



Irish Botanical News

No. 27 March 2017



Editor: Paul R. Green



Above: *Colchicum autumnale* (Meadow Saffron) growing in the Nore Valley. Left: close-up of leaves. See front cover for close up of flower. Photos J. Lucey © 2016 (p. 25).

Below: *Melampyrum pratense* (Common Cow-wheat), Blackstairs Mountain, Co. Carlow (**H13**). Photo C. Byrne © 2016 (p. 81).



Committee for Ireland 2016 -2017

The following is the Committee as elected at the Annual General Meeting at The Botanic Gardens, Glasnevin on 17th September 2016. Office bearers were subsequently elected at the first committee meeting. The Committee is now:

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and NI Representative on Records and Research Committee)
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Dr R. Hodd (Hon. Treasurer)
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Dr M. McCorry
Mr G. Sharkey (ROI Representative on Records and Research Committee)
Mr R. Sheppard

The following are nominated observers to the committee:

Mr P. Green (Irish Botanical News)
Mr M. Wright (Northern Ireland Environment Agency)
Dr M. Wyse Jackson (National Parks & Wildlife Service)

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Front cover photo: *Colchicum autumnale* (Meadow Saffron). Photo: John Lucey © 2016. See page 25.

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Editorial

It is so pleasing to have an overwhelming number of contributions for Irish Botanical News again, this year. As with last year, I have had to cut the text size down to font 10. This is .5 smaller than the one I used in issue 26. Hopefully, everybody can still read it okay. This is certainly the largest issue of IBN.

Please note my change of email address to paulbsbivcr4h12@gmail.com. Like many others I know, I was having so much trouble with my eircom.net email address... Either I didn't receive the incoming emails or the recipients didn't receive my replies.

IBN is also uploaded to the BSBI Irish webpage (<http://bsbi.org/ireland>) in early Summer each year. This year, the online version will have colour plates where black & white photos and maps have been used in this printed version.

If you notice any errors, however small, please do point them out to me. There are always a few. These are corrected before the online version is put up on the BSBI Irish webpage.

This IBN should be titled 'The hybrid edition' as there were 7 new hybrids recorded from Ireland in 2016. You can read about these on pages 17,18,31,34,41,49 & 53.

Have a great field season.

Paul R. Green

Note from the Irish Officer Maria P. Long – (maria.long@bsbi.org)

I want to begin by saying a big thank you to all those who work hard for botany and especially on BSBI-related matters. There are so many people who make the BSBI tick – the recorders of course, the members, the new-comer enthusiasts who are dipping their toes in, also workshop leaders, social media supporters, members of other organisations similarly focused on the study of nature.... Each and every one makes BSBI what it is, and makes working with BSBI meaningful and enjoyable.

Following on from a note of gratitude – a bit of a look forward! We have three years left (until end of Dec 2019) until the Atlas 2020 deadline. And so now, in early 2017, it really is a time to focus, to plan, and of course to get out recording ... no more just thinking or talking about it! And it is also time to come to me or anyone in CFI if you think you need support. We have a big task here in Ireland given the small number of botanists we have and the large area of land to cover – we do an amazing job as it is. Remind yourself of that if you are ever feeling over-whelmed! And do just get in touch.

As well as Atlas focus this year – don't forget all the great field trips and recording events we have planned! Our biggest event will be five days on the stunning Dingle peninsula in early June, but we have 12 other great trips planned too. And that's not counting the numerous 'rough crew' and local group outings which will be happening up and down the country also!

There's so much happening that I'm finding it harder and harder to keep up these days. Busy busy... but great fun! I hope you feel the same – busy, enthused, and enjoying it!

Changes in the Flora of a mixed Farm

Ralph Sheppard, *Carnowen House, Raphoe, Lifford, Co. Donegal*

I live on the farm where my wife Liz grew up, and to which we returned almost 40 years ago. Although many would doubt our farming credentials, we do determine what takes place each year, in each field, to ensure that the mix of tillage and grazing is maintained. Up to about 10 years prior to our arrival the farm was a much more sophisticated operation. It was much larger, and had an eight-year rotation in each field and a far greater variety of crops and livestock. My off-farm occupation necessitated some simplification, but changes in the local farming economy made it inevitable anyway. We planted trees on a third of our 40ha, and are managing them as continuous-cover plantations / native woodland. We allowed one small damp field to become a marsh and restored a few ponds. A wooded river bank and lanes remain as they were. A sizeable field is managed as a tree nursery by Coillte, with 1.5 million Sitka Spruce being lifted every three years. Most of the rest is let out to neighbours annually for grazing, silage, barley or potatoes.

Modern farming, as practiced by almost everyone (not least our neighbours), has practical limits to its flexibility, but with the co-operation of the neighbours we have tried to retain as much of the old flora as possible. Two full plant surveys, in 1991 and 2011, reveal to what degree we have succeeded, and reflect something of what is happening at large throughout the country.

We arrived at the end of an era in which farming was geared to sustaining the fertility of the land, and the start of an era of maximising outputs at the expense of everything else. The tractors that were used when we arrived would almost fit into the cockpits of the monster machines that are now compacting our soil, and killing off the flora and fauna that had previously maintained its structure and fertility. That fertility is now replaced by chemicals.....I'll skip the rest of the litany which you will all be familiar with, and proceed to the changes in the flora.

In 1991, I recorded 230 species. In 2011, the repeat survey came up with 229, but with quite a few gains and losses. Since 2011, 16 more new species have appeared. And there are 29 extra species which we introduced ourselves, all but four of them trees. Gains have been mainly through micro-management of small patches, or abandonment.

1) A tiny 15x1.5m sliver of open field was missed by the potato machinery this year and sprouted 32 species of weeds, including four that we had never recorded before, but which must have been in the seedbed for two decades, at the very least – *Fallopia convolvulus*, *Fumaria bastardii*, *Lamium hybridum* and *Polygonum arenastrum* (full lists appended).

2) The Coillte field (two fields at the 2011 survey) is heavily managed, and at first glance you might note only conifers and bare soil. But lack of competition and tolerance of herbicides has allowed colonisation of the muddy edges by many surprising species, such as *Hypericum humifusum*, *Isolepis setacea*, *Rorippa islandica* (first county record) and *R. palustris*. In fact, although it offends my organic instincts, the two Coillte fields had the highest plant diversity on the farm.

3) *Arabidopsis thaliana*, *Epilobium brunnescens* (miles from any likely habitat) and *Catapodium rigidum* (rare at this end of the country) have colonised gravelly areas around the house and yard.

4) *Dactylorhiza maculata* appeared for the first time in the district on a small 10x5m lawn, promptly hybridised with the few *D. fuchsii* already present and multiplied in a few years to over 200 individuals - all hybrids apart from about two or three of each parent. The best possible excuse for not mowing!

Despite all these gains, it could be argued that the species lost since 1991 are the more significant. They include *Rhinanthus minor*, *Mentha arvensis*, *Trifolium pratense*(!) and *Achillea ptarmica*. *Glebionis segetum*, *Galeopsis speciosa*, *Parentucellia viscosa* and *Urtica urens* have gone, not only from our farm, but from the entire countryside. And this year's new species in that potato-field patch might better be regarded as last gasps, rather than gains. I have little doubt that had we started surveying a few years earlier, we would have recorded more losses in 2011.

In some ways, we have more emotional investment in the plantations, which should deliver more in the long term for conservation than the farmland. Coppice management of Hazel has already persuaded *Veronica montana* to make a long jump from the riverbank. *Primula vulgaris* has also arrived. *V. chamaedrys* quickly established large stands throughout the plantations, along with a few other species, such as *Chrysosplenium oppositifolium*. But colonisation by most of the common woodland species is painfully slow. *Hyacinthoides non-scripta* is now abundant in a 1980 plantation, widely scattered in one planted in 1990, but with only two small clumps in the Millennium Plantation. *Allium ursinum* is sending out scouts, but these are not thriving as well as a few clumps we have transplanted. So it will be many years yet before there is a proper woodland flora, but given continuation of the right management, it should eventually happen.

Draw your own conclusions, but I'll offer a few:

1) Maintaining diversity of habitat, even on the tiniest scale, is the key to retaining as many species as possible.

2) Modern farming seems to have caused the demise of many species, particularly the arable weeds. It also seems likely that some of the survivors are in terminal decline. Another full survey in a few years (maybe 2021) will be revealing.

3) For a host of reasons not gone into here (and not all botanical), Ireland needs more woodland (and not just on the poorest soils) more than it needs more intensive agriculture.

4) Of course, I have to admit the real conclusion (before someone does it for me), that if I'd paid the same attention to my Atlas surveying, the Donegal map might almost balance Wexford's.

Potato weed patch 2016 – new species in bold

Scarlet Pimpernel	<i>Anagallis arvensis</i>
Shepherd's-purse	<i>Capsella bursa-pastoris</i>
Common Mouse-ear	<i>Cerastium fontanum</i>
Fat-hen	<i>Chenopodium album</i>
Creeping Thistle	<i>Cirsium arvense</i>
Spear Thistle	<i>Cirsium vulgare</i>
Short-fruited Willowherb	<i>Epilobium obscurum</i>
Sun Spurge	<i>Euphorbia helioscopia</i>
Black-bindweed	<i>Fallopia convolvulus</i>
Tall Ramping-fumitory	<i>Fumaria bastardii</i>
Cleavers	<i>Galium aparine</i>
Marsh Cudweed	<i>Gnaphalium uliginosum</i>
Toad Rush	<i>Juncus bufonius</i>
Cut-leaved Dead-nettle	<i>Lamium hybridum</i>
Red Dead-nettle	<i>Lamium purpureum</i>
Pineappleweed	<i>Matricaria discoidea</i>
Water-pepper	<i>Persicaria hydropiper</i>
Greater Plantain	<i>Plantago major</i>
Annual Meadow-grass	<i>Poa annua</i>
Equal-leaved Knotgrass	<i>Polygonum arenastrum</i>
Redshank	<i>Persicaria maculosa</i>
Creeping Buttercup	<i>Ranunculus repens</i>
Broad-leaved Dock	<i>Rumex obtusifolius</i>
Procumbent Pearlwort	<i>Sagina procumbens</i>
Charlock	<i>Sinapis arvensis</i>
Prickly Sow-thistle	<i>Sonchus asper</i>
Smooth Sow-thistle	<i>Sonchus oleraceus</i>
Common Chickweed	<i>Stellaria media</i>
Dandelion	<i>Taraxacum agg.</i>
Red Clover	<i>Trifolium pratense</i>
Common Nettle	<i>Urtica dioica</i>
Wall Speedwell	<i>Veronica arvensis</i>



Left: Silage Field from Plantation.

Right: Wildlife corridor hedge.



Photos R. Sheppard © 2016.

Gains between 1991 and 2011 (since 2011 survey in **Bold**)

Thale Cress	<i>Arabidopsis thaliana</i>
Common Orache	<i>Atriplex patula</i>
Hairy Bindweed	<i>Calystegia pulchra</i>
Wood-sedge	<i>Carex sylvatica</i>
Fern-grass	<i>Catapodium rigidum</i>
Sticky Mouse-ear	<i>Cerastium glomeratum</i>
Enchanter's-nightshade	<i>Circaea lutetiana</i>
Montbretia	<i>Crocosmia x crocosmiiflora</i>
Heath Spotted-orchid	<i>Dactylorhiza maculata</i>
American Willowherb	<i>Epilobium ciliatum</i>
Great Willowherb	<i>Epilobium hirsutum</i>
Marsh Willowherb	<i>Epilobium palustre</i>
Black-bindweed	<i>Fallopia convolvulus</i>
Sheep's-fescue	<i>Festuca ovina</i>
Red Fescue	<i>Festuca rubra</i>
Tall Ramping-fumitory	<i>Fumaria bastardii</i>
Common Ramping-fumitory	<i>Fumaria muralis</i> subsp. <i>boraei</i>
Cut-leaved Crane's-bill	<i>Geranium dissectum</i>
Floating Sweet-grass	<i>Glyceria fluitans</i>
Bristle Club-rush	<i>Isolepis setacea</i>
Toad Rush	<i>Juncus bufonius</i>
Cut-leaved Dead-nettle	<i>Lamium hybridum</i>
Heath Wood-rush	<i>Luzula multiflora</i> subsp. <i>hibernica</i>
Water Mint	<i>Mentha aquatica</i>
Blinks	<i>Montia fontana</i>
Narrow-fruited Water-cress	<i>Nasturtium microphyllum</i>
Early-purple Orchid	<i>Orchis mascula</i>
Procumbent Yellow-sorrel	<i>Oxalis corniculata</i> var. <i>atropurpurea</i>
Swamp Meadow-grass	<i>Poa palustris</i>
Equal-leaved Knotgrass	<i>Polygonum arenastrum</i>
Pondweed	<i>Potamogeton</i> agg.
Northern Yellow-cress	<i>Rorippa islandica</i>
Marsh Yellow-cress	<i>Rorippa palustris</i>
Celandine Saxifrage	<i>Saxifraga cymbalaria</i>
Krauss's Clubmoss	<i>Selaginella kraussiana</i>
Devil's-bit Scabious	<i>Succisa pratensis</i>
Green Field-speedwell	<i>Veronica agrestis</i>
Field Pansy	<i>Viola arvensis</i>
Sweet Violet	<i>Viola odorata</i>

Losses between 1991 and 2011	
Sneezewort	<i>Achillea ptarmica</i>
Water-plantain	<i>Alisma plantago-aquatica</i>
Winter-cress	<i>Barbarea vulgaris</i>
Large Bindweed	<i>Calystegia silvatica</i>
Common Sedge	<i>Carex nigra</i>
Whorl-grass	<i>Catabrosa aquatica</i>
Short-fruited Willowherb	<i>Epilobium obscurum</i>
Marsh Willowherb	<i>Epilobium palustre</i>
Large-flowered Hemp-nettle	<i>Galeopsis speciosa</i>
Corn Marigold	<i>Glebionis segetum</i>
Bulbous Rush	<i>Juncus bulbosus</i>
Slender Rush	<i>Juncus tenuis</i>
Corn Mint	<i>Mentha arvensis</i>
Creeping Forget-me-not	<i>Myosotis secunda</i>
Yellow Bartsia	<i>Parentucellia viscosa</i>
Pale Persicaria	<i>Persicaria lapathifolia</i>
Ivy-leaved Crowfoot	<i>Ranunculus hederaceus</i>
Sanicle	<i>Sanicula europaea</i>
Upright Hedge-parsley	<i>Torilis japonica</i>
Red Clover	<i>Trifolium pratense</i>
Marsh Arrowgrass	<i>Triglochin palustris</i>
Small Nettle	<i>Urtica urens</i>
Heath Speedwell	<i>Veronica officinalis</i>

The real sting: a review

Ralph S. Forbes, *Coolattin, 26 Castleward Road, Doctor's Hill, Strangford, Co. Down, BT30 7LU*

The Genesis of a Botanical Quest: A pub quiz in aid of church funds was the rather unlikely trigger that got me thinking about the science behind the biochemistry of the nettle sting, its mechanics and function. The answer accepted on the quiz night was that formic acid was the active chemical producing the nettle sting effect. I knew that I'd read a different story somewhere, but try as I might I couldn't recall the details. I decided to go along, say nothing and not make a fuss, but I promised myself I'd research the topic at my leisure to set my mind at rest. The following review is the result of my efforts to run down the quest.

The unforgettable nettle sting: The Common Stinging Nettle, *Urtica dioica*, is probably one of the very first plants we learn to recognise as children, unfortunately all too often it is a lesson in identification we learn the hard and tearful way. As Pigott (1964) rather dryly, and somewhat heartlessly points out, "If our early contacts with nettles lead us to dislike

them, we also acquire a respect for one of the few plants which makes its presence felt." Mechanical deterrents like prickles and spines we can see and avoid, but *U. dioica* is the only hairy plant in Britain and Ireland that punishes us for touching it. The touched plant administers a painful, hot, stinging sensation that can last for an hour, or sometimes lingers longer, at least as a tingling feeling, sometimes even into the next day. The attack is rather reminiscent of that given by an angry bee or a wasp, and it definitely is an experience we want to avoid repeating.

Structure and mechanics of the stinging hair: The stinging hair, trichome, or "stinging emergence", as E. L. Thurston (1974) prefers to call it after his careful study of its fine structure, consists of a fine capillary tube calcified at its lower end and silicified in its upper section. It is closed at the tip by a tiny bulbous swelling. The silica-rich upper portion of the hair is extremely delicate and brittle, like very thin glass (Salisbury 1964). When it comes in contact with skin, the bulb at the hair tip readily breaks off along a pre-determined line or suture. The break produces an exceedingly fine, needle-like point, formed by an oblique fracture at a line of weakness in the upper tapered region of the hair. It only requires the slightest pressure for this really sharp, slender needle to penetrate animal skin, and the attendant compression of the unsilicified bladder-like hair base injects the contained fluid into the minute wound (Emmelin & Feldberg 1947).

The chemistry and biological effect of the nettle sting: The burning pain of a nettle sting is so strong that Germans call the plant '*Brennessel*', a combination of '*brenn*' meaning 'burning, branding or stinging', and '*essel*', the equivalent of our, 'nettle' (Betteridge 1957; Simons 1992). The proverbial advice to "grasp the nettle" is quite good advice, since whenever the nettle plant is handled roughly, the hairs tend to be broken lower down, rather than at their tip. This means they are not so sharply pointed, and thus they do not so readily penetrate skin tissue (Salisbury 1964).

The nature of the sting has been a topic of investigation ever since Robert Hooke examined nettle hairs with his microscope in 1665. Yet despite a great amount of biochemical and pharmacological research over the past 120 years, the precise nature of the nettle sting toxin remains something of a mystery (Thurston & Lersten 1969; Pollard & Briggs 1984). Many members of the general public still commonly think that the active chemical producing the sting is formic acid. However this is now recognised as being incorrect – something of an urban myth. Formic acid is almost certainly absent from the stinging fluid, or alternatively, if present, it is in much too low a concentration to produce the characteristic painful effect (Thurston 1974).

The first scientific investigators to use pharmacological techniques involving *in vitro* bioassays to test the effects of stinging hair extracts on living systems, were Emmelin & Feldberg in 1947. Their study identified a combination of histamine and acetylcholine was present, which they concluded produced the stinging sensation; the former irritates the skin and the latter produces the burning sensation. These workers also showed that acetylcholine on its own had little irritant action, but when present in combination with histamine it produced an immediate stinging pain (Emmelin & Feldberg 1947). A few years

later, a third substance in the sting fluid was identified as 5-hydroxy-tryptamine (i.e. serotonin), which in common with histamine and acetylcholine, is also present in animal tissues. Like the two earlier compounds, serotonin can also cause inflammation and a rash on skin (Collier & Chester 1956). In animal tissues these three biochemical compounds are neurotransmitters that induce contractions in smooth muscles, accompanied by a fall of arterial blood pressure and an inhibition of the heart muscles. In plants these chemicals appear to exist purely to sting and deter herbivore browsers (Starkenstein & Wasserstrom 1933; Emmelin & Feldberg 1949). However, despite the above it should be noted that an *Urtica* cell extract completely free of these three chemical compounds, *still* elicits a painful response on the skin when it is applied. This suggests that other, additional compounds present in nettle cells are involved in the production of the characteristic deterrent sting reaction (McFarlane 1963).

Further doubts and debate regarding the chemical nature of the sting consider that the quantities present of the supposed pain-inducing compounds is much too low to produce such a significant, strong irritant effect (see Pollard & Briggs 1984, p. 508-509). Similar investigation of the stinging irritants in the related genus *Laportea* carried out by McFarlane (1963), found the same three chemicals present (histamine, acetylcholine and serotonin), but another unidentified substance that could not be dialyzed through cellophane, appeared much more active in producing pain than acetylcholine, histamine and 5-hydroxytryptamine. Additional studies indicate that the chemical cocktail in the *Urtica* trichome includes significant levels of tartaric and oxalic acids. These two acids are capable of inducing a pain reaction when injected into skin, and it is believed that they help extend the duration of the pain experienced when histamine, acetylcholine and serotonin are present (Fu *et al.* 2006).

Leucotrienes: In 1979 biochemists discovered and named compounds called Leucotrienes in animal tissues. These substances are capable of inducing persistent cutaneous wheals after injection into human skin, even when present in only very minute quantities below the nanogram per millilitre level. Leucotrienes have also been found in insect venom and in the stings of sea-animals (Czarnetzki *et al.* 1990a). Using RP-HPLC (reverse phase high pressure liquid chromatography) and RIA (radioimmunoassay), Czarnetzki *et al.* (1990b) were able to show high levels of leukotriene B4 and leukotriene C4 and histamine in the urticating (i.e. stinging) fluid of *U. urens*. Leucotrienes are a family of biologically active compounds described as eicosanoid inflammatory mediators. They were first discovered in mammalian leukocytes, being produced by the oxidation of arachidonic acid (AA) and the essential fatty acid eicosapentaenoic acid (EPA) by the enzyme arachidonate 5-lipoxygenase. They have since been found in other immune cells. In animals they participate in host defence reactions and pathophysiological conditions, such as immediate hypersensitivity and inflammation. In mammals these compounds have potent actions on many essential organs and systems, including the cardiovascular, pulmonary, and central nervous system as well as the gastrointestinal tract and the immune system. In addition, leukotriene production is usually accompanied by the production of histamine and prostaglandins, all of which act as inflammatory mediators (<https://en.wikipedia.org/wiki/Leukotriene>).

Budavari (1996) describes the leukotrienes as potent bronchoconstrictors with a role in immediate hypersensitive reactions and some as potent chemotactic agents. She suggests it is the chemotactic role of the leukotrienes that gives a longer, stronger stinging effect to the nettles. Budavari (1996) characterizes histamine as a potent vasodilator involved in allergic reactions.

In common with the other compounds involved in generating the stinging effect, exactly how these chemicals are produced from fatty acids in plant cells remains mysterious. It is certainly beyond the chemical understanding of the present writer. However, the fact that these several different biochemical compounds have been located in stinging hairs of *U. dioica* and *U. urens*, and their role in animal cells is known to involve or include the induction of inflammation, makes it very likely that they are actively involved in producing the nettle sting.

The protective function of the sting: The highly specialised structure and chemistry of the nettle stinging hair suggests that it is unlikely to have any function other than defence against herbivores (Pullen & Gilbert 1989). While it may appear obvious that possession of the sting affords such protection, it took considerable care and effort to design and execute the experiments which proved that many invertebrates (particularly insect larvae, slugs and snails), can attack nettle leaf tissues with impunity, yet mammalian herbivores (*e.g.* rabbits, sheep and horses), are positively deterred by the irritant hairs. Having said this, the situation is not one of complete mammal avoidance. In common with some animals' reaction to toxins in poisonous plants, some mammals will browse stinging or mechanically protected plants if they are sufficiently hungry. It has also been reported that some breeds of domestic cattle avoid nettles, while others eat them readily (Uphof 1962). Stinging hairs of *U. dioica* have also been found in the faeces of a number of mammalian herbivores (Taylor 2009).

Significant variability in stinging hair density exists within many examined nettle populations, and it has been shown to have a genetic basis (Pollard & Briggs 1982). Later experiments by these workers found that the interaction of large animal herbivores with variation in stinging hair defences could be an important selective force in nettle populations that display a typical range of variation.

The greater the density of stinging hairs, the more the plant is avoided. This is a learned behavioural reaction which occurs to the extent that clonal nettle patches in pastures become free to expand unless they are mechanically cut or otherwise managed (Pollard & Briggs 1984). Protected in this way, dense nettle colonies may smother out grass and reduce the grazing area available in pastures, since unlike the case of isolated thistles or many other poisonous or distasteful weeds, stock animals cannot browse vegetation *between* the plants, for fear of the burning sting (Bates 1933).

While the experimental results do not suggest that stinging is unimportant to invertebrate herbivores, the nettle stinging mechanism seems particularly well suited to deter larger animals. Large herbivores cannot eat 'around' stinging hairs in the way that very much smaller insect larvae or molluscs can, and the immediate deterrence produced by a sting's burning sensation will usually act before significant quantities of plant biomass have been consumed by the larger grazing animals (Pollard & Briggs 1984).

Measurements have shown that after browsing damage by vertebrate herbivores, or after mechanical clipping to manage or control nettle patches, the density of stinging

hairs on regrown stems and leaves is significantly higher than on the initial nettle growth. Since stinging hairs are presumably energetically expensive for the plant to produce, it would be strategically advantageous for an individual to be able to produce only as many of them as the existing herbivore pressure necessitates. The observed increase in stinging hairs after grazing is thus an example of an induced response to environmental pressure (Pullin & Gilbert 1989).

Subsequent experiments using degrees of leaf and stem apex clipping to mimic grazing, showed that there are differences in response even between the sexes of plants, *e.g.* with respect to regrowth, branching, reproduction and stinging hair density. In the case of the latter, density was higher on the new leaves of female plants than on males, which might be explained by the greater demand for defence in females due to their higher and longer allocation of resources to reproduction (Mutikainen *et al.* 1994). Similar earlier experiments by Pullin (1987) found that there was an increase in nitrogen levels and water content in fresh leaves that were regrown by nettle plants after clipping when compared with mature first growth leaves. This increase in nettle leaf quality in turn allowed higher growth rates of the specialist herbivore larvae of *Aglais urticae* (the Small Tortoiseshell Butterfly).

In Fermanagh, the authors of the original '*Typescript Flora of Fermanagh*' noted that Common Nettle was particularly abundant (and vicious stinging) on the screes below the limestone cliffs at Knockmore. This is a site long frequented by feral goats whose droppings over many generations must certainly have encouraged the plant's growth in this particular locality (Meikle *et al.* 1957).

Recommended treatment for nettle stings: To minimise the pain when stung it is important to avoid touching the affected area for at least 10 minutes. The best approach is to wash the stinging fluid off the skin, if possible without touching the surface, using liquid soap and either lukewarm or cold water. Applying the juice from a leaf of an *Aloe vera* plant, or using a manufactured product with a high concentration of aloe vera extract, can help to manage the red and inflamed skin area and reduce the painful burning sensation. Cold compresses or sluicing with cold running water are also recommended as ways of relieving the burning skin reaction (Cooper & Johnson 1998).

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Recording for Atlas 2020 with a grant from the Wild Flower Society (WFS)

Paul R. Green, *Yoletown, Ballycullane, New Ross, Co. Wexford, Y34 XW62*

Another discussion with the BSBI Irish Committee, BSBI Irish Officer Maria Long and BSBI Scientific Officer Pete Stroh, it was decided I should do most of my recording in the very North of County Cork. The reason behind this was that no botanists lived in this part of the county and that it is a very under recorded area.

The area concerned covers the North of two out of the three vice-counties Cork is split into, Mid Cork (**H4**) and East Cork (**H5**), an area 70km by just over 30km. As many people put it, this is a rather boring area of the county! Could I prove them to be wrong?

My first visit was in late April to record spring species. As I arrived at Fermoy I pulled over in Francis Street (**H5**, W8198) to get my bearings and to look at the map to see where I was heading for. Getting out of the car to stretch my legs, I looked into the garden next to the car and there was my first new native species for Cork, *Stellaria pallida* (Lesser Chickweed), two plants in a very tiny front garden. It was growing with *Cerastium diffusum* (Sea Mouse-ear). They are two coastal species 30km inland from the nearest coast. *Veronica crista-galli* (Crested Field-speedwell) was a weed of several road verges in Fermoy. For some unknown reason this non-native Speedwell is exceptionally common in parts of Cork, as I was to find out over the next few days.

My hit list included *Alopecurus pratensis* (Meadow Foxtail), *Anemone nemorosa* (Wood Anemone), *Ficaria verna* (Lesser Celandine) and *Viola reichenbachiana* (Early Dog-violet), etc. Wood Anemones certainly caused me much trouble. Along some rivers I might find the Anemones for a few kilometres, then there might be a whole hectad where the Anemones could not be found, then they would be common again along the river in the next hectad. Early Dog-violet was common along the River Blackwater, otherwise found on one road verge. Generally other spring species were easy to find, Lesser Celandine being found in all 22 hectads I visited. My best find was of many clumps of *Festuca altissima* (Wood Fescue) in rocky woodland (**H5**, W5697) above the River Blackwater on the east side of Mallow. To find a new site for this rare grass which has only one other extant site in the county was a good start to my recording in Cork. *Symphytum tuberosum* (Tuberous Comfrey) at two sites was another good discovery as it is only recorded from one other location in the county. *Symphytum x hidcotense* 'Hidcote Blue' (Hidcote Comfrey), a garden throw-out, was found at three places, this being a new hybrid for the county. A clump of *Polystichum munitum* (Western Sword-fern) on the side of a green lane and *Camassia leichtlinii* at the end of the same lane on the bank of the River Blackwater at Castlehyde (**H5**, W7798) were two unusual aliens to find. A local at Milford (**H4**, R4121) was very surprised and amused to see me crouched down in her front garden looking at *Cardamine corymbosa* (New Zealand Bitter-cress), it took some explaining!

