



A bird housed alone can't preen new feathers in hard-to-reach places, like its head. Without help, the quill-like sheaths surrounding the new feathers will stay put.

Molting 101

Proper nutrition, hygiene and care will help your bird weather the complex and gradual molting process. **By Dr. Susan Clubb**

All birds molt. It is through this essential process that they replace worn, broken or damaged feathers.

Molts usually occur once or twice a year, producing plumage that matches the bird's age, sex and, in many wild species, the season. Molting patterns are driven by hormones, species and age.

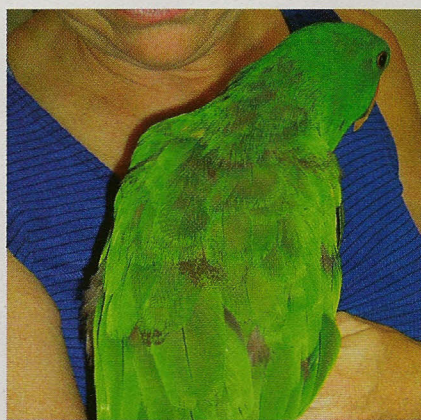
Small birds and tropical birds have fewer feathers and molt less often. For example, hummingbirds have hundreds of feathers. On the other hand, Canadian geese have tens of thousands. Many waterfowl also change color seasonally, molting before and after the breeding season. Still other birds, like penguins, use heavy molting as a survival strategy, losing and replacing plumage during warmer months. Parrots molt annually, but continue to replace feathers throughout the year.

Although molting is a natural process, growing feathers need proper care to blossom into healthy plumage. Therefore, it's important for pet store employees as well as hobbyists to learn the basics of molting, how to enhance the process and what steps to take if problems arise.

Learn the Basics

The process of molting is simple: An old feather comes loose from its follicle and a new feather starts growing in its place. If a feather is plucked or lost another way, the new feather starts growing immediately.

It's important to remember that new feathers are living structures complete with blood vessels, which is why they're often called blood feathers. Blood feathers are vulnerable to accidental



Old, discolored and damaged feathers are replaced with bright, clean and new feathers during molting.

breakage and need delicate care. As feathers mature, the blood vessels recede.

New feathers emerge from the feather follicle encased in a sheath. This casing must be removed for the feather to open. Birds naturally peel the sheath away during preening. However, they can't reach all their feathers, like the ones on their heads, and usually rely on another bird for help. If a bird is housed alone, it may need the careful help of a caregiver.

Molting naturally occurs throughout a bird's life. Baby birds lose their initial coat of soft, fluffy natal down during the post-natal molt, and develop juvenile plumage. During the juvenile molt, that early plumage is replaced by adult feathers. Dictated by hormones originating in the pituitary and pineal glands, molting is coordinated with light and reproductive cycles. Feathers are lost in an orderly fashion so the plumage doesn't become patchy. It will thin out, though, so birds may need additional heat to stay comfortable.

A molt can be complete or partial, depending on the number of feathers replaced. Flight is an essential survival tool for most birds, so almost all birds keep enough feathers to fly. The exception is some waterfowl, like loons, gulls and swans, which lose all flight feathers simultaneously and must swim until their new feathers mature.

Parrots have a less dramatic molt that usually takes place after the breeding season, a timeframe that varies by species. In North America, African parrots, cockatoos and Asian parakeets breed most heavily in the winter and early spring. Quaker and Amazon parakeets breed later in the spring, while macaws wait until late spring or early summer. Some conures breed in the spring, but some wait until late summer. Additionally, some parrots have a partial molt before the breeding season begins.

Caregivers will be able to detect molting by spotting more feathers than normal in a cage or feeling the firm quills of emerging feathers.

Enhance Nutrition

Feathers are made up of 91 percent protein, 8 percent water and 1 percent fat, so it takes a lot of protein, energy and nutrients to grow new feathers. In fact, converting a bird from a poor

FASTFact

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Source: Dr. Susan Clubb

diet to a healthy one often sparks a molt because the bird suddenly has the nutrients necessary to grow new feathers.

