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BIOLOGICAL SITE RECORDING AT SHEFFIELD MUSEUM

Introduction

This article forms the third part of a series covering aspects of biological recording at Sheffield City Museums (Whiteley 1978; Garland & Whiteley 1980). Museum involvement with site recording has increased over the last decade, in part as a result of the more enlightened view of conservation by planning authorities (though still not as much as many would like). The situation has been helped by the abilities of Local Biological Records Centres to act as a central data store and an intermediary between some of the parties involved, as well as a body acquiring data in its own right.

This paper explains how the site-recording system has evolved at Sheffield and how it is used. The system is not perfect, obviously, and certain problems have arisen at times, some of which have been outlined.

Filing System

Basic Site File

The main site files are housed in a four-drawer office filing cabinet in separate, suspended files which can be removed quickly for reference to a particular site. Colour slides are kept inside these files in suspended clear-plastic sheets holding up to 24 slides each. The files are grouped by 10 Km National Grid squares (being the square which contains the bulk of the site) and are arranged in alphabetical order by site name within these groups. There are about 120 sites and these can be easily located in the file by prior reference to a master map showing the site names and boundaries. In practice, the latter stage is normally circumvented, as we are familiar with the location of most sites. The only additional part of the site file is a summary index of 8 x 5 inch cards which give the site name, boundaries and a list of literature references to the site.

Information Input

The largest input of site data occurred during 1978 when one of the authors (S. Garland) was employed as a botanist on a Job Creation Programme scheme at Sheffield City Museum. The aim was to visit all sites of known or suspected biological interest in the Sheffield District and to record basic details, especially from a botanical point of view. Over one hundred sites were already on our files, but details about them were non-uniform and often very scanty.

This large number of sites, some of them covering twenty or thirty square kilometres, meant that a careful plan of action had to be formed to enable useful data to be collected from them all, by one person in one season. We decided that the basic requirements of an enquirer, including ourselves, when consulting a site file were to be able to obtain a good idea of what the site was like, without necessarily ever having been there, and to be able to find out how well the site had been studied from all aspects. The site file would provide a suitable place to store lists of species from certain sites, but the aim was to provide a base of information which could be used to build up the files in future.

Eventually the following fieldwork structure was decided upon:

- 1 An attempt should be made to walk through as much of the site as possible. When visiting large, fairly uniform sites such as moorland, attention should also be given to small features such as valleys, bogs, cloughs, woodland and other 'different' habitats. Boundaries should be decided upon as clearly as possible.
- 2 The major habitats should be sketched on a 6 inch to 1 mile map and any potentially interesting places (for example, springs, pools or quarries) should be noted. Habitats are described on the basis of physical features and plant communities.
- 3 Lists of dominant flowering plants should be made for all habitats and, depending on the time available, other plants species, mammals, insects, birds etc.... should be noted.
- 4 35 mm colour transparencies should be taken of the site with the aim of representing a selection of the various habitats.

After the visit the data was written up in the form of a report (see page 515 for an example). This provides an easily understandable verbal description of the site which, when used with an annotated map and colour transparencies enables a very good picture of the site to be drawn.

A geological site survey ran concurrently with the above scheme.

Freshwater Site File

In 1979-80 we conducted a survey, again with Manpower Service Commission support, of freshwater sites and invertebrates, which had largely been omitted in the previous survey.

The Freshwater sampling points and all relevant data are kept in a separate file. This file contains information, species lists and colour slides relating to each site. A master wall-map indicates all the sites and makes it straightforward to extract data concerning all freshwater sampling points within the biological site in question. There are over 500 freshwater sampling points.

In the freshwater file all sites are numbered to facilitate retrieval of data, and to provide an easy cross-reference to a substantial collection of accessioned specimens.

