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Edited by: Dr Brian S. Rushton, University of Ulster
Coleraine, Northern Ireland, BT52 1SA

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COMMITTEE FOR IRELAND, 2002-2003
BOTANICAL SOCIETY OF THE BRITISH ISLES

In line with the Rules, one new committee member was elected at the Annual General Meeting held in the Ulster Museum, Belfast on 14 September 2002. Office Bearers were subsequently elected at the first Committee Meeting. The Committee is now:

Mrs Fiona Maitland, Chair (retiring Irish AGM 2003)
Mr P. Hackney, Hon. Secretary and BSBI Council Representative (retiring Irish AGM 2005)
Mr G.V. Day, Field Meetings Secretary (retiring Irish AGM 2003)
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Mr P. Corbett, Environment and Heritage Service (N.I.) Representative
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Mr C. Breen, co-opted 2001

Irish Botanical News is published by the Committee for Ireland, BSBI and edited by Dr B.S. Rushton.

The cover illustration shows *Arbutus unedo* (Strawberry-tree) drawn by Mrs Pat McKee.

All species and common names in *Irish Botanical News* follow those in Stace, C.A. (1991). *New Flora of the British Isles*. Cambridge University Press, Cambridge except where otherwise stated.

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EDITORIAL

The long-anticipated and eargerly-awaited publication of *Atlas 2000* (Preston, C.D., Pearman, D.A. and Dines, T.D., eds (2002). *New atlas of the British and Irish flora*. Oxford University Press, Oxford) happened in autumn, 2002 and it is astonishing how quickly the results have been assimilated into our work – witness, for example, the fact that in this year's edition of *Irish Botanical News*, the atlas is referred to in eight of the eleven articles and reports. Irish botanists (i.e. those folk working on plant species in Ireland) are clearly on the ball. There is no doubt that, like its predecessor (Perring, F.H. and Walters, S.M. eds (1962). *Atlas of the British Flora*. Nelson, London), this will become a standard reference for all plant species studies in the years to come.

Inevitably though, in a publication of this magnitude (let's be honest, at 910 pages and 25.5 cm × 32.5 cm × 5.5 cm and 4.5 kg and a CD, it is the biggest book on my shelves) some errors have crept in and a couple of the articles in this issue do refer to problems. But it is, nevertheless, a magnificent achievement and publication.

One wonders whether such an enterprise will ever be repeated. Although we have had smaller scale surveys since the publication of Perring and Walters (1962), 40 years have passed between the publication of the two atlases. With change in the countryside being now so very rapid perhaps trying to do things on the big scale is not the best approach. The charting of change at the level of the vice-county through the careful work of the v.c. recorders and publication at *this level* is possibly the way to go. Over the years, we have seen in the pages of *Irish Botanical News* some excellent vice-county reports that have detailed biodiversity changes – I'm always willing to receive more …

Have a good field season,

Brian S. Rushton, *Irish Botanical News*

LEMNA MINUTA KUNTH (LEAST DUCKWEED) IN E. CORK (V.C. H5)

J. Lucey
Environmental Protection Agency, Butts Green, Kilkenny

Lemna minuta Kunth (Least Duckweed), is a native of temperate regions of North and South America (Sell and Murrell, 1996; Preston and Croft, 1997; Stace, 1997) which has become naturalized in Europe having been first recorded, initially as *L. valdiviana*, in south-western France in 1965 (Jovet and Jovet-Ast, 1966). The name *L. minuscula* Herter has been given, and *L. minuta* dismissed, by Leslie and Walters (1983), as the earliest valid name for the species but this is incorrect.

It was first reported in the British Isles following its discovery in Cambridge in 1977 by a visiting Swiss botanical professor (Landolt, 1979). By 1981 there were records from 17 10-km squares in eleven vice-counties in England and Wales (Leslie and Walters, 1983). It has spread rapidly since the 1980s and was known from 89 sites by 1993 (Bramley, Reeve and Dussart, 1995). The total number of 10-km square occurrences in the 1987-1999 period for *L. minuta* in Britain, as listed in the *New atlas of the British and Irish flora*, is 538 (Preston, Pearman and Dines, 2002).

L. minuta was first found in Ireland in 1993 at Blarney Castle (Mid. Cork, v.c. H4, but given erroneously as E. Cork in Preston, Pearman and Dines (2002)) and there are a further two unpublished records for Dublin (v.c. H21) (Preston, Pearman and Dines, 2002). There are just two published Irish records: for Ballyconnell in Sligo (v.c. H28), from where it was incidentally also identified in 1993 (Cotton, 1999), and Waterford (v.c. H6) in 2001 (Green, 2002). The number of 10-km square occurrences in the 1987-1999 period for *L. minuta* in Ireland, as listed in the *New atlas of the British and Irish flora*, is five (Preston, Pearman and Dines, 2002). It was recorded, by the author, in mid-September 2002 in the lower reaches of the Womanagh River (W992.727) and in a tributary known as the Dower River (W985.725) in E. Cork (v.c. H5). With these latest fluvial records it is confirmed in just seven Irish 10-km squares in five vice-comital divisions. Given the rate of spread in Britain in the past two decades the likelihood is that *L. minuta* is very much under-recorded in Ireland.

Though generally smaller in size, but with some overlap, it is most likely to be confused with *L. minor* (Common Duckweed) which also has a single root. The only reliable diagnostic character is vein (nerve) number: *L. minuta* having just one while *L. minor* has three (Leslie and Walters, 1983; Bramley, Reeve and Dussart, 1995). In the field, however, separation on this characteristic can be difficult, except sometimes in decaying fronds (Rich and Jermy, 1998), and it is prudent to retain a sample for examination with a stereoscopic zoom microscope as was done in this case. Even then

it is sometimes not possible, due to faintness of vein and/or frond pigmentation, to discern between the two. In such situations it is necessary to clear the fronds to determine venation; this may be effected by boiling them in a solution of lactophenol for 30 seconds (Leslie and Walters, 1983). Lactophenol solution may be made-up as follows: 10 g phenol (crystalline) dissolved in 10 ml distilled water + 10 ml glycerine (glycerol) + 10 ml lactic acid.

The location where *L. minuta* was found in the Womanagh River is some 19 km from its source where the average bank width was 6 m and the mean depth was 0.3 m. The current speed in mid-stream at the site was estimated at 0.25 m/s. The calculated long average flow rate for the river at Castlemartyr is 0.62 m^3/s (M. MacCárthaigh, pers. comm., 2002). Emergent macrophytes at the site included *Apium nodiflorum* (Fool's Water-cress) and *Rorippa nasturtium-aquaticum* (Water-cress) while the submerged flora comprised *Cladophora glomerata* (a filamentous alga), *Fontinalis antipyretica* (Water moss), *Elodea canadensis* (Canadian Waterweed), *Ranunculus aquatilis* (Common Water-crowfoot) and *Callitriche* sp. (Water-starwort). It was found in the close company of two additional floating species, the other American alien *Azolla filiculoides* (Water Fern) and *L. minor* (Common Duckweed). The river is eutrophic in its lower reaches reflecting nutrient enrichment from urban (Castlemartyr) and agricultural (tillage) sources. The pH of the water at the site was 7.75 and the measured conductivity on the day was 543 µS/cm indicating relatively hard-water conditions. Phosphate is the usual plant growth-limiting factor in fresh waters and phosphorus levels (0.05-0.77 mg/l P in the 1998-2000 period) in the river are elevated (Doris, Clabby and Lehane, 2002). *A. filiculoides*, which like *L. minuta* and *L. minor*, was abundant along the margins of this stretch of the Womanagh River, can fix its own nitrogen through a symbiotic relationship with a cyanobacterium species and hence can thrive in such nutrient-rich situations.

Floating plants such as the species in the family Lemnaceae can be a nuisance where, as is the case with the Dower River, water is abstracted for potable supply. These records, unlike the others from Ireland, are from flowing-water sites. It should be noted that in running water in temperate regions, floating plants, such as *L. minuta* and *L. minor*, while able to maintain themselves in low-flow conditions are usually washed away when the flows increase and therefore are dependent upon continual recolonization from sources upstream (Hynes, 1970). In November 2002, following the wettest October on record and the ensuing floods, there was no trace of the three floating species, *L. minuta*, *L. minor* and *A. filiculoides*, in the Womanagh River but small colonies were still present in backwaters and behind some obstacles in the slower-flowing Dower River.

By what mode *L. minuta* arrived in the Womanagh and Dower rivers is a matter for speculation, although accidental introduction by human agency is the most likely

source (e.g. there is a garden centre situated upstream on the former), but it was well dispersed throughout the lower reaches of both in mid-September 2002. The start of the year to April had mean air temperatures above normal – one degree generally – and that month was relatively sunny with no records of air frost at coastal stations (Met Éireann, 2002). Thus, the start of the growing season in 2002 was one most suited to the establishment of frost-sensitive plant species such as *A. filiculoides* and *L. minuta*. Both of these floating introduced plants would be favoured by warmer conditions and could in the future be useful indicator species of climate change, i.e. secondary indicators (ecological) for signals of climate change effects. The fern is known to have over-wintered successfully in E. Cork (Lucey, 1998) and Kilkenny/Carlow (Lucey, 1999).

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THE *ROSA TOMENTOSA* GROUP (DOWNY-ROSES) IN IRELAND, AND A CRITICAL REVIEW OF THE STATUS, DISTRIBUTION AND MORPHOLOGICAL CIRCUMSCRIPTION OF *R. TOMENTOSA* SMITH AND *R.* × *SCABRIUSCULA* SMITH

T. O'Mahony
6 Glenthorn Way, Dublin Hill, Cork City

ABSTRACT

Webb, Parnell and Doogue (1996) state that *Rosa tomentosa* Smith (Harsh Downy-rose) is of doubtful occurrence in Ireland, and that many early Irish records for this species are actually attributable to the interspecific hybrid, *R. canina* L. s.st. (Dog-rose) × *R. tomentosa* and its reciprocal (= *Rosa* × *scabriuscula* Smith). In light of these comments, the present paper critically reviews the status, distribution and morphological circumscription of both these taxa in Ireland. Additionally, a new key is provided to the *R. tomentosa* group in Britain and Ireland, while the phytogeography of this group in Ireland is reassessed.

INTRODUCTION

Within the genus *Rosa* L. (Roses), the *Rosa tomentosa* group (Downy-roses) is uniquely characterised in bearing stipitate-glands which emit a *sour*, *resin-like* odour on rubbing. These diagnostic, resin-scented glands occur on the subfoliar face of the leaflets, while in most European species of this group, they are also of common occurrence on the leaf-rachides, leaf-stipules, sepal-backs and on the flower-/fruit-pedicels. (Note: such glands are also present in interspecific hybrids involving a member of the *R. tomentosa* group.) The *R. tomentosa* group is represented in Europe by approximately six species (cf. Klášterský, 1968), of which three occur in Britain

and Ireland – *R. tomentosa* Smith (Harsh Downy-rose), *R. mollis* Smith (Soft Downy-rose) and *R. sherardii* Davies (Sherard's Downy-rose).

However, the history of recording of the *R. tomentosa* group in Ireland has, from the outset, been one of taxonomic confusion, the legacy of which has filtered right down to the present time, bedevilling efforts to elucidate the *true* distribution patterns of all three species. This problem has largely stemmed from the taxonomic treatment of the group in vogue in Ireland up to 1900 at least, during which period *R. sherardii* was not recognised as a distinct species (cf. Praeger, 1901). Inevitably therefore, *R. sherardii* was mis-determined as either *R. mollis* or *R. tomentosa*, the latter two species, in consequence, being grossly over-recorded, and their actual distribution patterns hopelessly obscured.

Nevertheless, in the interim period between the publication of *A revision of the British Roses* (Wolley-Dod, 1931-32) and the second edition of the *Census catalogue of the flora of Ireland* (Scannell and Synnott, 1987), there existed a long-standing belief that the species *R. sherardii*, *R. mollis* and *R. tomentosa* were all of widespread occurrence in Ireland. However, the Irish maps of the *Rosa tomentosa* group in the *Roses of Great Britain and Ireland* (Graham and Primavesi, 1993) and in the *New atlas of the British and Irish flora* (Preston, Pearman and Dines, 2002) paint a very different picture! While the maps in both of these works (which are largely in accord with each other) confirm that *R. sherardii* is more or less ubiquitous in Ireland, they display *mutually exclusive* distribution patterns for *R. mollis* and *R. tomentosa*, suggesting that the former is confined to the northern half of Ireland, and that the latter is essentially restricted to the southern half of the island. Moreover, Maskew (2002) comments that the map of *R. mollis* in Preston, Pearman and Dines (2002) "… is probably a fairly accurate reflection of its true distribution". From an Irish standpoint, the above data are in accord with the comments of Hackney (1992) in the third edition of *Stewart & Corry's Flora of the north-east of Ireland*, who states that *R. mollis* is frequent on the basalt in Down (H38), Antrim (H39) and Londonderry (H40). While *R. mollis* was formerly recorded from as far south as Glengarriff, Co. Cork (H3), I have never encountered this species in southern Ireland in almost 30 years of fieldwork. On present evidence therefore, *R. mollis* would appear to be confined to the northern half of Ireland.