Protein-rich feathers need two essential amino acids: methionine and lysine. Birds eating formulated diets—pelleted or extruded—probably are getting the necessary nutrients, but might eat a little more than normal during molting. Birds on a poor diet may benefit from high-protein supplements like eggs or small portions of cheese or well-cooked lean meats. Vegetarian sources of amino acids include beans and high-protein vegetables like baby soybeans, also known as edamame.

Adding vitamins may help reduce the stress of molting. Administer vitamins directly or mix them into food—don't add them to water. Because supplements and vitamins typically contain sugars to enhance acceptance, they promote bacterial growth in water. If you do add vitamins to drinking water, wash the bowls daily with soap and water. Pure fresh water is always important, but it's especially critical during a molt.

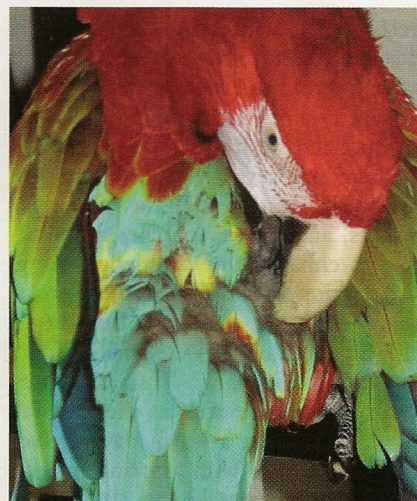
Fatty acids may help lubricate skin tissues and follicles so the feather can emerge with ease. There are plenty of ways to supplement a diet with

fatty acids—the important thing to remember is that a diet should contain a balance of omega-3 and omega-6 fatty acids. Sunflower and safflower seeds are high in omega-6 fatty acids and should be balanced with other things. Flax seed is high in omega-3s and is well-accepted by small birds and even some larger ones. Salmon oil might smell unpleasant but it's a great source of omega-3s and is surprisingly well-accepted by parrots. It can be mixed daily with the regular diet or with soft foods at the rate of two drops for every 100 grams of the bird's body weight. Add the salmon oil fresh each day; if you mix a big batch in advance, the oil and food combination will become rancid.

Use Good Hygiene

Bathing helps keep a bird's skin moist and softens the feather sheaths so they flake off or are easier to remove. However, it's an often neglected aspect of bird care.

Many available bird bath preparations



Medications or hormone injections may cause abnormal coloration in new feathers, as seen in this green wing macaw.

contain lanoline or other ingredients to enhance feathers' suppleness and gloss. The only drawback is that these products may cause build-up if used extensively. Intermittent bathing with



New feathers, or blood feathers, emerge from the feather follicle encased in a feather sheath that must be removed before the feather can open. A sheath that's not ready to be removed is very sensitive to pressure and can cause a bird pain if handled improperly.

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—Janet Fountain, Owner of Party Animals
(Baton Rouge, La.)

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fresh water will help keep feathers clean and shiny. Birds should be bathed twice a week, and owners can alternate between a commercial bird bath product and fresh water.

There are several bathing options. Many birds enjoy bathing with their owners, and shower perches are available to enhance the experience. Some like bathing in the sink. Others prefer being sprayed, although the sound can be frightening—especially if it's sprayed point-blank. Instead, spray water into the air and let the mist fall on the bird. On a warm day, shower the bird outside with a sprinkler head made for delicate flowers. Allow the bird to dry in the sun and its plumage will sparkle.

Stay Quiet and Patient

Molting, especially heavy molts, can be stressful for birds. Most birds will be quiet and moody so give them plenty of quiet time and darkness each

FASTFact

DURING THE POST-NATAL MOLT, SOME COCKATIELS, AUSTRALIAN PARAKEETS AND BLACK COCKATOOS GROW SEXUALLY DIMORPHIC PLUMAGE. IN OTHER WORDS, THE BIRD'S SEX CAN BE DETERMINED SIMPLY BY LOOKING AT ITS FEATHERS.

