IRISH BOTANICAL NEWS

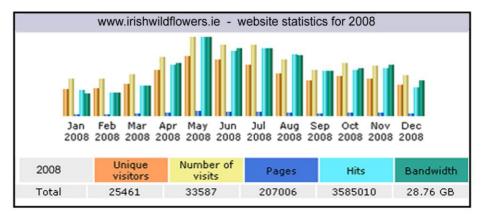
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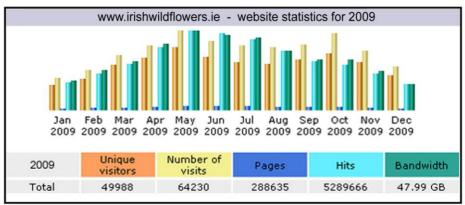
February 2011

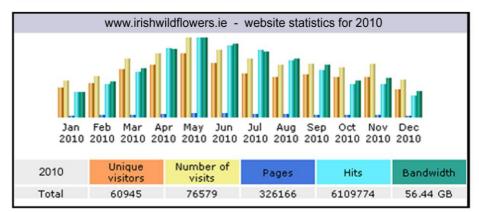


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The above statistics are from a website hosted by Jenny Seawright. This site has stunning photos of our Irish wild flowers.

The following is the committee as elected at the Annual General Meeting at the Museum of Country Life, Turlough, Co. Mayo on 7 August 2010. Office Bearers were subsequently elected at the first committee meeting. The Committee is now:

Dr. Brian Rushton (Chairman and Representative to Council) Gerry Sharkey (Vice Chairman) Michael Archer (Hon. Secretary) Fiona Devery (Hon. Treasurer) John Faulkner (Field Meeting Secretary) Paul Green (Hon. Editor, Irish Botanical News) Paul Hackney (N.I. Representative to Records Committee) John Wallace

The following is a co-opted member of the committee:

Caroline Mhic Daeid (R.O.I. Representative to records Committee)

The following are nominated observers to the committee:

Mark Wright (EHS NI) Michael Wyse Jackson (NPWS ROI)

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Front cover picture - *Diphasiastrum alpinum* (Alpine Clubmoss), Comeragh Mountains, Co. Waterford. Photo Jenni Roche © 2010.

All species (apart from three) and common names in *Irish Botanical News* follow those in the database on the BSBI website http://rbg-web2.rbge.org.uk/BSBI/ and Stace, C.A. (2010). *New Flora of the British Isles*, 3nd ed. Cambridge University, Cambridge.

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EDITORIAL

Hope you enjoyed the new look to Irish Botanical News last issue. I have decided to keep with this format of colour photos as there were no complaints. If you would like to include a photo with your article/paper please do feel free to send it in.

It will be interesting this year to see if the very cold winter had any effect on the non-native species in our countryside. The previous winter almost wiped out several of the sites in Co. Wexford for *Delairea odorata* (German-ivy). As the winter just gone was even colder it may be the final straw for this species at some sites.

I have decided to include in this issue the statistics from two websites (see inside front and back covers) just to show how much they are used by the general public. The internet seems a very good tool to show off Ireland's wild flowers. There are other sites out there also. One of my favourites is 'Wildflowers of Ireland' hosted by Zoë Devlin; can be found at www.wildflowersofireland.net. Zoë's website was launched in early 2009 and by the end of that year had been visited 29,389 times. Last year that had doubled to 61,821 visits. Please do take a look!

I would like to thank Jenny Seawright, Mike Stephens, Olivier Martin and Zoë Devlin for help with this issue.

Please note my new address on the front cover. I have moved 15 miles further south in Co. Wexford to within a few miles of Bannow Bay. Not far from the very first place I did some botany in Ireland back in September 1988.

Paul R. Green, Irish Botanical News

CROMANE – A FLORAL SNAPSHOT NORTH KERRY (H2)

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

Cromane is a peninsula jutting out northward as part of Castlemaine Harbour. The primary source of income for the locals is fishing and in particular mussel farming.

The western shoreline is mostly comprised of gravel and small boulders. Plantlife along the upper shoreline is extremely rich as many species strive to establish a foothold in a very competitive environment. Typical species include *Chenopodium rubrum* (Red Goosefoot), *Beta vulgaris* subsp. *maritima* (Sea Beet), *Calystegia soldanella* (Sea Bindweed), *Raphanus raphanistrum* subsp. *maritimus* (Sea Radish) and *Plantago coronopus* (Buck's-horn Plantain). By the roadside that runs parallel with the peninsula's shoreline one can find luxuriant stands of *Malva sylvestris* (Common Mallow), *Malva arborea* (Tree-mallow) and *Aster tripolium* (Sea Aster).

In early autumn the adjacent saltmarsh is dotted with conspicuous carpets of *Limonium humile* (Lax-flowered Sea-lavender).

In July 2009 I discovered a single specimen of the rare *Senecio cineraria* (Silver Ragwort). It was growing on the shingle strand with the abundant relative *Senecio jacobaea* (Common Ragwort).

The mudflats in winter attract a diverse variety of birdlife including brent greese, little egrets, spoonbills and several species of waders.

THE PHYTOGEOGRAPHY OF THE ROSA RUBIGINOSA GROUP (SWEET-BRIARS) IN IRELAND, AND THE DISTRIBUTION OF ROSA RUBIGINOSA SENSU STRICTO IN COUNTY CORK

Tony O'Mahony, 6 Glenthorn Way, Dublin Hill, Cork City

Introduction

Within the genus Rosa (Wild Roses) as represented in the British and Irish Flora, the Rosa rubiginosa group (Sweet-briars) consists of just three native species, namely: Rosa rubiginosa s. st. (Sweet-briar), R. micrantha (Small-flowered Sweet-briar) and R. agrestis (Small-leaved Sweet-briar). The group as a whole is characterised in bearing an abundance of stipitate-glands on the subfoliar face of the leaflets, and these stipitate-glands are also present on the pedicels of the former two species, though the pedicels of R. agrestis are unarmed and smooth. These large-headed, amber-coloured, viscous glands emit a delicious apple-like scent - especially when rubbed. Although it is sometimes stated in the literature (e.g. Graham & Primavesi 1993) that this scent is most pronounced in R. rubiginosa, and weakest in *R. agrestis*, there is certainly a subjective element to this claim. For example, my own long-term observations of this group suggest that many populations of R. micrantha are every bit as powerfully scented as those of *R. rubiginosa* and, on a warm, sunny day, this redolent scent can be detected many metres distant from the source of the Rosa micrantha populations. I have also found the scent of Rosa agrestis to be reasonably pronounced, and in no way faint or near-absent. However, as stated above, this is a highly individual experience, that cannot be objectively evaluated in the field.

Phytogeography of the Rosa rubiginosa Group in Britain and Ireland

Britain

All three members of the *Rosa rubiginosa* group display a preference for calcareous and base-rich habitats in these islands. In Britain, *R. rubiginosa s. st.* (Sweet-briar) displays the greatest

distributional range, occurring over the entire island. It is most frequent in southern England and Wales, while a further concentration of populations occur on the east coast, stretching from NE Yorks (v.c. 62) and Co. Durham (v.c. 66), northwards to Fife (v.c. 85) in Scotland. In stark contrast, both *Rosa agrestis* and *R. micrantha* are very rare, and of highly disjunct distribution, in northern England and Scotland (cf. Preston *et al.* 2002; BSBI Maps Scheme (www.bsbi.org.uk); Stace 2010).

Ireland

The phytogeography of the *Rosa rubiginosa* group in Ireland is both perplexing and fascinating. As in Britain, R. rubiginosa s. st. is the most widespread species in Ireland; yet, paradoxically, it is rare and of very localised occurrence on the expanse of limestone in the Central Plane, where it could reasonably be expected to have its core Irish base. Instead, its main concentration of populations occur near the east coast, stretching from Kildare (H19) and Dublin (H21) northwards to Down (H38), Antrim (H39) and Tyrone (H36). In southern Ireland, Rosa rubiginosa is widely but sparsely distributed, and many of its populations are very small in size, consisting of just a few adjoining bushes. This is the situation for example, in counties Kerry (H1-H2), Cork (H3-H5), Limerick (H8) and Waterford (H6). While future, rose-recording in these Munster vice-counties will intensive. undoubtedly increase the number of known sites for *R. rubiginosa*, the fact remains that its core Irish base is near the east and northeast coasts.

Rosa agrestis does, however, have its main concentration of populations on the limestone and calcareous gravels of the Irish Central Plain, where the populations form a transverse (east-west) belt, that stretches from Kildare (H19) and Meath (H22) westwards to Roscommon (H25), East Mayo (H26) and Sligo (H28) (Preston *et al.* 2002; BSBI Maps Scheme 2010). The first Irish records for *Rosa agrestis* date from *c*.1890-1900; they come from the Portumna area, on the limestone shores of Lough Derg, straddling the adjoining vicecounties of SE Galway (H15) and N. Tipperary (H10), and from the northwestern limestone shore of Lough Corrib, south of the village of Cong, E. Mayo (**H26**), where this species was reported as occurring in abundance (cf. Colgan & Scully 1898; Praeger 1901). In more recent times, the distribution of *R. agrestis* in central Ireland has been greatly extended (as noted above), while small, satellite populations also reach southwards to Limerick (**H8**), East Cork (**H5**) and Waterford (i.e. Dungarvan Bay) (**H6**), *R. agrestis* being added to the flora of these latter three vice-counties by the author, during the period 1983-1994. *Rosa agrestis* reaches its extreme southern Irish limit on the limestone of the beautiful Dungarvan Bay, in Co. Waterford, where it is accompanied by a rich rose-flora (O'Mahony 2008; Green 2008).

Within the Rosa rubiginosa group as represented in Ireland, R. micrantha displays the most skewed distribution pattern, and is currently (i.e. 2010) only recorded from ten vice-counties: Kerry (H1-H2), Cork (H3-H5), Waterford (H6), Limerick (H8), Kilkenny (H11), Wexford (H12) and Kildare (H19) (Webb et al. 1996; Preston et al. 2002; O'Mahony unpublished 2004 record for Limerick). However, this bare distributional statistic gives no indication of the remarkable fact that Co. Cork supports some 80%-90% of the total Irish populations of *R. micrantha*! – an observation gleaned, while the author was collating Cork data for this species for inclusion in the New Atlas of the British & Irish Flora (Preston et al. 2002). The remaining seven vice-counties hold only tiny, sparsely scattered populations of Rosa micrantha. This distributional phenomenon also adequately accounts for the fact that, within the 142-year time-period spanning the publication of 'Power's Flora' (Power 1845) and the second edition of the Census Catalogue of the Flora of Ireland (Scannell & Synnott 1987), Rosa micrantha had only been recorded from six vice-counties: Kerry (H1-2), Cork (H3-H5) and Waterford (H6). Within Co. Cork, *Rosa micrantha* is widely distributed in all three vice-counties, being locally frequent to locally common in calcareous and circumneutral hedgebanks - a delightful and stark contrast to its rarity elsewhere in Ireland.

Rosa micrantha *x* **R. rubiginosa** (= **R**. *x* **bigeneris**)

In Ireland to date, the *only* recorded interspecific hybrid within the *Rosa rubiginosa* group, is that of the cross, *R. micrantha* x *R. rubiginosa* (=

R. x bigeneris), which occurs in all three Cork vice-counties (H3-H5). *R. x bigeneris* is currently known in Co. Cork from nine 10-km squares (i.e. hectads) *vis-à-vis* twelve recorded hectads for native populations of *R. rubiginosa*. Moreover, this hybrid cohabits with both of its parents in a hedgebank on the western periphery of Kilcolman Fen (H5, R57.10) near Doneraile village, East Cork (O'Mahony 2004), and with both these species and *R. agrestis* in hedgebanks (H5, R61.05) bordering the interconnecting road from Doneraile village to Skenakilla Crossroads (on the N73), northwest of Castletownroche village (O'Mahony 1997).

ROSA RUBIGINOSA IN THE CORK FLORA

As a native species, Rosa rubiginosa is widely, if very sparsely, distributed in Co. Cork (H3-H5) on mainly calcareous and circumneutral soils. Most populations are very small, and consist of just 2-4 subadjacent bushes. Although occurring occasionally in limestone quarries and on grassy road-verges, its predominant Cork habitat is hedgebanks (i.e. stone-and-earth field-boundary embankments that are topped with tree and shrub species). On these calcareous or base-rich hedgebanks, it is accompanied by various combinations of the following rose taxa: Rosa micrantha, R. agrestis, R. arvensis (Fieldrose), R. tomentosa (Harsh Downy-rose), R. sherardii (Sherard's Downy-rose), R. canina (Dog-rose), R. corymbifera (i.e. R. canina Group *Pubescentes*) (Hairy Dog-rose), and the interspecific hybrids, *R*. micrantha x R. rubiginosa (= R. x bigeneris), R. sherardii x R. rubiginosa), R. stylosa (Short-styled Field-rose) x R. canina (= R. x and egavensis) and the cross, R. canina x R. tomentosa (= R. x scabriuscula), etc.