The next visit was three days recording in May. The first two were on Cape Clear (**H3**), one of the many islands off of the Cork coast. Jim FitzHarris joined me to help him brush up on his botany. We covered as much of the island as possible finding all but one of the rare species known here. *Trifolium ornithopodioides* (Bird's-foot Clover) was common along the centre of the narrow roads and *Ornithopus perpusillus* (Bird's-foot) was seen on one small rocky area. Some searching had to be done on a lane side wall to see *Asplenium obovatum* (Lanceolate Spleenwort) hiding behind the overhanging vegetation. *Carex punctata* (Dotted Sedge) put on a wonderful display at the base of a cliff on the side of a road. All very rare species in Ireland. It was nice to see a rare form of Bush Vetch (*Vicia sepium* var. *ochroleuca*) which has cream flowers that turn orange with age. I like a challenge, noticing that the DDb (BSBI's Distribution Database) had no records listed from the very southern tip of Cape Clear, which is the only land in the hectad V91, I had to make a special effort to record as many species as possible. We managed 60, not bad! This was steep rocky inaccessible sea-cliffs with very little areas we could walk with safety. As it had been extremely hot and sunny with no breeze I left Cape Clear feeling extremely exhausted and sunburnt. I changed my recording method, and did lots of quick spot recording as I made my way East through Cork, rather than record a whole monad. Each time I saw a species I hadn't yet seen I stopped to make a list. This included *Acaena ovalifolia* (Two-spined Acaena), *Anisantha diandra* (Great Brome) and *Petasites hybridus* (Butterbur). Stopping on the side of the N25 (**H5**, W8473) between Carrigtohill and Midleton to see where I was on the map, I happened to park by nine *Ophrys apifera* (Bee Orchid). The find of the day was at Lisgoold (**H5**, W8580) where I stopped at the shop to pick up a chocolate fix. On the west bank of the R626, I added the only new hybrid to my lifetime list from Cork. One clump of the very rare hybrid *Carex muricata* subsp. *pairae* (Prickly Sedge) x *C. divulsa* subsp. *divulsa* (Grey Sedge). I sent Tony O'Mahony a specimen and he confirmed my identification. This being a new hectad record.

I fancied a treat for myself in July and visited Cork Docks (**H4**, W6871) to record and see the rare aliens that John Diggin had been finding where the ships offload their grain. This site has added numerous new species to the Cork list. Here I saw many species I hadn't seen for a number of years including *Amsinckia micrantha* (Common Fiddleneck) and *Apera spica-venti* (Loose Silky-bent), both I had never seen in Ireland before. *Senecio inaequidens* (Narrow-leaved Ragwort) was common on an adjoining piece of waste ground, this ragwort has been turning up all over Ireland in the last few years. This area of Cork seems very good for garden escapes. I have never seen so much *Hypericum hircinum* (Stinking Tutsan) naturalised in the hedgerows as I saw between Cork City and Kinsale. There are many ruins of Abbeys and castles to visit in this part of Cork. At James's Fort (**H3**, W6449) *Petroselinum crispum* (Garden Parsley) was all over the walls. On the ruins of Timoleague Friary (**H3**, W4743) was *Geranium rotundifolium* (Round-leaved Crane's-bill) and *Allium vineale* (Wild Onion), both rare species in the county. My favourite find on this visit was while driving along the R600 (**H4**, W6651) between Kinsale and Belgooly and spotting *Euphorbia amygdaloides* (Wood Spurge), a very rare introduction in Ireland confined to a small area of Co. Cork. The most unusual find was of a rare form of Common Restharrow (*Ononis repens* var. *horrida*) which is covered in sharp spines, on top of a wall alongside the sea at Burren (**H3**, W5043). A variety that I have only once seen in Ireland before.

August saw me back in north Cork to catch all the species I could not identify early in the year or were not showing in April. The aim was to try and get as many Willowherbs as possible for each hectad, plus pick up species like *Persicaria maculosa* (Redshank) and *Avena fatua* (Wild-oat). This approach proved to be very productive. New for the county was *Epilobium roseum* (Pale Willowherb) found in the churchyard in Buttevant (**H5**, R5409) and three other sites. *Epilobium tetragonum* (Square-stalked Willowherb) took me by surprise as I encountered it often, a species I hardly ever see in Ireland. I also revisited sites I found species in the Spring I couldn't identify at the time. One such plant was a very large stand of golden yellow *Solidago gigantea* (Early Goldenrod) northeast of Kishkeam (**H4**, R2204). A very large disused quarry south of Buttevant (**H5**, R5307) proved well worth the visit. Here I found large quantities of *Gentianella amarella* subsp. *hibernica* (Autumn Gentian) the first county record for over 50 years. In the flooded area *Potamogeton coloratus* (Fen Pondweed) was holding up many flower spikes above the water surface. This is only the third extant site in the county. Newmarket had some unusual aliens and people! On waste ground (**H4**, R3207) were 100s of *Sisyrinchium californicum* (Yellow-eyed-grass), as a pavement weed (**H4**, R3207) was *Maurantherum paludosum* (Annual Marguerite) and in a storm drain (**H4**, R3107) was one plant of *Abutilon theophrasti* (Velvetleaf). One man followed me around in his car as I walked around Newmarket, just wonder what was going through his mind! Luck wasn't on my side when I tried to find *Alopecurus aequalis* (Orange Foxtail), as all sites I visited the habitat no longer looked suitable. *Rumex maritimus* (Golden Dock) proved a little more successful as I managed to find it in one site. It was growing on the bare mud around a small lough with *Rorippa palustris* (Marsh Yellow-cress) at Ballinaltig Beg (**H5**, R7104). I also went and checked on *Carex limosa* (Bog-sedge) (**H4**, R2311) which I saw while recording for 'Atlas 2000' in 1999. Here it has just escaped a track being put in across the moorland for a windfarm. The bog is now much drier than I could remember. This is the only extant site in the county.

I had a day in September along the south coast from Youghal to Whitegate to feed one of my addictions of looking for Glassworts and hybrid Orache for several weeks each September. The first highlight was spotting a large population of *Picris hieracioides* (Hawkweed Oxtongue) on the north side of the N25 just west of Youghal (H5, X0876). This is a rare species in Ireland. The first place I started my search was at Ballycreane (H5, X0168). It wasn't long before I found *Atriplex glabriuscula* x *A. prostrata* and *Atriplex x taschereaui* (*A. glabriuscula* x *A. longipes*). I soon got distracted by a large area of dumped soil which yielded *Phalaris minor* (Lesser Canary-grass) and *Sinapis alba* (White Mustard). On leaving the beach, I stopped at a carrot field to see if there was any more Lesser Canary-grass, as expected it was there. My plans changed as I set my targets at visiting all the cultivated fields I saw plus still sticking to my original planned route. This certainly was one action packed day, as it was a clear sunny day, but extremely windy. Doing my best to avoid being blown away and sand getting into my eyes, I visited Ardnahinch Beach, Ballynamona (H5, W9865), a known site for *Atriplex littoralis* (Grass-leaved Orache), which I failed to find. Whether this species no longer grows here or now only the hybrid remains, as I found 16 plants of *Atriplex x hulmeana* (*A. littoralis* x *A. prostrata*), a new hybrid to Ireland! That is what I thought until I looked at specimens at Glasnevin (DBN) and found that Tony O'Mahony had collected the hybrid here without knowing it in 1981. The BSBI *Atriplex* referee John Akeroyd confirmed my ID. It might be that the hybrid survives without one parent, as hybrid *Atriplex* often grow in places without their parents. The barley fields adjoining the dunes were overrun with Lesser Canary-grass, it was hard to know which was supposed to be the crop! Broad Bean, Carrot and Potato fields were also seen infested with this grass. Back to hybrid *Atriplex* I managed to find *Atriplex x gustafssoniana* (*A. longipes* x *A. prostrata*) at Ballylongane (H5, W9967) and Lahard (H5, W8760). Even though I saw two hybrid *Atriplex* that has *A. longipes* as one of the parents, which has never been recorded from the county. As of yet only recorded from Cos Waterford and Wexford. Saltmarsh habitat was rather thin on the ground and only encountered at Shanagarry (H5, W9866) where there was a little of each *Salicornia dolichostachya* (Long-spiked Glasswort) and *Salicornia ramosissima* (Purple Glasswort). By the time I had reached Whitegate (H5, W8363) rain was in the air. As I walked along looking for *Atriplex* I kept saying to myself those leaves look like garden carrots rather than native carrot! Eventually I was proven correct as I could see an orange carrot below the leaves. It was intriguing why there were so many garden carrots (*Daucus carota* subsp. *sativus*) all along the sea-wall as there was no other non-native species!

The last two days of recording was spent with Megan Morris. We had a day along the Araglin River (H5, R8601) east of Kilworth. Here we were lucky enough to park by a large patch of *Sambucus ebulus* (Dwarf Elder). Along the wooded river bank there was *Crepis paludosa* (Marsh Hawk's-beard). Two species that I hadn't seen elsewhere in Cork during the year. Here was the tallest *Malus sylvestris* (Crab Apple) tree I have ever seen, I hadn't realised apple trees could reach such a height! The roses were good here also. *Rosa stylosa* (Short-styled Field-rose) and *Rosa x scabriuscula* (*R. canina* x *R. tomentosa*) were the two most interesting of the four species and two hybrids we saw. Our second day was spent in the Glenville area. We used *Wildflowers of Cork City and County* (O'Mahony, 2009) to search for *Hymenophyllum tunbrigense* (Tunbridge Filmy-fern) in woodland up the Ardrou valley (H5, W7090). There, we could find it in large patches on damp rocks.

It felt like I was doing a Spring visit again as Lesser Celandine leaves were showing everywhere in the wood. Back in Glenville (**H5**, W7188) the leaves of *Arum italicum* subsp. *italicum* (Italian Lords-and-Ladies) were also up nicely, (another species I associate with Spring), and on the walls around the town, were many clumps of *Poa nemoralis* (Wood Meadow-grass).

Over all it was a very product 21 days. 10,658 records collected from across 49 hectares. 791 different species recorded.

One of the surprises of my work in Cork came when checking my data and noticing that I never recorded *Stachys palustris* (Marsh Woundwort) from north Cork on my April visit, but picked it up from 19 monads in August.

The critics were a little off as much of north Cork is rather nice to go plant recording. The only really boring area is the northwest part of north Cork. Here *Rubus spectabilis* (Salmonberry) is particularly abundant forming some extremely extensive patches. This may be a very invasive species, but I do enjoy seeing the shocking pink flowers in Spring!

I would like to take this opportunity to thank the WFS for the grant to enable me to record in Co. Cork. For those not mentioned above: BSBI referees for help with Eyebrights (Chris Metherell), Roses (Roger Maskew), Stoneworts (Nick Stewart) and Andy Amphlett for help with the DDb.

Reference:

O'Mahony, T. (2009). *Wildflowers of Cork City and County*. The Collins Press, West Link Park, Doughcloyne, Wilton, Cork.

***Carex elata* All. x *C. aquatilis* Wahlenb. in Co. Limerick (**H8**): A belated addition to the Irish and British flora**

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Abstract

In June 2000, an anomalous sedge belonging to the genus *Carex* section *Phacocystis* Dumort. (the '*Carex nigra* group') was found by the author, on the Limerick bank of the River Shannon at Ballyvolane (**H8**, R63.59), approximately 10.5 km upriver of Thomond Bridge, Limerick City. Initially this taxon was determined as the interspecific hybrid, *C. x turfosa* Fr. (= *C. elata* All. x *C. nigra* (L.) Reichard), and the record appeared under that name in the works, *Sedges of the British Isles* (Jermy *et al.* 2007) and *Hybrid Flora of the British Isles* (Stace *et al.* 2015). However, long-term study of living material of this taxon by the author, suggested that it was, in fact, the hybrid *C. elata* All. x *C. aquatilis* Wahlenb., and this belated, revised determination was confirmed by the BSBI *Carex* referee, Mr M. S. Porter, in November 2016. This is the first record for the interspecific hybrid, *C. elata* x *C. aquatilis* in both Ireland and Britain. Three photographs (page 90) of this hybrid are provided, one of which shows comparative infructescences of *C. elata* x *C. aquatilis* and *C. x turfosa*, to illustrate the distinctive differences in the shape and structure of their female spikes.

Introduction

Worldwide, the genus *Carex* L. section *Phacocystis* Dumort. (i.e. the ‘*C. nigra* group’), Is represented by 70-90 species (Standley *et al.* 2002), of which 31 are indigenous to North America and 15-16 species to Europe (Chater 1980). In Britain, eight species are currently recorded (i.e. *C. cespitosa* L., *C. recta* Boott, *C. salina* Wahlenb., *C. acuta* L., *C. aquatilis* Wahlenb., *C. bigelowii* Torr. ex Schwein., *C. elata* All., and *C. nigra* (L.) Reichard), of which only the latter five species are presently known to occur in Ireland. Section *Phacocystis* belongs within subgenus *Carex*, and is characterised by its combination of two stigmas, biconvex, papillate-walled utricles bearing a minute, truncate or shallowly-notched beak; biconvex, matt or glossy nutlets, and female glumes commonly purplish-black coloured, with a green or pale-brown midvein that often terminates short of the glume-apex; the base of the inflorescence-bracts characteristically display a pair of minute, black auricles – these rounded in outline, and clasping the stem at its junction with the bract or, very occasionally, replaced by a narrow, transverse, black band. The young leaf-shoots of most species and interspecific hybrids within the *C. nigra* group, are initially covered with a conspicuous *glauco-pruinose* waxy bloom that quickly fades and disintegrates into a milk-white, powdery residue as the shoots mature – a feature also often present on the abaxial face of the ligule-flange (i.e. the free tissue of the ligule). The leaves bear stomata on either the lower surface (hypostomous), the upper surface (epistomous) or on both surfaces (amphistomous) and the distribution of epidermal papillae almost invariably mirrors this stomatal pattern. (**Note:** In the author’s long-term experience of *Carex* taxa, the leaf surface that bears a dense covering of stomata and papillae, *retains a permanent, matt, glaucous or bluish-green colour*, possibly because of the fact that light is *refracted* from its microscopically-rough surface (e.g. the *upper* leaf surface of *C. aquatilis*, *C. nigra* and *C. rostrata* Stokes). In complete contrast however, the leaf surface that is smooth and *devoid* of stomata and papillae, appears *glossy-green* to the naked eye (e.g. the *upper* leaf surface in *C. acuta*, *C. elata*, *C. bigelowii* and *C. acutiformis* Ehrh., or the *lower* leaf surface, as in *C. aquatilis* and *C. nigra*.) On drying, the margins of epistomous *Carex* leaves become involute, whilst those of hypostomous leaves become revolute.

Ecological, distributional and breeding relationships of species within the *Carex nigra* Group

In reference to the species of the *C. nigra* group as occur in Britain and Ireland, Jermy *et al.* (2007: 455) state: “In the main, their geographical distributions overlap, and ecologically they have similar requirements. They form partially fertile hybrids that backcross, leading commonly to introgression between the species, and in all species there are forms showing one or more characters of another species”. This situation is greatly facilitated by the fact that a variable, often very high level of *self-incompatibility* is a characteristic feature of a range of species within section *Phacocystis* (Faulkner 1973: 235; pers. obs. 1990-2015), many species-populations producing very few developed utricles in their infructescences, and thus effectively behaving as near-sterile clones in the absence of a nearby, compatible pollen-source. While the biological phenomenon of variable self-incompatibility impacts considerably on fruit-production within clonal stands of the *C. nigra* group, it is unaccountably under-emphasised, or frequently overlooked, in the literature pertaining to this group, or to the genus *Carex* in general. Another consequence of self-incompatibility,

is that cohabiting species of the *C. nigra* group frequently exchange pollen and, in the virtual absence of breeding barriers within the group, the potential for rampant interspecific hybridisation is considerable – provided suitable microhabitats exist in which nutlet-fertile hybrid utricles can find a foothold, germinate, and develop into mature plants. Moreover, the *direction* of pollen-transfer in primary crosses within the *C. nigra* group, is influenced or dictated by the flowering time and floral biology of its various species. For example, *C. elata* is possibly the earliest species of this group to flower in lowland habitats (i.e. April-May), its inflorescences being predominantly homogamous or very weakly protandrous/protogynous (per. obs. of cultivated material, 1998-2016). Therefore, in binary interspecific crosses involving *C. elata*, it is likely to always be the pollen-donor. In both Europe and North America, partially pollen-/utricle-sterile interspecific hybrids within the *C. nigra* group, are of widespread occurrence, of which nine are presently recorded in Britain, and two in Ireland (Jermy *et al.* 2007; Foley & Porter 2015; Scannell & Synnott 1987). By consensus, however, the stabilised interspecific hybrids, *C. recta* and *C. salina*, are treated as species on both sides of the Atlantic (Cayouette & Morisset 1985, 1986a, 1986b; Standley 1990; Standley *et al.* 2002; Chater 1980 and Jermy *et al.* 2007), although both exhibit partial pollen-sterility and utricle-sterility, together with irregularities in meiotic chromosome pairing.

***Carex elata* x *C. aquatilis* on the River Shannon at Ballyvolane, Co. Limerick (H8)**

Reynolds (1999) reported finding populations of *Carex acuta* on the left bank of the River Shannon (the Limerick side) at Ballyvolane, (H8, R63.59.), NNW of Lisnagry, on 9th July 1998. *¹ (*C. acuta* had originally been reported from this area of the R. Shannon basin in 1901 (Armitage 1902)). As *C. acuta* is a very rare species in southern Ireland (Preston *et al.* 2002), with apparently *no* confirmed extant sites in the province of Munster in recent years (it is a species of predominantly northern distribution in Ireland), I visited this site on 6 June 2000, to hopefully become acquainted with the appearance and diagnostic characters of *C. acuta*. I also wished to collect living material of *C. acuta* for ongoing study under cultivation. While *C. elata* and *C. nigra* were present at Ballyvolane, a detailed search of this site failed to locate *C. acuta*. Intriguingly however, a member of the *C. nigra* group displaying *very slender* female spikes, occurred as a single clump on the sloping margin of the riverbank. It cohabited with a single plant of *C. elata*, both taxa exhibiting a tussocky growth-habit, and each borne proud of the water on tall pedestals. Close scrutiny of this anomalous taxon showed that the basal leaf-sheaths were *brown*, while the hyaline inner leaf-sheath face was *veined* and *minutely red-flecked*, the veins forming a ladder-like pattern on disintegration of the hyaline tissue (i.e. they became *ladder-fibrillose*). These features clearly showed that this taxon was a *C. elata* hybrid, while its very slender female spikes (these attenuate to the base), strongly indicated that the second parent was either *C. aquatilis* or *C. acuta*. Clearly, however, a range of other possibilities also needed to be carefully considered and weighed, given that the Ballyvolane region of the R. Shannon currently supports cohabiting populations of *C. elata* and *C. nigra*, in addition to an isolated population of *C. aquatilis* at Corbally (H8, R58.59.) and persistent historical records for *C. acuta*. Alternative possibilities were: (a) that the anomalous hybrid might be a nothomorph of the variable *C. x turfosa* (= *C. elata* x *C. nigra*), or (b) of *C. x prolixa* (= *C. elata* x *C. acuta*). It also needed to be differentiated from two other interspecific hybrids bearing

*¹ All current records of *Carex acuta* in Limerick were withdrawn by Reynolds (2013, p. 459).'

similar, slender, female spikes, namely: *C. acuta* x *C. aquatilis* and *C. acuta* x *C. nigra*. Moreover, bearing in mind the frequency and complexity of hybridisation within the *C. nigra* group as outlined earlier, it seemed quite possible that the Ballyvolane taxon might be something other than the straightforward F1 binary hybrid, *C. elata* x *C. aquatilis*. (This suspicion was strengthened by the fact that the morphological characters exhibited by the Ballyvolane hybrid, were predominantly inherited from its *C. elata* parent.) However, this latter possibility had to remain in the realm of conjecture, as it could not be teased out properly, given the fact that the taxonomically critical *C. nigra* group exhibits a paucity of *qualitative* diagnostic morphological characters, thereby ruling out a more refined analysis of this taxon's identity. Accordingly, living material of the Ballyvolane *C. elata* hybrid was collected for cultivation and ongoing study, at home.

In July 2000, I sent pressed vouchers of this River Shannon taxon (in addition to a detailed description and some tentative suggestions as to its parentage) to the *Carex* expert, Clive Jermy, at the British Museum of Natural History. Shortly thereafter, I received a brief, interim note from Clive, stating: "Your *C. x turfosa* looks very convincing. I will check it against BM material in September". In the event, however, I never received a formal identification of this taxon from Clive Jermy, but my Ballyvolane (**H8**) find was subsequently mapped (as *C. x turfosa*) in the works: *Sedges of the British Isles* (Jermy *et al.* 2007); and *Hybrid Flora of the British Isles* (Stace *et al.* 2015). At the time of publication of the *Flora of County Limerick* (Reynolds 2013), the identity of the Ballyvolane (**H8**) taxon had still not been officially confirmed (though the fact that it was a *C. elata* hybrid *had* been established at the time of its discovery in June 2000), therefore I decided to bring this matter to a conclusion. In July 2016, I pressed further vouchers of this taxon, and later mounted this material on herbarium sheets. The BSBI Referee for the *Carex nigra* group (Mr M. S. Porter) was then contacted by email, and provided with all of the relevant data on this taxon, together with some photographs – one of which contrasted its infructescences with those of *C. x turfosa* – the latter hybrid from a Killarney stock that I have in cultivation (see photos, page 90). Mike Porter received my specimens on 29 September 2016, and sent me a detailed reply on 6th November, confirming that, in his opinion, the Limerick taxon is indeed *C. elata* x *C. aquatilis* – an interspecific hybrid new to both the Irish and British Flora.

The distribution of *C. elata* x *C. aquatilis* and its parents on the R. Shannon at Ballyvolane (H8**)**

The River Shannon site for *C. elata* x *Carex aquatilis* at Ballyvolane, (**H8**, R63.59.) lies approximately 7 km upriver of Corbally (**H8**, R58.59.) – this latter, the *only* known location for *C. aquatilis* in Co. Limerick, where it was discovered by R.A. Phillips in 1904 (Phillips 1905). In the long interim period, this area has become urbanised, and the remaining sliver of riverbank between Athlunkard Bridge (formerly Corbally Bridge) and the upriver St. Thomas Island, held just two, relict patches of *C. aquatilis* in 2010 (Reynolds 2013). By contrast, *C. elata* is of locally frequent occurrence on the R. Shannon, from Ballyvolane northwards. The distribution and frequency of their interspecific hybrid, *C. elata* x *C. aquatilis* in the Ballyvolane area, remains to be ascertained. Moreover, a detailed survey of this region, might also reinstate *Carex acuta* to the flora of County Limerick.

Description of the Limerick *C. elata* x *C. aquatilis* hybrid

An early-flowering (April-May), tussock-forming plant that lacks long, pioneering rhizomes; **stems**: to 80 cm, triquetrous throughout; **basal scales and leaf-sheaths**: brown (no red pigmentation), the hyaline inner face of the leaf-sheaths finely veined and densely and minutely red-flecked, the veins displaying a ladder-fibrillose pattern on disintegration of the tissue; **leaves**: amphistomous, densely papillate and glaucous or bluish-green on both surfaces; 4-6 mm wide, with *c.* 25-31 close-packed veins, the basal leaves plicate and very thin in cross-section, but at least some culm-leaves channelled in cross-section; **leaf-ligule**: triangular-acuminate, *c.* 5-7 mm long; **floral biology**: protogynous, the turgid styles fully exerted and receptive some 3+ days prior to stamen-emergence; **inflorescence/infructescence**: 10-25 cm, and 1/6-1/3 (-1/2) length of stem; **male spikes**: 1-2, dimorphic, the largest 40-50 mm; male glumes: conspicuously bicolorous, the very broad, yellowish midvein, framed by a narrow, brown border, its hyaline apex erose-ciliate; **female spikes**: slightly curved, *c.* 35-50 x 4 mm, conspicuously slender, tapered very gradually (attenuate) from the midpoint to the base, where the lowest utricles become sparse and distant, thus revealing the spike-axis (a *C. aquatilis* or *C. acuta* character); female spikes displaying a neat appearance, as the utricles are apically-directed and appressed to their spike-axis; **female glumes**: apex very narrowly hyaline and erose-ciliate; **lowest inflorescence-bract**: leaf-like, varying enormously in length, from just equalling the proximal female spike to equalling the inflorescence-length (5-15 (-24) cm long); **pollen grains**: subspherical or ovoid, dark-bodied, with protoplasmic contents and thus potentially viable; **utricles**: dimorphic, the majority sterile, but some with fully-developed nutlets; the larger-dimensioned utricles like those of its *C. elata* parent (*c.* 3-3.25 x 1.75-2 mm), prominently ribbed, and with a conspicuous beak; the smaller-dimensioned utricles distinctive, *c.* 2.5-2.75 x 1.6 mm, faintly-veined, tightly enclosing the nutlet (*not* loose-fitting, as in its *C. elata* parent), and with a *C. elata*-like beak; **nutlet**: matt, pale-brown, its body-outline broadly obovate or bluntly quadrate and *c.* 1.5 x 1.5 mm, borne on a tiny, stipe-like base that is wider than tall.

A morphological comparison of the Limerick *Carex elata* x *C. aquatilis* with the interspecific hybrids, *C. x prolixa*, *C. x turfosa*, *C. acuta* x *C. nigra* and *C. acuta* x *C. aquatilis*

It is clear from the above description of the Co. Limerick *C. elata* x *C. aquatilis* interspecific hybrid, that it has inherited most of its morphological characters from its *C. elata* parent. The *main combination* of features pointing to *C. aquatilis* as the second parent, are: (a) the female spike characters; (b) the presence of abundant stomata and epidermal papillae on the *upper* (glaucous) leaf surface; (c) utricule characters and posture; and (d) the bracts of the proximal/subproximal female spikes. Yet, if the Limerick taxon is to be accepted as the first Irish and British record for *C. elata* x *C. aquatilis*, it is necessary to rule out the possibility of it being *C. elata* x *C. acuta* (= *C. x prolixa*) or *C. elata* x *C. nigra* (= *C. x turfosa*), both of which share one parent in common with *C. elata* x *C. aquatilis*. For completeness sake, the diagnostic characters of the Ballyvolane hybrid are also contrasted with the slender-spiked hybrids, *C. acuta* x *C. nigra* and *C. acuta* x *C. aquatilis*.

C. x prolixa (*C. elata* x *C. acuta*)

The leaves of both *Carex elata* and *C. acuta* are hypostomous, and therefore one would expect their interspecific hybrid, *C. x prolixa*, to also bear hypostomous leaves – an expectation corroborated by Foley & Porter (2015). Moreover, in both parental species, the epidermal papillae are also confined to the *abaxial* (lower) leaf surface, which is glaucous and matt, while in both species the *adaxial* (upper) surface becomes *green and glossy* as the leaves age. These characteristics can also confidently be expected to be inherited by their hybrid. Additionally, Jermy *et al.* (2007: 490) state that this hybrid bears long, pioneering rhizomes (rather than being tussocky), while its female spikes are up to 60 mm long x 5-5.5 mm broad. (**Note:** Literature statements to the effect that the *upper* leaf surface of *C. elata* is permanently glaucous, are *misleading*: as mentioned earlier, the leaves of most or all British and Irish species of the *C. nigra* group, are initially covered with a glauco-pruinose waxy covering, which is quickly lost as the plants mature, the upper leaf surface of *C. elata* and of *C. acuta* then becoming *smooth and glossy green*, at least proximally.) These features are *not* found in *C. elata* x *C. aquatilis*, the leaves of which are amphistomous, bear numerous papillae on both surfaces, and are also permanently matt-glaucous or bluish-green on both surfaces.

