



A SOURCE BOOK FOR BIOLOGICAL RECORDING IN SCOTLAND

Edited by
AnneMarie Smout
and
David Mellor

Published by *BRISC*

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**SOURCE BOOK
FOR
BIOLOGICAL RECORDING
IN
SCOTLAND**

**Edited by
AnneMarie Smout
and
David Mellor**

on behalf of *BRISC*

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The map of Scotland, which forms part of the cover, has been produced with DMap

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FOREWORD

However good a piece of scientific work is in itself, it has no value until the results have been communicated to other people, have been tested, and have been accepted. From the earliest days of British natural history, communication has occurred through letters to friends, contributions to natural history societies, papers to learned journals, and increasingly the building of computerised databases. To look at only a couple of examples, *The Natural History of Selborne* is essentially a collection of letters that document Gilbert White's observations, and the annual *Edinburgh Natural History Society Journal*, as well as containing articles, has a lively section on members' observations.

But I have focused so far on what I consider to be the first two of four steps - making the observation and communicating it. The next two steps could be referred to as archiving the observation and then using it. One observation tells us rather little, but as the number of observations increases so does their usefulness. We can start to build up pictures of the distribution, maybe to explore the factors that determine that distribution, over time to understand how and why the distribution is changing, and possibly even to investigate the inter-relationships between species. For all of this we need databases, the flow of new data into those databases, and hence the recording schemes that are outlined later in this book. We also need the tools for analysis so that answers can be found for a host of questions.

This could all be rather academic, but nevertheless extremely interesting. Think, for example, of the interest generated in 1962 when the first of the books of 'dot maps' - Frank Perring and Max Walter's *Atlas of the British Flora* - was published. Over the intervening years we have become used to these dot maps, showing us in which of the squares of the national grid a species currently occurs, used to occur, has never been known to occur, etc. Maps are now available for a whole variety of plant and animal species, and in some areas at a more detailed scale than the national 10km squares that are usually used.

We must now put this information to work, and here I commend the large amount of effort going into the Local Biodiversity Action Plans. Without the recording of Scotland's species, habitats and environmental data, I feel that it is true to say that Local Biodiversity Action Plans could hardly have been contemplated. Biological recording is essential to this work, to the work of the Scottish Biodiversity Group, to the work of the United Kingdom Biodiversity Group, and for reporting how we are implementing the international Convention on Biological Diversity. There are, of course, many other uses for our biological records, many of them already known, and undoubtedly others that will become manifest in the future. This is perhaps most urgent in the marine environment. With of the order of 11,800 km of coastline, and a huge sea area beyond it, there remains a massive task to understand just what there is 'out there' where it occurs, and how we might look after our marine habitats and species better.

In welcoming this book, I note the huge efforts of *Biological Recording in Scotland (BRISC)*, and particularly those of its 'army' of recorders, and congratulate them. I also note that, through their efforts, the book provides a huge amount of information about making biological records, on communicating those records, on the schemes for collating those records, and on using the records. Scotland is already well served, but publication of this book will help us to serve Scotland better and to understand more clearly how Scotland's biodiversity is changing. This will become even more important in the future when we believe that there might be human-induced changes to the climate, with unknown consequences for some of our plants, animals and microbes. How will these climate changes affect the habitats in which many of our species occur, whether on dry land, in our freshwater, or in the extensive marine environment? We shall want to know which are the success stories, as well as the failures which are so often the focus of attention. The huge number of people interested in taking this biological recording forward is perhaps the greatest strength in achieving all that we might wish to achieve, and this book will assist this growing 'army' of recorders.

Michael B Usher
Chief Scientist, Scottish Natural Heritage
June 1999



INTRODUCTION

This source book is intended as a reference volume for anyone with an interest in the recording of wildlife and wildlife habitats. Although based on earlier editions of *BRISC's Guide To Biological Recording in Scotland* (1976, 1993, 1995), this is a completely new and much expanded publication. We have here attempted to bring together in one volume as much relevant information as possible in a field which is not always widely documented. Much of the information in this publication will also be available on BRISC's website, which can be visited at <http://www.bris.org.uk>

The scope of the source book embraces every aspect of biological recording: the collection, processing and use of data, techniques, standards and principles in biological recording, co-operation and data exchange, and also where to find out more. We have attempted to cover the marine as well as the terrestrial environment. Unlike the collection of data for terrestrial species and habitats, much of the actual recording in the marine environment has to be left to professionals, though some schemes want to encourage divers to take an interest in biological recording. Its inclusion here reflects the growing realisation of the importance to Scotland of a healthy marine environment and the recognised need for a greater knowledge of the sea and all that it contains. Local Records Centres (LRCs), whose geographical area includes a coastline, need to be aware of their responsibility in this respect.

The first two sections deal with the purpose and techniques of biological recording, principles and standards of data collection, management and co-operation. The next two sections look at where to find information, both locally (Local Records Centres) and nationally (the huge range of national recording schemes), their activities, publications, recommended identification guides, etc. The final section is concerned with putting information to use through Local Biodiversity Action Plans.

Seven appendices contain lists of priority species and habitats, useful addresses, recommendations for the library shelf, a bibliography of papers and publications relating to views and developments in biological recording in the last twenty years or so, legislative framework relating to information handling, how to give a grid-reference and a map of Watsonian vice counties.

As the editors went about collecting information for this publication, we became increasingly impressed by the sheer volume of activity which is going on within biological recording today. That this coincides with the proposal for a National Biodiversity Network, which itself stems from the growing awareness and interest in biodiversity following the Rio Earth Summit and the establishment of a UK Biodiversity Group, and a gratifying increase in demand for environmental information by decision makers throughout the UK, can be no accident. We hope the current volume will encourage many more people to become involved, to progress towards better access and a more rational flow of biological data, for data sharing to become the norm, and for it all to add up to a better deal for our natural environment.

A vast number of people assisted us in this production. We want most gratefully to acknowledge the co-operation we have had from Scottish LRCs and all the recorders/organisers of the national recording schemes for their patience and time involved in answering our many questions. We wish to thank Ed Mackey of SNH and Gordon B Corbet for their most helpful and wise comments; Paul Harding and Henry Arnold at the BRC, Monks Wood, for encouragement and data; the ever friendly and patient staff of SNH and in particular Mike Shrewry, Chris Sydes and Andy Douse for unstinting help and assistance; Fife Nature for permission to reproduce their material; L Clemons, T Huxley, B S Nau, and Peter Cranswick for providing maps; the many national organisers for their logos; the Scottish Biodiversity Group and Vicky Abernethy for keeping us up-to-date regarding LBAPs; to the UK Biodiversity Secretariat for lists and tables of species and habitats; the NBN Secretariat for providing diagrams; Sue Wallis, ITE, to keep us right about the Countryside Survey, etc., and to *BRISC's* committee members for their comments on the many drafts. Lastly, we are greatly indebted to Scottish Natural Heritage for generous financial support, making this publication possible.

Anne-Marie Smout
David Mellor
June 1999

Section 1

PURPOSE AND TECHNIQUES OF BIOLOGICAL RECORDING.

'Public awareness and appreciation of biodiversity appears to be growing significantly as a result of a wide variety of initiatives. Government policy is seeking to strengthen and extend good practice, fill gaps, improve what is ineffective and give the participating bodies a sense of belonging to a national and international movement with well defined aims and a common purpose'

*Biodiversity: the UK Action Plan*¹

Why record wildlife in the first place?

Biological recording has always been a pleasurable activity and a fundamental part of understanding how plants and animals fit into the environment. Over the last few decades it has become an essential component of nature conservation. It has been calculated that about 70% of all information on species and 20% of data about habitats in the UK are collected by amateur biological recorders, who do this recording in their own time and without pay².

Importance of recording

Biological recording has never been more important than today. More and more people are becoming concerned with the state of the natural environment which support us all and gives quality to our lives; international and national legislation increasingly requires Government to protect endangered or threatened species and habitats. Detailed and reliable information is required by national agencies and local authorities to carry out their statutory functions, by planners and developers, by researchers, by the educational establishment and the general public.

Biodiversity

In signing the Convention of Biological Diversity (or 'Biodiversity') at Rio de Janeiro in 1992, our Government committed the UK to '**rehabilitate and restore ecosystems and promote the recovery of threatened species ... through the development and implementation of plans or other management strategies**' (Article 8(f)). The Convention reflects the general concern that human activities are destroying habitats, natural ecosystems and landscapes world-wide on an unprecedented scale, and that this destruction is accelerating at an alarming rate. Action is needed to reverse this trend before it is too late. The term 'Biodiversity' has become part of our common language since then.

The UK Action Plan³

By signing the above Convention, the UK also agreed to draw up national plans and programmes and to share resources to help implement them. The first UK Biodiversity Action Plan was published in 1994, with the overall goal 'To conserve and enhance biological diversity within the UK, to contribute to conservation of global biodiversity through all appropriate mechanisms'. Among the underlying principles were listed: 'Where biological resources are used, such use should be sustainable (clause 1) and 'Conservation practice and policy should be based on a sound knowledge base' (clause 4). In our context, these two clauses are particularly important because, for the first time, biological recording and monitoring were given a critical role, not just by those of us who do it, but by politicians. Fifty-nine steps were outlined to secure biodiversity in the UK, including the setting up of a steering group to write a national action plan.

Biodiversity: the UK Steering Group Report⁴

It is not the intention here to give the full history of events since the publication of the first UK Action Plan in 1994. A bibliography relating to the subject and biological recording in general can be found in Appendix E, for those who would like to know more. It suffices here to say that a UK Steering Group was soon set up, chaired by the then Department of the Environment, with representatives from the Scottish Office, national conservation agencies, national natural history collections, local government, universities, industry, farming, voluntary conservation organisations and others, and their epoch-making report was published by the end of 1995. The report, with all its appendices, was soon to become the bible for

¹ Anon. (1994), *Biodiversity, the UK Action Plan: Summary Report*, HMSO

² Williams, James, *Biological Recording*, Information and Advisory Note No 90, SNH

³ Anon. (1994), *Biodiversity, the UK Action Plan: Summary Report*, HMSO -

⁴ Anon. (1995), *Biodiversity, the UK Steering Group's Report*, Vol 1: Meeting the Rio Challenge; Vol 2 Action Plans, London, HMSO

conservationists around the country, recommending practical ways of conserving our biodiversity, examining systems and standards for collecting and collating data, and who should take the lead for particular actions. Importantly, lists of UK priority species and habitats were drawn up, expressing international and national conservation concerns, and with individual action plans and targets set for key species and habitats, largely based on information which volunteers and others had been collecting for years. Appendix A lists Scottish priority species, animals and plants, as well as the species for which action plans have been drawn up. Appendix B lists priority habitats and those for which action plans have been drawn up. As more information becomes available, especially on the less popular species, these lists are being updated for Scotland by Scottish Natural Heritage. There are still many gaps in our knowledge, and more studies are urgently needed.

How to become involved in recording

Collecting information about a group of species or certain kinds of habitats is, for many people, a natural extension of a general interest in wildlife. To help identify species correctly, a relevant guide is essential, and joining a society brings contact with other interested people. Study courses are also run by various schemes and societies, and at field centres, such as Kindrogan in Perthshire. On the whole, wildlife recording is a cheap hobby, where the greatest expenses are books and going places rather than costly equipment, although microscopes, hand lenses, binoculars, nets or other specialist tools will be a necessity for certain groups.

Starting point

Many people get started through one of the more popular groups, such as birds or butterflies, but it is worth branching out to get a wider knowledge of wildlife by attempting some less popular groups, although of course no one can become an expert in every field. The growth of good and accessible identification guides and keys for most groups is a tremendous help to beginners as well as to the more advanced, and visiting a museum with a good reference collection is another very worth-while exercise.

Practice

Time and experience is needed to develop skills, but there is no reason why every step of the process should not be enjoyed. It is important to realise that many individual specimens will not always be identifiable, even with the aid of a good reference book, and one should not be put off by this but rather concentrate on getting the feel for the species. With practice, it will be discovered that what initially looked the same may in fact be quite different, and points overlooked will be the key to success. Practice may not always make perfect but it certainly helps. Section 4 lists the various national schemes and the activities they organise, and the addresses of national societies can be found in Appendix C. To become involved locally, consult Section 3 for the Scottish Local Records Centres (LRCs) and their activities.

The BRC standard recording card is a structured form with the following sections:

- ORDER:** A grid for recording taxonomic order.
- DENUS & SPECIES:** A grid for recording the genus and species.
- SUB-SPECIES:** A grid for recording sub-species.
- COMPILER:** A grid for recording the compiler's name.
- SOURCE (Collection/Reference):** A grid for recording the source of the specimen.
- Grid Reference:** A grid for recording the grid reference.
- V.-C.:** A grid for recording the V.C. (Voting Ward).
- Collector/Recorder:** A grid for recording the collector or recorder's name.
- Determiner:** A grid for recording the determiner's name.
- Locality:** A grid for recording the locality.
- Notes (Habitat, etc.):** A grid for recording notes.
- Date:** A grid for recording the date.

At the bottom, it reads: "Biological Records Centre - September 1988 - BRP 10"

Figure 1 BRC standard recording card

The BTO recording card is a structured form with the following sections:

- Date:** A grid for recording the date.
- Number, Age & Sex:** A grid for recording the number, age, and sex.
- Locality:** A grid for recording the locality.
- Notes & Comments (Grid Ref, Direction, etc.):** A grid for recording notes and comments.

At the bottom, it reads: "Please send your completed card to your local recorder and put to the BTO"

BTO recording card

Note books and cards

Keeping a notebook has long been the traditional way of collecting records. Some centres offer proformas for use in the field or for transcribing the records before sending them in. Information should not be confined to those notebooks for long! Some recording schemes have developed special recording cards to ensure that all the required information is collected at the time, and the national Biological

Records Centre (BRC) at Monks Wood distributes a series of these, developed in co-operation with the relevant recording scheme. Organisations such as the Botanical Society for the British Isles (BSBI) or British Trust for Ornithology (BTO) use their own cards. Figure 1 above shows the standard BRC and BTO cards. A computer-readable form has been devised by BTO for their Garden BirdWatch. Most schemes prefer to have data submitted on their own special cards or forms.

Computerisation.

The development of the Personal Computer (PC) has meant that records can now conveniently be stored electronically. Some schemes are prepared to have data submitted electronically, and LRCs aspire to store all their data in electronic format in order that complicated data analysis can be carried out in a relatively short space of time, to meet deadlines for response to planning applications, and to achieve optimum access and flow of data. A number of special software packages have been developed to cope with biological recording and data storage. Some of these are described below.

The Recorder software

This is probably the most influential and widely used specialist software. It first appeared towards the end of 1980s and became the recommended software for biological recording during the 1990s. The package, developed by Dr. Stuart Ball, now of the Joint Nature Conservation Committee (JNCC), has been designed to overcome the divergence between site and species recording. Importantly, it has greatly encouraged LRCs and individual naturalists to collect records to a high uniform standard, only allowing a record to be accepted if it has all the essential details (What, Where, When and Who), but also suggesting a number of other useful items of information that could or should be recorded. This topic is dealt with more fully under Section 2.

The 'What' has been rationalised through the provision of a species dictionary and only records of species already in the dictionary can be entered. This eliminates typing errors and helps with name changes. Further species can be added by request. The 'Where' is preferably a grid reference, but can be a site, a location, an administrative county, region, district, parish, or a Watsonian Vice-county. A mapping program allows records of one or several species to be viewed as marks on a map in various formats, easily achieved by a couple of key-strokes, thus giving recorders the opportunity to see their efforts displayed in a visual format, and also, importantly, to spot errors.

Recorder has gone through a series of versions (latest release 3.3), and BRISC has organised courses for *Recorder* users at all levels in the past few years. However, the database platform, Advanced Revelation, is now outdated, and a new software, nicknamed *Recorder 2000*, is being developed in an entirely new format by JNCC as part of the National Biodiversity Network (see Section 2) to be released end of 1999 or early 2000. It will include an expanded species dictionary of ca 37,000 species, map based data input, and a modular structure to allow for people to develop add-in modules. JNCC's Marine Team is currently working on the first add-in module for marine specific recording.

Other databases

Some recording schemes have felt that *Recorder* is too much of a sledgehammer to crack a nut, and have consequently developed software for their own specific needs: 'Recordit' was developed by the Conchological Society, Butterfly Conservation has developed 'Levana' for their Butterflies for the New Millennium Atlas and 'Biobase' is used by the Mammal Society, to mention just a few. Special linking software packages have been developed between some of these databases and *Recorder 3.3*, (see Appendix C for how to obtain these).

DMap

This is purely a mapping program, extremely popular because it is easy to use and versatile, and is generally preferred to Plot5 which comes with *Recorder 3.3*. It is widely used in published atlases, by LRCs, and has been used for most distribution maps reproduced in this guide. The software is marketed privately at a very modest price. Address and details in Appendix C.

Geographical Information Systems

GIS is another epoch-making software for biological recording, and it is hoped that within a year or two, there will be general access through LRCs to maps on GIS systems. Developed originally for mainframes, cut-down versions are now available for PCs. ArcInfo (used by Scottish Natural Heritage and Scottish Environment Protection Agency), and MapInfo are probably the most popular. These systems are designed to query and analyse data visually on maps and can utilise a series of custom-built overlays. The new 'Recorder 2000' will itself allow data-input on maps and will also provide a link to GIS. Although still fairly expensive, more and more LRCs are acquiring GIS to ease the way in which spatial data can be presented e.g. to the planning system visually, and for sophisticated data analysis in a visual form. BRISC organised a workshop on GIS in 1998, and with sufficient demand will organise further workshops in its use, and some BRISC members are able to offer advice and assistance.

Ordnance Survey maps

For years, biological recording has been carried out on the basis of the national grid of the Ordnance Survey. There are basically three series of maps that recorders use: the popular red Landranger series 1:50,000 (20mm = 1km) and the green Pathfinder series 1:25,000 (40mm = 1km) which is obviously much more detailed, but some are dated and many individual maps show features that have disappeared years ago. Both are available in most local book shops and tourist information centres. An even more detailed map is the 1:10,000, not generally for sale in shops. Individual farm maps are usually to this scale, but an awful lot of maps are required to cover a larger area if this resolution is used.

Ordnance Survey copyright

The OS operates a copyright system to safeguard their interests, and there has been some confusion about what is copyrighted. The national grid itself is not copyrighted, and there are no restrictions in using the national grid referencing system for general recording or mapping purposes, such as distribution maps in published atlases, as long as this does not involve producing actual copies of any OS maps. However, if anyone wants to copy parts or an entire OS map for recording purposes or for inclusion in publications, then a licensing system requires the person to write to the OS in advance, giving full details of the proposed purpose. Cost will depend on what maps will be copied, how many copies will be taken and for what purpose. Licences are usually turned around in about 10-14 days.

Geographical Positioning System

GPS is another modern technique which may be used to advantage in recording. The GPS works by reference to satellites and, although there is a built-in error, due to US military strategic reasons, the hand-held instruments currently available in shops are good enough for giving a grid reference up to 100m (6-figure) accuracy. They can not be operated where there is obstruction between the instrument and the satellites, such as under tree cover or indoors. Costs are reducing for the equipment and accuracy is sufficient for location plotting in most open ground situation, e.g. upland areas. It is excellent to have in the car to record sightings of butterflies or other wildlife to a 6-figure grid reference as one is driving through the countryside, without reference to a map. It can also be used for fixed point monitoring, by e.g. burying a metal plate at the chosen point and then being able to relocate that exact point in subsequent years, even if the surrounding countryside has totally changed, by using a combination of the GPS (to locate the general area) and a metal detector (to find the spot where the plate was buried). A higher accuracy may be achieved by using a hand-held GPS in conjunction with a fixed GPS system, such as that used by yachts based on lighthouses, but that costs a good deal more. It is interesting to note that many building contractors now use GPS to ensure accurate location.

The Internet

The Internet offers a lot of information to the biological recorder. Many societies and organisations have their own website with information on species and recording. Some, such as dragonfly enthusiasts, have created a world-wide network, covering every aspect of their group, including identification keys, actual photographs of individual species and sexes, information on interesting records, such as the migrant Green Darner dragonflies that made it all the way to England from the US in 1998. Where a national recording scheme has a website, the address is listed under the scheme in Section 4, or for the adventurous, just try searching the Net using appropriate key words. Visit e.g. the IUCN (International Union of Nature Conservation) at <http://www.iucn.org> or go direct to the database maintained (in Cambridge) by WCMC (World Conservation Monitoring Committee) which holds data on all species of conservation concern world-wide at <http://www.wcmc.org.uk>

Searches can be made by country, groups or individuals species and by various conservation categories.

Habitat recording

So far, we have been discussing the recording of species, but habitat recording is equally important. Knowledge of what we have, where and how much, is essential for conservation purposes. Only in the last few decades have proper classification schemes been devised, necessary for people to know when they are talking about the same habitat. The most widely used schemes are discussed below. Section 3 on Local Records Centres details for each centre which habitats surveys have been carried out.

How to get involved

Field surveying or habitat recording is interesting but skills and expertise are required to carry out a reliable habitat survey of any kind. A branch of the Scottish Wildlife Trust runs Higher National Diploma (HND) and Higher National Certificate (HNC) courses for habitat management and surveying. For contact addresses see Appendix C.

Phase 1 habitat survey (NCC)⁵

This is by far the most widely used and easy to carry out scheme. It was introduced in 1990 by the Nature Conservancy Council (NCC), predecessor to the four country agencies. The scheme describes in broad details different classes of habitats and categories within them, listing helpful identification signs such as dominant plant species. A symbol and a particular colour has been allocated to each category. When an area is visited, the noted habitats are marked on to 1:10,000 maps in the field, as are 'target notes', which denote special features. These details are later transferred to a master copy. These habitat maps can also be translated into electronic format, using GIS. Although Phase 1 surveys have come in for criticism, largely due to lack of consistency between different surveyors, or because important habitats have been overlooked, the scheme allows for habitat assessments of large areas and is still the most widely used, field-based, habitat survey. Phase 1 was originally meant to indicate the most interesting sites, to be followed by a more detailed phase 2 survey. All the codes for the scheme are included in the *Recorder 3.3* software under 'habitats' (NCC), offering the opportunity to attach habitat codes to any record.

National Vegetation Classification⁶

NVC is a much more detailed habitat survey scheme, devised by J S Rodwell of Lancaster University, to assist managers in attaining a better understanding of natural processes and habitat changes. So far, five volumes of this mighty work have been published by Cambridge University Press. A lot of experience and serious botanical knowledge is essential for this type of survey. When the first volumes appeared in hardback, they were very expensive, presumably because the publishers did not feel there would be a great market for these weighty tomes, and only larger LRCs, societies and organisations could afford to buy them. However, the first four volumes are now out in paperback, at a very reasonable price. The series is essential for any detailed habitat survey, and consultants are usually required to survey to NVC standards. The classification system can be used with *Recorder* which lists all its codes.

CORINE⁷, Peterken, Shinwell and UK Biodiversity habitat classification systems.

There are several other habitat classification systems in existence. CORINE, developed by the European Community, has become very popular in Europe. It has good urban categories, something that is lacking in both the Phase 1 and NVC schemes. In Britain, the Butterfly Conservation use CORINE on their survey forms for the New Millennium Atlas. Originally developed as a catalogue for habitats, the classes are not always exclusive, and the Institute of Terrestrial Ecology (ITE) at Monks Wood is currently developing a new system called EUNIS under contract from the EU Environment Topic Centre for Nature Conservation, due for publication in second half of 1999. Other systems are Peterken, developed particularly for woodland stand types, and Shinwell, for urban habitats. The codes for all three schemes are included with *Recorder 3.3*. The UK Steering Group devised yet another system of broad 'Biodiversity habitat categories' for their habitat action plans, but included a 'converter' table to NVC in the Annex (volume 2) of their report. This is currently under review by the JNCC.

Aerial photography

Three near complete series exist for Scotland: ca. 1947, ca. 1973 and ca.1988. (The series took more than one year to complete). These are black/white except for selected areas of the 1988 series. For comparing

⁵ Anon. (1990), *Handbook for Phase 1 Habitat Survey: a technique for environmental audit*, JNCC

⁶ Rodwell, J S (ed) (1991-) *British Plant Communities*, Vols 1-5 (published so far), CUP

⁷ Anon. (1994), *CORINE Land cover Technical Guide*, Luxembourg, European Community

the countryside today with that of the past the series are invaluable tools and form the basis for the recent important SNH publication *Land Cover Change: Scotland from the 1940s to the 1980s*⁸. The Royal Commission on the Ancient and Historic Monuments of Scotland (RCAHMS), Edinburgh, is the custodian of all air photography in Scotland. Some local authorities have also commissioned aerial (colour) photography for parts or all of their area, and with the arrival of digital photography it is possible to put the entire series on computer, sized to a specified scale, so that OS maps can be matched and overlaid with the aerial photographs.