ROSA TOMENTOSA IN THE IRISH FLORA

In contrast to the *R. mollis* situation, the current status and distribution of *R. tomentosa* in the Irish flora seems very unclear, as the literature on this species is blatantly contradictory! For example, in Preston, Pearman and Dines (2002) the data suggest that *R. tomentosa* is virtually restricted to southern Ireland, where it is widely scattered (although this work records the species from just eleven hectads (= 10-km squares) for the period, 1987-1999). Again, some support for this distribution pattern is provided by Hackney (1992), who suggests that *R. tomentosa* "… probably does not occur in

NE Ireland. Records either refer to *R. mollis* or *R. sherardii*". Yet, in Webb, Parnell and Doogue (1996) *R. tomentosa* is *omitted* from both the *Rosa* key and descriptive account, the authors stating that this species is of doubtful occurrence in Ireland, and that many early Irish records for *R. tomentosa* are actually attributable to the interspecific hybrid, *Rosa canina* L. s.st. (Dog-rose) × *R. tomentosa* and its reciprocal (= *R.* × *scabriuscula* Smith).

In the course of *Rosa* fieldwork in Co. Cork during the period 1973-2002, *R. tomentosa* has proved to be of frequent/locally common occurrence throughout this region (e.g. it is currently known from at least 50 Cork hectads), and therefore its status as a constituent member of the Irish flora is *not* in doubt. Indeed I am confident that future research will ascertain that *R. tomentosa* is widespread and frequent throughout southern Ireland with, perhaps, some insular populations occurring in the northern half of the island. At the present time however, its general distribution and frequency in southern Ireland remains uncertain, as it continues to be confounded with superficially similar forms of *R. sherardii*, *R. canina* × *R. tomentosa* and its reciprocal (= *R.* × *scabriuscula*), and *R. canina* × *R. sherardii* and its reciprocal (= *R.* × *rothschildii* Druce).

[Note. Graham and Primavesi (1993: 114) state that the leaflets of *R. tomentosa* are "… irregularly biserrate, with small secondary teeth", while their accompanying illustration shows a leaflet displaying predominantly uniserrate-eglandular teeth, the occasional tooth bearing a single, glandular, denticle. However, this description *is totally at variance* with my own experience of *R. tomentosa* in Ireland, all material of which bears leaflets with multiserrate-glandular teeth! Indeed, the only Irish *R. tomentosa*-type material I have seen with leaflets displaying serrate or irregularly biserrate teeth (such as they describe), has been of the cross, *R. tomentosa* × *R. corymbifera*, which occurs in two locations close to Cork City (H4).]

THE TAXONOMY AND DISTRIBUTION OF *R.* × *SCABRIUSCULA* SMITH IN THE IRISH FLORA

The interspecific hybrid, *Rosa* × *scabriuscula*, in common with most pentaploid hybrids in the genus *Rosa* section *Caninae* DC., occurs in two very different forms, based on the direction of the cross, viz.: *R. tomentosa* × *R. canina*, or *R. canina* × *R. tomentosa*. (This situation is attributable to the fact that such pentaploid hybrids inherit four-fifths of their genetic material from the female parent, and consequently reciprocal hybrids often closely resemble this parent in morphology.)

With regard to the *R. tomentosa* × *R. canina* cross, Graham and Primavesi (1993: 116) state: "This is virtually *R. tomentosa*, with certain features suppressed or reduced in quantity. As *R. canina* has no outstanding features, its role as male parent seems to be that of suppression, various key-features of the female parent being apparently much

reduced rather than replaced". They describe this cross as follows: "General appearance of *R. tomentosa*. Leaflets are sparsely pubescent, sometimes on veins only beneath, weakly biserrate with a few glands on the teeth, and glands rare or absent on lower surface. Sepals are reflexed and fall early. Styles often glabrous". In connection with this cross, Melville (1975: 223) states that the sepal-backs vary from glandular-hispid to glabrous, and that the leaf-rachis is glandular-pubescent, while Wolley-Dod (1930-31: 92) commented that the hips of a biotype from Langdale, Westmorland (v.c. 69) were "often ill-formed". There is little doubt but that this cross is frequently confused with *R. tomentosa.*

Literature descriptions of the very variable reciprocal cross, *R. canina* × *R. tomentosa*, are generally terse, part contradictory, and consequently less than helpful. In my view, this is because *each is describing only part of the morphological variation* of this cross – that is regional variants/biotypes, which may occupy extensive geographical areas. Unfortunately, such fragmentary descriptions are bound to cause confusion and lead to erroneous determinations. Melville (1975: 223) describes *R. canina* × *R. tomentosa* as follows: "Intermediate in leaflet shape/leaflet serrature; the leaflets are glabrous or thinly pubescent below; the pedicels are 12-20 mm long and glandular-hispid, and the hips are subglobose". The description in Graham and Primavesi (1993: 97) reads: "Leaflets sometimes dull, dark-green, long and narrow, sparsely pubescent beneath, with some tendency to glandular biserration. Hips are small and globose, with moderately long, partially glandular-hispid pedicels (some 2-2.5 cm). Stigmas are glabrous or sparsely hispid, in a small head".

In Webb, Parnell and Doogue (1996), the habitat, distribution and frequency of *R.* × *scabriuscula* is given as: "Hedges, especially in the centre and lowlands; occasional". However, this information becomes meaningless, when it is realised that the detailed description they provide of '*R.* × *scabriuscula*' certainly does *not* apply to that taxon, but rather to a *R. sherardii* hybrid! Consequently, the Irish distribution maps for both *R.* × *scabriuscula* and *R.* × *rothschildii* in Graham and Primavesi (1993) and Preston, Pearman and Dines (2002) may well be quite erroneous, and therefore need critical reappraisal.

The description of '*R.* × *scabriuscula*' in Webb, Parnell and Doogue (1996) is as follows: "Somewhat similar to *R. sherardii*, but sweeter smelling; the sepals are bent backwards down the fruit, and soon fall; the stylar-disc is pentagonal, the orifice c. 1.4 mm, and no more than one-quarter the diameter of the disc; and the peduncle is about 15 mm long, and is longer than the fruit (11.5 mm)". Within the genus *Rosa*, the diameter of the stylar-orifice is genetically fixed, and in the case of both *R. canina* and *R. tomentosa*, a vertical section of a hip gives a measurement of *c. 0.4-0.8 mm* diameter for this character, *the stylar-orifice in these two species being characteristically deep and narrowly cylindrical*. Furthermore, hybrids derived from

the cross between these two species *will always bear a small stylar-orifice*, falling within the parameters given for the parents. Consequently, the stylar-orifice measurement of c. 1.4 mm attributed to '*R.* × *scabriuscula*' in Webb, Parnell and Doogue (1996) is erroneous and, in the context of their description, *must* apply to a *R. sherardii* hybrid, as the stylar-orifice of this species varies from c. 1.5-2.25(-2.5) mm in diameter.

[Note. In the *R. canina* plate in Graham and Primavesi (1993), the vertical section of the hip shows the walls of the stylar-orifice to be very shallow, and inwardly dilated. This feature is totally erroneous. In *Rosa canina* and all other indigenous British/Irish narrow-orificed *Rosa* taxa, the walls of the stylar-orifice are characteristically deeply and narrowly cylindrical.]

Indeed, the same doubts can be expressed concerning the accuracy of the British maps of *Rosa* × *scabriuscula* and *R.* × *rothschildii* in Graham and Primavesi (1993) and Preston, Pearman and Dines (2002), bearing in mind that Graham and Primavesi (1993: 97) state that the cross, *R. canina* × *R. tomentosa* is scarcely to be separated from *R. canina* × *R. sherardii*, except for its longer pedicels – a trivial and unreliable character for delimiting both these taxa! In this context, it is pertinent to note that Graham and Primavesi (1993) do not discuss the very important subject of polygenic inheritance in relation to *inherited stylar-orifice size* in interspecific hybrids, though this character can occasionally prove an invaluable aid in hybrid determination.

In this process (as it applies to *Rosa* section *Caninae*), some fundamental genetic principles are involved. As stated above, in a cross between two small-orificed species, their interspecific hybrid will *always* inherit a small stylar-orifice, irrespective of the direction of that cross. A corollary to this is, of course, that in a cross between two large-orificed species, the resultant hybrid will always bear a large stylar-orifice. However, in a cross between small-orificed/large-orificed species, the inherited stylar-orifice size *is generally unpredictably variable* (whatever the direction of the cross) yet can, on occasion, prove of crucial importance in clinching a hybrid determination.

In my own experience for example, the interspecific hybrid, *R. corymbifera* Borkh. (female parent) × *R. sherardii* (male parent) was observed to have inherited the concave disc and large stylar-orifice (c. 2 mm diameter) of its *R. sherardii* parent – thus absolutely ruling out the possibility that *R. tomentosa* was the pollen-donor in this case. Such a positive determination could not have been achieved using the criteria outlined in Graham and Primavesi (1993).

While the general distribution of *R.* × *scabriuscula* in Ireland remains uncertain at the present time, in Co. Cork (H3-H5) at least, the cross *R. canina* × *R. tomentosa* is of widespread occurrence, yet seems to be represented by just a single biotype. This

hybrid closely resembles its *R. canina* parent, though the apical leaf-shoots are often reminiscent of *R. tomentosa when they bear a matt, greyish-green cast*, while the leaflets are variably stipitate-glandular on their subfoliar face, such glands emitting a sour, resinous scent on rubbing. Leaflet-shape varies between populations, yet *all* such populations share the following suite of morphological characters: leaves *wholly glabrous*, the leaflets multiserrate-glandular with few-many subfoliar, resin-scented, stipitate-glands; leaf-rachides *glabrous*, with numerous, fine, resin-scented stipitate-glands; sepal-backs unarmed or variably stipitate-glandular, the pinnae *commonly foliaceous and raggedly glandular-ciliate*, the glands resin-scented; sepals recurved and usually caducous at the fruiting stage; fruit-pedicels to 20(-25) mm long, *the majority unarmed*, but some with a variable quantity of fine, stipitate-glands, c. 0.6 mm long; hips often very small and asymmetric (and thus appearing part-infertile), yet bearing a full complement of developed achenes; vertical-section of hip showing a deep, narrowly-cylindrical orifice *0.4-0.8 mm diameter,* and c. 1/5 the width of the flat/domed disc; styles *long* (5-7 mm), *loose*, variably hirsute, and often difficult to remove intact from the hip, given the narrowness of the stylar-orifice.

A NEW KEY TO THE *ROSA TOMENTOSA* GROUP IN IRELAND AND BRITAIN

Taxonomic keys to the genus *Rosa* in Europe have remained standardised for well over one hundred years, despite the fact that there is scope for considerable improvement (and innovation) in their construction. The following new key to the *R. tomentosa* group as represented in Britain and Ireland, is designed purely to facilitate the delimitation of its segregate species, *R. tomentosa*, *R. sherardii* and *R. mollis*. The present key is complementary to those currently in use, and utilises standard delimitation characters, augmented with data gleaned from my own personal research. It is essential to bear in mind however, that the highly complex *Rosa* breeding pattern present in the wild can often hamper 'straightforward' identification, for the following reasons:

1. All three species of the *Rosa tomentosa* group exhibit considerable morphological plasticity which, in itself, frequently causes identification problems.
2. Putative interspecific hybrids *within* the *R. tomentosa* group are of occasional occurrence, and can obscure the morphological boundaries between the three species.
3. Introgression is a widespread and common phenomenon in the genus *Rosa*, and further blurs the boundaries between species, as all species frequently display one or more characters of another, inherited through incipient gene-flow.
4. Backcrosses and second-generation (i.e. F_2) hybrids are of widespread occurrence.
5. All European *Rosa* species freely interbreed, giving rise to a diverse range of interspecific hybrids (mainly binary hybrids), many of which are of widespread and locally frequent occurrence, and tend to obscure the morphological parameters of their parent species. In this connection, binary hybrids resulting from a cross between a member of the *Rosa tomentosa* group and other *Rosa* species, are widespread, and are frequently confused

with one or either parent – as in the case of *R.* × *scabriuscula*, as detailed previously.

