

BSBI News

April 2010

No. 114



Edited by Trevor James & Gwynn Ellis



Fumaria reuteri with *F. officinalis*.



Fumaria reuteri

Both *Fumaria* photos taken at Kirriemuir, Angus by H. McHaffie © 2009 (see p. 26)



Lynne Farrell (our new HGS) at the site of *Orobancha alba* on Ardmeanach, Mull v.c.103, on a wet and windy day. Photo R. Scott © 2008 (see p. 62)



Disused water trough with *Chara vulgaris* near R. Moyle (v.c.H7)



Chara vulgaris found in trough pictured above



Anteridium of *Chara vulgaris*



Oogonium of *Chara vulgaris*



Bumble-bee *Bombus terrestris* robbing flower of *Silene dioica*. Photo M. Austin © 2009 (see p. 32)



Silene dioica flower showing signs of nectar robbery. Photo J. Memmott © 2009 (see p. 32)

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Cover picture – *Melitta dimidiata* on *Onobrychis ? montana*, Aosta Valley, northern Italy.
Photo Dr Paul Westrich © 2006 (see p. 13)

Editorial

Hon. Treasurer

At the beginning of April we said goodbye to one Hon Treasurer, Mr Anthony Nixon and welcomed another, Mr Terry Swainbank as his replacement.

We thank Anthony for his work on our behalf in the two years since his appointment and hope that we will continue to see him at meetings and that he now has more time to hone his plant identification and illustration skills.

Terry's appointment is by Council and he is available for reappointment by the membership at the AGM in June, together with the other honorary office-bearers.

Terry's contact details are inside the back cover but please note that Gwynn Ellis continues to be the contact for all matters regarding subscriptions.

Clive Jermy

Thanks to Arthur Chater for the following information on Clive's progress following his recent stroke.

Clive is making good progress and hopes to be home by the time this note is published. He is intensely interested in what is going on in the botanical world, is very keen to get back to his computer, and is hoping to embark on email communication in due course.

Orobanche lucorum

Unfortunately, the lower caption to the bottom photo on the inside back cover of *BSBI News* 113 contains an error which makes a nonsense of the thrust of the article: the location was 'in the wild' in St Andrews and not in the Botanic Garden. Our apologies to Mr Ballantyne and Prof. Cormack for this mistake.

Holly French

Our new Hon. Gen Sec. was so taken with the antics of the daughter of two of our members (Graham French & Jane Squirrel) that she sent the photograph that appears in the Colour Section, Plate 4.

Holly, 8 weeks old at the time (late January), was clearly taking an interest in the inputting of v.c.103 records into MapMate and wasn't the least bit attracted to her father! This augurs well for the future.

Coordinator's Corner

We have received a few complaints about some comments that appeared in one section of the last Coordinator's Corner, and one member wrote:

"Alex Lockton's lively-minded 'Coordinator's Corner' is a welcome regular feature of *BSBI News*. Mr Lockton's iconoclastic and even provocative approach is obviously intended to stimulate thought and debate, and an occasional lapse of manners can be forgiven for the sake of this laudable aim. But in his attack on ... County Recorders (*BSBI News* 113: 94, under 'Say hello to date class 5'), he goes too far."

Particular exception was taken to the use of some words and phrases such as 'naïve', 'So please try to understand this' and 'so silly that I don't really know how to respond'.

We would all like to say that we are sorry if the piece offended some readers. As Alex has assured everyone, it was not intended to offend, rather to exhort, and was certainly not aimed at any particular person. The Society values all County Recorders as well as other members equally. Our policy, in including pieces in *News*, is to allow people to say what they think, as long as this does not set out deliberately to offend or cause harm, and we are sorry if, in this case, it seems that it had.

NOTES

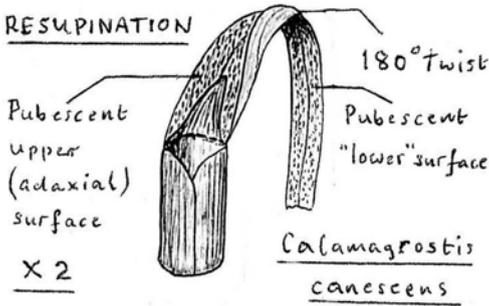
Common problems with identification in the field – experience with the Norfolk Flora Group

BOB LEANEY, 122 Norwich Road, Wroxham, Norfolk, NR12 8SA

I present here some of the more common difficulties encountered by myself or others during tetrad recording with the Norfolk Flora Group, over a period of some 20 years. The species involved are not from the well known ‘critical’ genera, or from ‘difficult’ genera like *Salix* (willows) or *Potamogeton* (pondweeds), where voucher specimens will in any case be retained for keying out at home or for confirmation by the v.c. recorder or referee. Misidentification during tetrad or environmental impact surveys is probably more likely, and more significant in a national context, in the rather more common species.

It is certainly a very good way of improving one’s identification skills to be shown unfamiliar species by more expert botanists during tetrad or other surveys. A major drawback, however, is that identification has to be largely by ‘jizz’. There is seldom time to use field floras, or even for the leader to properly demonstrate the field characters, which take much experience to interpret and time to get into the ‘visual memory’. In practice, more and more of us learn our botany in the context of surveying. This involves identifying plants without many of their key characters (due to stage of growth or time of year), using jizz, together with local knowledge as to what species are most likely in the given habitat, at the time of year, in one’s particular region. Lack of such local knowledge is a major cause, I am sure, for mistakes in environmental impact surveys carried out by ‘outsiders’. Unfortunately, it takes years or decades of frequent botanising to learn the jizz of most of the species encountered in one’s area, and many botanists never reach this stage. Further-

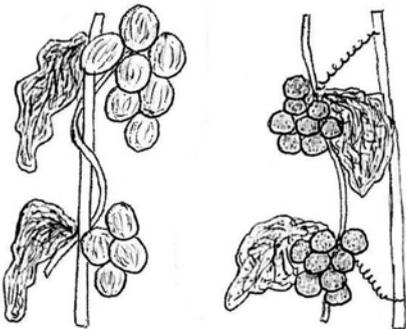
more, if one keeps checking field characters, one eventually realises that some species can mimic another in leaf shape and jizz - e.g. *Atriplex patula/prostrata* (Common/Hastate Oraches), *Carex acutiformis/riparia* (Lesser/Greater Pond-sedges). There is a form of *Leontodon saxatilis* (Lesser Hawkbit) that, in size, leaf posture and hairiness, uncannily mimics *L. hispidus* (Rough Hawkbit), until one looks at the pappus on the outer achenes. For these reasons one should try and become really familiar with field characters, give up using them reluctantly and in some species not at all. Whenever possible, one should use two or three field characters – using only one certainly gives a nice definite answer, but not infrequently a second and third do not fit, so that the particular specimen cannot be identified! Key or field characters can be more variable than suggested by the standard keys, at least on a local basis, and are also easy to misinterpret. Frequently too, illustrations of such characters are misleading. It has been my practice over the years to describe, measure and draw the main characters of a plant before using keys, to avoid bias in description or interpretation. I have used these drawings, augmented when necessary by specimens from the Swann collection in NWH, to illustrate some of the common problems encountered when using field characters. In some cases (e.g. *Atriplex patula/prostrata/oblongifolia* (Babington’s Orache), *Rumex palustris/maritimus* (Marsh/Golden Docks), *Galinsoga* (gallant soldiers) and *Trifolium* (trefoils) the illustrations should provide a better idea of the actual appearance of these characters than those generally available.



1. Resupination in grasses

The leaves of many species of grasses, especially if long and arching, tend to twist through 180° near their base, so that over the majority of their length the true upperside (adaxial surface) becomes the underside. This often causes consternation when confirming *Calamagrostis canescens* (Purple Small-reed) by checking for the characteristic patent hairs on the leaf upperside, with some finding profuse hairs and others finding none at all! Exactly the same problem can arise when looking for the similar but longer hairs to confirm *Elytrigia repens* (Common Couch). John Poland tells me that resupination can occur in many species (*Dactylis glomerata* (Cock's-foot) is a common example) and it could cause difficulties in other grasses on occasions. The answer is to always look at both surfaces!

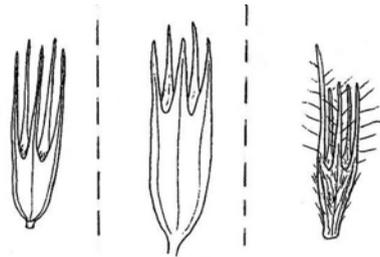
Tamus communis *Bryonia dioica*



BRYONIES AT LATE FRUITING STAGE

2. Fruits of *Tamus communis* (Black Bryony) and *Bryonia dioica* (White Bryony) in autumn

These two seldom grow together and one can go for years without learning the differences between the fruits (I did at least!). Around October, when the leaves are completely withered and difficult to interpret, the fruits can actually be identified at a glance – in *Bryonia* they are only about the size of a hawthorn berry (c.7mm), spherical and a very dull, opaque, dark red, whereas in *Tamus* they are nearly twice as large (c.12mm), ellipsoidal, and a shiny, translucent mid red. *Bryonia*, of course, is a scrambler with tendrils (though these are very finely and tightly coiled by autumn and difficult to see) and *Tamus* a twiner without tendrils.

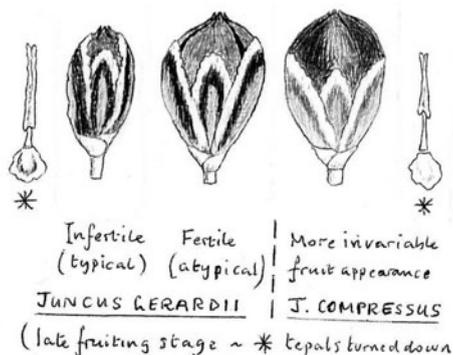


FRUITING CALYCES OF TRIFOLIUM
(hybridum, repens, pratense)

3. *Trifolium repens* (White Clover)/*T. hybridum* (Alsike Clover)/*T. pratense* (Red Clover)/*T. medium* (Zigzag Clover)

Typical plants of the four common large clovers should not cause problems, but the picture has been obscured by increasing use of the first three in the seeding of conservation headlands. The extremely robust cultivars of *T. repens* often used cause particular difficulties, as they can be up to a foot tall with large floppy elliptical rather than obovate leaflets, looking therefore much more like the other species (especially *T. hybridum*). In the vegetative state, the first thing to do is to see whether the leaf stalks arise from creeping stems (*T. repens*) or from aerial stems (the rest). The latter may be decumbent rather than erect, and not there-

fore so obvious, but the stems of *T. repens* are actually so closely attached to the ground by roots that they can hardly be found at all. Just ascertain that the petioles (or later peduncles) arise straight from ground level. The three species with aerial stems should be identifiable from a combination of stipule, leaf characters and hairiness, remembering that *T. medium* can also have a white leaf spot or crescent, but *T. hybridum* never has. The leaves of *T. hybridum* are characteristically floppy-looking with undulate-serrate edges. In the flowering state, *T. medium* (the flowers of which are always red) should be readily spotted from its long elliptic leaves and awl shaped stipules, but the other species can cause problems because all three can have white or pink flowers (or both), not only *T. hybridum*. In this situation a quick check of the calyx characters provides the easiest distinction. The calyces of *T. repens* and *T. hybridum* are very similar, in being white with fine green veins, but very different indeed in the length of the teeth, about $\frac{1}{2}$ as long as the tube in *T. repens*, and $1\frac{1}{2} - 2 \cdot$ in *T. hybridum*. Unfortunately, this distinction is not shown at all in the Stace illustrations, which are very misleading for this pair, showing both calyces with calyx teeth much shorter than the tube, and the teeth much too widely triangular as well. The calyx of *T. pratense* is characterised by extremely long patent hairs on the calyx teeth and a very shaggy calyx tube. I have not seen enough *T. medium*, but the true appearance of the calyces of the other three species is illustrated. These calyx characters remain very obvious in gone-over plants around September and October, by which time leaf and stipule characters may be difficult to interpret.



4. *Juncus compressus* (Clustered Rush) / *J. gerardii* (Saltmarsh Rush)

The Norfolk Flora Group has several times found apparent *J. compressus* quite far inland, with scattered flowering stems and very rounded and protruding capsules, which turned out on further study to be *J. gerardii*. In all cases these plants were competing against thick grass, which probably prevented the usual patch forming habit. The determination was made on stamen characters and seed measurement. A crucial realisation was that the stamens persist, hidden completely behind the tepals, in the fruiting stage and even when the capsules are dehiscent (in both these taxa). The anther-filament ratios remain the same at this late stage and more surprisingly anther length also tends to remain within the usually described ranges. It is, however, important not to make the determination in the field from the anther-filament ratio, because the dried anthers can break off or fold back on themselves to look shorter than they really are. Five to ten need to be examined under a microscope, and the seeds measured (by micrometer if possible) as well. Among the capsules of these *J. compressus*-like *J. gerardii* plants were some with narrowly ellipsoidal, non protruding capsules, more like those often illustrated. However, on dissection these capsules always contained either tiny, translucent sterile seeds (much below the measurements for even *J. compressus*) or were empty apart from a dust-like deposit. It would seem that the 'typical', narrowly ellipsoidal capsules of *J. gerardii*, seen in plants at the inner edge of salt marsh, are sterile, and that growing further inland they have many more fertile egg-shaped capsules, as shown in the Stella Ross-Craig illustration. As in this illustration, these fertile capsules can also protrude quite far beyond the tepals (up to about $\frac{1}{3}$ of their length). Specimens of *J. compressus* we have found (determined on stamen characters and seed measurement) did not have capsules that were noticeably more egg-shaped than these inland *J. gerardii* plants, but the capsules were more protruding ($\frac{1}{3}$ to $\frac{1}{2}$ the length of tepals). The lowest bracts were nearly all longer than the inflorescences, but not invariably so, whereas

those of *J. gerardii* were very much 'either way'. Another confusion with this pair is the colour of the tepals, described as light brown or dark brown respectively. In fact the midrib is a very light brown and the outer edges white-scarious in both taxa. Between is an area that is mid brown in *J. compressus* and dark blackish-brown in *J. gerardii*. Very rounded capsules protruding well beyond the tepals (up to a $\frac{1}{3}$) are not enough to determine *J. compressus*, even if the plants are growing inland and show scattered flowering stems. Stamen characters and seed measurement must be used and the former can still be used in the late fruiting stage.

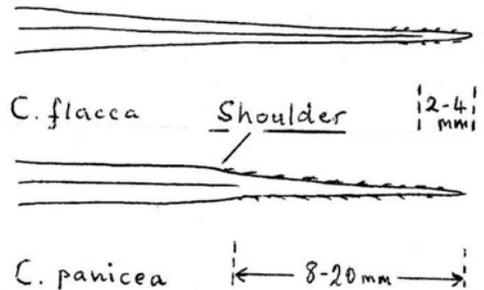


FRUITING TEPALS OF RUMEX
PALUSTRIS AND R. MARITIMUS

5. *Rumex maritimus* (Golden Dock) / *R. palustris* (Marsh Dock)

The difficulty here lies in the characters of the inner tepals (inner perianth segments) at the fruiting stage. There is a very clear distinction, but it is one most botanists do not appreciate because we seldom can compare the two species, and meet them fairly infrequently. The illustrations generally available are also misleading, the only ones showing the true appearance being those of Stella Ross-Craig. I have looked at about 20 plants, roughly half and half, over the last few years, and checked the fruiting characters against specimens in the NWH Swann collection (see illustrations). There are definite differences in tubercle shape and in the comparative length of the tepal apices, but the comparative length and character of the teeth are the only clear cut distinctions. The teeth in *R. maritimus* are virtually all much longer than the inner tepal itself, and those in *R. palustris* distinctly shorter. The teeth in *R. maritimus* are finer, more flexible and twisted, those of *R. palustris* a little thicker and rather

more rigidly curved. The Stace illustrations show the teeth much too thick and about half the length they should be, in both species. Fruit colour can be helpful at the newly ripe stage, but early or late can be misleading; and the ripe fruits of *R. palustris* can be yellowish, though yellowish-green rather than golden yellow. The best field character to use is whether the inner tepal teeth are longer or shorter than the length of the tepals themselves.

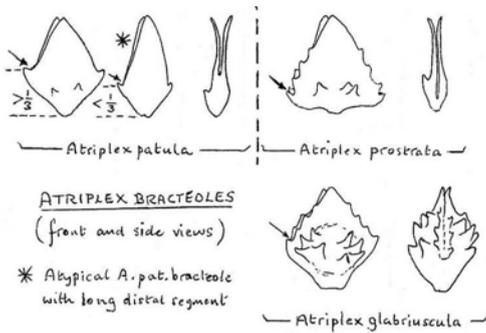


LEAF TIPS OF CAREX FLACCA
AND CAREX PANICEA X 2

6. *Carex panicea* (Carnation Sedge) / *C. flacca* (Glaucous Sedge)

Here, the trigonous tip character is difficult to interpret and can cause more problems than it is worth. I suspect that most botanists do not find it helpful until they can anyway distinguish these two species commonly encountered together in the drier parts of fen or wet meadow. The striking thing is that *C. panicea* leaves are much broader at the base, tapering gradually to the tip (awl shaped), whereas *C. flacca* leaves are narrower at the base and +/- parallel sided for much of their length. *C. panicea* leaves also look more glaucous, whereas *C. flacca* leaves only look really glaucous when turned over. I do not agree with the usual statement that *C. panicea* leaves are trigonous and *C. flacca* leaves not. Both are trigonous at the very tip for sure. If one looks at the leaf tip of *C. flacca* 'end on' one sees a triangle, and you will get a triangular cross section if you cut within 2mm of the tip. The difference is that in *C. panicea* the trigonous portion is 8 - 20mm long and with slight but definite 'shoulders' visible in some

leaves where the trigonous portion begins, at which point the dorsal groove also usually disappears (see illustration). In *C. flacca*, on the other hand, the dorsal groove disappears only 2 - 4mm from the tip, without shoulders. I feel that the trigonous tip character is useful once this is realised, but misleading if not.



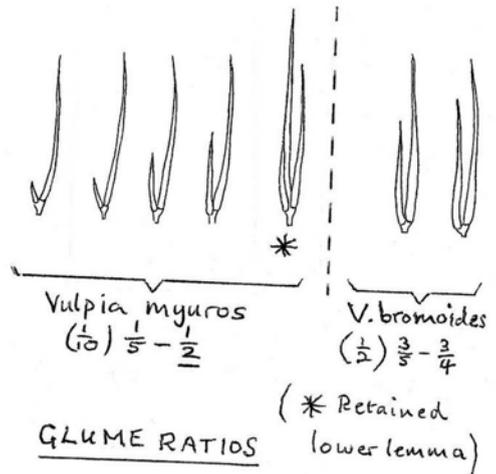
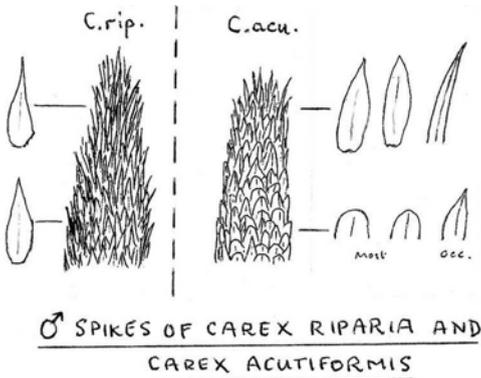
7. The proportion of bracteoles fused character in *Atriplex* (Oraches)

Distinguishing between *Atriplex prostrata* (Hastate Orache) and *A. patula* (Common Orache), and between *A. prostrata* and *A. glabriuscula* (Babington's Orache) is a common problem because leaf characters often overlap, especially in the latter pairing. Bracteole characters can very quickly solve this problem but are seldom used even by experienced botanists, due to misunderstandings about the descriptive terms used and especially the 'proportion of bracteoles fused' character. The bracteole pairs in *Atriplex* are always fused at the outer end of the basal portion, or in other words, where the lower edge of the bracteole turns abruptly inward towards the tip. This being the case, the proportion of bracteole fused is just another way of expressing the basal shape – if sub-cordate, truncate or widely cuneate (*A. prostrata*) the bracteoles are 'fused at the base only'; if narrowly cuneate 'for over $\frac{1}{3}$ their length' (*A. patula* and *A. glabriuscula*). In practice it is infinitely easier to put 5 - 10 of the largest bracteoles flat down on the palm of the hand and assess the average basal shape than to hold them up and look (strictly from the side!) to see the proportion of bracteole fused. In spongy or woody bracteoles it is even harder, because the line of separation between the

bracteoles can be virtually invisible in the field. Another problem is that the distal portion of the bracteole, above the point of fusion, is much more variable in shape and length than the basal portion. *A. patula* bracteoles with atypically long distal portions will often have a proportion of bracteole fused below $\frac{1}{3}$, although the basal portion is still typically narrowly cuneate. A further difficulty is that all bracteoles can be said to be 'fused at the base only', if one defines the 'base' not as the central area of attachment but as the whole lower edge of the bracteole. This is the sense of 'base' used to describe leaves (see Stace, 2nd ed. : 989), and I think this uncertainty is another reason why botanists do not use the proportion of bracteole fused character. Confusion of this sort is well exemplified by the illustration for *A. glabriuscula* in Stace, where the basal shape is entirely wrong, being truncate, exactly as in the *A. prostrata* illustration. The point of fusion, however, is shown halfway up the distal portion (where it never occurs), rather than at the outer end of the basal portion. I feel that the basal shape of the bracteoles (subcordate/ truncate/widely cuneate/narrowly cuneate) should be used for identifying *Atriplex* in the field, rather than proportion of bracteole fused. Looking from the side is more useful to see if the bracteole is 'fat' and 'spiny' (*A. glabriuscula*, *A. littoralis* (Shore Orache), *A. laciniata* (Frosted Orache)) or thin and leaf-like (*A. prostrata*, *A. patula*). The problem is that the available illustrations are often misleading on basal shape and hardly ever show side view at all. I hope to rectify this in a further illustrated article in the near future.

8. *Carex acutiformis* (Lesser Pond-sedge) / *C. riparia* (Greater Pond-sedge)

These two continue to cause problems for quite experienced botanists, mainly due to misunderstandings over the male glume and ligule characters. In the vegetative state, *C. acutiformis* can usually be spotted by its longer, narrower, more gradually tapering and arching leaves, and, when flowering, by the male spikes being narrower and parallel sided (cylindrical) rather than wider in the middle (fusiform). However, size and leaf width is very variable, and *C. acutiformis* can be very



robust or alternatively tiny enough to be taken for much smaller species, such as *C. nigra* (Common Sedge). Quick confirmatory characters are needed in the field, and usually the male glumes are used. Unfortunately, the appearance of these varies greatly between the top and bottom of the spike, those at the top looking much narrower and more acuminate in both species, before they are flattened out by the expanding utricles. As a result the ‘spiky’ appearance characteristic of *C. riparia*, caused by the protruding tips of acuminate glumes, can occur frequently at the upper end of *C. acutiformis* male spikes as well. Lower down, the glumes flatten out and become more blunt, with only a few acute tipped and many rounded due to abrasion. In *C. riparia* the basal glumes all remain narrowly acute or acuminate (see illustration). Another check is the ligules, but this too can be misinterpreted. Virtually always, *C. riparia* has a very short rounded ligule, exactly the same shape as a thumb-nail, and *C. acutiformis* a long pointed ligule like the tip of a pencil. However, quite frequently the *C. acutiformis* ligule is rounded near the tip. The important thing is that it is still very long compared with that of *C. riparia*. The most reliable check in our experience is the aerenchyma shape just below the ligule: 3 - 4• as long as wide in *C. riparia*, and 6 - 8• in *C. acutiformis*. This should be used, alone with ligule shape, if there is any doubt after checking the glumes at the base of the male spike.

9. *Vulpia myuros* (Rat’s-tail Fescue) / *V. bromoides* (Squirrel-tail Fescue)

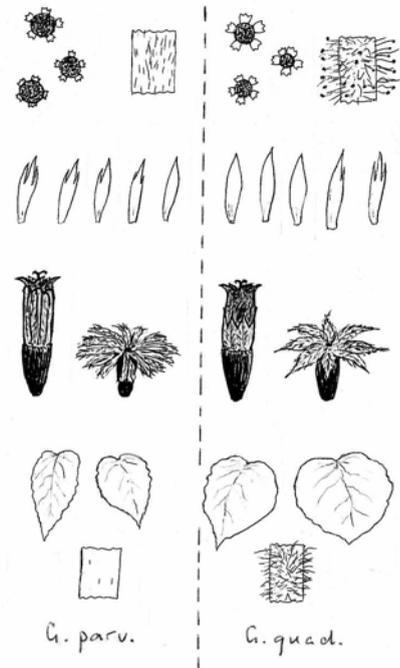
This is an instance in which misinterpretation of field characters leads to two species quite different in jizz being routinely confused. *Vulpia bromoides* has short ‘few-flowered’ inflorescences with quite fat, slightly spreading and separate-looking spikelets; whereas in *V. myuros* the spikelets are very fine and appressed, producing a very long, confluent, slender, +/- nodding panicle, with virtually always a few spikelets in the uppermost leaf sheath. Short *V. myuros* inflorescences still have many spikelets and look more like *V. ciliata* (Bearded Fescue). Short *V. bromoides* can have only 2 or 3 spikelets and looks like nothing else!

The usual way to sort out *Vulpia* specimens is, of course, to look at the comparative lengths of the upper and lower glumes. In the intact spikelets the glumes are very difficult to see as they are so closely applied to the lower lemmas, so all the lemmas are usually pulled out to leave the glumes easily visible. Unfortunately, with *V. myuros* the very slender lowest lemma, which looks very like a glume, is easily left behind, and in this case the upper glume opposite is about 2/3 the length of the lemma, suggesting *V. bromoides*! In gone-over panicles it is, in fact, easier, because the glumes are usually both left behind when the spikelet disarticulates. A more fundamental problem, at least in Norfolk, is that the

comparative lengths of the glumes is even more variable in *V. myuros* than is given in Stace, or in Cope & Gray. Stace warns that glume lengths should be examined only in spikelets at the base of the inflorescence or its branches, but even if this is done it is not unusual to find glume ratios of about $\frac{1}{2}$, outside the range given in both accounts. I have even found an absolutely typical specimen of *V. myuros* with all the glumes showing this ratio. On the other hand in *V. bromoides* the ratio is much more constant; in my experience always three fifths, and always clearly over half. Both these problems, I feel, lead to misidentification of *V. myuros* for *V. bromoides*. A glume ratio of $\frac{1}{2}$ fits *V. bromoides* in both Stace and in Cope & Gray but is, in our region at least, more likely to indicate *V. myuros*. I, therefore, believe that one should look at at least five spikelets if one finds this glume ratio to begin with – the majority of spikelets in *V. myuros* will have a glume ratio of much less than $\frac{1}{2}$, and virtually all *V. bromoides* of $\frac{3}{5}$. In fact, jizz is a very reliable way of separating this pair in the field, as above. ‘*V. myuros*-looking plants’, with unusually short inflorescences, short culms, and very unequal glumes, should be taken home to exclude *V. ciliata*. *Vulpia fasciculata* (Dune Fescue) looks more like a very short-stalked *Hordeum* than a *Vulpia*, because of its much larger spikelets, and should be easily spotted. In this case the lower glume is so tiny as to be virtually invisible in the field, another source of confusion.

