

Editorial

Note to those submitting copy to the newsletter. Could you please make sure that you follow the following guidelines for articles etc to be included in the Newsletter:

Material should be submitted electronically either on disc or by email to the editor. It should be in **Times New Roman, font size 10**. Please supply all images as tiffs at 300 dpi, with captions submitted along with the images. The names of animal and plant species should be underlined and the authority name given in full for the first time used, thereafter they may be omitted. All references should be given in full. Articles and other items for inclusion should be submitted to the Editor at least three weeks before the publication date. The deadline for copy can be found on the first page of every Newsletter.

Please let us know if you hear of any collections which are at risk, either because they are in danger of being closed down or dispersed, or because the jobs of those looking after them are at risk. We have recently heard of two such situations; St Albans Museum has had its Keeper of Natural History post deleted after the last Keeper left, and apparently they are looking to dispose of the collection, convinced that it cannot be properly curated without this post. Hull Museum has had a natural science curatorial post changed to an educational officer post. How do you feel about this? What do you think we should be doing about this? NatSCA hopes to be far more strident than it has been in the past about these issues, but we need to find out about them.

- Victoria Noble

Contributions for Issue 5, April 2005

All articles, letters, news, adverts and other items for inclusion for the next issue of the NatSCA Newsletter should be sent to the address below by March 1st:

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View From The Chair

A natural sciences curatorial post was advertised recently. The job was well paid, in a pleasant area of the country with good collections. It attracted no applicants with any suitable qualifications or experience. This worryingly seems to be becoming the norm with a number of natural sciences curatorial posts over the last few years having had to be re-advertised 2 or 3 times. This coupled with a very small number of graduates taking the natural sciences option on the University of Leicester Museum Studies course over the last few years should give cause for concern across the whole of the profession. This is one of the key areas we need to be working on as a professional group. If there is no new blood coming onto the profession then all our concerns and plans for the future development of natural sciences will all be for nothing. Low pay, lack of entry level positions and lack of profile generally are all contributory factors and ones we must address now to address the existing recruitment problems, which do not bode well for the future.

A major opportunity recently presented itself with the Museum, Libraries and Archives Council launching a Subject Specialists Network grant. By the time you read this NatSCA will have submitted a bid for a grant to explore the setting up of national natural sciences network. There has been a slowly forming idea within committee that a national network was needed and this has helped focus our thoughts on this matter. The exact details of the bid are still being worked up as I type this but if the bid is successful you will receive further information in early February 2005.

NatSCA have also responded to the Museum Associations 'Collections for the Future' survey, with a copy of the response published on the letters page of this newsletter. Having discussed our response with other specialist groups and colleagues, most were coming up with broadly similar responses. Most agreed to a greater or lesser degree with the points raised in the report and almost all had the same response – the reason much of these are 'issues' is down to lack of resources mainly financial, staff and time. The final report will be out in May 2005.

The potential Subject Specialists grant and the publication of the MA collections with report signal a busy year ahead of us. Both the report and grant have scope to be of great benefit to curators, conservators and collections. Let us ensure they do not disappoint.

- Nick Gordon

Letters

The Importance of Herbaria
 American Society of Plant Taxonomists
 Position Statement—2004

The American Society of Plant Taxonomists affirms the crucial role of natural history collections, and of plant collections in particular, in research, teaching, and public outreach. Collections of plant specimens (herbaria) are the foundation for all studies of plant diversity and evolution. Specimens provide enormous economic and scientific returns to society and are irreplaceable resources that must be preserved for future generations.

Specimens provide the foundation of nomenclature, the basis for identification, the common reference for communication, and the vouchers for floras, as well as for evolutionary and genomic studies. Molecular and morphological characters that allow us to reconstruct the history of life can be obtained from herbarium specimens. All fields of biological science from the level of molecular biology to ecosystem science are dependent on collections, not just for application of names, but as the basis for referencing all aspects of biodiversity.

Beyond their scientific importance, herbarium collections offer many benefits to society by providing data or reference materials for critical endeavors such as agriculture, human health, biosecurity, forensics, control of invasive species, conservation biology, natural resources, and land management. Herbarium collections provide a wealth of information on our natural heritage and extend back hundreds of years; thus they provide the only reliable, verifiable record of the changes to our flora during the expansion of human population.

Because natural history collections play such an important role in societal endeavors, continued physical and financial support is absolutely critical. Collections are most valuable in their original institutional and geographical context. Because they are historical records linked to a

time and place, lost collections cannot be replaced. Moreover, many populations documented in herbaria no longer exist and others are now protected. Furthermore, some specimens cannot be replaced due to the imposition of constraints on collecting. Therefore, ASPT strongly advises institutions to maintain their collections in perpetuity. Once an institution divests itself of a collection the institution can never regain the benefits associated with the collection.

It is imperative that minimum standards regarding environmental conditions and pest control be met so that specimens can be maintained indefinitely into the future. As a body of considerable expertise with regard to all aspects of herbarium curation, research, education, and outreach, the membership of the American Society of Plant Taxonomists hereby offers its expertise to help institutions develop management plans for maintaining collections and to integrate herbarium collections more effectively into research, education, and outreach activities.

Alan Prather
MSU Dept. of Plant Biology
Michigan State University

Thoughts on the MA Collections Review

The museums association is essentially right that we should find ways to collaborate more closely, and that there should be more coherent national frameworks for collecting and collections. However the document that aims to get the ball rolling, although quite engaging and written to incite debate, fails to address the main questions and issues facing the future of 'Natural Science' collections. It attempts, like many of its predecessors, to provide an all encompassing 'museums' overview, and address the issues involved in the future of both humanities-based and scientific collections in the same light. Given the distinct differences in

audience and use of these totally disparate collection categories, it is perhaps time that the museum community acknowledged some irrefutable facts. Whilst museums are united by a common aim to collect, safeguard and make accessible artefacts and specimens, which we hold in trust for society, sometimes we are incontrovertibly divided by our collections differing natures, uses and audiences.

A natural science collection may, on the face of it seem unused or effectively unusable at the present time, but could, with an element of serendipity, have a vitally important role, which we cannot even begin to comprehend at the present time. Also, natural science collections' can have such unique idiosyncrasies. Biological specimens with data can hold their intrinsic scientific value as a unique biological object, but also become items of great historical note or even artistic value. A good example from the NHM Oology collections would be the Emperor penguin eggs (*Aptenodytes forsteri*) recovered on the British Antarctic Expedition (1910) in which Apsley Cherry-Garrard undertook the 'winter journey' with Birdie Bowers and Bill Wilson. The Natural History Museum still holds these historically and scientifically important eggs in the main research series, and one of these eggs is currently on temporary display in Madrid at CosmoCaixa "La Antartida, el ultimo espacio virgen del planeta"; balancing the needs of the scientific community and ensuring public accessibility can be a difficult and controversial issue for museums whose entire collections are basically reference.

Maybe our current and future users are not best served by all-encompassing documents that attempt to provide universal answers to the difficult questions; rather we should celebrate and explore our collections individual strengths? Perhaps we would be better off formulating collection based consultation documents to address the important questions about our future? This might provide more insightful and ultimately useful documents, which can be used to coordinate national and international efforts in terms of acquisitions, audience development and the preservation of our existing collections?"

- Douglas Russell, Bird Group, The Natural History Museum, London

Letter On Convergence

Dear NatSCA member,

As you probably know, the five NCCR Vanguard Groups are voting this week on whether to converge and to set up a new Institute of Conservation (IOC). You may have already received a blue booklet (available from Paul Brown if not: pab@nhm.ac.uk), setting out how the new Institute will operate. I realise that many of you may not feel concerned about this matter, since your job does not encompass any aspect of conservation, but for the discipline of Natural Sciences I know that many curators either perform some conservation duties as part of their job or need to have knowledge of what is happening in conservation in the UK - so it does affect you.

As NatSCA's membership comprises a high proportion of of curators as well as conservators, we are not eligible to converge with the Vanguard organisations. However, a range of options for individual membership of the IOC will be available (see p13 of the booklet):

- 1 For ordinary members of hybrid bodies (such as us) there will be a discounted membership rate of £53.
- 2 Accredited members will pay a subscription of £125 to the IOC rather than to UKIC. I hope that they will be the main link between NatSCA and the new body.
- 3 Membership of the IOC will be available to any other interested parties who work in the conservation profession (£70).
- 4 A concessionary rate will be available for low-paid workers, students and retired persons (£25).

NatSCA will pay a subscription (£150) to the IOC as an organisation to maintain our link and cover any necessary administration costs.

If you have any questions or doubts about this, please come back to myself, Bob Entwistle or Paul Brown ASAP.

This is a very necessary move; it seems as

though the conservation profession has followed NatSCA's lead!

Thanks.

- Simon Moore, Conservator of Natural Sciences, Hampshire County Council

Where Have All the Curators Gone?

Are specialist curators genuinely an endangered species? In the last few weeks, two museums have stated that they will not be filling the natural history keeper posts that have become vacant, and one has officially deleted the post. There may be valid reasons for these decisions at the present time, but it is symptomatic of the way things are at present. It is also at odds with the way the community as a whole seems to think we should be going.

The recent report by the MA, Collections for the Future, has highlighted the decline in the number of specialist curators in our museums, and this is certainly true in Natural Sciences. Although the report is an intermediate stage, trying to establish both the problems and possible solutions, it nevertheless has identified a number of issues, some of which, from the range of ensuing discussions, are similarly seen by the rest of the museums community. One of these is the loss of specialist curators. A spokesperson for the MA has said to NatSCA

“Museums need access to expertise about their collections if they are ever to make them come alive for visitors. There has been a decline in the number of expert curators in recent years, right across the sector, and this is something that many people cited as a concern in the recent MA consultation on Collections for the Future. We want to explore this issue in more detail and to come up with recommendations to make sure that museums have the expertise they need.”

There has been a trend in recent years to employ collections managers instead of curators. Many of these have responsibility for a range of col-

lections, and replace rather than supplement the specialist curatorial cover given to these collections. This is not simply an immediate problem for the care and development of those collections. It is, more importantly, a serious threat to the maintenance of curatorial expertise in those fields, and to the maintenance and development of the understanding of the natural heritage of the area the museum serves. There are now very few genuine taxonomic specialists in museums, although the identification of natural material is not only one of the traditional tasks of the curator, it is also one of the most important ones at the present time, when so many people are seeking to understand and care for the local, regional and global environment. Neither are we preserving, much less developing the local or regional expert who has an in depth understanding of the natural heritage of their areas, or the community of people working in the area. And finally, at the same time as being pressed to make greater use of the collections in our care, we are getting rid of those people who enable us to do just that.

NatSCA will be seeking to address these issues, starting now, but they are necessarily limited in what they can do, with very few material resources and depending on people who try to carry out these activities in their spare time, or with the goodwill of their institutions. To be more effective, we will need help from outside. This means the support of our institutions and such organisations as the newly founded hubs, as well as from national government and not least from our own national bodies, the MA and the MLA. Since they are now saying that the decline in specialist curators is a serious problem, and will continue to be unless we do something about it. Well, we are trying to do that, so let's hope we can work together.

- Steve Thompson, Keeper of Natural Sciences and NatSCA committee member

Natural Sciences at St Albans Museums

St Albans Museum Service has been restructured with the result that the post of Keeper of Natural History has now been deleted. The collection has, for some time, been a closed collection with no new active collecting being undertaken. As a result of recent changes in the storage of collections it is felt that the collection is not as accessible as perhaps it might have been in the past. We would like to make it accessible to the public and for research. Meanwhile the collection is cared for in a suitable temperature and relative humidity store, monitored for pests and comes under the control of the Conservation officer and Collections Manager. It is not at risk.

Therefore we are placing an appeal to any interested registered museum service who can provide good accessible storage to take on some of the collection as detailed below. It should be noted that the documentation of these collections is extremely variable and is not digital.

British Vertebrates

Approximately 60 fish in spirit

Approximately 1200 birds eggs

Approximately 300 mounted specimens (mainly birds)

Invertebrates

Approximately 17, 500 lepidoptera

Approximately 5,000 other insects (including the Victorian County Collection)

Approximately 5000 mollusca

Botany

Important collections of bryophytes and non vascular cryptograms (Swinscow and A. E. Gibbs)

For any further information please contact:
Claire Thornton, Collections Manager, St Albans Museum Service, Verulamium Museum, St Michaels, St Albans, Herts, AL3 4SW
c.thornton@stalbans.gov.uk

NatSCA Study Trips

No decision has yet been made regarding a 2005 study trip, but I have been giving some thought to study trips from 2006 onwards. I feel it would be good to see if we could make the effort to get well outside of more familiar ground and visit places that are quite different. As some of you will remember, I tried to set up a trip to Kenya last year, but eventually put it on the back burner when there was a relatively poor response.

I am now considering the possibility of a trip to Tokyo, having been in communication with people over there for much of this year. As this will be very much more expensive and time consuming than such trips to date, I would suggest that people look at it as part holiday. I would, therefore, look at the idea of arranging travel out there and an itinerary for a series of museum visits, but allow time for people to do their own thing, say five days in museums, and at least as long again for other things.

If this was to go ahead, we would be looking at 2006, so at the moment there is plenty of lead in time. If you are interested in this idea, and think there is a serious chance that you would be able to go, get back to me, and if there is enough interest, I shall move on to the next stage. You can get to me at steve.thompson@northlincs.gov.uk, or on 01724 843533.

Just for the record, I am still interested in the possibility of a trip to Kenya, and am also interested in a trip to Iceland, which in comparison would be a much more ordinary trip. Feedback on any of these ideas is most welcome.

Cheers

Steve Thompson
steve_thompson@northlinks.gov.uk

Bursaries for the SPNHC / NatSCA / GCG Conference, June 2005

Dear Membership,

NatSCA would like to offer a number of bursaries towards the cost of the 2005 conference. There is a limited amount of money and the committee has decided that the following division best represents a fair dispersal of funds enabling the most members to come to the conference.

The bursary will cover the cost of the conference only, at either the full rate or the daily rate and is not intended to cover such costs as accommodation or travel. All applicants' names will be put into a hat and names will continue to be drawn until all the allocated money has been used.

The day rate is £85 before 15.04.05 and £100 after that date.

Full week is £160 before 15.04.05 and the cost of the full week after that is £195

Bursaries take the following form:

- For those living and / or working outside of London – 75% of the conference fee, either for the full rate or the daily rate
- For those living and / or working in London – 50% of the conference fee.

All applications must be sent to the treasurer by the end of February at the latest, and successful applicants will be notified by the end of March to enable them to qualify for the early-bird discount rate. Application should be by sending name, address and brief statement of interest (no more than 200 words).

