short walk away. We suggest a donation of £5 to support the work of the museum.

Saturday 16 November 2019, 11am-4pm
Flora Group/BSBI Exhibition Meeting
Testwood Lakes Education Centre, Totton, SU 345 155

We will continue this traditional winter get-together/social event, so please bring along cakes and other goodies to eat, or sandwiches for us to share, plus your specimens, photos, material for display boards and any other botanical talking point. This is a splendid informal event for meeting others interested in Hampshire's wildflowers. A digital projector will be available, so please can you bring a few digital photos to show us (but only British plants and preferably species found in Hampshire). Note that we will start showing the plant photos at 1pm.

If you don't wish to talk about your photos then please at least bring a few prints of photos (or pressed specimens) that you can put on the display tables – ideally annotated with where the photo was taken. Failing that, bring a few biscuits, etc and help us munch them!

Testwood Lakes Education Centre is reached from Brunel Road, a turning off the A36 at a roundabout between Totton and Ower. After entering Brunel Road, look for a small turning on the left after the block of industrial units. Go along this track, ignoring the first (public) car park and the Sea Scouts' building on your right, until the Education Centre comes into view above the lake. There is plenty of parking there. No need to book a place.

Contact: Tony Mundell (details on back page).

Reports of Recent Events

Herbarium Workshop – Saturday 9 February 2019

A report by Cathy Wilson

On Saturday 9 February six of us gathered at Chilcomb House, Winchester, where the Hampshire herbarium is kept, for a valuable introduction by Martin Rand and Tony Mundell to collecting plant specimens and using herbaria.

Martin started by explaining why collections of dried plants matter – from their value as a personal reference and ID (identification) tool, to their national and international importance in helping us understand the evolution of plants, climate change, variations within species, historical changes in taxonomy and shifts in the size or location of particular populations. He went on to give us helpful guidelines on the law and ethics of collecting samples, drawing our attention to the BSBI Code of Conduct (**https://bsbi.org/wp-content/uploads/dlm_uploads/Code-of-Conduct-v5-final.pdf**).

We then discussed what to collect for any particular plant. Martin stressed the importance of carrying an ID guide in the field, to check identifying features of the genus or species in question. We should then pick all the parts – but no more than necessary – essential for making a diagnosis. He urged us to photograph plants as well as collecting them, taking care to show the ID features; and recommended Adrian Davies' book 'Digital Plant Photography' for tips and GIMP software (see **https://www.gimp.org**) for editing photos. Referees sometimes want photos as well as samples, but it is important to check each one's requirements in the BSBI Handbook before sending anything – and whatever you do, don't post samples in plastic bags or with any moisture as they'll turn into a soggy black mess before they arrive!

On to pressing. Martin showed us different presses and materials available. He then demonstrated how to place a specimen in a 'flimsy' of newspaper and pack it between sheets of blotting paper and corrugated cardboard, which allows air to circulate and helps dry specimens quickly. The press straps are then tightened. Martin emphasised the importance of undoing the press again, within a day at most, to check specimens and rearrange any folded leaves. Pressing then continues until the plant is dry and relatively rigid.

Tony then entertained us explaining his idiosyncratic but highly successful pressing methods. He does not use a proper plant press, improvising instead with heavy books to provide pressure. He showed us how he packs specimens between newspaper sheets interleaved with kitchen roll paper and corrugated cardboard. He sometimes temporarily uses copper coins to persuade leaves to lie flat, before removing the coins and quickly placing layers of kitchen roll and newspaper on top. Then the cardboard goes on, followed by some old metal fridge shelves, all topped by weighty books. He presses most of his plants on the floor of a warm room but, for a few that demand rapid pressing, like dandelions, he uses a shelf amongst the household linen in the airing cupboard.

Then it was time for us to practise wrestling with an assortment of oddly shaped uncooperative specimens, packing bulky parts with tissue and trying to arrange leaves that just wouldn't lie down. We learned about trimming thick stems, slicing bulky flowers in half, scooping aquatic plants out of a basin of water with blotting paper and labelling everything clearly. Tony and Martin stressed the need to check specimens frequently so that they don't over-dry and lose colour – and at the end of the day we had a clear demonstration of why presses shouldn't be put on radiators, when we found that one of the specimens we had pressed in the morning was already scorched.

After lunch we moved onto mounting, with further valuable hints about acid-free paper, how to make little envelopes for seeds, the horrors of Sellotape, the perils of using Biro ink (it vanishes over time) and how to lay out plants both to show the key features and to look aesthetically pleasing. We were taught to leave a margin of at least 1cm around the specimens and to label the matching ends of stems

if we had to cut them to fit. It is also important to leave space for the label: standard practice at the Hampshire herbarium is to label the specimen in the bottom left of the sheet, but this varies between herbaria.

Finally, we visited the herbarium, where we learned what happens to specimens lodged there and how to access and handle them. We were warmly invited by Ross Turle, the Curatorial Liaison Manager at Hampshire Cultural Trust (HCT), to use the facilities whenever we wished (please e-mail him in advance **ross.turle@hampshireculturaltrust.org.uk**). There is desk space available with binocular microscopes. Wednesdays are good, as Margaret Munro (who looks after the herbarium) and other natural sciences volunteers are on hand to help – though the herbarium is co-located with the insect collections and desk space is often crowded on Wednesdays with eager entomologists.

Martin and Tony urged us to use the herbarium, not only for what we could learn from it but also to protect Hampshire's plant collections – some of which are nationally important – from the worrying trend elsewhere of non-specialists deciding to destroy herbaria because they believe they take up space and resources without value. There are moves afoot to photograph all specimens and make the herbarium accessible online, but examining the real thing is always best. Martin is also keen to encourage people to volunteer to help Portsmouth Museum, where the former Hampshire herbarium curator Christine Taylor is managing a new project to sort out the natural history collections, which include important herbaria from both Hampshire and Sussex that are currently in disarray.

This was an excellent day's training and we even got to take home a goodie bag each, with a starter pack of herbarium paper and linen mounting tape. Huge thanks are due in particular to Martin and Tony for their time and guidance, but also to Ross Turle and to HCT volunteer Sarah Gould, who not only took part in the course but kept us supplied with coffee, tea and biscuits.

Atlas 2020 Review Session – Morning of Sunday 24 February 2019

A report by Sarah Ball

About 20 people gathered at Testwood Lakes Education Centre to hear Martin Rand report on progress with the National Atlas recording work in Hampshire. He reviewed what needs to be done in the final year of recording in 2019 and demonstrated some new features of the mapping and recording technology on the Hants Plants website. Both Martin (South Hampshire VC11 recorder) and Tony Mundell (North Hampshire VC12 recorder) said that their priorities for the year would be available via the Hants Plants website (**http://www.hantsplants.org.uk/index.php**).

In the UK nationally the default threshold for considering a tetrad well re-recorded is 75% re-found. Tony said that some 'square-bashing' of certain tetrads in North Hampshire is still necessary for where 180 or fewer species have been recorded since 1999 or where there are fewer than 54% so far re-found. However, for both vice-counties emphasis is now changing to a species priorities exercise for which there will be printout sheets for annotation. There is a new page called 'Species Recording'. If a taxon is selected the page will show where there are pre-2000 records (although this covers only taxa selected for publication on the national Atlas, it may not cover all casuals, aliens, varieties or indeed some of the critical native species). On the associated map a green background indicates that all is well, the taxon has been recorded since 2000; a pale yellow background means 1970-1999. Martin advised recorders of particular tetrads to also check the 'tetrad recording' page in case anything else is needed.

Martin suggested that Stace 3 should still be used because BSBI has not yet moved to Stace 4 and Living Record, MapMate, iRecord, etc. need to match. For accurate location of records without a GPS against OS mapping or satellite imagery, Martin recommended the Cucaera web site, used by entomologists. The BSBI's Distribution Database (DDb) provides an alternative way to get lists of plants not recorded since 2000 and, unlike Hants Plants, it can be focused down to 1km resolution or better; for this facility the BSBI requires authorisation for access to the database, something which Martin and Tony confirmed that they will be happy to provide on request to Atlas 2020 participants.

Note: Since the meeting, Hants Plants has acquired two new Atlas 2020 facilities: a checklist of all taxa that need attention in Hampshire for Atlas 2020, either for interactive browsing or as a downloadable file; and a downloadable list of all sites at 1km or better resolution for taxa not recorded since 1999 in a hectad.

Mapping and Technology Workshop – Afternoon of Sunday 24 February 2019

A report by Lisa Malter

Martin Rand led an extremely helpful and interesting workshop in the afternoon after the Atlas 2020 update meeting at Testwood Lakes. He explained the theoretical basis behind GPS and mapping and how to use technology to help us locate plants in the field with greater accuracy and find our way back to the car safely afterwards. It was empowering for those of us who may have felt intimidated by the technology to be able to understand mapping techniques, hand-held GPS units and GPS-based software that is now available on our mobile phones. Martin also explained how to use iRecord and Living Record to speed up recording and sharing information, and how records are verified by the recorders before being added permanently to databases. His clear explanations and endless patience in answering questions made the afternoon pass very quickly. Thank you, Martin!

Here are my notes from the workshop:

Martin started by explaining how maps are made by projecting the Universal Transverse Mercator (UTM) grid on the earth. The YouTube video 'Understanding

UTM' (https://www.youtube.com/watch?v=LcVlx4Gur7I) makes this very understandable.

Then he explained that the OS (Ordnance Survey) map grid is a transverse Mercator grid, but not part of the UTM grid. It takes its own datum, but works on the same principle. The OS divides the UK into 100 km x 100 km squares, locally these are coded as SU and SZ.

A handheld GPS unit (like Garmin Etrex 10 which Martin showed us) is rugged and weatherproof and holds its charge well. It will waymark, and you can download the waymarks into a computer. You can set up routes and waypoints. You can place waymark 1 where you left your car and it can tell you how to get back to that waymark. More modern and expensive GPS units have more functions and can download OS maps. The antenna on GPS devices is better than those on phones and is more accurate.

When you set up a GPS unit, exploit as many satellites as possible for accuracy. Glonass is the Russian satellite network and GPS is the American satellite system, but there are others in development. There are codes for the map system you will be using: here we use the British Grid Ordnance survey format. In France, you would choose other options and you need to know what code you need for the format you want. There is a separate system for the Channel Islands even though they use an extension of the UK grid system. The GPS unit tells you it is only accurate to so many meters at any instant. This sometimes gets better over time so if reception is not good, stand still for a while before making your record.

You can download OS maps on smartphones. Beware: GPS uses a lot of your phone's battery and processing power so bring an extra (charged) power pack.

You can set the update frequency to 1 second, but this affects how long your battery will last, so if you don't need a 1 second update, make it longer. You can get a 6 figure to 10 figure grid reference, but you need the GPS enabled and the app given permission. This will use satellite signals if you have built-in GPS on the phone. The cheapest phones don't have GPS and will use the phone signal instead, but this is less accurate. Be careful not to be deceived into thinking you have GPS reception when you don't.

You can buy a licence for OS maps (https://osmaps.ordnancesurvey.co.uk), where you can download whichever maps you want (the 1:25,000 level costs £19/year). If you load 10km x 10 km tiles from the OS service that will store the information, you can upload routes and synch them with your device. There are public free layers that you can try first without buying the OS licence; however, the paid version does some things slightly better, such as plotting and recording a route.

Martin said he ends up using the Viewranger app (http://www.viewranger.com) for a smartphone more than the OS maps because you can get other layers at a reasonable cost, for instance for other countries. On Viewranger there is a range of free maps, but again you have to pay around £20/year for the OS mapping. You get a Viewranger account, can design and store routes, create waymarks and store tracks that you upload from your mobile. You can detect which layers you have turned on and can print a map to take into the field. Viewranger has better free maps than Google Maps. You can find your current location and it shows buildings, vegetation and public footpaths. For the annual licence fee you can download while you are on a wifi network and cache the map for use when wifi is not available. You can turn on a 'track your position' function so you can tell where you are with GPS or with a phone signal.

Other options

On an Android smartphone you can download GridreferencefreeOS, which has adverts but gives a big text size.

Iphones use Memory Map, which costs £100 as a 1 off payment.

If you buy a modern OS paper map there is a scan tag with the OS app that you can use on a smartphone, or you can set it up on a desktop computer and download it onto a phone.

Recording

The free **iRecord** app (https://www.brc.ac.uk/irecord/) is managed and promoted by the Biological Records Centre (*see Martin's article on p. 19*). (There is also an on-line browser-based equivalent which can be very slow, but has improved over time.) You can go to a plant, and it puts in the grid reference automatically, tailoring the precision of the reference to the accuracy of the signal the device is getting. You can't send these anywhere except to the Indicia database and they go from there to the NBN (National Biodiversity Network). They can't be intercepted into Martin's database to verify them, but Martin and some other BSBI recorders validate records in the Indicia database. A common data exchange convention needs to be defined so that more systems can interchange data simply and reliably. In the near future, validated Indicia records will be transferrable to the BSBI's central database. iRecord is expected to become the recommended field recording app for the BSBI.

There is a facility for generating a list for a given locality and adding plants to the list. If you have a grid alert turned on for the locality, it will tell you if you move outside the area. It gives you an option of putting in a more precise location for individual records, and you can add a variety of supporting data. You can post photos along with the record.

Living Record is free to use for recorders. It has some aspects that are more sophisticated than iRecord, but it is purely browser-based and does not have an equivalent field app. It is possible for BSBI recorders to validate records on the Living Record web site, and download batches of validated data either as a spreadsheet or as a csv (comma separated value) file. This means that records can be transferred to other systems on a 'one off' basis. It directly supports export to MapMate, the recommended BSBI database package for recorders for the last 18 years.

Plant Identification apps

Martin said that all automated plant ID apps are unreliable, and sometimes sensationally so, so please don't rely on them. He thinks that the Wild Flowers of Britain and Ireland Facebook group (**https://www.facebook.com/groups/735961066428140**) and the Open University iSpot webpage (**https://www.ispotnature.org/**) can be helpful for identification.

Visit to Hogmoor Inclosure and the Slab, Bordon – Saturday 18 May 2019

A report by Tony Mundell

Twenty-six people attended this meeting. It was a little disappointing that the promised new café at Hogmoor Inclosure had not yet opened, but we certainly found plenty of uncommon or interesting plants. In an area of short grass reserved for 'Dog Training' beside the car park, we saw Subterranean Clover *Trifolium subterraneum* and Knotted Clover T. *striatum*. Nearby there was a patch of red stems of Dodder *Cuscuta epithymum*, though not yet in flower, plus some Greater Quaking-grass *Briza maxima* on a heap of discarded soil a few yards away.

We had still barely left the car park and while I was trying to prevent a patch of Marsh Foxtail *Alopecurus geniculatus* from getting strimmed off I heard shouts that Paul Stanley had found its very rare cousin Orange Foxtail *Alopecurus aequalis*. This was on the muddy edge of a very shallow pond that had been planted up with dreadful alien garden plants like *Ophiopogon planiscapus* 'Nigrescens'. I counted about 60 plants of the Orange Foxtail – certainly its best site in Hampshire.

Next we looked at the tiny flowering heads on Bristle Club-rush *Isolepis setacea* and a colony of the rare Smooth Cat's-ear *Hypochaeris glabra* growing beside the very common Cat's-ear *H. radicata*. After much discussion, mainly between Martin Rand, Paul Stanley and myself, we concluded that one or two plants here were the hybrid between them, *Hypochaeris* x *intermedia* – a plant new for Hampshire. Later in the day at the Slab, more plants of this hybrid were found; in both cases growing on practically pure sand.

The bare sand areas of Hogmoor and the Slab support many other uncommon plants, including Shepherd's Cress *Teesdalia nudicaulis*, Coral Necklace *Illecebrum verticillatum*, Common Cudweed *Filago vulgaris*, Small Cudweed *Filago minima*, Bird's-foot *Ornithopus perpusillus* and Mossy Stonecrop *Crassula tillaea*, all of which we noted.

We visited a pond that back in 2006 used to support a large colony of Small Water-pepper *Persicaria minor*, although by 2012 it had been completely eradicated by a dense carpeting growth of New Zealand Pigmyweed *Crassula helmsii*. Initially I was puzzled that there were now only a few plants of the latter, but Bill Wain explained that the construction of the adjacent re-routed A325 had affected the local drainage and the pond was drying up. Consequently the contractors had dug the pond deeper – evidently removing virtually all the New Zealand Pigmyweed! One of the species that we found persisting here was Marsh Speedwell *Veronica scutellata*, but I suspect that eventually it will be smothered by new growth of the New Zealand Pigmyweed.

Orange Foxtail *Alopecurus aequalis*, Hogmoor Inclosure, 18 May 2019 *(Gareth Knass)*

We stopped for lunch, followed by our brief AGM (*see photo on back page*), and then headed towards the Slab. This was formerly used by the army to test tanks and is a maze of churned-up sandy tracks. After crossing Hogmoor Road, where we added Common Ramping Fumitory *Fumaria muralis*, we had to navigate through some suburban roads before entering the Slab. A roadside verge here gave us a flowering plant of Broad-leaved Leek *Allium nigrum*, Bugloss *Anchusa arvensis* and Keeled-fruited Cornsalad *Valerianella carinata*.

Nearby Paul Stanley recognised some leaves (without flowers) as being the very rare Small-flowered Catchfly *Silene gallica*. Indeed, when it was checked later, it turned out to be the attractive variety with a red spot on each petal called var. *quinquevulnera* – new to Hampshire!

Once in the Slab area we puzzled over a large group of shrubs beneath the power lines. It was too early for their flowers which would have helped a lot, but we concluded that they were Rum Cherry *Prunus serotina* rather than the rather similar Bird Cherry *P. padus.* Ignoring lots of Coral Necklace, our next stops were for Heath Pearlwort *Sagina subulata* and two sedges, Bottle Sedge *Carex rostrata* and White Sedge *C. canescens*. I managed to find some tiny seedlings of the rare Smooth Finger-grass *Digitaria ischaemum*. This is locally abundant at the Slab but does not reach maturity and flower before September or October.

Corn Spurrey *Spergula arvensis* was noted in many places but a few plants were also seen of Sand Spurrey *Spergularia rubra*. In a muddy area we found quite a few

Hybrid Cat's-ear *Hypochaeris glabra* x *radicata*, Hogmoor Inclosure, 18 May 2019 *(Gareth Knass)*

Shepherd's Cress *Teesdalia nudicaulis*, The Slab, 18 May 2019 *(David Buckler)*

Small Catchfly *Silene gallica* var. *quinquevulnera*, Bordon, 17 June 2019 *(Tony Mundell)*

plants of Leafy Rush *Juncus foliosus* in a new location. Paul Stanley was pleased to see a single plant of *X Conyzigeron stanleyi* (*Erigeron acris* x *Conyza floribunda*) named after him. It was in the same spot where it was discovered in 2018 and was already producing flowers, though both its parents nearby were all very immature plants. The implication is that the hybrid cannot be an annual.

After re-finding a patch of Common Wintergreen *Pyrola minor*, we headed for the tank-crossing gate. Bill Wain had kindly borrowed a key to this gate from the army and it significantly shortened our route back to Hogmoor Inclosure. Immediately after we crossed Hogmoor Road many plants of Hoary Cinquefoil *Potentilla argentea* were found together with the mown-off remains of a bush of Dutch Rose *Rosa* 'Hollandica'– the latter bush has been recorded here since 1987.

To select a route we could cover in a day I had to omit known sites for other rarities like Yellow Bird's-nest *Hypopitys monotropa*, Marsh Clubmoss *Lycopodiella inundata*, Cranberry *Vaccinium oxycoccos* and Hare's-tail Cottongrass *Eriophorum vaginatum*. Unquestionably, for their rare vascular plants alone, both Hogmoor Inclosure and the Slab should be an SSSI.

The bryophytes were also good. John Norton had confirmation back that a moss he collected by the pond in Hogmoor Inclosure was *Pohlia bulbifera*, new for Hampshire. In Britain it is mainly a northern and western upland species, the nearest other recorded sites being Dartmoor and Exmoor.

Visit to Headley Gravel Pit and Old Burghclere Lime Quarry – Saturday 25 May 2019

A report by Rob Still

Seventeen enthusiastic participants gathered on a warm, sunny day for this two-site survey, to record in detail the flora at the request of Hampshire & Isle of Wight Wildlife Trust. After carefully crossing the busy A339 (!) the survey started in the mixed woodland area of Headley Gravel Pit. Just a few metres in, during the initial rush of the expected species being noted a helleborine was found. Though this spike was too young to identify, a more mature Broad-leaved Helleborine *Epipactis helleborine* was found further on which may provide the answer. Attention was almost immediately drawn to the ferns, in particular a fine stand of 40 large Scaly Male-fern *Dryopteris affinis* (with Male-fern *Dryopteris filix-mas* nearby for comparison), a few Narrow Buckler-fern *Dryopteris carthusiana* that could be compared with the more numerous Broad Buckler-fern *Dryopteris dilatata*, and a confusing *Polystichum*, showing the features of both *aculeatum* and *setiferum*. This may be the hybrid *P.* x *bicknellii* but its identification will have to wait until a collected frond is pressed and sent off for expert opinion.

In the woodland, Agrimony vegetation was tested on quite a few occasions, with only Fragrant Agrimony *Agrimonia procera* found. Other surprises and notables in the woodland included Prickly Sedge *Carex muricata* subsp. *pairae*, Common Spotted Orchid *Dactylorhiza fuchsii*, Black Currant *Ribes nigrum* and Solomon's Seal *Polygonatum multiflorum*.

The open area, now much reduced due to scrub invasion (as evidenced by comparative Google Earth images covering a decade or so), still held a good colony of Green-winged orchid *Anacamptis morio*, though perhaps slightly past their best. Eager surveyors scattered over the entire area finding a nice colony of Heath Dog-violet *Viola canina* subsp. *canina*. Other notable taxa included some tiny Small Cudweed *Filago minima*, the glabrous variety of Marsh Speedwell *Veronica scutellata* var. *scutellata*, Blinks *Montia fontana* subsp. *chondrosperma*, Common Twayblade *Neottia ovata*, Common Milkwort *Polygala vulgaris* and the hybrid cinquefoil *Potentilla* x *mixta*. After lunch, which included chat about the current state of practical conservation, orchid varieties and which plants Steve Povey had eaten; Tony showed the differences between the *sylvestris* and *arvensis* varieties of Field Forget-me-not *Myosotis arvensis*.

With 164 vascular plant taxa recorded and after a successful renegotiation of the A339 the convoy headed off at around 12.45pm to Old Burghclere Lime Quarry where a similar combination of woodland and open area awaited, but on chalk rather than the acidic soils of Headley.

The woodland area contained little that was unexpected, other than perhaps the Fly Orchid *Ophrys insectifera* employing the risky strategy of flowering in the middle of the shady, narrow path, but it was good to note the chalk-loving Bramble *Rubus vestitus*. There was a palpable eagerness as we entered the Lime Quarry proper, which is truly an oasis within an intensive arable landscape. Though there was more scrub than I remember from previous visits there was nothing to disappoint. Hundreds of Fly Orchid *Ophrys insectifera* and a smaller number of Common Twayblade *Neottia ovata* provided the initial distraction followed by a good number of White Helleborine *Cephalanthera damasonium*, including one spike of the var. *chloritica* which lacks chlorophyll in its leaves, before the group radiated and recorded…

Dwarf Thistle *Cirsium acaule* was wonderfully widespread amongst the other species the site is known for, including

White Helleborine *Cephalanthera damasonium* var. *chloritica*, Old Burghclere Lime Quarry, 25 May 2019 *(Gareth Knass)*

Chalk Milkwort *Polygala calcarea*, Old Burghclere Lime Quarry, 25 May 2019 *(John Norton)*

Yellow-wort *Blackstonia perfoliata*, seedling Red Hemp-nettle *Galeopsis angustifolia*, Squinancywort *Asperula cynanchica*, Common Broomrape *Orobanche minor*, Knapweed Broomrape *Orobanche elatior* and Small Scabious *Scabiosa columbaria*. Much discussion took place at ground level about the separation of Chalk Milkwort *Polygala calcarea* and Common Milkwort *Polygala vulgaris* in the field. Both species were recorded and the differences noted: *P. calcarea* has a congested rosette of larger leaves near to the stem base with much smaller, or no leaves, on the stem beneath and with sepal veins not anastomosing at the edges (as on *P. vulgaris*). Flower colour a clear sky blue (unlike the more purplish blue of *P. vulgaris*) and the blue contrasts with the pure white 'centre' of the flower (unlike *P. vulgaris* where the 'centre' is just a paler purplish blue).

At just before 4pm the survey was concluded with 120 taxa recorded. There was lots of happy chatter on the walk back to the car park, some still with energy to climb the gate, and no doubt some very full camera cards.

Visit to Stockbridge Marsh – Saturday 1 June 2019

A report by Tony Mundell

Flora Group members at Stockbridge Marsh, 1 June 2019 *(Tony Mundell)*

Fifteen people attended this meeting that was courtesy of various landowners bordering the River Test at Stockbridge, including Penny Burnfield who hosted us and Dan Hawkins from the Stockbridge Fishing Club. I had advertised the meeting in *Flora News* by including a mouth-watering list of rare plants that had been recorded in the river floodplain in the past. All of them were plants of very wet, squelchy marsh habitat, but we soon found that the habitat was no longer as wet as it clearly must have been earlier. Dan Hawkins said that he had known the area all his life and he thought that the volume of water flowing in the Test was only about a third of what it had been when he was a child. Presumably water is extracted further upstream.

Nevertheless we still found enough to interest us, and full lists of all the plants we found were passed on to the landowners. Three separate lists were made: for the southern part of SU3536; for the VC12 part of SU3535 and for SU3534 in VC11.