Land Cover of Scotland digital datasets

Digital maps at 1:25,000 showing the land cover of Scotland are produced by the Macaulay Land Use Research Institute, Aberdeen, based on the aerial photograph series of 1988 discussed above. The series comprises 126 separate land cover classes. This spatial dataset can be leased either in digital form or as plotted maps displayed in colour on opaque paper, translucent paper or clear plastic film. Maps are also available at 1:50,000 and 1:250,000. A summary report, covering the aims and production of the survey, land cover classification, etc. is also available from MLURI.⁹

The Land Cover Map of Great Britain (1990/2000)

This is a digital dataset using satellite derived imagery to produce a 25m resolution dataset, registered to the National Grid and showing 25 different classes of land cover. Information from the MLURI 1988 survey has been incorporated, but at less detail than in the digital maps described above. Any area of the country can be supplied under licence from ITE, Monks Wood, Abbots Ripton, Huntingdon, Cambridge. The dataset is being re-run, with additional functionality for the year 2000. For further information consult the website at <http://www.nmw.ac.uk/ite/lcm.html> and an article by Fuller, Groom & Jones (1994) on the land cover map of Great Britain and Landsat.¹⁰

Countryside Survey (CS)

Also available from ITE is the Countryside Survey. This was first recorded in 1978, using a sample of 1km squares representing all 32 of the ITE land class types found in the country. CS was re-run in 1984 and 1990, and is being resurveyed for year 2000. The CS1990 (based on a total of 508 1km UK squares) collected the most extensive range of information in the field and provided scientifically reliable regional and national estimates of land cover, land use, linear features, vegetation, freshwater faunas and soils in a wide range of habitats. A 1km resolution version of the Land Cover Map of Great Britain (see above) is used in conjunction with the field survey data to perform analyses of change in the British countryside. For more information see the website <http://www.cs2000.org.uk>

Countryside Information System (CIS)

Also available from ITE is CIS, a Microsoft Windows-based package, originally produced to present the results from CS1990 (see above). The system is currently being updated and will incorporate the results from CS2000 when they are available. For more information see the website <http://www.cis-web.org.uk>

Remote sensing by satellite

It is now possible to census land cover from satellites, and the technique is constantly improving, so that at present it is quite possible to survey individual fields and if e.g. they have been applied with nitrate. This has immense implications for future monitoring. Because particular types of land cover can be identified from satellite images in otherwise remote and inaccessible areas, it can also direct any subsequent investigation on the ground. The technique has been used e.g. by the RSPB in the Flow Country, Caithness, where additional wetland habitats, known to be favoured by breeding dunlin, were located from satellite images and, when subsequently searched on the ground, these areas yielded up a number of breeding dunlin which would otherwise have been missed. CS discussed above uses remote sensing, and it is also used in a current project for characterising peat bogs

⁸ Mackey, E C, Shrewry, M C & Tudor, G J (1998), *Land Cover Change: Scotland from the 1940s to the 1980s*, Edinburgh, The Stationary Office.

⁹ Anon. (1993), *The Land Cover of Scotland 1988: Executive Summary*, Aberdeen, Macaulay Land Use Research Institute

¹⁰ Fuller, R M, Groom, G G & Jones, A R (1994), 'The Land Cover Map of Great Britain: an automated classification of Landsat Thematic Mapper Data', *Photogrammetric Engineering & Remote Sensing* 60: 553-562

Use of data

Much has already been said about use of data, but it might be worth while to summarise how data collections can be used in a variety of ways. This should by no means be taken as comprehensive. Readers will probably want to add to the list, and in time more will undoubtedly be added.

Who needs data?

- Anyone who is involved with or has an interest in conservation**

In the public sector:

- The Government** to inform policy, and to comply with international requirements
- National agencies**, such as Scottish Natural Heritage, Scottish Environment Protection Agency, the Forestry Commission, to carry out their statutory duties, such as advice on national and international legislation and directives
- Local Authorities** to inform policy and to carry out their statutory functions, especially planning, where they will need environmental impact assessments, environmental audits and nature conservation strategies. For Local Biodiversity Action Plans and State of the Environment Reports. For community councils and the general public, for educational purposes, and to manage and monitor specific areas such as Local Nature Reserves or coastal areas
- Museums and Botanic Gardens** need data for their various projects
- Universities**, for research purposes
- Local Records Centres** to fulfil their role as the local focus for biological recording
- Professional consultants** to allow them to carry out their business

In the voluntary sector:

- Non-governmental organisations** (NGOs), such as Scottish Wildlife Trust, the John Muir Trust, the British Trust for Ornithology, to mention just a few, require data for surveys and projects
- National societies** such as the Botanical Society for the British Isles, Butterfly Conservation, the British Plant Gall Society, etc., for distribution atlases, to analyse trends, for monitoring change
- Local natural history societies, interest groups and individuals**, for personal interests, for monitoring local distribution and status, etc.

What kind of things are data needed for?

- Environmental audits** because it is necessary to know what we have before we can conserve it.
- Inform the planning process**, so that locally significant habitats and species are protected
- UK BAP and Local BAPS** for species action plans and habitat action plans, to monitor the success of any plan, and to review action plans as more data becomes available
- Monitoring**, which requires comparable sets of data over a period of time and is essential for establishing whether things are getting better or worse, or staying the same. Insufficient monitoring means that species may be in serious decline before anyone has noticed, when it may be too late to do anything about it.
- Identification of important sites:** Special sites, from international importance through National Nature Reserves and Sites of Special Scientific Interests to Local Nature Reserves and Listed wildlife sites, have all been identified by a process based on data collection, analysis and comparison. International legislation and directives, such as the Ramsar Convention (on wetlands of international importance) in 1971, the EC Birds Directive (Bern 1979), and the Wildlife and Countryside Act 1981 (for the UK) are all ultimately data dependent and need to be backed up by reliable data.
- Site management** for protecting and enhancing the site's interest
- General public information and awareness raising** for essential support for future conservation
- Educational purposes**, to ensure that future generations are well informed and engaged
- Research** leading to a better understand of species and their requirements in order to influence measures for their future protection.

A deeper overall understanding of our natural environment so that more informed decisions can be taken.

Section 2

STANDARDS AND PRINCIPLES IN DATA RECORDING, MANAGEMENT AND EXCHANGE

"We are fortunate in the UK that relatively large amounts of data are collected on biodiversity. But much of this is not readily available in a form that assists decisions on the management of species populations or the direction of land-use change. We need to improve the collection, organisation and co-ordination of biological information and data ...".

Biodiversity: the UK Steering Group Report ¹

A need for standards

Everyone of us concerned about biodiversity has a strong obligation to tie the collection of data to the needs of the users. We need to assist in the efficient organisation of data so that all pertinent information can be produced effectively at the right time and the right place. We need to build co-operation and co-ordination to ensure ease of access and unobstructed flow of data between data holders. Sound principles and high standards are important. Because the vast majority of people who record the natural environment do so as unpaid volunteers in their spare time, standards are also critical, in order that that everyone can be enabled to make a valuable contribution and no efforts are wasted.

Data collection, basic principles and standards

The principle 'Collect once, use many times', makes sense, because in this way the value of any record can be greatly multiplied: data collected locally can build into a national overview, which in turn becomes of value in providing a national context to local efforts ². One of the great frustrations for conservationists today is that records in the past have not always been collected to appropriate formats, thus making historical information much less useful than it might have been. Insufficient detail prevents reliable comparison with the past, such as proof of declines in populations or deterioration of habitats. Hunches are difficult to prove and do not stand up well in a public inquiry. Therefore, even the most casual record needs to conform to a basic standard if individual naturalists are to contribute to the common good, rather than just to satisfy their own interest or curiosity.

1. A BASIC STANDARD FOR EVERY RECORD

For various reasons it is impossible to forecast all the details which future users might require from data, but some basic information will always be essential for any record to be of value. A record therefore, however casual, must contain at least four pieces of information: what; where; when; and who. The recording cards produced by the various recording schemes and the national Biological Records Centre (BRC) at Monks Wood make these four questions their minimum details for a valid record. The *Recorder* software was from the start designed to allow only records with answers to each of these four questions to be 'saved' in the database, and the wide use of this package has greatly helped to establish this basic principle throughout the recording community. A brief discussion of each of the four requirements is given here:

The 'What'

For the recorder, the first step in making a record is obviously to identify the species one wants to record. Because it is essential that the identification can be trusted, this requires some knowledge of the group in question. A database containing spurious records casts doubt on the reliability of the whole collection. If a species is not immediately recognisable, it should either not be recorded or help should be sought from reputable identification keys, field guides, or from someone who has greater knowledge of the group, to ensure sound identification. It should also be kept in mind that for many larger group, especially of invertebrates and lower plants, the popular field guides will not cover all species and identification can therefore only reliably be made to group or 'genus' level. For the beginner it is always safest to go for the commoner species and to build up expertise by joining a society, attending field meetings and learning from experts.

¹ Anon, (1995), *Biodiversity, the UK Steering Group Report*, Vol 1 section 3.1

² Williams, James, 'Biological recording', *Information and Advisory Note* No 90, SNH

General vetting procedures. Where a database consists of records submitted by a number of observers with varying degrees of expertise, it is essential that there is a standard system of verification. National recording schemes all have their own vetting procedures through a recognised national recorder/organiser. Depending on the popularity of the group, there may also be a network of recognised regional recorders/experts who will sift and verify records before they are accepted in to the national database. Many groups have additional well-known or even registered local recorders, whose range of expertise is assured. Some schemes organise training procedures, such as the Mammal Society's 'Look out for Mammals' courses, leading to certificates in competence. Details of national schemes and regional networks can be found in Section 4. Local Records Centres, which co-ordinate recording locally, will have a group of local experts to sift through records and query any unusual ones. This has several benefits: the local expert is more aware of what is locally unusual than the national expert who may be based in a different part of the country, and the local expert can also more easily check out records by visiting the sites in question.

Voucher specimens. There will always be cases, where the observer cannot be sure of an identification, and then it is useful if one can turn to an expert. Depending on the group, a 'voucher' specimen should be collected to 'vouch' for the observation. This is obviously less possible with a bird or a mammal than with plants or insects, although not so long ago, even ornithologists did not accept records of unusual sightings unless the object could be produced in the hand, usually shot dead. Hence the saying: 'What's hit is history, what's missed is mystery'. Of course, collecting voucher specimens became a hobby in itself. Some collectors e.g. of butterflies and birds' eggs, did amass incredible numbers of specimens, filling many cabinets, and possibly endangering the species in the process. Today, such collections are rightly discouraged and may even be illegal (for details of the law, see Taylor (1998)³), and 'collecting' with the aid of the camera is encouraged instead. However, for invertebrates and plants, depending on how difficult identification may be, most national recording schemes will still only accept unusual records if they are supported by voucher specimens. Difficult species can then be sent to experts for their opinion. Voucher specimens must subsequently be lodged with a museum, who can look after them properly so that, if the record at some future date comes under scrutiny, the specimen will still be there to substantiate it. Voucher specimens are also useful in cases where a species is split later. For most invertebrate or botanical groups, collection of voucher specimens will do no harm to the population, as long as it is kept within reasonable limits.

Rarities committees. To overcome the problem of verification without voucher specimens some groups, notably birds, have formed special committees of very experienced observers who receive and examine all unusual records before they can be officially accepted. As more and more people become involved in collecting records, each at a different stage of expertise, the need for verification of casual records becomes more acute. There are now several tiers of rarities committees in Scotland for birds, one at the Scottish level which requires to see all records of certain rare and difficult species, and one at the national level for ever rarer species. A third tier exists in many areas where the local group has established their own rarities committee to vet records locally of uncommon and difficult species. Detailed written descriptions, preferably with photographs, have taken the place of voucher specimens.

The 'Where'

The underlying principle for giving a location for a record should be to allow the species or site to be relocated at a future date. In older literature, a place name was often the only location given, but when it comes to relocating the place on a map, it may well turn out that the precise extent and location of a record is ambiguous or even that there are several places with the same name, thus severely reducing the record's value. Accuracy of location is now essential for conservation purposes, and making reference to the national grid is the preferred method.

Standard Recording units. It was only in the early 1960s that the idea of using the national grid for mapping wildlife was adopted. The method was simply to produce a mark for each 10km square, representing the presence of a species in that square, and this is still that used by most national recording schemes today. Some schemes, usual local ones, have gone beyond this unit and are

³ Taylor, M B (1998), *Wildlife Crime: A Guide to Wildlife Law Enforcement in the UK*. London: The Stationary Office

recording to 5km squares (quadrats), 2km squares (tetrads), 1km squares, or even 100m accuracy (see also Appendix G on how to give a grid reference). It all depends on the number of active recorders versus the area to be covered. Although recording in the larger units may suffice for a simple distribution map, it is not particularly useful for other purposes.

The importance of precise grid referencing . Today, it is highly recommended that the location for all records, and in particular for the scarcer species, should be as precise as possible, ideally with a 6-figure grid reference (accuracy to 100m) or better, and at the very least to 1km square accuracy. Anything vaguer has much less value for conservation purposes. It will always be easy to turn a 6-figure reference into a 10km square one, but never the other way round. If e.g. a road or a housing development is being planned, it may not help the conservationist or planner to know that some rare species is within the 10km square. Nor does it cut much ground at a public inquiry, and many important sites have been lost and scarce species destroyed due to ignorance of where they were. Being able to point to the exact location of a notable species may or may not change a route or stop a development, but at least the decision has to be made in the full knowledge of what will be destroyed if it goes ahead.

Grouping records by location. The *Recorder* software offers the facility to add to each record the name of the site, parish, vice county, modern county, or region where it was found, so that it is possible to report on all species recorded within a given geographical unit. This is particularly useful for Local Biodiversity Action Plans, local records centres and local authorities, and many recorders for national schemes group their records by the old Watsonian vice counties (see Appendix G), because these boundaries are more permanent than modern political boundaries.

The 'When'

A full date (day, month and year) should be given. Some people even note the hour and minute for the observation. This may be useful, e.g. with a flock of migrant birds or a school of dolphins to plot their movements. It is generally as easy to note down the full date as something vaguer, such as the month or season. Dates are also useful for creating histograms, e.g. of dates when a species emerges or periods when it is most abundant, based on past records. This type of analysis is also called phenology.

The 'Who'

Full name and how to get back in touch with the observer, such as address and telephone number must appear against any valid record. It enables queries to be made or settled when otherwise a record might be wrongly accepted or rejected. It is also useful to note if the record has been verified by an expert. In *Recorder* there is a field where the name of the determiner can be entered if this is different from the original observer.

Other details

There are many other details which can be included with a species record, such as abundance, habitat, elevation, stage of development, how encountered such as trapped, swept (with a net), 'pooted' (sucked up with a tube or 'pooter'), etc., etc. The *Recorder* software offers a whole range of options. Some national schemes make particular extra details a requirement and these will be listed on their recording cards. In general, the more detail the better, though the down side to this is that it will take much more time to process each record. Details on the scope and use of further details can be found in *BRISC's 'Guidelines on Standards and Good Practice for Biological Recording and Recorder Users'*⁴.

2. CO-ORDINATION AND PUTTING RECORDS TO WORK

All wildlife recording is made for a purpose, for personal interest and/or to contribute to some scheme or survey. Most recorders wish their efforts to be useful and available for the general good of conservation, and collecting data in a systematic and structured way makes this possible. There is of course already a long history of naturalists sharing data. Victorian and earlier naturalists exchanged

⁴ Biological Recording in Scotland (1998), 'Guidelines on Standards and good Practice for Biological Recording and *Recorder* Users', *Scottish Natural Heritage Research, Survey and Monitoring Report* No 107, SNH.

data freely for the greater good, perhaps not so much for the sake of conservation but because they were interested in finding out how widely distributed and common a group or individual species were. Not surprisingly, it was mostly done less systematically than one could have wished. Not till the second half of this century did naturalists get around to pooling all their expertise and resources and to documenting their findings methodically.

Distribution atlases

The first scheme to co-ordinate species recording on a national scale and ask individual naturalists to share their data for the greater good was the Botanical Society of the British Isles (BSBI) when they had the brilliant idea of mapping all vascular plants by the 10km square of the national grid, and to publish the findings in the *Atlas of the British Flora* (1962)⁵. Every 10km square in the British Isles was to be visited, an ambitious project when the workforce consisted entirely of volunteers doing the recording in their spare time. Recording forms were drawn up, which could be taken into the field and when species were encountered they could be scored off there and then. Historical information was also tapped and a different symbol was used for older records. This way of presenting huge and complex information in a simple and visual way also served to galvanise all botanists to go out and try to 'fill in' squares which were shown on the map as empty, especially if the particular species was otherwise found nearby. Since then, collecting and sharing data to produce distribution maps has become the first aim for national recording schemes, and their task has been greatly aided by technological advances. Astonishingly, the botanical atlas was produced without the aid of a computer; today, less than 40 years later, many individual recorders have their own powerful computers, process their data electronically, and are able to send and receive vast amounts of data electronically from anywhere in the world.

The national database at BRC

The Biological Records Centre (BRC) at Monks Wood near Huntingdon, was established in 1964 by the Nature Conservancy, initially in association with the botanical atlas project, and subsequently to maintain a national database of other species and to produce distribution atlases for these in co-operation with the national recording schemes. In due course it became part of the Institute of Terrestrial Ecology with support and part funding from the statutory conservation agencies. Dozens of distribution atlases have been published by BRC since then, and the most up-to-date ones are listed under the relevant schemes in Section 4. Today the BRC 'Oracle' database holds some 9,000,000 records of more than 10,000 species. The BRC will be a key player in building co-operation and data exchange between the local and the national data custodians within the National Biodiversity Network (see below). The acceleration of data gathering and data needs for the conservation and enhancement of biodiversity has initiated a change in the BRC's remit. As part of a six year development plan, BRC is working with national societies and recording schemes to help them to develop their own capabilities in the context of the whole of NBN, primarily as providers of field data and custodians of expertise. As part of the development of BRC, its important data holdings will become more accessible to a range of users.

Some limitations of distribution atlases

Distribution atlases represent a great stride in the quest for knowledge of our wildlife, but they also have their limitations. Most atlases are based on the effort of many recorders and many years' recording, which may lead to a distorted picture and this has to be kept in mind when looking at the published maps. E.g. there is no guarantee that populations recorded several years ago are still flourishing, although it may look so from the map. Also, things are easily missed, and unless recording has been carried out very thoroughly and systematically, maps are likely to show efforts and presence of recorders as much as presence or absence of individual species. A simple distribution map cannot tell us anything about abundance either: one dot does not reveal if it represents 1 or 1000 records or specimens. For many species, however, that is all which can realistically be achieved, because competent recorders are too thin on the ground for anything else. At least, this kind of coverage can aim to be on a national scale, thus providing a much needed indication of how widespread a species may be. Taken together with historical accounts, it may also provide an indication of long-term increase or decline.

⁵ Perring & Walters (1962), *Botanical Atlas of the British Flora*, BSBI

A step further: abundance with presence

An innovative method of recording was used for *The New Atlas of Breeding Birds in Britain and Ireland 1988-1991*.⁶ Here population density was worked out for each species, through a combination of point recording and counting the number of individuals observed, to show abundance by colour in addition to simple distribution. Although the published map unit was still the 10km square, the recording unit had become much smaller, being based on tetrads (2km squares), where at least 8 out of the 25 tetrads in a 10km square had to be visited for a specified period of 2 hours. Such a method requires a vast army of recorders. Nevertheless, it is something which could be attempted with less popular groups at a more local level. The benefit is that this method provides much more useful information for conservation action.

3. OBSERVATIONS THROUGH TIME

Article 7 of the Convention on Biological Diversity at Rio (1992) states that each contracting party shall, among other things undertake to

"monitor through sampling and other techniques the components of biological diversity paying particular attention to those requiring urgent conservation measures and those offering the greatest potential for sustainable use".⁷

Casual observation or even simple distribution atlases do not provide sufficient information for close monitoring of biodiversity. Two national breeding bird atlases have for instance been produced, with an interval of twenty years, and their value for comparing distribution is immense. However, national atlases cannot be produced at the drop of a hat, the organisation required is enormous, nor can the process bear repeating very frequently because the field workers, who are predominantly unpaid volunteers, would quickly lose their enthusiasm. It is also the case that twenty years may be too big a gap, and populations may simply have disappeared or declined too far in between for any rescue attempts to have a chance to work. Monitoring, which involves more intensive recording but on a much smaller scale, however, can fill the gap. Various systems of monitoring have been developed for this purpose. They involve repeated and systematic efforts on the part of the observer over a period of time, in order to establish whether things are getting better or worse on that site. When results are compared with other monitored sites, it is possible to establish regional and national trends. Both species and sites can be monitored, but the essential thing is that records are collected systematically in a specified way, so they are comparable over the entire period.

Some methods of monitoring

There are some well-known monitoring schemes which have been up and running for many years, such as the wildfowl counts organised by the Wildfowl and Wetlands Trust which started in 1947, or the British Trust for Ornithology's Common Bird Census which began in 1962. Most long series of data relate to birds, which is undoubtedly due to the army of birdwatchers who are prepared to spend their time collecting records and sending them in. Unfortunately, only a few other species or habitats have been monitored as thoroughly, such as the insect monitoring scheme organised by Rothamsted (see section 4). Although it can be a time-consuming business for the recorder, monitoring in this way offers the best chance of establishing trends, and it therefore an essential ingredient of any biodiversity action plan.

Sampling or census?

Unless species are very rare, very conspicuous, or very localised, complete counts can prove too difficult and expensive. This is particularly true when counting mobile species such as birds, or animals and plants that have a large range and inhabit remote sites where observation is difficult. It is often more practical to study a carefully selected sample of locations, to enable extrapolation from counts taken at these locations in order to provide an estimate of the population as a whole. Sampling locations may be plots of fixed shape and size, transects, or just points on the ground. For the inferences that one draws about the whole population to be valid, sampling must follow certain principles:

- Samples must be representative of the site being studied. Sampling locations are therefore usually selected randomly,

⁶ Gibbons, Reid & Chapman (1993), *The New Atlas of Breeding Birds in Britain and Ireland*, T & AD Poyser

⁷ Anon. (1995), *Biodiversity, the UK Steering Group Report*, Vol 1. p.27

- Multiple sampling locations are required. Known as replication, this enables the uncertainty in the population estimate to be assessed. This uncertainty is often expressed as a confidence interval for the estimate.

The sampling design will depend on the monitoring objectives. For example, monitoring is often concerned with detecting trends over time, as well as estimating the population at a given point in time. The use of fixed sampling locations is often most efficient for this purpose.

Choosing a method

Although a number of standard monitoring methods have been developed for selected species, when designing a new study it is advisable to identify an appropriate and efficient means of data collection. The chosen method will depend upon the ecology of the species concerned. As a guide, Scottish Natural Heritage are currently preparing a handbook in three volumes of monitoring methods, due for publication in the year 2000⁸

Indicator species

Ideally every species ought to be monitored, but with more than 50,000 species in Scotland alone, this quickly becomes impossible. The idea of developing a small selection of indicator species which in some reliable way can represent a whole host of other species, or the health of a type of habitat, is therefore very attractive, but fraught with difficulties. A project working on this is currently under way under the auspices of the UK Biodiversity Group.

4. PRINCIPLES AND STANDARDS IN DATA EXCHANGE

The need for data sharing is abundantly clear to everyone, the problem is - how? Standards and principles for data exchange are badly needed to ensure efficient and effective data flow between data holders. There are several aspects here that need to be sorted out: trust between those who exchange data (there has to be assurance of the scientific reliability of data), compatibility (so that recipients can make use of data from other sources without extra effort to rewrite systems), efficient procedures of data flow (so that a record only needs to be submitted once, whereafter it should automatically reach all others who will have made an expressed interest in this type of record), agreed standards of access to sensitive data (the bona fide researcher may need access to raw data, whereas the general public will be more interested in a summary of data, such as distribution maps), and of course the actual technical procedures involved in safely sending and receiving data electronically.

Some of the problems involved

A vast number of individuals and more than 2000 organisations in UK hold biological data that might be of interest to others. This indicates something of the scale of the problem of data exchange which has to be tackled. There are basically four tiers of data holders: individual amateur naturalists, Local Records Centres (LRCs) and other local organisations, national voluntary organisations, and national agencies and other public bodies. Individual observers may submit records to particular recording schemes, to their local records centre, to a national society or even direct to BRC, and in return they may wish to consult national or local datasets. Anyone who has been associated with an LRC will know that it is a substantial research project to discover who holds data which would be useful to the centre, and LRCs also need to be aware of the importance of supplying records to national schemes or direct to the BRC. Conversely, national recording schemes need to be aware that LRCs will hold records of interest to them, and also that LRCs and individuals may wish to consult their data holdings, while national agencies need information about everything from the local scene to the national picture in order to carry out their statutory functions of advising local and national government on conservation.

The need for principles and standards for data access and use

It is reasonable for any individual or organisation, who has freely contributed data to schemes or other databases, normally to expect subsequent full and free access to that data. It is clearly also to the overall benefit of nature conservation, both nationally and internationally, that relevant datasets are made accessible to everyone who needs them, so that decisions can be made on the basis of best available information and scarce resources not wasted through duplication of efforts in data collection. Modern technology and the ease with which data can be exchanged and made available electronically

⁸ Scottish Natural Heritage, (in prep.), *A Species and Habitats Monitoring Handbook*. Vols 1-3)

via the Internet, seems tailor-made for data sharing. However, as with so much of biological recording, what may seem simple in theory is in practice very complex. Stumbling blocks are legion, involving the data protection act, including data ownership, intellectual ownership and copyright (Appendix F lists the relevant legislation). Even if that is sorted out, there are other issues to do with confidentiality - who should have access to what? and at what level of detail? There is also the vexed question of charging for data. In the past, amateur naturalists have generally been extremely free with data they have collected, making it openly available to fellow enthusiasts and for conservation purposes. However, as more specific sets of environmental data are required for the planning process and environmental impact assessments, the economic value of data increases, and those who are charged with the task of providing the data may need to be recompensed for their efforts. It is therefore imperative that acceptable standards and principles are drawn up which the relevant partners can subscribe to if there is to be data-sharing and co-operation between data holders, and it will be one of the most important tasks for the proposed NBN to undertake.

T. NATIONAL BIODIVERSITY NETWORK (NBN)

The NBN is a partnership of local and national custodians of wildlife information with the objective to share the national data resource for the purpose of conservation by providing access to all within a framework of standards.⁹ It is being promoted by a consortium led by the Joint Nature Conservation Committee (on behalf of the four country nature conservation agencies), the National Federation for Biological Recording (on behalf of its own membership, the Association of Local Government Ecologists (ALGE), Biological Recording in Scotland (*BRISC*), and Biological Curators Group (BCG)), the Natural Environment Research Council (NERC), the Natural History Museum (NHM), the Royal Society for the Protection of Birds (RSPB) and the Wildlife Trusts. The NBN is promoting a number of initiatives to develop the standards and principles needed to sort out the problems discussed above, and thus to help a wide range of organisations and individuals collect, manage, access and use information about biodiversity in the UK and to link into European biodiversity initiatives. A diagram of the structure of the NBN is shown below in Figure 2.