C. x turfosa (*C. elata* x *C. nigra*)

As stated earlier, in *Carex elata*, both the stomata and epidermal papillae are confined to the lower leaf surface. In *C. nigra*, by contrast, both the stomata and epidermal papillae are *predominantly* found on the upper leaf surface – though many populations of this species also display a variable scattering of stomata and papillae on the lower leaf surface. In their interspecific hybrid, *C. x turfosa*, however, the leaves are *permanently glaucous*, as they bear an abundance of stomata and epidermal papillae on both leaf surfaces – exactly as in the hybrid *C. elata* x *C. aquatilis*. Both of these hybrids also share the red-flecked, and ladder-fibrillose characters of the hyaline inner leaf-sheath face of their *C. elata* parent. Yet, *C. x turfosa* virtually always displays long, pioneering rhizomes, so that the leaf-shoots arise at some distance from each other, whereas the Limerick *C. elata* x *C. aquatilis* has a *tussocky* growth-habit, as it totally lacks long, pioneering rhizomes. Additionally, *C. x turfosa* bears short, stout, broad-based female spikes that are *subcylindric-angular*, as both the *utricles* and *female glumes* are *aligned in 5-8 distinctive, longitudinal, divaricate rows* – a *C. elata* character. In complete contrast, the female spikes of *C. elata* x *C. aquatilis* are gracefully slender and curved; are long-tapered to their base, where their proximal utricles thin out markedly, thus exposing the infructescence-axis; and the spikes have a neat appearance, as all of the utricles are apically-directed and appressed, thus lacking the distinctive, *angular*, structural arrangement seen in the female spikes of *C. x turfosa* and *C. elata*. Lastly, the utricles of *C. x turfosa* resemble those of *C. elata*, being *c.* 3-3.5 x 2-2.5 mm, strongly ribbed, the utricle-tissue loosely enveloping the nutlet, while the nutlet-body is *c.* 2 x 1.5 mm. As stated previously, the utricles of *C. elata* x *C. aquatilis* are *dimorphic*, the largest resembling those of *C. elata*, while the distinctive smaller utricles are closer in appearance to those of their *C. aquatilis* parent, these being *c.* 2.5-2.75 x 1.6 mm, feebly veined, the utricle-tissue tightly enveloping the nutlet, and the nutlet-body measuring *c.* 1.5 x 1.5 mm.

C. acuta* x *C. nigra

The possibility of the Limerick taxon being *C. acuta* x *C. nigra*, can be ruled out immediately, as the hyaline inner leaf-sheath face in both *C. acuta* and *C. nigra* is *veinless*, and consequently does *not* become ladder-fibrillose as in *C. elata* and its hybrids. Moreover, Jermy *et al.* (2007: 477) state that the female glumes in this hybrid, are often more or less *patent*, as in its *C. acuta* parent.

C. acuta* x *C. aquatilis

C. acuta x *C. aquatilis* shares certain features in common with *C. elata* x *C. aquatilis*, namely: slender female spikes and matt, glaucous, amphistomous leaves that bear dense epidermal papillae on both surfaces. Critically however, its *veinless* hyaline inner leaf-sheath face, does *not* become ladder-fibrillose – a feature only encountered in hybrids of *Carex elata*, such as *C. elata* x *C. aquatilis* and *C. elata* x *C. nigra* (= *C. x turfosa*).

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Colchicum autumnale (Meadow Saffron) in the Nore Valley, Kilkenny (H11)

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Introduction

Long under suspicion of being an introduced species but also more recently considered to be an old native, the perennial *Colchicum autumnale* (Meadow Saffron), a plant of moist alluvial meadows and riversides in Ireland, is now restricted in the wild to the south-east of the country. The only recent records are both sides of the River Nore in its lower reaches and further downstream below its confluence with the River Barrow into Co. Wexford (Paul Green) as well as a disjunctive naturalized population at one further location beside the River Camcor in Co. Offaly (Fiona Devery).

Although always a rare plant in Ireland it was frequent in the Nore Valley at the beginning of the 20th century (Praeger, 1901). According to the second edition of *Cybele Hibernica* (Colgan & Scully, 1898) it was first found on the banks of the Nore, between Thomastown and Inistioge, in August 1799 by J. Blashford [sic]. The first finder referred to therein was, in fact, John Blachford (1771-1817) cousin and brother-in-law of William Tighe (1766-1816), of Woodstock in Inistioge, who himself wrote of it as follows (Tighe, 1802): ‘*Colchicum autumnale*, ornaments the meadows on the banks of the Nore, common near Kilkenny’. Thus, *C. autumnale* was common around Kilkenny at the start of the 19th century and referred to as abundant there, by Henry Chichester Hart (1847-1908), later in the same century (Hart, 1885).

In Ireland *Colchicum autumnale* (Tighe, 1802) has been called the Common Meadow Saffron (Anon., 1802), Autumn Crocus (J.R., 1829) and Meadow Saffron (Scannell & Synnott, 1987) while in the Gaelic language it has been named *Croc-an-fobair* (Ó Súilleabháin, 1828), *Cróc léana* (Moloney, 1919) and *Cróch-an-fhómhair* (An Roinn Oideachas, 1981). Amhlaoibh Ó Súilleabháin or Humphrey O’Sullivan (1780-1838), the Co. Kilkenny schoolmaster and diarist, recorded that it was plentiful near the Kings River on 25 September 1828 and gives an interesting account of the plant’s unusual habit – of flowering in autumn and producing fruit and leaves the following spring – which has been translated as follows (McGrath, 1936):

This is rather an unusual flower, without leaf or calyx, with bloom, with filament. It is of the hexandrian class, and of the tregynain kind. It is eight inches in height. The female portion of it goes down a foot into the ground, where the seed-pod is, so that the frost and snow of winter may not injure it. It is next spring it will come up with fruit and foliage. There are very few plants like this, for it gives it flower in September and its fruit the following spring.

The Kilkenny nurseryman and horticulturist John Robertson (1761-1839) also recorded that it was ‘in blow’ in the same month, on 28 September, in 1828 (J.R., 1829).

Although not threatened globally, intensification of agriculture, draining, ploughing and re-seeding grassland in Ireland, where it reaches its north-western distribution limit, have led to a serious decline in its former habitats and it has been classed

as ‘Endangered’ (Curtis & McGough, 1988). In order to establish the plant’s current status in the Nore Valley, surveys were undertaken of all its previously known locations and their environs.

Methods

A detailed survey of the bank-side habitats along the River Nore and some of its tributary streams was carried out in autumn 2015. Less-detailed surveys had been undertaken in the spring and autumn of two previous years while some more spot checks were carried out in autumn 2016. In the extensive survey of habitats some 50 km of main channel length was searched and 25 km of tributaries. Historical records were collated from literature sources and the BSBI database (DDb) as well as National Parks and Wildlife Service (NPWS) records. The distribution map of *C. autumnale* in **H11** was compiled using MapMate.

Soil for pH analysis was taken at a depth of 10cm where the corm of *C. autumnale* is located. Measurements of pH, reported as average of three replicates, were carried out using a Lutron (PH-201) meter.

Results

The following pre-1950 records in the Nore Valley were gleaned from literature sources: Kilkenny (Tighe, 1802; J.R., 1829; Mackay, 1836), Callan (Ó Suilleabháin, 1828), Inistioge (Mackay, 1836), Knocktopher, Mount Juliet, Poulgower and Warrington (Moore & More, 1866), Lisdowney (J.A.D., 1919), Freshford (Moore & More, 1866) and Inchbeg (Gibb, 1946-1947).

Other counties where *C. autumnale* was previously recorded in Ireland include: Armagh (An Irish Gentleman, 1818), Carlow (Mackay, 1836), Down (Anon., 1833), Dublin (Anon., 1833), Galway (Anon., 1874) and Limerick (Mackay, 1825) in the 19th century and it was said to be not uncommon in Mayo in the middle of the 20th century (L.D., 1943). It was first found at the Wexford (**H12**) site, beside the Barrow estuary, above New Ross by Robert Albert Phillips (1924) when it was said to be abundant and refound there by Paul Green in 2008. That outlier population, as well as the naturalized Co. Offaly (**H18**) one at Birr beside the River Camcor (N00), is now the only known extant wild population outside of the Nore Valley albeit adjacent and thus likely to be related stock.

In the most recent surveys in the Nore Valley *C. autumnale* was found at just three sites in two 10-km squares. All of these were adjacent to the Nore main channel with no recordings from tributaries. Two populations, one each in 10-km squares S54 and S63, were of relatively large extent and were measured as follows in September 2015: 180m in length clustered in middle and thinning out at both ends of colony; 150m in length also clustered in middle (x10m) and thinning out at both ends of colony (September 2015). In September 2016 the same populations were measured as follows: 250m in length and 25m in width at middle; 150 in length and 10m in width at middle. Two relatively recent records (1999 and 2007) in S63 and three in S54 (1990 and 2012) were not located during searches in 2015 or 2016 where the sites can now be classed as improved grassland. In Figure 1 the previous and present distribution of *C. autumnale* in **H11** is delineated which illustrates the decline from presence in eight 10 km-squares to just two. The two larger populations on both sides of the lower River Nore were found to be stable between 2004 and 2015 but the lesser

riparian group had some interference by grass mowing in September 2015. Similarly, grass mowing, before flowering is complete, is a threat to the Birr Castle Demesne population.

An analysis of the soil type (<http://gis.epa.ie/Envision> +Land+Soils) at the recent and historical sites, where Meadow Saffron has been recorded in the Nore Valley, were all found to be Mineral Alluvium. Thus in the lower Nore Valley it has a very-defined habitat: flat damp meadows by the river, above the limits of floods (Praeger, 1918), on mineral alluvial soils. The pH measurements at two of the Nore sites were 6.3 and 7.4. The soil at the Birr site, beside the River Camcor, is the same type and had an average pH reading of 7.5.

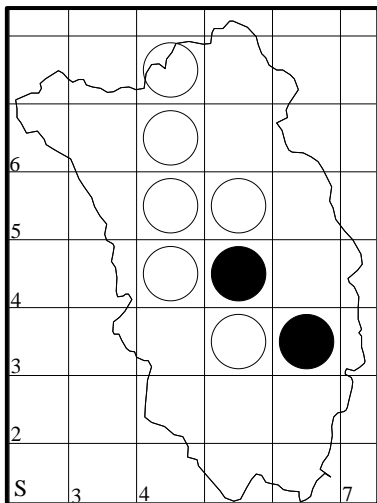


Figure 1. *Colchicum autumnale* (Meadow Saffron) in the Nore Valley, Kilkenny (H11). 10 km-square records: Open circles extinct sites (pre-1950); Closed circles extant sites (2015).

The leaves usually appear from mid-March onwards and flowers from late August (see photo on front cover and page 1). In Co. Offaly it was still in flower in the first week of October 2002 (Mean September temperature = 13.4°C) and 2015; and observed flowering in the first week of September 2016, the second week of September 2007 (Mean September temperature = 13.5°C) and the third week of September 2015. In Co. Kilkenny it was in bloom in the second week of September 2004 (Mean September temperature = 14.5°C), at the same period of 2015 and the fourth week of August 2016 (Met Éireann stations at Kilkenny and Birr closed in April 2008 and October 2009 respectively). It is interesting to note that when it was in flower in Kilkenny in the last week of September 1828 that the mean maximum temperature for the month was 64°F (J.R., 1829), which is the same average maximum temperature of 17.8°C recorded for September in the period 1978-2007 (<http://www.met.ie/climate-ireland/1981-2010/kilkenny.html>). At the beginning of the 19th century it was listed among the plants that flower in September at the Botanic Garden in Glasnevin when the average temperature recorded there for the month

in 1801 was 62.7°F (= 17.1°C) following a remarkably dry and hot summer in Ireland (Underwood, 1802). Regarding response to climate change, *C. autumnale* (mean flowering time 6 September ±3.6 days) was found to be exceptional in that it showed no advance in flowering time with temperature while the other British species examined in the study indicated an overall net response to temperature in the order of 2-10 days (Sparks *et al.*, 2000).

Discussion

Meadow Saffron was generally believed to have been introduced to Ireland for medicinal purposes – colchicine is still used in the treatment of gout – and its previous and present locations show a strong association with monastic settlements in the Nore Valley. Recently, however, genetic fingerprinting research points to *C. autumnale* being a native component

of the Irish flora with colonization via a western seaboard route from an Iberian glacial refugium being suggested (Smith & Waldren, 2010). The high genetic diversity found in that study would at least signify long residence here. Curiously, the plant is not mentioned in early works such as Threlkeld (1727) and K'Eogh (1735) – both of whom include the cultivated *Crocus sativus* (Saffron Crocus or Autumn Crocus) – as well as Wade (1804) particularly so in view of its medicinal properties by the first two authors and because of its scarcity by the third! It is also interesting to note that *C. autumnale* was not among the Botanic Garden collections in 1799 (Anon., 1800) but is listed in the catalogue for 1801 (Anon., 1802) coincidentally after its ‘discovery’ in Co. Kilkenny! Its finder John Blachford and his cousin William Tighe were both members of the Dublin Society which had founded the Botanic Garden at Glasnevin in 1795.

There have been instances of poisoning of cattle by colchicine, the toxin in *C. autumnale*, in the Nore Valley (e.g. J.A.D., 1919) and elsewhere in Ireland (e.g. Anon., 1874). The general advice to farmers, for improving pastures and meadows, was that ‘the bulbs should be forked up immediately the plant is discovered’ (Sutton, 1911). Writing during WWII, the agricultural botanist Professor Michael J. Gorman (1890-1982), of University College Dublin, noted that all parts of the plant were poisonous, whether they are grazed in the green condition or dried in hay, and advised that wherever it is found steps should be taken to eradicate it by digging up the corms (Gorman, 1944). It was noted in the 1950s that its destruction in Ireland had been very considerably accelerated in recent years by the ploughing up of grassland (Butcher, 1954).

Many botanists and others have taken the plant from the wild although when transferred the Meadow Saffron does not always thrive in certain soils. R.L. Praeger (1865-1953) collected plants from Kilkenny for his garden, in Dublin, but found that it had ‘too much leaf and too little flower to be a valuable accession in the garden’ (Praeger, 1914). Similarly, A.W. Stelfox (1883-1972) and R.A. Phillips (1866-1945) took clumps from the Wexford site in 1921 for cultivation in their gardens in Dublin and Cork (Phillips, 1926). The naturalized population on both sides of the River Camcor (H18), while thriving where the soil type is classed as Mineral alluvium, could be threatened by grass mowing before flowering has fully completed. These plants, which likely originated from the Nore Valley, could be important in the future conservation of the species in Ireland.

C. autumnale was not scheduled on the first Flora (Protection) Order, 1980 (S.I. No. 338/1980) but was still extant at its Limerick location, near Ballingarry (Curtis & McGough, 1988), up to the time of the introduction of the superseding Flora (Protection) Order, 1987 (S.I. No. 274/1987) wherein it was listed and in the succeeding Orders of 1999 and 2015. The field where it occurred up to 1999 in Co. Limerick was ploughed and reseeded and not refound afterwards (Reynolds, 2013).

The two main factors for the decline of the species in Ireland are destruction because of its poisonous qualities to livestock and modern farming methods. It has reasonably been concluded that agricultural improvement of the floodplain grassland along the Nore has restricted its presence to a few remaining damp meadows (Heery, 2003). Local conservation staff, formerly Dúchas – the Heritage Service and now the NPWS, have established good working relationships with all of the landowners responsible for the remaining locations in the Nore Valley, which has helped to ensure that the sites are managed sympathetically (Ó Críodáin, 2002). However, this is done on a voluntary basis

by the landowners, with farmers who have to move stock at certain times of the year receiving no recompense. During the recent surveys, one farmer when asked if he received compensation for the inconvenience replied that the compensation was that his cattle were not poisoned! At one of the large-population density sites, near Thomastown, in September 2015 ‘sheep were safely grazing’ in the same field where and when the plant was in flower. At the less-populous *C. autumnale* site, the other local rarity *Campanula trachelium* (Nettle-leaved Bellflower) was also recorded and there both species are threatened by the mowing of grass almost to the river’s edge where they were found only in the non-mowed area. A further threat to the two species is posed by the invasive *Impatiens glandulifera* (Himalayan Balsam) which has colonized, heavily in some places, many moist areas along the Nore.

Acknowledgements:

The author would like to thank the BSBI Vice-county Recorders Roger Goodwillie (**H11**) and Fiona Devery (**H18**) for their help.

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Some Aliens around Belview Port

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A walk along the disused Rosslare to Waterford railway in **H11** Co. Kilkenny on the 4th October offered tantalising glimpses through the port fence. It became evident that lots of alien seeds had blown from the vast concrete acreage of the port and settled in the cracks of the brick paved parking spaces along the fence.

Just inside the level crossing (S6512) there were two *Nicandra physalodes* (Apple-of-Peru) and perilously close to the wheels of a container lorry there was *Datura stramonium* (Thorn-apple) flowering and with its exotic thorny fruits, the former a first record for Kilkenny. I would have been happy enough going home with two new species, but was drawn further into the port to investigate a few *Ambrosia artemisiifolia* (Ragweed) I had spotted through the fence. With its wonderfully constructed flowers, this was another species new to me and another one new to the Kilkenny flora. *Senecio inaequidens* (Narrow-leaved Ragwort) was plentiful and still flowering, and a little further along there was also *Solanum lycopersicum* (Tomato) fruiting at the fence (S6513).

Setaria viridis (Green Bristle-grass) and one *Echinochloa crus-galli* (Cockspear), another FCR, had both self-seeded on the railway as well as inside the fence where there were also *Polypogon viridis* (Water Bent). *Phalaris minor* (Lesser Canary-grass) was found bordering two monads where containers had not frequently been moved (S65.13 and S66.13). *Phalaris minor* appears to be increasing at an alarming rate, as a contaminant of seed along the southern fringe of Ireland since 2015, and these were the first records for Kilkenny. It isn't fussy in its requirements and wherever you live it is worth watching out for.

Fleabanes were well represented and it was interesting to see the differences in the three species present. *Conyza floribunda* (Bilbao's Fleabane) was frequent and the few plants of *Conyza canadensis* (Canadian Fleabane) with its smooth bracts and obvious ligules were also easy enough to identify (S6512). *Conyza bonariensis* (Argentine

Fleabane) was also dotted around S6513, another FCR. This one looks superficially similar to *Conyza sumatrensis* (Guernsey Fleabane), as they both have hairy involucre bracts, and took more time to identify correctly.

Not all of the surprises were aliens. As the port was quiet that day, I chanced wandering the weedy looking path of the massive gantry crane. It seemed an unlikely spot, but many plants of *Geranium purpureum* (Little-Robin) (S6613 and S6512) and a patch of *Trifolium arvense* (Hare's-foot Clover) (S6613) were both thriving here, confined to the rusty median strip between the crane's rails. Both natives were new to the Kilkenny flora.

A gravel heap not far from the port and railway line turned up a less exotic looking alien, but the most intriguing of them all. Around thirty plants of *Potentilla norvegica* (Ternate-leaved Cinquefoil) (see photo page 45) were found beside a disused path to an overgrown ruin (S66531379). Luckily the gravel heap was on the sunny side of the track and while most of the plants had rusty seed heads there was still the odd flower present to aid identification.

It was hard to tell if the alien seeds had come in with the gravel, or blew onto the fresh gravel heap and found it to their liking. Other than the rampant *Clematis vitalba* (Traveller's-joy) and *Buddleja davidii* (Butterfly-bush), the surrounding vegetation was generally native. In stark contrast, the gravel heap was covered in the alien *Senecio inaequidens*, *Conyza floribunda*, *Petasites fragrans* (Winter Heliotrope) and the *Potentilla norvegica*.

Potentilla norvegica has a wide distribution, being found in much of Europe, Asia, and parts of North America, but none has been found in Ireland since 1993. It had previously been recorded in just five Irish hectads, from 1904-05 in **H19** Co. Kildare, with the more recent records for **H39** Co. Antrim, and in J37 there is also a single record for neighbouring **H38** Co. Down (Reynolds 2002). It's still a mystery how the *Potentilla* ended up in Co. Kilkenny, but it seems most likely that seeds had come in with the gravel, as a subsequent search on the 31st October for any stray *Potentilla norvegica* in the vicinity confirmed that the plants were entirely confined to the gravel heap.

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***Atriplex littoralis* L. x *Atriplex longipes* Drejer a new hybrid for Ireland from Co. Wexford**

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Where ever different species of coastal *Atriplex* (Orache) meet there is an extremely good chance hybrids can be found. Hybrids are generally at least partly fertile and will persist without one or both parent at a site.

Description of *A. littoralis* and *A. longipes*

Atriplex littoralis (Grass-leaved Orache) is an erect annual to 1.5 m, has linear leaves, margins entire or irregularly dentate, rarely with basal lobes. The bracteoles containing the

seeds are triangular in shape, sessile, margins toothed, united only at the base, stalkless and thick spongy at the base, dorsal surface muricata and commonly bi-tuberculate.

Atriplex longipes (Long-stalked Orache) is usually an erect annual to 1.5 m, but will also grow prostrate. The lowest leaves are narrowly triangular with laterally or forwardly directed lobes at the base. The smaller bracteoles are triangular, usually entire, fused only at the base, usually sessile. The larger bracteoles have stalks up to 70mm (books only give up to 30mm), margins entire or rarely with a few teeth, united only at the base, dorsal surface smooth or slightly muricate. The bracteoles are not spongy.

Description of the hybrid *A. littoralis* x *A. longipes*

This hybrid resembles *A. littoralis* in general appearance. A pale green upright well branched bushy plant to 1 m. With narrow linear leaves no more than 1 cm wide and up to 10 cm long, with no lobes at all. Majority of the bracteoles are stalkless. There are a scattering of bracteoles with stalks up to 15mm long. The bracteoles are only joined at the base like both parents. The **stalkless bracteoles** are spongy at the base and can have a few teeth and taper to a point at the apex; dorsal surface are commonly bi-tuberculate, rarely smooth. The **stalked bracteoles** can be slightly spongy at the base, but normally are not, the dorsal surface can be smooth or bi-tuberculate, some taper to a point at the apex and others are rounded.

The three Co. Wexford sites found in 2016

At the three sites I found the hybrid, both parents were present. All from within Wexford Harbour and from two hectads. See photo from Tincone on page 46.

- One large bushy plant on small beach by Wexford Bridge, Tincone, T05302248, 7 September. Specimen confirmed by John Akeroyd the BSBI *Atriplex* referee.
- A few scattered along the strand at Rosslare, T09371764 to T09361798, 13 September. Both parents fairly common.
- Several along strand at Drinagh, T05931860 to 05941856, 5 October. *A. littoralis* very abundant.

Irish distribution of the parents

Atriplex littoralis has scattered sites along the south coast from Co. Cork eastwards, continuing up the east coast as far north as Belfast Lough. Very rare on the west coast, an old record from Scattery Island, Co. Clare (**H9**) and recent records from Galway Bay, Co. Clare (**H9**) and West Galway (**H16**) and one site from West Donegal (**H35**). No records from the north coast.

Atriplex longipes is currently only known from Cos Waterford and Wexford. The first confirmed record was made in 2001 from a brackish pond on Little Island, Co. Waterford (Green, 2002). It is likely that it was first found in Ireland as early as 1990 from a saltmarsh on the River Suir opposite Little Island by Roger Goodwillie, this record is unconfirmed. I have found that the hybrid with *Atriplex glabriuscula* (Babington's Orache) to be frequent here.

Known distribution of *A. littoralis* x *A. longipes*

The above three sites might be a world first for this hybrid. As the only reference I have been able to trace is a paper published in Watsonia (Taschereau, 1986), where Pierre

Taschereau artificially crossed the parents to create F1 synthesised hybrids. These specimens are held at Manchester Museum (**Manch**).

Habitat of the parents

Atriplex littoralis is usually found along the top of saltmarshes, along top of strand lines on beaches, disturbed and waste ground on the coast, margin of brackish lakes and occasionally on seawalls.

Atriplex longipes is found in sheltered estuaries, along tidal rivers and around brackish lakes. Seems to avoid the coast which is exposed to the open sea. Normally found growing amongst coastal vegetation where it uses the vegetation to support itself. Often the only way to find *A. longipes* is to search amongst the vegetation as it seems to go out of its way to hide from the botanist. It will occasionally grow in the open, but these sites are normally sheltered from the elements.

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An interesting form of *Orobanche minor* in Southeast Galway (H15)

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Orobanche minor (Common Broomrape) is a widespread but introduced parasitic broomrape occurring throughout Ireland. It was first recorded in Ireland (in Cork) in 1866 but now occurs widely in grassland, dunes, gardens and waste ground (Reynolds 2002). Stace (2010) notes a variety of forms in Britain but in Ireland little variety in the plant has been reported other than two colour forms (purple and yellow) at Barley Cove Co. Cork (Wyse Jackson 1995).

Last June (11/06/2016), when exploring the ground around my home in the Doorus peninsula, west of Kinvara, Co. Galway, I came across an area of orchid rich grassland, limestone pavement and old meadow on the north shore of Aughinish Bay. The precise locality is M311126, it is almost due north across Aughinish Bay from Abbey Hill in Co. Clare. While much of the grassland on Doorus is intensively managed, a south facing rocky meadow at this site was not intensively managed and contained a variety of wild flowers including: *Dactylorhiza fuchsii* (Common Spotted-orchid), *Anacamptis pyramidalis* (Pyramidal Orchid), *Gymnadenia densiflora*, *Anthyllis vulneraria* (Kidney Vetch), *Vicia cracca* (Tufted Vetch), *Trifolium repens* (White Clover), *Rhinanthus minor* (Yellow-rattle), *Thymus polytrichus* (Wild Thyme), *Prunella vulgaris* (Selfheal), *Centaurea nigra* (Common Knapweed), and grasses including *Sesleria caerulea* (Blue Moor-grass), *Festuca rubra* (Red Fescue) and *Briza media* (Quaking-grass). Shrubs including *Rosa spinosissima* (Burnet Rose) and *Pteridium aquilinum* (Bracken) were also present.

In this field, over thirty spikes of an *Orobanche* species were in full flower. The plant drew my attention by virtue of its large showy yellow corolla (see photos page 44). On keying out the plant I concluded it was probably *O. minor* but a form approaching subsp. *maritima* rather than the widespread subsp. *minor*. This conclusion was based primarily on

the large yellow bosses on the lower corolla lip and the very swollen stem bases. Unlike subsp. *maritima*, however, it appeared to parasitize *Anthyllis vulneraria* or *Trifolium* sp. rather than *Daucus carota* subsp. *gummifer* (Sea Carrot) (or *Plantago coronopus* (Buck's-horn Plantain)) favored by true *maritima*. Also, subsp. *maritima* was an unlikely identification as that taxon is confined to the south coast of England where it is thought to be native.

I consulted Dr Fred Rumsey (the BSBI *Orobanche* referee) about the plant. He concluded that the plant was “on balance....closer to *maritima* than *minor*”. He thought the large yellow bosses on the corolla, the general appearance and stature suggest *maritima* but some features including sepal size, stigma lobes and host plant were anomalous so he was reluctant to definitely recognize it as *maritima*, especially as this would be a major extension in the range of that taxon.

So, the plant is for the moment in limbo. Unless further similar populations are found in Ireland its status must remain uncertain. It could represent an unrecognized Irish form, if so, the introduced status of some forms of *minor* would need to be re-examined. Alternatively it is an introduced variant which in some unknown manner acquired the characteristics of a local subspecies confined to an area some hundreds of kilometres to the south east.

In either case it is a striking plant that will I hope, add interest to many future walks along the shores of Aughinish Bay.

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A new hybrid dock for Ireland from Co. Monaghan (H32), *Rumex* × *digeneus* G. Beck (*R. hydrolapathum* Hudson × *R. conglomeratus* Murray) (Polygonaceae A.L. Jussieu)

Alexis FitzGerald (VCR for Co. Monaghan, H32)

Hybrids in *Rumex* L. subgenus *Rumex* (Polygonaceae A.L. Jussieu) occur “at variable frequencies almost wherever different species of subgenus *Rumex* coexist” (Akeroyd 2014). Some hybrids occur at very low frequencies in Ireland and Britain, and one such hybrid is *Rumex* × *digeneus* G. Beck (*R. hydrolapathum* Hudson × *R. conglomeratus* Murray) (Polygonaceae A.L. Jussieu). This is a rare hybrid, which has been recorded in Britain from N. Somerset (v.c. 6), E. Kent (v.c. 15), Montgomeryshire (v.c. 47), Cumberland (v.c. 70), E. Sussex (v.c. 14), Berkshire (v.c. 22), Westmorland (v.c. 69), Cambridgeshire (v.c. 29) and Cheshire (v.c. 58) and has also been reported from Germany and Hungary (Akeroyd 2014). It had not previously been reported from Ireland. Here a report of the first known Irish location for this hybrid is published.

