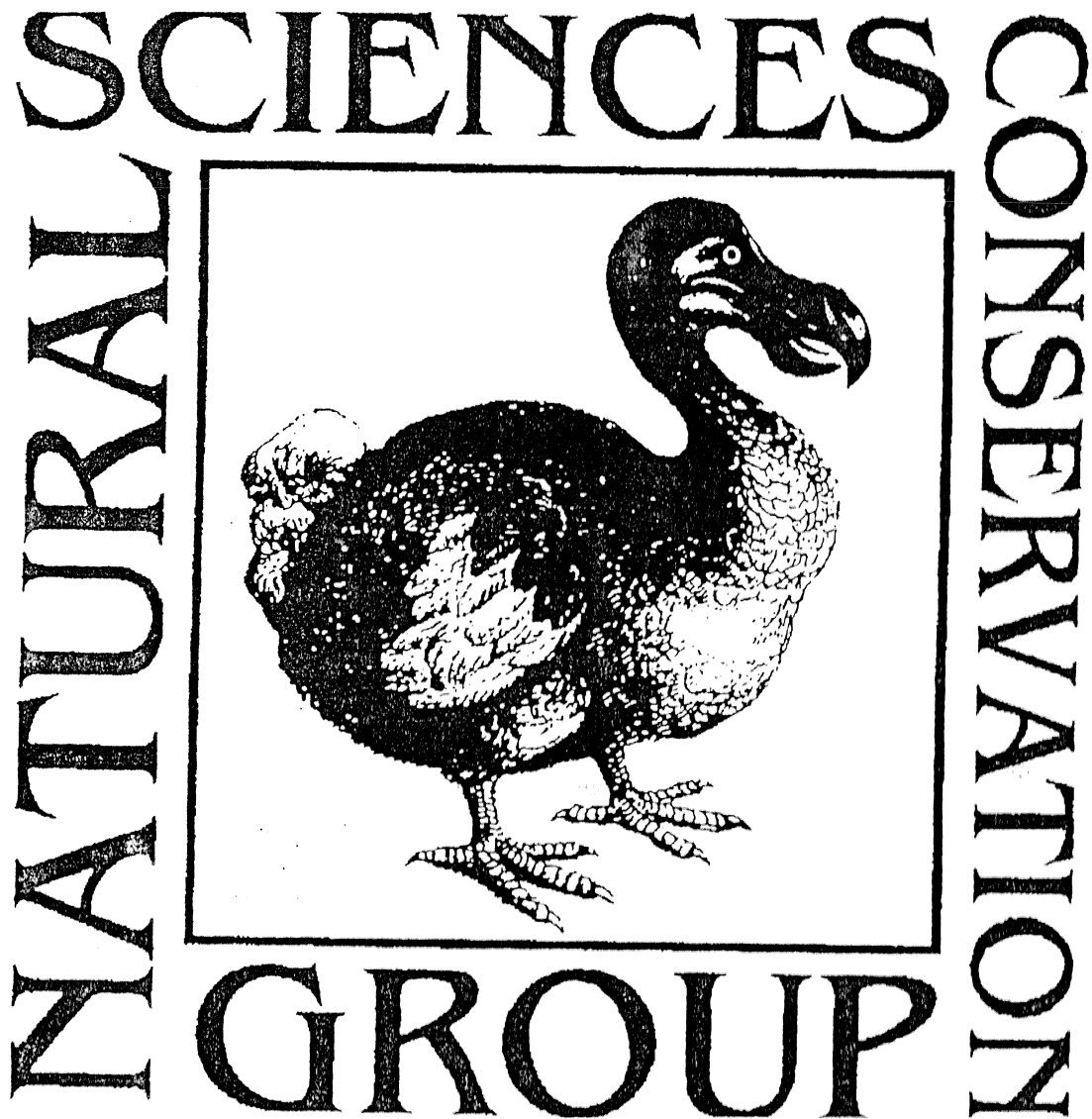


Natural Sciences Conservation Group

Newsletter

Issue 1



Toronto '95, Tenth Annual SPNHC Meeting and
Herbarium Workshop

In This Issue: SPNHC Conference Toronto '95 Bibliography of
Current Articles Care of Collections Workshop

Editorial

Welcome to the first Natural Sciences Conservation Group Newsletter since our break from UKIC earlier this year. If you have any news or views this is the vehicle for the rest of the group to hear from you and, as always, I need articles letters, useful bits of information. Since there is not quite so much pressure on me to produce six scripts per annum, now reduced to three, this does not mean that I have more time to concoct the newsletter myself it needs your contributions too -enough from the soapbox!

