

LOWLAND GRASSLAND LEAD CO-ORDINATION NETWORK

**** INFORMATION BULLETIN NUMBER 6 – MARCH 2005 ****

CAN YOU HELP US?

We are keen to know who sees this Bulletin and what they think of it. Any feedback is most welcome, including ideas for improvements or topics we could cover. Feedback should please cover at least these questions.

- Have you seen previous copies of *The Bulletin*?
- Do you think *The Bulletin* is useful?
- Would you look at future issues?

Feedback please to the editors: c.rimes@ccw.gov.uk or vicky.morgan@english-nature.org.uk. Many thanks!

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News in brief

- Common Standards Monitoring. Guidance for the monitoring of Lowland meadows and Upland hay meadows, Lowland dry acid grasslands, Lowland calcareous grasslands, Purple moor-grass and rush pastures and Calaminarian grasslands is now available on JNCC's website (www.jncc.gov.uk/page-2233). Field monitoring of SSSIs is proceeding in England and Scotland, and some non-statutory site monitoring has been undertaken in England (see BAP sample survey below). In Wales, methodology is still being developed, although considerable progress has been made with SAC features monitoring.
- BAP Targets Review. As part of a general targets review exercise, the UK Lowland Grassland HAP group is attempting the 'smarten' up the grassland HAP targets (Specific, Measurable, Achievable, Relevant and Time-bound). This is an extensive data collation and assessment exercise. The new targets for lowland grasslands will almost certainly still be focussed on maintaining extent, achieving condition, restoration of former habitat and expansion or creation of new habitat. In the meantime, 2005 brings another round of:

- BAP reporting 2005. All too quickly we have another reporting round – in September 05. However, the process should be made easier following the experience of the 2002 reporting, and now that BARS (Biodiversity Action Reporting System www.ukbap-reporting.org.uk) is up and running to facilitate the process. In addition, we do have reporting proformae that are particularly tailored for recording progress with lowland grassland projects. So if you are involved with a local grassland project – please do contact Carrie, to make sure that your efforts and achievements are recorded. Thank you!
- 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). They can also be downloaded from English Nature’s website www.english-nature.org.uk.
 - *Horses, grasslands and nature conservation.* English Nature/The British Horse Society
 - *Lowland acid grassland.* English Nature/CCW/SNH/EHS
 - *Lowland calcareous grassland.* English Nature/CCW/SNH/EHS
 - *Purple moor-grass and rush pastures.* CCW/English Nature/SNH/EHS
 - *Old meadows and pastures.* CCW/English Nature/EHS/SNH
 - *Wildflower meadows: how to create one in your garden.* English Nature IN15.3

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

- *Old meadows and pastures.* CCW/English Nature/EHS/SNH
- *Lowland acid grassland.* English Nature/CCW/EHS/SNH
- *Purple moor-grass and rush pastures.* CCW/English Nature/EHS/SNH
- 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 Sophie Lake: enquiries@grazinganimalsproject.info. The Grazing Animals Project e-mail Discussion Group Facility ‘Nibblers’ has proved to be a very useful source of information: nibblers@smartgroups.com. Sarah Kessell 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 Sarah for further information: tondu@wildlifetrustswales.org

- Ongoing research projects.

Mycological survey of Welsh lowland grasslands. CCW. Field survey of 50 sites continues for a third and final year during 2005. Due to report in 2006.