In Co. Cork, *Rosa rubiginosa* is also an occasional component of county council and/or national road authority planting schemes as, for example, along new roadway margins and embankments, or in shrubbery belts in amenity schemes. In the following distributional list, known sites for naturalised populations of this species are indicated by an asterisk *.

[Note: Prior to the commencement of my own studies on the genus Rosa in Co. Cork in 1973, very few published historical Cork records for Rosa rubiginosa existed, though this species had been recorded from all three vice-counties. For the sake of completeness, these nineteenth century records are briefly summarised here, the appropriate hectad grid reference being included for each record. Power (1845) gave the following three records: 1) Hedges near Passage [i.e. Passage West village (H4, W7.6.) Cork Harbour]: Mr J. Drummond; 2). Great Island [H5, W7.6. or W8.6., Cork Harbour]: Dr. Scott; 3). Near Timoleague [Timoleague village (H3, W4.3.), Courtmacsherry Bay, West Cork]: Mr Alexander. However, these three records were subsequently doubted. For example, in the work, Cybele Hibernica 1 (Moore & More 1866), the authors' stated that: "Mr [Isaac] Carroll believes that R. micrantha was mistaken for R. rubiginosa in the neighbourhood of Cork." Moreover, Allin (1883) excluded R. rubiginosa from his Cork Flora, and stated that all three records quoted by Power (1845) for this species, were too doubtful for admission into it. Nevertheless, Colgan & Scully (1898) provided two additional (West Cork) records for R. rubiginosa: 1). By the Dunmanway road, east of Ballylickey [H3, W0.5.], Bantry, 1878 – Isaac Carroll, Herbarium, Glasnevin [DBN]; 2). Near Glengarriff [H3, V9.5.] – [G.C.] Druce, 1891. The renowned Cork botanist, R.A. Phillips (in Praeger 1901) stated that Rosa rubiginosa is rare in West Cork, but provided no localities.]

H3, W5.4.

A) W53.45. A few bushes on a roadside embankment immediately east of the coastal Garraneteen Bridge (on the R600), near Kilbrittain village; July 1999: T. O'Mahony.

Record Source: O'Mahony, T. (2000). Irish Botanical News 10: 38-44.

H4, W3.9.

A) W37.97. Three bushes on the eastern hedgebank of a boreen, near its junction with the Banteer-Rathcool road, *c*. 0.8 km southwest of Banteer village railway level-crossing: 1999-2007: T. O'Mahony.

Record Source: O'Mahony, T. (2008). Irish Botanical News 18: 35-46.

B) W35.95. Two bushes in the northern hedgebank of the Banteer-Rathcool road, at Fortgrady T-junction: July 2007: T. O'Mahony;

C) W35.94. Many bushes in both hedgebanks of the minor road at Fortgrady T-junction.: July 2007: T. O'Mahony. [Note: The largest Co. Cork population of *Rosa rubiginosa* recorded to date.] Associated with an equal abundance of the hybrid rose cross, *R. sherardii x R. rubiginosa*.

Both Record Sources: O'Mahony, T. (2008). *Irish Botanical News* 18: 35-46.

H4, W4.7.

A) W41.71. A single bush in the western hedgebank of the Carrigadrohid-Killinardrish road, in the River Lee valley: July 2006: T. O'Mahony.

Record Source: O'Mahony, T. (2007). Irish Botanical News 17: 34-46.

H4, W4.9.

A) W43.99. Three bushes in the southern hedgebank of the Mallow-Kanturk road (R576) east of Kippagh Crossroads: July-August 2003: T. O'Mahony.

Record Source: O'Mahony, T. (2004). *Irish Botanical News* 14: 16-24. **B**) W44.97. Gurteencreen T-junction, c. 2 km west of Lombardstown village. A single bush in the eastern hedgebank of the minor road here, close to the level-crossing of the Mallow-Killarney railway line: August 2009: T. O'Mahony;

C) W43.97. One stand on the eastern branch of Gortmore Crossroads, which is situated 2 km south of Roskeen Bridge on the River Blackwater: August 2009: T. O'Mahony. Cohabiting with *Rosa micrantha*.

Both Record Sources: O'Mahony, T. (2010). *Irish Botanical News* **20**: 6-12.

H4, W5.6.

*A) W54.69. *Rosa rubiginosa* recorded as a component of a planted shrub-fringe on the southern embankment of the Cork-Macroom road (N22) at Ovens Bridge. Site adjacent to the right (eastern) bank of the South Bride River: October 2008: T. O'Mahony. Quite likely to occur

as a planted ornamental on other sections of new roadways in this and other Cork hectads, as future fieldwork should confirm. Record not published previously.

H4, W5.7.

A) W56.70. A few bushes in the northern hedgebank of the Inniscarra cemetery cul-de-sac, on the left bank of the River Lee: 1984/2007: T. O'Mahony. Cohabiting here with *Rosa micrantha* and *R. tomentosa*. **Record Source**: O'Mahony, T. (2008). *Irish Botanical News* 18: 35-46.

H4, W6.5.

A) W69.52. A few bushes on the eastern hedgebank of the northern arm of Ballinclashet Creek Crossroads: September 1997/2002: T. O'Mahony.

Record Source: O'Mahony, T. (2003). Irish Botanical News 13: 33-40.

H5, W7.7.

A) W77.76. A few bushes on hedgebanks of the western/eastern arms of the lesser Glenmore Crossroads, south of Knockraha village: July 2006: T. O'Mahony.

Record Source: O'Mahony, T. (2007). *Irish Botanical News* 17: 34-46. ***B**) W71.70. A few long-naturalised bushes of *R. rubiginosa* and *R. multiflora* (Many-flowered Rose) on the eastern embankment of the Blackrock amenity walkway (the route of the former Cork-Crosshaven railway line), adjacent to the Southern Ring Road (N25): 1990-2005: T. O'Mahony. Associated here with native *Rosa stylosa* (Short-styled Field-rose).

Record Source: O'Mahony, T. (2006). Irish Botanical News 16: 17-30.

H5, W7.9.

A) W79.90. A single bush in the eastern hedgebank of a farm-boreen, immediately west of Ahaclareen Bridge on the Glenville-Rathcormack road (R614): 2003/2009: T. O'Mahony. Associated with *Rosa tomentosa*, *R*. *canina* and *R*. *corymbifera*;

B) R74.90. A few bushes on the eastern hedgebank of the northern branch of Pound Crossroads, on the Glenville-Rathcormack road

(R614): June/September 2009. T. O'Mahony. Cohabiting with *Rosa* tomentosa, *R. canina* and *R. corymbifera*.

Both Record Sources: O'Mahony, T. (2010). *Irish Botanical News* 20: 6-12.

H5, W9.7.

A) W94.73. A few bushes on a hedgebank of a minor road adjoining the Midleton-Castlemartyr road (N25), on the eastern periphery of Lough Aderry: June 1999. T. O'Mahony. Record not previously published.

H4, R4.0.

A) R44.04. Cohabiting with *Rosa micrantha* on the rim of Subulter limestone quarry: July 1977: T. O'Mahony and M.J.P. Scannell. Both rose species were subsequently lost here, due to a reactivation of this quarry in later years. Apparently the first Co. Cork site where *R. rubiginosa* and *R. micrantha* were found growing together. Future work may yet reinstate *R. rubiginosa* to this hectad, in which *R. micrantha* still occurs frequently.

Record Source: Scannell, M.J.P. & O'Mahony, T. (1978). Kanturk Field Meeting 1977 – BSBI Irish branch. Additional Cork records. *Irish Naturalists' Journal* 19 (5): 166.

H5, R5.1.

A) R57.10. Two bushes in a south-facing hedgebank on the western periphery of Kilcolman Fen, near Doneraile town: 1994/2003: T. O'Mahony. Associated with *Rosa micrantha*, their interspecific hybrid, *R. x bigeneris*, and the hybrid cross, *R. sherardii x R. rubiginosa*.

Record Source: O'Mahony, T. (2004). *Irish Botanical News* 14: 16-24. **B)** R58.11. One bush on a grass-verge by a road-junction at Ardeen, some 4 km northeast of Buttevant village: 1997/2003: T. O'Mahony. Record not previously published.

H5, R6.0.

A) R63.05. One hedgebank bush, close to a minor road junction to Dromdeer West, c. 1 km west of Skenakilla Crossroads (on the N73), northwest of Castletownroche village: 1996+: T. O'Mahony. Record not previously published.

B) R61.05. A solitary bush on the western hedgebank of the Doneraile road, southeast of Cregg Castle: 1994+: T. O'Mahony. This solitary *R. rubiginosa* bush occurs close to one of only two known Co. Cork sites for *Rosa agrestis*, while these roadside hedgebanks also support populations of *R. micrantha* and of the interspecific hybrid, *R. x bigeneris* (O'Mahony 1997). As far as I am aware, the East Cork hectads **H5**, R6.0. and **H5**, R5.1. (Kilcolman Fen area, near Doneraile) (O'Mahony 2004) are the *only* two hectads in Ireland currently known to support (in close proximity) the four sweet-briar taxa: *Rosa agrestis*, *R. rubiginosa*, *R. micrantha* and *R. x bigeneris*.

C) R67.05. Two bushes on the right bank of the River Awbeg, a short distance upriver of Ballywalter Bridge: September 2001: T. O'Mahony. [Note: Incorrectly stated by the author (O'Mahony 2002) to be the first **H5**, R.6.0. record for *Rosa rubiginosa*.]

Record Source: O'Mahony, T. (2002). Irish Botanical News 12: 27-35.

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NEW RECORDS FOR *DIPHASIASTRUM ALPINUM* L. (HOLUB) AND THEIR IMPLICATIONS FOR THE SPECIES' CONSERVATION STATUS IN IRELAND

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Diphasiastrum alpinum (Alpine Clubmoss) has an upland distribution, occurring on mossy heaths or bare peat on mountain ridges and summits and is rare and apparently declining in Ireland (Webb *et al.*, 1996). Two new finds of the species have been made recently during the Pilot Survey of Upland Habitats and the ongoing National Survey of Upland Habitats, carried out on behalf of the National Parks & Wildlife Service (NPWS), Department of the Environment, Heritage and Local Government.

I first found *D. alpinum* in Co. Waterford (**H6**), a new county record (Roche & Perrin, in press), on 24 March 2010, while carrying out vegetation mapping with Philip Perrin. The species occurred in an exposed location on the plateau of the Comeragh Mountains (cSAC 001952) at the head of Coumlara (S30890.11241) at an altitude of approximately 735 m a.s.l. On returning to the area on 6 April 2010, I found more plants nearby at S30940.11274. The plants were scattered through an area of rocky montane heath which appeared to have developed where upland blanket bog had been eroded down to siliceous bedrock and gravel. The patchy vegetation was dominated by *Calluna vulgaris* (Heather) and *Racomitrium lanuginosum* (Hedw.) Brid.

I subsequently recorded *D. alpinum* at Carrowskeheen on Nephin Mountain in the Vice-County of West Mayo (**H27**) on 23 August 2010. This represents a new station and is the only record of *D. alpinum* from this area of Co. Mayo. Nephin Mountain has not been designated as a protected site. The plants were located on a broad, exposed ridge that forms the eastern rim of the mountain's northern corrie (G10903.08841) at an altitude of approximately 500 m a.s.l. Again, the population was scattered through a flat area of rocky montane heath. The vegetation was dominated by *C. vulgaris* and *R. lanuginosum* and *Erica cinerea* (Bell Heather), *Carex binervis* (Greenribbed Sedge), *Huperzia selago* (Fir Clubmoss) and *Cladonia uncialis* (L.) Wigg. were also present. The ericoids were very wind-clipped in appearance.

According to the Irish interpretation of the EU Habitats Directive, D. alpinum is included on Annex V under Lycopodium group (Lycopodium and related genera) (NPWS, 2008). As such, D. alpinum is considered to be a species of international conservation interest. whose taking in the wild and exploitation may be subject to management measures, although it does not appear on the Irish Red Data List (Curtis & McGough, 1988) or the Flora Protection Order (1999). As these recent finds would suggest, D. alpinum is closely associated with montane heath. Indeed, it is listed as a characteristic species of Alpine and Boreal heaths (4060) (European Commission, 2007), a habitat which appears on Annex I of the EU Habitats Directive and is therefore of international conservation importance. With limited possibilities for adaptation, montane species and their montane heath habitats are very vulnerable to the effects of climate change (Berry et al., 2001; 2003). Furthermore, D. alpinum is considered an obligate alpine species in the Irish context (NPWS, 2007) and has been identified as being potentially threatened by climate change by 2050 (Wyse Jackson, 2008).