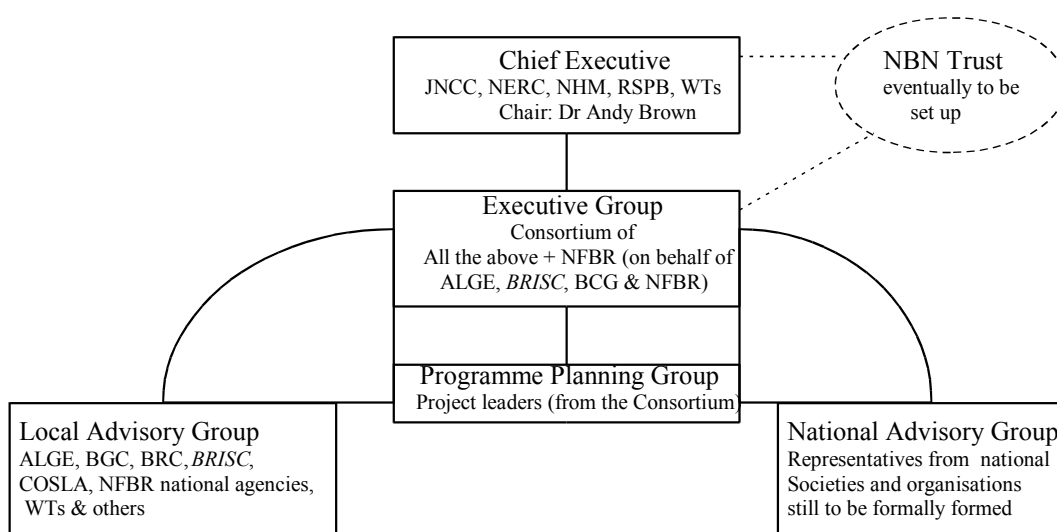


Fig 2. Structure of the NBN

It is not the intention here to give the full background to the NBN or its progress. It is still in the early stages of development and a lot of promotional work needs to be done to get everyone onboard. Various seminars and workshops have been arranged throughout the last couple of years to promote the principle of the network and to get feedback from potential partners. Categories of partners have been divided into two main groups: local and national. An advisory group consisting of representatives for each of these feed into the NBN's Executive Group. For those with access to the Internet, more information on the NBN and its project can be found by consulting its website at <http://www.nbn.org.uk>

⁹ Anon (1996), *National Biodiversity Network: building knowledge by sharing information*, brochure produced by the NBN Secretariat, c/o JNCC, Peterborough

The following 13 projects are currently (April 1999) listed on the NBN webpage <http://www.nbn.org.uk/project.htm>. They are grouped under four topic headings:

1. Co-ordinating development:

- Programme management (project leader Lawrence Way) To manage the relationships and overall performance of the 13 projects so that they can deliver examples of the NBN standards in working practice, and show the benefits of better access to information.
- Communication (project leader Lawrence Way) To promote the NBN and the contribution made by the participants in order to increase understanding of the benefits of the NBN and encourage its expansion to a wider community of organisations.
- Accreditation & membership (project leader Gordon McGlone) To develop standards of membership that are capable of being tailored to the different types of organisation within the partnership. Membership is open to public, voluntary and private organisations who collect or use biodiversity information as an important part of their activity.

2. Standards for contributing data:

- Developing data standards (project leader Stuart Ball) To demonstrate the range of standards required for recording schemes, and to show how these are purpose-related and can help increase the efficiency of information collection. To provide the building blocks for developing recording schemes which meet the standards, covering validation, exchange, cataloguing information sources, and dictionaries of standard names.
- Developing of collect/collate software (*Recorder 2000*) (project leader Stuart Ball) To support the adoption of data collection software that meets NBN standards by Local Record Centres and national schemes and societies. To encourage adoption of NBN exchange standards. To link national schemes and LRC information via Internet access and the NBN index and gateway [see under 4 below]
- Developing a framework of access terms (project leader Lawrence Way) To produce a simple framework of access terms and conditions which allow organisations and individuals to exchange information and provide access for public, education, naturalist, conservation, research and commercial users. The project will demonstrate how this can increase without increasing risk of damage to the environment or infringing copyright.
- Checklists and identification standards (project leader Peter Barnard) To provide definitive checklists of the 50,000 or so species of animals and plants in the UK (excluding single-celled organisms) together with a framework of standards for the construction and maintenance of checklists, and a model for improving and maintaining the standards of taxonomic identification.
- Sampling framework (project leader Paul Rose) This project links the information needs of the UK Biodiversity Action Plan (BAP) to the NBN. As an existing project under the UK BAP, working examples demonstrate how use and collection of information can evolve together to meet some priority BAP needs. This project will develop to identify requirements to meet other priorities.

3. Giving access to wildlife information across the UK

- Linking national societies and schemes (project leader Paul Harding) To develop, test and demonstrate models which will help national schemes and societies increase participation in recording and understanding of biodiversity; develop their recording schemes so that they can inform local and national decisions and provide access to their information and transfer skills.
- Linking Local Records Centres (project leader Sara Hawkswell) This project will develop, test and demonstrate a working model for LRCs in the UK. These LRCs will act as local data custodians within the NBN, meeting local users needs by bringing together national and local sources of data and providing the key local link in the network. Once standard practices are developed the project will focus on advising and supporting local organisations that wish to participate in the NBN.
- Linking national custodians (project leader Ian Fisher) To develop, test and demonstrate models through which national biodiversity organisations can provide access to their information, especially where this is needed to support local use or to meet educational needs. The

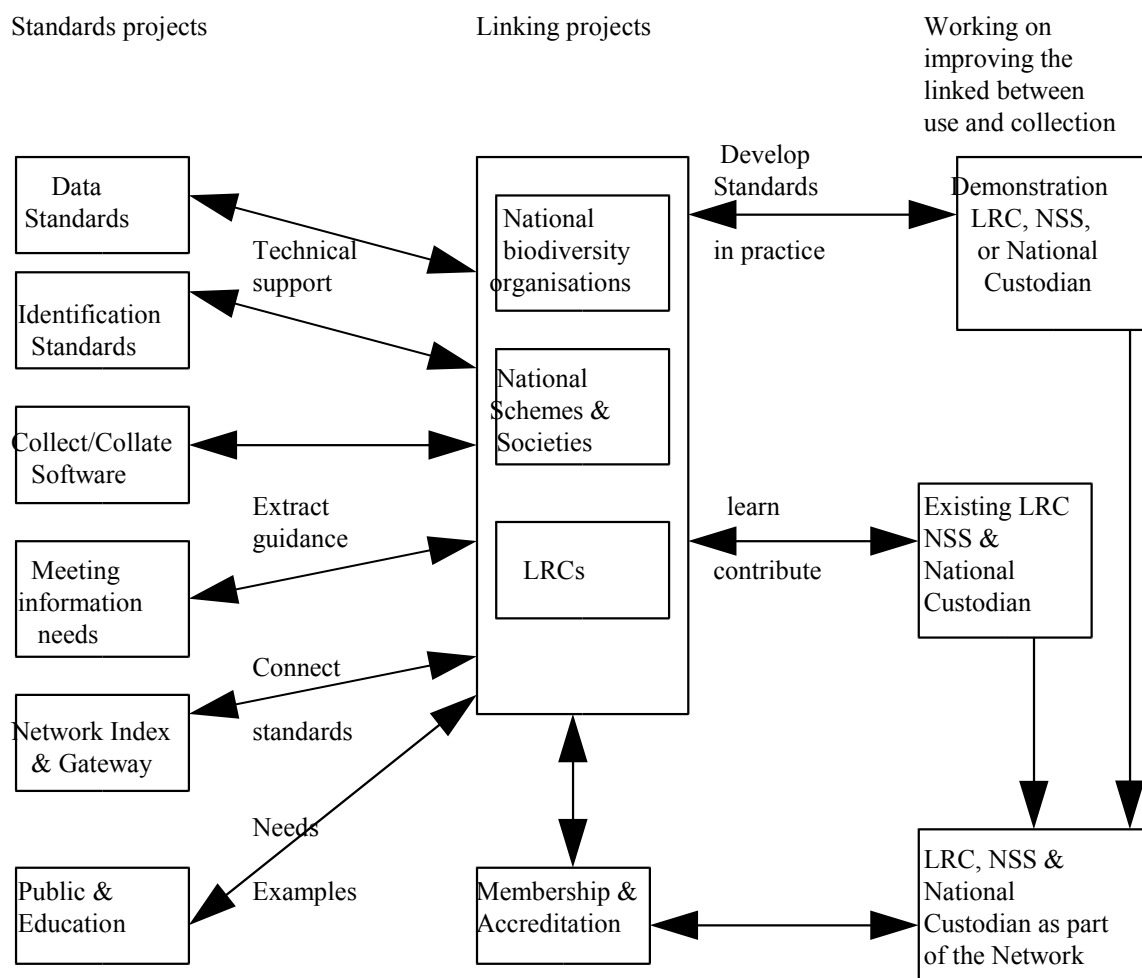
organisations in the consortium [see above] will provide access to habitat and species information held and maintained by them. This process will start with information held by RSPB, the BRC [see below] and the Marine Biological Association of the UK through its MarLIN project

4. Using and applying biodiversity information

- Network Index and Gateway (project leader Dorian Moss) The NBN Index is in development. It aims to provide a facility for visitors to the NBN site that wish to find, or browse, information on UK biodiversity. Currently, the Index is restricted to a very limited sample of biodiversity information that is being used as a demonstration to help gauge user requirements and to stimulate comments to guide further development.
- Developing public access and education services (project leader Ian Fisher) This project will investigate the requirements for public and educational access to biodiversity information; and develop, test and demonstrate models which allow organisations delivering biodiversity information to the public and education sectors to link their needs to the collectors of biodiversity information and make effective use of information

The NBN is the most exciting development in biological recording since the botanical atlas project was launched back in the 1950s and, although there is as yet only limited outside funding for the whole project (£700,000 from the Esmee Fairbairn Trust for the LRC project), the partners make substantial individual contributions and are wholly committed to making the NBN a working reality, with the natural environment being the ultimate winner.

Working in partnership towards the NBN



by sharing information

Fig 3. Showing how three linking projects support LRCs, national schemes and societies, and national organisations (from the NBN secretariat)

Section 3

SCOTTISH LOCAL RECORDS CENTRES.

'Local centres for data lie at the centre of an effective system. In particular, local data and information are needed to produce Local biodiversity Action Plans. Local and regional centres both serve the locality and provide information needed for the national picture'

Biodiversity: the UK Steering Group Report¹

LRCs in Scotland

It is central to *BRISC*'s activities to give as support and assistance to existing LRCs and to encourage the formation of new LRCs where none exist at present. Although the number of LRCs in Scotland has greatly increased during the 1990s, there are still substantial gaps in the coverage, such as in Argyll and the Outer Hebrides. However, the establishment of centres in Orkney and Shetland are extremely welcome, as are a range of new developments in Dumfries & Galloway, in NE Scotland, and Tayside. Efficient and well-supported LRCs are needed for every area of Scotland and provide an important ingredient in any LBAP partnership.

LRC activities and the 1996 Questionnaire

This section gives descriptions of each of the currently active LRCs in Scotland and brief notes on those that are inactive. It includes information which was provided in 1996 in response to a questionnaire circulated to Scottish LRCs. The aim was to assess the current position, particularly regarding the numbers of biological records they all hold and the proportion that had been computerised. Most centres responded but the information was not published at the time. The figures have been updated where possible and are included in this report.

LRCs & habitat information

A request for information about habitat survey coverage was included on the original questionnaire but the replies were not easy to assess. Centres have now indicated habitat survey coverage in the 'resources' section where appropriate, whilst ongoing habitat surveys are noted in 'current activities'.

BRISC Accreditation

Since 1991 an accreditation scheme has been operated by *BRISC* to try and evaluate the range of centres that exist, to give recognition for the efforts that were being made, and to encourage progress in raising standards and procedures. The accreditation scheme, which is summarise in Figure 4 and is

Fig 4 Summary of *BRISC* Accreditation Scheme in use up till 1997:

Type of Centre	Category 1	Category 2	Category 3	Category 4	Category 5
Local Records Centres	Good access; Work-space; Arrangement for specimen storage;	Regular access Safe storage of data; Arrangement for specimen storage;	Access by arrangement; Area for data storage; Contact with local recorders	Absence of an actual centre but formal commitment (admin) by recording group;	Secure storage (maps, data); ranger/warden in charge; Access by arrangement
recording networks -category 4 only	Professional staffing; Habitat & sites maps; Botanical data	Professional staffing; Habitat & sites maps;	planning depts, etc; Arrangement for specimen storage	At least 3 areas of recording interest, e.g	
Country Parks - category 5 only	+ 3 or more other major groups; Contact with local recorders planning depts, etc.	At least 4 major biological groups; Contact with local recorders planning, etc		Secure storage (maps, data)	

¹ Anon. *Biodiversity: the UK Steering Group Report*, Vol 1 section 3.25

fully described in BRISC's 'Guidelines on Standards and Good Practice for Biological Recording and Recorder Users'², was very effective in its early days. For various reasons, it has proved difficult to maintain the review of centres on a regular basis, but a reappraisal by BRISC of our accreditation scheme is currently being undertaken to make it more relevant to the standards required by the National Biodiversity Network (see also Section 2). The new scheme is anticipated to be in operation by the end of 1999, when Scottish centres and groups will be approached regarding reaccreditation.

Recent fate of LRCs

In the last decade or so, a lot has happened to Local Records Centres: some have flourished, others declined, and one or two have gone into suspension. Over the last two or three years there has been a renewed interest with the development of the NBN and the recognition of the importance of LRCs as a core part of the Local Biodiversity Action Plan (LBAP) process. The Scottish Biodiversity Group as well as the NBN Local Advisory Group are currently working on the production of publicity material aimed at local authorities and local partnerships, which sets out the many benefits that may be reaped by investing in a local LRC.

Local Record Centres within the National Biodiversity Network

As discussed in Section 2, the NBN is central to the development of national standards for biological recording, co-operation and data-sharing. The NBN's website <http://www.nbn.org.uk/> states that an LRC, operating within the NBN framework, will 'manage a range of biological datasets on behalf of a number of different organisations, supply products to users and provide support for biological recording within a defined geographical area.' To accommodate local variability, there will need to be considerable flexibility in the development of LRCs within the bounds set by a national framework. It is expected that LRCs will be run by local consortia involving a range of organisations, including statutory environmental organisations, local authorities, voluntary conservation and wildlife bodies.

Core functions

The following core functions of a LRC acting within the NBN will include³

- acting as a focus for biological record management within the area
- acting as contact point for access to datasets by local and national users
- providing a link for local users and suppliers to other LRCs and national data centres
- providing support and guidance for recorders
- promoting the collection, validation and maintenance of key biological datasets
- managing specified datasets on behalf of partners
- researching the availability of data sources, at an appropriate level
- supplying data to decision makers, educational establishments and the public

NBN accreditation

There will be a system of accreditation to ensure compatibility, accessibility and data quality. The National Biodiversity Network will do this by setting up a 'membership' scheme whereby organisations, societies and recording schemes agree to work to given standards when they join. Regulation of these standards will involve independent assessment and peer review groups. LRCs will also benefit from seeking accreditation as part of the NBN by being known to work to agreed standards, that their data are reliable, and that they can be trusted to handle other people's data. It is, however, not assumed that a LRC will necessarily fulfil all the above demands before it can become part of the NBN, but it must be showing progress in working towards them. It has been suggested that there is need for several levels at which LRCs could join.

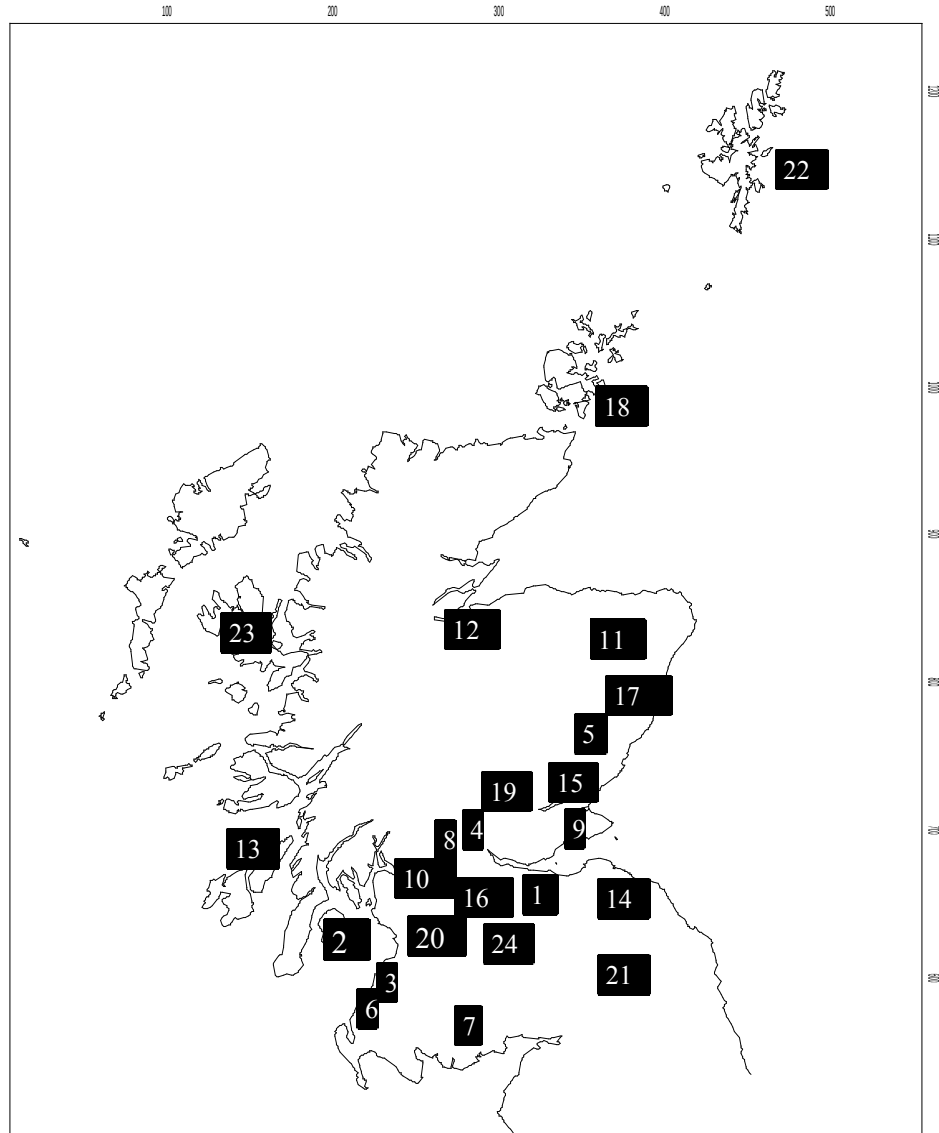
Fig. 5 Scottish Local Records Centres

- | | |
|--|--|
| 1. Almondell Biological Records Centre (CP only) | 6. Culzean Country Park Biological Records Centre |
| 2. Arran Biological Records Centre | 7. Dumfries and Galloway Biological Records Centre |
| 3. Ayrshire Biological Records Centre | 8. Falkirk Museum - <i>Not currently active</i> |
| 4. <u>C</u> entral <u>A</u> rea <u>R</u> ecording <u>S</u> ystem for the <u>E</u> nvironment | 9. Fife Nature |
| 5. Crombie Country Park (CP only) | 10. Glasgow Museum Biological Records Centre |

² BRISC (1998) 'Guidelines on Standards and Good Practice for Biological Recording and Recorder Users', *Scottish Natural Heritage Research, Survey and Monitoring Report* No 107 ISSN 1350 3111

³ *Linking Local Record Centres: first Project Report July 1997-October 1998*, The Wildlife Trusts p.23

- | | |
|---|---|
| <ul style="list-style-type: none"> 11. Haddo Country Park -(CP only) <i>Not currently active</i> 12. Inverness Museum Biological Records Centre 13. Islay Natural History Trust Wildlife Information Centre 14. Lothian Wildlife Information Centre 15. Naturebase (Dundee) 16. North Lanarkshire Biological Records Centre | <ul style="list-style-type: none"> 17. North-east Scotland Biological Records Centre 18. Orkney Biodiversity Records Centre 19. Perth Museum Biological Records Centre 20. Renfrewshire Biological Records Centre 21. Scottish Borders Biological Records Centre 22. Shetland Biological Records Centre 23. Skye Environmental Centre 24. South Lanarkshire Biological Records Centre |
|---|---|



1. ALMONDELL COUNTRY PARK BIOLOGICAL RECORDS CENTRE

Contact: **Mary Konick**
Almondell Visitor Centre
by Broxburn
West Lothian
Tel. 01506 882254

BRISC Accreditation: 1995 category 5

Access: by arrangement

Area covered: The area of the park only

Summary

Records of park wildlife have been kept on an index card system since 1975, by the ranger service. These records are constantly being added to, and are available to the public by prior arrangement, as they are kept in the ranger office at the visitor centre.

Current activities

- Continuation of 'Butterfly Site Recording Survey' (Butterfly Conservation)
- Monitoring greater butterfly orchids within the park

Resources

- Analyses of park survey, area habitats, statistical charts, geological features
- Butterfly survey results (from 1993 - ongoing)
- Library of local natural history literature e.g. West Lothian Bird Club Reports, West Lothian Wildlife Annual Review
- Report- River Almond Catchment - A Plan for Integrated Management

Records held by taxonomic Groups (1997)

Taxonomic Group	Nos records computerised	Nos records paper format	Date-range
Mammals		22	1981-1996
Birds		93	1981-1996
Amphibians		3	1981-1996
Reptiles		0	
Fish		10	1981-1996
Arachnids		3	1981-1996
Crustacia		9	1981-1996
Insects		60	1981-1996
Molluscs		9	1981-1996
Myriapods		0	
other invertebrates		21	1981-1996
Fungi		0	
Mosses & liverworts		0	
Vascular plants		361	1981-1996
Other plants		174	1981-1996

2. ARRAN BIOLOGICAL RECORDS CENTRE



Contact

Duncan Stevenson
Brodict Country Park
Brodict
Isle of Arran
KA27 8HY
Tel. 01770 302462
Fax. 01770 302462

BRISC Accreditation: 1993 category 4

Access: Normal access to visitor centre, access to information by arrangement

Area covered: Isle of Arran

Summary

This centre is based at the Brodict Castle Ranger service. Information is still collected periodically and is collated with the existing resource. The records centre has not been fully operative over the last few years due to ranger staff priorities. Arran Natural History Society is responsible for recording on an island-wide basis. Much material is published through the Arran Naturalist.

Current activities

- Surveys of red squirrels, badgers, garden mammals and bats.

Facilities

- The Ranger service will respond to any reasonable requests for information on the Natural History of Arran,
- A range of Guidebooks to the property is on sale at the Visitor Centre.

Resources

NVC 85% coverage
NCC upland survey 15%

Records held by taxonomic Groups (1997)

Taxonomic Group	nos computerised	nos in paper format	date-range
Mammals		35	1980-1996
Birds		150	1980-1996
Amphibians		4	1980-1996
Reptiles		7	1980-1996
Fish		0	
Arachnids		0	
Crustacea		0	
Insects		0	
Molluscs		0	
Myriapods		0	
other invertebrates		225	
Fungi		250	
Mosses & liverworts		0	1984-1993
Vascular plants		900	1991
Other plants		250	1985

3. AYRSHIRE BIOLOGICAL RECORDS CENTRE

Contact: Jason Sutcliffe/Gill Smart
Dick Institute
Elmbank Avenue
Kilmarnock
Tel. 01563 526401



BRISC Accreditation: 1995 category 1

Access: by appointment only at present

Area covered:-

Local authorities : East Ayrshire Council, South Ayrshire Council and North Ayrshire Council

Watsonian vice-counties : 75 & 100

List of complete ten kilometre squares :

NX18, NX28, NX29, NX39, NX49

NS20, NS25, NS30, NS31, NS33, NS34, NS40, NS41, NS42, NS43, NS44, NS51, NS52, NS53, NS62

Summary

The aims of the Ayrshire Biological Record Centre are to:

- collate information on the biodiversity of Ayrshire,
- provide information on the distribution, location and rarity of species and habitats,
- be a focus for the monitoring and protection of Ayrshire's biodiversity,
- promote wider awareness and appreciation of the wildlife heritage of Ayrshire.

There are thousands of records in the paper files and in the many reports held by other organisations. These will be entered onto the computer, processed and, unless of a sensitive nature, made accessible to anyone who needs it.

Recording never stops and our contacts will eventually send their data to us annually. We will continue to promote the recording of key species by the general public. National recording schemes will be promoted and we will send on Ayrshire records to them.

Survey initiatives will be identified by analysing the computerised records to show gaps in the information resource. The results of our surveys and analyses will be published in user-friendly booklets and on the Internet.

Current activities

- The Ayrshire Biological Record Centre is in an early stage of development and is concentrating on the collation and computerisation of existing records,
- A Catalogue of Records is in preparation to enable the prioritisation of data entry. In the meantime, plant records from recent habitat surveys in South Ayrshire and the Irvine area are being entered,
- The Centre is part of the partnership preparing the Local Biodiversity Action Plan for Ayrshire. We will be taking direction from the Plan and helping to monitor its success,
- Links are being established with interested parties, locally and nationally.

Facilities

No public facilities are available as yet but there are plans to provide:-

- Daytime access to source material,
- Information search service (which may include a charging policy for commercial users),
- Field sheets and recording pro-formas for local recording,
- While currently lacking the physical presence of major documents, we are able to direct enquiries to the relevant bodies or /individuals holding them.

Linked organisations

East Ayrshire, North Ayrshire, South Ayrshire Councils, Ayrshire Joint Structure Plan,
SNH, 2 Beresford Terrace, Ayr, KA7 2EG,
SWT, Ayrshire Branch,
SWT- Ayrshire Wildlife Survey Team,
Ayrshire Bat Group
Botanical Society of the British Isles
Butterfly Conservation
Mammal Society.

