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Hyoscyamus niger

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COMMITTEE FOR IRELAND, 1995-1996
BOTANICAL SOCIETY OF THE BRITISH ISLES

In line with the Rules, two new committee members were elected at the Annual General Meeting held in University College, Dublin on 7 October, 1995 (Office Bearers were subsequently elected at the first Committee Meeting). The Committee is now:

Miss Ann B. Carter, Chair (retiring October, 1997)
Mr Paul Hackney, Secretary (retiring October, 1996)
Dr Daniel L. Kelly (retiring October, 1996)
Miss Fiona MacGowan (retiring October, 1997)
Dr John Conaghan (retiring October, 1997)
Dr Michael Wyse-Jackson (retiring October, 1998)
Dr E.C. Mhic Daeid (retiring October, 1998)

The following are also members of the Committee:

Dr David W. Nash, B.S.B.I. Council Representative
Mr Paul Corbett, Department of the Environment (N.I.) Representative
Dr Colman O'Criodain, Office of Public Works, Republic of Ireland
Mr Alan G. Hill, Field Meetings Secretary, co-opted October, 1995
Dr Brian S. Rushton, Editor *Irish Botanical News*, co-opted October, 1995
Dr Declan Doogue, Atlas Co-ordinator, co-opted October, 1995
Dr John J. Early, Treasurer for the Atlas Project in the Republic of Ireland, co-opted October, 1995

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The cover illustration shows *Hyoscyamus niger* (Henbane), one of the rare plant species held in the Irish Plant Genetic Resources Seedbank. Taken from Fritch, W.H. and Smith, W.G. (1908). *Illustrations of the British flora*. Lovell Reeve & Co., Ltd, London.

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EDITORIAL

Well, they came, and went! The first Annual General Meeting of the B.S.B.I. to be held in Ireland was the highlight of 1995. And the most moving part of all was at the session in the National Botanic Gardens, Glasnevin when Maura Scannell was installed as an Honorary Member of the Society. It was so richly deserved and the warmth of the applause testified to the genuine affection in which we all hold Maura.

I remember meeting her in O'Connell St, Dublin one Saturday morning. I was in Dublin for an afternoon Committee for Ireland meeting and had brought my wife and my (at that stage) toddler son for a spot of shopping. Maura had been shopping too and presented my son with a lovely book - purely 'out of the blue'. He still has it and treasures it. And then there was another meeting at Glasnevin, just before Christmas. Maura came slightly late but proceeded to hand round small packets of ground coffee that she'd bought as Christmas presents for all members of the Committee!

Maura has always been a supporter of *Irish Botanical News* and I can always rely on her to provide an article, or two, or even three! Indeed, it is quite interesting to look back over the previous five issues and see the range of articles we've had. I always rather expected that one of the mainstays of *Irish Botanical News* would be vice-county reports. However, it is quite odd that only eight vice-counties have been reported on - ten if you count Cork as three, not one vice-county! Cork, Fermanagh and Antrim have nearly always been represented. But what of the other 30 which have never been reported in these pages? It would be great if I was having to hold material over because of an over-supply of copy!

Having said that, the articles this year have given us a newsletter of over 50 pages. Long may the flow continue, but do remember that even the shortest of notes will find a home in these pages; you don't have to write 2000 words or even 200 - 20 would do!

Have a good field season,

Dr Brian S. Rushton, Editor, *Irish Botanical News*.

CONSERVING NATIVE IRISH PLANT SPECIES BY COLLECTING AND STORING THEIR SEEDS

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INTRODUCTION

The ideal way to conserve plants is to protect their natural habitat, and to allow them to grow undisturbed in the wild - an approach termed 'in situ conservation'. At present, in situ conservation measures in Ireland take the form of the Flora Protection Order (1987), which confers direct legal protection on 68 species of plants and their immediate habitats, and National Nature Reserves, some of which have populations of rare plants. Further legislation, which is pending, will introduce Natural Heritage Areas, Special Areas of Conservation and other in situ measures, and the Flora Protection Order itself is being updated and will be published shortly.

The problems with in situ conservation are twofold. Firstly, increasing pressures from developers (industrial and agricultural) have led to intense conflicts of interest, in which the protection of frequently unimpressive looking colonies of plants is a low priority land-use option. Legally protected plants and/or their habitats can be accidentally or wilfully damaged and the litigation which follows can do little to replace what is lost. Secondly, in situ conservation measures necessarily focus on the rare and/or threatened species. The thousands of species and habitats which are outside the system of legal protection also require conservation attention.

It is apparent to many conservationists that in situ conservation can be very well supported by what are known as ex situ measures. The approach in ex situ conservation is to conserve organisms outside their natural habitats. This can be achieved in many ways. In the case of the Irish flora, most Angiosperms produce orthodox seed, i.e. seed which can be stored frozen without loss of viability. The most effective means to conserve these species ex situ is to establish a seedbank. Problem cases do exist: some species produce very little seed in the wild; others produce seeds which are apparently naturally largely inviable; while fern spores cannot withstand storage by freezing.

The Irish Genetic Resources Conservation Trust is a voluntary body comprising people from a range of educational, State and other organisations. Their purpose in setting up the Trust is to promote the conservation of Irish biodiversity. The first project for which the Trust sought funding was the establishment of a seedbank of rare and threatened native Irish plant species. Funding was obtained from the National Heritage Council, and the Irish Plant Genetic Resources Seedbank was launched in September, 1994. Support for the project in terms of access to advice and facilities are provided by Trinity College Botanic Gardens, the National Parks and Wildlife Service of the Dept of Arts, Culture and the Gaeltacht, and the National Botanic Gardens. Two employees (Dr Aileen O'Sullivan and James Martin) were engaged to carry out the seed collections and to set up the seedbank at Trinity College Botanic Gardens, where the project receives supervision from Dr Steve Waldren (Curator).

SAMPLING DESIGN AND METHODS

Species targeted for collection are those listed in *The Irish red data book* (Curtis & McGough 1988). Permits were obtained from the National Parks and Wildlife Service, to allow the collection of plant material from protected species. The first task was to gather information on the whereabouts of populations of the *Red data book* species. Up until 1994, the National Parks and Wildlife Service had commissioned surveys of rare plants in some Irish counties. This work, carried out by Rosemary FitzGerald (south-eastern counties and Cork/Kerry) and Declan Doogue (Dublin/Kildare), provides the majority of information upon which fieldwork for the seedbank is based. The reports produced during these surveys provide accurate information on the exact location of populations and the numbers of plants present. Information was also provided by B.S.B.I. Recorders, local Wildlife Rangers, etc. Based on an assessment of this information, populations are selected for sampling.

The aim of the project is to collect seeds from wild populations of rare and threatened species in such a way as to make the collections of potential use in the conservation of those species. This demands a scientific approach to sampling design. A fundamental point is that each plant population must be regarded as a pool of genetic diversity. Each individual is genetically distinct from others around it. Each population of plants may

have developed different genetic traits from other populations of the same species located in a different geographical region. When you consider that Ireland has been isolated as an island for the past 10,000 years, it may also be that Irish populations of any one species may differ significantly from their mainland European counterparts. The potential range of biodiversity is vast. It is a resource about which we know virtually nothing. In order to conserve it in an effective manner, it is important that as wide a range as possible of genetic diversity is captured in any collection, making it representative of the natural situation.

It was decided to base sampling methodology on guidelines published by the Centre for Plant Conservation (1991). If several populations of one species exist, three to five of the populations are selected for seed collecting. Populations are selected to represent the geographical/geological/ecological range of the species as it is represented in Ireland. Populations with the largest numbers of individuals present tend to be selected over smaller populations in similar locations. The number of individuals sampled in each population depends on the number of plants present. Ideally, 10-50 individuals are sampled per population, using a random stratified sampling system. During sampling, the entire area covered by the population is determined and care is taken to include individuals from the extremities of the population range, as well as those towards the centre. Studies have indicated that the collection of 1,000 viable seeds from one population ensures that the majority of genetic diversity present is captured (Menges 1991; Shaffer 1987). During collection, similar numbers of seeds are taken from each plant sampled, to prevent genetic bias in sampling. It is often the case with rare plants that populations are small, and that it is consequently not always possible to collect 1,000 seeds. In this case, only one-fifth of the seed present on the day is collected, so that the chance of the small population sustaining itself in situ is not affected (Prendergast *et al.* 1992). To complete sampling, records are made of what was collected, and descriptions made of the habitat and geographical location of the population.

STORAGE OF SEED AND POTENTIAL USES

The collected seeds are brought to the laboratory at Trinity College Botanic Garden, where they are systematically cleaned, dried, counted and

stored in sealed foil-laminate bags in domestic deep freeze units at a temperature of -18°C . The objective is to keep viability as high as possible, so that the seeds can be stored for long periods without regeneration, and to this end, the laboratory procedure employed by the seedbank is based on the work of Ellis *et al.* (1985). One hundred seeds are retained after cleaning to carry out germination tests. This test provides an estimate of the viability of each seed collection.

Usually, seedbanks divide each seed collection into an active and a base collection. The base collection is retained to ensure that the seed are conserved, as representative of the wild population from which they were taken. The base collection will usually be duplicated: one duplicate being stored in the Irish Seedbank; and the other being stored outside Ireland as added insurance. The active collection can be used in a variety of ways. An important function will be the provision of material to bona fide users for studies on the ecology/genetics of rare plant species. The Seedbank is currently collaborating with Dr Tom Curtis (National Parks and Wildlife Service) on conducting re-introduction or translocation experiments for a number of species which are critically endangered in the wild. Although sometimes controversial, re-introduction and translocation are often the only means whereby a species can remain in existence in the wild. The material used must be accurately sourced, and careful experimentation must precede any move to introduce a species into a semi-natural habitat. In this sense, the Irish Seedbank can make an important contribution to in situ conservation.

After carrying out germination tests on the seeds to assess viability, the seedlings can be grown on and planted out in botanic gardens. Botanic gardens have an important role in the preservation of endangered species. Both the Trinity College and the National Botanic Gardens already hold a range of rare and protected species (Synnott 1992). Much of the material currently grown in the Botanic Gardens is of uncertain origin, and therefore of limited use in conservation, in a scientific sense. However, the display of rare plants can promote awareness of the importance of conservation issues among members of the public, and the propagation of populations of rare species from accurately sourced seed material ensures that genetic stock is maintained. Also, small seed collections can be bulked up by collecting material from populations in cultivation, provided of course that the origin of the parent material is known. The collaboration

between the Seedbank and two of the major Irish botanic gardens is an important positive feature of this project.

