



**** INFORMATION BULLETIN NUMBER 5 – JULY 2003 ****

The Lowland Grassland Lead Co-ordination Network (LGLCN) is responsible for undertaking the ‘special functions’ of the Joint Nature Conservation Committee (JNCC) in relation to lowland grasslands, and involves specialist staff from all four country agencies and the JNCC support unit.

The LGLCN is chaired by the Countryside Council for Wales (CCW) with two part-time support posts in Bangor and Peterborough.

The group is responsible for the co-ordination of the UK Lowland Grassland Habitat Action Plan (HAP) Group, a broad body with members from a range of governmental and non-governmental bodies, having responsibility for the five lowland grassland HAPs. Other major LGLCN projects include developing UK condition assessment monitoring guidance, and enhancement of the UK grassland databases.

In addition, regular network meetings provide a forum for the discussion, and dissemination of information relating to topical lowland grassland conservation issues. Some of the more relevant issues have been summarised below. Also included is a conservation vignette of the hornet robberfly.

News in brief

- *Common Standards Monitoring - latest position.* The UK Common Standards Monitoring guidance for lowland grasslands has proved challenging to pull together. The document has recently been given approval by the Chief Scientists, and will soon be available on the JNCC website, although further modifications are likely following field experience during this season and beyond. A considerable amount of lowland grassland SSSI feature monitoring has been undertaken in England, Scotland and N. Ireland prior to completion of the UK guidance.
- Grassland leaflets. The following free leaflets are available from Two-Ten Ltd, English Nature, PO Box 1995, Wetherby, W. Yorkshire, LS23 7XX (tel. 0870 1214177, fax 0870 1214178, e-mail english-nature@twoten.press.net):

Lowland calcareous grassland. English Nature/CCW/SNH/EHS

The following free bi-lingual (Welsh/English) leaflets are available from CCW:

Old meadows and pastures CCW/English Nature/EHS/SNH

Lowland acid grassland CCW/English Nature/EHS/SNH

A leaflet on *Molinia-Juncus* pasture is due to be produced during 2003/4 by CCW. Contact Carrie.

- *NBN habitats dictionary.* JNCC are working to develop this with the Centre for Ecology and Hydrology. It is now called a habitats rather than biotopes dictionary so that its purpose can be more widely understood. The project aims to provide a one-stop shop for the main classifications in use, and how to find out more about them, including translation tools, keys and linkage to other facilities.
- Grazing Animals Project (GAP). The Local Grazing Scheme initiative is going from strength to strength, currently with over 30 projects on the books, being run by five part-time regional co-ordinators. For further details contact Sarah Murphy: smurphy@gap.cix.co.uk. The Grazing Animals Project e-mail Discussion Group Facility 'Nibblers' has proved to be a very useful source of information: nibblers@smartgroups.com. Allison Crofts from the Wildlife Trusts is now a member of both the GAP Executive and the UK Lowland Grassland Habitat Action Plan group, and is developing closer links with Habitat Action Programmes. Contact Allison for further information: acrofts@wildlife-trusts.cix.co.uk.
- *LBAP Workshop - Local Action for Grassland in the UK.* This workshop is being organised by the UK Lowland Grassland HAP steering group, in order to look at ways of integrating the work of the UK Group with Local Biodiversity Action Plans. It will take place at the University of Lancaster on Tuesday 3 February 2004 and admission will be free to delegates. More details will be available in the autumn; contact Carrie or Vicky to be added to the mailing list.
- Ongoing research projects:

Review of grazing levels on semi-natural lowland grasslands. CCW, EHS, English Nature, SNH. Due to report in October 2003.

Monitoring Biodiversity Action Plan Targets: condition and restoration assessment methodologies for non-statutory grasslands. English Nature, Defra. The second of two years fieldwork is underway to establish baseline data for a sample of sites. An interim report based on the first year results has been compiled.

The management of long-term set-aside for nature conservation – the creation of species-rich grasslands. 2001 was the final season for the joint SNH/SAC project looking at grassland creation on agricultural soils. The final report of this project, which began in 1993, will be available soon. Contact Jane MacKintosh - jane.mackintosh@snh.gov.uk.