R. hydrolapathum (Water Dock) is generally distributed in Ireland, but is absent from much of western Ireland (Akeroyd 2014). In Co. Monaghan (H32), it can be regarded as a scarce species, with 10 historic sites for the species recorded in the county (as per the

guidelines for species frequency in Faulkner (2015)). It is predominantly found in the county by lough edges. *R. conglomeratus* (Clustered Dock) is a widely distributed and frequent species throughout Ireland, as it is in Co. Monaghan. It can be found in the county by lough edges, as well as in wet grassland, by ditches, streams and wet paths, etc.

On 27 August 2016, collections of *Rumex* were made by the VCR in various locations throughout the county, with particular focus on *R. hydrolapathum* sites, and the potential hybrids to be found with that species. The first site visited was Drumreaske Lough, a calcareous lough occurring c. 3 km WNW of Monaghan town. On the shores of the lough, on marshy ground by wet lacustrine woodland, *R. hydrolapathum* occurs as an emergent plant, along with *R. conglomeratus*, *Rumex sanguineus* L. var. *viridis* (Sibth.) Koch, and *Rumex obtusifolius* L. on nearby path sides. This was therefore an ideal site to search for hybrid material.

A plant resembling *R. hydrolapathum*, but somewhat smaller than usual, was found at the SE corner of the lough (at H64334.34942). However, following closer inspection, it became clear that the plant had low fertility, with many valves not maturing (Akeroyd 2014). The mature valves were mostly lingulate, with a few broader valves having large elongate tubercles (Stace *et al.* 2015). The basal leaves were also somewhat smaller than those of true *R. hydrolapathum* (Stace *et al.* 2015). Bracts were occasionally present on the upper inflorescence. A basal leaf, a bract and a section of inflorescence were collected, pressed and sent off (along with supplementary photographs) to the BSBI *Rumex* referee, Mr. Geoffrey Kitchener, who determined the plant as *R. × digeneus* (see photo page 46) (on 25th November 2016). The specimen was subsequently donated to the National Herbarium at the National Botanic Gardens, Glasnevin (**DBN**).

This site is indeed rich in rare hybrid material, as *Epilobium × rivulare* Wahlenb. (*E. parviflorum* Schreb. × *E. palustre* L.) was also found adjacent to the *R. × digeneus* plant (similarly determined by Geoffrey Kitchener) and this specimen was also donated to **DBN**.

Despite the apparent rarity of *R. × digeneus*, this finding should hopefully serve as encouragement for other Irish VCR's to search for this hybrid (and other combinations) at their local *R. hydrolapathum* sites.

Acknowledgements:

Thanks must be offered to Geoffrey Kitchener, who determined my *Rumex* (and *Epilobium*) specimens.

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***Crassula tillaea* in County Down (H38)**

Graham Day, *Cherry Cottage, 11 Ballyhaft Road, Newtownards, Co. Down, BT22 2AW*

Crassula tillaea is a succulent plant also known by its common name 'Mossy Stonecrop'. It is a small, fleshy annual growing only centimetres in height. It has tiny ovate or elliptic

leaves only a few millimetres long. A tiny, more or less sessile flower or pair of flowers grows between each oppositely-arranged pair of leaves; the flowers are one to two millimetres in length and width. The fruit is a minute follicle containing one or two seeds. It is green when young, and gradually turns orange and very conspicuously, deep red when mature (see photo page 45).

This plant grows on bare, often compacted, sandy or gravelly ground. It is often found on rutted tracks, paths and other areas where the ground is kept open by disturbance and periodic flooding. It can withstand only minimal competition from other vegetation.

Crassula tillaea is native to Eurasia, particularly the Mediterranean Basin, but is known in other regions as an introduced species. It is a lowland plant, and regarded as native in southern England, north to Nottinghamshire, the Channel Islands, and is naturalised in Scotland.

The first record for Ireland was made in 1991 when it was found by David McClintock 'In two of the paths between the Slieve Donard Hotel, Newcastle, and the sea; among the borders etc.' (J33) (Hackney, 1992). I believe DMcC was staying at the hotel whilst attending the BSBI annual meeting at the time. He recorded it there again in 1994.

After a gap of 14 years, the next record was made at Murlough NNR (J43) by Tim Rich in 2008 (Rich *pers. comm.*). However, I saw this plant there earlier, in 2005, in some abundance, and subsequently in successive years. It is now found throughout the Murlough reserve in open sandy areas, and especially about the boardwalks and onto the road by Murlough House. In 2015, I found it only a few miles away in Castlewella Forest Park, where it was growing in a gravelly trackside forestry vehicle park.

This year (2016) I found this plant in the west of the county on a minor road near Tonaghmore (J15). This time it was growing in gravel at the roadside, displaying its very distinctive bright red colour. The plants had probably been there for some seasons, as there were several hundred covering an area of about 0.5 m². Table 1 lists all known records for the species to date.

It is not clear how this small species travelled about 20 miles from Newcastle in the east to Tonaghmore in the west. It is possible it may have been spread as seed carried by a vehicle. This species may have the potential to spread further, and recorders in other vice-counties should, perhaps, keep an eye open for a small red plant on roadsides in the late summer when it is at its most conspicuous.

J15	Tonaghmore	J13125016	Graham Day	17/7/2016
J33	Slieve Donard Hotel grounds and surrounds	J3831	David McClintock	1991
J33	Slieve Donard Hotel grounds and surrounds	J3831	David McClintock	1994
J33	Dundrum Inner Bay	J39563544	Graham Day	5/4/2009
J33	Slidderyford - Murlough NNR	J395344	Tom Curtis	31/7/2009
J33	Murlough NNR	J396337	Roger Field	24/9/2010
J33	Murlough NNR	J39703396	Graham Day	29/9/2012

J33	Murlough National Nature Reserve	J3939	Graham Day	11/5/2014
J33	Slidderyford - Murlough National Nature Reserve	J39513414	Graham Day	11/5/2014
J33	Murlough National Nature Reserve	J3933	BSBI	13/9/2014
J33	Castlewellan Forest Park	J3337	Graham Day	28/6/2015
J43	Murlough NNR	J400335	Tim Rich, R.L. Hodd, M. Jannink	22/7/2008
J43	Murlough NNR	J40553398	Graham Day	5/4/2009
J43	Murlough House Woods	J41173510	Graham Day	25/4/2014
J43	Slidderyford - Murlough National Nature Reserve	J4033	Graham Day	11/5/2014
J43	Murlough National Nature Reserve	J4034	Graham Day	11/5/2014
J43	Murlough National Nature Reserve	J41243496	Graham Day	4/7/2015

Table 1: Records for *Crassula tillaea* in County Down

Reference:

Hackney, P. 1992 (ed.) *Stewart & Corry's Flora of the North-east of Ireland*. 3rd edition. Institute of Irish Studies, Queens University of Belfast, Belfast.

Notes from H4 Mid Cork

John Christopher Wallace – (johnwiegm@gmail.com)

When I first saw that the position for Mid Cork recorder was vacant my first thought was one of apprehension. To fill Tony O'Mahony's shoes would have been a formidable task indeed. But then I remembered a lesson my dad taught me. He said "Don't ever try to wear someone else's shoes, use your own shoes and walk your own path in them." It is then that I decided to go for it. After all, it would be better to have someone doing the task rather than nobody and the fact that I live in Mid Cork, I thought it would be an abandonment of duty to not put on my shoes and start the journey.

It is incumbent of me to first extend my thanks to Tony for his blessing and well-wishes for the role and also to thank him for all the work that he has done for Cork over the years. The BSBI is indebted to Tony and has been exalted by his involvement over the years. I hope I can do justice to the strong foundations that both he and Maura Scannell did for the county prior to this. It is a privilege to be standing on the shoulders of such giants of botany. I have a new pair of shoes that need breaking in and I hope to have them well-worn both figuratively and tangibly in the near future.

I must also extend a massive thank you to my tutor and mentor Paul Green. I think I should have never have gotten into botany, except peripherally, had Paul not shared his knowledge and left me pester him over the years, especially during his time recording for

the Flora of Co. Waterford. During this time I wore down at least one pair of shoes as I joined Paul on many field trips and learned much from him.

My first task as VCR for **H4** was to assess the **H4** data to check for interesting sites and taxa, find gaps in the data and to see where what was needed for *Atlas 2020*. Before 2016 there were 27,832 records from 138 Tetrads (201.7 Records per Tetrad). It must be remembered that most of the earlier **H4** records were rarely recorded to Tetrad resolution and were mostly recorded at Hectad resolution for many different reasons. In 2016 7009 records from 172 Tetrads (an additional 34 tetrads) were added to **H4** dataset by a number of recorders. Many thanks to you all for this.

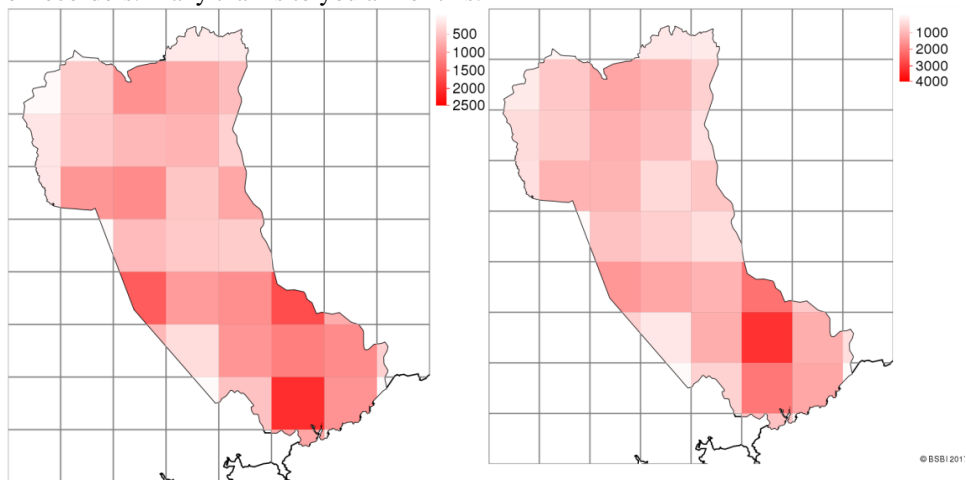


Diagram 1. Number of Records per Hectad. Left pre 2016 right post 2016 (note the change of scale).

Prior to 2016 the North and North East of H4 suffered a paucity of records. Paul Green in association with the Wildflower Society led a project to survey this part of H4 with great success. Paul's account of this can be read in this edition of IBN on page 14. I would like to thank Paul and the Wildflower Society for this massive contribution. There are still some Hectads with very little data. Most notable of these are W38, W48, W58 and W49 in central H4. The W38 and W48 Hectads consist mostly of upland managed coniferous forests which are by and large ultra-boring for the botanist. I did manage to survey some Tetrads in W48 which were not previously surveyed and this by and large confirmed this. In one boggy area that I thought must surely have a population of *Drosera* sp. I found nothing but *Molinia caerulea* (Purple Moor-grass) and a visit from a farmer who angrily thought I was surveying for a wind farm but was delighted to learn that I was just looking for plants. On the 24th of November I was able to find the infrequently encountered *Salix purpurea* (Purple Willow) along the Boggeragh Way in W48. So I haven't given up hope on these Hectads as perhaps some of the stream valleys and lesser forested areas may prove to yield some interesting finds in 2017.

On the 14th of August I went to see if I could re-find *Trichomanes speciosum* (Killarney Fern) which was recorded in 1820 from W47. A look at OS Maps and Google Maps prior identified a wooded valley along the Dripsey River which had potential. I discovered here a beautiful deciduous wooded valley with crystal clear water and a healthy population of *Euphorbia hyberna* (Irish Spurge) that beautiful Cork specialty. My exploration took me on a bearing South West along. I was stumped when the beauty gave way to a mass of the highly invasive *Rubus spectabilis* (Salmonberry). Here the understory was decimated by this highly destructive alien. I am glad to see work progressing on the eradication of *Fallopia japonica* (Japanese Knotweed) but I am increasingly concerned by

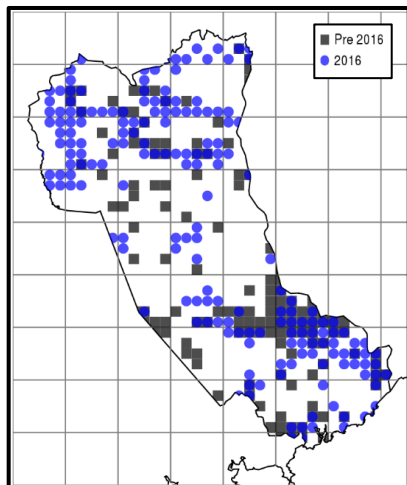


Diagram 2. Map showing
Pre 2016 and 2016 Tetrads

this species. as it does not seem to be getting the attention it needs.

On 21st November, while looking for *Arbutus unedo* (Strawberry-tree) which was reported by Edwina Cole who discovered it during a BSBI Field Meeting on 19th Sept. 2015 in Currabinny, W76V, I found the wonderful *Anthemis tinctoria* (Yellow Chamomile) growing on the sea wall along the stretch of road called Eastern Villas. I was unable to find the *Arbutus unedo* growing in Currabinny wood despite all my efforts to jog Edwina's memory. The next time Edwina and I meet I may have to try hypnotism. This record is most likely a garden escape or to have been planted. Currabinny is a complex landscape where *Eucalyptus* sp., *Rhododendron* sp., *Cotoneaster* sp. European Larch, Silver-fir, Scots Pine, *Berberis darwinii* (Darwin's Barberry) and Norway Spruce are all found growing among native species. Along the southern part of the

headland things get even more complicated where the line between garden, woodland and wild is blurred and only an aging low stone wall is all that stands sentinel to the encroachment of garden species into the wood.

On 26th November I was able to visit Garrycloyne (W67) to search for the rare *Asplenium onopteris* (Irish Spleenwort). I was surprised to find it so readily and abundantly growing on the walls along the road along with *Polypodium interjectum* (Intermediate Polypody), *Polypodium vulgare* (Polypody), *Asplenium scolopendrium* (Hart's-tongue), *Asplenium trichomanes* subsp. *quadrivalens* and the closely related *Asplenium adiantum-nigrum* (Black Spleenwort). I just fear that the site does not appear to have any protection and the species is not protected despite its rarity.

On 24th November I was able to re-find *Lepidium latifolium* (Dittander) at Loughmore Strand (W76) which was previously found by Tony O'Mahony in 1972 (O'Mahony 1995 & 2001). Although many of the plants had gone over their leaves were unmistakable. There were several plants growing among rocks at the back of the beach. On 19th July a check of the *Crambe maritima* (Sea-kale) site at Paddy's Point (W76) proved successful. Several plants can still be found here and appear to be in good health and not in

any apparent danger. The day was unusually warm and a walk along the beach greeted me with the pleasant aroma of *Crithmum maritimum* (Rock Samphire) which can be found growing in abundance on the rocks here. Also found growing here on gravel was the uncommon *Brassica nigra* (Black Mustard). Both colour forms of *Silene uniflora* (Sea Champion) as reported by Tony O'Mahony in 2009 (O'Mahony 2009) and *Glaucium flavum* (Yellow Horned-poppy) as reported by Jenny Seawright (O'Mahony 2009) were also found here.

Some communications with Tony O'Mahony helped me to narrow down my search for *Hymenophyllum tunbrigense* (Tunbridge Filmy-fern) in **H4** on 2nd December which was found growing near the waterfall at Glashagariff River at W47. I was delighted to discover this as, from my experience in Waterford, many sites in **H4** where I had expected to find it or its cousin *H. wilsonii* (Wilson's Filmy-fern) have failed to show any of them. This site, I discovered also, is the original 1820 site for *Trichomanes speciosum* which I originally thought was along the river Dripsey. A thorough search which resulted in a badly bruised and tender Tensor fascia from a slip on the wet rocks failed to find this species. Other ferns found growing in great abundance here were *Blechnum spicant* (Hard-fern), *Osmunda regalis* (Royal Fern), *Polypodium interjectum*, *Polypodium vulgare*, *Asplenium scolopendrium* and a very vigorous and robust form of *Asplenium trichomanes* subsp. *quadrivalens*.

I am looking forward to the adventures that 2017 will bring and hope that by this time next year to have added to the **H4** data by filling in the gaps and updating the data with a vision towards *Atlas 2020*. The plan for 2017 is to focus on Hectads with the least amount of surveyed Tetrads and to re-find and re-assess some old notable records. I welcome any contributions that anyone can make, please come to **H4** and survey a Tetrad will be my call for 2017. I look forward to meeting some of you over the year at the Field Meetings and particularly at the Field Meeting hosted by both Clare Heardman and I on Saturday 9th and Sunday 10th September in and around Oysterhaven and Kinsale which I am sure will be a blast and we will encounter some interesting species.

References:

- O'Mahony, T. (2001). *Lepidium latifolium* L. (Dittander) In The Cork Flora, Irish Botanical News **11**: 11 – 15.
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- O'Mahony, T. (2009). A Report on the Flora of Cork, Irish Botanical News **19**: 8 – 21.
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Interesting plants in Co. Waterford (H6), 2016

Paul R. Green, *Yoletown, Ballycullane, New Ross, Co. Wexford, Y34 XW62*
(paulbsbivcr4h12@gmail.com)

I only had two full days of recording in the county during 2016. Otherwise, I stopped if passing through or if I was visiting Waterford City for various reasons. My lack of time spent in the county was made up for by the high quality records sent to me.

As we are supposed to be updating records for *Atlas 2020*, I did call into the churchyard at Guilcagh (S4511) to see *Cyclamen hederifolium* (Sowbread), which I last saw there, back in 1997, with my brother.

Woodwardia radicans (Chain Fern) at Dunmore East (S6800) and *Euphorbia amygdaloides* subsp. *robbiae* (Turkish Wood Spurge) on a road verge at Ballyloughmore (S6605), both garden escapes, seen on the 1st March by Paula O'Meara were the first two new county records of the year. Two native hybrids were also added to the county list. The first was *Alopecurus x brachystylus* (*A. geniculatus* (Marsh Foxtail) x *A. pratensis* (Meadow Foxtail)) which I found in a marshy field at Gracedieu (S58011420) where it grew with both parents. A specimen was sent to Tom Cope and Mike Wilcox who both agreed with me. This is a new hybrid for Ireland. In the same field and the adjoining fields, were lots of *Bromus commutatus* (Meadow Brome): the 3rd record for the county. The other hybrid was found while I was out recording with Cliona Byrne at Paulsworth (X2180) on 22 October. Here we had *Atriplex x gustafssoniana* (*A. longipes* (Long-stalked Orache) x *A. prostrata* (Spear-leaved Orache), along the base of the sea-cliffs. This hybrid, if searched for, is likely to be very common around the Irish coast! Here we also had *Atriplex longipes*, this being the first Irish record away from the very Southeast corner of Ireland.

Cliona and I had a good day at Paulsworth as we found a new site for the Gametophyte stage of *Trichomanes speciosum* (Killarney Fern), on a under hang above a steep sided stream in the wood (X2181). We finished our day with a visit to a disused quarry at Knockbrack (X145827). *Sparganium emersum* (Unbranched Bur-reed) was plentiful in one of the pools and *Mentha x piperita* (Peppermint (*M. aquatica* x *M. spicata*)) was on the road verge by the quarry. Both new hectad records.

It wasn't until late June that individual interesting records started to be sent to me. The first was a photo from Martin Doyle of *Allium scorodoprasum* (Sand Leek) on Bilberry Rock (S5912), this is the first county record away from the River Blackwater. On 4 July, Megan Morris found a single *Plagiobothrys scouleri* (White Forget-me-not) on a disturbed road verge at Pallis (X0895), 2nd record for the county. Twelve days later, Mark Roper sent me photos of *Pinguicula vulgaris* (Common Butterwort) from the side of two small streams, high in the Comeragh Mountains, above Graigavalla (S3014), it was last recorded from this area in 1882 by H.C. Hart, but from nearby streams flowing from Coumduala Lough. On 25 August, Oisín Duffy found a large patch of *Galium album* (Hedge Bedstraw) at Waterford Nature Park (S5910), this being the 7th county record. Also from Waterford City (S5810) *Helminthotheca echioides* (Bristly Oxtongue) was seen by Úna McDermott in mid-August, once a rare non-native, now it is rather frequent around the city. Early October, Cliona Byrne sent me a photo of a single frond of *Ophioglossum vulgatum* (Adder's-tongue) from woodland along the Licky River Valley (X15108330), this being a new hectad record. On 16 October, Megan Morris had *Origanum vulgare* (Wild Marjoram) at Strancally Quay (X0891), also a new hectad record. The last record received was from John Wallace: *Alchemilla mollis* (Garden Lady's-mantle) naturalised in a layby on the side of the N25 at Monameean (X2185), a species that is often being found well away from habitation.

On the 2 July, I came across a large patch of *Phygelius capensis* (Cape Figwort) naturalised in a roadside hedge at Knockanduff (S5501), the 4th record for the county. Also on the same day, I had two spikes of *Allium ampeloprasum* var. *babingtonii* (Babington's Leek) in a roadside hedge at Ballynaclogh Cross Rds (S5505). Here it had escaped from a

garden, this is the 5th record for the county. In the last two years, I have started trying to make the effort to record the subspecies of Mouse-ear-hawkweed. On a wall top at Knockanduff (S5502), I identified *Pilosella officinarum* subsp. *euronota*, the 1st county record and only the 2nd time one of the seven subspecies have been recorded in Co. Waterford.

While walking along Parade Quay, Waterford City (S6112), on 9 July, I had *Cardamine corymbosa* (New Zealand Bitter-cress) in the cracks of the pavement and a single plant of *Lactuca serriola* (Prickly Lettuce), the latter new for the hectad.

The 22 of July, I took friends sightseeing. While looking around Lismore Cathedral (X0498), there was a large patch of *Pilosella aurantiaca* subsp. *carpathicola* (Fox-and-cubs) naturalised in the grass between graves, 5th record for the county. My last day of recording, on 22 October, produced the 2nd county record for *Phalaris minor* (Lesser Canary-grass) on the side of a roundabout at Dungarvan. A 3rd county record for *Picris hieracioides* (Hawkweed Oxtongue) from a side of a path leading down to Ballyshonock Reservoir (S4509) and the surprise of the day was *Chara vulgaris* (Common Stonewort) in the trench dug for the footings of a factory, several years ago, that was never built at Dungarvan (X25529361): this is only the 2nd record for any species of Stonewort for Co. Waterford. A specimen was sent to Nick Stewart the BSBI Stonewort referee who agreed with my identification.

A report on fieldwork in Limerick (H8), 2016

Sylvia Reynolds, 115 Weirview Drive, Stillorgan, Co. Dublin

The 2016 field season was again productive, and a selection of sites visited and less common plants found is given in this report. I still very much enjoy being out in the field, exploring the countryside, botanising, adding to botanical knowledge in the county, and particularly putting the plants and their habitats into a broader context – not simply recording for the sake of generating records for *Atlas 2020*! Having said that, I found that the tetrad maps produced by the BSBI for Limerick (from mostly my own records in the DDb) and the gaps they showed were useful as a guide to finding new locations – some unexpectedly of interest, others plain dull. Nineteen long days were spent in the field, again in 2016 usually with Julian Reynolds. This year was different in that three friends also went out regularly and made a significant contribution to records for the county (see below).

We started the year by taking part in the BSBI's New Year Plant Hunt, I believe topping the lists for Ireland with 52 species in flower in Limerick City on 2 January, having found 51 species in the Killiney area of Co. Dublin the day before. A bonus in Limerick City was to spot *Petroselinum crispum* (Garden Parsley) with flat leaves and immature fruits on a vertical brick wall on Athlunkard Street (R5757), not far from where there was a record in *Cybele Hibernica* (1866) at St Mary's Church (Cathedral). Among the plants in flower in the city were *Valerianella carinata* (Keeled-fruited Cornsalad) and many *Ficaria verna* (Lesser Celandine) in R5757, also *Polypogon viridis* (Water Bent) in R5857.

On 15 May *Vicia sepium* var. *ochroleuca* (Bush Vetch) was noted on a roadside on the south side of Knockouragh (R8347), and also near Knockouragh (R8247)

Moehringia trinervia (Three-nerved Sandwort) in a somewhat unusual open habitat, on the bare earth of a high roadside bank. With the aim of updating records from nearly 20 years earlier on the hill at Ardpatrick (R6320) on 5 June, we refound *Lamium album* (White Dead-nettle), two small patches at the base of the wall of the ruined church, just saved from being trimmed because they grew among fallen stones. *Cerastium tomentosum* (Snow-in-summer) was growing over the old walls and typically *Conium maculatum* (Hemlock) was seen within the ruin. Also that day, we found common heathy species – otherwise not common in hectad R62 – on a slope near the Cush ring forts (R6925), including *Pedicularis sylvatica* subsp. *hibernica* (Lousewort) and *Dactylorhiza maculata* (Heath Spotted-orchid). Our day ended at Elton (R6830) where there were numerous plants with good fruits of *Valerianella locusta* (Common Cornsalad, more normally a coastal species) on coarse limestone chippings beside the railway.

A good update for the county was made while scrambling up the east side of Knockfennell beside Lough Gur (R6441) on 17 June. It was for *Fumaria capreolata* (White Ramping-fumitory) which had not been recorded in Limerick since 1906. Then one of our best habitat finds was a flush in a hollow on top of Knockseefin (2 July, R7545). It had shallow standing water and some 40 species were recorded. When the taller vegetation was parted, many plants of *Juncus foliosus* (Leafy Rush) were seen, the stems and leaves flopped over, and with the clearly visible diagnostic dark lines on the tepals (less conspicuous on dried plants). The ridged seeds were checked at home with the microscope. We came across just one plant of *Platanthera chlorantha* (Greater Butterfly-orchid) on the slopes of Knockseefin. Our last stop for the day was in Kiltleely (R7241), where a sign read ‘Pride of Place’ – there was *Soleirolia soleirolii* (Mind-your-own-business) in one place, otherwise barely a weed in sight!

New to us was an area on higher ground over 200m north-west of Strand (26 July, R2329) with new sites on a damp shaded roadside for *Equisetum sylvaticum* (Wood Horsetail) and *Carex laevigata* (Smooth-stalked Sedge), both quite local plants in Limerick. Following a track uphill led to a large abandoned quarry and then degraded peaty ground, altogether making this a rich tetrad with some 179 species. Also that day we found *Rosa sherardii* (Sherard’s Downy-rose) in a hedgerow near the river bridge east of Toornafula (R2424). The next day we saw a single plant of pure white *Centaureum erythraea* (Common Centaury) among the normal pink at the abandoned Ballinleeny quarry (R4933). Then our main objective was to go up Liskennett Hill (27 July, R4736). It had the expected heathy species, including *Euphrasia nemorosa* (Common Eyebright), the glandular form found in Ireland (determined by Chris Metherell), which made the dense patch of plants look conspicuously greyish.

On 2 August, our first stop was north of Barrigone (R2851) to check low-lying unimproved rushy fields, separated from each other by deep drainage ditches overgrown with *Phragmites australis* (Common Reed). Wetter parts of the fields contained *Schedonorus pratensis* (Meadow Fescue), *S. arundinaceus* (Tall Fescue), *Eleocharis palustris* (Common Spike-rush), scattered tussocks of *Carex elata* (Tufted-sedge) and many plants of *Rhinanthus minor* subsp. *stenophyllus* (Yellow-rattle). We then worked our way to Carrigunnel Castle (R4955), a distinctive ruin on a low volcanic hill west of Limerick City. *Erodium moschatum* (Musk Stork’s-bill) was seen here in 1993, but not refound.



Left: top & bottom *Orobancha minor*, SE Galway (**H15**).
Photos C. Roden © 2016 (p. 33).

Top right: Bee Orchid,
Inchydoney, West Cork (**H3**).
Photo E. Cole © 2016 (p. 80)

Bottom right: Colm Clarke &
Maria Long take part in the
NYPH at Bull Island, Clontarf
Photo R. NigFhloinn © 2017
(p. 77)





Above: *Potentilla norvegica*, Belview Port, Co. Kilkenny (**H11**). Photo P. O'Meara © 2016 (p. 30). Below: *Crassula tillaea*, Co. Down (**H38**). Photo J. Nunn © 2016 (p. 35).





Above: *Rumex hydrolapathum* x *R. conglomeratus*, Drumreask Lough, Co. Monaghan (**H32**). Photo A. FitzGerald © 2016 (p. 34). Below: *Atriplex littoralis* x *Atriplex longipes*, Tincone, Co. Wexford (**H12**). Photo P.R. Green © 2016 (p. 31)





Above: Members at Murvagh, East Donegal (**H34**). Photo O. Duffy © 2016 (p. 82).
Below: Developing marsh, Raphoe, Co. Donegal. Photo R. Sheppard © 2016 (p. 5).



