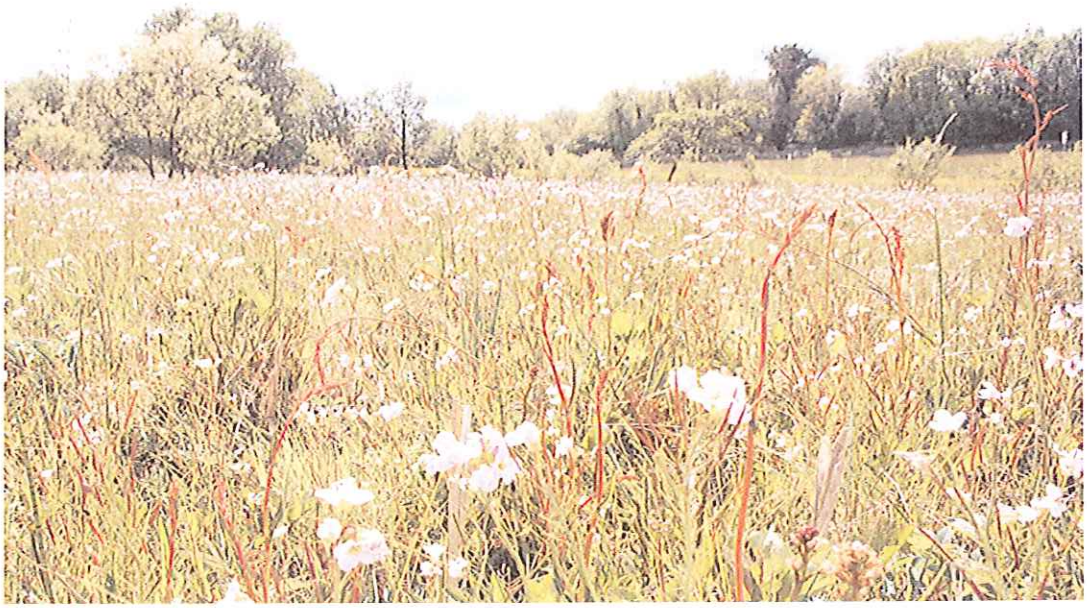
Monaghan Fen Survey 2007

Volume I: Main Report

Report for Monaghan County Council & The National Parks and Wildlife Service, Department of the Environment, Heritage and Local Government, Ireland



Prepared by:
Dr Peter Foss & Patrick Crushell

October 2007

An Action of the Monaghan Heritage Plan 2006-2010

Monaghan County Council

National Parks & Wildlife Service

Heritage Plan

epa Environmental Protection Agency

An Chomhairle Oidhreachta The Heritage Council

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Authors: Foss, P.J. & Crushell, P. 2007 Title: **Monaghan Fen Survey 2007**. Report for the Monaghan County Council & National Parks and Wildlife Service, Department of the Environment, Heritage and Local Government, Ireland. Volumes 1-3.

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Images of Monaghan Fens - Photographic Plate Credits

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Report cover images:
Left: – Quaking transition mire with Many-headed Bog Cotton (*Eriophorum angustifolium*) at Crumlin Lough.
Top: – Transition mire with Cuckoo Flower (*Cardamine pratensis*) and Common Sorrel (*Rumex acetosa*) at Morgan's Lough.
Bottom: – Quaking transition mire dominated by Lesser tussock sedge (*Carex diandra*) at Killyneill Fen.

Start of Executive Summary – Fen Views: 1 – Transition mire with Cuckoo flowers (*Cardamine pratensis*) at Lisnalee; 2 – Lake edge fringing reed and marsh community at Mullaglassan Lough, with a wooded crannóg in the centre of the lake; 3 – Transition mire area in the foreground and the infilling mill pond lake at Aghnamullen; 4 – Regenerating fen community on the cutover bog at Drumgallan Bog; 5 – *Carex rostrata* quaking mire on the edge of a small lake (Lough Aportan) at Eshbrack; 6 – Quaking poor fen community rich in *Sphagnum* species and Bog Sedge (*Carex limosa)* in the inter drumlin hollow at Lisarilly Bog NHA; 7 – Lesser tussock sedge (*Carex diandra*) quaking fen on the shores of a small lake at Lough Smiley NHA; 8 – The Alder woodland and reed fringe around the shores of Killyvilly Lough NHA.

