Bird Beaks: Anatomy, Care, and Diseases

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A bird's beak, also called the "rostrum," is used for many things from a weapon for enemies, to grooming, to the delicate feeding of a nestling. Beaks can be a combination of strength and sensitivity, strong enough to crack a walnut yet delicate enough to peel a grape.

Anatomy

A bird, like a mammal, has two jaws: the upper is the **maxilla** and the lower is the **mandible**. The nostrils, or **nares**, are located at the junction between the beak and the head. In most parrots, a small, round, brown structure, called the **operculum** is found inside of the nostril. This is comprised of cartilage and should not be mistaken for an obstruction or foreign body, such as a seed. Some species of birds, such as the parrots, have an area of fleshy tissue that contains the nares. This is called the **cere**. In budgies, the cere is blue in adult males, and a pinkish brown in females.

The beak is comprised of the jaw bone covered with a lightweight sheath called the **rhamphotheca**. The rhamphotheca is made of keratin, which is the same substance found in antlers or our fingernails. And like horns or fingernails, the beak is constantly growing. Depending upon the species, a bird's beak grows from one to three inches a year. The portion of the rhamphotheca covering the maxilla is called the **rhinotheca**, and that covering the mandible is the **gnatotheca**.

The proximal (closest to the bird) portion of the beak has a blood supply and a significant number of nerve endings. The distal portion (toward the tip) of the beak, like the end of a fingernail, does not sense pain.

Some parrots have file-like ridges crossing the inside of the upper bill. These aid the bird in cracking nuts and hard fruits.

There is a great variation in the size, shape, and strength of beaks. The type of beak a bird has is usually related to the type of food the bird normally eats.

- Strong, hook-like beaks, such as those on toucans and parrots, can crack an outer shell of a nut or the tough outer skins of certain fruits.
- Short, straight bills are perfect for seed and grub eaters. These include finches and canaries.
- Nectar-eating birds, such as hummingbirds, have long, pointed beaks for reaching into the heart of a flower.
- Wild birds, such as woodpeckers, have extremely strong, chisel-like beaks.
- Water birds, such as cranes, may have long beaks for probing; birds such as ducks and flamingos have flat beaks with special plates called lamellae, which help filter food.
- Raptors have hook-like beaks used for tearing food.
- Insect-eating birds, such as warblers, have short beaks.
- Some birds, such as swifts, have wide mouths, for catching insects while flying.

Signs of a healthy beak

A healthy bird has a healthy beak. And a healthy beak means that your bird will be using it to eat, play, and chew. If your bird's beak is causing him discomfort in some way, he will avoid using it. Signs that your bird's beak is in healthy include:

- Smooth, symmetrical appearance
- No peeling or unusual textures (Members of the cockatoo family should have fine powder on their beaks, the result of proper grooming of healthy feathers. See Feather Types, Anatomy, and Molting)
- No discolored areas
- Proper beak length (Check with your regular avian veterinarian to see if the tip of your bird's beak is as short as it should be for her particular species).
- Proper alignment of the upper beak and lower beak

Abnormal beak growth and development

The most common beak abnormalities include:

- Overgrown beak
- Scissors beak
- Prognathism or "parrot beak"

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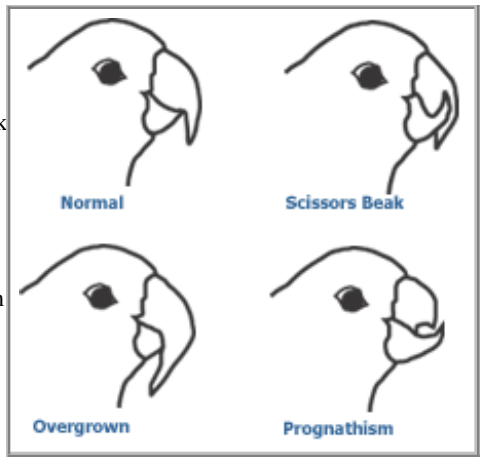
Overgrown beak: Either the upper or lower beak may overgrow, though it is far more common for the upper beak to do so. For some normal birds, regular beak trimming is necessary. Other birds may keep their beaks in proper form through eating a hard diet, grooming, climbing, chewing on toys, and rubbing the beak on a slightly abrasive surface. An overgrown beak can be the result of health problems including trauma, developmental abnormalities, nutritional imbalances, polyomavirus-like infection (finches), or liver disease (especially in budgies). See table below.