In the first meadow Gareth Knass found Glandular Dog-rose *Rosa squarrosa*, now treated as a separate species but until recently regarded as within one of the informal 'Groups' that make up a very broad concept of Dog-rose *Rosa canina*. So in 'old money' (as on my MapMate database) this plant which has a few red glands in various places (especially on the stipules) was rather clumsily called *Rosa canina* Group Dumales. In tall marshy vegetation beside the river we found some patches of Common Meadow-rue *Thalictrum flavum* and another classic meadow plant, Meadow Fescue *Schedonorus pratensis*.

In many places the flowers of the Common Mouse-ear *Cerastium fontanum* all seemed to be larger than normal and initially I thought I had found *C. fontanum* subsp. *holosteoides*, which prefers damp habitats. I have never seen this subspecies, but on checking the stems were all hairy so our plants were just the very common *C. fontanum* subsp. *vulgare*. Paul Stanley initially thought that he had found Slender Tufted-sedge *Carex acuta* for us, but after the meeting decided that his specimens were only Lesser Pond-sedge *Carex acutiformis*. Paul also collected some sedge specimens, suspecting that they might be the hybrid, called *Carex* x *sooi*, between Lesser Pond-sedge *Carex acutiformis* and Greater Pond-sedge *C. riparia*. This hybrid was later confirmed by the BSBI Carex Referee, Mike Porter and is new for Hampshire, mainly because so few people venture into trying to name sedge hybrids.

In another area we saw Brown Sedge *Carex disticha* and lots of Quaking Grass *Briza media*. Damper areas in and around the ditches gave us Marsh Valerian *Valeriana dioica*, Water Avens *Geum rivale* and some localised patches of Adder's-tongue Fern *Ophioglossum vulgatum*. One ditch had Water Fern *Azolla filiculoides* and Ivy-leaved Duckweed *Lemna trisulca*. More Common Meadow-rue was found by the riverside together with Water Dock *Rumex hydrolapathum* and patches of Slender Spike-rush *Eleocharis uniglumis* in two places. We passed beside many trees of Hybrid Black Poplar *Populus* x *canadensis* but at least one tree seemed to be the genuine native Black Poplar *Populus nigra* subsp. *betulifolia*.

Penny Burnfield had arranged for her friend Selina Musters to give us a brief talk on a historic local industry that made baskets, hats, mats and other goods from locally gathered sedges. So as we sat munching our sandwiches in the garden of the Mill House, Selina told us how this ancient industry was revived by the local Women's Institute in 1919 and continued for thirty years. It provided work and an income for local women using local riverside plants. More recently the Longstock WI had researched this, and had managed to replicate the whole process, from cutting and drying the sedges, soaking them prior to plaiting and constructing baskets. Selina showed us examples of the goods made.

Examples of baskets, etc. made from sedges at Stockbridge, 1 June 2019 *(Tony Mundell)*

We then continued botanising further south, and directly after crossing the road into VC11 were amazed to find a flowering plant of Creeping Snapdragon *Asarina procumbens* near to the public toilets in the cul-de-sac that leads to the Fish Hatchery. Sadly I cannot record it as this rare alien is not on the MapMate taxa list. Presumably it must have arisen from a seed from a nearby garden. We were then allowed in through normally locked gates into the Fish Hatchery and listed the plants seen there, before returning along the riverbank to Penny Burnfield's lovely garden.

Sedge Identification Workshop – Saturday 8 and Sunday 9 June 2019

A report by Phil Collier

We walked into the Testwood Lakes Education Centre for a ten o'clock start, and the room was perfectly set up with tables each with plant keys, specimens, battery illuminated lens, and with 'our' Martin standing calmly at the front. This was on 8–9 June 2019, with nine participants eager to hone their knowledge of sedges (Cyperaceae). It's easy to overlook or forget how difficult it is to organise and deliver successful workshops. Martin makes it seem effortless or even inevitable.

Martin started the workshop with an overview of the 'green' monocots, dealing in passing with the mantra 'sedges have edges …' by pointing out exceptions. The rushes (Juncaceae) are relatively easy to distinguish through the lens; they have little green flowers which are followed by capsules with multiple seeds (*Juncus*) or three seeds (*Luzula*). Grasses (Poaceae) and sedges have flowers arranged in spikelets or spikes (just a nomenclature difference between the two families), and leaves have ligules at the junction of the sheaf and blade, but grasses typically have obvious nodes along their hollow flowering stems. Spike(let)s usually have glumes surrounding specialised flowers, but inside the glumes the structure of grass and sedge flowers is quite different. At this stage a microscope is invaluable. In a spike with multiple flowers, individual sedge flowers are typically protected by a single glume, while a grass spikelet tends to have two outer glumes with each flower being protected by a glume-like lemma and more fragile-looking palea. As often in nature, there are many variations on these themes, and Martin explained how these structures and others can be referred back to the more 'typical' flower consisting of sepals and petals.

Many people will be familiar with Martin's explanations of plant ID. This can be at the level of GISS (general impression of size and shape), or by reference to important morphological characters, or at a more technical level that refers to natural groups and subgroups, or a melding of these approaches. Anyone feeling they had done their homework by reading up about the sedge genera were soon carried along to a deeper level, with Martin freely referring to names of *Carex* sub-genera like *Vignea* and *Carex*. Whilst these may be helpful ways of thinking at an advanced level, the most useful resource for beginners is Martin's 'Key to Sedges in Hampshire', available to all on the Hants Plants web site and conveniently printed in a binder on each table at the workshop. Within a large group of difficult plants, it is so useful to have this distilled down to a regional treatment that Martin has continually refined over the years.

Another dimension of Martin's knowledge is species distributions, which he can easily relate in much detail and this no doubt helped with planning the workshop. In the field, we were introduced to species from most UK sedge genera and many species of *Carex* during the two days. We first visited a brackish community on the lower Test, where very conveniently the cryptic and similar-looking species *C. divisa* and *C. disticha* were growing side-by-side. It was also good to compare *C. acutiformis* and *C. riparia* nearby. The afternoon walk to sites near to the Testwood Lakes Education Centre was delayed by a heavy shower, but here were shown the distinctive *C. hirta* and *C. leporina*, along with the insight that these species tend to persist in disturbed or modified places for longer than other *Carex* spp.

On Sunday morning in the lab, Martin drip fed us with a series of specimens he had collected previously. This was our chance to examine material under the microscope and carefully work through Martin's key to the sedges. Here we saw *Carex* utricles (the *Carex* fruit that contains a single nut) with long beaks (*C. vesicaria*), or shiny grape-like utricles lacking a beak (*C. pallescens*). We also discussed and observed presence/absence of stomata on leaves, where the massed stomata often create a glaucous appearance that is easily seen in the field (*C. nigra*, *C. panicea*).

On Sunday afternoon, Martin took us to the New Forest near Hythe, where he had three nearby sites on his agenda. At the first, we saw Brown Beak-sedge *Rhynchospora fusca*, which is a New Forest specialty and apparently favours disturbed ground, especially ground recovering from forestry operations. (Needless to say, several *Carex* spp. were also present.) At the second site, we were instructed to look for something small, and we eventually homed in on an *Isolepsis* sp. By this stage, one participant was leading us methodically through Martin's key, while others had perhaps resorted

to guessing and hoping that Martin might spill the right answer in response. The key proved its worth: both diminutive species of UK *Isolepis* (Club-rush) were there, again providing a very useful comparison. Lastly, Martin alerted us to some rough and wet ground in order to see the final treats. Tawny Sedge *C. hostiana* proved fairly easy to find, but the distinctive Flea Sedge *C. pulicaris* eluded us despite a lengthy search. We finally added Black Bog-rush *Schoenus nigricans* to our list for the weekend, which is very obvious when seen in its scarce but sometimes extensive New Forest populations. I think we were promised 14 *Carex* spp. included amongst 25 sedge species before the event, a classic case of under promising and over delivering.

Participants at the sedge workshop in the New Forest under instruction to 'look for something small' *(Ginnie Copsey)*.

I'm sure that all participants found the weekend worthwhile and informative. Good resolutions were made to go away and practise, which is essential for familiarity with sedge species that are only differentiated with discerning or detailed inspection. Thank you Martin for spending the weekend with us all, it could not have been a better learning opportunity.

Martin's document 'Key to sedges in Hampshire', as used in this workshop, is available at **www.hantsplants.org.uk/docs/Hants%20Sedge%20Key.pdf**.

Grasses Workshop – Sunday 16 June 2019

A report by Catherine Chatters

Andy Cross and Martin Rand kindly ran an excellent workshop for Flora Group members on the identification of grasses at Testwood Lakes Education Centre.

I particularly appreciated the emphasis on ensuring that we all understood the terminology used to describe parts of grasses, for example the spikelet and the floret and could all recognise the various structures such as the palea, lemma, awn and glume. A wide range of grasses had been brought in for us to examine. *Stipa gigantea* was an excellent choice of grass for us to study at the start of the workshop as the various elements of its large spikelets could be clearly identified.

Helen Dignum and Margaret Wonham at the grasses workshop, 16 June 2019 *(Catherine Chatters)*

Martin had produced a superb set of notes for a previous workshop, covering the anatomy of grasses, classification into tribes and genera, suggestions for further reading and useful equipment for identifying grasses. Attractive black and white illustrations of grasses taken from the second edition of Coste's *Flore de France*, published in 1937, accompanied Martin's notes which are available on the Hants Plants website (**http://www.hantsplants.org.uk/index.php**). We also referred to the BSBI Handbook No.13 *Grasses of the British Isles* by Tom Cope and Alan Gray and the grasses section of the *Vegetative Key to the British Flora* by John Poland and Eric Clement.

Since childhood I have always taken an interest in grasses and for many years have used books such as *Grasses* by C E Hubbard, Roger Phillips' photographic guide titled *Grasses, Ferns, Mosses & Lichens of Great Britain and Ireland* and the *Colour Identification Guide to the Grasses, Sedges, Rushes and Ferns of the British Isles and north-western Europe* by Francis Rose. I was therefore intrigued to learn that the BSBI Handbook (the new standard book for identifying British grasses) uses a hierarchical key system that identifies first to tribe, then to genus and then to species. As Martin explains in his workshop notes, the identification key used in Hubbard (the earlier major British field guide) can 'make for very long and tedious pathways' to the identification of a species and with the inclusion of many more non-native species such an approach would probably now be unworkable. The division of the subfamilies of the grass family (Poaceae) into tribes is therefore an advantage when working through the keys to identify a particular grass.

The workshop gave us an opportunity for plenty of practice at using the Key to Tribes in the BSBI Handbook and identifying grasses to genus and species level. In the afternoon we were given the option of going outside to identify grasses in the field but participants opted to remain inside to spend more time studying the examples provided and using the keys in the BSBI Handbook.

On behalf of the eleven people who attended, I would like to thank Andy and Martin for giving us such an interesting, well-prepared and worthwhile day.

Features

Wood Burdock (*Arctium nemorosum* Lej.) – does it actually exist in Hampshire?

A note by Martin Rand

In scrutinising the Hampshire records for Atlas 2020, I found that one of the most striking features is the total absence of records since 2000 for Wood Burdock (*Arctium nemorosum*), while there are many prior to that date (**Figure 1**).

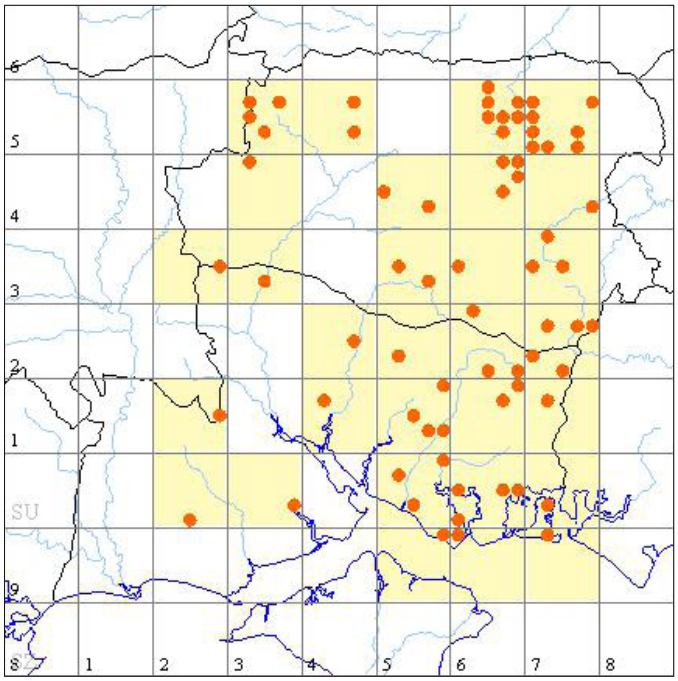


Figure 1: Old records of *Arctium nemorosum* in Hampshire

There are some good reasons for this, the most important being the confusion created by having two different taxonomies in use for *Arctium*. The one documented by Perring (1988) is the more traditional one followed by British botanists, and would have been used for recording occurrences of *A. nemorosum* before 1996. Duistermaat (1996) published an alternative treatment, and this was adopted by Stace (1997, 2010, 2019) for edition 2 onwards of the *New Flora of the British Isles*. A comparison of the two approaches is documented in the BSBI *Plant Crib* (1998), **https://bsbi.org/Arctium_Crib.pdf**. A look at the national mapping for *A. nemorosum* on the BSBI's Distribution Database makes it very clear that post-2000 recording is largely a matter of vice-county recorders' approach to the taxonomy, although the general bias towards a northern distribution is echoed by Stace (**Figure 2**).

In the time remaining before the end of the year, when recording for Atlas 2020 finishes, I shall be looking hard at burdocks in the field and would like to encourage others to do so in their area, following the Duistermaat approach. Stace's key has been revised for edition 4 of the *New Flora*, and I have used this as the basis for the comparison table given below (**Table 1**): using the

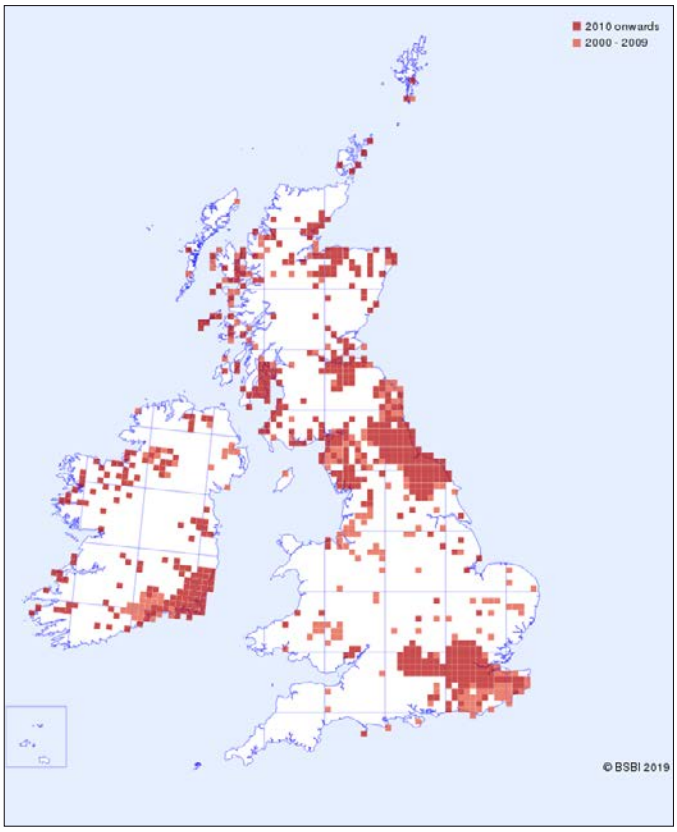


Figure 2: National recording of *Arctium nemorosum* since 2000

Arctium tomentosum* (omitted from table below). *Photo by Teun Spaans 2007 (licensed under Creative Commons (https://creativecommons.org/licenses/by-sa/3.0/deed.en)

key if you don't already have the characters in your head can present pitfalls, as there are some overlaps not mentioned in the key that can lead you in the wrong direction. For simplicity I have left out *A. tomentosum*, which is distinctive, non-native and rare in Britain, but a picture is included above, just in case you meet it.

From the table you can see that no one character separates *A. nemorosum* reliably from the *A. minus* taxa in all circumstances.

Table 1: Comparison of key identification features of burdocks (*Arctium* spp.)

Character	*A. lappa*	*A. nemorosum*	*A. minus* subsp. *minus*	*A. minus* subsp. *pubens*
Form of overall inflorescence (synflorescence) (see illustrations below)	Corymb	Raceme or spike-like	Raceme or spike-like	Raceme or spike-like
Stalking of capitula towards end of main branches	Stalked	Always sessile	Sessile to shortly stalked	Shortly to moderately stalked
Capitulum size (height x breadth)	20-33 x 26-47mm	19-29 x 27-40mm	11-24 x 15-25mm	11-24 x 20-32mm
Capitulum hairiness	Glabrous to sparsely hairy	Glabrous to densely hairy	Glabrous to sparsely hairy	Moderately to densely hairy
Involucral bract length relative to corolla	+1 to +5mm	+1.2 to +6mm	-2.5 to +3.6mm	-2.5 to +3.6mm
Middle involucral bract width	0.9-1.7mm	1.6-2.5mm	0.6-1.8mm	0.6-1.8mm
Corolla tip hairiness	Glabrous or glandular hairy	Always glabrous	Glabrous or glandular hairy	Glabrous or glandular hairy

Burdock corymb (left) and raceme (right)

- Start with the capitula near the ends of the main branches. If they are stalked, they will not be *A. nemorosum*.
- If they are sessile, check the involucral bract width. Above 1.8mm indicates *A. nemorosum*. Below 1.6mm indicates *A. minus*.
- If the width is in the 1.6-1.8mm range, check for corolla exceeding the involucral bracts and for corolla tips hairy. If either or both of these are true, you have *A. minus.*
- If neither is true, give up and find another plant.

The best places to look for *A. nemorosum* are wood borders and all kinds of disturbed ground, especially on calcareous soils and towards the north and east of the county. Good hunting! I will be happy to look at specimens. Photos are also fine as long as they are accompanied by measurements for the size features mentioned above.

References

Duistermaat, H. (1996). Monograph of Arctium L. (Asteraceae), *Gorteria* Supplement 3.

Perring, F.H. (1988). *Plant Crib* edition 1.

Rich, T.C.G. & Jermy, A.C. (1998). *Plant Crib* edition 2.

Stace, C.A. (1997, 2010, 2019). *New Flora of the British Isles,* editions 2, 3, 4.

Atlas 2020: the last push

A note by Martin Rand

As many of you will already be aware, this is the last year of recording for the BSBI's Atlas 2020 project, which follows on from the two previous national distribution atlases. One important aim in Hampshire has been to get as many 10km squares with old records for a species updated with at least one record in the square. Some species with a shortfall in records since 2000 reflect a real decline, but many are simply overlooked.

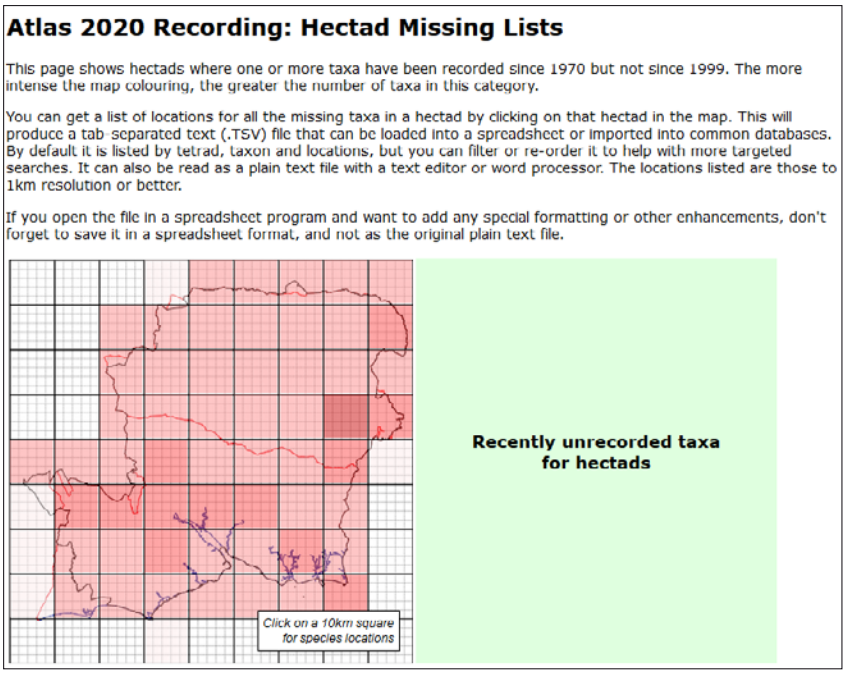
The Atlas 2020 pages on the Hants Plants web site have facilities for tracking these down, by individual species or by 10km square. I've prepared a list of species that have particularly significant gaps and can still be readily identified late in the season, and this is also available at https://www.hantsplants.org.uk/docs/Chase-ups for late 2019.xlsx. You can help with the final effort to record these and fill in other gaps, whatever your level of expertise; some are quite common and easy to recognise.

If you are prepared to take on anything you can in your area, the best way to find out what's needed is to go to the 'Hectad Missing Lists' page on Hants Plants (**https://www.hantsplants.org.uk/auphectadfront.php**). The legend on this page explains how you can use it.

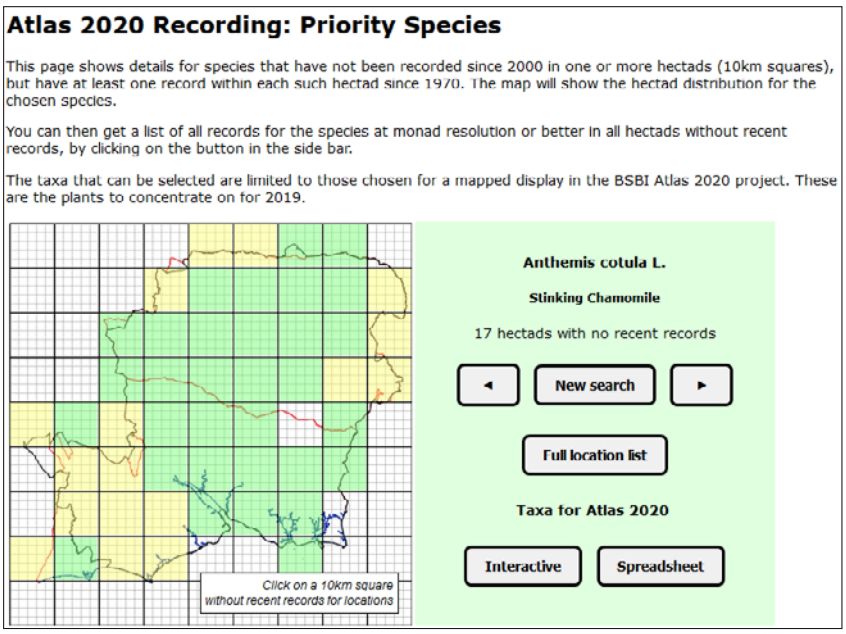
If you download a hectad listing, you should be able to load it into a spreadsheet. You may need to tell your spreadsheet program to use tab characters as the column separator.

On the other hand, you may be more interested in looking at certain target species. In that case, use the 'Species Recording' page (**https://www.hantsplants.org.uk/aupspeciesfront.php**). Once you have selected a species, you can either click on a 10km square with a yellow background to get a listing of locations for that square, or use the 'Full Location List' button to get a county-wide listing. From this page, you will get an Acrobat PDF file to print or examine.

Good hunting, and thanks for your efforts. Don't forget, the vice-county recorders will need records by the end of November if they are to be assured of making it into the Atlas. And as always, we are ready to help with confirming IDs.



	A	B	C	D	E
1	SITE LISTINGS FOR SU60				
2	Tetrad	Taxon	Site	Grid Ref	Last Year
3	SU60A	Agrostis canina sens. lat.	Forton Creek	SU610008	1999
4	SU60A	Anacamptis morio	Priddy's Hard	SU61500130	1992
5	SU60A	Atriplex laciniata	Forton Creek	SU610008	1997
6	SU60A	Berberis darwinii	Leesland Rec	SU606000	1998
7	SU60A	Brassica oleracea cultivated variants	Leesland Rec	SU606000	1998
8	SU60A	Digitaria ciliaris	Clarence Yard / Weevil Lane	SU616002	1998
9	SU60A	Digitaria ciliaris	Mumby Road	SU617003	1998
10	SU60A	Gastridium ventricosum	Forton	SU613002	1998
11	SU60A	Hordeum distichon sens. lat.	Leesland Recr. Area / Toronto Place	SU607001	1998
12	SU60A	Papaver pseudoorientale	Weevil Lane	SU6100	1998
13	SU60A	Parentucellia viscosa	Weevil Lane	SU612005	1998
14	SU60A	Parentucellia viscosa	Weevil Lane	SU615006	1998
15	SU60A	Phalaris minor	Forton	SU608009	1999
16	SU60A	Salicornia agg.	Forton Lake W / St Vincent	SU609007	1996
17	SU60A	Salicornia agg.	Forton Creek	SU610008	1997
18	SU60A	Soleirolia soleirolii	Newtown, Gosport	SU611000	1996
19	SU60A	Valerianella locusta	Newtown, Gosport	SU612000	1996
20	SU60B	Ammophila arenaria	W shore Portsmouth Harbour	SU603025	1997
21	SU60B	Arctium minus subsp. pubens	W shore Portsmouth Harbour	SU603025	1997
22	SU60B	Atriplex laciniata	W shore Portsmouth Harbour	SU603025	1997
23	SU60B	Carex divulsa subsp. leersii	Monks Walk	SU602023	1995



Recording in the field: an app for phones and tablets

A note by Martin Rand

Field biological recording has traditionally involved notebooks or recording cards, but there is an increasing range of tools for recording directly into a smartphone or tablet on site. Here I want to discuss what is probably the best option for British botanists at present and is expected to get BSBI 'recommended' status. It will soon provide easy transfer of data to the BSBI's national distribution database.