Mycological survey of Welsh lowland grasslands. CCW. A preliminary data collection study has been undertaken, and is being followed by a field survey over the next three years in order to identify and survey 50 sites.

Impact of organic manures on semi-natural grassland. A Defra project in partnership with English Nature, CCW and others. Due to report in March 2005.

Ecologically sustainable grazing management of lowland unimproved neutral grassland and its effect on livestock performance. A Defra project in partnership with English Nature. Due to report in 2005.

Influence of livestock experience and breed on foraging behaviour in unimproved grasslands and impact on biodiversity. A Defra project in partnership with English Nature. Due to report in 2006.

- Planned projects:

Scrub Management Handbook. Led by John Bacon, English Nature.

Guidance Handbook for the use of pesticides on Nature Reserves. English Nature.

Restoration of BAP grasslands in the Scottish Borders. SNH.

- *CCW lowland grassland survey update.* Survey work focused on Pembrokeshire and Clwyd last summer. This year sees the completion of the project that has covered well over 1000 of the most important known semi-natural lowland grasslands in Wales. The majority of vegetation maps have been digitised and checking is currently in progress.
- *N. Ireland survey update.* See article on GPS and grassland condition assessment.
- *English Nature inventory of lowland grassland.* This is a GIS inventory, based on English Nature's county grassland inventories, showing lowland grassland sites in England. When available it will enable reports to be compiled and sites to be viewed at a range of scales.

- *Scotland survey.* See article on the distribution and extent of lowland NVC grassland types in Scotland.

Recent Reports and Publications

A review of the ecology, hydrology and nutrient dynamics of floodplain meadows in England. 2002. Gowing, D.J.G., Tallowin, J.R.B., Dise, N.B., Goodyear, J., Dodd, M.E & Lodge, R.J. English Nature Research Report 446.

This report gives a useful summary of current thinking in relation to floodplain meadows, as well as identifying practical management guidelines and highlighting deficiencies in our understanding of the ecology of MG4 grasslands. The report is based on a review of relevant literature and the results of a questionnaire survey of conservation officers responsible for floodplain meadow sites.

An experimental study to re-establish *Molinia-Juncus* pasture from improved grassland at Rhôs Llawr-cwrt National Nature Reserve: Final Report. 2003. Adams, W.A. & Young, R.J. CCW Contract Science Report No. 563.

The final report of this six-year project (as described in previous issues of the Bulletin) is now available. Application of aluminium sulphate was effective in adsorbing soil phosphorus and reducing pH. However, effects on vegetation composition were relatively minor. The control plots showed considerable change in soil chemical properties and vegetation over the course of the project, with grassland communities changing from MG6 towards M23. Further recommendations were made to increase the rate of establishment of *Molinia-Juncus* grassland.

The effect of sward management on the restoration of species-rich grassland: A re-assessment of IGER's lowland grassland restoration experiment, Trawsgoed. 2001. Hayes, M.J. & Sackville Hamilton, N.R. CCW Contract Science Report 438.

At the time of writing, the Trawsgoed lowland grassland restoration plots had been running for eight years. Results so far, suggest that it may be beneficial to introduce a phased-management programme for increasing species-diversity of improved pastures. For the first 3-4 years, nil fertiliser inputs and at least two hay cuts per season followed by aftermath grazing, could accelerate reductions in residual soil fertility and optimise ingress and colonisation of new species. A second management phase would then return to a single hay cut, and consideration could be given to introduction of local seed if necessary, to speed up diversification. Successional changes, to date, appear far from complete and the full biodiversity value of the different extensification treatments remains to be quantified.

Conservation Pays? Joint British Grassland Society and British Ecological Society conference, University of Lancaster, April 2002. Proceedings published as Frame, J. Ed. 2002. *Conservation Pays? Reconciling environmental benefits with profitable grassland systems.* BGS Occasional Symposium no. 36. Reading: BGS/BES.

This well-attended conference attracted a range of delegates, including academics, consultants, policy-makers, large numbers of staff from the Rural Development

Service, but rather few farmers. A number of farmers presented papers however, and made an important contribution to the practical focus of the conference.