Furthermore, my own field experience suggests that the cross, *R. sherardii* × *R. rubiginosa* L. (Sweet-briar) may occur widely in Ireland, and that certain morphological variants of this cross are likely to be mis-determined as *R. sherardii*. *R. sherardii* × *R. rubiginosa* proves to be a widespread, gregarious, and locally common hybrid in Co. Cork (H3-H5), where it frequently cohabits with both *R. sherardii* and *R. tomentosa*.

TAXONOMIC KEY
(Note. An asterisk * indicates my own observations.)

1a. Stylar-orifice 0.40-0.80 mm diameter *(its walls vertical, deeply and narrowly cylindrical, and longitudinally ridged) c. 1/5 width of the flat or domed disc; styles long (5-7 mm), pilose, free, **often brittle at fruit-stage*, and then removable with difficulty from the stylar-orifice; *achenes *not* visible through orifice after removal of the styles; sepals generally caducous in fruit, their pinnae linear-elliptic, 6-9 mm long, and coarsely glandular-ciliate … ... *R. tomentosa*

1b. Stylar-orifice 1.5-2.7 mm diameter *(its walls inwardly-dilated, very shallow, and smooth) 1/3-1/2 width of the shallowly concave to deeply concave disc; styles short (mostly 4-5 mm long), *easily removable *en masse* as a soft, densely woolly, usually twisted-entangled ball; *achenes clearly visible through the orifice after removal of the styles; sepals tardily deciduous in fruit (= *R. sherardii*) or permanently attached to the hip (= *R. mollis*), their pinnae usually small (3-6 mm long), neatly oval, and with subsessile marginal glands … 2

2a. Sepals erecto-connivent, (frequently entire) and *permanently fused* to the hips by their swollen bases; stylar-orifice c. 2.4-2.7 mm diameter, and commonly 1/2 (or more) width of disc; *all* prickles straight, patent, and narrow-based … *R. mollis*

2b. Sepals generally erecto-patent, (occasionally erecto-connivent), *always* pinnate, not swollen at base, but disarticulating when the hip starts to ripen (i.e. tardily deciduous); stylar-orifice c. 1.5-2.25(-2.5) mm diameter, and 1/3(-1/2) width of disc; some prickles slightly curved; straight prickles patent or inclined … *R. sherardii*

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A NEW KEY TO THE NATIVE ANNUAL *PERSICARIA* (KNOTWEED) SPECIES IN BRITAIN AND IRELAND, AND AN OVERLOOKED DIAGNOSTIC CHARACTER IN *P. HYDROPIPER* (L.) SPACH (WATER-PEPPER)

T. O'Mahony
6 Glenthorn Way, Dublin Hill, Cork City

ABSTRACT
Attention is drawn to the fact that both the perianth glands and subfoliar glands of *Persicaria hydropiper* (L.) Spach (Water-pepper) *emit a delicate, sweet scent on rubbing* – an apparently previously overlooked diagnostic character that may be unique to this species among the European representatives of this genus. Additionally, a new key is provided for the five native, annual, *Persicaria* species in Britain and Ireland. This key is part-based on current literature data, and part on the author's own data, gleaned from research on this group in southern Ireland during the period, 1979-2002.

INTRODUCTION

As currently defined, the genus *Persicaria* Miller (Knotweeds) consists of a range of perennial and annual species, of which Stace (1997) recognises 17 native and introduced species as occurring in Britain and Ireland. Of the annual species within this group, five are regarded as indigenous in these islands, namely: *Persicaria hydropiper* (L.) Spach (Water-pepper), *P. maculosa* Gray (Redshank), *P. lapathifolia* (L.) Gray (Pale Persicaria), *P. minor* (Hudson) Opiz (Small Water-pepper) and *P. mitis* (Schrank) Opis ex Assenov (Tasteless Water-pepper).

Unfortunately, there has been a very long history of taxonomic confusion between these five annual species, and this confusion still reigns today, to the detriment of species-mapping surveys. In part, this situation is attributable to the considerable morphological plasticity exhibited by the group as a whole (particularly *P. maculosa* and *P. lapathifolia*), compounded by a dire lack of critical taxonomic research/insight on a European scale down the years. As a consequence, the literature on this group is replete with contradictory data for all five species. Moreover, many of the species-delimitation characters currently in use are ineffective, and are a testament to poor taxonomic judgement.

The following new key to the native annual *Persicaria* species of Britain and Ireland provides an alternative to the literature keys in use at the present time. This new key is based on a combination of reliable literature data (Britton, 1933; Simmonds, 1945; Timson, 1963, 1965; Broersma and Westen, 1981; Parnell and Simpson, 1988), supplemented with data gleaned from personal observation (fieldwork/microscope work) of this group in southern Ireland, during the period, 1979-2002. A detailed account of my research on the five native, annual *Persicaria* species (and their putative interspecific hybrids) in the Irish and British flora, is currently in preparation.

A NEW KEY TO THE NATIVE BRITISH/IRISH ANNUAL *PERSICARIA* SPECIES

Notes

a. The perianth-glands and subfoliar glands alluded to in the key, are *always sessile*, while the latter are visually like those found in the genus *Mentha*.
b. The data for *P. mitis* in this key are mainly derived from literature sources.
c. An asterisk * indicates my own observations.

1a. Perianths 3-4-merous, with numerous, *permanently attached, yellowish-brown, subspherical glands *which emit a sweetish scent on rubbing; *leaves frequently bright yellowish-green, with numerous, minute, *sweet-scented subfoliar glands; contracted, cleistogamous inflorescences always present in the leaf-axils, but part-hidden by the ensheathing ochreae; a hot, peppery-tasting juice present in all parts of the plant; nuts light-brown to dark-brown,

punctulate, matt; hairs on the ochrea-body fused for 9/10 of their length to the underlying tissue … … … … … … … … … … … … … … … *P. hydropiper*

1b. Perianth 4-5-merous, the glands (if present) *scentless; subfoliar glands (if present) *scentless, and *easily detached from the leaf-surface with the tip of a blade; axillary, contracted, cleistogamous inflorescences absent or rare; acrid juice absent; nuts black, smooth, glossy; hairs on the ochrea-body totally free from the underlying tissue, or (in *P. mitis* only) fused to it in their proximal half … 2

2a. Styles divided to 2/3; *stigmas ovoid, *tapered into, and little wider, than the stylar-arms; infructescences with c. 1% of nuts trigonous, and c. 99% lenticular-biconcave, *the latter parallel-sided in side view/vertical section; perianth-glands subspherical, yellowish, *fused to the underlying tissue; fruit perianth-segments with principal veins elevated, and forked distally, the branches recurved and anchor-like; subfoliar glands pellucid or yellowish-opaque, *viscous and glistening … … … … … … … … … ... *P. lapathifolia*

2b. *Styles divided to halfway or less; *stigmas capitate or button-shaped, *their truncate bases much wider than, and peltately attached to, the stylar-arms; infructescences usually with an abundant mix of trigonous and lenticular nuts, the latter biconvex or planoconvex (never biconcave) and *bulbous-based in side view/vertical section; perianth glands (if present) not subspherical, the fruit perianth-segments with inconspicuous, straight, simple veins; subfoliar glands (if present), *non-viscous … … … … … … … … … … … … … … 3

3a. Fruit-perianth 2-2.5 mm long, dull-red, eglandular; leaves eglandular, *occasionally with a black blotch on the upper face, characteristically elliptic-oblong and parallel-sided for most of their length, 5-8.5 times as long as broad, often with a broad, rounded base, and up to 15 mm wide; inflorescence/infructescence subfiliform, interrupted and leafy proximally; nuts 2-2.5 mm long … … … … … … … … … … … … … … … *P. minor*

3b. Fruit-perianth 3-4 mm long, often variably glandular; leaves elliptic or lanceolate, 3-5 times as long as broad, long-tapered to base and apex, up to 30 mm wide … 4

4a. Inflorescences/infructescences subfiliform, lax-flowered, interrupted proximally; perianth-segments with 0-15 minute, flat, hyaline glands; leaves never black-blotched, eglandular; hairs on the ochrea-body fused in their proximal half to the underlying tissue, but free in distal half; ochrea-cilia 3-5(-7) mm long; nut 2.5-3.5 mm long … … … … … … … … … … … … … … … … … … … *P. mitis*

4b. Infructescence usually oblong-cylindrical and stout (7-10 mm diameter) with dense-packed flowers; *perianth-segments with 0-10 lime-green glands, the glands thick, angular, rugulose and wart-like; leaves often with a black blotch on the upper surface, *and with 0-many subfoliar glands; hairs on the ochrea-body totally free, not fused to the underlying tissue; ochrea-cilia (a mixture of long + short) 1.5-3.5 mm long; nut 2-3.2 mm long … … … … *P. maculosa*

AN OVERLOOKED DIAGNOSTIC CHARACTER IN *PERSICARIA HYDROPIPER*

Persicaria hydropiper (Water-pepper) is a locally abundant annual species of paludal habitats over much of Britain and Ireland, although rare or absent in parts of central Ireland and north-eastern Scotland. In the *New atlas of the British and Irish flora* (Preston, Pearman and Dines, 2002) *P. hydropiper* is recorded from 1709 British hectads and 602 Irish hectads.

In *P. hydropiper*, all parts of the plant contain a distinctive, hot, peppery-tasting juice (hence the English name, 'Water-pepper'), which is apparently absent in the related, cohabiting annual species, *P. mitis* (Tasteless Water-pepper), *P. minor* (Small Water-pepper), *P. maculosa* (Redshank) and *P. lapathifolia* (Pale Persicaria). Traditionally therefore, botanists chew the leaves of *P. hydropiper*, in order to establish the presence of this peppery-tasting juice, and thus confirm the identification. However, this practice is now known to pose a major health risk, as the potentially fatal Wiel's Disease can be easily contracted in this way!

Yet all is not lost. In the 1970s, while researching the delimitation characters of the native annual *Persicaria* species in southern Ireland, I discovered that both the perianth glands and subfoliar glands of *P. hydropiper emit a delicate, sweetish scent on rubbing* – a diagnostic character that is possibly unique to this species among the European representatives of the genus *Persicaria*. Indeed, in early spring, the new vegetative growth of *P. hydropiper* can confidently be distinguished from its allies by the fact that its leaves display a bright, yellowish-green colouring, while they emit a characteristic sweetish scent on rubbing, as described above. In contrast, allied species bear dull-green, scentless leaves.

However, I am well aware that scent has a limited value as a diagnostic aid, as this olfactory sense is very poorly developed in many people. For example, the eminent British rhodologist, Wolley-Dod (1861-1948), was unable to detect the resinous scent emitted from the leaves of the *Rosa tomentosa* group (Downy-roses). In this regard, my own limited experiments on the detection of plant-scents (conducted with various natural history groups down the years) suggests that surprisingly few people (without training?) can differentiate between the resin-scented leaves of the *Rosa tomentosa* group and the apple-scented leaves of the *R. rubiginosa* (Sweet-briar) group, though such a basic discriminatory feat is mandatory, if one is to entertain any hope of arriving at a correct determination in the genus *Rosa*!

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POA BULBOSA L. AT ROSSLARE HARBOUR, CO. WEXFORD (V.C. H12)

P.R. Green
Coombegate Cottage, St Ive Cross, Liskeard, Cornwall, PL14 3LZ
E-mail: pgreencoombegate@tinyworld.co.uk

Poa bulbosa (Bulbous Meadow-grass) was first found in Ireland at Rosslare Harbour (T1.1), Co. Wexford in May 1997 by my brother Ian Green. The specimen was confirmed by Dr J.R. Edmondson and placed in **DBN**. When first found there were only about ten plants on the edge of the dunes next to the road. Visiting the site in June 2002, I was amazed at how much the species had increased. All the very short turf between the areas of *Ammophila arenaria* (Marram) was now covered in *P. bulbosa*. The orange mats from the dying leaves made it easy to spot. In just five years the species has increased from a handful of plants to tens of thousands. Also well naturalised on the dunes are *Anisantha diandra* (Great Brome) (Reynolds, 1996) and *Lagurus ovatus* (Hare's-tail) (Reynolds, 1994), both since the early 1980s. It is disappointing that the above records for the three species mentioned were passed on, but are not represented in the *New atlas of the British and Irish flora* (Preston, Pearman and Dines, 2002), especially as the site for *Poa bulbosa* is the only known Irish record.