- *Impact of organic manures on semi-natural grassland.* An extended Defra project in partnership with English Nature, CCW and others. Due to report on the first six years in Spring 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.
 - *Managements to achieve botanical diversification of improved grassland by natural recolonisation.* A Defra project in partnership with CCW. Due to report in June 2006.
 - *Restoration of BAP grasslands in the Scottish Borders.* SNH. Due to report in 2005.
 - *The management of long-term set-aside for nature conservation – the creation of species-rich grasslands.* SNH/SAC project looking at grassland creation on agricultural soils. The final report of this project, which began in 1993, is due in 2005.
 - *European context of UK BAP priority Grasslands.* Due to report in 2006. English Nature.
- CCW lowland grassland survey update. Last year saw the completion of the project that has covered well over 1000 of the most important known semi-natural lowland grasslands in Wales. Contact David Stevens or Stuart Smith: d.stevens@ccw.gov.uk or stuart.smith@ccw.gov.uk
 - English Nature inventory of lowland grassland. Data available from: www.english-nature.org.uk/pubs/gis/gis_register.asp
 - East Scotland Grassland Management Scheme. A new scheme to help eastern Scotland's semi-natural grasslands and grazed fens has just been launched by SNH. A total of £600,000 is available to run the scheme in eastern Scotland over eight years. This will help with the management and care of 83 grassland and fen SSSIs totalling 4731h or just under half the semi-natural lowland grasslands in Scotland. Contact: Phil Gaskell phil.gaskell.snh.gov.uk

Recent Reports and Publications

Waxcap-grasslands - an assessment of English sites. 2004. Evans, S. English Nature Research Report 555.

Waxcap-grassland fungi are of conservation interest as indicators of semi-natural, mycologically rich unimproved grasslands. This project aims to source and collate distribution data for all the indicator waxcap-grassland species in England, and to use this information to produce a preliminary list of the most important English grasslands known to date. It is hoped that the survey findings, supported by a dataset of nearly 20,000 records, will enable well-informed decisions to be made on appropriate site protection. The project results show that England has some outstanding examples of waxcap-grassland sites both in a national and European context.

Copies are available free from English Nature's Enquiry Service (01733 455100 or enquiries@english-nature.org.uk) and will also be available in PDF on their website: www.english-nature.org.uk.

See also: **Charismatic megafungi – the conservation of waxcap grasslands.** 2004. Griffith, G.W., Bratton, J.H. & Easton, G. *British Wildlife* 16: 31-43

The Herbicide Handbook: Guidance on the use of herbicides on nature conservation sites. 2003. FACT/ English Nature.

This Handbook has been produced by *FACT* (The Forum for the Application of Conservation Techniques) in association with English Nature. It encourages managers to weigh use of herbicide against other possible techniques in tackling the control of unwanted vegetation. It reviews non-chemical methods of control for problem plants, legal and safety legislation affecting herbicides and includes sections on which herbicides have approvals for use on named 'weeds' and habitats.

The handbook is available at:

www.english-nature.org.uk/pubs/handbooks/upland.asp?id=7

or www.herbicide.fact-group.org

The Scrub Management Handbook: Guidance on the management of scrub on nature conservation sites. 2004. FACT/ English Nature.

The handbook is designed as a one-stop reference for managers and advisers involved in scrub and shrub management for wildlife. Scrub can be both a valuable habitat component in some environments and an unwelcome intruder of small grasslands and other vegetation; management treatments vary accordingly. Profiles of 48 species of shrubs (and trees) are provided covering distribution, status, identification, growth characteristics, palatability to livestock and value to wildlife.

The handbook is available at:

www.english-nature.org.uk/pubs/handbooks/upland.asp?id=8

or www.herbicide.fact-group.org

Limited hard copies (including the herbicide handbook) are available at £30, contact John Bacon: Jbacon7586@aol.com

Conservation of lowland semi-natural grasslands in the UK: a review of botanical monitoring results from agri-environment schemes. 2003. Critchley, C.N.R., Burke, M.J.W. & Stevens, D.P. *Biological Conservation*, 115: 263-278.

The restoration and re-creation of species-rich lowland grassland on land formerly managed for intensive agriculture in the UK. 2004. Walker, K.J., Stevens, P.A., Stevens, D.P., Mountford, J.O., Manchester, S.J. & Pywell, R.F. *Biological Conservation*, 119: 1-18.

Habitats of Wales Phase I data- 1979-1997 – Lowlands and Uplands. 2003. CD ROM. CCW, Bangor.

Priority habitats of Wales: a technical guide. 2003. Jones, P.S, Stevens, D.P., Blackstock, T.H., Burrows, C.R. & Howe, E.A. CCW, Bangor.
This is a comprehensive overview of the Welsh semi-natural habitat resource, providing quantitative extent and distribution data for each of the priority habitats.