Since our rebirth as an autonomous group there have been various changes to the committee: Kate Andrew is our new acting chair since William Lindsay had to retire due to pressure of work, while Nick Gordon and Caroline Butler, who are respectively designing a new logo and a subscription form, have replaced Louise Bacon and Chris Collins. The group offers its thanks to William, Louise and Chris for their hard work, especially William during the UKIC re-organisation.

At present the 1996 AGM is to be held at Ipswich Museum on 20-21st March. The date and venue should only be pencilled into diaries as these have not yet been finalised. Special notices will be issued concerning the AGM fairly soon.

It only remains for me to thank those of you who have contributed to this newsletter, to remind everyone that the next deadline is the end of February and to wish everyone all the best for rapidly approaching Christmas and New Year.

Simon Moore Group Editor

Submitting Articles

When submitting articles to the editor for the NSCG newsletter, whenever possible please submit a printed copy **and** a copy on computer disc, either 3.5" or 5.25", in Word for Windows format (.doc), WordPerfect 5. ASCII format (.txt), or Rich Text Format (.rtf). This will help reduce editing time by cutting out the need for OCR scanning or having to retype the whole document. Drawings and diagrams should be in black ink on white paper or card. Photographs should be black and white prints.

Articles should be sent to: Simon Moore, Hampshire County Museums Service, Chilcomb House, Chilcomb Lane, Winchester, Hampshire, SO23 8RD

Disks can either be sent with articles to Simon Moore or straight to the layout editor : Nick Gordon, Saffron Walden Museum, Museum Street, Saffron Walden, Essex, CB10 1JQ

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COVER : New Natural Sciences Conservation Group logo design by Sarah Bagley, Worcester City Museum

Introduction and Welcome

Welcome to the first newsletter of the new Natural Sciences Conservation Group. This first newsletter comes to you in your capacity either as a pre-1995 member of UKIC Natural Sciences Section, a 1995 member of UKIC who elected the Natural Sciences Section as their preferred section or as a new member of the Natural Sciences Conservation Group. If you wish to continue receiving mailings and to support Natural Science Conservation in Britain and have not yet joined, please complete the membership form in this issue.

The new Natural Sciences Conservation Group has been formed as a result of the restructuring of UKIC, a move that Natural Science Section members disagreed with since voting rites were restricted and membership fees almost doubled; a vote at our AGM in March authorised the committee to form a new group should the UKIC restructuring proceed.

The new group officially came into being with the demise of the old UKIC structure on 29th September 1995 and will replace the old Natural Sciences Section; there are insufficient people and resources to justify two groups representing Natural Sciences conservation in the UK. The change over period to an independent group has been a long and sometimes painful process but personally, I feel that the diverse conservation and curation skills formerly within the original section and still possible in our membership will allow the group to play a major role in the development of this branch of collection care. The highly successful two day Collection Risk Assessment and Management workshop organised for the first time in Britain by our members is a case in point (see David Carter's report in this issue).

I would like to take this opportunity of thanking William Lindsay for his hard work as Chairman over the last three years. William's skills were invaluable when drawing up the original constitution and in all committee and meeting procedures. The period during which the UKIC structure was being reviewed was particularly busy for him as Chairman, with many additional meetings to attend and reams of paper work to sift through. William expressed a wish to resign as Chairman at the 1995 AGM but agreed to stay on until the new group was formed, that point has now been reached and I am now acting as chairperson until the AGM.

The committee is working hard on organising the 1996 meeting and AGM to be held in Ipswich with a second day of collection tours to nearby museums. If any one would like to give a talk, please let Bob Entwistle or another member of the committee know. Poster presentations are equally welcome and may be a little less daunting for those of you with the combination of interesting projects and stage fright.