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CARDAMINE PRATENSIS L. IN SUBURBAN DUBLIN, WITH A NOTE ON THE UNDERGROUND SWAN RIVER

Maura J.P. Scannell
43 Raglan Road, Ballsbridge, Dublin 4

The occurrence of a wetland species, *Cardamine pratensis* L. (Cuckooflower, Lady's Smock) in garden lawns in Pembroke Township, Dublin City south – observed since 1986 – was reported in 1997 (Scannell, 1997). Associated species found at the Leeson Street-Waterloo Road site, were listed. It was considered that the plants had derived from seed-packets of 'wild flowers' (origin not stated, ? from outside Ireland) of *C. pratensis* then on sale in horticultural outlets in city shops. In 1998 a further note was published (Scannell, 1998). It prompted reports of several sightings in Britain, in *BSBI News* **80** (1999), by Bullard (Orkney), Green (Somerset, Devon, Dorset, Morayshire, Inverness-shire and Cornwall), Williams (London), Henson (Harrogate), Marshall (Bucks.) and, in *BSBI News* **81** (1999), Ash (The Wirral). The habitat 'lawn' is noted by Green, Green and Crouch (1997) for *C. pratensis*. Rich (1991) states "rarely casual in cities". Preston, Pearman and Dines (2002) provide the information "*C. pratensis* … persists in gardens and lawns … it is resistant to some herbicides".

In 2002 gardens in Dublin were again observed. Lady's Smock was seen in abundance at the original location. Fresh sites were noted: at 68 Waterloo Road (1 May 2002), at 35 Waterloo Road (21 April 2002) and in Dublin 9 at 170 Botanic Avenue (4 June 2002). At present the Leeson Street-Waterloo site carries a sign announcing that Belgravia Developments Ltd are to refurbish the dwelling and intend to make spaces available for parking. It probably means that in the future there will be no further wild flora at the site.

Lawn specimens at Dublin City sites are less robust than material seen in the wild and fruit poorly. Stace (1997) refers to the subspecies recognized in continental Europe, "… but identity of British variants with taxa named in Europe is very dubious".

In the course of discussions with others on the presence of a wetland species in urban

lawns I was reminded that beneath the built environment of Dublin City there is a labyrinth of streams, and while most are aware of the Poddle and the Camac, little is known of others. According to Sweeney (1991) in the excellent book *The rivers of Dublin* there are more than 60 watercourses underground with a total length of 139 km, many now culverted or arched-over for health or aesthetic reasons, and therefore hidden or forgotten.

Sweeney (1991) lists and describes the watercourses of Dublin City and the route of each is shown on large-scale Ordnance Survey street maps. One, the 'Swan River Network' streams under the southern suburbs of Dublin City – a total length of 17 km – and forms the drainage backbone of the Terenure, Rathmines and Pembroke districts. It rises south east of Kimmage to outfall in the River Dodder upstream of London Bridge at Ringsend. The situation is here outlined in brief – a part of the Swan River coming from Leeson Park, makes its way from the northern boundary of the grounds of Donnybrook Royal Hospital, to the grounds of Bloomfield Hospital and Swanbrook (HQ of the Society of Friends) to Swan Place on Morehampton Road, to Wellington Place (which abuts on the Leeson Street-Waterloo junction). An 'egress stream' emerges nearby and goes to Herbert Park and enters the Dodder above Ballsbridge. This streamlet was known in the past as the 'Swanee'. The main Swan Place water continues down Clyde Road, to Pembroke Road via the Trinity Botanic Gardens (now a hotel) to Landsdown to enter the Dodder river and then to sea.

Sweeney (1991) also refers to the Coat-of-Arms of the City of Dublin that was first granted to the municipal authority in 1607. The Arms incorporate the "Three Castles of Dublin symbol of the city since the Middle Ages". The Castles are borne on a shield that is supported by two female figures representing Law and Justice and, "at their feet are groups of flowers". No doubt but that *C. pratensis* is included.

Limestones and older silty sedimentary rocks underlie Dublin City (Doogue *et al*., 1998). The underground water-courses, which branch and anastomose, speak of marshy meadows in the past, but an association between the wetland species then and plants seen today in the Pembroke area is an open one.

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THE RIM DECORATION OF THE IRISH SILVER STRAWBERRY DISH DERIVES FROM THE FLOWER OF THE WILD STRAWBERRY, *FRAGARIA VESCA* L.

Maura J.P. Scannell
43 Raglan Road, Ballsbridge, Dublin 4

Crafted domestic silver plate in Ireland dates from the 17th century. A complete range of this ware is housed in the Art and Industry Division of the National Museum of Ireland. Tableware items as bowls, baskets and dishes are well represented in the collection. Small dishes – platters used to serve fresh fruit with cream – known as strawberry dishes are often reproduced today to commemorate notable events. They measure from 10 to 30 cm in diameter and are from 2 to 5 cm deep. The rim decoration is a repeating pattern of curve and projection described in the literature as wavy, lobed and scalloped.

"Design is conscious arrangement" (Hatton, 1960). The craftsman of the Irish silver strawberry dish with its curvilinear rim was inspired by the flower of the wild strawberry, *Fragaria vesca* L. (Rosaceae) through direct observation of the symmetric, saucer-shaped, five-petalled corolla. In the flower, broad petals alternate with slender pointed tips of sepals. Related species *Potentilla erecta* (Tormentil) and *P. anserina* (Silverweed), with a similar type of flower plan but with more dimpled petals, appear to have been taken into consideration for the design of the dish. The rim of the flower, as presented to a visiting pollinator, is a horizon of petal and peeping sepal. The junction of petal with petal in the bowl of the flower is depicted in the dish as gentle fluting. The silver strawberry dish is an elegant statement guided by intelligent observation.

Craftsmen in the past had a love of Nature and were familiar with the whole fabric of the countryside and with the cultivation of the strawberry for its fruit. The wild

strawberry (*Fragaria vesca*) – frequent in Ireland on dry grassland and on roadside banks – has been grown in gardens since the Middle Ages. The fruit is small and tedious to collect so growers in centuries past introduced *Fragaria* spp. from other lands. Smith (1774) provides information on the cultivation of the fruit in Munster as:

"On the north bank of the river [Lee] are several improvements and country houses … and a very pretty hamlet called Sunday's Well … Here is a cool refreshing water which gives the name to the place … Here are very great plantations of strawberries of the largest kind as the chili [sic] and the hauteboys [sic] strawberry. The planters … have also great plantations of them round other parts of the city [Cork]."

From the account by Smith (1774) it is clear that cultivated strawberries as 'chili' [Chile] and 'hauteboys' [Hautebois] were well known to growers in Ireland in the early 18th century. The 'chili', *F. chiloensis* was introduced to France in 1714 from the Pacific coast of South America and the 'hauteboys', *F. moschata*, was introduced to Europe from eastern North America in the 18th century. The fruit now grown for the trade is *F.* × *ananassa* Duchesne (Garden Strawberry) – a hybrid between *F. chiloensis* and *F. virginiana*.

Plants, realistic and stylised, have been used by artists, craftsmen and decorators over a period of time to embellish and enhance all manner of goods in the domestic domain and in the interior and exterior of edifices, used in advertising, fabric design and heraldry. The emblem of France, the Fleur-de-lis (*Iris versicolor* (Purple Iris)) chosen by Louis VII as his badge, literally translated is 'Flower of Louis', 'lis' being a corruption of Louis. The Tudor Rose of England, important in heraldry, is a double-flowered rose, each circlet of five petals, and 'five-pointed leaf-like sepals projecting slightly between the petals'.

A recent publication by Pearson (2002) informs readers of the "rich legacy of beautiful minutae" seen by the author in the course of wanderings in Dublin City. Of interest are the cast-iron coal-hole metal plates with low relief design. The present writer has seen a plate in Molesworth Street with a design of ten leaves of dandelion arranged in a radial pattern. Railings (Turner?) incorporate plant form as ivy, vine, foliage and the Fleur-de-lis. Page (1988) includes a diagram showing 'fern-croziers' on a Corinthian capital of classical architecture. A church on Haddington Road in the southern suburbs of Dublin with bosses – keystones of vaulting – shows a variety of naturalistic forms including what seems to be a frond of *Asplenium ruta-muraria* (Wall-rue), a plant which grows on the surrounding garden wall.

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BELFAST GASWORKS REVISITED

J. Wilde
10 Kensington Court, Belfast, BT5 6NE

During the 1993-1995 survey of the city in advance of the publication of *Urban flora of Belfast* (Beesley and Wilde, 1997) several interesting sites were found. Among these, and of special interest since it was scheduled for re-development, was the site of the former Belfast Gasworks on the Ormeau Road. It had lain neglected and more or less derelict for a number of years and the large area of open ground produced a good variety of interesting species.

In the course of 1994 Stan Beesley and the author made two visits to the site and then led an evening excursion of members of Belfast Naturalists' Field Club in late August of that year. Altogether, a total of 158 species was recorded. In view of the site's separation from the nearest area of trees – some 600 m across the river to Ormeau Park – it was interesting to note the degree of tree invasion which had occurred, the following being present at that time:

Acer pseudoplatanus (Sycamore)
Alnus glutinosa (Alder)
Betula pendula (Silver Birch)
Betula pubescens (Downy Birch)
Quercus sp., unidentified Oak seedlings
Salix caprea (Goat Willow)
Salix cinerea subsp. *oleifolia* (Grey Willow)
Sambucus nigra (Elder)
Sorbus aria agg., unidentified Whitebeam seedlings

Ferns were well represented, the following being present:

Athyrium filix-femina (Lady-fern)
Dryopteris affinis (Scaly Male-fern)
Dryopteris dilatata (Broad Buckler-fern)
Dryopteris filix-mas (Male-fern)
Phyllitis scolopendrium (Hart's-tongue)
Polystichum aculeatum (Hard Shield-fern)

Pteridium aquilinum (Bracken)

Notable other species occurring included *Spergularia rubra* (Sand Spurrey), possibly from seed imported with sand brought in for use when the works were operating, and *Mimulus moschatus* (Musk), a very rare casual found at only one other city site during the full survey.

Altogether, 23 grasses were recorded on the site and six sedges (*Carex* spp.).

Returning in 2001 to see what changes had occurred, we found the area now developed into a business park with much new building and a road system in place, leaving only about half of the 1994 open area and even this largely levelled and disturbed so that little of the former habitat remained. The first visit of the year was in mid-July and thereafter we went again on 23 August and 4 September. A final visit in November was specifically for examination of the *Conyza* species and, even so, the weather forced us to curtail this.

At the time of these visits we were unable to record 58 of the species listed in 1994, including nine grasses, four sedges and five ferns. *Spergularia rubra* could not be found and the absence of *Spergularia marina* (Lesser Sea-spurrey), *Cochlearia officinalis* (Common Scurvygrass), *Atriplex prostrata* (Spear-leaved Orache) and *Cerastium diffusum* (Sea Mouse-ear) could indicate a reduction in the salinity of the soil resulting from the work on the site. Less to be expected was the disappearance of *Anthriscus sylvestris* (Cow Parsley), *Digitalis purpurea* (Foxglove), *Melilotus officinalis* (Ribbed Melilot), *Rumex acetosa* (Common Sorrel) and *Verbascum thapsus* (Great Mullein).

On the other hand, 34 species not recorded in 1994 were found in 2001. Of these, the following might well have been introduced in the grass and shrubbery landscaping of the building environs:

Anagallis arvensis (Scarlet Pimpernel)
Calystegia sepium (Hedge Bindweed)
Euphorbia helioscopia (Sun Spurge)
Fumaria muralis (Common Ramping-fumitory)
Galeopsis tetrahit (Common Hemp-nettle)
Lamium purpureum (Red Dead-nettle)
Sinapis arvensis (Charlock)
Spergula arvensis (Corn Spurrey)
Veronica filiformis (Slender Speedwell)
Viola arvensis (Field Pansy)

However, most new species were located away from such work and could only be regarded as having arrived in a non-artificial way.