CURRENT STATUS OF THE SEEDBANK

After two seed-collecting seasons, the Irish Plant Genetic Resources Seedbank currently holds 128 seed collections comprising 57 species (Table 1). Of these 57, 34 are species which are legally protected and considered to be among the most threatened. This figure represents half of the plant species currently protected by law in this country. Some of these species are very vulnerable in the wild. For example, *Helianthemum nummularium* (Common Rock-rose) and *Gymnocarpium robertianum* (Limestone Fern) each occur at only one location. Efforts are currently being made to conserve both these sites - they are proposed Natural Heritage Areas/Special Areas of Conservation. However, damage can yet occur, as mentioned earlier, and the storage of seeds/spores of these species is a sensible conservation measure. Many of the species stored are of potential commercial value, as the wild relatives of crop species, e.g. *Asparagus officinalis* subsp. *prostratus* (Wild Asparagus), *Hordeum secalinum* (Meadow Barley), *Lolium temulentum* (Darnel) and *Trifolium* spp. (Clovers). Others were once grown as crops in Ireland but have declined in significance, e.g. *Avena strigosa* (Bristle Oat), *Secale cereale* (Rye) and *Crambe maritima* (Seakale). Some species are of potential interest for their chemical/medicinal properties, e.g. *Colchicum autumnale* (Meadow Saffron), *Hyoscyamus niger* (Henbane).

Although currently focusing on rare and threatened species, the Seedbank hopes in future to expand its activities to include a more comprehensive range of native Irish species. The future is largely dependent on funding. At present, funding for the Irish Seedbank is dependent on the National Heritage Council, which dispenses money collected by the National Lottery. Although the Seedbank is grateful to the National Heritage Council for its support, the present situation places the Seedbank in a rather precarious position financially. Currently, E.U. funding is directed at in situ conservation, while ex situ conservation receives no support. Should this change in future, the Irish Seedbank should become more secure, to reach its full potential.

TABLE 1. Rare and Protected Plant Species held in the Irish Plant Genetic Resources Seedbank

Taxon	No. of Accessions	Taxon	No. of Accessions
<i>Asparagus officinalis</i>		<i>Kickxia elatine</i>	2
subsp. <i>prostratus</i>	3	<i>Lamiastrum galeobdolon</i>	2
<i>Asplenium obovatum</i>	1	<i>Ligusticum scoticum</i>	3
<i>Avena strigosa</i>	8	<i>Lolium temulentum</i>	7
<i>Calamagrostis epigejos</i>	1	<i>Lotus subbiflorus</i>	1
<i>Campanula trachelium</i>	4	<i>Mertensia maritima</i>	3
<i>Carduus nutans</i>	2	<i>Oenanthe pimpinelloides</i>	4
<i>Carum verticillatum</i>	2	<i>Ornithopus perpusillus</i>	1
<i>Centaureum pulchellum</i>	1	<i>Otanthus maritimus</i>	2
<i>Clinopodium acinos</i>	2	<i>Pilularia globulifera</i>	2
<i>Colchicum autumnale</i>	3	<i>Potentilla fruticosa</i>	2
<i>Crambe maritima</i>	4	<i>Prunus padus</i>	1
<i>Deschampsia setacea</i>	2	<i>Pyrola rotundifolia</i>	
<i>Draba incana</i>	1	subsp. <i>maritima</i>	1
<i>Erigeron acer</i>	1	<i>Rumex maritimus</i>	2
<i>Eriophorum gracile</i>	3	<i>Salvia verbenaca</i>	2
<i>Filago minima</i>	4	<i>Saxifraga hirculus</i>	2
<i>Filipendula vulgaris</i>	1	<i>S. rosacea</i> subsp. <i>hartii</i>	1
<i>Frangula alnus</i>	3	<i>Sanguisorba officinalis</i>	1
<i>Galeopsis angustifolia</i>	1	<i>Secale cereale</i>	8
<i>Geranium purpureum</i>	1	<i>Sibthorpia europaea</i>	3
<i>Geranium rotundifolium</i>	1	<i>Simethis planifolia</i>	1
<i>Gnaphalium sylvaticum</i>	2	<i>Spiranthes romanzoffiana</i>	1
<i>Gymnocarpium robertianum</i>	1	<i>Stachys officinalis</i>	2
<i>Helianthemum canum</i>	2	<i>Trifolium subterraneum</i>	1
<i>H. nummularium</i>	1	<i>Trollius europaeus</i>	4
<i>Hordeum secalinum</i>	6	<i>Tuberaria guttata</i>	2
<i>Hyoscyamus niger</i>	1	<i>Vicia orobus</i>	1
<i>Hypericum canadense</i>	2	<i>Viola lactea</i>	1
<i>H. hirsutum</i>	1		

POTENTIAL INVOLVEMENT OF THE B.S.B.I.

The basis of meaningful conservation is information! The Seedbank is always interested to receive assistance with locating populations of rare and threatened species. Provision of precise location details and an estimate of population size are also useful. B.S.B.I. recorders who are interested in assisting this project should be assured that the Seedbank does not give out information on rare plant populations and treats all information received with discretion. The Seedbank co-operates closely with Dr Tom Curtis, who is officially in charge of Biological Records for the National Parks and Wildlife Service. Information received will be passed on to Dr Curtis for storage on the National Plants Database.

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PROGRESS TOWARDS A *FLORA OF FERMANAGH*

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This article is based on a talk given by R.S.F. at the launch of CEDaR (Centre for Environmental Data and Recording), given at the Ulster Museum on 11 November, 1995, but the information and opinions on the Flora expressed here have been discussed and agreed by both authors.

We are now well into our fifth year of work to computerise the flora of Fermanagh (H33), and the RECORDER database we are using currently contains in excess of 146,000 plant records. In the last 12 months we have added about 25,000 records (a substantial proportion being imported from the N.I. Lake Survey, associated on this occasion with the larger lakes in the county). We both feel that we are beginning to approach our goal, which is to produce a computer mapped *Flora of Fermanagh*, detailing plant finds, and analysed at the tetrad level (i.e. 2-km square).

This is far beyond what we aimed to do when we began this project away back in our youth in 1976. Then, and for the next decade, we felt that with such limited manpower (basically just the two of us), if we managed to produce a Flora on the 5-km basis, we would achieve four times the resolution of the Perring & Walters (1976) *Atlas*, and we would be doing well. However, as time went on and things inevitably changed, one benefit was the strengthening of the governmental conservation agency, which subsequently began to commission large scale botanical surveys in Fermanagh with the view to establishing conservation sites.

We were not, of course, starting from scratch in 1976. Around this time R.S.F. had been recruited by Pat Kertland to act as v.c. recorder (H33), and had been given a copy of a typescript *Flora of County Fermanagh*, produced by R. Desmond Meikle, the previous recorder, authored by himself and E.N. Carrothers, J.McK. Moon and R.C. Davidson. This

valuable document listed and summarized the flora records from the first findings of Dr Robert Scott published in 1806, to those of the typescript 'Flora Authors' who continued working from 1945 until 1954. Some years later, Mr Meikle forwarded a somewhat more detailed version of the typescript *Flora* and the box of file cards on which it was based. In retrospect, much of what we were doing in the first ten years of our study, was confirming the findings of Meikle *et al.*, and locating their sites and those of earlier workers, notably Praeger and Barrington.

Throughout the period from 1976 onwards we were also gradually improving our skills as field botanists, and had begun to locate new species and hybrids, particularly among the ferns and horsetails. Meetings arranged in the v.c. by the B.S.B.I. in 1977 and subsequently by the British Pteridological Society and the Bryologists, also proved very worthwhile, not only in that they generated records, but simply because they were stimulating and encouraging.

The accumulation of new records was very slow until the B.S.B.I. Monitoring Scheme began in 1987. This proved to be the spur for a sudden burst of recording, mainly by R.H.N. who is the only resident botanist in the county, which has gone on at much the same pace ever since. More recently there have been surveys for D.O.E. of the Pettigo plateau and the very thorough N.I. Lake Survey (which investigated about 200 small lakes and the four major lakes in great detail), and Matthew Tickner of the R.S.P.B. worked the islands it manages in Lower Lough Erne. A list of significant contributors to the database records, their dates, and the number of records in the computer attributed to them is given in Table 1, and the total records are analysed by date in Table 2.

In reading these tables one should of course remember that bare statistics don't tell the whole story. Dr Scott's 29 records include some of the rarest and most interesting plants ever found in Fermanagh, e.g. (figures in brackets give current numbers of records), *Oreopteris limbosperma* (Lemon-scented Fern) (8); *Stratiotes aloides* (Water-soldier) (44); *Epipactis palustris* (Marsh Helleborine) (15); *Pseudorchis albida* (Small-white Orchid) (34) and *Brachypodium pinnatum* (Tor-grass) (4). It should also be pointed out that when R.S.F. was given six months study leave from Queen's University in early 1994, work began to add the historical records to the RECORDER database from the card index supplied by

TABLE 1. Significant contributors to the records on the Fermanagh flora database

Name	Active	No. of records
Dr R. Scott	1804	29
J.T. Mackay	1834	16
Rev. T.O. Smith	1845-72	45
S.A. Stewart	1881	345
R.M. Barrington	1881-2	347
W.N. Tetley	1890-1925	43
W. West	1898-1915	49
R.L. Praeger	1892-1946	856
'Flora Authors'	1945-53	4130
R. Mackechnie	1948-53	180
P. Hackney	1969-	341
L. Farrell	1970	1784
R.S. Forbes	1976-	8437
R.H. Northridge	1976-	75804
D.O.E. Surveys	1985-	28711
N.I. Lake Survey	1988-90	19213
M. Tickner	1989-	3938

TABLE 2. Accumulation of plant records over time for the Fermanagh flora database

Date	No. Records in period	% of total Database (146,363)
Pre-1900	1286	0.9
1900-69	6192	4.2
1970-86	33560	23
1987-88	29401	20
1989-90	23504	16
1991-92	26758	18
1993- continuing	25662 ...	17.5 ...

Meikle, and from published papers. Due to the tedious labour involved in entering individual records into the computer rather than those from site lists, we took the decision not to add older records for those species which already had more than 200 occurrences in the database.

The two tables clearly show the substantial increase of records since 1987 when the Monitoring Scheme began and the achievement of R.H.N., who has added more information to the database *than all other workers combined*. Apart from this remarkable feat the most outstanding statistic concerning the flora database is that 95% of the records are post-1970. The B.S.B.I. Monitoring Scheme and the requirements to record all species using an organised, systematic approach based on 2-km squares, galvanised us to hunt more thoroughly and to do so in places we would have previously tended to ignore. The back-up of the *Plant crib* (Rich & Rich 1988), and Tim Rich's enthusiastic encouragement proved infectious and undoubtedly also played a part. The success of the new approach and increased effort in generating interesting new plant finds itself encouraged us and motivated R.H.N. in particular, and soon he was plant recording in December and January! There could hardly be a better argument for the new Atlas project than the stimulation and motivation the Monitoring Scheme had on us in Fermanagh.

The study leave previously mentioned also allowed R.S.F. to concentrate on developing a site structure for Fermanagh in the database. Sites are based on significant units such as, for example, Forest Parks, large estates, lakes and townlands, and a reasonably consistent pattern of subsites to three or four subsidiary levels has been constructed. Regrettably, decisions taken early in our experience, before we refined and standardised our approach to site recording and the use of six-figure grid references, are difficult to rectify (although not impossibly so). The current position is that we have sites in all 521 tetrads in the county, and the total number of sites and subsites exceeds 2,900. Considering that the typescript Flora described distribution in terms of just four large districts, and the *Atlas* did the same with just 33 10-km squares, all or partially within Fermanagh, our current site map shows how much more information on plant occurrences we now have assembled and can display (see Fig. 1).