If there are any issues that you as a member wishes to air, this newsletter is one way of doing so, Simon Moore as editor would be happy to receive copy, Nick Gordon is also now helping Simon as assistant editor. Committee members can of course be approached, the next committee meeting will be in late November.

In conclusion, to those of you who have already joined, thank you and welcome aboard and to those who have not yet joined, please seriously consider doing so.

Katherine Andrew, acting chair person

Professional Indemnity Insurance

For those of you who do freelance work and need professional indemnity to cover you against being sued for poor quality work, there is a group of conservators trying to get a 'bulk discount' from insurers. If you are interested contact:

Caroline Bendix
40C Lavender Gardens
London
SW11 1DN
Tel: 0171 7381931

As soon as possible as she wants to get something sorted out by the end of the year
(Note professional indemnity covers you against poor quality work, public liability covers you for accidental damage. They are not the same!)

Bibliography of Current Articles

This is intended to keep members aware of current articles relevant to natural sciences conservators.

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- Davis, P 1995: La documentation des collections de sciences naturelles en Grande-Bretagne. *La Lettre de l'OCIM*, 38: 14-16
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OCIM is the *Office de Coopération et d'Information Muséographiques*, and publishes a bi-monthly journal (*lettre*). 36 Rue Chabot-Charny, 2100 Dijon, France, Tel. 0033-805-89850.

From SPNHC's *Collection Forum*:

- Blount, AM 1993: Nature of the alterations which form on pyrite and marcasite during collection storage. *Collection Forum*, 9(1): 1-16.
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- Clark, PF, Crimmen, OS, Naggs, FC, Wahl, AD, and Mansfield, MC 1994: Transportation of fluid preserved natural history specimens stored in glass containers: new solutions and old problem. *Collection Forum*, 10(1): 1-9
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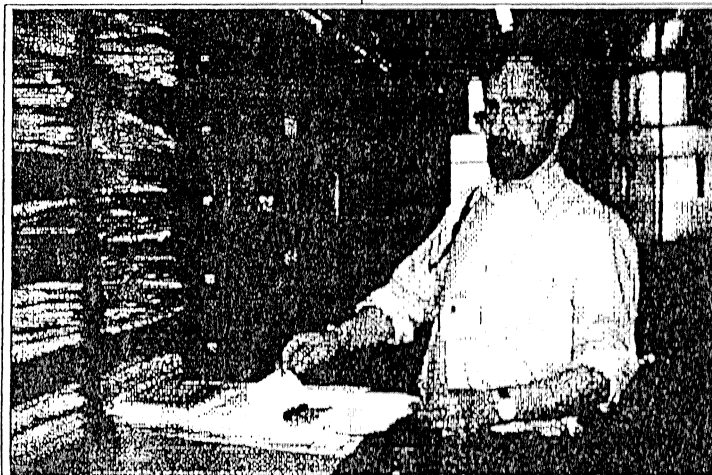
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ARTICLES

Toronto '95, the tenth annual SPNHC meeting and herbarium workshop. (Royal Ontario Museum, 2-6 June)

Keeping the pulse on modern museum trends in natural sciences, SPNHC's theme for the 1995 conference was more botanically orientated. Four days of largely interesting talks relevant to modern conservation problems and discoveries. The first day centred around the role of natural history museums and a general updating of museum curatorial duties, especially collections management and associated problems. Stephen Jay Gould (MCZ) spoke of the glory of natural history museums and how he deplored the present day trend of putting real and scientifically relevant specimens aside for electronic and hi-tech theme park displays, of little scientific value, just to bring in the public. Some

more specific topics were also presented including biochemical reactions in bone and keratin to show how they deteriorate under certain conditions; Victoria Purewal (NM Wales) showed examples from a 'herbarium' of wax flower models, how these had deteriorated and how the NMW were finding ways to cure this problem. the use of original illustrations to act as a control against colour leaching in fluid preserved



Rob Huxley (NHM) with fungal specimens on 'moose balls' (moose dung)

fish specimens was presented. Julian Carter (NMW) provided a useful buffer for formalin preservation. Chris Collins gave the meeting the 'low-down' on the proposed Cambridge Conference next year - 'Madrid 2' as it has been nicknamed! The second day's presentations were centred around problems and disasters with

collections. Storage of specimens in tropical climates, problems with air conditioning, off-gassing insecticides affecting certain plastics, preparing for and acting on disasters, to the ultimate

problem of running a museum in an active war zone!

