

## **23 Functions of Feathers**

Arizona State University – Ask a Biologist

### **Flying**

Flight feathers are very strong and stiff feathers found on the wings of birds.

### **Help keep them warm**

Downy feathers as well as Simiplume feathers are able to trap pockets of air close to the bird's body to help keep it warm. How much body heat they keep can be adjusted by arranging their feathers to trap more or less air. If you see birds fluffing their feathers in the cold that is their way of adding extra air to trap body heat and keep warmer.

### **Controlling body temperature**

To keep their body temperature steady birds can either expose their heads and feet to cool down, or tuck them into their feathers to help keep warm.

### **Protection from wind, moisture, and sun**

The stronger and ridged contour feathers shield birds from wind. The tough material they are made from, beta-keratin is water and wear resistant. Darker colored feather might also provide protection from the sun. Keeping them dry In the rain, feathers work to keep water out. The interlocking feather barbs and a special coating that is either oily or waxy create a shield that water runs off.

### **Swimming and diving**

Some birds use their half-spread out wings in a flying motion to swim in water. Penguins have developed their wings into stiff flat flippers that make them great swimmers.

### **Floating**

Using the trapped air in downy feathers, water birds like ducks can float on water as well as add protection from cold water.

### **Snow-shoeing**

One of the more unusual feather uses is snow-shoeing. Grouse, chicken-like birds that live in snow covered areas have feather covered feet in the winter that increase the size of the foot just like snow-shoes. This keeps the birds from sinking into the snow.

### **Tobogganing**

Why walk if you can slide, or in the case of penguins toboggan. The Antarctic birds flop down on the smooth feathers of their bellies and use their flipper-like wings together with their feet to move themselves, toboggan-like, across snow and ice.

**Bracing**

When not flying, many birds use their tail feathers as supports when on the ground or climbing the sides of trees such as seen with woodpeckers.

**Feeling**

Feathers do not have nerves, but they do stimulate nerves that surround where the feather attaches to the bird. Birds can adjust the position of their feathers and posture depending on the stimulation of the nerves.

**Hearing**

Some predators, especially owls, have their face feathers arranged like two dishes (facial discs) to collect and channel sounds into their ears so they can more accurately locate prey in the dark (parabolic reflector).

**Making sounds**

We think of bird sounds either as songs and or calls, but using their feathers they are able to make many different sounds like humming, drumming, and whistling.

**Muffling sounds**

Birds that hunt at night like owls are able to use their wings to muffle the sound of them approaching their prey. You can think of them as an early stealth fighter plane.

**Foraging (looking for food)**

Some birds like herons that hunt for fish in water of lakes and streams will sometimes use their feathers by forming an umbrella over their head. This might make it easier to see fish in the water. Other birds might use feathers located at the side of mouth to select fruits.

**Helping to keep a steady supply of food**

Hummingbirds help to pollinate flowers when foraging for sweet nectar when the feathers around their head pick up pollen from a flower that they then transfer to other flowers as they continues looking for more nectar.

**Keeping clean**

Some birds, like herons, have small feathers called powder down that they crush with their beak and feet to rub into the normal feathers and keep them conditioned. This powder down may also help control feather parasites like mites.

**Aiding digestion**

Some fish eating birds also eat their own feathers to line their digestive area. This helps to protect the bird from sharp fish bones.

### **Constructing nests**

Many birds line their nest with bird feathers especially water birds. This helps to keep the eggs warm and also a soft padding. Some birds like parakeets actually use the feathers located on their bottom and lower back to move grass and leaves to their nest

### **Transporting water**

Many adult birds when raising eggs and baby chicks will soak their feathers on their belly before returning to the nest. They can then use the water to keep the eggs from drying out and to give their chicks a drink. Some birds that live in the desert like the sandgrouse have special belly feathers that are very good at holding water so that they do not have to nest too close to water holes where there might be more predators.

### **Escaping from predators**

When birds are attacked or frightened they can drop some of their tail feathers. This is called fright molt. This sometimes help the bird get away from the attacking bird leaving the attacker with only a mouth or feet full of feathers.

### **Sending visual signals**

Feather color and patterns are used to send signals to mates and rivals. This is likely the largest and most used function of feathers.

### **Camouflage**

Sometimes bright colors out is not a good thing. To keep from being seen by predators many birds have feathers that look like dead leaves or other parts of the surroundings they live in so that predators cannot see them. Some predators also like to blend in so that their prey may come closer to be more easily caught.

Source:

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References: Stettenheim, Peter. What Feathers Do. Birder's World, June 2006: 25-34