Review of stocking levels recommended for semi-natural lowland grasslands. 2003. Kirkham, F.W., Mole, A., Gardner, S.M. & Wilson, D. CCW Contract Science Report 596.

The project aimed to provide conservation site managers and agri-environment project officers with updated guidance on stocking levels appropriate for use on semi-natural lowland grasslands across a wide range of geographical locations, site conditions and management objectives. Data were gathered via a questionnaire and models were developed to examine variation in stocking levels within different habitats.

Guidelines based upon the data received and the models developed are presented for different grassland habitats.

Analysis of soils at Graig Fawr SSSI (Denbighshire) to inform appropriate methods of grassland restoration. 2003. Hayes, M.J. & Tallwin, J.R.B. CCW Contract Science Report 569.

An investigation into the potential for restoring calcareous and other types of semi-natural grassland on adjacent species-poor areas. Management issues are also discussed.

Further information

LBAP Workshop - Action for Grassland in the UK – links between local and national groups

A JNCC-sponsored workshop involving the UK Lowland Grassland HAP group and members of Local Biodiversity Action Plan (LBAP)/other local groups was held at Lancaster University on 3 February 2004. The aims were to promote links between local and national groups, to explore innovative methods of knowledge transfer and project implementation, and to look at ways of working together to integrate local and UK action in order to achieve grassland HAP targets across local landscapes.

The event proved to be extremely popular, unfortunately with more applicants than available places. Speakers gave presentations of LBAP grassland projects in action, including grassland management in the Scottish Borders, Local Grazing Groups, and links between grassland conservation and the rural economy in Devon. There was discussion of some of the achievements so far, problems encountered, and future

challenges. Talks were also given on funding for lowland grasslands and the use of the web for communication. All the presentations are available on the JNCC website at <http://www.jncc.gov.uk/page-2097>. The workshops then considered issues such as achieving better conservation conditions on non-statutory sites, raising awareness of lowland grasslands at both local and national levels, and involving the wider community in grassland conservation and restoration. A final plenary session attempted to draw together the main threads of the day. A full written account of the whole event should be available shortly on the JNCC website.

A large number of issues and possible actions arose from the presentations and workshops; not surprisingly funding was the one area that almost everyone agreed needed addressing. The lack of core funding for so much of the BAP effort is severely hampering progress. For example, Local Grazing Schemes (linked to the Grazing Animals Project or GAP), which have so clearly demonstrated their value for good grassland management, now require incorporation into mainstream, routine work by putting in place continued resources alongside temporary funding for specific projects.

Taking a broad view, habitat fragmentation is still regarded as one of the chief threats to the survival of lowland grassland biodiversity. Restoration needs to be given top priority in landscapes with semi-natural grassland aggregations to improve prospects for survival of specialist taxa. Climate change and the likelihood that the geographical range of some of our species will change make this priority all the more important, so that the countryside is more permeable for dispersing grassland species.

The whole issue of raising awareness of lowland grasslands was seen as crucial. In comparison particularly with woodlands, the lack of media interest and attention to the continuing loss of our lowland grassland heritage, is very worrying. For example, there are still too many cases of trees being planted on non-statutory grassland sites, and there are few controls in place to prevent this happening. Strong LBAP partnerships involving the Forestry Commission, the training of Woodland Grant Scheme advisers and the sharing of habitat extent and distribution information can help with the tree-planting problem.

These were just a few of the many issues that were discussed in the course of the workshop. The chance to meet and discuss national and local problems with members of LBAP groups from a large part of the UK was extremely valuable, and one that would be useful to continue in some form, possibly as a similar follow-up event or as a series of field visits in different parts of the UK to discuss practical problems. Your ideas would be welcome!

Lowland Heathland and Grassland HAP groups join forces at Greenham Common

A second JNCC-sponsored event during September 2004 was the combined meeting of the UK Lowland Heathland and Lowland Grassland HAP groups to discuss cross-cutting issues of habitat management and restoration.