Polypodium cambricum (Southern Polypody), which usually sheds spores in late winter and early spring, at this site had immature sporangia in early August (the paraphyses were checked for at home). Some six weeks later on 16 September I found *P. cambricum* on limestone outcrop at Lough Gur (R6341), with nearly mature sporangia. The fronds here and in similar open habitats were much smaller and thicker than in shaded places, and such fertile fronds at this time of year could be mistaken for *P. interjectum* (Intermediate Polypody). I checked with Rob Cooke (the BSBI *Polypodium* referee) who explained that “In many respects *P. cambricum* is a Mediterranean plant, which is why it spores in the winter, when the weather is less harsh” and that spring time is not especially noteworthy.

A road to recently erected wind turbines through forestry and disturbed ground near Knocknalaght south of Athea (14 August, R1332) gave us access to a surprisingly undisturbed wet slope. *Juncus acutiflorus* (Sharp-flowered Rush) was the dominant species, with scattered *Achillea ptarmica* (Sneezewort), not common in Limerick. *Epilobium obscurum* (Short-fruited Willowherb) was abundant in places in almost pure stands and there were extensive patches of *Viola palustris* (Marsh Violet) leaves. This lovely slope was in complete contrast to the very degraded and unattractive cut-over bog beyond the turbines (R1232) where the best plants were *Drosera rotundifolia* (Round-leaved Sundew) and *Potamogeton polygonifolius* (Bog Pondweed)! On the way to another site, I had never before seen such a large area of *Impatiens glandulifera* (Indian Balsam) as on a cut-over slope near Knockawahig (R1830). Also that day, definite *Juncus x surrejanus* (a hybrid Rush) was seen by a lane on higher ground east of Toornafulla (R2424), and the garden escape or discard *Lysimachia punctata* (Dotted Loosestrife) was growing on a low roadside bank and established in adjacent pasture, not near a house.

Towards the end of the summer, a site near the old Dell factory at Castletroy was revisited (24 August, R6258) and *Calystegia x lucana* (a hybrid Bindweed) found on a weedy mound, with both parents nearby. Another site new to us was Sarsfield’s Rock south-west of Oola (31 August, R7840), a place of historical interest. It consisted of substantial rock outcrop, with species not seen in the surrounding pastureland and roadsides, such as *Arenaria serpyllifolia* s.s. (Thyme-leaved Sandwort), *Pilosella officinarum* (Mouse-ear-hawkweed), *Geranium molle* (Dove’s-foot Crane’s-bill), *Galium verum* (Lady’s Bedstraw) and *Trisetum flavescens* (Yellow Oat-grass). A good vantage point in the lowlands, you can look down on where Patrick Sarsfield and his cavalry destroyed the Williamite siege train in 1690.

A quick card was done at the end of the day in Crecora (R5447) on 6 September. Apart from seeing *Epilobium brunnescens* (New Zealand Willowherb) on a wall top by the church (more usual in the mountains and on forestry roads), *Rumex acetosella* (Sheep’s Sorrel) on a weedy grave and *Fumaria officinalis* subsp. *wirtgenii* (Common Fumitory) on the roadside, the best find was *Poa nemoralis* (Wood Meadow-grass). Our attention was drawn to this grass with its fine leaves sticking out at right angles. The plants were on a low bank at the base of a high estate wall, this species previously only known in Limerick at Adare in the early 1900s. On 16 September, we marked our final card for the season in flat land just south of the Shannon, east of Carriglogher Point (R4757). The drainage ditches with *Oenanthe aquatica* (Fine-leaved Water-dropwort) were the best habitat here. *Rumex x pratensis* (a hybrid Dock) grew among *R. obtusifolius* (Broad-leaved Dock) in pasture and *Equisetum telmateia* (Great Horsetail) was abundant throughout a field fairly recently

planted with trees. Later season work included checking for and collecting charophytes at several sites, and that will be written up separately. Miscellaneous records made at the same time included finding a flat-leaved form of *Potamogeton crispus* (Curled Pondweed) in the lake at Curragh Chase (7 October, R4149), and up-dates on 10 October for *Pinguicula lusitanica* (Pale Butterwort) in the fen at Ellaha (R2848) and *Potamogeton praelongus* (Long-stalked Pondweed) in the canal at Doohyle Lough (R3743).

Now to backtrack – Julian and I were not the only ones recording in Limerick in 2016. Three friends with a bit more time at their disposal and with botany in their backgrounds, Mike Quirke, Tom Harrington (a botanist at the University of Limerick) and Paul Murphy, were keen to brush up on their plant identification skills, do fieldwork and contribute to the recording effort. And how productive the self-proclaimed ‘troika’ were! They met regularly over the season, continuing into early winter, going out together or occasionally in pairs on some 20 days. Apart from adding many records of the more common species, they made some good finds.

Mike, Tom and Paul updated *Hymenophyllum tunbrigense* (Tunbridge Filmy-fern) in Cappercullen Glen (25 April, R7356) and found that *Matteuccia struthiopteris* (Ostrich Fern) was establishing itself by the stream in the lower part of the glen. The disused railway at Feeagh south of Askeaton (15 June, R3545) gave good access to peaty grassland where there was *Pinguicula vulgaris* (Common Butterwort), a new site in Limerick, and on 22 June at Bullaun (R3446) in the same area they also found *Poterium sanguisorba* (Salad Burnet), new to the hectad. Away from the northern limestone area, *Geranium columbinum* (Long-stalked Crane’s-bill) was seen on a track surfaced with limestone chippings at the bog edge south of Gooig (26 July, R6763). Mike and Tom found *Rumex hydrolapathum* (Water Dock) on an old section of the Camoge River west of Grange (31 August, R6143). On 14 September all three recorded at and near Herbertstown Fen (R6940), where there is also some bog with *Erica tetralix* (Cross-leaved Heath), *Eriophorum angustifolium* (Common Cottongrass) and *Narthecium ossifragum* (Bog Asphodel) – otherwise not occurring in this part of the county.

The most new finds made in a hectad by Mike, Tom and Paul were in the Limerick City area in October and November. *Hirschfeldia incana* (Hoary Mustard), only once before found in the city, was abundant around a grain store at the west end of the docks, and *Urtica urens* (Small Nettle) and *Artemisia vulgaris* (Mugwort) were seen near the docks too (9 November, R5656). They also recorded garden escapes and discards in the city (R55), including *Aubrieta deltoidea* (Aubretia), *Campanula portenschlagiana* (Adria Bellflower), *C. poscharskyana* (Trailing Bellflower), self-sown *Quercus ilex* (Evergreen Oak) and *Chelidonium majus* (Greater Celandine), the last not reported from the county since 1906. Paul found *Adiantum capillus-veneris* (Maidenhair Fern) on an old wall in Henry Street (19 October, R5756), a fern which is native in parts of Ireland but an introduction in Limerick. He also found *Cerinthe major* (Greater Honeywort) in Raheen (R5553) in flower on 14 November, not obviously planted. First seen in 2012, Paul again saw the late-flowering and attractive *Crinum x powellii* (Powell’s Cape-lily) beside King John’s Castle at the base of a wall facing the Shannon (R5757) on 19 October, probably a first record for Ireland. (See photos on back cover)

Julian and I had a day with Mike, Tom and Paul on 29 March to get the season started, and at Ballyvorheen House (R7554) added another site for *Silene dioica* (Red

Campion). I had two more equally enjoyable days out with them. We spent many hours on 24 August in unimproved species-rich wet grassland on peaty soil at Rootiagh on the outskirts of Limerick City (R5451), seeing nobody else, but within earshot of the motorway. *Juncus subnodulosus* (Blunt-flowered Rush) formed dense patches and other species there included *Eriophorum angustifolium* (Common Cottongrass), *Cirsium dissectum* (Meadow Thistle), *Pedicularis palustris* (Marsh Lousewort), *Hydrocotyle vulgaris* (Marsh Pennywort) and *Anagallis tenella* (Bog Pimpernel), with *Menyanthes trifoliata* (Bogbean) in the wettest parts. Patches of *Origanum vulgare* (Wild Marjoram) bordered the disused railway, also *Knautia arvensis* (Field Scabious) and *Agrimonia eupatoria* (Agrimony), and there were several plants of *Chaenorhinum minus* (Small Toadflax) on the tracks.

Our last joint outing was up the very steep Assaroola Glen with its river and waterfalls on the west side of the Galty Mountains on 7 September. A flush surrounded by acid grassland (R8323) contained common *Carex* (Sedge) species, *Ranunculus flammula* (Lesser Spearwort) and, more unexpectedly, *Triglochin palustris* (Marsh Arrowgrass). Conspicuously glaucous *Festuca ovina* (Sheep's-fescue) grew by and near the river (R8323, R8322), but was not clearly *F. ovina* subsp. *hirtula*. In the same two monads, *Asplenium trichomanes* subsp. *trichomanes* (Maidenhair Spleenwort) was growing on outcrops. On our way to our highest point at about 400m, we also passed a few plants of *Euphorbia hyberna* (Irish Spurge), apparently not otherwise recorded from the Galty Mountains, as well as *Crepis paludosa* (Marsh Hawk's-beard), new to the Limerick part of the Galtys (both in R8322). We spotted *Galeopsis bifida* (Bifid Hemp-nettle) at a farm gateway on the way down (R8223). Meanwhile, Julian recorded in two monads in the nearby lowlands and refound *Geranium pyrenaicum* (Hedgerow Crane's-bill) at Barna Cross Road (R8225) nearly 20 years after it was first seen there.

Three other people also provided Limerick records. Conservation Ranger Elaine Keegan gave me a new site for the gametophyte of *Trichomanes speciosum* (Killarney Fern) in the Slievefelim Mountains (R75). Margaret Jackson wrote to me about the profusion of *Ophrys apifera* (Bee Orchid) on the uncut verges of the old Dell factory site at Castletroy (mid-June, R6258). Julian and I visited the site soon after and were suitably impressed! Anneke Vrieling sent me various records from the Abbeyfeale area in west Limerick, for example, *Lythrum portula* (Water-purslane) in a field near Oolagh Bridge (22 July, R1330) and we got to go out in the field together on 6 September. She showed us three of her good sites, including the one near Oolagh Bridge where *Euphorbia hyberna* (Irish Spurge) grew on the bank of Oolagh River and *Mentha x verticillata* (Whorled Mint) on the stony river edge. A good wet slope north-west of Sugar Hill (R1933) contained several *Carex* species, including *Carex laevigata* (Smooth-stalked Sedge), and much *Viola palustris* (Marsh Violet). In return, we helped Anneke with plant identifications.

Apart from our Limerick work, Julian and I had three productive days recording in Longford for *Atlas 2020*.

Julian's continuing work with me in the field is, as always, indispensable and much appreciated – and certainly it makes fieldwork much more fun! I also want to thank Mike, Tom and Paul for the great contribution they made in 2016. The number of hectads listed for species in the *Flora of County Limerick* (2013) is now rather out of date, but that is as it should be – there is always more to do and find, and to understand!

Recording in Wexford (H12), 2016

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2016 was a fantastic year for recording, the weather was on our side and plants just kept flowering way past their normal period. Recording took place over the whole year, with 48,000 more records collected than any other year. 53 new species and hybrids were added to the county list, and if you include subspecies and varieties there were 86 new for Wexford. Of these, only 7 were native.

Records were received from 50 people besides me and my joint vice-county recorder Paula O'Meara. The majority sent in records for the flower of the month the Wexford Naturalists' Field Club chose to record. This proved highly successfully and popular amongst club members. Many monads had gaps filled for spring species like *Ficaria verna* (Lesser Celandine) where Paula and I had recorded when it wasn't showing.

Frankie Tenant made one of the star re-finds of the year, in the drains on South Slob (T0814) where hundreds of dainty golden yellow flowers of *Utricularia australis* (Bladderwort) were standing above the water surface. This is the 3rd county record and first since 1937. Frankie had *Lamprothamnium papulosum* (Foxtail Stonewort) in Lady's Island Lake (T1004), first record from the lake since 1999. A specimen was sent to Nick Stewart the BSBI referee for Stoneworts who determined the identification for Frankie. Frankie had a number of days out recording with Roy Watson during the year. Their *Radiola linoides* (Allseed) from a green lane on Forth Mountain (S97111860) is the first record for the hectad since 1974. *Ceratophyllum submersum* (Soft Hornwort) from a drain at Ballagh (T02240562) is the 3rd record for the county. They had a new monad for *Filago minima* (Small Cudweed) along a forest road at Ballyconnigar (T14173455). *Osmunda regalis* (Royal Fern) from the side of the railway on South Slob (T0814) was new for the hectad. Roy found a new monad for *Spirodela polyrhiza* (Greater Duckweed) at Sigginstown (T05430699), only the 3rd county site since 1974.

Dominic Berridge asked me to take a look at an orange poppy he found naturalised all over the walls of a working quarry at Finchogue (S993398), certainly a spectacle! This was identified as *Papaver atlanticum* (Atlas Poppy), 3rd county record.

A team surveying the River Slaney flood plain, either side of Enniscorthy, came across some really interesting species: Joanne Denyer and Jonathan Yearsley found *Potamogeton x cooperi* (*P. crispus* (Curled Pondweed) x *P. perfoliatus* (Perfoliate Pondweed)) in the River Slaney (S97193886), above junction with River Urrin, with *Potamogeton perfoliatus* and *Myriophyllum spicatum* (Spiked Water-milfoil). A specimen was sent to the BSBI Pondweed referee Chris Preston who confirmed the ID. A new hectad record. Eleanor Mayes had a large stand of *Bidens cernua* (Nodding Bur-marigold) in a wet field on the east side of the R. Slaney (S973387). Also a new hectad record. In the same field Róisín NigFhloinn found a little *Rorippa palustris* (Marsh Yellow-cress), the first hectad record since 1881. Róisín had *Mimulus guttatus* (Monkeyflower) in a wet field (S97664063), this time north of the town. A new hectad record.

Shane Farrell added two new garden escapes to the county list: *Campanula rapunculus* (Rampion Bellflower) self-sown on the walls and roof of building in the Irish

National Heritage Park (T01122252) and *Lonicera henryi* (Henry's Honeysuckle) self-sown on the side of a wall at Fourth Commons (S979180).

Joanna Hodgton's *Linaria purpurea* (Purple Toadflax) at Glenglass (S861416) was new for the hectad and her *Primula veris* (Cowslip) at Woodbrook (S860444) was the first hectad record since 1992.

Chris Metherell identified *Euphrasia nemorosa* x *E. confusa* from Craig (T10297210) for Paula O'Meara, a new native hybrid for the county. Paula O'Meara found 14 other new species for the county, all were garden escapes.

Here in the order they were recorded:

Festuca glauca sens. str. – Glenour (S872262), 25 March, self-sown on road verge.

Pyracantha coccinea (Firethorn) – Killealy (S85154676), 30 March, self-sown on wall.

Geranium 'Johnson's Blue' – Ballagh (S83192944), 04 June, field hedgerow.

Hypericum olympicum – Whitechurch (S708193), 19 June, self-sown on top of stone wall.

Iris germanica (Bearded Iris) – Whitechurch (S70821935), 19 June, old clump established on road verge near farm ruin.

Chiastophyllum oppositifolium (Lamb's-tail) – Ballymore (T08134987), 4 July, established on top of shaded concrete wall.

Alcea rosea (Hollyhock) – Ballinrooan (T00923091), 10 July, road verge.

Saxifraga stolonifera (Strawberry Saxifrage) – Ballysop (S72421945), 11 July, established by woodland pond.

Clarkia amoena (Godetia) – Kilhile (S71591186), 21 August, surviving with dumped soil on waste ground.

Spiraea japonica (Japanese Spiraea) – Drumderry (S90005854), 27 August, flowering through rubble heap.

Sedum kamtschaticum var. *ellacombeanum* – Irish Coastguard Station, Rosslare (T10261422), 10 September, self-sown on grave. Specimen was sent to Ray Stephenon the BSBI *Sedum* referee who determined the ID.

Houttuynia cordata (Fish-plant) – Ramsgrange (S74260947), 20 September, on dumped rubble.

Cornus sanguinea (Dogwood) – Castlebridge (T055266), 27 September, surviving at gateway of brown field site.

Calceolaria chelidonioides (Slipperwort) – Castlebridge (T055269), 30 September, weed of Community Garden in grounds of house ruin, where it sporadically appears.

Setaria pumila (Yellow Bristle-grass) – Killenagh (T16585027), 17 October, weed of car park.

Paula also had many other good finds including:

Lepidium ruderales (Narrow-leaved Pepperwort) – Tellarought (S756215), 21 February, one between concrete cracks at graveyard. 4th county record, first since 1995.

Orobanche rapum-genistae (Greater Broomrape) – Kelly's Rock, Ballymaclare (S74422175), 22 June, under *Ulex europaeus* (Gorse) along rough lane.

Euphrasia arctica x *E. nemorosa* – Barrickcrohan (S14267131), 12 July, forest road, first county record since 1934. Determined by Chris Metherell the BSBI *Euphrasia* referee.

Carex pallescens (Pale Sedge) – Bregorteen (S95852332), 18 July, overgrown forestry

track. 2nd county record, first since 1944.

Gnaphalium sylvaticum (Heath Cudweed) – Ballyfarnoge (T08143149), 10 October, sandy heathy road verge.

Of the good plants I saw this year, while out recording my favourite was a single *Misopates orontium* (Weasel's-snout) on the side of a stubble field at Island Lower (T09335775).

Below are the new native species I added to the counties growing list:

Nitella opaca – Ballynamona (S81991947), 28 June, lots in drain. Determined by Nick Stewart, BSBI Stonewort referee.

Atriplex glabriuscula x *A. prostrata* – White Gap (T03670548), 6 September, edge of saltmarsh. Found in many sites during 2016.

Atriplex x *hulmeana* (*A. littoralis* x *A. prostrata*) – Grogan Burrow (T04450560), 6 September, one at top of saltmarsh with both parents.

Rumex x *knafii* (*R. conglomeratus* x *R. maritimus*) – Ringbaun (T01840539), 10 September, one with both parents in reed bed. The first record for Ireland. Confirmed by Geoffrey Kitchener the BSBI *Rumex* referee.

Alchemilla glabra (Smooth Lady's-mantle) – Kilnahue (T12895988), 27 October, lots along edge of pasture above track.

The list of new non-native species I added to the county can be seen on my BSBI Wexford page: <http://bsbi.org/wexford>.

Co. Down (H38) recording in 2016

Graham Day, *Cherry Cottage, 11 Ballyhaft Road, Newtownards,
Co. Down, BT22 2AW*

Ad hoc field trips and monthly field meetings were organised to make records for the forthcoming new Atlas, and in support of the proposed flora of Co. Down. I also give grateful thanks to Lesley Crawshaw, Margaret Marshall and Ian McNeill who sent additional plant records to me.

The recording year began early on the morning of 1 January when the Stormont estate in Belfast was visited for the BSBI New Year Plant Hunt. Twenty-nine flowering taxa were found including naturalised *Geranium* x *oxonianum* (Druce's Crane's-bill), and *Anthemis arvensis* (Corn Chamomile) which was in a 'wild flower' bed.

Margaret Marshall started the spring recording season very well with a 'first for Co. Down' of *Saxifraga cymbalaria* (Celandine Saxifrage) from the recently re-opened but unrestored walled garden by the farm.

The next records were made by the Saltwater Brig near Portaferry in mid-April, when an old churchyard and adjacent roadside were walked. The churchyard had old *Berberis darwinii* (Darwin's Barberry), *Veronica salicifolia* (Koromiko), *Veronica* x *franciscana* (Hedge Veronica) bushes and *Iris foetidissima* (Stinking Iris). The roadside produced *Valerianella locusta* (Common Cornsalad) and *Geranium lucidum* (Shining Crane's-bill) (which seems to have rapidly expanded its distribution in the past few years).

Walking on the shore and roadside between Greencastle and Cranfield produced *Lampranthus falciformis* (Sickle-leaved Dewplant), *Lycium barbarum* (Duke of Argyll's

Teaplant), *Muscari armeniacum* (Garden Grape-hyacinth), *Sedum spectabile* (Butterfly Stonecrop), and *S. rupestre* (Reflexed Stonecrop). Some specimens of *Sherardia arvensis* (Field Madder), now rarely encountered, were found on a roadside bank. There was no sign of *Carduus tenuiflorus* (Slender Thistle), once so abundant around Greencastle, and the village seemed to have been subjected to a ‘tidy-up’.

In late April, the Ormeau embankment in Belfast held large populations of *Erophila verna* (Common Whitlowgrass) and *Saxifraga tridactylites* (Rue-leaved Saxifrage). A few *Heracleum mantegazzianum* (Giant Hogweed) were also seen.

A short section of the Comber Greenway at Dundonald produced *Aphanes australis* (Slender Parsley-piert), *Myosotis discolor* (Changing Forget-me-not), *Rorippa sylvestris* (Creeping Yellow-cress) and *Veronica montana* (Wood Speedwell) in mid-May. In late May, an adjacent section had *Veronica agrestis* (Green Field-speedwell).

A party of four visited Dromantine north of Newry in mid-May. Numerous introduced species were present along the roadside, but there was also some good woodland with understorey containing *Hyacinthoides non-scripta* (Bluebell), *Lonicera periclymenum* (Honeysuckle), *Sanicula europaea* (Sanicle), and *Veronica montana*.

In late May, Lesley Crawshaw sent me a record of *Allium roseum* (Rosy Garlic) from Groomsport. This was the first record for Co. Down. The small patch of plants seems to have been present for some years, probably a discard from the gardens close by.

Mew and Lighthouse Islands (by Copeland Island – hectad J68) were visited in mid-June. Both had large numbers of nesting gulls and thorough searches were not possible. However, Mew may have become drier, as conspicuous marsh and aquatic plants previously recorded were not seen. It is now dominated by bracken with bluebells underneath. Rocky areas have abundant *Festuca rubra* (Red Fescue), *Silene dioica* (Red Champion), and *Rumex* spp. On Lighthouse Island, effort has been made to control *Impatiens glandulifera* (Indian Balsam), and bracken is now dominant with abundant *Heracleum sphondylium* (Hogweed), *Hyacinthoides* spp., *Sambucus nigra* (Elder) and *Silene dioica* (Red Champion). *Urtica urens* (Small Nettle) and *Carduus tenuiflorus* were seen around the old lighthouse and bird observatory.

In mid-June, *Polystichum aculeatum* (Hard Shield-fern) and *Festuca altissima* (Wood Fescue) were relocated at Tollymore, but a thorough search for the filmy fern, *Hymenophyllum wilsonii* was unsuccessful. On the return journey, *Silene vulgaris* (Bladder Champion) was noted growing out of a hedge near Dundrum.

The Whyte Estate was visited with the Belfast Naturalists Field Club in mid-July. *Dryopteris borreri*, *Agrostis vinealis* (Brown Bent), *Poa nemoralis* (Wood Meadow-grass), *Veronica montana* and several species of introduced trees including *Carpinus betulus* (Hornbeam) and old *Cupressus macrocarpa* (Monterey Cypress) were recorded.

Chenopodium rubrum (Red Goosefoot), *Papaver rhoeas* (Common Poppy) and *Veronica anagallis-aquatica* (Blue Water-speedwell) were found in a quarry at Skelton’s Cut. *Cicuta virosa* (Cowbane) and *Rorippa palustris* (Marsh Yellow-cress) were noted at Islanderry Lake in mid-July.

The most surprising find of the year was *Crassula tillaea* (Mossy Stonecrop) on a roadside in the north west of the county at Tonaghmore in mid-July. Previously this species was known only from a few sites in the east.

The land-fill adjacent to the RSPB reserve at Belfast docks was revisited in late July and early August when note was made of *Blackstonia perfoliata* (Yellow-wort), *Filago minima* (Small Cudweed), *Mentha arvensis* (Corn Mint), *Myosotis ramosissima* (Early Forget-me-not), *Ophrys apifera* (Bee Orchid), *Senecio inaequidens* (Narrow-leaved Ragwort) and *Heracleum sphondylium* x *mantegazzianum*. A first county record was made for *Stipa tenuissima* (identified by T.B. Ryves).

Ground by the Victoria Park bridge to the Harbour Estate produced *Heracleum mantegazzianum*, *Lactuca serriola* (Prickly Lettuce) and *Phalaris canariensis* (Canary-grass) in early August.

In early September, recording at Kilkeel produced *Crocoshmia paniculata* (Aunt-Eliza), *Solanum nigrum* (Black Nightshade), *Diplotaxis muralis* (Annual Wall-rocket) and *Vicia sativa* subsp. *segetalis* (Common Vetch). At Wilson's Point, *Pilosella aurantiaca* (Fox-and-cubs) and *Gaultheria mucronata* (Prickly Heath) were seen.

Of the 42 hectads in County Down, 21 were visited (7 specifically targeted due to under-recording) in 2016, producing 434 new or upgraded (from previous Atlas) records.

Telling the story of eight uncommon/declining Irish plant species – first results from the Irish Species Project (ISP).

Authors: Maria P. Long, Con Breen, John Conaghan, Joanne Denyer, John Faulkner, Fiona MacGowan, Mark McCorry, Robert Northridge and Paula O'Meara.

Introduction

The Irish Species Project (ISP) was a new venture initiated by the BSBI Committee for Ireland (CFI) and designed with the Irish membership and Irish flora in mind. It ran for two years – 2014 and 2015 - with the aim of collecting up-to-date information on the distribution and ecology of eight species of vascular plant. All are distinctive native plants chosen for the ISP because they were thought to be in decline in Ireland based on data from the last Atlas. All are relatively easy to identify, which allowed people with a wide spectrum of botanical skills to contribute. It was therefore hoped that, as well as gathering data on specific species, this project would also encourage more members to get out into the field and generate records to contribute towards the Society's Atlas 2020 project.

Sites were pre-selected for each species based on their known distribution (as indicated in the BSBI'S distribution database – DDb) for the period 1970 – 1999. Vice-county recorders (VCRs) and other participants were asked to consider revisiting pre-selected sites, to co-ordinate recording on their patch, or alternatively, to refer participants to the Irish Officer. In addition – or instead of (depending on the precision of the record - see below) – it was suggested to consider recording at other sites in a vice-county (VC) for the species, or to go out to search for new sites if there were promising areas.

The eight target species:

Moonwort	<i>Botrychium lunaria</i>
Cyperus Sedge	<i>Carex pseudocyperus</i>

Autumn Gentian	<i>Gentianella amarella</i>
Toothwort	<i>Lathraea squamaria</i>
Grass-of-Parnassus	<i>Parnassia palustris</i>
Cowslip	<i>Primula veris</i>
Common Wintergreen	<i>Pyrola minor</i>
Cranberry	<i>Vaccinium oxycoccos</i>

This paper gives an indication of where these species were found, the size of the populations, habitat management, and threats to their continued existence, along with other useful information. As will be seen below, our findings should be interpreted in the context of the relatively small numbers of surveys undertaken for some species, and are best understood to be indicative of the current status of the target species across Ireland, rather than absolute. A second paper will follow at a later date providing further detail on some aspects of the data, as well as discussing the findings in terms of what we learned, what worked well, etc.

Methods

The full details of the methods for the ISP are available to read in the project guidance document which is available to download from the BSBI Irish webpage (<http://bsbi.org/ireland>).

All Irish BSBI VCRs were sent a list of pre-selected sites for their VC. The combined number of pre-selected sites to visit for each of the 40 Irish VCs was typically in the range of six to eight, but varied at the extremes from two to a maximum of 23. The eight ISP species were chosen based on their relatively widespread distributions across Ireland, but of course, there was some variation between species. The aim was to choose, in a stratified random manner, approximately 50 sites in total for each of the eight species. Only *Botrychium lunaria* and *Pyrola minor* diverged strongly from this, with 38 and 20 sites respectively. This was due to both the paucity and the geographic clumping (in some cases) of records for these uncommon species. The stratification methods employed included aiming to spread records geographically, and to include preferentially those with better resolution grid references. Along with the list of sites for survey, all available information for that record included on the DDB was also sent to VCRs.

Recorders were also encouraged to survey 'extra sites'. These included any and all additional populations/sites for the target species, outside the 'pre-selected' ones. The inclusion of extra sites meant that anyone could take part in the ISP, and of course, the more populations from which data were received, the better the picture which could be assembled for each species.