10. *Galinsoga quadriradiata* (Shaggy-soldier)/*G. parviflora* (Gallant-soldier)

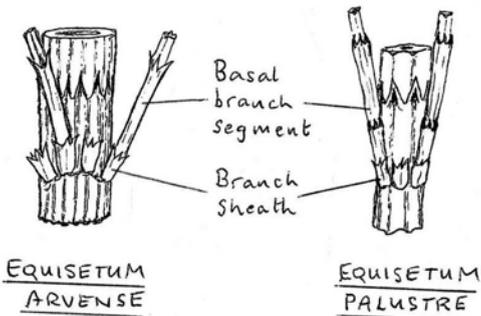
Surprisingly, Poland & Clement do not deal with vegetative identification in this pairing, though Sell & Murrell do. My observations on hundreds of plants in Norfolk and Dusseldorf, Germany (where both species are common pavement and waste ground weeds), confirm Sell & Murrell’s indumentum characters, useful in both the vegetative and flowering stages, and have shown also some useful spotting characters. *G. parviflora* can be fairly hairy, but the lower stems are always glabrous



GALINSOGA PARVIFLORA AND *G. QUADRIRADIATA*. (i) Inflorescences ; peduncle hairs. (ii) Receptacular scales. (iii) Achenes : immature & mature pappus. (iv) Upper-stem leaves ; basal stem hairs.

or sub-glabrous, and virtually all the hairs higher up are eglandular and strictly appressed. Occasionally an odd patent glandular hair is found, but always mixed with appressed, not patent, eglandular hairs. In *G. quadriradiata* on the other hand, the main stem low down has very long, kinked, patent, eglandular hairs, usually extremely profuse and shaggy, and these usually remain profuse higher up, becoming progressively mixed with long, patent, red-tipped, glandular hairs, often on the inflorescence branches, and always on the peduncles. *G. quadriradiata* is now much the most frequent of the two species in Norfolk, in Dusseldorf and, I believe, in London, and urban botanists may now be assuming that all gallant soldiers are this species, because of a lack of easy spotting characters. In fact, with practice, the two can provisionally be

separated by jizz and the size of the ligules. In *G. parviflora* the leaves are usually comparatively small and lanceolate to narrowly ovate. In *G. quadriradiata* they are much larger and broadly ovate to sub-orbicular, obscuring the upper branches. The white ligules of *G. parviflora* are tiny compared to the yellow disc, each ligule being only $\frac{1}{4}$ - $\frac{1}{2}$ the disc width, whereas in *G. quadriradiata* the ligule is much larger, $\frac{1}{2}$ - $\frac{3}{4}$ the disc width. Another problem encountered lies in the interpretation of the receptacle scale and pappus characters. Under a $\cdot 10$ lens the trifold nature of the scales in *G. parviflora* is easily missed because the overall oblanceolate outline of the scale is the same in both cases (occasional scales in *G. quadriradiata* are trifold in any case). Botanists also in my experience have difficulty with the awning of the pappus, not least because one is lucky to find one gone over flower per plant. A much better and more readily available character is the comparative length of the immature pappus and corolla: in *G. quadriradiata* the pappus is around $\frac{1}{2}$ the length of the corolla tube, and in *G. parviflora* at least $\frac{7}{8}$ the length, so that basically the dull yellow corolla can hardly be seen above the off white pappus. At the vegetative stage the two gallant soldiers can be readily separated by the presence or absence of long, patent, eglandular hairs on the lower stem. Later on, the ligule to disc ratio and especially the immature pappus to corolla ratios are reliable and easier to use than the receptacle scale and mature pappus characters. The comparative size of the ligules, and the narrower and smaller leaves of *G. parviflora*, are good spotting features.



11 *Equisetum arvense* (Field Horsetail) / *E. palustre* (Marsh Horsetail)

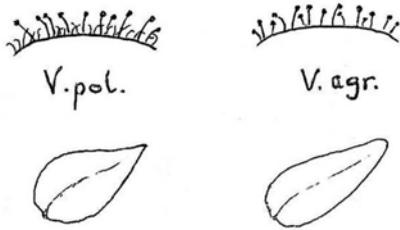
As a beginner, or where jizz is intermediate, one uses the comparative length of the leaf sheaths (better understood as 'stem sheaths') and the basal segments of the branches for this distinction. It is not usually pointed out that the base of each branch is surrounded by a 'basal sheath' that looks very like a branch segment itself, though much shorter. One can quite easily take this basal sheath to be the basal branch segment and thus wrongly identify *E. arvense* as *E. palustre* (see illustration).

12. *Bromus hordeaceus* (Soft-brome) / *B. commutatus* (Meadow Brome) (*B. racemosus* (Smooth Brome))

On several occasions we have found confusing examples of *B. hordeaceus* with very long panicle branches somewhat suggestive of *B. commutatus* (now regarded by Cope & Gray as a form of *B. racemosus*). On looking further, it becomes clear that, although the panicle branches are extremely long, they remain +/- erect and appressed, the pedicels remain +/- shorter than the spikelets and the lemmas thickly pubescent. One sometimes finds a very long panicle branch with a single spikelet and it is tempting to define this as a pedicel, and therefore assume that the plant cannot be *B. hordeaceus*! This taxon is now well described and illustrated in Cope & Grey, under the title of *B. hordeaceus* ssp. *longipedicellatus* (though shouldn't that be 'ssp. *longiramosus*'?).

13. *Veronica agrestis* (Green Field-speedwell) / *V. polita* (Grey Field-speedwell)

The only clear-cut vegetative field character here, according to Poland & Clement, would seem to be the longer petioles in *A. polita* (<4 mm, as opposed to <2 mm). I have looked at about twenty specimens in the field and NWH, and found that leaf shape and colour were often intermediate and unhelpful. Attempts to separate these two in the field usually resolve around the capsule hairs, but these need a $\cdot 20$ lens and good light conditions to interpret, and usually there is a difference of opinion! When one gets a few capsules under



CAPSULE HAIRS AND SEPALS IN
VERONICA POLITA AND V. AGRESTIS

the microscope at home, moreover, one often comes to a different conclusion! In my opinion, a much better field character is the shape of the sepals, where there is a very clear cut and invariable difference. The sepals of *V. polita* are always broadly ovate, with the distal edges straight and converging onto a sub-acute or acute tip. Those of *V. agrestis*, on the other hand, are narrowly elliptic-lanceolate, with +/- parallel sides and the distal edges

curving very gradually to a rounded tip (see illustration). In fresh material these sepal characters correlate absolutely with the capsule hairs, and they also correlate well with leaf colour and shape when these characters are clear cut one way or the other.

Acknowledgements:

I would like to thank Alec Bull, Bob Ellis and Gillian Beckett, leaders of the Norfolk Flora Group surveys, for all that I have learnt from them over the years.

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Hydrangea colour and soil pH

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Jack Oliver (*BSBI News*, 113: 38-39) makes the classic mistake of assuming that just because anthocyanins behave like litmus – red in acid solution, blue in alkaline – that Hydrangeas must do the same. Unfortunately Hydrangea flowers are blue on acid soils, pink on alkaline ones – the exact opposite of the behaviour of litmus. This is because there is no simple relationship between the pH of cell sap and the soil a plant grows in, and in any case the colour change is not due to cellular pH. In

fact the anthocyanin in Hydrangeas is basically pink, but combines with aluminium to form a blue pigment. Blue Hydrangeas therefore need aluminium, but aluminium compounds are soluble only in acid soils. So, for a really blue Hydrangea, an acid soil is a must. Given an acid soil (pH below 5.5), you can help things along by watering with aluminium sulphate or good old-fashioned alum, but on a neutral or basic soil, blue Hydrangeas are impossible.

Sporulation of *Lycopodium annotinum* (Interrupted Clubmoss) in winter – addendum

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With reference to the note in *BSBI News* 109: 27 (September, 2008), we regrettably did not get any response from *BSBI* members. However, plate 1 in the colour section of *BSBI News* 113 (January, 2010) clearly shows sub-

mature cones shortly before sporulation. As the photo was taken in November 2009 in Scotland (v.c.96), it proves the occurrence of the phenomenon, as to be expected, also in the British Isles.

***Onobrychis viciifolia* (Sainfoin) on Salisbury Plain, Wiltshire**

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I have read with interest the two recent notes on *Onobrychis* in Britain by Eric Clement and David Pearman (*BSBI News*, 112: 19-20 and 113: 30). Some other views and observations may assist in assessing the status and significance of two variants of this plant in Britain. *Onobrychis viciifolia* Scop. is widespread on the chalk grasslands of Salisbury Plain, Wiltshire, where it clearly consists of two subspecies: the native *viciifolia viciifolia* and the alien *viciifolia decumbens*. For the most part these are readily distinguished in the field on morphological characters. The native subspecies (sometimes referred to as ssp. *montana*) has deep pink flowers and is decumbent to erect in form, but less so than the alien subspecies. Generally the native plant has fewer leaflets than its close relative. With practice the two forms can be separated from one another at a distance of several metres.

The native *viciifolia viciifolia* is locally and widely distributed over the Plain and is particularly common on the grasslands about Tilshead, extending further north to the Vale of Pewsey and the Marlborough Downs. It is clearly a plant that is not in any way threatened or in decline on the Plain. Thomas Johnson was the first to publish the occurrence of *Onobrychis* from the area. In his *Mercurius botanicus* (1634) he records the plant "On the farther edge of Sarisbury Plaine" (I am indebted to David Pearman for drawing this reference to my attention). The introduced subspecies *decumbens* is common on the grasslands, often being found alongside the native subspecies. Apparent intermediates between the two subspecies occur from time to time. Henry Edmunds, a local farmer at Cholderton (on the Wiltshire/Hampshire border and very close to the Bulford area of the Plain), has grown ssp. *decumbens* as a crop for many years. Indeed, he is the only farmer on the Plain that continues to cultivate *Onobrychis* commercially. The plant has

been grown at Cholderton since 1730, and there has been a continuation until the present day (Edmunds' grandfather having taken on the crop in the 1880s) (Edmunds, pers. comm.). It is grown annually on the estate (using a variety known as "Hampshire Common") and occupies an area of over 200 acres. This form generally produces flowers earlier in the season, from about May and is over by July. It is, of course, desirable that a commercial crop flowers at the same time and thus can be mown once the pods ripen synchronously. The native form flowers from June to October. There is some overlapping in the flowering periods of the two subspecies that can perhaps favour cross-pollination. This, however, has not been proved to occur on the Plain. Also, the cutting of both subspecies generally encourages a second, later flowering.

It is clear that the native form of *Onobrychis* has been established in Britain for several thousand years. There are two examples that provide evidence supporting this view. First, quantities of *O. viciifolia* pods or the skeletal remains of these have been identified from late glacial deposits (the Middle and Late Weichselian) including those at Earith, Kent, and Nazeing, Essex (Godwin, 1975). *O. viciifolia* pollen in such glacial deposits has not, apparently, been found in Britain. Second, there is one bee in Britain that is very intimately associated with the plant, being totally dependent on it for pollen. *O. viciifolia* attracts many insects, mostly bumblebees (*Bombus* species) and honeybees (*Apis mellifera*) which act as pollinators. However, there is one bee that only visits the species for pollen and nectar, the melittid mining-bee *Melitta dimidiata* Morawitz. As a consequence, this species is only to be found where there is sufficient *Onobrychis* to sustain viable populations. The bee has never been found visiting the introduced form as cultivated by Edmunds but probably does so

where it occurs on the natural grasslands. It is, however, more likely to favour the native *viciifolia viciifolia* as a pollen and nectar source as this plant is in full flower during much of the bee's flight period, at a time when *decumbens* is nearing the end of its flowering period. *M. dimidiata* flies from late June to late July, the period being very closely synchronised with the flowering of both subspecies of *Onobrychis viciifolia*, especially during June. P.E.W. Currie was the first to find the bee in Britain, on 9th July 1949 near Tilshead in the centre of the Plain. Some years later it was discovered at another site very close to the first one, and later still at an isolated locality near Easton Royal, in the Vale of Pewsey. It should be emphasised that the serious recording of bees on the Plain was largely neglected until the late 1980s and it is no surprise that the bee was not identified as a British species until relatively recently. Since 1989 Stuart Roberts and I have investigated numerous sites on the Plain where *Onobrychis* is well established and we have found *M. dimidiata* in many of these, sometimes in abundance (it is a large bee, about the size of the cosmopolitan honeybee, and is not easily overlooked) (Else & Roberts, 1994). In Britain the bee is found exclusively in Wiltshire, with confirmed records only from Salisbury Plain, the Vale of Pewsey (formerly Easton Royal) and the Marlborough Downs (Walker's Hill). Else and Spooner (in Shirt, 1987) list the species as Endangered (RDB1), as does Falk (1991) in his status review of the British aculeate Hymenoptera. It would seem inconceivable that this bee was somehow imported into Britain with *Onobrychis* when subspecies *decumbens* was introduced for cultivation. Indeed, Baker, when introducing the species as new to Britain (1964), was of the opinion that the bee arrived in Boreal or Sub-boreal times. *M. dimidiata* is very widely distributed in Eurasia, reaching Russia, Greece

(Kos), Turkey and central Asia. The nearest populations to Britain are isolated ones in Belgium and central France. The bee is oligolectic on *Onobrychis* throughout its range, but facultatively monolectic in Britain. It visits several species of *Onobrychis* species in mainland Europe, including *O. arenaria* (Kit.), *O. montana*, *O. supina* (Vill.) and *O. viciifolia*. The Wiltshire populations are of international significance and are the only ones known from the Atlantic biogeographical zone. The species is Endangered throughout much of its world range.

Paul Westrich has very kindly allowed me to illustrate this note with a photograph of a foraging female of *M. dimidiata* (see Front Cover). He took this in the Aosta Valley, northern Italy, at an altitude of about 1600 m. At this location the bee is apparently associated with *O. montana*, a very close relative of *O. viciifolia*.

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Sainfoin (*Onobrychis viciifolia*) – the subspecies may matter to insects

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The mixed up genetic nature of the British flora can be considered variously as a taxonomic conundrum, a field botanist's challenge or a conservation issue. But it is not just a botanical matter. Many phytophagous insects and other insects with very specific floral requirements can be much scarcer or more geographically restricted than the plants they require. In some instances this is down to climatic factors or the fact that the plants they need now survive at sparse levels within highly fragmented populations across many parts of their range. But I suspect that the genetic nature or subspecies of a plant may be a factor in some instances, either because it affects growth and flowering characteristics of the plant or physiology and chemistry. If any of you happen to be Black-poplar enthusiasts, you will be aware that the spiral galls created by *Pemphigus* aphids (see Colour Section, Plate 1) are one of the best clues that you are dealing with true *Populus nigra* as opposed to one of the \times *canadensis* hybrids. Mistletoe by contrast, prefers the hybrids. Some of our

scarcer bees may also be influenced by plant races. One rarity, *Melitta dimidiata*, only feeds on Sainfoin (*Onobrychis viciifolia*) and is restricted to Salisbury Plain, where the native Sainfoin is common. It is said to use an alien form of the plant here (George Else – pers. comm.) but does not seem to occur at sites with only the alien form in other parts of southern Britain. The related *Melitta tricincta* only forages on Red Bartsia (*Odontites verna*), and is restricted to southern Britain, even though the plant is locally common elsewhere, including massive populations in some of the old limestone quarries of my adopted county (Warwickshire). Is it especially dependent upon ssp. *serotinus*?

Like you botanists, we entomologists are now increasingly using DNA analysis to work out what is going on, and it is throwing up plenty of surprises, including a new bumblebee which has been hiding away within the traditional concept of the common *Bombus lucorum*, appropriately named *Bombus cryptarum*!

Chemically-induced colour change in *Chamerion angustifolium* flowers

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In response to the request for information on chemically-induced colour change in plants (Jack Oliver, *BSBI News* 113), I wish to say that I observed this phenomenon in the summer of 2005.

There are extensive stands of *Chamerion angustifolium* (Rosebay) growing by the road margins that dissect Kilderry Wood, Milltown, Kerry (v.c. H2). Several weeks before flowering time, the wood management applied a spray solution to the

encroaching vegetation that was narrowing the roadway. When flowers did appear they were white rather than the usual red-purple. Plants away from the vapour drift displayed the typical colour. A year later, white flowered *Senecio jacobaea* (Common Ragwort) plants were found growing by the road margin, but whether this was chemically-induced or as a result of a rare natural occurrence, I cannot be certain.

Progress with a project to locate and DNA fingerprint the Water Poplars of southern England

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What is a Water Poplar? It is the old English name (Cook, 1676) for what we now call the ‘native’ Black Poplar or the ‘Atlantic race of the European Black Poplar’: *Populus nigra* ssp. *betulifolia*. Neither vernacular is particularly appropriate as it would seem that many if not all our trees are probably no more native than the ‘English’ Elm *Ulmus procera*; now known to have been introduced to England in the first century AD and to derive from an Italian clone to the east of Rome. More appropriately, it could be given the less embarrassing appellation Atinian Elm (Gil, L. *et al.*, 2004). Furthermore, *Populus nigra* extends right across Europe into central Asia and south into N. Africa, so it’s hardly appropriate to call *P. nigra sensu lato* the ‘European’ Black Poplar. Hence my endeavour to promote the old English name to minimise confusion with so-called ‘Italian’ Black Poplars/Hybrid Black Poplars and other Euro-American and Euro-Asian hybrids and the various American Cottonwoods.

There has been a growing realisation Europe-wide that enormous quantities of pollen are being produced by the tens of thousands of ornamental and commercial plantings of crosses between the exotic American Eastern Cottonwood *P. deltoides* and *P. nigra typica*, and *P. nigra* ssp. *betulifolia*; together with fastigate clones of *Populus nigra typica*, in particular the male ‘Italica’, and the various male *P. nigra* ssp. *betulifolia* × ‘Italica’ clones known collectively as ‘Plantierensis’. Although females of *P. nigra* have been shown to respond preferentially to conspecific pollen in mixed pollen clouds (Vanden Broeck *et al.*, 2006), if none alights on their stigmas, they will accept pollen from, and cross with *P. ×canadensis*. They can also cross with ‘Italica’, and Water Poplar males can cross with the fastigate female ‘Gigantea’. Despite the thinly

scattered distribution of our WPs, this is not a significant problem in the U.K. However, suitable conditions for germination and establishment no longer exist due to destruction of our riparian forests. It is, however, a problem on the continent, where, for example, around 50% of the young trees along the Rhine were found to be of hybrid origin (Smulders *et al.*, 2008), and will become our problem if, as proposed recently, riparian forests are re-established in the U.K. In another sense, it is already a problem, in that numerous hybrid trees imported from the continent involving ‘Italica’ and ‘Gigantea’ as parents have been turning up in the U.K. Thus, if we don’t vegetatively propagate the full range of genetic variation present in our veteran WPs this will be lost when the old trees die. Genuine Water Poplar seedlings are very exacting in their environment, requiring a gravelly, weed-free substrate that remains wet with well-oxygenated water right through the summer, so that any seedlings that survive are likely to be the less exacting and more vigorous hybrid crosses. A few seedlings are occasionally found in the U.K., but we can only be really sure that they are the product of a genuine intraspecific cross if we bag the young female flowers and dust them when receptive with pollen from a *bono fide* male and grow up the seedlings in a nursery. Until we know more about our clones, I would urge restraint on making artificial crosses. Suppose, for example, one of our strains has an extra thick cuticle that protects it against fungal attack. If we cross it with one that has a thin cuticle we could end up with compromised progeny.

In recent decades, enthusiasts have become concerned about the apparent scarcity of Water Poplars, and are now aware of the need to conserve as much remaining genetic variation as possible, to try and avoid the sort of

epidemic disease outbreak that decimated our monoclonal *Ulmus procera*. This has led a number of counties to extend and refine the recording of the exact location and sex of individual trees started by the late Edgar Milne-Redhead, and they have begun to collect cuttings from every individual tree, and one or two from each group of trees, and to propagate them in clone banks. This resource, combined with new, highly sensitive DNA microsatellite analyses, has made it possible to begin to answer a number of outstanding questions about our U.K. Water Poplars. This analysis is based on the detection of size differences in a set of seven highly repetitive regions of DNA known as microsatellites, that are widely dispersed across the poplar genome. These small size differences, which accumulate over long periods of time, can be detected by isolating these DNA segments and running them on polyacrylamide gels. The resulting information can be used to indicate whether a tree is likely to have been derived vegetatively via a cutting, in which case the pattern of microsatellites of parent and offspring will be identical, or whether it has grown from a seed, in which case the microsatellite pattern will be a combination of the fingerprint of the parents. This technique has been adopted in the U.K. by Joan Cottrell and Stuart A'Hara at Forest Research, Roslin, and was initially applied to the WPs held in clone banks across the U.K. (A'Hara *et al.*, 2009). Their results for the 250 trees sampled suggest that, as already suspected, most of our U.K. trees have been cloned from cuttings taken from a small number of genetically unique individuals.

Joining forces with Peter Ennis and Keith Turner, who had been locating and mapping WPs in Suffolk and Essex, I began in 1997 to search for, locate, and accurately map all the veteran WP trees in Essex, and more recently throughout the London area and parts of North Wiltshire/East Gloucestershire. It quickly became apparent that using national grid references, whether derived by map or GPS, was not a sufficiently accurate way of locating or

recording an individual tree, and many hours and days were spent searching for trees that others had reported. The problem has been solved by annotating the crown of each tree recorded on satellite aerial images (using the site

<http://wtp2.appspot.com/wheresthepath.htm>, in conjunction with PaintshopPro 5), so that now we have begun to sample the trees for DNA fingerprinting it is possible to be certain which tree has been sampled. During 2009 a further 126 trees were sampled from the wild, completing the list of known trees in Essex and as many isolated individuals and groups of trees that we could find in the London area. These were sent to Forest Research for DNA fingerprinting.

At the outset of this work, I had set myself a number of questions. Firstly, did the range of clones in clone banks represent the full range of clones that grow out there in the wild in Britain? Or had these been swapped around by nurseries from a relatively few isolates? Secondly, have most of the veteran trees in the wild been derived vegetatively from a small number of clones, or are there any populations that appear to have been derived genuinely from seedlings? Thirdly, have we been ignoring genuine WP veterans that do not have the typical morphology described for *P. nigra* ssp./var. *betulifolia*, such as lack of hairy petioles or burring? Finally, are there any insects that are entirely specific to WPs so that we can use them to identify the species, or are we likely to come unstuck if back-crosses between *P. nigra* ssp. *betulifolia* and any of the F1 *P. deltoides* × *nigra* hybrids also act as hosts to these insects?

Taking the last question first, I had been struck by my observation back in 1998 that four male trees on the cliffs at Southend were so infested with the aphid *Pemphigus spyrothecae* that they had up to six spiral galls on their petioles, noticeably disfiguring the canopies from some distance away, despite their complete absence from several *P. ×canadensis* growing in the vicinity (see Colour Section, Plate 1). Since that time, I

have never seen a spiral gall on an obvious *P. ×canadensis*, or any poplar species other than those obviously derived from *P. nigra*, such as ssp. *betulifolia*, ‘Italica’, ‘Gigantea’ or ‘Plantierensis’. Others however have claimed to find spiral galls on hybrids, and it occurred to me that these might be backcrosses. If there is something in the genome of *P. deltoides* that makes the petioles of the F1 hybrid with *P. nigra* unattractive or unpalatable to *P. spyrothecae*, what if this was back-crossed with *P. nigra*? Might the gene(s) responsible in some cases be lost at meiosis? I therefore collected samples from a number of trees that I came across that looked as if they might be back-crosses, or did not quite fit the typical *betulifolia* morphology. In addition to the seven microsatellites common to the *Aigeiros* (Cottonwoods and Black Poplars) subgenus, there is a shared gene that in *P. deltoides* has a sizeable DNA deletion, which is being used by Forest Research to detect first generation *P. ×canadensis* hybrids. Unfortunately, although infallible for F1 hybrids, just like

my hypothetical *P. spyrothecae* resistance gene, it will be lost at meiosis in half the offspring in a F2 backcross. So far only one of my samples has exhibited both the *deltoides* specific deletion and possessed spiral galls, although only a couple of galls were found on the tree. Thus it could have been a back-cross in which ‘my gene’ had been lost but not the *deltoides* deletion. Fortunately, further genetic markers have now become available that are also specific to the *deltoides* genome, and it will therefore henceforth be possible to detect such a back-cross. A word of caution, however: spiral galls will not be found in any numbers, if at all, on *P. nigra* agg. trees that are water stressed, such as those that flush in a spring drought, or are recovering from drastic pollarding or crown reduction. Although aphids of the genus *Pemphigus* also occur in N. America on their various Cottonwoods, and four species have been found to be specific to *P. deltoides*; there are several European species which appear to be specific to *P. nigra sensu lato*.

The following are regarded as specific to the old world *P. nigra* aggregate:

	Secondary hosts	Abundance
<i>Pemphigus spyrothecae</i>	no secondary host	common
<i>Pemphigus protospirae</i>	<i>Berula erecta</i> , <i>Sium latifolium</i>	very rare
<i>Pemphigus bursarius</i>	Lettuce Root Aphid	frequent
<i>Pemphigus populi</i>	<i>Medicago</i> , <i>Melilotus</i> , <i>Lathyrus</i>	rare
<i>Pemphigus populinigrae</i>	Marsh Cudweed Aphid	common?
<i>Pemphigus phenax</i>	Carrot Root Aphid	common?
<i>Pemphigus gairi</i>	<i>Aethusa cynapium</i>	common?

Apart from *P. spyrothecae*, which overwinters as an egg on the bark of its host, all the others migrate to the roots of various herbaceous plants as alternate hosts. I have never seen *P. protospirae*, not surprising perhaps as it has *Berula* and *Sium* as its secondary hosts. Maybe it will turn up in the Cambridge or Norfolk fens. It is distinguished by the presence of more than the two complete turns typical of the spiral gall of *P. spirothecae*.

