

Environmental Monitoring for Museums - The Basics

Presenter:

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The Sixth Floor Museum at Dealey Plaza

Outline

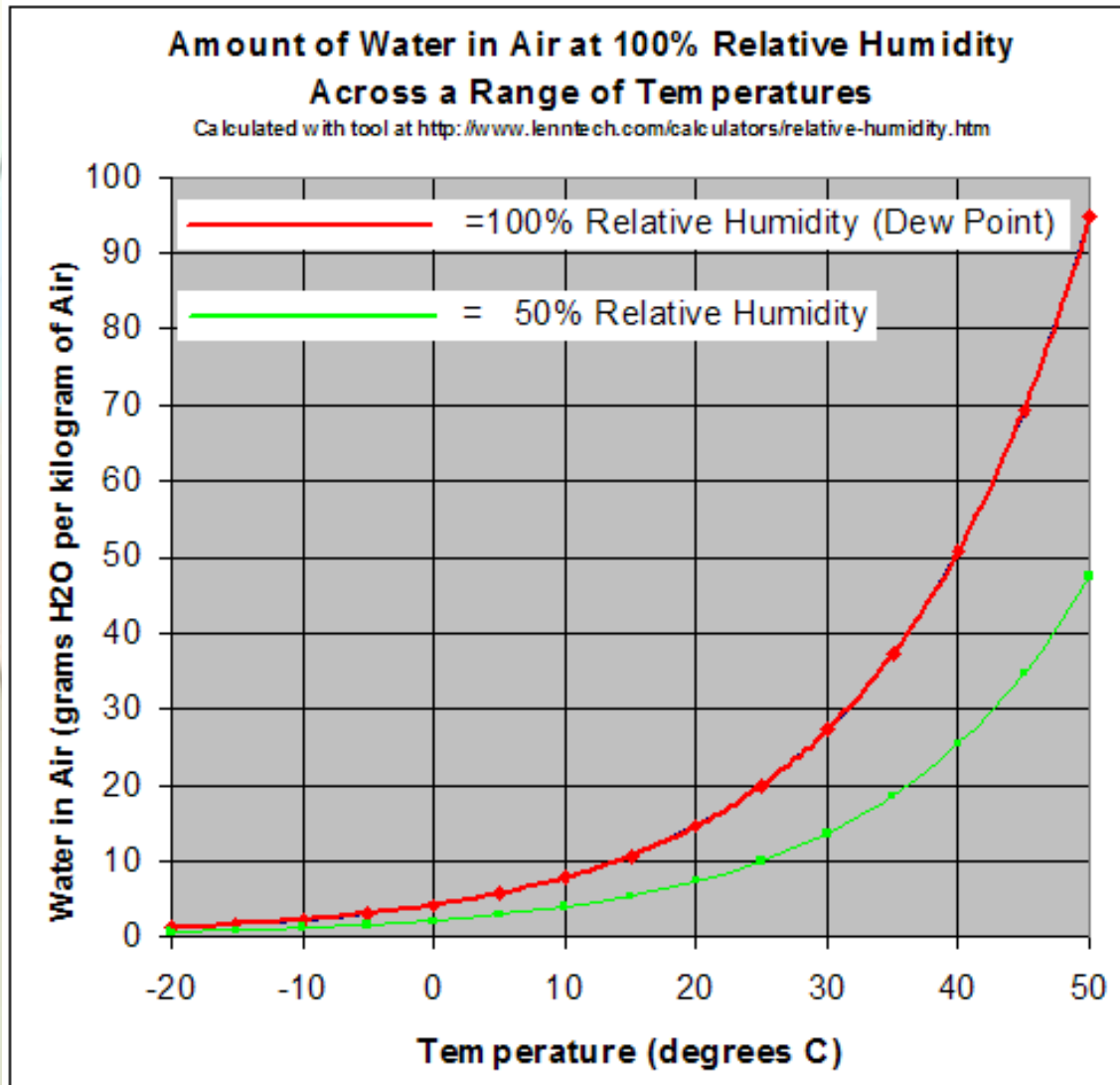
- Temperature and Relative Humidity
- Basic Guidelines
- Common Monitoring Equipment
- Creating a Monitoring Program
- Light and Airborne Pollutants
- Creating Microclimates
- IPM: Integrated Pest Management
- TAM: CMC's EMKs Project
- Resources
- Questions