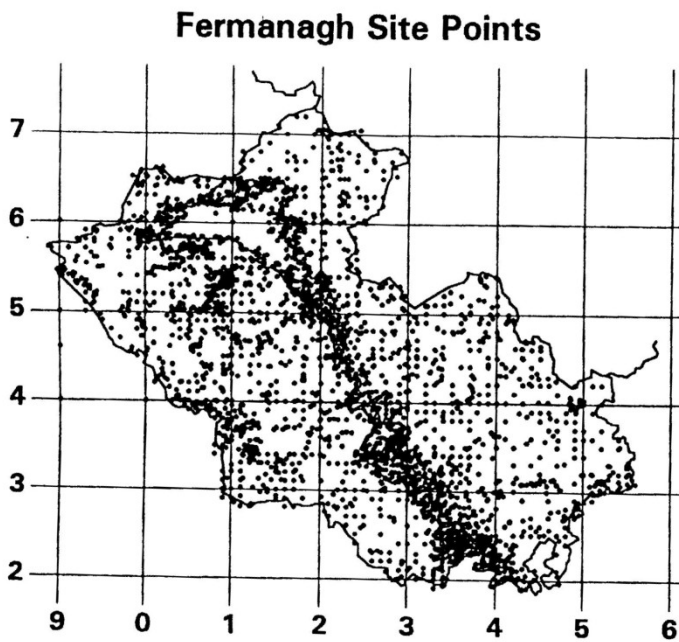


FIGURE 1. A site map for the proposed *Flora of Fermanagh*.

Working with the RECORDER database for over four years has meant that as we added records, sites and species, we have gradually picked up computing skills which enable us to query the data and obtain reports which allow us to direct our future recording efforts. We know, for example, that the most species-rich 10-km square is H/0.5 with 648 taxa, and the equivalent tetrad is H/0.5W with 384. Of the 521 tetrads in (or partially in) Fermanagh, we have 22 tetrads with over 300 species recorded, and 100 squares with between 200 and 299 taxa. However there are also 159 tetrads with less than 100 species recorded, and our current aim is to work in these latter squares to *try* to get every tetrad into triple figures. It will be understood that this may not be possible if a square suffers from insufficient habitat variety.

The ten most common species in the database are listed with the current number of records in Table 3. It doesn't require a great deal of ecological analysis to appreciate that almost all of Fermanagh has a wetland flora! RECORDER includes an elegant mapping program, Plot 5, which in conjunction with Alan Morton's DMAPW (i.e. Distribution Map for Windows), allows us to adjust many aspects of scale and symbol size, as demonstrated for our most frequent species, *Filipendula ulmaria* (Meadow-sweet) in Figs 2-4. Clearly a great amount of detail can be displayed, but over-fussy maps could confuse the overall distribution pattern, and inappropriate choices of map type (proportional or not), or of format, could over or under represent the weight of available data. We have decided to standardise on the straight tetrad map for the great majority of species.

Apart from mapping the species and giving basic statistics of their occurrence in the database, we intend commenting on their distribution at v.c., N. Ireland, Ireland, and British Isles levels, and will indicate threats and conservation measures in force or required. The Meikle *et al.* typescript Flora will sometimes enable us to make historical comparisons, but in the main we will not yet be able to say whether a species is stable or not, since it is only with the creation of this relatively short-term data set that we can for the first time draw a baseline against which *future* changes could be measured.

Despite this limitation there is a great deal which will be commented on in the Flora of Fermanagh. The v.c. contains 21 species protected by the N.I.

TABLE 3. The ‘Top Ten’ species by number of records in the Fermanagh flora

Species	No. of records
1. <i>Filipendula ulmaria</i>	1455
2. <i>Ranunculus repens</i>	1318
3. <i>Juncus effusus</i>	1312
4. <i>Alnus glutinosa</i>	1170
5. <i>Ranunculus flammula</i>	1123
6. <i>Angelica sylvestris</i>	1115
7. <i>Agrostis stolonifera</i>	1072
8. <i>Equisetum fluviatile</i>	1026
9. <i>Caltha palustris</i>	1020
10. <i>Galium palustre</i>	980

Countryside and Wildlife Schedule 8 (see Table 4), ten of which have their all-Ireland or N. Ireland headquarters in Fermanagh (based on consideration of Curtis & McGough (1988)). The references to the ‘number of sites’ in Table 4 tends to use a much larger scale, less grid-focused site concept, e.g. Lough Melvin and Upper Lough Macnean are here considered as ‘sites’ of *Trollius europaeus* (Globoseflower) although there are in reality eight grid-referenced stations in the database for this species. *Lathyrus palustris* (Marsh Pea) has so many occurrences around Upper Lough Erne that a different approach is needed for this analysis and in this particular instance ‘sites’ are based on individual grid plotting points.

Eleven of the protected plants are represented by a single site each, including *Erica vagans* (Cornish Heath) and *Cirsium heterophyllum* (Melancholy Thistle), these also being their only Irish stations. *Stratiotes aloides* is NOT on the N.I. Protected Schedule, but R.S.F. has been researching its status and he believes that it merits native rank and conservation as a declining species within the British Isles (a paper in preparation will argue the case). *Stratiotes aloides* is known to occur in 15 tetrads around Upper Lough Erne (which is its N.I. headquarters), but if there is any increase this century, it is not dramatic, and the plant was first recorded as long ago as August 1805, making it the earliest plant record of any species in the county.

We hope to complete our field recording in 1996 in the under-recorded

Filipendula ulmaria

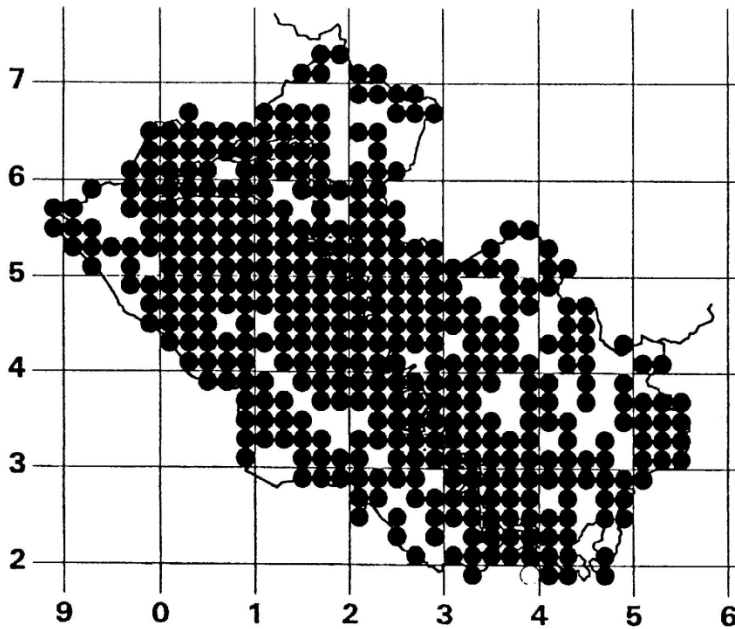


FIGURE 2. Distribution of *Filipendula ulmaria* in Fermanagh (using a plotting unit of 2.0 km and a symbol size of 2.0 km).

Filipendula ulmaria

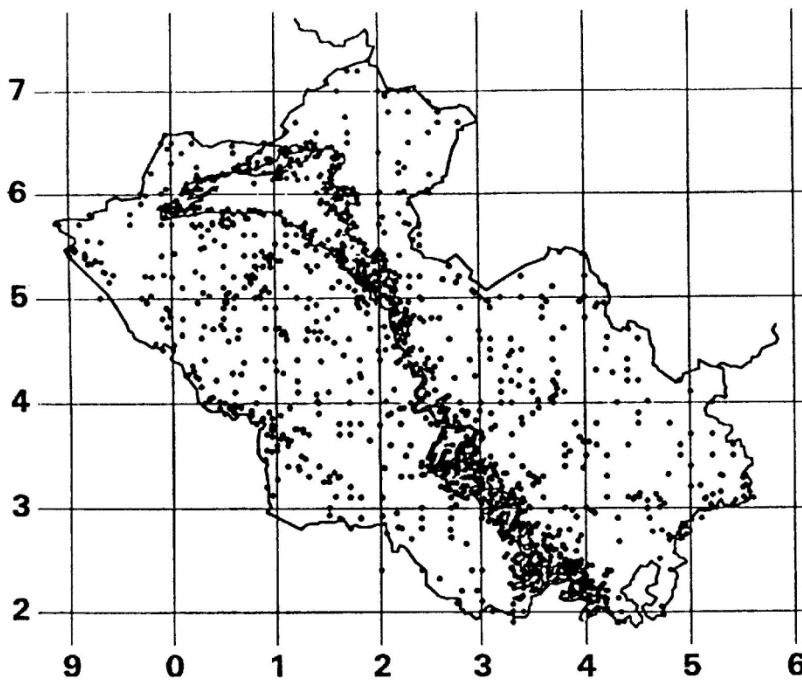


FIGURE 3. Distribution of *Filipendula ulmaria* in Fermanagh (using a plotting unit of 0.1 km and a symbol size of 0.5 km).

Filipendula ulmaria

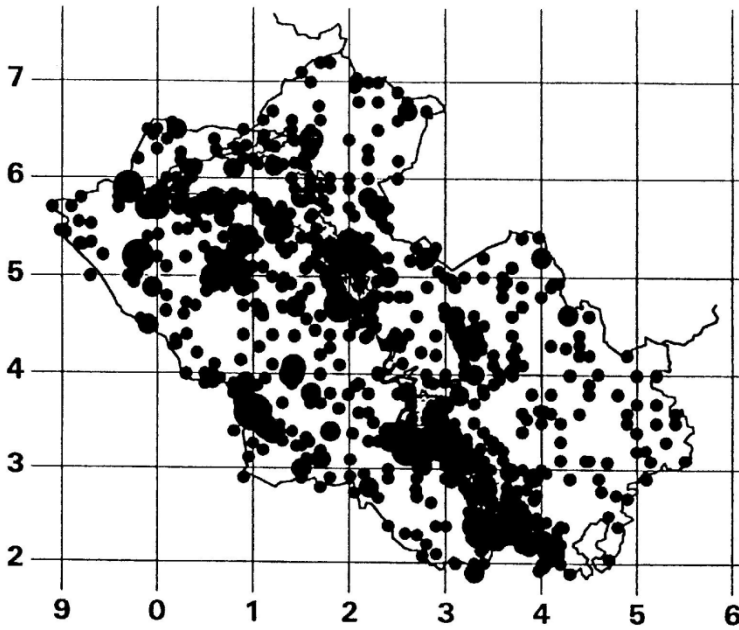


FIGURE 4. Distribution of *Filipendula ulmaria* using proportional mapping. (Records have been grouped by sites; maximum number of records at any site = 5.)