Start of Introduction to the Monaghan Fen Survey - Flora of Fens: 1 – Delicate feathered flower head of Bog Bean (*Menyanthes trifoliata*) on Cornaglare Lough; 2 – Water Mint (*Mentha aquatica*) and Water St Johns Worth (*Hypericum elodes*) on quaking transition mire on the shore of Cornaglare Lough; 3 – Cowbane (*Cicuta virosa)* and Water Horsetail (*Equisetum fluviatile*) a plant combination seen on many fen sites in Monaghan; 4 – Seed heads of the Hairy Willow (*Salix aurita*) at Crinkill Lough; 5 - Wild Angelica (*Angelica sylvestris*) in flower at Kilroosky Lough Cluster; 6 – The Hairy Willow Herb (*Epilobium hirsutum*) at Dummy's Lough; 7 – The thick waxy flower of Yellow Water Lily (*Nuphar lutea*) at Crinkill Lough; 8 – Water pondweed (*Potamogeton polygonifolius*) in a ditch at Dunaree fen; 9 – Pink splendour of Ragged Robin (*Lychnis flos-cuculi*) in the fen and adjacent wet grassland at Killycooly Lough.

Start of Introduction to Irish Fens - Fen Mosses: 1 – *Hylocomium splendens* one of the hummock forming species in open wooded, poor fen area at Killyneill fen; 2 – Rich lichen growth on the trunk of a Willow tree at Sheetrim; 3 – *Aulacomnium palustre* a species found on poor fens,

here at Eshbrack; 4 – *Sphagnum squarrosum* on poor fen at Killyneill; 5 – *Plagiomnium* species on the transition mire at Killyneill fen; 6 – *Calliergonella cuspidata* on quaking transition mire at Lisinisky fen; 7 – *Marchantia polymorpha*, a thaloid liverwort in transition mire on Lisinisky fen; 8 – *Drepanocladus revolvens* forming a purple carpet on the fen at Summerhill Lough; 9 – *Sphagnum recurvum* in an area of regenerating poor fen on cutover bog at Cornaglare Lough.

Start of Materials & Methods - Fen Wildlife: 1 – A flock of immature Mallard (*Anas platyrhynchos*) at Crinkill Lough; 2 – The Variable Damselfly (*Coenagrion pulchellum*), one of the many species found on Monaghan fens; 3 – The Common Frog (*Rana temporaria*) found on every site during the Monaghan Fen Survey; 4 – Fen flowers, such as Wild Angelica provide a rich source of food to many insect species including Wasps; 5 – The Smooth Newt (*Lissotriton vulgaris*) one of the vertebrates of fens here at Lough Smiley NHA; 6 – One of the top insect carnivores, the Four-Spotted Chaser dragonfly (*Libellula quadrimaculata*) at Annagheane Lough; 7 – A Mayfly, one of the many insects seen on fens, here on Lisarilly Bog NHA; 8 – Water mint (*Mentha aquatica*) an important source of nectar to insects such as this Bumblebee; 9 – Caterpillar larvae feeding on Meadowsweet (*Filipendula ulmaria*) leaves at Lough Smiley NHA.

Start of Results - Grasses of Fens: 1 – Bottle sedge (*Carex rostrata*), one more common sedges found on fens in Monaghan; 2 – Star sedge (*Carex echinata*) found on the upland fens at Eshbrack; 3 – Reed Mace (*Typha latifolia*) found on the marginal areas of many fens and around small lakes at many sites; 4 – Lesser tussock sedge (*Carex diandra*) dominated fen at Killyneill. The midlands and north-east, including Monaghan are the headquarters for this fine leaved sedge; 5 – Bog Sedge (*Carex limosa)* a delicate sedge species found on poor fens among *Sphagnum* dominated moss carpets; 6 – Saw sedge (*Cladium mariscus*) forming large stand on lakeshores and in mineral rich alkaline fens; 7 - *Carex diandra* fen community with Cuckoo flower (*Cardamine pratensis*) one of the fen habitats for which Monaghan is a stronghold.

