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Title: The application of GIS to IPM risk zone mapping

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A ban on the use of dichlorvos [DDVP] in the UK resulted in a need to implement an Integrated Pest Management (IPM) programme to protect vulnerable collections in storage areas and on display at the Natural History Museum, London.

With such a large diverse collection in a complex series of interconnecting buildings it was necessary to break the programme down into sections.

A key to this was the decision to define and adopt the concept of "Risk Zones" from high risk A, to low risk D, for all areas of the museum.

The paper describes the development of ideas and subsequent implementation of the "Risk Zone" concept.

We will also make observations on the need to identify priorities and the importance of training staff at all levels in pest awareness.

The application of GIS to IPM risk zone mapping
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A geographic information system (GIS) is a computer-based tool for mapping and analysing features that exist, and events that happen, on earth. It offers a platform to overlay the visual representation of tabular data and build queries to interrogate the variables to analyse trends or hotspots and assist in planning strategies.

The holistic approach of the Integrated Pest Management (IPM) regime was established through a strategy of managing risk to the collections. Each area of the museum has been designated in one of four zones grading from high to low risk. This then determines the priorities for action, the working practice in that area and the level of monitoring for pests. Analysing and correlating variable levels of documentation from so many concurrent initiatives could not be possible without a system that could translate the data into a common and comprehensible format. A pilot project demonstrated that the application of geographical information software to the improved integration of the various pest management activities was a viable solution.

The results of the pilot project demonstrated quite conclusively that the digital representation of risk zones would enable effective development of targeted strategies. Together with the attachment of captured data to a scaled plot of the spatial array of insect monitoring traps, this exercise showed that geospatial analytical software could be a hugely powerful tool to monitor pest population density across the museum and analyse trends with time. With the digital zones firmly embedded, there are enormous museum-wide implications in terms of environmental conditions of collection areas, space planning, disaster planning, exhibition design and security. The Natural History Museum, London will now look to implement a centralised database of pest monitoring data and integrate building environmental data to further improve the resolution of 'cause-and-effect' assessments.

Levels of IPM control, matching conditions to performance and effort
- Tom Strang, Canadian Conservation Institute
- Rika Kigawa, National Research Institute for Cultural Properties, Tokyo

Abstract
In this paper we model pest control activities across a wide spectrum of cultural objects that we try to protect, organized as a perceptual scale of biodeterioration situations. Within the scale, we set seven levels, in large part determined by accessibility to pests in commonly found protective structures against other deleterious agents. For each level there are described appropriate remedial IPM solutions to the more significant vulnerabilities. Long term planning would attempt to move collections up the levels to increase their protection.