Greenham Common near Newbury in Berkshire was the venue, and more than 30 group members from a wide range of organisations converged on the notorious former airbase. After discussing a wide range of overlapping issues ‘in the field’, where there is on-going restoration and management for both heath and acid grassland, the groups turned their attention to the main agenda of the meeting the following day. Some of the key points emerging from the meeting were as follows.

- There are many common conservation issues between lowland heathland and grassland habitats, such as fragmentation and lack of necessary management.
- Habitat groups need to be careful about the ‘silo’ approach (without reference to related interests); there are obvious and necessary linkages between different HAPs, between HAPs and SAPs, and between national and local BAPs.
- There are tensions between the management process (definitions, targets, working groups) and nature conservation delivery, with some external perceptions that BAP has become involved in too much administration and too little field-level action.
- A more ‘relaxed’ approach to habitat creation needs to be promoted, with less of a focus on closely defined end-points. The overall extent and distribution of heath and grassland in the landscape is what primarily counts.
- Grazing is key to the future of both habitats, and there are presently a range of changes underway which could provide opportunities, such as cross compliance, the single farm payment, agri-environment schemes, LGSs and development of niche markets. The HAP groups need a strong influence in such schemes.
- Future HAP targets need to be set within a longer-term vision reflecting the concept of favourable conservation status at landscape scale. This is likely to centre on achieving landscape scale processes over extensive areas of mixed habitat in the cultural farmed landscapes of lowland Britain, so again there is an imperative for closer thinking between the lowland terrestrial BAP habitats.

The State of England’s grasslands - England BAP sample survey

In 2001 English Nature, Defra and the JNCC commissioned a project to determine the condition and extent of existing non-SSSI BAP grasslands. The aim was to collect survey information on extent and condition for a sample of 500 sites without statutory designation but supporting one or more of the five priority grassland types, and to use this to establish a baseline against which progress made towards meeting the BAP targets (set for arresting loss and improving condition of non-statutory priority grasslands) can be monitored and future changes assessed.

Sites were randomly selected from English Nature’s Lowland Grassland Inventories, after stratification for the five grassland HAP types and presence or absence of agri-environment scheme agreement. In all 484 grassland stands were sampled comprising grassland conforming to 22 different National Vegetation Community types.

Surveys were carried out during the summers of 2002 and 2003, using a modified version of EN’s rapid assessment of condition of lowland grassland interest features on SSSIs. Collected data was analysed using both grassland SSSI favourable condition thresholds and slightly lower thresholds designed for potential use on non-statutory grasslands sites.

Overall, only 14% of grasslands sampled passed the required SSSI thresholds, and hence could be considered to be in 'favourable condition'. When the non-statutory targets were applied, the proportion passing rose to 21%. Sites failed most frequently because they lacked positive indicator species in sufficient number and at frequency levels characteristic of good semi-natural grassland. Similarly, many sites failed because the proportion of non-grass plant species in the swards was too low (% herb cover attribute).

Upland hay meadows and Lowland meadows fared worst, with a huge 98% and 92% respectively of grasslands in these categories being deemed to be in "unfavourable condition", when SSSI condition assessment targets and thresholds were applied. When the lower non-statutory thresholds were applied numbers failing fell slightly to 93% and 82% respectively. Purple moor-grass and rush pasture sites did comparatively well, with only 76% failing condition targets when the SSSI thresholds were applied, declining to 65% when non-statutory thresholds were used. Lowland dry acid and Calcareous grasslands had intermediate failure rates.

Grasslands within agri-environment agreements were almost twice as likely to be in favourable condition as those outside schemes – this relationship was statistically significant. However, it would be inappropriate to make a judgement on the effectiveness of AE agreements in improving/maintaining condition of grassland from this survey alone. An analysis of the effects of different Countryside Survey options and Environmentally Sensitive Area Tiers on condition of the grasslands in the sample is being undertaken.