Additional Input

- 1 Bibliography. References to all publications relating to each site. This information represents the oldest part of the site file, initiated by David Spalding in 1964. Comprehensive and more or less up to date. Necessitates a careful check of local publications (Sorby Newsletter, Sorby Record, the Naturalist, county trust newsletters) and occasional search for other material.
- 2 Site orientated records from local naturalists etc.
 - a) Birds. Information based on (but not a direct copy of) the B.T.O. Site Register project, was prepared by members of the Sheffield Bird Study Group, using B.R.C. cards. Note that confidential information is retained by the S.B.S.G. recorder. (Fig)

- b) Mammals and Lower Vertebrates. Reports are prepared for the more important sites relating to these groups. A separate file of Badger setts approaches completion, but is maintained in a confidential file, not available for general enquirers.
 - c) Vascular Plants. Records for the "Flora of Sheffield" project are held by the Sorby N.H. Soc. Botany Section, cross-indexed to species and locality. A photocopied site report and species listings are currently obtained virtually on demand by telephone through the good offices of Miss M. R. Shaw, as required. It is hoped to acquire the complete file for the Record Centre on completion of active fieldwork on the Flora.
 - d) Copies of field excursion reports by the Sorby N.H. Soc., Yorkshire Naturalists Union, Sheffield Bird Study Group and Rotherham Naturalists Soc. are filed. Usually very concise and accurate summaries of the most significant records of the day.
- 3 Newspaper cuttings and C.P.R.E. (Council for the Protection of Rural England) reports. Often very useful background information on the conservation and use of sites.
 - 4 "Feed-back" from students, teachers etc. who have used the site file to prepare their own reports. Copies of the relevant parts of theses, dissertations, projects etc. are requested in return.
 - 5 Various other published and unpublished reports, manuscript material, photographic prints etc. Some examples include management plans prepared by the Peak Park Planning Board, N.C.C. S.S.S.I. schedules, Freshwater Biological Association Report, various black and white prints and negatives.

Updating Files - ideas

The staff input now continues at a lower key for data being collected by the museum staff during field visits. Reports of a similar nature are produced for both new sites and existing sites after a visit, even if they are quite brief. Most of the visits are in response to a specific enquiry which is not satisfactorily answered by our existing file.

An approach similar to that of the JCP Scheme is used when visiting new sites or new areas of known sites. Further visits can be for varying reasons, and information is accumulated on various aspects. The data collection for files can be grouped roughly into 4 stages.

- 1 Initial visit (see JCP scheme above).
- 2 Detailed studies of certain aspects such as habitats, species etc. This involves concentrating efforts on such groups as aquatic beetles, lichens, dead-wood-associated invertebrates or flowering plants. The general idea is to learn as much as possible about a site for the lowest man-hours input.

Discussions concerning which groups to concentrate efforts on have continued for some time and will continue! Many aspects must be considered; these are listed below:-

- a. Species with a strong public appeal will carry more weight in any report. (The "cuddly bunny" syndrome.) This includes mammals, birds, reptiles, amphibians, flowers and butterflies.
- b. Species which cannot be identified in a relatively short time are best avoided if a rapid reply is required to an enquiry. For example, a crate of unidentified beetles is of very low value when compiling a report, although they will almost certainly prove invaluable in time. (Evans; 1979 pp. 23-27, bryophytes.)
- c. Species with very specific ecological requirement relevant to the site under study are very useful as they can impart a great deal of information about the habitat for less work. Examples of such "ecological indicators" are certain Coleoptera and Diptera which require sites with a continuous history of woodland containing overmature trees and dead wood and certain lichen species which are particularly sensitive to habitat disturbance. Additionally, lichens and many freshwater invertebrates are known to be indicators of pollution levels in their respective habitats.

There are two problems associated with this approach. Firstly, the field work is always vastly more productive when performed by someone experienced in collecting the group concerned. Secondly the "ecological indicator" concept is in its infancy and very few proven indicator lists for any habitats exist. (Even the Coleoptera in the ancient woodland indicator lists of Harding (1977) are not of great use in northern England due to faunistic differences, Garland (1983). See also Stubbs (1982) who discusses hoverfly indicator species.