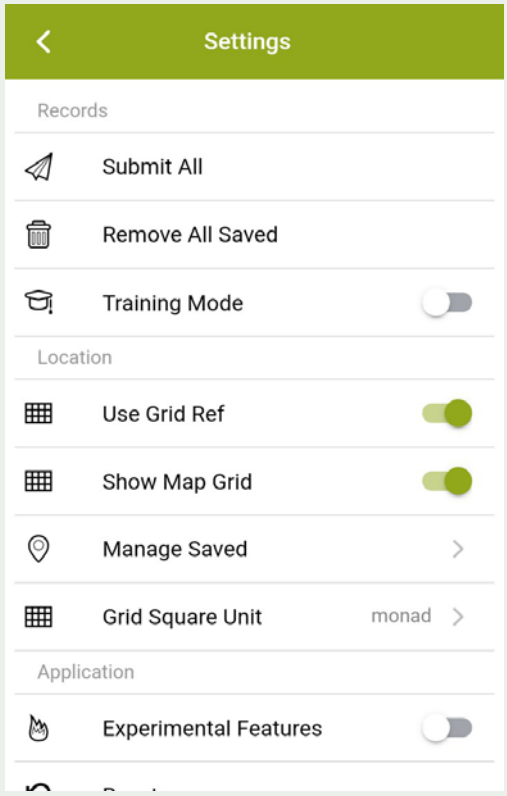
The **iRecord App** has been developed by the Biological Records Centre, and continues to be maintained and improved by them. It is available free for both Apple and Android devices. Records are stored on your portable device until you choose either to transfer them to the BRC's central Indicia data store, or to delete them. Once on Indicia, they are visible to an approved verifier (usually the BSBI county recorder) who can give each record a status varying from 'unconditionally accepted' through degrees of doubtfulness to 'firmly rejected'. With the camera in your smartphone or tablet you can attach photographic evidence to your record, which may help you to achieve the blessed state of 'unconditionally accepted'.

That covers the main features. At the moment, data that goes to Indicia is not readily downloadable by the vice-county recorders, and doesn't make its way to the BSBI database as a matter of course. For this reason, I wouldn't encourage you to do bulk entries of data that are needed in the short term just yet. This will change.

I mostly use iRecord App to do 'quick and dirty' recording: as I always carry a phone, but often don't have a GPS on me, I can snatch an ad hoc plant record for anything interesting I happen to see. Once I'm home, I transcribe the record onto my local database and delete it from iRecord.

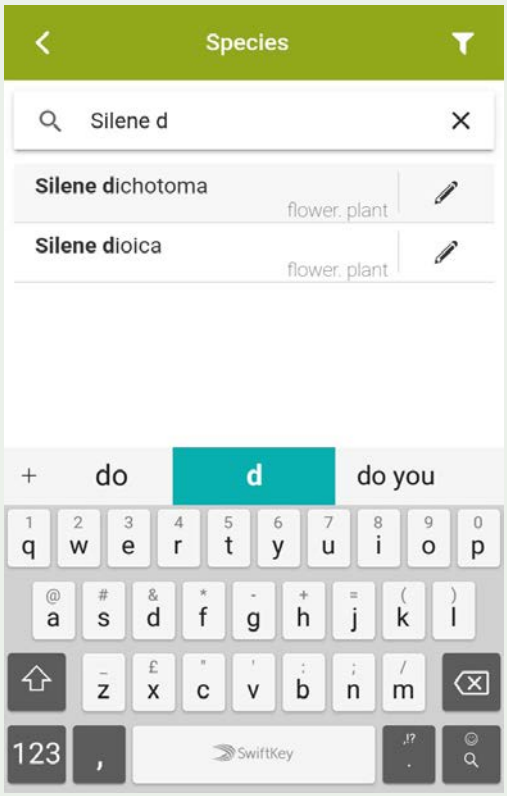
If you do use the app for recording, here are a few cautionary notes.

- iRecord has a big species dictionary. Make sure you select the right name.
- iRecord allows you to specify records at locations without a name. Please don't do this: make your name relate to text on the Ordnance Survey mapping or on OpenStreetMap.
- By default, iRecord uses the name you give when first registering the app. Please use your full name and not an abbreviation or nickname. This is an important part of the record.



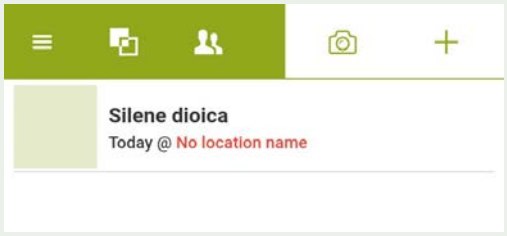
Once you've installed the app and given yourself a user identity, you need to confirm a few settings. If you want to use your mobile device as a GPS unit for recording plant locations, you will need to turn on 'Use Grid Ref'. For setting up sites (which we'll see later), it is also sensible to show the national grid on maps and satellite imagery; for this, enable 'Show Map Grid'.

The 'Grid Square Unit' option allows you to select the default resolution when recording records to a given site; for botanical purposes, the 'monad' (1km) setting is appropriate these days. This setting does not prevent you (or the device) giving a more precise reference to any individual plant record.

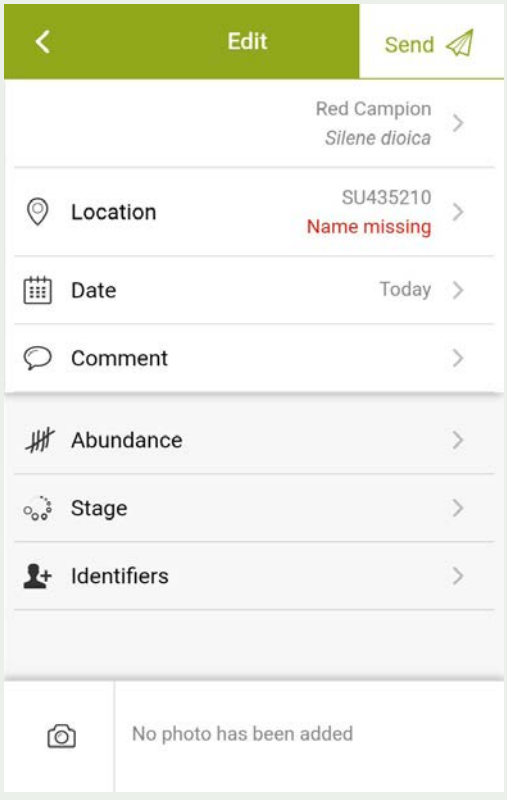


Entering an individual record at the site where the plant occurs is straightforward, especially if you have enabled 'Use Grid Ref'. From the front screen, click on the '+' button at the top right of the screen.

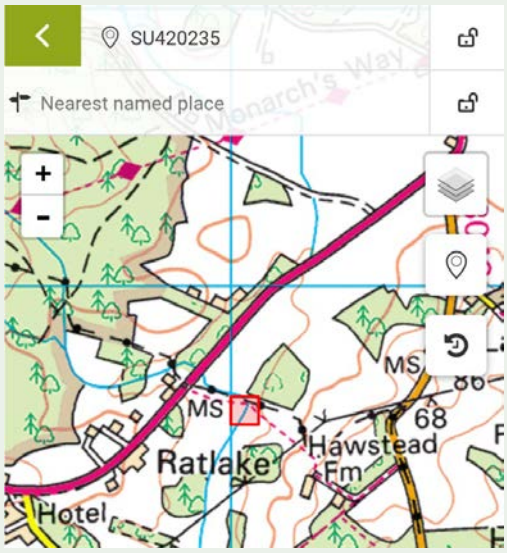
Then start typing the name (in scientific or English), until you have a unique name or a short enough list to select from.



Once you accept the name, you have a 'bare bones' record. Click on the record to edit it.



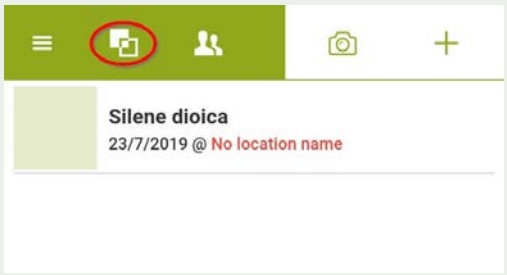
This allows you to add or edit detail. Most fields are self-explanatory. The interesting one is 'Location'.



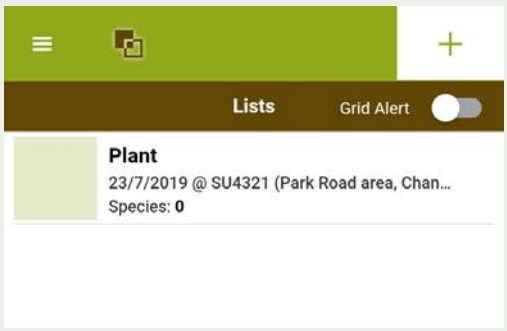
‘Location’ will bring up the map or satellite imagery where your grid reference was recorded. By scrolling the map and clicking on it you can change the coordinates; by zooming the map in or out you can control the resolution of the grid reference. The ‘Layers’ icon in the top right of the map lets you choose the imagery.

To get back to your real-world position click on the pin icon below this.

You can enter your own place name; if you are using your current physical position, you can also let the app find a nearby name from Google Maps.



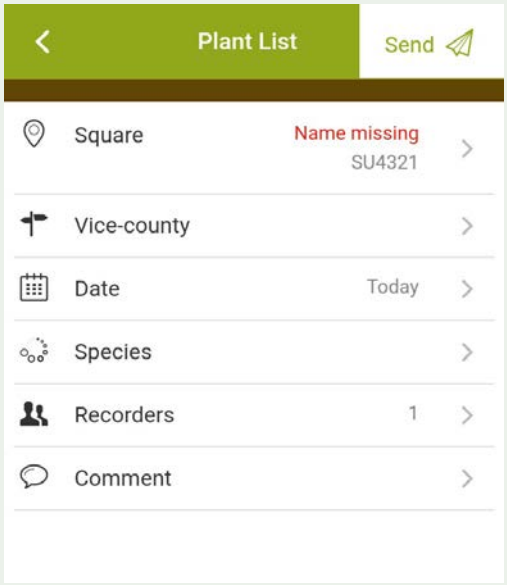
Rather than record each species at a separate location, you may want to record a list of species at the same site. In this case, click on the ringed icon on the front page. This allows you to add site definitions in the same way as you add records.



The list you now see is of previously defined **sites**, rather than previously entered individual **records**. At present, all site lists are plant lists, although future versions will no doubt support other species groups.

Note the ‘Grid Alert’ slider button. If you turn this on (and are using the device’s geolocation facilities), the app will notify you if you move outside the boundaries of the site.

Click the ‘+’ button to add a new site, or click on an existing site in the list to edit it.



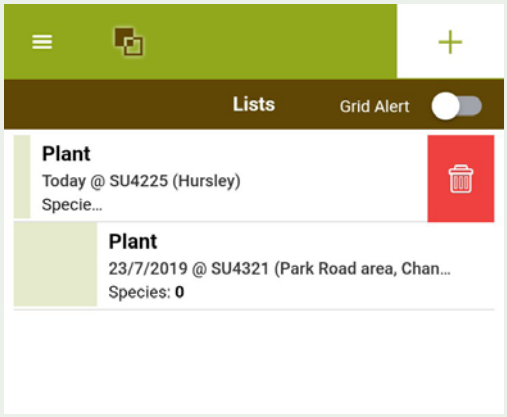
By default, if your device’s geolocation capabilities are being used, the site you get will have a grid reference for where you are standing. Site grid references are always at 1km (monad) or 2km (tetrad) resolution, depending on what you specified in ‘Settings’.

You can change the site location by clicking on the ‘Square’ element, and add or edit any other part of the site detail by clicking on it. Rather weirdly, a site has a date, and that is inherited by all the records you list for that site, so you can’t reuse a previously defined site on another day.

Clicking on 'Square' gives you similar mapping facilities to those for individual records, except that now you can only select a 1km or 2km square, and zooming in to higher resolutions will prevent you from selecting something smaller.

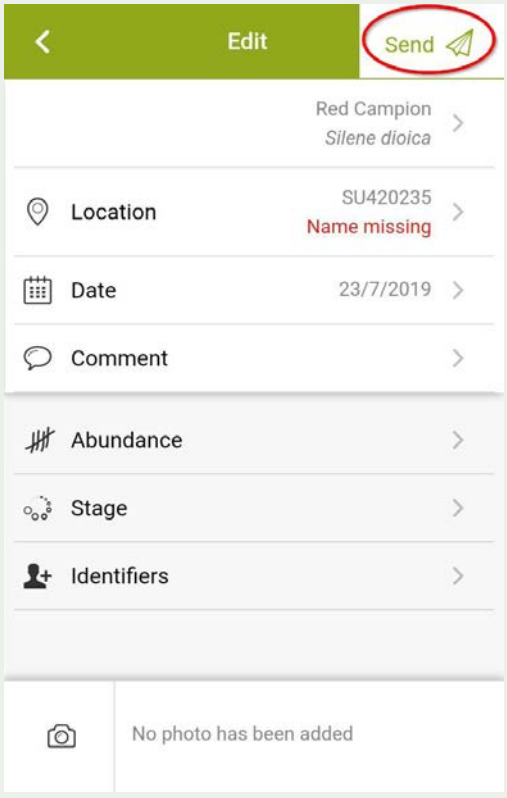
It is usually best to define your own name rather than rely on the app to find something appropriate; in any case, you can only get a choice from the app for the position where you're currently located, and in open country, not even then.

Once you've defined the Square location, you can return to the previous screen and use the 'Species' element to add a succession of species records to the site.



You may want to delete individual records or sites. (Deleting a site removes all the records associated with it.) The method is the same for each; use the touch screen to slide the entry leftwards on the screen, and this will reveal a dustbin icon. Click on this, then confirm that you really want to delete the item.

There are facilities for bulk deletion as well, but you can only use these once you have transferred your records to the Indicia data store. Of course, if you are at a remote place in the countryside you may have to wait until you have a good data connection to do this.



To send either an individual record or a site and its associated records, use the 'Send' button at the top right of the screen. This will then transfer data to the Indicia data store the next time it can make a connection.

To make life easier, there is a 'Submit All' option on the 'Settings' page, which will send anything not previously sent. Once data has been transferred, you can use the 'Remove all Saved' option on the same page. (There is no way to bulk remove data that hasn't been transferred.)

Floral extinctions from the commons of the New Forest: 1876–2000

A note by Clive Chatters

When Catherine McGuire and I recently looked at the fragmentation of heathland landscapes in the New Forest (*British Wildlife* July 2019) we touched on the matter of local extinctions. In this article I explore some of those extinctions in more detail.

The Open Forest is the commonable part of the New Forest which is continuously open to communal grazing by livestock, predominantly cattle and ponies. The habitats of the Open Forest are highly diverse and include heaths, pasture woodlands, bogs, grasslands, rivers, ponds and saltmarsh, all of which are contiguous with each other and all occur within the same grazing unit. There is a continuous process of change as to what constitutes the Open Forest as land is enclosed, inclosed and un-inclosed. For a definition of these terms it is best to refer to the *British Wildlife* article.

A history of the Open Forest will show periods of gains and losses; the overall trend is, however, one of loss. At the opening of the nineteenth century the Open Forest covered about 40,000ha, the current extent of these habitats is about 24,000ha, a minority of which falls outside the functioning Open Forest. In reviewing local extinctions, it is therefore necessary to include species that were part of the Open Forest at the time they were last recorded. This analysis becomes complicated where land has been fragmented from the Open Forest but remains otherwise unmodified; by this I mean that the fragmented land is still a natural habitat and is still extensively grazed.

For the purpose of this exercise, 'local extinction' is taken to be the absence of post 2000AD records of species that previously have been known from the Open Forest. A gap of just 19 years between records leaves plenty of scope for 're-discovering' critical species and for finding plants which are naturally sporadic in their appearance. Botanical recording in the Forest is good, but far from perfect. I hope that this review will stimulate others to do more recording.

Flora extinctions from the Open Forest: 1876–2000

Species		Last published record	Notes
Ferns and their allies			
Fir Clubmoss	*Huperzia selago*	1906	Known since 1783 with herbarium specimens to confirm the records. Formerly found in a number of heathland sites, but always rare or sparingly. A species that colonises bare ground in humid conditions.
Stag's-horn Clubmoss	*Lycopodium clavatum*	1987	Known since before the 1880s from across the parched gravelly soils of the northern heaths. Records of recent decades related to the colonisation of heavily disturbed areas such as around Cadman's Pool (dating from shortly after the pool was excavated) together with a number of plantation and inclosure ride-sides and entrances. With the return of Newlands Plantation to the Open Forest there are opportunities that the plant may reappear close to the site where it was known in 1987.
Flowering plants			
Purple Small-reed	*Calamagrostis canescens*	c.1970	Formerly in well-lit fenny communities on the Open Forest in the mires of Holmsley, Matley and Rowbarrow. These habitats have been encroached on by secondary woodland as well as being subject to drainage schemes. This grass may persist in enclosed habitats near Sowley and Wellow. There is a record from Whitemoor in 2006 which awaits confirmation.
Spreading Bellflower	*Campanula patula*	c.1931	There are two historical records from the northern margins of the Forest that were within the bounds of stock straying from the Open Forest. The last site for this bellflower was from near Wellow Drove in 1931. This species is tolerant of periods of intense grazing followed by lighter grazing. To become established a population requires sparse open grasslands in disturbed well-lit sites including hedge banks and road verges.
Whorled Caraway	*Carum verticillatum*	1976	A single non-flowering specimen was once recorded from the complex of flushes on Boundway Hill; Whorled Caraway may yet be re-discovered here or in other base-enriched flushes of the Headon Beds. There was also a population in an enclosed heath at Acres Down which was last recorded in 1983. The Boundway Hill flushes remain an exceptional site; the Acres Down population became over-grown following sporadic grazing.
Brown Galingale	*Cyperus fuscus*	c.1960s	There are extant, and historical, populations of Brown Galingale from seasonal, muddy pools set within the greens of the western boundary of the Forest. The plant persists at Kingston where a heath is still grazed despite being fragmented from the Open Forest in the 1960s. Another population that grew within the Open Forest was known from Blashford Green which became overgrown with coarse grass and scrub following it being fenced out of the Forest in the 1960s.

Species		Last published record	Notes
Starfruit	*Damasonium alisma*	1876	Starfruit was known from a number of sites in the south-west of the Forest in the nineteenth century. This is a species of trampled, seasonally-wet muddy pools. The last record is from Barton Common which became fragmented from the Open Forest in the 1960s and subsequently became overgrown. Livestock have recently been introduced onto part of the common but it is unclear whether the Starfruit pools are included within the fence-line.
Maiden Pink	*Dianthus deltoides*	1949	There are a few records from the sandy soils of the south-west of the Forest but the accounts are insufficient to place this flower on the Open Forest with complete confidence. As this is a plant of extreme parched grasslands, which are occasionally disturbed, it is probable that it was a component of the dry heaths of the south-west of the Forest, now enclosed.
Field Eryngo	*Eryngium campestre*	1985	A single plant was found in 1983 growing in the close-grazed parched sward of Tanners Lane, the Open Forest drove which gives Forest stock access to the saltmarshes. This specimen was infamously destroyed by the misfortune of having a telegraph pole erected on it.
Broad-leaved Cudweed	*Filago pyramidata*	1960	There are late nineteenth century records for the Fields Heath/Badminston Common area. These heaths are now outside the perambulation and include ground that is highly disturbed through quarrying. More recent records are from Beaulieu Heath, with one population associated with a gravel pit, now infilled. The base-enriched tightly-grazed parched grasslands of the former airfield may still support the species.
Toothed Hawkweed	*Hieracium calcaricola*	1974	Formerly known from the Open Forest between Holmsley and Burley this hawkweed is believed to persist in the central reservation of the A31 at Bratley which was fenced from the Open Forest in the 1960s.
Bluish-leaved Hawkweed	*Hieracium salticola*	c.1963/65	Originally recorded from Burton Common in 1963, when this dry heath was open to Forest stock. The heath became ungrazed and progressively overgrown following its fragmentation from the Open Forest in the late 1960s.
Touch-me-not Balsam	*Impatiens noli-tangere*	1986	First recorded from 1930 in the Open Forest alder carr of Matley Passage, the population dwindled from the early 1970s with the last record being made in 1986. If this was a native population, then it was an outlier from the main British populations. Much has happened to Matley since the 1930s, not least the cessation of coppicing the alder leading to much more shady conditions, together with attempts at drainage within the catchment.
Bastard Balm	*Melittis melissophyllum*	1975	There are a number of records dating from the 1950s to the 1970s from Open Forest pasture woodlands around Ocknell Plain. This flower is a short-lived herb of well-lit disturbed woodlands and still can be found in enclosed and inclosed woods in the Forest. Open Forest populations may yet be rediscovered in tangles of bramble or where root-plates are exposed by wind-thrown trees.
Lesser Twayblade	*Neottia cordata*	1930	The status of Lesser Twayblade as a native species of the Forest's heaths is open to doubt. The records of 1927-1930 from 'near Brockenhurst' are reputedly supported by a herbarium specimen held at Kew. If anyone is working at Kew it would be worth checking this material, not least as the closely related Common Twayblade *Neottia ovata* still grows on the clayey heaths outside Brockenhurst. The records made in the 1980s from near Slufters are almost certainly of introduced plants.
Adder's-tongue Spearwort	*Ranunculus ophioglossifolius*	c.1900	Discovered in 1878 in a drove-side ditch where Forest stock gained access to the commons and saltmarshes of Southampton Water. The verge was subsequently drained and incorporated into an adjoining field.
Nottingham Catchfly	*Silene nutans*	c.1960s	It is difficult to track the history of Open Forest grazing of the lanes around Milford-on-Sea but it is highly likely that Nottingham Catchfly was growing in grazed parched grasslands around Milford-on-Sea in the early twentieth century. The other Forest population is from gravel cliffs near Lepe which were open to the Forest but fenced from it, possibly sometime before the 1960s. The Lepe population survives on naturally exposed gravel cliffs; the Milford population died out in the 1980s.
Summer Lady's-tresses	*Spiranthes aestivalis*	1959	The sad demise of Summer Lady's-tresses is fully documented in the report prepared for the Wildlife Trust by Francis Rose and Jon Cox. The extinction of this orchid in its sole British location was due to a combination of drainage, afforestation and excessive collection. It is widely reported by orchid enthusiasts that material from cultivated stocks has been planted in Forest bogs. These introductions were unauthorised and undocumented, so confounding an understanding of the true status of the plant, should this orchid be found in the future.

Species		Last published record	Notes
Small Cord-grass	*Spartina maritima*	c.1900-1960	The Waterside of the New Forest coast is the *locus classicus* for the hybridisation of Cord-grasses eventually resulting in the emergence of *Spartina anglica.* Small Cord-grass grew within the Open Forest on Hythe Marsh before it was hybridised out of existence. Hythe Marsh was fenced from the Forest in the late1960s but the Cord-grass appears to have disappeared before then.
Marsh Stitchwort	*Stellaria palustris*	1988	In 1904 Townsend recorded Marsh Stitchwort as being 'rather plentiful', between Holmsley and Burley. This is a believable record as the Mill Lawn that runs between those two places still supports fine fenny grasslands. Since the early twentieth century the Mill Lawn Brook has been engineered and drains have been installed across the floodplain; this is likely to have reduced the swamp conditions preferred by the Stitchwort. The last Open Forest records were of a short-lived handful of plants growing in the marl pits of Marlborough Deeps.
Yellow Vetch	*Vicia lutea*	1964	This Vetch has been known from a number of sites in the Open Forest, related to highly disturbed conditions such as gravel pits. The last Open Forest population was at Shave's Green, near Blashford, a small common which became overgrown with scrub when it was fenced out of the Forest in the 1960s.
Wood Bitter-vetch	*Vicia orobus*	1879	The native status of this Bitter-vetch has been questioned as the New Forest is isolated from other British populations and has a less 'Atlantic' climate than the species' strongholds. Detailed historical records of the Bitter-vetch are set out in Martin Rand's article in *Flora News* **50** (2016) along with suggestions as to where it may be searched for. Since the nineteenth century the Park Hill area has been subjected to systematic plantation forestry with the establishment of closed-canopy tree-cover at the expense of the tall humid heath habitats of the Bitter-vetch.

Trends

There is nothing subtle about the trends that have nearly halved the extent of the Open Forest since c.1800. We can attribute the loss of seven species to being fenced out of the Open Forest and thus deprived of the grazing regimes upon which they depended. Many more species of conservation concern have experienced major reductions in distribution due to the shrinkage of habitats, but that is beyond the scope of this article.

There are seven locally extinct species which require seasonally parched open ground habitats. Historically, domestic-scale mineral workings and paring turf from the heath would have supplemented natural exposures of bare ground created by soil erosion and large grazing animals. Maybe, today we are too precious about avoiding scuffs and scars in the landscape, and in doing so we are depriving a range of species of their habitats.