The results of this survey paint a somewhat bleak picture of the state of the lowland grassland resource outside the statutory sites series in England, with meadows faring particularly badly. However there are grounds for optimism. Defra's new Higher Level Environmental Stewardship Scheme to be launched in Spring 2005 will allow for more subtle, site specific grassland management. But a variety of existing mechanisms will need to be pursued in tandem with the rolling out of Defra's new scheme if improvements in the non-statutory priority grassland resource are to be maximised. These are likely to include: site acquisition and management by nature conservation bodies; statutory notification where appropriate; influencing higher level policy, particularly in the livestock sector; promoting Grazing Animal Project initiatives and ensuring effective implementation of the new EIA regulations covering uncultivated land or semi-natural areas for intensive agricultural purposes.

The findings of this survey and further analyses of the data will be published shortly as an English Nature Research Report. If you would like further details of the project please contact Clare Pinches, Lowland Grassland Ecologist, English Nature, clare.pinches@english-nature.org.uk

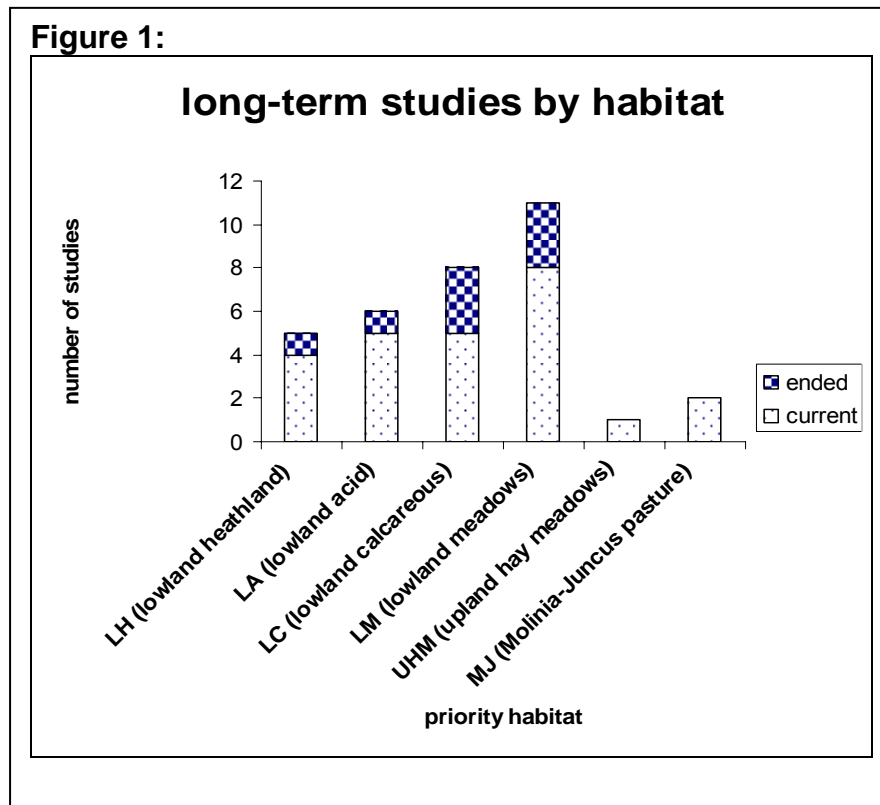
Review of long-term experimental studies of priority habitats