The third and fourth days made up the Herbarium Workshop. The ROM director, John McNeill, welcomed participants to the two day workshop and commented that herbaria had not changed that much since the times of Linnaeus. He also expressed concern at the non-standard approach of modern taxonomists using variation as opposed to sub-species in the lowest taxon. Preventative conservation measures were discussed during the first of these workshop days and included such subjects as collection risk evaluation, air conditioning for a herbarium, insect problems and coping with freezing so as not to destroy seed viability; the suitability of herbarium papers, inks and adhesives and recent developments relating to these materials. The evening was taken up with a most useful 'bazaar' - an exchange of latest developments, ideas and technology relating to herbaria.

Subjects for the second day of the workshop revolved, initially, around bar-coding - the pro's and con's, suitability for large collections and ease of accessioning and updating. The remainder of the day discussed techniques, ideas, loan policies and techniques surrounding destructive sampling of both plant and animal tissues for DNA extraction¹.

Simon's poster was centred on problems encountered with RH when trying to store entire (freeze-dried) fungal sporocarps. It also outlined the arguments for starting a more scientific mycota herbarium in such a fungal rich county as Hampshire. Although not intended to be an in-depth scientific review about conserving collected fungi it was aimed at just the correct level to provide the contacts and feedback essential to the setting up of such a herbarium. Over the next few years the information gathered at this conference should manifest itself as a county mycology herbarium.

¹If you require a longer report, please write to:

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Hampshire County Museums Service
Chilcomb House
Chilcomb Lane
Winchester
Hampshire
SO23 8RD

Tenth Annual Society for the Preservation of Natural History Collections meeting and herbarium workshop 2-6 June 1995

The conference, as expected, was of a high standard and addressed many interesting and relevant topics covering several aspects of conservation. However, although the topics covered were of considerable interest, it was difficult to relate them to my own discipline, that of botanical conservation. Nevertheless, I was pleased that on this occasion a two day herbarium workshop was held towards the end of the conference. The workshop involved presentations and slide shows, question and answer time with a small parcel of specialists and finally a poster session. The talks were interesting and addressed practical issues, the question time was informative but brief, and the poster sessions of a high standard.

Topics covered included studies on the stability of materials used in botanical conservation, the conservation of herbarium specimens with a view to DNA sampling and the advantage of heat ventilating air conditioning (HVAC) systems.

Particularly relevant were presentations assessing materials frequently used in botanical conservation. Jane Down (CCI) reviewed a range of adhesives used for mounting specimens on herbarium sheets. Whether it is better to strap or glue has always been a conjectural point. She concluded that regardless of the adhesive used, it would eventually become acidic and discoloured and that the best and most stable material available was gelatin-backed linen tape, which is the method currently used at the National Museum of Wales. The following debate failed to resolve the matter but it appears that the majority of institutions continue to use glue, though a few actually glue and strap.

Although methylcellulose has been used for sometime as an adhesive in paper conservation, and has many other uses including the softening of old adhesives to aid removal, it has only recently been employed in botanical conservation. It appears to remain flexible for some time once dry. Sodium carboxyl methyl cellulose is also used in some institutions but this has generally been abandoned by paper

conservators in favour of methyl cellulose which is more stable.

Several other presentations addressed the use of inks in label writing and the accessing of specimens. The permanence of inks from both pens and printers was compared by assessing the extent of fading, solubility, and adhesion. It was interesting to see the degree to which these properties varied. The best pens were found to be Rotring 17, Pigma and Marsgraphic pigment liner., but the printers whilst having some advantages, were limited in their usefulness. For example bubble-jet is soluble in water and this may present problems in recovering specimens following a water related disaster (e.g. fire and flood).

Julia Fenn (ROM) presented a talk at the main conference on the reactions of chemicals on plastics. She deduced that over a period of time several pesticides may have been applied to the same specimen and almost invariably, such treatment will not have been documented. Moreover, she discovered that the use of several pesticides in succession may have a synergistic effect on plastic deterioration although a combination of a few pesticides have little adverse effects. These effects include changes in the stability of the plastic, its pH, opacity and increased brittleness.