Treasurer: Kate Andrew

Hereford Museum and Art Gallery

Broad Street

Hereford

HR4 9AU

Email: kandrew@herefordshire.gov.uk

William Hunter's Insect Collection and emerging descriptive taxonomy in the Eighteenth Century

- E. G. Hancock, Hunterian Museum (Zoology), Graham Kerr Building, University of Glasgow

This is a brief account of the insect cabinets of William Hunter (1718-1783). The collection is contained in 127 original drawers and numbers about 7,600 specimens. It is an example of an eighteenth century collection which is substantially intact with contemporary documentation. It provides a resource of great interest for the history of both science and exploration. Dating from the most active period at the beginning of descriptive taxonomy, it is also of value as a repository of primary types. Possibly over 550 name-bearing specimens can be found, mainly described by Johann Christian Fabricius (1745-1808), the 'entomological Linnaeus'. There are types from other authors also, principally Guillaume-Antoine Olivier (1756-1814) and Dru Drury (1725-1804).

Background

The foundation of the Hunterian Museum, University of Glasgow, is based on the bequest in 1783 of William Hunter's collections to his *alma mater*. The material arrived from London in 1807 and the museum built to house it at the old university city centre location opened that year to become the first public museum in Scotland (Brock, 1980; Markus, 1985). William's younger brother John, the comparative anatomist and surgeon, also made a collection that became the basis of the Hunterian Museum of the Royal College of Surgeons, London. This collection is perhaps less eclectic than William's, whose private museum contained paintings, coins and medals, antiquities and printed books as well as geological and natural history specimens. Both museums have the brothers' respective medical and other material illustrative of their professional interests in anatomy and pathology. In some instances confusion exists amongst authors and commentators as to which brother is responsible for which of the two collections. Perhaps this is not too surprising given their similar interests and medical practices. In the case of entomology the situation is relatively simple. William put together a large collection of dry-pinned insects, incorporating the collections of contemporary naturalists. John had a curiosity for bees and other biologically interesting species and dissected and preserved in line with his studies in comparative anatomy.

William Hunter's collections

William Hunter was not a practising entomologist but one of the *virtuosi* and *literati* of the period living in London. He built a private museum in 1767 as extension to his property in Great Windmill St, near Piccadilly Circus, where he lived, taught anatomy and entertained like-minded gentlemen.

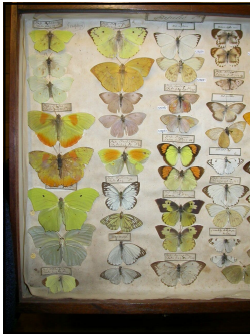
William Hunter had begun to collect seriously from about 1763. He became financially secure from about 1759. In modern parlance he had millionaire status, acquired from his success as an obstetrician and from investing in government bonds and the stock market. Anatomical preparations had already accumulated, being part of his professional development. Between 1770 and 1782 he made considerable expenditure on natural history specimens and built up collections of other items as mentioned above.

One of the earliest dated insects in Hunter's collection, the Goliath beetle bought in 1766, was to become the holotype for *Goliathus goliathus* (Drury, 1770). Much confusion surrounds this beetle, which never belonged to Drury and therefore discussion on its history is occasionally inaccurate (e.g. Staig, 1931). The controversy that arose between Hunter and Drury concerning its ownership and the circumstances of its illustration, has been described in detail by Brock (1977). The species was to remain extremely rare in collections, only a handful being known and scattered mainly in European royal collections, until the locus of native populations was found in the interior of Africa in the mid nineteenth century (Wood, 1883). Hunter's collection contains early material acquired from other sources such as specimens from Fothergill and Yeats (see Appendix 2). His cabinets compare well with others from the period such as Joseph Banks' now in the Natural History Museum, London, which numbers just over 4,000 specimens (Fitton & Shute, 1994).



The Cabinets

The mahogany cabinets appear to date from after the collection came to Glasgow and may have been manufactured in Edinburgh (David Jones, pers. comm.). This might have been necessitated by damage to the original carcasses. Most importantly, however, the drawers are original and the layout of most of the specimens is retained. This is supported by two principal pieces of evidence as well as the drawer construction.



Firstly, Hunter's collections were listed by his executors. These documents survive, completed in the case of the insects in 1785, and herein referred to as the *Trustees' Catalogue*. This manuscript is laid out principally in the order given in Fabricius (1781) and cabinet labels can be seen to relate precisely to the *Trustees' Catalogue* in substantial parts of the collection. The *Trustees' Catalogue* ceases to list specimens part way into the Diptera for reasons that are not presently very clear and many specimens thereafter lack also cabinet labels. This is disappointing

not least because Fabricius' own collection of flies in Copenhagen is described as a 'tragedy' (Zimsen, 1964), having been almost destroyed by insect damage. Of course, after 230 years some interference in arrangement can be detected but there is relatively little, affecting some orders of insects more than others. The *Trustees' Catalogue* does contain errors as the authors were not experts and fairly obvious mistakes in juxtaposition of specimens and labels were diligently recorded or possibly created.

Secondly, it has been found during recent curatorial work that the papers lining the drawers are water-marked, dating them (Shorter, 1957) to between c. 1763-1777. These papers are loose, overlying presumably older paper glued to the cork lining of the drawers. As a result, the insect and cabinet label pins pierce the paper (mainly) in accordance with the layout given by the *Trustees' Catalogue*. Thus it can be seen that the occasional wrongful relationship between cabinet label and specimens predate the compilation of the *Trustees' Catalogue*.

The pins used for the specimens conform with the types used in other contemporary collections such as those in the Linnaean collection (Mikkola, 1983), although there is great variety of length, shape and thickness. An investigation of these and pin manufacturing technology of the period linked to entomological field craft and developing collection management procedures of the eighteenth century would make a worthwhile study. Douglas (2004) touches on the instructions to collectors issued by Drury (see also Noblett, 1985). Drury was at pains to point out that collectors should not insert large pins through small insects but perhaps occasionally there was little alternative for the person in the field. Smeathman complained that his belongings were systematically pilfered while he was in Africa and needed more pins to be sent from London (Douglas, 2004). Given that many specimens in Hunter's cabinets are almost perfect with full complements of legs, wings and antennae, early collectors (such as those listed in Appendix 2) deserve admiration for the standard of their efforts.

A comprehensive description of Hunter's cabinets and drawers was drawn up in manuscript by Jim Flanagan in 1984. These data provide the basis for the lists in the Appendix and most usefully assist in locating individual specimens in each drawer. Earlier listings, apart from the *Trustees' Catalogue*, are found in Kerr (1910), Staig (1931-1940) and a card index was created by a Miss H.E. Glen in 1916.

The status of individual specimens

In accordance with apparently normal practice for the period it is relatively unusual for any labels to be on the specimen's pin. One or two carry quite specific locality information on the cabinet labels such as a lycaenid obtained from T. P. Yeats. Otherwise careful association between species identification, internal evidence (such as pins and pinning style), archives, illustrations and published descriptions is usually necessary to establish provenance. Applying historical knowledge in addition to taxonomic expertise can reveal a great deal more about the status of many of the individual specimens that may not be immediately obvious.



The collection is of a synoptic nature in the sense that it appears to present a contemporary view of the knowledge of insect diversity almost regardless of the rarity of individual species. There are usually two examples representing each name. This is immediately noticeable in the butterflies (see Fig. 2). Often the

two specimens are shown one with the upper side and the other the underside visible. In sexually dimorphic species there may be one or two of each sex although at least in some cases this is due to lack of appreciation that they were the same taxon. An example of this phenomenon is provided by ‘*Papilio*’ (= *Cressida*) *cressida* collected in northeast Australia by Banks during Cook’s first voyage. When the Endeavour had to be repaired following damage on the Barrier Reef, the naturalists had many days in which to collect around what is now called Cooktown. Examples of *cressida* were described by Fabricius in 1775 from males, two examples of which can be seen in Glasgow (Fig. 4) and two in London in the Banks’ Collection, NHM (vide Zimsen, 1964). Two females stand in Hunter’s collection without any specific epithet (fig. 5) as they were not recognised as *cressida* until they had been described as a new species, *harmonia*, by Fabricius in 1793. By this time Hunter’s collection had been catalogued by the Trustees and so the cabinet label does not show the name he bestowed latterly. Again, two examples of each stand in both London and Glasgow. All of these specimens, which could only have originated from one collecting event, most probably have equal status although only the London ones are listed by Zimsen (1964).



Male *cressida*



Female *cressida*

Fabricius and

the birth

of modern descriptive insect taxonomy

Fabricius described more than twice as many butterfly species than his mentor, Linnaeus. Not only was he able to benefit from a greater number of expeditions and expanding trade by the emerging European colonial powers but also he was entomologically single-minded. He travelled widely and the situation outlined above, whereby very often just two specimens of each species are in the cabinet, indicates a systematic approach to his studies. The situation also lends support to the working practices of Fabricius who got access to the bulk material as it became available to the London-based collectors, whether it was from Smeathman’s labours in Sierra Leone, Masson’s in South Africa, Koenig’s in India amongst others. Armitage (1958) and Hope (1845) give brief summaries of Fabricius’ visits to London, to which he came seven times between 1767 and 1787 in order to consult the various museums including that of Hunter. It is most unlikely that exploring naturalists or mariners on their various voyages would only ever collect just two of everything.

Harish Gaonkar (pers. comm.) in his detailed readings of all of Fabricius’ published work and scattered archives has established that in some instances specimens belonging to a series (now we would refer to these as syntypes) were divided between several collections. This is alluded to by Fitton & Shute (1994) and given slightly more substance by Carter (1987) in which he says ‘ [Fabricius was] at work amongst the Banksian arthropods, both before and after the *Endeavour* voyage, and an agent in distributing duplicate specimens to other collections such as William Hunter’s and Dru Drury’s’. Fabricius would examine the raw material and retain some for himself, return examples to the originator and distribute ‘duplicates’ to the other cabinets (Gaonkar, pers. comm.). It seems that Hunter was intended to receive two of each kind where this was possible. The travelogues (e.g., Fabricius, 1787, from Austria, Germany and Russia) are important sources of information for determining the various collections and collectors that he visited and almost always he was given specimens of new species which were subsequently described. He was presented with examples of the species described by his hosts and these also entered the Fabrician collection in Copenhagen. In many ways this whole methodology, although not explicitly stated, can be recognised as the modern idea by which a taxonomist establishes the right to hold back example (s) for his or her own research when agreeing access with the museum or owner.

The implication of the above is that although Fabricius’ published descriptions name a specific source from which he derived his descriptions, the type series does not always reside there exclusively. A straightfor-

ward example of this is given above with '*Papilio cressida*'. This is evident even more clearly with rare specimens that originate uniquely from one place, such as some restricted island species from the various Cook's voyages, of which examples can be found today in London, Glasgow and Copenhagen. The source of material given in the published descriptions of species from the first voyage is credited by Fabricius to Banks (for obvious reasons as he had collected the specimens and they were first unpacked in his house upon return from sailing around the world). At the present examples of many of these can be found in different museums and are candidates for consideration as part of syntypic series.

This situation would explain, for example, the existence of Drury material described by Fabricius in Copenhagen although von Hayek (1985) felt at the time unable to accept Zimsen's (1964) claim for these being types. A literal acceptance of the original placement of the specimens using a restrictive latter-day application of the modern rules of nomenclature may impede interpretation. The type concept as we recognise it did not then exist and internationally agreed codification of nomenclatural rules was still over a century in the future.

Modern Usage

In tracking types necessary for revisionary work much time can be spent by taxonomists even locating specimens before deciding on their status. One of the problems in the past is that the Hunter's insects in Glasgow have not been utilised perhaps as much as they deserve partly due to geographical isolation (i.e., having become distant from London) and partly on perceptions as to the content. In an interesting account of Fothergill including discussion on Smeathman (Shillito, 1976), there is no reference to Fabricius' role in general as the principal insect taxonomist of the period, developing the work of Linnaeus as one of his keenest pupils. Fabricius described most of the new species sent by Smeathman from Sierra Leone. The existence in the Hunterian Museum, as given in Staig (1931-1940), of many Fabrician types from Africa, Cook's voyages and elsewhere around the world should naturally lead researchers to Glasgow. Neither Fabricius nor Hunter are in the figure ('Heroes Scientiae' in the 18th Century) in which appear the other relevant personalities of the period (Shillito, 1976) even though Fothergill left all or part of his zoological collections to Hunter in his will as clearly stated in Payne (1889).

Recently, a search for a beetle was directed to the Hunterian and specimens were easily located in Hunter's cabinet. Julio Ferrer, research associate of the Swedish National Museum of Natural History, had been seeking these 'missing' types for a considerable period but had been misled by Fabricius' statement that they were from Drury's collection. The species, '*Tenebrio*' (*Tauroceras*) *cornutus*, had been sought unsuccessfully in London, Paris, Copenhagen and other known repositories of Fabrician types until finally they were located in Glasgow. The specific process by which these particular specimens were acquired by Hunter is not known. One of the problems with Drury's main collection is that it was split at auction after his death. However, earlier movements of material by exchange, gift or purchase between eighteenth century London-based collectors made during their joint life times, are difficult to establish from contemporary documentation. Von Hayek (1985) maintains that, because independent corroboration cannot be traced concerning such transactions, no credence can be given to any claims that they did. However, in the case of the specimens of *T. cornutus* in Glasgow clearly they made the transfer - the actual pinned insects are their own evidence. It is misleading and over-simplistic to suggest that because Drury died after Hunter the latter could not have any specimens from the former. As contemporaries, sharing friends and common interests, added to the fact that Drury was sometimes impecunious and Hunter was a rich man, it is not at all surprising to find Drury specimens in Glasgow, even without the involvement of Fabricius. Specimens of species described by Fabricius from other collections but offered as part of Drury's sale are listed, their existence accepted without comment by von Hayek (1985), so it was clearly a regular two-way traffic. There are several other examples of Drury specimens in Glasgow, candidates for type status, and undoubtedly more will be revealed with time. The revision of *Tauroceras* and some other tenebrionids can now take place (Ferrer, et al., 2004).