Distribution map data show that the species, having previously been recorded from 49 hectads, has been confirmed from only 17 hectads in Ireland since 1987 (Preston *et al.*, 2002). Conaghan (2006) stated that it is unclear whether this apparent decline is due to the actual

loss of the species or insufficient recent botanical recording effort in the Irish uplands. Recent research suggests that both of these factors are in effect simultaneously. During a recent resurvey of six sites at which *D. alpinum* was previously recorded, it was only refound at four (Nienhuis & Smyth, 2009), which suggests that the species is indeed declining and should be closely monitored. During the Pilot Survey of Upland Habitats and the ongoing National Survey of Upland Habitats, despite rare plant recording not being a primary focus, two new site records for *D. alpinum* have been generated from only six sites surveyed to date. This would suggest that the species has been under-recorded.

D. alpinum is currently known from Cos Wicklow and Galway northwards and formerly from Co. Kerry but is now apparently extinct there (Webb *et al.*, 1996). In view of this, the new county record for Waterford represents a significant southward extension in the species' known range. In Co. Mayo, the species appears to have only previously been recorded from the Mweelrea Mountains and Sheeffry Hills in the south-west and from the Achill Island/Corraun Peninsula area in the west. The new station at Nephin Mountain lies in central north Mayo and bridges the gap with the nearest population, which is located in the Dartry Mountains, Co. Sligo (Preston *et al.*, 2002).

In "*The Status of EU Protected Habitats and Species in Ireland*" (NPWS, 2008), the conservation status of the *Lycopodium* group was assessed as poor overall. The group's range was assessed as good while its population, area of suitable habitat and future prospects were assessed as poor. These recent records of *D. alpinum* provide support for the positive assessment of the range of the *Lycopodium* group, while the discovery of new stations may contribute to a more positive assessment of population i.e. whether or not the population is sufficiently large to allow the long-term survival of the species. The assessment of the area of suitable habitat and future prospects for the group as poor remains unchanged.

To conclude, *D. alpinum* is apparently rare, declining and yet under-recorded in Ireland and is also likely to be threatened by climate change. The conservation status of the species should be further studied by monitoring known stations and by increased botanical recording in Ireland's spectacular uplands.

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LOUGH CARRA: CONSERVATION AND MANAGEMENT OF LAKESHORE HABITATS

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Lough Carra is a shallow marl lake at the top of the Carra/Mask/Corrib system. It covers around 1,560 ha, has an average depth of only around 1.75 metres and drains a catchment of 114 km² over Carboniferous limestone. It has an extremely indented shoreline, about 73 island of up to 1 ha, and the lakeshore has a very wide range of habitats including woodland, scrub, grassland, limestone pavement, fen and marsh. The lake and associated wetlands are designated as SPA, and the lake and good areas of lakeshore are designated as SAC. It is also a proposed NHA and a Wildfowl Refuge.

There is a great deal of information available from past field research, including from Praeger and Ruttledge (around 100 years ago), a team led by Brian Stronach around 40 years ago, the Fisheries Board, the EPA, and a team of aquatic ecologists from TCD led by Ken Irvine since 2000. We have also been exploring the ecology of the lake and its lakeshore habitats since 2000, with some assistance from others, including two postgraduate GMIT students (Lorraine Grimes studying woodlands and Chris Meehan working on the wildfowl). Our research has covered land use, distribution and abundance of reeds (*Phragmites*) and bulrushes (*Schoenoplectus*), dragonflies, butterflies, moths, wildfowl, breeding birds and orchids.

The results of all these studies show that the lake and its lakeshore habitats are suffering from various problems, foremost among which are eutrophication, habitat loss and damage, ecosystem disruption, species declines and losses and the presence of invasive alien species.

The land use research, carried out by John Thornton, an undergraduate student at GMIT, showed that since 1970 about 25% of the land in the catchment had been converted from natural or seminatural habitats into improved grassland, together with concomitant increases in livestock numbers, slurry application and use of chemical fertilisers. Slightly less reliable information adds a further 25% between the 1940s and 1970, indicating that half of these habitats have been lost in the last 60 years. This tallied with the TCD results, which showed that nutrient loading into the lake had increased and that a process of eutrophication was ongoing. Further TCD work on deposition of nutrients and organic matter in the marl lakebed showed that the lake was perhaps "mildly" nutrient enriched before the famine, but recovered from this fairly rapidly when the human population declined by around 80%. However, over the last fifty years or so, nutrient levels had increased exponentially, such that the marl is now saturated with Phosphorus.

As part of the Stronach team, in 1975, Jonathan Shackleton mapped the extent of the reeds and bulrushes. We have repeated this work, including resurveying his transects, and the resulting data show that there have been significant changes that are unlikely to be explained by "natural" processes of ecological succession. In particular, the bulrushes have proliferated considerably, and investigation of possible causes continues.

Wildfowl populations have crashed, with some "common" duck species such as mallard suffering declines of over 90%. This is probably

due to a combination of factors, but especially the arrival in the 1980s of American mink.

We have mapped the distribution of dragonflies, butterflies and orchids in order to assist in identifying those lakeshore areas of greatest ecological and conservation interest so that any enforcement and management effort can be directed more effectively. Over 26,000 orchids of around 18 species were recorded and mapped, mostly at the 1 ha grid square level.

The problems of agricultural practices in the catchment and on the lakeshore include continued conversion of valuable habitats, overgrazing, undergrazing, grazing at "bad" times, use of heavy or "inappropriate" livestock, slurry spreading and use of chemical fertilisers. Unfortunately, there is no management plan for the protected areas and, outside of REPS, no management agreements with landowners. This is exacerbated by the mistrust and antagonism towards NPWS and conservation that exists in some of the farming community. There is also very little enforcement action, especially as the NPWS Ranger is able to allocate very little time to this site (1.5 days per year when asked in 2008).

Alien species that are already causing significant ecological problems are the American mink, Fallow deer and Rhododendron. There has been some informal and sporadic trapping of mink, but no systematic control effort. Fallow deer are culled, but not in sufficient numbers to alleviate the serious damage to vegetation in some areas. Rhododendron clearance has been carried out with Heritage Council funding, as a result of which at least this particular problem has been brought under control.

Two relatively large and important sites with particularly rich flora and fauna are being managed and protected in a sensitive and effective manner: the Partry House Estate and the Doon peninsula. These give cause for some degree of optimism. However, one very important area with perhaps the country's best orchid site does not fall into this category. A website is now online (www.loughcarra.org), established with some Heritage Council funding, where much of the information on various aspects mentioned above is already available. More information and data are being added as they become available and as time permits.

A REPORT ON THE FLORA OF CORK (H3-H5), 2010

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INTRODUCTION

2010 has proved a busy and very productive year botanically. As usual, the routine annual recording of taxa ran parallel with more protracted research towards a range of envisaged taxonomic papers, which are currently at various stages of completion. Notable alien additions to the Cork Flora discovered in the course of general recording, included: *Veronica peregrina* (American Speedwell), *Rosa* 'Hollandica' (Dutch Rose), *Kerria japonica* (Kerria), *Solidago gigantea* (Giant Goldenrod) and *Calamagrostis epigejos* (Wood Small-reed) – this last discovered by Tom Gittings in 2009, and the identification confirmed by myself in 2010. Moreover, *Senecio inaequidens* (Narrow-leaved Ragwort) was found naturalised in a range of additional Cork City locations (first added to the Cork flora in 2009), intimating that this attractive South African perennial might well spread dramatically over the island of Ireland from its Cork base, just as *Senecio squalidus* (Oxford Ragwort) did in past centuries.

Ongoing monitoring of *Geranium purpureum* (Little Robin) populations in Cork City and its hinterland throughout the year (all of which are under some threat from a range of infrastructural developments) prompted the collection of fruit (i.e. mericarp) stocks of this species from a Blackrock Village (H4, W71.71) population – an action deemed a necessary conservation measure. Little Robin is a predominantly inbreeding annual and, consequently, some of its highly disjunct populations differ from each other in subtle minor characters,

though *all* populations display the suite of eighteen diagnostic morphological characters that emphatically distinguish this species from the sometimes superficially similar *Geranium robertianum* (Herb Robert). In relation to these two species, a particularly thrilling event was the discovery of additional populations of the interspecific hybrid, *G. robertianum x G. purpureum* (a world rarity) in the Rathcooney (**H5**, W7.7.) area of Glanmire, East Cork, where I originally recorded this hybrid in 2003 (see account below).

In July and August, the first stages of a re-survey of the distribution and frequency of *Elytrigia atherica* (Sea Couch) and *E. x* oliveri (Hybrid Sea Couch) populations in Cork Harbour (H4-H5) were undertaken (see notes below), and this survey will hopefully eventually include the entire coastline of Co. Cork. (Indeed, in my view, a detailed resurvey of all Irish and British coastal Elytrigia taxa is necessary, given the taxonomic problems encountered in this genus, which frequently results in erroneous determinations, and thus ongoing uncertainty as to the actual distribution and frequency of its constituent taxa. This problem is most pressing with regard to *Elytrigia atherica* and E. x drucei, as both taxa are frequently indistinguishable on vegetative features alone, while my own research to date (O'Mahony 2007) strongly indicates that many Irish (and British?) populations of E. atherica are self-incompatible, and thus effectively behave as fruitsterile clonal colonies, in the absence of a nearby, compatible, pollensource. If this scenario is correct, then the majority of populations of these two taxa can only be consistently distinguished with complete confidence on the basis of pollen and anther characters. (For example, Elytrigia atherica's pollen grains are symmetrical, dark-bodied, and viable, while its 5.5-7mm long anthers are fully dehiscent. In stark contrast, the sterile pollen grains of *Elytrigia x drucei* are either malformed or, if symmetrical, then hyaline and devoid of contents. Moreover, its well-exserted stamens bear *shrunken*, *indehiscent* anthers, only *c*. 3.5-4.5 mm long.)

On 6 April, a number of white-flowered populations of *Veronica peregrina* (American Speedwell) were discovered as a weed-adventive

in the western section of St Joseph's Cemetery (H4, W67.70), Tory Top Road, Ballyphehane, Cork City – an addition to the flora of Co. Cork. Also in flower in the cemetery at this date, were other naturalised species, such as: *Erodium moschatum* (Musk Stork's-bill), *Valerianella carinata* (Keeled-fruited Cornsalad), *Veronica filiformis* (Slender Speedwell) and *Veronica crista-galli* (Crested Field-speedwell). Native species coming into flower here were: *Geranium rotundifolium* (Roundleaved Crane's-bill), *Geranium lucidum* (Shining Crane's-bill), *Carex divulsa* (Grey Sedge), *Cardamine pratensis* (Cuckooflower) and *Arum maculatum* (Wild Arum), while the gracefully arching, glaucous, subtubular leaves of *Allium vineale* (Wild Onion) were conspicuous in a small portion of the northeastern section of the cemetery.

On 13 April, a 2-hour visit to the pedestrian amenity walkway bordering the right bank of the Curraheen River (H4, W63.71. & W64.71), Cork City, produced a naturalised bush of double-flowered Kerria japonica (Kerria) on a limestone outcrop – an addition to the flora of Co. Cork. Ribes nigrum (Black Currant) is well naturalised in damp ground adjacent to the pathway, along one section of the walkway, while occasional bushes of equally established Ribes uvacrispa (Gooseberry) occur in scrub on the limestone, associated with Rosa arvensis (Field Rose). Populations of Silene dioica (Red Campion) occur at both the western and eastern ends of the walkway (an addition to the Cork City flora), but this species may be only adventive in this site, as the area was sown with wildflower seed (of presumed European origin) in the 1990s, following on the laying of a massive sewer through this once extensive wetland in the 1980s. While the recent upgrading of the pathway here has been well executed, it has, most regrettably, been to the detriment of the aesthetics and biodiversity of this habitat, as prolific colonies of weed species such as Cirsium arvense (Creeping Thistle), Cirsium vulgare (Spear Thistle), Rumex obtusifolius (Broad-leaved Dock) and Urtica dioica (Common Nettle) now despoil the area.

A Sunday spin on 6 May, produced extensive colonies of naturalised *Veronica crista-galli* (Crested Field-speedwell) bordering roadsides and hedgebanks of the Drimoleague-Skibbereen road (the

R593), abutting the left bank of the tidal River Ilen, in hectad (H3, W1.3.). This pioneering, adventive speedwell was also seen on 9 May, frequenting the margins of a byroad to Rylane (H4, W46.81), close to its junction with the Banteer-Cloghroe road (R579), near Crean's Crossroads.