At the herbarium workshop Julia concentrated on selection methods used in choosing suitable plastics for specific uses. Tom Strang (CCI) addressed the effects of heat on plant specimens during pest control. He showed that by placing the material in a sealed chamber heated to 55°C (131°F) and maintained at a relative humidity of 50%, that after eight hours all the proteins were denatured, destroying all stages in the pest's life cycle. DNA, however, is affected to a lesser extent, some seed remaining viable and capable of germination following such treatments. The use of relatively high temperatures as a mean of pest control went initially against the grain since most institutions are accustomed to freezing their specimens. In general, $Q_{10} = 2$, that is for every 10°C (50°F) rise, the rate of chemical reaction doubles. Thus, heating specimens will accelerate chemical changes and may result in the loss of wax and solvents and may cause damage to membranes, cuticles and hairs. Numerous preliminary tests have

been conducted and so far there seems to be little evidence of immediate damage to specimens. Consequently, the use of heat presents many advantages especially as it reduces the time required to treat collections. However, the long term effects require careful monitoring since the effect of heat on DNA and the vast array of complex chemicals found within lichens remains largely unknown.

The second day of the workshop concentrated on the herbarium as a source of DNA samples, the correct code of conduct while working on a herbarium specimen and the conditions required to prevent DNA destruction. I found this a very important session as I felt it gave guidelines to areas which had previously been neglected. Inevitably, this led to lively discussion.

The four days in total were a mine of useful information and the conferences were conducted in such a way that an enjoyable time was had by all.

Victoria Purewal

**National Museum of Wales, Cathays Park,
Cardiff, CF1 3NP**

Managing the Modern Herbarium

With no time to recover from the packed and invigorating programme of the SPNHC conference, 95 delegates including myself ploughed straight into the training workshop 'Managing the Modern Herbarium'. This ambitious event was organised by Ann Pinzl (Nevada State Museum) and Deborah Lewis (ROM). Those from the conference who weren't herbarium orientated could go on a tour of the ROM's collections and facilities, or (and I can't remember seeing this in the programme) visit Niagra Falls, go up the CN Tower, 'shop' etc.! Anyway we die-hards arrive at Monday 8am to register for what was to become two days of discussions, activity and productive debate.

John Townsend, a preservation consultant and information specialist began the first day by presenting a talk on 'preventative conservation' and how an effective programme of this could be a tool for 'managing' the deterioration of natural history collections. John identified the four factors which contribute to this inevitable deterioration: biological, physical, chemical and environmental, and how by slowing or interrupting these processes, a long term

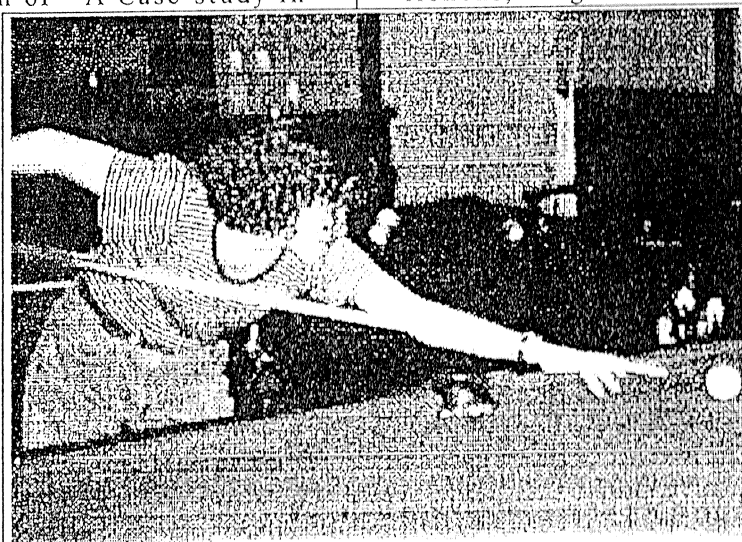
preservation programme can be set up. The latter of these agents of deterioration was then discussed by William Lull, in a talk entitled 'Herbarium Building Design and Environmental Systems'. This followed on from a paper presented the day before at the conference on heating, ventilation and air conditioning (HVAC) systems and concentrated on the challenge of controlled humidity, temperature and light for a collection of varying needs, such as herbaria, fungi, wet specimens, etc. William is currently working on the renovation of the NY Botanic Garden's herbarium. In 1991 he advised on the new environmental design for Brooklyn Botanical Garden. Kery Baringer, a curator at this institution followed with an illustrated presentation of 'A Case-study in