It should be noted that after Hunter's death in 1783, his museum remained in London, managed by his nephew, Matthew Baillie, who had inherited it for his own use until it reached Glasgow in 1807. During this intervening period the insects were still available for consultation and were seen again by Fabricius. Indeed others, such as Olivier only came to London during this period and got access to the collection - his handwriting appears on a number of labels and he acknowledges the access provided by Hunter's nephew (Olivier, 1789-1808). This provides an example of the influence of the English capital on cultural life as once the collection moved north it became metaphorically 'moth-balled'. Thereafter, for the entire nineteenth century few if any records of visiting entomologists consulting it or being concerned for its existence

can be traced. Only in the early part of the twentieth century was any attention given to it (Kerr, 1910). Published catalogues of types (Staig, 1931-1940) were started but cover only slightly more than half the Coleoptera.

Future work

As curation has become more pro-active within the last few years more attention is being paid to Hunter's insect collection by contact with experts in particular groups. In order to encourage them to visit Glasgow financial assistance is sometimes possible. The specimen level database, a publicly accessible version available through <<http://www.hunterian.gla.ac.uk>>, has the capacity to incorporate digital images. The resulting catalogue will be enhanced also by deeper historical and systematic research. This increased awareness of the value of the collection as a primary resource will broaden the user base. An example of this is provided by Douglas (2004) as well as more traditional taxonomic revisionary work (e.g. Staines, 2002).

Decision-making on type status is complex and a great deal of work will be necessary with primary sources such as 'Jones's *Icones*'. William Jones, of Chelsea (died 1818), produced a set of watercolours drawn from specimens in the cabinets of the London-based collectors. They were never published but the originals are in Oxford (Hope Dept of Entomology). These paintings, as with the published illustrations in Olivier (1789-1808), were based on specimens some of which may yet exist in Glasgow. In several cases Olivier's figures are based on specimens in Glasgow and his handwriting can be seen in the drawers.

A number of other initiatives are being pursued. Seeking external funding for assistance with cataloguing is high on the agenda. To this end a research plan has been drawn up. The cabinets and drawers would benefit from attention and small amounts of restoration by a furniture conservation specialist. A metallurgical analysis and historical research into early insect pins might be revealing. A more ambitious aim might be to place the period during which Fabricius was active into a wider entomological context such as Farber (1982) has achieved for ornithology.

Acknowledgements

Harish Gaonkar, research associate NHM & Copenhagen, is thanked for sharing much of his unpublished research, observations and ideas on Fabricius' working practices; Starr Douglas, Royal Holloway, University of London, for providing a copy of her thesis; Jim Flanagan who most diligently analysed and made comprehensive notes on the Hunterian cabinet contents; David Jones, furniture historian, University of St Andrews, kindly shared his views on the actual cabinets.

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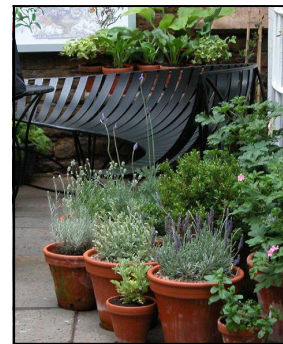
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Voyage of Discovery:
A new exhibition at North Lincolnshire Museum
- Steve Thompson

Friday, 25th June was a big day for us at the North Lincolnshire Museum, as we opened a new temporary exhibition, but one with a difference. Most of our temporary exhibitions are almost entirely home grown, and a few are hired in ready made. This time we have home grown the exhibition, but almost all the objects are borrowed, and the heart of the exhibition is very special, being a set of twenty five of the original plant illustrations from the first Cook expedition to the South Seas. These have been borrowed from the Natural History Museum, and many of them have not been on public display before, so we are absolutely delighted to be able to do this.

This project came about originally as part of our aim to pick up on the fact that this the Royal Horticultural Society's Year of the Garden. Within the service we already have a painstakingly reconstructed Victorian walled kitchen garden, at Normanby Hall, and just a few weeks ago, we opened at the museum a courtyard garden, making use of a courtyard area that had until then been simply used as dumping ground.

For this exhibition, we drew on the fact that the country's greatest botanist and horticulturist, Sir Joseph Banks, was a Lincolnshire man. This suggested to us, and particularly to Julie Bunclark, our Exhibitions Officer, the idea of borrowing from the NHM some of the paintings made between 1768 and 1771 on the first Cook expedition to the southern hemisphere. This was principally funded by Banks himself, and amongst its many great achievements, it was the first truly scientific voyage of exploration. It has a further topical resonance in that the original impetus was to make the first good record of the transit of Venus, from Tahiti, a very rare astronomical event which, by coincidence, took place just a few weeks ago, for the first time in 120 years. This time it was of greater interest than importance, but the readings taken in 1769 helped to establish the size of the Solar System.



The courtyard garden at North Lincolnshire Museum

The paintings borrowed come from throughout the voyage, and have been chosen partly for their beauty, but also because they show in many cases plants that have now become familiar to gardeners in this country. The exhibition shows the enormous effort undertaken at that time, in the name of exploration and understanding. Neither of the two expedition illustrators made it back to England, both succumbing to disease on the voyage, not a fate that today's botanists would expect to face, and certainly not a problem contended with when popping down to the garden centre for a Hibiscus.

It has presented a challenge for us, in that the environmental, security and insurance implications were far more significant than we normally have to contend with, but I am pleased to say that we have been able to meet all of those requirements. (It may be of interest to people, however, to learn that the Government Indemnity Scheme does NOT cover loans from the National Museums, which came as something of a surprise to us.) The staff and Trustees of the NHM have, for their part, been extremely helpful, and we are most grateful to them for their efforts. I hope they are pleased in turn at the chance to have these wonderful items on show to the public. All we need now is for the public to take up the opportunity, but the signs are looking good at the moment as the level of interest from the local media has been better than for almost anything we have done in recent years. Here's hoping.



The new Voyage of Discovery exhibition at North Lincolnshire Museum



The Society for the Preservation of Natural History Collections is proud to be recognizing its 20 years of service to the Natural History Community in 2005. SPNHC is an international association of individuals who are interested in the development and preservation of natural history collections. Within SPNHC, natural history encompasses more than biological and geological topics; it also includes the fields of anthropology, e.g. ethnology and archaeology. SPNHC members are collection managers, curators, registrars, conservators, and other specialists and generalists involved with research, educational and exhibit collections; a broad range of associated values to these materials are both acknowledged and protected.

In these 20 years, SPNHC has led the way in providing support to the Natural History Community via:

- books: *Storage of Natural History Collections: A Preventive Conservation Approach*, *Storage of Natural History Collections: Ideas and Practical Solutions* (both of these have quickly become classics, and have import beyond natural history fields), *Managing the Modern Herbarium*, and our latest *MuseumWise: Workplace Words Defined*; more are scheduled to come out soon.
- Collection Forum, our internationally respected peer reviewed journal which covers the diverse subject matter relevant to the needs of natural history collection management and preservation; book reviews are regularly included; visit our web-site to view two volumes and the contents of other previous issues.
- Twice-yearly Newsletters, which includes an occasional series of subject specific Leaflets (the Leaflets and some newsletters are on our web-site for your inspection)
- Annual Meetings, sometimes held in conjunction with other organizations such as the Natural Science Collections Alliance (previously known as the Association of Systematics Collections/ASC) and the International Society for Biological and Environmental Repositories/ISBER. Workshops are held at each meeting.
- Participation in pertinent forums relating to the Society's mission, e.g. Heritage Preservation's *Heritage Health Index*, and the *Workshop to Produce a Decadal Vision for Taxonomy and Natural History Collections* funded by NSF.

The Society's contributions were recognized by the American Institute for Conservation of Historic and Artistic Works (AIC) and Heritage Preservation who presented SPNHC with their 2001 **Award for Outstanding Commitment to the Preservation and Care of Collections**.

SPNHC is a valuable resource which should not be overlooked by workers in the natural history field. The Society actively encourages the participation of individuals involved with all aspects of natural history collections. Visit our web-site www.spnhc.org and join the listserv NHCOLL-L. We encourage you to become a member and partake of our activities, especially this coming year.

We are pleased to be celebrating this event by holding our 20th Annual Meeting (London, June 12-19 2005) jointly with our friends and colleagues in NatSCA, GCG and ICOM Natural Sciences Conservation Working Group

NFBR / NBN Conference
July 2nd and 3rd 2004 at the National Museum of Wales, Cardiff
- G.Walley, Nottingham Natural History Museum

Natural Partners: biodiversity observations and collections

This was a very useful conference to attend which is really saying something. All the speakers were informative and the range of topics was comprehensive. Whilst acknowledging the wider world's limited appreciation of the importance of natural science collections this meeting celebrated them and their role in supporting records and being the basis of the whole wide natural sciences. The main action taken away by the NBN and NFBR is to promote the importance of collecting and collections on their websites and in their publications. To this end a list of Recommendations was produced which is to form the basis of their future work in this important area.

Summary of the presentations: after going through my notes and my memories several themes seemed to recur –

- The historical and biodiversity importance of collections is not recognised at every level.
- There is a real and vital role for collections in formal and informal training of local natural historians.
- There is not enough modern collecting, and too much data collected without specimens. The responsibility of statutory bodies and research funding bodies needs to be highlighted.
- This is an exciting time for access to data and collections need to be a part of it, or miss out!

The presentations:

Session 1: chair Bill Butcher, NFBR Chair

Ray Woods, Science Advisor for the Countryside Council for Wales, gave the **keynote address** covering the need for accurate information to inform conservation decisions and how collections are part of that information base. Within Wales Ray gave a brief history of the increasing awareness of the specialness of the local Welsh landscape, the need to conserve habitats and species, and how changes in agriculture and industrial needs were permanently altering it at an increasing pace.

The loss of a whole system of SSSI quality meadows in Wales due to agricultural change was a spur to more protection that eventually arrived as the 1980 Wildlife and Countryside Act. Lichens are Ray's specialism and he gave the example of a Smith specimen of *Lobaria amplissima* (an extremely rare species in Wales) from a collection being used to target modern survey work leading to its re-discovery, and helping to get agreement from the land-owner to manage the site to maintain the species. Part of the convincing lay in there being a specimen in historic times from the same place, which was more special than a paper record, from the owner's point of view, and part came from the wider historic distribution that museum specimens pointed to, now reduced to one known site.

Ray finished with his increasing interest in forming an archive of local landscape photographs and post-cards, which can contain a wealth of clues to species and management information.

Chris Palmer, Senior Keeper of Natural sciences, Hampshire Museums and Archives Services, spoke on the **Functions of museums and record centres and how they have changed**. Chris spoke from the point of an important regional museum, with its own accidents of history, from Dodo bones to comprehensive collections used in genetic research, and a museum which has made a major contribution to local biological and geological recording throughout its history. As well their usefulness in supporting individual observations their role in identifying species was crucial. Despite this Chris noted the lack of appreciation of the importance of collections amongst local naturalists, in contrast to local historians who used and supported theirs. Attempts to promote collections as the local natural history collections seem especially vulnerable to disposal and for some reason are often not appreciated as history in the way objects are. In display they have

tended in recent years to be used to display natural processes rather than diversity. Chris noted the need for museums to be a key partner in the management of the local LRC, and to provide a curation service for local voucher specimens. He concluded with the hope that collections will again be seen to be central to local environmental information management, and that this meeting would lead there.

The form and function of archival systems was addressed by Neil Thompson, Head of Data and Digital Systems at the Natural History Museum. Neil is an archivist by training and it interesting to hear his view of paper records when most of the audience was museum curators and environmental data managers. Archives were described as being, generally, unpublished, unique material, available for reference only, non-current, selected and collected for a purpose. Archivists tend to keep perhaps 15% of what is available – so spend a lot of time deciding and encouraging others on what not to keep. Archives are concerned to maintain the provenance of all items and any original order, and to keep donated material separate. Their curation looks towards stable conditions and storage materials, the removal of staples etc, and the conditions of access, and adequate descriptions to encourage their use. The separation of notebooks from specimen collections is a loss for the archive as well as the collection.

The legal framework that affect archives include the Freedom of Information Act 2000, Data Protection Act 1998, Environmental Regulations 2003 (based on the EU directive of 1992) and the Modernising Government White Paper – where all government records are to be archived in electronic format.

Digital archives have their own problems, especially the migration of media and formats, and the risk that a certain archive may be dependent upon one ageing equipment that cannot be repaired or replaced. To complete our concerns Neil reminded us of the limited life of CDs – which are the mainstay of most current archiving. Neil ended with a summary of his present interests in meta-data and collection-level descriptions. The European project Biocase is collecting very basic collection descriptions of all living and preserved collections with the NHM as the UK node. The Nature Collections in the UK (NCUK) is aimed at producing a more detailed and complete collection-level description within the UK. It was somewhat alarming for the ancient CRU members in the audience that the regional work of museum curators or FENSCORE weren't mentioned here, especially as they have provided BioCase with 80% of the current European entries. These developments are a tribute to that early attempt, supported by BCG, to produce a way into the whole of the museum collections in the UK. [Post-conference it is clear that FENSCORE will be part of NCUK].

Charles Copp, of Environmental Information Management, Clevedon and the Natural History Museum, London gave a typically lively summary of the current bio-data world, full of whizzy things with whizzy acronyms. It was entitled *Use of technology in providing access to information about biodiversity*. I'll await his paper so I can sort out the Semantic Webs, RDFs, Ontologies, Agents and Digital Signatures. He started with the obvious and serious point of who all this data is for and how can we make it more accessible? Charles finished with the importance of real information, improving decision-making and education. Especially at a time when science is being reduced to being another belief-system rather than measurable reality, where creationism can be given the same scientific weight as evolution.

Session 2, chaired by Jim Munford, Programme Director of the NBN Trust.

This session began with Adam Rowe, then head of the Biodiversity Information Service of the Powys and Brecon Beacons National Park speaking on the subject of *Local and regional biodiversity networks and LRCs – recent developments*. Here the regional demands on environmental data can be expected to increase as more powers and resources are funnelled through the regions. The South West pilot project is an illustration of how independent LRCs can work to common standards and produce common data products, for example habitat inventories. This relies on complete LRC coverage and on adequate individual recorders and their coverage. Adam suggested that one key LRC role is to link local recorders to the NBN. The current project in Wales of building an LRC network with the support of the Welsh Assembly is recognition of the importance of having a sustainable system of environmental data collection and analysis. The National Museum in Wales has a recognised role for maintaining museum specimens as vouchers of records and so is an important precedent. Adam recognised that data usefulness is based on its quality, which is based on the knowledge and experience of the recorders. In many groups there is a clear role for museums, with their collections, expertise and facilities to have a greater role here. However how many are resourced to do training, and how many are resourced to receive specimens in any quantity? Adam finished by suggesting that LRCs should be at the forefront of validating local data, but few do, preferring to add caveats

putting the responsibility back to the recorder, who often will be unknown to the end-user.