Source: Dr. Susan Clubb

night—preferably 12 hours. A calm, peaceful environment will allow the bird to expend energy in new feather growth.

Birds may also appear itchy, continually preening their new feathers. You may be tempted to help, but it's important to remember that the new feather sheaths are very sensitive to pressure. Touching a still-growing feather can hurt the bird. Check for blood feathers first. Then gently scratch, using just your fingernail, new feathers the bird can't reach, like the ones on its head or neck.

During molting, some birds will begin to pluck their feathers. It has been theorized that friction may occur between the layers of tissue as the feathers emerge from the follicle and that this friction may result in skin inflammation.

Growing flight feathers may be vulnerable to clipping or breakage as they emerge, especially in birds whose feathers have been clipped to prevent flight. These feathers can bleed excessively, leaving blood smears on the bird's plumage. Pulling these feathers is not recommended, unless you are not able to stop the bleeding. Pulling feathers can cause serious damage to the feather follicle.

If possible, stop the bleeding with an application of flour or cornstarch and applied pressure. Allow the bird to rest quietly, keeping an eye out for further bleeding. If this fails and bleeding is excessive, seek veterinary care.

It's important to know the basics of molting and what to expect, because a novice may confuse feather plucking, chewing or other damaging behaviors with an improper molt. If a parrot has bald spots or lots of broken or clipped feathers, the problem is probably not associated with molting. A bird that fails to molt or has an incomplete molt could be ill, malnourished or have an underlying metabolic problem. For those issues, it's best to see a veterinarian. pa

5 KINDS OF FEATHERS

Feathers, a bird's most distinguishing feature, are more than window-dressing. There are five feather types, and each has a specific job to help a bird survive and flourish.

◆ **Contour feathers** are the most visible, making up the external body covering and giving the bird its characteristic shape. These feathers provide waterproofing and insulation as well as plumage color and gloss.

Flight feathers (remiges) and tail feathers (retrices) are modified contour feathers that allow birds to fly.

The sturdy vein of the feather is called the shaft or calamus. The shaft's branches are called rachis, which support additional branches called barbs. Those, in turn, support barbels: tiny, interlocking hooks that form the vane, or surface of the feather.

A portion of a contour feather closest to the body is soft and downy, while the other end is smooth, relatively firm and tightly knit.

◆ **Semiplumes** fill in between down and contour feathers, providing shape and insulation. They're intermediate in size between contour and down feathers.

◆ **Filoplumes** function as sensory receptors that detect vibration, pressure and the location of other feathers. These are the hairlike structures seen on a plucked bird.

◆ **Bristles**, found around the beak and nostrils of birds or as eyelashes, are hairlike feathers with stiff shafts.

◆ **Down feathers** provide insulation between contour feathers and the bird's skin. They're soft, usually gray or white, and lack interlocking barbels.

Powder down feathers grow continuously and disintegrate into a substance that helps clean and waterproof the feathers. These are especially prominent in cockatoos and African greys, giving the birds a powdery and soft appearance. However, powder down can cause allergic reactions in people and even other birds, like macaws.

—Dr. Susan Clubb

Dr. Susan L. Clubb is an internationally respected avian and reptile veterinarian. An honors graduate of the Auburn University School of Veterinary Medicine (Auburn, Ala.), Clubb is owner/operator of Rainforest Clinic for Birds and Exotics Inc. and Hurricane Aviaries, Inc. She is staff veterinarian at Jungle Island in Miami, (Formerly Parrot Jungle) and a consultant to zoos. In addition, she is a consulting veterinarian for the Pet Industry Joint Advisory Council (Washington) and for Kaytee Products Inc. (Chilton, Wis.).