Only one tree species, *Sorbus aria* agg. (Whitebeam group) was missing from those listed in 1994 but, additionally, *Crataegus monogyna* (Hawthorn), *Salix alba* and *S. aurita* (White and Eared Willows) and *Hebe salicifolia* (Koromiko) were recorded in 2001. It was also possible now to identify well-grown oak seedlings as *Quercus petraea* and *Q. robur.*

Many of the new arrivals found in 2001 were plants which could well have been expected on such a site and, indeed, some of them might have been overlooked in the earlier survey, but from the new records the following are worthy of mention: *Barbarea intermedia* (Medium-flowered Winter-cress), *Centaurea nigra* (Common Knapweed), *Malva sylvestris* (Common Mallow), *Ranunculus sceleratus* (Celery-leaved Buttercup), *Solidago canadensis* (Canadian Goldenrod) and *Sonchus arvensis* (Perennial Sow-thistle).

In July, basal leaf-rosettes of plants we suspected to be of *Conyza* species were found in several areas and, our past experience of the genus being limited, we assumed these would be *C. canadensis* (Canadian Fleabane). However, by September it was clear that more than one species was present and after a visit by Sylvia Reynolds in November we are confident that both that species and *C. sumatrensis* (Guernsey Fleabane) occur. There is a possibility that others of this genus could be on the site but there is difficulty in finding a comprehensive key for this group.

The stature of these plants is such that it is impossible for them to have been present and escaped notice in the earlier survey and for such a substantial population to have arisen in the short time between the surveys strongly supports the suggestion made initially that the complete urban survey should be repeated after five years or so. Additional evidence of the need for such a general re-examination of derelict and other sites is provided by the 2001 occurrence of *Lactuca serriola* (Prickly Lettuce) not only at this Gasworks site but on ground in the Dargan area of the Harbour Industrial Estate as well.

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ADDITIONS TO THE CHECKLIST OF VASCULAR PLANTS FROM CO. MONAGHAN (V.C. H32)

A. Hill
2 Woodgrange, Holywood, Co. Down, BT18 0PQ

The last published list of vascular plants, to my knowledge, for Co. Monaghan (v.c. H32) appeared in Scannell and Synnott (1987) and this listed a total of 587 species, subspecies and hybrids as having been recorded in the county.

Records held at the Biological Records Centre, Monks Wood which did not appear in Scannell and Synnott (1987) add a further 25 species, subspecies and hybrids (Table 1) and a perusal of the BSBI v.c. Recorder's card index for the county found another 57 pre-1986 records of species (Table 2) not included in Scannell and Synnott (1987).

More recent fieldwork was carried out in 1987 by the Botanical Society of the British Isles under their Monitoring Scheme when three designated tetrads in selected hectads were visited and all plants listed. Scannell and Synnott (1987) listed all native plants and also some non-native plants which were long-established e.g. *Acer pseudoplatanus* (Sycamore), whereas the Monitoring Scheme was wider-ranging, listing in addition to all native plants, all non-native species: this included adventives, garden escapes and throw-outs as well as established alien species. This added a further 51 species, subspecies and hybrids to the list (Table 3).

Recording work for the BSBI *Atlas 2000* project (Preston, Pearman and Dines, 2002) covered fieldwork in all hectads in the years up to the end of 1999 and again recorded all native and non-native plants. This fieldwork has added a further 124 species, subspecies and hybrids to the list (Table 4). Another six species and one variety (Table 5) have been added since the completion of recording for the *Atlas 2000* project. When all these records are amalgamated, the list of species in Scannell and Synnott (1987) increases from 587 to 850 (Tables 1 to 5).

I would like to thank Donal Synnott, the vice-county Recorder, for providing all the earlier records and Paul Hackney for his help and advice. My thanks also go to the various recorders who helped in the fieldwork especially Ian McNeill, David McNeill, Declan Doogue, David Nash, John Faulkner and John Harron.

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[Editor's note. In order to conserve space common names have been omitted from the following tables.]

TABLE 1. Records held at the Biological Records Centre, Monks Wood not included in Scannell and Synnott (1987).

Arctium minus subsp. *minus*
Buddleja davidii
Callitriche brutia
Callitriche platycarpa
Carex divulsa subsp. *divulsa*
Carex lasiocarpa
Crepis vesicaria
Equisetum variegatum
Festuca vivipara
Galeopsis bifida
Galium uliginosum
Geranium sanguineum
Mimulus agg.
Myriophyllum verticillatum
Ranunculus penicillatus subsp. *penicillatus*
Rhinanthus minor subsp. *minor*
Rhinanthus minor subsp. *stenophyllus*
Rhynchospora fusca
Rorippa × *anceps*
Rorippa × *sterilis*
Sagina apetala subsp. *erecta*
Salix × *multinervis*
Scilla verna
Senecio erucifolius
Utricularia intermedia

TABLE 2. Pre-1986 records in the v.c. Recorder's card index not included in Scannell and Synnott (1987).

Acorus calamus
Alchemilla filicaulis
Alchemilla filicaulis subsp. *vestita*
Alchemilla vulgaris agg.
Alisma lanceolatum
Atriplex prostrata agg.
Berberis vulgaris
Bromus commutatus
Buxus sempervirens
Calystegia silvatica
Camelina sativa
Carduus tenuiflorus
Carex distans
Carex pendula
Carum carvi
Drosera intermedia
Dryopteris affinis subsp. *borreri*
Euphrasia nemorosa
Glyceria maxima
Mimulus guttatus
Minuartia hybrida
Persicaria wallichii
Persicaria weyrichii
Pinus sylvestris
Populus × *canadensis* 'Serotina'
Potamogeton pusillus
Primula veris
Prunus laurocerasus
Quercus cerris
Ranunculus penicillatus subsp. *pseudofluitans*
Ribes uva-crispa
Salix × *smithiana*
Samolus valerandi
Sempervivum tectorum
Silene latifolia
Sinapis alba
Solanum nigrum

Glyceria × *pedicillata*
Impatiens glandulifera
Inula helenium
Isolepis cernua
Larix decidua
Leontodon hispidus
Listera cordata
Malus domestica
Melissa officinalis
Mentha × *rotundifolia*
Symphytum officinale
Taxus baccata
Trifolium medium
Ulmus minor subsp. *minor*
Verbascum thapsus
Viburnum lantana
Vicia sativa
Vicia sativa subsp. *nigra*
Viola hirta
Viola reichenbachiana

TABLE 3. Records from the BSBI Monitoring Scheme 1987+.

Agrostis gigantea
Aquilegia vulgaris
Arabidopsis thaliana
Bromus hordeaceus subsp. *hordeaceus*
Calystegia sepium subsp. *sepium*
Campanula latifolia
Cardamine amara
Ceratocapnos claviculata
Cornus sanguinea
Cornus sericea
Cotoneaster horizontalis
Crataegus × *macrocarpa*
Crocosmia × *crocosmiiflora*
Dipsacus fullonum
Epilobium brunnescens
Equisetum × *litorale*
Equisetum × *trachyodon*
Euphrasia arctica subsp. *borealis*
Euphrasia officinalis agg.
Fuchsia magellanica
Fumaria bastardii
Galium palustre subsp. *palustre*
Gentianella amarella subsp. *amarella*
Glyceria declinata
Hesperis matronalis
Hypericum maculatum
Lysimachia punctata
Phalaris canariensis
Polygonum arenastrum
Polypodium × *mantoniae*
Potamogeton pectinatus
Potamogeton praelongus
Prunus domestica
Pseudofumaria lutea
Ranunculus ficaria subsp. *ficaria*
Ribes nigrum
Ribes rubrum
Rumex acetosella subsp. *acetosella*
Salix cinerea subsp. *cinerea*
Schoenoplectus lacustris
Sedum album
Sedum spurium
Senecio squalidus
Solidago canadensis
Stachys arvensis
Syringa vulgaris
Tragopogon porrifolius
Tripleurospermum inodorum
Verbena officinalis
Veronica filiformis
Vicia sativa subsp. *segetalis*

TABLE 4. Records from recent fieldwork for Preston, Pearman and Dines (2002).

Acer campestre
Agrimonia procera
Agrostemma githago
Allium triquetrum
Alnus incana
Antirrhinum majus
Aphanes inexspectata
Arctium minus subsp. *nemorosum*
Arenaria serpyllifolia subsp. *serpyllifolia*
Avena sativa
Callitriche obtusangula
Carex hostiana × *C. viridula* (*C.* × *fulva*)
Carpinus betulus
Castanea sativa
Cerastium tomentosum
Chaenorhinum minus
Chenopodium rubrum
Cirsium heterophyllum
Clematis vitalba
Colutea arborescens
Crocosmia paniculata
Daphne laureola
Empetrum nigrum
Epilobium ciliatum
Epilobium ciliatum × *E. montanum*
Erophila verna
Euphrasia arctica
Euphrasia arctica subsp. *arctica*
Festuca ovina subsp. *ovina*
Foeniculum vulgare
Fumaria capreolata
Fumaria muralis
Galium mollugo
Galium palustre subsp. *elongatum*
Geranium phaeum
Geranium pratense
Geum × *intermedium*
Hieracium vulgatum agg.
Hirschfeldia incana
Hordeum distichon s.l.
Mentha × *villosa*
Milium effusum
Mimulus guttatus × *luteus*
Mycelis muralis
Myosotis sylvatica
Narcissus agg.
Neottia nidus-avis
Oxalis exilis
Oxalis stricta
Papaver dubium subsp. *lecoqii*
Papaver somniferum
Parietaria judaica
Pedicularis sylvatica subsp. *hibernica*
Picea sitchensis
Pilosella aurantiaca
Poa humilis
Poa nemoralis
Polygonatum × *hybridum*
Polygonatum multiflorum
Populus balsamifera
Populus × *canadensis*
Populus × *canescens*
Populus nigra
Pseudosasa japonica
Quercus petraea × *Q. robur* (*Q.* × *rosacea*)
Ranunculus ficaria subsp. *bulbilifer*
Ribes sanguineum
Rosa agrestis
Rosa caesia subsp. *glauca*
Rosa canina × *sherardii* (*R.* × *rothschildii*)
Rosa × *dumalis*
Rosa mollis × *sherardii* (*R.* × *shoolbredii*)
Rubus spectabilis
Rumex crispus
Rumex crispus × *R. obtusifolius* (*R.* × *pratensis*)
Salix alba × *S. fragilis* (*S.* × *rubens*)

Hordeum murinum
Hottonia palustris
Humulus lupulus
Hypericum calycinum
Hypericum hircinum
Iris foetidissima
Lamiastrum galeobdolon subsp. *argentatum*
Lamiastrum galeobdolon subsp. *galeobdolon*
Lamium hybridum
Ligustrum ovalifolium
Lilium martagon
Linaria purpurea
Linum usitatissimum
Lobularia maritima
Lonicera nitida
Lunaria annua
Luzula multiflora subsp. *congesta*
Luzula multiflora subsp. *multiflora*
Lycopersicon esculentum
Lysichiton americanus
Lysimachia nummularia
Mahonia aquifolium
Malva moschata
Meconopsis cambrica
Mentha spicata
Salix fragilis × *S. pentandra* (*S.* × *meyeriana*)
Salix repens
Saponaria officinalis
Saxifraga × *urbium*
Senecio fluviatilis
Senecio squalidus
Spiraea agg.
Spiraea alba × *S. salicifolia* (*S.* × *rosalba*)
Spiraea douglasii
Spiraea douglasii × *S. salicifolia* (*S.* × *pseudosalicifolia*)
Spirodela polyrhiza
Stachys × *ambigua*
Stratiotes aloides
Telekia speciosa
Thelypteris palustris
Trifolium hybridum subsp. *hybridum*
Triticum aestivum
Utricularia australis
Vaccinium oxycoccos
Veronica hederifolia subsp. *hederifolia*
Vinca major
Vinca minor
Viola tricolor

TABLE 5. RECORDS FROM RECENT FIELDWORK, POST-*ATLAS 2000*.

Avena strigosa
Bidens cernua var. *radiata*
Cotoneaster salicifolius
Echinops bannaticus
Hordeum vulgare
Pinus contorta
Rorippa sylvestris

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THE FLORAL DELIGHTS OF A DISUSED LIMESTONE QUARRY

M. O'Sullivan
Knockavota, Milltown, Co. Kerry

Nestling under Dromin Hill (75 m), 3 km east of the town of Killorglin is the long disused limestone quarry at Steelroe (Kerry, v.c. H2). The Landmark Bridge, spanning the River Laune opened in 1885 and the Catholic Church of St James (1891) were both constructed with the durable stone from this famous quarry. To this day can be seen the kiln house near the semi-circular shaped rock face. On the floor, 9 m below, there is a thin film of grass on the rock that is enclosed by two semi-circular low ditches; the whole complex consists of less than 1 ha.