P. bursarius, the pouch gall, is another petiole specialist, and is next in order of frequency. It occurs commonly on ‘Italica’ and occasionally on *betulifolia*. *P. populi*, which forms a globular gall on the upper surface of the midrib with an access hole below and often splits open above, is rare and I have only seen it a couple of times [on *betulifolia*]. The next three belong to a group which form similar linear, pouch-like galls on the mid-rib, and

you have to look at the aphids inside to identify the exact species; something I have not yet done, although the pouches which start off green, and then go red, are not uncommon. So, the answer to my question would appear to be: if any of these galls appear in large numbers on a tree it must be one of the *P. nigra* agg. If only a few galls are present, it could either be due to water stress or the possibility of a (*deltoides* × *typica*) × (*betulifolia*) back-cross, requiring a test for several of the new *deltoids*-specific DNA markers to be sure.

Going back to my list of questions: do the genetic fingerprints of veterans in the wild match those in existing clone banks, and have these veteran trees mostly been propagated from cuttings? The clone bank results referred to above suggested that the 7,000 male trees planted around Greater Manchester were probably all Clone 28, and that the 5,000 male trees in Aylesbury Vale are probably all Clone 35. Clone 28 also turned up in clone banks elsewhere, and our results suggest that at least 150 of the trees scattered over the London area derive from this clone, and a further 120 occur in Essex. The large population in the Lee Valley at Hackney and surrounding suburbs is thought to have been planted in the 1890s, and the population in Hainault Country Park in 1910. This raises the intriguing question as to the social history of these plantings. Did the nursery that propagated the enormous number of trees for Greater Manchester also sell them country wide, possibly to finance the project? Or did they just happen to choose a stock tree from a clone that was already widespread? This clone is known to be susceptible to a strain of Poplar Scab that is decimating the Greater Manchester population. What we don't know is whether other clones are equally susceptible, or whether the stresses of living in a damp, urban environment have caused the epidemic, and this clone just happened to be in the firing line. Until we know the answer, and since there are already large numbers of

clone 28 around, it would be prudent not to plant any more of them.

Of the females, my limited results so far for N. Wilshire/East Gloucestershire suggest that the large population of morphologically distinct females occurring along the tributaries of the Isis are all likely to be of a new Clone (49) unique to this catchment. In addition our results extend the suggestion that Clone 47, of which there are at least 30-40 trees, is probably unique to the Herts./Cambs./Suffolk confluence and we can therefore confidently expect more trees of this clone among the 100 or so trees recorded for Cambs., yet to be fingerprinted. The large population of female trees of clone 32 in Suffolk extends thinly scattered right across Essex and into the London area. One male tree near Waples Mill near the R. Roding in Essex is, so far, a new clone with a single representative, and might possibly derive from a genuine seedling. On the other hand, the intriguing occurrence of a male tree in a hedgerow near Harlow with an identical fingerprint to a tree on an island in the Lea on the Middx. side of the river, and so far no match elsewhere, is a real social history puzzle. Thus far then, it is clear that there are more multiple plantings out there in the wild of clones that have yet to be discovered, that saturation mapping is going to be worthwhile, and that virtually all our trees are likely to have been planted from truncheons (large 5 to 6ft long cuttings) taken from existing trees.

Finally, perhaps the most exciting discovery of all, concerns the enigmatic mixed population of males and females in a line along the south-west bank of the tidal Thames from Hammersmith to Putney (see Colour Section, Plate 1). They were recorded there as long ago as 1852 by J. Boswell Syme (Lousley, 1976). Of the 40-odd trees, I have only sampled the first two males and first two females up from the Barnes end, but intriguingly they have all four proved to be genetically unique, suggesting that they may represent a relict population originally germi-

nating as seedlings along the gravelly shore line. The Victorian engineers obviously appreciated the binding power of their roots, and the role of their trailing branches in slowing the marginal currents, thus protecting the river bank, and they carefully constructed their stone and brick revetment around the base of the trees. As my photograph shows, the revetment does not appear to have been repaired since then, suggesting that the trees were already fully grown at the time and that they must therefore be close to 200 years old. No new seedlings are likely to survive however, due to the sealing effect of the revetment and the metalling of the towpath. The role of riverine trees in stabilising river banks is well known abroad, and engineers in Australia have carried out experiments to quantify the advantages of using trees for bank protection, concluding that the presence of tree roots can increase the safety factor of an otherwise unstable bank section by 60% (Abernethy & Rutherford, 2000). Even in the U.K., the company Salix [www.salixrw.com] routinely uses willow trees for this purpose. However the Port of London Authority have been advised otherwise and this, possibly the only substantial surviving population of Water Poplars grown naturally from seed in the U.K., is under imminent threat.

In 2010/2011 I would like to sample all of this line of trees, as well as additional trees that have been discovered in London, Suffolk and Essex; the trees that have now been located in Surrey (c.200); Cambs. (c.100), and Norfolk (c.70); and to continue to map and sample the trees in East Herts. I also have a substantial shopping list for N.Wilts and E. Gloucestershire. Fingerprinting is an expensive business, however, and I need to find around £10,000 to finance the next phase of the project. So, if any of our readers would like to make a donation to the project, or help to raise the cash, your assistance would be most welcome. And if you are influential and can help to save that unique row of trees along the Thames, your help would be appre-

ciated. Another aspect of the Water Poplar saga that needs financing is the experimental work that needs to be done to establish whether any of our clones are resistant to the current strain of Poplar Scab. When, in 50 years time, all the tropical hardwood trees are carbon sequestered as people's front doors or expensive furniture, we may need to turn once again to the Water Poplar as a timber tree. A more extensive résumé of the plight of the world's poplar species, how to distinguish Water Poplars morphologically, and how to grow them and sample them for DNA fingerprinting – plus tables and colour coded maps of the trees we have sampled so far, can be found on the BSBI linked website. www.bsbi.org.uk >Recorders>>Essex>>Water Poplars.

Many thanks to all who have sent in records of tree locations – please keep them coming – and to the Essex Biodiversity Project and the Royal Parks for covering the DNA fingerprinting costs to date. I am also very grateful to Joan Cottrell for carefully reading through this article and making corrections and suggestions to improve it.

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Changes in Upper Kennet Valley *Salix* populations in response to fungal blights

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In the 18th century, the most common *Salix* species in the Marlborough locality were *S. caprea* (Goat Willow), *S. cinerea* (Grey Willow or Grey Sallow) and *S. viminalis* (Osier). Less common were *S. alba* (White Willow), *S. aurita* (Eared Willow), *S. fragilis* (Crack Willow), *S. purpurea* (Purple Willow) and *S. triandra* (Almond Willow), the first and third of these usually planted (MCNHS, 1934). The waterside lists of frequency by Grose (1957) only mention *S. atrocinerea* (= *cinerea* ssp. *oleifolia*), *fragilis* and *viminalis* as riverside front-runners. By 1970, the preponderant *Salix* species upstream and downstream from Marlborough were *S. fragilis* and *S. viminalis*, but with local concentrations of *S. alba*, *S. cinerea*, *S. purpurea*, *S. ×sericans* (Broad-leaved Osier)(a hybrid), and *S. triandra*. West of Marlborough (upstream), the dominant large riverside *Salix* was then Crack Willow, forming an attractive green ribbon along the River Kennet when viewed from higher ground. Over the last four decades, the same view has changed to create an even more spectacular display when the trees are in leaf. Sunlight and wind can cause a ripple of reversed leaf surfaces, from green to silver or silver to green, moving along the valley, a similar phenomenon to that seen in some wheat fields ('metachromatic succession'). These semi-continuous ribbons west of Marlborough are now formed by White Willows.

Marren (2005) refers to the Kennet Valley as "...one of the most willow-rich places (in terms of species) I have ever seen." Around Ramsbury, east of Marlborough (downstream), in the 1990s, Crack Willow was the dominant large *Salix*. Marren described the sorry state of these trees towards the end of the decade and subsequently. He attributed their decline to three

fungal diseases becoming rampant after the two warm, wet autumns of 1998 and 1999. The Ramsbury White Willows and the four commonest smaller *Salix* species were wholly unaffected.

Assessing the relative ratios of the different *Salix* taxa is complicated by frequent human plantings and by past failure to note common hybrids. All the Cricket-bat Willows (*S. alba* var. *caerulea*), for instance, are superb rapid-growth trees, originating from Norfolk, but locally planted. These trees are more regular and vertical than the commoner *S. alba* trees, with silvery-blue leaf undersurfaces – and are disease resistant. Allowing for these complications, the general picture in the 1970s was dotted individual White Willows west of Marlborough, mostly mature (or toppled), with a few coppiced stumps or pollards, surrounded by a very marked preponderance of Crack Willows of all ages. By 2009, the picture had become largely reversed. A small number of of mature Crack Willows retain healthy crowns, with White Willows all around. Fallen White Willows send up a forest of of new verticals (extensive layering – see Oliver, 2002a and b). Fallen, coppiced, pollarded or shaded Crack Willows now tend to die. More noticeably, young Crack Willows are stunted, and failing to compete well, even with Osiers. Lower branches of medium-sized Crack Willows hardly survive shading. I have discussed the changes with tree surgeons clearing dead timber, saying that the relative preponderance of the big willow species has been changing "since the War", and have been corrected thus: the process has been a more recent acceleration, since the 1980s. We should therefore think in terms of a rapid weakening and stunting of Crack Willows over the last two decades,

especially 1998-2010, in line with Marren's (2005) account.

There are two main leaf and shoot diseases: Willow Scab and Black Canker. These are caused by the fungus *Pollacia saliciperda* (= *Fusicladium saliciperda*, the imperfect or asexual state of *Venturia saliciperda*); and the fungus *Glomerella miyabeana* (and its imperfect, or asexual state: *Colletotrichum gloeosporoides*). In 2008 and 2009, west of Marlborough, Willow Scab was the primary condition, with Black Canker attacking some scab-damaged trees later in the season. Young leaves can develop irregular black spots. Blackening can then involve the whole leaf, petioles and shoots. Killed leaves shrivel and eventually drop (Rose, D.R., 1989).

The table (p. 23) gives detail on riverside *Salix* trees and shrubs within Marlborough College grounds to Preshute, and my Arboretum at Clatford. At both sites, there are mixtures of native, naturalised, introduced (past and recent), and exotic *Salices*. These were often in close proximity, with vigorously layering, shrubby species, such as *S. purpurea*, *S. triandra*, and *S. viminalis* (nos. 26, 27, 36, 37) colonising away from the shade of tall *Salix* or *Populus* trees. Dampness, dankness and shading therefore provided a severe test of vulnerability to the many types of willow, sallow and osier.

The table lists 20 *Salix* species, 10 interspecies hybrids, and six additional subspecies, cultivars or variants. The other two are commercial clones with different susceptibilities to the corresponding taxa (nos. 6 and 29). The Alice Holt Research Centre produced a list of 16 *Salix* taxa susceptible (or not) to Willow Scab and Black Canker. This included five native species, five exotic species, two hybrids and four additional variants on the preceding 12 (Rose, J., 1989). All five natives, three exotics, one hybrid and one variant are shared with my list (which only has two weeping forms, compared with five on the Alice Holt list).

For eight of the 10 matched taxa, my observations on susceptibility fully matched those of the Alice Holt Centre. However, all six of my Bay Willows (*S. pentandra*) were mildly or moderately afflicted by obvious Willow Scab (resistant, according to the Alice Holt Centre). These six may have been vulnerable, for all had suffered severe squirrel-stripping, and five were also shaded. A lesser difference was that all the Goat Willows (no. 8) in this part of Wiltshire seem totally resistant to blight (only moderately resistant according to the Alice Holt Centre – but note no. 29 on the table).

Susceptibilities and resistance of the common local *Salix* taxa

In 2008 and 2009, I have not noted one Crack Willow (no. 17) or one Crack Willow hybrid (no. 30) free from Willow Scab in any part of the Upper Kennet Valley (see also Marren, 2005). Some of the younger trees, lower branches of big trees, re-sprouted coppice or pollard branchlets are in a sorry state, blackened, stunted, girdled by cankers or dead.

The many lovely White and Cricket-bat Willows (nos. 2 and 3) are thriving, the former (no. 2) increasing, to become the dominant riverside tree. Purple Willows (nos. 26 and 27) are all thriving and spreading. Interestingly, all those willows with purple pigment externally but bright yellow under-barks (nos. 1, 12, 21, 26, 27, 31) seem resistant to both blights, suggesting that these pigments might be extracted as fungicides. All osier species and their hybrids seem to be blight-resistant and thriving (nos. 11, 13, 31, 33, 35, 37, 38). This applies especially to common Osier (nos. 37 and 38) and our remarkable Broad-leaved Osiers (no. 33). These last can become fully substantial trees and can grow well in water or on dry chalk! All the natural Sallows and Sallow-Osier hybrids resist the two blights (nos. 8, 9, 11, 13, 28). However, five small same-age trees in a ring under heavily diseased Crack Willows in the Marlborough College

grounds showed mild or moderate Willow Scab infection in 2009 (no. 29). I suspect these were a clone commercially-bred from alien parentage for some special horticultural feature(s).

The foregoing covers all the common Upper Kennet Valley *Salices* except *S. triandra*, which is also invariably disease-free.

Susceptibilities of rarer or exotic horticultural *Salix* taxa to Willow Scab

S. babylonica (Weeping Willow) (no. 7) suffers severely from late spring frosts, sometimes looking very ragged in early summer, but recovering to become the best of the weeping willow taxa from mid-summer to late autumn. All five hybrid weeping willow taxa are moderately or mildly susceptible to Scab (five on the Alice Holt Centre list, the one on mine: no. 32). Each of these five have one vulnerable parent (Crack, Golden (no. 5) or Pekin Willow; but *S. babylonica* itself as the other parent resists Willow Scab). The local common weeping willows can suffer much blackened, gappy and untidy foliage in some years, but are free in others; not always in phase with the severest Willow Scab years for the surrounding Crack Willows.

S. aurita became extinct in this part of Wiltshire in the 1980s, but it likes acid conditions. Some of the many *Salix* introductions and new hybrids will survive, thrive or even spread, but I see no future for the older Golden Willow (*S. alba* var. *vitellina*) clones (no. 5), nor for other exotics, hybrids or cultivars which are vulnerable to Willow Scab and Black Canker, or to late frosts (for example nos. 4, 10, 15, 16, 19, 22, 23, and 30).

Summary and conclusions

The long-standing dominance of Crack Willows has recently given way to flourishing and extensive ribbons of healthy White Willows alongside the R. Kennet in the Upper Kennet Valley. This seems to be an accelerating process, not mainly due to

intentional human plantings of White (and/or Cricket-bat) Willows. The fungal diseases Willow Scab and Black Canker can be intermittent in their virulence, but appear to be having a permanent weakening effect on all Crack Willows and all their hybrids. All the natural Osiers, Sallows and Purple Willows and their hybrids are so far resistant to the blights, but some exotics, cultivars and complex hybrids are vulnerable. If these observations are correct and sustained, they are another example of fungi having a sudden and severe influence on tree populations, depressing one or more species in favour of their replacement by others moving in. Fungi may therefore influence the evolution of trees.

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Table 1: Susceptibility of large and medium-sized *Salix* species and hybrids to Willow Scab and Black Canker

Taxon no.	Taxonomic name	Common name	No. of specimens	Affected by Willow Scab (A, A1B, C or †)	Affected by Black Canker (A, B, C or †)	Affected by other impacts (S, F)
1	<i>acutifolia</i>	Siberian Violet-willow	2	0	0	S
2	<i>alba</i>	White Willow	20	0	0	
3	<i>alba</i> var. <i>caerulea</i>	Cricket-bat Willow	10	0	0	S
4	<i>alba</i> ‘Britzensis’/ ‘Chermesina’	Carmine-twiggèd Willow	2	2 (B)	0	
5	<i>alba</i> var. <i>vitellina</i>	Golden Willow	5	5 (B, C, †)	3 (B, C, †)	
6	<i>alba</i> var. <i>vitellina</i>	Golden Willow (disease-resistant clone)	2	0	0	
7	<i>babylonica</i>	Weeping Willow (true, or Willow-pattern)	1	0	0	F
8	<i>caprea</i>	Goat Willow (Pussy Willow ♂, Great Sallow)	10	0	0	S
9	<i>cinerea</i> ssp. <i>oleifolia</i>	Grey Willow (Lesser Sallow)	8	0	0	S
10	<i>cordata/adenophylla</i>	Heart-leaved Willow	2	2 (†)		
11	× <i>calodendron</i>	Holme Willow	1 (♀)	0	0	
12	<i>daphnoides</i>	European Violet-willow	8	0	0	
13	× <i>dasyclados</i>	Sallow-Osier (triple hybrid) (all ♂)	12	0	0	
14	<i>elaeagnos</i>	Olive Willow	1	0	0	
15	× <i>erythroflexuosa</i>	Argentine Copper-corkscrew Willow	3	3 (B, C, †)	2 (C, †)	F
16	<i>exigua</i>	Coyote Willow	3	3 (B, C, †)	(uncertain blight)	3? (uncertain blight)
17	<i>fragilis</i>	Crack Willow	>40	>40 (B, C, †)	>15 (B, C, †)	
18	<i>gracilistyla</i>	Manchu-Korean Willow	2	0	0	

19	<i>gracilistyla</i> var. <i>melanostachys</i>	Kurome/Japanese Black-catkin Willow	2	2 (B)	1 (A)	
20	<i>hookeriana</i>	Hooker's Pacific-coast Willow	5	0	0	1 (†) (uncertain blight)
21	<i>irrorata</i>	Morning Dew Willow	3	0	0	S
22	<i>magnifica</i>	Wilson's Sichuan Mountain Willow	1	1 (A)	0	F
23	<i>matsudana</i> 'Tortuosa'	Corkscrew Pekin Willow	2	2 (C, †)	0	
24	<i>pentandra</i>	Bay Willow	6	6 (A, B)		S
25	<i>phylicifolia</i>	Tea-leaved Willow	1	0	0	
26	<i>purpurea</i> ssp. <i>lambertiana</i>	Purple Willow	10	0	0	
27	<i>purpurea</i> ssp. <i>purpurea</i>	Purple Willow	4	0	0	
28	× <i>reichardtii</i>	Hybrid Sallow (natural hybrid)	4	0	0	
29	× <i>reichardtii</i>	Hybrid Sallow (commercial clone)	5	5 (A, B)	0	
30	× <i>rubens</i> nv. <i>basfordiana</i>	Golden/Crack Willow hybrid	4	4 (C)	2 (A, B)	S
31	× <i>rubra</i>	Green-leaved Willow	1	0	0	
32	× <i>sepulchralis</i> nv. <i>chrysocoma</i>	Weeping Willow hybrid	6	4 (A, B)	0	
33	× <i>sericans</i>	Broad-leaved Osier	20	0	0	
34	× <i>seringeana</i>	Olive Willow/ Goat Willow hybrid	1	0	0	
35	× <i>smithiana</i>	Silky-leaved Osier	1	0	0	
36	<i>triandra</i>	Almond Willow	>13	0	0	
37	<i>viminalis</i>	Osier	55	0	0	
38	<i>viminalis</i> 'Bowles Hybrid'	Biomass Osier	2	0	0	

Susceptibility: A: mildly; B: moderately; C: severely; †: terminally afflicted; S: squirrel stripping of bark; F: late frost sensitivity

Hybrid plants in *Typha*

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The two species of bulrush, *Typha latifolia* (Bulrush) and *T. angustifolia* (Lesser Bulrush), have a sterile hybrid, *T. ×glauca*, which is most likely to be confused with *T. angustifolia*. The hybrid also has narrow leaves similar to *T. angustifolia* and so makes it difficult to determine with certainty. However, the main way in which the hybrid can be told from its parents is in the flower shape, primarily the hood shape, and its sterility.

Both the parents produce seed, which is usually seen as white fluffy heads in late summer on the large brown, cigar-shaped flowering spikes, jam-packed with patent flowers. The brown colour is the tips of the flower hoods squashed together. The position of the seed in the flower tube of the parents is different for each taxon. Figures 1 & 2 show flowers of all three taxa from left to right; *T. angustifolium*, *T. ×glauca* and *T. latifolium* respectively. The expanded portion in the tube

is the seed, almost in the middle of the flower. However, in the hybrid it is absent, as can be seen in the figure, showing a skinny tube all the way up to the expanded flower hood.

The seed in *T. angustifolia* is high in the tube and more importantly the opening of the flower is a long-narrow hood. In *T. latifolia* the seed appears low down in the flower tube, giving a long portion of tube above it before the hood, and the hood is short and broad, like the expanded ‘head of a Cobra’. In the hybrid, there is no seed and the hood is intermediate, with a slightly expanded tip, but an intermediate narrow opening as well. This can be seen in close up in figure 2 (middle flower head). Flowers, therefore, are the most useful way of determining this hybrid. The lack of seed and the intermediate hood of the hybrid (which is variable) should be examined to confirm the hybrid.

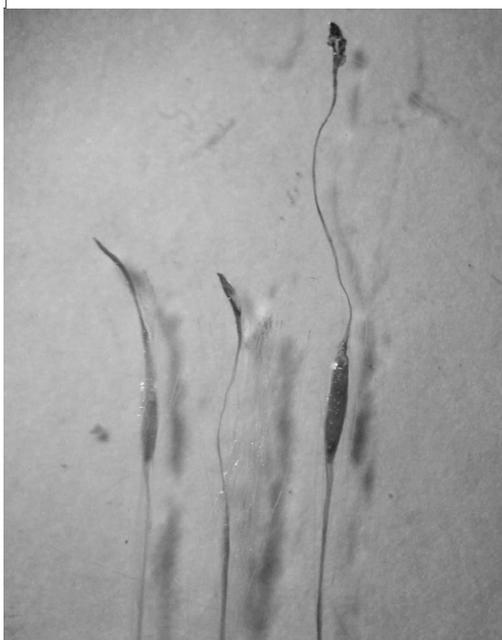


Figure 1. *Typha* seed position



Figure 2. *Typha* flower hoods

See text above left for details. Both photos M. Wilcox © 2009

Two more *Fumaria reuteri* (Martin's Ramping-fumitory) locations in Scotland

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Fumaria reuteri (Martin's Ramping-fumitory) has previously only been known in the UK from the Isle of Wight and Cornwall. It is thought to be a neophyte, which was first recorded in 1904 and might be of recent introduction, although it could be an archaeophyte which had not been recognised. It was added to Schedule 8 of the Wildlife and Countryside Act but as its status is unclear it is on the Waiting List for the 2005 Red Data List.

In 2006 Ian Teesdale found plants in a neighbour's garden in Campbeltown in Kintyre which were eventually identified as *F. reuteri*. The neighbour had moved in comparatively recently and was trying to clear the garden with repeated applications of herbicide. The fumitory flourished in the cleared space in between applications. We thought there might have been some transfer of seed, perhaps by way of a garden plant purchased on holiday in the south, and that this was an isolated occurrence. Plants from Campbeltown were grown at the Royal Botanic Garden in Edinburgh, which gave us the opportunity to see living material of a species that we would not otherwise encounter. In cultivation the plants were a strong pink with contrasting white sepals.

However, in 2009 while driving through Kirriemuir a verge was observed with abundant fumitory growing on the bank behind a new retaining wall (see Inside Front Cover). This fumitory was unusually pale, being on the north side of a conifer hedge. On examination the characteristic *reuteri* 'jizz' was observed: a long narrow flower with a gap between the end of the sepal and the rounded spur, due to the long nectary tube. A dissecting microscope showed a long point in the centre of the stigma equal to the length of the lobes on either side. Rose Murphy kindly confirmed this material, which showed a wider range of variation than the southern plants, especially in having more teeth on the sepals, which are usually smooth. Rose undertook many measurements of the

flowers and sepals to demonstrate the variation and also illustrated these in a beautiful set of drawings. The plant has a long parallel-sided inflorescence with well spaced-out flowers. The sepals lie flat against the flower and are usually only sparsely toothed near the base. This species probably looks most like *F. muralis* (Common Ramping-fumitory) but the latter only has a short inflorescence and the flowers are shorter and broader. *F. muralis* sepals do not lie flat against the flower but undulate away from the point of attachment and usually have many teeth.

We wondered if the golden *Cupressus* × *leylandii* hedge had come from a nursery on the Isle of Wight, which was not impossible. It was difficult to imagine that people had dumped earth behind the new wall from the other end of Britain, or that earth-moving equipment would be freely moving over that kind of distance with generous quantities of seed-infested soil. In any case the fresh red soil was typical of the local type, with an unremarkable collection of other species, mysteriously dominated in abundance by this single species of fumitory. There was one plant of *F. officinalis*, but no other fumitories. Around the same time Jim McIntosh was looking at some fumitory near St Cyrus which turned out to be the same species. This was dark pink, a more typical colour, and several robust plants were growing in a weedy corner of a potato field. This was also drawn by Rose, and we were grateful for her assistance in confirming these two records.

Now that there are three confirmed occurrences in Scotland it is possible that more might be found, which is the challenge for this summer. It raises the question of whether this indicates an expansion of range, with a gap across most of England, or if perhaps it is under-recorded, which seems more likely. There are old records in the Atlas over a wider area of southern England. Perhaps there was

some specific mechanism for spread in the past which no longer operates in the south. Possibly the Scottish occurrences relate to another limited phase of accidental introductions. It is also possible that milder weather has encouraged it to spread, although this winter might not prove so favourable. As there is material in cultivation at the RBGE we can provide fresh plants for examination and in future fumitory

workshops this *F. reuteri* will be included with the Scottish species. The next workshop is on Wednesday 9th June 2010, commencing at 10.00 am at the Royal Botanic Garden Edinburgh. The afternoon will include a field visit, which might include *F. reuteri* (depending on a local field site being located by then!). To book for the workshop (no charge) phone or email me.

‘Unusual’ habitat for *Chara vulgaris*

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The Charophyta (Order: Charales), commonly known as stoneworts, are the only non-vascular plant group whose study is included in the objectives of the BSBI (Bryant & Stewart, 2005). Charophytes, unlike other algae, possess a number of morphological and cellular characteristics of higher plants (Grambast, 1974) and are classed as macrophytes.

On 29th July 2008, while making my way to the River Moyle, Co. Tipperary (v.c.H7) (S14548 31903) to sample macro-invertebrates for water quality purposes, I noticed a disused watering trough with aquatic plants growing in it (see Inside Back Cover). On closer examination, it turned out to be a veritable ecosystem supporting floating plants (*Lemna minor*) as well as submerged bryophytes, filamentous algae, phytoplankton and zooplankton. However, the most unusual inhabitant was a charophyte, *Chara vulgaris* L., growing in great profusion (see Inside Back Cover).

