

Caring for Feathers

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Feathers have been used for everything from pens to decorations for centuries by people all over the world. Individual feathers are not only collected for their inherent beauty, but also used with other materials to create everything from sacred or ritual objects to personal adornments. The type of item and the way it was made will determine how to best preserve it when framed. There are too many different types of feather items to be discussed here, so this article will focus on the care of the feathers themselves.

What Is A Feather?

Feathers are made up of mostly protein and a small amount of water. A feather gets its strength and suppleness from its fibrous, sulfur-containing protein. The two main types of feathers commonly used are *contour* and *down*. Contour feathers are found on the back and wings of birds and have a central stem commonly call the quill. Down feathers are usually found under the contour feathers. They are softer and fluffier and have a shorter quill.

The colors found in feathers are a result of two different phenomena. Particular chemical molecules in feathers absorb certain wavelengths of light. The unabsorbed light results in some of the colors we see. The second reason for the colors is that the many air-filled spaces in the surface layers of the protein reflect or refract light.

The water repellent nature of feathers is a result of preening. Birds rub their bills and heads against oil glands at the base of the tail feathers. These oils are then transferred to the bird's wing and body feathers. The oils keep

feathers from drying out and also helps to keep them healthy.

What Harms Feathers

- Insects can do considerable damage to feathers. The sulfur in feather protein is a tasty food for some little critters. Insects may not be visible, but check for tiny bits of feather and a fine, granular dust underneath feathers. These are the results of insects eating the feathers.
- Dust is another common problem. Oil on the surface of feathers can hold dust, and it can also get embedded in the structure of the feather. Dust itself is abrasive and can hold moisture, thus raising the humidity on the surface of a feather. Surface damage can result in the loss of both sheen and smoothness.
- Light causes colors to fade and can also break down molecular bonds that result not only in color fading but the yellowing and embrittlement of the feather.
- If feathers are exposed to strong direct light, damage can occur rapidly. Damage from light is cumulative so it is best to expose feathers to as low a light level as possible. The recommended level is 50 lux or less which translates into a very dimly lit room. Often, the first sign of damage is the falling of tiny pieces of broken feather to the bottom of the frame or case. At this point, however, it may be too late to start thinking about preservation.

- Acidic or alkaline environments speed up deterioration. Acids cause the protein in feathers to break down while alkaline environment can be even more destructive to the protein. The rate of damage will increase when the temperature and humidity are high. The recommended pH is between 6.5 and 7.5.
- Temperature and humidity should be kept as stable as possible. Heat is a catalyst for many chemical reactions, so high temperatures may speed up the deterioration of feathers. The recommended temperature is between 60°F and 75°F and the recommended humidity is 45% to 55%. Feathers become dry and brittle at humidity levels below 35%.

How to Preserve Feathers

Preventative maintenance is the way to go. Check feathers regularly for signs of possible damage. Call a conservator for help if damage is detected.

To remove surface dirt, feathers can be gently dusted if they are new or in good condition. Support the back of the feather and dust it with a soft, natural bristle brush in the direction of the vane. However, avoid

unnecessary handling. If the feather is in poor condition or delicate, brushing may cause further damage.

Down feathers found in such things as comforters and pillows can often be washed. However, ornamental feathers are another kettle of fish, so to speak. Wetting will often damage contour feathers.

Many times decorative feathers have been commercially dyed and the dyes may run or fade if washed. Natural colors may also be affected.

Dry cleaning can cause feathers to dry out by removing natural oils. Because cleaning of any kind can be harmful, it is best to consult a conservator to find out if your feathers can be cleaned, and if so, what is the best method.

When displaying feathers, it is best to provide a stable, closed, pH neutral, low light environment. Feathers should be protected against dust and unnecessary handling. UV glazing should be used along with pH neutral materials and wooden frames should be sealed. Feathers are sensitive and can easily be harmed. Once they have been damaged they cannot easily be fixed. ■

This article is based on material on caring for feathers from Bishop Museum, Hawaii, 1993.