However, it is the numerous and diverse range of plants that are found here that mark it out as a botanical garden in the wild. There are three tree species, six shrub species, four ferns, three sedges (*Carex* spp.), two rushes (*Juncus* spp.) and a further 78 other flowering plants. Clinging to the rock-face are such species as *Leucanthemum vulgare* (Oxeye Daisy), *Linum bienne* (Pale Flax) and white flowering specimens of *Centaurium erythraea* (Common Centaury). The ground flora is quite diverse and includes two most exciting orchid species, *Ophrys apifera* (Bee Orchid) and *Anacamptis pyramidalis* (Pyramidal Orchid) sharing space with *Ranunculus bulbosus* (Bulbous Buttercup) and *Lotus corniculatus* (Common Bird's-foot-trefoil).

Umbellifers are well-represented with *Conium maculatum* (Hemlock), *Heracleum sphondylium* (Hogweed), *Torilis japonica* (Upright Hedge-parsley) and the dainty *Daucus carota* (Wild Carrot). The fragrant *Filipendula ulmaria* (Meadowsweet) is very prominent especially towards the outer rim of the quarry. Smaller plants like *Linum catharticum* (Fairy Flax), *Euphrasia officinalis* agg. (Eyebright), *Veronica persica* (Common Field-speedwell), *Trifolium dubium* (Lesser Trefoil), *Potentilla erecta* (Tormentil) and the Pimpernels *Lysimachia nemorum* (Yellow) and *Anagallis arvensis* (Scarlet) are dotted throughout the limestone floor.

Tussilago farfara (Colt's-foot), *Odontites vernus* (Red Bartsia), *Humulus lupulus* (Hop), *Reseda luteola* (Weld) and *Scrophularia nodosa* (Common Figwort) are among the diverse species of wildflowers inhabiting this mini-botanical wonderland.

The quarry is now surrounded on three sides by the newly developed Killorglin Golf Course. Up until ten years ago, the land was used for farming and, being adjacent to the River Laune, was also a favoured wintering ground for the stately Whooper Swans.

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A REPORT ON THE FLORA OF CORK (V.CC. H3-H5), 2002

T. O'Mahony
6 Glenthorn Way, Dublin Hill, Cork City

Between January and March, considerable time was spent extracting composite, detailed descriptions of *Euphrasia* (Eyebright) species from literature sources – a prelude to proposed fieldwork in Co. Cork in future years on this taxonomically critical genus. The genus *Euphrasia* has never been systematically recorded in the Cork flora, consequently the distribution and frequency of most taxa is still very inadequately known. Such research is all the more urgent at the present time, given that the *New atlas of the British and Irish flora* (Preston, Pearman and Dines, 2002) suggests that the genus as a whole has declined throughout Britain and Ireland in recent years, as a consequence of radically changing land-use practices.

During this period also, the wall-flora of various sites about Cork City (H4-H5) was resurveyed, updating old records and adding new finds, while revision work was undertaken on the aquatic/paludal species of the genus *Myosotis* (Water Forget-me-nots), in preparation for detailed observations in the field later in the year. Moreover, early-flowering populations of *Fumaria muralis* (Common Ramping-fumitory) and *F. bastardii* (Tall Ramping-fumitory) allowed a refamiliarisation with the delimitation characters of these frequently confounded species.

During April, initial delight at the refinding of some small, insular, roadside populations of *Geranium purpureum* (Little-Robin) from various sites about Cork City (H4), gave way to dismay later in the year, when all of these succumbed to the combined effects of protracted wet weather, and Cork City Council's weed-eradication programme. Various Sunday spins during April, showed *Veronica crista-galli* (Crested Field-speedwell) to be well established at Enniskean (H3, W35.54), Crookstown (H4, W42.65) and near Cloughduv (H4, W43.65 and W44.65). On 23 April, a visit to Clonakilty town (H3, W38.41) found *Valerianella carinata* (Keeled-fruited Cornsalad) and *Soleirolia soleirolii* (Mind-your-own-business) to be naturalized here, while the R588 to Enniskean (in 1-km square, W37.41) held some twelve clumps of flowering/fruiting *Primula veris* (Cowslip) on a steep roadside embankment close to Fernhill House Hotel – a rare species in West Cork these days.

On 12 May, Jim O'Malley showed me some tiny, cohabiting populations of *Primula veris* (Cowslip) and *P.* × *polyantha* (False Oxlip) in a redundant limestone quarry at Meelin Village (H4, R29.13) near Newmarket. This small, insignificant-looking quarry provided the limestone for Cobh's magnificent St Colman's Cathedral! Hectad R2.1 has yet to be adequately surveyed, and may prove of interest, given the juxtaposition of upland acid heaths, and insular, carboniferous limestone outcrops. Populations of Marsh-orchids (*Dactylorhiza majalis* agg.) and naturalized

Cotoneasters occur in this hectad, and await critical determination, while *Rubus spectabilis* (Salmonberry) is also established here.

On 26 May, work was undertaken in the Doneraile area of East Cork (H5, R6.0). Populations of *Erinus alpinus* (Fairy Foxglove) were established on part of the limestone boundary-wall of Doneraile Estate, near Noonan's T-junction (R60.06), where naturalized *Ribes uva-crispa* (Gooseberry) and *Symphytum officinale* (Common Comfrey) populations also occurred. All three species are additions to hectad R6.0. *Erinus alpinus* is also abundant on the limestone outcrops of the Marian shrine (H5, R59.07) on the Doneraile-Old Twopothouse road, and frequent on a limestone wall adjacent to the shrine. The southern branch of the nearby Cornahinch crossroads (H5, R58.06) holds further cream-flowered populations of *Symphytum officinale*, both this species and *E. alpinus* being new to hectad R5.0. The limestone walltops hereabouts, held an abundance of *Arabidopsis thaliana* (Thale Cress), *Saxifraga tridactylites* (Rue-leaved Saxifrage) and *Vulpia bromoides* (Squirreltail Fescue), etc.

A number of May/June visits to the northern coastline of Great Island, Cork Harbour (to the east of Belvelly Castle), enabled recording to be undertaken in four contiguous East Cork hectads, viz.: W7.6, W7.7, W8.6 and W8.7. In 1-km square W79.70, the saltmarsh pans immediately east of Belvelly Castle held a typical halophyte flora, which included an abundance of *Atriplex portulacoides* (Sea-purslane), *Cochlearia* × *hollandica* (Hybrid Scurvygrass), *Triglochin maritimum* (Sea Arrowgrass), *Plantago maritima* (Sea Plantain) and *Limonium humile* (Lax-flowered Sea-lavender), etc. (In the 1840s, the area about Belvelly Castle harboured populations of *Mentha pulegium* (Pennyroyal) and *Leonurus cardiaca* (Motherwort), though these have long since died out here.) A nearby roadside pond was covered with a mat of *Lemna minuta* (Least Duckweed) – a very unwelcome addition to our ever-increasing list of invasive aquatic aliens. *L. minuta* is new to East Cork, though in Mid Cork it has been established in Blarney Castle Lake (H4, W60.74) for a number of years. The roadway skirting this pond held populations of *Carex divulsa* (Grey Sedge), *Hyacinthoides* × *massartiana* (Hybrid Bluebell) and *Clematis vitalba* (Traveller's-joy).

The roadside hedgebank in the contiguous 1-km square, W79.69 yielded a few bushes of *Taxus baccata* (Yew), which is very rare in the Cork flora, while a tiny, impounded, brackish pond provided a second site for *Lemna minuta.* The hedgebanks of an adjacent by-road held populations of *Rosa micrantha* (Small-flowered Sweet-briar) and *Rubia peregrina* (Wild Madder), the latter being quite common eastwards along the coast road to beyond Rosslague. An established conifer plantation fringes the by-road, and evidently occupies the site of a former demesne – as is suggested by the presence of bushes of *Prunus laurocerasus* (Cherry Laurel), and a few relict, mature trees of *Castanea sativa* (Sweet Chestnut) on its margins. The plantation pathways held populations of *Aira praecox* (Early Hair-grass) together with an abundance of naturalized *Chamerion angustifolium* (Rosebay Willowherb).

The coastal seawall eastwards to Rosslague (H5, W80.69) held masses of *Centranthus ruber* (Red Valerian) and *Crepis vesicaria* (Beaked Hawk's-beard), both of which occur abundantly throughout Cork Harbour, while scattered populations of *Brassica nigra* (Black Mustard) were also present. *Allium triquetrum* (Three-cornered Garlic) and *Melissa officinalis* (Balm) were found at Rosslague T-junction, while the low, coastal walltops in the adjacent 1-km squares, W82.69 and W83.69, held a range of species, including: *Aira caryophyllea* (Silver Hair-grass), *Aira praecox* (Early Hair-grass), *Catapodium rigidum* (Fern-grass), *Vulpia bromoides* (Squirreltail Fescue), *Linum catharticum* (Fairy Flax), *Leontodon saxatilis* (Lesser Hawkbit), *Sagina maritima* (Sea Pearlwort), *Sagina apetala* (Annual Pearlwort) and *Sedum acre* (Biting Stonecrop). Transient pools by the roadside produced masses of *Cochlearia* × *hollandica* (Hybrid Scurvygrass), associated with *Puccinellia distans* (Reflexed Saltmarsh-grass) and occasional stands of *Atriplex portulacoides* (Sea-purslane). *Prunus cerasus* (Dwarf Cherry) is of locally frequent occurrence in roadside hedgebanks here.

On 3 June, I rechecked my May 2000 find of *Erinus alpinus* (Fairy Foxglove) from the limestone roadside walls on the northern bank of the River Blackwater at Ballyhooly Bridge (H5, W72.98), the flowers of which were assiduously being probed for nectar by some Painted Lady butterflies (*Vanessa cardui*). The normal purple-flowered form occurs abundantly here, cohabiting with localised populations of a lilac-flowered variant. Associated species included: *Aira caryophyllea* (Silver Hair-grass), *Arabidopsis thaliana* (Thale Cress), and localised *Orobanche hederae* (Ivy Broomrape), *Clinopodium ascendens* (Common Calamint) and *Arabis hirsuta* (Hairy Rock-cress), the latter species being new to hectad W7.9. Calcareous banks at a road-bend (H5, R74.03) roughly 1 km west of Glanworth Village, added *Origanum vulgare* (Wild Marjoram) to hectad R7.0, this very local Cork species being associated with *Trisetum flavescens* (Yellow Oat-grass), *Helictotrichon pubescens* (Downy Oat-grass), *Anisantha sterilis* (Barren Brome), *Knautia arvensis* (Field Scabious), *Vicia hirsuta* (Hairy Tare), *Galium verum* (Lady's Bedstraw), *Pimpinella saxifraga* (Burnet-saxifrage) and a single flowering clump of *Carex muricata* (Prickly Sedge), which latter is rare in hectad R7.0.

Much the same calcicole flora occurs on roadside embankments at Glanworth Village (H5, R75.04), with the addition of *Clinopodium ascendens* (Calamint), *Geranium columbinum* (Long-stalked Crane's-bill) and *Trifolium campestre* (Hop Trefoil). However, the *major* find of the day was four clumps of the sedge hybrid, *Carex divulsa* (Grey Sedge) × *C. muricata* (Prickly Sedge), which occurred with both parents on a hedgebank close to Ballykenly Bridge (H5, R75.06) on the River Funshion, the hybrid inflorescences being characteristically protogynous. (Subsequent microscopic examination of the pollen of this F_1 hybrid showed it to be highly sterile, with most grains malformed and empty of contents. Moreover, fruiting material collected from

this site on 27 October 2002, showed that all female spikelets bore no more than 1-3 fully-developed utricles, the remainder being aborted.)

On 19 June, evening botanical work was undertaken in the Belgooly area, close to Kinsale town. Rechecking of a minor road which runs southwards from Oatlands T-junction (H4, W69.53) to the crossroad (H4, W69.52) immediately north of Ballinclashet, showed the naturalized *Fragaria* × *ananassa* (Garden Strawberry) population (known since 1993) to cover c. 16 m of hedgebank here. Arboreal species established from old demesnes in this area included: *Populus tremula* (Aspen), *Prunus laurocerasus* (Cherry Laurel) and *Rhododendron ponticum* (Rhododendron). These are associated with native *Euonymus europaeus* (Spindle), *Rosa sherardii* (Sherard's Downy-rose) and a few bushes (status uncertain) of *Rosa rubiginosa* (Sweet-briar) which I first recorded from here in 1996(?). *Carex divulsa* (Grey Sedge) is a common roadside sedge here, and alternates with stands of *Osmunda regalis* (Royal Fern) where streams abut the roadway.