The published proceedings are well worth a look, including papers on chalk grassland and purple moor-grass and rush pastures, restoration techniques, grassland and birds, as well as policy and economic aspects. Richard Jefferson opened the Enhancement and Maintenance of Biodiversity section with his paper: *Setting the conservation scene*.

Further information

Grassland management requirements of invertebrates – workshop March 2002

All the lowland grassland Habitat Action Plans (HAP) include actions to liaise with relevant Species Action Plan (SAP) groups and co-ordinate actions for rare and declining grassland species. Whereas the requirements of higher plant flora and birds are usually quite well understood, the needs of various endangered invertebrate taxa are less widely appreciated. So it was felt timely to start a dialogue with appropriate SAP groups by organising a workshop to look at grassland management requirements of invertebrates.

The UK Lowland Grassland HAP group, with support from JNCC, organised the workshop on 19 March 2002 at the Royal Entomological Society in London, attended by 40 grassland and invertebrate specialists.

Tim Blackstock, as chair of the group introduced the meeting with a brief review of the vegetation objectives of the five lowland grassland HAPs. Pete Kirby then opened a series of invertebrate talks with a wide-ranging tour through some of the main management issues affecting grassland invertebrates. One of the themes running through his talk, which was also echoed in subsequent talks, was that from an invertebrate point of view, grassland is only part of a mosaic of habitats, often in a dynamic flux between scrub, woodland, heath, bare ground etc. Although there are many invertebrates associated with grasslands, there are few truly grassland species, and many of the richest sites for invertebrates include a variety of habitats, very often in dynamic equilibrium. The challenge for grassland conservation site managers is to maintain this ecological and structural diversity.

Caroline Bulman (Butterfly Conservation) then gave a presentation on the conservation of the marsh fritillary butterfly. Habitat loss and fragmentation of wet grassland and chalk downland were the main issues here. Mike Edwards then continued with discussion of the rarer bumblebees, and explained how the most important factor for survival was a continuous supply of pollen and nectar between spring and autumn, this having implications for the timing of hay cutting. Mike Howe (CCW) gave a talk on the management requirements of the hornet robberfly, as an example of a dung-dwelling invertebrate, and how the agricultural use of avermectins for worm control has had deleterious effects; this led on to a discussion of the more general approach to avermectin use in conservation grasslands.

Jeremy Thomas (Centre for Ecology and Hydrology) considered the research needs of grassland and invertebrate conservation. Rather than reviewing past research, he opted to look ahead at new issues that would benefit from future research. His examples ranged from micro- to landscape scale including, for example, identification of local populations with specific management needs and the problems of habitat restoration, as well as cryptic invertebrate taxa. David Sheppard (English Nature) discussed some of the issues arising from current Biodiversity Action Plan (BAP) grassland invertebrate projects and introduced a draft summary document describing in brief the management requirements of the 48 grassland invertebrate BAP species.

Chairing the concluding discussion, Adrian Fowles (CCW) stressed the need for general guidance for site managers that would to some degree bridge the gaps between some of the management problems raised during the workshop. BAP has so far been very important to invertebrate conservation by providing a huge injection of funds; the challenge is to now make use of these resources as wisely as possible. UK BAP is intended to reverse the serious declines seen in recent years; there are 174 invertebrate priority species that are covered by individual or grouped SAPs and applied research into these species is important, especially in relation to habitat restoration and soil processes. In practical terms, concentrating on flagship or keystone species may be a way forward, and the incorporation of SAP as well as HAP requirements into agri-environment schemes should help invertebrate conservation in the wider environment.

As a follow-up to the workshop, David Sheppard is planning to co-ordinate a report on current thinking about the inter-relationships of invertebrates and their grassland habitats. It will aim to review recent developments in invertebrate and grassland ecology and provide an insight into current ecological thinking. This will lead, inevitably, to changes in current advice and the formulation of new advice in previously overlooked subject areas.