The water in the trough had the following characteristics: temperature 20.3°C, dissolved oxygen 103%, pH 8.03 and conductivity 207 µS/cm. Based on this, the degree of hardness of the water could be classed as slightly hard (Environmental Protection Agency, 2000), while that of the adjacent river was 767 µS/cm which would indicate much harder water conditions. The trough was apparently kept topped up with rainwater, although when in use was supplied from the river. No charophytes were present in the river, so the colonisation of the trough with *C. vulgaris* was apparently from another source.

Chara vulgaris L. is monoecious, i.e. with male and female gametangia (reproductive organs) produced on the same plant (see Inside

Back Cover showing photomicrographs of anteridium and oogonium of *C. vulgaris* from the water trough). It has a widespread distribution and is found in almost every kind of aquatic situation such as lakes, ponds, puddles, slow-moving rivers and canals, ditches, man-made habitats, as well as in highly alkaline to mildly acid and brackish water (Moore, 1986). Despite this wide tolerance of habitats, charophytes are normally associated with clean water quality conditions.

Given its cosmopolitan occurrence and only being limited to some degree by flow or current speed, perhaps a water trough should not, after all, be seen as an unusual habitat for a species such as *C. vulgaris*. Rather, this record should merely serve as an example to demonstrate the adaptability of the Charophyta.

References:

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Botanical books available to download from the internet

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Over the last year or two we have had cause to consult many old county floras and other botanical works, and have found that there is an immense amount that has been digitised and is available to freely download. The selection is certainly eclectic, but, to give very brief examples, we have been able to access about 50 Victorian floras, almost the whole of the *Journal of Botany*, the whole of Sowerby, various editions of Hudson, Lightfoot, Hooker and Smith, Aiton's *Hortus Kewensis*, Turner & Dillwyn, Miller's *Gardener's Dictionary* and about 100 others. Works are predominately from the 19th century and earlier, but some early 20th century works are available too, such as Gunther's *Early British botanists*.

If you don't use a computer to find internet resources, you may not want to read further. But if you would like to have easy access to a truly immense botanical library, then you may want to think about doing so. On the other hand you might already be aware of the literary treasure-house just a few clicks away, although you may still want to read on. Here are some of the sites that provide electronic texts, and some examples of what you can find, in the order in which we discovered them:

Google Books (<http://books.google.com/books>)

Go to 'Advanced Book Search' and enter 'Flora' in the title box, then press 'Enter' to find a list of (currently) 20,000 books with that word in the title. To narrow your search you might enter 'Hooker' in the author box, which yields 1,000+ results. Click 'Full View Only' for 200+ hits. A sample from one downloaded volume, Hooker, W.J. *Br. Fl.* 1: 97 (1838):

Internet Archive (<http://www.archive.org/>)

21. ΑΝΘΡΑ. Linn. Dwaie.

1. A. *Belladonna*, L. (common *Dwaie* or *deadly Nightshade*); stem herbaceous, leaves ovate undivided, flowers axillary on short peduncles. *E. Bot.* 4. 592.

Hedges and waste places; especially among ruins and near towns. *Fl.* June. 1f.—3 feet and more high. *Leaves* entire, some very large, but placed in pairs of unequal sizes. *Flowers* drooping, lurid purple. *Berries* shining, black, highly injurious when taken internally. Their effects are said to be best counteracted by drinking plentifully of vinegar.

This brings you to a site where, under 'Texts', you have full access to 1.8 million books, periodicals, etc. The example below is from S.F. Armstrong's *British grasses and their employment in agriculture*. Cambridge: CUP, 1917, p. 79. This fount of botanical literature includes W.H. Painter's *A contribution to the flora of Derbyshire* (1889), A.R. Horwood's colourful *British wildflowers* (1919) and many numbers of the much-loved *Hardwicke's science-gossip*. The advantage of Internet Archive downloads over those by Google Books is that the former are searchable by 'Ctrl-F'. This site also has the books available as a text option for download, but the character recognition is very often awry!



The Biodiversity Heritage Library (<http://www.biodiversitylibrary.org/>)

Apart from *Species plantarum* (1753) and other landmark publications you can find a good (though interrupted) run of *The annals and magazine of natural history* from vol. 1 (1838) into the early 1920s.

Botanicus (<http://www.botanicus.org/>)

A dedicated site with more classic works by writers such as Culpeper, Hales and Sweet, and runs of *Transactions of the Linnean society*, *Curtis's botanical magazine* and *Edwards's botanical register*. But even more of interest, this site gives access to works by Bauhin,

L'Obel, Clusius, Parkinson and many other early writers (but no Turner or Ray).

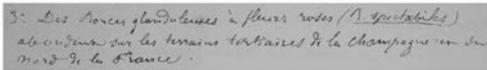
The Digital Library of the Real Jardín Botánico of Madrid

(<http://bibdigital.rjb.csic.es/ing/index.php>)

A relatively small library but one rich in European literature. Download is quite possible but not so straightforward.

Tela Botanica (<http://www.tela-botanica.org/page:bibliotheque>)

A French site with some 'recherché' titles, including, for enthusiasts, copies of Abbé Boulay's handwritten annotations to his distributions of *Rubus* specimens.



3. Les Avenues plantées de fleurs roses (*R. spectabilis*) abondent sur les terrains arborés de la Champagne en son nord de la France.

The wealth of literature out there in the ether is truly amazing. You may know of more sites, in which case please share your knowledge, and we are still looking for most of Ray's works! It is true that, as pdfs, accessing each for a particular page is fairly slow and clunky, but at least you can do it straight away, and in your own home.

We have not discovered how to export a list of the titles that we have downloaded. If anyone can tell us how to convert contents of a folder to a Word list that would be appreciated. Likewise any observations that would help botanists build their own 'virtual library'.

DP would like to stress that it was entirely through KS that these avenues were opened up to him and to which he has enthusiastically added.

Ciba–Geigy *Weed Tables*

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Alan Hale's piece about the Ciba–Geigy *Weed Tables* (*BSBI News*, 113) brought back memories for me. I was shown a set of these tables in 1970 when I was staying with a botanical/medical family who owned a set, and I was immediately captivated by the high quality of the illustrations. In particular, I very much admired the portrayal of the two *Fluellens* (*Kickxia spuria* and *K. elatine*) which I had recently become acquainted with in arable fields adjoining the beach at Clymping in Sussex (do they still grow there, I wonder?). The Ciba–Geigy artist had very convincingly captured the distinct "jizzes" of the two species in a way that I felt the illustrations in Keble Martin's flora, then my reference of choice, quite failed to do. I asked my host how I could obtain a set of these tables for myself, and he told me that as a general practitioner he had written to Ciba–Geigy and they had sent them to him free of charge.

My father being a medical man too, I suggested to him that he write off to Ciba–Geigy to request a set of the weed tables. In response, they asked why he wanted them – evidently they were no longer distributing them so freely. My father was a specialist in

haematology, and around that time had been conducting clinical trials to determine the efficacy of a drug called vincristine, obtained from the Madagascar Periwinkle (*Catharanthus roseus*), in the treatment of leukaemia. He was keenly aware of the untapped potential of wild plants as sources of pharmacologically active substances, and offered this as the reason for his interest in the weed tables. I must admit that I was rather sceptical of this: not that I doubted the importance of plants as a source of useful drugs, but that I felt that his real reason for requesting the tables was my own enthusiasm for the illustrations!

Be that as it may, Ciba–Geigy were satisfied with the explanation, and in due course the tables began arriving, not all at once, but in a series of instalments, each comprising one or more folders containing, loose-leaf, the illustrations for a single genus or group of related genera (my *Kickxias* appearing as *Linaria*), as well as the box-file to store them in, as described by Alan Hale. In addition to this, however, there arrived a large portfolio containing a series of about twenty high-quality photographs, each somewhat larger than

A3 size, showing the weeds growing in situ. Each photograph was a life-size view, from above, of a small section of weed-ridden arable land, with each weed carefully labelled. There was also a brief accompanying text in German, French, English, Italian, Spanish, Portuguese, and Russian.

As each item arrived, my father passed them over to me. As I suspected, he was never going to use them in the investigation of possible medical treatments. I still treasure my set of the Ciba-Geigy *Weed Tables*, and consult them from time to time, but more often, I must admit, to admire the beauty of the artwork than for any serious scientific purpose.

Measuring change in species distributions: a report on a workshop

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The distribution of plants is not fixed in stone. Yet at one time species distributions were considered characteristic of a species, and this is still partly true. But for all sorts of reasons we are becoming much more aware of how dynamic our flora is.

This February we attended a workshop at the Centre for Ecology and Hydrology (Wallingford) titled “Measuring Changes in Species’ Distributions”. This was a gathering of about 70 animal and plant ecologists who all struggle with the challenge of interpreting change in biological records.

The morning was largely taken up with an examination of the problems and historic approaches to the issue. The main difficulty is that you need to account for fluctuations in recording intensity, while at the same time dealing with the temporal, taxonomic and spatial biases that obscure real change. We are fortuitous in having the best recorded flora and fauna in the world, but even so sometimes it is difficult to see the wood for the trees – one speaker described it as “driving through fog”.

After a working lunch, the conference reconvened to listen to some examples of methods for analysing change in species distributions. It was noticeable that several of these were designed to deal with differences in recorder effort, such as sub-sampling and rarefaction and various modelling approaches. Yet it was noteworthy that each technique had to use indirect methods to measure recorder effort. The problem is that, irrespective of the recording scheme, little information is ever gathered on how long someone surveyed for (the BSBI

Monitoring Scheme was one exception, though this data has not been used when analysing change). Obviously, it makes a big difference if someone found a species in five minutes of recording, rather than searching for hours. Yet, these details are practically never recorded.

We were frequently reminded of the value of the Local Change Project, which, although not immune from bias, is the only standardised national survey the BSBI conducts. Without standardised surveys it is very difficult to calibrate our other recording activities. Some other organisations do manage to do more on standardisation, such as butterfly transects or breeding bird counts, but these are typically recording schemes for groups with the most volunteers.

We took away several messages from the workshop, but the three important ones are: that standardised survey methods are invaluable; that professional ecologists should make more effort to communicate with volunteers through a combination of training and explaining their research as feedback to help motivate volunteers; and finally that groups working on different taxonomic groups would gain from working together.

In conclusion, it was encouraging to see so much enthusiasm from ecologists who want to use our records. While the methodological and statistical techniques are improving, a perhaps even trickier problem will be balancing the local needs and interests of recorders with the national needs of government ecologists.

Extinction terminology

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While sympathising with Richard Bateman's desire for a more nuanced discussion of plants that "go missing" (*BSBI News*, 113), and asking for a due sense of proportion when considering local extinctions against the global picture, I object to his use of the term 'extirpation'. This is not synonymous with 'local extinction', even if some biologists have tried to make it so. In general usage, the range of related meanings for this word all carry the notion of wilful or at least targeted removal from the scene, in direct contrast to the idea of contingent loss. In a botanical context this is especially true. Consider the following definitions and examples from the Oxford English Dictionary:

"extirpate, sense 2. 'To pull or pluck up by the roots; to root up, destroy or remove root and branch (a tree, plant).' J. S. Mill, *Political Economy*, I.,xi, 1848: 'The wood seems to have been ... extirpated'.

extirpate, sense 3. 'To root out, exterminate, or totally destroy (a class, sect or nation); to kill off, and render extinct (a species of animals or plants)'.

extirpation, sense 2. 'The action of rooting up trees or weeds; total destruction.' *Penny Cyclopaedia*, VIII, 1837: 'The ... extirpation of couch grass is one of the first things which an experienced farmer sets himself to.'

As Professor Bateman is worried about the effects of inappropriate terminology on a wider audience, I think he ought to bear this in mind. That audience is unlikely to be familiar with the rather different meaning that he and other specialists would like to give to it, and will read into it something which does not apply in all cases. Of course it would be good to have a word that does carry that sense of wilful extinguishment. 'Extirpation' would have seemed ideal for the purpose, had the waters not apparently been muddied by others.

It appears that there are two issues here: that of local as opposed to global extinction; and

that of deciding at what point (whether local or global) 'extinct' is an appropriate term. For the latter, in cases such as the Ghost Orchid, where reasonable doubt exists (and probably always will), I would like to propose the term 'Vanished'. I realise that in doing this I am moving outside any officially promoted conservation terminology, but I think everyone understands that something that has vanished (underground, say) has, given no other qualification, a chance of reappearing. It may be objected that 'Vanished' carries some implication of suddenness. The French often use 'Disparu' for this purpose, but somehow the English 'Disappeared' sounds slightly contrived or arch, perhaps even sinister.

On the former issue, while agreeing wholeheartedly that species should not be baldly proclaimed as 'Extinct' or heading for extinction when what is meant is local extinction, I see nothing wrong with using the word 'Extinct' itself, with appropriate qualification where the context is not clear. IUCN (2001) acknowledges that Red List criteria will be applied at local levels, and recognises that the status of a taxon may well differ between the global and the local level of concern. There is no suggestion that the term 'Extinct' is to be treated differently in this matter from other threat categories by giving it an absolutist global definition. Indeed the supporting document for application of the criteria at the local level (Gardenfors *et al.*, 2001) proposes the term 'Regionally Extinct', abbreviated 'RE'. Given that this is officially promulgated at an international level, and is backed by a published if somewhat subjective formulation of extinction, I think that it should be the preferred term. As many Red Lists precede these latest IUCN papers, unfortunately the 'RE' abbreviation is far from universal.

The French Red List for vascular plants (Olivier, Galland & Maurin, 1995) tackles the issue in a more extended fashion: first by listing the global against the national threat

category, then by defining a “Heritage Status”, as follows:

- A Strict national endemic
- B Subendemic (France and one other, generally neighbouring, country)
- B1 Subendemic rare and/or threatened in both countries
- B2 Subendemic rare and/or threatened in France alone
- C Present in three or more countries
- C1 Present in three or more countries, rare and/or threatened over all its range
- C2 Present in three or more countries, rare and/or threatened in France alone

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When bees exploit plants: nectar robbery

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The amazing variety and beauty of flowers we see in our gardens is partly due to the relationship between plants and their pollinators. Through millions of years of evolution, insects have adapted to use flowers and plants have adapted to use insects. By producing a sugary reward in the form of nectar, plants attract insects to their flowers and use those insects to carry their pollen. The plants benefit from having their pollen spread over greater distances and with much more accuracy than if transported by wind. The insects benefit by gaining a source of high energy food in the form of nectar. This relationship can then be considered a mutual one, with both groups gaining an advantage from the interaction.

In every mutualism, however, there may be opportunities to take advantage of the situation. Normally there is ‘give and take’, but sometimes one half of the relationship may just ‘take’. For example there are several orchid species with non-rewarding flowers which do not produce nectar. Insects may still respond to flowers which contain no reward. The non-rewarding orchids ‘cheat’ the bee by not wasting energy on producing nectar, but still benefit from pollination.

There is another example of a ‘cheater’ taking advantage of the situation, but with the roles reversed. Some species of bees have learnt to steal nectar from flowers without pollinating them. To do this, the bee will make a hole in the flower near to the source of the nectar. This makes it possible for bees with short tongues to reach nectar in long flowers which would normally be too deep to reach. The bee will then use the hole to extract the sugary reward without going near the stigmas and stamens. This behaviour is described as nectar robbery. You may have seen bumble bees doing this in your garden, as it has been observed on several different types of plants, including *Silene dioica* (Red Campion), *Dicentra spectabilis* (Bleeding Heart), Fuchsia sp. (Fuchsia), and *Linaria vulgaris* (Common Toadflax). Even Charles Darwin observed robbery of broad bean flowers and mentions robbery of azalea and honeysuckle flowers. Looking for evidence of robbery is quite simple. If flowers have been robbed, they will usually have a neat circular or semi-circular hole near their base, close to where the nectar is produced. Once holes have been made by the robbers, other insects may also use them.

For example, honeybees and ants have been seen using holes made by bumblebees.

Directly damaging the flowering parts of a plant would appear to be detrimental to the plant and in some situations nectar robbery may reduce the numbers of seeds produced. Robbery reduces the amount of nectar in flowers, which can make the flowers less attractive to true pollinators, and which in turn may reduce pollination of those flowers. But the holes made by robbery can encourage other insects to feed from flowers which would otherwise be inaccessible, encouraging a greater diversity of insects.

Although there have been many studies on nectar robbery, there have been few in the British Isles. I am currently involved in a study into robbery of Red Campion by a short-tongued bumblebee, *Bombus terrestris* (see Back Cover). At the University of Bristol we are attempting to understand the patterns of robbery in this wild flower and are looking for people across the British Isles to assist us. This summer I am trying to gain a picture of what levels of robbery are like across the country and I would like volunteers to collect and send information. If you feel you would like to take part in active research and help with the collection of data on nectar robbery see the instructions below or visit the BSBI website: www.bsbi.org.uk, and look for the species account for *Silene dioica*, where you can also find more information on Red Campion.

Plants have lived with insects for millions of years, but in some cases the insects have learnt to exploit the plants they visit by robbing nectar. So look out for signs of robbery on wildflowers or in your garden. And if you see a bee making a hole in a flower, you may be witnessing nectar robbery first hand and catching them in the act.

Instructions for checking robbery levels in red campion:

The equipment required is a pen and paper, and it only takes a few minutes to record the data per patch of Red Campion. Each patch of Red Campion counts as a single record. You need to be able to recognise the plant and be able to see flowers close up to look for signs of robbery. The main flowering season for Red Campion is during May and June.

1. Find a patch of Red Campion flowers and count the number of open flowers as accurately as you can. Record this as ‘number in patch’. For very large or long patches, an estimate to the nearest 10 is sufficient. Ignore small patches of less than 30 flowers.
2. Choose any 30 open flowers. Ideally choose flowers that are spread across the patch, and check for signs of robbery. Record the number of robbed and unrobbed flowers. e.g. 25 robbed, 5 unrobbed.
3. From the list below, choose a habitat which best describes where the patch is found, selecting from:
 - Woodland
 - Woodland edge
 - Hedgerow
 - Grassland
 - Other (please describe)
4. List any other common flowers close to the Red Campion.
5. Please state the location of where the patch was recorded, e.g. a postcode, grid reference or address, and the date you checked the flowers.

Please e:mail results to:
Nic.Charlton@bristol.ac.uk

“Ben Alder”: five BSBI Past, Present or Future Presidents have slept here

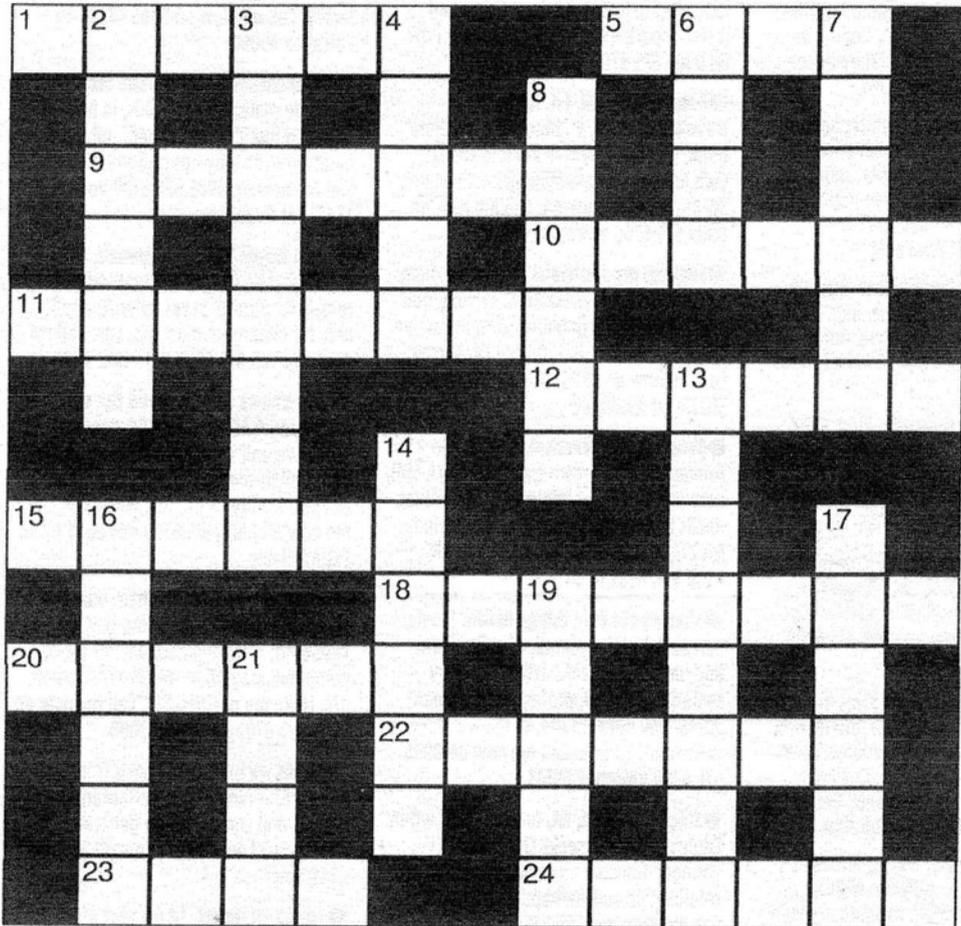
PETER MACPHERSON, “Ben Alder”, 15 Lubnaig Road, Glasgow, G43 2RY

It has been an honour and privilege to have had John Dony, Ted Lousley, Clive Stace and Mary Briggs spend at least one night at the

above address, the fifth being the author of this little note. Is this a record?

BOTANICAL CROSSWORD 14

by CRUCIADA



Across

1. Exhibitions and talks persuade BSBI members to attend this (3, 3)
5. Botanists' ownership occupation is planted (4)
9. Present five, perhaps, through broken lens to make me express doubt (7)
10. Fused and roughly consumed (6)
11. With good excuse, we'd say this pest belongs to bishop too (8)
12. "Rent", i.e. the uncut version (6)
15. I learn about going straight up and down (6)
18. Fight it within – there's no alternative I have left (8)
20. With five present, everyone's in the tree (6)
22. Aspire to arrange a garland for bride? (7)
23. Fruit that takes the wonder out of seaweed (4)
24. Wild ones five when young (6)

Down

2. They say his morsel thrown to Cerberus is aromatic shrub (6)
3. A royal institution, say, with long-drawn-out point (8)
4. A thousand in mine – a whale of a find! (5)
6. Patent work with opponents is less than half (4)
7. Recant about visitor's sweet inducement (6)
8. Rakes are often fifteen (6)
13. Tempted to be sick, we hear, in home of shepherd's cress? (8)
14. As deer in summer forest, so botanists in Summer field (6)
16. One school test is for crucifer to dye for (6)
17. *Carex* seen in layers with different head (6)
19. Place in charge of a fold (5)
21. Left honour behind in Deepcut section (4)

Has SSSI status been devalued?

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The loss of *Salvia pratensis* Meadow Clary from its SSSI, a 0.2ha rectangular enclosure separated from a much larger field at Rogiet by a substantial fence and two five barred, tubular-iron gates, should not have happened. It is the only Welsh site for this nationally rare plant. I had not been able to visit the SSSI site at Rogiet in 2007. In June 2008 I revisited the enclosure to find the NE gate wide open and attempts to close it prevented by the growth of vegetation and earthworm-raised soil near the gatepost. The gate had obviously not been closed for at least two years. Inside, apart from clumps of nettles, docks and Hogweed, the vegetation had been eaten down to the earth, with a large number of cow pats and an area where cattle had lain while chewing the cud. A search failed to find a single leaf of the Clary. After my 2008 mid-July visit, I alerted Plantlife through Dr Trevor Dines, as I was under the misplaced belief that it was still the custodian, to be informed it had passed the task to CCW; but my concern would be conveyed to their Cardiff office. My next visits in June and July 2009 revealed that in 2008-9 the NE gate had been driven into with force by a powerful vehicle so that each bar had been bent almost to a right angle near the hinged end and the SW gate was lying on the ground outside the enclosure. In the search no remnant of the *Salvia* could be found. I feared that this Lusitanian relict, in its only Welsh site had become extinct, but after another letter to Trevor Dines he organised a visit to Rogiet with representatives from CCW, GWT, a Valleys Conservation organisation and himself to see the damage and consider a plan that would ensure the future of the site so that plants grown from seeds collected in the past could then be relocated there. Fingers crossed.

Along the Monmouthshire coast there are four linear SSSI sites between the 'sea wall' and the R. Severn. (1) just to the west of where the M4 comes ashore at Caldicot (ST487872), (2) from Collister Pill to Magor Pill (ST447854), (3) from the mouth of the R. Usk

to just west of Lighthouse Inn, (ST303818 & ST308823), and (4) between Peterstone (ST264796) and Rumney Great Wharfs (ST246785). All are being overgrazed by cattle and/or sheep during the main summer flowering period for brackish and salt marsh plants.

Site (3) at ST3024.8173, the only remaining v.c.35 locality for *Carex distans* (Distant Sedge) (10 plants present since at least 2001) had been grazed by cattle so thoroughly that not a trace remained of a single plant in 2009.

Cattle and sheep had access to the brackish meadows and saltmarsh between the Severn and the sea wall in site (2), but not people; a large sign near Collister Pill warned walkers to keep to the path along the top of the sea wall or else! Walking along I could see no sign of *Alopecurus bulbosus* (Bulbous Foxtail) through binoculars on the brackish meadow near the sea wall where, in the recent past, it had been abundant. The saltmarsh plants, just above high water, that had offered shelter to the great flocks of wading and other water birds coming off the Severn gravel beds as the tide came in preventing them from feeding, had also been eaten right down thus destroying any cover.

Site (1) had a wonderful display of plants, that flourish only in some coastal and estuarine saltmarshes and brackish meadows on 2 dates in July, 2005 and looked very promising on the 4th June, 2009. *Alopecurus bulbosus* in uncountable numbers, large patches of *Trifolium squamosum* (Sea Clover) and *T. fragiferum* (Strawberry Clover), patches of *Lotus glaber* (Narrow-leaved Bird's-foot-trefoil), 50 plants of *Apium graveolens* (Wild Celery), numerous bushes of *Ononis spinosa* (Spiny Restharrow), in three colour forms pink, white and a colour I had not seen before – pale blue, near the sea wall, two 30+ × 1 m shallow scrapes full of *Ranunculus baudotii* (Brackish Water-crowfoot), two patches one 20 × 2 m and the other 44 × 3 m of *Medicago arabica* (Spotted Medick), *Oenanthe lachen-*

alii (Parsley Water-dropwort) and a scattering of *Puccinellia distans* (Reflexed Saltmarsh Grass) were some of the plants on display. Heather Colls reported that she had visited the site in July 2009 and couldn't recognise many plants as the area had been heavily grazed!

