## NSCG Newsletter

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pest management strategy, as pest problems are not specific to individual departments.

2. The level of routine cleaning in galleries, working and storage areas must be consistent and effective. Financial pressures that dictate team cleaning rather than dedicated areas for specific cleaners might lead to reduced standards. The concept of "deep cleaning" must be taken on board by the Museum to tackle difficult areas in galleries and stores. Experience in other museums has shown that this can be very effective when it is properly organised and there is adequate equipment to do the job.

3. When there are provisions for controlling the environment, the temperature should be maintained below 18° C, or as low as possible, to prevent insects breeding.

4. The pest monitoring programme has revealed pest insect activity in unexpected areas. Monitoring should be widespread and regular with records co-ordinated through the pest control sub-group.

5. Although chemical treatments should be seen as only one aspect of an integrated approach, localised treatments by trained staff using Drione desiccant dust are valuable for control of insects in dead spaces. The need for occasional remedial treatments with other residual insecticides such as Empire 20 must be evaluated on a case-by-case basis and may require the employment of an outside contractor.

6. The use of DDVP slow release strips is a crucial component of the current pest control programme. The use of such strips in gallery cases and storage areas has prevented what would have otherwise been serious damage to collections both on display and in store. The use of DDVP strips should continue in closed areas but care must be taken regarding the safe storage and disposal of strips.

7. In the current climate of pesticide registration, it is possible that the approval and use of DDVP strips may be restricted in future years. As these strips are such an important component in the Museum's policy, serious consideration must be given to alternative methods. There is no direct chemical replacement for DDVP and therefore any loss of this product will have to be met with a new approach involving increased inspection and use of methods such as freezing, heat or gaseous nitrogen.

8. All incoming material must either be treated by freezing at -30° C or examined in a quarantine area.

9. Investment in new storage furniture by some departments has definitely decreased the risk to specimens. Specifications for new furniture should include adequate protection of specimens by pest exclusion.

10. Any proposals for new buildings should include provision for pest exclusion and prevention at the design stage. Any alterations within the existing building should take account of the overriding need to separate collection storage, working and library areas.

11. Museum collection policy (through Collections Impact Statements) should take account of future care of collections, and adequate resources must be available to process new material. Risk assessment by means of condition surveys should be used to determine priorities. Careful consideration should be given to a long term programme of "disposal', and re-housing of currently exposed and vulnerable material.

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## Since the Pinneger Consultancy - Progress and problems

Pest control in The Natural History Museum's life sciences departments has traditionally relied on insecticides - Naphthalene (discontinued since 1989) in Entomology, Lauryl chloropentaphenate (discontinued since 1992) for flowering plants, and Dichlorvos still in use in Zoology. Concerns regarding Health & Safety have necessitated re-assessment of such routine blanket treatments, and in turn focussed attention on the need for 'Integrated Pest Management', an approach that requires an appraisal of each aspect of museum life as it impinges on pest control. In The Natural History Museum, the initial impetus for this [for us] novel approach was provided by the 'Pinniger Consultancy - 1994-5'.

As noted above, the consultancy resulted in eleven principal recommendations. In some areas, there has been notable progress - formal course training, a widespread monitoring programme and consequently more targeted use of insecticides, the introduction of quarantine procedures, investment in new

storage furniture, consideration of the needs of pest control in the design of proposed new buildings, and the on-going development of condition surveys. But major areas of concern remain. Whatever the financial gains of recently introduced out-of-hours cleaning, from the point of view of pest control the consequent loss of contact between curators and cleaners can only be seen as retrograde. And concerns remain regarding safe use of Dichlorvos, its long-term availability, and the lack of a suitable alternative.

Future progress might centre on the crystallisation of the Pinniger Recommendations into a formal pest control policy supported by museum management and readily available to all staff. Such a policy should include the following considerations:-

1. Everyone working in the Museum or acting as an agent for the Museum, should be aware of their responsibilities regarding care of the Museum's collections.

2. The specifications for collection furniture, display furniture, buildings and environmental conditions, should meet standards that do not place specimens housed therein at risk from pest attack.

3. Procedures must be in place to reduce the probability of pests being introduced through contaminated materials.

4. Associated collection practices, e.g. research, cleaning, estate management, should reflect the needs of pest control.

5. Working practices should be adopted that eliminate unnecessary exposure of specimens.

6. Pest monitoring programmes must be in place and maintained, and the results documented and acted upon as appropriate.

7. When remedial measures prove necessary, they should be carried out within the constraints of current Health & Safety legislation and documented as appropriate.

8. Any remedial measures should minimise/avoid chemical/physical changes in objects.

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## The Thermo Lignum Process

Environmental health concerns have caused a radical change in the popular perception of chemical pest control methods. Governmental and environmental agencies seek to further limit the uses of chemicals in areas that have, till now, accepted them as routine treatments.

As an example, the German 'Dangerous Substances Act' requires that "toxic gases may no longer be employed if a toxin free procedure is effective and reasonable". Because of these concerns, non-chemical solutions to common pest problems have become a particular goal. This has led to the development of essentially two new processes designed to treat insect-pest infested objects - warm air treatment with controlled humidity, and inert gas "fumigation".

The treatment and restoration of rare and valuable objects in a sensitive and non-invasive way is a priority for anyone concerned with conservation. Insect pests account for much loss and damage every year and are responsible for the slow erosion of our cultural heritage.

In the field of building and monument preservation the basic hot air method has been applied successfully for several decades. Using high pressure heated air, roof timbers and building frames can be raised to over 55°C. At such temperatures animal protein within the insect cells becomes irreversibly denatured resulting in the insect's death. The main problem encountered in applying this sound biological principle to the treatment of high value works of art, antiques etc. has been resultant dehydration of the piece causing irreversible damage through shrinkage and cracking.

The eradication of insect pests in such a sensitive area requires precise control over all environmental parameters. This is especially true of relative humidity. The development task was to find a treatment which could guarantee the destruction of the insect pest at all stages of development while being completely harmless to the object and posing neither health nor environmental risks.

The thermal solution is a technically refined version of the previously discussed heat treatment. A chamber was designed in which objects could be placed and the environment