TABLE 4. Schedule 8 (N.I. Protected) species in the Fermanagh flora database

Species	No. of sites*
Headquarters species	
<i>Trollius europaeus</i>	2/4
<i>Lathyrus palustris</i>	c. 37/50
<i>Monotropa hypopitys</i>	3/6
<i>Pseudorchis albida</i>	8/14
<i>Orthilia secunda</i>	c. 8/8
<i>Viola persicifolia</i>	3/6
<i>Stratiotes aloides</i>	c. 15/?
<i>Orobanche hederæ</i>	2/2 (in NI)
<i>Saxifraga aizoides</i>	2/3 (in NI)
<i>Sisyrinchium bermudiana</i>	8/8 (in NI)
<i>Primula veris</i> (in meadows)	3/3 (in NI)
Single site species	
<i>Polystichum lonchitis</i>	(only NI site)
<i>Trichomanes speciosum</i>	1/10
<i>Erica vagans</i>	(only Irish site)
<i>Cirsium heterophyllum</i>	(only Irish site)
<i>Limosella aquatica</i>	(only NI site)
<i>Hottonia palustris</i>	1/2
<i>Dryas octopetala</i>	1/3 (in NI)
<i>Epipactis phyllanthes</i>	1/4
<i>Spiranthes romanzoffiana</i>	1/7 (in NI)
<i>Andromeda polifolia</i>	1/3 (in NI)
<i>Rorippa islandica</i> s.s.	1/2 (in NI)

* Number of sites in the Fermanagh flora compared with the total number of sites.

tetrads, and while we expect that this will not produce startling new finds, it will enable us to refine our statistics and claim a more even survey coverage of the vice-county. Meantime we intend customising the 'Local Species' window in RECORDER to enable us to begin writing accounts of the rarer and more interesting species in Fermanagh. We feel that our experience with the RECORDER Database and what we have achieved by applying ourselves to our self-driven task while using it, proves that Irish recorders can attain the recording standards for local Floras set by Co. Durham and Co. Northumberland in recent years, where the numbers of active botanists are legion by comparison with Ireland. We do not have as rich a flora as theirs, but with prolonged dedication we can cover what we have as well or better!

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HYBRID DOCKS AND WILLOWHERBS IN COUNTIES SLIGO, LEITRIM AND MAYO

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A few notes from a casual visitor on some under-recorded groups may be of interest. Taxa marked with an asterisk are not listed in Scannell & Synnott (1987).

DOCKS (*RUMEX* SPP.)

These hybridise as readily as in Great Britain, but are often overlooked especially as their irregular development gives the impression of a scruffy or immature plant. Some good examples were found on 30 July, 1995 on the coastal hill slope at Mulranny (H27, W. Mayo; F/829.966), south of the N59. There were some abandoned shrub plantings,

presumably associated with a nearby closed hotel, and these may have created the initial disturbed conditions which produced *Rumex crispus* (Curled Dock), *R. obtusifolius* (Broad-leaved Dock) and *R. sanguineus* (Wood Dock). All hybrid combinations were present: three plants of *R. x pratensis* (*R. crispus* x *R. obtusifolius*); and one each of *R. x dufftii* (*R. sanguineus* x *R. obtusifolius*) and *R. x sagorskii** (*R. crispus* x *R. sanguineus*).

R. x dufftii fruits irregularly, with very variable tepals showing occasional small teeth from the *R. obtusifolius* parent. Because of the low fruit set and the readiness of the flowering parts to dry and fall off without full development it is as well to reject for identification purposes those plants which may instead simply be in bad health.

The *R. x sagorskii* specimen also had fragmentary inflorescences, with the general jizz of a weak *R. crispus*. The tepals were, however, more variable in shape (from the lingulate influence of *R. sanguineus*).

R. x pratensis is always a much more vigorous hybrid, manifest from the combination of slightly crisped leaves and small teeth on the tepals, and likely to be found on any of the numerous occasions when the parents grow together. I saw this also at Parkes Castle, 23 July, 1995 (H29, Co. Leitrim); Rosses Point, 24 July, 1995 (H28, Co. Sligo) and on a number of roadsides or field margins along the south of Clew Bay, 29 July, 1995 to 1 August, 1995 (H27, W. Mayo). Still in H27, *R. x dufftii* was also present at one end of the old viaduct at Newport.

WILLOWHERBS (*EPILOBIUM* SPP.)

Forestry operations create disturbed conditions suitable for colonisation by willowherbs, with hybrids arising before growth is crowded out. In two such disturbed areas at Union Wood, Ballysadare (H28, Co. Sligo, G/683.298 and G/698.292) on 27 July, 1995 I noted 18 specimens of *Epilobium montana* x *E. ciliatum* and six of *E. obscurum* x *E. ciliatum**. Present were *E. ciliatum* (American Willowherb), *E. hirsutum* (Great Willowherb), *E. montanum* (Broad-leaved Willowherb), *E. obscurum* (Short-fruited Willowherb), *E. palustre* (Marsh Willowherb) and *E. parviflorum* (Hoary Willowherb). The frequency of the *E. montana* cross, with its characteristic 'clenched fist' stigmas, corresponds with my observations elsewhere. But it was not until I re-read Preston (1989)

that I appreciated how relatively few were the Irish records of *E. ciliatum* as recently as 1986, although it was widespread in the vice-counties which I visited.

Conifers are also afforested around Lissadell House, north east of Sligo (H28). Here on 25 July, 1995 in the rides or gaps between trees were two further plants of *E. montanum* x *E. ciliatum* plus one of *E. parviflorum* x *E. ciliatum**.

New roadsides are another willowherb habitat, particularly on gravelly edges or in shrub plantings. The edge of the road to Hazelwood by Lough Gill carried some hybrids whose identity I was less efficient in recording. And a few moments snatched en route to Knock Airport produced *E. parviflorum* x *E. montanum* from a new roadside on the southern outskirts of Castlebar (and so, I take it, just within H26, E. Mayo), with distinctly four-lobed stigmas inherited from both parents. Other hybrids were present, but under the pressure of time I committed the cardinal sin of omitting to note potential parents in the vicinity which would have added confidence to identification.

All the crosses noted above bore characteristic hybrid features in addition to intermediacy between parent species: flushed pink flowers, often larger than usual; partial sterility; and, when developed, straggling inflorescences. Hence it is possible to pick out such plants at a distance in the field, although identification requires close examination.

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OROBANCHE HEDERAE DUBY - THE STRUCTURE OF THE LABELLUM

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Orobanche hederæ Duby (Ivy Broomrape) (Orobanchaceae) is described in Webb (1977) as “[parasitic] on the roots of *Hedera*; occasional in S. half, much rarer in N.”

In August, 1995 I collected specimens of Ivy Broomrape on the grass verge of a roadside hedge with Ash and other trees bearing Ivy, east of Mountmellick, N/53.06, Co. Laois (H14). On sight the plant appeared to be *Orobanche hederæ* and it was checked against the description in Webb (1977) which describes the lower lip of the corolla thus “cut off square”. This was not in accord with the specimen in hand which I would describe as a shape divided into three subequal lobes, the central lobe slightly folded, fleshy and with the vein excurrent.

On return to base, I consulted the wider literature and found variation in descriptions of the morphology of the lower lip of *O. hederæ*. The following are examples:

Clapham *et al.* (1987): “lower [lip] 3-lobed with the middle lobe truncate”.

Rumsey & Jury (1991): “lower lip with middle lobe just largest, all sub-acute, crisped and denticulate”.

Stace (1991): “lower lip of corolla with acute to subacute lobes”.

Stace (1991) advises that, when collected, the “corolla should be opened out ... the shape of the corolla in side view and of the lower lip in front should be recorded”.

Line drawings were also found to be at variance with the Laois specimen, as in Ross-Craig (1966) and Butcher (1961). Both show truncated lower lips. The problem may go back to the Bentham era.

A glance at floristic literature in French revealed:

Coste (1906): “... l’inferieure lèvre a lobes inégaux”. [- in the illustration, not acute.]

des Abbayes (1951): “inf. à lobe median plus grand que les lateraux”.

In the season 1996 botanists might check the shape of the lower lip of the corolla of Ivy Broomrape and report thereon. The flowers of the plant are of a fleshy texture and therefore it is not easy to persuade a labellum with a median fold to lie flat. Also it is important that line drawings mirror text descriptions. It appears that many illustrations are based on herbarium material.

The present report on *Orobanche hederæ* in Laois (voucher in **Herb. M.J.P. Scannell**) extends the range. Previous records noted the plant from the south of the county about Durrow.

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THE NATURAL HERITAGE AREA SURVEY OF WEST CORK

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A recent Office of Public Works leaflet described a Natural Heritage Area (N.H.A.) as a “place of special interest ... to the landowner, to the nation and to

science. It is part of the heritage we hand on to our children. Such areas are special because they are the best remaining habitats for our wild plants and animals. These habitats are commonly found in areas that have remained in a relatively natural state - scrub, bogs, woodland, seashore and rough grazing places. Without them many species would become extinct”.

August, 1994 saw the end of the West Cork section of the National N.H.A. survey carried out by the National Parks and Wildlife Service (N.P.W.S.). This article outlines the background to this recent survey and some information on the sites involved is also given.

In 1981 An Foras Forbartha published a document entitled *Areas of scientific interest in Ireland*. It is an inventory on a county by county basis of all the Areas of Scientific Interest (A.S.I.) both ecological and geological noted up to 1981. This report pointed out that Ireland is fortunate in having a wide range of scientifically important sites but it recognised that this rich and unique resource was being steadily reduced by a range of damaging activities. Urbanisation and other development related processes and agricultural practices such as drainage and land clearance are among the forces responsible. Apart from the intrinsic aesthetic value of these areas they have an important role in tourism and in scientific and historical research. Their degradation represents a serious loss to the nation.

The information on A.S.I.s contained in the 1981 report had already been incorporated into the various County Development Plans prepared by the local authorities and could be taken into account by planning department staff when considering proposed developments. No legal protection was conferred on A.S.I.s nor was there any incentive or compensation scheme in place to assist in their conservation.

The value of this 1981 report was that for the first time we now had a detailed list of sites and information on why they are important. Sites were classified as being of International, National or Local importance and their specific interest, e.g. ornithological, botanical or zoological, was given. One thousand and fifty nine A.S.I.s were listed covering roughly 3% of the area of the country. By 1992 with various reviews the list had grown to 1,800, roughly 7% of the territory of Ireland.

In 1992 a new National Heritage Area/Area of Scientific Interest Survey commenced. Its objectives were:

1. to check and review the status and boundaries of Areas of Scientific Interest in Ireland; and
2. to contribute towards the establishment and updating of the A.S.I. database.