Modern Herbarium Design'. This was a brilliant example of a 'before and after' and I think many came away feeling "if only...". Tom Strang from the Canadian Conservation Institute presented an amusing collection of holiday slides(?) with some information on pest control mixed in. Many(!) graphs were shown (if your eyes could register the information quick

enough) depicting the effects of thermal, atmospherically controlled and conventional fumigant methods on seed viability. Let it be known, Tom has a graph for everything! In the afternoon four papers preceded a panel/audience discussion on the chemistry of herbarium materials and storage. Greg Hill (National Archives of Canada), Stephen Williams (Museum of Texas tech. University), Jane Down (CCI) and Julia Fenn (Conservation Dpt. ROM) presented a conservation perspective to compliment a traditionally curatorial one. This was an exciting follow-on from subjects raised at the conference 'Conservation and the Herbarium', Liverpool '93. Here was evidence of active research being carried out specially on behalf of herbaria concerns.

Greg, a paper conservator, discussed various tests used to check the stability and compatibility of mounting and storage materials. Stephen (past president of SPNHC), described spot-checks for analysing the longevity of inks, including the increasing use of bar-codes. Jane, a conservation scientist, presented the findings of research carried out by CCI into adhesives used in herbaria. I found this extremely interesting in view of my own survey carried out on materials used in the UK. Julia, a conservator, described several tests designed to check the type, and therefore suitability, of plastic packaging often used in museums. Even though plastic is not yet a major material for herbaria, it is used occasionally to contain seeds, beans, lichens, fungi etc. As few of the panel

actually worked within the herbarium environment, much of the debate posed by the audience was bounced back around the auditorium, though their professional advice was indeed noteworthy. The day's presentation closed with an address by the President



Donna Hughes 'showing some form' clearing the table versus Rob Waller. Toronto 1995.

Carolyn Rose on SPNHC as a resource for conservation and collection care and John Townsend who presented a synopsis of the day's findings and discussion. This prepared us all nicely for the evenings ensuing herbarium workshop/bazaar (yes we all worked till 10pm. while others got the drinks in!). In between we all had a tasty dinner in the University of Toronto Faculty Club, where all thanks were given to the speakers and organisers.

So to the Bazaar. Was it bizarre? Well if you call 100 people getting very excited about compactor systems, mercury poisoning, glue, paper.... then, yes! The evening was a great success due to everyone's commitment to join in, whether debating methods of fumigation or rolling there sleeves up to spread glue over glass

with Judy Gibson (San Diego NH Museum). In all 16 posters were displayed, many with hand-outs to take away. The trade fair stands were here again (from the AGM). We also had a slide presentation of a project developed at the Canadian Museum of Nature on the design and construction of a 'protective' Type specimen folder. I had my doubts about the feasibility of this prototype design due to its vulnerability to dirt migration, not to mention how time consuming and expensive its application would be. Anyway, many came away impressed and this was what it was all about; sharing ideas and experience. Hats off to Deb Metsger for organising the Bazaar (and also managing to sit on a committee meeting that evening!)

Tuesday's theme was a contemporary issues facing herbaria and began with Rusty Russel, Smithsonian Institute, discussing the use of bar-codes, such as tracking and providing accountability especially for loans. Rusty is also involved in botanical projects on the Internet and enlightened us to its future application within herbaria e.g. holding site images, photos of living plants, microscopic images etc.