The narrow coastal laneway running from Ardnaboha (H4, W68.51) southwards to Ringville (H4, W68.49) held an abundance of *Carex divulsa* (Grey Sedge) and a few clumps of *Silene vulgaris* (Bladder Campion). The Ringville shoreline (facing the mouth of Oysterhaven Inlet) produced a surprise in two small populations of the rare Cork species, *Blackstonia perfoliata* (Yellow-wort) – one growing on an eroding, near-vertical cliff-face, the other associated with a maritime-turf flora, which included *Armeria maritima* (Thrift), *Anthyllis vulneraria* (Kidney Vetch) and *Festuca rubra* (Red Fescue). While *Fumaria capreolata* (White Ramping-fumitory) has been reported from the strand area at Ringville in recent years, I only noted *F. muralis* (Common Ramping-fumitory) here, this species also occurring frequently in cereal fields on the clifftop, where it cohabits with *F. bastardii* (Tall Ramping-fumitory).

On 21 June, initial recording was undertaken in the East Cork hectad, W8.8 which, inexplicably, has never been surveyed to-date. This upland hectad lies to the south of the Rathcormac-Aghern road, and is dominated by acidic or circum-neutral soils, while being well supplied with wooded stream-valleys. On the present visit, *Euphorbia hyberna* (Irish Spurge), *Rosa tomentosa* (Harsh Downy-rose) and the rose hybrid, *R. sherardii* (Sherard's Downy-rose) × *R. rubiginosa* (Sweet-briar), proved to be of locally frequent occurrence here. Naturalized species seen in this hectad included: *Hesperis matronalis* (Dame's-violet), *Ribes uva-crispa* (Gooseberry), *Conium maculatum* (Hemlock) and *Chamerion angustifolium* (Rosebay Willowherb). Considerably more work is needed in hectad W8.8.

On 9 July, Gougane Barra Lake (H3, W0.6) was visited, with the aim of examining the cliffs at Foilnashrone, to the north-east of the lake. Unfortunately, intermittent torrential rain ruled out this activity, so I contented myself with a brief survey of the approach roadways (W09.65 and W09.66) to this majestic site. The flora here

included: *Agrostis vinealis* (Brown Bent), *Festuca vivipara* (Viviparous Sheep's-fescue), *Dactylorhiza majalis* agg. (Marsh-orchids), *Saxifraga spathularis* (St Patrick's-cabbage), *Cytisus scoparius* (Broom), *Euphorbia hyberna* (Irish Spurge), *Lepidium heterophyllum* (Smith's Pepperwort), *Rosa sherardii* (Sherard's Downy-rose), *Osmunda regalis* (Royal Fern), and the naturalized species, *Juncus tenuis* (Slender Rush) and *Epilobium brunnescens* (New Zealand Willowherb). The lake-margin fronting the hotel holds a naturalized population of an undetermined, linear-leaved *Berberis* (Barberry), in addition to an *Arum italicum*-like taxon (Italian Lords-and-Ladies) bearing inordinately long, cream–veined leaves, with halberd-shaped basal lobes. This latter taxon looks very different from typical *A. italicum* subsp. *italicum* – a plant that is now widely naturalized in Co. Cork (H3-H5).

Subsequently, I surveyed the hedgebanks of a byroad (H3, W06.57) adjoining the Bantry road (the R584), c. 1.8 km east of Carriganass Bridge. This yielded an abundance of *Euphorbia hyberna* (Irish Spurge), and some flowering bushes of *Rosa tomentosa* (Harsh Downy-rose) and *R. sherardii* (Sherard's Downy-rose). Close to this junction, a small population of *Impatiens glandulifera* (Indian Balsam) occurred on the main road. The journey home was via Ballingeary, on the northern shore of Lough Allua. *Calystegia pulchra* (Hairy Bindweed) was seen in flower in two disjunct hedgebank sites (H3, W16.66 and W17.65), where I first recorded it in the 1970s. Close to the disused sand-quarry occurred roadside populations of *Agrostis vinealis* (Brown Bent), *Festuca vivipara* (Viviparous Sheep's-fescue), *Fragaria* × ananassa (Garden Strawberry) and one flowering stand of *Hieracium umbellatum* agg. (Umbellate Hawkweed), which in Co. Cork is currently only known from the environs of Lough Allua.

On 28 July, work was undertaken in hectad R7.1 (H5/H8) near Kildorrery, East Cork, given that the Cork section of this hectad has only received minimal attention to-date. About Marshallstown Bridge (H5, R74.11), populations of *Knautia arvensis* (Field Scabious), *Carex divulsa* (Grey Sedge), *Silene vulgaris* (Bladder Campion), *Galium verum* (Lady's Bedstraw), *Pimpinella saxifraga* (Burnet-saxifrage), *Impatiens glandulifera* (Indian Balsam), *Rosa tomentosa* (Harsh Downy-rose), *Sedum album* (White Stonecrop) and *Pimpinella major* (Greater Burnet-saxifrage) were seen. At nearby O'Brien's Bridge (R73.11), *Hypericum perforatum* (Perforate St John's-wort) bordered the pathway to the River Sheep, while *Cornus sericea* (Red-osier Dogwood) was well established on the left bank above the bridge, and also in the adjacent roadside hedgebank.

A further visit to hectad R7.1 on 18 August, turned up cohabiting flowering populations of the two *Agrimonia* species, *A. eupatoria* (Agrimony) and *A. procera* (Fragrant Agrimony) in damp roadside verges on the northern branch of Killee Crossroads (H5, R77.13). This is now an increasingly rare event in Co. Cork, where both *Agrimonia* species have greatly decreased in frequency on roadside verges since

the 1980s, though the reason(s) for the decline is far from obvious. Both *Rosa tomentosa* and *R.* × *scabriuscula* (= *R. canina* (Dog-rose) × *R. tomentosa* and its reciprocal) occur frequently at Killee Crossroads, the hybrid also occurring in the neighbouring hectads, W6.9, R6.0, R7.0, R8.0 and R8.1, etc.

On 21 August, Gougane Barra was revisited in sunny weather, and the small, accessible area of cliffs at Foilnashrone (H3, W09.67) was surveyed. These produced nothing of interest, save a population of the putative *Agrostis* hybrid, *A. capillaris* (Common Bent) × *A. vinealis* (Brown Bent). However, this determination remains tentative, until such time as flowering material can be collected and critically examined under the microscope. Damp hollows in the mountain, and shaded clefts between rocks, held populations of *Hymenophyllum wilsonii* (Wilson's Filmy-fern) and *H. tunbrigense* (Tunbridge Filmy-fern), the former being the more frequent. *Pinguicula grandiflora* (Large-flowered Butterwort) occurred commonly in the area, while the beautiful damp grasslands-cum-heaths flanking the Owennashrone River produced: *Rhynchospora alba* (White Beak-sedge), *Schoenus nigricans* (Black Bog-rush), *Drosera rotundifolia* (Round-leaved Sundew), *Hypericum elodes* (Marsh St John's-wort), *Scutellaria minor* (Lesser Skullcap), *Carex hostiana* (Tawny Sedge), *C. hostiana* × *C. iridula* subsp. *oedocarpa* (Yellow-sedge) and *Pinguicula lusitanica* (Pale Butterwort), etc. Comprehensive fieldwork is clearly required in this mountainous area – as, indeed, in virtually all Cork montane habitats!

Between September and November, a number of trips were made to sections of the River Bandon and River Argideen, in West Cork. In addition to general plant recording, a special search was made for the rare *Myosotis* hybrid, *M. laxa* (Tufted Forget-me-not) × *M. scorpioides* (Water Forget-me-not) (= *M.* × *suzae*), as work during the period, 1996-1999 had suggested its presence on both of these rivers. In the event, *M.* × *suzae* was confirmed to occur on the River Bandon from at least Dunmanway (H3, W23.52) down-river to Murragh Bridge (H3, W38.54), incorporating the hectads, W2.5 and W3.5. *M.* × *suzae* was also confirmed from the River Argideen, but to-date only from the short stretch from Kilmaloda Bridge (H3, W45.45) to below Inchy Bridge (H3, W46.45), a distance of approximately 2 km. I hope to complete this West Cork phase of my survey work on *M.* × *suzae* in 2003, in addition to a taxonomic paper on the genus *Myosotis* section *Palustris* as represented in Britain and Ireland.

On 17 September, botanical work was undertaken along the defunct railway line (H3, W23.52) to the south-east of Dunmanway town, near the confluence of the Brewery River and Dirty River – tributaries of the River Bandon. This revealed a western extension of the riverine-woodland ecosystem which radiates outwards from the River Bandon immediately south of Long Bridge, Dunmanway town, (H3, W24.52). This wonderful environment consists of a network of interlacing streams and rivers, which

encircle numerous small, wooded islets, the latter bearing an abundance of *Viburnum opulus* (Guelder-rose), *Myrica gale* (Bog-myrtle) and *Osmunda regalis* (Royal Fern), while the understorey holds localized populations of the normally base-demanding *Allium ursinum* (Ramsons). Here, on the fringe of this wetland, the tree-canopy of mature *Quercus petraea* (Sessile Oak) is far better developed than along the course of the River Bandon itself. This fascinating wetland ecosystem provides a spectacular contrast to the 'tame', mundane agricultural land that encircles it. Moreover, this habitat is clearly relict in nature, and ecologically fragile and vulnerable. It shares many characteristics with another Cork wetland ecosystem – the unique Gearagh Alluvial Woodland on the River Lee (H3, W2.7 and W3.7) close to Macroom. Such alluvial woodland ecosystems are now of very rare occurrence in Ireland (and, indeed, through much of Europe) and consequently should be fully conserved for posterity.

On 25 September, a return visit was made to the River Bandon, accessing the right bank (immediately below the defunct Milleenanannig railway bridge) via an old trackway adjoining the R599 (H3, W24.51). At the main road junction, the grassy trackway bore small populations of *Chamaemelum nobile* (Chamomile) and *Juncus tenuis* (Slender Rush), both species being additions to hectad W2.5. Close to the River Bandon, the old trackway forms a Y-fork, each branch of which holds paludal communities, with dense stands of *Myosotis* × *suzae* (Hybrid Water Forget-me-not) cohabiting with localized populations of both its parents. Also present here (and on both riverbanks) were beautiful flowering populations of *Mentha* × *gracilis* (Bushy Mint) in its most upriver location to-date. I first recorded *M.* × *gracilis* on the River Bandon in the 1970s. Bushy Mint is now known from an extensive stretch of the River Bandon between Dunmanway and Inishannon, in hectads W2.5, W3.5, W4.5 and W5.5.

On 29 September, a visit was made to Inchy Bridge (H3, W46.45) on the River Argideen above Timoleague. *Myosotis* × *suzae* proved to occur frequently on the right bank of the river for a distance of at least 400 m below the bridge, while populations of *Selaginella kraussiana* (Krauss's Clubmoss) and a white-flowered garden *Aster* (to be determined) were seen to be extensively naturalized here. More localised taxa included: *Mimulus guttatus* (Monkeyflower), *Lysimachia nummularia* (Creeping-Jenny), *Symphytum officinale* (Common Comfrey), *S.* × *uplandicum* (Russian Comfrey), *Soleirolia soleirolii* (Mind-your-own-business) and *Fallopia* × *bohemica* (Hybrid Japanese Knotweed). *Polypodium cambricum* (Southern Polypody) and *P. interjectum* (Intermediate Polypody) cohabit as epiphytes on *Quercus petraea* (Sessile Oak) trees overlooking the river. The hedgebank of the Inchy Bridge-Timoleague road, some 600 m down-river of the bridge in 1-km square W47.45, produced a small, naturalized stand of a Bamboo taxon (to be determined), while *Agrostis vinealis* (Brown Bent) grew on embankments close to the bridge, and was also new to hectad W4.4.

On 5 October, a stop at Kilmacsimon Quay on the right bank of the River Bandon above Kinsale, allowed a rechecking of my September 1971 find of *Origanum vulgare* (Wild Marjoram) – a very rare species in West Cork. It still occurred in small quantity on a roadside hedgebank between Kilmacsimon Bridge and Cloghane Crossroads (H3, W55.53). On the journey home, examination of an old churchyard (H4, W54.56) on the left bank of the River Bandon at Inishannon, turned up established populations of *Cichorium intybus* (Chicory) and *Oenothera glazioviana* (Large-flowered Evening-primrose), the former now being of very rare occurrence in Co. Cork.