Start of Executive Conclusion - Value of Fens: 1 – When sensitively managed the recreational use of wetlands and their associated wildlife can both benefit (Drumsnat Lough); 2 – Fens can have a high scenic appeal, adding diversity to the countryside (Ramages Lough in the Kilroosky Lough Cluster); 3 – Flushed areas of wetland on Eshbrack have high scenic value and tourist appeal; 4 – Wetland protection and environmentally responsible farming can work well together to benefit both site interests (Mullaglassan Lough); 5 – The use of wetlands for fishing, with the development of appropriate visitor features, such as fishing stands, these generate income to local economies such as at the Kilroosky Bog Cluster; 6 – Lake and marginal reed beds at Drum Lough has benefited local community projects which promote the wildlife value of the area; 7 – Environmental information signs, like those at Cornaglare Lough can help raise awareness of the value and importance of wetlands and fens, though much more work needs be done in this area; 8 – Fen area on Crinkill Lough helps purify the water entering the lake, which is the local water supply for Doohamlet.

Fen Damage: 1 – Infill of fens with soil and building rubble occurred on half the sites surveyed during the Monaghan Fen Survey, here a section of the fen at Aghacloghan is being buried; 2 – Illegal dumping of household waste, here at Ardkirk, seriously degrades the environmental quality of many rural areas and endangers wildlife; 3 – Infill in the middle of fen at Coravilla-Rakeen leading to habitat fragmentation; 4 – An all too familiar road sign seen in Monaghan, here at Bocks Upper; 5 - Dumping on the road edge on Drumgallan Bog; 6 – Careless littering is a threat to wildlife, here at the Kilroosky Lough Cluster SAC; 7 – Hardcore infill causing damage to wetlands and habitat reduction at the edge of Sheetrim; 8 - Illegal dumping of garden and household waste, causing a significant threat to the fen habitats at Lough Smiley NHA.

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Contents: Volume III - Site Survey Photographic Reports

Acknowledgements

This project was made possible through the generous financial support of The Heritage Council, Monaghan County Council and the National Parks and Wildlife Service, Department of the Environment, Heritage and Local Government.

The authors of this report would like to thank the following for their help and assistance during the compilation of sites to be surveyed during the Monaghan Fen Survey, provision of background information and comments on the final survey report.

To the land-owners for allowing access onto their lands during the course of the field survey.

Shirley Clerkin, Heritage Officer, Monaghan County Council for help during the survey period and for comments and suggestions on the final report.

Maeve Quinn and staff at Environmental Protection Agency, Monaghan for help during the collection and hydrochemical analysis of water samples taken during the survey.

Dr. Colmán Ó Críodáin, National Parks and Wildlife Service for invaluable discussions and comments throughout the period of the survey and preparation of this report.

Thanks also to Mr Tennyson and Dr Alan Hill, BSBI County Recorder for Monaghan for providing additional site recommendations.

Adrienne Burns, GIS Section, Monaghan County Council for assistance with provision of GIS survey data for the county.

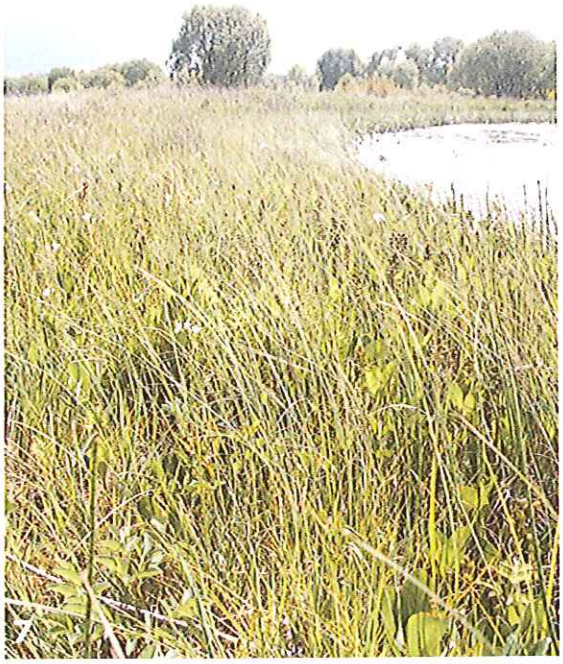
Caitríona Douglas, Dr. Michael Wyse-Jackson and Dr. Neil Lockhart, National Parks and Wildlife Service for their assistance with providing background data on sites.

The authors especially wish to thank the following individuals for their assistance during the collection of data used in the preparation of this report: Michael Sheehy, Quaternary Section, Geological Survey of Ireland; Grainne McAviney, Monaghan County Council.