Satellite Record Centres:-

The Ranger Service, Brodick Castle Country Park, Arran, KA27 8HJ.
Eglinton Country Park,
Clyde Muirshiel Regional Park, Barnbrock Farm, Renfrewshire, PA10 2PZ.

Resources

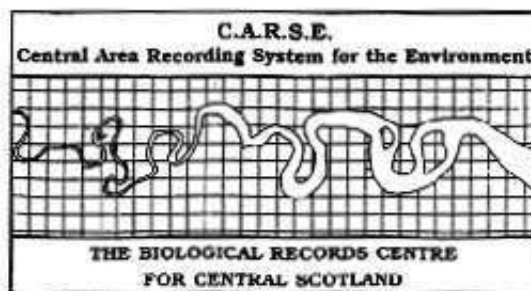
- Kilmarnock & Loudon District Phase 1 Habitat Survey, 1992, (SWT) consists of 1:10,000 scale colour maps and target notes from a district-wide survey of the section of East Ayrshire formerly known as Kilmarnock & Loudon District,
- Recorder* data files on 590 sites,
- Assorted documents and survey reports (not yet catalogued)

Records held by taxonomic Groups (1998)

Taxonomic Group	nos computerised	nos in paper format	date-range
Mammals	2730		
Birds	3972		
Amphibians	173		
Reptiles	56		
Fish	1775		
Arachnids	644		
Crustacia	778		
Insects	20729		
Molluscs	1370		
Myriapods	67		
other invertebrates	898		
Fungi	1552		
Mosses & liverworts	88886		
Vascular plants	9963		
Other pants			

4. Central Area Recording System for the Environment - CARSE

Contact: Lesley Brown
Smith Art Gallery & Museum
Dumbarton Rd
Stirling
FK8 2RQ
Tel. 01786 446008
Fax. 01786 449160
e-mail CARSE@CARSEC.freerve.co.uk



BRISC Accreditation: 1991 category 1

Access: by arrangement

Area covered: Stirling, Clackmannanshire and Falkirk Council areas

Summary

CARSE was inaugurated in 1993 to bolster the pre-existing record centre based in the Smith Museum, Stirling. We operate a computerised database of all species in Central Scotland, The name CARSE is a synonym and also the name of a local area.

Professional, amateurs, and local people have contributed to our records all with a common interest in contributing to the protection of the environment. We currently hold over 30,000 records and welcome any records on any species seen within our area, common or rare.

The information we receive is used for the protection and improvement of our natural habitats. Verification, or checking of records, is vital so we are currently seeking experts willing to act as verifiers.

Current activities

CARSE has recently employed a full-time member of staff through funding from the National Lottery Charities Board. This should enable us to further expand our database, produce maps, reports and publications and provide training for those interesting in biological recording.

Facilities

We have a biological database and hope to soon be able to offer facilities for:-

- training in biological recording and identification,
- giving talks to interested groups,
- producing species distribution maps,
- providing information to local communities, statutory and voluntary agencies for the enhancement and protection of the local environment.
- Recording sheets are available from Wildlife Records Officer.

Resources

- Smith Museum's biological records,
- CARSE surveys 1996 - frogs and toads, red and grey squirrels,
- Biological records and maps held by Central Regional Council, Dept. of Development & Planning,
- Scottish Wildlife Trust Wildlife Site material,
- We are currently negotiating with SNH for SSSI information.

5. CROMBIE COUNTRY PARK

Contact: **Scott Morris**
Crombie Country Park,
Monikie, by Dundee.
DD5 3QL.
Tel. 01241 860 360

Not *BRISC* accredited

Access: 9.00am - 9.00pm (-5.00pm in winter)

Area covered: The area of the country park only

Summary:

The Country Park rangers collect records relating to the park's own wildlife and has information on a number of species

Current Activities:

Red squirrels and nest box records are the main focus of activity at present.

Facilities

There is a Phase 1 habitat survey of the park (1995).

6. CULZEAN COUNTRY PARK BIOLOGICAL RECORDS CENTRE

Contact: **Gordon Riddle**
Culzean Country Park
Maybole
Ayrshire
KA19 8LE
Tel. 01655 760269
Fax. 01655 760615



Not *BRISC* accredited

Access: 9.00- 17.00 daily

Although records are not directly accessible to the public, Ranger staff respond to a wide range of requests for information on Culzean and its natural history.

Area covered

Only the Culzean Country Park which includes parts of Tetrads NS20- V,W,X
NS21- B,C,H

Summary

Culzean Castle and Country Park is the most popular property of the National Trust for Scotland, attracting over 200,000 visitors annually. The Country Park covers over 560 acres and contains a variety of habitats - 6km. of varied coastline, mixed woodland, dune heath, gardens, farmland, ponds and waterways and many old estate buildings.

The Coastal strip is a SSSI and the woodland is designated a Listed Wildlife Site by the SWT.

Natural History Recording is carried out primarily by the Ranger Service as part of their work remit, firstly as a tool for conservation management and secondly for interpretation purposes.

Current activities

Annual and ongoing surveys include :-

- Wetland Birds Survey,
- Common Bird Census,
- Rothamstead moth trap,
- Warblers,
- Butterflies,
- Bats,
- Common lizards,
- Raptors - kestrel and sparrowhawk,
- Tawny owls (nest box scheme),
- Red squirrels,
- Monitoring is also being carried out on the grey squirrel situation, following occasional sightings in the Park in the last two years, and the occurrence and distribution of the New Zealand and Australian flatworms within Culzean,
- Habitats which are continuously monitored are the dunes system, heathland, ponds, shoreline,
- Daily weather records are kept for the Meteorological Office,
- The National Trust for Scotland is currently looking at computerising record systems for all its countryside properties.

Facilities

- The Ranger Service will respond to any reasonable requests for information on the natural history of Culzean,
- A range of guidebooks to the property is on sale at the Visitor Centre, including a birdlife leaflet with a complete status list for the property.

Linked organisations

The National Trust for Scotland
Scottish Natural Heritage
Royal Society for the Protection of Birds
Scottish Ornithologists Club
Scottish Wildlife Trust (Ayrshire Branch)
South Strathclyde Raptor Study Group
South Ayrshire Council
Scottish Agricultural College, Auchincruive
Hessilhead Wildlife Rescue Centre, Beith.
Vincent Wildlife Trust
Ayrshire Environmental Education Forum
Ayrshire Biodiversity Group

Resources

- Phase one ecological surveys have been carried out for the whole property under the guidance of the NTS ecologist.
- Landscape and tree surveys were produced in 1992/3.
- Species records are kept principally on a card index system.

Records held by taxonomic Groups (1997)

Taxonomic Group	nos computerised	nos in paper format	date-range
Mammals		22	1967-1997
Birds		163	1967-1997
Amphibians		4	1945-1997
Reptiles		1	1967-1997
Fish		6	1967-1997
Arachnids			
Crustacia			
Insects		380	1967-1997
Molluses		14	1967-1997
Myriapods			
other invertebrates		300	1967-1997
Fungi		350	1967-1997
Mosses & liverworts		18	1967-1997
Vascular plants		500	1967-1997
Other plants		300	1967-1997
Rock pool species		60	1967-1997

7. DUMFRIES & GALLOWAY BIOLOGICAL RECORDS CENTRE

Provisional contact: **Jackie Galley**
Solway Heritage,
Carmont House,
The Chrichton,
Bankhead Rd
Dumfries,
DG1 4ZB.
Tel. 01387 247543
Fax. 01387 24756

Summary

The main focus of activity in this area is centred on the development of the LBAP, in integral part of which is the establishment of a biological records centre. A substantial number of species and habitats have been identified all of which require a significant information base.



8. FALKIRK MUSEUMS BIOLOGICAL RECORDS CENTRE

Contact: **Jack Sanderson**
Callander house
Callander Park
Falkirk
FK1 1YR
Tel. 01324 624911
Fax. 013224 503771

Summary

Currently inactive, this centre is hoped to be part of the local Biodiversity programme being developed by the Strategic services Section of Falkirk council. Data from Falkirk is currently being collected by CARSE

Records held by taxonomic Groups (1997)

Taxonomic Group	nos computerised	nos in paper format	date-range
Mammals		21	1979-83
Birds		307	1979-83
Amphibians		11	1979-83
Reptiles		0	
Fish		22	1979-83
Arachnids		337	1979-83
Crustacia		268	1979-83
Insects		1994	1979-83
Molluscs			1979-83
Myriapods		1	1979-83
other invertebrates		277	1979-83
Fungi		233	1979-83
Mosses & liverworts		650	1979-83
Vascular plants	4892		1979-83
Other plants		551	1979-83

9. FIFE NATURE



Contact: **Dr William Penrice**
or **Mr Ross Spalding**
Fife Planning Service.
Fife House
Glenrothes
Fife KY7 5LT
Tel. 01592 413793/413436
Fax. 01592 416300

BRISC Accreditation: 1997 category 1

Access: Open to the public Mon. - Fri. 9.00-17.00

Area covered: All of Fife (= current local authority boundaries)

Summary

Fife Nature is part of Fife Council Planning Service and was founded in 1992 with the aim of providing a quality biological information service for Fife. Fife Nature is located within Fife House, Glenrothes and employs two full time staff. It operates a Service Agreement with Scottish Natural Heritage.

The centre has a sophisticated data handling and retrieval system with multiple databases linked to GIS and report-producing software. The main customer is the Planning Service itself, which handles more planning applications than any other Scottish local authority.

As well as surveys, which help raise awareness, the centre is also involved in detailed biotope and species surveying and frequently contracts professional work. Data is available for conservation, education, planning, research and the general public.

Publications include Provisional Atlases of Mammals, Butterflies, Dragonflies, Amphibians and Reptiles; also Nature of Fife Inventory (Computer Disc).

Current activities

- Endangered plants project, including twenty-six LBAP species action plans (due April 2000),
- Intertidal habitat survey, completed March 1999,
- Marine database (due June 1999),
- Fife river corridor survey (due Dec. 1999),
- Biotopes database including NVC, river corridor, Phase 1, etc., with local context information,
- Updating the Nature of Fife CD disk, including maps and multimedia (due April 2000),
- Urban Phase 2 Habitat survey (due April 2000),
- Public species surveys on fungi, galls, woodlice, grasshoppers, garden butterflies and squirrels,
- A publication "Wildlife Walks in Fife" is due in April 2000,
- Collating data for the Fife Ornithological Atlas and production of provisional distribution atlas for breeding and non-breeding birds,
- Supporting the LBAP process through data provision, production of Species Action Plans & organisation of survey and monitoring programmes.

Facilities

Centre users have access to

- Extensive natural history library,
- Work space, table, computer, microscope, library and slide library,
- Field recording sheets, survey packs and local field keys,
- Training for recording and computer users,
- User support for recorders including a satellite network,

Linked organisations
BSBI

BTO
RSPB

Butterfly Conservation
 Scottish Wildlife Trust,
 Scottish Wildlife Action Programme
 WATCH

Fife Badger Group
 Fife and Lothian Swan Group

Fife Ornithological Atlas Group
 Fife Squirrel Group

Kirkcaldy Naturalist Society
 Pitcairn Society

SNH,
 SEPA,
 FWAG
 Fife LBAP Steering Group
 Fife Rangers Service
 Fife Police

Resources

- >300,000 species records covering 4,000 species. Information on distribution and status of all 10,020 Fife species, including marine,
- Habitats: complete Phase-1 coverage of Fife including inter-tidal area, being digitised onto GIS,
- Sites files: detailed information on all designated sites within Fife (e.g. SSSIs, Wildlife Sites, and LNRs) in paper and digital format (GIS), including full habitat extents. Also details on 800 other sites. Non-statutory sites in digital format. NVC data for 17 sites in digital format. Paper backup for all sites,
- Maps: OS map coverage for Fife at 1:50,000, 1:25,000 and 1:10,000. All major OS data-sets including 1:50,000 and 1:10,000 Raster and Landline in digital form (GIS),
- Aerial photography: All Fife at 1:10,000, urban areas at 1:5,000, (paper and digital formats),
- Small collection of historical aerial photography,
- Data terrain model: complete Fife coverage of altitude data to 1m resolution, 50m horizontal, and digital format for GIS and landscape modelling,
- Land Cover Scotland: complete Fife coverage on GIS,
- Landscape Character Assessment: complete Fife coverage on GIS.

Records held by taxonomic Groups (1999)

Taxonomic Group	nos computerised	nos in paper format	date-range
Mammals	7000		pre-1900- present
Birds	160,000		pre-1900- present
Amphibians	1200		pre-1900- present
Reptiles	30		pre-1900- present
Fish	75		pre-1900- present
Arachnids	1600		pre-1900- present
Crustacia	1000		pre-1900- present
Insects	18,000		pre-1900- present
Molluscs	2000		pre-1900- present
Myriapods	700		pre-1900- present
other invertebrates	4000		1900-present
Seaweeds	5500		1999-
Fungi	3000		pre-1900- present
Mosses & liverworts	80,000		pre-1900- present
Vascular plants	60,000		pre-1900- present

10. GLASGOW MUSEUM BIOLOGICAL RECORDS CENTRE

Contact: **Richard Sutcliffe.**
Museum & Art Galleries,
Kelvingrove,
Glasgow.
G3 8AG
Tel. 0141 287 2660
Fax. 0141 287 2690
e-mail richard.sutcliffe@cls.glasgow.gov.uk

BRISC Accreditation: 1991 level 2

Access: by arrangement

Area covered: Glasgow
Watsonian VCs 77, 86, 99 but some records from all over Scotland

Summary

The group maintaining the Records Centre are currently engaged in transferring data to *Recorder*. 20,000+ been entered so far, in addition to those listed below.

Resources

Records held by taxonomic Groups (1999)

Taxonomic Group	nos computerised	nos in paper format	date-range
Mammals	100	1000+	Early 1800 onwards
Birds	200	10,000+	Early 1800 onwards
Amphibians	100	100	Early 1800 onwards
Reptiles	100	100	Early 1800 onwards
Fish	1900	500+	Early 1800 onwards
Arachnids	100	100	Early 1800 onwards
Crustacia	100	200	Early 1800 onwards
Insects	3600	100,000+	Early 1800 onwards
Molluscs	13,700	1200	Early 1800 onwards
Myriapods	100	?	Early 1800 onwards
other invertebrates	100	1000+	Early 1800 onwards
Fungi	500	?	Early 1800 onwards
Mosses & liverworts	1300	3000	Early 1800 onwards
Vascular plants	2600	20,000	Early 1800 onwards
Other plants			Early 1800 onwards

11. HADDO COUNTRY PARK BIOLOGICAL RECORDS CENTRE

Not currently active.

Contact: **John Malster**
Tarves
Ellon
Tarves
AB4 0ER
Tel. 01651 851489
Fax. 01651 851834

BRISC Accreditation 1995 level 5

Access: By arrangements

Area covered: Country Park only

Summary

A Country Park centre on the Aberdeenshire coast with a small visitor centre in which we have on different interpretative displays at different times of the year. These displays help visitors enjoy the Country Park and the wider countryside.

On some of these displays we ask our visitors to record details of sightings. e.g.. At the moment there is an interpretative display all about our red squirrels and the advancement of the grey squirrels. Here we ask people to record sightings of either inside the Country Park or anywhere in Aberdeenshire. Otter sightings within the Park are also recorded in this fashion.

Resources

We have species lists for all sighting of any flora or fauna within the Park. We also keep details of our visitor's records and sightings and do wildfowl counts throughout the year. If anyone requires records all they need do is contact a Ranger who can usually be found in the office beside our Discovery Room.

12. INVERNESS MUSEUM BIOLOGICAL RECORDS CENTRE

Contact: **Stephen Moran**
Museum & Art Gallery
Castle Wynd
Inverness
IV2 3ED
01463-237114
01463-225293
e-mail Stephen.Moran@highland.gov.uk

BRISC Accreditation: 1991 Category 1

Access: Museum open 9.00-17.00 Monday -Friday
Access to centre by arrangement

Area covered: Highland Council, Watsonian vice counties 95 (part), 96, 97, 104-109.

Summary

IMRC, based in the Natural Sciences section at Inverness Museum & Art Gallery, was inaugurated in 1976. Since then a wide range of data have been assembled, with an emphasis on invertebrates and mammals to complement the records held by other organisations in the area.

The centre acts as a focus for the activities of the Highland Biological Recording Group (HBRG), founded in 1986, which mounts species surveys, training days and, occasionally, special habitat surveys on an annual basis.

The centre has a large resource of records on paper which is being transferred to the *Recorder* database package. These are backed up by an extensive natural history library and growing reference collections. Access is on a daily basis by arrangement and working spaces are available for researchers.

Enquiries from people wishing to do voluntary work are welcomed, and projects are shaped to benefit both the centre and the interests of the volunteer.

Current policy on access to information is free access for non-commercial uses, with a charge for time needed to service commercial enquiries. The intellectual copyright of the record providers and any degrees of discretion in their use are recognised when dealing with requests for information.

Current activities

- Transfer of data to *Recorder*,
- Preparation work for an Atlas of Highland Mammals, drawing on previously untapped historical data, in addition to gathering current information,
- Species surveys on hawk-moths, garden snails, stinkhorn fungi and owl pellet analysis in the Highlands (via HBRG) with more surveys planned for 1999. Hedgehog road-kill monitoring scheme (HBRG),
- Continuing a study of oak wood invertebrates in the Highlands, in conjunction with HBRG members,
- Co-ordination of butterfly records for Butterflies for the New Millennium Atlas. Have just published (1998) an atlas of Highland Butterflies,
- Contributing records and advice to various LBAP schemes,
- Beginning co-operation with national phenological survey.

Facilities

- Work space, tables, collections, and library,
- Directory/network of expertise,
- Field sheets and recording pro-formas available for local recording,
- Occasional training days and workshops.

Linked organisations

Highland Biological Recording Group (HBRG) (c/o IMRC)
The Highland Council, Planning Department (including countryside rangers and archaeology unit)
Northern Highlands Environmental Records Centre, Bruce Buildings, Wick (currently unstaffed)
RSPB Scotland, Northern Office, Inverness
SNH (Northern region HQ and various area offices)
SWT (local branch and survey teams)

Resources

- Computerised data, on insects and mammals in particular, from a wide range of sites, with smaller numbers of records from other groups. Large numbers of records on paper, many unpublished. Archive files for most of the 40 or so HBRG species projects,
- Reference collections; local flora/fauna (ca. 35,000 specimens), with associated documentation,
- Extensive natural history library with many local and national distributions atlases and key works,
- Maps: - geology, soil, land capability, forestry 'plantability' (for around 40% of 'old' Inverness-shire). Access to Phase 1 maps of ca. 25% of Highland is available via local planning dept. Historical maps: Originals of detailed maps, including estate maps, for large areas of the highlands from early 18th century onwards,
- Aerial photos: - Some coverage, 1950s-1980s, available in Sites & Monuments Record, a copy of which is held for the Inverness area of Highland Council,
- Site information (of varying quality) from over 2,000 sites from National Nature Reserves to sites of local significance.

Records held by taxonomic Groups (1999)

Taxonomic Group	nos computerised	nos in paper format	date-range
Mammals	1500	5000+	1890-1997
Birds	600		1890-1997
Amphibians	1500	100	1982-1997
Reptiles	400	100	1982-1997
Fish	-	100	1982-1997
Arachnids	300	500	1982-1997
Crustacia	100	100+	1982-1997
Insects	36,500	50,000+	1920-1997
Molluscs	200	200	1870-1997
Myriapods	100	100	1982-1997
other invertebrates			
Fungi	200	2000	1850-1990
Lichens	500	1500	
Mosses & liverworts		500	1850-1997
Vascular plants	200	unknown	1830-1997
Other plants		2000	1850-1990

13. ISLAY NATURAL HISTORY WILDLIFE INFORMATION CENTRE

Not *BRISC* accredited.

Contact: **Lindy MacLellan**
Main St
Port Charlotte
Islay
PA48 7TX
Tel. 01496 850288

email:- MAOgilvie@indaal.demon.co.uk

Access arrangements:- Open to the public daily 10am-5pm (Mondays-Fridays) Summertime

Area covered:- Islay (some records also for Jura). OS Map 60
10 km. grid squares: NR15, 16, 24-27, 34-37, 44, 46(part), 47(part).

Summary

The Islay Wildlife Information Centre is housed in its own premises in the bottom floor of a former distillery warehouse. The upper floor is occupied by a 42-bed Youth Hostel run by the Scottish Youth Hostels Association.

The Centre is run by the Islay Natural History Trust and was founded in 1984. The recording area is the island of Islay, Inner Hebrides. Some records for the neighbouring island of Jura are also held. Most data is held on computer in Paradox, but the development of *Recorder 2000* is being watched with interest, with a view to transferring to this when it is available. DMap is also used.

Current activities

No specific surveys are conducted by the Centre, but records from all surveys carried out on the island by other organisations (e.g. BTO, RSPB, and SNH) and individuals are deposited there.

Facilities

- Large laboratory (for up to 30 people) with benches, microscopes etc.,
- Extensive reference library,
- Reference collections of lichens, marine molluscs and geological specimens,
- Checklists and recording forms available (free) for birds, mammals, reptiles, amphibians, butterflies, dragonflies and vascular plants,
- Published annual reports on birds and other natural history of Islay.

Linked organisations

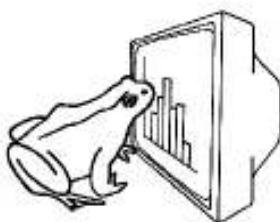
Scottish Natural Heritage
area office, Main Street,
Bowmore, Isle of Islay
Islay Land Use Forum
Argyll & Islands
Enterprise
Argyll & Bute Council

Records held by taxonomic Groups (1999)

	Taxonomic Group	nos computerised	date-range
	Mammals	600	all post 1985
	Birds	50,000	99% post 1960
	Amphibians	140	all post 1985
	Reptiles	120	all post 1985
	Fish	85	all post 1980
	Arachnids	150	all post 1985
<input type="checkbox"/> Data on most major taxa (see table), with birds, vascular plants, bryophytes and lichens being the most complete,	Crustacia	50	all post 1980
	Insects	1500	95% post 1950
	Molluscs	850	all post 1970
	Myriapods	50	all post 1980
	other invertebrates	100	all post 1980
	Fungi	1200	all post 1969
<input type="checkbox"/> Maps: geological, soil,	Lichens	650	
<input type="checkbox"/> Site files: only a handful.	Mosses & liverworts	2400	98% post 1950
	Vascular plants	18,000	all post 1970

14. LOTHIAN WILDLIFE INFORMATION CENTRE

**Lothian
Wildlife**
Information Centre



Contact: Bob Saville.
Suite 19, Leith Business Centre
130 Leith Walk
Edinburgh EH4 6NS
Tel/fax: 0131 554 6360
email swtlothianrc@cix.co.uk

Not *BRISC* accredited

Access: by arrangement

Area: Lothians

Local authorities: City of Edinburgh, West Lothian, East Lothian, Mid Lothian
Watsonian vice counties 82, 83, 84

Summary

Centre was set up in 1991. There are currently 240,000 species records on *Recorder*, covering 6500 species. The emphasis is on invertebrates and higher plants. Analysis of records are carried out to evaluate rarity status of all species.

The centre runs two public surveys a year, making up to ten so far. Among these was the 'Secret garden survey', which included detailed study of the biodiversity of 16 gardens. Reports of the surveys are available, and results are also published in the Lothian Wildlife Newsletter, published three times a year.

The centre has given advice on LBAPs for all four districts, provides training for specialist recording, and runs invertebrate surveys. A booklet on the dragonflies of the Lothians has already been published.

The centre is run with the help of volunteers, and more are always welcome. Current policy for charging is that data are free for private user, while commercial users are charged retrieval time. All records held by the centre are considered the property of the recorders.

Current activities

- Transferring data to *Recorder*,
- Encourage recording by the general public through two surveys: the common blue butterfly survey and the Lothian 'local patch' project, which consists of recording species, including LBAP species, and to allow the enhancement of the patch by the removal of invasive plants and litter, obtain management help and advice from the centre,
- Producing a 'Lothians notable species' booklet,
- Produce a 'Butterflies of the Lothians' publication,
- Newsletter,
- Co-operate with LBAP groups, and produce Species Action Plan (SAPs),
- Making biodiversity sites visits six times a year, for recording & training,
- Being a demonstration centre for the NBN for policy and procedures,
- Producing an annual 'Lothian Wildlife Discoveries' publication,
- Carrying out invertebrate surveys of sites.

Facilities

- All the Lothian Wildlife sites surveys conducted by SWT are held by the centre (c 100 surveys),
- Field sheets and recording forms,
- Maps and reference books,
- Network of expertise.

Linked organisations

Scottish Wildlife Trust
Scottish Natural Heritage

All four local authorities

Resources

- Datasets for a wide range of sites,
- Large numbers of paper records still to be entered into *Recorder*,
- SWT sites survey files,
- Site summary information for ca.300 sites,
- An early (1970-1980s) Phase 1 type of habitat survey for the whole of Lothians.

Taxonomic breakdown of records on *Recorder* (1999)

Taxa	nos of records	nos of species
Mammals	2300	35
Birds	12,000	326
Amphibians	302	8
Arachnids (spiders)	6550	260
Beetles	4837	810
Butterflies	8730	26
Moths	15,337	797
Other invertebrates	11,000	1150
Bryophytes	1846	526
Lichens	1468	496
Fungi	460	167
Vascular Plants	160,000	c.1900

15. NATUREBASE - (DUNDEE MUSEUM)



Contact: Richard Brinklow.
Dundee Museum's Local Record Centre
McManus Galleries
Albert Square
Dundee DD1 1DA
Tel. 01382 432069
Fax 01382 432052

BRISC Accreditation: 1993 category 1

Access: On a daily basis by arrangement, Mon.-Fri. 9.00-17.00

Area covered:

Council areas: Dundee City, Angus Council, (also hold some records for Perth & Kinross)
Vice counties mainly VC 85, 88, 89, 90
OS maps approximately NN50-NN99 and NN00-NN00

Summary

Naturebase is located in the McManus Galleries in the centre of Dundee. It was initiated in the early 1970s and has developed since that date, to hold a wide range of local and regional information and play an active role in local conservation.