On 11 May, fieldwork in the Trantstown-Watergrasshill (H5, W7.8.) area of East Cork, ascertained that delightful populations of Euphorbia hyberna (Irish Spurge) are still of locally frequent to locally common occurrence on stone-and-earth acidic to circumneutral hedgebanks in this East Cork hectad. For a sensational visual display, the stunning elegance and beauty of Irish Spurge has few equals in either the Irish or British flora. Yet the hedgebank habitats that support such a significant proportion of its populations in southwest Ireland, are still being eradicated at an ever-accelerating rate, even in these current times of financial recession, when the public eye and conscience is diverted from laudable nature conservation and biodiversity concerns. Companion plants that flower synchronously with Irish Spurge in these hedgebanks, include: Hyacinthoides non-scripta (Bluebell), Primula vulgaris (Primrose), Viola riviniana (Common Dog-violet), Stellaria holostea (Greater Stitchwort), Glechoma hederacea (Ground-ivy), Potentilla sterilis (Barren Strawberry), Ficaria ficaria subsp. fertilis (Lesser Celandine) and F. verna subsp. verna (Bulbiliferous Celandine). A more localised threat to the Irish Spurge populations of this and other Co. Cork sites, is posed by the ever-expanding colonies of naturalised Chamerion angustifolium (Rosebay Willowherb), and of hedgebank plantings of Lamiastrum galeobdolon subsp. argentatum (Variegated Yellow Archangel) and that abominable invasive groundcover, Rubus tricolor (Chinese Bramble).

On 26 May, fieldwork on the Kilnap amenity walkway (H5, W66.75) on the north side of Cork City, produced a single tussock of the sedge hybrid, *Carex divulsa* (Grey Sedge) x *C. muricata* (Prickly Sedge), accompanied by an abundance of the former parent, and by a few plants of the latter. This is a new Cork 10-km record for a world rarity that has been recorded from six 10-km squares (twelve 1-km squares) in the Mid Cork-East Cork area during the period 1987-2010.

On 8 June, a two-hour visit to the Blackrock Castle section (H4, W72.71) of the amenity walkway abutting the Ringmahon Strand shore of Cork Harbour, turned up a few flowering plants of Geranium purpureum (Little Robin). Furthermore, three flowering clumps of naturalised Allium schoenoprasum (Chives) were seen once again in its newly discovered 2009 site. Particularly exhilarating however, was the rediscovery of a few flowering plants of the beautiful adventive, Lathyrus nissolia (Grass Vetchling), whose main population here (discovered in June 2009) had been obliterated, along with its paludal meadow habitat, in October 2009. Hopefully, this tiny, remnant section of paludal meadow (holding the only known extant population of Grass Vetchling in Ireland), will be conserved for future generations to enjoy. A most interesting historical Cork City record for Lathyrus nissolia is given in the Appendix to the second edition of Cybele Hibernica (Colgan & Scully 1898), which reads: 'At the waterworks, Cork [City]: Herbarium T. [Thomas] Chandlee. A casual, native in south [of] England.'

On the 15 June, a section of the northern shore of Lough Allua on the River Lee (H3, W21.65), a short distance to the west of Inchigeela village, was visited. My main objective was to hopefully refind the populations of Viola lactea (Pale Dog-violet), Viola canina (Heath Dog-violet) and their interspecific hybrid, all three of which were recorded here in the early-1990s by Ro FitzGerald and myself. To my consternation, the intervening field between the main road and the shoreline at this location had been totally denuded of vegetation down to the bedrock – a bleak, skeletal scenario greeting the eye in this otherwise beautiful surrounding lake environment. To add to the sense of despondency, vigorous shoots of the rampant weed, Fallopia japonica (Japanese Knotweed), were sprouting up over sections of this now wasteland site. Thankfully, the low-level marshy shoreline itself was in pristine condition, and held an abundance of flowering Viola canina. However, Viola lactea could not be found on this occasion, though a single flowering plant of V. lactea x V. canina was discovered. A series of May-June visits to Lough Allua in 2011 is clearly required, in order to update information on the distribution and frequency of the *Viola* populations of this lough – the *only* location in Ireland, where all three hybrid combinations involving the species *V. lactea*, *V. canina* and *V. riviniana* (Common Dog-violet), have ever been recorded.

On 23 June, the rose hybrid, *Rosa* 'Hollandica' was added to the Cork flora. The find consisted of a *c*. 8m length, linear hedgebank population, occurring on the byroad (**H4**, W648.664) to the south of Crossnacroha road junction, on the southwestern rim of Cork City. On 28 June, naturalised flowering populations of *Oenothera glazioviana* (Large-flowered Evening-primrose) were seen on waste ground beside the railway line at lower Glanmire Road (**H5**, W69.72), Cork City.

Work in the Rathcooney (H5, W71.75) area of Glanmire, East Cork, in 2003 (O'Mahony 2004) turned up two F1 plants of the interspecific hybrid, Geranium robertianum (Herb Robert) x G. purpureum (Little Robin) cohabiting with both of its parents, and further searches in this area between June and October 2010, showed this world rarity to also occur in the two adjoining 1-km squares: H5, W72.75 & H5, W70.76. These new hybrid populations are sparsely and very locally distributed in hedgebanks, for a distance of up to 1.8 km from the original 2003 find close to Rathcooney Cemetery. As these disjunct populations vary slightly in some floral features, and display erratic fruit development (while their mature mericarps bear a G. robertianum-like ornamentation pattern), it is tempting to view them as F2 segregants, whose mericarps have, over the years, been distributed along these adjoining roadways, their pioneering progeny now being far removed from the original founder-population at Rathcoonev Crossroads.

On 13 July, the amenity walkway on the right bank of the Curraheen River (H4, W63.71 & W64.71), Cork City, was revisited. The elevated, west-east aligned pathway here, runs parallel to the course of the river, and bisects this former wetland habitat. In 1997, I found a few scattered plants of *Glyceria maxima* (Reed Sweet-grass) beside the pathway (an extremely rare and localised species in Co. Cork), and surmised that these were remnants of a former, much larger population. On this current visit, thirteen years later, some luxuriant

flowering stands of this beautiful grass species were located in wet ground on the southern side of the pathway. This is a very welcome find, as it represents the only known extant Cork City site for Reed Sweet-grass. Disturbed ground at the western end of the walkway, close to Carrigrohane Bridge (H4, W628.710), held a stand of the weedy, unwelcome, *Fallopia x bohemica* (Hybrid Japanese Knotweed), in addition to scattered plants of the adventives, *Matricaria chamomilla* (Scented Mayweed), *Lactusa serriola* (Prickly Lettuce) and *Epilobium tetragonum* subsp. *tetragonum* (Square-stalked Willowherb).

On 26 July, the saltmarsh at Douglas Hall Lawn cul-de-sac (H4, W70.70) was visited. This habitat is located at the head of the Douglas River-estuary. In August 1996 I collected putative material of the interspecific hybrid, *Elytrigia atherica* (Sea Couch) $x \ E.$ repens (Common Couch) (= $E. x \ oliveri$) from the coastal fringe of the saltmarsh here (O'Mahony 1997). Material collected on the current visit, and examined under the microscope later at home, confirmed the original determination. Here, as elsewhere in Cork Harbour, $E. x \ oliveri$ often occurs *intermingled* with its E. repens (and sometimes its E. atherica) parent, rather than the three taxa forming more or less sharply delimited zonal stands. Consequently, a very careful scrutiny of material is required at each site visited.

On 27 July, Harper's Island (H5, W78.72) in Cork Harbour, was visited. My objective was to hopefully refind the population of putative adventive *Calamagrostis epigejos* (Wood Small-reed) discovered here by Tom Gittings in October 2009, and subsequently reported to me, complete with directions for relocating this colony. In the event, two subadjacent stands of *C. epigejos* were found in grassland immediately north of the Cork-Midleton road (N25), which latter bisects Harper's Island in a west-east direction. This attractive, rhizomatous grass is new to the flora of Co. Cork, where it must be considered adventive, though the source of the founder-population remains a mystery. Wood Small-reed is an extremely rare native Irish grass species. While I have no current information on other naturalised stands of this species in Ireland, I note that Cope & Gray (2009) in the work, *Grasses of the*

British Isles, state in regard to *C. epigejos*: "It can also be found in a range of artificial habitats, including road verges, quarries and railway banks." Moreover, the authors' also point out that various forms of this species are occasionally used as an ornamental grass for lakesides and water-gardens.

On Harper's Island, Wood Small-reed is associated with a range of paludal taxa, including the adventive *Juncus tenuis* (Slender Rush) and the native species, *Juncus inflexus* (Hard Rush), *J. conglomeratus* (Compact Rush), *J. effusus* (Soft Rush) and *Carex otrubae* (False Foxsedge). Also present are: *Carex divulsa* (Grey Sedge), *Carex muricata* (Prickly Sedge) and *Carex flacca* (Glaucous Sedge).

Between 29 July and 10 August, a series of other, known, Cork Harbour sites for putative *Elvtrigia x drucei* (Hybrid Sea Couch) were visited in two hectads (i.e. W7.7. & W7.6.) and later microscopic examination of anthers and pollen from all of these populations, confirmed their hybrid nature. Two of these sites were on the south bank of the River Douglas estuary, adjacent to Rochestown road, 1). H4, W72.69. Bloomfield saltmarsh and seawalls, namely: immediately west of the Rochestown amenity walkway. 2). H4, W73.69. The short stretch of saltmarsh wedged between Harty's Quay and Hop Island, immediately east of the amenity walkway. 3) H5, W72.72. Tivoli Docks coastal embankment, on the northern shore of Cork Harbour, opposite Blackrock Castle. 4). H5, W76.73. Northern shoreline of Cork Harbour at Glounthaune village, on the Cork-Youghal road (N25). While the intricate, fretted shoreline of Cork Harbour precludes the possibility of systematically exploring every section of its shores within the next few years as part of my ongoing survey of maritime *Elvtrigia* populations, a basic and quite satisfactory picture of distribution patterns of the various taxa present, is already evident. The picture emerging within Cork Harbour, is of the widespread distribution, local abundance, and cohabitation of Elytrigia repens (Common Couch), E. atherica (Sea Couch), E. x drucei (Hybrid Sea Couch) and, much more locally and sporadically, of E. atherica x E. *juncea* (Sand Couch) (= E. x acuta). No populations of either Sand Couch (*E. juncea*) or of the hybrid, *E. juncea x E. repens* (= *Elytrigia x laxa*) have been discovered here to date.

On 11 August, fieldwork on the Blackrock amenity walkway at Lakeland Strand (H4, W73.70.), Cork City, produced a disturbedgrassland population of the adventive grass, *Poa compressa* (Flattened Meadow-grass) and an established stand of *Rosa* 'Hollandica' (Dutch Rose). This is only the third confirmed Cork City record for Flattened Meadow-grass, which is of very rare occurrence in Co. Cork, while the Dutch Rose is new to the Cork City flora, and only the second county record to date. The damp grassland in this area is liberally studded with the very attractive yellow-green leafy clumps of *Carex divulsa* (Grey Sedge), its leaves arching over gracefully in a fountain-like display. Grey Sedge cohabits here with *Carex otrubae* (False Fox-sedge) (no interspecific hybrids seen, though avidly searched for), and with the occasional tussock of *Carex muricata* (Prickly Sedge).

On 16 August, Tivoli Docks Industrial Estate (H5, W71.72 & W72.72), Cork City, was visited, and some large populations of the adventive, Senecio inaequidens (Narrow-leaved South African Ragwort) were seen in flower and fruit - a visually pretty species. Tivoli Docks was visited once more on 5 October, and a more leisurely and systematic survey of the terrain was undertaken. The novelty on this occasion, was an attractive, adventive grass species; a low-statured, petite taxon, bearing short, compact, spike like or partly-lobed panicles. This intriguing species bore fresh flowering stems (the tiny anthers partially exserted and dehiscing) as well as many fruiting stems, and subsequent observations at this site, showed it to continue flowering and fruiting until the end of November. The largest population of this adventive grass species occurred as a linear stand in sandy ground at the base of a fenced off site overlooking the main roadway servicing Tivoli Docks. Some material of this tufted annual was transferred to my garden for ongoing observation, and the results (and identification) will be presented in the 2012 issue of Irish Botanical News.

