

Integrated Pest Management (IPM) advice for space planners and designers in museums and cultural property.

What is IPM – Integrated Pest Management?

IPM is a program within the overall discipline of preventive conservation; IPM principles are based on the understanding of the biology and behavioural patterns of those invertebrates (insects) that represent a very serious threat to Museum objects, specimens and building fabric such as wood and textiles.

Is also based in the understanding of the complex relations between insects and other pests, such as rodents and pigeons, and how the harbouring mechanisms of these create an internal ecosystem and provide an environment in which insects are able to complete their biological cycles.

By creating an unwelcoming environment for pests, designers and planners of Museum spaces would be able to prevent most of the problems that we currently face, reducing the use of pesticides and chemicals.

The intention of this document is to summarise the basic points that will facilitate the design of projects up to building detail level.

General advice for all areas

Avoiding dead spaces, facilitating housekeeping and adopting design techniques to ensure an easily and sustainable control of environmental parameters are some of the major contributions in space designing towards preventive conservation.

All voids and dead spaces should therefore be made accessible for cleaning

Avoid false ceilings, enclosed walls, difficult-to-reach areas and dead spaces. Experience shows that all of those tend to fill very rapidly with dust, debris and waste. If they are beyond the reach of cleaners, they will be the biggest contributors to attracting pests and providing a food source and a harbouring space.

A plain pale colour on floors, walls and storage cabinets will help spotting insects and areas in need of housekeeping.

Carpets should be avoided wherever possible. If carpets or rugs are an essential requirement of the design, synthetic materials will be the option. Display textiles in general should be made of 100% synthetic material and never from wool.

Organic insulation materials should always be treated and pest-proofed.

A temperature of 20C or less will slow insect growth, temperatures of 16C (although in certain conditions it could also facilitate the growth of mould, Conservation Centre's specialists should be consulted when contemplating this option) or less will eliminate most insect problems altogether, for correct environmental conditions please refer to the appropriate CSIP documentation.

Windows should be avoided or covered with UV filters as UV can damage specimens and fade colours. But there is also an IPM consideration: skylights with no filters can create a greenhouse effect, raising temperature and humidity, hence creating an ideal environment for most pests.

Well ventilated areas tend to stay naturally within safe margins of humidity for both IPM and object preservation. It is a basic IPM recommendation to keep windows closed, especially within collections areas and therefore the use of ventilation systems and ducts is essential. Pest proofed mesh should be installed all along the ventilation system. Specifications on mesh design and dimensions could vary depending on the risk, please check with the IPM Group.

Designing a locker room for external clothing separated from collections areas will avoid pest ingress in soiled or wet clothing and bags.

Collections areas

In addition to the general advice:

Collections areas should be separated from all other activity (offices, common room areas and toilets) isolated with sealed doors, pest proof mesh in ventilation ducts and avoiding external windows and external doors.

Round edges along the floor corners instead of 90 degree angles will facilitate cleaning and prevent harbouring of pests and accumulation of debris.

A total ban of food storing and food and drinks consumption (other than water) in collections areas is essential, space planners should take this into consideration when deciding the location of kitchens and designated food areas.

Decorative living plants should not be included in any collections areas and avoided anywhere else in the building.

Display and public areas

In addition to the general advice:

Cabinets should be well sealed while providing easy access for cleaning and specimen and IPM monitoring traps checks.

Organic materials should be avoided in display cabinets even for temporary exhibitions.

Facilitating cleaning and housekeeping is especially important in public areas as it is the need to avoid gaps and dead spaces; experience shows that debris and organic waste accumulates very rapidly due to public activity generating serious IPM infestations on areas where added to the risk to specimens on display they can create a public image problem for the institution.

Facilities

In addition to the general advice:

It is essential that a quarantine space area with at least the basic treatment facilities for IPM (deep freezer) is set up at an entry point to the building.

External areas

In addition to the general advice:

External doors should have some sort of effective deterrent to avoid pest ingress. Double doors – air locks and air curtains, pest proofing stripes and seals on doors' gaps should be considered.

A "safe" path/ area of gravel or stone should separate external walls from gardens and vegetation areas.

Bird nests are a major source of pests problems in old buildings, therefore chimneys should be pest proofed with mesh, spikes and other bird-proof devices. A smart design in new buildings should look into minimizing opportunities for birds to harbour and nest.

Bins in front and public gardens should be pest-proofed.

Position lighting away from the building, light attracts insects so you should aim to keep them away from the building where possible. Sodium vapour lights for exterior lighting rather than metal halide lights should be considered the best option.

References

Pinniger, David. Pest management: prevention and control. Pages 152 to 176 in Carter, D. and Walker, A. Care & conservation of Natural History Collections. The Natural History Museum, 1999.

Armando Mendez & Suzanne Ryder

IPM Co-ordinators at the Natural History Museum, London.

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