Finally thanks to Deaglán Ó Caoimh for editorial comments and proof reading selected sections of the final report.

Fen Views

A fen is a wetland system with a permanently high water level at or just below its surface, that receives nutrients via direct contact with mineral enriched surface or groundwater.



1. Executive Summary

1. To date no systematic national survey of fens has been undertaken in Ireland, in contrast to the situation for other habitat types including raised and blanket bogs, woodlands and turloughs.

2. The Monaghan Fen Survey 2007, the first in a series of County fen surveys, aims to address this information deficit, and proposed the following research objectives:

    - develop a methodology for the survey of fens at the county and national level;
    - describe in detail a selection of known and possible fen sites recognised as being of conservation value in County Monaghan, and locate additional sites within the constraints of the project;
    - describe and classify the key habitats and in particular fen vegetation types present on each site according to the scheme proposed in National Parks and Wildlife Service National Fen Study 2007;
    - ascertain the extent of the fen type(s) present and the overall site extent;
    - define the water chemistry parameters and peat depth on each site and relate these to the fen habitats recorded;
    - collect baseline hydrochemistry data to aid in developing management requirements of the different fen types that occur in Ireland;
    - identify the main threats and damage present on the sites, and propose management options;
    - rank the conservation importance of sites on a international/national scale and from a local biodiversity perspective;
    - finally the methodologies developed and employed during the Monaghan Fen Survey were to be assessed, and recommendations made on how best to apply these to the on-going National Fen Survey of Ireland.

3. The Monaghan Fen Survey report includes results of a detailed survey of 42 sites in County Monaghan, containing a total of 69 discrete survey compartments with a total site area of 1,919 ha (see Appendix 1 & 3).

4. On sites where fen communities were observed, the sites were described in detail, and the fen types present were recorded (via the collection of vegetation descriptions (relevés) from quadrats within each sites), these relevés were subsequently classified, and hydrochemical analysis of water samples collected from relevés was undertaken. The habitats present were mapped and their extent calculated, threats and damage were noted, management recommendations made and sites were ranked in terms of their conservation value.

5. This survey information was collated, digitised and stored within the National Parks and Wildlife Service (NPWS) Fen Survey Database. Additionally a completed paper based site report for each site was produced and lodged with the NPWS Research Section and Monaghan County Council.

6. In addition to the 42 sites surveyed in detail, a further 14 sites were assessed for their fen interest (see Appendix 4), which was found to be lacking. Summary results are presented for these sites.

7. The main results to emerge from the sites surveyed in detail as part of the Monaghan Fen Survey (MFS) 2007 are as follows:

    - Of the 42 sites surveyed, 25 were found to contain fen communities, the remainder contained other wetland habitats including marsh, reedbed and wet woodland;
    - On 11 sites the survey found that the fen habitats believed to be present, differed from those actually recorded;
    - Transition Mire 7140 (PF3) is the most frequently occurring fen habitat type in Monaghan, with a total fen habitat area of 77.2 ha;
    - The total area of fen recorded on sites during the MFS was 95.6 ha, considerably less than that predicted by earlier studies;

- Four main fen types were recognised in Monaghan, namely Poor fen PF2, Transition Mire 7140 PF3, Cladium fen 7210 PF1 and Alkaline fen 7230 PF1;
- Petrifying Spring 7220 FP1, which was believed to occur at one site in the County was not in fact recorded, and this habitat may not in fact occur within the County;
- Of the 42 sites surveyed, 3 sites were deemed to be of International Conservation Value; 16 of National Conservation Value and 8 of County Conservation Value; with a further 10 being of Local Biodiversity Value (High and Moderate local value);
- Future conservation of these sites will require appropriate designation, listing and planning control by the NPWS and Monaghan County Council;
- Five of the sites surveyed cross the international border with Northern Ireland. Discrepancies in conservation designations occur at each of these sites which may hinder the long term conservation of these areas. These issues should be addressed by National Parks and Wildlife Service (ROI) and the Environment and Heritage Service (NI);
- Three sites surveyed during the current MFS, which had an existing conservation designation prior to the survey, were found to have been seriously affected by drainage activities, resulting in habitat deterioration and loss of most if not all of their conservation value;
- All of the fens surveyed during the MFS were found to have been negatively affected by some degree of damage or modification from their natural state. The most significant damage observed was from drainage of wetlands, posible water pollution and infilling associated with land reclamatation. These issues will need to be addressed to prevent further degradation and subsequent loss of habitat and conservation value;
- Due to the abundance of wetland sites in County Monaghan it was not possible in the context of the MFS to survey all sites within the County. From an analysis of the distribution of wetland units within the county and the current habitats occurring there, it is likely that further fen areas still exist within the county that require survey.