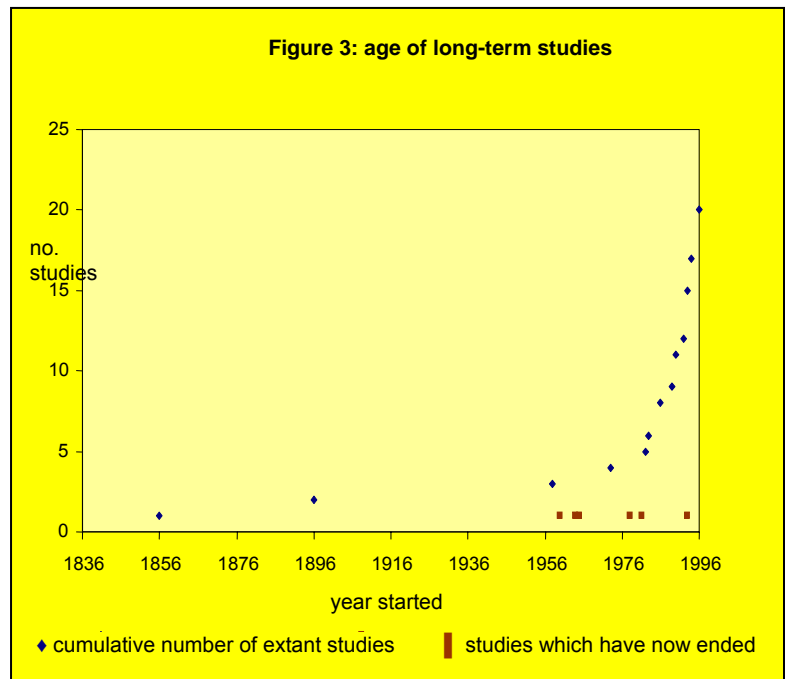
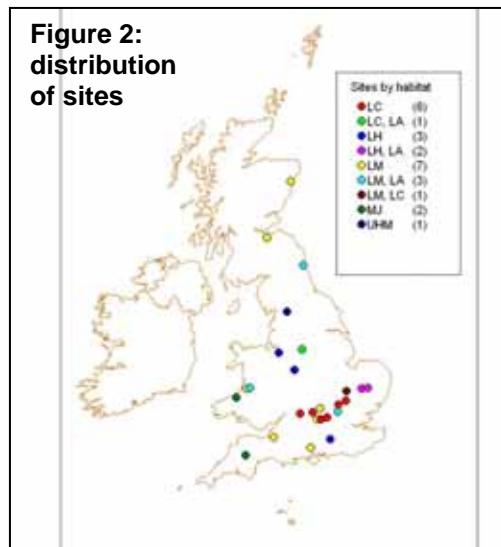
The UK Lowland Grassland HAP Steering Group, concerned about the insecure status of a number of important long-term experiments, initiated a review of long-term experimental studies of 6 priority habitats.

An inventory was compiled and the results disseminated within the country agencies and to the academic community. For inclusion in the review a study had to be:

- more than 5 years duration
- replicated experimental study
- not monitoring.

Figures 1-4 show some of the results to date. Only a handful of surviving long-term studies have security of funding, even though a majority continue to provide information that is essential to improving our understanding of ecological processes and management of habitats. Studies may be abandoned before post-treatment floristic equilibrium is achieved.





The HAP Group’s concerns are shared by a working group of academics that has independently proposed to found *The Ecological Continuity Trust* to address the problems. Data from the HAP Group and LCN review have been used to support a proposal to the British Ecological Society (BES), asking for financial support to establish and develop the Trust with the following aims.

- To acquire security, in perpetuity, of key long-term ecological experiments.
- To facilitate expanded research and monitoring based on the experimental sites.
- To raise funds for and manage an endowment to finance these aims.

Sources of information:

The Ecological Continuity Trust - a request to the BES for development fund.