GPS and Grassland Condition Assessment



Figure 1. Hand held GPS unit

Over the past few years JNCC and the Country Agencies have been developing guidance for the condition assessment of various habitat and species features. During the same period the Environment and Heritage Service in Northern Ireland (EHS) have been developing the use of Differential Global Positioning System (dGPS) and in particular how this tool could be applied to the whole area of condition assessment.

EHS Fieldworkers use a hand held (8x16cm, Figure 1) GPS unit with a base station, where the two can be differentially corrected against each other giving a post-processed location typically with 50-150cm accuracy. In addition, the units have quite simple data logging facilities, which combined with the GPS,

make this tool a rather useful piece of field kit.

For most of EHS condition assessment monitoring carried out over the past year, the traditional field notebook has become redundant. Attribute information e.g. sward height or presence of indicator species, is entered directly into the GPS unit in the field. In addition to the attribute information, the unit records the co-ordinates of the plot or point, date and time. For many sites where the habitat feature occurs as mosaic making area estimates problematic, the use of GPS gives scope for re-visiting precise locations in 6 years time to assess whether there has been any change, and so loss or gain of particular habitats can be assessed.

The EHS GPS units have been set up with a data dictionary that enables collection of attribute data. This is done in a fairly standard way and default values are entered preventing the need to record zero values. The unit permits data entry of numerical values (Figure 2), text strings and selection from a menu of options (Figure 3). Text can be entered (Figure 4), but in the system used here, it is



Figure 2. GPS data entry screen.

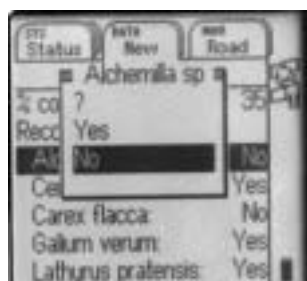


Figure 3. GPS data entry screen, menu.

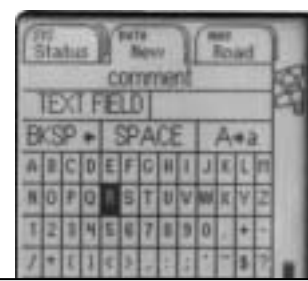


Figure 4. GPS data entry screen, text entry.

rather cumbersome - a bit like sending text messages but without text recognition.

From the GPS software, using a fairly simple, streamlined Geographic Information System (GIS), you can then output your information in a variety of formats e.g. ARCVIEW files, ACCESS database files or EXCEL spreadsheets. There is no need for tedious transcription of field data (from usually illegible field sheets!) and the laborious task of data entry checking is removed.

EHS have been using GPS routinely over the past 2-3 field seasons, both in the context of general field survey, Phase II habitat survey, delineation of unmapped boundaries and in condition assessment. The hand held units are particularly useful for condition assessment, where the methodology is fairly clearly defined and the attributes recorded in the field are simply translated into GPS data dictionaries.

Significant timesaving was achieved in EHS over the last field season by using GPS for condition assessment. It was estimated that each member of the team of 8 saved about 1 weeks work over the course of the season.

EHS plans to continue using GPS, especially for condition assessment and will be developing its use further with field mapping, quadrats etc. It should also be noted that the units used and illustrated (Figure 2) are no longer produced and

have been superseded by more up to date technology. EHS will be introducing some of these units, which amongst other things, can download maps and have a standard WINDOWS interface, which will improve data entry. If you need further information or would like to discuss further – please contact **Mark Wright** at mark.wright@doeni.gov.uk. For a full copy of Mark's paper with two useful examples, contact Carrie.

Grazing and grazing animals - special issue of Vakblad
Natuurbeheer, May 2002

This is an English issue of a magazine produced by the Dutch Ministry of Agriculture, Nature Management and Fisheries. A free copy can be obtained by e-mailing balie@eclnv.agro.nl, presumably while stocks last.

The focus of the magazine is 'natural grazing', or free-range grazing of a semi-natural landscape by wild or 'de-domesticated' animals. The animals, usually horses or cattle, are not farmed but are allowed to breed and die with minimal interference.