Lawrence Way from the Joint Nature Conservation Committee spoke on the wider data context under the title of *Links between national and international biodiversity and collections networks*.

Looking at the global need for common data-sets, especially with regard to shared resources such as the oceans, Lawrence took us through a range of projects that had a web presence such as OBIS, Ocean Biogeographic Information System (www.iobis.org), GBIF, Global Biodiversity Information Facility (www.gbif.org), Fishbase, a global information system on fishes (www.fishbase.org), Seemap, part of OBIS, concerned with marine vertebrate populations (www.seemap.env.duke.edu/). REMIB is a Mexican initiative that started as a country-based biodiversity data project that has subsequently extended to the wider world (www.conabio.gob.mx/remib_ingles/doctos/remib_ing.html). Lawrence suggested that international pressures are developing databases that will track invasive species, share data on diseases and disease vectors, and encouraging countries to consider their wildlife as one of their major natural resources.

Adrian Spalding of Spalding Associates (Environmental) Ltd spoke on *Developing Networks of Data Suppliers*. Adrian shared his experience of working with and analysing the work of national macro-moth recording scheme (www.mothrecording.org.uk/index.php). From his survey it was clear that the main concerns of recorders centred on the use of their data, data validation, the increasing use of computers and the benefits and complications of that, the need for a practical method of describing habitats. It is estimated that 20% of recorders don't pass on their records to anyone. The percentage of recorders who are urban or rural proportion is 20% and 80% respectively. There has been a huge increase in recording in recent years. It is clear that many recorders do not understand the need to collect and kill specimens and have little sympathy for it. There is more interest in using photographs for verification rather than taking specimens. Many recorders are keen to work with and learn from museum specialists although many have the idea that arranging to meet an expert is difficult, or the collections are old and faded, and they would not be welcomed. There's clearly a lot of work here for museums to do.

Steve Tilling, Director of Communications, Field Studies Council completed the presentation part of the meeting with a talk entitled *Engaging the public: outreach, training and education*. He gave a whole range of statistics that showed the continuing interest of the general public in the natural sciences, but a decline in interest in school-based biology (perhaps losing out to geography?) and especially the use of field techniques. The FSC quizzed forty UK environmental agencies and consultants and found that 80% had had difficulties in recruiting biologists with field survey experience. Another concern has been the reduction in people's reduced 'love and appreciation of the environment' reported in recent newspaper articles based on UK research. More research by the Wellcome Trust identifies that 'whole-organism biology' such as ecology is regarded as less important by A-level students than the more experimental molecular biology, and this view is re-inforced and deepened as they pursue their university studies! (go to <http://www.wellcome.ac.uk/en/1/pinpubacteduisclif.html> for a copy of the report). The FSC's own research suggests that nearly a third of PGCE students aiming for a career in teaching biology have two days field experience! The slightly better news that Steve was able to report was that the need for field ecologists was now being recognised by the DfES.

The three *workshops* concentrated on Data Validation (led by Trevor James, NBN Development Officer), the Management and the Role of Collections (led by Mike Wilson, head of Entomology, NMGW) and the Management and Role of Archives (led by John Edmondson, head of Collections Management and Research, Science, Liverpool Museum). These deserve to be written up in full, but not here; they fed into the plenary session.

The *Plenary Session* moved quickly on to a draft set of Recommendations, which were to be worked up by the conference officers led by Trevor James. The delegates agreed these and the subsequent final (-ish) version is attached.

An excellent meeting.

Key resolutions and recommendations from the Conference:

1. The Conference affirmed that a key link between biodiversity data and biodiversity collections is the role of collections in underpinning long-term data quality.
2. The Conference confirmed that there has been a serious decline in resources to manage biodiversity collections across the UK, and that this is largely a direct result of the increasing divorce between these collections and the process of collecting and using biodiversity data.
3. The Conference recommended that biodiversity data collectors and managers should aim to ensure the long-term viability of data, and should adopt mechanisms to ensure that these data are supported by reference to relevant collections where necessary.
4. The Conference recommended that collectors of data should describe their responsibilities to ensure that, where appropriate, records are underpinned by the collection of specimens, and that these are maintained for the future.
5. The Conference recommended that biological recording schemes and societies should actively formalise their relationship with relevant local and national taxonomic expertise, and promote more formal agreements with appropriate museums and other holders of collections over the use and deposit of specimens.
6. The Conference recommended that museums which hold biological collections should actively seek to engage with local volunteer networks and expertise to support and reinforce the maintenance and use of these collections as an archive of voucher or related material and as a resource to underpin the local collection of records.
7. The Conference recommended that the National Biodiversity Network Trust should actively pursue the issue of a statutory need to be recognised for quality biodiversity data to be made available in the Environmental Assessment process, parallel to the situation for archaeological information.
8. The Conference recommended that the National Biodiversity Network Trust should actively support the need for biological collections to be used by local biodiversity partnerships to underpin their data.
9. The Conference recommended that all biodiversity organisations should seek to promote the links between biodiversity collections and the collection of data, and to encourage collaborative approaches to the funding of collections through formal partnerships with users of biodiversity information.
10. The Conference recommended that the National Biodiversity Network Trust should develop best practice guidance, with partners, concerning the long-term management of natural science archives, including electronic data and “grey literature”.
11. The Conference recommended that relevant organisations should seek to encourage professional training and accreditation for staff involved in biological recording, particularly in local records centres.
12. The Conference recommended that the Museums Association and The Museums, Libraries and Archives Council be asked to promote the development of regional/local “hubs” under the “Renaissance in the Regions” programme, especially in relation to biological collections and their use with respect to biological recording.

The Collection Survey:
Linking observation to cause across disparate collections
- D. O'Dwyer, P.R. Ratcliffe, G. Comerford, F. Bolton
The Natural History Museum, London

The Palaeontology Department of the Natural History Museum is undergoing a refurbishment programme from 2002 to 2004. This provided an opportunity to survey the collections and produce baseline information on their condition. The survey uses a novel data surveying & handling technique that allows us to quantitatively compare and contrast the condition of different collections. The same survey will be repeated at regular intervals to monitor the effect of remedial and preventive conservation projects. This allows us for the first time to compare or combine condition data across disparate collections and hence spot trends and prioritise conservation work. The survey works by focussing on **observable indicators** that can be directly related to **agents of deterioration**. E.g. *observable* pyrite oxidation *indicates* a high RH. Different indicators are used for different types of specimen to ensure the most accurate reporting of the agents of deterioration.

Agents of deterioration

Current research defines nine or ten agents of deterioration. These are listed as:

- direct physical force
- thieves, vandals and displacers
- fire
- water
- pests
- contaminants
- radiation
- incorrect temperature
- incorrect humidity
- custodial neglect.

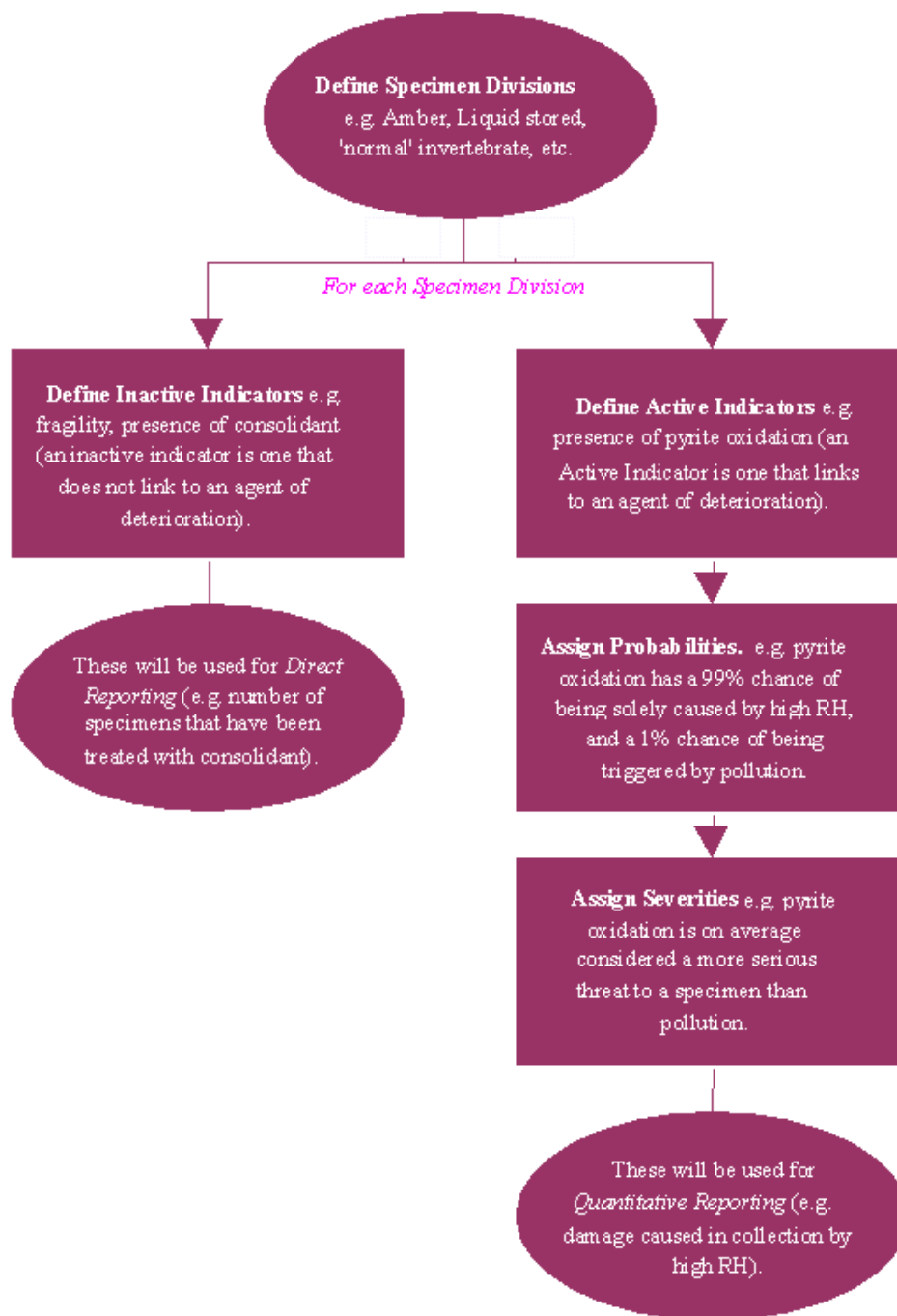
Observable Indicators

Indicators are the observable manifestation of the action of agents of deterioration. Examples include:

- breaks- related to poor storage and/or handling (physical force)
- label damage- related to pests and/or exposure to UV radiation.
- surface pollutant- related to exposure to contaminants
- pyrite decay- related to incorrect humidity
- poor condition of coating- related to incorrect temperature and/or exposure to UV radiation.

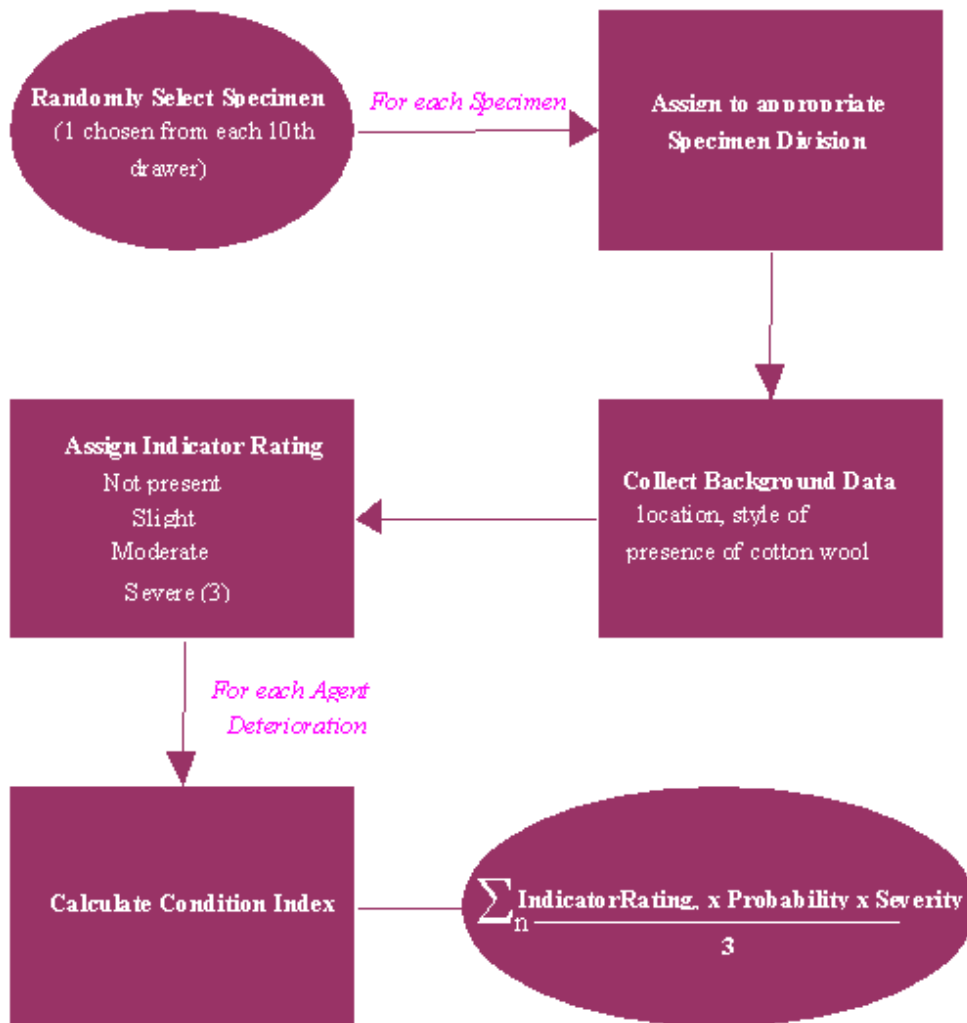
Linking indicators & agents

We link indicators to agents of deterioration through **probabilities** and **severities**. Each specimen division has its own set of indicators with appropriate probabilities. E.g. delamination of sub-fossil bone strongly links to low RH, whereas delamination of a mollusc has a weaker link



Calculating the Condition Index

For each specimen we survey, we produce a set of condition indices – there is one index for each agent of deterioration. The index is a measure of the damage that that agent has caused to the specimen over time.