- d. Standardized sampling techniques (e.g. moth-trapping, live mammal-trapping) are fraught with problems. They are useful to compare sites of similar types over the same time periods, but otherwise can be misleading. For example, pitfall traps measure relative activity of animals, or their love of formalin solution rather than their abundance and moth-traps are biased towards faster-flying species and sample migrating and resident populations. Sampling techniques and their pitfalls (groan) are admirably discussed in Southwood (1978).
- 3 Comprehensive site study. This will involve site visits and studies of several groups of the fauna and flora as described above as well as research into earlier recordings and published references. The 'Vale of Belvoir' report (Evans 1979) is an example of such a publication. It presents all the available data in a neutral way to be consulted by the parties concerned with the Public Enquiry held to discuss plans for coal-mining in the area.

Sheffield City Museums Natural Sciences department produced a 48-page report of some detail for the Nature Conservancy Council to support a proposal that a local site, Wharncliffe Wood, be considered as a candidate site for S.S.S.I. status. This presented carefully selected information from a vast quantity which would have rendered the document much more awkward to use. However, even after selecting this information certain of the subjects discussed carried far greater weight than others. Historical algal records are of much lesser value than current hoverfly records pertaining to dead wood associated species. Likewise in the 'Vale of Belvoir Report' the lichen section is of much higher value than, for example, the fleas or bumble-bees. There is certainly much to be discussed when considering writing such reports especially when considerable time and money is involved.

4 Total comprehensive faunal and floral listings for all sites. The ultimate. If you think you can achieve this, forget it! It is a good, long-term aim, but will never be achieved, except for very small sites which receive considerable attention. Difficulties arise in getting help from a complete range of experts; has your local society a Bacteria Recorder?! However, we will all undoubtedly strive to swell our site files with this ultimate aim in mind.

Biological Site Records as an Information Service

Basically, the site file has evolved alongside an increasing demand for more complex information on areas of natural history interest. Information retrieval is totally manual at the present, and presents no problems for straightforward site enquiries. A bona fide visitor is simply presented with a site folder, and relevant information is either extracted or photocopied as required. Charges are only made for photocopies. A brief review of the major users and uses are summarised as follows:

Individual Local Naturalists are fairly regular users of site information. Quite often interested or carrying out fieldwork in a single discipline, and requiring background information on the total natural history of the site.

Conservation Committees of Natural History Societies and Regional Rural Protection Groups frequently ask for data on threatened sites to fight developments. Likewise, the relevant Planning Authority may ask for the same information. Although one may be personally tempted to support the conservation cause, we must remain strictly impartial in all cases if the system is to run efficiently. Several local sites have been 'saved' in this way, mainly from development of 'recreational' facilities, but also occasionally from complete obliteration. Often, however, cases are not usually so clear-cut, and a compromise can be negotiated. For example, it has been possible to suggest alternative routes for major roads, or the re-siting of proposed picnic sites, car parks etc. to avoid highly sensitive sites.

District Planning Department - drew heavily on stored information and staff expertise for the formulation of a Green Belt Plan for the Sheffield Met. District. This included original notification of sites of biological, geological, historical, and archaeological significance. At a later date more detailed information was requested for 'problem' areas, where a conflict of opinions existed. As the reputation of the Museum's records centre has grown, and contacts are made with planning staff a number of individual requests have been received. Usually an accurate 1:10560 (6") map indicating site boundaries, and a digest of each site's biological significance suffice, but occasionally more detailed information is required.

We have provided the Department with a key map to sites of biological and geological sites in the Metropolitan District, in the hope that their development officers will consult us for information whenever a site is likely to be affected.

County Council Departments. The work of South Yorkshire C.C. Environment Department since its formation in 1974 has included the preparation of "A Review of Nature Conservation in South Yorkshire". 'Appendix A' to this work is an inventory of 285 sites known as non-statutory S.S.I.'s (Sites of Scientific Interest) and scheduled as such, on a

local scale by the Environment Dept. Each site is numbered, mapped and assessed on a scale of 1 to 5 for each of six subject areas: Birds, Other Vertebrates, Invertebrates, Flowering Plants, Other Flora, and Geology. The assessments are computerised and remain confidential, to avoid mis-interpretation by inexperienced observers. Sites are also classified as suitable for educational use, or otherwise. The Museum, along with other institutions, made a significant contribution to this project, which is now used by the Environment Dept. as a basis for nature conservation in the County.

