



Conserve O Gram

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Upholstered Furniture: Agents Of Deterioration

Upholstered furniture generally refers to seating furniture, such as sofas, chairs, and stools, which are padded for comfort and covered with fabric. The framework of upholstered furniture is usually wood. The padding materials are quite diverse. They historically include materials such as grasses, animal hair, feathers, moss, cotton batting, and sea weed. More recently materials such as polyester batting and synthetic foams have been introduced. Since the 1830s, coil springs have been used to provide loft and cushioning to upholstered seats. The external or show coverings are of a wide variety of materials: cellulose (e.g., cotton and linen), as well as protein-based animal products (e.g., haircloth, wool, silk, and leather).

Because upholstered furniture is typically an assemblage of a variety of materials, it is susceptible to damage from a greater number of agents of deterioration than simpler types of artifacts made from a single material. Additionally, the effects of the various materials on one another can exacerbate the deterioration of the object.

Relative Humidity

Excessively high relative humidity (RH), above approximately 65%, can cause mold to grow on and deteriorate textiles. (See *Conserve O Gram* 16/1.) In addition, high RH will promote the oxidation of metal elements such as tacks and springs in furniture. This will not only deteriorate the metal itself but will stain and embrittle the fabrics and stuffing that it contacts. Excessively low RH, below approximately 40%, can embrittle and ultimately break down the individual fibers of textiles.

Light

Light damage is cumulative and irreversible. Visible light and ultraviolet (UV) radiation will fade and embrittle show covers. Some upholstery fabrics, such as silk, are particularly susceptible to light damage. Light will also fade wood stains and the natural color of the wood as well as degrade wood finishes.

Sunlight contains both the visible and UV components of the spectrum. Therefore, do not display upholstered furniture in direct sunlight. Attempt to keep light levels below 50 lux (5 footcandles).

It is advisable that upholstered furniture be totally protected from light when it is not being viewed. This can be accomplished by shutting light off at the source or covering the object with clean cotton sheets.

Dust and Dirt

Dust particles which generally include lint as well as organic debris act as an attractant and food source for insects and attract moisture to the surface of the object. In addition dust is abrasive and over time can damage the finish of exposed wood members.

To reduce the deterioration potential of dust and dirt on upholstered furniture, keep the exhibit environment clean and reduce ambient dust as much as possible. Cover the furniture with clean cotton sheets when not on display.

If the show fabric is stable, vacuum regularly. A low suction should be used. It is generally

preferable to vacuum through a nylon mesh window screen approximately 18" by 18" with protective tape sewn or adhered to the edges. See NPS *Museum Handbook*, Part I (Rev 9/90), Appendix K, for guidance on this technique. This will help protect the show fabric. Water or high-efficiency particulate air (HEPA) filtering vacuums are recommended. HEPA vacuums are designed to pick up and retain fine dust particles which can pass through the filters and bags of normal vacuums.

Caution: If the fabric is unstable, do not attempt to vacuum. Consult a conservator for advice.

Stains

The removal of old stains in fabric should be attempted only by a textile conservator. Misguided attempts to remove old stains can result in more damage.

A fresh spill should be removed, to the degree possible, by blotting with a clean white cotton cloth. A conservator should immediately be contacted for advice.

Handling and Moving

Upholstered furniture is particularly susceptible to damage from improper handling and moving. Clean white cotton gloves should be worn when handling upholstered surfaces to avoid staining the fabric with hand oils. Since much upholstered furniture is heavy and bulky it is particularly important to exercise care in moving. Be sure to measure door openings before the actual move, ensure there is ample help available, and grasp by the legs rather than upholstered surfaces if possible. Follow the techniques for handling and moving furniture outlined in NPS *Museum Handbook*, Part I (Rev 9/90), Appendix N.

Insect Infestation

Upholstered furniture is susceptible to damage from those insects that feed on proteinaceous and cellulose materials. Exit holes on the surface of the wooden members as well as the presence of frass, a finely powdered sawdust, are indications of a wood-boring beetle infestation. The adult stage of the beetle creates the exit or flight hole, 1/16" to 3/16" in diameter, as it emerges from the wood, pushing the frass out ahead of it. It is the larval stage of the insect which does the most damage, consuming the cellulose as it tunnels through the interior of the wood members.

Proteinaceous materials, like silk, horsehair, and wool, are attacked by dermestids such as the various carpet beetles and the clothes moth. The larva are repelled by light and tend to feed in dark undisturbed locations. The crevices and spaces within upholstered furniture provide ideal conditions for infestation.

The presence of larva, cast skins, and egg casings in crevices or on the floor below are indications of possible infestation. Finding adult dermestids on window sills is also a good indicator of infestation of upholstery or other fabrics in the room.

The most effective means of preventing infestation of dermestids is to monitor any activity through an Integrated Pest Management (IPM) program. See NPS *Museum Handbook*, Part I (Rev 9/90), Chapter 5. Regularly vacuum upholstered furniture, being sure to clean the under pillows, the crevices, and the dust cover beneath the seat frame. Maintaining a proper environment is also important as dermestids are more likely to be active in spaces with high relative humidity.

If there is a current infestation, discuss with a conservator the options of freezing or fumigation. Coordinate all fumigation treatments through the park and regional IPM coordinators and the Regional Curator.

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