River engineering and wetland drainage is associated with the loss of five species. Engineering not only disrupts the local hydrology but also inadvertently promotes the dominance of secondary woodland. Within my working lifetime the managers of the Open Forest were committed to 'improving' its drainage. This was particularly the case where there were aspirations to improve the forage value of grasslands and to establish forestry plantations. In recent decades there have been some remedial works but much more needs to be done to restore the Forest's hydrology to a near-natural state.

Excessive shade has contributed to the loss of another three species. Pasture woodlands, by their very nature, are habitats of light and shade. There are few flowering plants that can survive in the permanent gloom of closed-canopy trees.

Interestingly, whilst there is a local loss of species associated with insufficient grazing pressure, there are no plants that have become extinct due to overgrazing. Indeed, much of what makes the Forest special botanically is dependent on continuous grazing across the whole Open Forest combined with locally intense concentrations of livestock, particularly around its greens and lawns.

In fragmented habitats, even those as big as the Open Forest, there is the risk of sheer bad luck. Over time populations of all species fluctuate; in a healthy ecosystem there will be opportunities for a species to re-colonise following a fluctuation that has led to a local extinction. Island biogeographic theory and practical experience tell us that the smaller and more isolated the ecosystem then the greater chance of permanent extinction. For example, what may have happened to the Forest's solitary plant of Field Eryngo if someone had not dug straight through its deep tap-root to erect a telegraph pole?

The former status of Maiden Pink in the south of the Forest is uncertain *(Clive Chatters)*

As a final thought, given the supporting habitats have been reduced by almost a half, it is remarkable how few plant species have become extinct in the Open Forest. Whilst this is not grounds for complacency, it is something to celebrate whilst we plan for the future.

My thanks to Martin Rand for his comments on the draft.

Lichen extinctions in the New Forest

A note by Neil Sanderson

To complement the note by Clive Chatters on vascular plant extinctions in the New Forest in this issue, this is a brief note on lichen extinctions in the New Forest woodlands and heathlands. The historic data on lichens is much more patchy than that for vascular plants but there was a good deal of collection done here in the nineteenth century within the woodlands. The New Forest was regarded as special for lichens even then. The collections included large showy species and a lot of much more obscure fertile crust forming lichens. The Victorian collectors, however, showed no interest in sterile crusts. Sanderson (2010) looked at the pattern of extinctions of epiphytes and noticed a distinct pattern. There was a mixture of large leafy species and crust forming extinct species not seen since the nineteenth century. Among the large species, seven (and another has since been found in the NHM herbarium) had cyanobacteria (blue-green algae) as an algal partner, only two did not. Using the 2010 data Sanderson (2010) calculated that of the 13 leafy species lost since the 19th century or currently threatened, 10 (i.e. 77%) have cyanobacteria symbiotic partners present. This is a far higher proportion than the proportion (4.6%) of blue-green-algae-containing lichens (20) in the total recorded New Forest flora. Many of the surviving cyanobacteria-containing lichens are also in a poor way and in decline. This is likely to reflect the exceptionally high sensitivity of blue green algae partners to low level SO_2 pollution or acid rain. Of the crust forming species Sanderson (2010) noted that these could still be overlooked and that several thought extinct by Sandell & Rose (1996) had since been re-found. This has continued, with three more crusts thought extinct in 2010 re-found.

For the woodlands the relatively high decline in cyanobacteria lichen species, especially those known to be sensitive to acidifying air pollution, points to air pollution as a major external impact on the New Forest woodlands. The proportionally much lower losses of green algae dominated species, especially crust forming species suggest that, other than air pollution, there have been few serious pressures on the core pasture woodlands of the New Forest. Unlike the vascular plants of fringing productive habitats described by Clive Chatters in this issue, the epiphytic lichens have been protected from severe fragmentation by the preservation of the core of the open Forest as common in the nineteenth century and cushioned by the continuity of management by grazing within the woodlands since then. The impact of pollution, however, has robbed us of some of the most beautiful and charismatic old woodland lichens.

For the heathlands there is very limited data. Of the four species thought extinct in Sandell & Rose (1996), three have since been found and the fourth is a difficult to identify crust of flints. The limited historical data and modern survey data suggests the heathland lichen assemblage has survived well.

NEW FOREST WOODLANDS

Name	Habitat	Current Conservation Status
Large leafy species last seen in the nineteenth century		
Collema fasciculare *	Oceanic base rich bark	NT (NS/IR)
Lobaria scrobiculata *	Oceanic base rich bark	Nb (IR)
Menegazzia terebrata	Oceanic acid rich bark	Nb (IR)
Pannaria rubiginosa *	Oceanic base rich bark	Nb (IR)
Pseudocyphellaria aurata	Oceanic base rich bark	CR (NR/S41)
Sticta sylvatica *	Oceanic base rich bark	Nb (IR)
Crust forming species last seen in the nineteenth century		
Graphina ruiziana	Oceanic acid rich bark	Nb (IR)
Calicium adspersum	Sub-oceanic dry bark	CR (NR/S41)
Calicium lenticulare	Oceanic lignum	Nb (IR)
Ochrolechia tartarea	Oceanic acid rich bark	LC (Least Concern), but is a strongly western and upland species with no recent records in the lowlands **http://www.britishlichensociety.org.uk/resources/species-accounts/ochrolechia-tartarea**
Large leafy species probably lost since 1967		
Pectenia plumbea s. str. *	Oceanic base rich bark	Nb (IR)
Nephroma laevigatum *	Oceanic base rich bark	Nb (IR)
Nevesia sampaiana *	Oceanic base rich bark	NT (NS/IR/S41)
Parmeliella testacea *	Oceanic base rich bark	NT (NS/IR/S41)

Name	Habitat	Current Conservation Status
Large highly threatened species still just surviving		
*Fuscopannaria mediterranea**	Oceanic base rich bark	Nb (IR)
Lobaria amplissima +	Oceanic base rich bark	Nb (IR)
Pannaria conoplea *	Oceanic base rich bark	Nb (IR)
Sticta limbata *	Oceanic base rich bark	Nb (IR)
Crust forming species thought extinct in the New Forest since the nineteenth century in 1994 but re-found since		
Arthonia anglica	Oceanic smooth bark	EN (NR/IR/S41)
Arthonia zwackhii	Wound tracks	NT (NR)
Arthopyrenia nitescens	Oceanic smooth bark	Nb IR
Bacidia subturgidula	Oceanic lignum bark	CR (NR/IR/S41)
Lecanora sarcopidoides	Sub-oceanic lignum, dry bark	Nb (NR/DD)
Sphinctrina tubiformis	Mesic bark on old trees	Nb (NR/DD)

* Main alga partner cyanobacteria

+ Cyanobacteria in secondary structure

Pectenia plumbea s. str. = *Degelia plumbea* s. str.

Nevesia sampaiana = *Fuscopannaria sampaiana* (possibly an error for *Parmeliella testacea*)

NEW FOREST HEATHLANDS

Name	Habitat	Current Conservation Status
Large leafy species last seen in the nineteenth century		
Rinodina aspersa	Flints	NT (NR)
Species thought extinct in the New Forest in 1994 but re-found since		
Cladonia zopfii	Sub-oceanic heathland	Nb (NS)
Leptogium palmatum	Disturbed ground	Nb (NS)
Leptogium tenuissimum	Disturbed ground	Nb (NS)

Request from Plantlife for photographs of arable plants

Cath Shellswell of Plantlife has asked whether Flora Group members have photographs of arable plants at different stages of growth, from seed to seedling to mature plants flowering and setting seed, for a new series of leaflets showing their lifecycles. The leaflets are aimed particularly at farm advisors and agronomists. Plantlife would like photographs of arable plants throughout the different stages of their lifecycle, in particular pictures of seeds and seedlings as this is where they have gaps on their photo collection, but they would appreciate lots of different photos so that they can show all of the characteristics of plants as they grow. If anyone is happy to donate suitable photographs please send them to **Zoe.Morrall@plantlife.org.uk**. You will need to give Plantlife your consent to use your photographs for this purpose and put the name of the plant and credit into the name of the photo (i.e. Spreading hedge-parsley © Joe Bloggs or if it is a joint credit Corn Buttercup © Joe Bloggs – Plantlife). Bigger files or multiple photos will need to be zipped together.

Plantlife will be collecting photos over the course of the year to produce the leaflets. If you have any queries please contact Zoe Morrall.

Arable field corner with Stinking Chamomile *Anthemis cotula (John Norton)*

A proposed new vascular plant indicator list for lowland dry acid grassland

An article by John Norton

Acid grassland on shingle beach at Browndown SSSI, Gosport, 2 June 2016 ***(Debbie Allan)***

INTRODUCTION

Over the past several years I have been developing a list of acid grassland indicator (AGI) species (**Table 1**) intended to replace the one produced over 20 years ago by Neil Sanderson in his review of acid grassland for English Nature (Sanderson 1998). I can provide the list as a spreadsheet and Microsoft Word recording form on request and would be glad to receive comments and suggestions for improvements[1].

Indicator lists are useful tools in helping to determine the ecological value of a site or area of habitat. In simple terms they can be used to provide a measure of species diversity, but with well-chosen species they may also help to indicate a long history of traditional management or a high degree of stability and integrity of an ecosystem. The best types of indicator species are those which are more specialised in terms of their ecological requirements and dispersal mechanisms and so tend to be restricted to a particular type of habitat. The use of plant lists to indicate habitat value was pioneered by the late Francis Rose in the 1970s and 1980s. He had initially helped to devise a scale to measure sulphur dioxide pollution using lichens on trees (Hawksworth and Rose 1970), and later developed a list of 30 species of lichens to assess age and environmental continuity in old woodlands (Rose 1976). He was perhaps the first to coin the term 'continuity' as applied to semi-natural habitats. This list was later expanded so as to be more widely applicable to assessing the nature conservation status of woodlands (Rose 1993). He also started producing his well known list of ancient woodland vascular plants (AWVP) in the late 1970s for the then Nature Conservancy Council, who used it in their ancient woodland inventory surveys (see Rose 1999).

Neil Sanderson's 'provisional' list of lowland acid grassland indicator species was published as Table 8 in Vol 2 of his report (Sanderson 1998). It comprised 88 vascular plant taxa (87 species and one additional subspecies), 1 liverwort, 7 mosses and 12 lichens (= 108 total). The table also listed a further six vascular plants and one moss that could be used in Wales. He noted that the list was intended primarily to cover parched acid grasslands falling under National Vegetation Classification (NVC) community **U1** *Festuca ovina-Agrostis capillaris-Rumex acetosella* grassland. However, he also included a variety of other species associated with related types of acid grassland, including several of the more maritime clovers and a few species characteristic of more strongly acidic 'heathy' grasslands. He also listed seven 'bonus' species of vascular plants that are usually regarded as calcicoles but sometimes occur in acid grassland.

The new list should be of use to botanists and vegetation surveyors who record acid grassland sites, and could be used to help assess the botanical and ecological value of such sites for impact assessment and setting of site management and conservation priorities. As well as making use of the list in my own surveys I have also been using it to compare the species richness of a number of acid grassland sites in my home borough of Gosport. Brief details are given later in this article, but I may publish a fuller summary in a future edition of *Flora News*.

List requirements

In drawing up the list and the accompanying recording form I considered a variety of criteria and requirements, with the net result as follows:

1. The new list is based on Neil Sanderson's list, but includes only vascular plants. This makes it simpler to use for botanists with poor lower plant identification skills. Sanderson's lower plant indicators are in any case species of strongly acidic heathland sites rather than U1, and include several rarities.

2. A few species pairs and aggregates are grouped as a single entry on the list to avoid problems with identification and so that they only contribute 1 to the total score. These are *Arenaria serpyllifolia/leptoclados* (thyme-leaved sandworts), *Euphrasia* agg. (eyebrights) and *Polygala serpyllifolia/vulgaris* (milkworts). In addition, the list includes a single entry for dandelions in Section Erythrosperma, which are relatively easily differentiated from other dandelion groups and are good indicators of herb rich dry grasslands. Note that one entry on the main list and several on the list of rarities (see below) are well-differentiated subspecies (e.g. *Vicia sativa* subsp. *nigra*, the native form of Common Vetch).

3. The list is increased to 100 species, the same number that was used by Francis Rose for his AWVP list. A hundred is simply a 'nice round number'; but having used Rose's list for woodland surveys for many years, I have found that a total of 100 species works well as a manageable number to commit to memory whilst carrying out surveys. This number of species can also be nicely fitted onto an A4 size recording form. In fact, it would have been possible to include upwards of 150 species,

[1] Please note that this article has not yet been upgraded to Stace 4.

but it was restricted it to exactly 100, so as not to be too cumbersome.

4. Only native species and archaeophytes were initially considered for inclusion. However, some native species are considered to be introductions outside their presumed native range and others have spread into more ruderal types of habitats in recent years (e.g. Mossy Stonecrop *Crassula tillaea,* Sea Stork's-bill *Erodium maritimum*, Wall Bedstraw *Galium parisiense* and Rue-leaved Saxifrage *Saxifraga tridactylites*). There are also several species in Britain for which botanists have different views as to their native status (e.g. some of the Breckland specialities). For these reasons a pragmatic approach was taken and species were selected on the basis of their habitat preferences rather than their presumed native status.

5. The list includes common as well as local and uncommon species, provided all are reasonably characteristic of acid grassland (but not necessarily restricted to it). Rare species (**Table 2**) have been omitted from the main list of 100 species, but if recorded can be counted towards a site total. This follows the approach taken by Francis Rose for his AWVP list. The main benefit of including some very common and more generalist species means that even lower quality sites will usually support small numbers of AGIs, so it may still be possible to carry out meaningful comparisons between such sites for evaluation purposes.

6. The list is intended to be broadly applicable to lowland areas of England and Wales where U1 and related grasslands are mainly to be found. However, it may be useful to tailor the recording form for use in particular counties or regions by switching some of the common species with rarer ones (e.g. for use in south-west England or the Brecks). Rose (1999) similarly produced slightly different lists of woodland indicators for the three old Nature Conservancy Council regions of southern England. Note that the rare species can be listed at the bottom of the recording form as memory-joggers, but only those occurring within the recording area need be shown.

7. The use of bonus species has been adopted, particularly as this was the only way that the main list could be restricted to 100 species. They generally comprise those that are more characteristic of other types of vegetation but do occasionally occur in acid grassland. They also tend to be good indicators of habitat quality. Bonus species can be shown on the recording form but should be totalled separately from the main list for evaluation purposes. Nearly 30 species are currently proposed (**Table 3**), grouped into three additional habitats: 'arable & dry habitats', 'calcareous grassland' and 'heathy grassland'. The heathy group includes a few woody species, including Heather *Calluna vulgaris*, Bell Heather *Erica cinerea* and Dwarf Gorse *Ulex minor* which could perhaps be excluded altogether. The arable/dry group is a disparate set of species adapted to very dry, often disturbed soils, and is composed of a mixture of species of both acid and calcareous soils.

Species categories

The scope of the list was increased so that it would be applicable to a slightly wider range of grasslands than was originally intended by Sanderson (1998), though still chiefly those occurring on warm, dry sites in the lowlands. Therefore, some species characteristic of MG5 and a related type of grassland not covered by the NVC were included, plus others of heathy grassland falling under NVC 'U' communities (especially U3 and U20 – see below). Such grasslands cannot be adequately assessed using other published indicator lists. The full list of grassland 'categories' that the list covers is summarised below. Each species is assigned to the most appropriate category in **Table 1**, though several species fall into more than one.

- **U1 species.** Thirty of the 100 selected species on the main list have been classed as U1 species (or occur in very closely related types of vegetation not fully covered by the NVC); 20 were also included on Sanderson's list. The additions mostly comprise commoner species, including Sheep's Sorrel *Rumex acetosella*, which helps define the community.
- **Heathy acid grassland species.** Sixteen species were added to two retained from Sanderson's list (18 total). In the south of England these occur mainly in **U3** *Agrostis curtisii* grassland and **U20** *Pteridium aquilinum-Galium saxatile* community. Several also occur in **U2** *Deschampsia flexuosa* grassland and **U4** *Festuca ovina-Agrostis capillaris-Galium saxatile* grassland, though these are predominantly semi-upland types on moister soils. Sanderson (1998) rightly noted that these communities are often inherently species poor, so are not readily assessed by the use of indicator lists; however, the updated list presented here will certainly identify good examples of U20, which can be surprisingly species rich. The selected species include those which are constant in the respective NVC types, such as Bristle Bent *Agrostis curtisii*, Wavy Hair-grass *Deschampsia flexuosa,* Tormentil *Potentilla erecta* and Heath Bedstraw *Galium saxatile*, whilst others

Sheep's Sorrel *Rumex acetosella* and Heath Milkwort *Polygala serpyllifolia*, Browndown Common, Gosport, 19 May 2019 *(John Norton)*

Table 1: Acid Grassland Indicators and their predominant vegetation type

Species	English name	Category	Sanderson list
Agrostis curtisii	Bristle Bent	hag	
Agrostis vinealis	Brown Bent	hag	
Aira caryophyllea	Silver Hair-grass	U1	Y
Aira praecox	Early Hair-grass	U1	Y
Aphanes australis	Slender Parsley-piert	U1	Y
Arenaria serpyllifolia sens. lat.	Thyme-leaved Sandwort	ruderal	
Bellis perennis	Daisy	gmg	
Betonica officinalis	Betony	hag	
Campanula rotundifolia	Harebell	calc	
Carex arenaria	Sand Sedge	other	Y
Carex caryophyllea	Spring Sedge	MG5	
Carex muricata subsp. *pairae*	Prickly Sedge	MG5	
Carex pilulifera	Pill Sedge	hag	
Carlina vulgaris	Carline Thistle	calc	B
Centaurium erythraea	Common Centaury	U1	
Cerastium arvense	Field Mouse-ear	calc	Y
Cerastium diffusum	Sea Mouse-ear	maritime	Y
Cerastium semidecandrum	Little Mouse-ear	U1	Y
Chamaemelum nobile	Chamomile	other	Y
Conopodium majus	Pignut	MG5	
Crassula tillaea	Mossy Stonecrop	ruderal	Y
Cuscuta epithymum	Dodder	hag	Y
Danthonia decumbens	Heath-grass	MG5	
Deschampsia flexuosa	Wavy Hair-grass	hag	
Echium vulgare	Viper's Bugloss	calc	Y
Erigeron acris	Blue Fleabane	calc	Y
Erodium cicutarium	Common Stork's-bill	U1	Y
Euphrasia agg.	Eyebright	calc	
Festuca filiformis	Fine-leaved Sheep's-fescue	hag	
Filago minima	Small Cudweed	U1	Y
Filago vulgaris	Common Cudweed	ruderal	Y
Galium saxatile	Heath Bedstraw	hag	
Galium verum	Lady's Bedstraw	MG5	
Geranium molle	Dove's-foot Crane's-bill	gmg	
Geranium pusillum	Small-flowered Crane's-bill	ruderal	
Hypericum humifusum	Trailing St John's-wort	hag	
Hypericum pulchrum	Slender St John's-wort	hag	
Hypochaeris glabra	Smooth Cat's-ear	U1	Y
Hypochaeris radicata	Cat's-ear	MG5	
Jasione montana	Sheep's-bit	other	Y
Koeleria macrantha	Crested Hair-grass	calc	Y
Leontodon hispidus	Rough Hawkbit	MG5	
Leontodon saxatilis	Lesser Hawkbit	calc	
Lepidium heterophyllum	Smith's Pepperwort	U1	Y
Linum bienne	Pale Flax	calc	B
Lotus corniculatus	Common Bird's-foot-trefoil	MG5	
Luzula campestris	Field Wood-rush	MG5	
Luzula multiflora	Heath Wood-rush	hag	
Medicago polymorpha	Toothed Medick	maritime	Y
Moenchia erecta	Upright Chickweed	U1	Y
Montia fontana	Blinks	U1	
Myosotis discolor	Changing Forget-me-not	U1	
Myosotis ramosissima	Early Forget-me-not	U1	Y
Ononis repens	Common Restharrow	calc	
Ornithopus perpusillus	Bird's-foot	U1	Y
Pilosella officinarum	Mouse-ear Hawkweed	calc	

Species	English name	Category	Sanderson list
Pimpinella saxifraga	Burnet Saxifrage	calc	
Plantago coronopus	Buck's-horn Plantain	maritime	Y
Plantago media	Hoary Plantain	calc	
Poa bulbosa	Bulbous Meadow-grass	maritime	Y
Polygala serpyllifolia	Heath Milkwort	hag	
Potentilla anglica	Trailing Tormentil	hag	
Potentilla argentea	Hoary Cinquefoil	U1	Y
Potentilla erecta	Tormentil	hag	
Rosa spinosissima	Burnet Rose	maritime	Y
Rumex acetosella	Sheep's Sorrel	U1	
Rumex pulcher	Fiddle Dock	other	
Sagina subulata	Heath Pearlwort	maritime	Y
Saxifraga tridactylites	Rue-leaved Saxifrage	ruderal	
Scleranthus annuus	Annual Knawel	U1	Y
Sedum acre	Biting Stonecrop	U1	Y
Sedum anglicum	English Stonecrop	maritime	Y
Senecio sylvaticus	Heath Groundsel	hag	
Sherardia arvensis	Field Madder	ruderal	Y
Spergularia rubra	Sand Spurrey	U1	Y
Spiranthes spiralis	Autumn Lady's-tresses	calc	Y
Stellaria pallida	Lesser Chickweed	U1	Y
Taraxacum Sect. Erythrosperma	'Lesser' Dandelion	U1	
Teesdalia nudicaulis	Shepherd's Cress	U1	Y
Thymus polytrichus	Wild Thyme	calc	B
Thymus pulegioides	Large Thyme	calc	B
Torilis nodosa	Knotted Hedge-parsley	gmg	
Trifolium arvense	Hare's-foot Clover	U1	Y
Trifolium campestre	Hop Trefoil	U1	
Trifolium dubium	Lesser Trefoil	gmg	
Trifolium glomeratum	Clustered Clover	U1	Y
Trifolium micranthum	Slender Trefoil	U1	
Trifolium ornithopodioides	Bird's-foot Clover	maritime	Y
Trifolium scabrum	Rough Clover	maritime	Y
Trifolium striatum	Knotted Clover	U1	Y
Trifolium subterraneum	Subterranean Clover	maritime	Y
Trifolium suffocatum	Suffocated Clover	maritime	Y
Veronica arvensis	Wall Speedwell	U1	
Veronica chamaedrys	Germander Speedwell	MG5	
Veronica officinalis	Heath Speedwell	hag	
Vicia lathyroides	Spring Vetch	maritime	Y
Vicia sativa subsp. *nigra*	Common Vetch	U1	
Viola canina	Heath Dog-violet	hag	Y
Viola riviniana	Common Dog-violet	hag	
Vulpia bromoides	Squirrel-tail Fescue	U1	
Total taxa = 100			

Key:

B	bonus species on Sanderson list
calc	calcareous dry grassland
gmg	*Geranium molle* grassland
hag	heathy acid grassland
maritime	U1-related species with coastal distributions or maritime distribution
MG5	MG5 *Cynosurus cristatus-Centaurea nigra* grassland
other	other miscellaneous vegetation
ruderal	species of arable and disturbed ground
U1	core U1 species

Table 2: Rare acid grassland indicator species

Species	English name	NS list
Allium schoenoprasum	Chives	Y
Apera interrupta	Dense Silky-bent	Y
Artemisia campestris s.l.	Field Wormwood	
Astragalus danicus	Purple Milk-vetch	Y
Botrychium lunaria	Moonwort	Y
Bromus hordeaceus subsp. *ferronii*	Soft-brome	
Bromus hordeaceus subsp. *thominei*	Lesser Soft-brome	
Carex ericetorum	Rare Spring-sedge	
Carex montana	Soft-leaved Sedge	Y
Centunculus minimus	Chaffweed	
Clinopodium calamintha	Lesser Calamint	
Corynephorus canescens	Grey Hair-grass	Y
Dianthus armeria	Deptford Pink	Y
Dianthus deltoides	Maiden Pink	Y
Erodium maritimum	Sea Stork's-bill	Y
Euphrasia vigursii	Eyebright	Y
Festuca longifolia	Blue Fescue	Y
Filago lutescens	Red-tipped Cudweed	Y
Gentianella campestris	Field Gentian	Y
Gladiolus illyricus	Wild Gladiolus	Y
Gnaphalium sylvaticum	Heath Cudweed	
Herniaria glabra	Smooth Rupture-wort	Y
Hypericum linariifolium	Toadflax-leaved St John's-wort	Y
Lotus angustissimus	Slender Bird's-foot-trefoil	Y
Lotus subbiflorus	Hairy Bird's-foot-trefoil	Y
Medicago minima	Bur Medick	Y
Medicago sativa subsp. *falcata*	Sickle Medick	
Muscari neglectum	Grape-hyacinth	Y
Ophioglossum azoricum	Small Adder's-tongue	
Petrorhagia nanteuilii	Childing Pink	Y
Petrorhagia prolifera	Proliferous Pink	Y
Phleum arenarium	Sand Cat's-tail	
Phleum phleoides	Purple-stem Cat's-tail	
Potentilla tabernaemontani	Spring Cinquefoil	Y
Scilla autumnalis	Autumn Squill	Y
Scleranthus perennis subsp. *prostratus*	Prostrate Perennial Knawel	Y
Silene conica	Sand Catchfly	Y
Silene nutans	Nottingham Catchfly	Y
Silene otitis	Spanish Catchfly	Y
Thymus serpyllum	Breckland Thyme	Y
Turritis glabra	Tower Mustard	
Veronica praecox	Breckland Speedwell	
Veronica spicata subsp. *spicata*	Breckland Spiked Speedwell	Y
Veronica triphyllos	Fingered Speedwell	
Veronica verna	Spring Speedwell	Y
Viola lactea	Pale Dog-violet	Y
Viola tricolor subsp. *curtisii*	Seaside Pansy	
Vulpia ciliata subsp. *ambigua*	Bearded Fescue	Y
Total taxa = 48		

Table 3: Bonus acid grassland species

Species	English name
arable & dry habitats	
Anchusa arvensis	Bugloss
Catapodium rigidum	Fern-grass
Galium parisiense	Wall Bedstraw
Linaria repens	Pale Toadflax
Minuartia hybrida	Fine-leaved Sandwort
Poa compressa	Flattened Meadow-grass
Silene gallica	Small-flowered Catchfly
Spergula arvensis	Corn Spurrey
Valerianella eriocarpa	Hairy-fruited Cornsalad
calcareous grassland	
Anthyllis vulneraria	Kidney Vetch
Briza media	Quaking-grass
Cirsium acaule	Dwarf Thistle
Clinopodium acinos	Basil Thyme
Clinopodium ascendens	Common Calamint
Cynoglossum officinale	Hound's-tongue
Festuca ovina	Sheep's Fescue
Linum catharticum	Fairy Flax
Poterium sanguisorba	Salad Burnet
heathy grassland	
Anemone nemorosa	Wood Anemone
Calluna vulgaris	Heather
Erica cinerea	Bell Heather
Genista anglica	Petty Whin
Lathyrus linifolius	Bitter-vetch
Nardus stricta	Mat-grass
Pedicularis sylvatica	Lousewort
Radiola linoides	Allseed
Solidago virgaurea	Goldenrod
Succisa pratensis	Devil's-bit Scabious
Ulex minor	Dwarf Gorse

Perennial Knawel *Scleranthus perennis* subsp. *prostratus*, Lakenheath, Suffolk, 11 November 2004 *(John Norton)*

include Heath Wood-rush *Luzula multiflora*, Betony *Betonica officinalis*, Common and Heath Dog-violets *Viola riviniana*, *V. canina* and Slender St John's-wort *Hypericum pulchrum*.