On 6 October, one margin of the Bandon-Crossbarry Road (the R589) shortly east of Brinny Crossroads (H4, W52.59), produced populations of *Mimulus guttatus* (Monkeyflower) (in a ditch), *Stachys* × *ambigua* (Hybrid Woundwort) and *Veronica crista-galli* (Crested Field-speedwell), all of which I had originally found here in 1984. A new discovery was *Fragaria* × *ananassa* (Garden Strawberry), covering c. 35 m of grassy roadside margin. On 17 October, a byroad adjoining the N71 at Lisselane Bridge (H3, W40.44), close to Clonakilty, yielded small populations of naturalized *Fragaria* × *ananassa*, *Arum italicum* subsp. *italicum* (Italian Lords-and-Ladies), *Mimulus guttatus* (Monkeyflower) and *Vinca major* (Greater Periwinkle).

In early November, a beautiful flowering population of *Cyclamen hederifolium* (Cyclamen) was seen to be well established on a grassy embankment bordering a section of the Old Ballyvolane Road (H5, W68.73), in Cork City.

Lastly, on 29 December, a pilgrimage was made to the sole Irish site for *Carex depauperata* (Starved Wood-sedge) in the River Blackwater valley, close to Killavullen village (H5, W6.9). As in 2001, only a solitary clump of this visually very distinctive sedge was seen – conferring on it, the unenviable title, 'Ireland's rarest species'.

REFERENCE

Preston, C.D., Pearman, D.A. and Dines, T.D., eds (2002). *New atlas of the British and Irish flora*. Oxford University Press, Oxford.

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RECORDING IN 2002 FOR A FLORA OF CO. WATERFORD (V.C. H6)

P.R. Green
Coombegate Cottage, St Ive Cross, Liskeard, Cornwall, PL14 3LZ
E-mail: pgreencoombegate@tinyworld.co.uk

The year 2002 has been another very productive year; besides the finds listed below there have been several more sites for *Euphorbia hyberna* (Irish Spurge) and *Saxifraga spathularis* (St Patrick's-cabbage). In the *New atlas* (Preston, Pearman and Dines, 2002) all the records for Rock Sea-lavenders in the county are mapped as *Limonium binervosum* agg. I visited all the sites and have sent specimens to Dr L. Boorman who has named them all as *Limonium procerum* subsp. *procerum*. The first 10-km square in the county to top 700 species is (S5.0) Tramore with 701 species now recorded.

The records detailed below were made by myself unless otherwise stated. NCR = new county record. **DBN** = National Herbarium, Glasnevin, Dublin. * = species not native to Co. Waterford. All dates are 2002.

**Allium ampeloprasum* var. *babingtonii* (Wild Leek). Twelve plants on verge of N25, Ballynaneashagh (S56.10), 1 June, Ian Green, NCR.

**Alnus rubra* (Red Alder). Single self-sown specimen near parent tree in damp grass by Kilmaloo Lough, Garrananaspick (X12.81), 21 October, Ian and Paul Green, NCR.

**Althaea officinalis* (Marsh-mallow). Single plant on bank of River Suir, Ballynakill (S63.11), 25 October, Ian Green, third county record.

**Arbutus unedo* (Strawberry-tree). Single bush self-sown in hedge, Knocknageragh (X14.80), 24 July, NCR.

Bromus racemosus (Smooth Brome). Plentiful in super meadow next to Annestown Stream, Annestown (X49.99), 5 June, Ian Green, NCR, confirmed by Dr T.A. Cope.

Calystegia × *lucana* (*C. sepium* × *C. silvatica*). Large stand along hedge of field adjoining beach, Fornaght Strand, Knockavelish (S70.03), 19 October, Paul and Ian Green, NCR.

Carex strigosa (Thin-spiked Wood-sedge). Plentiful along tracks in damp woodland, Curraghmore, Portlaw (S43.15), 1 June, second county record.

**Cotoneaster henryanus* (Henry's Cotoneaster). Thirteen bushes self-sown along forest ride, Russelstown Bridge (S16.19), 27 October, Ian Green, NCR, determined J. Fryer.

**Cotoneaster sternianus* (Stern's Cotoneaster). Single bush self-sown on edge of conifer plantation, Toor South (X17.85), 21 October, Ian Green, NCR, determined J. Fryer.

**Cotoneaster* × *suecicus* (Swedish Cotoneaster). Self-sown on wall of churchyard, Lismore (X04.97), 22 October, Ian Green, NCR, determined J. Fryer.

Crambe maritima (Sea-kale). Nine plants at top of beach, Monatray West (X11.77), 24 July.

**Dracunculus vulgaris* (Dragon Arum). Two clumps in wood, dumped at some time, Tramore (S58.01), 30 March, NCR.

Echium vulgare (Viper's-bugloss). Single plant on waste ground, Aughnamucka (S66.07), 25 October, second county record.

Epilobium ciliatum × *E. parviflorum*. Disused quarry with both parents, Ballynaharda (X26.81), 26 July, NCR.

**Euphorbia mellifera*. Self-sown at base of wall, Knockmahon (X44.99), 4 June, NCR.

**Fallopia* × *bohemica* (*F. japonica* × *sachalinensis*). Patch on roadside, Ballycullane (X21.08), 21 October, Ian and Paul Green, third county record.

**Geranium* × *oxonianum* (Druce's Crane's-bill). Little in hedge, Lisnakill (S52.07), 6 June, Ian Green, NCR.

Groenlandia densa (Opposite-leaved Pondweed). Lots in several ditches, Knockane, Portlaw (S48.15), 20 July.

**Hirschfeldia incana* (Hoary Mustard). Single large specimen on roadside, Rath (X14.78), 24 October, NCR.

Lemna gibba (Fat Duckweed). Small pond, Logloss, Waterford (S59.12), 6 June, Paul and Ian Green and Declan McGrath. Second county record, first since 1889.

**Lilium pyrenaicum* (Pyrenean Lily). Clump, roadside hedge, Ballyvad (S44.11), 8 June, Ian Green, NCR.

**Linaria vulgaris* (Common Toadflax). Roadside bank, Kilmore (X11.86), 23 July, third county record.

Lolium × *boucheanum* (*L. perenne* × *L. multiflorum*). Clump on roadside, Dromina (S69.06), 19 October, Ian Green, NCR.

**Lonicera xylosteum* (Fly Honeysuckle). Several bushes self-sown in wooded area next to road, Cooltegin (S68.06), 19 October, Ian Green, NCR.

Oenanthe aquatica (Fine-leaved Water-dropwort). In several ditches, Knockane, Portlaw (S48.16), 20 July.

**Oxalis corniculata* var. *atropurpurea* (Procumbent Yellow-sorrel). Plentiful in pavement cracks and at base of walls in Rockfield Park, Waterford (S59.12), 6 June, Declan McGrath.

**Plagiobothrys scouleri* (White Forget-me-not). Single specimen on newly sown road verge, Kilmacthomas (S39.05), 2 June, Ian Green, NCR.

Ranunculus sardous* (Hairy Buttercup). Single specimen on verge of N25, The Sweep, Kilmeadon (S52.09), 20 July, NCR. Specimen placed in **DBN.

Rosa agrestis (Small-leaved Sweet-briar). Single bush in roadside hedge, Shandon Island, Dungarvan (X24.94), 27 July, confirmed by Rev. A.L. Primavesi. New county record when found here in 1983 by Tony O'Mahony.

Rosa × *andegavensis* (*R. stylosa* × *R. canina*). Several bushes in hedge, Shandon Island, Dungarvan (X24.94), 27 July, NCR, confirmed by Rev. A.L. Primavesi.

**Rosa multiflora* (Many-flowered Rose). Roadside hedge, Faha (S36.03), 2 June, Ian Green, NCR.

**Sedum sexangulare* (Tasteless Stonecrop). Seven patches on disused railway, Gracedieu (S56.12), 20 July, second county record.

Sorbus hibernica. Large tree on field bank and eleven small trees scattered over moorland amongst *Calluna vulgaris* (Heather) and *Ulex gallii* (Western Gorse), Curragh (R99.95), 7 June, Ian Green, third county record.

Trifolium arvense (Hare's-foot Clover). Lots on wall top, Ballymacart Cove, Ballymacart (X25.81), 26 July, John Coveney, first county record since 1968.

Vaccinium oxycoccos (Cranberry). Growing over an area about 4 m square in boggy area, Kilnafrehan West (X26.93), 23 October, third county record.

**Vicia tetrasperma* (Smooth Tare). Disused quarry, Ballynaharda (X26.81), 26 July, NCR.

REFERENCE

Preston, C.D., Pearman D.A. and Dines T.D., eds (2002). *New atlas of the British and Irish flora*. Oxford University Press, Oxford.

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MINUTES OF THE ANNUAL GENERAL MEETING OF THE BSBI IRISH REGIONAL BRANCH HELD IN THE ULSTER MUSEUM, BELFAST ON 14 SEPTEMBER 2002 (Unapproved)

The Chair, Anne Carter, welcomed the 17 attending members.

ATTENDANCE

S.L. Parr, A.B. Carter, C. Mhic Daeid, F. Devery, R. Forbes, A. Hill, R. Piper, J. Wilde, F. Maitland, I. McNeill, M. Archer, D. McNeill, G. Day, J. Nunn, A. Austin, P. Reilly, R. Sheppard.

APOLOGIES

Apologies were received from B. Rushton, D. Nash, M. Scannell, R. Pryce, C. Breen, G. O'Donovan, P. Hackney, R. Northridge, W. Semple, F. Wilson, S. Reynolds, M. Marshall, D. Doogue, S. Beesley, M. Allen, J. Crichton.

MINUTES OF IRISH REGIONAL AGM 2001, 22 SEPTEMBER 2001

Read, approved and signed.

CHAIR'S REPORT

The Chair, Anne Carter, said that it had been a somewhat fallow year and many of the plans discussed last year were still under discussion. She stated that the all-Ireland website was an important project for the future. Anne thanked the Committee particularly Brian Rushton for his work in producing the *Irish Botanical News*, Graham Day for organising the field trips and Fiona Maitland and Sharon Parr for their work. Pete Selby, the BSBI/Plantlife Volunteers Officer was welcomed to Belfast. Anne said that she was now stepping down as the Chair but had enjoyed her time and it had been an honour.

SECRETARY'S REPORT

The Committee met in January, April and June.

The changing of the BSBI from a totally voluntary organisation to one having some paid posts, funded from sources such as the Heritage Lottery Fund in the UK, meant that the Committee had to look at how this may affect Ireland, particularly the South which could become marginalised. The general feeling of the Committee is that we can not let this happen but we will need to examine each of the projects to be pursued by the Society and see if, and how, it is feasible for us to take part.

One of the major impediments in the South is the lack of a biological records centre so the Committee began to consider the development of a BSBI Ireland database to be managed by ourselves. This is still in the early stages and will need a considerable amount of commitment and consideration if it is to become a reality. Next year it is proposed to rerun the 1988 monitoring scheme and Pete Selby will talk more about this later on, so this means that the incoming Committee will have to address this issue immediately.

The possibility of extending the Flora of Northern Ireland website to cover all of Ireland received further attention. This venture was funded by the Environmental Heritage Service in the North and a funding partner in the South would be needed if it is to be extended.

Other possibilities discussed for 2003 included the possibility of holding a Recorder's meeting early in the year and instigating an annual lecture which would help to raise public awareness of the BSBI.

Anne retires as Chair this year and David Nash as Representative to Council; on behalf of the rest of the Committee, I thank them for all their work during their time on the Committee. Having served as Secretary for five years, I am now stepping down as I am unable to give the position the commitment it requires at the present moment in time.

REPORT OF THE FIELD MEETINGS SECRETARY

Ten field meetings were held. Graham Day thanked all the leaders and read a summary of the reports he had received.

VICE-COUNTY RECORDERS REPORTS

The Chair welcomed Ralph Sheppard as the new vice-county recorder for West Donegal.

Reports were presented by Caroline Mhic Daeid – South Kerry (H1), Ian McNeill – Tyrone (H36), Graham Day – Down (H38), Ralph Forbes – Fermanagh (H33), Ralph Sheppard – West Donegal (H35).

ELECTION OF COMMITTEE MEMBER

As Anne Carter was stepping down there was one vacancy on the Committee. Paul Hackney (Proposer Fiona Maitland, Seconder Raymond Piper) was elected unopposed.

AOB

A letter from Maura Scannell was read out. It concerned the *Flora for Co. Westmeath* and tendered her resignation from the co-ordinating panel. The matter is to be dealt with by the incoming Committee.