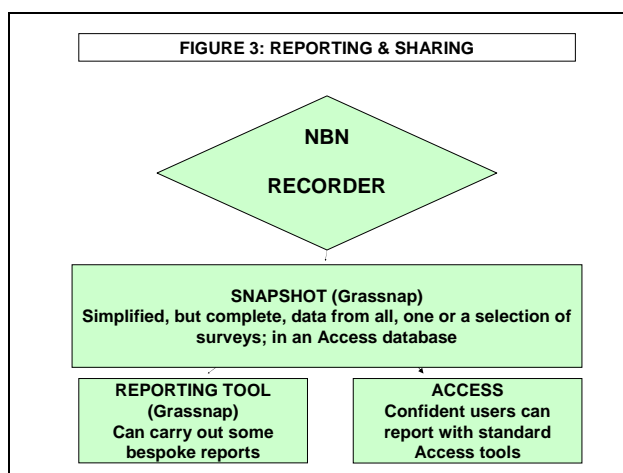
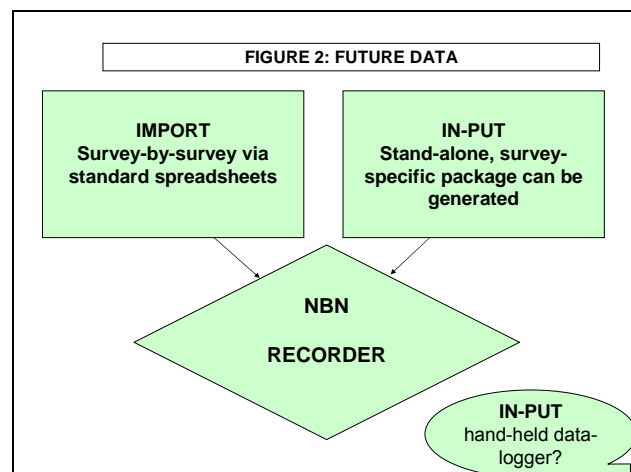
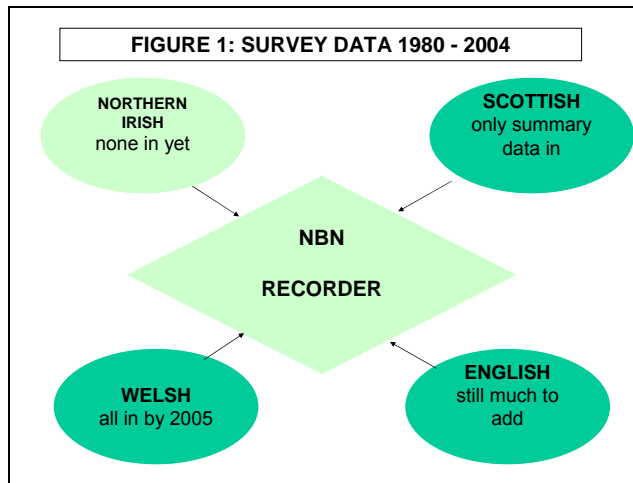
Jonathan Silvertown (j.silvertown@open.ac.uk), Jerry Tallwin, Michael Morecroft and Val Brown. Unpublished, draft proposal.

Inventory of long-term studies, Vicky Morgan, unpublished. Work in progress.

Please contact Vicky Morgan if you want any more information.

UK Lowland Grassland Database – progress report

Work continues on this UK-wide JNCC project that aims to convert existing quadrat and community data into a more secure, modern and accessible form and to capture missing data. Figures 1-3 summarise the process.



These processes should be complete by summer 2006. Potential initiatives for the future include the following.

- Data capture exercises for England, Scotland and Northern Ireland

- Up-to-date maps of priority habitats (could be interactive, on-line)
- Phytosociological research
- Biogeographical research
- Comparable development of databases for other habitats.

For further details contact Vicky Morgan.

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 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 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. The development of new and improved schemes for lowland grassland conservation and the maintenance of common standards are key goals.

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

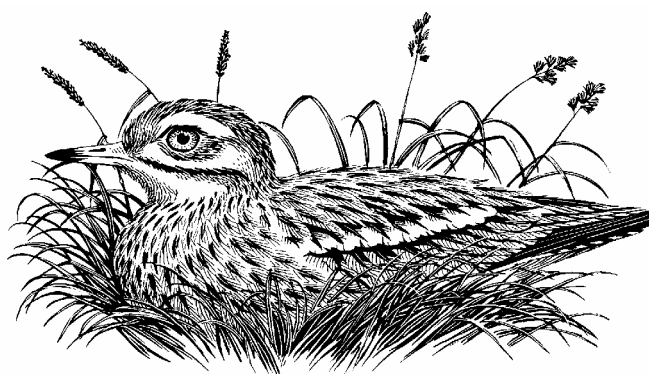
Carrie Rimes, CCW, Plas Penrhos, Ffordd Penrhos, Bangor, Gwynedd, LL57 2LQ, tel: 01248 385680, fax: 01248 385510, e-mail: c.rimes@ccw.gov.uk

or

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

Stone Curlew – *Burhinus oedicephalus*

The stone curlew is a large long-legged plover-like bird with strikingly large, owl-like yellow-eyes. It is most unlike other European waders including the well-known curlew (*Numenius arquata*). It is sometimes known as the thick-knee and, on account of its plaintive cry, it was once known in Norfolk as the wailing heath chicken! Being generally silent and secretive during the day, it is difficult to find, often sitting immobile and camouflaged on stony or sandy terrain.