- **Calcicoles**. Five of Sanderson's list were placed in this category, together with four of his calcicole bonus species. A further seven species were added to give a total of 16. All of these are therefore predominantly associated with calcareous soils, but most also occur in sandy soils of various types, and even on pure sand. Most of the species are probably not obligate calcicoles, but dry ground specialists. Examples include Carline Thistle *Carlina vulgaris*, Crested Hair-grass *Koeleria cristata* and Large Thyme *Thymus pulegioides*.
- **Maritime species.** This is a group of 12 species which in southern Britain tend to have coastal distributions, or at least are commonest in coastal counties. Some, but not all, are saline tolerant to some degree and occur in forms of maritime grassland (a few of the clovers also occur on salted road verges). None of the species are particularly strongly associated with U1 grassland, though all were included on Sanderson's list. The group includes four species of clovers *Trifolium* spp., Buck's-horn Plantain *Plantago coronopus*, Toothed Medick *Medicago polymorpha* and Burnet Rose *Rosa spinosissima*.
- **MG5 species.** The list includes ten species which are characteristic of **MG5** *Cynosurus cristatus-Centaurea nigra* grassland, none of which were selected by Sanderson (1998). This type is closely related to U1 and often forms transitions to it (particularly with the more acidic **MG5c** *Danthonia decumbens* sub-community). Several of those selected are also reasonably frequent in U1 or indicate particular sub-communities of it, such as Common Bird's-foot-trefoil *Lotus corniculatus* and Cat's-ear *Hypochaeris radicata*.
- **Ruderals**. A group of six species (three from Sanderson's list) which are more strongly associated with disturbed ground than with U1 or other types but all also occur in acid grassland, especially on sandy soils. They include four species associated with arable and cultivated habitats: Thyme-leaved Sandwort *Arenaria serpyllifolia* s.l., Common Cudweed *Filago vulgaris*, Small-flowered Crane's-bill *Geranium pusillum* and Field Madder *Sherardia arvensis*. Common Cudweed occurs in both calcareous and acidic habitats and is one of several dry ground species which has spread into urban areas (at least locally in Hampshire, where it occurs in several places on block paving in Gosport). The other two species are Mossy Stonecrop *Crassula tillaea* and Rue-leaved Saxifrage *Saxifraga tridactylites* which are similarly spreading on gravel and occasionally into urban habitats.
- **Species of *Geranium molle* grassland.** A further four species have been added which are particularly distinctive of an undescribed type of herb rich mesic

Hare's-foot Clover *Trifolium arvense*, Browndown SSSI, Gosport, 29 June 2016 *(John Norton)*

to acid grassland which has become prominent on mown road verges and amenity grassland in built-up areas of south-east England in recent years. I have provisionally called this '*Geranium molle* grassland' but will describe it fully in my next article on acid grassland NVC. The species included are Dove's-foot Crane's-bill *Geranium molle*, Daisy *Bellis perennis*, Lesser Trefoil *Trifolium dubium* and Knotted Hedge-parsley *Torilis nodosa*. Although it might be perceived as a very common species, Daisy is a probably a good indicator of unimproved dry, well managed grassland. Other associates of the community include Musk Stork's-bill *Erodium moschatum*, Common Stork's-bill *E. cicutarium*, Sticky Mouse-ear *Cerastium glomeratum*, Spotted Medick *Medicago arabica*, Buck's-horn Plantain *Plantago coronopus*, Wall Speedwell *Veronica officinalis* and Parsley-piert *Aphanes* spp., several of which are also included on the list as U1 species.

- **Other species**. This miscellaneous category includes four species (three from Sanderson's list) which do not fit straightforwardly into any of the above types. They comprise Sand Sedge *Carex arenaria*, a perennial of sand dunes but also sandy heathlands and shingle; Chamomile *Chamaemelum nobile*, a species of mildly acidic damp grassland that is usually well-grazed or regularly mown; Sheep's-bit *Jasione montana*, a species of drought-prone, coastal and heathland habitats on thin soils and Fiddle Dock *Rumex pulcher*, a predominantly south-eastern species of mildly acidic well-grazed or mown pastures and coastal habitats.

DISCUSSION

Species summary

From Neil Sanderson's original list of 87 species, 45 were retained on the new list, but 33 were moved to the rarities list (**Table 2**) and two to the bonus list in the heathy grassland category (Allseed *Radiola linoides* and Dwarf Gorse *Ulex minor*) (**Table 3**). Four of his bonus calcicoles were moved to the main list and a further 51 species were therefore added to bring the total up to 100 species (**Table 1**). Only seven of Sanderson's

main species were excluded altogether: Bermuda-grass *Cynodon dactylon*, Musk Stork's-bill *Erodium moschatum*, Jersey Cudweed *Gnaphalium luteoalbum*, Yellow Bartsia *Parentucellia viscosa*, Knotted Pearlwort *Sagina nodosa*, Rock Stonecrop *Sedum forsterianum* and Navelwort *Umbilicus rupestris*. These were considered not typical enough of dry acid grasslands in lowland habitats. In the time since Sanderson produced his list Musk Stork's-bill has increased dramatically and, as noted above, is now a distinctive species of *Geranium molle* grassland on road verges and amenity grassland. However, it tends to prefer moister and more enriched sections of verges, especially where dogs have visited, and is no longer a good acid grassland indicator. Once considered a rare native, Jersey Cudweed has in recent years also spread more widely into urban situations but has yet to become properly established in acid grassland.

A large number of other species were considered for inclusion but did not make it onto any of the three lists presented here. Amongst those rejected were Fragrant Agrimony *Agrimonia eupatoria*, Slender Thistle *Carduus tenuiflorus*, Round-leaved Crane's-bill *Geranium rotundifolium*, Creeping Soft-grass *Holcus mollis*, Common Wintergreen *Pyrola minor* and Rat's-tail Fescue *Vulpia myuros*. A number of other very rare plants could also probably be added to the rarities table, including for example, some of the Lizard specialities. I would be interested to know if anyone has any strong feelings about these or any of the other species currently included on the lists or can suggest any that I haven't mentioned.

Using the list

In using the list for recording and evaluation purposes it should of course be borne in mind that many of the species are annuals, and several have flowering periods very early in the year. Therefore one-off surveys or surveys out of season are likely to underestimate the true number of AGI species on a site. Ideally, at least three visits spread throughout early spring to late summer would be required to produce an adequate list for an acid grassland site. Many species also vary in germination rates and hence abundance and detectability from year to year.

Interpreting the total AGI scores for sites and comparing sites for evaluation purposes needs careful consideration. The total score will obviously vary greatly with the size of the site and with the types of acid grassland vegetation present. As noted above certain types of heathy acid grassland can be much less diverse than the core U1 type. The list is likely to give higher counts for sites that have greater levels of disturbance, due to the ruderal nature of many acid grassland species. Coastal sites are likely to score higher than inland sites, and sites which are isolated and remote from other sites will have relatively low scores.

In Hampshire, I have studied the acid grassland resource in Gosport over many years, and this has provided a useful means of testing out the AGI list. There are exceptionally species rich and important sites at Browndown SSSI (Browndown Ranges), Browndown Common and Gilkicker Point. Acid grassland is also plentiful in areas of coastal amenity grassland, on road verges, restored sand and gravel workings along the Alver Valley and within a large cemetery. In total, the borough supports 95 of the 100 main species on the AGI list, plus four rarities (Lesser Soft-brome *Bromus hordeaceus* subsp. *thominei*, Slender and Hairy Bird's-foot-trefoils *Lotus angustissimus, L. subbiflorus* and Nottingham Catchfly *Silene nutans*). My dataset is not yet fully up to date, but the total of AGI species (including rarities) for twelve of the best acid grassland sites ranges from 23 for a small site of less than half a hectare to 69 for Browndown SSSI (65ha). Browndown Common scores 46 and Gilkicker 55. Most of the acid grassland at Gilkicker is contained within a relatively small area of about 3ha of coastal vegetated shingle, which is currently under severe threat from increased visitor pressure and development.

For Hampshire, therefore, where we clearly have some of the richest acid grassland sites in the country, a total of more than 20 AGI species for a small to medium sized site would probably indicate that it is good enough quality for designation as a Site of Importance for Nature Conservation (SINC). For other counties a smaller total might be more appropriate. This is not notwithstanding the fact that acid grassland is a S.41 habitat of principal importance in England (Priority Habitat) and any examples would automatically qualify for consideration as local wildlife sites in most counties. For larger sites of say more than 20ha, a total of perhaps 40 or more AGI could indicate national importance and hence possible selection for inclusion in the SSSI network.

ACKNOWLEDGEMENTS

I am grateful to Neil Sanderson for providing helpful comments on a draft of this article.

REFERENCES

Hawksworth, D.L. & Rose, F. (1970). Qualitative scale for estimating sulphur dioxide air pollution in England and Wales using epiphytic lichens. *Nature (London)* **227:** 145-148.

Rose, F. (1976). Lichenological indicators of age and environmental continuity in woodlands. *In:* Brown, D.H., Hawksworth, D.L. & Bailey, R.H. (eds), *Lichenology: progress and problems,* pp. 278-307. Academic Press, London.

Rose, F. (1993). Ancient British woodlands and their epiphytes. *British Wildlife* **5:** 83-93.

Rose, F. (1999). Indicators of ancient woodland: the use of vascular plants in evaluating ancient woods for nature conservation. *British Wildlife* **10:** 241-251.

Sanderson, N.A. (1998). A review of the extent, conservation interest and management of lowland acid grassland in England. Volumes I and II. *English Nature Research Report 259*. English Nature, Peterborough.

Contact: John Norton **john@jnecology.uk**.

Recording

Hampshire Lichen Report 2018–19

A report by Neil Sanderson

INTRODUCTION

Two major surveys in the last year have resulted in many interesting records. The first was carried out by Jan Vondrak from the Institute of Botany, Academy of Sciences, Czechia (Czech Republic). He carried out an intensive survey of three 1ha plots in the New Forest A & O (Ancient and Ornamental) woods, along with the author, Andy Acton and Mark Powell. This was part of a project aimed at understanding the diversity epiphytic lichens across Europe by intensively recording fixed areas within hot spots of lichen richness. The data are still to be analysed and some more new species records will emerge from this work, but the richest plot, in Wooson's Hill, Mark Ash Wood is at just over 200 taxa from 1ha and, excluding lichenicolous fungi (Jan's standard measure), it is over 180 species. This makes the New Forest the richest area of lowland woodlands for epiphytic lichens in Europe so far recorded! As always with Jan's intensive surveys, surprising new species were found and new species concepts passed between the surveyors.

The other project was a review of Holly cutting in the A & O woodlands for Natural England, the Forestry Commission and the National Trust. This involved a lot of rapid visits to woods I had not been to for some time, and produced some observations of some very rare species responding positively to conservation Holly cutting in the A & O woods.

One interesting issue that emerged from Jan's work was the occurrence of lichen and bark fungi assemblages of conservation significance on some Scots Pines in the New Forest. Most pines within the New Forest are lichen poor; only well-lit trees next to humid glades deep within the pasture woodlands support this interesting and distinctive assemblage. One species, *Calicium parvum* NT (NR), had been found once previously in the Forest in 1998, but most rare species were new finds. The assemblage includes several species that are obligate pine bark species, otherwise only known from Scottish native pinewoods in the UK: *Calicium parvum* NT (NR), *Calicium pinastri* Nb (NR) and the non-lichenised fungi *Propolis leonis* (NR). An undescribed *Melaspilea* species (*Melaspilea* sp. A), is also a pine bark obligate but is already known outside the native pine woods. Other rare species are shared with Oak dead wood, and sometimes acid Oak bark, and include the very rarely recorded *Lecanora sarcopidoides* Nb (NR), along with *Lecidea nylanderi* Nb (NS) and *Micarea doliiformis* Nb (NS) and the characteristic pine species *Imshaugia aleurites* and *Parmeliopsis hyperopta*. Pine was first planted on the fringes of the New Forest in the late 18th century, but was not planted within the Forest proper until the mid 19th century, so it seems likely the pine bark specialists are long distance colonists. The controlling factor for them is possibly the occurrence slow growing pine in well lit humid environments, probably a very rare habitat outside the native pinewoods. Other species will have jumped from existing acid epiphytic habitats. This represents something of a conservation challenge as the presence of non-native *Pinus* is regarded as a negative feature within the old woodlands!

The most interesting lichen records from Hampshire made in the last year or so are described below. *All photos taken by the author.*

NEW SPECIES TO BRITAIN

Calicium pinastri (NR): Jan's survey produced one new species to Britain, a specialist of pine bark as discussed above. It is a pinhead lichen similar to the common *Calicium glaucellum*, but it is much smaller (0.3–0.4mm), has no pruina under the head and has shorter asci (30–35 x 4–5µm). It was also recorded from a native pinewood in Speyside during Jan's British work. It has only recently described and can be expected to be found in other pinewoods. There are pictures of the asci in Peksa (2006) *Silva Gabreta* **12**: 51-56 **http://www.npsumava.cz/storage/vyzkum/SGpdf/SG12_2_Peksa.pdf**. In the New Forest, now known from pines on the edges of glades in pasture woodland at Wooson's Hill, Mark Ash Wood, SU259 077, September 2018, J. Vondrak, N.A. Sanderson, A. Acton & M. Powell & SU269 081 & Wood Crates, November 2018, N.A. Sanderson.

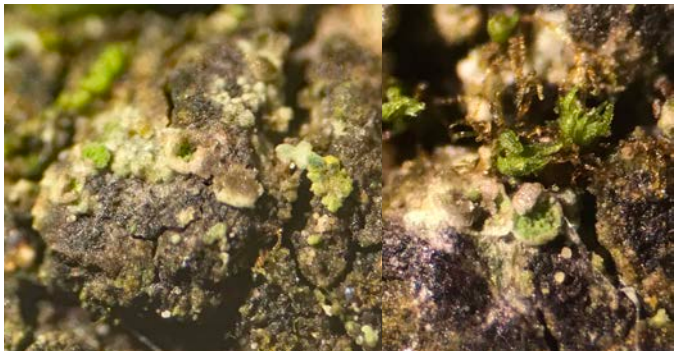
Calicium pinastri **on pine bark, Woosons Hill, New Forest**

NEW TO HAMPSHIRE

Byssoloma marginatum Nb (NS): a species of less acidic oaks in upland woodlands, with a distinctive 'woolly' disk margin formed of projecting hyphae. There is only a single lowland record previously from the Weald. This lichen was recorded in two of the three of Jan's plots; it maybe that the habitat of smaller suppressed trees in old growth woodland has been overlooked in past less intensive surveys. Frame Wood, SU359 033, on a suppressed young Sessile Oak & Wooson's Hill, Mark Ash Wood, SU259 077, on a young Sweet Chestnut; both September 2018, J. Vondrak, N.A. Sanderson, A. Acton & M. Powell, in pasture woodland.

Caloplaca alstrupii (NR): an example of how Jan's practice of getting together expert field lichenologists from across Europe results in very fruitful exchanges of

species concepts. The Mark Ash Wood record was new to southern England, and only the fourth British record. It is a recently described lichen, and certainly under-recorded, and one which is easily overlooked when sterile, but it may not be a common species. When sterile this lichen looks very similar to *Caloplaca obscurella* or *C. ulcerosa*, with blister-like vesicles bursting to expose crater like soralia, but the vesicles are dark pigmented; when split the wall is retained as a lid-like structure and the soredia are bright green (see Palice *et al.* (2018) *Herzogia* **31**: 518–534). In neither *Caloplaca obscurella* or *C. ulcerosa* is the lid of the vesicle retained and the soredia are grey-green to blue-grey in the former and grey to pale yellow-green in the latter (see **https://www.fungi.org.uk/viewtopic.php?f=16&t=2400**). It grows in similar habitats to these species: nutrient enriched twigs and wound tracks. Wooson's Hill, Mark Ash Wood, SU259 077, September 2018, det. J. Vondrak, on Beech twigs in pasture woodland; Matley Wood, SU334 078, September 2018, det. J. Vondrak, on Beech twigs in pasture woodland & Ocknel Sling, Highland Water, SU244 105, det. N.A. Sanderson, in a wound track on ancient Ash pollard.



***Caloplaca alstrupii* on a Beech twig in Mark Ash Wood, showing burst vesicles with dark coloured retained lids and the bright green soredia inside**

Didymocyrtis ramalinae (NR): a rarely recorded fungal parasite of *Ramalina*, new to Hampshire. Janesmoor Plain, New Forest, SU247 128, December 2018, N.A. Sanderson, N. Nicola Bacciu & the Wessex Lichen Group, parasitic on *Ramalina fastigiata* on the twigs of a Hawthorn bush in acid grassland.

Lecanora hybocarpa (NR): new to England, this was first picked up by detailed examination of material from Oak twigs in Jan's plots. It is very similar to the common *Lecanora chlarotera*, but differs in the distribution of crystals in the apothecia, visible in cross section in polarised light. The crystals descend down from below the epithecium (top surface of the disk) into the hymenium (fertile part of the disk) well below the tips of the asci. This is similar to *Lecanora pulicaris*, but with the thalline margin of *L. hybocarpa* Pd–. The species requires examination with a microscopic to confirm, but with practise candidates can be spotted by the lightly pruinose mid brown discs. It has subsequently found to be quite widespread in South Hampshire and Wiltshire and has been recorded on the twigs and trunks of Oak, Beech, Hawthorn, Ash, Aspen, Blackthorn, Hornbeam, Sallow, Rose and Apple. It has been found mixed with *Lecanora sinuosa* and internally the apothecia of both these taxa are very similar and the more distinctive *L. sinuosa* may just be a morph of *L. hybocarpa*. The European material named *L. hybocarpa* does not match the American type and as *L. sinuosa* may be a morph of the European *L. hybocarpa*, this would make *L. sinuosa* the correct name (J. Malíček, pers. comm.). The species appears southern and eastern in Britain and can be commoner than *L. chlarotera*, especially on sunny twigs. (See **https://www.fungi.org.uk/viewtopic.php?f=16&t=2404**). Frame Wood, SU358 033 & Matley Wood SU334 078, all September 2018, on Oak twigs, N.A. Sanderson, J. Vondrak, A. Acton & M. Powell.

Top: *Lecanora hybocarpa*, typical material, with lightly pruinose disks on an Oak twig; lower left: *Lecanora hybocarpa* apothecia cross-section in polarising light; right: *Lecanora chlarotera*, showing the more constrained distribution of crystals within the apothecia (bright areas).

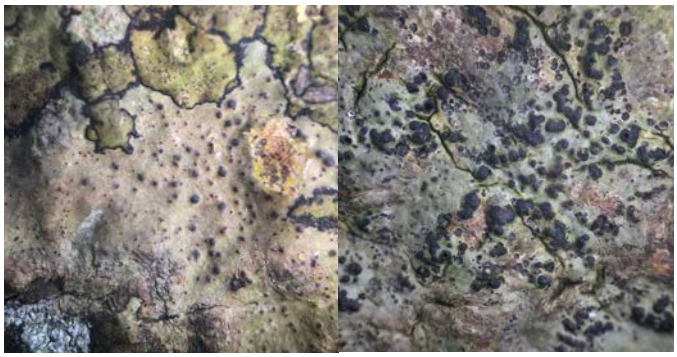
Minutophoma chrysophthalmae NT (NR): this tiny lichenicolous fungi was previously recorded only from the apothecia of *Chrysothrix chrysophthalma* in Scotland, a rare species of native pinewoods. In 2018 it was found in the apothecia of the closely related but widespread *Chrysothrix flavovirens* growing on standing dead wood in the New Forest, new to England. Although *C. flavovirens* is common, it is rarely fertile, and usually only is only fertile on large pieces of dead wood in humid locations, so the parasite is probably still rare. (see **https://www.fungi.org.uk/viewtopic.php?f=16&t=2403**). Ferny Crofts, New Forest, SU366 055, November 2018, on a standing *Quercus* in dried pond on the edge of pasture woodland & Stubbs Wood, New Forest, SU364 032, January 2019, exposed lignum on a standing Oak in old growth Sessile Oak–Beech pasture woodland, N.A. Sanderson.

Phaeoseptoria peltigerae: a rarely recorded parasite on a decaying *Peltigera* species, new to Hampshire. Tom Pook's Hill, Stricknage Wood, SU258 125, December 2018, Nicola Bacciu, N.A. Sanderson & the Wessex Lichen Group.

Propolis leonis (NR): a bark fungus not normally recorded by lichenologists, but an apparently very rare pine bark specialist, previously only recorded from native pinewoods in Speyside. A very distinctive species, with large and heavily pruinose apothecia bursting through the bark, the apothecia are also C + red. Another recent addition to the assemblage of specialist pine lichens and bark fungi in the New Forest, which is discussed above. Wooson's Hill, Mark Ash Wood, SU259 077, SU257 078 & SU256 077, & Shave Wood, SU2936 1247; all, November 2018, N.A. Sanderson, pines standing on glade edges by mires.

The apothecia of *Propolis leonis* busting through pine bark

Pyrenula nitidella EX (NR): this lichen is a smaller version of the rare *Pyrenula nitida*, both of which are continental species in Europe. It appears moderately distinct from *P. nitida*, but could simply be a small morph of this species. *P. nitida* is a rare Beech specialist in Britain, with its largest population in the New Forest and currently only otherwise known from Burnham Beeches. The only previously confirmed records from Britain are from North-east Yorkshire in 1856 and from Perthshire in 1914. Given the local frequency of the similar but larger *P. nitida* in the New Forest *P. nitidella* had been looked for many years without success. It was, however, found in one of Jan's plots and subsequently in three other woods. The current discovery removes a species from the British extinct lichens list. It seems rarer than *P. nitida* in the New Forest. The main difficulty in finding this species is the abundance of *P. chlorospila* in the same habitats, This lichen has has similar sized perithecia. Candidate *P. nitidella* can be picked out from *P. chlorospila* by the smaller and less frequent pseudocyphellae, the less smooth thallus and, at least in the New Forest, a paler brown thallus compared to the darker olive-brown of *P. chlorospila*. To avoid too much damage to a potentially rare lichen, with care the K+ purple reaction in the outer part of hymenium characteristic of *P. nitidella* can be detected in the field from a single perithecium using a tissue paper. A complication is that the K+ purple reaction is very variable in intensity, even within the same thallus, however, the spores of *P. nitidella* are distinctly shorter and narrower that those of *P. chlorospila*. (See **https://www.fungi.org.uk/viewtopic.php?f=16&t=2399**). Wooson's Hill, SU259 077, September 2018, det. M. Powell & N.A. Sanderson; Fox Hill, Rushpole Wood area, SU300 100, SU299 100 & SU299.099, January 2019, det. N.A. Sanderson; Bramble Hill, Alum Green, SU275 070, January 2019, det. N.A. Sanderson; Wood Crates, SU268 083, January 2019, det. N.A. Sanderson; on moderately flushed bark on a total of six veteran *Fagus* trees in old growth *Fagus* dominated pasture woodland.



***Pyrenula nitidella* (left) & *Pyrenula nitida* (right) at the same scale, on an ancient Beech, Fox Hill, Rushpole Wood**

Strangospora deplanata Nb (NR/DD): an internationally rare lichen with the first English and second British record made from the New Forest. It was found near Jan's plot at Wooson's Hill, where it was extensively overgrowing *Pyrenula chlorospila* on a suppressed old Beech. Wooson's Hill, Mark Ash Wood, New Forest, SU257 078, November 2018, N.A. Sanderson.