Naturebase has significant resources although, due to relocation, its services have been very curtailed recently. In addition to specimen-related data and a substantial number of paper records, Naturebase contains 150,000 records computerised on *Recorder*. These relate to some 3000+ species. Dundee Museums have collections in excess of 100,000 specimens to complement and underpin these records.

There is a general policy of free access to information for non-commercial users with charging for time needed to service commercial enquiries.

Current activities include

- Dundee's environmental stock-take,
- A major Lottery-funded project to audit Dundee's habitats and wildlife,
- Contributing to the Tayside LBAP, BSBI Atlas 2000, Butterflies for the Millennium.

Facilities

- daily access by arrangement,
- work space with tables for researchers,
- reference collections,
- a library of identification resources.

Linked organisations

Dundee Naturalists' Society
Scottish Wildlife Trust - Angus & Dundee Branch
SNH area office - Airlie, Angus
FWAG local office
RSPB, Dundee members group
Other Dundee City Council departments

Resources (no information on computerised data available)

- Phase 1 surveys, maps covering parts of Angus,
- Data on a wide range of plant and animal groups,
- Maps: geological, soil, habitats,
- Site files with 200+ local sites from SSSIs to Wildlife Sites.

16. NORTH LANARKSHIRE BIOLOGICAL RECORDS CENTRE

Contact: Conservation and Greening Unit
Palacerigg House
Palacerigg Rd
Cumbernauld
G67 3HU
Tel. 01236 780636
Fax. 01236 780645
e-mail conservation@northlan.gov.uk



BRISC Accreditation:- 1995 category 1

Access:- 9.00-16.30 Monday-Friday

Area covered:- North Lanarkshire Council area
Watsonian VCs 77: Lanarkshire, part of 86: Stirlingshire.
OS coverage NS66, 67, 68, 75, 76, 77, 78, 85, 86, 87, 95, 96

Summary

The North Lanarkshire Biological Records Centre was established in 1996 by the amalgamation of record bases of Cumbernauld & Kilsyth, Monklands, and Motherwell districts. It is now the main source of information about wildlife and wildlife sites in the area.

The centre is based at Leisure Department offices at Palacerigg House and offers free access to non-commercial users such as suppliers of information, conservation or community groups. Any staff time spent on extracting data may be charged to other users.

The centre contains reports and species lists from the three former districts plus Strathclyde, Drumpellier and Palacerigg Country Parks, also some from Strathkelvin and parts of South Lanarkshire.

The site information relates mainly to the 300 Sites of Importance for Nature Conservation (SINCs), the ten SSSIs in North Lanarkshire and the Local Nature Reserves at Dumbreck Marsh (Kilsyth), and Perchy Pond (Wishaw).

The information is on paper, in reports and maps. However, there is an extensive list of site assessments on computer file and important species and SINC data are gradually being transferred to *Recorder*.

Current activities

- Biodiversity Audit and Draft Action Plans for North Lanarkshire LBAP,
- Identification and mapping of SINC sites,
- Species surveys on bluebells, hares and scarce butterflies and Odonata,
- Investigating development of links with South Lanarkshire.

Facilities

- Training opportunities for recorders,
- Work space (to be expanded),
- Access by arrangement,
- Field sheets/ recording pro-formas available for local recording,
- Training opportunities for recorders.

Linked organisations

North Lanarkshire Council (all departments)
Lanarkshire Biological Recording Forum

BSBI local recorder
 Butterfly Conservation
 FWAG (Lanarkshire branch)
 Hamilton Natural History Society
 Central Scotland Countryside Trust
 Kelvin Valley Countryside Project
 River Clyde Fisheries Management Trust
 RSPB
 SOC (Clyde Area Branch)
 SWT - Action Programme
 SWT, Ardrrie & Cumbernauld members group
 SWT training teams
 SWT Cumbernauld Greenspaces Project

Resources

- Records on flowering plants, trees, birds, mammals, amphibians, some insect groups, fungi,
- Phase 1 surveys, reports and maps, covering 100% of area mainly 1988-1993,
- Aerial photo coverage- Cumbernauld and Motherwell,
- Maps: - soil and geology,
- Site files: - mainly former Motherwell District area.

Records held by taxonomic Groups (1999)

Taxonomic Group	nos computerised	nos in paper format	date-range
Mammals	200	500	1981-1999
Birds	300	2000	1981-1999
Amphibians	100	100	1981-1999
Reptiles	10	10	1981-1999
Fish		50	1981-1999
Arachnids			
Crustacia			
Insects	200	1000	1981-1999
Molluscs			
Myriapods			
other invertebrates			
Fungi		500	1981-1999
Lichen	100	500	1981-1999
Mosses & liverworts		100	1981-1999
Vascular plants	3500	10,000	1981-1999
Other plants			1981-1999

17. NESBReC (NORTH-EAST SCOTLAND BIOLOGICAL RECORDS CENTRE)

Contact: **Andy Ferguson**
NESBReC
Room G64, MacRobert Building
Aberdeen University
King Street, Aberdeen
AB24 5UA
Tel. 01224 273633
email. nesbrec@aberdeenshire.gov.uk



Not *BRISC* accredited

Access: By arrangement

Area covered: Aberdeen City, Aberdeenshire, Moray (Grampian Area)

VCs covered: 91. Kincardineshire
92. South Aberdeenshire
93. North Aberdeenshire
94. Banffshire
95. Moray (Elgin)

Summary: NESBReC is being set up to collect biological information from numerous sources for the whole of the north east of Scotland. Habitat and species records will be held in a computerised database within Aberdeen University, this information can then be used by anyone for all areas of environmental management or research (professional organisations may be expected to pay a small administration fee). Presently we are simply establishing the record centre, setting up equipment and collecting data, however in the not-too-distant-future we will be accessible to everyone with an interest in their local environment.

Current Activities: To be arranged

Facilities: To be arranged

Linked organisations: To be arranged

Resources: To be arranged

Records held : To be arranged

18. ORKNEY BIODIVERSITY RECORDS CENTRE

Contact: **Ross Andrew**
Anchor House
10 Bridge St
Kirkwall, Orkney
KW15 1HR
Tel. 01856 875127
Fax. 01856 875127
biodiversity@orkney.gov.uk



BRISC Accreditation:- 1997 category 3

Access:- 9.00-17.00, Mondays-Fridays

Area covered:- Orkney Islands VC 111

Summary

Orkney Biodiversity Records Centre is a partnership project established in September 1998 and co-funded by Orkney Field Club, Orkney Islands Council (Education Department), Orkney Enterprise, RSPB, SNH, and the European Regional Development Fund. On expiry of the ERDF funding programme (or any successor joint funding) the datasets will be held and developed by OIC Education Department who plan to locate the future Centre within the new County Library which is currently under development.

OBRC builds on the work undertaken over many years by the Orkney Field Club and is currently funded until December 2000 to achieve the following targets

1. Create a geographic database of 200,000 biological records,
2. Create databases on the biodiversity of each inhabited island,
3. Ensure all public agencies working in Orkney have a mechanism for the delivery of data in a mutually agreed format,
4. Ensure a mechanism for the delivery of data for commercial enquiries,
5. Ensure Orkney BRC is compatible with other LRCs throughout the country and with the future National Biodiversity Network (NBN),
6. Promote the concepts of biodiversity,
7. Contribute to the development of the Orkney Biodiversity Action Plan.

Current activities

- Inputting data to *Recorder* - target 200,000,
- Developing the Centre as a resource for recorders,
- Planning the development of a *Recorder* satellite system,
- Working with recorders to develop an LBAP-driven recording strategy for future work,
- Improving communications between the centre, the community at large, and recorders throughout the County,
- Developing training opportunities for recorders.

Facilities

- Work space,
- Compound and stereo- microscopes,
- Voucher specimen handling,
- Small reference library,
- Recording cards available.

Linked organisations/continued

Linked organisations

Orkney Field Club. A considerable number of records have been made over many years and are currently held by Orkney Field Club
 Orkney Islands Council
 RSPB
 SNH
 Orkney Enterprise

Resources

These at the new centre are to be developed as described above
 At present OBRC holds ca 20,000 other biological records on *Recorder* - target is 200,000

Records held by taxonomic Groups, computerised by Orkney Field Club, but not currently held on *Recorder*

Taxonomic Group	nos of species computerised	nos in paper format	date-range
Mammals	14		1959-1997
Birds	340		
Amphibians			
Reptiles			
Fish			
Arachnids		83	1959-1975
Crustacia			
Insects	600		1969-1996
Molluscs	362	81	1959-1996
Myriapods			
other invertebrates			
Fungi	120+		1959-1996
Lichen			
Mosses & liverworts			
Vascular plants	800		1959-1997
Other plants	300+		1959-1996

19. PERTH MUSEUM BIOLOGICAL RECORDS CENTRE

Contact: **Mark Simmons**
Perth Museum
George St
Perth
PH1 5LB
Tel. 01738 632488
Fax. 01738 443505
email Museum@pkc.gov.uk

BRISC Accreditation:- 1995 category 1

Access:- Museum open 10.00-17.00 Monday-Saturday
Access to LRC by arrangement (no access on Saturdays)

Area covered:- Perth & Kinross

Summary

Perth Museum Biological Records Centre is based in the Natural Sciences Section of Perth Museum and Art Gallery, part of the Leisure and Cultural Services Department of Perth & Kinross Council.

Since 1980 records have been kept on vertebrates (excluding birds) and some invertebrate groups. Beginning in 1988 the Centre has run annual species surveys to encourage interest and participation in recording. Work on an mammal atlas has begun.

The Museum houses a substantial collection of natural history specimens mainly collected during the period 1880-1930. There are substantial numbers of Perthshire voucher specimens, especially in the herbarium and insect collections.

In conjunction with the Biological Records Centre at Dundee Museum and other data holders in the area, the potential for improved management of biological information is being investigated.

Current activities

- Member of Tayside Biodiversity Partnership which is progressing a Local Biodiversity Action Plan for Tayside,
- Tayside has been selected as a demonstration project for the development of the National Biodiversity Network (NBN) Linking Records Centres Project,
- A preliminary atlas of mammals of Perth & Kinross project is underway; publication expected in 2004,
- In conjunction with SWT Perthshire Branch, developing invertebrate surveys of listed wildlife sites.

Resources

- Natural history collection - 170,000 specimens including 20,000 Perthshire voucher specimens (plants, insects, and vertebrates),
- Library with local natural history literature,
- 300 site files,
- Recorder and DMap,
- Microscopes, field equipment.

Records held/continued

Records held by taxonomic Groups (1999)

Taxonomic Group	nos computerised	nos in paper format	date-range
Mammals	7400	1000	1980-present
Birds	200		
Amphibians		700	1990-present
Reptiles		300	
Fish			
Arachnids			
Crustacia			
Insects	1100	2000	1986-present
Molluscs		200	1980s
Myriapods		50	
other invertebrates			
Fungi			
Mosses & liverworts			
Vascular plants	300	200	1980-present
Other plants			

The above excludes the museum's collection of data

20. RENFREWSHIRE BIOLOGICAL RECORDS CENTRE

Contact: **Shona Allan**
Keeper of Natural History
Paisley Museum & Art Galleries
High Street
Paisley
PA1 2BA
Tel. 0141 889 3151
Fax. 0141 889 9240
email rbrc@renfrewshire.gov.uk

BRISC Accreditation:- 1991 category 1

Access:- Museum open daily 10.00- 17.00 Tuesday- Saturday
Access to Centre by arrangement (Tuesday - Friday)

Area covered:- Strathclyde
Council areas- Renfrewshire, E Renfrewshire, Inverclyde. (598 square km)
OS map coverage NS16-17 NS26-27 NS35- 37 NS44-47 NS54-56 NS64-65

Summary

RBRC is located in the Natural History Department of Paisley Museum. It was inaugurated in 1976 and has developed, since that date, to have a wide range of local wildlife information and an active role in local conservation.

The Museum supports Paisley Natural History Society (P.N.H.S.) which carries out a programme of survey work most summers.

Recording news, survey reports and local species summaries are published via PNHS Annual Reports.

RBRC has good resources; within its databank is most of the available material relating to Renfrewshire. Most information is held on paper though a transfer to *Recorder* is underway. It has collections of specimens to reinforce the database. Good working space and resources are available to researchers and access is by arrangement.

General policy on access to information is free access for non-commercial uses with charging for time needed to service commercial enquiries.

Current activities

- Transferring data onto *Recorder* - currently 16,000 records entered,
- Co-ordinating biodiversity audit for Renfrewshire LBAP,
- Special species surveys: - orchids, butterflies, dragonflies, foxes,
- Phase 1 survey to complete the area's coverage.

Facilities

- Work space, tables, microscopes, etc. are available,
- Access to reference collections and identification literature,
- Field recording sheets available.

Linked organisations

Paisley Natural History Society (secretary c/o Paisley Museum)
Scottish Wildlife Trust (Clyde area officer)
SNH (Mid & South Clyde area office)
Greater Glasgow Urban Wildlife Forum
FWAG (local office)
RSPB Lochwinnoch Nature Reserve

RSPB South & West Scotland regional office, Glasgow
Scottish Ornithological Club (Clyde area branch)
Council departments
Environment section, Planning Dept. Renfrewshire Council
Environment section, Planning Dept. East Renfrewshire Council
Planning Dept. Inverclyde Council

Resources

- Site files on 400 local sites, ranging from SSSIs to local sites,
- Slide collection on site, localities and species by grid references,
- Data files and habitat maps based on tetrad basis,
- Species records card system and on *Recorder*; includes lichens, plants, insects, birds, and mammals,
- Habitat mapping. Phase 1 surveys over ten years covering about 60% of area. NVC coverage of Clyde Muirshiel Regional Park,
- Aerial photo-coverage: - 1954 black and white, 1988 colour stereo,
- Maps: - geological maps, soil survey maps and reports.

Records

Approximately 70,000 of which 16,000 are computerised - no details available as to groups.

21. SCOTTISH BORDERS BIOLOGICAL RECORDS CENTRE

Contact: Dan Watson

Harestanes Visitor Centre
Ancrum
Jedburgh
TD8 6UQ
Tel: 01835 830306
01835 830734
email dwatson@scotborders.gov.uk

No *BRISC* Accreditation

Access:- By arrangement

Area covered:- Council area - Scottish Borders Council
Vice Counties - 78-81, part of 83

Summary

SBBRC has been located at Harestanes Countryside Visitor Centre since April 1998; prior to this it was based at Hawick Museum. The new centre was established in 1994, since when it has built up a valuable databank of species and habitat information. The centre is run within the Leisure and Recreation Department of Scottish Borders Council.

Our aim is to actively promote the recording of wildlife and its habitats in order to provide detailed information to those bodies directly responsible for the planning and implementation of the management of the Scottish Borders Countryside. This will also add to the pool of scientific knowledge relating to wildlife population dynamics.

SBBRC is keen to involve the public in its activities and encourages participation in various recording schemes. It is currently undertaking a development programme in line with NBN guidelines.

Current activities

- Involvement in LBAP species audit,
- Transfer of BSBI records to *Recorder*,
- Development of links with other local organisations to facilitate the transfer of records.

Facilities

- A workspace and library are available for visiting recorders and researchers,
- Recording sheets are available for local recording.

Linked organisations

Scottish Borders Council Museum Service
Scottish Borders Council Planning and Development Department
Forest Enterprise
Countryside Ranger Service
LBAP Officer
SNH Area Office, Scottish Borders
SEPA
RSPB Local Conservation Advisor
SWT Tweed Valley Survey Team
SOC Local Recorder
Tweed Foundation
BSBI Vice County 81 Recorder
Bryophyte Recorders
Fungus Group of South-east Scotland

Resources

Records held by taxonomic Groups (1999)

Taxonomic Group	nos computerised	nos in paper format	date-range
Mammals	2730		
Birds	3972		
Amphibians	173		
Reptiles	54		
Fish	1775		
Arachnids	644		
Crustacia	778		
Insects	20,729		
Molluscs	1370		
Myriapods	67		
other invertebrates	898		
Fungi	1552		
Mosses & liverworts	88,886		
Vascular plants	9963		
Other plants			

22. SHETLAND BIOLOGICAL RECORDS CENTRE

Contact: **Roger Riddington**
Shetland Amenity Trust
22-24 North Rd, Lerwick
Shetland
ZE1 0NQ
Tel. 01595 694688
Fax. 01595 693956
email sbrc@zetnet.co.uk



Not *BRISC* Accredited

Access:- Access by arrangement with Centre Manager.
9.00-17.00 Monday - Thursday (1600 Fridays)

Area covered:- Shetland VC. 112

Summary

Shetland Biological Records Centre (SBRC) was established in 1998, funded by a partnership of four locally-based organisations (Scottish Natural Heritage, Shetland Islands Council, Shetland Enterprise Company, and Shetland Amenity Trust), with matching funding from the European Community. The headquarters of the new Centre are located within Shetland Amenity Trust (a local environmental organisation) in Lerwick.

In Shetland, there has been a steady increase in systematic biological recording since the 1970s. Shetland Bird Club was the first specialist recording group in Shetland (formed in 1973), and continues to thrive. Alongside it, Shetland Entomological Group, and Shetland Sea Mammal Group are now also well-established.

All three of these organisations, together with RSPB, SEPA, and the Shetland Oil Terminal Environmental Advisory Group, are represented on the Steering Group of SBRC, and will supply records to the new Centre.

As a newly-established local records centre, the database at SBRC is still relatively small. However, there has been careful allocation of resources for data input and, as a result, we can already provide a wide range of important natural history data. At the moment, *Recorder* is the primary database software, although information on invertebrates is stored on MS Access.

Access to information is free to non-commercial users, commercial enquiries are charged at a market rate.

Current activities

- Preparation of 'Shetland's Rare Plants' in collaboration with two local botanists. This will be a county rare plant flora following national guidelines, and will be published by SBRC,
- Shetland-wide survey of amphibians in 1999,
- Involvement with the LBAP process for Shetland, including managing a contract to produce a biodiversity audit,
- Separate from the above, producing an audit of all existing biological records pertaining to Shetland,
- Adding important local surveys and data to the *Recorder* database.

Facilities

- Access to reference library,
- Help and advice on local recording.

Linked organisations

Scottish Natural Heritage (Shetland Area Office)
Shetland Islands Council (Environment & Transportation Department)
Shetland Oil Terminal Environmental Advisory Group
Royal Society for the Protection of Birds (Shetland Office)
Scottish Environment Protection Agency (Shetland Office)
Shetland Bird Club
Shetland Entomological Group
Shetland Sea Mammal Group

Resources

- Computerised data on plants, invertebrates, birds & mammals,
- Site files for a number of key local sites,
- Small reference library.

Species Records held on *Recorder* (1999)

Taxonomic Group	No. of records
Charadriiformes	10,746
Gaviiformes	526
Magnoliidae	1,181
Carnivora	378
Falconiformes	334
Pteridopsida	85
Passeriformes	319
Liliidae	391
Anseriformes	315
Anura	121
Equisetopsida	15
Pinopsida	2
Procellariiformes	1
Lepidoptera	9,407
Odonata	52
Syrphidae	928
Hymenoptera	88
Neuroptera	117
Trichoptera	95

23. SKYE ENVIRONMENTAL CENTRE

Contact: Grace Yoxon
Broadford
Isle of Skye
IV49 9AQ
Tel/fax 01371 822487
email SEC@otter.org



Not *BRISC* accredited

Access:- by arrangement

Area covered:- Isle of Skye, Lochalsh, small Isles

Summary

Skye Environmental Centre is an independent Scottish Charity. Its objectives are to further, through education and involvement, an understanding of the unique environment of the Hebrides, its geology, fauna and flora and too help conserve and protect it.

SEC organises research programmes, conferences, field excursions and school projects and it also the headquarters of the International Otter Survival fund.

The Centre runs a wildlife hospital taking in all casualties but specialising in otters and seals.

Current activities

- Behavioural studies of the Eurasian otter on the Isle of Skye,
- Population studies of the Eurasian otter in South Uist,
- Otter Watch UK (a recording scheme of live and dead otters),
- Bat surveys in conjunction with the Bat Conservation Trust,
- Research into reducing the level of otter road mortalities (using wildlife warning reflectors),
- Cetacean recording (in conjunction with Mammal Society,
- Co-ordinating local current Highland Biological Recording Group surveys.

Facilities

- Work space, tables, library,
- Geological collection, microscopes, etc.,
- Training opportunities for recording , especially otters.

Linked organisations

Mammal Society
IUCN Otter Specialist Group
Whale and Dolphin Conservation Society
Earthkind
Born Free Foundation
Hebridian Whale and Dolphin Trust
Marine Animal Rescue Coalition
British Divers Marine Life Rescue
SSPCA
Scottish Natural Heritage
Highland Biological Recording Group

Resources and records

- Otter population data on the Isle of Skye,
- Data on coastal utilisation of otters,
- Spraint analysis equipment an identification material,

- Library with geology and natural history material,
- Maps: Geological and Ordnance Survey topographical,
- Geological reference collection,
- Children's environmental education equipment (nets, etc.),
- Slide resources on the natural history of the Hebrides.

Records held by taxonomic Groups (1999)

Taxonomic Group	nos computerised	nos in paper format	date-range
Mammals	5000		1985-present
Birds			
Amphibians			
Reptiles			
Fish			
Arachnids			
Crustacia			
Insects			
Molluscs			
Myriapods			
other invertebrates			
Fungi			
Mosses & liverworts			
Vascular plants			
Other plants			

24. SOUTH LANARKSHIRE BIOLOGICAL RECORDS CENTRE

Contact: Anne McKillop
Chatelherault
Ferniegair
Hamilton
ML3 7UE
Tel. 01698 426213
Fax. 01698 421532

BRISC accreditation:- Chatelherault CP was accredited in 1994 to level 5

Access:- Ranger centre open daily 10.00-17.00
Access to the information is possible, on application to the ranger service.

Area covered:- S Lanarkshire

Summary

Records have been kept at both Chatelherault and Calderglen Country Parks for many years as part of the rangers' duties. Most information gathered concerned the parks themselves and compartmentalised recording was undertaken. Information is generally stored on paper but information relating to the Country Parks is on *Recorder*.

South Lanarkshire BRC, together with North Lanarkshire BRC, belongs to the Lanarkshire Biological Recording forum. This group is currently investigating opportunities for redeveloping the service in Lanarkshire.

Resources

- 4 years bird data from Calderglen Country Park,
- Bird data for James Hamilton Heritage Park (E Kilbride) and Langlands Moss (LNR),
- Plant records all on 1km basis for Calderglen Country Park.

Records held by taxonomic Groups (1997)

Taxonomic Group	nos computerised	nos in paper format	date-range
Mammals	6500	2000	1980-present
Birds			
Amphibians		700	1990-present
Reptiles		300	1990-present
Fish			
Arachnids			
Crustacia			
Insects	100	2000	1986-present
Molluscs		200	1980s
Myriapods		50	
other invertebrates	950		
Fungi			
Mosses & liverworts			
Vascular plants			
Other pants			

Section 4

NATIONAL RECORDING SCHEMES

"Because of the efforts of dedicated amateurs and, increasingly, statutory organisations, the UK has an exceptionally rich resource of biological data and information. But there are important gaps...."

Biodiversity: the UK Steering Group Report ¹

Keeping the information on schemes up-to-date

The information presented here has been gathered through personal contact with the national schemes and their organisers during the first quarter of 1999. Every effort has been made to make this section as comprehensive as possible. A list of all the national schemes co-operating with the national Biological Records Centre (BRC) at Monks Wood was kindly supplied by Paul Harding, head of BRC, and where we knew or were told of other, independent, schemes, these have been added. *BRISC*, however, is anxious at all times for the information here to be as comprehensive and as up-to-date as at all possible, and we are therefore keen to learn about any changes which may have taken place since this section was compiled, and also to hear about any national recording schemes that may have been missed out. A printed publication of this kind quickly goes out of date, but most of the information in this section will also be accessible on *BRISC*'s website <http://www.brisec.org.uk>, where it is intended to devise a method for individual schemes to keep their own details up-to-date.

Methods for data gathering

All the recording schemes listed here welcome new field workers and submission of records. Some schemes employ the BRC standard recording card (Gen13), some have their own specially designed forms such as Butterfly Conservation, while others operate independently of BRC such as the British Trust for Ornithology. There are also BRC recording cards which have been specially designed for a particular scheme, detailing additional information which that scheme wants recorded. Information about how records should be submitted and what recording cards to use can be found for each scheme under the heading 'Method'. Many schemes also provide helpful notes for fieldworkers, such as the BSBI for the Atlas 2000.²

The importance of grid referencing

As discussed under Section 2, giving precise location is important, and a grid reference for each record (and especially for rarer species) is highly recommended, preferably to 6-figures (i.e. to 100m accuracy) or at least down to a 4 figure (i.e. to 1km accuracy), **even if the scheme does not require it**, because it makes the record so much more useful in the long run. **However, the demand for detailed grid referencing should not be taken to such extremes that it discourages people from submitting records.** (See Appendix G for how to determine a grid reference).

Help with identification

Many scheme organisers are willing to help with difficult identifications. Where this is the case, please follow the common courtesy rule of contacting the person in question first to see if it is convenient to send in specimens and how best to do this, and always enclose postage for return mailing. Any specimen should always be accompanied by as much information as possible and at least with the minimum requirement, which is location, grid reference, date and who found it.

Schemes relation to national societies

Many schemes are run by or affiliated to national societies. Relevant details are given with each scheme, and addresses of national societies and other useful information can be found in Appendix C.