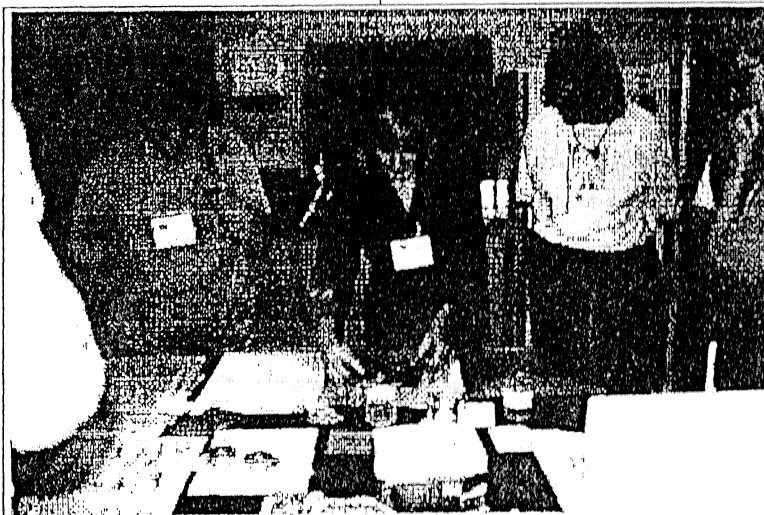
The rest of the day consisted of a symposium on "Destructive sampling and molecular systematics : are we moving toward a consensus?" Sampling was discussed from a 'provider' perspective by Emily Wood, collections manager at the Harvard University Herbaria. Here they have drafted a policy statement and authorisation form for the application of destructive sampling. The contents of this were described and followed by posing questions for discussion: should one be forming a subset herbaria of samples? And how can they be stored in the long term for stability? Bo Jansen, University of Texas, presented a 'user' perspective, discussing the advantages of using herbaria, rather

than fresh, material for DNA studies and describing DNA isolation methods. A survey showed that herbaria specimens are used in nearly all the research labs (SA), but in most cases only about 10% of DNA is currently obtained from preserved material. Issues affecting DNA sampling of mycological collections were discussed by Gregory Mueller. The 'destructive' issue is not the same, as virtually all examination of fungal specimens require dissection and many genera can only be identified by spore analysis. There is a need for research into preservation techniques for mycological material, also DNA extraction and amplification methods for certain taxonomic groups.

Preceding an open discussion of the day's topic James Whitfield and Mark Engstrom presented papers on destructive sampling from a zoological perspective. I am afraid I did not attend these two talks (by now the amount of information and the sun had got to me!) but I returned for the closing of the symposium which posed the question: 'Where do we go from here?....'. Policy statements and

objectives were discussed and agreed upon by everyone. These will be available hopefully in the form of a post conference SPNHC publication. SPNHC hope to take this workshop 'roadshow' style to different venues across the states. Myself and a couple of other delegates (on the wave of enthusiasm!) expressed interest in staging a UK workshop in 2-3 years time. Who knows?, but we definitely have to keep this momentum of concern going.

Donna Hughes
National Museum & Galleries on
Merseyside, Liverpool, Museum, William
Brown Street, Liverpool, L3 8EN



Lindsay Wodruff, of the Botanical Institute of Texas demonstrating an adhesive for mounting herbarium specimens

RISK ASSESSMENT AT LEICESTER

The Collection Risk Assessment Workshop held at the Museums Association Conference at Leicester University in September was run by The Canadian Museum of Nature and promoted by the Natural Sciences Section of UKIC. Facilitators for this two day workshop were Rob Waller, Sylvie Marcel and Jean-Marc Gagnon. The course was attended by 46 delegates, all museum professionals. Rob Waller's workshops have an enviable reputation and delegates attended with high expectations of this event. To the surprise of many, the approach was not the slick, high-powered, presentation that might have been expected. The sessions were conducted throughout in a relaxed and friendly manner whilst keeping up the momentum of the workshop so that all topics were fully covered.

From the outset it was emphasised that, in order to obtain funding for conservation works in museums, we must clearly define problems and solutions and communicate our needs to administrators who often are neither conservators, curators nor scientists. So often the approach is to bemoan lack of staff and funding to carry out essential conservation work and such a negative approach does not impress administrators and fund holders. The Canadian Museum of Nature's approach is more structured, forward-looking and positive and has already resulted in improved funding for conservation projects. The first stage of this structured approach was to look at the ten recognised agents of deterioration: physical forces, fire, water, criminals, pests, contaminants, light and radiation, incorrect temperature, incorrect relative humidity and custodial neglect. The last agent was the most contentious as it is currently interpreted as failure to document material, resulting in ultimate loss of data and specimens, even access to specimens. Delegates generally agreed that this is an important aspect but that it is not adequately described by the term curatorial neglect which has far wider implications. Using a simple matrix system, risks were assigned to one of three major categories ranging from constant and gradual to rare and catastrophic.

