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understand references, how to get hold of obscure journals, how to use specialist libraries, and so on. Again, those of us working in large museums or universities tend to forget how difficult it can be to find this sort of information. The book, called *Identifying British Insects and Arachnids: an annotated bibliography of key works*, will be published by Cambridge University Press later this year.

So the Natural History Museum's current contribution to insect identification are the compilation and maintenance of checklists, helping to create new keys and handbooks, and writing a guide to the taxonomic literature. These seem to us the three tools most needed at present, and the NHM, by virtue of its size and breadth of expertise, is uniquely placed to provide such taxonomic services. But having said that, we cannot do everything, and the future for insect taxonomy undoubtedly lies in collaboration with experts of all kinds, whether the professional society or the lone amateur. Britain has the largest concentration of natural history enthusiasts in the world, and we must share our knowledge and pool our resources to capitalise on this unique strength.

*Peter Barnard*

*The Natural History Museum, London*

## Species recording schemes, museum collections and the role of local museums

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**This paper is based on a talk given at the BCG meeting Local Collections, Local Information, held at Nottingham Natural History Museum on 30 January 1997. It presents a personal opinion and does not necessarily reflect the opinions of the Institute of Terrestrial Ecology.**

### Introduction

Local museums, and the collections that they manage, have a unique role in species recording in the UK, apart from acting as local biological or environmental records centres. Local museums are a resource for curating collections and archives resulting from national and local species recording schemes and in promoting recording in conjunction with these voluntary groups. Greater partnership between museums and national and local species recording schemes could benefit both museums and schemes.

### National species recording schemes

There are over 60 national species recording schemes, most of which operate in association with the Biological Records Centre at Monks Wood (Harding & Sheail 1992). Each scheme has the basic objective of recording the distribution of species in a taxonomic group (e.g. flowering plants, millipedes, fleas) in Britain and Ireland. About half the schemes are organised by, or under the aegis of, a national society or specialist group (e.g. Botanical Society of the British Isles (BSBI), British Myriapod Group (BMG))

with the remainder being organised by individual recognised specialists. All schemes are operated on a voluntary basis with records being contributed by experienced field naturalists. Many national recording schemes are underpinned by some form of local structure, for example regional or county recorders or through inter-relationship of volunteers with local natural history societies, wildlife trusts and local records centres. However, this inter-relationship is usually ad hoc and is acknowledged to be incomplete and inefficient through lack of co-ordination (Burnett, Copp & Harding 1995).

### Local recording

There must be hundreds of locally based recording initiatives, but no list of them or their co-ordinators exists. Meenan (1983) and Milner (1994) list many local natural history societies, but these lists are incomplete and rapidly become out of date. Many local museums, local records centres and wildlife trusts have contacts with local naturalists and their local groups and societies but co-ordination of effort and use of resources is generally poorly organised, simply because there is no consistent method for co-ordination.

### Expertise in taxonomy and field craft

The number of biologists actually employed to collect and identify biological material to species is steadily declining in the UK (and in other western European countries). Therefore, the organisers and voluntary field recorders who contribute to schemes are, increasingly, the single most important resource of taxonomic expertise in the UK.

Regrettably, few staff in local museums have opportunities to exercise their field craft skills as part of their official duties and, increasingly, their taxonomic skills are under-used in their day-to-day duties. Those who have any energy left, after wrestling with increasing amounts of administration and bureaucracy in their working hours, may still undertake some active field biology and identification in their spare time; inevitably there is some 'blurring' of work and hobby.

After several decades of surveys being undertaken, for a wide range of organisations, by inexpensive but inadequately trained and inexperienced teams of field surveyors, there is increasing awareness of the need for reliable identifications and use of appropriate techniques in field surveys of all types. Several training and validation programmes have been set-up in recent years (e.g. under the leadership of the Institute of Ecology and Environmental Management, the Natural History Museum's IdQ programme and training programmes based around the National Vegetation Classification), but costs and commitment of time to this form of training are well beyond the budget of most volunteer field naturalists.

### Species recording schemes and collections policies

Ideally, every record should be based on a reliable identification capable of verification in perpetuity, but this is impractical. For example, the Biological Records Centre (BRC) database contains over 6 million individual records of some 10 000 taxa. A recent survey (S G Ball pers. comm.)

showed that some 5 million records are held by some 150 Recorder users. If a supporting specimen was held, somewhere, for each of these records, it would be equivalent to about 20% of the entire biological and geological collections at The Natural History Museum. There is no end to the making of records, but, at most museums, facilities for housing collections are bursting at the seams and there are too few curatorial staff! Consequently, where voucher specimens are held in association with collated biological records, they are as likely to be in personal collections, or in unrecognised collections (e.g. in schools or field centres), as they are in an accredited museum or herbarium.

Few national schemes have recognised policies on the retention of voucher specimens to support accepted records. The BSBI advises its recorders to deposit voucher specimens in recognised herbaria and has recently published guidance for its members of the preparation of specimens and the use of herbaria (Chater 1996). The British Bryological Society (BBS) requires each new vice-county record to be supported with a specimen, which is then deposited in the BBS herbarium maintained at the National Museum of Wales.