PEM2 data logger, Image taken by
Stephanie Allen-Givens

Temperature/Relative Humidity

- Absolute Humidity is the amount of water vapor in the air.
- **Relative Humidity** is the amount of water vapor in the air **RELATIVE** to the temperature. It is the **PERCENTAGE** of water vapor in the air compared to what could be held in the air at the current temperature.



Relative
Humidity
Decreases

Temperature
Increases



Temp and RH Damage



Mold damage to the leather seats of a horse-drawn carriage experiencing humidity issues, Image courtesy CCI



Cracking occurring in the surface of a painting due to regular RH fluctuations, Image courtesy CCI

Basic Guidelines for Collections Storage/Exhibits

- Ideal: ~70 degrees F and ~40 – 50% RH
- Practical: Just keep it as STABLE as possible



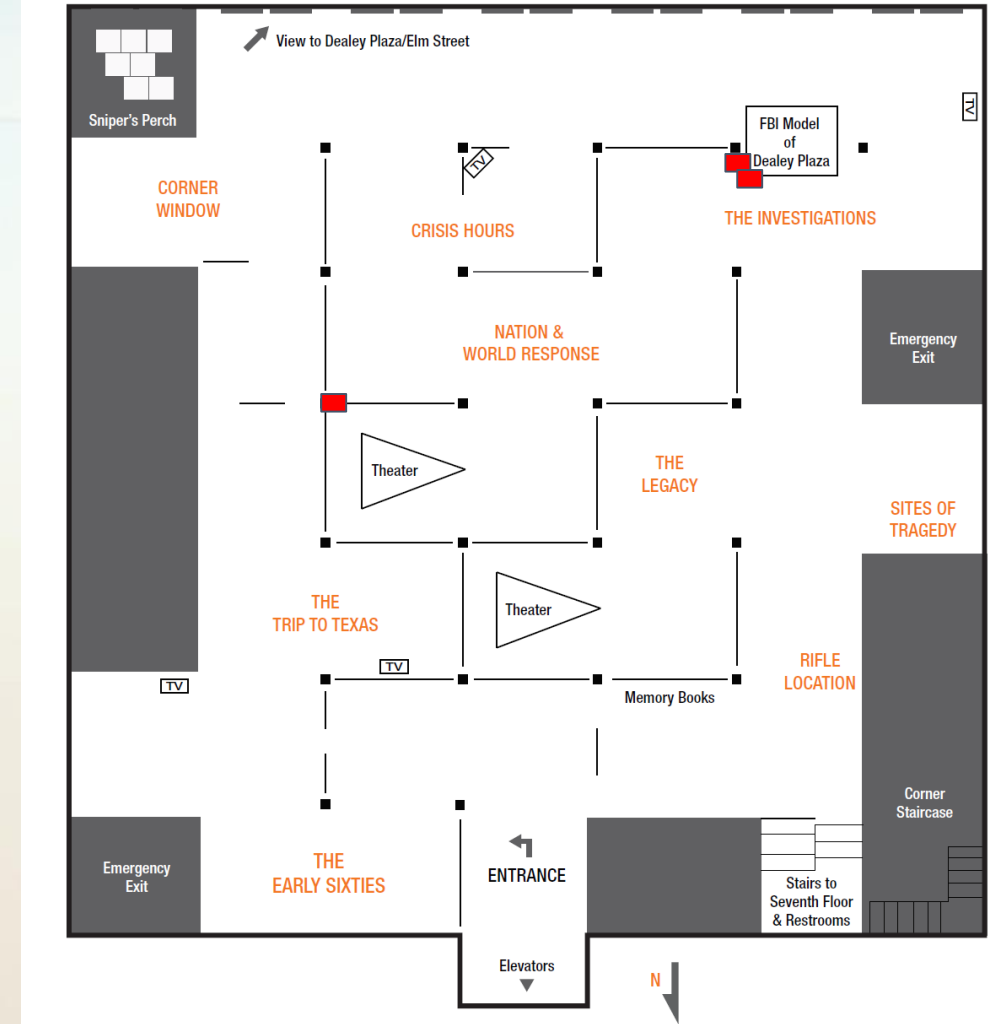
Collections storage at The Sixth Floor Museum,
Image taken by Stephanie Allen-Givens