Regardless of the category of site, information on the population (e.g. size, regeneration, extent), the site itself (e.g. management, habitats present, site history), threats, associated species, etc. were collected. When a search was made but the species could not be refound, the importance of null returns, with possible reasons for loss of the species, was stressed in the project guidance information. The standard recording form used for the survey can be viewed on the Irish BSBI webpage (see above). Associated species were captured by requesting the recorder to choose a representative area of uniform vegetation where the target species was present. Within this area, an individual of the target species

was selected and all vascular plant species within a 1m radius were listed. The abundance of all higher plants, including the target species, in this 2m diameter circular plot was recorded using the DAFOR scale, where D = dominant, A = abundant, F = frequent, O = occasional, R = rare. Participants were asked to record up to two extra plots if the species occurred over a large area or in more than one vegetation type. A grid reference for each quadrat location was required and at as high a precision as possible and using a GPS if available. Additionally, for *Lathraea squamaria* the apparent host species were asked to be noted.

Completed forms were to be returned by post or email to the Irish Officer, Maria Long, by the end of November in the year of recording, and recorders were advised to keep a copy for their own records. Once all data were received a team of eight volunteers from CFI, the VCR network, and including the Irish Officer, undertook collation and analysis of the data. These eight volunteers were given a basic template to fill in, but were asked to add other information when relevant and as they saw fit. For this reason, and because of the multiple authors, some inconsistencies of approach and formatting may be noted in the species accounts below.

Results

The first section below gives an overview of the data returned. We then present individual accounts for all eight target species. More detailed on the result and the main discussion will follow in a future publication.

1. Overview

A total of 236 record cards were returned, with data being submitted for 31 of the 40 VCs across Ireland. Sixty-four individually named recorders (of which 26 were VCRs) and five groups (3x BSBI, CAWS) submitted forms. Twenty recorders sent in five record cards or more, with eight recorders sending in 15 or more cards.

In terms of the returns for the individual species, Table 1 shows an overview. On average, about a quarter of the pre-selected sites were visited. For all species except the rarest (*Pyrola minor*), a substantial number of extra sites were also visited. These extra sites made up almost 60% of the total site returns, and so contribute significantly to the findings of this study.

Table 1. Overview of card returns by species.

Species name	No. pre-selected sites	No. pre-selected sites surveyed	(% of pre-selected surveyed)	No. extra sites surveyed	Total no. sites surveyed
<i>Botrychium lunaria</i>	38	9	24	9	18
<i>Carex pseudocyperus</i>	47	14	30	10	24
<i>Gentianella amarella</i>	51	7	14	10	17
<i>Lathraea squamaria</i>	50	18	36	33	51
<i>Parnassia palustris</i>	51	12	24	22	34
<i>Primula veris</i>	50	14	28	25	39
<i>Pyrola minor</i>	20	8	40	4	12
<i>Vaccinium oxycoccos</i>	50	16	32	25	41
	357	98	27	138	236

2. Species-by-species results

i. *Botrychium lunaria* – Moonwort

Compiler: Joanne Denyer

Existing information

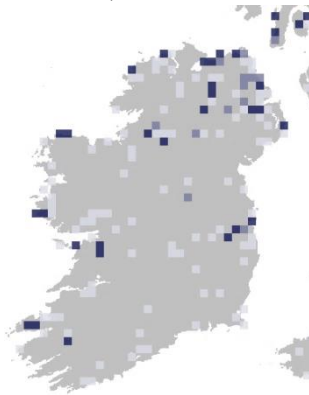
“A small fern, often occurring singly or in small populations. It prefers well-drained sites, usually with a high base-content, although it can occur on more acidic substrates. Habitats include meadows, pastures, open woodland, sand dunes and grassy rock ledges. It can also colonise slag heaps and quarry spoil. 0-1065 m (Ben Lawers, Mid Perth).”



Text and map from BSBI Atlas 2000 (Preston *et al.*, 2002).

Photograph by Donna Rainey, ISP participant.

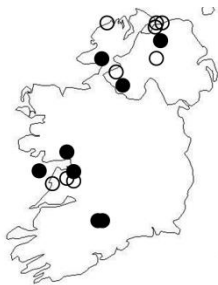
Species is assessed as ‘near threatened’ in the recent Irish Red List due to “decline in area of occupancy” (Wyse Jackson *et al.*, 2016).



Number of sites

The species was only found at one of the eight pre-selected sites which were searched. However, it was found at seven of the nine extra sites. The map below shows the distribution of the populations surveyed during ISP.

The pre-selected site where the species was re-found had a two-figure grid reference. The surveyor was a long-standing VCR who was able to re-locate the site because of personal knowledge of the area and the site containing the species. Twenty-one of the 30 pre-selected sites which were not visited had only two-figure (i.e. hectad) grid references. This made it very difficult for the recorder to re-find the species without prior knowledge of the site.



Left: Distribution, shown approximately, of the 17 records for *Botrychium lunaria* returned as part of ISP. (Open circles denote null records.)

Population size

The population size ranged from very small (1 to 3 individuals) to small (13 to 25 individuals). The largest population (at least 25 fronds) was counted from an area of 10m x 10m, but may have extended outside of this area. Plant patches were generally small, with most being less than 5m x 5m, and one population occurring on a single rock. The largest patch was at least 10m x 10m.

Site – habitats, management, threats

This species was found in a range of grassland types including fixed dunes (1 site), acid grassland (3 sites), calcareous grassland and calcareous grass-heath (3 sites) and edge of an upland car-park (1 site). Where drainage was recorded, the sites were described as free-draining or dry. The underlying rock types included limestone, acid igneous rock and sandstone conglomerate.

All but one of the sites where the species was refound were grazed. This includes winter grazing by cattle, year-round grazing by sheep, and light goat and rabbit grazing. Scrub control was undertaken at a few sites. Some of the sites where the species was not refound were recorded as being undergrazed with rank vegetation developing. The site with the largest population (25-30 fronds) was winter grazed by cattle with a reduced summer stocking rate to control *Molinia caerulea*. This was successfully reducing a previously dense *Molinia caerulea* litter layer and creating a mixed sward height.

The majority of the sites where the species was not refound had undergrazing and the subsequent development of tall, rank vegetation (and regenerating woodland) listed as a threat. The species was considered transient at two sites where it was not refound and no threats were listed for these sites. At the sites where the plant was present, most did not have any obvious current threats. However, undergrazing and invasion by self-seeding *Pinus contorta* was a potential threat at a few sites, and one horse-grazed site had overgrazing listed as a threat. Two sites were apparently threatened by urban development and two by afforestation.

Associated species

Lists of associate species were made at all sites where *Botrychium lunaria* had been recorded. In addition, a list was made at one site where *Botrychium lunaria* had not been seen recently, but the exact location of the population was known to the recorder. In total, 59 vascular plant species, six bryophytes and one lichen (unidentified) were recorded as associates of *Botrychium lunaria*. Of these, 45 (76%) were recorded only once. The most frequent species was *Potentilla erecta* (five sites), while *Anthoxanthum odoratum*, *Cynosurus cristatus*, *Festuca rubra* agg., *Succisa pratensis* and *Viola riviniana* were recorded at four sites. These are all generalist grassland species. Species which were recorded at three sites include some typical of calcareous grassland/ grass-heath such as *Calluna vulgaris*, *Euphrasia* agg., *Galium verum*, *Linum catharticum*, *Lotus corniculatus* and *Thymus polytrichus*. Plants indicative of improved/ over-grazed grassland such as *Trifolium repens* and *Senecio jacobaea* were only recorded from one site each. The number of associated species recorded at each site was in the range six (car-park edge) to 32 (calcareous grassland on limestone pavement), with an average of 11.

Summary and conclusions

Of the 38 sites pre-selected for survey, eight sites were visited and the species refound at one; it was not refound at seven sites despite dedicated searching. The species was also found at seven extra sites. At two of the pre-selected sites where the species was not refound it was listed as being a transient or casual population. At three sites the recorder notes that lack of grazing is the likely reason for the species not being refound. The species being hard to relocate, due to small size and irregular occurrence from year to year, was mentioned for

three sites, with the recorder stating that the species may well still be present as the habitat appears still suitable. Thus the main threat to the species is lack of management, in particular undergrazing leading to tall vegetation and dense litter layer and encroachment by woody species. Many of the records in the database (24 out of 38 in the case of this project) have only a two-figure grid reference, which makes locating these sites almost impossible without prior knowledge. Only five of the records had six-figure grid references or better on the DDb. Of these, two were visited but the species was not found at either site.

Overall, our findings suggest that this is a challenging species to survey for. It had the highest proportion of null records returned. In some cases, the recorder was familiar with the population, and so knew exactly where to look, and yet the species was not refound. It is small in stature, and can occur in small populations, and further, does not always appear every year. All that said, however, lack of management (especially grazing) appears to be a significant and real threat to many of the sites and habitats which support this species.

ii. <i>Carex pseudocyperus</i> – Cyperus Sedge	Compiler: Robert Northridge
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Existing information

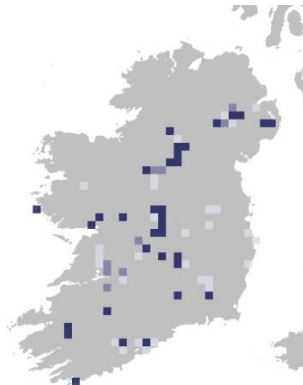
“A pioneer species of wet mud and shallow water, found in a wide variety of habitats including the edges of lakes, ponds, reservoirs, rivers, ditches, canals and backwaters. It also occurs in reed-swamps and tall-herb fens, and readily colonises sand-, gravel-, clay- and marl-pits. It is shade-tolerant, and is found in swampy *Alnus* woods and *Salix* carr. Reproduction is by seed. Lowland.”



Text and map from
BSBI Atlas 2000
(Preston *et al.*,
2002).

Photograph by
Hannah Northridge,
ISP participant.

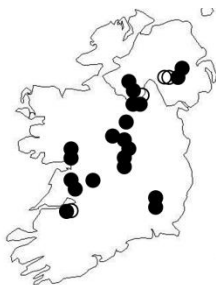
Species is assessed
as ‘least concern’ in
the recent Irish Red
List (Wyse Jackson
et al., 2016).



Number of sites

Overall, 47 sites were pre-selected from across 23 vice-counties. Of the 47, the species was refound at ten of the 14 sites visited, not refound at four, and 33 sites were not revisited at all. The map below shows the distribution of the populations surveyed during ISP. At one of the four sites where the species was not found, the record for *Carex pseudocyperus* was almost certainly a misidentification for *Carex vesicaria*. The species was also recorded at ten extra sites.

A high percentage of pre-selected sites were not searched at all; most of these (approx. 75%) had only two-figure grid references.



Left: Distribution, shown approximately, of 24 records for *Carex pseudocyperus* returned as part of ISP. (Open circles denote null records.)

Population size

The population size was usually very small, mostly only one, two or three clumps. At 15 sites the numbers were in the range of 1-10, and there were only three sites with 11 or more clumps/patches (though one recorder may have counted flowering spikes).

Site – habitats, management, threats

Many of the sites were in wet woodland-edge where, due to heavy shade and perhaps slightly fluctuating water levels, there is some exposed mud for seed germination and there is limited competition. The plants were usually found linearly along the shore of a drain or lake, the description typically being given as 10x0.5m.

Of the sites, nine were lakeshores, eight were drains, one was a bog and one a canal bank, and 11 of these sites were described as woodland edge. An unusual site was on the edge of Galway city where *Lolium perenne* (Perennial Rye-grass) and *Galium aparine* (Cleavers) were 'frequent'.

Most of the sites for this species were wet woodland alongside lakes or other wet areas, and many of these were unmanaged. Some records for the species were in drains which had been dredged at some point in the past, one as recently as 2013.

Several recorders mentioned being overgrown by various species as a threat; agricultural improvement and lack of management were also cited without the recorder giving more detail of the threat. Twelve of the twenty sites had no listed threat.

Associated species

Lists of associated species were made at 18 of the 20 sites where *Carex pseudocyperus* was recorded. In total, 74 species were recorded as associates of *Carex pseudocyperus*. Of these, 48 were recorded only once. *Rubus fruticosus* agg. was recorded at six sites while *Alnus glutinosa*, *Filipendula ulmaria* (Meadowsweet), *Mentha aquatica*, *Carex remota*, *Galium palustre*, *Iris pseudacorus*, *Phragmites australis* and *Salix cinerea* were recorded at four or five sites. The number of associated species recorded at each site was in the range of one to 15, with an average of seven.

Summary and conclusions

The map above shows the approximate distribution of the 24 records received for *Carex pseudocyperus*, and it suggests that we can be relatively happy with the geographic spread of our survey. The species was refound at ten of the 14 pre-selected sites visited and at ten extra sites. There does not appear to be any clear evidence for an overall decline, though at many of the sites five or less clumps occurred. The records in the DDb do appear to give a

fair reflection of the presence of the species, though the pre-selected sites where the species was refound had either a six-figure grid reference or the relevant VCR was very familiar with the sites for the species in their VC and could find the species when only a two-figure grid reference was given.

Of the four null records, one was a mis-identification originally, and at the other three, vegetation becoming more dense was seen as the most likely cause for failure to refind the target (with growth of *Carex* species and *Phragmites australis* mentioned in two of the cases). Looking at the information provided across all record cards, the main threat to the species is probably changes or ‘improvements’ to the edges of wet woodlands, or major changes to the management of some drains in which they are either allowed to be totally overgrown or they are very efficiently dredged. Of note, however, is the fact that twelve of the twenty visited sites had no listed threat. Hopefully this signals conditions which are suitable for the species, and relatively stable, at these sites.

iii. <i>Gentianella amarella</i> – Autumn Gentian	Compiler: Maria P. Long
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Existing information

“An annual or biennial herb of well-drained basic soils, typically occurring in grazed chalk and limestone grassland, on calcareous dunes and machair, on spoil-tips and in cuttings and quarries. Mainly lowland, ascending to 750 m (Knock Fell, Westmorland).”



Text and map from BSBI Atlas 2000 (Preston *et al.*, 2002).

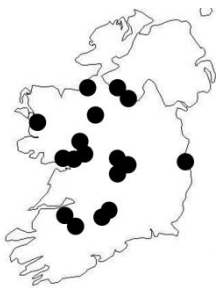
Photograph by Kevin Collins, ISP participant.

Species is assessed as ‘near threatened’ in the recent Irish Red List due to “decline in area of occupancy” (Wyse Jackson *et al.*, 2016).



Number of sites

Only seven of the 51 pre-selected sites were searched, making this a very small return on which to base conclusions. This is 14% of the pre-selected sites, and makes it the smallest proportional return of all eight ISP species. However, a good number of extra sites were searched (10), giving us a reasonable number of record cards on which to base conclusions. There were no null records for this species. The map below shows the distribution of the populations surveyed during ISP. Most of the pre-selected sites had only a hectad grid reference.



Left: Distribution, shown approximately, of 17 records for *Gentianella amarella* returned as part of ISP. (Open circles denote null records.)

Population size

Results suggest most populations of *Gentianella amarella* are small (typically around 20 plants), and many of the descriptions mention that plants and populations were scattered. However, six of the 17 returns were for populations with more than 300 plants, and one had a population of more than 1,000, so there is clearly much variation.

Site – habitats, management, threats

For the purposes of reporting, each record was assigned to one habitat type only, but it should be noted that some habitat categories overlapped (e.g. quarry on esker, limestone grassland on esker). The summarised results for *Gentianella amarella* are:

- Limestone grassland – 5 sites
- Esker – 4
- Limestone quarry - 3
- Dune – 3 (dune slack = 2 of these)
- Cutover bog - 1
- Other – 1 (associated with cutover bog)

Based on the above, the affiliation of this species with open, lime-rich habitats with thin soil cover is clear. Perhaps unexpectedly, two sites are associated with cutover bog. It is likely that there are either pockets of lime-rich soil/drift in the vicinity, or that the peat-cutting itself has cut down to below the acid soil layers.

Of the seventeen sites visited, six site returns did not have the management noted. A further seven stated that there was no active management evident, and four sites were cattle grazed. Consequently, the overall picture is of light or little management across most sites. Perhaps unsurprisingly then, lack of management/undergrazing was the most commonly listed threat, appearing in seven of the 17 sites. Mineral extraction was also prominent, listed at five. This latter reflects the free-draining nature of the substrate that *Gentianella amarella* typically favours – e.g. quarries, eskers, dunes. Invasive species (*Cotoneaster* sp. listed twice, species not mentioned one card), over-grazing and recreation pressures were all listed at more than one site.

Overall, these results indicate that many sites which support this species are not being sufficiently managed, and that there are a number of threats to the continued survival of the species at these sites. As it is a species of open ground, lack of management does not bode well – a build-up of rank vegetation or scrub encroachment could cause a decrease in population, or even the local loss, of the species.

Associated species

There were 90 species recorded in 24 quadrats alongside *Gentianella amarella*, of which 36 were recorded only once. This relatively high number of associated species reflects the

fact that this species is often found in quite species-rich areas and across a relatively diverse range of habitat. The number of species recorded per plot varied from six to 24, with an average of 13.

There were twelve species which were found in eight or more plots (i.e. in over one-third of plots). These are listed here, with the number of plots they occur in given in brackets: *Linum catharticum* (15), *Carex flacca* (13), *Thymus polytrichus* (12), *Lotus corniculatus* (10), *Euphrasia* agg. (10), *Centaurea nigra* (10), *Carlina vulgaris* (10), *Leontodon hispidus* (9), *Briza media* (9), *Plantago lanceolata* (8), *Leucanthemum vulgare* (8), *Blackstonia perfoliata* (8). Among this list of associated species are a number of clear calcicoles (e.g. *Carlina vulgaris*, *Blackstonia perfoliata*), reflecting again the preference of this species for lime-rich areas. Of particular note on the list of associated species was one occurrence of *Viola hirta*, a very rare and legally protected plant in Ireland.

Perhaps of interest is that Pritchard (1959), in his paper entitled '*Gentianella* in Britain', notes the following:

"The most frequent associates of *G. amarella* are: *Carex flacca*, *Euphrasia* spp., *Festuca* spp., *Hieracium pilosella*, *Linum catharticum*, *Lotus corniculatus*, *Plantago lanceolata* and *Thymus drucei*."

All but two of these species made it onto the list above (*Festuca rubra* agg. and *Pilosella officinarum*), but both do appear in the data, just missing out on a mention in our list due to having only seven occurrences, not eight.

Summary and conclusions

Most of the pre-selected sites for *Gentianella amarella* had only a hectad grid reference and therefore it was impossible to know in most cases if the population found and surveyed was the same as the original record. It was also impossible to know how many VCRs or other recorders were put off even trying to search due to having hectad-only grid references. There were no null records submitted for this species.

The map above shows the approximate distribution of the 17 record cards received for *Gentianella amarella* across Ireland. Although the absolute number of cards received was relatively low, we can be confident that they are relatively representative of the geographic range of the species across Ireland, and also representative of a number of its habitat types.

Overall, data collected as part of this project suggest that this is a vulnerable species. Many populations are small, with scattered plants, and in many cases, lack of management is a real threat to the continued existence of the habitat, and thus the species. In other places, quarrying is a threat. A balanced management is required – neither abandonment on the one hand (which may lead to succession and a reduction in open habitat) nor destructive types of management (e.g. quarrying, land 'improvement' for agriculture) are suitable.

Addendum

It is worth noting that most (all?) populations of *Gentianella amarella* found in Ireland are *Gentianella amarella* subspecies *hibernica*. This subspecies is one of only 18 endemic plant taxa in Ireland and it is one of a handful of species for which more than 25% of the European

population occurs in Ireland (Wyse Jackson *et al.*, 2016). Pritchard (1959) presents, among other findings, morphometric data illustrating how different Irish specimens are.

iv. <i>Lathraea squamaria</i> – Toothwort	Compiler: John Faulkner
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Existing information

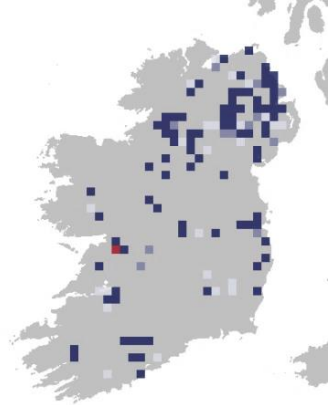
“An annual or perennial herb, parasitic on the roots of a range of woody plants, especially *Corylus*, *Fraxinus* and *Ulmus glabra*. Its typical habitats include deciduous woodland, hedgerows, and river and stream banks. Generally lowland, but reaching 350 m at Alston (Cumberland).”



Text and map from BSBI Atlas 2000 (Preston *et al.*, 2002).

Photograph by Robert Northridge, VCR H30 & H33.

Species is assessed as ‘least concern’ in the recent Irish Red List (Wyse Jackson *et al.*, 2016).

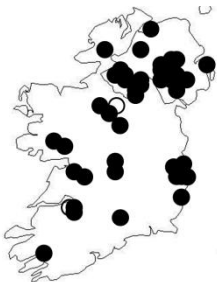


Number of sites

There were returns for 18 of the 51 pre-selected sites, and these covered all four Irish provinces. However, extra sites (33) made up for the pre-selected ones that were not surveyed (33). These extra sites were mainly from Ulster. The species has been regarded as commoner in the north, so it is perhaps no surprise that many of the extra sites recorded were in Ulster. The map below shows the distribution of the populations surveyed during ISP.

Lathraea squamaria was not refound in only two of the 18 pre-selected sites surveyed, and in one of these it was found elsewhere in the hectad (within 200m in fact).

One searched site where *Lathraea squamaria* was not found was discounted from the results because the wrong monad had been searched. The ‘refind rate’ in searched pre-selected sites was 88%.



Left: Distribution, shown approximately, of 51 records for *Lathraea squamaria* returned as part of ISP. (Open circles denote null records.)

Observers searched a much higher proportion of sites defined by four- or six-figure grid references (9 out of 14), than of those defined by tetrad or two-figures (8 out of 37). This may have been because it was a less daunting task, but other factors could have played a part.

Population size

Population size was estimated in all but one of the sites where *Lathraea squamaria* was found. The units counted were flowering spikes. By far the commonest category was 11-100. Statistically, this is not unexpected as it spans a tenfold range whereas the larger categories span a lesser range in multiple terms.

Observers took different approaches to the definition of a 'site': at one extreme, it seems to have been interpreted to mean a population on a single host tree, whereas at the other it included all plants that could be found within a demesne covering more than one monad. The largest population included approximately 1,250 spikes on one host poplar tree, and the next largest contained an estimated 1,000 spikes, also on a single poplar tree.

Site – habitats, management, threats

The habitat was usually deciduous or mixed estate woodland. At least 25 sites were either noted as being on the banks of streams or rivers, or can be inferred from sketch maps supplied to be within a few metres of rivers or lakes (but not of the sea). This tendency of *Lathraea squamaria* to grow close to water appears too strong to be explained merely by water features being rather frequent in these woodlands. We suggest that it appears to thrive better in damp conditions.

Typically, no management was recorded.

The two sites where *Lathraea squamaria* was not refound had been subject to tree felling and re-planting or building development. At most sites, no obvious threats were noted. At others, various potential forms of disturbance were put forward as possible threats, ranging from recreational developments to dumping, road improvements, afforestation and gardening activities. Both invasion by, and removal of, laurel were suggested as threats (at different sites!). In general, however, the threat level appears to be very low. *Lathraea squamaria* seems to persist well as long as the host trees survive.

Associated species

A total of 60 vascular plant species (omitting trees and self-supporting shrubs) was recorded as growing in association with *Lathraea squamaria*. Three quarters were present in only five or fewer sites, i.e. less than 10%. The table below gives the 15 most frequent species and the number of occurrences. For the purposes of this list, a few closely related taxa have been merged.

Hedera helix s.l.	27	Conopodium majus	10
Ficaria verna s.l.	19	Polystichum setiferum	10
Arum maculatum	16	Viola spp.	9
Anemone nemorosa	14	Veronica montana	9
Allium ursinum	13	Heracleum sphondylium	8
Hyacinthoides spp.	13	Asplenium scolopendrium	6

Taraxacum agg. 11 Geranium robertianum 6
 Rubus fruticosus agg. 11

As might be expected of a tree parasite, all of these associated species are highly shade tolerant and mostly more characteristic of well-established woodland than recent plantations. Taken as a whole, they are also indicative of a strong preference for neutral to alkaline soils, with the most characteristic species of acid woodland being notable by their absence.

Host species

Recorders were asked to specify which species appeared to be acting as the host for *Lathraea squamaria*. Most attempted to do this. The number of likely host species specified per site varied from none to six, with varying degrees of confidence being indicated. Seventeen hosts were identified, from 12 plant families. In general, the records of hosts can be divided into those that were qualified by a question mark or a term like ‘possible’, and those that were unqualified by the recorder. The list below enumerates the number of occurrences of each host species, with the qualified occurrences being given in brackets.

<i>Corylus avellana</i>	14 (+3)	<i>Crataegus monogyna</i>	1
<i>Prunus laurocerasus</i>	9 (+2)	<i>Fagus sylvatica</i>	1
<i>Acer pseudoplatanus</i>	8	<i>Hedera</i> sp.	1
<i>Tilia</i> sp.	6	<i>Larix</i> sp.	1
<i>Populus</i> sp.	5	<i>Prunus avium</i>	1
<i>Prunus lusitanica</i>	3	<i>Quercus</i> sp.	1
<i>Ilex aquifolium</i>	2 (+2)	<i>Fraxinus excelsior</i>	(2)
<i>Ulmus</i> sp.	1 (+2)	<i>Picea</i> sp.	(1)
<i>Aesculus hippocastanum</i>	1		

Even allowing for the possibility that a few of these are mistaken, the diversity of hosts is striking. *Corylus avellana* is by a wide margin the major native host. The next five most frequent hosts were all non-native species. As noted above (under population size), in the case of *Populus*, it seemed there were two very heavy infestations of *Lathraea squamaria*. In general, however, it is not possible to discern whether more spikes were counted around some host species than others as such data were not explicitly asked for.

It could prove interesting to compare this list of likely host plants with other published data on the hosts of *Lathraea squamaria* in Ireland or elsewhere.

Summary and conclusions

Lathraea squamaria was in some ways an ideal species for the ISP. It is very site loyal and therefore easy to relocate given an accurate grid reference. It also gave botanists who might have been too busy later in the season an opportunity or excuse to go recording in the spring and to note features of *Lathraea squamaria* populations that might otherwise go unrecorded. As a result the number of populations surveyed was sufficient to point to some interesting conclusions about hosts species and population size.

The high ‘refund rate’ (88%) of *Lathraea squamaria* at pre-selected sites – albeit one based on a relatively small sample – contrasts somewhat with the evidence in the DDb that suggested some decline. A possible explanation of this is that, outside of this project, *Lathraea squamaria* has frequently been overlooked because the majority of general plant recording takes place only after the spikes have died back. Nearly all of the *Lathraea squamaria* surveys for this project took place in April or early May.

At most sites surveyed, neither management nor threats were noted. At one site where the species was not refunded, the recorder noted that a hotel development may have wiped out the population. However, on the evidence of this project, it seems that *Lathraea squamaria* is holding its own and there is no immediate threat to its survival.

v. Parnassia palustris – Grass-of-Parnassus

Compiler: John Conaghan

Existing information

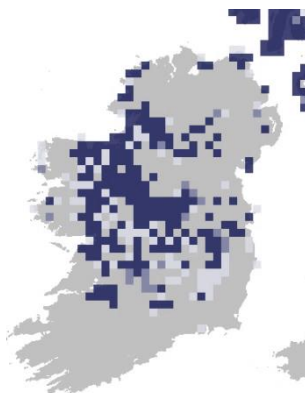
“A perennial, shortly rhizomatous herb of base-rich flushes in short grassland, mires, fens, dune-slacks and machair. The last two habitats support the coastal ecotype, var. *condensata*. 0-1005 m on Ben Lawers (Mid Perth).”



Text and map from BSBI Atlas 2000 (Preston *et al.*, 2002).

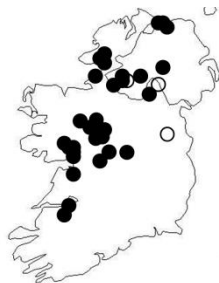
Photograph by Oisín Duffy, joint VCR H35.

Species is assessed as ‘least concern’ in the recent Irish Red List (Wyse Jackson *et al.*, 2016).



Number of sites

The species was refunded at nine of the 12 pre-selected sites which were surveyed, but not refunded at three. A large percentage of the pre-selected sites (75%) were not searched. Twenty two extra sites were surveyed. The map below shows the distribution of the populations surveyed during ISP.