On 10 October, an extensive naturalised stand of the *Solidago* canadensis agg. (Garden Goldenrod) was observed to be coming into

flower on a grassy verge beside the Old Mallow Road (H4, W60.82), near Glancam Bridge, Rathduff. Although this taxon has been established here for many years, I have never been able to collect flowering material until today, given that this population (and its roadverge habitat) are usually mown *prior* to the plant's very late flowering here (i.e. October-November). Subsequent examination showed it to be referable to Solidago gigantea (Early Goldenrod) or hybrid derivitives of this species, in that the showy, recurved ligules are *much longer* than both the involucre and disc-flowers, while the stems and leaves are glabrous. (Note that the English name for this species, seems particularly inappropriate with regard to this *late-flowering* stand!) In the work, A Catalogue of Alien Plants in Ireland, Reynolds (2002) reports just one Irish record for S. gigantea: "Near Coolatore [Westmeath, H23] 1958; waste ground by bog road (TCD)." The Old Mallow Road taxon also accords reasonably well with the leaf-teeth characters given for S. gigantea in the work, The Vegetative Key to the British Flora (Poland & Clement 2009). Clearly, however, the taxonomy of the S. canadensis agg. as represented in Britain and Ireland, needs a thorough overhaul, for Stace (2010) states: "The N. American species are numerous and very difficult; they have possibly given rise in cultivation in Britain to new taxa that add to the problems of identification." And in the same work he further comments: "The precise identity of British material of S. canadensis is uncertain; some of it might be cultivars or hybrids that have arisen here, particularly with S. rugosa [Rough-stemmed Goldenrod] and S. gigantea [Early Goldenrod]."

Also in October, further Cork City sites for *Senecio inaequidens* (Narrow-leaved Ragwort) were discovered in waste ground in the Marina Industrial Park, Centre Park Road (H4, W69.71) and close by, in the Munster Agricultural Society's Showgrounds (H4, W70.71). This latter population was undoubtedly the seed-source for the few stray plants of *Senecio inaequidens* discovered by the adjacent Atlantic Pond site (H4, W70.72) and at the nearby Monaghan Road junction (H4, W69.71) in 2009 (O'Mahony 2010). On 26 October, a flowering population of the adventive *Geranium pusillum* (Small-flowered

Crane's-bill) was found at the western end of Glenamoy Lawn housing estate (H5, W70.73) Mayfield, Cork City - a new Cork site for this species.

Throughout November and December, checks were made on many populations of annual species of interest in the Cork city flora, confirming their ongoing presence, and thus keeping records for these species up-to-date. For example, on 4 November, leaf-rosettes of Geranium purpureum (Little Robin) were rechecked in a number of sites in Blackrock village (H4, W71.71), and in Beaumont limestone quarry (H4, W70.70 & W70.71) near Ballintemple village. On 26 November, cohabiting flowering populations of Geranium pusillum (Small-flowered Crane's-bill) and Veronica polita (Grey Fieldspeedwell) occurring on the periphery of the roundabout island at Well Road / Douglas Hall Lawn junction (H4, W69.70) in Cork City, were also rechecked. Moreover, a hitherto overlooked old limestone wall habitat populations of Geranium rotundifolium (Round-leaved Crane'sbill) was found in a cul-de-sac in Mahon Park (H4, W72.71), Blackrock. This is a welcome find, as the formerly numerous wall populations of Geranium rotundifolium in Cork City, have been greatly reduced since the 1970s, as their wall habitats have been destroyed due to infrastructural development on a massive scale. The same applies in the case of *Geranium purpureum* (Little Robin), as both of these annual geranium species formerly cohabited frequently on Cork limestone walls and mortared sandstone walls.

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CO. WATERFORD (H6), 2010

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I did very little work in the county during the year. Only a total of 1124 records were added to the database. Two new county records were made: the best one being by Jenni Roche of *Diphasiastrum alpinum* (Alpine Clubmoss) in the Comeragh Mountains (see page 16). The other was made on 14 June by me at Coolnasmear (X23.98) in the form of *Euphorbia amygdaloides* subsp. *amygdaloides* (Wood Spurge), a clump in a hedge bank opposite a dwelling, a garden escape. I visited the site to check on a *Geranium* I had seen on the road verge the year before. It was *Geranium x oxonianum* (Druce's Crane's-bill), six clumps, escaped from the same garden.

On 16 April I had to visit Dungarvan to give a short talk on WLR FM, the local Waterford radio station, on edible plants found growing wild as part of Dungarvan food festival. While walking around the town I was surprised to find a plant of *Gnaphalium luteoalbum* (Jersey Cudweed) in a pavement crack, last recorded from waste ground on the edge of the town in 2001. Even more of a surprise was seeing *Mycelis muralis* (Wall Lettuce) in pavement cracks and on walls around the town. Wall Lettuce was seen on a reseeded verge on the north side of town in 2005 and 2006. This must be where it had spread from.

On the 17 May Declan McGrath found two clumps of *Primula veris* (Cowslip) on the grassy area on the factory side of Shanooan, Dunmore East (X69.99). It is unlikely to have been planted, though seeds could have blown across from a house on the far side of the harbour. This is the first record for the 10-km square.

Kath and Richard Pryce visited the Comeragh Mountains on 22 June. Around the edge of a car park near Barravakeen (S247.192), Kath found two *Botrychium lunaria* (Moonwort), only the third reported record for the county. They also found *Thymus polytrichus* (Wild Thyme), the first record for the 10-km² and the first time Wild Thyme has been recorded away from the rock ledges of the coums in this mountain range. They also had *Dactylorhiza fuchsii* (Common Spotted-orchid), a new species for the tetrad.

RECORDING IN CO. WEXFORD (H12) DURING 2010

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2010 has been a strange year as I was out of action for much of the first half of the year with a slipped dish. The second half of the year seemed to have made up for it with a good number of records. A total of 16,126 records were added to Mapmate the database I use to computerise all the counties records. The strangest thing of the year was seeing two plants of *Ficaria verna* subsp. *verna* (Bulbiferous Celendine) flowering on 22 August in a ditch at Kiltra (S85.10). I gave up the idea of filling in forms for Corn Marigolds for the Threatened Plants Projects, as 2010 seemed to be the year of the 'Corn Marigold' in Co. Wexford, as they were so common, turning many cultivated fields yellow. If I had been given a Euro for each Corn Marigold I saw I could have taken early retirement!

 $\mathbf{DBN} = \text{cited specimens deposited in the National Herbarium,}$ Glasnevin, Dublin.

Besides myself the following have also contributed during the year: Dominic Berridge gave me a number of records including a report of Crassula helmsii (New Zealand Pigmyweed) from a Kettlehole at Ballyvalloo (T11.30) shown to him by the land owner Kevin Murphy and later to me, not a welcome addition to the county; Frankie Tennant and Roy Watson were the largest contributors during the year, sending in records from many parts of the county; besides coming out with me several times Jenny Seawright added Papaver pseudoorientale (Oriental Poppy) to the county list; Megan Morris did her year bird count at Caim (\$90.40) and made a plant list including the first county record for Bromus hordeaceus subsp. longipedicellatus; Paula O'Meara added many new 1-km² records, including Silvbum marianum (Milk Thistle) the first reported county sighting since 1995; Zoe Devlin allowed me to extract records from a website of Irish Wildflowers, plus contributed records via Mapmate, the first person in the county I have talked into doing it this way and the Wexford Naturalists' Field Club gave me plant lists made on several of their field excursions. I was also joined during the year for recording walks by Markus Schmidt and Olivier Martin and received a few records from Matthew Roche and Sylvia Reynolds. David Allen was kind enough to look at a box of 20 bramble specimens I sent him: Rubus armipotens from a roadside hedge by the entrance to a house at Finshoge (S74.25) was a new bramble for Ireland and Rubus ordovicum from a disused quarry at Ferns (T00.48) was a new county record.

The 8 June took me over to Rosslare (T09.15) to look for *Trifolium subterranean* (Subterranean Clover) which was a new county record when found by Roy Watson and Frankie Tenant the previous year in short thin turf of a children's play area. As hard as I looked I could not find it. A call to Roy soon helped me out as he said look for bluish leaves in the mown turf. There were just a few flowers hanging on. It was not long before I was getting even more excited as also in the grass were thousands of little pink flowering heads of *Trifolium glomeratum* (Clustered Clover). A species that was found in the area by E.S. Marshall in 1897 but not reported since. Marshall found his Clustered Clover in sandy fields, there does not seem to be any of this

habitat left in the area. The thin short turf of a children's play area is a good modern day substitute. Also growing with the above two clovers were *Ornithopus perpusillus* (Bird's-foot), *Trifolium striatum* (Knotted Clover) and *T. micranthum* (Slender Trefoil).

The 10 June took me down to Duncannon Fort (S72.08) for a guided tour of the fort and to see what plants were on the walls. Trifolium scabrum (Rough Clover) was common on the wall tops, a species I had not seen in the county before. Also on the wall tops were (Lady's Bedstraw), Ononis Galium verum repens (Common Restharrow) and Trifolium campestre (Hop Trefoil). Asplenium marinum (Sea Spleenwort) was common in places on some of the wall sides and Petroselinum crispum (Garden Parsley) was extremely abundant. To finish the afternoon off I drove down the Hook Peninsula, stopping by the ruined church at Churchtown (X73.98) for a little ramble before heading home. Here to my surprise was a good 6 m stretch of *Pelargonium tomentosum* (Peppermint-scented Geranium) growing on the field wall just down from the church. A species that I would have thought unable to survive our cold winters was flourishing, a new county record.

The next day I visited Kilmore Quay (S96.03) where I found the purple flowers of *Tragopogon porrifolius* (Salsify) dotted about amongst the small area of dunes, established here since found by Ro. FitzGerald in 1992. In a rough field between houses were several large patches of *Iris orientalis* (Turkish Iris) just coming into flower. Another new alien to the county.

An e-mail received from a concerned local about Bee Orchids on the lawns of St Helen's Hotel (T13.12) at Rosslare Harbour took me over to have a look on 25 June. The hotel is going to be demolished and have an old folk's home built in its place. What a lawn it turned out to be for Bee Orchids and other interesting plants! A total of 61 Bee Orchids was seen flowering, the tallest had 17 flowers. It was not the only orchid as 17 Common Spotted-orchids were in a damp part of the lawn. *Lotus subbiflorus* (Hairy Bird's-foot-Trefoil) was common. Several species of *Carex* were on the lawns including one clump of *C*. muricata subsp. pairae (Small-fruited Prickly-sedge) and lots of C. leporina (Oval Sedge) and a little C. otrubae (False Fox-sedge) in the damper parts and a single spike of Orobanche minor (Common Broomrape). The non-native species were also well worth a look as Gnaphalium luteoalbum (Jersey Cudweed) was abundant and the Fleabanes gave me a headache for a while as there were four different species there which all superficially look alike. This was a very good way of learning the differences between Conyza floribunda (Bilbao Fleabane) a greyish green bristly plant, Conyza canadensis (Canadian Fleabane) like the previous species but lime green in colour and not so hairy, Conyza sumatrensis (Guernsey Fleabane) greyish green and much hairier and individual flowers almost twice the size of the previous two species and Conyza bonariensis (Argentine Fleabane) (see back cover) (DBN). The latter a new alien species for Ireland with flowers much larger than the other three species. It is surprising C. bonariensis has not been reported from Ireland before as it is common in much of Europe. I finished the afternoon by going down to the dunes by Rosslare Ferry Port (T13.12) as after reporting my brother finding Festuca arenaria (Rush-leaved Fescue) there last year (Green, 2009) several botanists contacted me to say it did not occur in Ireland. Several specimens were sent to Arthur Copping the BSBI referee for Festuca, who replied with a very in-depth letter why my grass was indeed Festuca arenaria, it was good to have it confirmed at last for the county.

A red flowered *Potentilla* found on the side of a forest track in Curragh Wood, Killinierin (T16.65) on the 2 July took some time to identify. The internet came to my rescue. I scrolled down a large list of *Potentilla* photos until I found red coloured flowering plants and came to the conclusion that it was *P. nepalensis* Hook. (Nepal Cinquefoil) (**DBN**). Later in the year I saw it labelled in a botanic garden, very pleased the internet had given the correct answer for another new county record.

The 16 July I went and collected some of the roses I had seen during the summer that I was not sure of their identification and sent to Roger Maskew. The most interesting of these was one seen on a BSBI meeting I lead at Park (T03.23) on 6 June. This was *Rosa x* scabriuscula (R. canina x R. tomentosa), an erect bush with pale pink flowers and hairy leaves. The second record for the county.

I stopped to look at *Cichorium intybus* (Chicory) on 29 July which I could not remember seeing as part of the wild flower mix sown in 2007 on a verge at Holmestown (S96.22). This verge proved much more worthy of a stop than I had expected as also on it were several patches of well established *Bromopsis inermis* (Hungarian Brome) and many plants of *Pimpinella peregrina* L. (Long Burnet Saxifrage), a new alien to Ireland. This is a species much like our native *Pimpinella major* (Greater Burnet-saxifrage) but taller, larger umbels and bristly fruit. It just goes to show, sowing of non-native grass seed mix can introduce the unexpected; two more species with the potential of becoming established in our countryside.

I was heading north along the N72 on 2 August, passing a bean field at Forestwood (S82.31), I thought that I spied *Bromus diandrus* (Great Brome) amongst the bean crop. So I turned the car around and pulled into the field gateway. Then I realised I has been mistaken about it, but as there were a few *Glebionis segetum* (Corn Marigolds), I decided to take a look. The farmer came along to see whether I had something to do with the new road that was to go through the field (Enniscorthy-New Ross bypass). He said the local name for the Corn Marigold is 'yellow bottom' because of its yellow flowers and that I could pick them all if I wished.

