NSCG Newsletter

Title: Two conservation problems

Author(s): Moore, S.

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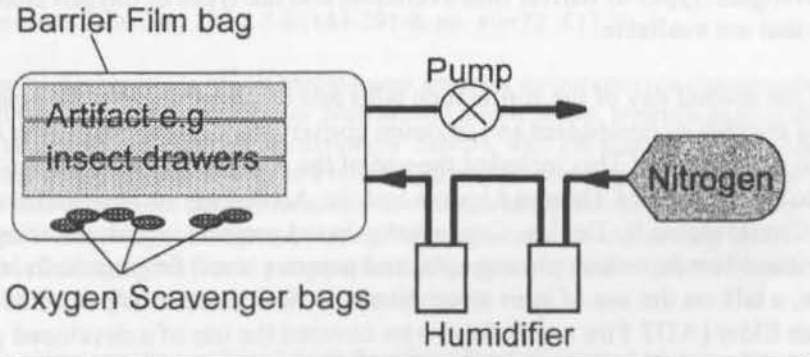
Carotene's and similar compounds in plants, which are used to control reactive species of oxygen produced from photosynthetic reactions. Brian then went on to illustrate how medieval illuminators used such plant extracts to stabilise certain pigments.

The conference was well attended, with over 100 delegates and speakers from throughout the UK, Europe and even as far as Japan! Overall, a very worthwhile conference that was of great value to those who attended.

Following the conference, a demonstration was given by Chris Collins of the Geological Conservation Unit, Cambridge on how to set up and use a barrier film bubble for creating an anoxic atmosphere. Figure 1 shows the principles of the set-up, which can be used to form atmospheres with an oxygen content as low as 0.2% for 30 days. This set-up offers a practical system for use in museums. In Sweden a portable system has been put together for use by multiple museums, a set-up which the Area Museum Councils in the UK should perhaps consider repeating.

Figure 1. Anoxic Environment Set-up



Basic Procedure;

1. Remove excess air with pump.
2. Flush atmosphere in bag with nitrogen to begin removal of oxygen.
3. Add oxygen scavenger to reduce oxygen levels to below 1%.

The use of anoxic environments for pest control and artefact storage certainly has great potential in the museum world, although there are still disadvantages in the cost of setting up and maintaining the environments and the treatment time required. There are also further long-term concerns over the effects of the environments on some materials such as pigments and the stability of the barrier films for long-term storage. However, such concerns are being researched, and as the use of anoxic environments has input from commercial companies such as Rentokil and Mitsubishi Gas Chemical, there is the prospect of continued development of the materials used in the process of anoxic environments.

Two conservation problems

Simon J. Moore, Conservator of Natural Sciences, Hampshire County Council Museums Service, Chilcomb House, Chilcomb Lane, Winchester, Hampshire S023 8RD.

At the 1999, NSCG Conference in Leicester two conservation problems were highlighted for which no one had any answer. The first came out during a tour around the collections where I was shown a mounted stoat in its ermine coat that had gradually yellowed. I have also noticed that fixing a freshly dead or freezer specimen in formalin has an even more dramatic effect - within 24 hours all the white fur has turned a bright buttercup yellow, which change appears to be irreversible.

Does anyone have any idea why and how this (presumed) chemical change occurs? and can it be reversed?

The second problem was put forward by Jenny Bryant at the Conservation Surgery and which had just been written up by New Zealand Museum researchers Nelson & Falshaw, 1999. Certain carageenophyte marine algae, some of which had been in herbaria for over 100 years, suddenly started to deteriorate dramatically and irreversibly. The polysaccharides in the thalli

started to break down into (presumably) carbon caused by the hydrolysis of sulphate half-ester groups producing minute quantities of sulphuric acid. The problem was noted at the Natural History Museum in 1998, where it was assumed to have been catalysed by humidity, following the humid summers of 1996 and 1997. Even in the mid 1980's a curator in Berkeley, Calafornia noticed that specimens had suddenly deteriorated so severely that the herbarium paper had been eaten away! Although the New Zealand authors have put forward a likely chemical equation showing the sulphate hydrolysis, preventive and remedial measures are still an unknown quantity! No common link to these deteriorated specimens has yet been established; some were only collected about 30 years ago and would have been mounted on different herbarium paper with different adhesive. The condition has affected only a random handful of specimens within each collection.

Once again does anyone have any ideas about this problem and how it can be prevented, bearing in mind that large quantities of carageenophyte specimens cannot, in practical terms, be regularly monitored or stored in expensive and tailor-made herbarium cabinets? Damaged specimens have been photocopied to record the extent of the damage. The carbonised areas have then been cut away, hopefully to prevent the condition from spreading (J. Bryant, *pers. com.*).

Please contact Jenny Bryant at the Natural History Museum (02079425004 or jem@nhm.ac.uk) with any ideas or to monitor further developments.

Reference

Nelson W. A. & Falshaw, R. 1999 Irreversible deterioration of some carageenophytes *(Rhodophyta)* in herbaria. *Taxon* **48**(2): 325-329

A New Museum Pest in Britain

Darren J. Mann, Hope Entomology Collections, Oxford University Museum of Natural History, Parks Road Oxford, OX1 3PW

A recent paper by Mark Shaw (1999) of the National Museum of Scotland (NMS) reports of a new pest of natural history collections: *Trogoderma angustum* (Solier, 1849) (Coleoptera: Dermestidae). This beetle, originally from the Americas has spread across Europe, and was first noted in Britain in the mid 1980s' in the Royal Botanic Garden of Edinburgh herbaria. In the collection of NMS the beetle has been found in glazed cases of mounted birds and primates where, in the former it only caused slight visible damage, feeding upon skin beneath the feathers. As with other members of the genus *Trogoderma*, of which there are four in Britain, *T. angustum* is polyphagous, being able to feed on material of both animal and plant origin.

As this species has only recently been added to the British list of insects, it is not included in any readily available identification guides. In the Handbook by Peacock (1993: 25-26) on the Dermestidae, problems will arise in the key to genera of the subfamily Megatominae due to *T. angustum* having an elongate body and weakly developed antennal cavities, however, the figures in Shaw (*l.c.*) enable this distinctive dermestid to be identified. The larvae are similar to *Reesa vespula* (Milliron, 1939) and therefore care should be taken if no adults are available for identification.

References

Peacock, E.R. 1993. Adults and larvae of hide, larder and carpet beetles and their relatives (Coleoptera: Dermestidae) and of derodontid beetles (Coleoptera: Derodontidae). *Handbooks for the Identification of British Insects* **5**(3): 1-144

Shaw, M.R. 1999. *Trogoderma angustum* (Solier, 1849) (Coleoptera: Dermestidae), a museum and herbarium pest new to Britain. *Entomologist's Gazette* **50**: 99-102