The practical end of the survey involved visiting all the A.S.I.s, making a general assessment of the condition of the site under such headings as habitat classification, current land use, damaging operations, potential threats and overall site 'quality' as well as determining appropriate site boundaries. The site report also included any new information on the sites generated from the various ecological surveys on animal and plant populations that are constantly undertaken by staff of the N.P.W.S.

Two aspects of this recent N.H.A./A.S.I. survey deserve special mention. First is the fact that this survey differs from previous related ones in that it is a much more public affair. Many landowners were never made aware that their lands contained part, or all, of an A.S.I. Obviously, a landowner could not play a role, say, in the conservation of a rare plant if he did not even know it was on his land. Under the present N.H.A. scheme, after official designation of the new N.H.A.s (sometime in late 1994 or early 1995) all known landowners will be contacted by N.P.W.S. in writing. Also, a series of advertisements in local and national newspapers will show maps and list all the townlands involved in N.H.A.s. These maps will also be displayed in the Teagasc, Farm Development Service Offices and Department of Social Welfare Offices. In cases where landowners are not satisfied with the designations an appeals procedure is being set up with the Appeals Board being comprised of members drawn from a number of conservation and farming bodies with an independent chairperson.

The second aspect worthy of note is the role of the N.H.A.s in the new Rural Environmental Protection Scheme (R.E.P.S.) - one of the measures under the European Community C.A.P. Reform. Landowners who join the R.E.P.S. scheme who have N.H.A.s on their holdings will be entitled to a grant under certain conditions to encourage them to conserve the N.H.A.

The R.E.P.S. scheme is designed to:

- a. establish farming practices and controlled production methods which

reflect the increasing public concerns for conservation, landscape and wider environmental problems;

- b. protect wildlife habitats and endangered species of flora and fauna; and
- c. produce quality food in an extensive and environmentally friendly manner.

To this end farmers will farm according to an approved management plan. N.P.W.S. staff will have a role in the design of these plans where N.H.A.s are involved. The N.H.A. grant will amount to a 20% top up premium on the standard R.E.P.S. payment. Of further interest is the fact that one of the measures listed as compulsory for participation in the R.E.P.S. scheme is the protection of any features of historical or archaeological interest.

Of the approximately 150 N.H.A. sites currently listed for Co. Cork over 50 are in the West Cork Wildlife Zone (roughly west of Bandon). They vary in size from a single building housing bat colonies to very large areas of mountains and bays. The Roaringwater Bay and Islands N.H.A., for example, covers an area of almost 3500 ha. Fig. 1 shows the location of these sites and brief details of their main points of interest are given in the list of site accounts below. In a few of the accounts I have been a bit vague on the exact location of sites or in the naming of a particular species where I consider it appropriate to the protection of the scientific value of the site.

THE SITES

Site 1. Bandon Valley above Inishannon. Area 96 ha.

Site 2. Bandon Valley below Inishannon. Area 103 ha.

Site 3. Bandon Valley south of Dunmanway. Area 71 ha.

Site 4. Bandon Valley west of Bandon. Area 117 ha.

These sections of the Bandon Valley hold the remaining areas of natural and semi-natural woodland. They include the wet alder/willow/birch stands below Dunmanway and the drier oak and beech woodlands in the Bandon/Innishannon area as well as the brackish reedbeds in the tidal zone of the Bandon estuary. Overall these N.H.A.s contain a host of habitats for a wide range of plant, insect, bird and mammal species and in an area of intensive agriculture they are of particular importance as wildlife oases. The Bandon River itself is also of value in that

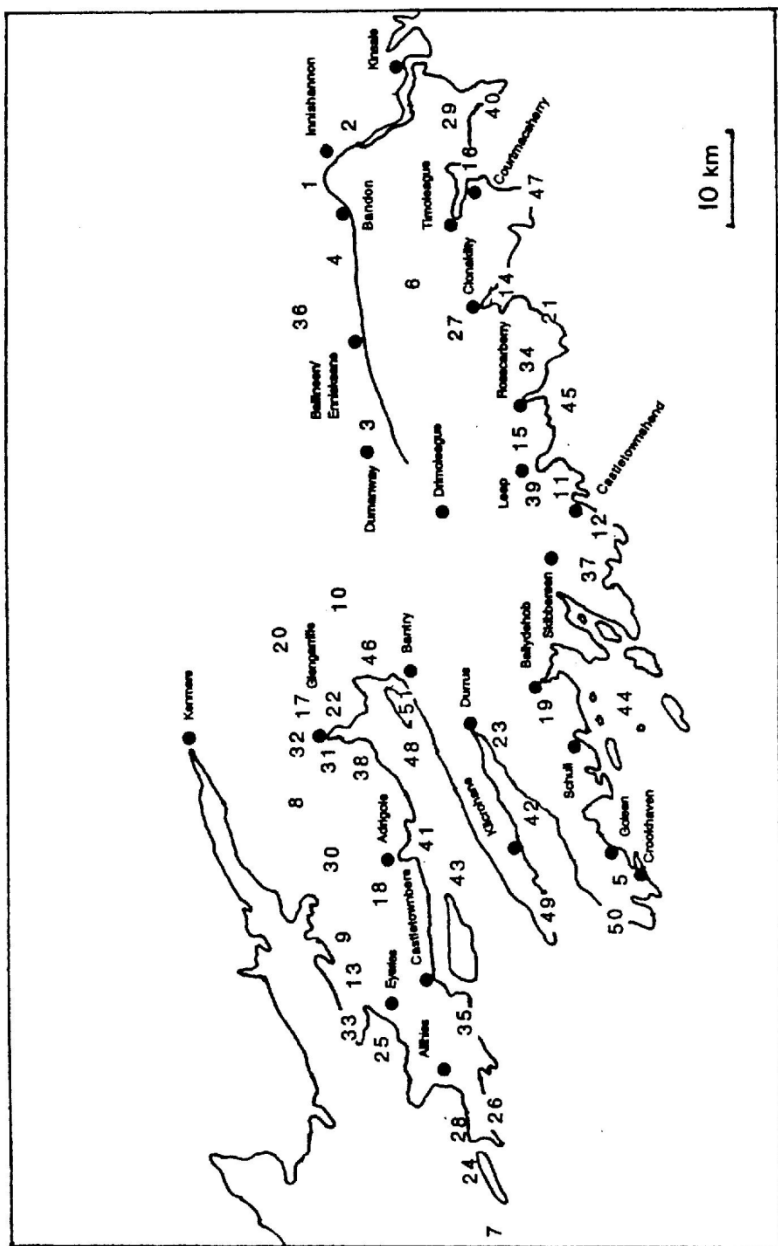


FIGURE 1. Locations of 51 Natural Heritage Areas in West Cork.

unmodified river beds are scarce in a European context.

Site 5. Barley Cove to Ballyrisode Point. Area 99 ha. This site contains the Barley Cove sand dune system - a limited habitat in Cork in spite of the extensive coastline and currently in need of some management. It also includes Lissagriffin Lake which is of ornithological importance and the Goleen/Crookhaven area which has a host of very rare plants such as *Lotus subbiflorus* (Hairy Bird's-foot-trefoil), *Orchis morio* (Green-winged Orchid), *Ornithopus perpusillus* (Bird's-foot), *Asplenium obovatum* (Lanceolate Spleenwort), *Crambe maritima* (Seakale) and *Tuberaria guttata* (Spotted Rock-rose). Several good specimens of *Arbutus unedo* (Strawberry-tree) are found within the site and much good quality coastal heath land is also included.

Site 6. Bateman's Lough. Area 9 ha. An area which is important as an inland site for wildfowl, especially duck species.

Site 7. Bull and Cow Rocks. Area 7 ha. The seabird breeding colonies of these offshore rocks are the point of interest, particularly the gannet colony of the Bull rock. Both rocks have Refuge for Fauna status.

Site 8. Caha Mountains. This is a very large area stretching from near the Healy Pass to Barley Lake. It is of value for upland blanket bogs and lakes as well as for the presence of the rare plant *Minuartia recurva* (Recurved Sandwort) whose next known station is in the mountains of southern Europe.

Site 9. Ardgroom. Area 2 ha. One of the sites for the protected plant *Stachys officinalis* (Betony).

Site 10. Kealkill. This site is a building with a large colony of Daubentons Bats.

Site 11. Castletownshend. Area 90 ha. A woodland site of botanical importance.

Site 12. Castletownshend. A building with a large breeding colony of Leislars Bats.

Site 13. Cleanderry Wood. Area 19 ha. This is an oceanic oak woodland of very high quality with a nice ground flora including *Saxifraga hirsuta* (Kidney Saxifrage).

Site 14. Clonakilty Bay. Area 694 ha. An area of extensive mudflats, saltmarsh, freshwater marsh and good quality sand dunes. The mudflats are of particular importance for a range of wildfowl and wader species.

Site 15. Cloonties Lough. Area 5 ha. This is an upland acidic lake of botanical and ornithological value.

Site 16. Courtmacsherry Estuary. Area 619 ha. Another large area with a range of coastal habitats and of particular importance for wildfowl and waders.

- Site 17. Currakeal. Area 1 ha. An upland area of botanical importance.
- Site 18. Dereen Upper Bog. Area 43 ha. This area includes Hungry Hill which has blanket bog habitat, corrie lakes and streams and has an interesting montane flora.
- Site 19. Dereenatra. Area 1 ha. An area of botanical importance.
- Site 20. Knockboy. Area 570 ha. A large area of very good quality upland blanket bog.
- Site 21. Dirk Bay. Area 22 ha. A small sand dune system with some interesting plants.
- Site 22. Glengarriff. This site is a building with a year round colony of Lesser Horseshoe Bats.
- Site 23. Durrus Bog. Area 20 ha. This small area contains a range of woodland types and other vegetation of interest.
- Site 24. Dursey Island. Area 406 ha. Of interest chiefly for its heathland and bird life, particularly the Chough population.
- Site 25. Eyeries Island. Area 5 ha. One of the tern breeding sites.
- Site 26. Firkeel Gap. Area 12 ha. A site of botanical importance.
- Site 27. Gallanes Lough. Area 9 ha. A small lake of ornithological importance with some nice communities of wetland plants.
- Site 28. Garinish Point. Area <1 ha. A site for the protected plant *Stachys officinalis*.
- Site 29. Garretstown Marsh. Area 10 ha.
- Site 30. Glanmore Bog. Area 252 ha. This is another section of the Caha Mountains with upland blanket bog habitat.
- Site 31. Glengarriffe. This site is a house with a particularly large colony of Long Eared Bats.
- Site 32. Glengarriffe Harbour and Woodland. Area 300 ha. This site comprises the oak woodlands of Glengarriffe together with the waters of the harbour which includes one of the biggest breeding colonies of Common Seals (*Phoca vitulina*) in Ireland. The woodlands, owned and managed by the N.P.W.S. are currently subject to an intensive management programme designed to control the *Rhododendron ponticum* infestation. The presence of *Arbutus unedo* in the woodland is one of its features of interest.
- Site 33. Kilcatherine Heath. Area 1 ha. A coastal heathland of botanical value.
- Site 34. Kilkieran Lake and Castlefreke Sand Dunes. Area 500 ha.
- Site 35. Kilkinnikin. Area <1 ha. Another of the *Stachys officinalis* sites.

