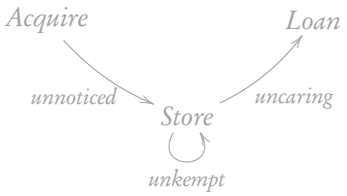
Dissertation for the Degree of Doctor of Philosophy

Studies in Pest Control for Cultural Property



Thomas J.K. Strang, B.Sc., M.A.

Opponent: Dr. Agnes Brokerhof, Senior Researcher,
Instituut Collectie Nederland

Department of Conservation

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Abstract

This thesis considers discrete problems of protecting cultural property from pests and examines some of the solutions. Recent decades have seen a large change in how fumigants and pesticides are used in collections of cultural property. To reduce health hazards and deleterious interactions with materials, alternatives such as thermal treatment and controlled atmosphere fumigation have replaced applied residual chemicals and exposure to reactive gases in many applications. The shift has introduced new risks. Establishing efficacy, considering side effects of unfamiliar control applications, and how to construct systemic programs to reduce the risk of pest damage across a wide range of conditions are common challenges to the decision process. The thesis includes papers written to introduce sufficient data to these discussions, and examine complicating factors in a way which would address key concerns and enable collections care professionals to have greater confidence in their decisions.

This work investigates some means by which the risk biological factors pose to cultural property can be assessed, introducing how elements from insect population modelling could be applied to cultural property pests and examines fungal data and models for the goal of protecting the most susceptible objects. It also presents works which examine how to forestall harm or evaluate potential for harm from thermal and fumigant treatments applied to kill pests on objects. Support for integrated pest management (IPM) is also presented as a means for institutions from small to large to engage in this task.

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