Distribution, shown approximately, of 34 records for *Parnassia palustris* returned as part of ISP. (Open circles denote null records.)

The pre-selected sites with two-figure grid references at which the species was found were in counties with long-standing

VCRs who had good local knowledge who were able to re-locate the site. Twenty four of the 33 pre-selected sites which were not visited had only two-figure grid references available, making it difficult for the VCR to refind the species.

Population size

Most of the populations surveyed were in the range of 11 to 100 flowering spikes. A number of populations (six) were greater than 1,000 flowering spikes in size, with four over 3,000. The largest populations noted were associated with the fen margins of large calcareous lakes and dune slacks.

Site – habitats, management, threats

The majority of the *Parnassia palustris* sites surveyed (55%) were areas of base-rich fen/flush which tend to be dominated by low-growing grass and sedge species. These fen/flush areas are often found along the margins of lakes where limestone is the dominant geology. A number of sites were described as wet meadow/grassland which overlie limestone geology and some of these could also comprise fen/flush habitat. The species also occurs in base-rich, non-fen habitats such as dune slack and calcareous grassland.

Management was not noted on all of the completed cards, however, the majority of the *Parnassia palustris* sites visited were grazed by livestock with a low to moderate grazing level noted. In general the vegetation in which *Parnassia palustris* grew was less than 30cm in height with shrubs rarely occurring. It would appear that the species does not tolerate any degree of scrub encroachment/shade. At a small number of sites (c.25%) no grazing was noted.

The main threat to populations noted was a lack of grazing/management which could lead to the development of rank vegetation and ultimately the loss of *Parnassia palustris* populations. Two sites in the north of are thought to have been lost through the development of scrub and one population in Co. Meath has been recently lost as a result of afforestation. Drainage is an obvious ongoing threat to *Parnassia palustris* sites, however evidence of active damage through drainage was not noted at any sites, apart from the one site which has been recently lost to afforestation.

Associated species

Parnassia palustris tends to occur in relatively species-rich fen vegetation. Of the 20 associated vegetation lists analysed, the range of species richness varies between seven and 29, with an average of 16 species per list. The most frequent species co-occurring with *Parnassia palustris* was *Molinia caerulea* (66% of quadrats), closely followed by *Succisa pratensis* (60%) and *Briza media* (50%). Additional species which occurred in between 35 and 50% of the quadrats were *Carex flacca*, *Agrostis stolonifera*, *Lotus corniculatus*, *Equisetum palustre*, *Holcus lanatus*, *Juncus articulatus*, *Linum catharticum* and *Mentha aquatica*. In some fen sites the vegetation was dominated by a high cover of *Molinia caerulea* and *Schoenus nigricans*. In drier grassland-dominated sites, e.g. calcareous grassland and dune slacks, species such as *Lotus corniculatus*, *Plantago lanceolata*, *Holcus lanatus* and *Trifolium repens* were typically frequent.

A number of locally rare fen species were noted growing in association with *Parnassia palustris*, i.e. *Equisetum variegatum*, *Eriophorum latifolium*, *Galium uliginosum*, and *Lathyrus palustris*.

Summary and conclusions

Parnassia palustris is a relatively uncommon species which is largely confined to areas of calcareous fen habitat in Ireland. The species has a scattered distribution and is most frequent in the mid-west and centre of the island. According to the available DDb data, the species appears to be most common in Counties Fermanagh, Sligo, Galway and Clare. The species has never been recorded from counties Cork and Kerry and is very rare in most of the counties along the southern and eastern coast of the Island.

Where it is found, the species usually occurs as relatively small populations of less than 300 flowering plants but can sometimes occur as much larger populations, especially along lake margins and in dune slack areas. The re-survey of pre-selected sites demonstrates that there has been some loss of smaller populations of *Parnassia palustris* in the north and east of the island as a result of scrub encroachment and afforestation. At many of the sites a lack of management/grazing has been identified as being an ongoing/future threat to populations of the species. A lack of grazing over time will lead to the development of tall wetland vegetation/scrub and the eventual elimination of low-growing species such as *Parnassia palustris*. Wetlands are known to be vulnerable to abandonment on the one hand, and conversion (for example, to agricultural or silvicultural use) on the other, and so these findings tally with what are known to be wider issues for wetlands in general in Ireland.

vi. <i>Primula veris</i> - Cowslip	Compilers: Fiona MacGowan & Mark McCorry
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Existing information

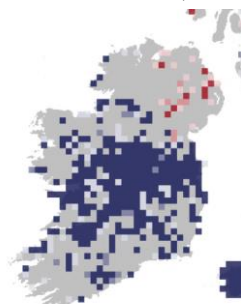
“A perennial herb of well-drained, herb-rich grasslands on mesic to calcareous soils; less commonly on seasonally flooded soils, in scrub or woodland rides and edges, and on calcareous cliffs. 0-750 m (Knock Ore Gill, Westmorland), and exceptionally at 845 m (Great Dun Fell, Westmorland).”



Text and map from BSBI Atlas 2000 (Preston *et al.*, 2002).

Photograph by Maria P. Long, BSBI Irish Officer.

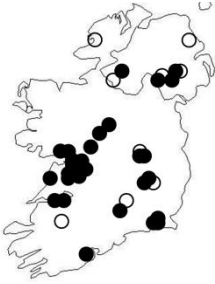
Species is assessed as ‘least concern’ in the recent Irish Red List (Wyse Jackson *et al.*, 2016).



Number of sites

The species was re-found in just five of the 14 pre-selected sites which were searched (out of a total of 50 pre-selected sites). However it was recorded in 25 new extra sites. The map below shows the distribution of the populations surveyed during ISP.

The pre-selected sites where *Primula veris* was re-found had eight-figure grid references. At four of the pre-selected sites which were searched for *Primula veris* the species could not be found as the grid references were too vague.



Left: Distribution, shown approximately, of 39 records for *Primula veris* returned as part of ISP. (Open circles denote null records.)

Population size

Twenty five of the record cards provided actual numbers, and among these, populations of 1-10 and 11-100 were by far the most common (twenty of the populations fell within these categories). Three sites had populations of over 300 plants.

Site – habitats, management, threats

The main habitats recorded were a mix of grasslands, from roadside verges to pastures to calcareous grasslands. There were two records from gardens and one from heathland. The calcareous grasslands included low growing grassy areas at the back of sand-dunes and esker grasslands.

The main threats recorded included: road realigning; undergrazing; quarry extension and human trampling.

Associated species

The wide range of habitats from which *Primula veris* was recorded resulted in there being 101 associated species. Twenty-two record cards included species lists, and lists ranged from seven to 30 species, with an average of 13. Of the 101 species, 54 occurred just once in the dataset. The most commonly recorded species were: *Plantago lanceolata* and *Taraxacum* agg. (both at 12 sites), *Anthoxanthum odoratum* and *Festuca rubra* agg. (both at 11 sites), and *Centaurea nigra* and *Lotus corniculatus* (both at 8 sites). The first four in particular are common and ubiquitous grassland plants. The latter two indicate low levels of management, and neutral to basic soils. In fact, a number of uncommon species were recorded, many of which are largely calcicole (e.g. *Centaurea scabiosa*, *Geranium sanguineum*, *Origanum vulgare*, *Pimpinella saxifraga*, *Poterium sanguisorba* and *Sesleria caerulea*). The rare and protected *Viola hirta* was recorded at one site. Interestingly, *Primula vulgaris* was recorded at one site only, and here also the hybrid was recorded, *P. x polyantha*.

Summary and conclusions

The vast majority of the *Primula veris* records were from roadside verges, and the species appears to be doing well in this habitat. As VCRs for Laois (H14), a county with two motorways (M7 & M8) and a calcareous geology dominating most of the county, we received many anecdotal records from people noticing the flowers along roadsides. However, we were also told by several farmers how they remembered ‘cowslip meadows’ in their childhood 30 and more years ago; however, only one meadow with a *Primula veris* population is known to be still extant in our VC. This story is no doubt replicated across Ireland with agricultural improvements, mainly through increased fertiliser regimes and re-seeding, pushing out the cowslip. Of note also is the fact that road verges are often, in recent times at least, planted with ‘wildflower’ seed mixes, thus making it difficult to tell native from introduced populations at times.

The map presented above suggests that the ISP project resulted in surveys taking place across much of the species' range in Ireland. What is notable is the relatively low refund rate, with nine null records from the 14 pre-selected sites which were surveyed. This is one of the lowest of all eight species. This is perhaps particularly surprising for *Primula veris*, as this species was understood to be by far the most common of the ISP species. The fact the recorders struggled to refund it particularly in the north of its range is reflective of its relative scarcity here (it is listed for protection in Northern Ireland), and most particularly as a native.

vii. <i>Pyrola minor</i> – Common Wintergreen	Compiler: Con Breen
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Existing information

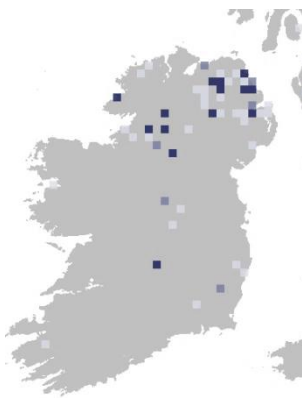
“A rhizomatous, mycorrhizal, perennial evergreen herb. In S. England it is a plant of damp woodlands with deep litter, on a variety of soils; elsewhere it occurs in damp places in heaths, plantations, disused railways, on rock ledges and in sand dunes. 0-1130 m (Ben Lawers, Mid Perth).”



Text and map from BSBI Atlas 2000 (Preston *et al.*, 2002).

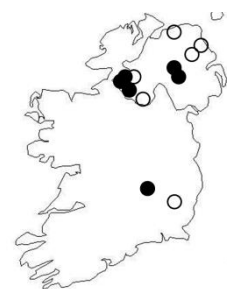
Photograph by Hannah Northridge, ISP participant.

Species is assessed as ‘near threatened’ in the recent Irish Red List due to “decline in area of occupancy” (Wyse Jackson *et al.*, 2016).



Number of sites

Only twenty sites were pre-selected for this species in total. Eight of these were surveyed, and 12 were not. Of the eight, the species was refunded at three and not refunded at five. Four extra sites were surveyed for the species. The map below shows the distribution of the populations surveyed during ISP.



Left: Distribution, shown approximately, of 12 records for *Pyrola minor* returned as part of ISP. (Open circles denote null records.)

Population size

This rhizomatous species produces extensive clonal patches in some of its sites with many individual flowering and non-flowering rosettes. This may make counting individual plants

challenging. Three record cards recorded population sizes of less than ten plants, two recorded a population of 11-100, and one was in the range of 100-300 individuals.

Site – habitats, management, threats

Where confirmed, the species was generally associated with woodland habitat, with a moderate to high level of shading, containing *Betula pendula*, *Ilex aquifolium*, *Corylus avellana* and *Salix* spp., the latter in a secondary cutover bog habitat.

No particular management regimes were noted for any of the sites.

A combination of invasive species and sites being overgrown with e.g. *Carex pendula*, *Prunus laurocerasus*, *Rhododendron ponticum* and *Rubus fruticosus* agg. are mentioned as among the actual or likely reasons for a decline or extinction at a number of pre-selected sites. Excessive leaf-fall may be the cause of a decline at one site, while recreational pressure is mentioned as a possible factor that may impinge on the species at two sites. Overgrazing by deer is mentioned as a threat at one extra site where the species was confirmed, while the same factor is regarded by the VC recorder as being responsible for its likely extinction at another site. Two sites, each with SSSI listing, had no reported threat.

Associated species

Lists of associated species were made at each of the six sites where *Pyrola minor* was recorded. Among vascular plants, 28 species were recorded as associates of *Pyrola minor*. Of these, 21 were recorded only once. *Hedera helix* s.l. was recorded at five sites. *Rubus fruticosus* agg. and *Anemone nemorosa* were each recorded at three sites. The number of associate species recorded at each site was in the range of five to 14, with an average of seven.

Summary and conclusions

The fact that all of the six sites, including the extra ones, where *Pyrola minor* has been confirmed were known to the respective VCRs underlines the need to maintain constant surveillance of this declining species at its presently known sites. This is combined with the need to have some form of management so as to mitigate the deleterious effects of threats from invasive species and deer-grazing noted at a number of the sites. These latter threats are regarded by the respective VCRs as being primarily responsible for the apparent loss of the species at three of the six sites for which null returns were made. Of more significance, however, is the fact that of the twenty pre-selected sites where the species had previously been confirmed, twelve were not surveyed and *Pyrola minor* was confirmed at only three of the eight pre-selected sites. This fact points to the need to confirm, by further field-work, the present status of the species in these sites. While various threats to the species have been highlighted, a possible additional factor which may possibly affect the viability of populations of this species is the symbiotic relationship which is known to exist between the species and certain mycorrhiza. Research has shown that these mycorrhizal fungi contribute to the uptake by *Pyrola minor* of both carbon and nitrogen. However, the possible effect of fluctuations in mycorrhizal activity on the viability of populations of *Pyrola minor* is unknown.

Existing information

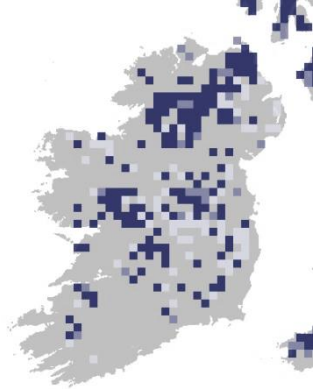
"A slender, trailing dwarf shrub found in bogs and on very wet heaths, usually creeping amongst *Sphagnum*. 0-760 m (Ben Macdui, S. Aberdeen), but the higher records may refer to *V. microcarpum*."



Text and map from BSBI Atlas 2000 (Preston *et al.*, 2002).

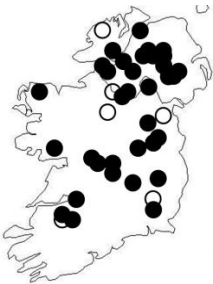
Photograph by Rory Hodd, joint VCR H1 & H2.

Species is assessed as 'least concern' in the recent Irish Red List (Wyse Jackson *et al.*, 2016).



Number of sites

There were 50 pre-selected sites for the species. Sixteen of the pre-selected sites were visited. *Vaccinium oxycoccos* was refound at ten, but not refound at six. There were returns from 18 VCs, with the species found at 25 extra sites. The map below shows the distribution of the populations surveyed during ISP. Approximately 70% of the pre-selected sites were not visited - perhaps searching for Cranberry with just a hectad grid reference was off-putting for some, though due to its habitat preference (generally raised bogs) it may be easier than for some other species.



Left: Distribution, shown approximately, of 41 records for *Vaccinium oxycoccos* returned as part of ISP. (Open circles denote null records.)

Five of the ten pre-selected sites where the species was refound had six-figure grid references, mostly in Northern Ireland. The other five had only two-figure grid references, but were in VCs with long-standing VCRs who had the knowledge to find the site, or were perhaps in possession of old record cards. Of the six pre-selected sites where the species was not refound, three had two-figure grid references, two had four-figure and one had a six-figure grid reference.

Population size

Due to the size of the plant, the straggling nature of growth, and the terrain, many recorders found it difficult to estimate the population size. Of those that did, 13 noted populations of 1-10, and five noted populations of 11-100. There was one record each for populations of

301-500 and 501-1,000, and one recorder noted 1,000s of plants. For this species in particular, the descriptions of density and measures of extent are also helpful, though it should be borne in mind that not all recorders filled out these fields. Many recorders noted that the plant was ‘scattered’, sometimes in the wettest areas, sometimes noted as ‘throughout’, other times noted as being associated with *Sphagnum* hummocks. In terms of extent, estimates were similarly varied. Most, however, were relatively small (approximately sixteen cards noting an extent of 10x10m or less). Five cards showed extents of between 20x20m and 50x50m, and one noted 250x500m.

Site – habitats, management, threats

Vaccinium oxycoccos is generally found in open areas of wet *Sphagnum*-rich raised bogs. The sites included Fossitt type ‘Cutover bog - PB4’, ‘Upland blanket bog - PB2’, ‘Raised bog - PB1’ and ‘Poor fen and flush - PF2’.

Most of the sites were unmanaged, other than light grazing at some. Frequent anthropogenic activity at the sites included drainage, turf cutting, conifer planting, recent evidence of burning, and ongoing attempts to control *Rhododendron ponticum* at one of the sites.

Burning was noted as the greatest threat, evident at eleven of the sites. Drainage was encountered as a threat at nine sites. Turf cutting was noted as evident or had been present in the past at nine of the sites. While there was a lack of management at five of the sites, six of the sites list afforestation, the planting of conifers or natural regeneration (*Betula* spp. etc.) as threats. Seven of the sites listed invasive species including *Rhododendron ponticum*. This was mentioned for three locations, and was managed for a number of years at one site. There were no listed threats for eight of the sites.

Associated species

Lists of associated species were made at 34 sites where *Vaccinium oxycoccos* was found. *Calluna vulgaris* was the most common associate plant, found at 27 of the sites, while *Erica tetralix* and *Eriophorum vaginatum* were also found at over 20 sites. *Drosera rotundifolia*, *Eriophorum angustifolium*, *Molinia caerulea* and *Narthecium ossifragum* were all frequent at the sites. Sixteen of the 41 species were recorded only once. Associated species lists ranged from two to 13 species, with six species being the average recorded. Some recorders noted bryophytes, but others did not. This was not explicitly asked for in the guidance.

Summary and conclusions

The approximate distribution of the 41 record cards received for *Vaccinium oxycoccos* is shown in the map above. Their spread is relatively representative of the geographic range of the species, and so we can be reasonably confident that a good range of sites was visited as part of the survey.

Just 16 of the 50 pre-selected sites were visited (32%), but 25 extra sites were surveyed. Six of the 16 pre-selected sites produced null records. This is suggestive of a decline. However, the challenge of finding this diminutive species in the field must be borne in mind. Continued loss of raised bog habitat in particular in Ireland is known to be occurring, and is likely to have had an impact on populations of this species. As well as

outright loss of habitat, the noted threats of burning, land drainage and afforestation are among the other major issues.

Interestingly, the difficulties encountered by recorders in terms of assessing population size by counting plants of *Vaccinium oxycoccos* highlighted the need for perhaps a more flexible approach. For this species, a measure of extent of population may have been more desirable and provided more useful results, than asking recorders to count plants.

Discussion

A discussion paper on the results of the ISP will be produced later in 2017, in which further aspects of the data and the implications of the findings will be teased out.

Acknowledgements

Firstly a very big thank you to each and every one of you who took part (listed below). Your efforts collecting and submitting data are greatly appreciated.

Thanks to volunteers: Phoebe O'Brien - for writing species profiles and help with advertising the project; Shane Brien - help with data entry; and Conor Blunt - help making maps.

Thanks to NBDC for hosting the species profiles (links on Irish BSBI webpage).

Thanks to Tom Humphrey (BSBI Database Officer) and Bob Ellis (BSBI Project Officer) for technical help behind the scenes, and to Pete Stroh (BSBI Atlas Co-ordinator) for thoughtful and helpful comments on a draft of this article.

Full list of ISP participants (those whose name was on five or more cards in bold):

Alexis FitzGerald, Alistair Church, Alistair Uprichard, Amanda Browne, Andrea Webb, Andrew McNeill, Anne Mullen, Brad Robson, **Catriona Brady**, CAWS, Chris Faulkner, **Chris Peppiatt**, Ciarán Bruton, Ciarán Byrne, Cilian Roden, Cliona O'Brien, David McNeill, **David Riley**, Deborah D'Arcy, Don Cotton, **Fiona Devery**, Gareth Buchanan, **Gillian Faulkner**, **Hannah Mulcahy**, **Hannah Northridge**, Heather Bothwell, **Ian McNeill**, John Brophy, **John Conaghan**, **John Earley**, **John Faulkner**, John Swindells, Jonathan Shackleton, **Julian Reynolds**, Kate Marie O'Connor, Katherine Duff, Kenneth Stewart, Kevin Collins, **Lisa Dowling**, Mairéad Crawford, Marc Cruise, Margaret Norton, Maria Long, Mark McCorry, Mark Wright, Martin Smith, **Michael Archer**, **Micheline Sheehy Skeffington**, Nick Scott, Oisín Duffy, Pascal Sweeney, Paul Green, Paul Hackney, **Paula O'Meara**, Pauline Hodson, **Phoebe O'Brien**, **Ralph Sheppard**, **Robert Northridge**, Rodney Daunt, Rory Hodd, Rosaleen Fitzgerald, Sarah Hanrahan, Seán Meehan, Sharon Parr, **Sylvia Reynolds**, Valerie McCarthney

Acronyms used in the text:

BSBI – Botanical Society of Britain and Ireland; CAWS – County Armagh Wildlife Society; CFI – (BSBI) Committee for Ireland; DDb – BSBI Distribution Database; ISP – Irish Species Project; NBDC – National Biodiversity Data Centre; SSSI – Site of Special Scientific Interest; VC – vice-county; VCR – (BSBI) vice-county recorder.

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Pritchard, N.M. (1959) *Gentianella* in Britain. *Watsonia* 4: 169-193.

Wyse Jackson, M., FitzPatrick, Ú., Cole, E., Jebb, M., McFerran, D., Sheehy Skeffington, M. & Wright, M. (2016) *Ireland Red List No. 10: Vascular Plants*. National Parks and Wildlife Service, Department of Arts, Heritage, Regional, Rural and Gaeltacht Affairs, Dublin, Ireland.

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BSBI Dublin Local Group

People of all ages, experiences and knowledge bases attend the BSBI Dublin Local Group, which is open to anyone who is interested (to put your name on the mailing list please contact myself, Róisín NigFhloinn, rnigfhloinn@gmail.com, or Maria Long, maria.long@bsbi.org). We visit sites all over Dublin (and occasionally in neighbouring counties), usually picking the next site to visit by general consensus at the end of each outing. This is a great way to keep the momentum going, and allows all in attendance to help to organise the field trips. The main aims of outings are to visit an area of botanical interest (whether that is due to a deficiency in records, or the presence of known rarities, or simply to visit an interesting or varied site) and to enjoy the outdoors while appreciating and learning about the plant diversity. We also take part in the New Year's Plant Hunt (see photo page 44) each year (<http://bsbi.org/new-year-plant-hunt>).

Apart from the pure enjoyment of seeing interesting or beautiful plants, or learning something new, the benefits of these informal meetings include; encouraging people with new or improving plant identification skills; making plant records and thus contributing to *Atlas 2020* efforts; and sharing knowledge and conversation with people of all different ages and backgrounds... not to mention the occasional stop for tea, cake or the pub (especially after a cold blast of the Irish wind and rain!). We look forward to meeting you at the next outing in 2017!

Field meeting reports, 2016

Outline of 2016 field meetings

2016 was yet another busy year for field meetings. A total of twelve meetings were held throughout the island with a wide geographical spread. I managed to participate in four of the meetings including the very successful Co. Longford meet. The three day Co. Longford meeting was the main trip of the year which resulted in the collection of c. 2700 records over three days. This flurry of activity now means that Co. Longford has gone from one of the vice-counties with the lowest level of recording to one of the better recorded vice-counties in Ireland. In addition to detailed accounts of field meetings presented in this edition of *Irish Botanical News*, a number of brief summaries of 2016 field meetings were provided by the leaders and are outlined below.

North Kerry meeting 21st and 22nd May

Two days were spent recording in the historic and atmospheric Sliabh Luacra to the east of Killarney. A small but enthusiastic group of five people met up in Glenflesk on Saturday

morning and headed out to the ancient pilgrimage site of ‘The City’ at the base of the iconic Paps mountains. Although nothing unexpected was found, a good list of species was made from the surrounding lanes and nearby bog, with sheets of *Saxifraga spathularis* (St Patrick’s Cabbage) putting on a fine display on the stone walls of The City. A walk was then taken to Lough Glannafreaghaun, nestled below the Eastern Pap. A circumambulation of the lake revealed very photogenic populations of southwestern specialities such as *Pinguicula grandiflora* (Greater Butterwort), *Hymenophyllum wilsonii* (Wilson’s Filmy-fern) and the by far the largest plants any of the party had seen of *Saxifraga spathularis*. Non-flowering plants of *Wahlenbergia hederacea* (Ivy-leaved Bellflower) were found close to the lake shore and a targeted search revealed one plant of *Listera cordata* (Lesser Twayblade) under tall heather. On Sunday, a much diminished party of two explored roadsides and raised bog to the north of Barraduff. Good lists were made for a number of monads, but a search of the bog for an old record of *Vaccinium oxycoccos* (Cranberry) was unsuccessful.

Bailieborough, Co. Cavan, 18th and 19th June

The purpose of this two day meeting was to get records from under-recorded hectads in east Cavan. On the first day there were six botanists who split in to two groups while on the second day heavy rain reduced the party to just three!

However, four hectads were surveyed over the two days and the number of post-2000 records in each hectad was raised to H60, 242 records, H70, 214 records, N69, 214 records and N79, 231 records.

Interesting species which were found included *Ranunculus trichophyllus* (Thread-leaved Water-crowfoot), *Listera cordata* (Lesser Twayblade), *Lythrum portula* (Water Purslane) while the finds of *Rapistrum rugosum* (Bastard Cabbage *Rapistrum rugosum* and *Agrostis vinealis* (Brown Bent) were new county records.

South-east Galway, 20th and 21st August

Though the forecast was very bad, about 8 people came on both days, a different group coming each day, so a total of about 14 attended one or both of the days.

The first day 20 August was spent around the western shore of Lough Rea and we recorded 186 species from the lake edge, grassland and the fen at scrub on the SW end, where *Eriophorum latifolium* (Broad-leaved Cottongrass) was confirmed amongst the *Molinia caerulea* (Purple Moor-grass) and *Myrica gale* (Bog Myrtle).

On Sunday 21 a hardy group set out for the bog above Moyglass in the Slieve Aughty Mountains near Woodford. Much of this is heavily grazed bog, though it is also managed as a grouse moor. The key attractions was the very quaky scragh around the lake where huge *Andromeda polifolia* (Bog-rosemary) was locally abundant along with *Vaccinium oxycoccos* (Cranberry) –indicating that the bog is a transition between the raised bogs and the more westerly blanket bog, where those two species are absent. *Rhynchospora alba* (White-Beaked Sedge) was also frequent in many of the ditches. Having circled the whole lake, we descended, as finally the torrential rain forecast was beginning to get under way.

John Conaghan

West Galway (H16) - 28th and 29th of May

The main aims of this two day field meeting were to record in a number of under-recorded hectads along the western fringes of the vice-county and to enjoy the wonderful scenery of the Connemara coastal region. As is often the case in Connemara in late May, wind-burn was the main weather-related problem to contend with however the rain did stay away on both days which is always a bonus.

A total of eight people turned up on Saturday and the first port of call was an area of saltmarsh and sandy beach habitat at Rossadillisk (L5759) near Cleggan. Most of the typical salt marsh and dune species were recorded. The main species of interest noted were *Blysmus rufus* (Saltmarsh Flat-sedge), *Inula helenium* (Elecampane), *Atriplex laciniata* (Frosted Orache), *Eryngium maritimum* (Sea Holly) and *Calystegia soldanella* (Sea Bindweed). These species are generally rare along the west coast of Ireland and the majority constitute new hectad records. *Blysmus* was a particularly nice find as it is often overlooked due to its low-growing and relatively inconspicuous nature.

In the afternoon we called to the attractive abode of Marie Louise Heffernan and family near Rossleague, Letterfrack (L6957) where a species-rich mixture of scrub woodland and heath habitats awaited us. The area is dominated by low woodland, occurring on both wet and dry soils, which lie along the sides of a narrow stream valley. From a habitat point of view the occurrence of low willow woodland on a flushed slope was nice to see as it is a very rare habitat in the west of Ireland. Among the more notable plant finds were *Equisetum telmateia* (Great Horsetail), at its only known location in West Galway, and *Carex laevigata* (Smooth-stalked Sedge) which is generally rare in West Galway. *Saxifraga spathularis* (St. Patrick's Cabbage) and *Crepis paludosa* (Marsh Hawk's-beard) were also noted growing along rock outcrops by a small stream. Also of note were the large areas dominated by the invasive *Persicaria campanulata* (Lesser Knotweed), which prompted a good deal of discussion regarding possible methods of control.