Coping with requests for data

Local partnerships, who are carrying out audits for Local Biodiversity Action Plans, or Local Records Centres needing to collect in one place as much information as possible about their areas, may wish to contact scheme organisers or national recorders for data, and the format in which data is held is listed where possible for each scheme. It should, however, be noted that many of the schemes, especially for

¹ Anon, (1995), *Biodiversity, the UK Steering Group Report*, Vol 1 section 3.15

² Dines, T D, *Fieldwork for Atlas 2000: 4. A Beginners Guide to Recording*, BSBI 10pp. Has details also on how to give various grid references.

the less popular groups, are run by busy people in their spare time and this will inevitably influence their response rate. A number of schemes have not as yet computerised their data, and some rely on BRC to computerise their records. Where possible, the total of computerised records held on the BRC's mainframe for a scheme has been stated separately under the heading 'Data'.

An urgent need for rationalising the submission of records

An immediate problem which has been affecting individual observers for some time is: who to send their records to? It is too often the case that individual recorders feel they need to submit the same records to two or three different places, e.g. to the Local Records Centre, to the national recording scheme and direct to BRC at Monks Wood, to ensure that they all get them. This process is badly in need of rationalisation, so that a record only needs to be submitted once to be assured of flowing through the system, and we believe this is something that the NBN needs to tackle sooner rather than later. Regular and reliable data flow between data holders would be of the greatest mutual benefit. Thus, national schemes need to be alert to the fact that there will be records collected by LRCs, which are relevant to their scheme and that these should not be ignored. It could even be the case that only the national organiser/expert is able to assess the reliability of these records. From the LRCs' point of view, the national schemes will undoubtedly hold records which the LRC needs for the local situation. The whole issue requires open discussion to find what is practical as well as reliable.

Order of listings

The schemes have been listed in the order used for the UK BAP list of priority species³, i.e. by the English names for groups and starting with Vertebrates (animals with backbone): mammals first, then amphibians & reptiles, birds and fish, followed by Invertebrates (animals without backbone), where the sequence follows the Latin names of the major groups in alphabetical order, i.e. Arachnida for spiders & allies, Coleoptera for beetles and bugs, Diptera for flies, Lepidoptera for butterflies and moths, and so on. The botanical schemes come towards the end. The Index at the back of the publication will also help.

VERTEBRATES **(Animals with backbone)**

MAMMALS

Name of Scheme:- **Look out for Mammals project**

Website:- <http://www.mammal.org.uk>

Number of Species:- 72

Scottish County Recorders for the Mammal Society:

Central Region:- Mr John F Haddow, 27 Balmoral Court, Dunblane
Perthshire FK15 9HQ Tel: 01786 823390

Ayrshire:- Dr Bruce Philp, c/o Scottish Agricultural College,
Auchincruive, Ayr KA6 5HW Tel: 01292 520331

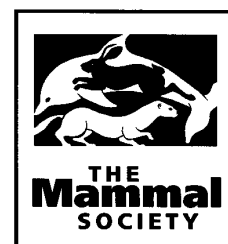
Clyde:- Dr J A Gibson, Scottish Natural History Library, Foremount House, Kilbarchan,
Renfrewshire PA10 2EZ Tel: 0150 792419

Argyll & Inner Hebrides:-Mr Tim Champion, PO Box 9556, Lochgilphead, Argyll, PA31
8YA

Lothians:- Peter Reynolds, Motacilla, 2 West Port, Garvald, East Lothian

Fife:- Dr Gordon B Corbet, Little Dumbarrie, Upper Largo, Leven, Fife KY8 6JG
Tel: 01333 340634

Highland Region:- Highland Biological Recording Group c/o Ms Ro Scott, SNH,
27 Ardconnell Terrace, Inverness IV2 3AE Tel: 01463 712221



³ *Biodiversity, the UK Steering Group Report* Vol 2: Action Plans. 1995. HMSO

Isle of Skye:- Mr Paul Yoxon, Isle of Skye Environmental Centre Ltd., Broadford, Isle of Skye IV49 9AQ Tel: 01471 822487

Outer Hebrides: Mr Bill Neal, Askernish, South Uist, Western Isles, HS8 5SY
Tel: 01878 700237

Orkney:- Mr Ross Andrew, Orkney LRC, Anchor House, 10 Bridge Street, Kirkwall, Orkney KW15 1HR, Tel: 01856 875127

Shetland:- Dr Roger Riddington, Shetland LRC, Shetland Amenity Trust, 22-24 North Road, Lerwick, Shetland, Tel: 01595 694688

National Organiser:- Ms Gillie Sargent, Project Officer

Address:- The Mammal Society, 15 Cloisters House, 8 Battersea Park Road, London, SW8 4BG
Tel: 0171 498 4358 Fax: 0171 622 8722 email: enquiries@mammal.org.uk

The scheme has been in operation since 1976.

Method:- A standard recording card is obtainable from the Mammal Society.

Coverage:- Widespread.

Data:- 115,200 records are held electronically at BRC, 59% to 1km accuracy; 21% post 1980.

Activities:- The website gives information about the Society and details of schemes and training courses organised by the Society, such as at Highland Ecological Centre in Inverness-shire and at Kindrogan in Perthshire in 1999. A national mammal scheme is planned for November 1999.

Publications:- *Mammal News*, a quarterly newsletter of the Mammal Society, edited by Gordon Woodroffe, Tel: 01752 432416. Arnold, H R (1993), *Atlas of Mammals in Britain*, HMSO, ISBN 0-11-701667-5 (£12.50).

Ease of identification:- A good starting point is Sargent, G & Morris, P (1998), *How to Find and Identify Mammals* (second edition), available at £7.50 from the Mammal Society.

Recommended guides to ID:- (see also above)

- Corbet, G B (1989), *Finding and Identifying Mammals in Britain*. British Museum (Natural History), London.
- Corbet, G.B & Harris, S (1991), *The Handbook of British Mammals*. Blackwell, Oxford (o/p).
- Macdonald, D & Barrett, P (1993), *Collins Field Guide to Mammals of Britain & Europe*, HarperCollins Publishers, London.
- Greenaway, F & Huston, A M (1990), *A Field Guide to British Bats*. Bruce Coleman Books, Uxbridge.
- Yalden, D W (1985), *The Identification of British Bats*, The Mammal Society, London.
- Green, J & Green, R. (1997), *Otter Survey of Scotland 1991-1994*, The Vincent Wildlife Trust, London.

The Mammal Society also organises national survey schemes for individual species (details of which can also be found on its website - see above):

National Owl Pellet Survey

Started in 1993, this ongoing survey uses current pellet analysis data to study small animal species distribution and compare availability of these species between locations and habitats throughout the country. Contributors collect pellets and analyse them, sending in the data, or send the pellets for analysis. Pellet analysis data (current) or pellet batches for analysis welcome.

Contact:- R A Love, 4, Laurel Way, Totteridge, London N20 8HP

International Hedgehog Survey

An ongoing survey started in 1992 looking at the impact, perceived or otherwise, of hedgehogs on ground-nesting birds throughout their range: studying distribution and anecdotes concerning hedgehogs. Information is required about damage where hedgehogs are suspected as the cause.

Contact:- H Warwick, 167 Lache Lane, Chester CH4 7LU

Brown Hare Distribution Survey

This survey, to establish the relationship between habitat pattern and brown hare population dynamics, is now finished. Information collected will be used to quantify the effects of habitat change on hare distribution and abundance.

Contact:- G McLaren or S Harris, Zoology Department, Bristol University, Woodland Road, Bristol BS8 1UG

National Field Vole Survey

This survey, which ran from 1994-1998 is now finished. The results will be used in the management and conservation of habitats and bird/mammal species.

Contact:- M Woods, Hollinside, Axbridge Road, Cheddar, Somerset BS27 3BZ

J Flowerdew:- Zoology Department, Cambridge University, Downing Street, Cambridge CB2 3EJ

National Fox Survey

The Mammal Society is undertaking a new survey during winter 1999 and 2000 (February - March) in association with BBC Wildlife Magazine to try and establish the size and distribution of rural fox population in Britain and to find out more about their diet. It involved walking a 1km transect (see also Section 2) twice within a 2-4 week period, recording and collecting fox droppings ('scats') among other things.

Contact:- Ms Charlotte Webbon, The National Fox Survey, School of Biological Sciences, University of Bristol, Woodland Road, Bristol BS8 1UK Email:- C.C.Webbon@bris.ac.uk

Name of scheme:- National Bat Monitoring Programme

Website:- <http://www.bats.org.uk>

Number of species:-

Scottish Contact:- For your nearest group, contact the national organiser

National organiser:- The Bat Conservation Trust,

Address:- 15 Cloisters House, 8 Battersea Park Road, London SW8 4BG

Tel:- 171 627 2629 Fax:- 0171 627 2628

email: enquiries@bats.org.uk

The Trust was founded in 1990. The programme, which is DETR funded, started in 1996 and will run for five years.

Method:- The local groups do the recording. It is necessary to have a licence to visit roosts.

Coverage:- There are 18 groups or so in Scotland

Data:- It is not a recording scheme as such but a monitoring programme to establish trends

Activities:- The Bat Conservation Trust runs training workshops at Kindrogan for potential licensees.

Publications:- The Journal *Scottish Bats*, where the results are published.

Ease of identification:- There is great potential for participation, and new members, both young and old are welcome. There is a range of memberships of the Bat Conservation Trust: A junior membership only costs £5 per annum, and a family membership £20.

Recommended guides to ID:-

- Stebbings, R E, *Which Bat is it*, Mammal Society, London.
- Yalden, D W (1985), *The Identification of British Bats*, The Mammal Society, London.
- latest CD/tape by Stag Electronics, 4 Esprit Court, New Roads, Shoreham-by-Sea, West Sussex BN46RB



Name of scheme:- Deer Distribution Survey

Number of species:- 6

National Organiser:- Mr Hugh Rose,

Address:- Trian House, Comrie, Perthshire, PH6 2HZ

Email:- hughrose@dial.pipex.com

Scheme has been in operation since 1963, directed by the British Deer Society, HQ Burgate Manor, Fordingbridge, Hants, SP6 1EF

Method:- There is a standard recording card, but individual records may be submitted with detailed written report and map reference.

Coverage:- Patchy - England is very out-of-date. Scotland is better (7 years out-of-date on a 10km square basis).

Data:- All records are passed to BRC who maintain the national database



British Deer Society

Activities:- Visits are arranged by branches to wild sites for species. A Millennium update of the distribution is planned for 1999, with six Branch recorders. Anyone interested in contributing should contact the national organiser above.

Publications:- A report on Scottish deer distribution was published in the *British Deer Society Journal*, 1993. Species pamphlets produced jointly with Mammal Society (see above).

Ease of identification:- Scottish Deer Centre, Cupar, Fife, has captive animals. Deer identification sheets available from British Deer Society education section. Videos produced regularly.

Recommended guides to ID:-

- (1971), *Field Guide to British Deer*, Blackwell (o/p but may be reprinting)

Name of scheme:- **Whales, Dolphins & Porpoises (Cetaceans)**

Website:- not established yet

Number of species:- 25

Scottish Contact:- Strandings Coordinator: Dr Bob Reid

Address:- SAC Veterinary Service, Drummond Hill, Stratherrick Road, Inverness IV2 4JZ

Tel:- 01463 243030 Fax:- 01463 711103

Sea Watch Foundation regional Co-ordinators

Shetland:- Shetland Cetacean Group,
Dr Paul Harvey c/o SNH,
Stewart Building., Alexandra
Wharf, Lerwick, Shetland ZE1
0LL, Tel:- 01595-693345

Aberdeen:- Ciaran Cronin, JNCC, Dunnet, 7 Thistle Place, Aberdeen AB10 1UZ

Moray Firth:- Friends of Moray Firth Dolphins, Lyn & Peter MacDonald, 4 Craig View,
Findochty, Grampian, AB56 2QF, Tel:- 01542-833867

NW Coast:- Mr Ian Birks, Sail Gairloch, Tigh Na Coille, Strath, Gairloch, IV21 2BT,
Tel:- 01445-712326

Hebrides:- Dr. Chris Parsons, Hebridean Whale & Dolphin Trust, 28 Main St., Tobermory,
Isle of Mull, PA75 6NA, Tel:- 01688-302620

National Recorder:- Sea Watch Foundation, Dr Peter G H Evans, Director

Address:- 11 Jersey Road, Oxford, OX4 4RT

Tel/Fax:- 01865 717276 - Email:- peter.evans@zoology.ox.ac.uk

Scheme has been in operation since 1972 (formerly Cetacean Group of Mammal Society until 1991)

Method:- These are often difficult to identify at sea and most records rely on strandings. Any bodies should be reported to the Strandings Coordinator for Scotland (see above).

Data:- Currently over 50,000 sightings on database/spreadsheet.

Activities:- The Sea Watch Foundation is co-ordinating a national sightings scheme (recording sightings of live animals) as well as establishing Regional Groups which conduct active programmes of sightings data collection.

Publications:- A coloured A3 laminated species identification chart, a colour field guide booklet, and a technical report *Status Review of Cetaceans in UK Waters* and a free *Guide for Regional Group members* are all available. Sea Watch also publishes a newsletter three times a year and is working on an *Atlas of Cetacean Habitats in the UK*.

Recommended guides to ID:-

- Evans, P G H (1992), *Guide to the Identification of Whales, Dolphins and Porpoises in European Seas*, Sea Watch Foundation. 36pp., ISBN 1-85716-193-9.
- Carwardine, M (1995), *Whales, Dolphins and Porpoises*, Dorling Kindersley. 256pp. ISBN 0-7513-1030-1



BIRDS

There are a number of on-going local recording schemes, carried out and collated into local bird reports by local branches of the Scottish Ornithologists' Club or independent local bird clubs. A list of

local reports is published in the Birdwatchers Yearbook, which also details all local and other recording schemes, including some commissioned research and monitoring carried out by the RSPB. Only five organisations are listed here: the BTO, JNCC (Seabirds and Cetaceans Branch), RSPB, SOC and WWT.

Name of Organisation :- **British Trust for Ornithology (BTO)**

Website:- soon to be announced

Number of species:- 571

Scottish Recorders:- The BTO has regional representatives in most areas, who can advise on survey participation in your neighbourhood. Current recorders are listed below in alphabetical order by area:



Aberdeen North	Paul Doyle, South Meiklemoss, Collieston, Ellon, Aberdeen, AB41 8SB Tel: home 01358 751365; work 01224 493288
Aberdeen South	Graham Cooper, Westbank, Beltie Road, Trophies, Nr Banchory, Aberdeen, AB31 4JT Tel: home 013398 82706; work 01224 205047
Angus	Ken Slater, 19 Carnegie Street, Arbroath, Angus, DD11 1TX Tel: home 01241 877073
Argyll - Arran, Bute & Cumbrae	Vacant (surveys organised directly from Thetford)
Argyll - Islay, Jura & Colonsay	Malcolm Oglivie, Glencairn, Bruichladdich, Isle of Islay, Argyll, PA49 7UN Tel: home 01496 850218
Argyll - (North & Mull)	Vacant (surveys organised directly from Thetford)
Argyll - (South & Gigha)	Vacant (surveys organised directly from Thetford)
Ayrshire	Paul Darnborough, 65 Loreny Drive, Kilmarnock, Ayrshire Tel: work 01563 528623
Benbecula & The Uists	Paul Boyer, 96 Carnan, South Uist, Western Isles Tel: home 01870 610253; work 01896 754333 and ask to bleep!
Borders	Alex Copland, Iona Cottage, Creel Road, St Abbs, Berwickshire, TD14 5PN No home telephone
Caithness - (acting)	Neil Money, Heathfield House, Dunnet, Thurso, Caithness, KW14 8XP Tel: home 01847 851346; work 01847 805208
Central Scotland	Neil Bielby, 56 Ochiltree, Dunblane, Perthshire, FK15 0DF Tel: home 01786 823830
Dumfries	Richard Mearns, Connansknowe, Kirkton, Dumfries & Galloway DG1 1SX Tel: home 01387 710031
Fife & Kinross	Norman Elkins, 18 Scotstarvit View, Cupar, Fife, KY15 5DX Tel: home 01334 654348
Inverness (East, West & Speyside)	Hugh Insley, 1 Drummond Place, Inverness, IV2 4JT Tel: home 01463 230652; work 01463 232811
Kincardine & Deeside	Vacant (surveys organised directly from Thetford)
Kirkcudbright	Vacant (surveys organised directly from Thetford)
Lanark, Renfrew & Dunbartons.	John Simpson, 3 Mitchell Drive, Cardross, Strathclyde, G82 5JJ Tel: home 01389 841351; work 01436 674321 and ask for Coulport 5486
Lewis & Harris Joint	Anthony Pendle, 3 Linsiadar, Isle of Lewis PA86 9DR Tel: home 01851 621311
Lewis & Harris Joint	Chris Reynolds, 50 Strouden Avenue, Bournemouth, Dorset, 9HX Tel: home 01202 528483
Lothians	Alan Heavisides, 9 Addiston Court, Balerno, Midlothian, EH14 7DB Tel: home/work 0131 455 2381
Moray & Nairn	Bob Proctor, 94 Reid Street, Bishopmill, Elgin, IV30 4HH Tel: home 01343 544874 (weekends); work 01479 821409; fax: 01479 821069
Orkney	Colin Corse, Garrisdale, Lynn Park, Kirkwall, Orkney, KW15 1SL Tel: home 01856 874484; work 01856 884156

Perthshire	Ron Youngman, Blairchroisle Cottage, Ballinluig, Pitlochry, Perthshire PH9 0NE Tel: 01796 482324
Rum, Eigg, Canna & Muck	Bob Swann, 14 St Vincent Road, Tein, Ross-shire, IV19 1JR Tel: home 01862 894329
Ross-shire	Andrew Ramsay, Lower Courthill, By Tain, Ross-shire, IV19 1NE Tel: home 01862 892361; work 01862 892121; fax: 01862 893334
Shetland	Dave Okill, Heilinabretta, Cauldhame, Tronda, Shetland, ZE1 0XL Tel: home 01595 880450; work 01595 696926
Sutherland - (acting)	Neil Money, Heathfield House, Dunnet, Thurso, Caithness KW14 8XP Tel: home 01847 851346; work 01847 805208
Skye	Vacant (surveys organised directly from Thetford)
Wigtown	Geoff Sheppard, The Roddens, Leswalt, Stranraer, Dumfries and Galloway, DG9 0QR Tel: home 0177 687 0685

BTO Head Quarters:- The Nunnery, Thetford, Norfolk, IP24 2PU
Tel:- 01842 750050 Fax:- 01842 750030 Email:- enquiries@bto.org

The organisation has been in operation since 1933.

Method:- A number of 'BTO Wild Bird surveys for Volunteers' are run by BTO, each with its own recording form. Details of current schemes are given below.

Coverage achieved:- Generally good, but less well in more remote areas in Scotland

Data:- Over 5 Million records. Paper records are being transferred to electronic format.

Activities:- Courses in censusing are available. BTO also organises conferences and lectures.

Publications:- *BTO News* (6 times a year) free to members. *Bird Table* (4 times a year) free to participants of Garden BirdWatch Scheme (see below). There are also reports for most annual surveys which are distributed to participants. BTO has been involved in three recent publications of great importance: Gibbons, D W, Reid, J B & Chapman, R A (1994), *The New Atlas of Breeding Birds in Britain and Ireland: 1988-1991*, Poyser, London (£40). Lack, D (1986), *The Atlas of Wintering Birds in Britain and Ireland*. Poyser, London. (£21.95). Hagemeyer, W J M & Blair, M J (1997), *The EBCC Atlas of European Breeding Birds*, T & A D Poyser (£55).

Ease of identification:- There is plenty of scope for observers at all levels. Each scheme gives a skill level.

Recommended guides to ID:- Many excellent publications offer help for beginners and skilled observers alike:

- Cramp & Perrins (1977-1994), *Handbook of the Birds of Europe, the Middle East and North Africa: The Birds of the Western Palearctic* (9 volumes), Oxford University Press, is the most comprehensive, but handy volumes such as the following can usefully be taken into the field:
- Jonsson, L (1992), *Birds of Europe with North Africa and the Middle East*, Helm, or
- Ferguson-Lees, J, Willis, I & Sharrock, J T R (1992), *The Shell Guide to the Birds of Britain and Ireland*, Michael Joseph Ltd, London.



Name of scheme:- Breeding Bird Survey

Number of species:- 240

Scottish Organisers:- see list above

National Organiser:- Richard Bashford,

Address:- BTO HQ, The Nunnery, Thetford, Norfolk IP24 2PU

Tel:- 01842 750050 Fax:- 01842 750030
richard.bashford@bto.org

Scheme has been in operation since 1994.

Description:- A joint BTO/JNCC/RSPB project. The survey aims to monitor widespread and abundant breeding birds across all major regions and habitats. It involves counting birds each year in specially selected 1-km squares of the National Grid. A preliminary visit is used to set up transect lines and record details of the habitat. We aim to survey around 360 1km squares in Scotland annually and new observers are urgently required. The survey will, for the first time, provide indices of population change for many Scottish birds. Mammal records also welcome.



Coverage:- Generally good, but Caithness, Sutherland and Argyll are under-recorded.

Data:- 320 squares are covered.

Activity:- Three site visits required during the period April-June, total around 5 hours of fieldwork.

Publications:- Annual report to participants.

Skill level:- Identification of all birds seen and heard.

Name of scheme:- **Common Birds Census**

Number of species:- All species are recorded. National indices are produced for 75 species.

Scottish Organisers:- see list above.

National Organiser:- John Marchant or Fiona Sanderson

Address:- BTO HQ, The Nunnery, Thetford, Norfolk IP24 2PU

Tel:- 01842 750050 Fax:- 01842 750030 email:- john.marchant@bto.org

Scheme has been in operation since 1962.

Description:- This is a BTO project involving some 16 people in Scotland who each cover a particular area of about 100-200

acres of farmland or 25-50 acres of woodland to monitor the breeding of birds of that area from year to year, and detect changes in numbers on a UK basis.

Coverage:- More Scottish plots are urgently required.

Data:- UK Common Birds Census indices are available for 75 species.

Activity:- It involves ten visits during late March - early July every year, mapping the positions and activities of all birds encountered on the census plot to establish the number of breeding pairs within the area. Average about 3 hours per visit and paperwork.

Publications:- The results are reported annually in *BTO News*, and there is feedback to individual observers.

Skill level:- Identification of all birds seen and heard.

Common Birds Census



Name of scheme:- **Garden BirdWatch**

Number of species:- Detailed records are collected for 41 species. Additional records are also welcome.

Scottish Organisers:- see list of Regional Representatives above.

National Organiser:- Jacky Prior or Andrew Cannon

Address:- BTO, The Nunnery, Thetford, Norfolk IP24 2PU

Tel:- 01842 750050 Fax:- 01842 750030 Email:- gbw@bto.org

Scheme has been in operation since 1996.

Description:- Supported by CJ Wildbird Foods. The only year-round, nation-wide survey of wild birds in gardens. Participants contribute £10 per year.

Coverage:- Nationwide. Records from inner city and rural gardens are particularly welcome.

Data:- Records from 8,000 gardens throughout the UK.

Activity:- Weekly logs of well-known garden bird species observed during normal domestic activities are sent to the BTO HQ on computer-read forms.

Publications:- A quarterly magazine *Bird Table* is produced exclusively for Garden BirdWatchers with informative articles on garden birds and feedback on the survey results.

Skill level:- Suitable for anyone with access to a garden, including beginners. Do not have to feed birds.

Name of scheme:- **Heronries Census**

Number of species:- 1

Scottish Organisers:- see list of Regional Representatives above.

National Organiser:- John Marchant

Address:- BTO, The Nunnery, Thetford, Norfolk IP24 2PU

Tel:- 01842 750050 Fax:- 01842 750030

Email:- john.marchant@bto.org

Scheme has been in operation since 1928. This is one of Europe's longest-running bird surveys.

Description:- An annual scheme to monitor changes in the

Heronries Census



numbers of breeding pairs of grey herons throughout Britain, organised through a countrywide network of regional coordinators. The scheme gives good information on the health of the environment as herons are at the top of a complex food web.

Coverage:- Nationwide. More volunteers needed in most areas.

Data:- 50 sites are monitored in Scotland

Activity:- Each year, all active grey heron nests need to be counted in early spring. Check with BTO that your heronry is not already covered, then estimate number of active nests.

Publications:- Feedback via *BTO News*

Skill level:- Suitable for beginners.

Name of scheme:- **Nest Record Scheme**

Number of species:- Cards for 231 species have been received.

Scottish Organisers:- see list of Regional Representatives above.

National Organiser:- Caroline Dudley or Humphrey Crick

Address:- BTO HQ, The Nunnery, Thetford, Norfolk IP24 2PU

Tel:- 01842 750050 Fax:- 01842 750030 Email:- caroline.dudley@bto.org

Scheme has been in operation since 1939.

Description:- The nest record scheme is a scheme for all bird watchers. Using special BTO record cards, log any nests found and collect information on numbers of eggs and nestlings observed. Provides vital data on nesting success and productivity for a range of species. Results are reported to Scottish Natural Heritage (via JNCC) as a vital part of their conservation monitoring programme.

Coverage:- Records for less common species particularly valuable.

Data:- 40,000 cards per year.

Activity:- Very flexible, monitor just one nest box in the garden, or as many nests as you can find.

Publications:- An annual breeding report is published in *BTO News*. A free guide/instruction booklet is available from BTO.

Skill level:- Some care required to avoid disturbance, otherwise suitable for beginners.

Name of scheme:- **Waterways Bird Survey**

Number of species:- 20 core species

Scottish Organisers:- see list of Regional Representatives above.

National Organiser:- John Marchant or Fiona Sanderson

Address:- BTO HQ, The Nunnery, Thetford, Norfolk IP24

2PU Tel:- 01842 750050 Fax:- 01842

750030 Email:- john.marchant@bto.org

Scheme has been in operation since 1974.

Description:- Between March and July, participants undertake regular survey work to record the breeding territories of waterbirds along canals and rivers. The resulting data can be used to assess the effect of water management and pollution on these birds. More coverage in Scotland is urgently required.

Coverage:- Poor in Scotland, especially north of the Forth/Clyde.

Data:- Only 10 sites are covered in Scotland.

Activity:- 9 visits during March - July, each taking about 2 hours.

Publications:- An annual index of population change is published in *BTO News*. Full results from 1974-1988 were included in Marchant et al. (1990) *Population Trends in British Breeding Birds*, BTO.