Site 36. Killaneer Glen. Area 7 ha. A high quality remnant oak and hazel woodland along the valley of a tributary of the Bandon River.

Site 37. Lough Hyne Nature Reserve and environs. Area 400 ha. Contains the Lough Hyne Marine Nature Reserve which is of international scientific importance and also includes Knockomagh Woods and nearby heathland, marshes, freshwater lakes and coastline as far east as Tralispeen.

Site 38. Lough Avaul. Area 8.5 ha. This is an upland lake with good brown trout growth rates. *Lobelia dortmanna* (Water Lobelia), a western plant species also grows in the lake margins.

Site 39. Myross Wood. Area 11 ha.

Site 40. Old Head of Kinsale. Area 230 ha. The site has large breeding colonies of seabirds including the Auk, species of razorbills and guillemots. The cliffs where the seabirds breed have Refuge for Fauna status.

Site 41. Adrigole Harbour. Area 14 ha.

Site 42. Owens Island. Area 1 ha.

Site 43. Roancarrigbeg and Roancarrigmore. Area 4 ha.

The above three sites hold tern breeding colonies at times.

Site 44. Roaringwater Bay and Islands. Area 3457 ha. This is a very large area of multiple scientific values. Many of the islands are important for rare plants and seabird colonies. It includes Sherkin and Cape Clear, well known from the work of the Sherkin Island Marine Station and Cape Clear Bird Observatory. Parts of the mainland are also included where intact habitats occur such as coastal heathland, un-reclaimed rough grazing areas, saltmarshes and some reedbeds. A large area of sea bed is included and among the notable marine species recorded from here is the rare maerl, *Lithophylum dentatum*, found in inner Roaringwater Bay near Mannion Island.

Site 45. Rosscarbery Estuary. Area 105 ha. This is a very accessible wildfowl and wader site which also often holds rare immigrant species such as the Little Egret.

Site 46. Reenydonagan Lake.

Site 47. Seven Heads and Dunworly Bay. Area 203 ha. This site includes a considerable length of coastline and some good quality wetland habitat such as reedbeds and saltmarsh areas.

Site 48. Sheelane Island. Area <1 ha. This island is used both by cormorants and terns as a breeding area.

Site 49. Sheeps Head. Area 100 ha. The coastal heathland here includes communities of the rare plants *Viola lactea* (Pale Dog-violet) and

Tuberaria guttata and also has an ornithological value provided by choughs and fulmars.

Site 50. Three Castle Head to Mizen Head. Area 254 ha. Important for cliff breeding colonies of seabirds including razorbills, guillemots and kittiwakes. It has botanical value with rare plants such as *Viola lactea*, *Asplenium obovatum* and *Tuberaria guttata*.

Site 51. Whiddy Island. One beach on Whiddy is used by terns as a breeding colony at times.

Overall, these N.H.A. sites contain a diverse range of wildlife habitats. Some of these are already owned and managed by the N.P.W.S. Under the new R.E.P.S. scheme there is a great opportunity for an input into the management of other N.H.A.s and this management should play a vital role in the conservation of many species.

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(The above article first appeared in the *Mizen Journal*, number 3 (1995) and is reprinted here with only minor editorial changes and with the kind permission of the National Parks and Wildlife Service and the editor of the *Mizen Journal*. Some changes have taken place since the paper first appeared but it is essentially still accurate.)

A REPORT ON THE FLORA OF CORK (v.cc. H3-H5), 1995

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1995 has proved a marvellous year botanically, particularly for nationally-rare interspecific hybrids. As usual, only the more notable finds are mentioned in the present report.

In March/April, work on the River Lee and its tributary, the River Martin (from Inniscarra Dam to Cork City, H4, W/5.7 and W/6.7)

showed virtually all *Allium vineale* (Wild Onion) populations (first recorded 1964-1970) to be still flourishing. During this time also, the magnificent Inniscarra Amenity Park (former site of the largest gunpowder mill in these islands) produced *Scirpus sylvaticus* (Wood Club-rush) in its first H4 station since 1900, while other finds included an abundance of *Lysimachia nummularia* (Creeping-Jenny) and *Mentha* x *gracilis* (Bushy Mint) (*M. arvensis* (Corn Mint) x *M. spicata* (Spear Mint)), together with some massive naturalised clumps of the rampageous *Lamium galeobdolon* subsp. *argentatum* (Yellow Archangel).

In late April, *Veronica crista-galli* (Crested Field-speedwell) was seen to be well established on a roadside hedge bank adjacent to Banteer Railway Bridge (H4, W/38.97), some 50 km from Cork. Co. Cork has long been the major centre of naturalisation for this species in Europe. During the period 1970-1995, I have recorded Crested Field-speedwell from some 15 10-km squares within a c. 50 km radius to the north/west/south of Cork City.

In May, *Carex strigosa* (Thin-spiked Wood-sedge) was found in an estuarine scrub wood on the River Tourig, near Youghal (H5, X/0.8). This very local Cork sedge has previously only been recorded from the River Blackwater and River Awbeg. It is now known from five 10-km squares in East Cork. Another Youghal find (near Tourig Bridge) was a single large clump of the rush hybrid, *Juncus effusus* (Soft-rush) x *J. inflexus* (Hard Rush).

Also in May, *Azolla filiculoides* (Water Fern) was refound, in abundance, in a brackish ditch at North Esk, Little Island (H5, W74.72). I had last recorded it from Little Island in May, 1974. The hybrid, *Cochlearia anglica* (English Scurvygrass) x *C. officinalis* (Common Scurvygrass) is abundant in saltmarshes here, as elsewhere in Cork Harbour, where it largely replaces both parents.

The Lee Fields (H4, W/6.7) (inundation meadows) were rechecked successfully for *Leucojum aestivum* (Summer Snowflake), *Apium* x *moorei* (Hybrid Marshwort) and *Azolla filiculoides*, all three taxa having been found here by me in the 1970s. The adjacent woodland of Lower Mount Desert once again produced *Veronica hederifolia* subsp. *lucorum* (Fischer's Ivy-leaved Speedwell), *Hyacinthoides hispanica* (Spanish

Bluebell) x *H. non-scripta* (Bluebell), and a new find in *Vinca minor* (Lesser Periwinkle).

A refind of tremendous interest, however, was that of the hybrid *Geranium purpureum* (Little-Robin) x *G. robertianum* (Herb-Robert), of which some 20 plants were seen on a hedge bank near Glanmire (H5, W/7.7). I had originally recorded the hybrid from here in July, 1988, it being new to science. (While this hybrid has been frequently synthesised since the 1940s, to my knowledge it has never been found in the *living* state elsewhere in the wild.)

June was spent working out the distribution patterns and frequencies of Cork *Rosa* taxa, with some very profitable forays into the adjacent counties of Limerick (H8) and Waterford (H6) also.

In early July, *Glyceria declinata* (Small Sweet-grass) was found in a few inland Cork sites, such as Ballinvinny South (H5, W/73.78), Waterloo Marsh (H4, W/59.77) and Clogheenmilcon Marsh, Blarney (H4, W/62.75).

A return visit to the Glanmire site for the *Geranium purpureum* x *G. robertianum* hybrid turned up only two surviving plants, the remainder having fallen victim to the ravages of the hedgerow-cutter. Exasperatingly, these latter two plants were subsequently destroyed also, putting paid to any hopes of long-term observation of this fascinating hybrid population.

Also in July, Trantstown Marsh, near Watergrasshill (H5, W/7.8) provided a small population of the rare rush hybrid, *Juncus conglomeratus* (Compact Rush) x *J. effusus* (Soft-rush), while Trantstown Bridge held a single tussock of *Carex paniculata* (Greater Tussock-sedge) x *C. remota* (Remote Sedge), in only its second East Cork site.

In August, the Carboniferous Limestone outcrops opposite Buttevant quarry (H5, R/5.0) were visited. This site supports the sole likely *native* Cork population of *Cornus sanguinea* (Dogwood), which now seems certain to be destroyed in the near future by the proposed new eastern road by-pass of Buttevant. The nearby River Awbeg, and an adjoining pond, are also somewhat threatened, and hold such Cork rarities as

Butomus umbellatus (Flowering-rush), *Oenanthe aquatica* (Fine-leaved Water-dropwort) and *Ranunculus circinatus* (Fan-leaved Water-crowfoot), the latter in its only recorded Cork station in c. 150 years. Of special interest, however, was the discovery of the putative grass hybrid *Glyceria declinata* x *G. fluitans* (Floating Sweet-grass) in its first recorded Irish site! Flowering plants were collected for critical microscopic examination and for vouchers, while living material was brought into cultivation for on-going observation. Cork County Council has been notified of the special botanical interest of this area.

During the period late-August to late-September, a number of trips to the now semi-dry Lee Reservoir (H3/H4) proved highly productive, viz:

1. At Lower Dripsey (H4, W/5.7) over 100 plants of *Kickxia elatine* (Sharp-leaved Fluellen) were re-found on river-gravel in my 1985 site (see *Bulletin of the Irish Biogeographical Society* 9: 27-33, 1985).
2. Rooves Bridge, Coachford (H4, W/45.71) was found to still support *Chamaemelum nobile* (Chamomile) in one of its few remaining H4 sites, while *Spergularia rubra* (Sand Spurrey) was still locally frequent here, as elsewhere in the Reservoir; I originally found both species here in 1974.
3. The Reservoir basin below Carrigadrohid Bridge (H4, W/4.7) produced a 70 m stand of *Eleocharis uniglumis* (Slender Spike-rush) in its first inland Cork site. *Elatine hexandra* (Six-stamened Waterwort), new to H4, and *Limosella aquatica* (Mudwort) occurred here very sparingly, yet it is clear that both are gradually spreading downstream from their Gearagh (H3) headquarters. *Persicaria minor* (Small Water-pepper) is locally abundant here, as elsewhere, on the Reservoir.
4. The Reservoir at Ashton, near Macroom (H4, W/36.71) held *Potamogeton praelongus* (Long-stalked Pondweed), new to H4, and *Ceratophyllum demersum* (Rigid Hornwort) in its only recent Mid Cork site.
5. The northern shore of the Gearagh between Lee Bridge and the Causeway (H3, W/3.7) had *Elatine hexandra* in abundance, while *Potamogeton praelongus* and *Callitriche hermaphroditica* (Autumnal Water-starwort) proved locally common. These latter two species were

added to the Cork flora from here in the 1980s, *P. praelongus* being found by Ro. FitzGerald and *C. hermaphroditica* by Maura Scannell.

However, the most gratifying refind on the Lee Reservoir was a *Persicaria minor* hybrid - a largely nut-sterile taxon, which I originally found in August 1984, adding new stations in the dry summers of 1987 and 1989. This year, some ten plants were found in three separate sites, and a few ripe nuts were collected for cultivation. Between 1984 and 1995 I have found some 80 hybrid plants on the Lee Reservoir.