The Peterstone end of Site (4) had such dreadful footing due to holes made by cattle using it when it was far too wet that it made one excursion out from the sea wall to the *Limonium vulgare* (Common Sea-lavender) scattering so hazardous I would not risk a second. The much larger colony of *L. vulgare* on Rumney Great Wharf (not visited in 2009) had been reduced in 2005-6 to just a few non-flowering leaves and the main v.c. 35 colony of *Hordeum marinum* (Sea Barley) to a small fraction of its past size.

Surely 25 plants of *Oenanthe pimpinelloides* Corky-fruited Water-dropwort, identified on 30th June 2009, growing near the centre of Vauxhall meadows (SO50611345), in a bend

of the Monnow, Monmouth, deserves conservation. This has not been given, in the last 77 years to my 1985 roadside verge, Tynewydd (ST272915), which had 1-3 plants. Despite my letter of 6th July 2009 to the Head of the Countryside Section, Monmouth C. C. Planning Department, asking for the field not to be cut before the end of August, it was cut in full flower in early August or earlier, and not a trace of a single plant was in evidence among the new growth of grass. This resulted in a second letter, dated 25th August 2009, asking what decisions had been taken. So far no reply has been received. The discovery of two plants on a grassy verge at St Mellons in 2009 by J. Woodman's team now makes three sites for v.c.35.

Conclusion

In view of the above examples of SSSIs having little or no protection from overgrazing, one is forced to ask – Has SSSI status been devalued?

BOTANY IN LITERATURE – 54

Sir Arthur Conan Doyle, in Memoriam – *The valley of fear* – like a rare plant, not so easy to find – a short bibliographical guide

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Notwithstanding the fact that the 22nd May 2009 marked the 150th anniversary of the birth of Arthur Conan Doyle, it is still timely to reflect that, despite his avowal, "If I had a good competence I would devote myself to some serious literary or historical work", and that out of the resulting fictional undertakings (twenty-three novels, four collections of stories, three separate stories, two collections of poems), the additional four Sherlock Holmes novels (or novellas as some prefer to call them): *A study in scarlet* (published 1888), *The sign of four* (1890), *The hound of the Baskervilles** (1902), and *The valley of fear* (1915), and fifty-six stories in collections of twelve (*The adventures of Sherlock Holmes*; *The casebook*†§), eleven (*The memoirs of Sherlock Holmes*), thirteen (*The return of Sherlock Holmes*), and eight (*His last bow*†), are what, as Ruth Rendell (since

1997 Baroness Rebdell of Babergh) writes (see Guide), demonstrate his genius. His other literary works, with perhaps the exception of the Professor Challenger stories (see Souchier in *BSBI News* 106: 27-29), being largely only vaguely remembered.

So memorable, and immortal, if not "mortal", is Mr S.H., that those in search of him perennially turned up in Baker Street, London, W1, expecting to see him either lounging in his purple (or his grey) dressing-gown, Persian slippers afeet, smoking a cigarette, or in his overcoat, complete with deerstalker cap on his head, and drawing deeply on his Meerschaum pipe, only to find that No. 221B didn't exist (as I found quite some time ago). But, as if to remedy this biographical lacuna, this address has been created and, since 1997, has been the home of The Sherlock Holmes Museum

(Telephone: +44(0)20-7935 8866), while also in Baker Street one may find The Sherlock Holmes Hotel, complete with *Ristorante Moriati* (Tel.: +44(0)20-7486 6161). But not in Baker Street, where one would expect to find it, is a very attractive public house The Sherlock Holmes, replete with hanging baskets, which is situated at 10 Northumberland Street, (Covent Garden), London, WC2 (Tel.: +44(0)20-7930 2644), and has souvenirs, pictures, and a reconstruction of Holmes's flat in Baker Street.

One hundred and twenty-two years on his character is as much revered as it was at first appearance, and he is commemorated not only by a Sherlock Holmes Collection at the Marylebone Library in Marylebone Road, London, NW1 (Tel.: +44(0)20-7641 1037), not far from where it is bisected by Baker Street, but also in stamps, the recent Royal Mail "Eminent Britons" release on 8th October 2009, which featured Conan Doyle on one 1st class stamp in a set of ten, the inscription reading "Sir Arthur Conan Doyle (1859-1930) writer and creator of Sherlock Holmes", being but one philatelic example of several (see Appendix).

Three of the four Sherlock Holmes novellas have been made into films, perhaps the most famous being *The hound of the Baskervilles*, of which a German film is recorded by Lycett. Silent versions by The English Samuelson Company of *A study in scarlet* and *The valley of fear* also once were screened.

It is to this latter novella that we now turn. Superior by far to *The sign of four* (which is perhaps noteworthy, not only for the difficulty Conan Doyle had finding a publisher for it, but also perhaps for its absence from cine-film, for, with two rather long tales being told by two different characters, it tends, with the first tale at least, to explain too much too soon, thereby all but destroying any suspense), it is, like *A study in scarlet* and 'The Adventure of Wisteria Lodge' (see Souchier, *BSBI News* 112: 35-38), a cross-continental revenge mystery cast in two parts: (1) The Tragedy of Birlstone, set in Sussex, England and (2) The Scowrers, set in the North American Vermessa Valley of 1875 (the V.V. of the clue V.V. 341

found scrawled on a card beside the murdered man), its location of Merton now only found in the state of Victoria, Australia. The story opens with a customary dialogue between Watson and Holmes: "I am inclined to think ..." said I. "I should do so" Sherlock Holmes remarked impatiently. I believe that I am one of the most long-suffering of mortals; but I'll admit that I was annoyed at this sardonic interruption. "Really, Holmes," said I severely, "you are a little trying at times."

With Sole's description of "Sherlock Holmes, who was arrogant, omniscient, self-absorbed and a drug user, [and who] brought Conan Doyle fame" in mind, we next find Holmes too absorbed in his thoughts to give an immediate answer, but soon, with reference to Porlock and then "the great man" Moriarty – "Picture to yourself the pilot fish to the shark, the jackal and the lion" – Watson is prompting him with "The famous scientific criminal, as famous among crooks as ..." "My blushes, Watson!", Holmes murmured in a deprecating voice", and thereafter they are poring over an old *Whitaker's Almanac* trying to solve Porlock's cipher. Next, with the appearance of Inspector MacDonald, they are coincidentally drawn into the murder at Birlstone Manor House (predicted by the cipher) which is based on Groombridge Place near to Crowborough where Conan Doyle died, and where, after the mysteries of the branded triangle inside a circle on the forearm of the victim, the V.V. 341, the missing wedding ring and dumb-bell, and the blood mark on the window sill are turned very neatly by Holmes into the first dénouement. Part two, about the Scowrers, who are based on the Molly Maguires, a clandestine organisation which fought for the rights of Irish miners in the 1870s, before being infiltrated by James McParlan, a detective from the newly formed Pinkerton agency, begins. It is a marvellous piece of chicanery on Conan Doyle's part, the reader being completely carried along until the second dénouement (followed by the customary Epilogue).

But, before the reader becomes too involved in the story of Brother John McMurdo of Lodge 29, Chicago, Bodymaster J.H. Scott in

the coalfields of Pennsylvania, and the valley in the Gilmerton Mountains (Gilmerton exists only in Perth and Kinross, Scotland), he is afforded, in passing, in Part One Chapter 4 Darkness, a glimmer of Holmes enrap as one whose profession it is to study plants:

He was a very bustling and genial person, this Sussex detective. In ten minutes we had all found our quarters. In ten more we were seated in the parlour of the inn and being treated to a rapid sketch of those events which have been outlined in the previous chapter. MacDonald made an occasional note; while Holmes sat absorbed, with the expression and reverent admiration with which the botanist surveys the rare and precious bloom.

‘Remarkable!’ he said, when the story was unfolded, ‘most remarkable! I can hardly recall any case where the features have been more peculiar.’

Note and Bibliographical Guide:

Little by way of expansion is necessary here, except to say that, while, on the one hand, it is one of Conan Doyle’s finest Sherlock Holmes novellas (possibly equal to, if not, then only slightly surpassed by *The hound of the Baskervilles*, and a development on the *A study in scarlet* prototype), it has, on the other, not been so readily published as the latter two titles, or the collections of stories, although this has recently been in part remedied. Below is a short annotated guide to some of the publications featuring it:

[Conan Doyle, A.] 1989. *Sherlock Holmes: the complete stories: with illustrations from the ‘Strand’ Magazine*. (reset 2006). Wordsworth Editions Limited, Ware, Hertfordshire. ISBN: 13: 978-1-853-26896-0. A most attractive volume, the cover featuring a glorious colour painting by Frederick Wiles from the *Strand Magazine* of September 1914, showing Holmes examining the cipher document from *The valley of fear*. The text is very clearly set on a pleasant and comfortable 15 cm (6 inches) W × 23 cm (9 in) L page. Although not arranged in strict chronological order, the four novellas being first, and *The sign of the four* being given instead of the usual Conan Doyle title *The sign of*

four; also ‘The Adventure of’ has been dropped from some of the later titles, so they read simply, for example, ‘Wisteria Lodge’ rather than the more correct ‘The Adventure of Wisteria Lodge’, ‘The Creeping Man’, and so forth. But, at just under £10.00, the 1408 page volume is very good value, even if it has introduction or notes.

Conan Doyle, A. 2009. *The Penguin complete Sherlock Holmes*. Penguin Books, London. ISBN: 978-0-141-04028-8. This features an interesting foreword by the distinguished crime writer Ruth Rendell, but no notes or illustrations. The cover is chestnut brown with a black relief silhouette of Holmes in his deerstalker cap with famous pipe about two-thirds of the way down the cover and gold embossed lettering above. The text is clear and the volume much the same page size as the Wordsworth edition. It has retained ‘The Adventure of’ in the appropriate stories and they and the novellas are presented chronologically. More expensive than the above at £18.99 (€23.00).

Conan Doyle, A. 2008. *The valley of fear*. Penguin Red Classics, London. ISBN: 978-6-141 03544-4. This is in the same series as the 2007 *His last bow* and *The case-book of Sherlock Holmes* (ISBN: 978-0-141 03434-8). At £6.99 and measuring 10.75 cm (4¼ in) W × 18 cm (7 in) L, it is a budget Penguin publication, with no introduction or notes, and, like all the seven Holmes titles in the series, has a rather graphic, if not lurid cover. But the 11/13 PostScript Monotype Dante typeface, at least in *His last bow* and *The case-book*, is of generous, clear, and therefore pleasing proportions.

All are printed on relatively acceptable paper.

There was, until relatively recently, another Penguin series (Penguin Classics), which had so far included *A study in scarlet* and, in a second volume, *The adventures of Sherlock Holmes* and *The memoirs of Sherlock Holmes* (to give it its full title) both with introductions by Iain Sinclair (*A study*) and Iain Pears (*The adventures and memoirs*) and notes, in both cases, by Ed Glinert, who was also the author of the notes in *The valley of fear and selected*

cases, intended for publication in the same series, but to date not materialising, the series having been discontinued, and the title apparently dropped. With dimensions of 12.5 cm (ca. 5 in) W × 19.5 cm (7¾ in) L, and most attractive covers, featuring, in each volume published to date, a hand-coloured illustration of one published in the *Strand Magazine*, and the text clearly typeset in 10/12.5 Monotype Baskerville, as well as the introductions and notes, the abandoning of this series is a serious loss to Holmes' scholars.

Although I have not seen the next two titles, the keen and adventurous Holmes reader might be interested in these:

(1) *Sherlock Holmes complete illustrated novels*. Chancellor Press, 1987, (2) *Sherlock Holmes illustrated omnibus*. Schocken Books, USA, 1976; published in Great Britain by John Murray and Jonathan Cape Ltd.

* see Souchier, 2007, Sir Arthur Conan Doyle – Botany and Botanists in (1) *The hound of the Baskervilles* and (2) *The lost world and other stories* - Naturalism and Doyle's oscillation between botany, zoölogy (and entomology). *BSBI News* 106: 27-29.

† see Souchier, 2009, Arthur Conan Doyle's 'The Adventure of Wisteria Lodge' – *eine kleine Botanik* (and very few plants). *BSBI News* 112: 35-38.)

§ The word 'case-book' features on the cover and title page of *His last bow* and *The case-book of Sherlock Holmes* in the Penguin Red Classics series, but in, for example, the Wordsworth edition (above and references) 'casebook' is used. Similarly, most publications, for example, Avenel Books (1976) (this does not include *The valley of fear* in its selection) and Wordsworth (1989), proffer the '*Strand Magazine* (or *Strand Magazine*), although the 1938 commemorative cover features *The Strand Magazine*, as used by Sole. This is akin to *The Times* (in the newspaper itself) versus *Times* in *The Guardian* (or sometimes *Guardian*) newspaper; i.e. idiosyncrasies of style, sometimes due to word development, and therefore inconsistencies

abound. However, it should be noted that the street in London is simply called Strand.

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APPENDIX

A chronological philatelic summary of the immortalisation of Mr Sherlock Holmes, by way of relatively recent stamp booklet, journal, commemorative, and first day covers, stamps, and articles. (*Brit. Phil. Bull.* = *British Philatelic Bulletin*).

(1) **April 1987 – January 1988:** Stamp booklet covers: a series of five @ £1.00 each. e.g.. (i) *A study in scarlet*: the left of the cover shows Holmes and Watson with lit matches in their hands inspecting a wall, while to the right, also in monochrome, is a magnifying glass under which a hand with another lit match illuminates the letters R A C H E¹ in red (to denote blood). Holmes has his cape and deerstalker on; Watson a jacket or coat and bowler. First in a series from an idea by Mark Callicott, illustrated by Andrew Davidson, and printed by Harrison & Sons Ltd. (ii) 'The Adventure of the speckled band': This features Holmes recoiling from the snake ("swamp adder")² and making to strike it with a cane. To the right of this monochrome scene is again a magnifying glass showing the head of the snake which looks more like a cobra. This cover, which like the above, contains five

- 18p and one 13p stamp(s), is the third in the same series.
- (2) **October 1993:** Article by Jean Matheson (*Brit. Phil. Bull.*)
- (3) **1993:** Stamps, a series of five @ 24p each: A letter of the word ‘Doyle’ is hidden on each of them, as follows:
 D: *The hound of the Baskervilles* [Novella]: Above a clump of grass in the foreground. (Scene: “SHERLOCK HOLMES & SIR HENRY”).
 O: ‘The final problem’ [*The memoirs*]: On the cuff of a shirt.
 Y: ‘The Greek interpreter’ [*The memoirs*]: On a piece of an item apparently made of fabric.
 L: ‘The six :Napoleons’ [*The return*]: On the cover of the book on the table. (Scene: “SHERLOCK HOLMES & LESTRADE”).
 E: ‘The Reigate Squire’ [*The memoirs*]: On the spine of a book next to Watson’s right shoulder. (Scene: “SHERLOCK HOLMES & DR. WATSON”).
- (4) **13th May 1997:** Stamp @ 47p: *The hound of the Baskervilles*, and First Day Cover (FDC): The stamp features the hideous gigantic face of the hound, mouth open, with two rows of sharp pointed teeth, and red-pupilled stellified eyes; the cover the head, ears, and shoulders of a monstrous black hound, with sharp pointed canines, in a circle with a red background, the rotondo superimposed on a scene of wolves or dogs baying beneath a full moon.
- (5) **January 1998:** Article by James Negus (*Brit. Phil. Bull.*).
- (6) **February 1998:** Article by James Negus (*ibid.*).
- (7) **May 2009:** Article by Brian Sole (*Brit. Phil. Bull.* **46(9)**: 274-277)
- (8) **July 2009:** Caption to stamps featured in ‘Eminent Britons’ article by Anonymous (*Brit. Phil. Bull.* **46(11)**: 339).
- (9) **8th October 2009:** Issue of ‘Eminent Britons’ 1st class stamps series, one featuring a photograph of Arthur Conan Doyle with caption “Sir Arthur Conan Doyle 1859-1930/Writer and creator of Sherlock Holmes”.
- (10) **October 2009:** Front cover (FC) and Inside Front Cover (IFC) of *Brit. Phil. Bull.* **47(2)** featuring the illustration *The Death of Sherlock Holmes* by Sidney Paget³ from the December 1893 issue of *The Stand Magazine* [sic]. This issue also included Arthur Conan Doyle’s story ‘The adventure of the final problem’ [‘The final problem’ in *The memoirs of Sherlock Holmes*]. The ‘Eminent Britons’ Conan Doyle stamp is again featured in the *Bulletin*.
- (11) **December 2009:** ‘Eminent Britons’ series features (including ACD) in Favourite Stamps Poll 2009 (*Brit. Phil. Bull.* **47(4)**: 115).
- (12) **February 2010:** Commemorative Cover detailed by M. Tanner, 180 Whitehorse Road, West Croydon, CR0 2LA (Tel./Fax: +44(0)20-8684 9757) as “An Arthur Conan Doyle/WG Grace cover (28 numbered copies) featuring MLC/Conan Doyle versus London Counties/WG Grace at Crystal Palace, and the 1908 London Olympic Marathon Race when Conan Doyle assisted Pietri Dorando (later disqualified)”: other Holmes items also given. (*Brit. Phil. Bull.* **47(6)**: 189).
- (13) **n.d.:** Nicaragua stamp with value of 2.00 Aereo (not Córdoba (C\$)) featuring books with Interpol and Conan Doyle on two separate spines and an open book depicting Sherlock Holmes with deerstalker and pipe, all on a turquoise background.

NOTES:

1. “‘If this man was murdered, how was it done?’ asked the former [Lestrade]. ‘Poison,’ said Sherlock Holmes curtly, and strode off. ‘One other thing, Lestrade,’ he added turning round at the door. “‘Rache” is the German for “revenge”; so don’t lose your time by looking for Miss Rachel.’
 With which Parthian shot he walked away, leaving the two rivals open-mouthed behind him.”
2. “... For half an hour I sat with straining ears. Then suddenly another sound became audible – a very gentle, soothing sound, like that of a small jet of steam escaping continually from a kettle^a...”.
 ... “It was a singular sight which met our eyes.
 ... Beside this table, on the wooden chair, sat

Dr. Grimesby Roylott, clad in a long grey dressing-gown ... His chin was cocked upwards, and his eyes were fixed in a dreadful rigid stare at the corner of the ceiling. Round his brow he had a peculiar yellow band, with brownish speckles,^b which seemed to be bound tight round his head. As we entered he made neither sound nor motion.

‘The band! the speckled band!’ whispered Holmes.

I took a step forward: in an instant his strange headgear began to move, and there reared itself from among his hair the squat diamond-shaped head^c and puffed neck^d of a loathsome serpent.

‘It is a swamp adder!’^e cried Holmes – ‘the deadliest snake in India.’^f He has died within ten seconds of being bitten.’^g

3. This illustration also features on the front cover of *The adventures of Sherlock Holmes and The memoirs of Sherlock Holmes* (Penguin Classics), but in this instance has been hand coloured by the artist Helena Zakrzewska-Rucinska.

APROPOS OF THE IDENTITY OF CONAN DOYLE’S SNAKE (CLASS REPTILIA, ORDER SQUAMATA, SUBORDER SERPENTES):

- a. A snake’s hissing warning sound is produced by forcing air from the lungs and windpipe through the glottis. The Puff Adder (*Bitis arietans*, Family Viperidae) has an especially loud hiss, like a horse.
- b. The ground colour of the male Adder (*Vipera berus*, Family Viperidae) is a dirty yellow with a dark zig-zag dorsal line which has a series of spots on either side, while the (Common) Puff Adder is yellow to brown with darker bars or chevrons on its back.
- c. Reminiscent of the Indian snake cobra de capello or *Naja naja* (Family Elapidæ) with its hood and flattened neck which rears and expands the hood when frightened or excited. It strikes upwards and the venom is secreted from glands behind the eyes and runs down ducts to the fangs that grow from

the front of the upper jaw. After striking the cobra hangs on to its victim, chewing at the wound and injecting large quantities of venom.

- d. The (Common) Puff Adder inflates the upper part of its body (and hisses) when alarmed.
- e. Adders (i.e. *Vipera berus*) usually prefer dry, conditions but are sometimes also found in damp places. Swamps are a favourite haunt of the Anaconda or Water Boa (*Eunectes murinus*, *E. notæus*, Family Boïdæ) which kills its prey by constriction, not venom.
- f. Cobras, the Indian Python (*Python molurus*, Family Pythonidæ), and the Himalayan Pit Viper (*Ancistrodon himalayanus*, Family Crotalidæ) are found in India, but not adders which inhabit Asia and Europe (including the British Isles). The Puff Adder lives in Africa. ACD travelled to many places, but not India.
- g. Death can occur in a human fifteen minutes after the bite of a cobra; depending on the size of prey the venom of the Adder takes effect in thirty seconds to a few minutes, but is rarely fatal to humans, while that of the Puff Adder is much slower-acting, but just as potent and therefore deadly.

Furthermore, Ed Glinert, in his notes to *The adventures* (Penguin Classics), suggests not only that the snake might be the Indian Russell’s Viper, but also states what is well known to herpetologists i.e. snakes have no eardrums so they are deaf to airbourne (but not earth) vibrations, which means they cannot hear a whistle. Neither can they climb a rope (although they can descend one), and, of course, what is no doubt fairly obvious to any reader of ‘The speckled band’, one could not keep a snake alive in, a safe.

But the story, which Arthur Conan Doyle rated as his most favourite (out of ten), is marvellous and ingenious all the same.

ALIENS

***Silene gallica* (Small-flowered Catchfly), *Melilotus indicus* (Small Melilot) and *Cuscuta campestris* (Yellow Dodder) on the new Haydon Bridge bypass, Northumberland (v.c.67)**

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Haydon Bridge is a village on the A69 trunk road leading from Newcastle-upon-Tyne to Carlisle. It is about 50 km west of Newcastle-upon-Tyne, in the valley of the river South Tyne.

On 1st October 2009 I chanced to take a walk through Haydon Bridge. I realised en route that if I climbed up the embankment of the new by-pass, which had opened to traffic the previous March, I could cross the River Tyne by the new road bridge, and complete a circular walk instead of doing an out and back walk, as I had intended. As I walked the verge and embankment, I found three plants not very familiar to me: *Panicum miliaceum* (Common Millet), *Geranium pusillum* (Small-flowered Crane's-bill) and *Melilotus officinalis* (Ribbed Melilot). Pleased with these finds, I returned the next day and had a closer look at some of the verges and embankments. Almost straight away I found *Melilotus indicus* (Small Melilot) in flower over two feet high, and only a few yards from it *Silene gallica* (Small-flowered Catchfly) (see Colour Section, Plate 2). On another embankment I discovered *Chaenorhinum minus* (Small Toadflax). I subsequently walked the entire one mile length of the new road, both sides, with no further significant finds. Most of the verges and embankments are seeded with grass and clovers.

On 26th October I returned to the *Silene gallica* site to show it to some friends. I immediately found *Medicago arabica*

(Spotted Medick), only a few feet from the *Silene*. Just a few minutes later, my wife Rosemary found a patch of *Cuscuta campestris* (Yellow Dodder) growing on *Polygonum aviculare* (Knotgrass), on the embankment on the opposite side of the road (see Colour Section, Plate 2). We later found more sites nearby for the *Medicago arabica* and the *Melilotus indicus*. All the interesting finds were on ground made of newly laid ballast or rough sub-soil, not topsoil. They were largely in odd corners or on slopes not easily capable of being seeded with grass for cutting.

Silene gallica has been previously recorded in v.c.67 in 1868 and 1921. *Melilotus indicus* has not been recorded in v.c.67 since 1971. Subsequently I found it at Benwell, Newcastle-upon-Tyne on 11th December 2009. *Cuscuta campestris* is a new record for v.c.67. *Melilotus officinalis* is usually noted much nearer to the east coast of Northumberland. *Chaenorhinum minus* is usually found in v.c.67 associated with railway tracks. The bridge on whose embankments/verges I found it crosses both a river and a railway and it was growing only 25 or 30 yards from the railway. *Medicago arabica* is not often seen inland in v.c.67.

I acknowledge considerable assistance from Professor John Richards, BSBI recorder for v.c.67, in confirming plant identification.

Weeds of container plants

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A visit to almost any garden centre in the UK will reveal large pots of container plants, often in the form of olive and palm trees. Those not

carefully tended will provide some records of weeds, but should they 'count' in a *Flora*, perhaps as new to a v.c. (or even to Britain)?

Personally, I would certainly add them to a listing, but would enclose them in square brackets [] as potential records, not yet embedded on *terra firma*. The pot could be removed to another v.c. within a day or two! The records are important, as they clearly tell us how weeds are spreading into and within Britain.

Some are not easy to identify, especially those not native in Europe. Regrettably, in the UK, we do not yet have a list of these immigrants: a splendid project for some active BSBI member! Meanwhile, we are indebted to Ivan Hoste *et al.* for a valuable paper in *Dumortiera*, 97: 1-16 (2009) about ‘Alien plant species associated with the importation of Mediterranean container plants to Belgium’. In 2008, the five authors spent the year looking in garden centres at these exhibits, mostly ‘imported from Spain and Italy’. More than 120 species are listed therein, including 23 species ‘recorded from Belgium for the first time’. About one third of the species were not indigenous to Europe. This clearly demonstrates the truly global exchange of exotic plants. Container plants are obviously a major vector for the current spread of exciting aliens within urban areas.

Looking through their fascinating inventory, it is easy to correlate it (after a radicum of nomenclatural changes) with British adventives. In the cast are *Amaranthus* (6 species), *Aster squamatus* (Narrow-leaved Aster), *Bassia scoparia* (Summer-cypress), *Eleusine indica* (Yard-grass), *Euphorbia maculata*

(Spotted Spurge), *E. prostrata* (Prostrate Spurge), *E. serpens* (Matted Sandmat), *Galium murale* (Yellow Wall Bedstraw), *Medicago truncatula* (Strong-spined Medick), *Polypogon maritimus* (Mediterranean Rabbit’s-foot Grass), *Polypogon viridis* (Water Bent), *Portulaca oleracea* (Common Purslane), *Rostraria cristata* (Mediterranean Hair-grass), *Sisymbrium orientale* (Eastern Rocket) and *Urtica dubia* (Membranous Nettle), to name but a few. Maybe we are overlooking their (critical) *Stellaria cupaniana*? The cast that I list have all appeared in recent issues of *BSBI News* or *Watsonia*.

Many records of container weeds must lie unpublished – some lost within my own extensive files! Only one such listing comes to hand. It seems worthy of report here (but maybe not as indisputable records for v.c. 11!). Phil Budd, whilst on short-term employment at Brentry Container Unit, Ampfield, South Hants., during June-August 2001 encountered, amongst others (and all confirmed/det. E.J.C.): *Conyza bonariensis* (Argentine Fleabane), *Digitaria ciliaris* (Tropical Finger-grass), *Eclipta prostrata* (False Daisy), *Gnaphalium pensylvanicum* (Wandering Cudweed), and *Setaria verticillata* (Rough Bristle-grass). All of these appear in the Belgium article (the *Gnaphalium* with a helpful illustration).