More recently, enquiries requesting more detailed information on these S.S.I.'s have been received from the Environment Dept. and less frequently from the county Planning Dept., resulting from planning applications to develop or change the use of individual sites.

This system is an alternative to the Museum processing all planning applications. Time is saved, but it could be argued that we should be concerned with all sites and not just S.S.I.'s. One likely problem would be if a development went ahead off a S.S.I. but near enough to have a strong effect on it due to such changes as an increase in sulphur dioxide levels or decrease in the water-table. We have to entrust these decisions to the Environment Department; however, we have had no problems yet.

Nature Conservancy Council - Liason with the N.C.C. regional offices over the scheduling and revision of statutory S.S.S.I's has resulted in the preparation of substantial reports on **four** major sites; namely ^{Moss Valley,} Wharnccliffe Wood, Ecclesall Wood and Agden Bog, all recommended as possible S.S.S.I's. This involved museum staff in more detailed work on these sites, in the form of additional fieldwork to asses selected invertebrate groups, research into existing information and preparation of detailed reports. Other existing S.S.S.I. schedules are being revised or ammended with reference to information stored in the site file.

County Naturalists Trusts - Site files are maintained for nature reserves within our area and relevent information forwarded to either the Yorkshire Wildlife Trust or the Derbyshire Naturalist Trust. We have particularly close links with Agden Bog Nature Reserve (Y.W.T.) as one member of staff (Tim Riley) is currently reserve chairman with responsibility for management and development of the reserve. The South Yorks Area Group of the Y.W.T. acts as an 'environmental watchdog' over all important sites in the county (not only reserves) and alerts naturalists and conservationists to threats, as well as taking direct action.

University/Polytechnic Students - Undergraduates in certain B.Sc. or B.Ed. degree courses are required to undertake surveys and/or assessments of local sites as part of their third or fourth year studies, and often refer to existing information on file as either background or appendix material to support their dissertation. In such cases detailed species lists are usually requested. University departments most frequently requesting information include Natural Environmental Science, Landscape Architecture and Botany: Polytechnic departments include the Environmental Studies, Biology and Education Departments.

Teachers/Student Teachers - They seek background information on the natural history of local sites in the vicinity of their schools. Such enquiries are increasing as school travel budgets

dwindle and teachers turn their attention to resources nearer home. Four of our less sensitive sites have been designated as official "Field Studies Sites" where school fieldwork is actively encouraged.. Guide books for teachers have been prepared by an ad hoc Field Studies Group comprising museum staff, education advisors, teachers, naturalists and the Recreation Department.

School Students - As environmental studies and natural history become more important parts of the G.C.E. and C.S.E. curriculum, an increasing number of school students use the museum's records centre as the initial step in their project work.

Conservation Volunteers - More recently, conservation volunteers have consulted museum staff and records before undertaking active conservation work. On three occasions an initial contact has led to site visits resulting in a better understanding of the site, and a reduced risk of accidental, irreparable damage.

Amenity Woodlands Advisory Group - An ad hoc group of naturalists, educationalists, outdoor pursuits persons and staff of Sheffield Recreation Department which was set up by the latter to canvass opinion from all those with an interest in the woodlands managed by the Department. These woodlands cover a wide spectrum from highly managed parks to a nature reserve and other 'wild' areas. They are a large and significant habitat resource in the District. A summary of some of the Group's activities appear in Gilbert (1982).

The Museum is represented on the Group and provides objective data and opinions relating to woodland ecology and conservation.

Peak Park Planning Board - In 1983 representatives of the Board who were conducting a habitat survey of part of the Peak District National Park extracted details of all Sheffield Metropolitan District sites within the Park. This now forms part of a register of sites of natural history interest in the same way as the South Yorkshire register.

Problems

The major problem in maintaining our site data-bank is staff time. The solution has been to use M.S.C. staff to update files in quite a big way and to make use of volunteers in a smaller way to collect insects from sites during the summer. Information concerning several sites has been accumulated in the latter way in recent years. This has included general Diptera, Coleoptera and Hemiptera collecting as well as more specific studies such as craneflies or sawflies when the volunteer's abilities allowed such specialisation.