In late September, five plants of *Carex pseudocyperus* (Cyperus Sedge) were found bordering the pond in Clogheenmilcon Marsh, Blarney (H4, W/62.75). This is the first Mid Cork record in nearly 20 years, and the first record from here since c. 1840. A new find was *Azolla filiculoides* in one of its few Cork stations.

Also in September, the rare maritime grass hybrid *Elytrigia atherica* (Sea Couch) x *E. repens* (Common Couch) was rechecked at four new Cork Harbour sites, viz: Blackrock Castle area (H4, W/72.71); Glashaboy River, Dunkettle (H5, W/72.73); Glounthaune (H5, W/76.73) and Slatty's Bridge, Carrigtohill (H5, W/80.72). The grass is new to East Cork, while this is only its second Mid Cork site. This hybrid was added to the Irish flora in July, 1979 when I found it at Monkstown Creek, Cork Harbour (H4, W/75.64).

During the last few days of September, a return visit was made to Inniscarra Amenity Park (H4, W/5.7) to collect vouchers of *Scirpus sylvaticus*, and the mint hybrid *Mentha* x *gracilis* (Bushy Mint) x *M. aquatica* (Water Mint) was found. While the rare garden escape *M. x smithiana* (Tall Mint) shares this triple parentage, it is very different in morphology from the wild, spontaneous, Inniscarra hybrid which, moreover, is variably nut-fertile! A careful search was also made here for R.A. Phillips' intriguing 1909 record of *Persicaria laxiflora* (Tasteless Water-pepper), but without success. To date I have no evidence to suggest that this species occurs in Co. Cork.

Lastly, the 'icing on the cake' this year was the discovery of *Mentha pulegium* (Pennyroyal) in its first major Cork site in 100 years. Its stream bank habitat lies within the city boundary (H4, W/6.7), where some 30 plants are scattered over c. 430 m of bank. Unfortunately,

Pennyroyal's native status here is open to doubt as the habitat is greatly disturbed and weed-infested, while the mint is accompanied by such transient adventives as *Chaenorhinum minus* (Small Toadflax), *Matricaria recutita* (Scented Mayweed) and *Epilobium tetragonum* (Square-stalked Willowherb).

CORK COUNTY (v.cc. H3-H5) IN 1995

Mary J.P. Scannell

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In 1995, field visits were made to County Cork. In the time available known habitats were checked and other areas were worked for possible sites of botanical interest in West, Mid and East Cork (H3, H4 and H5). A rail journey between Rath Luirc (Charleville) and Cork City revealed, near to the track, marshes with slow-flowing streams and tussocks of *Carex paniculata* (Greater Tussock-sedge). These marshes are difficult to locate from the Mallow to Cork road.

Kent Station - terminus of the Dublin-Cork line (H5, W/6.7).

Senecio viscosus (Sticky Groundsel) and *S. squalidus* (Oxford Ragwort) were noted in some abundance. A large part of the railway yard was tarmacadamed recently for car parking and habitats for plants colonising such ground are no longer available. The wall-top flora of the brick-walled pedestrian access held *Saxifraga tridactylites* (Rue-leaved Saxifrage) and *Erophila verna* agg. (Common Whitlowgrass), in the early part of the year. On the sheer rock-face (Old Red Sandstone) opposite the station (H4) a small colony of *Geranium rotundifolium* (Round-leaved Crane's-bill) was noted which is one of the vulnerable species listed by Curtis & McGough (1988).

Barrys court - a quarry (limestone); a dump and a sand and gravel deposit, the latter active at present.

With the aid of a grab the floating vegetation in the quarry was retrieved and proved to be *Potamogeton natans* (Broad-leaved Pondweed) (confirmed by C.D. Preston). A glance through the *B.S.B.I. Handbook No. 8* showed the few records for Cork for *Potamogeton* species.

Oenothera glazioviana (Large-flowered Evening-primrose) occurs on the spoil heaps of the sand quarry. *Verbena officinalis* (Vervain) occurs near limestone outcrop and this species is not uncommon in East Cork. *Saponaria officinalis* (Soapwort) was found on the approach road, and it also is intermittent in East Cork. In a nearby tea shop the decorations included an urn-full of a dried crucifer. Now dried and bleached it bore fruits which were appressed to the stem; some swollen round seeds were still in situ and the swollen apical beak indicated *Hirschfeldia incana* (Hoary Mustard), a species not so far recorded for Cork. I was told that the material was collected on a roadside near Fota, so this might be checked out in 1996.

The Dower river, east of Castlemartyr (H5, W/97.72)

A small stream issues from a cave mouth directly under the road (east-west). Coleman, a cave expert has described this as “the largest rising in County Cork”. The river had been cleaned a few weeks earlier and the flora consisted only of *Fontinalis antipyretica* and *Ranunculus* sp. (not in flower) and there were no Charophyte species. A marsh in the nearby McLoughlin farm included *Bidens tripartita* (Trifid Bur-marigold) and a *Rorippa* (*Nasturtium*) sp. (Watercress). A planned further visit to record the flora did not materialise. *Ononis repens* var. *spinosa* (Common Restharrow) was found on a nearby earthen bank. A small colony of *Origanum vulgare* (Wild Marjoram) known on a roadside bank for some years had been removed, apparently by rigorous roadside trimming; hopefully the plants will recover. On cliff slippage near Garryvoe (Ballycotton Bay) some plants of *Cichorium intybus* (Chicory) were collected.

Portalougha, a marsh north of Enniskean (H3, W/34.56)

This marsh with open water was discovered during work for the Monitoring Scheme. In 1995 it was found to have been seriously altered. A track had been cut along the base of the hill on the northern periphery. In September, 1995 this track held an abundance of *Aleuria aurantia* (Orange Peel Fungus). The area of open water had diminished and was now dominated by *Molinia caerulea* (Purple Moor-grass), *Succisa pratensis* (Devil’s-bit Scabious), *Lycopus europaeus* (Gypsywort) and other species. *Osmunda regalis* (Royal Fern) occurs in some quantity. *Carex limosa* (Bog-sedge) was not seen. A body of open water at Clonomera (Sheet 25) is a marsh with little or no open water. Time was not available for work at this site.

REFERENCE

Curtis, T.G.F. & McGough, H.N. (1988). *The Irish red data book: 1. Vascular plants*. The Stationery Office, Dublin.

REPORT ON THE FLORA OF FERMANAGH (v.c. H33), 1995

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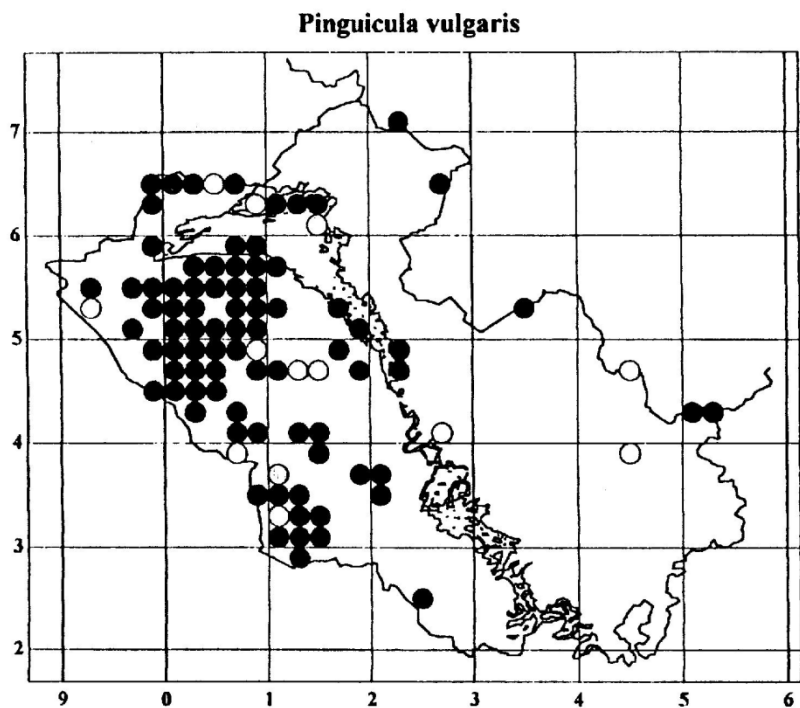
Work continues towards a *Flora of Fermanagh*. The Fermanagh records in the RECORDER database now total 148,000 and Ralph Forbes and I are beginning to master some of the ways of using the system to provide information instead of us just feeding its insatiable lust for data!

We have discovered how to count the number of species recorded per tetrad and it appears that, with a couple more seasons recording, we may be able to produce a Flora in which there are meaningful maps based on tetrads. Fig. 1, for example, is a tetrad map made using 211 records of *Pinguicula vulgaris* (Common Butterwort) showing that the species is almost exclusively confined to the west of the county. The map is produced using Alan Morton's DMAP.

Table 1 summarises the number of tetrads in which certain numbers of species have been recorded.

TABLE 1. The number of tetrads of the Fermanagh flora containing specific number of species

No. of species recorded	No. of tetrads
0-49	71
50-99	88
100-199	221
200-299	100
300-399	22
Total	502



FFIGURE 1. Distribution of *Pinguicula vulgaris* plotted as a tetrad map. The solid symbols represent records from 1975 onwards; the open symbols are records before 1975.

The tetrads with over 300 species are in well known areas such as Crom, Castle Cauldwell, Monawilkin, Knockmore and the Marble Arch Glen. More work is obviously required in many of the tetrads with less than 100 species, though some of them are either species poor or a very small part of the tetrad is actually in Fermanagh. If any botanist is holidaying in Fermanagh and would like to help, please get in touch!

Some of the more notable finds of the last year have been:

Orobanche hederæ (Ivy Broomrape) on the walls of the old Crom Castle, first noted here in 1872 by the Rev. T.O. Smith.

Monotropa hypopitys (Yellow Bird's-nest) beside the track up Knockninny, this being the first record of the plant from the Upper Lough Erne area.

Andromeda polifolia (Bog-rosemary), a new county record, found by Paul Corbett and Bobbie Hamill of the Department of the Environment, Northern Ireland on Drumanacabranagher Bog, where *Rhynchospora fusca* (Brown Beak-sedge) was seen some years ago by Simon Leach.

Pyrola minor (Common Wintergreen), found by Ian Herbert in woodland at Derryvore near Crom.

A *Pyrola* sp., probably *P. media* (Intermediate Wintergreen), on two scarps in Lough Navar Forest where Praeger saw the species in 1904.

Lycopodium clavatum (Stag's-horn Clubmoss), found by Matthew Tickner, at a site north of Castle Cauldwell.

Erucastrum gallicum (Hairy Rocket), a new county record, on a disturbed roadside near Lisbellaw. This yellow crucifer is, according to Tim Rich, extending its range in Ireland: this is the first record in the north of Ireland and the plant should be looked out for.