By way of example of the majority of schemes, and in contrast to BSBI and BBS, BMG has no stated policy on collections. Personal, voucher specimen collections are maintained by most of the 30 or so active recorders, and individual specimens and a few whole collections have been donated to museums, but not necessarily in the UK. Museums in Paris, Copenhagen and Italy have benefited because appropriate specialists are employed at them, but there has not been a specialist employed to work on myriapods at any UK museum for decades.

### Species recording schemes and museum collections

Few schemes have made systematic efforts to collate records from existing collections. There are several reasons for this:

- 1 Most contributors to schemes are motivated by the attractions of field work and finding and identifying their own specimens;
- 2 There is a widely held perception that the data with most specimens in collections are too imprecise for species mapping, let alone species or site protection;
- 3 The reliability of identifications in collections is often suspect and therefore much material will need complete re-identification;
- 4 It is difficult to find out what collections and specimens are kept at individual museums, although summary information is now available for many museums as a result of the work FENSCORE (see below).

The extent to which any of these reasons applies will vary according to the taxonomic group and the individuals involved with the scheme.

- 1 With almost every scheme there is usually somebody who would have an aptitude to work on collections, but all too often they are prevented from doing so because they are unable to spend long periods away from home or work. A possible solution to this might be easier access to collections through loans, but the administrative and logistical

difficulties this might bring to museums should not be underestimated.

- 2 The amount of detail contained in data labels in collections varies greatly, but, as a general rule, the older the record, the less detail there is likely to be. Nonetheless, to be certain, from a museum specimen, that a species was formerly known from an area (and that the original identification was correct) is a great help in trying to re-find elusive species. There are many well-documented examples of successes in this type of detective work.

- 3 The standard of identification in collections (of all types) varies greatly. Two collections of woodlice, on which I have worked myself (Harding & Sutton 1985), demonstrate the extremes: that of W E Collinge, at York Museum, proved to almost totally unreliably identified; whereas that of D R Pack Beresford, at the National Museum of Ireland, was almost without fault (and included good site data, despite dating from the period 1910-1940). Changes in nomenclature are a fact of life, for which access to well synonymised checklists is essential in trying to interpret early records.

- 4 The activities of the Collection Research Units (CRU), co-ordinated by the Federation for Natural Science Collections Research (FENSCORE) have resulted in a series of regional indexes to collections and the data for a comprehensive national database of metadata on UK collections. Unfortunately, the published indexes are poorly known outside the museum community, and the FENSCORE database is incomplete and inaccessible, due to inadequate funding. Detailed catalogues of individual collections are scarce and obscure so that only the most tenacious recorder will know of their existence.

### What have recording schemes got to offer museums?

The organisers of, and contributors to, recording schemes are potentially important sources of taxonomic expertise and collection material, as was noted earlier. They can contribute to the work of museums in several ways, for example by:

- 1 Validating and cataloguing existing collections (so that, as by-product, they acquire reliable data from the collections).
- 2 Contributing well documented and curated voucher specimens to a museum, in accordance with the museum's collections policy.
- 3 Providing a resource for the identification of material acquired by museums and in providing expertise in identification and field craft for museum out-reach programmes.

It is probably not good use of volunteer specialists' time to assist with the curation of existing museum collections or data-entry, unless as part of a validation and cataloguing exercise. Many aspects of curation and data-entry are semi-skilled activities (mechanistic processes) requiring little taxonomic knowledge if properly and regularly supervised.

### What could museums offer recording schemes?

Many museums are actively involved with their local community of naturalists, especially where the museum operates or is associated with a local records centre. However, there are some opportunities for closer co-

operation which may not yet have been considered by all museums.

From the somewhat selfish perspective of the volunteer specialist involved with a recording scheme, the following would be very helpful at a museum:

- 1 Access to the CRU index and any detailed catalogues;
- 2 Being told what it is and is not possible to do at the museum (especially in relation to the resource limitations of the museum) - clearly the museum curator will need to be careful to avoid time-wasters;
- 3 Being told whether there is a policy of charging (admissions, bench fees, etc) for regular visitors working on the collections, where the museum will derive some benefits from the work;
- 3 Access to relevant collections for use as reference material, to undertake searches for data from labels and to re-determine specimens as necessary;
- 4 Space on a table or bench within reach of the collection being used and, particularly for work on collections of invertebrates, use of a working microscope (and illumination). Most specialists would expect to bring their own instruments and keys, and some might bring their own microscopes;
- 5 Advice on how to document, manage and curate a personal collection (I have been amazed how poorly documented or curated some personal collections can be!);

6 Help with effecting the donation and permanent curation of voucher specimens, whole collections or documentary archives. This need not necessarily be at the museum being consulted as there may be a more appropriate museum, with other collections of the taxa or a member of staff with a particular interest in the taxa.

**Closer partnership between recording schemes and museum**

Many of the above points would lead to or will require closer partnership between the individuals associated with recording schemes and the staff at museums. There is one particular area where, by combining forces, the interest of both parties could benefit greatly - the recruitment and training of new field naturalists. The involvement of local wildlife trusts and Watch groups should also be considered.