Staff fieldwork time is usually restricted to sites which have been the subject of specific enquiries from outside bodies. We rarely have enough information for a detailed enquiry and must at least visit the site once to update our files. A short report is always written after any such visit. This updating is vital and unavoidable. If we visited twelve of our one hundred and twenty sites each year then there would always be on average twelve site files which would be nine years out of date!

In practice, fewer than twelve sites are usually studied each year. One must always decide what priority this work should receive alongside our other duties? What minimum standards should we aim for?

Acknowledgements

We would like to thank our colleagues Jerry Lee and Tim Riley for helpful comments and criticisms on the first draft of this paper. Also to the Museum's Director, Philip Broomhead, for his support of biological recording activities.

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BROOMHEAD MOORS / Bio. Loc. FILE / 29

6	HABITAT	Date		V.C. No	
5	Majorly upland gritstone moorland, managed for grouse rearing, dominated by Ling	Dec 77		63	
4	Includes Upper Eudem Beck with minor	V.C.		S. YORKS	
3	by 15 scolds and some mature Elm/Oak.	All.		Code No.	
2		500-1800			
1					

6	Gr. Northern Diver	1	2	3	4	5	6	Black Grouse	1	2	3	4	5	6
5	Red-throated Diver							Red-legged Partridge						
4	Great Crested Grebe							Partridge						
3	Little Grebe							Phasian						
2	Mare's Shearwater							Water Rail						
1	Fulmar							Cormorant						
	Gannet							Moorhen						
	Corncrake							Coot						
	Shag							Oystercatcher						
	Heron							Lapwing						
	Bittern							Ringed Plover						
	Mallard							Little Ringed Plover						
	Teal							Golden Plover						
	Garganey							Turnstone						
	Gadwall							Snipe						
	Wigeon							Jack Snipe						
	Pintail							Woodcock						
	Shoveler							Curlew						
	Scaup							Whimbrel						
	Tufted Duck							Black-tailed Godwin						
	Pochard							Bar-tailed Godwit						
	Goldeneye							Green Sandpiper						
	Common Scoter							Wood Sandpiper						
	Eider							Common Sandpiper						
	R-b Merganser							Redshank						
	Goosander							Spotted Redshank						
	Shelduck							Greenshank						
	Grey Lag Goose							Knot						
	White-fronted Goose							Purple Sandpiper						
	Pink-footed Goose							Little Stint						
	Brent Goose							Dunlin						
	Barnacle Goose							Curlew Sandpiper						
	Canada Goose							Sanderling						
	Mute Swan							Ruff						
	Whooper Swan							Arctic Skua						
	Bewick's Swan							G. Black-backed Gull						
	Sparrow Hawk							Lesser B-b Gull						
	Marsh Harrier							Herring Gull						
	Hen Harrier							Common Gull						
	Osprey							Black-headed Gull						
	Melba							Killiwake						
	Kestrel							Black Tern						
	Red Grouse							Common Tern						

BIRDS					
Date	V.C. No				
Dec 77	63				
V.C.		S. YORKS			
All.	Code No.	500-1800			