Rorippa islandica (Northern Yellow-cress), another new county record, at Cruntully townland north of Ederney, found by Ian McNeill and identification confirmed by Tim Rich.

Sisyrinchium bermudiana (Blue-eyed-grass), in a slight base rich area of a rushy field north of Ederney: perhaps this species occurs in similar situations in Tyrone.

Galium uliginosum (Fen Bedstraw), in a flush on Slieve Beagh: again this plant might well occur in similar situations in other areas of the north.

NOTES ON RECENT PLANT DISCOVERIES IN TYRONE (v.c. H36)

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Cochlearia danica (Danish Scurvygrass)

Has continued its spread along the M1 and M2 motorways in Northern Ireland, and by 1990 had penetrated Tyrone. It is now well established in the km or so between Verner's Bridge (border with Co. Armagh) and the Tamnamore turn-off.

Crepis setosa (Bristly Hawk's-beard)

Found in some quantity on a neglected lawn in Cookstown in 1991. In 1992, the lawn was restored, and the species did not re-appear.

Carex magellanica (Tall Bog-sedge)

Material from Black Lough, west of Pomeroy, was firmly identified as *C. magellanica* by staff in the Edinburgh Botanic Garden in 1991. This is the second confirmed site in Tyrone - it was first found near Lough Cam by a B.S.B.I. party in 1981.

Hirschfeldia incana (Hoary Mustard)

First found in Tyrone at Sluggan gravel-pits, near Carrickmore, in July, 1992. Confirmed by T.C.G. Rich. It turned up a week or two later in a car park in Dungannon. The latter site was revisited in 1995, but there was no sign that the plant had survived.

Coronopus didymus (Lesser Swine-cress)

Also found in Dungannon in 1992, not appearing to survive to 1995. Only Tyrone record.

Spergularia marina (Lesser Sea-spurrey)

Found in 1992 in a roadside layby at Killeeshil, on the main Dungannon-Ballygawley road. Confirmed by J.A. Ratter. First Tyrone record. Like *Cochlearia danica*, another plant relishing the salty environment of our modern roads.

Rosa glauca (Red-leaved Rose)

A rose with strong wine colouration of leaves and stems turns up frequently in

hedges to the south of Omagh, ranging from Cavanacaw in the west to Beragh in the east. It rarely flowers and, when it does, the fruit appears to abort. Primavesi and Graham are firm that it can be recorded as *R. glauca* but, in the absence of fruit, they cannot be sure of its status - is it a wild rose, or a domesticated variation?

Allium vineale (Wild Onion)

Found in rank grass by the Foyle at Dunnalong, August, 1993. First Tyrone record. Confirmed by P. Hackney.

In *The botanist in Ireland*, under the sub-heading Londonderry City, Praeger mentions *Allium vineale* as being “recorded from the side of the river above the City”, and that its “re-finding is desirable”. Dunnalong is about 8 km up river from Derry, and is probably not Praeger’s site, but presumably the habitat is essentially similar.

Rorippa islandica (Northern Yellow-cress)

R. islandica appeared in some quantity in Drum Manor Forest Park, near Cookstown, in 1994. First recorded site in N. Ireland and confirmed by T.C.G. Rich.

In 1995, on the B.S.B.I./Belfast Naturalists’ Field Club visit to West Tyrone, we found it again near Lough Corr (N.W. of Drumquin) and 1 km upstream from Sloughan Glen (W. of Drumquin).

It is difficult to suggest any common reason for its appearance at three such disparate sites; perhaps it is spreading in Ireland by random human introduction or by purely natural means.

Hypericum hirsutum (Hairy St John’s-wort)

Found in 1994 in Drum Manor Forest Park, in cultivated ground. Presumably a casual human introduction. No other record for Tyrone.

Utricularia intermedia (Intermediate Bladderwort)

U. intermedia was found in 1994 in the fenland around Lough Corr, N.W. of Drumquin. Confirmed by P. Hackney.

At the time it was believed to be a first record for Tyrone, but in the *Nature atlas of Great Britain* (Jackson, N. & Eversham, B. eds, 1989, Pan/Ordnance Survey, London) Intermediate Bladderwort is mentioned as being in the extreme west of Tyrone, in the Killeter Forest area.

Utricularia ochroleuca (Pale Bladderwort)

Found in 1995 in marshy ground near The Bin Rocks, S. of Castlederg.

The specimen we sent to P. Taylor (the B.S.B.I. referee) was insufficient to distinguish between *U. ochroleuca* and *U. stygia* (Nordic Bladderwort) but, as Mr Taylor pointed out, *U. stygia* has only one site in Britain, so the probability that it was *U. ochroleuca* is very high. If so, it would be the first record for Tyrone.

Saxifraga cymbalaria (Celandine Saxifrage)

J. Faulkner found this plant in some quantity on walls at a house at Kingsmills, E. of Cookstown, in May, 1995. The owner of the house told me it had been there for several years; it had not been planted, and had simply 'arrived'.

Crepis tectorum (Narrow-leaved Hawk's-beard)

Observed in July, 1995 on a re-seeded embankment in Cookstown. Confirmed by staff at the Edinburgh Botanic Garden. Presumably a grass-seed alien, and unlikely to persist.

Phegopteris connectilis (Beech Fern)

Beech Fern was found by R. Northridge during the B.S.B.I./B.N.F.C. excursion in August, 1995 at Sloughan Glen, W. of Drumquin. This is the third Tyrone record; the first record was in Strabane Glen in 1887 (Phillips), and Miss Kertland found it in Glenlark in 1958.

Nicandra physalodes (Apple-of-Peru)

This plant turned up in some quantity in dumped material on waste ground N.W. of Drumquin near Killen Lough, in September, 1995. Possibly a bird-seed alien. No other record for Co. Tyrone.

Cicerbita macrophylla (Common Blue-sow-thistle)

Found in May, 1994 at Pennyburn Bridge, N.W. of Donemana. Only Co. Tyrone record.

THE BURREN FIELD TRIP, MAY, 1995

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This field trip was organised as part of the Annual General Meeting of the Society held in Dublin; the leaders for the excursion were Sylvia

Reynolds and E. Charles Nelson.

Monday, 15 May

Corofin in the heart of the Burren, Co. Clare was safely reached by all by 2 p.m. on Monday afternoon. From there we drove on to the entrance to the infamous Mullaghmore interpretative centre where we were given an introduction by Dr Enda Mooney, the Regional Manager of the Burren National Park. Things got off to an interesting but controversial start with many of our British counterparts wanting to know exactly the story of the Interpretative Centre. The conclusion of this discussion was agreed by everyone - the whole conservation movement in Ireland has been damaged by the controversy.

We then walked on towards Mullaghmore mountain itself where we skirted the edge of the turlough and found so many beautiful plants that most of us didn't even make it to the hazel wood at the foot of the mountain. Some of the more memorable plants were *Neotinia maculata* (Dense-flowered Orchid), the unforgettable blue of *Gentiana verna* (Spring Gentian) and the first flowers of *Potentilla fruticosa* (Shrubby Cinquefoil). We made it back to our cars by 6 p.m. and dispersed to the various guest-houses and hotels where we were all staying.

Tuesday, 16 May

9.30 a.m. the next morning saw our intrepid adventurers meet up again, this time in Lisdoonvarna. From there with a bit of environmentally-conscious (and downright sensible!) car-sharing we made our way to the coast at Poulsallagh. Here, besides the plants seen at Mullaghmore, the elusive *Adiantum capillus-veneris* (Maidenhair Fern) and *Ajuga pyramidalis* (Pyramidal Bugle) were found.

We moved on to O'Donoghues pub in Fanore for Guinness and sandwiches. Then we split into two groups. Charles Nelson led the walk along a 'green road' from Formoyle. This was after a stop just before the Khyber Pass to look at the Caher river - the only overground river in the Burren. As promised on the schedule the walk did take several hours but it meant that we moved from the by now familiar limestone pavement up into more mountainous flora and across a treacherous stretch of boggy vegetation. The cameras were working overtime on this walk but for me, the best picture was a good family shot of *Primula vulgaris* (Primrose) and *P. veris* (Cowslip) together

with their hybrid offspring! The prominent plants further up the hill were *Arctostaphylos uva-ursi* (Bearberry), *Empetrum nigrum* (Crowberry), prostrate *Juniperus communis* (Common Juniper) and the sunny *Dryas octopetala* (Mountain Avens). The rain finally caught up with us here, but it provided us with an excuse to find a sheltered spot and sit and enjoy the glorious view across Galway Bay to the Aran Islands. The other group fared just as well being ably led by Sylvia Reynolds and David Nash from plant to plant up and around Black Head. They climbed up to the Stone Age fort where they saw *Saxifraga hypnoides* (Mossy Saxifrage) and also enjoyed the expansive view.

Meanwhile Charles' group drove back towards Lisdoonvarna across the hills making two stops along the way (in pouring rain it must be added - these are determined botanists!). Firstly we saw the delicate flowers of *Arctostaphylos uva-ursi* and secondly a most impressive swallow hole. It was literally dripping with lush vegetation and a majestic Ash growing right in the centre.

Then it was back to Lisdoonvarna for some warmth, comfort and food! This was followed by Irish Coffees in Sheedy's Spa Hotel (many thanks to Sheedy's for the glasses and Shannon Development for their contents!).

Wednesday, 17 May

Ah! Wednesday morning brought the magical mystery tour. Many cars were lost between Lisdoonvarna and Slievecarron but all eventually arrived in one piece. This involved another trek across the limestone to the foot of the hill where we came upon a beautiful wood where the trees were laden down with lichens and epiphytic ferns. Most people stayed around the ruined church and old well but some ventured further up and Con Breen returned with *Cornus sanguinea* (Dogwood) branches.

Then it was back to the cars and over the border into Galway and on to Coole Park. Here, after a lazy lunch in the sun, we were given a guided woodland walk by the O.P.W.'s Tim O'Connell with a little of the history of Lady Gregory's beloved estate. The walks are set through the 'Seven Woods of Coole', made famous by W.B. Yeats. The park's literary connections are fascinating and these merge with botany in the majestic Copper Beech Autograph Tree in the walled garden.

It was time to move on again then, over to Garryland Wood. The wood is supposed to be haunted and with its eerie stillness occasionally punctuated by creaking branches, it's easy to understand why this is the local belief. We made our way through the dark wood and out into the open of the turlough area where a frantic search for the Fen Violet (*Viola persicifolia*) began. It wasn't found but an energetic argument as to whether the violets present were *V. canina* (Heath Dog-violet) or *V. riviniana* (Common Dog-violet) ensued. This author is quite happy with the *canina* argument but is not sure if it actually was fully settled. However, it was all quickly forgotten when we came upon a large clump of *Lathraea squamaria* (Tooth wort) on our way back out. They were in full ghostly bloom and all the cameras were whipped out yet again.

So it was that the Burren B.S.B.I. show finished with a fanfare of Toothworts. The botanical appetites of all concerned were well satisfied and with the farewells made, people set off in various directions - many of our visitors heading off to explore more of the wild and wonderful west!