8. 149 plant species (higher plants, mosses and liverworts) were recorded on sites during the Monaghan Fen Survey;

9. Classification of vegetation relevés showed that five main vegetation types were recorded and will provide further understanding of the vegetation of the different fen types that occur in Ireland. The data collected should prove useful for future studies into the phytosociology of fens in Ireland.

10. Hydrochemical analysis of water samples confirmed a clear gradient from base-poor acid conditions prevalent at Poor fen sites to intermediate neutral conditions of Transition mires to base rich alkaline conditions prevalent at the Alkaline Fen and *Cladium* Fen sites. The hydrochemistry data collected provides good baseline data for these fen habitat types.

11. Although the main plant nutrients Phosphorus and Nitrogen were analysed, the concentration of these nutrients was not found to be directly related to differences in vegetation types.

12. To ensure the long term protection of conservation worthy sites identified by the MFS, with an International, National or County Conservation Value, these sites must be listed in the County Development Plan and in Local Area Plans where appropriate.

13. On sites that are earmarked for conservation, strict planning controls must be enforced by the County Council.

14. As many of the sites identified, both those with an existing conservation designation and those being proposed for conservation, are in private ownership, their conservation will depend on voluntary co-operation with landowners and various stakeholders. The County Council should foster a wider understanding among these parties.

15. To foster a more positive attitude to the conservation value of wetlands and fen areas in particular, an enhanced public information programme might be considered by the County

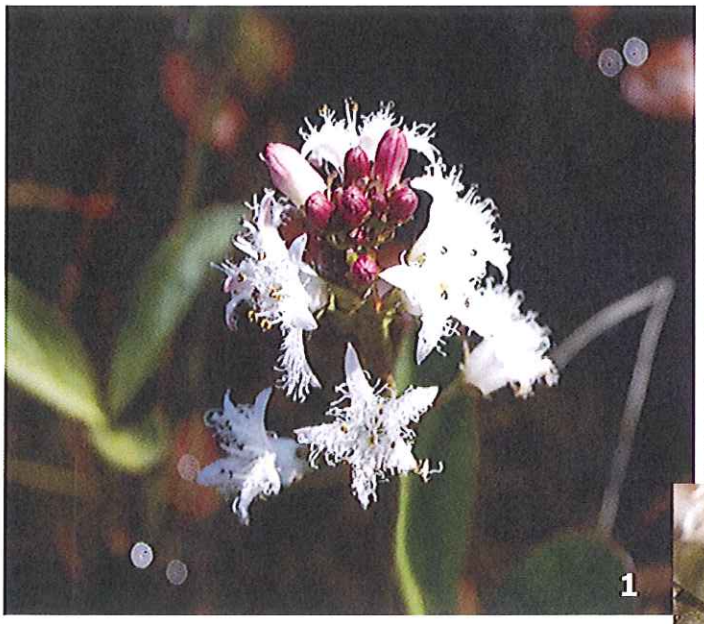
Council which should include interpretation at the most important and accessible sites identified.

16. A methodology for the detailed survey of fen sites has been developed and piloted during the MFS. This survey scheme allows the creation of a full digital record of the sites surveyed. This includes site maps, habitat maps, photographic site record, and a digital description and account of the site and habitat particulars, together with phytosociological and hydrochemical data on the fen communities present.

17. Survey limitations encountered during the current survey that should be addressed prior to further surveys being carried out include:
    - ♦ difficulties accessing old non-digitised records of previous ecological surveys of the county. Information sources should be collated and digitised, where possible within NPWS and other relevant organisations;
    - ♦ due to resource constraints it was not possible to carry out an extensive remote sensing exercise to identify all possible fen habitat within the county.