I am grateful to Filip Verloove (Meise, Belgium) for sending to me a copy of the above paper. He was one of the enthusiastic co-authors.

REQUESTS & OFFERS

Wanted: the rarer spike-rush subspecies

JEREMY ROBERTS, *Eden Croft, 2 Wetheral Pasture, Carlisle, CA4 8HU;*
(fjr@edencroft2.demon.co.uk)

As BSBI referee for *Eleocharis*, it is embarrassing to admit that my experience of the rarer subspecies of *Eleocharis palustris* (i.e. subspecies *palustris*), is currently limited to what I have read about it. If you have knowledge of this elusive plant, any recent records, or any

sites for it, or have specimens that I may look at, I would be very grateful to hear from you. Also do keep a lookout for candidates for it this season, and send me any putative specimens.

Seeds from Ware – 2009 collections

GORDON HANSON, 1 Coltsfoot Road, Ware, Herts., SH12 7NW

Please enclose suitable
labelled small packets and
S.A.E. for anything required.

- | | | |
|--------------------------------------|------------------------------------|-------------------------------------|
| <i>Acanthus hungaricus</i> | <i>Erodium daucooides</i> | <i>Onobrychis viciifolia</i> – |
| <i>Achillea filipendulina</i> – | <i>Erodium manescavii</i> | Turkey |
| Uzbekistan | <i>Erodium pelargoniflorum</i> | <i>Onopordon algeriense</i> |
| <i>Alcea rosea</i> – Turkey | <i>Erysimum scoparium</i> – | <i>Opopanax hispidus</i> – Turkey |
| <i>Allium ampeloprasum</i> | Madeira | <i>Oxalis micrantha</i> |
| <i>Allium babingtonii</i> | <i>Euphorbia terracina</i> – Spain | <i>Peucedanum chryseum</i> – |
| <i>Althaea officinalis</i> – Isle of | <i>Festuca californica</i> – USA | Turkey |
| Wight | <i>Festuca rubra</i> – USA | <i>Physospermum cornubiense</i> – |
| <i>Ambrosia artemesiifolia</i> – | <i>Fremontodendron californi-</i> | Bucks. |
| Canada | <i>cum</i> | <i>Phytolacca americana</i> – Italy |
| <i>Anomatheca laxa</i> – cult. | <i>Fumaria capreolata</i> | <i>Phytolacca bogotensis</i> – S. |
| <i>Antirrhinum majus</i> – Spain | <i>Geranium psilostemon</i> | America |
| <i>Arabis glabra</i> – Herts. | <i>Gilia aff. minor</i> – Cheshire | <i>Pimpinella major</i> – Slovakia |
| <i>Astrantia bavarica</i> | <i>Hieracium grandidens</i> – | <i>Rumex flexuosus</i> |
| <i>Callistemon rugulosus</i> | Derbys. | <i>Salvia nubicola</i> |
| <i>Carex ?adpressa</i> – Australia | <i>Hieracium lasiochaetum</i> – | <i>Salvia sclarea</i> – Turkey |
| <i>Centaurea cyanus</i> – bird-seed | Turkey | <i>Salvia sylvestris</i> |
| <i>Centaurea macrocephala</i> – | <i>Hieracium pannosus</i> – | <i>Salvia verbenaca</i> |
| Tenerife | Turkey | <i>Salvia virgata</i> |
| <i>Centaurea melitensis</i> – Wool | <i>Hieracium plumbeum</i> – cult. | <i>Scolymus hispanicus</i> |
| alian | <i>Hieracium vagum</i> – Derbys. | <i>Scrophularia sambucifolia</i> – |
| <i>Ceratochloa cathartica</i> – | <i>Hieracium vulgatum</i> – | Spain |
| New Zealand | Derbys. | <i>Senecio polyodon</i> |
| <i>Ceratochloa staminea</i> – | <i>Iberis amara</i> – USA | <i>Seseli elatum</i> – Slovakia |
| China | <i>Ipomoea purpurea</i> | <i>Sida rhombifolia</i> |
| <i>Chaerophyllum libanoticum</i> | <i>Johrenia dichotoma</i> – Turkey | <i>Sideritis pisidica</i> – Turkey |
| <i>Chenopodium giganteum</i> – | <i>Lachenalia longituba</i> – S. | <i>Silene catholica</i> – Worcs |
| birdseed | Africa | <i>Silene coeli-rosa</i> |
| <i>Chenopodium vulvaria</i> | <i>Lavatera arborea</i> – Isle of | <i>Silene noctiflora</i> – Turkey |
| <i>Cirsium ?decussatum</i> | Wight | <i>Solanum scabrum</i> |
| <i>Clematis integrifolia</i> – USA | <i>Lavatera bryonifolia</i> – | <i>Solanum villosum</i> |
| <i>Commelina dianthifolia</i> | Turkey | <i>Solidago confinis</i> – USA |
| <i>Consolida ajacis</i> – Spain | <i>Lavatera cretica</i> – Spain | <i>Stipa cernua</i> – USA |
| <i>Corydalis magadanica</i> – | <i>Layia platyglossa</i> – USA | <i>Succisella petteri</i> |
| Russia | <i>Leonurus glaucescens</i> – | <i>Thalictrum rochebrunianum</i> |
| <i>Cotoneaster obtusus</i> | Uzbekistan | – Japan |
| <i>Cynoglossum amabile</i> | <i>Lepechinia hastata</i> | <i>Tinantia erecta</i> – cult. |
| <i>Dipsacus pilosus</i> | <i>Linum perenne</i> | <i>Tinantia pringlei</i> – Mexico |
| <i>Ehrharta erecta</i> – New | <i>Malcolmia graeca</i> | <i>Tragopogon dubius</i> – |
| Zealand | <i>Malva parviflora</i> – Tenerife | Tadjikistan |
| <i>Elymus magellanicus</i> | <i>Medicago rugosa</i> – Rhodes | <i>Verbascum bombycinum</i> |
| <i>Erodium cicutarium</i> – | <i>Melica californica</i> – USA | <i>Verbascum lydium</i> – Greece |
| Madeira | <i>Melica jacquemontii</i> – | <i>Verbascum pumiliforme</i> – |
| | Tadjikistan | Turkey |
| | <i>Nassella pulchra</i> – USA | <i>Verbascum thapsus</i> – USA |
| | <i>Oenothera ?stricta</i> – Chile | <i>Viola tricolor macedonica</i> – |
| | <i>Oenothera oaksiana</i> – USA | Slovakia |

Specimens of *Juncus compressus/gerardii* wanted

MICHAEL WILCOX, 32 Shawbridge Street, Clitheroe, Lancashire, BB7 1LZ;
(michaelpw22@hotmail.com)

Both these taxa can occur in maritime situations and the former is easily mistaken for the latter. Please collect a few stems from one or more localities (not if there is only a few plants, like a road verge, where sometimes a single or few plants can occur). Preferably, it would be best to collect in fruit, as this will aid the ID. The aim is to look at known plants, and

once some other characters are known and seem consistent, it may be possible to do it from non-fruiting plants. Please send an SAE if you require any further information or the material returning, or use the e:mail address where possible. Other *Juncus* welcome – I would also like to get material of non-native rushes from elsewhere in the world if possible.

NOTICES

Recent developments at the NHM British and Irish Herbarium

DR MARK A. SPENCER, Curator, British and Irish & Sloane Herbariums, Department of Botany, Natural History Museum, Cromwell Road, London, SW7 5BD;
(020 7942 5787; m.spencer@nhm.ac.uk)

The British and Irish Herbarium has recently been moved into new facilities in the Darwin Centre at the Natural History Museum and is once again fully open for business. The collections are now housed in a store with a temperature and humidity controlled environment. The new facilities are also considerably more accessible than previously.

The herbarium and associated library provides a valuable resource for British and Irish botanists. The collection consists of over 600,00 specimens collected during the last 300 years. Many of the specimens relate to records not present in literature or databases and are therefore a valuable resource for county recorders, referees and others undertaking research for Rare Plant Registers or the BSBI Threatened Plants Project. Recent examples of where the collections have proved useful include:

□ Corroboration of an historic record of *Artemisia scoparia* mentioned by D.H. Kent in his *Supplement to the historical flora of Middlesex* (2000). Three specimens held in the collection show that the plant was collected by W.T. Thistleton-Dyer in 1865 and 1870 on the site of the former International of 1862, or Great London Exposition. The site is now occupied by

Imperial College, the Science Museum and the Natural History Museum.

□ Databasing the herbarium's collection of *Caucalis platyphyllos* (Small Bur-parsley) added a further 37 localities to the 123 records already held (excluding those with more location information or only resolved to hectad) by the BSBI.

The potential value for phenological studies is currently being investigated. The Museum holds large quantities of 'historic' (i.e. pre-1950) specimens that are localised and accurately dated. Preliminary studies of approximately 30 widespread British and Irish taxa suggest that these data may be compatible with more recent field observations. A paper on the effect of seasonal temperature changes on the flowering of a rare British orchid has recently been submitted for review.

The earliest record (by far) of *Equisetum ramosissimum* in England. Further information on this discovery will be published in *Watsonia*.

If you have not visited the herbarium before but would like to take a look or discuss some ideas, please contact Mark Spencer by phone or e-mail.

The British Herbarium is now located on the Lower Ground Floor of the Darwin Centre, next door to the Angela Marmont Centre for UK Biodiversity. The Centre is for anyone with an interest in UK natural history. It will be a hub for amateur naturalists, enthusiasts and other societies to study wildlife. Visitors can investigate all aspects of the natural world,

from animals, insects and plants to fossils and minerals. More information about the Centre can be found at: <http://www.nhm.ac.uk/nature-online/british-natural-history/uk-biodiversity-portal/the-marmont-centre/index.html>

The Centre also hosts the London Natural History Society's library, see: <http://www.lnhs.org.uk/library.htm>

Celebrations at the South London Botanical Institute

ROY VICKERY, *Chairman of Trustees, South London Botanical Institute, 323 Norwood Road, London, SE24 9AQ*

In 2010 the South London Botanical Institute celebrates its centenary with a variety of events throughout the year. Founded by Allan Octavian Hume, a former Indian civil servant, in 1910, the SLBI has continued to spread an interest in botany in south London and beyond. It holds lectures, courses, and field meetings, and provides a pleasant meeting place for anyone with any interest in plants. It maintains a small botanical garden, an herbarium, and a library that has a particularly good collection of local floras. These facilities are open to the public on Thursdays between 10 a.m. and 4 p.m., but can be made available, by appointment, at other times. Being a small organisation, largely dependent on volunteers, the Institute avoids the bureaucracy which can bedevil larger organisations, and is flexible and seeks to help people develop their varied

interests. Although its name suggests a rather austere, scientific approach, the Institute's interests extend well beyond narrow confines of 'botany'. If it involves plants in any way, then the Institute will attempt to explore it.

Two exciting developments in recent years have been a great increase the Institute's outreach to young people, and the conducting of botanical surveys of sites in south London. The latter will be the Institute's main contribution to the projected new Flora of London.

Details of the centenary programme can be found on www.slbi.org.uk, or write to the Institute's Administrator. Events in 2010 focus on plants. In 2012 the Institute will commemorate the centenary of its founder's death, celebrating Hume's far-ranging interests and extraordinary life.

Wiltshire Botany

JOHN PRESLAND

Issue No. 11 of this journal is now published. It begins with a survey of the scrub habitats of Pepperbox Hill near Salisbury. There are keys for groups of Wiltshire plants often found difficult to identify: willow-herbs (*Epilobium*), duckweeds (*Lemnaceae*), docks (*Rumex*) and a collection of plants of reed-like appearance. An interesting new departure for the journal is a contribution on the herbal properties of the Stinging Nettle by a medical herbalist. Another new feature is a collection of summaries of and/or extracted information from articles and other publica-

tions which include aspects of the botany of Wiltshire though published elsewhere than in *Wiltshire Botany* and Wiltshire Botanical Society's Newsletter. These include: two articles on trees; one on the effect of climate change on Wiltshire fungi; one on the frequency of *Minuartia hybrida* on Salisbury Plain; an account of the Wiltshire botanist John Ounsted's botanical library, notebooks and correspondence; an article on orange-trunked trees in Savernake Forest; a case study of the Wiltshire Fritillary meadows; articles on the flora of dry stone walls; and a

report of a field meeting at Clatford Arboretum. Also included are a study of the distribution of the cultivated Snowdrop variety *Galanthus nivalis* forma 'pleniflorus' P.D. Sell in the Kennet Valley and the usual selection from a year's (2008) botanical records.

Contributions to the journal are welcome on any aspect of Wiltshire botany. Articles should be submitted to John Presland, 175c Ashley Lane, Winsley, Bradford-on-Avon, BA15 2HR, who will also be pleased to

discuss proposed articles informally (Tel.: 01225 865125). A leaflet is also available offering guidance to authors on the most helpful forms in which to submit articles.

Copies of No. 11 and some earlier issues are available from Rosemary Duckett, 50A The Butts, Westbury, Wiltshire, BA13 3EX (Tel.: 01373 858296; email: rosemary.duckett@virgin.net). The cost is £5.00 post free. Cheques should be made payable to: Wiltshire Botanical Society.

Recording Invasive Species Counts (RISC) – a new survey of three alien plants

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(petermjbrown@googlemail.com) (www.nonnativespecies.org/recording)

Non-native plants have provided a recent source of interesting debate (Pearman & Walker, 2009; Thomas & Dines, 2010). As reported in *BSBI News*, 112 (Brown, 2009), a new survey focusing on non-native plants and animals is launching with the help of BSBI. Entitled 'Recording Invasive Species Counts' (RISC), this web-based project asks BSBI members and the public to look out for and record a small selection of non-native species. The project involves the recording schemes for various plants and animals and is a collaboration between the Biological Records Centre (CEH), the National Biodiversity Network and the GB Non-native Species Secretariat, with funding from Defra.

The two primary aims of the project are to inform the public on non-native species, and to gather additional useful data on the distribution and ecology of the chosen species. Three plant species have been chosen for the project. These are *Ailanthus altissima* (Tree-of-heaven), *Lysichiton americanus* (American Skunk-cabbage) and *Ludwigia peploides* (Water Primrose) (see Colour Section, Plate 4). Reports of the latter to the GB Non-native Species Secretariat have been on the increase, and they are very keen to track any sightings of this invasive aquatic.

Records may be submitted via an online recording form, with the facility to upload photographs of the recorded plant, for verification. In my previous note I asked for a volunteer to administer the project, and received a very good response. I would like to express my thanks to all who enthusiastically offered their help. Two BSBI members – one based in England (Christopher Cockel) and one in Scotland (Diane Taylor) – will be handling the records on behalf of BSBI. They will sort through the online records, verify them where possible and reply to the recorders.

Recording Invasive Species Counts (RISC) launches on 22nd March 2010. For further information and to log records of the three plants mentioned, see:

www.nonnativespecies.org/recording.

References:

- BROWN, P. (2009). 'Volunteer co-ordinator needed for new survey of alien plants'. *BSBI News* **112**: 38.
- PEARMAN, D. & WALKER, K. (2009). 'Alien plants in Britain – a real or imagined problem?' *British Wildlife* **21**: 22-27.
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Floodplain Meadows Partnership

EMMA ROTHERO, *Floodplain Meadows Outreach Co-ordinator, Floodplain Meadows Partnership, The Open University, Walton Hall, Milton Keynes, MK7 6AA*
(01908 655645; or 07941 486260) (www.floodplainmeadows.org.uk)

Floodplain meadows are one of the UK's most biodiverse and rare habitats. They can contain up to 40 different plant species per square metre and act as a key habitat for a host of invertebrates and birds. Some meadows contain rare species such as the Snake's-head Fritillary, now found on only a handful of sites in the UK.

These meadows have evolved through an annual cycle of traditional agricultural management, with the meadows 'shut up' until summer, whereupon they were cut for hay. The hay from floodplain meadows was valued particularly highly by the agricultural community due to its nutrient rich status. Being on floodplains, these meadows receive high levels of natural fertilizer! This high fertility leads to a continuation of the grass growth after the hay cut, and so hay cutting is followed by grazing into the autumn. Such meadows would have been the mainstay of winter feed for livestock.

However, it is estimated that the UK has lost 97% of its wildflower meadows, and those that are left remain under threat from development, aggregate extraction, flood alleviation, inappropriate management and climate change.

The Ecology Group at the Open University is interested in how the plant communities on floodplain meadows respond to different environmental conditions. Each different plant species has a different tolerance of environmental stresses and by observing distributions in the field we have been able to quantify these tolerances. Using a database of species occurrence linked to soil hydrology, we have been able to predict plant community changes based on changes in soil water and soil nutrient status.

The collection of this data entails visiting many sites over the survey period and across the country, and recording large numbers of 1m • 1m quadrats. In 2009, we visited 20 floodplain meadow sites and recorded over 1500 quadrats worth of species data.

In all, to date, the database contains information from 57 floodplain meadow sites in the UK, with botanical data from all of these; soil-water data from 25; hydrological models on 15; and soil nutrient data from 13. In total we hold over 17,000 quadrats worth of data. We are currently investigating how to best share this data. A re-designed website (available soon) will host a map of all known floodplain sites, with a summary of research data held by the university as part of it.

This information can also be used to predict if sites are suitable for meadow restoration, as well as a guide to management on existing sites.

The Floodplain Meadows Partnership, hosted by the Open University has brought together a range of organisations and individuals involved in the management and restoration of floodplain meadows. The Partnership is committed to undertake long-term monitoring on some of the best remaining sites across England and Wales in order to develop our knowledge of how these meadows change in response to our changing environment and encourage their restoration and re-creation. We are interested to hear about others recording and monitoring floodplain meadows, so please get in touch if you have your own recording schemes locally.

The sharing of information with all those involved in the conservation, management and restoration of floodplain meadows is crucial to the success of the project. We are running short courses, workshops and a conference on Floodplain Meadows. In particular, we are running a weekend course on 'The Natural History of Floodplain Meadows' from 11th–13th June with tutors Professor David Gowing and John Rodwell. See website for further details. We are also providing publications and literature that summarise the latest research findings.

For further information, please see: www.floodplainmeadows.org.uk (contact: Floodplain-Meadows-Project@open.ac.uk).

REPORT OF OVERSEAS FIELD MEETING – 2009

BSBI: Romania

Leaders: OWEN MOUNTFORD & JOHN AKEROYD; Day report authors as listed

Day 1: 10th June (Owen Mountford)

Most of the group travelled on a BA flight from Heathrow to Otopeni airport and by soon after 5pm, all of us had arrived. We set off north on DNI across the agricultural plain of Muntenia toward Ploiești, with patches of *Sambucus ebulus* (Danewort) on the verges. Rocky outcrops bore thickets of silver-leaved Sea Buckthorn – here common well away from the coast on river gravel and stony slopes. Beech and mixed deciduous forests surrounded the villages in the middle and upper valley. The sides of the valley closed in and limestone precipices rising to 2000m, some with larch, emerged from the forest to the west – the Bucegi Mountains. Short of Predeal (on the watershed between Muntenia and Transylvania), we turned west toward Zărnești, descending through beech and spruce forest on a series of hairpins. We were anxious to get at least some botanising in before supper, and stopped in a promising area of pasture and scrub not far short of Râșnov. There was an interesting variety of sedges, including the true *Carex flava* (Yellow Sedge) in base-rich flushes. Limestone Woundwort and Hairy Spurge grew on the scrub edge and at least one of the oak bushes seemed to be *Quercus polycarpa* – one of eight oaks native to Romania. The route to Măgura from Zărnești seemed unpromising at first – a rough stony track up the Zărnești gorge, followed by a zigzag steeply up through forest to the surprisingly large village of Măgura itself, scattered over the rolling hills. There was thunder and lightning playing around the mountains – the temperature in București had been well over 30 degrees, and the weather was unsettled for our first 3 days in Romania.

Day 2: 11th June (Owen Mountford)

The weather was uncertain over breakfast, and we therefore altered our plans, deciding first

to explore the middle and upper parts of the Zărnești gorge where shelter from a cloudburst would be easier to reach. The gorge had limestone walls, some dry and exposed to the sun, others shaded and moist. Here and there beech forest came down to the trackside and a stream, with associated flushes, added further diversity. As we ascended, the beech gave way to a mix of spruce and beech as we entered the gorge proper. We recorded some 250 species within the gorge. Lower down there were warm, sunny, dry slopes, with “Breck species” such as Sickie Medick. The beech forest had patches of *Neottia* (Bird’s-nest Orchid) and occasional Butterfly Orchids, whose precise identity was probably impossible to establish, as well as Small-leaved Helleborine and *Corallorhiza* (Coral-root Orchid).

The beginnings of a truly upland influence were witnessed by wet flushes and springs with lots of *Silene pusilla*, which at first looked quite un-campion like. Cresses (*Arabis* spp. and especially the tall garlic-scented *Peltaria*) became commoner as we neared the narrowest defile. The flora on the rock faces became more truly montane, though not strictly alpine, including *Dianthus spiculifolius*, *Sesleria rigida*, *Saxifraga paniculata* (Livelong Saxifrage) and *Erysimum witmannii*, as well as patches of *Cortusa* (Alpine Bells) by seepage on the scrubby slopes. This was a good place to take lunch – on the banks of the gorge stream. Some exquisite bushes of the alpine rose *Rosa pendulina* grew out of the rock faces, with a few plants of the neat yellow *Saxifraga corymbosa*, and Small White Orchids in light shade close by.

We returned to Măgura ready for another walk, but another brief cloudburst delayed matters. When the weather cleared, we followed a path through the meadows above and near our pension. Our progress was very

slow, but the cause was the rich flora. Bright red *Trifolium alpestre* (Mountain Zigzag Clover) grew with Zigzag and Mountain Clovers, and the bright sunshine brought out some spectacular patches of Bladder Gentian on moist stony slopes. Bug Orchids were scattered over the slope, together with a few Scented Orchids and an array of *Rhinanthus* and *Centaurea* species, as well as patches of Blue Bugle. The slope was criss-crossed by paths connecting cabins and scattered farmsteads set amongst a mosaic of meadows, pastures and woodlands. We descended by other paths to the church, where Wild Liquorice grew in lush ground, and a marshy verge had *Juncus compressus* (Round-fruited Rush) and *Carex distans* (Distant Sedge). The lanes back to our pension had Winged Broom and Pink Masterwort growing on multi-coloured banks, and we spent some time trying to distinguish the variants of Dyer's Greenweed present. Caraway was very frequent on margins and drier pasture in this region.

Day 3: 12th June (Stephen Ashworth)

The group undertook three excursions all in the immediate vicinity of the guest house. The first revisited the species-rich alkaline meadows to the east of the pension of the previous afternoon, but then ascended to more acid pastures about 100m higher, with outcropping limestone crags, where Swallowwort and Sermountain were prominent. *Nardus* (Mat-grass) was frequent in these pastures, as well as juvenile Juniper. A significant find in this habitat was the Balkan heather *Bruckenthalia spiculifolia* growing as scattered young plants in the turf – as an Eastern European counterpart of our Ericaceae. We climbed steeply to an area where sheep were occasionally penned, and the resulting vegetation was much less diverse. Hence we retraced our steps and were rewarded by patches of Musk Orchid in the less acid turf, together with *Ophioglossum vulgatum* (Adder's-tongue Fern), *Antennaria dioica* (Mountain Everlasting) and *Thesium alpinum* (Alpine Bastard-toadflax).

Our second excursion took in small hay meadows and road verges below the pension.

Some of these fields had already been scythed and others had a similar flora to the upper meadows, but there were interesting additions, including a typically variable *Dactylorhiza* that seemed to be *D. cordigera* (Heart-flowered Orchid) in wetter places (possibly with hybrids), whilst *Lychnis viscaria* (Sticky Catchfly) grew on drier banks and *Pyrola minor* (Common Wintergreen) grew in deciduous scrub. Walking back through the village revealed many weeds, including some, such as Good King Henry, which are typical of the uplands in Romania. Hoopoes were calling as we returned and Teresa found a splendid, though sadly dead, Mole Cricket which was the subject of many photos.

The third and final excursion took us back to the Zărnești gorge, where now we focused on the lower part toward the town. *Cephalanthera damasonium* (White Helleborine) (with another infertile species) grew with the *Neottia* under beech, together with *Cardamine/Dentaria bulbifera* (Coralroot) and *Dentaria glandulosa*. Sunnier slopes and rock outcrops had Crown Vetch, *Verbascum lychnitis* (White Mullein) (yellow-flowered), *Phyteuma orbiculare* (Round-headed Rampion) and a distinctive form of the Siberian Bellflower. We stopped by a spring where fine fresh water was available for drinking, and both *Carex flava* and *Blysmus compressus* (Flatsedge) were common. Yellow-bellied Toads were clambering around this sward. Earlier, in roadside puddles, we had found both adults and tadpoles. The constant sound of crickets from the meadows welcomed us back to the pension and an after-supper species-session to sum up the area completed this part of our trip.

Day 4: 13th June (Bridget Smith)

After the high hay meadows of Măgura we returned to the plain; first down the rough, unmade road through the lower gorge. Transylvania seems either to be completely flat or very hilly. Our road was through large fields of grain, managed fairly intensively but interspersed with rough grazing and large flocks of sheep shepherded by a man and dogs. Nearer the villages were strips of arable land managed traditionally by small farmers

and near the small towns were derelict factories from the communist era and the occasional modern factory. From Braşov, a climb through wooded country brought us to the area of the Saxon villages where we were to stay.

A scramble up the terraces, gave us our first glimpse of what happens when this land is allowed to revert from cultivation to rough grazing or even hay meadow. The seed bank must be immense and one could hardly imagine this was once plough-land. We were now seeing mainly vegetation of the steppe and the woodland edge with a large number of species of the Fabaceae family, including the brilliant red *Lathyrus tuberosus* (Tuberous Pea), the shrubby *Chamaespartium sagittale* (Winged Broom), and the impressive yellow *Trifolium pannonicum* (Hungarian Clover). We also had our first sighting of the bright pink *Polygala major* (Large Milkwort) and the local teasel, *Dipsacus laciniatus* (Cut-leaved Teasel), with its pinnatifid cauline leaves and more upright, pale inflorescences. Here we saw, as on previous days, how the variety of vegetation resulted in a wonderful variety of insects, with the air full of the sound of grasshoppers and crickets, as well as butterflies at every step.