The concept of natural grazing arose from the still-controversial work of Dutch ecologist Frans Vera. He suggests that our natural lowland landscape, before human intervention, consisted of park-like or savannah vegetation, rather than the closed-forest which is the climax vegetation of traditional ecological models. Vera uses evidence from the quaternary pollen record, written historic records and the observed ecology of tree species to argue his case.

The magazine has articles on both theory and practice including the following topics:

- Herbivores and landscape before the last ice age
- How livestock farming changed our landscape
- Grazing and the conservation of low-nutrient landscapes
- Reptiles and butterflies and grazing
- Natural grazing, social structure and heredity
- Ethical aspects, including animal welfare
- Grazing animals and the public
- Rare breeds of livestock.

It is remarkable that most of the first attempts to initiate natural grazing of large, semi-natural areas have been made in the Netherlands, which is one of the world's most densely populated countries.

Vera's work has stimulated some lively debate. English Nature has developed a simple model based on Vera's proposals (Kirby 2003).

Reference

Kirby, K.J. 2003. *What might a British forest-landscape driven by large herbivores look like?* English Nature Research Report 530.

The distribution and extent of lowland NVC grassland types in Scotland

A three-stage review has just been completed of the NVC data recorded during surveys of Scottish lowland grasslands from 1984 onwards. The mapped area of each lowland grassland NVC type (including new variation identified in the second stage of this review) was measured where possible and estimated where measurement was impossible. These measurements and estimates are summed to give the total recorded area of each lowland grassland NVC type. An estimate of the total area likely to occur throughout Scotland is made for the more thoroughly recorded lowland grassland NVC types.

The data from this Review has been used to create SNH's Lowland Grassland Database, containing details of all lowland grassland sites recorded by the grassland surveys, their grid reference, conservation status, area, surveyor, date of survey, NVC lowland grassland types present and their areas. Local authority area, old local authority district and SNH Area are also included.

A total of 8700 ha of semi-natural lowland grassland NVC types (excluding coastal grasslands) has been recorded in Scotland. This habitat is unimproved and of high nature conservation value.

The likely total areas in Scotland of these Biodiversity Action Plan priority habitats have been extrapolated from the known areas, to give an estimated total area of 16000 ha minimum.

For further information on the project and details of BAP priority habitats recorded and estimated, contact:

Jane MacKintosh jane.mackintosh@snh.gov.uk

England's green unpleasant land? Why urgent action is needed to save England's wild flower grasslands. 2002. By Miles King for Plantlife and The Wildlife Trusts.

This campaigning document sets out to report on the fate of lowland grassland in England since the influential publication of *Nature Conservation in Great Britain* (NCC, 1984). It also calls for a package of measures to prevent further losses, focussing particularly on the Government's agri-environment schemes.

The data used to argue the case come from a study of County Wildlife Sites in eight counties of importance for lowland grassland: Cornwall, Derbyshire, Lincolnshire, Shropshire, Suffolk, Warwickshire, Wiltshire and Worcestershire.

As with the previous report (NCC 1984), the results give cause for serious concern. Examples include Worcestershire, where 75% of unimproved lowland grassland was lost or damaged in 25 years, and Derbyshire, where 91% of unimproved lowland grasslands known to survive in 1983 had disappeared by

1999. Other counties have fared better, for example Suffolk, where the losses of the 1980s and early 1990s are thought to have all but ceased.

The booklet ends with a discussion of 'how to make things better', including Wildlife and Countryside Link's 10 recommendations for agri-environment schemes, and a section on the impact of the outbreak of Foot and Mouth Disease on English grassland.

The booklet (24 pages, A4) is available for £5 (inc p&p) from Plantlife Bookstore Summerfield Books, Main Street, Brough, Cumbria CA17 4AX, tel. 01768 341577, fax 01768 341687.

Reference

Nature Conservancy Council 1984. *Nature Conservation in Great Britain*. Peterborough, Nature Conservancy Council.