18. Recommendations for the on-going National Fen Survey. These include:

    - ♦ more detailed GIS examination of air photography to shortlist possible fen sites should be undertaken, possibly at national level;
    - ♦ every effort made to contact local specialists and stakeholders seeking site information;
    - ♦ the development of a Phase I Fen Survey system to identify fen sites and exclude those sites with other related wetland habitats including marsh; wet woodland; and reed bed communities, prior to full fen survey;
    - ♦ preparation of methods manuals should be undertaken so that future surveys can follow a standard methodology, we propose both a:
        - o Phase I survey manual to follow when carrying out the initial county wetland survey to identify potential fen sites within a county
        - o Phase II manual for the detailed survey of fen sites, as outlined in this report
    - ♦ training programme for surveyors should be introduced at start of survey project to ensure consistency and standardisation of methods;
    - ♦ each survey team should comprise at least two individuals;
    - ♦ should an extensive programme of survey be introduced, it would be advisable to appoint a co-ordinator who would be responsible for on-going quality control of county surveys;
    - ♦ consideration be given to an invertebrate survey of a selection of fen sites to give greater understanding of the species diversity of fens in Ireland, as has been done in parts of Northern Ireland;
    - ♦ a habitat action plan for each fen type should be drawn up.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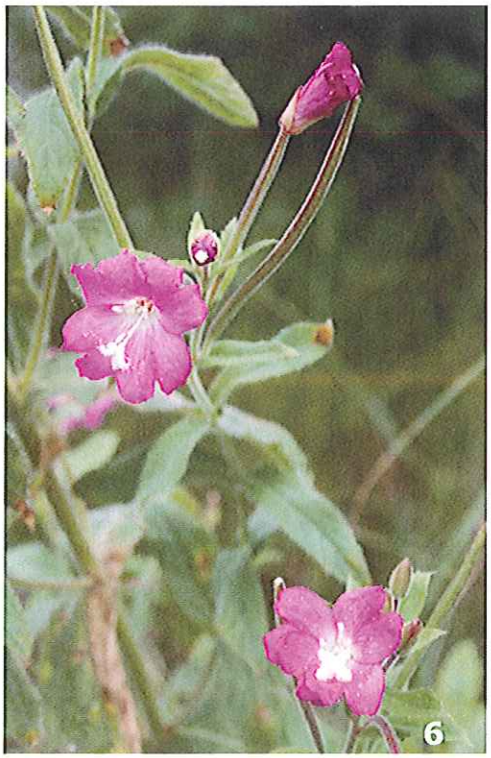
Flora of Fens

Fens contain a rich selection of flowering plants which add a rich tapestry of colour to this wetland habitat.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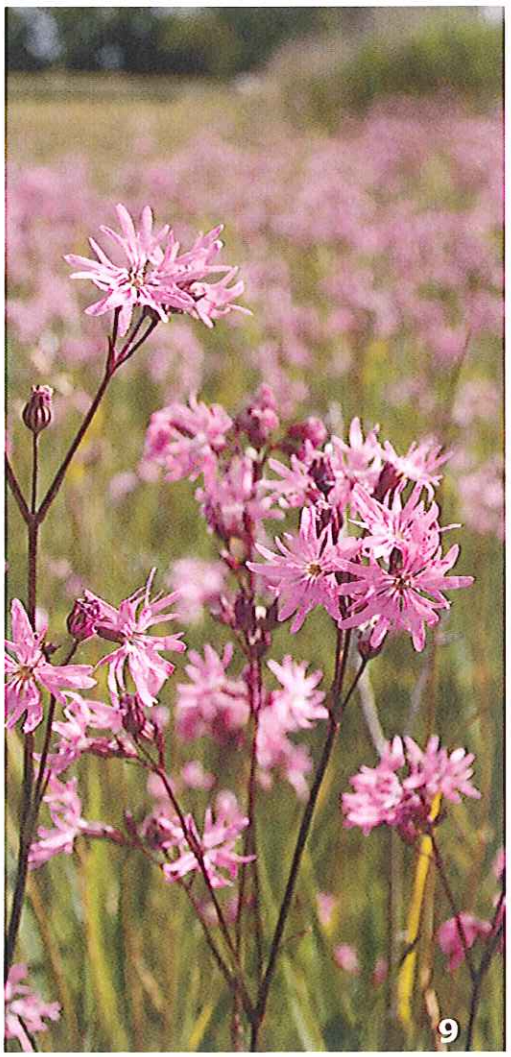
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