E.g. the condition index for High RH for a ‘normal invertebrate’ with slight delamination and moderate pyrite oxidation is:

$$\frac{1 \times 30 \times 1.6}{3} + \frac{2 \times 99 \times 2.2}{3} = 161.2$$

Interpreting the results

Condition indices give a quantitative measure of the amount of damage caused to a specimen by an agent of deterioration that is independent of the type of specimen surveyed. As the index makes no judgement on when damage occurred to a specimen it is not correct to look at it in isolation – i.e. we cannot look at a single result and say if it is ‘good’ or ‘bad’. Rather, all indices must be examined in comparison to an appropriate reference collection. For general work, we use a reference collection of specimens that are judged to have no current storage problems and do not contain iron pyrites (hence are not subject to pyrite oxidation). This approach means we can combine and compare results for specimens composed of entirely different materials (e.g. insects in amber with molluscs preserved in limestone). This can either be done on an index by index basis (e.g. damage caused by high RH) or a combined condition index can be created which gives an at-a-glance indication of the condition of a collection. The figures below give some sample results.

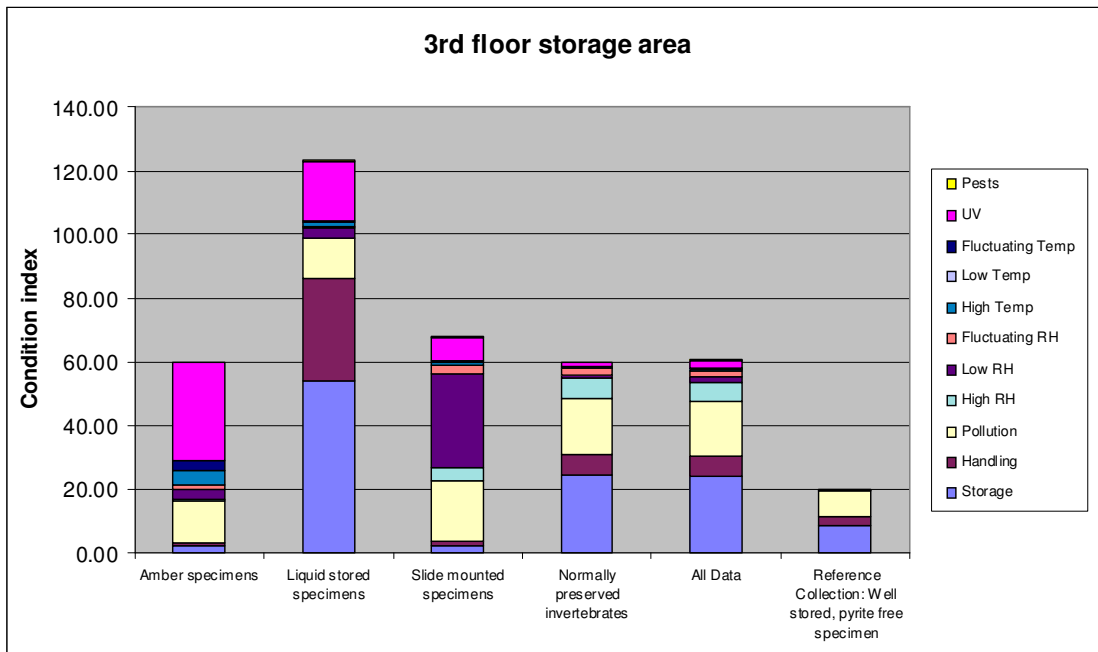


Figure 1: One storage area, four collections

The results above show the overall condition indices for four different collections, all held in the same storage area. Liquid stored specimens are the priority conservation issue due to current poor storage, whereas the issue with amber collection is previous exposure to UV (now stored in darkness). (Full colour graphs available; please contact V.Noble@nhm.ac.uk – Ed.)

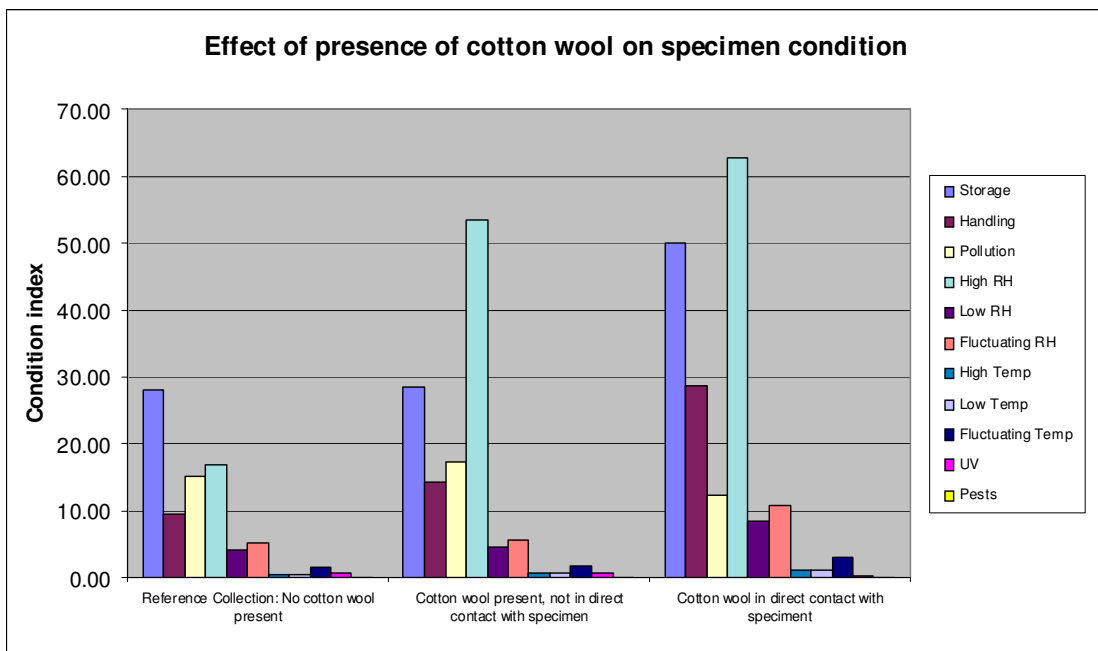


Figure 2: An early find – cotton wool...

The condition indices shown above are for specimens known to contain pyrite, and clearly show that cotton wool vastly increases the damage caused by high relative humidity (RH) by speeding the pyrite oxidation reaction.

(Full colour graphs available; please contact V.Noble@nhm.ac.uk – Ed.)

Going forward – what next for the survey?

The survey is a useful tool to directly compare collections containing different types of material. For example, for a smaller museum with mixed natural history collections it would be possible to survey a storage area containing spirit collections, dried skins, taxidermy and geological specimens and combine the results to report on e.g. the effects of humidity and style of storage that used in that location. There is already interest from other Museum departments who would like to use the survey on their collections and we also plan to pilot it in the gallery areas.

However this does not mean that the design of the survey is complete - it is observational and thus it is subjective. We have removed one level of interpretation from the user - surveyors state what they see and do not draw conclusions at the surveying stage. We also use tight guidelines to cut down on differences in opinion over condition and plan to introduce a reference collection for training surveyors. Further work is also required to ensure the probabilities and severities used are as accurate as possible.

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The Life and Times of *Tineola bisselliella* in the Collection Store - Jill Kerr: Natural Science Conservator, Ulster Museum, Belfast

Summary

In the summer of 1999 a ‘sticky’ trap with a pheromone lure for *Tineola bisselliella* (Hummell, 1823) (webbing clothes moth), located in the taxidermy collection, was found to contain seven moths. This was the first indication of an infestation, which had become established throughout the store. A non-chemical solution for the treatment of the space and specimens based on cleaning and freezing, proved successful, except for one area where a small number of moths were still being trapped. Here, it was discovered that cardboard boxes containing bags of ‘unclean’ bones showed signs of an extensive, active infestation. The most alarming revelation was that some of the larvae had managed to eat their way out of the polythene bags in which the bones were stored.

Introduction

Pest species, which attack museum specimens, include some species of insects, rodents and birds. They can cause irreparable damage to, and staining of, specimens. An Integrated Pest Management programme is essential for the long-term preservation of museum collections. This offers a holistic approach to the problem of pests by establishing procedures for prevention, monitoring and treatment. Documented here, is the infestation of *Tineola bisselliella* in the Collection Store at the Ulster Museum and the roll of IPM in the discovery and management of the problem.

An IPM programme began at the Ulster Museum in 1997 and the main collection store (Figure 1) was included in the pilot survey. It is the largest store in the museum (780 m²) and contains a wide range of specimens from various disciplines including zoology, botany, ethnography, archaeology, geology and local history. These specimens, many of which are organic and vulnerable to pest attack, are housed in a variety of cabinets, drawers and racks or on open shelving.

During the five years since monitoring began, the IPM programme has steadily evolved. The monitoring programme now includes the whole museum and a quarantine facility has been set up adjacent to the main collection store. A monthly cleaning regime has been successfully established for this store. The dissemination of information on our IPM programme has stimulated interest and raised awareness amongst curatorial and gallery staff.

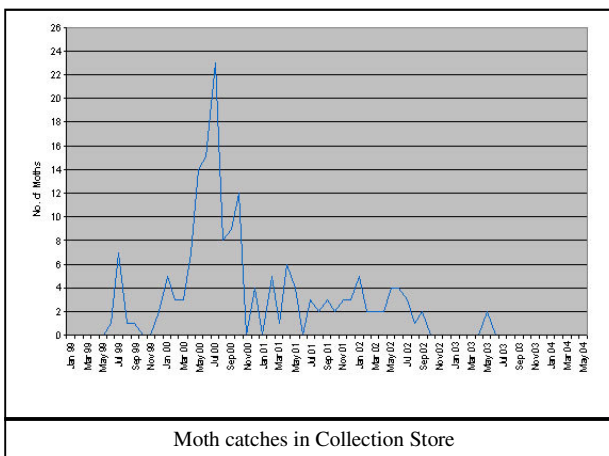
To monitor for pests, ‘sticky’ traps were used in many areas and traps with pheromone lures for *Tineola bisselliella* and *Anobium punctatum* (Degeer, 1774) positioned near collections particularly vulnerable to attack by these species (Figure 1). Since 2002 the lures for *Anobium punctatum* have no longer been available. The traps were inspected monthly and annual reports produced with any findings and recommendations.



It was during the third year of monitoring that significant numbers of *Tineola bisselliella* started to appear in the traps in the zoology bay (Figures 1 & 2) and the ensuing infestation put the newly established IPM to the test.

Tineola bisselliella

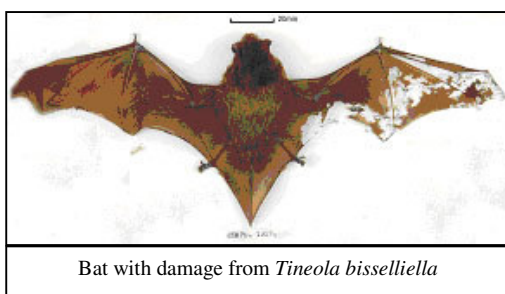
Tineola bisselliella is a small (5-7mm long), fawn-coloured moth from the family Tineidae. It is known to eat a range of materials, most commonly natural fibres such as wool (preferably soiled), fur, feathers, bird and mammal skins (Pinniger & Winsor, 1998). They can also damage synthetic materials and have the capacity to digest keratin in bone (Florian, 1997). They are not attracted to light and tend to scuttle around in dark areas, only flying when it is warm enough. The larva spins a silk tube, which contains frass and material from the damaged object. One generation usually takes about a year but there can be more if conditions are favourable (Carter & Walker, 1999; Pinniger, 2001). The collection store, which is air-conditioned, typically to a range of 18-23°C and 50-55% RH provides an ideal environment as they breed in temperatures between 20-33°C and an optimum RH of 70%.



Tineola bisselliella in the Collection Store

In the first two years of monitoring, the numbers trapped indicated a low level of activity, four adults between May 1997 - April 1998 and two in the subsequent year. These had been found in the zoology, ethnography and local history costume bays (Figure 1). In July 1999 a trap with a pheromone lure was inspected and seven adult moths identified. The trap was situated in the zoology bay amongst the taxidermy collection (Figure 1).

In the following months, the number of moths trapped and the sightings of adults increased dramatically. Vulnerable parts of the collection (taxidermy, ethnography and costume) were inspected. Relatively few objects appeared infested but those that were, showed quite severe damage (Figure 3). A number of options to treat the specimens and the space were considered. It was decided that the most practical and effective way to treat the specimens was by freezing (Strang, 1992). If carried out correctly this would be guaranteed to kill all the life stages of the moths and would have minimal effects on those objects in the collection identified for treatment (Strang, 1996). The specimens found to have an active infestation were treated immediately and those vulnerable to attack were bagged in preparation for freezing. Although progress was slow due to the freezer capacity, bagging of specimens protected them from infestation and contained those already infested.



Bat with damage from *Tineola bisselliella*

A few taxidermy specimens, which showed signs of insect activity but were too large to fit in the freezer, were treated with Dichlorvos (Vapona™). It came as an impregnated strip, which slowly released a vapour, lethal to insects at the correct concentration. Its main use was where a contact insecticide was not appropriate and had the added advantage of remaining effective for up to six months. However, this product was not suitable for all types of specimens as it can fade some dyes and corrode metal (Dawson & Strang, 1992). This insecticide has

now been withdrawn for all use in the UK because of health and safety concerns.

Pest control companies were consulted about an approach to the treatment of the storage space and furniture. Various factors had to be considered such as the residual effects of the treatment, health and safety and disruption to staff and visitors. A series of pyrethrin-based spray treatments was suggested for the treatment of the building fabric and methyl bromide fumigation for the furniture. A survey of the store revealed that there was a lot of unnecessary non-collection material cluttering up the floor space, creating potential food/harbourage sites of pests and restricting access for cleaning. It was decided to make significant improvements to the housekeeping regime and to consider the chemical solution only if these steps did not prove effective in reducing moth numbers.

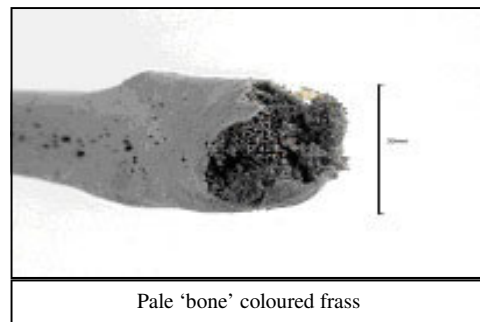
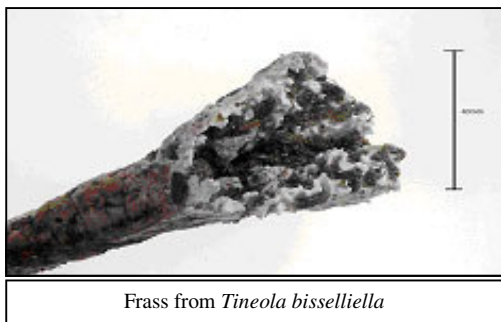
During the bagging process, extra pheromone and blunder traps were placed in areas containing specimens vulnerable to attack to help locate the source of any activity as soon as possible. Steps were taken to improve cleaning in the store and a programme started to remove non-collection material in order to facilitate cleaning. Storage furniture was cleaned thoroughly whenever specimens were removed for freezing.