Friendly Reminder



Creating a Monitoring Program

- Designate staff member(s) responsible
- Look at old monitoring data (if available)
- Choose where you want to monitor
- Determine duration of monitoring
- Select appropriate monitoring equipment
- Plan for regularly analyzing data
- Report data to other staff
- Have steps in place to address issues when they arise



Map of Sixth Floor Exhibit at TSFM and Locations of data loggers

Temp/RH Data Loggers



HOB0 data logger, Image courtesy OnSet



PEM2 data logger, Image taken by Stephanie Allen-Givens



USB data logger, Image courtesy Lascar Electronics

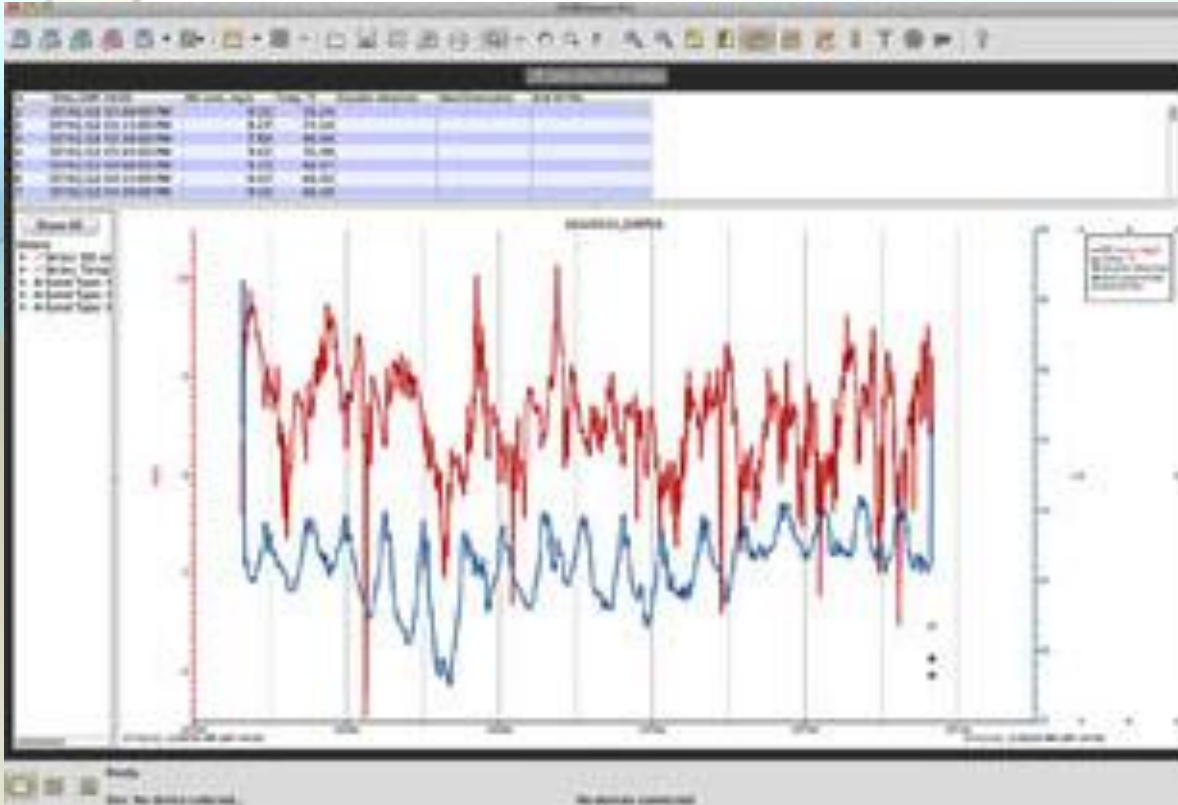


HOB0 data logger, Image courtesy OnSet

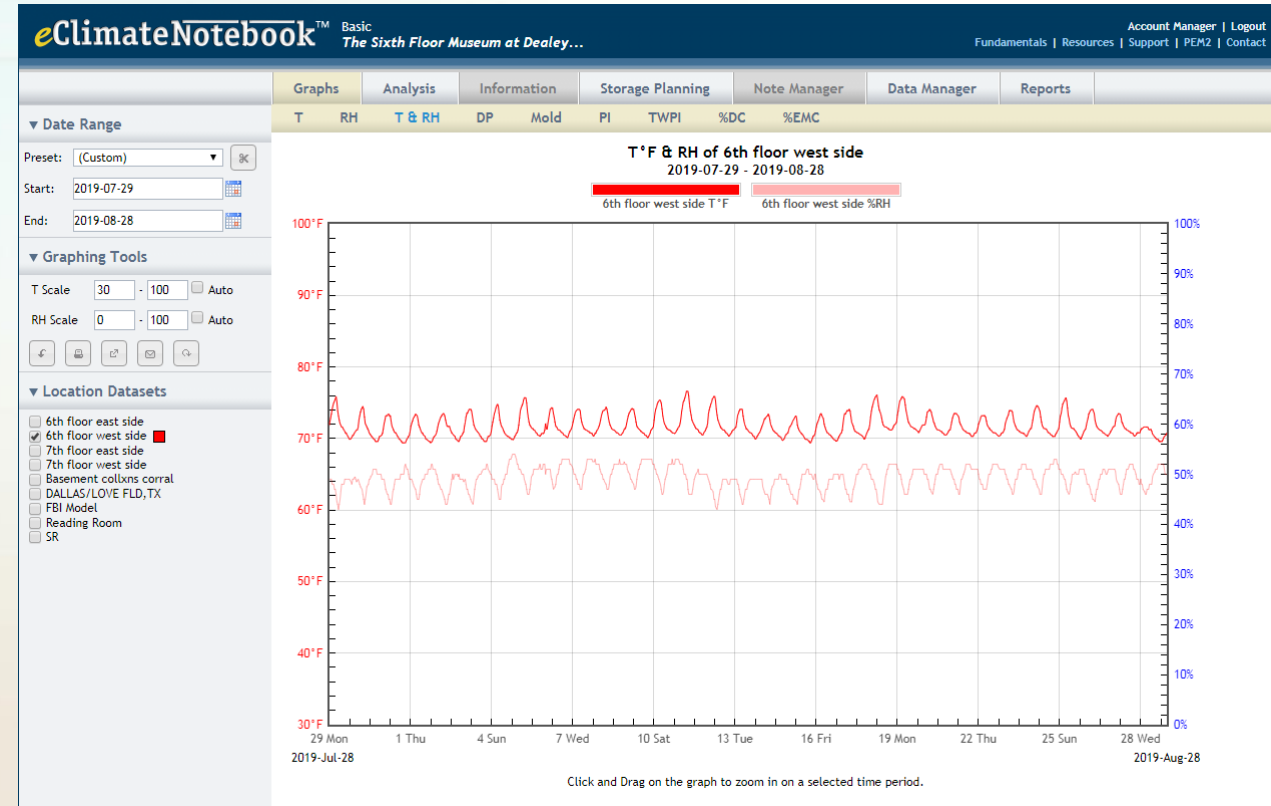


Small, non-recording data logger, Image courtesy Omega Engineering

Data Tracking



Screenshot of HOBOWare, Image courtesy Onset



Screenshot of eClimateNotebook, Image courtesy Image Permanence Institute at the Rochester Institute of Technology