Day 5: 11th June (Phyl Abbott)

On Sunday Karcsi had a day off so we set off on a six mile trek that took most of the day – a bit much to ask of people used to ambling along at botanists' pace! However we inevitably made time to look at plants and were in no way disappointed by the beauty and diversity of the species in the meadow steppe. These areas are grazed by horses and cattle. Amongst the first new plants of the day was *Melampyrum bihariense*, endemic to Eastern Europe and distinguished from *M. cristatum* (Crested Cow-wheat) by having hairs on the veins of the calyx. Teresa found the attractive Sand Lizard *Lacerta agilis*. From the top of the hill across the valley before us there was extensive grassland with sparse hawthorn scrub and dense *Quercus robur* (Pedunculate Oak) woodland on the higher parts of the slope opposite.

Our picnic lunch was taken near woodland which held *Maianthemum bifolium* (May-lily), *Convallaria majalis* (Lily-of-the-valley), *Lathyrus vernus* (Spring Pea) and *Phyteuma tetramerum*, the latter endemic to the southern and eastern Carpathians. Wandering along the valley we saw two superb flowering specimens of *Veratrum album* (White False-helleborine) and a large patch of the attractive *Euphorbia salicifolia* (Willow-leaved Spurge). There were leaves of *Colchicum autumnale* (Meadow Saffron) to tempt us to come back later. When we reached the road a few people chose to return to the village that way. The rest of us took to the hills again and, on the steppic slope, Owen was delighted to point out *Salvia nutans* (Nodding Sage), another eastern European endemic. This was growing along with *Jurinea mollis*, *Teucrium chamaedrys* (Wall Germander), and a white flowered variant of *Dianthus carthusianorum* (Carthusian Pink), but *Adonis vernalis* (Yellow Adonis) and *Dictamnus albus* (Burning Bush) had already finished flowering. Other species occurred that are rare in Europe generally and some with their centre of distribution well to the east in the Steppe region e.g. *Crambe tatarica*, *Iris pumila* (Dwarf Iris) and both *Prunus tenella* and *P. fruticosa*, as well as the archetypal grass *Stipa* and the wormwood *Artemisia pontica*. Umbellifers were important, especially Longleaf but also the yellow *Ferulago sylvatica* and white *Laser trilobum*. On the homeward trek along the ridge we saw *Ornithogalum pyramidale* and, on the edge of an arable field, *Consolida regalis*, *Adonis aestivalis*, *Ranunculus arvensis* (Corn Buttercup) and, finally, there were beautiful areas dominated by *Rhinanthus minor* (Yellow-rattle) and *Onobrychis viciifolia* (Sainfoin).

Day 6: 15th June (Chris Preston)

The first site, 2km S. of Apold, was one of the mysterious fields of 'tumps' which are found in this part of Transylvania (see Colour Section, Plate 3). Several small, steep-sided hills rise out of rather flat ground (currently fallow fields). They look man-made, although some consider that they have a natural origin;

even if natural, some appear to have been cut through to allow tracks to pass between them. Their flora had much in common with that seen on the hills the previous day, with much *Carex humilis* (Dwarf Sedge). *Artemisia pontica* was frequent in an open community on the driest, steepest slopes, and the more closed turf held *A. campestris* (Field Wormwood), *Astragalus monspessulanus* (Montpellier Milk-vetch), *Cirsium pannonicum* (Hungarian Thistle), *Clematis recta*, *Eryngium campestre* (Field Eryngo), *Falcaria vulgaris* (Longleaf), *Galium rubioides*, *Gymnadenia densiflora* (Marsh Fragrant-orchid), *Inula ensifolia*, *Iris pumila*, *Lembotropis nigricans* (Black Broom), *Linum flavum* (Yellow Flax), *Jurinea mollis* (again, past flowering), *Rosa gallica*, *Sesleria heuflerana*, *Stipa pennata* (Feather-grass), *Teucrium chamaedrys*, *Thesium bavaricum* and *Verbascum phoeniceum* (Purple Mullein). John pointed out vegetative plants of the late-flowering *Adenophora lilifolia* (a bellflower) (not dissimilar to *Hieracium umbellatum*, also here) and *Cephalaria radiata*. The south-facing side of one tump had a mass of *Salvia nutans* (mainly past flowering), with flowering *S. pratensis* (Meadow Clary) on the north-facing side; *S. verticillata* (Whorled Clary) grew at the base. The *Chamaecytisus* in this area had pale yellow rather than cream flowers, suggesting that it was *C. banaticus* rather than *C. albus* seen earlier, but the difference was rather slight.

After lunch under roadside walnut trees at Apold we went on to Şaeş, walking along a lane with *Aristolochia clematitis* (Birthwort) and *Leonurus cardiaca* (Motherwort) to a *Phragmites* (Reed)-dominated marsh in a depression in the hills. The flora was much more familiar, especially to the East Anglian contingent, with *Angelica sylvestris* (Wild Angelica), *Calamagrostis canescens* (Purple Small-reed), *Caltha palustris* (Marsh Marigold), *Calystegia sepium* (Hedge Bindweed), *Carex acutiformis* (Lesser Pond-sedge), *Iris pseudacorus* (Yellow Flag), *Lathyrus palustris* (Marsh Pea), *Myosoton aquaticum* (Water Chickweed) and *Salix*

cinerea ssp. *cinerea* (Grey Willow). The wetland vegetation graded into grassland, with *Cirsium canum* at the moist edge and a fine display of *Melampyrum arvense* (Field Cow-wheat) on a dry bank. *Consolida regalis*, *Euphorbia platyphyllos* (Broad-leaved Spurge) and *Silene noctiflora* (Night-flowering Catchfly) grew as weeds in a nearby maize field.

Day 7: 16th June (Clare and Mark Kitchen)

On this our last day in Viscri, we were joined by several members of ADEPT (Agricultural and Environmental Protection in Transylvania). These included students studying land use history and biodiversity, the distribution of scarce species, environmental guiding and the surveying of flora and vegetation. Our walk took us south of the village to the top of 'Huluba Hill', on which an 'Orange' telephone mast stands. This and the surrounding foothills are formed of calcareous marl with a little sand and slumped areas. Monica, an MSc student from Cluj researching dry grassland with ADEPT, commented that the grassland we passed on the way contained plants which suggested its previous use was arable, although it is currently mesophilic grazing pasture. The open area is vast, as enclosure of fields never occurred in this part of Romania. We were pleased to see *Melampyrum arvense* (Field Cow-wheat), in its full purple and yellow glory. The sub-steppic flora of the steep unimproved slopes was similar to that seen on the previous day with such plants as *Salvia nutans*, with its bending heads of blue flowers and the sensuously aromatic *Dictamnus albus*, being notable highlights. New were a few of our target plant *Echium russicum* (Red Viper's-bugloss), with its deep red flowers, below the top of the hill where the mast had been constructed. The grassland was also good habitat for butterflies including Niobe Fritillary, Eastern Bath White and the Queen of Spain.

The day being hot we took a long siesta before strolling to the church on top of the hill in Viscri. In the churchyard we noted *Pinus strobus* (Weymouth Pine), unusual for the

area. Returning from the church we inspected the ruderal flora associated with the street drainage ditches, which included *Chenopodium glaucum* (Oak-leaved Goosefoot), and *C. hybridum* (Maple-leaved Goosefoot or Sowbane), *Lepidium ruderales* (Narrow-leaved Pepperwort) and *Polygonum neglectum* (a knotweed). On our way to Sighișoara in the evening we were able to break our journey at the ADEPT offices, where we were told of their ventures in commercial quality food production to support the indigenous farming community, and there followed a shopping opportunity of numerous locally produced jams, cordials and dried herbs and tisanes including that made from *Viscum album* (Mistletoe).

Day 8: 17th June (Anne Cole)

The day began with a visit to a plateau of ancient wood pasture, the Breite (broad). Huge standard oaks once pollarded now stag-horned, mainly *Quercus robur* and *Q. petraea* (Sessile Oak) with their hybrid (*Q. ×rosacea*) dominated the sadly under-grazed grassland. These dying trees were home to a rare beetle *Cerambyx cerdo*, which excavates long galleries in the wood. We were able to find two of these impressive animals. The plant of note was *Alcea pallida* (Eastern Hollyhock) – evidently a new site for this in the Saxon Villages. The surrounding dense woodland of *Carpinus betulus* (Hornbeam) and *Fagus sylvatica* (Beech) had an interesting ground flora: *Anemone nemorosa* (Wood Anemone), *Cardamine/Dentaria bulbifera*, *Maianthemum bifolium* and *Polygonatum latifolium*. The edge flora included *Campanula rapunculoides* (Creeping Bellflower), *Cardamine impatiens* (Narrow-leaved Bittercress), *Salvia glutinosa* (Sticky Clary) and *Lathyrus vernus*. *Rudbeckia laciniata* (Conflower) and *Oxalis stricta* (Upright Yellow-sorrel) were naturalised by the track through the wood.

A convivial lunch was next at *Jo's Pub* in Sighișoara. Afterwards we toiled up steep flights of steps to the jumble of ancient houses on top of the hill. Two grasses were noted: *Hordeum murinum* (Wall Barley) ssp. *leporinum* and *Cynodon dactylon* (Bermuda-grass)

on the way to the austere beautiful 1345 Lutheran church full of Saxon treasures and with a historic cemetery spilling down the hillside overgrown with wild flowers. Alas no time to survey!

On the way to the mountains a last stop was made to explore an acid grassland site on gravels by the river Bâlea near Cârțișoara. Here there were stands of *Frangula alnus* (Alder-buckthorn) and *Impatiens parviflora* (Small Balsam) by the river, and scattered *Myricaria germanica* (German Tamarisk), reflecting the location draining the mountains. In the short turf were *Scleranthus perennis* (Perennial Knawel), cudweeds (*Filago minima* and *F. vulgaris*), *Veronica triphyllos* (Fingered Speedwell), *Gypsophila muralis* (Annual Gypsophila) and *Trifolium arvense* (Hare's-foot Clover) – an assemblage remarkably like the Breckland of eastern England.

Day 9: 18th June (Giles King-Salter)

Our hotel for the final three nights of the excursion was the Cabana Cascada at 1250m on the northern slopes of the Făgăraș Mountains, part of the Southern Carpathian chain. The surrounding forest was predominantly *Picea abies* (Norway Spruce), with scattered trees of *Abies alba* (Silver Fir). Travelling up from the hotel on the first morning, we drove past a fine display of flowering *Ranunculus platanifolius* (Large White Buttercup) and several large plants of *Lycopodium clavatum* (Stag's-horn Clubmoss). After emerging from the Spruce zone, we passed through a zone of *Pinus mugo* (Mountain Pine) before reaching Lake Bâlea, at about 2050m, where we spent most of the day. The vegetation here was short alpine grassland with extensive areas of scree and exposed rock. The pink flowers of the dwarf shrub *Rhododendron myrtifolium* could be seen forming dense patches higher up but it was less abundant around the lake and below, presumably due to the effects of sheep grazing and possibly because the soil is richer in bases. Overall, however, the grazing pressure here was less than on the southern side nearby, resulting in a more diverse and interesting flora.

Ranunculus crenatus (Crenate Buttercup) was flowering in abundance in short turf near the lake, together with a large number of other species including *Primula minima* (Least Primrose), *Geum montanum* (Alpine Avens), *Soldanella montana* (Mountain Snowbell), *S. pusilla* (Dwarf Snowbell), *Plantago gentianoides*, *Potentilla aurea* (Golden Cinquefoil), *Cerastium cerastoides* (Starwort Mouse-ear), *Arabis alpina* (Alpine Rock-cress), *Lloydia serotina* (Snowdon Lily), *Doronicum carpathicum* (Carpathian Leopard's-bane), *Saxifraga stellaris* (Starry Saxifrage), *Viola biflora* (Yellow Wood-violet), *Pulsatilla alba* (White Pasque-flower), *Ligusticum mutellina* (Alpine Lovage), *Sedum alpestre*, *Homogyne alpina* (Alpine Colt's-foot) and the dense pink-flowered cushions of *Silene acaulis* (Moss Champion). Among the graminoids were *Luzula alpinopilosa* (Alpine Woodrush), *Kobresia myosuroides*, *Carex atrata* (Black Alpine Sedge) and the grass *Oreochloa disticha*. Wildlife seen near the lake included whistling Marmots, Ravens, Alpine Accentors and Water Pipits, with the latter performing their noisy display flights up from the ground.

Making our way west, away from the lake, we crossed an area of scree and scrambled up a steep grassy slope to reach the base of a cliff. Plant species on the slope included *Saxifraga rotundifolia* ssp. *heucherifolia* (Round-leaved Saxifrage), *Ranunculus oreophilus*, *Anthemis carpathica* ssp. *carpathica* (Carpathian Dog-daisy) (see Colour Section, Plate 3), *Epilobium nutans* (Nodding Willowherb), *Gnaphalium supinum* (Dwarf Cudweed), *Myosotis alpestris* (Alpine Forget-me-not), *Sedum rosea* (Roseroot), *Phleum alpinum* (Alpine Cat's-tail), *Gentiana acaulis* (Trumpet Gentian), *G. punctata* (Spotted Gentian), *Acinos alpinus* ssp. *alpinus* (Alpine Calamint), *Trifolium badium* (Brown Trefoil), *Bartsia alpina* (Alpine Bartsia), *Phyteuma wagneri*, *Silene vulgaris* ssp. *glareosa* (Bladder Champion) and *Astragalus alpinus* (Alpine Milk-vetch), a species possibly new to Făgăraş. The presence of *Scilla bifolia* (Alpine Squill) at the foot of the slope was a

surprise, but also suggested this area may be relatively unknown botanically. We briefly struggled to identify *Dianthus barbatus* (Sweet William), which presented an unusual appearance in bud, but were able to confirm the identification when we saw it in flower lower down the following day. On and around the cliff face we saw rare *Callianthemum coriandriifolium* and other species such as *Asplenium viride* (Green Spleenwort), *Pinguicula vulgaris* (Common Butterwort), *Dactylorhiza coeloglossum* (*Coeloglossum viride* – Frog Orchid), *Erigeron nanus* (Dwarf Fleabane), *Galium boreale* (Northern Bedstraw), *Veronica baumgartenii*, *Campanula alpina* (Alpine Bellflower) (see Colour Section, Plate 3), and *Allium victorialis*, with broad leaves and large nodding flower heads.

We then descended to about 1900m to investigate a boggy area containing a small pool. Very little was growing in the water itself, but around the margins were *Eriophorum angustifolium* (Common Cotton-grass), *E. vaginatum* (Hare's-tail Cotton-grass), *Pinguicula vulgaris* (Common Butterwort), *Juncus filiformis* (Thread Rush), *J. triglumis* (Three-flowered Rush), *Carex nigra* (Common Sedge) and *Cardamine pratensis* ssp. *rivularis* (Cuckoo-flower), while *Caltha palustris* (Marsh Marigold) was abundant alongside small streams.

Nearby were several base-rich low mounds supporting a diverse flora, which included many impressively large plants of *Botrychium lunaria* (Moonwort). Also growing here were *Primula elatior* ssp. *intricata* (Oxlip), *Pritzelago alpina* (Chamois Cress), *Selaginella selaginoides* (Lesser Clubmoss), *Gentianella tenella*, *Cerastium alpinum* ssp. *alpinum* (Alpine Mouse-ear), *Minuartia verna* ssp. *gerardi* (Spring Sandwort), *Viola alpina* (Alpine Pansy) and *Saxifraga oppositifolia* (Purple Saxifrage).

Day 10:19th June (Con Breen)

In contrast to the previous day's foray, which had been confined to areas above the tree line at over 2000m to the west of Lake Bâlea, the morning's botanising explored the *Picea abies*

(Norway Spruce) zone immediately above our abode, the Cabana Cascada, in the deep valley below the Bâlea cascade ranging from 1200m to over 1300m. With the deep shelter prevailing in the valley a varied plant list of woodland and riverside plants was made, including several species washed down from higher up the valley – as is normal in alpine valleys such as this. Species of note with a predominantly eastern or south-eastern distribution in Europe included, *Cirsium waldsteinii*, *Pulmonaria rubra*, *Soldanella hungarica* and *Thymus alpestris* together with more widespread species including *Achillea stricta*, *Adenostyles alliariae*, *Alnus viridis* (Green Alder), *Doronicum carpaticum*, *Gentiana asclepiadea* (Willow Gentian), *Hypericum richeri*, *Saxifraga cuneifolia*, *Saxifraga rotundifolia* (Round-leaved Saxifrage), *Senecio nemorensis*, *Silene pusilla*, *Spiraea chamaedrifolia* and *Veronica urticifolia*. The semi-parasitic *Tozzia alpina* ssp. *carpatica* took us a while to recognise but was in many respects the find of the day, being a species listed for protection under Natura 2000. Fine specimens of Whorled Solomon's-seal at the foot of a cliff provided a good subject for photography.

The party then proceeded to a lunch spot on higher ground in grassland and stream-sides in the *Pinus mugo* (Dwarf Mountain-pine) zone at some 1700m. Significant species noted in this area were the Romanian endemic, *Silene dinarica*, together with other local species including *Cardamine "rivularis"*, *Carex pyrenaica* and *Draba kotschyi*. Also seen were *Arenaria ciliata* (Fringed Sandwort), *Dianthus barbatus* (Sweet-William), *Dryopteris expansa* (Northern Buckler-fern), *Epilobium alsinifolium* (Chickweed Willowherb), *E. anagallidifolium* (Alpine Willowherb) and *Poa chaixii* (Broad-leaved Meadow-grass).

Finally, the party returned to Lake Bâlea, where outcrops and mountain slopes to the north-east of the Lake yielded yet further botanical riches to finish the visit to Romania literally on a high note! Many species already seen on the previous day to the west were noted. A steep rocky outcrop, with much

Lloydia serotina and *Rhododendron myrtifolium*, and the surrounding slopes were busily examined by the more athletic, and adventurous, members of the party. A sheltered overhang was bright with the large white flowers of *Saxifraga pedemontana*, a species with a very disjunct and local distribution from Morocco through Spain, the French Alps, and Corsica to Romania and the Balkans. Other significant local species with an eastern distribution in Europe included *Aconitum tauricum*, *Pedicularis oederi*, *Phleum montanum*, *Phyteuma confusum*, *Poa media*, *Veronica baumgartenii* and *Viola declinata*. Other mountain species more familiar to the party in Britain included *Arabis alpina* (Alpine Rock-cress), *Asplenium viride* (Green Spleenwort), *Luzula spicata* (Spiked Wood-rush), *Minuartia sedoides* (Cyphel), *Salix reticulata* (Net-leaved Willow) and a large-flowered *Saxifraga oppositifolia* (Purple Saxifrage). Teresa took a higher route than the rest of us and found *Dryas octopetala* (Mountain Avens) and *Pinguicula alpina*.

Thus ended a most satisfying day's mountain botanising and a fitting end to a wonderful visit to Romania.

Day 11: 20th June (Owen Mountford)

Our final day had no real natural history observations, although we did see some fine scenery on our drive to Curtea de Argeş. Plants on roadside rocks and slopes included Sticky Catchfly, Black Broom and Sea-buckthorn. From my 2008 visit to the area, I knew the pink that was frequent at moderate altitudes was *Dianthus henteri*. Passing the Argeş reservoirs and eventually reaching the lowlands, we got to the A1 motorway near Piteşti and were soon at Bucureşti. The weed flora around the capital's ring-road would have no doubt held further species for our list for the trip (already over 900), but only White Water-lily was added (in large pools nearing the airport). I was to spend one more day in Romania and thus with Marilena said "Drum bun!" to the travellers, hoping that they had come to share some of my affection for this country.

REPORT OF THE ANNUAL EXHIBITION MEETING 2009

ALAN SHOWLER, 12 Wedgwood Drive, Hughenden Valley, High Wycombe, Bucks., HP14 4PA

The theme for the exhibition, on 21st November at Baden-Powell House, Kensington, was 'Floras of Small Areas', and it attracted what must be a near-record number of exhibits, the majority fitting the title. This also meant that many of the titles described well the scope of the exhibit without much further elaboration by your reviewer. This was just as well, as a quick calculation shows how little time could be spent viewing each of the 42 displays, even without a break for lunch, looking at books and talking to friends. I hope I have done justice to those who provided an abstract of their exhibit; to those who did not, my apologies – but next year please provide one unless the title covers all you need to say.

As usual, there were the evergreens – in leaf as usual – like Sean & Ann Kearly with their 'Help!' table. They have issued an ultimatum that 2010 will be their last (offers to take over to Roy Vickery). Sean and Ann also exhibited for the Plant Gall Society. Others needed help nearby, where John Poland had more fiendish things to identify and his new book (co-authored with Eric Clement) to remind us it could help (for the answers, see *BSBI News* 113: 89). Jane Croft had next year's Field Meetings already listed, and nearby were pictures from one of 2009's meetings, led by Teresa Farino in N. Spain. To the south, John Bailey recommended "Delights of the Mallorcan flora". Jean Combes, as usual, showed us some very fine drawings and photographs, and Mervyn Southam exhibited (guess what!) Umbellifers, with the emphasis on *Ferula*. R.M. Veal had the latest additions to the Sark flora, which included the ever-spreading *Conyza canadensis*. Some degrees lower in temperature and higher in latitude were "Some Spitzbergen Plants" from Ruth Pierce, and from the wilds of Morecambe Bay Michael Foley & Mike Porter produced an unbelievable 18 species of *Cotoneaster*; mostly from limestone and not all still to be found, as the report covered

1990-2009. Appropriately, some were mentioned by Jeanette Fryer, our referee for the genus, in "Cotoneasters in Stace's Flora".

At 2.15 there was a pause for a presentation by the President to the authors and artist of the new Grasses Handbook. Tom Cope, Alan Gray and Margaret Tebbs well deserved the praise and applause that they received. Another diversion was a tour of the NHM's British Herbarium in the new Darwin Centre by Mark Spencer, and there were books to look at, on sale from Summerfields, Cambridge University Press and Acanthophyllum Books. Then it was back to the Exhibition. Here Petra Broddle and Roy Vickery reported on a newly commenced survey by the South London Botanical Institute of St. Leonard's churchyard, Streatham. It is planned to monitor changes over the years to what has been found so far – 130 flowering plants, 5 ferns, 2 gymnosperms, 21 mosses, 20 lichens and the fauna. Stella Taylor is a pet-lover, but her pets are the weeds (well some) in her garden in Diss, v.c.27. Most are native, a few less common are introduced, and she was giving away the fruits of her labours to any who wanted some. Continuing the small areas theme, Sarah Whild and Alex Lockton displayed the flora of Haughmond Hill and of Attingham Park (both v.c.40); Pam Taylor showed "Taplow Wildlife" from v.c.24 and Simon Leach gave us the "Flora of Taunton", v.c.5. The adjoining v.c.6 was represented by Helena Crouch with the "Flora of the Cam and Wellow Valleys", which summarised work by the Cam Valley Wildlife Group. The "Top 20" species held no surprises, nor I fear did Indian Balsam (*Impatiens glandulifera*), but others, e.g. Common Broomrape (*Orobanche minor*) and Marsh Cudweed (*Gnaphalium uliginosum*) were much rarer, as was White Helleborine (*Cephalanthera damasonium*) on the western edge of its range. In the same v.c., Liz McDonnell reported on the "Flora of the parish

of Wedmore”, and still in the southwest, Ted Pratt showed his book “The Wildflowers of the Isle of Purbeck, Brownsea and Sandbanks” and how it was written, with sample map tetrads. Eastwards in v.c.11, Debbie Allan & John Norton presented an “Annotated checklist of the wildflowers of Gosport”.

From up north came “Hell Kettles – a forgotten corner” of v.c.66, from Falgunee Sarker (described in *BSBI News* 113: 35); whilst our President, Michael Braithwaite, showed “Native species colonising the Berwickshire Coast” and some Berwickshire Rare Plant Register hectad reports. Back in the south, Mick Crawley had “Silwood Park – the flora of 100 hectares” in v.c.22, while David Bevan and David Corcoran recorded “The Flora of Queens Wood – continuity and change in an urban London wood (v.c.21)”. Jon Shanklin gave us “The Flora of Cherry Hinton Chalk Pits”, known for many, many years, but probably not as good as in the ‘old days’. Alan Leslie reported on “New Cambridgeshire Records” from the same v.c. In the same area, Ken Adams looked at the “Former distribution and extinction of *Hieracia* in Epping Forest”, and also the “Distribution and ecology of Crested Cow-wheat and Sulphur Clover in eastern England”. Elsewhere, there were “Three new records of alien plants from Leicestershire” from Uta Hamzaoui, while

George Hutchinson provided “Records from three Conservation Areas” around Cardiff. Barry Phillips, Susan Grayer & James Armitage showed “Flora of RHS Wisley, 1910 – 2010: a centenary publication”, while Mark Spencer displayed the remarkable “Herb. J. Stephenson – a long lost/unknown London herbarium”, only recently discovered.

On other topics, Geoffrey Kitchener exhibited “Complex hybrids in *Epilobium*” and also “Complex hybrids in *Rumex*”. Christina O’Rourke, S. Connan and D. Stengel showed “Characterisation of the pigment levels in the brown seaweed *Ascophyllum nodosum*”, while David Allen, surrounded by all these Latin names, just said it’s “All Greek to me”, which probably some of them were. Saving the best until last, Tim Rich had on view “Biodiversity Duty Audits of National Museum of Wales sites”, but he also featured, with Peter Garner and Mark Yanninck in “Haunted Herefordshire – the Ghost reappears after 23 years”. This described how Mark identified auspicious weather conditions earlier in the year, staked out 10 possible sites and on 20th September found it – the Ghost Orchid (*Epipogium aphyllum*)! Just one plant, 5cm tall, which he greeted with: “Hello you – so there you are!” (also described in more detail in *BSBI News* 113: 7). What a fabulously well deserved find to end this report.

OBITUARY NOTES

MARY BRIGGS, 9 Arun Prospect, Pulborough, West Sussex, RH20 1AL

* an Obituary will be published in *Watsonia*

With regret we report the death of **Dr P.F. Yeo***, a BSBI member since 1984 and known to many members as an author of the New Naturalist Library books on Pollination; the first with Michael Proctor was published in 1973, and the second edition with Andrew Lack also as *The Natural History of Pollination* published in 1996. Peter working at the Cambridge Botanic Garden was a BSBI referee for some years for *Euphrasia* and *Aster* and for *Geranium* he was referee from 1997-2003. Peter was the world expert on *Geranium* and his comprehensive *Hardy Geraniums* was

published in 2005. Peter was also a good companion on field excursions and handy with a long handled screw driver for the extraction of an *Arum* tuber from rocky terrain when required for the possibility of a new species.

With regret also we report the death of **C.A. Sinker*** BSBI member since 1949, known to many members as Director of the Field Studies Council, and earlier at Malham Tarn Field Centre as Assistant Warden and for longer as Warden at Preston Montford. Charles was also BSBI Recorder for Montgomery v.c.47 1961-1969, for Shropshire v.c.40 1961-1976, and

was a joint author of *Ecological Flora of the Shropshire Region* 1985.