Tineola bisselliella in the Osteological Collection

In May 2002 the bagging of taxidermy, ethnography (organic specimens) and local history costumes was completed and the number of moths trapped reduced to an average of 2-3 per month (Figure 2). These were mostly confined to one particular area in the taxidermy collection. This was perplexing because all the taxidermy specimens had been bagged thereby eliminating possible food sources. It was decided to continue with the removal of the non-collection material in an attempt to clear this area and find any sources of infestation. It was then that a box of bones was discovered which showed signs of an established infestation of *Tineola bisselliella*. An inspection of this and the surrounding boxes revealed a number of seal skulls and dolphin bones which had not been completely de-fleshed during preparation and which showed signs of activity. Inside the boxes, the bones were stored in unsealed polythene bags. A new programme of inspection and bagging began in an attempt to eradicate what was hoped to be the last source of moth activity.

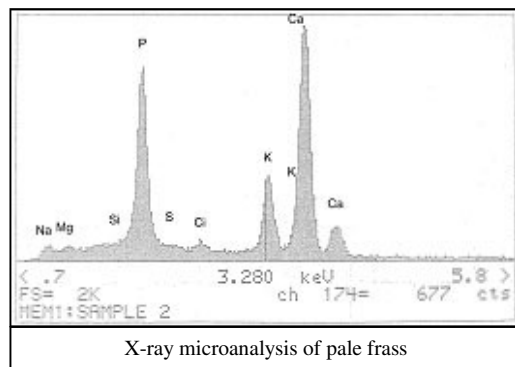
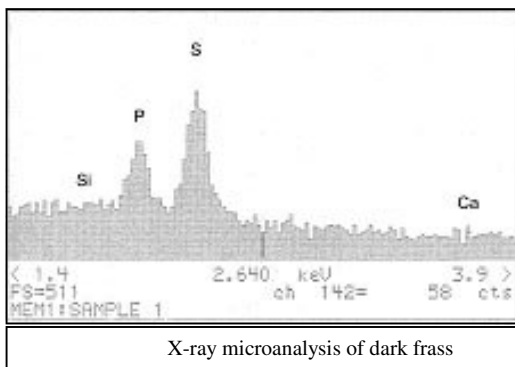
After the bones had been frozen, they were cleaned of any moth debris, which included frass, larval tubes, larvae and adults. Examination of the bones during cleaning revealed a number of interesting features:

- The extensive nature of the colonisation by the moths in this environment (Figure 4).

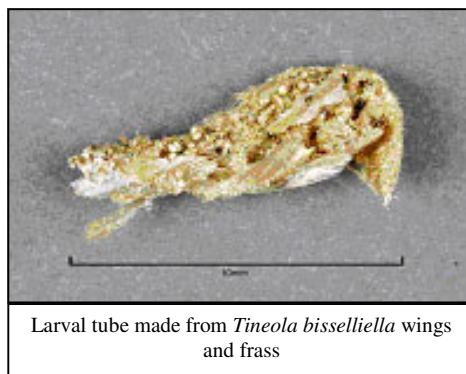


Appearance and analysis of some of the frass indicates that the larvae had digested bone as well as flesh. Most of the frass is a dark 'flesh' colour but in a few cases it appears to be a pale 'bone' colour

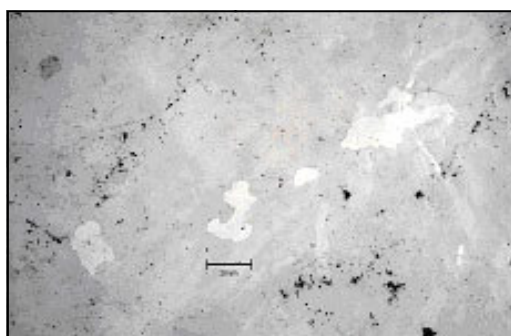
To discover if the moths had digested bone, two samples of frass were compared using X-ray microanalysis. Figure 6 was produced from a sample of dark frass and Figure 7 from a sample taken from the bone shown in Figure 5. Several areas of each sample were analysed. The pale frass shows distinct peaks for calcium, potassium and magnesium, all elements common in bone. By comparison, the dark frass shows no peaks for these elements.



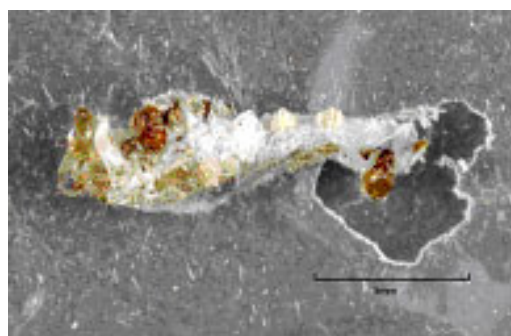
Some of the larval tubes appear to be made from dead adult moth wings and frass, and several of the polythene bags showed signs that they had been eaten through from the inside by larvae.



Larval tube made from *Tineola bisselliella* wings and frass



Hole in polythene bag eaten by *Tineola bisselliella*



Larval tube attached to hole in polythene bag

Conclusion

Since this incident, the number of moths caught have been significantly reduced (Figure 2). The freezing programme is making slow but steady progress and vulnerable specimens remain bagged. Keeping the specimens in bags has created problems with access and the co-operation of curatorial staff has played an essential part in controlling the spread of this pest. The objects can only be removed from their bags after freezing and when no moths have been trapped over a period of several months. It was decided that the improvement in housekeeping had proved effective in reducing moth numbers and a chemical treatment was not required for the space or furniture.

Hopefully, this experience has taught us several valuable lessons, which will lessen the risk of future infestations:

- A quarantine procedure is essential to prevent the entry of pests.
- A good housekeeping regime can reduce the likelihood of an infestation developing.
- A trapping programme is essential to identify pest outbreaks and sources.
- Pests can be very resourceful in their quest for survival.
- In order to manage a pest population it is essential to understand their habits.
- Pest management is the responsibility of all staff.

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Proposal on the development of a web-based Decision Making Model for the conservation and restoration of fluid preserved specimens

- A.J. van Dam, Leiden Museum of Anatomy

ORGANIZATION

The International Council of Museums (ICOM) is an international non-profit organization, which is 'committed to the conservation, continuation, and communication to society of the world's natural and cultural heritage, present and future, tangible and intangible'.

ICOM-CC is the largest of 25 International Committees of which ICOM is constituted. It is concerned with preservation, conservation and restoration of natural and cultural heritage. ICOM-CC consists of a variety of specialist Working Groups.

ICOM-CC's Natural History Collections Working Group (NHCWG) has approximately 150 members in more than 50 different countries. Due to election a new coordinator and assistant coordinator during ICOM's last triennial meeting in Rio de Janeiro, Brazil (2002), the Working Group is functioning as it never did before.

Based on a discussion attended by more than 80 members, an ambitious program for the next triennial period (2002-2005) has been outlined during the Working Group's meeting in Rio.

The NHCWG recognizes that loss of conservation skills, serious gaps in conservation research, and lack of training is a concern in most countries in the world. By assimilating knowledge through the expertise of natural history conservators, knowledge loss and knowledge gaps can effectively and efficiently be dealt with.

ACTIVITIES and their IMPORTANCE & RELEVANCE

According to the NHCWG, the development of a web-based 'Conservation Expertise Network' and a 'Mobile Conservation Skills Lab' could be useful instruments in order to prevent the loss of skills in natural history collections conservation and to promote the sharing of conservation knowledge.

By creating a Mobile Conservation Skills Lab the Working Group aims at transferring knowledge and skills by international project-based training programs. When conservation knowledge and skills are lacking somewhere, a specific training program in the form of a workshop will be developed.

The proposed Conservation Expertise Network, to which the Mobile Conservation Skills Lab should be complementary, will be a web-based decision making model. It will serve as a (self-)educational, practical instrument designed to upgrade conservation knowledge and ethics, and should consequently lead to the development of conservation protocols that suit specific local situations.

Although the NHCWG eventually aims at realizing a Conservation Expertise Network covering various disciplines within natural history collections conservation, it realizes that a pilot project on one specific aspect of conservation should be performed. Therefore, the NHCWG would like to apply for a Conservation Education and Training Grant to perform this pilot project.

The proposed pilot project is focused on conservation and restoration of fluid preserved specimens. Of all disciplines within natural history collections conservation, this extremely specialist one is most profoundly subject to lack and loss of knowledge and skills.

The Working Group's web-based decision making model for the conservation and restoration of fluid preserved specimens will build upon the 'Decision making model for the conservation and restoration of modern art' developed by the Foundation for the Conservation of Modern Art and the Netherlands Institute for Cultural Heritage (1999). The model serves as a guideline through all aspects that need to be considered before making a decision about conservation of an object. It consists of a series of steps that lead to the formulation of a sound advice for treatment of the object based on the meaning and the condition of the object. The decision-making model forms the backbone of the Conservation Expertise Network. To it will be

linked all kinds of available information and a database of specialists in natural history conservation.

This web-based decision making model for the development of which the Getty's support is being requested, will serve as a pilot-project by testing the feasibility and will stimulate the further development of an integral Conservation Expertise Network. It will be invaluable as a source of much-asked knowledge and skills that we otherwise lose.

The results of this proposed pilot project should be presented at ICOM's next triennial meeting (The Hague, September 2005).

INVOLVED INDIVIDUALS & INSTITUTIONS

Andries J. van Dam will be the person mostly involved with the proposed project. Being conservator of the Leiden Museum of Anatomy, Van Dam has developed a broad expertise on conservation of fluid preserved specimens. He has published numerous articles on this subject, has given many lectures both in the Netherlands and abroad and has investigated new methods and materials for conservation, for instance in cooperation with the Smithsonian Institution. In 2002, he was elected coordinator of ICOM-CC's Natural History Collections Working Group.

Van Dam will bring together the most recent knowledge on conservation of fluid preserved specimens in close cooperation with experienced colleagues and relevant institutions like ICN, NHCWG, ICCROM, CCI etc.

Victoria Purewal, botanical conservator of the National Museum and Gallery of Wales and assistant coordinator of the NHCWG, will edit the results of Van Dam's activities.

Agnes Brokerhof will be involved as project advisor. Brokerhof is senior conservation scientist at ICN (Netherlands Institute for Cultural Heritage) and well known for investigating techniques, materials and procedures for conservation, both remedial and preventive. She has experience with the application of the 'decision making model' in the conservation of both natural history and ethnographic collections.

Coordinator of the proposed project will be Babke Aarts, who is currently employed by the Dutch Academic Heritage Foundation. She coordinates both local and national projects on selection, conservation and digitization of natural history collections.

If the proposed project will take place, three programmers and designers will be invited to present their proposals for the web-related part of the project. They should both be skilled in developing heritage-related and educational websites.

Preliminary developmental work has shown that the decision-making model and associated ideas can be transformed to an interactive computer based program.



Ol' Yellow Belly – a problem with stoat ventral fur
- Simon Moore, Hampshire CC Museums Service

Something that has puzzled me for a long time now is why the ventral fur on stoats, including the dorsal fur during the ermine phase, gradually becomes yellow? The fur underneath and alongside the chin also under the front paws, however, stays its normal pale cream colour (Fig.1). By fixing stoat specimens in formaldehyde, this reaction is considerably catalysed and is even more dramatic, the fur taking on a deep golden colour within a few days.

The stoat's close relative, the weasel, is totally unaffected by this problem (right, Fig. 2), making any mustelid-related theories impossible!

I have had ideas put forward relating to leaching of gall bladder or other liver-related pigments into the skin but this would only apply to freeze-dried specimens since mounted bodies would have these organs removed by a taxidermist. Enzymes active after death have also been suggested and if crushed, some produce a pigment. Fine, except for the chin fur remaining non-discoloured, and the weasel?

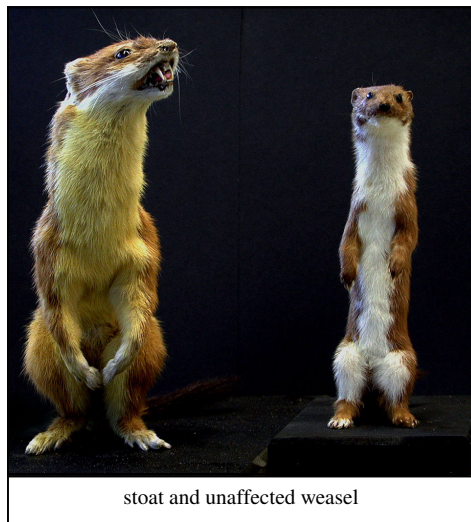


demarcation zone

My own theories tend more towards:
Light gradually affecting the fur in some way.
That stoats have aldehyde sensitive ventral fur?

If anyone is able to analyse the yellow pigment please let me know and I will send a hair or two.

If anyone has any ideas or has heard of research being conducted into why stoat fur goes yellow, I would be most interested to hear.



stoat and unaffected weasel

Cleaning dusty feathers, a technique that works!

Abstract

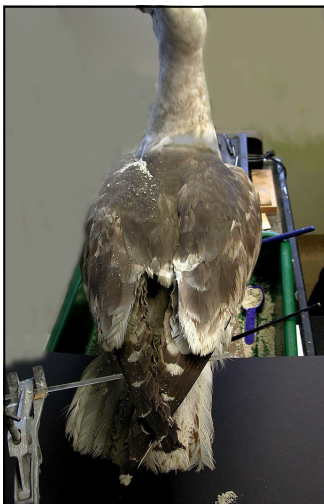
Until recently, dusty white feathers on a taxidermy bird were a problem, often ignored. They involved washing, layer by layer to prevent cross contamination, using conservation grade detergent, deionised water and a hairdryer. The result was never that satisfactory since the acidic dust linked with the feather protein resulting, after the hard work, in a pale grey bird. Laser cleaning is good but expensive and will only clean off the external layer of dust contamination. Using a document cleaning powder (used in paper conservation), a technique for cleaning bird feathers and neutralising acidic staining has been successfully developed.