On Sunday morning seven people met up and we headed to the Carna peninsula. The first location visited was the beautiful beach area on the southern shore of Mweenish Island (L7629). The area contains areas of coastal grassland on sand which merges with rocky outcrops/dry heath to the south. Locally rare species such as *Atriplex laciniata* (Frosted Orache), *Inula helenium* (Elecampane), *Juncus planifolius* (Broad-leaved Rush) and *Ranunculus sceleratus* (Celery-leaved Buttercup) were recorded. Outside of the Slyne Head peninsula *R. sceleratus* is a remarkably rare plant in West Galway. At this location the alien rush species *Juncus planifolius* grows frequently in flushed ground within coastal heath habitat which is quite different to its usual habitat of more artificial/disturbed habitats such as drainage ditches and forestry tracks.

Our final recording stop was the northern shore of Loughaunore (L8232) in the south of the Carna peninsula. This location provided the usual array of blanket bog and heath species, along with a few species of oligotrophic lake. *Daboecia cantabrica* (St. Dabeoc's Heath), *Lobelia dortmanna* (Water Lobelia) and *Juncus planifolius* (Broadleaved Rush) were the main species of interest recorded.

Over the weekend a total of 398 plant records were collected across 4 hectads and a number of interesting finds were made, roll on 2017.

John Conaghan

Inchydoney, West Cork (H3)

On Saturday 25th June the local Cork BSBI group (and a few welcome visitors from the UK!) gathered on a dry Saturday morning at the car park at Inchydoney beach to go and explore the beach and dunes to the east of the hotel there. Approximately 15 people set off down onto the beach to begin our species list for the site. We took our time below the cliff area and on the beach, identifying plants that were unfamiliar to the majority of us. We came across many typical coastal plants – *Beta vulgaris* subsp. *maritima* (Sea beet), *Cakile maritima* (Sea rocket), *Honckenya peploides* (Sea sandwort), *Raphanus raphanistrum* subsp. *maritimus* (Sea radish) and *Salsola kali* (Saltwort).

Our main aim was to explore the dunes. Here we recorded the classic dune species such as *Ammophila arenaria* (Marram grass), *Elytrigia juncea* (Sand couch) and *Calystegia soldanella* (Sea bindweed). But we had our hearts set on seeing some orchids, and the dunes didn't disappoint! We were delighted to spot several *Ophrys apifera* (Bee orchid) (see photo page 44) in among the short vegetation and also recorded *Anacamptis pyramidalis* (Pyramidal orchid), *Dactylorhiza maculata* (Heath Spotted-orchid) and *Neottia ovata* (Common Twayblade). Other species in flower on the dunes included *Agrimonia eupatoria* (Agrimony), *Centaurium erythraea* (Common Centaury), *Linum catharticum* (Fairy Flax), *Rhinanthus minor* (Yellow-rattle) and the vibrant blue *Echium vulgare* (Viper's Bugloss) – one of the very few places it occurs in Co. Cork!

After our morning's work most of us retired for refreshments at the hotel which was most welcome. We recorded a total of 150 species over 3 monads.

Edwina Cole

Glenbarrow, Co. Laois (H14) 16th July

This Saturday meeting saw a group of ten meet up the Slieve Bloom Mountains of north Co. Laois. We headed first down an old green road shaded overhead by *Corylus avellana* (Hazel) and *Sorbus aucuparia* (Rowan) into the upper river Barrow valley. We were at the headwaters of Ireland's second longest river and we made our way up the wooded valley to see the beautiful Glenbarrow waterfall. This is a Coillte owned site with tall *Picea sitchensis* (Sitka Spruce) dominating the coniferous woodland but indigenous *Betula pubescens* woodland intrudes wherever it can, especially along the steeper river slopes. The geology along here is interesting with fossil ripple-marks easily seen in the old red sandstone along the river path. Highlights recorded along the path included *Festuca altissima* (Wood Fescue) and *Luzula pilosa* (Hairy Wood-rush) both rarities in this part of the world.

Following lunch in the sunshine of the forest car park we moved just 1.5km northwards down the hill to an area known locally as the 'Festival Field' of Rosenallis where various 'festivals of the mountain' have taken place over the years. This field sits snugly up against remnant blanket bog and wet heath habitats which are stretching down from the mountains above. The narrow road through the area is great to drive or walk along every June and July rewarding you with several orchid species on display. We recorded *Platanthera bifolia* (Lesser Butterfly-orchid), *Listera ovata* (Common Twayblade), *Dactylorhiza fuchsii* (Common Spotted-orchid) and *D. maculata* (Heath Spotted-orchid). The habitat along the roadside here is a mix of bog, heath and flush – ideal conditions for the insectivorous *Pinguicula vulgaris* (Common Butterwort) along one side of the road

whilst directly across in amongst the *Ulex europaeus* (Gorse) we found *Sorbus hibernica* (Irish Whitebeam) – an indigenous Slieve Bloomer!

As sometimes happens the highlight of the day for all ended up being zoological rather than botanical – the sun-bathing adult and baby native viviparous lizards on the rocks dotted through the heathy vegetation. That said, the highlight for the two Laois VCRs was on their way home along the Ridge of Maryborough esker into Portlaoise town – the beautiful spires of *Campanula trachelium* (Nettle-leaved Bellflower) growing along the old, narrow road that hugs the esker top.

Fiona MacGowan & Mark McCorry

South Blackstairs, Co. Carlow (H13), 30th July

The visit to the southern limb of the Blackstairs Mountains in Carlow was undertaken in ideal weather conditions at the end of July. A small group accompanied me, leader Lisa Dowling (Ciarán Byrne, Shane Brien, Paula O Meara and Paul Green), in this beautiful part of south County Carlow. The aim was to collect records for this very under recorded area for *Atlas 2020*.

We started the morning at South Bog, Knockmullgury, just south of Ballymurphy. This Bog was referred to me by Mary Tubridy as a good place to find Cranberry for the Irish Species Project in 2015. The low-lying blanket bog covers an area of about 15 hectares and is very much overlooked by the neighbouring Blackstairs Mountain. It has a ‘grassy’ appearance typical of blanket bogs with abundant *Molinia caerulea* (Purple Moor-grass), *Juncus squarrosus* (Heath Rush), *Juncus acutiflorus* (Sharp-flowered Rush), *Agrostis canina* (Velvet Bent), *Carex panicea* (Carnation Sedge), *C. echinata* (Star Sedge) and *C. pulicaris* (Flea Sedge). *Vaccinium oxycoccos* (Cranberry) was found in abundance in wetter sphagnum-dominated areas, as well as, *Drosera rotundifolia* (Round-leaved Sundew), *Anagallis tenella* (Bog Pimpernel), *Hypericum elodes* (Marsh St John’s-wort) and a few specimens of *Pinguicula lusitanica* (Pale Butterwort). The stately *Osmunda regalis* (Royal Fern) was dotted throughout the bog. Orchids *Dactylorhiza maculata* (Heath Spotted-orchid) were still flowering in full force while old spikes of *Dactylorhiza incarnata* subsp. *pulchella* (Early Marsh-orchid) were still evident here and there. Stands of *Menyanthes trifoliata* (Bogbean) with *Viola palustris* subsp. *juressi* (Marsh Violet) were found in wetter patches as we moved south through the bog. We also came across *Scutellaria minor* (Lesser Skullcap) and *Epilobium palustre* (Marsh Willowherb) at this location.

Muddy ground on the edge of the bog included *Montia fontana* (Blinks), *Lythrum portula* (Water-purslane) and *Juncus foliosus* (Leafy rush).

The flushed zone south of the bog included a couple of interesting species such as *Carex paniculata* (Greater Tussock-sedge), *Veronica scutellata* (Marsh Speedwell) and a small patch of *Comarum palustre* (Marsh Cinquefoil). Paul Green described the characteristics of the hybrid *Mentha x verticillata* (Whorled Mint (*M. aquatica* x *M. arvensis*)) to us which he spotted at this location.

As we walked the narrow lane back to our cars Paul pointed out *Potentilla anglica* (Trailing Tormentil) which I have likely being overlooking in Carlow.

The plan for the afternoon was far more vague with the general aim to explore the upper slopes of the Blackstairs Mountain. We found *Isolepis setacea* (Bristle Club-rush), *Drosera rotundifolia* (Round-leaved Sundew), and *Nardus stricta* (Mat-grass) in enclosed

fields as we made our way uphill. It was then suggested to head for some rocks where we might find Filmy-ferns, and sure enough the second set of rocks we investigated yielded both Filmy-ferns *Hymenophyllum wilsonii* and *H. tunbrigense*. This is the second county record for *H. tunbrigense*. The upper slopes at this point were by far dominated by dense bracken growth which varied in height probably due to past fires. Growing beneath the bracken were plants reminiscent of woodland including *Stellaria holostea* (Greater Stitchwort), *Hyacinthoides non-scripta* (Bluebell) and *Oxalis acetosa* (Wood-sorrel).

Paula, (vastly experienced at tackling the Blackstairs, albeit from the other side!) spotted a gully that didn't look too far away which she suggested might be a good place to check for Saxifrages. With bracken rather high for most of the trek, often obscuring the treacherous rocks and holes underfoot, the going was pretty slow as we picked our way across the mountain. Though we didn't find Saxifrages, our heavy trek was well rewarded when eagle-eyed Paula spotted Common Cow-wheat *Melampyrum pratense* in short turf (See picture from Ciarán Byrne on page 1). Certainly the find of the day, a number of specimens were encountered over a small patch of ground. This record represents the first for the county since before 1970, and the first record within this hectad since 1899.

Many thanks to all who joined in for a very enjoyable day, and especially to Paul Green and Paula O'Meara who were a great help identifying some trickier specimens. I certainly feel far more encouraged to investigate this rather neglected and challenging side of the county in the coming year.

Lisa Dowling

South Donegal Field Meeting – East Donegal (H34)

A two day field-outing was held in the southern half of the East Donegal (H34) vice-county over the 6th-7th of August. The aim of this field-outing was to collect records for *Atlas 2020* and to also showcase some of the botanical rarities of H34. The weather was mixed over the weekend, with warm temperatures on the Saturday to a very windy morning on the Sunday. In fact the weather deteriorated so quickly on Sunday that we ended up cancelling the second part of the day.

On Saturday the 6th a group of 11 recorders (see photo on page 47) set out to the botanical hotspot of Murvagh. We had not left the car park more than five minutes before coming across the first rarity of the day *Pyrola rotundifolia* subsp. *maritima* (Round-leaved Wintergreen) a sub-species which is only found in two locations in the country, Murvagh in Co. Donegal and The Raven in Co. Wexford.

The first hollow to be investigated turned up other interesting plants, *Parnassia palustris* (Grass-of-Parnassus) was a common sight, while *Epipactis palustris* (Marsh Helleborine) and *Epipactis helleborine* (Broad-leaved Helleborine) were also quite frequent.

The next area we reach had equally nice species, at this stage *Parnassia palustris* and *Epipactis helleborine* were no longer captivating the crowds, however it wasn't long till we came across *Ophioglossum vulgatum* (Adder's Tongue) a prostrate form of *Equisetum variegatum* (Variegated Horsetail) and *Hypopitys monotropa* (Yellow Bird's-Nest), a great deal of time was spent here with small crowds of botanists swarming from plant to plant.

Next on our recording itinerary was a set of Turloughs even further South in the country near Ballyshannon. We came across a host of wetland species such as *Comarum palustre* (Marsh cinquefoil), *Veronica anagallis-aquatica* (Blue Water-Speedwell), and *Triglochin palustris* (Marsh Arrowgrass), but our next Turlough visit was halted by cattle. Diverted but not deterred we decided to record along an old laneway which led to an abandoned house. We found a number of interesting plants at this location, including two *Alchemillas* (Lady's Mantle), *Alchemilla xanthochlora* and *Alchemilla filicaulis* subsp. *vestita*. We also recorded *Polygonum arenastrum* (Equal-leaved Knotgrass), *Anacamptis pyramidalis* (Pyramidal Orchid), and *Epipactis helleborine* (Broad-leaved Helleborine) which only reinforced the point further in my head that you do not need to be somewhere that looks interesting to find things of interest.

On Sunday the 7th we headed for one of Donegal's best known beaches, Rossnowlough. Rossnowlough is also well known for its strong winds, and while this was good for the many kite surfers in attendance it kicked up quite a bit of a sandstorm for wide eyed botanists. As with many of the BSBI trips that I've been on the rather uninspiring carpark turned out to be of some interest and a nice amount of time was spent scouring its perimeter. This proved to be very useful as within two minutes of recording we came across *Erodium cicutarium* (Common Stork's-Bill), *Saponaria officinalis* (Soapwort) and the minute *Sherardia arvensis* (Field Maddar). Once the car park had been suitably recorded we headed along the beach to our intended grassland site.

We finished up our recording for the day in a wet grassland sites and were able to add a few new species to our list, the most interesting being *Potamogeton polygonifolius* (Bog Pondweed), *Baldellia ranunculoides* (Lesser Water-plantain), and *Samolus valerandi* (Brookweed). Unfortunately due to heavy showers we had to cut our outing short, but we're looking forward to hosting another outing in Donegal this year with John Conaghan during the 10th and 11th of June.

Oisín Duffy and Mairéad Crawford

BSBI Irish Branch AGM Minutes (Draft)
Saturday Sept 17th, 2016
National Botanic Gardens, Dublin
Main Auditorium 13.30

Welcome and introduction from the Chair

Robert Northridge thanked the 37 attendees at the AGM and appreciated them sacrificing their botanical time to attend the AGM in a windowless room on such a lovely day.

Introduction of Consultation Briefing Document

Chris Metherell announced that he, along with Jane Houldsworth and John Faulkner, would be present at the Herbarium for the duration of the AGM, to hear comments and suggestions on the Consultation Briefing Document. The document has been circulated to the attendees prior to the AGM, and he apologised if some got the document more than once, but emphasised that they were anxious to reach as many of the membership as possible.

Apologies

Apologies were received from the following: Edwina Cole, Don Cotton, Graham Day, Paul Green, Clare Heardman, Helen Lawless, Margaret Marshall, Fiona Mac Gowan, Ian McNeill, Sharon Parr, David Riley, Stephen Ward, Faith Wilson and Mike Wyse-Jackson.

Minutes of BSBI Irish Branch AGM 2015

The 2015 Minutes were amended and approved.

Matters arising from the Minutes

1. Flora of the Connamara and the Burren

Gerry Sharkey announced that the *Flora of Connamara and the Burren* is available from the Cambridge University Press web page as a print on demand book. It is available in hardback at £55.

2. Constitution for Ireland 2015

A number of points were discussed clarifying issues pertinent to the new constitution. Some members thought the protocol of the AGM should be stricter, while others were in favour of shortening the formal part of the AGM to allow more time to share botanical news and highlights and to discuss progress towards *Atlas 2020*.

Jim White pointed out that as the AGM Minutes were already published in IBN, it was wasteful of paper and time to print them again for the AGM.

David Nash queried why there was no Treasurer's Report in the 2015 Minutes. Robert Northridge, as treasurer for 2014 – 2015 stated that as there were no funds dealt with in 2015, a Treasurer's Report wasn't necessary. Former Treasurer Fiona Devery also asserted that there were no funds dealt with during her tenure as treasurer and that as CFI so rarely encounters funds to be dealt with, a treasurer wasn't always appointed.

Margaret Norton thought that nominations to CFI should be made earlier and wider consultation with the general membership would be more beneficial. Robert Northridge agreed and CFI undertake to seek nominations earlier from the general membership next year.

Declan Doogue queried the length of time a member can stay on CFI under the new constitution. This was clarified as 7 consecutive years, when a gap of one full year was necessary for return to the committee.

3. Data resolution

Margaret Norton requested it minuted that as *Atlas 2020* records are being used to generate funds for BSBI central, and even though her records are gathered at monad resolution or greater, she will be uploading her data at hectad resolution, as she feels this is exploitative of recorders.

David McNeill shared an opposite experience. He favours giving his records freely and at high-resolution, but finds it frustrating when they revert to being used at 10 km level by the Northern Ireland Environment Agency (NIEA). He feels it would be more beneficial to planning and conservation if they were left at the higher resolution.

4. Insurance for ad hoc recording groups

David Nash questioned whether ad hoc recording groups are covered by BSBI insurance. This continues to be a grey area and no consensus was reached by attendees.

Chairperson's Report 2015-2016

Rather unexpectedly, I found myself chairing the CFI this time last year when John Faulkner was elevated to the position of chair of BSBI central. Congratulations to John on that appointment.

Before writing this report I made a list of all the activities that I thought should be mentioned; there were between 25 and 30. Being a mathematician I felt that I need some sort of structure. I had just been reading the Consultation Document on the BSBI Structural Review and I felt that the headings there provided a good framework under which to discuss what had been achieved over the last year. By considering our work under these headings, we might also see where we could improve next year!

The Structural Review has four main headings, most with a couple of sub-headings.

1. Provide increased opportunities for botanists of all abilities to participate in our activities, including the means for improving their skills.

Participation

1. Field Meetings: this year these were largely focussed on Atlas recording in areas where DDb analysis showed that there were few records. Most meetings have been very well supported: the highlight was the Cork meeting; over the four days in West Cork there were 37 recorders who made over 4000 records and found over 400 species. These figures do not include records from Mid Cork or East Cork which were also visited over the four days.

2. The Rough Crew, led by Rory Hodd, has explored less accessible areas such as mountaintops and off shore islands. After the success of the Rough Crew, we are hoping to start a group called the Roving Crew to help with botanical recording in Longford, Westmeath and south Cavan.

3. At the Spring Conference there were talks of general interest: Kilmacurragh, by the Head Gardiner of Kilmacurragh, Seamus O'Brien, as well as "A walk through Conifers" by Matthew Jebb.

Improving Skills

1. *Euphrasia*; two days of workshops were arranged, one yet to come; many thanks to Chris Metherell for being the tutor.

2. There was a *Carex* identification day at Castle Saunderson, Co. Cavan; there were 17 participants with three tutors, and about 20 species of sedge.

3. A Charophyte identification weekend takes place at the end of September; many thanks to Cilian Roden for agreeing to run this.

4. Again, at the Spring Conference, as well as talks of general interest, we had sessions on the identification of *Ficaria*, *Hedera* and *Festuca*.

5. Also at the Spring Conference, Tom Humphrey and Pete Stroh came from England to give help on the DDb and on recording for *Atlas 2020*, and Jim McIntosh from Scotland to give advice on MapMate.

6. On some of the Field Trips, the Irish Officer took a group of beginners/ improvers at a slower pace to improve their skills

2 Contribute to and improve the quality of botanical research in Britain and Ireland.

1. The Irish Species Project. This is currently being written up and we hope to be in a position to publish the results early next year.
2. The Irish Red Data List. Use was made of BSBI records in short listing the species for the Red Data List. I believe that this project is nearing completion.
3. *Atlas 2020* has been the main focus of 2016. I would like to thank VCRs and others for all their work in getting in to the field and submitting records. Several of our field trips have been targeted at recording: two days in Cavan, two in Donegal, two in Galway, three in Longford, four in Cork as well as several single day field trips. Thank you to the leaders of these and all the other field trips and to our Field Meeting Secretary, John Conaghan, for his work in arranging them.
4. Paul Green, funded largely by Wild Flower Society, has been recording in some of the Cork Vice Counties, which were without VCRs.

3 Increase awareness of the Society and recognition for its accomplishments.

1. The Irish Officer has given talks to NGOs and others aimed at raising profile of the BSBI.
2. The New Year Flower Hunt attracted a lot of press attention as well as generating some interesting records.
3. We have been in contact with the NBDC about raising the profile of plants in Ireland. They hosted the Spring Flower Project to which the general public contributed over 2200 records and then the Summer Flower Project to which over 1100 records were contributed by 376 recorders from all 32 counties of this island. There is an interest amongst the general public in plants; how do we foster this interest? Maria and I will be meeting with NBDC on 29 September to discuss the records of plants that they hold. As well as records from the Spring and Summer Flower Projects, NBDC also holds the results of surveys funded by NPWS on specific habitats. CFI is interested in obtaining further information on these surveys at the meeting. Were an agreement to be reached whereby we could access some of these records, we would ensure that none would be imported to the DDb without the relevant VCRs first validating them.

4 Take significant steps to strengthen the Society as a whole, allowing it to support botanists in to the future:

Communications:

1. Irish Botanical News, edited by Paul Green, had another successful edition published earlier in the year, and Paul is already thinking about the 2017 edition.
2. Facebook and Twitter; I am very grateful to Maria for keeping our more tech-savvy members updated on our goings-on through our presence on Facebook and Twitter.

Financial sustainability:

1. NPWS Funding: as you are aware, for the last two years, NPWS has been funding 1.2

days a week of the time of the Irish Officer. A team recently met NPWS to see if funding can be obtained for the coming year and, as was stated in a recent email from Chris Metherell to all VCRs, once there is a concrete proposal, any affected VCRs will be consulted.

2. CEDaR Funding: £1000 was obtained from CEDaR to assist with botanical recording in the North. The money was spent on books, maps, lenses and other items, some of which were given to VCRs in the north and some of which are retained centrally for use on future plant identification courses.
3. Wild Flower Society; as I mentioned earlier, the WFS funded Paul Green, through BSBI central, to do Atlas recording in Cork.
4. Membership is a source of funding and is increasing slowly; Paula will give more details in the Secretary's report.

We have had a very successful year and that has been largely due to the work of the Irish Officer and the Committee for Ireland.

Can I thank Maria for all that she has done over the last year; you will hear some of the details in her report.

Can I also thank Joanne for her support as vice-chair, Paula as secretary, John Conaghan as Field Meetings Secretary and the other members of the CFI for their work and input over the last year. Can I also thank John Faulkner, Jane Houldsworth, Chris Metherell and Jim McIntosh for their advice and support.

Micheline Sheehy-Skeffington is stepping down from the CFI. I would like to thank her for her work on the CFI during her years of service; she has brought academic rigour, botanical expertise and common sense to the deliberations of the committee.

Robert Northridge

Secretary's Report 2015-16

CFI met four times at Glasnevin during 2015 - 2016, on 4th October, 16th January, 14th May and the 17th September.

Irish members were spoilt for choice this year, with a bumper list of 12 field meetings over 24 days organised by John Conaghan. While the focus for meetings has largely been on recording for *Atlas 2020*, opportunities to improve identification skills for sedges, grasses and saltmarsh plants were also included.

CFI strive to ensure that VCs will be as well covered as possible for *Atlas 2020* and 'VCR changes' and '*Atlas 2020*' are central standing items on our agendas. The VCR network has remained stable this year with just three vacant VCs remaining; **H4** Mid Cork, **H5** East Cork and **H24** Longford. Our welcome and thanks go to Oisín Duffy and Mairéad Crawford who were appointed joint VCRs for East Donegal (**H34**) earlier in the year.

The Irish membership count has seen an increase of nine since last year, bringing the total to 174 members. 15 members did not renew their subscriptions for 2016, but there have been 26 new members so far this year.

We would like to thank the National Botanic Gardens here at Glasnevin for the use of their premises for our meetings, as the venue for the Spring Conference and the AGM, and for providing accommodation at the Herbarium for the Irish Officer.

Paula O'Meara

Treasurer's Report 2015 – 2016

Money in during 2016 amounted to €340 from registration fees for Robert Northridge's sedge course in Co. Cavan in July. As the course was heavily subscribed, money left over after paying for venue hire and other expenses was €120.

Rory Hodd

Irish Officer Report 2015 – 2016

There is a lot happening. This year we had a very full schedule, with 12 scheduled 'typical' field meetings, but on top of that, we also had:

- training courses (all fully booked out, and all actually taking extra people), [*Euphrasia*, Sedges, Charophytes]
- rough crew outings (around 5), [great thanks to Rory, to regular attendees]
- local groups:
 - Cork [Edwina, Clare]
 - Clare [Stephen Ward]
 - Dublin [Róisín NigFhloinn, Brian Seales, Seán Meehan]
 - Belfast [Sharon Spratt, David McNeill, Claire Dunphy, Tricia Magee]
 - Longford/Westmeath [Robert Northridge, Sylvia Reynolds, John Conaghan]

The BSBI conference in spring has become an expected and welcome part of the calendar for botanists, budding and seasoned alike, to get them geared up for the season ahead. We have had big multi-day events, and smaller one-day events, and all have drawn excellent attendance. This year's two-day conference was no different, with the mini-workshop format proving popular with attendees.

On Facebook, we currently have over 1,200 people who 'like' our page, and thus see our posts about activities and happenings (there are five or six people who post on the page), and on Twitter we have almost 890 followers. This is not counting, of course, the larger FB and Twitter accounts managed by the Communications Officer, Louise Marsh – who tirelessly re-posts, likes and re-tweets! For those of you who find this irrelevant, remember... this is the currency that the younger generation deal in. This is how information is shared, and connections made, and importantly, how interests are fostered.

Overall, this is a large increase in activity and involvement compared to a small number of years ago, and bodes well for the future of the organisation and for botany in Ireland. All of these groups are composed of people who are willing to put time and effort into BSBI and botanical recording. Of course not all will become recorders, but some will!

I'd particularly like to thank the people who taking on squares, of where there are quite a few, but I know that Eamonn Delaney and Finbarr Wallace in particular have worked hard in tandem with their local VCRs. There are also three potential new VCRs in the pipeline. And I have been helped by three great volunteers, whose time and effort I greatly appreciate: Sunniva, Shane and Hannah.

BSBI is re-established as THE organisation you go to if you are interested in plants, if you are studying plants, if you want to know more, also, if you want to have a good time and meet like-minded people, if you want to, at the same time, increase your knowledge and contribute to a big project in a meaningful way. More and more people are contacting me or others asking how they can get involved, how they can help, how they can be part of it! This will only continue to grow in the few years leading up to *Atlas 2020* – a

big challenge, but one the BSBI in Ireland is more than capable of meeting, and one which will bring great opportunities to involve even more people in our organisation.

Maria Long

Election of Chairperson, and 5 members of the Committee for Ireland, to serve from 1st October 2016

As per the new constitution one third of the outgoing committee stepped down, namely Robert Northridge, Paula O'Meara and Micheline Sheehy- Skeffington.

The following nominations were proposed and seconded:

Chair: Robert Northridge was proposed & seconded by Paula O'Meara & Joanne Denyer.

Edwina Cole was proposed and seconded by John Conaghan and Rory Hodd.

Mark McCorry was proposed and seconded by John Faulkner and Con Breen.

Paula O'Meara was proposed and seconded by Sylvia Reynolds and Rory Hodd.

Gerry Sharkey was proposed and seconded by Micheline Sheehy Skeffington and Mark McCorry.

Ralph Sheppard was proposed and seconded by Paula O'Meara and Mark McCorry.

All of the nominations were unopposed and Robert Northridge and Paula O'Meara and were duly re-elected. Mark McCorry and Gerry Sharkey, as co-opted members to the 2015 -2016 committee, were elected. Edwina Cole and Ralph Sheppard were newly elected.

AOB

Sylvia Reynolds requested that funding be found to waive the conference fee for VCRs attending the Spring Conference. She made the point that VCRs are charged €30 to attend the Spring Conference, to be told what to do for *Atlas 2020* by professionals who are on expenses, while volunteer recorders already bear the cumulative cost of recording, in particular VCRs who have to travel to their respective VCs. Sylvia suggested that were the fee to be waived, it would be a gesture of thanks in recognition of the hard work of VCRs. Maria Long replied that funding is consistently being sought to keep costs down for attendees, and that the matter would be brought to CFI.

Margaret Marshall made an offer of back copies of *Watsonia* via email to any member who would like them. These originally belonged to the Belfast Naturalists' Field Club where storage is no longer available for them. The collection is from 1977 – 1990, with some abstracts from 1971 – 1988. Contact Paula O'Meara or Margaret Marshall for collection. Micheline Sheehy Skeffington also mentioned that she had a copy of the *Urban Flora of Belfast* and the new edition of Stewart & Corry's *A Flora of The North-East of Ireland* by Paul Hackney free to any takers.

Closing

Finally, the president John Faulkner thanked Robert Northridge and noted the support of his wife, Hannah. He thanked the Vice-chair, Joanne Denyer, the Secretary, Paula O'Meara, the Irish Officer, Maria Long and the members of CFI for their hard work and achievements over the last year.

Close of formal AGM at 3.10

Robert Northridge, Chair, & Paula O'Meara, Secretary, BSBI Committee for Ireland



Top:
Infructescence of
Carex elata x *C.*
aquatilis.

Left: Lowest
fruiting female
spike of *C. elata* x
C. aquatilis.

Right: Comparative
infructescences of
C. elata x *C.*
aquatilis and *C.*
turfosa.

Photos
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Crinum x powellii (Powell's Cape-lily), a garden escape in Limerick City. Photo P. Murphy © 2016: (p. 42).