Parameters for estimating the magnitude of risks were then considered. Figures were assigned to parameters expressing potential extent of damage, loss in value and probability of loss. By multiplying these together an index representing the magnitude of risk can be calculated. Many delegates felt that assigning such figures, particularly when the parameters cannot be defined accurately and objectively, is an exercise of dubious value. For example the calculation of loss in value is very difficult to assess with any degree of accuracy, particularly since monetary value is rarely the prime consideration, with research and cultural values greatly exceeding market values in most cases. The facilitators agreed that precision is not possible but suggested that reasonable estimates are a possibility and that such figures are extremely useful for comparative purposes. The very exercise of evaluating risk magnitudes is valuable in helping curators to assess and reduce risks to their collections.

Having identified and evaluated risks on day one, the programme on day two moved to the management of risks, looking at methods for risk mitigation, levels for applying methods, mitigation strategies and their costs and benefits. Risk mitigation involved the identification of methods of control, ranging from eliminating the source of the risk (the preferred option) to acting on the agent of deterioration. Levels for applying methods were then discussed and categorised. These ranged from the location of a building to the establishment of safe procedures for handling collections. Mitigation strategies were then discussed, the objective being to encourage broad thinking and thorough analysis of the situation.

The evaluation of costs and benefits of risk mitigation strategies is an extremely important topic as these are criteria that will strongly influence senior management and funding bodies. When looking at costs, it is often useful to consider both a short-term, low cost solution and a long-term, high cost solution. All costs must be identified and evaluated as well as risks and collateral risks associated with both the implementation and maintenance of strategies. It should always be borne in mind that short-term solutions often result in higher long-term costs. When assessing benefits it is most important to consider

broad implications of actions and to look at aspects not included in the risk assessment procedure. Examples of benefits are improved efficiency of research and better staff morale.

As a grand finale to the workshop, delegates were given the opportunity to put their newly acquired skills to use by undertaking an exercise to determine mitigation strategies for a fictional scenario provided by the facilitators. Individual teams looked at different risk categories and presented their results to the group in a lively and good humoured discussion session.

After two days of presentations, exercises and brainstorming sessions, we left the

workshop with the feeling that time had been very well spent and that this had been an extremely worthwhile exercise. Congratulations to Rob and his team for communicating their enthusiasm for and commitment to a holistic approach to collections risk assessment. They have provided us with a methodology that can be applied to any collection in any museum and should enable us all to communicate the conservation needs of our collections in a thorough and convincing manner.

David Carter

Department of Entomology, The Natural History Museum, London SW7 5DB.

IF YOU ARE NOT ALREADY A MEMBER OF THE NATURAL SCIENCES CONSERVATION GROUP - JOIN NOW!

In March 1995 the membership of the Natural Sciences Conservation Section voted at their AGM to separate from UKIC and form a new group if the planned UKIC restructuring came into force. This has now occurred and subscriptions for the new organisation the *Natural Sciences Conservation Group* are now being sought.

The annual subscriptions for the new group will be:

UK personal	£10
Overseas personal	£15
UK Institutional	£25 (1 set of publications plus 3 membership rate places at meetings)
Overseas Institutional	£35 (1 set of publications plus 3 membership rate places at meetings)

Annual subscriptions will be due in April. Because the new group is forming in the middle of the year however, the first subscription fee will cover years 95/96 and 96/97, finishing in April 1997. For this period only the subscription rates will be slightly higher:

UK personal	£12
Overseas personal	£18
UK Institutional	£30
Overseas Institutional	£42

NATURAL SCIENCES CONSERVATION GROUP SUBSCRIPTION 1995/97

I would like to join the Natural Sciences Conservation Group:

Name

Address

.....

.....

.....

Please tick one category:

- Personal Subscription (UK) - £12
- Personal Subscription (overseas) - £18
- Institutional Subscription (UK) - £30
- Institutional Subscription (overseas) - £42

Cheques, in sterling, should be made payable to Natural Sciences Conservation Group and sent to:

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c/o Ludlow Museum
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