But the stop proved to be very worthwhile as, under the crop the ground was pink with the minute flowers of *Valerianella dentata* (Narrow-fruited Cornsalad). There must have been millions of these. I noticed another rare arable weed scattered between the rows of beans: *Euphorbia exigua* (Dwarf Spurge).

I also spotted one plant of the very rare *Valerianella rimosa* (Broad-fruited Cornsalad) but as hard as I searched could not find any others. Doing some research, it proved that this is the first Irish record for this plant since 1962 when it was recorded from a root field at

Borris, Co. Carlow and a cornfield at Clohamon, Co. Wexford. Both found by E. Booth and M. McCallum Webster. Unfortunately, in a couple of years time, they may all be gone because of the building of the new road.

A call from Roy Watson on 16 August sent me over to White Hole, Tacumshin Lake (T03.05) to look at *Rumex maritimus* (Golden Dock) on the bank of a ford. Even though I was very pleased to see the four plants as it was a species I had not seen in Ireland before, they were the most miserable small Golden Docks I have ever seen; one plant was only 2 cm high. In the stream by the dock was *Potamogeton crispus* (Curled Pondweed) and on the edge of the water was *Lemna minuta* (Least Duckweed), a species that is increasing at an alarming rate in the county, found on nearly every pond or lake I have visited in the last two years in the county. The open bare muddy area by the ford had an abundance of the tiny *Centaurium pulchellum* (Lesser Centaury) and along the shore of Tacumshin Lake was *Chenopodium rubrum* (Red Goosefoot).

On the 20 August before meeting up with Markus Schmidt for a walk along the coast at Cahore Point I stopped and looked at a Ficus carica (Fig) growing out of a field wall at Ballygarrett (T20.48), a new county record. We headed south on the coast path on the cliff top before heading into the dunes and back along the beach. The back of the dunes had a few scattered patches of *Thalictrum minus* (Lesser Meadow-rue) and Equisetum x moorei (Moore's Horsetail). The dead heads of Carlina vulgaris (Carline Thistle) were dotted about in the open areas and just coming into flower was Hieracium umbellatum subsp. umbellatum (Umbellate Hawkweed). There were very few signs of any strandline plants and the ones we did see had extremely small populations, these included: Atriplex laciniata (Frosted Orache), Cakile maritima (Sea Rocket) and Salsola kali subsp. kali (Prickly Saltwort). Nearly back and we found several stands of *Humulus lupulus* (Hop) on the edge of the scrub. We finished our afternoon walk by meeting back up with Markus's family and friends for a barbeque which rounded the day off nicely.

The next day I joined Dominic Berridge for some survey work, we had a look in one of the Kettleholes (T10.29) on the edge of the area we were surveying. Somebody had been doing a little gardening and planted *Cypercus involucratus* and the White Water-lily (*Nymphaea alba*) looked like it may have arrived the same way. Among the many native species in the water was *Sparganium natans* (Least Bur-reed), a plant I had not seen in the county before. After we had finished our work we visited a disused sandpit at Ballyconnigar (T13.33), with no disturbance anymore the plants were not as good as I had hoped. However we still had a few good species, the best native species being one fruiting patch of *Zannichellia palustris* (Horned Pondweed) in the pond in the bottom of the pit as it is the first time I have seen it in the county. Some dumping had taking place; this produced a good list of non-native species including one new county record: *Ambrosia artemisiifolia* (Ragweed) (**DBN**).

The 23 August saw me over on the coast at Maytown (T11.12). I had hoped to get down to the water's edge but the cliffs were too high and unstable. Much dumping had taken place, *Urtica urens* (Small Nettle) and *Chenopodium rubrum* were on the heaps of soil along with *Nepeta x faassenii* (Garden Cat-mint), a new county record. A patch of *Lepidium draba* (Hoary Cress) survived on the cliff edge, a species I have not seen in the county before.

I took Jenny Seawright to the old lime workings on the edge of New Ross (S73.30) on 10 September to show her *Minuartia hybrida* (Fine-leaved Sandwort) in its only county site, where Ro. FitzGerald found it in 1993. I also showed Jenny the only site in the southern part of the county for *Erigeron acris* (Blue Fleabane) (see back cover). There was also an abundance of *Conyza floribunda*. It was not long before Jenny asked 'what is this?' I looked at it and knew straight away Jenny had found what I had been looking for each time I visited the site: the hybrid between *Erigeron acris* and *Conyza floribunda*. We contacted Clive Stace that evening to see how common this hybrid was, and almost by return of e-mail he said it was new to science. For the time being I have nicked named it 'Jenny's Fleabane'. My last full day out in the county for the year took me over to Killurin to see if I could re-find *Senecio erucifolius* (Hoary Ragwort) on the railway bank where Ro. FitzGerald had seen it in 1991. I have looked on several other occasions and never had any luck. I was just eating my banana before heading back home when I looked up and realised I could see a clump of what I had come to see. Directly above the railway bridge (S97.27) was a clump a metre round with one flower out. What an end to the day! Before this I had had a very successful afternoon, as it started by finding lots of *Sagina nodosa* (Knotted Pearlwort) on the wall along the River Slaney and in the river fruiting *Callitriche truncata* (Short-leaved Water-starwort) was plentiful in places and below a bridge (S98.27) over a tributary of the R. Slaney was a clump of *Sagittaria sagittifolia* (Arrowhead), a species I had not seen in the county before.

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CO. DOWN (H38) RECORDING IN 2010

Graham Day, 11 Ballyhaft Road, Newtownards, Co. Down

Monthly field meetings were organised in support of the first year of recording for the proposed flora of Co. Down and to make records under the new date-class. The meetings were initially well supported, but had few attendees during the later part of the year. As well as the new date-class, this has been the first year of recording after an extensive revision of classification, nomenclature and identification keys, as described in the third edition of Stace - something I am sure we will all become accustomed to in the near future. Thank you to those who sent me their records.

The highlight of the year was re-finding *Helminthotheca* echioides (Bristly Oxtongue) at the Castlebawn development site in Newtownards. It is a Northern Ireland Species of Conservation Concern, and was previously known here only from a single station on Blackhead in Co. Antrim. It was first located at Castlebawn, where it was clearly introduced, in late 2009. However, as the land was subsequently cultivated, presumably to knock down the weeds, it was uncertain the plant would persist. A search in August 2010, failed to locate any specimens at the previous spot, but a search in September found two flowering plants close to the Comber road. Also seen were *Lactuca serriola* (Prickly Lettuce), *Senecio squalidus* (Oxford Ragwort) and *Senecio viscosus* (Sticky Groundsel). Recording at the Castlebawn development in June also produced *Diplotaxis tenuifolia* (Perennial Wall-rocket) and *Barbarea verna* (American Winter-cress).

In mid-February, *Azolla filiculoides* (Water Fern) was found by Audley's Castle on the National Trust Castleward Estate. Also of note was a fine stand of naturalised *Galanthus nivalis* (Snowdrop).

In mid-April, on a visit to Terrace Hill which overlooks the Lagan near Ballynahatty, I finally found *Viola reichenbachiana* (Early Dog-violet). I had looked for this species several times in the past, closer to the river, but this time had been helpfully given the correct location by Roger Field. Many of the plants by the river appear to be *V. x mixta*, the hybrid with *V. riviniana* (Common Dog-violet).

Stellaria pallida (Lesser Chickweed) was found at a new location by Ballyhalbert Pier in mid-April, only the fourth site for this plant in the county and the second extant one.

In mid-April a walk along the coastal path west of Bangor relocated *Scilla verna* (Spring Squill), though in much reduced numbers, possibly because of the landscaping of a golf course.

Rostrevor oak wood was visited in early May and *Melica uniflora* (Wood Melick) and *Luzula pilosa* (Hairy Wood-rush) were refound.

In mid-May, Ian Rippey re-found *Vaccinium oxycoccus* (Cranberry) at Cluntagh Bog near Dromore (first found at Cluntagh in

1990 by Ian), this probably being the last station of this species in Co. Down.

The spring was cold and late, and it seemed that the flowering period of some early species such as scurvygrasses was extended. In mid to late May and early June, I looked for scurvygrasses along the outer Ards Peninsula. *Cochlearia officinalis* subsp. *officinalis* (Common Scurvygrass), *Cochlearia officinalis* subsp. *scotica*, *Cochlearia danica* (Danish Scurvygrass) and the hybrid *C. officinalis x danica* were widespread, e.g. at Slanes Point close to the pumping station. However, around the point (good for birds) into Slanes Bay, a patch of ground, previously good for 'wet' plants had been in-filled and planted with willows.

In early June, a walk around Nugent's Wood and the shore north of Portaferry produced *Juncus ranarius* (Frog Rush), *Myosotis discolour* (Changing Forget-me-not) and spreading clones of *Disphyma crassifolium* (Purple Dewplant) and *Aptenia cordifolia* (Heart-leaf Iceplant) where someone's garden had been extended into the road verge.

In mid-June, woodland to the west of the Clandeboye estate contained *Rumex sanguineus* var. *sanguineus* (Wood Dock), an escape from Clandeboye, as well as the common var. *viridis. Equisetum sylvaticum* (Wood Horsetail) was re-found, and a number of introduced trees were recorded including *Acer campestre* (Field Maple), a purple cultivar of *Fagus sylvativca* (Beech) and *Quercus x crenata* (Lucombe oak).

Delamont Country Park near Killyleagh was also visited in mid-June, and yielded a number of planted species including *Salix pentandra* (Bay Willow). A remnant of semi-natural woodland contained *Veronica montana* (Wood Speedwell), but the most surprising find was *Spirodela polyrhiza* (Greater Duckweed) growing in a cattle trough. The park shows signs of considerable management by Downpatrick council including use of strimmers and herbicides, even on the stone walls of the old garden to remove ferns. It was therefore unsurprising that the single plant of *Allium ameloprasum* var. *babingtonii* (Wild Leek) was not re-found at its 1997 station next to the Lough.

In late June Roger Field recorded *Botrychium lunaria* (Moonwort) at Murlough National Trust reserve, a known site for this species. This fern is rarely recorded, so when a record of it was sent with photographs by Kenneth Stewart from a new station on Slieve Croob, I went to look for it, but failed to find it, possibly because of over-grazing by sheep. However, I did find some good wet ground below the public car park with *Veronica scutellata* (Marsh Speedwell) and the hybrid Marsh-orchid *Dactylorhiza x transiens* (*D. fuchsii x maculata*).

The conservation area and adjacent ground at Tillysburn was visited in mid and late July. The area is now densely wooded with a variety of trees including Sorbus torminalis (Wild Service-tree), but has little undergrowth. In an area of open ground, where locals light fires and drink, Geranium sanguineum (Bloody Crane's-bill), G. pratense (Meadow Crane's-bill), Galium album (Hedge Bedstraw), Malva moschata (Musk-mallow) Silene dioica (Red Campion) and Hypericum maculatum (Imperforate St John's-wort) persist. The pond is now entirely overgrown with Glyceria maxima (Reed Sweet-grass). Across the road, the council had cultivated part of a grassed area and sown Glebionis segetum (Corn Marigold), Centaurea cyanus (Cornflower), Agrostemma githago (Corncockle), Anthemis cotula (Stinking Chamomile), Persicaria maculosa (Redshank) and P. lapathifolia (Pale Persicaria). Coincidentally, a few days after my first visit, an item appeared on the local TV news showing council workers injecting Heracleum mantegazzianum (Giant Hogweed) with herbicide at Tillysburn, where it is frequent, and warning the public of the dangers of contact with the plant.

Another escape from Clandeboye (probably) was recorded in mid-July by Roger Field at the Balloo wetland site in Bangor, where he found 'literally acres' of *Glyceria maxima* (Reed Sweet-grass).

In late July, a spin round mid-Down gave at Seaforde estate, *Mercurialis perennis* (Dog's Mercury) and in a fine grassland field, *Euphrasia arctica* (Arctic Eyebright); *Allium ameloprasum* var. *babingtonii* (Wild Leek) at Dundrum Inner Bay and *Pseudofumaria lutea* (Yellow Corydalis) at its known site at Annsborough near Castlewellan.

Also in late July, over 230 taxa were recorded in a single 1km² (is this a onead?) at Whitespots country park, Newtownards. Paul Hackney was present to look at Hawkweeds growing on a spoil heap. Records were made of *Hieracium vulgatum*, *Neottia ovata* (Common Twayblade) and *Epipactis helleborine* (Broad-leaved Helleborine).