Arctic Tern	1	2	3	4	5	6	Redwing	1	2	3	4	5	6
Little Tern							Ring Ouzel						
Sandwich Tern							Blackbird						
Razorbill							Wheatear						
Gullinmot							Stonechat						
Puffin							Whinchat						
Stock Dove	1						Redstart						
Woodpigeon							Nightingale						
Turtle Dove	2						Robin						
Collared Dove							Grasshopper Warbler						
Cuckoo	2						Reed Warbler						
Barn Owl							Sedge Warbler						
Little Owl							Blackcap						
Tawny Owl	1						Garden Warbler						
Long-eared Owl							Whitethroat						
Short-eared Owl	2						Lesser Whitethroat						
Nighthawk							Willow Warbler						
Swift	2						Chiffchaff						
Kingfisher							Wood Warbler						
Green Woodpecker							Goldcrest						
G. S. Woodpecker							Spotted Flycatcher						
L. S. Woodpecker							Hedge Sparrow						
Woodlark	2						Meadow Pipit						
Sylark							Tree Pipit						
Swallow	2						Rock Pipit						
House Martin	1						Pied Wagtail						
Sand Martin							Grey Wagtail						
Raven	1						Yellow Wagtail						
Carrion Crow							Red-backed Shrike						
Rook							Starling						
Jackdaw							Hawfinch						
Magpie	1						Greenfinch						
Jay	2						Goldfinch						
Great Tit	2						Siskin						
Blue Tit	2						Linnet						
Coal Tit	1						Twite						
Marsh Tit	1						Redpoll						
Willow Tit	1						Bullfinch						
Long-tailed Tit	2						Crossbill						
Nuthatch	1						Chaffinch						
Treecreeper	1						Brambling						
Wren	3						Yellowhammer						
Dipper	1						Corn Bunting						
Mistle Thrush	2						Reed Bunting						
Fieldfare	2						House Sparrow						
Song Thrush	2						Tree Sparrow						

OTHER SPECIES Rough Legged Buzzard, Great Grey Shrike
 Leach's Petrel, Snow Bunting all winter or Passage (1)
 Plus confidential information held by Sheffield Bird Study

Appendix 1. - Example of bird records as held in site files.
 Data from the Sheffield Bird Study Group.

WYMING BROOK/BIO.LOC.FILE/28

Report: Visit made on 21st September, 1978, by S. P. Garland

Wyming Brook runs down from Redmires Reservoirs to Rivelin Dams through a wooded gorge. The site includes this as well as all of the other woodland around the Dams except the Water Authority owned areas. This consists mostly of mixed woodland with numerous planted Larch and Scot's Pine.

1. Open area near the top of the valley

This area is very popular with day-trippers and seems to withstand this fairly well. It is mostly short turf with occasional patches of Bilberry or bramble and some Soft Rush in wetter places. The visit was on a warm day and Small Copper, Small Tortoiseshell (Butterflies), Silver Y Moth and Aeshna juncea (Dragonfly) were seen.

2. Fox Holes

Most of the woodlands along the top of the bank are dominated by Birch (B. pubescens) with some Sessile Oak and Mountain Ash. Below are many Larch, Beech and many others. The valley bottom plants are discussed in other sections, but the top vegetation includes mainly Purple Moor Grass, Bilberry, Bracken, Ling, Wavy Hair Grass, Sheep's Fescue, Heath Bedstraw and occasionally Cowberry. Common Bent Grass occurs in places.

3. Fox Holes Plantation

This area is more a mixed woodland, though deciduous broadleaf species predominate. As the slope is descended then numerous springs are seen to occur at the foot of the steepest bank producing large areas of marsh. The woodlands possess an abundance of Bracken, Creeping Soft Grass, Wavy Hair Grass, Bilberry, Buckler Fern, Bramble, Heath Bedstraw and Wood Sorrel whereas the marshes include Marsh Violet, Goat Willow, Lady Fern, Creeping Buttercup, Opposite-leaved Golden Saxifrage, Marsh Thistle, Soft Rush, Tufted Hair Grass and Sorrel. In places Herb Robert and Foxglove are abundant.

The woodland flora is mostly found on the lower slopes of Fox Holes Plantation and up the eastern side of the valley. The higher parts of the slope and most of the western woodland have a heathy flora, though Creeping Soft and Wavy Hair Grasses are dominant in places as well as Bracken.

West Area

The western areas contain far more conifers, mostly Larch and Pine, producing an unusual landscape. Above these trees is Ling-dominated Moorland which is virtually a pure stand, but for some Wavy Hair Grass. One very interesting area occurs at the top of Reddicar Clough, but is mostly within the Brown Edge site, although marshy woodland areas extend down into the Wyming Brook site. A list of species from the Brown Edge Site is attached to this report.

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Appendix 3 - Contents list of the Wharncliffe Wood Report.

* indicates sections based largely on original museum fieldwork.