OTHER RECORDS OF SPECIAL INTEREST

Calicium parvum NT (NR): as discussed above this is one of the pine bark specialist with disjunct distribution in the Scottish native pinewoods and the New Forest. First found in Wood Crates in 1998 but not refound until 2019 and subsequently in four other woods. The lichen can be identified in the field by the thinly verrucose (warty) white thallus, which is UV+ white and Pd+ yellow and by the heads of the pinhead apothecia lacking pruina. Wooson's Hill, Mark Ash Wood, SU259 077, SU256 077 & SU258 077, September & November 2018, det. J. Vondrak; Wood Crates, SU270 083, SU275 0823, November 2018 & January 2019; Shave Wood, SU291 124, November 2018, Eaves Hill, Busketts Wood, SU305 112, December 2018 & Park Hill, SU315 065, January 2019. All on well lit Scots Pine in glades in pasture woodland and det. N.A. Sanderson unless stated.

Enterographa elaborata CR (NR/IR/S41): an internationally rare southern Atlantic–Mediterranean warm temperate lichen, with an important population in the New Forest and only extant in a single other site in Kent in Britain. During the review of Holly cutting sites in the New Forest a new and clearly colonising population was found on a Beech opened up by Holly cutting in the 1990s; a very encouraging result (see **https://www.fungi.org.uk/viewtopic.php?f=16&t=2401**). Redbridge Hill, Rushpole Wood, SU310 096, January 2019, three small thalli actively colonising a veteran *Fagus* in old growth *Fagus–Quercus –Ilex* pasture woodland opened up by past *Ilex* coppicing and pollarding.

Beech opened up by Holly cutting with new *Enterographa elaborata* colony (left), one of the colonising thalli with *Pyrenula chlorospila*, also colonising above (right)

Lecanora quercicola VU (NS/IR/S41): a sub-oceanic field tree specialist, typically found on veteran Oaks in sunny wood edges and in fields. Always rare in the New Forest as wood edge veteran Oaks are rare due to general expansion of the pasture woodlands over the last 150 years. Found in 2018 on an Oak in a large woodland lawn during the Holly survey, the first record of well developed material this century from the New Forest. Shepherds Gutter, New Forest, VC11, South Hampshire, SU262 151, December 2018, N.A. Sanderson, on a well lit ancient *Quercus* tree on the edge of pasture woodland, with *Rinodina isidioides* NT (NS/IR/S41) and *Pertusaria coronata* Nb (NS).

Lecanora sarcopidoides Nb (NR): this is a rare species in Europe of acid conifer bark and hard lignum of conifers and broadleaved trees. The only Hampshire record was from 'old posts near Brockenhurst', by the Rev. J.M. Crombie, in the nineteenth century. It was thought extinct in Britain in the late twentieth century, but is known from a few locations. Recently I had learned to identify this lichen from better material from dead wood in parks in Yorkshire and Kent. The lichen has strongly pruinose apothecia disks and a definitive strong KC+ yellow reaction from the thallus. I then realised that scrappy material from old pines in the New Forest could be this, and the KC+ yellow reaction dually confirmed it. Delving into my herbarium, I also found some specimens of this species misnamed *Lecanora piniperda*, including one from Oak dead wood in the New Forest. So another species back from the dead in the New Forest. Mouse's Hole, New Forest, SU223 062, January 2005, standing dead Oak in sheltered edge of pasture woodland; Wooson's Hill, Mark Ash Wood, SU256 077, November 2018, well lit sheltered pine on the edge of a mire in pasture woodland & Stricknage Wood, SU261 125, December 2018, on a pine in a glade in pasture woodland, all N.A. Sanderson.

Megalaria laureri EN (NR/IR/S41) a Beech specialist only known from the New Forest in Britain. During the review of Holly cutting sites in the New Forest two new and clearly colonising populations were found on veteran Beeches opened up by Holly cut in the 1990s and 2000s; a very encouraging result (see **https://www.fungi.org.uk/viewtopic.php?f=16&t=2401**). North of Gutter Heath, Busketts Wood, SU304 105, November 2018 & Lyndhurst Hill, SU287 077, January 2019, N.A. Sanderson, both single small thalli on Beech.

Tylophoron hibernicum NT (NR/IR/S41): a widespread tropical species, rare in Europe, which starts its life as a parasite on other lichens, before becoming an independent lichen. A south-western species in Britain on the edge of its range here, and only ever found as small fragments in the New Forest previously. In 2019, two substantial colonies were found. Red Shoot Wood, New Forest, SU182 081, January 2019, N.A. Sanderson & A.M. Cross, parasitising *Lecanactis abietina* on a veteran Sessile Oak in old growth Sessile Oak–Holly pasture woodland & Mill Copse, Roydon Woods Nature Reserve, SU322 000, March 2019, N.A. Sanderson, parasitising *Lecanactis abietina* on a veteran Pedunculate Oak on a boundary bank in ancient woodland.

OTHER RECORDS

Arthonia anglica EN (NR/IR/S41): only the second find of this very rare lichen in the New Forest, in spite of quite intensive searching recently, Matley Wood, New Forest, SU334 079, September 2018, N.A. Sanderson, J. Vondrak, A. Acton & M. Powell, single thallus on ancient Holly, in old growth Pedunculate Oak–Holly pasture woodland, N.A. Sanderson.

Bacidina adastra (*Bacidia adastra*) (NS): new to Hampshire, fertile material confirming the identity of widespread sterile material found on nutrient enriched twigs and wound tracks on Beech in the New Forest. Also likely to be widespread in nutrient enriched habitats outside of the New Forest. Coomy Hat, Busketts Wood, New Forest, SU311 110, November 2018, fertile thallus on a *Fagus* twig in pasture woodland.

Bacidina squamellosa (*Bacidia squamellosa*) Nb (NS): a local oceanic old woodland species, recorded with pycnidia, not seen before in Europe (see **https://www.fungi.org.uk/viewtopic.php?f=16&t=2304** for pictures). Tom Pook's Hill, Stricknage Wood, New Forest, SU259 125, December 2018, N.A. Sanderson & the Wessex Lichen Group, on *Salix cinerea* on edge of pasture woodland.

Buellia hyperbolica VU (NR): a rare southern Atlantic–Montane Mediterranean lichen of acid bark and lignum, with a stronghold in the New Forest. This record is the first for the species for Birch. Matley Wood, New

Forest, SU334 079, September 2018, N.A. Sanderson, J. Vondrak, A. Acton & M. Powell, on an old Silver Birch and on lignum on a fallen Oak log.

Chaenothecopsis retinens Nb (NR): the second record of an internationally rare obligate parasite of *Sporodophoron cretaceum* (*Schismatomma cretaceum*) from the New Forest in a stand opened up for lichen conservation by Holly pollarding and coppicing 29 years ago. Shave Wood, New Forest, SU293 122, February 2019, N.A. Sanderson, parasitising *Sporodophoron cretaceum* on dry bark on a leaning veteran Oak, in old growth Beech–Pedunculate Oak–Holly pasture woodland.

Cladonia grayi s. str. (NR): first record (world?) of this lichen as an epiphyte, detected due to the distinctive and very bright pale-purple fluorescence from greyanic acid. Matley Passage, New Forest, SU330 071, August 2018, N.A. Sanderson, on horizontal branch on young Oak tree in bog woodland.

Cryptolechia carneolutea EN (NS/IR/S41): a specialist of wound tracks on Elm and Ash in the south, now highly threatened by tree diseases, which has a small population in the New Forest on wounded Beeches. Three new colonies were found in the last year, including apparently colonising thalli, suggesting a dynamic viable population. Wooson's Hill, Mark Ash Wood, SU2524 0760, November 2018, in wound track on Beech; Pound Hill, Mark Ash Wood, SU243 173, December 2018, very large colonies occupying several wound tracks on a Beech & Wood Crates, SU269 082, January 2019, a sterile thallus with conidia colonising a recently formed wound track on a Beech, N.A. Sanderson.

Dimerella tavaresiana (*Coenogonium tavaresianum*) Nb (NR): this internationally rare southern Atlantic–Mediterranean lichen was first collected from Britain from Roydon Woods in 2017, it has now been found in the New Forest proper, both times in Jan's plots. Frame Wood, SU358 033, one Oak & Matley Wood, SU334 079, SU334 078, two Oaks; both September 2018, N.A. Sanderson, J. Vondrak, A. Acton & M. Powell, on flushed base rich bark on veteran Oak in old growth pasture woodland

Enterographa brezhonega VU (NR): an internationally rare obligate parasite on the oceanic *Porina rosei* NT (NR). Found in one of Jan's plots on two trees, a large population, in a new woodland and the forth location known from the New Forest. Frame Wood, New Forest, SU358 033, September 2018, N.A. Sanderson, J. Vondrak, A. Acton & M. Powell.

Opegrapha thelotrematis Nb (NS/IR): an obligate parasite of *Thelotrema* spp, which is rare in lowland England. Found in one of Jan's plots in a new 10km square. Wooson's Hill, Mark Ash Wood, SU259 077, September 2018, N.A. Sanderson, J. Vondrak, A. Acton & M. Powell. Parasitising *Thelotrema lepadinum* on a veteran Beech in old growth Beech dominated pasture woodland.

Pertusaria coronata Nb (NS): a sub-oceanic species which is widespread in eastern Scotland but very rare in England. These are the second and third New Forest sites. Potentially overlooked in the south for the common *Pertusaria coccodes* but the orange UV fluorescence of *Pertusaria coronata*, however, is a quick way of separating these similar looking species. The use of a strong UV lamp accounted for both of these finds. Shepherds Gutter, SU262 151, N.A. Sanderson & Rans Wood SU366 024, N.A. Sanderson, J. Vondrak, A. Acton & M. Powell; both September 2018, single well lit ancient *Quercus* trees on the edges of pasture woodlands.

Schismatomma graphidioides VU (NS/IR/S41) a species that may be increasing in the New Forest, and was found in another new site in 2018 (see photos at **https://www.fungi.org.uk/viewtopic.php?f=16&t=2405**). Ferny Crofts, New Forest, SU367 054 & U370 054, April & May 2019, N.A. Sanderson, on two young suppressed Beech trees in pasture woodland.

Sphaerellothecium cinerascens (NR): the second New Forest and third British record of an internationally rare obligate parasite on the old woodland and dead wood specialist *Cladonia parasitica*. Notwithstanding the distinctive and conspicuous blue-grey staining of the host, this fungus has proved difficult to find and appears to be very rare. Bramshaw Wood, New Forest, SU262 173, December 2018, N.A. Sanderson, parasitic on *Cladonia parasitica* on a standing dead Oak, in Oak–Beech–Holly old growth pasture woodland.

REFERENCES

Sandell, K.A. & Rose, F. (1996). The Lichen Flora. In: *The Flora of Hampshire* (ed. A. Brewis, P. Bowman & F. Rose) 306-324. Harley Books, Colchester, Essex.

Sanderson, N.A. (2010) Chapter 9 Lichens. In: *Biodiversity in the New Forest* (ed. A.C. Newton) 84-111. Pisces Publications, Newbury, Berkshire.

Key

EX	= Exinct Red Data Book species (since re-found)
CR	= Critically Endangered Red Data Book species
EN	= Endangered Red Data Book species
VU	= Vulnerable Red Data Book species
NT	= Near Threatened Red Data Book species
DD	= Data Deficient Red Data Book species
NR	= Nationally Rare
NS	= Nationally Scarce
IR	= International Responsibly species
Nb	= Notable species (NR, NS, IR or S41 species not RDB NT or higher, which are not under recorded ruderal species)
S41	= Section 41 species

VC 11 Records

The VC 11 records will be published in the Spring 2020 edition of *Flora News*.

VC 12 Records

Compiled by Tony Mundell (records up to 7 July 2019)

As usual here is my personal selection of records received in the last six months, showing a mixture of the scarcer native plants and some interesting aliens. As we are now in the last year of recording for the BSBI Atlas 2020 Project I, and others, will be doing much less plant recording next year so the number of records shown in future editions of *Flora News* will begin to tail off.

However, our Hampshire Flora Group field meetings will continue to generate records and there are many in this category shown below. The meeting at Hogmoor Inclosure and the area called the Slab at Bordon was particularly productive as is clear from this list – both those areas should have been included in an SSSI many years ago. A good example of one of the rarities that we found there is Orange Foxtail, *Alopecurus aequalis* (*see p. 6*). This has been lost from nearly all of its former sites and, prior to our Bordon meeting, I thought we were down to a single Hampshire site left. This is at Fleet Pond where in recent years only a single plant has appeared. For a few years, 2005 to 2007, it also occurred as a weed on flowerpots of aquatic plants for sale at Longstock Park Nursery, but that is clearly not a native site. So it was wonderful that Paul Stanley homed in on about 60 plants of this very rare grass at Hogmoor Inclosure.

On that same meeting a new plant for Hampshire was found both at Hogmoor Inclosure and at the Slab. This was *Hypochaeris* x *intermedia*, the hybrid between Cat's-ear *H. radicata* and Smooth Cat's-ear *H. glabra*. I was also very pleased to find a new site for Leafy Rush, *Juncus foliosus* that is a rarity in VC12 though scattered within the New Forest area.

Whilst on an urban road in Bordon as the HFG members headed from Hogmoor Inclosure to the Slab, Paul Stanley was able to identify some plants, not yet in flower, as the rarity Small-flowered Catchfly *Silene gallica*. Bill Wain returned later at flowering time and was surprised to find flowers very different to those at the other Bordon site for this species, well-known to him. He sent me photos which I recognised as *Silene gallica* var. *quinquevulnera*, new for Hampshire. It is very curious that two very different varieties of this rarity both grow in Bordon.

Another rarity found on a HFG field trip was *Carex* x *sooi*, the hybrid between Lesser Pond-sedge *Carex acutiformis* and Greater Pond-sedge *Carex riparia*, found at Stockbridge Marsh. This was also down to Paul Stanley's eagle eye, and is new for Hampshire, though very few people attempt to identify sedge hybrids so it could be elsewhere.

This year Dave Pearson made the splendid discovery of a new site for a scarce orchid, Narrow-leaved Helleborine *Cephalanthera longifolia*, just outside the boundary of Magdalen Hill Butterfly Reserve. Another orchid surprise this year was a plant of White Helleborine *Cephalanthera damasonium* at Old Burghclere Lime Quarry, with its leaves and stems, as well as the flowers, pure white (*see p. 8*). In this variety, known as var. *chloritica*, the absence of chlorophyll means that the plant is totally dependent on its symbiotic fungus for its nutrients and typically such plants look rather unhappy!

Many people visit Ladle Hill, often just to see the Burnt Orchids *Neotinea ustulata* (which had a good year in 2019) but other rarities used to be found there. One is Field Fleawort *Tephroseris integrifolia* that has not been reported there since 2010 and may be lost. Another is Slender Bedstraw *Galium pumilum* that I last saw there in 2011 but could not re-find in 2017 despite much searching. So I was delighted when Fred Rumsey found it in another spot there this year.

In early March Cathy Wilson found an unusual fern growing part-submerged on the wall of a mill race of the River Wey at Neatham Mill, that Fred Rumsey identified as *Cyrtomium fortunei* var. *clivicola*. Remarkably, later that month she found another plant of the same species (again identified by Fred Rumsey from photos) at the foot of a wall near the river further upstream.

This year I, plus a few others, have spent many days trying to re-find particular pre-2000 records of plants where there is no record from 2000 onwards of that species anywhere in the whole same 10km grid square. This means that unless the old record can be re-found, that species will lack a 10km dot in the planned Atlas 2020. So far 130 searches in VC12 have been made for particular pre-2000 records, resulting in 32 re-found and 98 not re-found, so only about 25% are getting re-found. This is a good illustration of the constant attrition of plants in the countryside.

One of these 'Species Search' records was for Great Fen-sedge *Cladium mariscus* which was re-found this year (in abundance but presumably originally planted) at Foley Manor Pond, Liphook, adjacent to a public bridleway. However, more interesting was the extraordinary abundance of another plant growing with it. This is the alien *Saururus cernuus*, a native of North America in the family Saururaceae. After I first found it there in 1998, I wrote an article about this plant in *BSBI News* No.83, p. 40-41 and suggested a possible origin. What is interesting is how much it has spread since 1998. My original article mentions a 'huge solid patch 20m long and 2m wide …The dense tangled mat of rhizomes extending out across the water is almost strong enough to walk on'. In 2019 it is now occupying over a hundred metres of the edges of this large pond and extending at least 2m in from the margin. The pond is roughly triangular with each side about 100m. Let's hope it cannot escape from there! Incidentally I cannot record it on my MapMate database as it is not on the available taxa list, but I have added a note about it under the record for Great Fen-sedge.

HFG = Hampshire Flora Group

***Acer negundo* (Ashleaf Maple)** Planted tree in Tunworth Churchyard SU6731 4844, Tony Mundell & Tony Davis 12 Apr 2019.

***Achillea ptarmica* (Sneezewort)** Cultivated double-flowered form. Several plants growing on roadside opposite Hartley Mauditt Church SU7429 3615, Cathy Wilson 7 Jul 2019.

Aconitum napellus **(Monk's-hood)** On riverbank, Overton SU5040 4972, Sarah Ball & Sarah White 29 May 2019.

Aegilops cylindrica **(Jointed Goatgrass)** Litchfield Estate SU4754 5365, in strip drilled with seed to attract insects and birds. A single plant with many flowering/fruiting stems, Tony Mundell & Dawn Nelson 3 Jun 2019.

Agrimonia procera **(Fragrant Agrimony)** Newtown Common SU4691 6303 and SU4681 6276, leaves still present where plants were first identified in summer 2018, Simon Melville 2 Apr 2019. Headley Gravel Pit SU5119 6271, strongly glandular, also noted in many other places on the reserve. No ***Agrimonia eupatoria*** confirmed here (but too early for any fruits) HFG 25 May 2019.

Agrostis curtisii **(Bristle Bent)** Hogmoor Inclosure SU7889 3506, several plants on edge of wide sandy track, HFG 18 May 2019.

Allium nigrum **(Broad-leaved Leek)** Bordon SU7835 3505, one flowering plant by boundary fence of the Caravan Park off Mornington Road, HFG 18 May 2019.

Allium paradoxum **(Few-flowered Garlic)** Liphook, Radford Park, in great quantity scattered from SU844319 to SU847319, Steve Povey 13 Apr 2019.

Allium triquetrum **(Three-cornered Garlic)** Overton SU5055 4904, on woodland track near lane, Sarah Ball and Sarah White 29 May 2019.

Alopecurus aequalis **(Orange Foxtail)** Hogmoor Inclosure SU7860 3526, a very rare plant in Hampshire. About 60 flowering plants in a dried-up pond near the new café building, HFG 18 May 2019. Sadly the perimeter of this pond has been planted with alien plants including a very tall grass (possibly a *Calamagrostis*) and *Ophiopogon planiscapus* 'Nigrescens'.

Amsinckia micrantha **(Common Fiddleneck)** Found during BSBI New Year Plant Hunt at Alton SU7259 3970 on NW verge of B3004 in an industrial estate, Cathy Wilson 1 Jan 2019. Photo of plant, in flower, confirmed by Tony Mundell.

Anacamptis morio **(Green-winged Orchid)** Ashford Hill Road, Headley SU5146 6269 and SU5150 6269, a few in lawns of houses named Samaria and Trescowe, Simon Melville 3 May 2019. [All mown off by 25 May 2019, Tony Mundell].

Anemone apennina **(Blue Anemone)** Upton Grey, flowering patch on road verge at SU6927 4880, presumably planted, Tony Mundell 5 Apr 2019.

Anemone blanda **(Balkan Anemone)** Winchester, St Giles Hill SU4894 2935, present for some time, Anna Stewart 11 Mar 2019.

Anthriscus caucalis **(Bur Chervil)** Blackmoor Golf Course SU7708 3486, a few plants on bare, shady bank, beneath roadside Oaks, Laura Gravestock & Steve Povey 25 Apr 2019.

Arabis hirsuta **(Hairy Rock-cress)** MOD Barton Stacy, Moody's Down range SU435385, edges of car parking area, John Moon 31 Mar 2019.

Araucaria araucana **(Monkey-puzzle)** Liphook, Radford Park SU843319, large single tree, Steve Povey 13 Apr 2019.

Arenaria leptoclados **(Slender Sandwort)** S of Overton SU5105 4853, near farm buildings, Sarah Ball and Sarah White 29 May 2019.

Armeria maritima **subsp.** ***elongata*** **(Tall Thrift)** Aldershot, Pavilion Road SU8516 5040, Fred Rumsey 7 Jul 2019. Dr Rumsey is growing this rare plant as part of a Lincs HLF Project. It has escaped and has seeded itself into the pavement outside his house and is about to flower there. It has also seeded into various pots in his garden.

Arum italicum **subsp.** ***neglectum*** **(Italian Lords-and-Ladies)** Many plants scattered along the base of the entire length of Selborne Hanger from SU739333 to SU734338. Also many plants scattered at the base of wooded slopes on Selborne Hill from SU731337 to SU732334. Many plants scattered throughout the length of narrow woodland from SU740333 to SU741334 and at base of Hanger at SU740333. All Steve Povey and Laura Gravestock 17 Mar 2019.

Asperula cynanchica **(Squinancywort)** Old Burghclere Lime Quarry SU4716 5730, only a single plant noticed, but too early for its flowers, HFG 25 May 2019. Bransbury Common SU4165 4179, single plant on an ant-hill, Tony Mundell, Gareth Knass & John Moon 6 Jun 2019.

Azolla filiculoides **(Water Fern)** Liphook, Radford Park SU844319, in quantity in ponds, Steve Povey 13 Apr 2019. Stockbridge Marsh SU3561 3583, in the river tributary, HFG 1 Jun 2019.

Barbarea intermedia **(Medium-flowered Winter-cress)** M3 Winchester Services Southbound SU5222 3534, Anna Stewart 27 Apr 2019, photo and specimen identified by Tony Mundell.

Blysmus compressus **(Flat-sedge)** Bransbury Common, a few flowering plants surviving at SU41506 41580 scattered over 2m x 1m on a trampled track where the vegetation is shorter, Tony Mundell, Gareth Knass & John Moon 6 Jun 2019. Tichborne Springs, a few flowering plants in a patch of shorter vegetation at SU57445 31707 and several at SU57440 31690, growing with a few ***Eleocharis uniglumis***. Several more in another patch of shorter vegetation at SU57443 31690, Tony Mundell and Dave Pearson 12 Jun 2019. North Warnborough Meadows, a good colony spread through a square metre in patch of shorter vegetation at SU7313 5204, more at SU7313 5203 and SU73065201, Tony Mundell and Cathy Wilson 18 Jun 2019.

Briza maxima **(Greater Quaking-grass)** Hogmoor Inclosure SU7859 3536, several flowering plants on heap of disturbed soil, HFG 18 May 2019.

Calamagrostis epigejos **(Wood Small-reed)** Bucks Horn Oak SU8077 4183, on edge of an open area used as a car park, Tony Mundell & Cathy Wilson 5 Apr 2019.

Campanula glomerata **(Clustered Bellflower)** Faccombe, in clearing at SU3991 5676, Peter Billinghurst 26 Oct 2018. Worting SU6010 5215, in flower in a meadow. It will probably be lost in the Manydown development in the next few years, Mike Hackston 24 Jun 2019.

Campanula trachelium **(Nettle-leaved Bellflower)** Tunworth SU6702 4863, beside footpath, Tony Mundell & Tony Davis 12 Apr 2019. Swallick SU6482 4824 and SU6494 4825, beside permissive footpath along disused railway, many plants scattered along several hundred metres, Tony Mundell, Cathy Wilson & Mike Harrison 15 Apr 2019. SW of Ovington SU5430 3070, by footpath on wood edge, Tony Mundell, Anna Stewart *et al*., 20 May 2019.

Cardamine amara **(Large Bitter-cress)** Liss Forest SU7873 2870, local, on banks of stream, Laura Gravestock and Steve Povey 25 Apr 2019.

Carex canescens **(White Sedge)** Bordon, Slab SU7807 3578, many tufts on pond edge, HFG 18 May 2019.

Carex hostiana **(Tawny Sedge)** Bransbury Common, SU4135 4157 and SU4138 4149, a few plants, Tony Mundell, Gareth Knass & John Moon 6 Jun 2019.

Carex laevigata **(Smooth-stalked Sedge)** Ron Ward's Meadow, Tadley SU6021 6065, very locally plentiful, Tony Mundell and Mary Parker 14 Jun 2019.

Carex lepidocarpa **(Long-stalked Yellow-sedge)** Stockbridge Marsh SU3573 3588, on bankside path, HFG 1 Jun 2019. Tichborne Springs SU5759 3175, a single patch found in shorter vegetation, Tony Mundell and Dave Pearson. Greywell Fen SU7202 5109, doing well with many plants, Tony Mundell and Cathy Wilson 18 Jun 2019.

Carex muricata **subsp.** ***pairae*** **(Prickly Sedge)** Grayshott SU8678 3526, beside track, Tony Mundell, Cathy Wilson, Steve Povey *et al*. 22 May 2019. The Chase SU4415 6305, in car park, Tony Mundell, Gareth Knass & Sarah Ball24 may 2019. Headley Gravel Pit SU5128 6265, HFG 25 May 2019. Liss Forest SU788284, a few plants beside field entrance, Steve Povey 17 Jun 2019. Liphook SU8318 3072, beside track, Tony Mundell, Isobel Girvan & Steve Povey 20 Jun 2019.

Carex pallescens **(Pale Sedge)** Ron Ward's Meadow, Tadley, surprisingly plentiful in one area between SU6025 6072 and SU6021 6064, Tony Mundell & Mary Parker 14 Jun 2019.