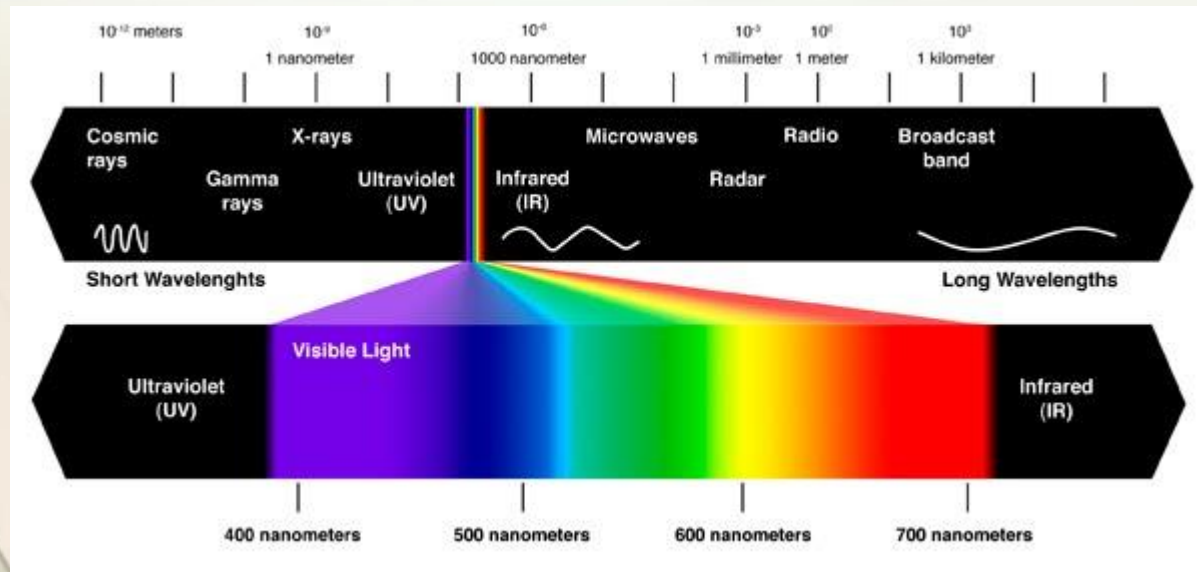
Dehumidifiers, Humidifiers, and Fans



Dehumidifier, humidifier, and fan, Images courtesy Grainger Industrial Supply

Light: Visible, Infrared, and Ultraviolet

- Exhibit vs. storage conditions
- Acceptable exposure to light depends on the types of object