Although aspects of the biological sciences form part of the National Curriculum, old-fashioned natural history and basic biology are generally neglected in schools. Despite this, there is greater interest in environmental matters and 'wildlife' than ever before. Those interests need to be harnessed and focused to recruit new cohorts of active field naturalists. Museums, through their displays, special events, educational programmes and other out-reach activities are already laying the ground for the recruitment of field naturalists. But we have to compete with the apparent accessibility of wildlife misleadingly portrayed by television. The concept of 'mini-beasts' has proved remarkably useful in giving children hands-on experience of living organisms and their habitats.

It is unreasonable to expect, or even to seek, thousands of new recruits to collecting and recording, nor could schemes, museums or records centres cope with them. Whilst continuing to provide for the general public who require fairly superficial levels of information and understanding, it is important also to target the small number of enthusiasts who show potential to develop their skills in taxonomy and recording. By involving existing local specialists in acting as 'mentors' for these aspiring specialists, they will be able to transfer knowledge and experience between generations. This may not be easy - some of our most effective recorders may be unwilling or unable to take a 'mentor' role.

**Summary**

Recording schemes might require the following from local museums:

- Accessible indexes to collections, e.g. the FENSCORE database and CRU reports/databases,
- Accessible catalogues of collections.
- Access to local collections for use as taxonomic reference collections, with appropriate facilities,
- Local museums might consider the following:
  - Encouraging local specialists (including those involved with schemes) to deposit well curated voucher specimens to support local and national records
  - Negotiating with schemes and records centres to deposit well curated voucher collections at museums with appropriate facilities and expertise

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*(If anyone would like to review these publications for the Biology Curator please let the Editors know. Thank-you)*

Partnership with local and national specialists to improve the taxonomic veracity of local collections and to catalogue existing collections

Partnership with local specialists to provide archival facilities for documents associated with local collections and local recording (e.g. personal notebooks)

Recording schemes and local museums should develop partnerships so that local and national specialists work together with museums to develop the taxonomic skills of new cohorts of recorders, using local collections and local facilities.

Local museums, and especially their governing bodies, should be more aware of the vital role they could and should play in interaction with field naturalists and biological recording initiatives. In most cases museum professionals already have a duty to promote the use of collections in their care and most museums have, or should have, collection policies. It would be advantageous if museum accreditation could take account of this important aspect of the role of museums in society. Only by reinforcing the need for museums and the relevance of the collections that they hold to the society that they serve, will we be able to continue to justify the existence of and demand for resources for museums.

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## Colour Change in Cabinet Skins

As a professional bird illustrator, I have used the collection at Tring for many years for reference, and have

become interested in the question of the alteration of plumage colours in cabinet skins.

There are nowadays a large number of illustrators using the collection at Tring, and there is a continuing assessment of racial differences based on small variations of plumage colour. I would like to raise the issue of trying to establish exactly what colour changes take place in skins, and what impact this might be having on all the work that is going on.

Thinking about this has led me to re-read the article published in 1947 in *British Birds*, Vol XL, pages 322-325 by Reginald Wagstaffe and Ken Williamson on "Cabinet colour changes in bird-skins and their bearing on racial segregation". This is really quite alarming, in that substantial colour changes in even recently collected material were detected by comparison with freshly dead birds. Presumably some changes take place soon after a skin is prepared, and some over a much longer period of time. I guess that the slow-down in collecting in recent years will render much comparison impossible, and which of the historic skins really retain validity? Much of the collection at Tring is already old - what will it be like in 50 years time?

I wonder if there are any recent studies by museum workers anywhere on this topic? It could certainly be interesting to compare freshly dead collected material from Africa, for instance, to existing skins, to determine what changes have taken place. In critical groups like greenbuls and warblers it might help to have a note actually published near the relevant plates to alert users to the situation.

I would be very interested to hear the views of BCG members, and whether they think it would be useful to initiate some research or debate. It may well be, of course, that much has been published within the museum world about this subject, and I would certainly be interested to get details.

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## Did Richard Buxton ever collect any *Rubus* specimens?

The artisan botanist Richard Buxton (1786-1865) author of the *Botanical Guides to the Flowering Plants about Manchester* (1849, 1859) actually studied the Manchester *Rubi* for no less than seven years. Buxton although only a clog-maker by trade realised that his knowledge of local botany actually exceeded that of 'more learned men'. Perhaps he was referring indirectly to botanists such as L. H. Grindon (who also produced a *Manchester Flora* in 1859) and J. Sidebotham? A few specimens of a very limited number of bramble species were collected by Grindon and Sidebotham during the 1840s from the Manchester area and are housed at Manchester Museum (MANCH) mainly within the Charles Bailey collection. It should be noted however that a collection of *Rubus* stem leaves presumably of local brambles is to be found in Grindon's herbarium of cultivated plants (MANCH) which would probably have been used in botany class demonstrations. These local exiccatae fall short of a complete representation for the *Rubus* accounts