***Carex pulicaris* (Flea Sedge)** Bransbury Common, surviving in many places e.g. SU4134 4157, SU4138 4149, SU4140 4148, SU4166 4175, SU4200 4200, etc., Tony Mundell, Gareth Knass & John Moon 6 Jun 2019.

***Carex rostrata* (Bottle Sedge)** Bordon, Slab SU7803 3580, beside stream and puddle, HFG 18 May 2019.

***Carex strigosa* (Thin-spiked Wood-sedge)** Alice Holt Forest, on muddy tracks at SU8014 4026, SU8068 4043, SU8078 4045, SU8080 4049, SU8081 4046, Tony Mundell & Cathy Wilson 5 Apr 2019. Grayshott, muddy areas beside tracks SU8647 3500, SU8660 3510, SU8662 3510, SU8664 3511, SU8667 3514, Tony Mundell, Cathy Wilson, Steve Povey *et al*. 22 May 2019.

Carex* x *sooi* (*C. acutiformis* x *riparia*)** Stockbridge Marsh SU357360, HFG 1 Jun 2019, a specimen collected by Paul Stanley was confirmed by the Carex Referee, Mike Porter, who wrote 'With unemerged anthers and empty utricles it is a candidate for ***C.* x *sooi. Most of the diagnostic characters seem to point to ***C. acutiformis*** but the ligule is not as acute as is normal for that species. The aerenchhyma cells are a combination of short (2mm) as in ***C. riparia*** while others are 5mm as in ***C. acutiformis***. I think there is probably enough evidence to accept it as this difficult hybrid.'

***Catabrosa aquatica* (Whorl-grass)** Tichborne Springs SU5741 3181, in ditch, Tony Mundell & Dave Pearson 12 Jun 2019.

***Catapodium marinum* (Sea Fern-grass)** North Warnborough SU7317 5204, on road verge, Tony Mundell & Cathy Wilson 18 Jun 2019.

***Catapodium rigidum* (Fern-grass)** S of Overton SU5105 4853, near farm buildings, Sarah Ball and Sarah White 29 May 2019.

***Cephalanthera damasonium* (White Helleborine)** Oakridge roundabout, Basingstoke SU6460 5347, 30+ flowering plants within dense scrub, Tristan Norton 15 May 2019. Damsel Lane, Axford SU6170 4287, about a thousand plants, covering an area of 150m x 6m in a strip of Beech woodland, Ellie Brine 19 May 2019. Crawley Down SU443359, numerous plants within dense beech woodland at S edge of Crawley Down, also regular groups of plants fringing main track through woods at SU445361, Tristan Norton 24 May 2019. Andover SU382462, 32 plants counted, Graeme Davis 27 May 2019. Basingstoke, well over 100 spikes from SU6181 5315 to SU6183 5313 under a line of Beech trees on edge of derelict car parking area, Mike Hackston 5 Jun 2019.

Cephalanthera damasonium* var. *chloritica* (White Helleborine)** Old Burghclere Lime Quarry, many normal plants in flower plus one of **var. *chloritica (lacking chlorophyll in leaves) at SU47226 57315, HFG 25 May 2019.

Cephalanthera longifolia* (Narrow-leaved Helleborine)** Magdalen Hill Down SU5139 2911, five flowering plants, plus about ten ***C. damasonium, Dave Pearson 21 May 2019, photos confirmed by Tony Mundell. Magdalen Hill Down, total of seven plants confirmed, six of them in flower. Just outside the fenced area of the Down on the south side of the public footpath. One flowering at SU51396 29105, one at SU51387 29138, two at SU51380 29138, one at SU51381 29137, and one at 51379 29138. also one non-flowering at SU51380 29138. Also 14 ***C. damasonium*** on south side of the path plus 28 on the north side, Nigel Johnson & Rosemary Webb 27 May 2019. Ashford, East, over 300 flowering plants scattered in and around SU7404 2683 in an area known as 'The Little Shoulder of Mutton', Steve Povey 24 May 2019. Upper Ashford Lodge SU735258, seven flowering and two non-flowering, Nigel Johnson & Rosemary Webb 28 May 2019. Little Shoulder of Mutton SU740268, 583 flowering and six non-flowering, Nigel Johnson & Rosemary Webb 28 May 2019.

***Cerastium arvense* (Field Mouse-ear)** Woolbury Ring, Stockbridge Down SU379352, four flowering patches around ant-hills immediately SW of Woolbury Ring, between ditch and scrub, close to a high point, Andy Barker 21 Apr 2019.

***Ceratocapnos claviculata* (Climbing Corydalis)** Eversley, in an overgrown ditch at SU7800 6172 and SU7800 6171, more in ditch at SU7801 6180, Tony Mundell & Anna Stewart 13 May 2019.

***Cerinthe major* (Greater Honeywort)** Petersfield Central (VC12 part) SU743237, two plants in light scrub on bank by footpath, Steve Povey 3 Apr 2019.

***Cicerbita macrophylla* subsp. *uralensis* (Common Blue-sow-thistle)** Grayshott SU8723 3517, on verge of Stoney Bottom, beneath the street name sign, Tony Mundell, Cathy Wilson, Steve Povey *et al*. 22 May 2019.

***Cirsium acaule* (Dwarf Thistle)** Old Burghclere Lime Quarry SU4757, wonderfully widespread across the reserve, HFG 25 May 2019. Bransbury Common, a few plants SU4169 4196 and SU4199 4218, Tony Mundell, Gareth Knass & John Moon 6 Jun 2019.

***Cirsium dissectum* (Meadow Thistle)** Bransbury Common, a few in several places SU4136 4155, SU4195 4207, Tony Mundell, Gareth Knass & John Moon 6 Jun 2019. Ashford Hill Meadows SU5641 6204, Tony Mundell & Mary Parker 14 Jun 2019. Ron Ward's Meadow, Tadley SU6025 6071, Tony Mundell & Mary Parker 14 Jun 2019.

Cladium mariscus* (Great Fen-sedge)** Liphook, Foley Manor Pond SU8306 3074, in enormous abundance around edges of a large pond. Growing with masses of ***Saururus cernuus that covers over a hundred metres of the pond edge but I cannot record it as it is not on the MapMate taxa list. See *BSBI News* 83 p.40-41 for an account of when I first found this in 1998.

***Claytonia perfoliata* (Springbeauty)** Fleet, SU805549, verge of Avenue Road, Tony Mundell 20 Mar 2019.

***Claytonia sibirica* (Pink Purslane)** Liphook, Radford Park SU846318, several plants in on banks of River Wey, Steve Povey 13 Apr 2019. Headley/Mill Green SU5237 6391 and SU5244 6384, by footpath on Hampshire side of River Enborne, Tony Mundell & Dave Pearson 17 Apr 2019. N of Overton SU5193 5335, large patch in woodland and a few on the road-bank opposite, Sarah Ball and Sarah White 23 May 2019.

***Crataegus laevigata* (Midland Hawthorn)** Tadpole Lane, Ewshot SU8211 5061, single plant still present on south road verge, but trunk collapsed and bent down under a fallen branch onto road, so will probably soon get sawn off, Tony Mundell & Dave Pearson 17 April 2019.

Crataegus* x *media* (*C. monogyna* x *laevigata*)** N of Upton Grey SU694493, one or two bushes in hedge of ***C. monogyna, Tony Mundell 5 Apr 2019. Sheephouse Copse SU7527 4548, single bush still present beside footpath, but it has been coppiced and the new stems only reach to 5ft high, Tony Mundell 28 May 2019. Liphook SU8305 3109, in hedgerow amongst many ***C. monogyna***, Tony Mundell, Isobel Girvan & Steve Povey 20 Jun 2019.

***Cuscuta epithymum* (Dodder)** Hogmoor Inclosure SU7857 3540, young plants with many stems but not yet flowering, HFG 18 May 2019.

Cyrtomium fortunei* (Fortune's Holly-fern)** Holybourne, Neatham Mill SU7399 4077, photos identified by Dr F Rumsey as ***C. fortunei* var. *clivicola. One plant on wall of mill race at Neatham Mill, part submerged after heavy rain, Cathy Wilson 7 Mar 2019. Holybourne SU7339 4046, at the foot of a wall near to River Wey, clearly the same species as found recently nearby at Neatham Mill. Photos det. by Dr F Rumsey as ***C. fortunei* var. *clivicola***, Cathy Wilson 30 Mar 2019.

***Dactylorhiza incarnata* subsp. *incarnata* (Early Marsh-orchid)** Tichborne Springs SU5740 3180, only a single spike found, Tony Mundell & Dave Pearson 12 Jun 2019.

***Dactylorhiza praetermissa* (Southern Marsh-orchid)** Liphook SU8261 3102, at least 20 spikes in meadow corner, Tony Mundell, Isobel Girvan & Steve Povey 20 Jun 2019. Greywell Pumping Station SU722513, one plant with pure white flowers, Phil Simpson 30 Jun 2019.

Dactylorhiza* x *grandis* (*D. fuchsii* x *praetermissa) Liphook SU8342 3051, single flower spike at junction of two tracks on golf course, Tony Mundell, Isobel Girvan & Steve Povey 20 Jun 2019. Woolmer SU783295, a few plants, some close to pure ***D. praetermissa***, beside main track, Steve Povey 5 Jul 2019.

Fortune's Holly-fern *Cyrtomium fortunei* Neatham Mill (top) and Holybourne (bottom), March 2019 *(Cathy Wilson)*

Dactylorhiza* x *transiens* (*D. fuchsii* x *maculata*)** Ashford Hill Meadows SU5640 6202, a few spikes of ***D. fuchsii amongst many ***D. maculata*** with one or two that seem to be the hybrid. Ron Ward's Meadow, Tadley

SU6020 6063, ***D. maculata*** dominates in this wet, boggy area, whereas ***D. fuchsii*** dominates a little further north where it is drier. All the plants are very variable but one or two here are probably the hybrid. At SU6024 6077 ***D. fuchsii*** dominates. All plants are extremely variable but at least one at this spot seems to be the hybrid. All Tony Mundell & Mary Parker 14 Jun 2019.

***Daphne laureola* (Spurge-laurel)** SW of Binsted SU7679 4040, two small plants above informal but well-trodden path detour from muddy track, Cathy Wilson 18 Apr 2019.

***Digitaria ischaemum* (Smooth Finger-grass)** Bordon, Slab SU7823 3554, many really tiny seedlings of this rare annual grass (it flowers late in the year in September), HFG 18 May 2019.

***Dipsacus laciniatus* (Cut-leaved Teasel)** W of Liss SU7784 2751, two plants beside path to Somersfield Terrace, Steve Povey 2 Jul 2019.

Eleocharis uniglumis* (Slender Spike-rush)** Stockbridge Marsh in damp areas of meadow SU3548 3539 and SU3553 3582, HFG 1 Jun 2019. Tichborne Springs at SU57440 31690, only a few spikes, growing with ***Blysmus compressus in patch of shorter vegetation. Lowest glume nearly encircles spikelet base, upper glume has a flower inside, Tony Mundell & Dave Pearson 12 Jun 2019.

***Epilobium roseum* (Pale Willowherb)** NE of Woolton Hill SU4409 6265, single plant in ditch beside track, but not yet in flower. A side branch taken home compares exactly with plants in my garden known to be this, with its long pedicels and leaf toothing, etc., Tony Mundell, Gareth Knass & Sarah Ball 24 May 2019.

***Epipactis purpurata* (Violet Helleborine)** Wick Wood SU759352, not yet in flower, Penny Raynor 23 Jun 2019. Although not in flower Penny's description of the dark purple stem and leaves are convincing and there are many known sites for Violet Helleborine in this general area - Tony Mundell. Selborne Hanger SU7391 3327, two stands in a dark Beech Hanger where the sun glimpsed through, Chris Piper 27 Jun 2019, photo of plant not yet in flower identified by Tony Mundell.

***Equisetum telmateia* (Great Horsetail)** Andover, Rooksbury Mill LNR SU3544, Mike Wildish 8 Jun 2019. Liphook SU8276 3102, by footpath, Tony Mundell, Isobel Girvan & Steve Povey 20 Jun 2019.

***Eranthis hyemalis* (Winter Aconite)** Snoddington Down SU2545, on verge of Snoddington Lane, near farm, John Moon 25 Jan 2019. East Stratton SU5373 4003, clearly planted beside a roadside seat, Tony Mundell & Anna Stewart 1 Apr 2019.

***Erigeron glaucus* (Seaside Daisy)** Liphook SU8393 3093, on roadside verge outside a house, Tony Mundell, Isobel Girvan & Steve Povey 20 Jun 2019.

***Erigeron karvinskianus* (Mexican Fleabane)** Brickfields Park, Aldershot SU8669 4960, on concrete culvert beside pond, Tony Mundell & Cathy Wilson 17 May 2019. Arford Churchyard SU8217 3626, on churchyard wall, Tony Mundell & Cathy Wilson 30 May 2019.

***Erodium moschatum* (Musk Stork's-bill)** Overton SU5143 4899 and SU5144 4900, large patch on grass corner near housing estate, Sarah Ball and Sarah White 29 May 2019.

***Eruca vesicaria* (Garden Rocket)** Ashley Warren, several plants on a road verge at SU48621 54845 outside a cottage, near to Hare Warren Farm, Dave Pearson 21 May 2019, pressed specimen confirmed by Tony Mundell.

***Euonymus japonicus* (Evergreen Spindle)** Tadpole Lane, Ewshot SU8215 5063, presumably planted, Tony Mundell & Dave Pearson 17 Apr 2019.

***Euphorbia lathyris* (Caper Spurge)** Overton SU5138 4994, on lane verge by wall, Sarah Ball and Sarah White 29 May 2019.

***Euphorbia oblongata* (Balkan Spurge)** Biddesden SU2950, on road verge near T-junction with road to Redenham House, John Moon 20 Mar 2019.

***Euphrasia arctica* subsp. *borealis* (an Eyebright)** Bransbury Common SU4164 4183, a few flowering plants in the shorter vegetation beside a track, Tony Mundell, Gareth Knass & John Moon 6 Jun 2019.

Filago minima (Small Cudweed) Hogmoor Inclosure, Bordon SU7897 3485, locally plentiful, Tony Mundell & Lisa Malter 15 May 2019. Liss Forest SU7853 2961, on sparsely vegetated sandy dry heath, Tony Mundell & Cathy Wilson 17 May 2019. Bordon, Slab SU7804 3590, HFG 18 May 2019. Headley Gravel Pit SU5115 6270, at least ten incredibly tiny plants under 10mm tall, on patch of bare gravel, HFG 25 May 2019.

***Filago vulgaris* (Common Cudweed)** Liphook Golf Course SU8350 3047, beside public footpath, Tony Mundell & Lisa Malter 15 May 2019. Arford SU8227 3632, arable field margin, Tony Mundell & Cathy Wilson, 30 May 2019.

***Fraxinus angustifolia* (Narrow-leaved Ash)** Brickfields Park, Aldershot SU8657 4940, a single tree, presumably originally planted, Tony Mundell & Cathy Wilson 17 May 2019.

***Fraxinus ornus* (Manna Ash)** SW of Priors Dean SU719283, three trees among oaks, beside main road & opposite houses, Steve Povey 19 May 2019. A303, Micheldever Station SU5175 4374, a young tree in flower beside A303 near junction, Tony Mundell 24 May 2019.

***Fritillaria meleagris* (Fritillary)** Chilbolton Common, approx 900 blooms & seed-heads in area 70m x 20m, from SU 3891 3997 to SU 3885 3996. Although number has increased, area has not expanded, Glynne Evans 11 April 2019. West Liss SU779287,

around 35 plants scattered in small rough meadow near river, including several of the white-flowered variety, Laura Gravestock & Steve Povey25 Apr 2019.

Fumaria densiflora **(Dense-flowered Fumitory)** Westover Farm SU352409 and SU354403, in cultivated strip along SE and SW margins of fields, John Moon 11 Jun 2019.

Fumaria muralis **subsp.** ***boraei*** **(Common Ramping-fumitory)** SW of Kingsley SU788379, two large plants beside sandy track, Steve Povey 13 May 2019.

Fumaria parviflora **(Fine-leaved Fumitory)** Westover Farm SU352409 and SU354403, in cultivated strip along SE and SW margins of fields, John Moon 11 Jun 2019.

Galanthus elwesii **(Greater Snowdrop)** Weston Corbett, a large patch 2m x 1.5m at SU6881 4706 in woods by roadside but very close to a house, Tony Mundell 5 Mar 2019.

Galeopsis angustifolia **(Red Hemp-nettle)** Old Burghclere Lime Quarry SU4723 5721, several tiny seedlings on 'scree' of bare chalk, HFG 25 May 2019.

Galium parisiense **(Wall Bedstraw)** Sutton Scotney Services, on kerb edge at SU45834 39890, Paul Stanley 25 May 2019.

Galium pumilum **(Slender Bedstraw)** Ladle Hill, one diffuse patch/ plant occupying c. 30 square centimetres at SU47669 56738. Sample taken for DNA testing in case it is ***Galium fleurotii*****,** Fred Rumsey 7 Jul 2019.

Slender Bedstraw ***Galium pumilum*****, Ladle Hill, 7 July 2019** ***(Fred Rumsey)***

Galium **x** ***pomeranicum*** **(*G. verum* x *album*)** Ladle Hill SU4788 5674, one clump, both parents nearby, Fred Rumsey 7 Jul 2019.

Geranium columbinum **(Long-stalked Crane's-bill)** N of Overton SU507528, on field and track verge as seen before in previous years, Sarah Ball and Sarah White 23 May 2019.

Geranium lucidum **(Shining Crane's-bill)** Holybourne, South SU7395 4078, many plants by bridges over River Wey at Lower Neatham Mill, Cathy Wilson 30 Mar 2019.

Geranium phaeum **(Dusky Crane's-bill)** Pondtail Heath SU826536, two plants on canal verge, John Ayres 12 May 2019.

Geranium rotundifolium **(Round-leaved Crane's-bill)** South Hay SU7741 3962, one plant on corner of junction, Cathy Wilson 3 May 2019.

Geum **x** ***intermedium*** **(*G. rivale* x *urbanum*)** SW of Ovington SU5422 3060, SU5423 3062 and SU5492 3116, by footpath with many ***G. rivale***, Tony Mundell & Anna Stewart 20 May 2019. Overton SU50671 49587, on bank near pond, Sarah Ball and Sarah White 29 May 2019.

Glyceria declinata **(Small Sweet-grass)** Bransbury Common SU4205 4225, in muddy puddle, Tony Mundell, Gareth Knass & John Moon 6 Jun 2019.

Gymnadenia conopsea **(Chalk Fragrant-orchid)** Noar Hill SU7411 3199, **var.** ***albiflora*** with white flowers, Nigel Johnson & Rosemary Webb 30 Jun 2019.

Helleborus foetidus **(Stinking Hellebore)** Andover SU364462, three plants, Graeme Davis 27 Jan 2019. Lains Farm SU2744, on verge of road through industrial estate, John Moon 9 Mar 2019. Selborne Common, North SU733335, around 30 plants scattered on Selborne Hill, at top of slope, Chris Webb 17 Mar 2019. Selborne Common, North, single plant at SU732333 and three at SU734334, Steve Povey & Laura Gravestock 17 Mar 2019. Bradley Wood, while searching unsuccessfully for old records of ***Helleborus viridis*** in this wood we found a single plant of ***H. foetidus*** beside a track at SU4594 5211. It had no basal leaves (***H. viridis*** has them), stem leaves with 9 leaflets, typically 6cm x 0.6cm (so far narrower than ***H. viridis***) and 5 vascular bundles in the petioles, Tony Mundell & Dave Pearson 28 Mar 2019. N of Holybourne SU7326 4128, one plant on grass verge beside public footpath, Cathy Wilson 2 Apr 2019.

Helleborus viridis **(Green Hellebore)** Hale Copse, several hundred plants scattered at western end of copse SU731319 and many hundreds scattered at western end SU731320, Steve Povey & Laura Gravestock 17 Mar 2019. SW of Binsted SU7657 4087, in small disused quarry area, Cathy Wilson 17 Mar 2019.

Heracleum mantegazzianum **(Giant Hogweed)** East Stratton SU535400, in extraordinary abundance with thousands of plants spread across at least half of a large grassy field, north of Church Bank Road, Tony Mundell & Anna Stewart 1 Apr 2019.

Hieracium scotostictum **(Dappled Hawkweed)** West Stratton, four plants already in bud on grassy roadside ditch-bank at SU5294 4033, Tony Mundell & Anna Stewart 1 Apr 2019.

Hottonia palustris **(Water-violet)** Fleet Pond, East Marsh, shown to Tony Mundell by John Sutton where he had recently found it occupying about 20m of a ditch in the reed beds at SU8231 5514, flowering on 30 May 2019, John Sutton.

Hyoscyamus niger **(Henbane)** Matterley Estate, three of last year's plants on field edge at SU5258 2939, Tony Mundell, Dave & Anna Stewart 7 Feb 2019. Laverstoke SU4883 4847, 15 plants, Alison Cross 14 Jun 2019.

Hypochaeris glabra **(Smooth Cat's-ear)** Bordon, Slab SU7808 3593, on sparsely vegetated sandy area growing beside ***H. radicata*** and their hybrid, HFG 18 May 2019. Hogmoor Inclosure SU7860 3536, growing together with ***H. radicata*** and the hybrid ***H.*** **x** ***intermedia***, HFG 18 May 2019.

Hypochaeris **x** ***intermedia*** **(*H. glabra* x *radicata*)** Bordon, Slab SU7808 3593, on sparsely vegetated sandy area growing beside both parents. Determined in-situ by Martin Rand and Paul Stanley, HFG 18 May 2019. Hogmoor Inclosure SU7860 3536, growing with both parents. Confirmed in-situ by Paul Stanley and Martin Rand. Leaves wider than ***H. glabra*** and with some hairs on upper surface. Capitula less elongated than ***H. glabra***, HFG 18 May 2019.

Illecebrum verticillatum **(Coral-necklace)** Longmoor Inclosure, plentiful on damp bare sand in and around SU785295, Steve Povey 15 Apr 2019. Liss Forest SU7915 2965, plentiful on minor track, Tony Mundell & Cathy Wilson 17 May 2019. Hogmoor Inclosure SU7898 3481, also seen in many other places, always on damp sand, HFG 18 May 2019.

Impatiens capensis **(Orange Balsam)** NE of Woolton Hill SU44626285, beside pond, Tony Mundell, Gareth Knass & Sarah Ball 24 May 2019.

Impatiens parviflora **(Small Balsam)** E of Liss Forest SU792283, many plants beside Rake Road, Steve Povey 17 Jun 2019.

Isolepis setacea **(Bristle Club-rush)** Hogmoor Inclosure, Bordon SU7883 3512, locally plentiful, Tony Mundell & Lisa Malter 15 May 2019. Bransbury Common SU4141 4148, a few plants, Tony Mundell, Gareth Knass & John Moon 6 Jun 2019. Tichborne Springs SU5741 3182, several plants in cattle-poached area by fence, Tony Mundell & Dave Pearson 12 Jun 2019.

Juncus foliosus **(Leafy Rush)** Bordon, Slab SU7802 3588, several plants on mud, HFG 18 May 2019.

Juncus subnodulosus **(Blunt-flowered Rush)** Bransbury Common SU4192 4192, a few plants, Tony Mundell, Gareth Knass

& John Moon 6 Jun 2019. Mapledurwell Fen SU677523, still locally plentiful, Tony Mundell & Cathy Wilson 18 Jun 2019.

***Juniperus communis* subsp. *communis* (Common Juniper)** A31, Chilcomb, just north of A31 at SU5179 2906 and SU5183 2910. Matterley Estate, one very old and sick male bush at SU5226 2862, struggling to find any light in dense hedge between border of estate and A272 roadside, much of foliage dead and brown. Also two very old and sick bushes plus a dead one at SU5230 2859, one male and one female. All Tony Mundell, Dave & Anna Stewart 7 Feb 2019.

***Koeleria macrantha* (Crested Hair-grass)** Bransbury Common SU4128 4141 and SU4130 4185, a few plants, Tony Mundell, Gareth Knass & John Moon 6 Jun 2019.

***Lactuca virosa* (Great Lettuce)** West Stratton, one plant on road verge at SU5299 4027, Tony Mundell & Anna Stewart 1 Apr 2019. S of Overton SU5105 4852, by farm building, Sarah Ball and Sarah White 29 May 2019.

***Lagurus ovatus* (Hare's-tail)** A3, Greatham SU778300, abundant on a short length of the A3 central reservation, Paul Stanley 18 May 2019.

***Lathraea clandestina* (Purple Toothwort)** Liss, beside River Rother SU7798 2860, on west bank of stream, spreading downstream. At least five colonies and more than 50 flowers at SU7798 2860 and SU7798 2862, Bill Wain 10 Apr 2019. West Liss SU777279, seen from the riverside walk, Jennifer Sopwith 18 May 2019.

Lathraea squamaria* (Toothwort)** Hartley Mauditt, many patches, all under old hazel coppice stools along public footpath between SU749365 and SU752360, Cathy Wilson 26 Mar 2019. Park Hanger, West Worldham, 79 spikes between SU7497 3653 and SU7497 3654, 37 spikes at SU7506 3645 on Hazel on east side of fence at base of hanger, also about 30 spikes at SU7512 3633 on Hazel on west side of fence at base of hanger, Catherine Chatters 14 Apr 2019. N of Candovers SU7520 3602, growing alongside ***Paris quadrifolia on ***Corylus avellana*** coppice, Cathy Wilson 21 Apr 2019. Wick Hill Hanger SU7513 3598, dozens of plants in fruit on roadside, Chris Piper 10 May 2019.

