

Investigation into Preferential Insect Damage of an 18th Century Quilt

Emily Schuetz Stryker

In Memorium



We had several cancellations by presenters, for various reasons: health, budget constraints, and weather. All were disappointing, but none as devastating as the news in February that Emily Schuetz Stryker had taken ill and died very suddenly. Many of you knew Emily, who recently graduated from Winterthur. My colleagues here at -CW were very pleased to host her here last year; we learned about her work, her plans, and were so very impressed with her professionalism and poise. I

had a special affinity for this textile conservator who was wise beyond her years. She understood that preventive conservation, in spite of its more mundane activities makes sense, and she was prepared to include it in her new practice. Emily embodied the promise that those of us who are senior professionals seek – that we can move up and on and out of our chosen field leaving it in very capable hands. Sadly, others will have to pick up the projects that Emily was unable to complete. Emily's abstract is a summary of research she did with Joelle Wickens. See contact details below for more information or to share observations.

Abstract

Collections worldwide contain objects composed of materials that are at risk from damage by pests; keratinaceous objects in particular, such as woolen textiles, quillwork, tortoiseshell, and horn wares, are vulnerable to certain types of insects including carpet beetles and clothes moths. A wide variety of factors influence the locations of insect damage on a given object, including color: in a 2010 research project, Winterthur University of Delaware Preservation and Conservation student Steven O'Banion documented the existence of preferential insect damage, finding a correlation between the color of parts of quillwork objects and their likelihood of their being damaged by pests. More information about what makes certain parts of objects preferable to others could influence the risk assessment of and guide the monitoring plans for vulnerable museum objects everywhere by suggesting where preferential insect damage is most likely to occur.

In 2010, a wool whole cloth quilt in the Winterthur Museum's collection was discovered to be infested with case-making clothes moths and varied carpet beetles. Because the damage indicated a clear preference for a specific colored part of the object, it presented a good opportunity to investigate why the blue stripes were more attractive to the pests than the rest of the object. XRF and GC-MS analysis

was performed on fiber samples taken from the quilt in order to identify the dyes and mordants present, and provide clues as to why the preferential damage occurred. The GC-MS analysis of the blue samples, the preferentially eaten areas, confirmed that the blue areas are dyed with indigo or woad, an unmordanted vat dye. The XRF analysis detected copper in the green yarn samples, the samples from the preferentially not-eaten parts of the quilt, which indicates that copper was the mordant used for the yellow dye in the green thread and fabric. Copper is a known biocide, and its toxicity to many types of insects and marine life is becoming increasingly well-documented. It now seems possible however, that these pests particularly prefer indigo-dyed wool to other colors of wool because it is unmordanted, contains nitrogen, and because the alkaline vat dyeing process makes the wool fibers slightly easier to eat. This knowledge can better inform collections care, and make integrated pest management more efficient because dye-related risk could be factored into the schedule for monitoring to make the best use of staff time and resources.

Contact:

Joelle Wickens, PhD

Winterthur Museum, Garden & Library

Winterthur, Delaware 19735

302/888-4714

jwickens@winterthur.org