Method

I have been searching around for some time trying to solve the ‘dusty white bird’ problem and have tried several techniques, some mentioned above, but none have been that effective given the amount of time and resource. Last year I ordered some Document Cleaning Powder from Preservation Equipment Ltd (cat. Number 782-1000) to try out on some specimen in the future.

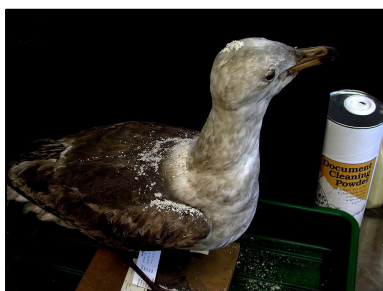
This year I had the good fortune to acquire Kathryn Medlock from the Tasmanian Museum & Art Gallery as a trainee in various taxidermy conservation techniques as she has some ailing Thylacines and many dusty white birds (including Albatrosses) to maintain. The Hampshire County Museums Service collection also has a (very) few dusty white birds, including a sub-adult Lesser Black-backed Gull *Larus fuscus*.

The problem with not quite mature seabirds is that the plumage is usually flecked with areas of brown and grey and it’s not always easy to differentiate dust stain from natural colour! The gull had also been slightly infested with *Anthrenus* larvae (a few skins present) with some resultant loose feathers! Undeterred, Kathryn and I set to the task and she had soon developed a fingers and thumb technique for actually massaging the document powder into the feathers without disarranging them. The infested areas were massaged with more care and support to prevent feather detachment. The massaging technique can pull loose or broken feathers out but by making a locality map they can easily be glued back in again afterwards using neutral pH PVA. Where acidic dust has embrittled feathers, even greater care must be taken and more time taken to prevent breaking the feather shafts.



sub-adult lesser Black-backed gull with much dust and dust stain contaminating plumage. A small area of white on the crown of the head shows where the first application of cleaning powder

The ‘powder and massage’ technique worked well and we quickly saw the first white patch appearing amongst the formerly grey feathers on the crown of the bird’s head (Fig. 1). The cleaning powder is quite coarse and has a mealy consistency, so is easily brushed out. As a dust magnet, the powder works well and takes on the dusty grey colour as it becomes saturated. The naturally grey feathers took on a new lease of life sheen-wise once the dust had been removed (Fig. 2). The bird took about 8 hours of treatment before it was considered to be clean (Fig. 3).



Back of same gull showing one side cleaned



Successful completion of the work leading to a much cleaner bird

Conclusion

I don't know of a similar method developed for the cleaning of this type of material. Although it may take a skilled conservator one day to clean an entire gull, the technique's efficacy is now proven. The powder appears to neutralise any acidic defects caused by dust in feathers and removes any contaminant coloration and even grease spots. This technique is considerably more convenient and less messy than the washing technique and the end result looks infinitely better.

Removing pooled fat and mothproofing freeze-dried mammals by perfusion

Abstract

This article follows up to a short piece that I wrote about 'lyophiloresistance' over 10 years ago in *Conservation News*, **51**: 38-39 (1993). It deals with the ongoing problem of removing *tris*-structured molecular compounds (e.g. dense fluids, such as glycols, and lipids) from freeze-dried biological specimens - particularly mammals.

A job that many taxidermists avoid, if possible, is the mounting of peoples' pets that have passed away! The difficulty of capturing the exact mood pose for the deceased animal combined with the removal of a larger amount of subcutaneous fat than usual can provide a daunting task!

A pet owner can even be so attached to their animal that even the thought of removing any body part is unthinkable – what to do? I was approached some months ago by just such a couple – could I freeze-dry their beloved cat without removing ANY body parts. I explained that the eyes would not look good and would normally be replaced with glass. No, that was out of the question but I could process the body with the eyes closed. I will always ensure that the finished result is final and if it doesn't quite capture the mood then that is the owner's risk. This was agreed and I set up the cat in the required pose with his eyes closed. Keeping the eyes closed is quite a problem, the eyelids tend to sag and leave the eyes one quarter open. Even when fully frozen, the lids just keep on creeping slightly open! Eventually they just had to be pinned shut.

Molecular size-related problems

Freeze-drying will remove water (as ice) and other cellular fluids in the form of sublimed vapour. Larger or heavier molecules, particularly those with a *tris* structure such as glycerol, glycols and of course triglyceride lipids, tend to get left behind: the process hasn't a low enough temperature to freeze them and once the mono-aliphatic molecules have been sublimed away, these remain behind and give rise to waxiness and other associated problems.

The cat freeze-dried well over a 10-month period, accompanied by a 'passing traffic' of smaller mammals, fungi and birds. The process of freeze-drying will, however, only remove a small amount of fat mainly in the form of monostearides. The heavier triglycerides remain in the body and gravity will form them into a pool on the lower side where they start to creep through making the ventral fur greasy. If left untreated this fat pool will continue to creep through and permeate much of the animal's skin; this leads to oxidation, fat

burn and fur drop!

The same problems are also apparent in smaller mammals: the tails of mice and other rodents constitute a fat store against lean times. When freeze-dried, the tail either becomes saturated with pooled fat or, after time, the skin shrinks down onto the caudal skeleton and giving the tail an undesirable knobbly appearance. Taxidermists often obviate this by substituting a piece of non-corroding wire or inert but flexible plastic (poly-propylene) into the tail skin, having removed the caudal skeleton. By pricking the tail, once frozen, this problem can be considerably reduced for freeze-dried specimens. The monostearides are assumed to sublime away along with the water (ice) vapour and the remaining triglycerides are usually too small in content to cause any lasting problems.

Another problem, however, is the tastiness to pests that a freeze-dried mammal presents. Insect pests seem to sense a freeze-dried feast like a vole or mouse and will often infest these before touching any mounted specimens. Below I have outlined a technique that will deal with both problems at the same time.

Technique

Removal of pooled triglycerides in a freeze-dried cat or other mammal is essential for the reasons mentioned above. Once processed, the cat's ventral fur started to become greasy. Placing the specimen onto some paper towel soaked some of the fat pool away but it wasn't until I injected the cat with a solvent containing mothproofers that the process really started to move forward.

I still use Eulan W (also known as Edolan), which along with most of the conservators'/curators' arsenal of pest-preventive chemicals has been severely regulated or restricted by COSHH over recent years. Providing that it is injected into the body and just permeates the skin and not the fur AND the specimen is suitably hazard-labelled, then that still seems to be acceptable. Eulan is much too oily and hazardous to inject undiluted and must be diluted to at least 10% in iso-propyl alcohol (the most suitable solvent I have found so far). As the alcohol evaporates, the Eulan is left internally as an unpalatable barrier against any invading pests.

The isopropanol, as a carrier solvent, proved most effective at dissolving out the triglyceride pool even faster and yellow stains appeared on the paper towels (Fig. 1).

The syringe that I use is ideal for injecting the solvent since the needles have capped clearing wires that can be withdrawn once the needle has penetrated the body cavity and preventing the tip from becoming clogged with body tissue. 50ml of isopropanol twice a week at front and back of the ventral body removes about 10% of the fat pool. Once the yellow stains no longer appear I will finally revert to using the Eulan as an insect-proofing barrier and leave the cat on the towels until the staining ceases. The ventral fur will then be dry-cleaned with isopropanol to remove any greasiness and that, hopefully, will be the end of any fat and pest-related problems.



freeze-dried cat showing the lipid-soaked paper towels and the greasiness of the ventral fur

Conclusion

Although this technique is still ongoing, it is working well combining fat removal with mothproofing. Any further developments, including problems, will be reported in later issues.

Notes On Conservation Tests Of Failing Collembola (Insecta) Micro-Slide Mounts
- Melissa Gunter* & Paul A. Brown**

* Royal College of Art / Victoria and Albert Museum Conservation Programme, V. & A. Museum, Cromwell Road, LONDON, SW7 2RL.

**Department of Entomology, The Natural History Museum, Cromwell Road, LONDON, SW7 5BD.

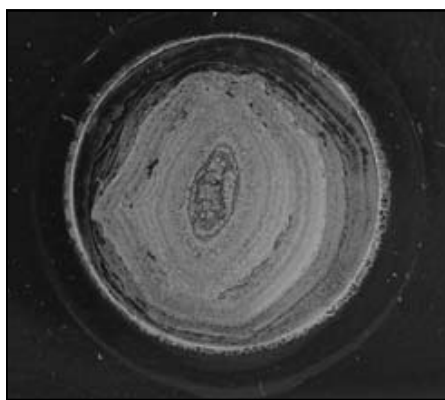
**Entomology Microscope Slide Conservation Project,
 18th February – 5th March 2004**

Insect cuticle and Canada balsam have very similar refractive indexes. Its use as a mounting medium was discouraged in the past because the fine structures of insect specimens tend to be invisible using normal light microscopy. Before it was established that phase contrast microscopy could overcome the refractive index problem, many new mounting media with contrasting refractive indexes were used to improve the visibility of the specimens. However, most of these have been proved to be unstable compared with Canada balsam. This project was designed to determine a conservation method to rescue deteriorating Collembola microscope slide mounts at the Natural History Museum, and to establish whether such material could be successfully remounted in archivally proven Canada balsam. In many cases, the mounting media used in these slide mounts was not known for certain.

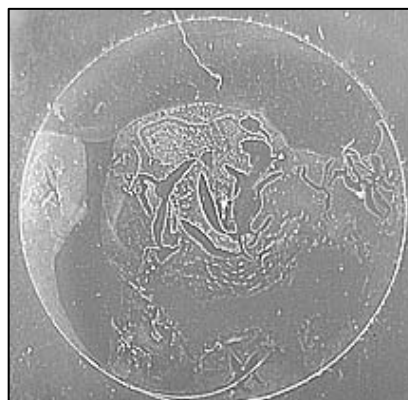
PAB selected 40 deteriorating Collembola microscope slides from the NHM main Collembola collection. The slides selected were relatively unimportant material and considered expendable for this experimental work. Using the Brown & De Boise (2004) slide conservation technique as a guide, the slides were processed by Melissa Gunter as part of her MA studies on the Royal College of Art/Victoria & Albert Museum Conservation Programme, in collaboration with the Natural History Museum, 18th February – 5th March, 2004. The slides were soaked in 30% ethyl alcohol for 5-6 days and their respective labels were removed and remounted onto new slides. The cover-slips and specimens were easily separated from the slides after soaking. After dehydrating each of the specimens in glacial acetic acid for 3-5 minutes, the Collembola were soaked in oil of cloves and remounted into archival quality Canada balsam. The slides were then placed into an oven at 30°C for three to four weeks to harden.

Berlese Collembola slide mounts

There were two types of Collembola slides identified as deteriorating and in need of conservation. Three slides were made with classic Berlese gum chloral mountant, which had become completely crystallised (Figure 1). The sealant ring had failed and allowed the Berlese to dehydrate, thus causing the formation of Chloral-hydrate crystals throughout the mount. On soaking these slides in 30% ethyl alcohol, the specimens were found to have broken up into many small pieces, making them unsuitable for further conservation. Any important, completely crystallised Collembola slides will, in the future, be de-ringed and placed into a warm and wet environment to attempt to re-hydrate the crystals. If the crystals disappear, these slides will be re-ringed after treatment with Canada balsam or Euparal, to stop any future dehydration.



Crystallising Berlese mount



Shrinking (possibly) Gisin's mount

Peter Lawrence Collembola slide mounts

As stated in Brown (1997), many slide preparators and researchers have not stated what mountant they used. The majority of slides studied were made by Peter Lawrence who did not state which mountant he used, either on the slide or in any of his taxonomic papers. The majority of slides showed varying signs of the mountant retreating away from the specimens and from the centre of the slide (Figure 2). This is further aggravated by the mountant shrinking vertically, resulting in the cover-slip separating from the mountant and damaging the specimen.

As this form of shrinkage is not known in any of the Berlese slide mounts in the NHM aphid collection, we can assume that the mountant is not Berlese. Also these slides are not ringed and show no signs of crystallisation caused by dehydration. These slides were easily soaked out from the mountant using 30% ethyl alcohol, whereas Berlese slide mounts usually require a further soak in 10% potassium hydroxide to release the specimens.

Peter Lawrence possibly used 'Gisin's recipe. According to Fjellberg (1980), this consists of 179 ml. of lactic acid, 36 ml of glycerol, 28 ml. of glycerol + saturated picric acid and 7 ml of 40% formaldehyde. A future study will reveal whether any formaldehyde present in Gisin's fluid, or in the preserving solution used prior to slide preparation, might preclude the successful dissolving of the body contents to effect the necessary improvement of visibility for the study of cuticular structures.



Collembolan remounted in Canada balsam

Conclusions

Most of the Collembola specimens coped well with being soaked out of the old mountant, dehydrated with glacial acetic acid and remounted into Canada balsam (Figure 3). Body contents should always be removed so that the cuticular characters used in taxonomy can be clearly seen using transmitted light or phase contrast microscopy. Some of the specimens should have been soaked in 10% potassium hydroxide to attempt to remove body contents still present, but this could not be done due to the time constraint on the project. Non-removal of such body contents resulted in a degree of (osmotic?) collapse of the cuticle of some specimens on remounting into Canada balsam. When attempting to discover techniques to rescue deteriorating slide mounts, one should experiment on less important material mounted by the same collector/preparator so as not to risk destruction of more valuable specimens. This technique will be used and improved with practice, to rescue the type and other important deteriorating material in the NHM Collembola collection. Steve Hopkin of Reading University is currently engaged in a condition survey of the NHM Collembola collection to indicate which important slide material requires rescue.

References

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- Brown, P.A. & De Boise, E.**, 2004. Procedures for the preparation of whole insects as permanent microscope slides and for the remounting of deteriorating aphid slides within the Natural History Museum, London. *NatSCA News* **3**.
- Fjellberg, A.**, 1980. *Identification keys to Norwegian Collembola*. Norsk Entomologisk Forening. 152pp.

Museums Association – Collections Review
East Midlands Consultation Meeting
Snibston Discovery Park, Coalville
Thursday 9 September 2004, 10.00a.m.

Present: Beverley Baker (Galleries of Justice), Michael Cooper (Nottingham City Museums & Galleries), Yolanda Courtney, (Leicester City Museums), Jim Grevatte (EMMLAC), Melissa Hall (Newark Museums), Mary Hider (Leicester City Museums), Glyn Hughes (Newark Museums) Ron Inglis (Nottingham City Museums & Galleries), Paul Jefford (Lincs Vintage Vehicle Society/Lincs Road Transport Museum), Susan Lansdale (EmmS), Steph Mastoris (Leicestershire Heritage Services), Francine Smith (Derby City Museums), Jonathan Wallis (Derby City Museums/MidFed), Jerry Weber (EMMLAC), Ros Westwood (Derbyshire Museums Service), Graham Whalley (Nottingham City Museums & Galleries/ NatSCA), Helen Wilkinson (Museums Association), Franne Wills (Lincolnshire Heritage Services) David Worthington (East Midlands Hub).