Skill level:- Identification of all waterbirds seen or heard.

Waterways Bird Survey



Name of scheme:- **Winter Farmland Bird Survey**

Number of species:- 25

Scottish Organisers:- see list of Regional Representatives above.

National Organiser:- Simon Gillings

Address:- BTO HQ, The Nunnery, Thetford, Norfolk IP24 2PU

Tel:- 01842 750050 Fax:- 01842 750030

Email:- simon.gillings@bto.org

Scheme has been in operation since 1998.

Description:- This survey, funded under the JNCC/BTO partnership, covers a suite of species found on farmland in winter, including tree sparrow, linnet, bullfinch, yellowhammer, redwing and fieldfare, lapwing and golden plover.

Coverage:- Poorer in Scotland - information required from all types of farmland.

Data:- 300 10km squares are covered in Scotland.

Activity:- The survey involves coverage of random squares, counts at important sites and casual records.

Publications:- Feedback via *BTO News*

Skill level:- Ability to spot, identify and estimate numbers of typical winter farmland species.

Name of scheme:- **WeBS The Wetland Bird Survey**

(see also entry under Wildfowl & Wetlands Trust)

WeBS represents the amalgamation of WWT's 'National Waterfowl Counts' and BTO's 'Birds of Estuaries Enquiry', and continues the long tradition of waterfowl monitoring begun in 1947.

Number of species:- ca 100

Scottish Organisers:- see list of Regional Representatives above.

National organiser for Low Tide Counts :- Andy Musgrove, BTO HQ

Address:- BTO HQ, The Nunnery, Thetford, Norfolk IP24 2PU

Tel:- 01842 750050 Fax:- 01842 750030 Email:- andy.musgrove@bto.org

National organisers for core counts and general enquiries :- Peter Cranswick or Mark Pollitt

Address:- The Wildfowl & Wetlands Trust, Slimbridge, Glos.

Description:- A joint BTO/WWT/RSPB/JNCC monitoring scheme for non-breeding waterfowl in the UK. Principal aims are to determine population size, trends in numbers and distribution, identify important sites for waterfowl and conduct research which underpins waterfowl conservation.. WeBS core counts on estuaries are normally made at high-tide roosts. WeBS LTC aims to identify important feeding areas within estuaries, using counts made at low tide.

Coverage:- Good. Data are collected from ca. 800 count-sections in Scotland by an extensive network of volunteer counters and local organisers. New counters are always welcome.

Data:- Probably several thousand records generated every year.

Activities:- A monthly visit on pre-selected dates (November - February) at low tide to count birds in predefined sections of inter-tidal habitat

Publications:- All participants receive regular newsletters and a comprehensive annual report.

Skill level:- Identification of all waterfowl birds, seen or heard and skill in counting them

Name of scheme:- **Bird Ringing Scheme**

Number of species:- 405 species have been ringed in the UK and Ireland

Scottish Organisers:- Names of local, qualified ringers with whom to train can be obtained from BTO HQ.

National Organiser:- The Ringing Unit, Jackie Clark

Address:- BTO HQ, The Nunnery, Thetford, Norfolk IP24 2PU

Tel:- 01842 750050 Fax:- 01842 750030 Email:- jacquie.clark@bto.org

Scheme has been in operation since 1909.

Description:- The BTO, acting under the authority of the governments of the UK and Irish Republic, issues permits to individuals wishing to mark wild birds with rings, upon their completion of a training programme. Separate approval must be obtained to ring schedule 1 species in the breeding season. The information gathered from the recovery of ringed birds is processed centrally by the BTO and provides unique insights into birds' life histories and movements.

Coverage:- Good.

Data:- 800,000 birds are ringed in the UK and Ireland each year, ca.14,000 ringed birds are reported each year.

Activity:- Handling living wild birds is one of the most rewarding experiences in ornithology. The safety and well-being of the birds is paramount and hence ringing permits can only be obtained through a time-consuming process of selection and training. Many of the bird ringers in Scotland operate as part of a regional group. There are also a number of projects at universities in which ringing is an essential tool. Information about ringing and how to become a bird ringer are available from the Ringing Unit at the above address.

Publications:- A ringing report is published annually in *Ringing & Migration*..

Skill level:- Dexterity and confidence with small hand tools, serious commitment to ornithology.

Name of scheme:- Retrapping Adults for Survival Project

Number of species:- 45

Scottish Contacts:- List available from BTO HQ

National Organiser :- Dawn Balmer

Address:- BTO HQ, The Nunnery, Thetford, Norfolk IP24 2PU

Tel:- 01842 750050 **Fax:-** 01842 750030 **Email:-** dawn.balmer@bto.org

Scheme has been in operation since 1998.

Description:- An initiative of the BTO Ringing Scheme, it aims to gather retrap information for a wide range of species, especially those of conservation concern. Detailed information about survival rates will help in the understanding of population trends and results will be relayed to conservation organisations to form the basis for effective conservation action plans.

Coverage:- National, with 17 projects registered in Scotland.

Activity:- Ringers choose a target species, decide on a study area and develop suitable catching techniques. The aim is to catch all the breeding adults of the chosen species within the study area and repeat this over a minimum of five breeding seasons.

Publications:- Results are reported in *Ringers' Bulletin* and *Ringing & Migration*.

Skill level:- Must have current ringing permit.

Name of scheme:- Constant Effort Sites Scheme

Number of species:- 28 species are monitored

Scottish Organisers :- List available from BTO HQ.

National Organiser :- Dawn Balmer

Address:- BTO HQ, The Nunnery, Thetford, Norfolk IP24 2PU

Tel:- 01842 750050 **Fax:-** 01842 750030 **Email:-** dawn.balmer@bto.org

Scheme has been in operation since 1983.

Description:- Another project for ringers which monitors changes in the populations of passerine birds. Survival rates and breeding success are also measured.

Coverage:- National, with 12 projects registered in Scotland

Activity:- Birds are caught in a fixed set of mist-nets on 12 occasions between May and August.

Publications:- Results are reported in *Ringers' Bulletin* and *Ringing & Migration*.

Skill level:- Must have current ringing permit.

Name of scheme:- Rare Breeding Birds Panel

Scottish Contacts:- see list of Regional Representatives above.

National Organiser :- The Secretary, Dr Malcolm Oglivie

Address:- Glencairn, Bruichladdich, Isle of Islay PA49 7UN

Description:- The Panel is an independent body supported by the Joint Nature Conservation Committee, the Royal Society for the Protection of Birds, the British Trust for Ornithology and the journal *British Bird's*. It collects in a central file all information on rare breeding birds throughout the UK. All details are strictly confidential.

Method:- Special forms are used, obtainable free of charge from the Secretary. They should, if possible, be submitted to the Panel via county and regional bird recorders.

Publications:- An annual summary report is published in *British Birds*.

Name of scheme:- Seabird Monitoring Programme

Website:- www.jncc.gov.uk

Number of species:- 60+

National Organiser :- Dr Kate Thompson

Address:- JNCC, 17 Rubislaw Terrace, Aberdeen AB1 1XE

Tel:- 01224 655703 **Fax:-** 01224 621488

Email:- thomps_k@jncc.gov.uk

Scheme has been in operation since 1989 to monitor seabird breeding numbers and performance.

Method:- Standardised methods as prescribed in Handbook (see below).

Coverage:- Four key sites are studied (Fair Isle, Isle of May, Canna, Skomer).

Data:- Seabird Colony Register (Paradox database) contains information on many seabird: several million records.



Activities:- Little scope for public involvement at four key sites but data on breeding numbers and performance from other colonies is welcome.

Publications:- Lloyd, C, Tasker, M L, & Partridge, K (1991), *The Status of Seabirds in Britain and Ireland*. London, T & AD Poyser. Thompson, K R, Brindley, E & Heubeck, M (1997), *Seabird Numbers and Breeding Success in Britain and Ireland, 1996*. JNCC, Peterborough. Thompson, K R, Brindley, E & Heubeck, M (1998), *Seabird numbers and breeding success in Britain and Ireland, 1997*. JNCC, Peterborough. Thompson, K R, Pickerell, G & Heubeck, M (1999), *Seabird numbers and breeding success in Britain and Ireland, 1998*. JNCC, Peterborough. Walsh, P M. et al. (1995), *Seabird monitoring handbook for Britain and Ireland*. JNCC, Peterborough. ISBN 1 873701 73 X

Name of scheme:- **Seabird 2000**

Website:- www.jncc.gov.uk

Number of species:- 60+

National Organiser:- Dr Ian Mitchell

Address:- JNCC, 17 Rubislaw Terrace, Aberdeen AB1 1XE

Tel:- 01224 655717 Fax:- 01224 621488 Email:- mitche_i@jncc.gov.uk contact

Scheme has been in operation since 1998 to census all seabird colonies in Britain and Ireland 1998-2001.

Method:- Standardised methods as prescribed in Walsh, P M et al. (1995), *Seabird Monitoring Handbook for Britain and Ireland*. JNCC, Peterborough

Data:- Seabird 2000 database (Paradox) holds several million data.

Activities:- Volunteers required throughout Britain and Ireland.

Publications:- Biannual newsletter.



Name of organisation:- **The Royal Society for the Protection of Birds**

Scottish Headquarters:- Dunedin House, 25 Ravelston Terrace, Edinburgh EH4 3TP,

Tel:- 0131 311 6500

Scottish branch offices are:

East Scotland 10 Albyn Terrace, Aberdeen, AB1 1YP Tel:- 01224 624824

North Scotland: Etive House, Beechwood Park, Inverness IV2 3BW Tel:- 01463 715000

South & West Scotland Unit 3.1 West of Scotland Science Park, Kelvin Campus, Glasgow G20 0SP, Tel:- 0141 945 5224

National Headquarters:- The Lodge, Sandy, Bedfordshire, SG19 2DL

Tel:- 01767 680551

The Society was founded in 1889

Purpose:- To work for the conservation of wild birds and their habitats, including the acquisition and management of nature reserves, research and surveys, monitoring and response to development proposals and other threats to wild birds, the protection of rare and endangered species and advice on wildlife law enforcement.

Activities:- Manifold. Of particular interest to recording is RSPB commissioned research into various aspects of wild birds, including monitoring schemes. There is also a club for children (YOC). Join the RSPB to become involved.

Publications:- The magazine *Birds* (quarterly); *Bird Life* (bi-monthly magazine for YOC members); and a yearly *Conservation Review*.

Name of organisation:- **The Scottish Ornithologists' Club**

Number of species:- all those on the Scottish list = 469 + 12 species in category D (escapes etc.)

SOC recorders (as published in the 1996 *Scottish Bird Report*)

Shetland: Kevin Osborn, 20 Nederdale, Lerwick, Shetland ZE1

OSA

Fair Isle The Warden, Bird Observatory Fair Isle, Shetland ZE2

9JU

Orkney Tim Dean, Echnaview, Burray, Orkney KW17 2SX

Outer Hebrides Brian Rabbitts, 6 Carinish, Lochmaddy, North Uist HS6 5HL

Caithness Peter Miller, 10 Harrold Cottages, Reiss, Wick, Caithness KW1 4RU



Highland Colin Crook, 6 George Street, Avoch, Rosshire, IV9 8PU
 Moray & Nairn Martin Cook, Rowanbrae, Clochan, Buckie, Banffshire AB56 5EQ
 North-east Scotland Andy Thorp & Andy Webb, 30 Monearn Gardens, Milltimber,
 Aberdeen, Grampian AB1 0EA
 Angus & Dundee Mike Nicoll, Natural History Museum, Albert Square, Dundee
 Perth & Kinross Ron Youngman, Blairchroisle Cottage, Ballinluig, Pitlochry, Perthshire
 PH9 0NE
 Fife Douglas Dickson, 2 Burrelton Court, Glenrothes, Fife KY7 4UN
 Isle of May Ian Darling, 579 Lanark Road West, Edinburgh EH14 7BL
 Forth Cliff Henty, 7B Coneyhill Road, Bridge of Allan, Stirlingshire FK9 4EL
 Argyll Paul Daw, Tigh-na-Tulloch, Tullochgorm, Minard, Argyll PA32 8YQ
 Clyde Islands Bernard Zonfrillo, 28 Brodie Road, Glasgow G21 3SB
 Clyde Iain Gibson, 8 Kenmure View, Howwood, Johnstone, Renfrewshire PA9
 1DR
 Ayrshire Angus Hogg, 11 Kirkmichael Road, Crosshill, Maybole, Ayrshire KA19
 7RJ
 Lothian Ian Andrews, 39 Clayknowes Drive, Musselburgh, Midlothian EH21 6UW
 Borders Ray Murray, 4 Bellfield Crescent, Eddleston, Peebles, EH45 8RQ
 Dumfries & Galloway Steve Cooper, WWT Eastpark Farm, Caerlaverock, Dumfries DG1
 4RS

National headquarters :- Sylvia Laing, Secretary, 21 Regent Terrace, Edinburgh EH7 5BT

Tel:- 0131-556 6042

Club founded in 1936.

Purpose:- Encourage ornithology in Scotland, including to encourage and direct the study of Scottish ornithology in all its branches; co-ordination; co-operation between field and indoor workers, and promotion of research.

Coverage:- There are 14 branches of the club covering most of Scotland.

Method:- There are no standard forms, but records are submitted annually to local recorders who subsequently submit a selection to the editor of the annual *Scottish Bird Report*.

Activities:- There are programmes of indoor meetings and field outings throughout the year, two conferences a year (one weekend event and one day event in conjunction with BTO). The publications of both breeding atlases (1976, 1994) and the winter distribution atlas (1986) (see below) are joint ventures between BTO, SOC and RSPB, with SOC members being largely responsible for collecting data in Scotland. Several branches have produced their own local atlases. Join the SOC to become involved.

Publications:- The Journal *Scottish Birds* (twice a year) with scientific articles, *Scottish Bird Report* (once a year), *Scottish Bird News* (four times a year). Some branches also produce their own newsletters. The SOC has been involved in the data collection for and publication of Gibbons, D W, Reid, J B & Chapman, R A (1994), *The New Atlas of Breeding Birds in Britain and Ireland: 1988-1991*, Poyser, London (£40). Lack, D (1986), *The Atlas of Wintering Birds in Britain and Ireland*. Poyser, London. (£21.95). Also published under the auspices of SOC is Thom, V (1986), *Birds in Scotland*. Poyser, (hbk £25.00) and *Raptor Round Up*, the annual report for the Scottish Raptor Study Groups.

Name of organisation:- **The Wildfowl & Wetlands Trust (WWT)**

Website:- <http://www.greenchannel.com/wwt>

Number of species:- All waterfowl, i.e. divers, grebes, cormorants, herons, swans, geese, duck, rails and coot, waders, gulls & terns.

Scottish Organisers:- A list of local organisers is available from WWT

National Organiser:- Peter Cranswick, Head of Waterfowl Monitoring

Address:- HQ:- WWT, Slimbridge, Glos., GL2 7BT

Tel:- 01453 890333 ext. 280 Fax:- 01453 890827

Email:- Peter.Cranswick@wwt.org.uk

Trust Founded in:- 1947

Purpose:- To monitor numbers, distribution and trends of waterfowl. The WWT organises surveys, listed under separate entries below.

Coverage:- In Scotland the biggest gaps are W Scotland, Orkney and Shetland.



Data:- Several million records, with ca. 50,000 added every year. All records since 1960 have been computerised.

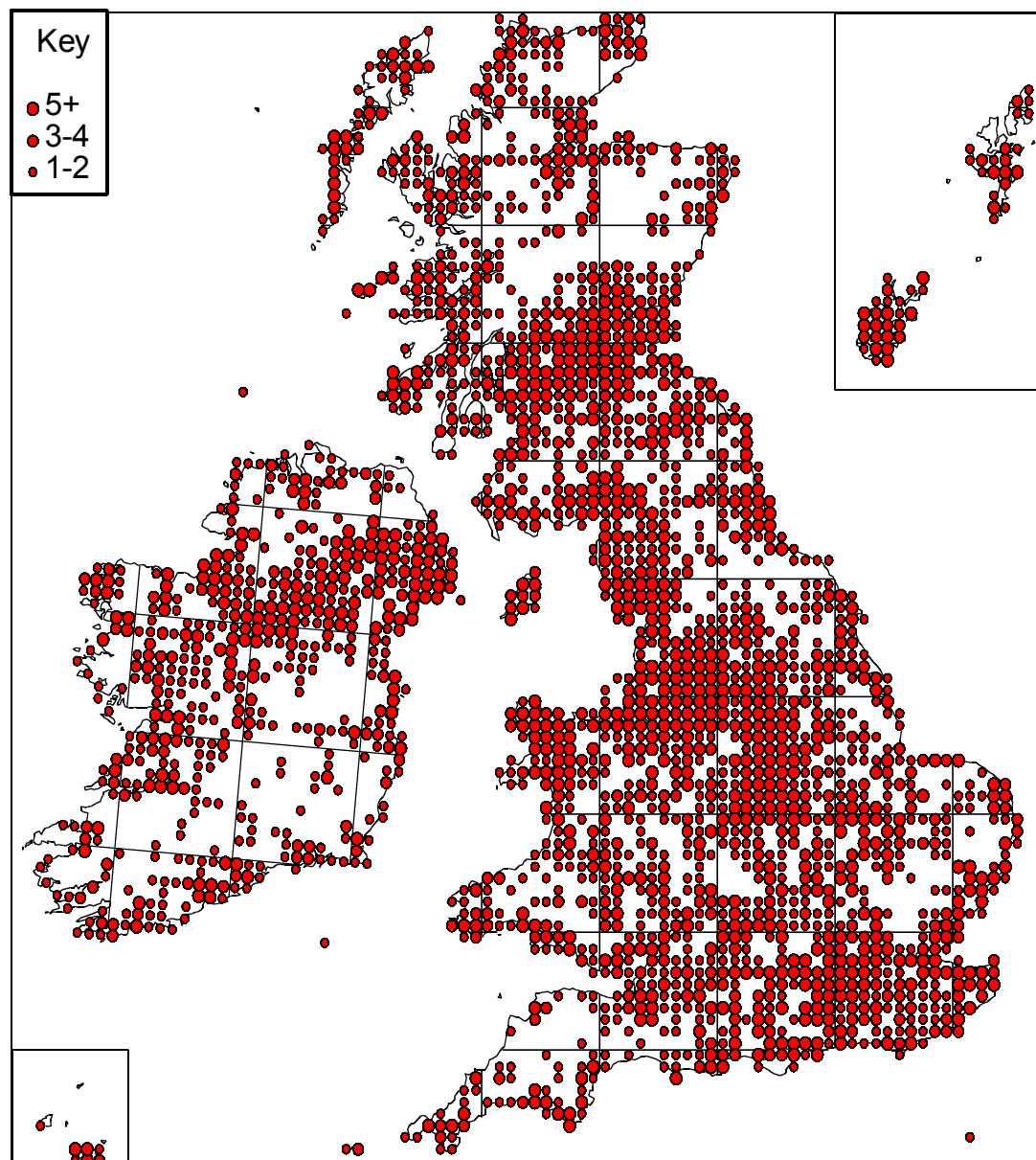
Activities:- Contact the WWT.

Publications:- An annual report *The Wetland Bird Survey: Wildfowl and Wader Counts*, published jointly by BTO, WWT, RSPB and JNCC, available from WWT.

Skill level:- There are many excellent field guides to the identification of birds and endless opportunities for beginners as well as for experienced observers, depending on the scheme.

Recommended guides to ID:-

- Jonsson, L (1992), *Birds of Europe with North Africa and the Middle East*, Helm.
- Madge & Burn (1988), *Wildfowl*, Helm.
- Maynard, Marchant & Prater (1986), *Shorebirds*, Helm.



The map above shows coverage by WeBS and Low tide-WeBS since 1960. Different sized dots represent the number of count units counted in each 10km square. Map supplied by WWT.

Name of scheme:- **The Wetland Bird Survey (see also WeBS Low Tide Counts under BTO)**

WeBS represents the amalgamation of WWT's 'National Waterfowl Counts' and BTO's 'Birds of Estuaries Enquiry', and continues the long tradition of waterfowl monitoring begun in 1947.

Number of species:- Potentially > 200 (all waterfowl including escapes). Records of more than 100 species are received every year, of which 60-70 occur in significant numbers.

Scottish Organisers :- see above.

National Organisers for core counts and general enquiries :- Mark Pollitt or Becky Hughes

Address:- The Wildfowl & Wetlands Trust, Slimbridge, Glos.

Tel:- 01453 890333 ext. 255 Fax:- 01453 890827 Email:- Mark.Pollitt@wwt.org.uk or Becky.Hughes@wwt.org.uk

Description:- A joint BTO/WWT/RSPB/JNCC monitoring scheme for non-breeding waterfowl in the UK. Principal aims are to determine population size, trends in numbers and distribution, identify important sites for waterfowl and conduct research which underpins waterfowl conservation.

Coverage:- Over 500 sites are covered annually in Scotland by an extensive network of volunteer counters and local organisers. New counters are always welcome.

Data:- Roughly 50,000 records are generated annually for core counts.

Activity:- A monthly visit on pre-selected dates (to coincide with optimal conditions for counting birds at high tide roosts at coastal sites), concentrating on the winter period, to allocated sites.

Publications:- 3000 participants receive regular newsletters and a comprehensive annual report.

Skill level:- Identification of all waterfowl birds, seen or heard and skill in counting them.

INVERTEBRATES (Animals Without Backbone)



Garden Spider from Vilhelm Bergs-e, *Fra Mark og Skov*¹

ARACHNIDA: SPIDERS & ALLIES

British Arachnological Society

Name of scheme:- Spider Recording Scheme (Araneae)

Website:- The British Arachnological Society's site
<http://www.salticu.demon.co.uk/bas/index.html>
also describes the recording scheme.



Number of species:- 637

Scottish Contacts:-

Miss Isobel Baldwin, 44 Murrayfield Drive, Brandon, Durham, DH7 8TQ:
Dumfriesshire (VC 72); Peebles (VC78); Selkirkshire (VC79);
Roxburghshire (VC80); Berwickshire (VC81)

Dr David Beaumont, RSPB Scottish Headquarters, Dunedin House, 25 Ravelston Terrace,
Edinburgh EH4 3TP, Tel:- 0131 311 6500
Kirkcudbrightshire (VC73); Wigtownshire (VC74); Lanarkshire (VC77)
Dunbartonshire (VC99); Cantire (VC101); Ebudes South (VC102)

Dr Iain Downie, Environmental Science, SAC, Auchincruive, Ayr, KA6 5HW,
Tel:- 01560 484351 (home) 01292 525291 (work)
Ayrshire (VC75); Renfrewshire (VC76)

Mr Jim Stewart, 109 Greenbank Crescent, Edinburgh, EH10 5TA:
Tel:- 0131 4474210
East Lothian (VC82); Midlothian (VC83); West Lothian (VC84)
Fife and Kinross (VC85); Stirlingshire (VC86); West Perthshire (VC87)
Mid Perthshire (VC88); East Perthshire (VC89); Angus (VC90)
Argyll Mainland (VC98)

Mr Mike Davidson, 1 Crowmaillie Cottages, Pitcaple, Inverurie, Aberdeenshire, AB51 5HR:
Tel:- 01467 681219 (home) 01224 248338 (work)
Kincardineshire (VC91); Aberdeen South (VC92); Aberdeen North (VC93)
Banffshire (VC94); Morayshire (VC95)

Mrs Claire Geddes, 1 Groam Farm Cottages, Kirkhill, Nr Inverness, IV5 7PB:
Easternness (VC96); Westernness (VC97); Mid Ebudes (VC103)

Mr Michael Kilner, 58 Llangedsedd Way, New Inn, Pontypool, Gwent, NT4 0RG
Clyde Isles (VC100)

Mr David Horsfield, 131 (3F1) Comiston Road, Edinburgh, EH10 6AQ
Tel:- 0131 554 9797
North Ebudes (VC104); West Ross (VC105), East Ross (VC106)
Sutherland East (VC107); Sutherland west (VC108), Caithness (VC109)
Hebrides (VC110)

Mr Edward Milner, 80 Weston Park, London, N8 9TB,
Tel:- 0181 341 9392 (home) 0181 340 2619 (work)
Orkney (VC111); Shetland (VC112);

National Organiser:- Mr Peter Harvey

Address:- 32 Lodge Lane, Grays, Essex, RM16 2YP

¹ Bergs-e (1881) *Fra Mark og Skov: Billeder af Insekternes Liv*, Gyldendal, Copenhagen, Vol 1&2

Tel/Fax:- 01375 371571

Scheme has been in operation since 1987.

Method:- The scheme continues to record all species of spider on the basis of a 10km square grid of the National Grid (Ordnance Survey). Specimens which prove difficult to identify, or require confirmation, may be sent in alcohol, together with date of collection, locality, habitat and grid reference, to the national organiser of the scheme or the appropriate Area Organiser (listed above).

Coverage:- Generally patchy, with under-recorded areas in Mid-Wales, Northern England and N. Ireland. Scotland is poorly covered with few records for many vice-counties. Especially E. Sutherland (VC107), Dunbarton (VC99), Mid-Ebudes (VC103), Selkirk (VC79), Kintyre (VC101), Shetland (VC112), Berwickshire (VC81), Orkney (VC111), Renfrew (VC76), Dumfries (VC72), Stirling (VC86) and Kincardine (VC91).

Data:- ca. 140,000 records, stored in a variety of formats, on cards or electronically (ca 35,000) using *Recorder* as well as home-grown databases. Mr Stanley Dobson, Moor Edge, Birch Vale, High Peak, Derbyshire, SK22 1BX, will provide advice to those intending to submit records on computer disk rather than using cards.

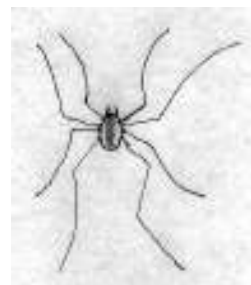
Activities:- Sometimes courses are run at Kindrogan Field Centre, and usually each year there are courses run by the Field Studies Council in Surrey and Pembroke.