Treatment consists of trimming the beak to the proper shape and removing any excessive flaking. An overgrown beak is similar to an overgrown fingernail in that the overgrown portion has no sense of pain. The overgrown portion may be safely trimmed back to normal length without causing discomfort to the bird. Beak trimming is best performed by a veterinarian, unless you have considerable experience. If a beak is trimmed too short, it will cause the bird pain, will bleed, and may make it difficult or impossible for a bird to eat. Beak trimming may be performed using manual tools, such as human fingernail clippers and nail files, or side-cutting wire cutters. Some veterinarians prefer to use a Dremel drill grinding stone. In either case, the bird is generally not anesthetized for the procedure.

Scissors beak: Scissors beak is a lateral deviation of the rhinotheca. It is a developmental abnormality that occurs most commonly in cockatoos and macaws. It is thought to be caused by improper temperature during artificial incubation, genetics, or incorrect feeding techniques. Other possible causes include calcium deficiency, trauma, or a viral or mycobacterial infection.

Treatment varies with the severity of the problem and the age of the bird. In young birds with mild deviations, simply applying finger pressure to the appropriate side of the beak for several minutes 2-3 times daily, may correct the problem. In older birds, or those with more severe deviations, an avian veterinarian may need to perform surgery and apply a type of acrylic prosthesis (splint) to correct the abnormal growth.

Prognathism or "Parrot Beak:" Mandibular prognathism occurs when the tip of the rhinotheca rests on or inside the gnatotheca. This developmental abnormality is most commonly seen in cockatoos. The cause of this condition is unknown, and may include genetics, improper incubation, and hand-feeding techniques. It is rarely seen in parent raised birds. It is thought that when parent birds hook onto the chick's rhinotheca during feeding, they help to promote the normal development of the chick's beak.

As with scissors beak, treatment varies with the severity of the condition and the age of the bird. For some chicks, applying finger pressure several times daily may help, as will using a piece of gauze to apply traction to the upper beak during feeding. In an older bird, in which the beak has calcified, treatment generally involves the placement of an acrylic appliance on the beak. The type of appliance varies depending upon the extent of the problem.

At-home beak care

Beak care is critical for the overall health of the bird. The beak is the entry for nutrients, and is used for climbing and playing. We can help promote beak health by ensuring the bird is getting all the nutrients he needs and detecting any problems early. Some at-home care includes:

- Daily checking the health of your bird. Look for cracks, overgrowth, or discoloration of the beak.
- Consulting an avian veterinarian if you suspect that your bird's beak is growing unevenly. This can indicate underlying problems such as liver or nutritional issues. Your avian veterinarian can determine the reason for the problem as well as trim it to prevent problems with eating or preening.
- Providing chewing toys, any toy that a bird has to work at chewing will help keep his beak trim. These include build-your-own toys that you can make by alternating mineral pieces with rope, wooden, blocks, and plastic.
- Including different textures of perches, including cement perches specifically made for beak and nail health. Note: Do not use sandpaper perches.
- Housing the bird in a proper size cage. Owners of large parrots, especially, need to provide a sturdy cage. Parrot owners we know have come home to a flimsy cage with snapped bars and the soldering (made of toxic lead and zinc in some inexpensive cages) chewed off.

Trauma

Trauma to the beak may occur as the result of fighting, chewing on electric cords, hitting the beak while flying or landing, or having the beak trapped between cage bars or other hard surfaces. Injuries may include fractures, punctures, and avulsions (tearing away of the beak). Injuries to the beak often bleed, and the hemorrhage needs to be stopped (usually with electrocautery. DO NOT use silver nitrate sticks - they are toxic to birds). The wounds must be cleaned and antibiotics and antifungals may need to be given. The beak has nerve endings, and pain or the displacement of the beak may make eating

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difficult or impossible. All birds with beak injuries should be examined by a veterinarian. Acrylics may be used to repair the beak until new tissue replaces it.

Other beak conditions

There are many diseases and conditions that can affect the health of the beak, as shown in the following table.

Common Beak Lesions		
Lesion	**Possible Cause**	**Species**
Abnormal growth	Liver disease *Knemidocoptes* mites Polyomavirus-like infection Psittacine Beak and Feather Disease (PBFD) Vitamin D3 deficiency Soft food Malnutrition Old trauma	Budgies Budgies Finches
Shiny surface to beak (instead of powdery appearance)	PBFD	Cockatoos
Crusty lesions	Avian Pox *Knemidocoptes* mites Bacterial infection	Amazon parrots Budgies
Soft, pliable beak ("rubber beak")	Calcium or Vitamin D deficiency	Cockatiels
Discoloration	Malnutrition or systemic disease	Toucans and Lorikeets
White lesions in mouth, excess mucus, swelling	*Candida* infection *Trichomonas* infection Bacterial infection Vitamin A deficiency	

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Sunken, irregular lesions	Old trauma *Aspergillus* infection *Candida* infection Bacterial infection PBFD	
Ulcerative lesions at beak junction	Avian Pox *Trichomonas*	Cockatiels

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