Apologies: Mike Cavanagh (Kettering Heritage Quarter), Sarah Levitt (Leicester City Museums/MidFed/ EM Hub), Susanna Smith (National Trust EM), Keith Harrison (William Carey Museum), Doddington Hall

Welcome & introductions

Steph Mastoris (Chair) welcome everyone to the meeting, and particularly Helen Wilkinson who has been the instigating force in the development of the MA Collections Review. He suggested that the discussion be structured along the lines suggested by the MA for regional consultation meetings, and invited those attending to introduce themselves and give an outline of their experience with, and interest in, collections. This highlighted a number of areas for discussion.

The MA Collections Review – presentation

Helen Wilkinson explained that the Review arose out of the MA's ambition to set policy agendas in the future. Collections and collecting was the foremost issue, partly because of the emphasis on learning and access in recent years; there was a need to mesh the latter more integrally with collections. Consequently, the MA had appointed a Steering Group, then set up two Working Groups, leading to the consultation paper, which was launched earlier this summer. The consultation process ends on 1 October, after the MA Conference where this will be a major theme.

The MA anticipates two outcomes: (1) a final report, driven by case studies and good practice, aiming to change the way people work; and (2) the strengthening of subject specialist networks (for institutions, rather individuals). It is hoped to launch the report in Museums & Galleries Month in May 2005. The MA hopes that MLA and a charitable foundation will support the networks, probably through project-led activity, which has been shown to be more productive than funding infrastructures. The MA is aware that such networks would have to fit with the regional hubs and *Renaissance*, and must consider interdisciplinary working.

From the consultation meetings, the MA seeks: feedback on what the networks could do and what they would need; and debate on the philosophical ideas raised, perhaps with a view to a revision of the Code of Ethics in the longer term.

Networks

The meeting divided into three groups to discuss the practicalities of setting up and running subject specialist networks, and to suggest examples of good and poor practice.

Feedback:

- Natural Science Network – started with mapping for a database, which provided a European summary of natural science collections. Staff time was provided free by large museums. The positive

outcome was a product that is still used. However, once the project ended, with withdrawal of resources by the larger institutions, it was difficult to maintain and develop. The sustainability has been dependent on individuals. It is suggested that national initiatives need a regional infrastructure to be workable and sustainable;

- Institutions must see such projects/networks as having value, significance, outcomes or other benefit if they are to dedicate staff and resources. They must also link with corporate objectives;
- The Coalmining Collections Forum was cited – doing sterling work but struggling to sustain itself because of lack [of resources and clear leadership](#);
- Networks need to (1) undertake a mapping exercise; (2) have a development plan; (3) develop regional or national agreements on progressing collections.
- Networks would probably end up being subject-based. Preferably grounded in a region, but may extend beyond;
- There is a need to think beyond a focused use of specific collections or subject areas; there is much to be gained from imaginative links and interpretations with other areas and collections. Independent museums, which have to be visitor-focused, link with other museums through county fora to do this well;
- If concentrating on the visitor experience, museums need guidance on storage and disposal, and to think laterally about more dynamic ways to use the collections e.g. handling, disposal to private collections. It was agreed that museums could better value or judge the items in their collections if there was better documentation; perhaps there should be a greater emphasis on retrospective documentation rather than mapping;
- The different nature of collections in museums, libraries & archives was discussed – it was felt that museums’ cataloguing and storage issues were more complex due to the diverse nature of the collections. Lack of subject specialists on hand often made it difficult to make decisions about display, storage and disposal. Collections need to be seen and judged in different ways e.g. their specialist importance, artistic value, as well as their social historical and local significance;
- There are already too many groups. Invigorate and support those that exist instead of starting more.

Clarifying the use of museum collections

There was a broad-ranging discussion on this issue. The MA wonders whether museums should use their collections more actively, rather than preserving and storing? It was agreed that there should be a clearer sense of what is a used and/or reserved collection.

[Perhaps there was a need for certain, less scientific subjects to create taxonomy so that museums could judge their own collections better?](#)

How do we decide on what is of long-term value for future generations? If we base our collections on current use and importance, we could destroy items that may be of important significance for future generations. It was agreed that we should assess objects in terms of their ‘importance’ as objects first, followed by their social historical importance, and local significance. Often, communities are the best source of local knowledge – it is vital to get information about the items in our collections from local people so that we, and future generations, know how objects worked or were used. The recording and transfer of knowledge and information about each object is important.

More ambitious and better targeted collecting

This is a difficult area. There are urgent issues of bulging stores and documentation backlogs that prevent some museums from engaging in contemporary and proactive collections policies. Others are nervous about making the right decisions in [acquiring](#) for a temporary or holding collection.

A systematic approach to collecting can be boring; it is often felt that the most interesting collections are those collected by one person with a particular interest or viewpoint. [Steph Mastoris outlined his previous work on systematic contemporary collecting of advertising ephemera and domestic packaging, as an example of an individual initiative. This had a number of important spin-offs into other areas such as the social history of home decoration and eating habits. He felt it was important to distinguish between proactive col-](#)

lecting of historic material and collecting contemporary items.

We tend to collect what people value now, or older people use as trigger points for reminiscence. In collecting for the future, how do we judge what items will be of similar interest for future generations? And will they value or be interested in what we consider of significance now? This is a debate for national discussions and collections.

There was interest in Newark Museums' group of lay local advisers, brought together through local media appeal, who support the museums on acquisitions and disposals. It was felt that that the active engagement of curator, artefact and community e.g. through such initiatives and through reminisce work, informed the collection and elicited a local viewpoint on significance and importance.

It was thought that science museums were engaging with the development of collections of technological items (e.g. mobile phones, computers) from the last thirty years of dynamic change. Items would appear in general museum collections by donation; it would be important to support their acquisition with knowledge about how people used them and what importance they had in their lives; they would be objects for reminiscence with the next generation(s). It was agreed that recording e.g. digital photography showing objects in context, and oral history, was useful in enhancing the knowledge of objects that were currently being collected.

It was suggested that there isn't enough contemporary collecting being undertaken in the natural science field e.g. for use in monitoring environmental change, and that many identifications are not being backed up by specimens. There is a wider need for more natural science collections – but who will collect, fund, maintain?

Role of the private collector

Partly due to the Portable Antiquities scheme, there are more developing relationships between museums, special interest groups and enthusiasm collectors' clubs.

Concern was expressed that, if scientific items go to private collections, they leave the public domain and are lost in mapping, journal [citation](#) etc.

It was acknowledged that many collections are already a mix of public and private e.g. Lincs Road Transport Museum where some vehicles are owned by the Trust, others by private individuals – all accessible to the public (who are not concerned where ownership lies). Many collections in museums started out as private collections, and many private collections are put on public display.

There is a massive amount of public interest in objects and collecting, and enthusiasm for the past, stimulated and maintained by TV and the media. The county fora and friends' groups are very important in advising on specialist areas and in stimulating community involvement.

It was felt that perhaps the MA Code of Ethics needs to be revisited, as there is a great potential for more productive relationships between private collectors, collectors and enthusiasts clubs and museums. Education, outreach and access work have already contributed to blurring the boundaries.

Summary

Helen Wilkinson felt that there was still a long way to consensus on many points. The consultative meetings and discussions are raising more questions rather than answering those posed by the MA. She invited any further comments to be emailed to her (helenw@museumsassociation.org) preferably by 1 October.

Steph Mastoris thanked everyone for attending and for their lively contributions. Notes of the meeting would be made available to those attending, and discussed at the EmmS Practitioners Panel on 7 December. Ros Westwood proposed thanks to Steph Mastoris and Helen Wilkinson for guiding the discussion. The meeting then adjourned for lunch.

Spring Seminar of the Guild of Taxidermists hosted by the Bird Group, Tring
13.03.2004

- Katrina Cook, The Natural History Museum

The Guild of Taxidermists is, excuse the pun, a body of professional and amateur practitioners as well as many simply with an interest in the craft, seeking to "...raise and maintain the...status and standing of Taxidermy..." It communicates with its members through regular newsletters etc. and meets three times a year: for the Annual Conference in the autumn, and a Northern and Southern Spring Seminar, traditionally a 'behind the scenes' museum visit.

This year, for the first time, the Southern Spring Seminar was hosted by the Bird Group, part of the Natural History Museum's Zoology Department, and provided delegates with a unique opportunity to get a glimpse of the nation's ornithological reference collection, the most comprehensive collection of avian material in the world, housed on the site of the Walter Rothschild Museum in Tring, Herts.

The bird collections are *not* open to the public and visiting researchers are admitted by appointment only and at the discretion of the curatorial staff. The event was therefore a real treat for the Guild, particularly owing to the facts that the department is only open on weekdays and does not lend itself to the supervision of a large number of people. By popular request though, a solution was reached limiting the number of delegates to 25, enabling the group to be split into two smaller parties that could be effectively supervised by the curatorial staff present. Ultimately its success relied on the goodwill of staff from across the site that gave up their time voluntarily in order to run the event, held on Saturday 13th March. Without their support the seminar could not have taken place.

Despite some protests over the restriction of numbers, only 15 of the 25 members booked (including one or two extras) turned up, though this of course made things easier from an organisational standpoint. For a membership which could easily conceal one or two taxidermy 'collectors' of spurious intention amongst the overwhelming majority whose attitude is scrupulously professional, attention to security was obviously of paramount importance and the group was thoroughly 'policed' at all times.

Delegates were received at 10.00am and served coffee and biscuits in the Conference Room, while members with specimens for accreditation brought them into the Laboratory. This is a neutral 'holding' room not subject to the strict quarantine procedures for specimens entering collections areas. The meeting was opened by Teresa Wild, director of the Walter Rothschild Zoological Museum, who gave an enlightening and highly entertaining introduction to the museum, its history, and relationship with the Zoology Department. The group was then divided into two parties and given a two hour personal tour of the egg, nest, spirit, skeletal and bird skin collections led by each of the Bird Group curators, and Rothschild Library led by librarian, Alison Harding. Lunch arrangements had been made in advance with an excellent local pub, and orders telephoned through, so no time was lost in proceeding with the afternoon's events.

The afternoon session was held in the Laboratory, where delegates were able to discuss their work, accredited by senior members of the Guild, and purchase a variety of taxidermy supplies brought in by local professional Derek Frampton.

At the Bird Group's specific request, Guild treasurer and National Museum of Scotland's taxidermist Peter Summers, along with Dave Astley, gave a demonstration of several casting and bone replacement techniques of particular relevance to the bird collections at Tring. Peter removed the bones from a wing of a Barn Owl, replacing them with an assemblage of wire wrapped with tow, then demonstrated the casting of a skull of a White-tailed Eagle while David showed an alternative casting method on another bird skull. These specialised techniques enable the preparator to maximise the potential of a particularly valued specimen, making skeletal material available that would normally remain within the study skin.

A short tea break later and the delegates were set free to enjoy the delights of the public galleries of the Walter Rothschild Zoological Museum, naturally a paradise for them as it is for all of us, and a fitting and most enjoyable climax to the day's events.

Bird Group curators are: Robert Prys-Jones, Mark Adams, Douglas Russell, Jo Cooper and Katrina Cook.



CONSERVATION NEWS
Notices, Adverts & Meetings

Meetings:

Geological Curator's Group Seminar
Planning for disaster
18-19th January 2004

GCG Seminar, including 31st AGM, and field trip: Planning for disaster.
 Hancock Museum, Newcastle upon Tyne

Contact: Steve McLean, Hancock Museum, Barras Bridge, Newcastle, NE2 4PT
 Tel: 0191 222 6765
 Email: s.g.mclean@ncl.ac.uk

Geological Curators' Group AGM

The 31st AGM of the GCG will be held at 16.20 on Tuesday 18th January at the Hancock Museum, Newcastle upon Tyne.

Nominations for the post of chairman, Officers and two committee members must be made by two members of the group and submitted in writing to Giles Miller, GCG Secretary, Department of Palaeontology, the Natural History Museum, Cromwell Road, South Kensington, London, SW7 5BD by Tuesday December 28th



SPNHC_2005 (2).pdf

NatSCA Conferences & Workshops - Events for 2005

23 Feb 2005:

Managing Insect Collections, to be held in the Entomology Section, Liverpool Museum

Another chance to attend this popular training meeting held and hosted by the Natural History Museum earlier this year. This time the meeting is to be held and hosted by Liverpool Museum 'up north'. Topics and demonstrations will remain largely the same as before and will encompass pest control, environment and materials, new acquisitions, vouchers and recording, mounting and setting, recovering specimens from alcohol, microscope slides, collections in spirit, collections furniture and storage and remedial conservation problems such as re-pinning. The day provides an excellent opportunity to visit the new look Liverpool Museum and entomology collections in their new environment. Cost approx. £25 (to be confirmed), places limited. Booking forms including full details and contacts will be available soon.

15 & 16 June 2005:

NatCSA AGM & Annual Conference

We will be holding our AGM and 'annual conference' next year at the SPNHC Conference at the Natural History Museum, London. The conference entitled '**Realising Standards**', will be held in collaboration with NatSCA, SPNHC, ICOM & GCG and will take place from 12-18 June (see elsewhere in the newsletter for further details). NatSCA will host a technical session with presentations based on the conference theme on Wednesday 15th, the AGM will be held lunchtime Thursday 16th. Any offers of presentations for our session to be directed to Jo Hatton, jo@johatton.fsnet.co.uk.

Call For Papers:

Realising Standards Conference – 2005

12-18 June 2005

The 20th annual conference of the Society for the Preservation of Natural History Collections (SPNHC) is being hosted by the Natural History Museum, London.

The conference will focus upon current standards in the care and management of natural history collections. Work-shops will review the assessment and implementation of current standards, benchmarking of collection condition, risk assessment and implementation of integrated pest management programmes.

Those interested in submitting a Paper or Poster on the care, management or conservation of natural history collections should contact:

SPNHC Conference 2005
The Natural History Museum,
Cromwell Road
London
United Kingdom
SW7 5BD

or via email spnhc2005@nhm.ac.uk
www.nhm.ac.uk/spnhc2005

The conference is being organised in conjunction with the Natural Sciences Collections Association, the Geological Curators Group and ICOM Natural Sciences Conservation Working Group.