Any comments, views or requests for further information or paper copies should be addressed to the LGLCN officers, either:

Carrie Rimes, CCW, Plas Penrhos, Ffordd Penrhos, Bangor, Gwynedd, LL57 2LQ, tel: 01248 385680, fax: 01248 385510, e-mail: c.rimes@ccw.gov.uk

or

Vicky Morgan, English Nature, Northminster House, Peterborough, PE1 1UA, tel: 01733 455405, fax: 01733 568834, e-mail: vicky.morgan@english-nature.org.uk

Hornet robberfly - *Asilus crabroniformis*

Despite its large size and rather striking appearance, the hornet robberfly is surprisingly cryptic. The brown thorax and yellow abdomen blend in well against decaying dung, which provides the fly with its preferred perching sites. Once widespread in southern Britain, concern over recent declines of the hornet robberfly has resulted in its inclusion as a UK BAP priority species. Subsequent surveys have shown that the species still occurs widely in southern England, south of a line from Gloucester to Chelmsford and from Cornwall to Kent, with particular hotspots on the Dorset heaths and the chalk downlands of Wiltshire and Hampshire, and outlier populations in Worcestershire. In Wales, it is currently known from about 20 sites although strong populations are restricted to just six or seven localities.



Hornet robber-flies on dung

Peter Skidmore

The hornet robberfly is typically found on dry heathland and free-draining unimproved or semi-improved base-rich or neutral pastures, although it occurs occasionally in hay meadows that have aftermath grazing and in damp fields on the edge of wetlands. Adults can be found from late June to October, although the majority are on the wing in August and early September. They feed on a variety of insects including those attracted to dung e.g. adult dung beetles, dungflies and fleshflies, and others associated with grassland habitats such as grasshoppers. Females have been observed laying eggs on the dung of horses, cattle and rabbits preferring to lay on older, drier dung which has been on the field for about 2 to 3 weeks. After hatching, the larvae probably feed on nematodes and other small organisms in the dung but little is known of the ecology of more mature larvae. However, they are believed to be predaceous, feeding on the larvae of dung beetles such as *Aphodius* or *Geotrupes* (dor beetles), and perhaps the minotaur beetle *Typhaeus typhoeus* when the fly is associated with rabbit dung. It is unclear how long the larval stage lasts, but it is likely that the majority pupate and emerge as adults in the following summer.

Adults are strong fliers and are easily provoked into flight if disturbed. Mark-recapture studies have demonstrated that they are capable of travelling over distances in excess of 430m, even over inhospitable habitats, and such powers of dispersal will help them to colonise suitable areas in a fragmented landscape. These studies have

also shown that adult numbers at a site can be very large, with marked individuals in a single season exceeding 300 at a site in south Wales.

To maintain breeding populations of the hornet robberfly on a site, it is recommended that grazing animals, preferably cattle or horses, should be present at least from early June to September so that dung in a suitable condition is available throughout the flight period. However, grazing should be light enough to provide a sward that promotes good populations of grassland insects such as grasshoppers, with a minimum height of 3-10cm in August. Shelter belts such as bracken, hedgerows and scattered scrub should be retained to provide roosting sites for adult flies. Avermectin wormers should not be used between June and November as these can have a deleterious impact upon the dung fauna, thereby removing the prey of robberfly larvae.

Further reading

Clements, D.K. & Skidmore, P. 2002. *The autecology of the hornet robberfly Asilus crabroniformis L. in Wales, 1997-99*. CCW Contract Science. **525**. Countryside Council for Wales.

Cox, J. 1999. The nature conservation importance of dung. *British Wildlife*, **11**: 28-36.

Lloyd, D. 2001. *Dispersal abilities and population structure of the adult hornet robberfly Asilus crabroniformis at Caeau Bwlch SSSI*. CCW Contract Science. **458**. Countryside Council for Wales.

Skidmore, P. 1997. *The status of the hornet robberfly Asilus crabroniformis in south Wales*. CCW Contract Science. **212**. Countryside Council for Wales.

Smith, M. 2000. *The hornet robberfly Asilus crabroniformis: land use and livestock grazing regimes at sites in England*, English Nature.

Smith, M.N. 2001. The current distribution of the hornet robberfly *Asilus crabroniformis* Linnaeus (Diptera, Asilidae) in England and Wales. *Dipterists Digest*, **8**: 79-84.

Mike Howe, CCW