Light meter that just reads Visible light, Image courtesy Grainger Industrial



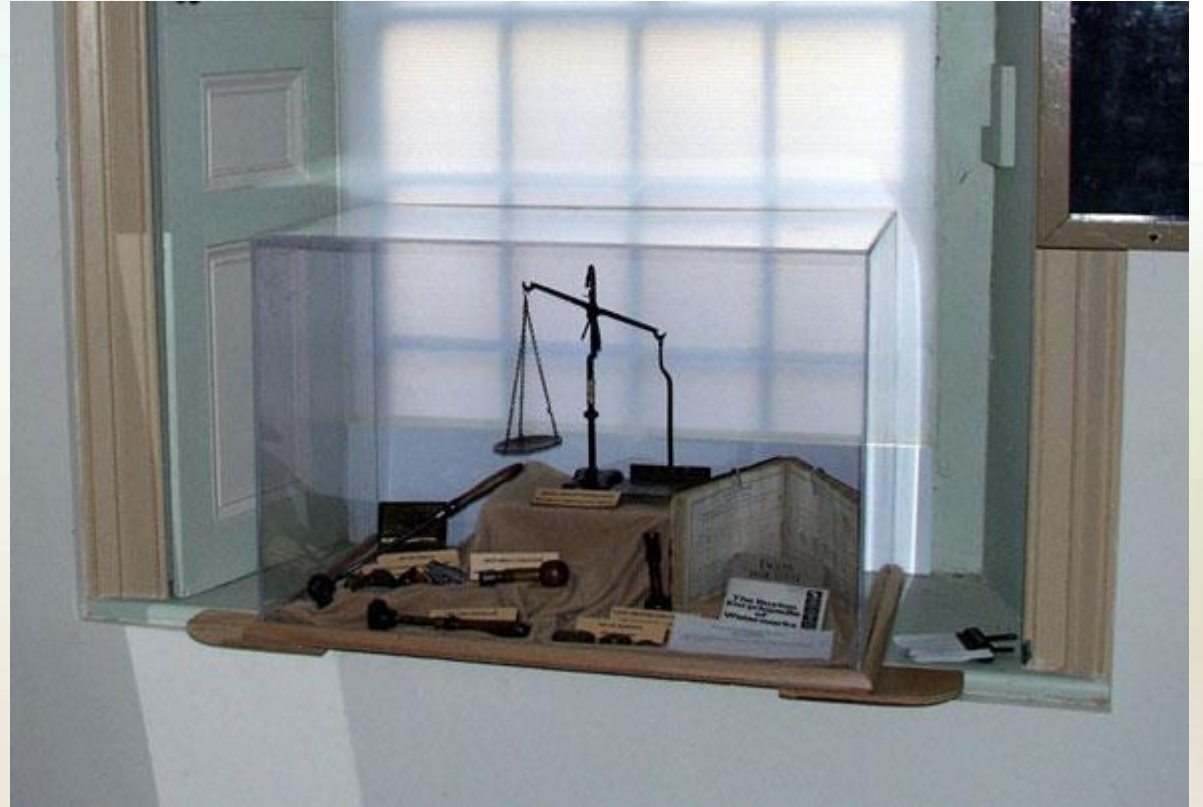
Light meter that reads Visible, IR, and UV light, Image courtesy Elsec

Light Damage

Light damage is cumulative and irreversible!!



Light damage to leather-bound book, Image courtesy NEDCC



Case mounted in window, placing objects at risk of light and temperature-related damage, Image courtesy CCI

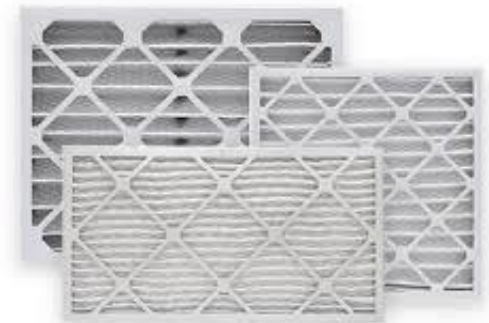
Airborne Pollutants

Particulates:

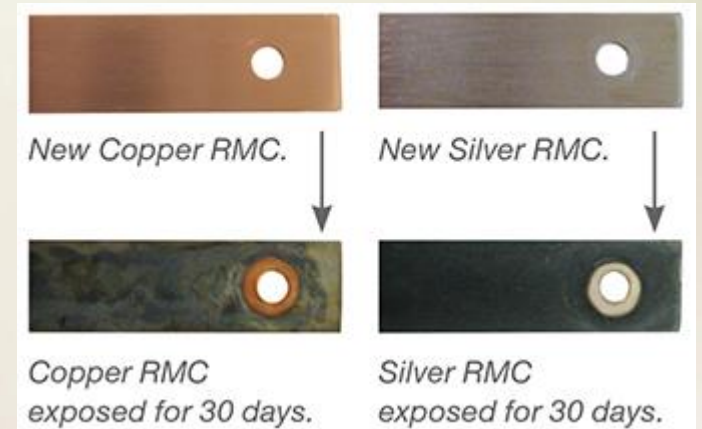
- No standard monitoring equipment
- Change HVAC filters
- Regular cleaning
- Dust covers for objects/Storage in boxes, cabinets