In Britain the stone curlew is on the northernmost edge of its world range. It was once widespread in southern and eastern England as far north as Yorkshire. It underwent a steady decline from the mid 19th Century through to the late 20th Century due to factors such as a decline in rabbit warrening, afforestation of semi-natural grassland, land enclosure, conversion of grassland to arable and, more recently, an increase in taller grassland due to a reduction in, or cessation of grazing. By the 1930s, it has been estimated that there were between 1000 and 2000 breeding pairs. Numbers fell by more than 85% between 1945 and 1995. It is now one of our rarest and most threatened birds.

The stone curlew is a summer visitor to England and birds arrive in mid-March. Most birds have left by the end of October. They winter in the Mediterranean and North & West Africa. The stone curlew is now largely restricted to two core areas, the East Anglian Breckland and the Wiltshire Downs.

Stone curlews prefer to breed on very short, grazed, often sparsely-vegetated calcareous or acid grasslands. They also nest in late spring-sown arable crops on suitable soils where the clutches and chicks are vulnerable to farming operations.

The birds lay a clutch of two eggs in a scrape of bare earth. Replacement and second clutches are common. The adults and chicks feed on surface dwelling invertebrates, particularly earthworms, woodlice, millipedes and beetles. Adults forage up to 3 kilometres from their eggs and chicks, whereas chicks rarely move more than 100 metres from the nest. High densities of birds in excess of six pairs per km² are possible in mixed farming landscapes with large areas of grazed semi-natural grassland, ley pastures and spring-sown arable crops. These habitats provide nest sites and a wide range of invertebrate prey.

The stone curlew has been the focus of conservation effort since the mid-1980s. A Species Action Plan (SAP) was published in 1995 (UK Biodiversity Steering Group

1995). This set targets to increase the breeding population in the present UK range to 200 pairs by 2000 and 300 by 2010. The Stone Curlew Recovery Programme, funded by English Nature and the RSPB, employs project officers to locate and monitor nests and liaise with landowners to help ensure successful rearing of broods on arable farmland. They also provide advice on the special incentives available under agri-environment schemes to benefit this species including the creation of bare earth nesting plots. This approach, coupled with the protection, management and creation of grassland by site designation and through the use of environmental incentive schemes, has been very successful and the 2000 SAP target was achieved two years ahead of schedule. In 2003, there were 261 breeding pairs in England, which indicates the 2010 target should be met and very probably exceeded!

Further Reading

- Brown, A.F. & Grice, P.V. 2005. *Birds in England*. T & A.D. Poyser, London.
- Gibbons, D.W., Reid, J.B. & Chapman, R.A. 1993 *The New Atlas of Breeding Birds in Britain and Ireland: 1988-1991*. T & A.D. Poyser, London.
- Green, R.E. & Griffiths, G.H. 1994. Use of preferred nesting habitat by stone curlews *Burhinus oedicephalus* in relation to vegetation structure. *Journal of Zoology*, 233: 457-471.
- Green, R.E., Tyler, G.A. & Bowden, C.G.R. 2000. Habitat selection, ranging behaviour and diet of stone curlew (*Burhinus oedicephalus*) in southern England. *Journal of Zoology*, 250: 161-183.
- Shrubb, M. 2003. *Birds, Scythes and Combines. A history of birds and agricultural change*. Cambridge University Press, Cambridge.
- UK Biodiversity Steering Group 1995. *Biodiversity: the UK Steering Group Report. Volume 2: Action Plans*. HMSO, London.

Richard Jefferson, English Nature.

Acknowledgement: Thanks to Allan Drewitt for comments on the text and for supplying the 2003 breeding data.