We were sorry to hear recently from Dr E.C. Chicken that his wife **Mrs Jean Chicken** had died in 2008. Due to illness she was resigned from the Society just before her death, but Jean had been a BSBI member since 1955. As Elinor Jean Harris, she graduated in Botany at Newcastle, then part of Durham University under Prof. Heslop Harrison. After teacher training she became a popular teacher in Hull. In 1970 Jean and Eric Chicken were married, both were graduates in science and BSBI members. They botanised together for the *Flora of Cyprus* (D. Meikle, 1985) and also in the East Riding of Yorkshire and with the Wild Flower Society. We send sympathy to Mr Chicken and the families of Peter Yeo and Charles Sinker.

We also report with regret the deaths of the following members: Mrs W.G. Haythornthwaite of Bingley (1956) and Mrs B.M. Newman of Reading (1994) and send sympathy to their families.

Thanks to Miss M.D.B. Allen of Belfast who has sent the following good appreciation of **John Wilde** of Belfast, whose death was reported in *BSBI News* 113; January 2010.

John Wilde October 1917 -September 2009

John was a true Naturalist; it began with birds and ended in plants but with a lot in between. Though plants became his passion, he never forgot his first love and he often lifted his head out of the undergrowth to catch a bird song or watch the flight of a bird.

He loved plants and took as much pleasure in a flush of primroses as an exotic rarity. He was

a member of the Botanical Society of the British Isles for many years and with his great friend and fellow botanist, Stan Beesley County Recorder for County Antrim, he recorded all over Ireland. A few days before he died, John was poking in a muddy pond after a plant he did not instantly recognize.

He was a Member of the Belfast Naturalists Field Club and, with Stan, co-authored *Urban Flora of Belfast* (Institute of Irish Studies, Queen's, University Belfast (June 1, 1997) tramping miles around Belfast, recording card in hand. For this highly acclaimed work John and Stan both received the Club Medal, one of only a few awarded in our 146 year history. He also made significant contributions to the publication *Wild Belfast* (Robert Scott, Blackstaff Press)

John had three great botanical loves:

- ☐ He was passionate and extremely knowledgeable about orchids. He and his wife Lyn hunted these through Europe and Australia. His extensive collection of orchid photographs is now lodged in the Ulster Museum, Belfast.
- ☐ He found ferns fascinating, and delighted in the crested sports.
- ☐ He loved The Burren, that magical area of limestone pavement in County Clare. John and Lyn visited there so often they became Honorary residents. John toured the area checking that the plants, especially the orchids, were prospering.

John was a great botanist but an even greater friend; he willingly passed on his knowledge to the next generations. We will greatly miss his company, his humour, his courtliness and his expertise but he gave us precious memories.

BOOK NOTES

Will I Cope?

DR TIM RICH, *Head of Vascular Plants, Welsh National Herbarium (NMW), Dept. of Biodiversity & Systematic Biology, National Museum Wales, Cardiff, CF10 3NP*

At the age of 18 I learnt my grasses
from a Penguin book in ecology classes.
There were pictures and text, but old Mr Hubbard
had used the old names so was put in the cupboard.

To be up-to-date I memorised Tutin -
he didn't give old names the slightest look-in.
The excursion flora fitted my pocket
and the main key worked, couldn't knock it.

Then came the new flora by Professor Clive Stace;
To learn new names was once more a race.
His knowledge of grasses was pretty extensive
So I bought the book, it wasn't expensive.

Then Sell & Murrell gave us infra-specifics;
More changes again, the details terrific.
Next hundreds of aliens from over the seas -
Ryves, Clement and Foster helps with these!

Now Cope and Gray author a fine handbook
It'll be all change if I dare take a look.
Thank heavens there are only two hundred and
twenty
pictured with Margaret's fine drawings a-plenty.

Now I'm old, and my brain has no room;
the last word in grasses came none too soon.
I'll stay in and read the six books in bed,
or start something easy like brambles instead.

Diary

N.B. These dates are often supplementary to those in the 2010 Calendar in *BSBI Year Book 2010* and include provisional dates of the BSBI's Permanent Working Committees.

Committees and Working Groups

Meetings	8 Sep
Records	6 Oct
Training & Education	13 Oct
Publications	20 Oct
Database	10 March
SRC	Virtual
Wales	12 June, 15 Oct, 3 Dec
Scotland	15 May, 25 Sep
Ireland	7 Aug

Executive and Council

Executive	14 July, 27 Oct
Council	5 June, 10 Nov

Annual meetings

Spring Conf. & AGM	5-6 June, Leicester
Welsh AGM & Exbn.	11-13 June, Anglesey
Irish AGM	7 August Castlebar, Co. Mayo
Scottish AGM & Exbn.	6 Nov, Edinburgh
One day Conference	26 Nov. Birmingham
Annual Exbn Meeting	27 Nov. Birmingham

Forthcoming event

Spring Conf. & AGM	May/June 2011 Galway, Ireland
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RECORDERS AND RECORDING

Panel of Referees and Specialists

MARY CLARE SHEAHAN, *61 Westmoreland Road, Barnes, London SW13 9RZ;*
m.sheahan@kew.org

We have a new Referee for Rowans, and the entry in the Yearbook will read:

Sorbus subg. *Sorbus* (pinnate-leaved *Sorbus*):
Dr McAllister; fresh ripe fruiting material with mature buds is best, but Dr McAllister is also happy to look at dried material. His address is: University of Liverpool Botanic Gardens, Ness, Neston, South Wirral, Cheshire CH64 4AY.

In addition Paul Green has offered to identify garden shrubs; his address is in the Referees' Section in the Yearbook.

Also Rob Cooke, Referee for *Polypodium*, has a change of address. It should be: 2 Barrowden Road, Ketton, Nr Stamford, Rutland, PE9 3RJ (rob.cooke@naturalengland.org.uk).

Michael Walpole's death was announced in the last issue of *News* but it was too late to amend his entry in the Referees section of the 2010 Year Book; he was the Referee for local floras and herbals for a long time, and answered a large number of queries for members.

Panel of Vice-county Recorders

DAVID PEARMAN, *Algiers, Feock, Truro, Cornwall, TR3 6RA; 01872 863388*

New Recorders

V.c.87 (W. Perth). Mrs J. Jones to join as joint recorder. Correspondence to Mrs K. Lavery as before.

V.c.92. (S. Aberdeen). Dr I.S. Francis, East Cottage, Asloun, Alford, Aberdeenshire, AB33 8NR. (this is already in the Year Book, but was confirmed at Records Committee in January)

Advice on Buying and Using GPSs for BSBI members

JIM MCINTOSH, *BSBI Scottish Officer, Royal Botanic Garden, 20A Inverleith Row, Edinburgh, EH3 5LR; Tel: 0131 2482894; j.mcintosh@rbge.ac.uk*

Buying

1. Even the basic models do more than most users will ever need – and I recommend a basic model like the yellow Garmin eTrex H. Cheapest sources are generally on-line but Argos, Ellis Brigham, Maplin, PC World, Tiso and other outdoor activities shops all stock them.
2. Make sure that it is a 'High Sensitivity' Model. These have 'H' in the model name, e.g. Garmin eTrex H and have high sensitivity antennas. Out of the box however, many models look almost identical but *high sensitivity* models will have this marked above the display. They are much more

sensitive than the older models such as the black Garmin GPS12 bricks, and will operate in forests, woods, gorges, under overhangs and even indoors (handy if *very* lost).

3. GPSs are available which display position on a map. However the size of the screen and the scale of the map both reduce usefulness – and the GPSs and maps are expensive
4. The Garmin Foretrex is a lightweight, wrist-mounted GPS with built-in rechargeables and most of the features of larger models. It costs over £100 – and is more

expensive than an eTrex, but it is very good for keeping hands free and being readily viewable.

Using

1. Make sure that your GPS is set-up correctly! Check that the Position Format is set to 'British Grid' on the navigation setup page and that the Map Datum is set to 'Ord Srvy GB'. Note that 'WGS84' is often set as default on new GPSs and must be changed. Menu > Setup > Enter > Units > Enter and set format to British Grid and press enter – this automatically sets datum to Ord Srvy GB.
2. WAAS (Wide Area Augmentation System) – Nearly all new GPSs are WAAS enabled which improves the positioning accuracy about 5 times from 15m to >3m. *But it must be switched on.* To do this on Garmins Menu > Setup > Enter > System > Enter and select WAAS Mode (if available) and enter. On Gekos it is Menu > Setup > GPS Mode. If a GPS is receiving the WAAS correction signals a small 'D' will appear on the satellite strength bars on both the normal and advanced skyview satellite page. (To access the advanced skyview page, press the Enter button on the satellite page, select 'Advanced Skyview' and press the Enter again.) It sometimes takes the GPS some time to lock-up to these additional signals and often only after being stationary for several minutes.
3. Accuracy – given the above GPS resolutions it is debatable whether it is worth quoting grid references to all 10 figures and the long string of digits may only increase the chance of a transcription error. I tend to prefer 8 digits, but the conversion may also introduce errors.
4. Leave GPSs on all day for improved accuracy, especially using them intensively. There is also no delay while the GPS locks-on. Keep the GPS at the very top of rucksacks or attached to rucksack shoulder straps or waist belts so that it can readily pick up satellite signals.
5. If the Trip Computer Page is reset at the outset and the machine is left on, at the end of the day the GPS will accurately indicate the total distance travelled.
6. Use Rechargeable Batteries. Nearly all GPSs will work for two full field days with a new set of alkaline batteries. But this is expensive and not very environmentally friendly – a much better idea is to use high capacity re-chargeable batteries. If the GPS uses AA type batteries get 2,500mAh ones as a minimum (2,700 and 2,850mAh are also available but are more expensive).
7. Always take a spare set of batteries – regardless of type. They always go flat when needed most!
8. Buy a padded bag to protect the GPS in case of drops and scratches. Some GPS screens score quite easily (e.g. Garmin eTrex series).
9. Do not obstruct the GPS by crowding it or holding your hand over the antenna – usually in the upper part of the device. Satellite signals do not go through heads or hands very well! The GPS's satellite view page gives accuracy – wait until it gets down to 3 or 4 metres.
10. GPS Altitude readings are never as accurate as their horizontal positions. Typically they are 1.5× to 2× less accurate. But this is still pretty good. If altitude is important then some models like the Geko 301 include a barometric altimeter – but these need regular re-calibration every time you pass a known spot height (e.g. a trig point). Alternatively precisely plot position on a 1:25,000 OS Map and interpolate between contours.
11. Learn to use the GOTO function! This is extremely useful when trying to refind population sites with reasonably detailed grid references, e.g. for the Threatened Plant Project. First enter the grid reference you want to go to, Menu > Waypoints > Enter > Select Nearest waypoint > Enter and highlight the nearest from this list and select then EDIT to the target grid reference, and save

- as a different waypoint. Then from list of Waypoints select this Waypoint Menu > Waypoints > Enter, select the Waypoint that has just been entered then select GOTO and enter. The GPS will give the bearing and distance to the target. Check on a map that your destination is not on the other side of an abyss, or some other navigational obstacle, before following the GPS's instructions!
12. To stop navigational guidance, after reaching the destination press Page to switch to the Pointer page > Enter and select Stop Navigation > Enter.
 13. Locate Photographs. Mark Waypoints when taking photographs and that will give the precise time and place which can be matched with the time in the photograph's properties.
 14. Using GPSs with digital maps. All GPSs can be connected to PCs but this requires the correct interface cable. Ask at a Garmin stockist. It is then possible to download tracks along with any waypoints into software such as MemoryMap, which will display it superimposed on an OS map background. This is useful as it shows precisely the route taken, with timings. (This is another way to match up with photographs.) Tracks can also be imported to display on Google Earth.
 15. Keep GPS software up to date to give best possible performance. Connect GPS to computer and then download and install the Garmin Webupdater from www.garmin.com/support/download.jsp and follow instructions.

NOTES FROM THE OFFICERS

From the Hon General Secretary – *LYNNE FARRELL*

41 High Street, Hemingford Grey, Cambs., PE28 9BJ
(01480 462728) (farrell104@btinternet.com)

January was relatively quiet and in February it snowed and snowed. This statement applied not only to the weather in Cambridgeshire, but also to the amount of BSBI paperwork coming my way. However, with everyone's help, I am beginning to make sense of most of it. Computers can help too, but my 5-year old pc soon decided that its memory was overloaded (I knew exactly how it felt!), and so it was upgraded, and I am still getting used to new formats, etc. Please do use my current email address given at the top of this note, as my previous one is now redundant.

Most Working Committees have met recently and there have been several changes in the officers. The officers for the Permanent working Committees are listed here for your information.

Database sub-committee: Mr Alex Lockton (chair), Mr Chris Boon (sec.)

Meetings: Dr Ian Denholm (chair), Dr John Bailey (sec.)

Publications: Mr Chris Boon (chair), Mr John Poland (sec.)

Records: Mr David Pearman (chair), Mr Bob Ellis (sec.)

Science & Research: Prof Mick Crawley (chair), Mr Alex Lockton (sec.)

Training & Education: Dr Sarah Whild (chair), Ms Sue Townsend (sec.)

January also brought with it a consolidation of tetrad records for including in the latest date class for Atlas up-dating, which ended in December 2009. For my own vice-county, Mid Ebudes, all my recent records for the island of Mull were entered into MapMate, giving a grand total of over 101,000 individual records for v.c.103. I expect the prolonged, cold winter has seen other BSBI recorders and members sorting through their data also. When spring finally arrives, I am sure it will come with a flourish (or should that be a flower-rush?)

From the Head of Research and Development – KEVIN WALKER

97 Dragon Parade, Harrogate, North Yorkshire, HG1 5DG: kevinwalker@bsbi.org.uk

Recording strategy

Following a consultation with VCRs a draft 'Recording Strategy' was presented to Records committee in January. The Committee were broadly happy with the document as a framework for future recording and various outputs including VCR guidance. An improved version was ratified by council in March and the final version will be available to recorders before the start of the 2010 field season. Guidelines that underpin the document will be updated over the next six months.

Welsh Officer

CCW have now agreed to fund a Welsh Officer post as part of a broader BSBI/CCW Strategic Partnership Grant that we will be submitting over the summer. The post will be similar to Jim McIntosh's post in Scotland in providing support to BSBI volunteers as well as helping coordinate projects that underpin the delivery of plant conservation in Wales (e.g. Site Conditioning Monitoring). All being well recruitment for the post is likely to take place in late 2010 / early 2011.

BSBI book celebrating 50 years of recording

A proposal for a book to celebrate the 50 years of BSBI recording since the first (1962) Atlas has now been drawn up. This was presented to Records and Michael Braithwaite has agreed to coordinate its production, though much of the work would need to be carried out by Plant Unit staff, mainly in 2011. The book is intended to be distributed to delegates at a BSBI conference on distribution mapping planned for 2012.

Threatened Plants Project (TPP)

Survey data for last year's (2009) species has now been digitized by Clare Rickerby under a small contract funded by SNH (see table below). The total is a little down on last year (800 in 2008) but this is mainly due to us requesting fewer visits. There are a few gaps which we hope to fill through field meetings this and next year (e.g. *Carex ericetorum*, *Fallopia dumetorum*, *Melampyrum cristatum*). Information for the 2010 species was sent out in March so if you would like to get involved please contact your local VCR or check out the TPP page on the website where all the 2010 information is available to download: <http://www.bsbi.org.uk/html/pp.html>.

2009 TPP species	Selected sites surveyed	Extra sites surveyed	Total sites surveyed
<i>Carex ericetorum</i>	16	10	26
<i>Coeloglossum viride</i>	44	79	123
<i>Dianthus deltoides</i>	37	16	53
<i>Cephalanthera longifolia</i>	35	15	50
<i>Fallopia dumetorum</i>	12	3	15
<i>Gnaphalium sylvaticum</i>	41	45	86
<i>Groenlandia densa</i>	48	26	74
<i>Melampyrum cristatum</i>	13	2	15
<i>Oenanthe fistulosa</i>	40	63	103
<i>Vicia orobus</i>	42	39	81
Total	328	298	626

Surveillance

Plant Unit staff are currently working on two JNCC contracts on plant surveillance. The first is using our Local Change data to identify nitrogen impacts. The second is much more ambitious: to devise an “ideal” UK surveillance scheme for plants. This is a close collaboration between BSBI, Plantlife, CEH and BTO and the final report is due to be completed at the end of April.

Climate change research

BSBI is currently supporting two PhD students at the York University as part of a collaboration with Chris Thomas. Alison Jukes is investigating distribution patterns for neophytes in relation to climate and trait parameters and Alex Bell is looking at shifts in the northern range margins of native species with southerly distribution's in the UK. Both are making good progress and I hope to report on some of their initial results later this year.

Invasive aliens

David Pearman's article on aliens in British Wildlife (“a real or imagined problem?”) has stimulated much interesting debate. Despite significant research in this area, the results were a surprise to many individuals and highlights the importance of BSBI becoming more actively involved in the debate surrounding the impacts of introduced species.

Natural England ‘extinctions’ report

In March Natural England launched a major report on the decline of species in England. BSBI were one of the main contributors of information on vascular plant chapters and are therefore one of the joint authors. The report is free is available to download online:

<http://naturalengland.etraderstores.com/NaturalEnglandShop/NE233>.

UK Plant Species Status Assessment Group

The group who produced the UK Red List in 2005 met for the first time in four years in

March. The BSBI is now providing secretariat for the group and Lynne Farrell continues as the Chair. Issues discussed included Year 3 & 4 updates to the Red List, work on Data Deficient species and planning for the next Red List due to published sometime around 2017.

Big database

We have commissioned Tom Humphries (H@H) to develop a prototype database that will allow us to collate all our data into a single ‘big database’. Tom is due to complete the prototype soon after which it will be tested to see how it performs. If successful we plan to fund further development of the system in 2010. In parallel to this we are also testing Recorder 6 to see how it performs as a central data management and query system. This will include testing its ability to handle large and complex datasets such as the VPDB but also smaller VC datasets and import/export to a variety of formats.

Data quality and data flow

As part of a contract with NBN we are developing guidelines for the submission of vascular plant records to the NBN. This will help us to be much clearer on the format of our own records, what they should contain and some indication on the level of accuracy.

Webpage on the ‘British and Irish flora’

CEH have now commissioned a Web Designer to develop a ‘British and Irish flora’ webpage that will provide a link to all sorts of useful information on species mapped in the Atlas (e.g. species accounts, trait information, photos, etc.). This is a collaboration with BSBI and will be hosted on our own website. A prototype has been produced and we hope the system will go ‘live’ sometime within the next 12 months.

From the Scottish Officer – *JIM MCINTOSH*

Royal Botanic Garden, 20A Inverleith Row, Edinburgh, EH3 5LR; Tel: 0131 2482894;
j.mcintosh@rbge.ac.uk

BSBI Data for the Forestry Commission

Scottish Ministers have endorsed the Scottish Forestry Strategy target to increase woodland cover to 25% of the Scottish land area by the second half of the century. This is being done to increase the capacity of Scotland's forests to sequester carbon and help mitigate our impact on climate change. The increase will require additional planting levels of up to 15,000 hectares per year, compared with the current rates of 4 – 5,000 hectares per annum.

This is good news – *providing* valuable habitats and rare plant populations are not damaged and the landscape is not adversely affected. The BSBI was therefore very pleased to have been contracted to supply all our Scottish notable plant records to the Forestry Commission in 2009, to help inform forestry management decisions and protect rare plant populations. The data is to be available to all staff involved in considering forestry grants as well as those who manage the Forestry Commission's own estate.

The data – some 100,000 records in total – was collated from a number of sources; principally the BSBI Vascular Plant Database (72%), the BSBI MapMate hub (21%) and the BSBI Threatened Plant Database (7%). Stonewort records were kindly supplied by Nick Stewart from his charophyte database. Thanks are especially due to all the BSBI recorders who supplied the data in the first place, to my BSBI colleagues Alex Lockton and Bob Ellis and to our friends in Forest Enterprise.

Recording Strategies

You may be aware that the BSBI has just completed its recording strategy which clearly sets out recording activities and priorities for the next decade in the lead up to the next Atlas. It will also include guidance on our preferred approaches to recording. Clearly this will be of enormous interest to members

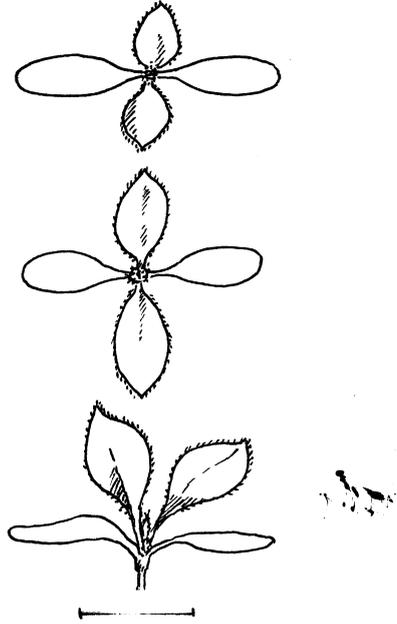
and especially to VC Recorders. The planned national projects include a comprehensive update of hectad records in the period 2000-2019 in preparation for the third atlas of the British and Irish flora in about 2024, a repeat of the Monitoring Scheme in 2019-2020 and the stated aim that all VCs will at least have a draft Rare Plant Register by 2019. However I will let others explain and communicate the *national* strategy. What I would like to write about are *local* recording strategies.

One of the most enjoyable and rewarding aspects of my work is visiting BSBI VC Recorders at home for one-to-one meetings about BSBI matters. The agenda is wide-ranging and includes everything from how paper records are filed to the often difficult issue of succession. There is generally also a session on MapMate. But the most important agenda item is a discussion on the local recording strategy – or putting it more simply how and why the recorder records.

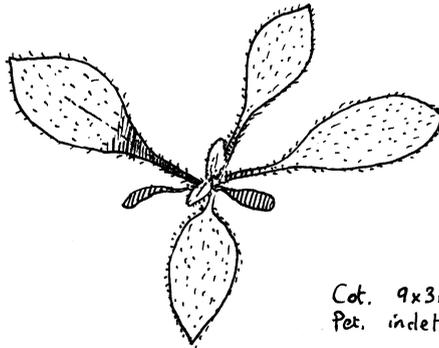
It has been a major task visiting every one of some forty Scottish recorders, who almost by definition are well scattered to the four airts. But one of the most fascinating things is that there are as many different approaches to recording as there are recorders in Scotland. On reflection it is perhaps not surprising that recorders, often working in relative isolation, respond to different sets of complex circumstances and interests differently.

The important thing though is that all VC Recorders do have a clear local recording strategy or plan – perhaps a systematic survey of all squares or a sample of squares within the VC by a certain date and often working towards the publication of a checklist or flora. The issue of recording unit is invariably discussed in Scotland, and 'tetrad or better' is now prevalent. But the most crucial aspect is that whatever approach and timescale is adopted, it must be sustainable – and *enjoyable*.

SILENE DIOICA



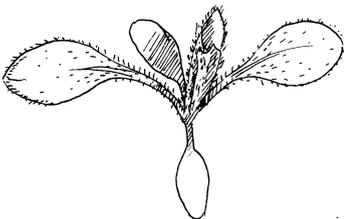
SPRING



Cot. 9x3mm oval
 Pet. indeterminate (c. 7 total length)

Plant bright yellowish green.
 True leaves featureless but for ^{numerous} white hairs.

Hairs ± straight, variable length, pointed.
 Longest on petiole



Solution & Crib to Botanical Crossword 14

Solution

Across

1. THEAGM; 5. SOWN; 9. SPIGNEL;
10. ADNATE; 11. GOUTWEED; 12. ENTIRE;
15. LINEAR; 18. OPPOSITE; 20. SALLOW;
22. SPIRAEA; 23. SEED; 24. AVENAE

Down

2. HYSSOP; 3. ARISTATE; 4. MINKE
6. OPEN; 7. NECTAR; 8. BLADES;
13. TEESDALE; 14. BROWSE; 16. ISATIS
17. ATRATA; 19. PLICA; 21. LOBE

Crib

Across

1. The simple truth?; 5. botanistS OWNership;
9. the present (tense) of SOWN (5 ac) is sow,
which perhaps is a PIG, through anag of LENS
= ME + UM (doubt); 10. anag AND + ATE;
11. G (good) + OUT (excuse) + WE'D =
Goutweed aka Bishopweed; 12. anag RENT IE;
15. anag I E EARN; 18. OPPOS<IT>E not
alternat(iv)e; 20. S<ALL>OW (SOW from 5ac
again); 22. anag ASPIRE + A;
23. SE(AWE)ED; 24. wild oats SOWN

Down

2. his sop; 3. A/RI/STATE; 4. MIN<K>E;
6. OP/EN (opponents at Bridge, also the let-
ters OPEN are less than half of OPPO-
NENTS; 7. anag RECANT; 8. Rakes are
young BLADES, which are often linear
(15ac); 13. teased/ail, home of Teesdalia;
14. Botanists browse in Summerfield Books;
16. I/SAT/IS (dye with woad); 17. change
STRATA to ATRATA; 19. PL/IC/A;
21. L/OBE (without prejudice to Deepcut
Barracks)

CONTRIBUTIONS INTENDED FOR
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August 1st

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Two hundred year old Black (Water) Poplar trees on Thames Embankment, Barnes, London.
Photo K. Adams © 2008 (see p. 18)



Pemphigus spyrothecae galls on the petioles of *Populus nigra* ssp. *betulifolia* Clone 28 at Castle Eaton (v.c.7). Photo K. Adams © 2008 (see p. 16)



Silene gallica at Haydon Bridge bypass (v.c.67)



Close-up of flowers of *Silene gallica* from Haydon Bridge.
Both photos J. Bowyer © 2009 (see p. 42)



Cuscuta campestris at Haydon Bridge (v.c.67)



Close-up of flowers of *Cuscuta campestris* at Haydon Bridge.
Both photos R. Bowyer © 2009 (see p. 42)



Campanula alpina (Alpine Bellflower)



Apold, Romania, habitat view showing 'Trumps'.
Photo J. Croft © 2009 (see p. 51)



Anthemis carpatica (Carpathian Dog-daisy)

Above & right photos taken in Romania by G. Orban © 2008 (see p. 54)



Lysichiton americanus (American Skunk-cabbage). Photo RPS Ltd © 2006 (see p. 47)



In an effort to increase the younger membership of the BSBI, Holly French (Graham French & Jane Squirrell's daughter), is already helping with inputting v.c. 103 records into MapMate (with Bob Ellis (Volunteers Officer), standing). Photo L. Farrell © 2010 (see p. 21)