***Legousia speculum-veneris* (Large Venus's-looking-glass)** Malshanger Estate, since last year the field had obviously been harrowed with brilliant effect. There was an even distribution of plants across the width and length of the headland strip, at least from the field gate at SU5724 5387 to the northern corner at SU5738 5393. It probably extended also along the northern margin - I did not check, Fred Rumsey 7 Jul 2019.

***Leucojum aestivum* subsp. *pulchellum* (Summer Snowflake)** Biddesden SU2950, on road verge near T-junction with road to Redenham House, John Moon 20 Mar 2019.

***Lithospermum officinale* (Common Gromwell)** Weston Common SU6904 4466 and SU6930 4467 beside track, Tony Mundell & Cathy Wilson 19 Apr 2019. On roadside alongside Basingstoke Hospital SU6223 5409, Mike Hackston 16 Jun 2019. Excellent close-up of a flower confirmed by Tony Mundell.

***Lonicera pileata* (Box-leaved Honeysuckle)** Grayshott SU8677 3534 and SU8679 3524, seedlings on very steep track, Tony Mundell, Cathy Wilson, Steve Povey *et al*. 22 May 2019.

***Lysichiton americanus* (American Skunk-cabbage)** Liss Forest SU787287, many hundreds of plants dominating the areas in and beside the stream for 100+ meters, Laura Gravestock & Steve Povey 25 Apr 2019. Arford, many plants beside stream from SU827363 to SU828362, Tony Mundell & Cathy Wilson 30 May 2019.

***Mercurialis annua* (Annual Mercury)** Ibthorpe, on verge of Horseshoe Lane at SU3772 5383, Peter Billinghurst 6 Nov 2018. Manor Farm, Itchen Stoke SU563324, frequent around edges of car park, Tony Davis 31 Dec 2018.

***Myosotis arvensis* var. *sylvestris* (Field Forget-me-not)** Headley Gravel Pit SU5124 6270, flower diameter measured, HFG 25 May 2019.

***Myosotis discolor* (Changing Forget-me-not)** M3 Fleet Services, northbound SU7973 5582, Anna Stewart 26 Mar 2019, confirmed by Tony Mundell. Liphook, Radford Park SU843319, single plant on grassy bank by car-park, Steve Povey 13 Apr 2019. Ashford, East SU743268, several plants in Jack's Meadow, Steve Povey 21 May 2019.

***Myosotis ramosissima* (Early Forget-me-not)** M3 Winchester Services, northbound SU5221 3600, Anna Stewart 21 Mar 2019, confirmed by Martin Rand. Broxhead Common cricket ground SU8057 3709, on grassy bank at edge of cricket green, Tony Mundell & Cathy Wilson 17 May 2019. Aldershot, Pavilion Road SU8516 5041, in a lawn, Fred Rumsey 7 Jul 2019.

***Myosotis secunda* (Creeping Forget-me-not)** NE of Woolton Hill SU4432 6265, in marshy area, Tony Mundell, Gareth Knass & Sarah Ball 24 May 2019.

***Narthecium ossifragum* (Bog Asphodel)** Yateley Country Park SU837598, on heath, Jean Cheadle 26 Jun 2019. Castle Bottom SU798597, scattered throughout area, Jean Cheadle 4 Jul 2019.

***Neotinea ustulata* (Burnt Orchid)** Ladle Hill, total of 168 noted, 81 in this 100m square, 32 at SU4780 5675, 7 at SU4780 5676, 13 at SU4781 5674, 3 at SU4783 5674, 4 at SU4785 5674, 22 at SU4785 5675. A more thorough survey would have revealed more, Fred Rumsey 7 Jul 2019 (who also counted it in 4 other 100m squares not repeated here).

***Neottia nidus-avis* (Bird's-nest Orchid)** N of Crawley SU423361, several plants adjacent to main east-west track, Tristan Norton 2 Jun 2019.

***Nothofagus obliqua* (Roble)** N of Holybourne, surprisingly a large number of very tall mature trees, perhaps 100 trees, in the woodland strips on both sides of the road between SU7359 4371 and SU7345 4384. Voucher specimen collected, Tony Mundell & Cathy Wilson 23 Apr 2019.

***Onoclea sensibilis* (Sensitive Fern)** West Liss SU778289, many well-established plants covering several square meters in damp ground, Laura Gravestock & Steve Povey 25 Apr 2019.

***Onopordum acanthium* (Cotton Thistle)** Preston Candover SU6072 4186, road verge at school entrance., several young plants, Tony Mundell & Cathy Wilson 11 Apr 2019. Polecat Corner SU668501, several plants on roadside verge at road junction near Polecat Corner, Tony Mundell 11 Apr 2019.

***Ophioglossum vulgatum* (Adder's-tongue)** Jack's Meadow, Ashford SU743268, around 100+ plants covering 6 sq. metres, Steve Povey 3 Apr 2019. Stockbridge Marsh SU3568 3593 and SU3569 3595, in marshy areas of meadow, HFG 1 Jun 2019.

Ophrys apifera* (Bee Orchid)** Winnall, Tesco SU4952 3036, at least 14 plants present, mostly **var. *belgarum, Tristan Norton 30 May 2019. Winchester, Winton Close SU477307, several flowering, or now going over in a grassy area. Usually this grass is cut by Winchester City Council but this year they have survived so far, Jenny Streat 25 Jun 2019. The Warren SU734281, around 25 plants beside path through open grassy area, Steve Povey 26 Jun 2019.

***Orchis mascula* (Early-purple Orchid)** Riddings Copse, Ewshot SU8114 5065, 18 spikes here but many others nearby, Tony Mundell & Dave Pearson 17 Apr 2019. Many more spikes (c. 100) now visible in this copse than when visited on 17 April 2019, Tony Mundell 27 Apr 2019.

***Orobanche minor* var. *flava* (Common Broomrape)** Litchfield Estate SU477551, about a dozen spikes of the yellow form with a few of the normal purplish-brown form. On an area of private land (no public access) being reverted to download, Christopher Wills 10 Jun 2019. Identified by Tony Mundell from photos.

***Papaver argemone* (Prickly Poppy)** Arford SU8234 3645, several plants on arable field edge, Tony Mundell & Cathy Wilson 30 May 2019. Westover Farm, New Barn Field SU352409, in cultivated stewardship strip along SE margin of field, also Westover Farm, The Down SU354403, in cultivated strip along SW margin of field, John Moon 11 Jun 2019.

***Papaver hybridum* (Rough Poppy)** NE of Itchen Abbas SU5436 3383, Dave Pearson 9 Jun 2019. Westover Farm, New Barn Field

SU352409, in cultivated stewardship strip along SE margin of field, also Westover Farm, The Down SU354403, in cultivated strip along SW margin of field, John Moon 11 Jun 2019.

***Papaver lecoqii* (Yellow-juiced Poppy)** North Warnborough SU7316 5226, several plants beside service road. Yellow juice confirmed, Tony Mundell & Cathy Wilson 18 Jun 2019.

***Parentucellia viscosa* (Yellow Bartsia)** Woolmer SU790298, locally plentiful in open area, Steve Povey 5 Jul 2019.

Paris quadrifolia* (Herb-paris)** New Buildings SU7523 3670, still in bud, Catherine Chatters 14 Apr 2019. N of Candovers SU7520 3602, 50-60 plants near to public footpath. Growing alongside ***Lathraea squamaria on ***Corylus avellana*** coppice, Cathy Wilson 21 Apr 2019. E of Steep, plentiful in copse at SU751258 and many other places nearby, Steve Povey 2 May 2019.

***Pedicularis palustris* (Marsh Lousewort)** Greywell Fen SU7202 5109, only a few plants, Tony Mundell & Cathy Wilson 18 Jun 2019.

***Petroselinum segetum* (Corn Parsley)** S of Odiham, about a hundred plants scattered along 100m of arable field edge from field corner at SU7537 4849 to SU7547 4833, Tony Mundell & Cheryl Richards 4 Jun 2019.

***Platanthera chlorantha* (Greater Butterfly-orchid)** Around 30 plants at 'The Little Shoulder of Mutton' on Ashford Hanger SU740268, Steve Povey 24 May 2019. Porton Down, single flowering spike noticed at SU25007 37553, Glynne Evans 1 Jun 2019. The Warren SU734281, many plants scattered in open grassy area, Steve Povey 26 Jun 2019.

***Poa bulbosa* (Bulbous Meadow-grass)** Sutton Scotney Services, on kerb edges at SU45809 39903 and SU45836 39904, Paul Stanley 25 May 2019.

***Poa infirma* (Early Meadow-grass)** M3 Fleet Services, southbound SU7978 5575, Anna Stewart 26 Mar 2019, confirmed Tony Mundell.

Polygala calcarea* (Chalk Milkwort)** Old Burghclere Lime Quarry SU4718 5730, HFG 25 May 2019, confirmed at this spot but quite widespread elsewhere in the reserve. Has a congested rosette of larger leaves near to the stem base with much smaller, or no leaves, on stem beneath. Sepal veins not anastomosing at edges (as on ***P. vulgaris). Flower colour a clear sky blue (unlike the more purplish blue of ***P. vulgaris***) and the blue contrasts with the pure white 'centre' of the flower (unlike ***P. vulgaris*** where the 'centre' is just a paler purplish blue).

***Polygala serpyllifolia* (Heath Milkwort)** Bransbury Common SU4163 4175, a few plants, some leaves opposite, Tony Mundell, Gareth Knass & John Moon 6 Jun 2019.

Polypodium cambricum* (Southern Polypody)** Winchester, St Giles Hill, Stratton Road SU4899 2918, large epiphytic colony on a tree, prothalli seen in rhizomes, varied frond morphology (some may be ***P.* x *mantoniae), one specimen determined by Rob Cooke as ***P. cambricum***, Anna Stewart 19 Feb 2019.

***Polypodium* x *mantoniae* (*P. interjectum* x *vulgare*)** Winchester, Quarry Road SU4954 2942, near M3 bridge under Quarry Road sign. Samples identified by R Cooke, Anna Stewart 19 Feb 2019.

***Polypogon viridis* (Water Bent)** Overton SU5136 4970, on rough ground outside a house, Sarah Ball and Sarah White 29 May 2019. North Warnborough SU7317 5204, on road verge, Tony Mundell & Cathy Wilson, 18 Jun 2019.

***Polystichum aculeatum* (Hard Shield-fern)** Selborne Common, North, several plants scattered along base of Hanger from SU739334 to SU737334, and on path above at SU737333, also near bottom of Zig-Zag Path SU740333, Steve Povey & Laura Gravestock 17 Mar 2019. Tunworth SU6735 4835, several plants beside sunken lane, Tony Mundell & Tony Davis 12 Apr 2019.

***Polystichum setiferum* (Soft Shield-fern)** Grayshott SU8645 3496, about 20 plants on a stone wall, Tony Mundell, Cathy Wilson, Steve Povey *et al*. 22 May 2019. Old Burghclere Lime Quarry SU4715 5745, beside the largest lime kiln remains and several more nearby beside the path, HFG 25 May 2019.

***Polystichum* x *bicknellii* (*P. aculeatum* x *setiferum*)** Grayshott SU8671 3512, beside track, single plant in ditch. Voucher specimen of one frond retained, Tony Mundell, Cathy Wilson, Steve Povey *et al*. 22 May 2019.

Potentilla anglica* (Trailing Tormentil)** Bransbury Common SU4162 4177 and SU4166 4194, a few plants amongst many ***Potentilla* x *mixta and ***P. erecta***. Stem leaves mostly ternate, fertile seeds forming, four petals, but larger than ***P. erecta***, Tony Mundell, Gareth Knass & John Moon 6 Jun 2019.

***Potentilla argentea* (Hoary Cinquefoil)** Many plants on road verge at entrance to Hogmoor Inclosure, extending for 20m from SU7859 3570 to SU78613569, HFG 18 May 2019.

Potentilla* x *mixta* sens. lat. (*P. anglica* or *erecta* x *reptans*)** Headley Gravel Pit SU5115 6268, single plant, flowers with both four and five petals., all stipules simple, mixture of 3, 4 and 5 leaflets, petioles all longer than shortest leaflet, HFG 25 May 2019. Bransbury Common SU4166 4194, in extraordinary abundance, growing with ***P. erecta, P. reptans and at least one ***P. anglica***, Tony Mundell, Gareth Knass & John Moon 6 Jun 2019.

Primula* x *digenea* (*P. elatior* x *vulgaris*)** Sheet SU7510 2507, Single plant growing near both parents on a grassy bank in Harrow Lane, Steve Povey & Paul Stanley 28 Mar 2019. [The origin of the ***P. elatior colony here is unknown but it must have been planted].

***Pyrola minor* (Common Wintergreen)** Bordon, Slab SU7821 3578, not yet in flower, but buds beginning to form, HFG 18 May 2019.

***Ranunculus hederaceus* (Ivy-leaved Crowfoot)** Bordon, Slab SU7802 3588, on mud, HFG 18 May 2019. NE of Woolton Hill SU4432 6265, in marshy area, Tony Mundell, Gareth Knass & Sarah Ball 24 May 2019.

Rosa agrestis* (Small-leaved Sweet-briar)** NE of Woolton Hill SU4542 6303, Roadside hedge. Seems to be this but ought to be confirmed when in fruit, Tony Mundell & Gareth Knass 24 May 2019. [Confirmed by Gareth Knass as ***R. agrestis on return visit on 4 Jul 2019. The bush is regularly flailed so the form is not standard, the main stem looks surprisingly old.]

***Rosa* 'Hollandica' (Dutch Rose)** Bordon, Hogmoor SU7858 3571, on road verge at entrance to Hogmoor Inclosure. The bush, known here since 1987, has been mown off, so is currently surviving as short shoots rather hidden in the grass, HFG 18 May 2019. Arford Churchyard SU8210 3632, a large, spreading bush, obviously originally planted, Tony Mundell & Cathy Wilson 30 May 2019.

***Rosa multiflora* (Many-flowered Rose)** Liss Forest SU788285, large plant in hedge alongside railway, near Mint Road, Steve Povey 17 Jun 2019.

***Sagina subulata* (Heath Pearlwort)** Bordon, Slab SU7815 3565 to SU7819 3562, this area has been churned up by motor cycles - but this will help by spreading seeds and deterring scrub growth, HFG 18 May 2019.

***Salix purpurea* (Purple Willow)** Stockbridge Marsh SU354356, beside river, HFG 1 Jun 2019. S of Chilland SU5218 3236, beside footpath, close to river, Tony Mundell & Dave Pearson 12 Jun 2019.

***Salvia sclarea* (Clary)** Overton SU5075 5194, field margin, just one plant not yet in flower, Sarah Ball and Sarah White 23 May 2019.

***Salvia verbenaca* (Wild Clary)** Overton SU5148 4995, scattered on and below wall outside churchyard, Sarah Ball and Sarah White 29 May 2019.

***Saxifraga granulata* (Meadow Saxifrage)** Chilbolton, West Down, approx 16 plants in 2m x 6m patch, SU38362 38985 to SU38360 38991, Glynne Evans 5 May 2019.

***Senecio viscosus* (Sticky Groundsel)** Alton SU725397, found during BSBI New Year Plant Hunt beside B3004 in industrial estate, Cathy Wilson 1 Jan 2019. Photo of plant, in flower, confirmed by Tony Mundell.

***Silaum silaus* (Pepper-saxifrage)** Bransbury Common SU4142 4148 and SU4165 4184, a few plants, Tony Mundell, Gareth Knass & John Moon 6 Jun 2019.

Silene gallica* var. *gallica* (Small-flowered Catchfly)** Bordon, Conde Way SU7965 3470, Tony Mundell 19 Jun 2019, checked the plants at this well-known site to determine which variety they are. The fruiting pedicels are all much shorter than the calyx and the flowers are pink (though nearly all of the flowers are now over) so I conclude it is **var. *gallica and not **var. *anglica***. It is curious that the newly discovered site in 2019, nearby also in part of Bordon, is a different variety, **var. *quinquevulnera***.

Silene gallica* var. *quinquevulnera* (Small-flowered Catchfly)** Bordon SU7836 3504, photos taken by Bill Wain by the boundary fence of the caravan park off Mornington Road were identified as **var. *quinquevulnera by Tony Mundell. There are four plants with c.20 flower spikes. Also seen and photographed in-situ by Tony Mundell on 17 Jun 2019.

Solanum physalifolium* (Green Nightshade)** Hogmoor Inclosure SU7863 3561, HFG 18 May 2019, a single very young plant on the edge of some concrete, sadly not in fruit so cannot be separated from ***S. sarachoides. The records show that there has been continuing confusion between these two species in Hampshire, but Eric Clement and Paul Stanley who were present at this meeting say that ***S. physalifolium*** is much more likely.

Stellaria neglecta* (Greater Chickweed)** Headley/Mill Green SU5297 6329, by footpath on Hampshire side of River Enborne at base of a tree. Sepals measure 5.5mm to 6.0mm, petals 4.5mm to 5.0mm, 10 stamens, Tony Mundell & Dave Pearson 17 April 2019. Mortimer Lane, Butler's Lands SU6668 6253, only a single large plant on the road verge, 2m south of a gateway into the copse. Verge getting very overgrown with dense growth of ***Galium aparine. Both ***Stellaria media*** and ***S. holostea*** also present within a couple of metres, Tony Mundell & Anna Stewart 13 May 2019. Joulding's Ford, Bramshill, Voucher specimen collected. A splendid colony extending for 30m along the footpath (and its ditch) leading to the Hampshire side of the ford, SU7522 6343 to SU7523 6346, stopping c.20m short of the ford. Patches of ***Cardamine amara*** occur on the Berkshire side of the ford nearby at SU7526 6348, Tony Mundell & Anna Stewart 13 May 2019.

***Stellaria pallida* (Lesser Chickweed)** Alice Holt Forest SU812 34166, in short grassland. Only two stamens and no petals, seeds 0.8mm, sepals to 3.0mm, Tony Mundell & Cathy Wilson 5 Apr 2019.

***Symphytum caucasicum* (Caucasian Comfrey)** Preston Candover SU6081 4138, on road verge, opposite side of road from a house, Tony Mundell & Cathy Wilson 11 Apr 2019. Eversley SU7802 6166, large flowering patch beside B3272, Tony Mundell & Anna Stewart 13 May 2019.

***Symphytum orientale* (White Comfrey)** Petersfield (VC12 part) SU743239, single plant beside footpath, Steve Povey 14 May 2019.

***Teesdalia nudicaulis* (Shepherd's Cress)** Hogmoor Inclosure, Bordon SU789349, on both sides of a central gully, Bill & Chris Wain 27 Mar 2019. Hogmoor Inclosure SU7889 3506, several plants in flower and fruit on edge of wide sandy track, HFG 18 May 2019. Bordon, Slab SU7818 3563, several plants, mostly in seed, HFG 18 May 2019.

***Thalictrum flavum* (Common Meadow-rue)** Stockbridge Marsh SU3541 3559, SU3569 3592 and SU3572 3612, HFG 1 Jun 2019. Bransbury Common SU4132 4123, SU4132 4139 and SU4198 4211, a few plants, Tony Mundell, Gareth Knass & John Moon 6 Jun 2019.

***Thelypteris palustris* (Marsh Fern)** Greywell Fen SU7202 5109, doing well, with many plants, Tony Mundell & Cathy Wilson 18 Jun 2019.

***Thlaspi arvense* (Field Penny-cress)** E of Litchfield SU4808 5359, dozens along field edge and in field corner near Caesar's Belt, Dave Pearson 20 Apr 2019.

Torilis arvensis* (Spreading Hedge-parsley)** S of Odiham, a single plant at SU75376 48476 amongst many ***Petroselinum segetum on arable field edge, Tony Mundell & Cheryl Richards 4 Jun 2019.

***Torilis nodosa* (Knotted Hedge-parsley)** Aldershot SU8655 5050, still present on a bit of lawn not far from Aldershot Railway Station, Fred Rumsey 7 Jul 2019.

***Trachystemon orientalis* (Abraham-Isaac-Jacob)** Liphook, Radford Park SU845319, several plants on shady bank, below gardens, Steve Povey 13 Apr 2019.

***Tragopogon porrifolius* (Salsify)** Abbotts Ann SU3243, large plant at foot of wall in Duck Street, also a casual in a nearby garden, John Moon 26 May 2019.

***Trifolium ornithopodioides* (Bird's-foot Clover)** Liss Forest SU7853 2961, many dozens of flowering and fruiting plants in sparse vegetation on sandy dry heath, Tony Mundell & Cathy Wilson 17 May 2019. Chilbolton - West Down SU387392, many hundreds on gravel cap by old car park, Paul Stanley 25 May 2019.

***Trifolium striatum* (Knotted Clover)** Hogmoor Inclosure SU7857 3541, in 'Dog Training' area, HFG 18 May 2019. Aldershot, Pavilion Road SU8516 5041, in a lawn, Fred Rumsey 7 Jul 2019.

***Trifolium subterraneum* (Subterranean Clover)** Bordon SU7967 3591, two plants on bare sand beside Hampshire Road, Bordon, Laura Gravestock & Steve Povey 25 Apr 2019. Hogmoor Inclosure SU7857 3541, in 'Dog Training' area, HFG 18 May 2019. Liss SU779277, large patch by war memorial, Paul Stanley 25 May 2019.

***Tristagma uniflorum* (Spring Starflower)** N of Holybourne SU7328 4127, one flower on grass verge between public footpath and high wall, Cathy Wilson 2 Apr 2019, photos confirmed Tony Mundell.

***Turritis glabra* (Tower Mustard)** Baker's Corner, Kingsley SU7787 3775, 50+ fine plants scattered over cleared area, Steve Povey 13 May 2019.

***Urtica urens* (Small Nettle)** E of Wyck SU764397, many plants all over area used for pheasant cover in summer, Cathy Wilson 17 Mar 2019.

***Valerianella dentata* (Narrow-fruited Cornsalad)** Malshanger Estate SU5724 5387, since last year the field had obviously been harrowed with brilliant effect, Fred Rumsey 7 Jul 2019.

***Veronica scutellata* var. *scutellata* (Marsh Speedwell)** Hogmoor Inclosure SU7908 3469, in dried-up pond, HFG 18 May 2019. Headley Gravel Pit SU5110 6269, the glabrous variety, in a damp patch, HFG 25 May 2019.

***Veronica scutellata* var. *villosa* (Marsh Speedwell)** Silchester Common SU6260 6243, beside a densely shaded pond near a school., Tony Mundell & Mary Parker 14 Jun 2019.

***Vicia villosa* (Fodder Vetch)** Bordon SU7943 3658, growing on disturbed soil beside the new Bordon relief road (the re-routed A325), Paul Stanley 17 May 2019. Also seen by Tony Mundell on 18 May 2019.

***Viola canina* subsp. *canina* (Heath Dog-violet)** Headley Gravel Pit, the best colony with many flowers at SU5110 6268 and a small colony with several plants at SU5111 6269, HFG 25 May 2019.

***Viola* x *bavarica* (*V. reichenbachiana* x *riviniana*)** Tankerdale Lane SU769259, a cluster of several plants beside woodland path of varying degrees of intermediacy between both nearby parents, Laura Gravestock & Steve Povey 21 Apr 2019.

Viola* x *contempta* (*V. arvensis* x *tricolor*)** Headley/Mill Green SU5227 6387 to SU5264 6345 and beyond, in vast numbers mixed with some ***V. arvensis across large areas of a field used to cultivate a purple-leaved Mint. Flowers nearly all yellow, larger ones measure typically 23mm from top to bottom, petals longer than or roughly equal to sepals. Some with the largest flowers may be ***Viola tricolor***, Tony Mundell & Dave Pearson 17 Apr 2019.

***X Dactylodenia heinzeliana* (*Gymnadenia conopsea* x *Dactylorhiza fuchsii*)** Noar Hill SU74516 31803, Nigel Johnson & Rosemary Webb 30 Jun 2019.

The Hampshire and Isle of Wight Wildlife Trust Flora Group aims to monitor the status and promote conservation of the flora of the two counties and develop skills of those members interested in flora.

This edition of *Flora News* was put together by Catherine Chatters and John Norton. Many thanks to everyone who contributed. If you have any comments or would like to submit articles or photographs for inclusion in a future issue please contact:

Catherine Chatters, Flora Group Secretary

Ivy Cottage, Ashurst Bridge Road, Totton, Southampton SO40 7EA

Tel: 023 8086 3920, e-mail: **Catherine.Chatters@hiwwt.org.uk**

When submitting digital photographs, please reduce the size of each image to no larger than 2MB and please include your own name in the filename, along with description of subject and date taken for inclusion in the caption. Please include English and scientific names of any plants.

If you would like to send in your plant records, please see the Hants Plants website: http://www.hantsplants.org.uk for information, including downloadable forms, or contact your relevant vice-county Recorder:

VC11: Martin Rand

3 Kings Close, Chandler's Ford, Eastleigh, SO53 2FF

Tel: 07531 461442, e-mail: **VC11recorder@hantsplants.net**

VC12: Tony Mundell

38 Conifer Close, Church Crookham, Fleet GU52 6LS

Tel: 01252 614516, e-mail: **argmundell@btinternet.com**

Flora Group AGM at Hogmoor Inclosure, 18 May 2019 *(John Norton). See p. 6.*

If you would like to join Hampshire & Isle of Wight Wildlife Trust and become a member of the Flora Group please contact our Membership Team on 01489 774400 or visit our website for further details: www.hiwwt.org.uk. Visit us on Facebook under *Hampshire Flora Group*.

Company Limited by guarantee and Registered in England and Wales No 676313
Registered Charity No 201081
Beechcroft House, Vicarage Lane, Curdridge, SO32 2DP

Hampshire & Isle of Wight Wildlife Trust