Publications:- A newsletter is published three times a year and issued to all members of the BAS resident in the UK and those few recorders who are not members of the Society. A provisional distribution atlas has been delayed till 2001, at the earliest.

Ease of identification:- This is a difficult group and a microscope is essential, preferably a stereo instrument, and a high intensity top light. Specimens need to be stored in spirit.

Recommended guides to ID:-

- Locket, G H & Millidge, A F (1952-1953), *British Spiders*, Vol. 1 & 2. Ray Society, London.
- (reprinted volumes 1-2 in one volume may still be available from the Natural History Museum book shop, or Foyles Bookshop both in London.
- Locket, G H, Millidge, A F & Merrett, P (1974), *British Spiders*, Vol. 3. Ray Society, London.
- Roberts, M J (1985-1987), *The Spiders of Great Britain and Ireland*, Vol. 1, 2 & 3, Harley Books, Colchester. Roberts, M J (1995), *Field Guide to the Spiders of Britain and Northern Europe*, HarperCollins. This volume provides an excellent way into the group, but does not cover all the species on the British list.



Harvest Spider (AMS)

Name of scheme:- **Harvestmen or Harvest Spiders (Opiliones) Recording Scheme**

Website:- <http://www.salticus.demon.co.uk> (British Arachnological Society)

Number of species:- 24, only 17 species recorded so far from Scotland.

Scottish Contact:- Mr Mike Davidson

Address:- 1 Crowmaillie Cottages, Pitcaple, Inverurie, Aberdeenshire, AB51 5HR:

Tel:- 01467 681219

National Recorder:- Dr Paul Hillyard

Address:- Department of Entomology, The Natural History Museum, Cromwell Road, London SW7 5BD

Tel:- 0171938 8832 Fax:- 0171 938 8896 Email:- phd@nhm.ac.uk

Scheme has been in operation since 1973.

Method:- Standard recording cards are available from BRC. Harvestmen occur in moss, leaf litter and in low vegetation. They are mainly nocturnal but most can be captured by day, especially on the lower branches of trees and shrubs and in ling or heather moorland vegetation. Most mature from June onwards.

Coverage:- Records are wanted from all areas of Scotland, especially damp ravines and from localities above 250m OD. Main gaps are north of the Great Glen, south of the Forth/Clyde valley and most of the islands.

Data:- At least 20,000 for GB. Most of these are electronically validated, but 3,000 are still only on cards. At the latest count, 16,500 records were held electronically by BRC.

Activities:- The recorder for Britain is willing to help in cases of difficult identification, but must first be contacted (SAE please). The ORS is part of the British Arachnological Society, which runs field meetings and courses. Contact: Secretary Dr Helen Read, c/o Corporation of London, Burnham Beeches Office, Hawthorn Land, Farnham Common, Slough SL2 3TE.

Publications:- Sankey, J H P (1988), *Provisional Atlas of the Harvest-Spiders (Arachnida : Opiliones) of the British Isles*, ITE, ISBN 1-870393-10-4. The scheme's newsletter, *Ocularium*, is published once a year in combination with the Spider Recording Scheme's newsletter.

Ease of identification:- Microscope plus key (see below) needed; with these, identification of all British species is reasonably straightforward. To get involved, join the British Arachnological Society.

Recommended guides to ID:-

- Hillyard, P D & Sankey, J H P (1989), *Harvestmen*, (2nd edition) Synopsis of the British Fauna (New Series) no 4, Linnean Society of London, ISBN 90-04-09078-9, available from National Recorder for ORS at address above for £15.

Name of scheme:- **Pseudoscorpion Recording Scheme**

Number of species:- ca. 26

No official Scottish Organiser.

National Organiser: - Dr Gerald Legg

Address:- Booth Museum of Natural History, 194 Dyke Road, Brighton, BN1 5AA

Email:- boothmus@pavilion.co.uk

Scheme has been in operation since 1970.

Method:- Collection and preservation details are available on BRC field cards. Pseudoscorpions are most numerous in leaf litter and can easily be extracted by hand sorting, Tullgren funnel or 'litter traps'.

Coverage:- Patchy. Poor coverage in Scotland generally.

Data:- 5,500 records for the UK, held in electronic format.

Activities:- There are no formal activities.

Publications:- A newsletter is produced annually. A minimal, simplified key is in preparation and will be available from the organiser. Provisional atlas produced in 1988.

Ease of identification:- Identification of this group is difficult and records will only be accepted if determinations have been confirmed by a recognised expert.

Recommended guides to ID:-

- Legg, G & Jones, R E (1988), *Pseudoscorpions*, Synopsis of the British fauna (new series) No 40, London: Brill for the Linnean Society.



Tick (AMS)

Name of scheme:- **Ticks (Acari: Ixodoidea) Mapping Scheme**

Number of species:- 23

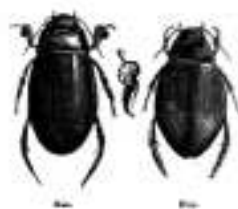
Scheme was in operation 1964-1988.

Data:- Record sheets and collection registers - held by BRC.

Publications:- Martyn, K P (1988), *Provisional Atlas of the Ticks (Ixodoidea) of the British Isles*, limited edition, BRC (ITE), ISBN 1-870393-09-9.

No further information available for this project.

COLEOPTERA:- BEETLES



Diving beetles (from Vilhelm Bergsøe, *Fra Mark og Skov*)

Name of scheme:- Aquatic Coleoptera (Water Beetle) Recording Scheme

Number of species:- 300, with 200 or so species in Scotland.

National and Scottish Organiser :- Professor G N Foster

Address:- Balfour-Browne Club, 3 Eglinton Terrace, Ayr KY7 1JJ

Tel:- 01292 260064 **Fax:-** 01292 525333 **Email:-** G.Foster@au.sac.ac.uk

Scheme has been in operation since 1979.

Method:- A field recording card is available from the Biological records Centre.

Coverage: The coverage of Scotland is good, but records are welcomed for all parts, specially in northern areas in 100km squares NH, NJ and NN away from the traditional "beetling" areas in Speyside.

Data: By December 1998 over 100,000 records for Scotland out of an estimated 300,000 for the British Isles (70% to 100m accuracy; 30% post 1980). All newly acquired records are stored electronically on *Recorder*.

Activities: Each contributor receives a printed output and, upon request, a selection of maps to which they have contributed.

Publications:- A newsletter *Latissimus* is published twice a year. A preliminary atlas of British water beetles has been published in a series of newsletters. An account of rare and endangered species in Scotland has been published: Foster, G N (1994) *Biodiversity Inventory for Scotland: Aquatic Coleoptera*, Scottish Natural Heritage Review No. 26.

Ease of identification:- Identification of the adults is well catered for by publications, but less so for immature stages; water beetles, even the larger ones, can prove difficult to identify and beginners should avail themselves of the free identification service provided through membership of the Balfour-Browne Club.

Recommended guide to ID:-

- Nilsson, A N (ed.) (1996), *Aquatic Insects of North Europe - a Taxonomic Handbook*. Vol 1 Apollo Books, Denmark. ISBN 87 88757 09 9.
- Friday, L E (1988), *A Key to the Adults of British Water Beetles*, Field Studies 7 1-151, published separately as AIDGAP Book 189, Taunton, England.

Name of scheme: **Atomariinae and Ptiliidae Mapping Scheme**

Number of species:- 47 Atomarine Beetles, 72 Feather-wing Beetles

National Organiser :- Colin Johnson

Address:- Dept. of Entomology, Manchester Museum, The University, Manchester M13 9PL

Data:- All Atomariinae records (10,800) were computerised by BRC for the atlas (see below).

Publications:- Johnson, C (1993) *The Atlas of Cryptophagidae-Atomariinae (Coleoptera) of Britain and Ireland*, ITE, ISBN 1-870393-17-1. A Ptiliidae Atlas is in preparation.

This scheme is now complete.



Glow Worms and larvae (from Vilhelm Bergsøe, *Fra Mark og Skov*)

Name of scheme:- Cantharoidea & Buprestoidea Recording Scheme (Soldier beetles, glow worms, net-winged beetles and jewel beetles.)

Number of species:- 60

No separate Scottish Organiser.

National Organiser :- Dr Keith N A Alexander

Address:- 14 Partridge Way, Cirencester, Gloucestershire GL7 1BQ

Tel:- 01285 651818 (daytime) 01285 651171 (evenings) Fax:- 01285 657935

Email:- xeakxa@smtp.ntrust.org.uk

Scheme has been in operation since 1986.

Method:- Records can be sent on computer diskette using the *Recorder* export-import facility or on BRC recording card available from the BRC. Other formats are acceptable however.

Coverage:- Good in England, OK in Wales and N. Ireland; poor in Scotland, especially common species (but also nationally scarce): *Ancistronycha abdominalis* e.g. is a big, obvious but scarce species which has not been recorded for a very long time, although it is unlikely to be extinct in Scotland. Only 2 Buprestoidea have ever been reported from Scotland - *Agrius viridis* and *Trachys troglodytes*, both from Dumfriesshire - but not for about 100 years! Active Scottish recorders are needed for this scheme.

Data:- Thousands of records - all kept on cards and other hard copy. BRC is part way through loading records onto computer and organiser has also started to enter data into *Recorder*.

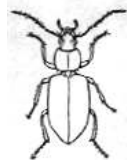
Activities:- British Entomological & Natural History Society (BENHS) has run an identification workshop in the past and this could be re-run if demanded, but using their Reading facilities (Berkshire). Scottish Museums could perhaps also run workshops.

Publications:- A field guide covering the larger, more colourful soldier beetles (the Cantharinae) was produced (1986) by the scheme and is available from the organiser. A newsletter was originally produced (free) once every two years by BRC with among other things a simple field key for the soldier beetles and preliminary maps. Currently, the *Coleopterist* carries updates every two years or so. This journal is available from Mr P J Hodge, 8 Harvard Road, Ringmer, Lewes, East Sussex, BN8 5HJ. Subscription £7 pa (individuals), £10 (organisations). It is also hoped that BRC will produce a Provisional Atlas within the next few years.

Ease of identification:- One species - the glow worm - is very easy, and the field key (see above) is very accessible.

Recommended guides to ID:-

- The best beginner's book is Harde, K W (1984), *The Octopus Book of Beetles*, recently reprinted in soft cover, which has excellent illustrations.
- Joy (1932), *Practical Handbook of British Beetles* for Malthininae (the small dark ones with yellow wing-tips), while Cantharinae (the larger, brightly coloured ones) are covered by the scheme's field key (see above).
- For other Cantharoidea use Joy in conjunction with Hodge & Jones (1995), *New British Beetles*, British Entomological & Natural History Society ISBN 1-899935-00-2 for hardback, 1-899935-01-0 for paperback.
- For Buprestoidea, use Levey, Brian (1977), *Handbooks for the Identification of British Insects* Vol 5 (1b), The Royal Entomological Society, or Brill (1982),
- *The Buprestidae of Fennoscandia and Denmark*. Fauna Entomologica Scandinavica, Vol 10, Scandinavian Science Press, Klampenborg, Denmark ISBN 87-87491-42-7.



Ground Beetle (AMS)

Name of scheme:- **Carabidae (Ground-Beetle) Recording Scheme**

Number of species:- 371

There is no official Scottish Organiser.

National Organiser:- Dr Mark G Telfer

Address:- c/o Biological Records Centre, ITE Monks Wood, Abbots Ripton, Huntingdon, Cambs, PE17 2LS

Tel:- 01487 773381 (daytime) 01223 526553 (evenings) Fax:- 01487 773467

Email:- m.telfer@ite.ac.uk

Scheme has been in operation since 1974.

Method:- A BRC field recording card is available. Since this was produced in 1974, there have been several changes to the British Carabid list. A note covering details of the changes is available from the organiser. There are also single species card for data from museum collections etc.

Coverage:- Good coverage generally, but more sparse and patchy in Scotland than in the rest of Britain - with gaps especially in the areas North of Aberdeen and Caithness.

Data:- 141,695 records, held in electronic format at BRC (30% to 1km accuracy; 50% post 1980).

Activities:- Occasional workshop are arranged, such as British Entomological Natural History Society's workshop in 1998. Several new species for the British list have been discovered in recent years. Recorders wishing to have their identification checked may contact Dr Martin L Luff. Please observe the usual courtesies of seeking permission prior to sending specimens, and of including return postage. Dr Luff's address is Department of Agricultural and Environmental Sciences, University of Newcastle-upon-Tyne, Newcastle upon Tyne NE1 7RU Tel:- 0191 222 6919, Fax:- 0191 222 5228 Email:- martin.luff@newcastle.ac.uk

Publications:- Luff, M L (1998), *A Provisional Atlas of the Ground Beetles (Coleoptera, Carabidae) of Britain*, ITE, ISBN 1-870393-41-4. Occasional news items are published in *The Coleopterist* journal, available by subscription (£7 to individuals within the EC) from the Hon. Treasurer: Mr P J Hodge, 8 Harvard Road, Ringmer, Lewes, East Sussex, BN8 5HJ.

Ease of identification:- Some species require specialist knowledge for accurate identification, and others are more readily identified after some experience. Seeking help from the organiser or another experienced Carabidologist is strongly recommended.

Recommended guides to ID:-

- Lindroth, C H., (1974), *Coleoptera: Carabidae*, Royal Entomological Society Handbooks for the Identification of British Insects (HIBI) 4 (2):1-148, reprinted (1996) with 2 pages of corrections and amendments. Available from Publications Sales, Royal Entomological Society, 41 Queen's Gate, London SW7 5HR, price £15, p+p extra.
- Joy, N H (1932), *A Practical Handbook of British Beetles*, (reprinted 1973, 1997), Classey.
- Forsythe, T G (1987), *Common Ground Beetles*, Naturalists' Handbooks No 8, Richmond Publishing Co. provides a fairly simple starting point. A more extended bibliography is available from the scheme's organiser.



Name of scheme:- **Cerambycidae Recording Scheme (Long-horn Beetles)**

Number of species:- 67

Scottish Contact:- Mr Duncan Sivell

Address:- Habitat and Species Branch, SNH, 2 Anderson Place, Edinburgh EH6 5NP

Tel:- 0131 446 2421 Fax:- 0131 446 2405 Email:- ibb@rasdsnh.demon.co.uk (Duncan Sivell)

National Organiser:- Dr P F G Twinn

Address:- Upper Woodlands, Llanover, Abergavenny, Gwent NP7 9EP

Scheme has been in operation since 1982.

Method:- BRC standard recording card.

Coverage:- Recording throughout the UK is patchy and more recorders are needed. This is particularly so in Scotland where some popular localities, such as Nethy Bridge, Aviemore and Loch Garten are quite well covered, but other areas are virtually lacking any records.

Data:- 14,000 records held electronically by BRC.

Publications:- A distribution atlas is in page proof.

Ease of identification:-

Recommended guides to ID:-

- Bense, Ulrich (1995), *Longhorn Beetles: Illustrated key to the Cerambycidae and Vesperidae of Europe/ Bockkäfer: Illustrierter Schlüssel zu den Cerambyciden und Vesperiden Europas*, Margraff, Germany. Bilingual text throughout (English-German). in paperback.

Name of scheme:- **Chrysomelidae and Bruchidae (Leaf and Seed Beetles) Recording Scheme**

Number of species:- 263 in the British Isles: 1 Bruchid and 130 leaf beetles recorded in Scotland

No official Scottish Contact

National Recorder:- Dr M L Cox,

Address:- Museum Associate, c/o Dept. of Entomology, The Natural History Museum, Cromwell Road, London SW7 5BD

Tel:- 0181 938 9468 Email:- m.cox@nhm.ac.uk

Scheme has been in operation since 1981.

Method:- A recording card (RA41) is available from Monks Wood.

Coverage:- Poor. There are few recorders and concomitantly many 10km squares without records in Scotland (see 'records received' in Cox (1992) referred to below).

Data:- All records are kept manually on cards.

Activities:- The organiser is willing to identify adults, especially those belonging to the difficult genera, *Galerucella*, *Phyllotreta*, *Aphthona*, *Longitarsus* and *Altica*, and also larvae. The larvae are often encountered in the absence of adults and it is important that they be identified in such instances.

Publications:- Cox, M L (1992), 'Progress Report on the Bruchidae Chrysomelidae recording scheme', *Coleopterist* 1: 18-24. Keys to British Donaciinae, *Psylliodes* & more in the pipeline.

Ease of identification:- Difficult without access to a reference collection.

• Recommended guides to ID:-

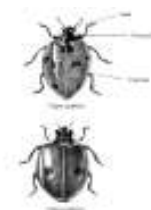
- Menzies, I S & Cox, M L (1996), 'Notes on the natural history, distribution and identification of British reed beetles', *British Journal of Entomology and Natural History* 9: 137-162.
- Cox, M L (1998), 'The genus *Psylliodes* Latreille (*Chrysomelidae: Alticinae*) in the UK', *The Coleopterist* 7 (2): 33-65.
- Aldridge, R J W & Pope, R D (1986), The British species of *Bruchidius* Schilsky (Coleoptera: Bruchidae), *Entomologist's Gazette* 37: 181-193.
- Cox, M L (1995), 'Identification of the *Oulena* 'melanopus' species group (Chrysomelidae)', *The Coleopterist* 4(2): 33-36.
- Cox, M L (1982), 'Larvae of the British genera of chrysomeline beetles (Coleoptera, Chrysomelidae)', *Systematic Entomology* 7: 297-310.
- Kevan, D K (1962), 'The British species of the genus *Haltica* Geoffr', *Entomologists monthly Magazine* 98: 189-196.
- Kevan, D K (1967), 'The British species of the genus *Longitarsus*, *Entomologists' monthly Magazine* 103: 83-110.

Name of Scheme:- **Cleroidea, Lumexyloidea and Heteromera -**

National Recorder:- Dr Key

Address:- English Nature, Northminster House, Peterborough PE1 1UA

No further information of this scheme.



7-spot & 2-spot ladybirds (Fife Nature)

Name of scheme:- **Coccinellidae Mapping Scheme (Ladybird Beetles)**

Number of species:- 42

No official Scottish contact

National Recorder:- Dr M E N Majerus

Address:- Department of Genetics, Downing Street, Cambridge CB2 3EH

Tel:- 01223 333 983 Fax:-

Scheme has been in operation since 1973.

Method:- There is a BRC recording card.

Coverage:- Patchy.

Data:- 9340 records are held electronically by BRC.

Publications:- A bibliography of papers, etc. can be found in the publication below.

Ease of identification:- There is much scope for involvement with schools and the general public. The title below is an excellent way into the group.

Recommended guide to ID:

- Majerus, M E N & Kearns (1989), *Ladybirds*, Naturalists' Handbook No 10, Richmond Publishing

Name of scheme:- **Curculionidae (part - Othocerous Weevils)**

National Recorder:- Dr P S Hyman

Address:- Hillcrest, Church Road, Studham, Bedfordshire, LU6 2QD

No further information of this scheme.

Name of scheme:- **Dermestoidea and Bostrichoidea**

Name of National Recorder:- Mr B Constantine

Address:- 1 Auchencrow Mains, Restium Eyemouth, Berwickshire TD14 5LT

No further information of this scheme.

Name of scheme:- **Elateroidea Recording Scheme (Click Beetles and allies)**

Number of species:- 82 species

No separate Scottish Organiser

National Organiser:- Howard Mendel

Address:- Entomology Department, The Natural History Museum, Cromwell Road, London SW7 5BD

Tel:- 0171 938 8782 Fax:- 0171 938 8937 Email:- h.mendel@nhm.ac.uk

Scheme has been in operation since 1983.

Method:- Records are accepted in any format.

Coverage:- Good compared with many other schemes. The organiser is happy to receive specimens for identification, provided that they are accompanied by full data.

Data:- ca. 30,000 records, partially electronically processed.

Activities:- There are no workshops, but write to the organiser to get involved.

Publications:- Mendel, H & Clarke, R E (1996), *The Provisional Atlas of the Click Beetles (Elateridae, Throscidae and Eucnemidae) of Britain and Ireland* (3rd edition), ITE.

Ease of identification:- A difficult group.

Recommended guide to ID:- There are none at present, but the organiser is writing one.



Rose Chafer (Vilhelm Bergs-e, *Fra Mark og Skov*)

Name of scheme:- **Scarabaeoidea Mapping Scheme (Stag Beetles, Dung Beetles and Chafers)**

Number of species:- 101 on checklist

National Organiser:- Mr Darren J Mann

Address:- Hope Entomological Collections, Oxford University Museum of Natural History, Parks Road, Oxford, OX1 3PW

Tel:- 01865 272957 Fax:- 01865 272970 Email:- darren.mann@zoology.oxford.ac.uk

Scheme has been in operation since 1994.

Method:- Use BRC recording card RA 60.

Coverage:- Generally poor, and very poor in Scotland, where all areas are under-recorded.

Data:- 10,000 records, currently in the process of being computerised.

Activities:- None as yet.

Publications:- The organiser is currently working on a new key to species.

Ease of identification:- Most species in the group are easy, some very difficult. Larger species are readily identifiable with some tuition. The Royal Entomological Society's key, plus more general guides on insects or beetles have figures of larger species.

Recommended guides to ID:-

- Jessop, L (1968), *Dung Beetles and Chafers (Coleoptera: Scarabaeoidea)*, Royal Entomological Society Handbook for the Identification of British Insects 5 (11) ISBN 0 901546 66 6 (53pp).

Name of scheme:- **Scolytidae and Platypodidae (Bark Beetles) Recording Scheme**

Number of species:- 61 Scolytidae; 1 Platypodidae

No official Scottish Organiser.

National Organiser:- Mr Tim Winter

Address:- c/o Entomology Branch, Forest Research, Alice Holt Lodge, Farnham, Surrey GU10 4LH

Tel:- 01428 642379

Scheme has been in operation since 1991.

Method:- A recording card is available from BRC.

Coverage:- The species are poorly covered (except for coniferous species from some Forestry Commission sites).

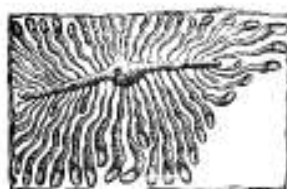
Data:- ca. 2,500 records have been collected. Records are kept manually on cards.

Activities:- This scheme aims not only to record distribution but also to provide basic background information on habitat. These species are rather ephemeral in their appearance at a site since most depend on dead/dying trees being present, which can only be utilised by the beetles for a short period. however, when found often present in abundance.

Ease of identification:- A difficult group to collect. Identification depends on adults being collected and, because of the difficulty of identifying some species, recorders are asked to send in voucher specimens of these to the organiser.

Recommended guide to ID:-

- Duffy, E A J (1953), *Coleoptera (Scolytidae and Platypodidae)*, Royal Entomological Society Handbooks for the Identification of British Insects (HIBI), Vol 5 (15):1-20, (London) (o/p).
- Gr[un]e, S (1979), *Brief illustrated Key to European Bark Beetles*, Hanover, M H Schaper (o/p?).
- Balachowsky, A (1949), 'Coleopteres Scolytides'. *Fauna de France*: 50:1-320. Paris, P Lechevalier.
- Munro, J W (1926), *British Bark Beetles*. Forestry Commissions Bulletin No 8, London, HMSO.



Bark Beetle and its galleries (Vilhelm Bergsøe, *Fra Mark of Skov*)

CRUSTACEA

Name of scheme: **Cladocera (Water-fleas)**

Number of species: 90 native species

National organiser: - Mr J Hearn

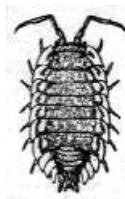
Address: - 3 Waverley Way, Carshalton Beeches, Surrey SM5 3IQ

The scheme has been in operation since 1977.

Method: - A BRC recording card is available from Monks Wood.

Data: - 9,500 records computerised at BRC.

No further information of this scheme.



Name of scheme: - **British Isopod Study Group (Woodlice and Non-marine Waterlice)**

Number of species: - 41 native species

There is no official Scottish Organiser.

National Organiser: - Mr D T Bilton

Address: - Plymouth Environmental Research Centre, Department of Biological Sciences, University of Plymouth, Drake Circus, Plymouth PL4 8AA

Tel:- 01752 232966 Fax:- 01752 232970 Email:- dbilton@plym.ac.uk

The scheme has been in operation since 1968.

Method: - There is a recording card available from BRC.

Coverage: - Quite a lot is already known about woodlice, but there is still much to find out about individual species, and records are welcome from anywhere.

Data: - 27,000 records computerised at BRC, 94% to 1km accuracy; 13% post 1980.

Activities: - The study group acts as a focus for surveys of woodlice and waterlice in Britain and Ireland. There is no formal membership or officers and it is open to amateurs and professionals alike. A field and social meeting is held annually, usually in the Easter vacation, jointly with the British Myriapod Group.

Publications: - An annual newsletter is produced in the autumn, available from the organiser or BRC.

Harding, P T & Sutton, S L (1985), *Woodlice in Britain and Ireland: Distribution and Habitat*, ITE, ISBN 0-904282-85-6 (£4.00)

Ease of identification: - The contribution of amateurs is particularly welcome. One of the best ways to learn more about what is going on is to come to an annual meeting, details of which appear in the Newsletter (see above).

Recommended guides to ID: -

- Hopkin, S P (1991), 'A key to the Woodlice of Britain and Ireland', *Field Studies* 7: 599-670. Available separately as an AIDGAP Publication (Offprint No204) ISBN 1-85153-204-8 (a well illustrated key with brief, clear descriptions of all species and colour photographs of 30 species).
- Oliver, P G & Meehan, C J (1993), *Woodlice*, Synopses of the British Fauna (New Series) No 49, London: Linnean Society of London and The Estuarine and Coastal Sciences Association, ISBN 1-85153-251-X (mostly well illustrated keys and detailed descriptions of all species, but contains errors relating to Armadillidium species).

Name of scheme: - **Crab Distribution Survey**

Clark, P F (1986), *North-east Atlantic Crabs: an Atlas of Distribution*, Marine Conservation Society.

This scheme is no longer active.