Gaseous Pollutants:

- Equipment is expensive
- Corrosion classification coupons



Air filters, Image courtesy Air Filters Delivered



Corrosion classification coupons, Image courtesy AAF International

Creating Microclimates



Collections storage at The Sixth Floor Museum,
Image taken by Stephanie Allen-Givens



Archival box, Image courtesy Gaylord Archival



Jack Ruby's hat, in sealed exhibit case on display
at TSFM, Image taken by Stephanie Allen-Givens

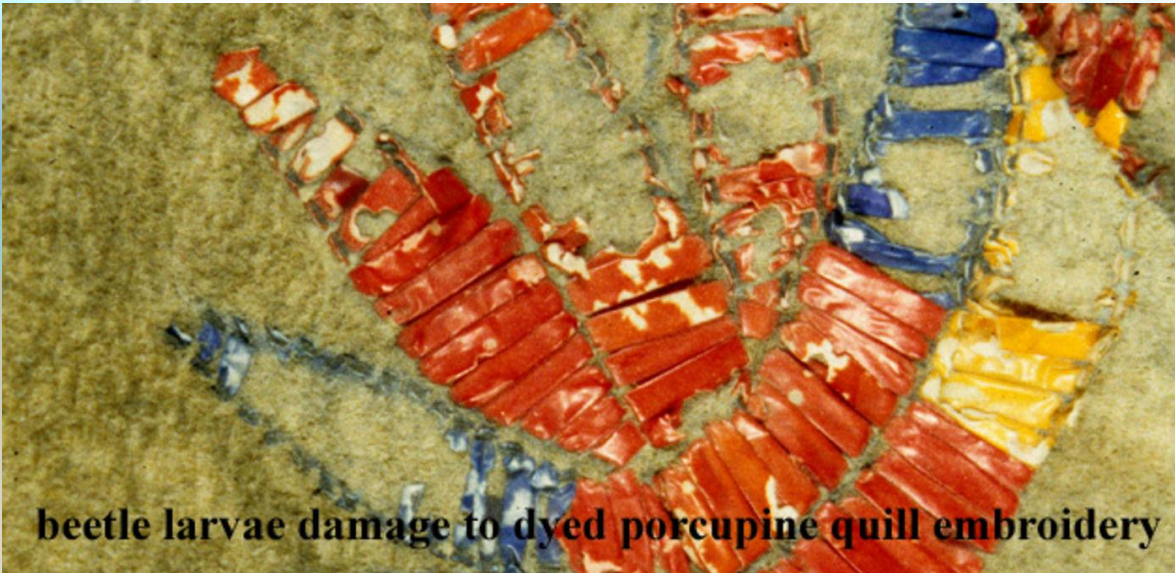
IPM (Integrated Pest Management)

NO BUGS ALLOWED !