In August several of John Harron's records for Glebionis segetum (Corn Marigold) were followed up at the request of BSBI as part of the threatened species monitoring programme. The species was not found in early August at the first grid near Annacloy, now a playing field. However, in a small area where someone had dumped soil when constructing a track, there was Galeopsis tetrahit (Common Hempnettle), G. bifida (Bifid Hemp-nettle), Fallopia convolvulus (Blackbindweed) and Phleum bertolonii (Smaller Cat's-tail). John's Glebionis segetum was re-found at Island Hill by Comber and Rosa caesia subsp. vosagiaca (Glaucous Dog-rose) and Lepidium draba (Hoary Cress) recorded nearby on Rough Island, Strangford Lough in early August. John's Glebionis segetum was also re-found at Lisnagonnell in south west Down. Walking the road north produced *Hypericum x desetangsii* (Des Etangs' St John's-wort) on a small area of turned over soil by a recently erected fence. This was close to a marsh where several willows were previously recorded, but it was too wet to re-find the records.

An early spring tide in mid-August permitted the walk from Greyabbey to South Island in Strangford Lough. Here, *Anchusa arvensis* (Bugloss), *Cynoglossum officinale* (Hound's-tongue), *Atriplex littoralis* (Grass-leaved Orache) and *Chenopodium rubrum* (Red Goosefoot) were re-found. Roger Field sent records of *Polygonum oxyspermum* (Ray's Knotgrass) and *Atriplex laciniata* (Frosted Orache) from Murlough beach in mid-August.

Inula helenium (Elecampane) was by the car park at Lough Money near Downpatrick in mid-August. A number of samples of aquatics were taken and later identified as *Littorella uniflora* (Shoreweed), *Ceratophyllum demersum* (Rigid Hornwort), *Myriophyllum spicatum* (Spiked Water-milfoil) and *Potamogeton* gramineus (Various-leaved Pondweed). Close to the track to the old quarry were *Hypericum humifusum* (Trailing St John's-wort) and *Agrimonia procera* (Fragrant Agrimony). The quarry face held Asplenium adiantum-nigrum (Black Spleenwort), *A. trichomanes* subsp. quadrivalens (Maidenhair Spleenwort) and *A. scolopendrium* (Hart'stongue).

Mycelis muralis (Wall Lettuce) and *Linaria purpurea* (Purple toadflax) were common on derelict ground at Lisburn in mid-August. The River Lagan held *Nymphoides peltata* (Fringed Water-lily), *Glyceria maxima* (Reed Sweet-grass), *Spirodela polyrhiza* (Greater Duckweed), *Sparganium emersum* (Unbranched Bur-reed), and was seemingly choked with *Elodea nuttallii* (Nuttall's Waterweed). The council had planted a variety of willows along the river which may merit further study.

Paul Hackney and I visited Bloody Bridge and the coastal path south of Newcastle in mid-August. The area has been well recorded before and notable re-finds included *Asplenium marinum* (Sea Spleenwort), *Glaucium flavum* (Yellow Horned-poppy), *Agrimonia procera*, *Vicia sylvatica* (Wood Vetch), *Eleocharis uniglumis* (Slender Spike-rush) and *Pinguicula lusitanica* (Pale Butterwort). Paul remembers seeing many on other visits, but only one plant of *Mertensia maritima* (Oysterplant) was seen on this occasion.

In the third week of August, I walked up the Banns Road to the north cliffs on Slieve Muck. At the lower end of the Banns Road, ongoing agricultural improvement including the removal of stones from

use of fertilisers and herbicides and introduction of fields. 'horseyculture' had impacted diversity, but leaving the development behind, the normal flora of the Mournes appeared. Rhynchospora alba (White Beak-sedge) and Agrostis vinealis (Brown Bent) were found by the track close to the Miners Hole River. There is a path marked on the map onto the slopes between Slieve Muck and Carn Mountain, but it's almost all overgrown, so I followed the river, repeatedly flushing a Cinclus cinclus (dipper). The north cliffs on Slieve Muck were followed, but the midges were very unpleasant and obviously hadn't been fed in August, so at the first opportunity, I headed onto the top into a breeze. Saussurea alpine (Alpine Saw-wort) was not seen and I also missed Cystopteris fragilis (Brittle Bladder-fern) and Rubus saxatilis (Stone Bramble) re-found by David McNeill in 2006. Huperzia selago Diphasiastrum Clubmoss), alpinum (Alpine (Fir Clubmoss). Phegopteris connectilis (Beech Fern), Sedum rosea (Roseroot), Solidago virgaurea (Goldenrod), Empetrum nigrum (Crowberry) and Vaccinium vitis-idaea (Cowberry) were seen. I walked across the heavily grazed top of Slieve Muck and onto the steep south west boulder slope where Paul Hackney and I had found a second Co. Down location for Asplenium trichomanes subsp. trichomanes (Maidenhair Spleenwort) in 2002. I searched around the site and found Athyrium filix-femina (Lady-fern), Blechnum spicant (Hard-fern), Polypodium vulgare (Polypody) and flowering Vaccinium vitis-idaea (Cowberry) as well as the Asplenium trichomanes subsp. trichomanes.

In late August I had a tip-off from Margaret Marshall that there was an interesting *Raphanus raphanistrum* (Radish) growing on the shore at Orlock Point near Groomsport. Two subspecies and their intermediate were recorded, *R. raphanistrum* subsp. *maritimus* (Sea Radish) and *R. raphanistrum* subsp. *raphanistrum* (Wild Radish).

At the end of August an unsuccessful attempt was made to refind *Glebionis segetum* at another of John Harron's locations, this time close to the Cassywater in south Down. I found suitable ground, but the crops growing in the fields had been treated with effective herbicides. While in the area, Greencastle was looked at, but this had been tidied up, so that much of the roadside was weed-free. Virtually all the previously abundant *Carduus tenuiflorus* (Slender Thistle) had gone, but for one plant. A colony of *Carpobrutus edulis* (Hottentot-fig) was spreading over rocks on the shore, and a single mature *Polygonum oxyspermum* (Ray's Knotgrass) plant was found in disturbed sand by a short track to the beach.

In mid-August Margaret Marshall and I recorded at Annalong. After visiting the harbour, we walked north along the coastal path. This was wide and covered the zone where upper shore plants would be expected, and there was little in the adjacent fields, so it wasn't very productive and we turned round and walked south out of Annalong along the path. Again the council had put in a wide path, but there were areas where boulders on the shore had been covered with waste mixed with sand and further on a rocky shore with remnants of a saltmarsh. Lepidium coronopus (Swine-cress), L. didymum (Lesser Swine-cress), Carpobrutus edulis, R. raphanistrum subsp. maritimus (Sea Radish) and R. raphanistrum subsp. raphanistrum (Wild Radish) were noted. While going back to the cars, we looked at the waste ground between a playing field and the sea where Oenothera glazioviana (Large-flowered Evening-primrose) was growing and discussed the use of a putative Rosa rugosa x spinosissima hybrid to deter locals from venturing close to a drainage ditch by an estate. By the car park, in a walled garden, now let to run wild, the council had planted Humulus lupulus (Hop). Disappointingly, the scent of this garden form was rather weak. Interestingly, I had a letter and photograph from a member of the public wanting to know the identity a plant that he'd found in Annalong in the summer; it was a garden throw-out, Dierama pulcherrima (Hook f) Baker (Angel's Fishing Rod).

In mid-September I had records from Margaret Marshall of *Conyza canadensis* (Canadian Fleabane), *Lactuca serriola* (Prickly Lettuce) and *Lepidium ruderale* (Narrow-leaved Pepperwort) from Belfast. Roger Field sent records of *Gentianella campestris* (Field Gentian), *Calystegia soldanella* (Sea Bindweed), *Glaucium flavum* (Yellow Horned-poppy) and *Crassula tillaea* (Mossy Stonecrop) from Murlough.

In late September a walk along the shore from Greyabbey towards Mid Island produced (*Elytrigia x drucei* (*E. repens x atherica*) (Common Couch x Sea Couch), *Juncus ranarius* (Frog Rush), *Atriplex littoralis* (Grass-leaved Orache) and *Armoracia rusticana* (Horseradish).

BSBI IRISH FIELD PROGRAMME, 2011

SATURDAY 11th JUNE GRASS IDENTIFICATION FOR BEGINNERS NEWBRIDGE DEMESNE, DONABATE, CO. DUBLIN (H21) Leader: Joanne Denyer

This is a grass identification training meeting and will be suitable for beginners. The aims will be to introduce the key characters used for grass identification and learn to identify a range of common species. The parkland at Newbridge Demesne contains lowland neutral grassland, calcareous grassland and wet grassland, so a diverse range of species will be encountered. Further details will be provided on booking.

Contact: Joanne Denyer. E-mail: joanne@denyerecology.com

SATURDAY 9th & SUNDAY 10th JULY WESTERN CO. WESTMEATH (H23) Leader: Con Breen

The object of the weekend will be to explore under-recorded habitats in the west of **H23**. On Saturday, meet at 10.30am at Feericks Hotel, Rathowen (N315.674). On Sunday, meet at 10.30am at Ballynacarrigy, in the car park at 35th lock, Royal Canal (N305.592).

Contact: Con Breen, 101 Bettyglen, Raheny, Dublin 5; Tel (RoI) 01 8313573, mobile 086 35392959

SATURDAY 16th JULY & SUNDAY 17th JULY ACHILL ISLAND, CO. MAYO (H27) Leader: Gerry Sharkey

Meet on the Corraun (mainland) side of the Achill Sound Bridge (L739.998) each morning at 10:30am. There is a small hotel on the left hand side immediately before the Bridge. The hotel car park overlooks the bridge, and this will be our meeting place each morning. Exact sites to be visited will depend on weather and numbers. As this will be a weekend of recording for the next BSBI Atlas project, we may split up to make the best use of the botanists available, and to cover as many sites as possible. Keem Bay, Lough Acorymore, Crumpaun and the 'deserted village', Minaun ridge and the eastern end of Trawmore (Keel Strand) are all likely targets. We will get together for a meal and/or drinks on the Saturday evening.

Please let Gerry know to expect you and please provide a number where you can be contacted in case of late changes of plan. E-mail to gsharkey@patodonnell.com (preferred). Alternatively at 2 Spencer Street, Castlebar, Co. Mayo, or mobile 087 6202550 (00 353 87 6202550 for UK-based phones).

SATURDAY 23rd JULY MULLINGAR, CO. WESTMEATH (H23) Leader: Con Breen

This is a training meeting aimed primarily at all those who wish to improve their identification skills for grasses and sedges. A variety of habitats in the Mullingar area will be visited. As some of these will be very wet, wellies are strongly advised. Meet 10.30am Mullingar Railway Station (at western end of Mullingar at end of Dominick Street, the main street of Mullingar, turn left before canal bridge immediately past Newbury Hotel).

Contact: Con Breen, 101 Bettyglen, Raheny, Dublin 5; Tel (RoI) 01 8313573, mobile 086 35392959

SATURDAY 13th & SUNDAY 14th AUGUST TOLLYMORE AND STRANGFORD, CO. DOWN (H38) Leader: Graham Day

A variety of ferns should be re-located at Tollymore Forest Park, including *Hymenophyllum wilsonii*, *Oreopteris limbosperma*, *Polystichum aculeatum* and *Dryopteris aemula*. We should also re-find *Festuca altissima* and may have time to look at the trees in the forestry arboretum. Strangford village and the nearby woodlands and sea lough shores may produce some introductions, including *Arenaria balearica* and *Briza maxima*. Meet 11.00am on Saturday at the car park at Tollymore (J347.327; n.b. you will have to pay the parking fee) and 11.00am on Sunday in the car park by the south slip in Strangford grid (J590.497).

Contact: Graham Day, 11 Ballyhaft Road, Newtownards, Co. Down BT22 2AW. Tel: 028 91817710. E-mail: gvd@cherrycottage.myzen.co.uk

SATURDAY 3rd & SUNDAY 4th SEPTEMBER AQUATICS IN N.E. GALWAY (H17) Leader: Cilian Roden

The purpose of this meeting is to explore the aquatic and lake side flora of a series of small ponds and lakes in **H17** which are seldom visited. We hope to sample at least four lakes on each day. Bring boots, chest waders and grapnels. Meet at main square Mount Bellew at 10.30am Saturday and cross roads in Glenamaddy at 10.30am on Sunday.

Please contact C. Roden by e-mail (croden@iol.ie) if you plan to attend.

SATURDAY 10th SEPTEMBER LADY'S ISLAND LAKE, CO. WEXFORD (H12) Leader: Paul Green

Habitats to be visited will be dunes, strand line species and brackish and aquatic plants of Lady's Island Lake. There will be a great number of

plants on offer from the only Irish site for Achillea maritima (Cottonweed), Spiranthes spiralis (Autumn Lady's-tresses), Atriplex littoralis (Grass-leaved Orache), Polygonum oxyspermum subsp. raii (Ray's Knotgrass) and Ruppia cirrhosa (Spiral Tasselweed). Meet at 11.00am at end of very narrow lane and park on edge of dunes (T098.046) at Chour. Lunch to be carried. It should be easy walking.