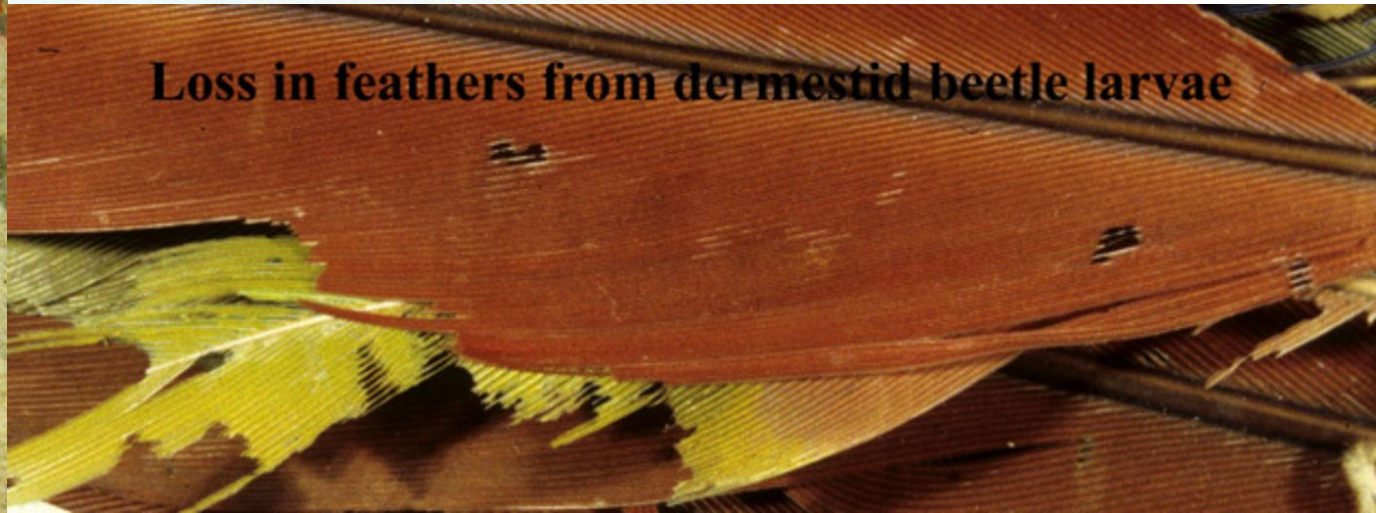
Sticky traps, Image courtesy Museumpests.net

Pest Damage



beetle larvae damage to dyed porcupine quill embroidery

Image courtesy the Field Museum



Loss in feathers from dermestid beetle larvae

Image courtesy the Field Museum

TAM's CMC and the EMKs

TAM - Texas Association of Museums

CMC - Collection Manager's Committee of TAM

EMKs - Environmental Monitoring Kits



The CMC's Environmental Monitoring Kit, Images taken by Stephanie Allen-Givens

Other Resources

- Merritt, J. and J. Reilly (eds.). 2010. *Preventive Conservation for Historic Houses*. Altamira Press., Lanham, MD.
- Rose, C., C. Hawks and H. Genoways (eds.) 1995. *Storage of Natural History Collections: A Preventive Conservation Approach*, Society for the Preservation of Natural History Collections. www.spnhc.org
- Thomson, Gary. 2013. *The Museum Environment*. Butterworth-Heinemann, Oxford, UK.
- The National Trust. 2006. *The National Trust Manual of Housekeeping: The Care of Collections in Historic Houses Open to the Public*. Butterworth-Heinemann, Oxford, UK.
- American Institute for Conservation. *Journal of the American Institute for Conservation* (electronic archive of articles) www.conservation-us.org click on Resource Center
- Canadian Conservation Institute preservation and preventive conservation resources
<http://www.cci-icc.gc.ca/index-eng.aspx>
- Getty Conservation Institute, free publications on conservation and preservation, in pdf format
http://www.getty.edu/conservation/publications/pdf_publications/
- Heritage Preservation, www.heritagepreservation.org
- Institute of Conservation (ICON) series on how to care for various objects
http://www.icon.org.uk/index.php?option=com_content&task=view&id=9&Itemid=10
- National Archives and Records Administration, electronic publications on preservation
www.archives.gov/preservation/
- National Park Service *Conserve-O-Grams* and *NPS Handbook* (3 vols) www.cr.nps.gov/museum/
- Museum Pests Network – information on pest ID and control www.museumpests.net
- Hatchfield, Pamela. 2002. *Pollutants in the Museum Environment: Practical Strategies for Problem Solving in Design, Exhibition and Storage*. Archetype Publications, Michigan.

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