Contact details: Tel: 087 7782496, or email: paulnewross@eircom.net

BOTANICAL PROJECTS FOR IRELAND

Brian S. Rushton, 62 Semicock Road, Ballymoney, Co. Antrim, Northern Ireland, BT53 6PY E-mail: bsracademic@hotmail.co.uk

In May 2009, the BSBI Committee for Ireland finally decided that we no longer wished to be associated with the OrchidIreland Project. I think it is fair to say that we were disappointed that we had to take that decision as it would have been an excellent way to galvanise the field-recording efforts of our membership in Ireland towards the production of a worthwhile publication that would have added greatly to our knowledge and understanding of a fascinating group of plants. Nevertheless, the decision was the right decision in the circumstances and Gerry Sharkey (2010) has provided some of the background to that decision for readers of *Irish Botanical News*.

However, the Committee for Ireland feels it is now time to look again at some possible projects but this time led and organised by the Committee and supported by the Council of the BSBI through the Science and Research Committee. In suggesting this course of action we are mindful of a few things ...

The number of botanists in Ireland is *very* small (compared to the 'mainland'!). These data are very rough but do give an idea of the problem. In Ireland, about one third of the Irish membership are vice-

county recorders; in the rest of the Society the figure is about 4%. On average there about 25 botanists in each 'mainland' vice-county whilst in Ireland there are less than three. Additionally, many of our members live in or close to the two major urban conurbations, Belfast and Dublin. This means that any project must be sharply focused and 'doable' given the limited numbers of field botanists we are dealing with.

In Scotland, there is a paid 'Scottish Officer' who supports the work of botany in Scotland and makes a significant contribution to project work. In Wales, it is now certain that a 'Welsh Officer' will be in post in the very near future to carry out similar duties there. It is unlikely that Ireland will achieve a dedicated 'officer' in the short- to medium-term and therefore any project management or similar activity will have to be undertaken by the Committee for Ireland itself.

Sometimes when we have requested information, the Irish membership has been reticent about providing responses. For example, a request from the Honorary Secretary for information on the status of alien trees and shrubs elicited just two responses out of 48 people asked. This may be because there is no enthusiasm for national projects or because the projects are of no interest or are not locally applicable. Whatever the reason, it is essential that any Committee-driven initiatives receive the support of the membership as a whole so that they can be carried out to a successful conclusion.

So, what possible projects might we engage in? The following is just a 'flavour' of some of the things we have in mind.

- Detailed survey of particularly note-worthy species or groups (e.g. *Epipactis* has been suggested);
- 'Biological' data on relatively common species (e.g. reproductive success of ...);
- Current status of invasive species (not just 'square-bashing') but details of population sizes, 'vigour', threats, etc.;
- Etc.

We will be surveying Vice-county Recorders in the coming year to determine what support there might be out there and in order to prioritise the efforts. (Declan Doogue formulated a much more extensive lists of projects which he outlined in the paper that followed this paper at the AGM.) It is likely that if this initiative 'gets off the ground' we would be looking for financial support from BSBI Council. Indications are that they would welcome such initiatives in Ireland. If members wish to contact me with their views on this matter they may do so using the email address given above.

REFERENCE

Sharkey, G. (2010). BSBI Committee for Ireland and OrchidIreland. *Irish Botanical News* **20**, 38-39.

BOOK REVIEWS

The Flora of County Tyrone. Ian McNeill. 374 pp. National Museums Northern Ireland, 153 Bangor Road, Cultra, Holywood, Co. Down, BT18 0EU. £25.00 paper back. ISBN-978-1 905989-17-1.

The Flora of County Tyrone, the largest county in Northern Ireland. The author is Ian McNeill who was born there in 1938. He started recording in the Cookstown area in 1980 with his son David and a friend, Ronnie Irvine. His other son, Andrew, has also done much recording for his father's Flora. The book has a most attractive cover of a landscape with inserts of Bog Asphodel, Herb-Robert and Flowering Currant. The rest of the book also has a large number of colour photos of common and rare species. This Flora covers everything the botanist needs to know about Tyrone, from maps showing its situation in Ireland, to a map of the towns and villages. There are also very interesting chapters on topography and botany, giving a good introduction to all the various places and the species to be found. This is followed by in-depth detailed accounts of the climate by Nicholas Betts and geology by Philip Doughty. The History of Botanical Recording in Co. Tyrone gives a thorough account of the recording from the early nineteenth century up to the present day. The habitat gallery has a description of many sites around the county with a photo for each place mentioned. Then it is on to the section of the Flora that I like the most, where all the species are listed. Many are accompanied by a distribution map. Habitats are given for each species and the rarer ones have all the sites listed. I really enjoyed this splendid publication and it is well worth buying.

An Introduction To The Wild Flowers of Baldoyle. Michael J. Hurley. 48 pp. Can be obtained from mjhurley48@eircom.net for €7 plus €1 for postage. Paper back.

This delightful little book of the wild flowers of the Baldoyle area has a very interesting introductory chapter followed by photos of over 120 species of plant found in the area. Each photo is numbered and these correspond with text about each species. There is no index as the plants are in order of Common name with Latin name and Irish names following. If you are living in the Dublin area this book is certainly worth adding to your collection.

Paul R. Green

MINUTES OF THE ANNUAL GENERAL MEETING OF THE BSBI REGIONAL BRANCH 2010 HELD AT THE MUSEUM OF COUNTRY LIFE, TURLOUGH, CO. MAYO ON 7 AUGUST 2010 (unapproved)

ATTENDANCE

Twenty three members attend the meeting.

APOLOGIES

Maura Scannell, Sharon Parr, Stephen Ward, Alan Hill, Ian McNeill, Paul Green, David Nash and Cilian Roden.

MINUTES OF AGM 2009

The minutes of the AGM held at Oxford Island, Craigavon, Co. Armagh were read and approved.

MATTERS ARISING FROM MINUTES

Micheline Sheehy Skeffington pointed out that the proposed location for the BSBI Central Council AGM in 2011 was named incorrectly as UCG, which should be NUI Galway.

Michael Archer, Honorary Secretary, BSBI Committee for Ireland

HONORARY SECRETARY'S REPORT FOR 2009-2010

The Committee met on 10 October 2009, at National Botanic Gardens, 23 January 2010 at Armagh Museum and on 17 April 2010 at National Botanic Gardens.

FIELD MEETINGS

John Faulkner arranged another comprehensive programme of nine meetings most of which were well attended and thankfully enjoyed better weather conditions than had been endured the previous year. Included was a training meeting – led by Robert Northridge and which was well attended, most instructive and enjoyable. More of the same should be arranged in the future.

RECORDS

Brain Rushton prepared a detailed memo on the possible alternative routes for the publication of Irish records. This was approved by committee and distributed to the Vice-county recorders.

TRAINING AND CERTIFICATION

Further to the presentation by Dr. Sarah Whild at last year's AGM the committee agreed that, if possible two committee members should attend the next Field Identification Skills Certificate event as observers. Gerry Sharkey and Michael Archer attended at The Gateway Centre, Shrewsbury on 15 July and will prepare a written report. The Committee agreed that it is important that the matter of training and/or Certification be further progressed and that the incoming Committee should treat this as a priority.

CONSTITUTION

The reviewed constitution was approved by council and will be adopted from the date of the forthcoming AGM.

BSBI COUNCIL AGM 2011

The Committee has been in contact with John Bailey (Hon. Sec. Meeting Committee) to assist in arrangements for the AGM to be held in Galway, 2011.

VICE-COUNTY RECORDERS

The new joint VC Recorders for Co. Carlow (**H13**) are Dr. Mark McCorry and Dr. Fiona MacGowan. (Correspondence to Dr. McCorry).

PUBLICATIONS

Two new magnificent Irish Botanical Publications were launched during the past year – namely 'Wildflowers of Cork City' by Tony O'Mahony and 'The Flora of County Tyrone' by Ian McNeill. Congratulations to two of our Vice-County Recorders.

RECORDING INTO THE FUTURE

The recently issued BSBI booklet – Recording the British and Irish Flora 2010-2020, sets out the BSBI, medium to long term programme for the recording, surveillance and monitoring activities which it aims to achieve over the next ten years. It has been suggested informally that the recent level of recording progress for most of Ireland is poor and there might be merit in Irish VCR'S looking for assistance from recorders from England.

The proposal should be considered by the incoming Committee in consultation with all the Irish VCR'S.

REPORT FROM VICE-COUNTY RECORDERS

Reports from VC recorders and of field meeting were given by: John Faulkner – Co. Fermanagh Fiona Devery – Co. Offaly Sylvia Reynolds – Co. Limerick Graham Day – Co. Down John Earley – Co. Roscommon John Faulkner (Field Meeting Secretary) requested that offers to organise field meeting for next year be advised to him as soon as possible as he will not be available from 20 September onwards.

Brian Rushton requested that each VC Recorder who led a field meeting should write up a short report of same for inclusion in the Irish Botanical News.

COUNCIL AGM 2011 - NUI GALWAY

Your Committee had held a meeting on the previous Friday evening with John Bailey the Secretary of the Council meeting Committee and Micheline Sheehy Skeffington from the Botany Department NUI Galway.

Arrangements for the AGM were progressing and the C.I.F. confirmed their offer to assist if required.

CONCLUSION

The formal meeting ended and this was followed by interesting and informative presentations on the general theme of Habitat Management and Conservation.

Michael Archer, Honorary Secretary, BSBI Committee for Ireland

Saturday 7th August 2010

This will be an indoor day of talks and discussion as well as the formal CFI AGM, in the Museum of Country Life, Turlough, about 7km east of Castlebar, follow brown road-signs on the main Dublin Road, (the N5) to the Museum. If driving directly from Dublin or other parts, watch out for the Museum signs after going through the village of Bellavary on the N5.

The Museum entrance is from Turlough village at Grid Ref M202.933 marked PO on Discovery 3I. The actual building and car park are at Gortnafolla, almost on the N5, but there is no entrance except through Turlough Meet in the Museum car-park between 10:00am and 10:15am, we have little spare time in a full day and need to start promptly at 10:30am.

10:30 to 11:00 - Formal AGM of BSBI Committee for Ireland (all welcome)

 $11{:}00$ to $11{:}15$ - Brian Rushton, incoming CFI Chair, on future recording projects for BSBI in Ireland

11:15 to 11:45 - Declan Doogue, "Using the BSBI Knowledge-Base to protect the Irish Flora"

11:45 to 12:30 - Break followed by general discussion based on points raised in the previous two presentations

12:45 to 13:15 - Chris Huxley "Conservation and Management of Lough Carra's lakeshore Habitats"

13:30 to 1430 - Lunch

14:30 to 15:00 - Rory Hodd, "The Montane Heath vegetation of the Western Irish Mountains and its potential response to climate change

15:00 to 15:30 - Stephen Foster "The use of Rare Breeds in the grazing management of Nature Reserves

15:30 to 15:45 - Break

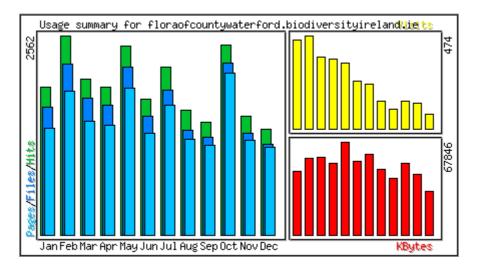
15:45 to 16:15 - Micheline Sheehy Skeffington 'Farming as a Management Tool for Biodiversity in Turloughs".

17:00 - Building closes, so we must have vacated it.

The above times may vary as circumstances during the day warrant.

There will be a charge to cover lunch etc. the amount is not available as yet but it will be kept as small as possible.

Statistics for floraofcountywaterford.biodiversityireland.ie



History

	Average/Day					Totals				
Month	Hits	Files	Pages	Visits	Traffic	Hits	Files	Pages	Visits	Traffic
2010	1921	1674	1478	251	49.49 Mb	699541	609670	538299	91459	17.59 Gb
2009	1668	1366	1008	338	38.35 Mb	609132	498649	368132	123408	13.67 Gb
2008	872	711	322	104	18.56 Mb	57555	46947	21255	6872	1.20 Gb
Totals	1718	1453	1166	278	41.81 Mb	1366228	1155266	927686	221739	32.46 Gb

The above statistics shows the amount of traffic using the Flora of Co. Waterford website per year. Site hosted by the National Biodiversity Data Centre, Waterford.







Conyza bonariensis (top left). © P.R. Green, Erigeron acris (top right). © J. Seawright. E. acris x C. floribunda (bottom left). © P.R. Green. C. floribunda (bottom right). © Z. Devlin. All taken in Co. Wexford in 2010. See pages 38 & 41

