

## Turkey Vulture

Vultures are large birds of prey closely related to hawks and eagles. They are divided into New World vultures and Old World vultures, both belonging to the order Falconiformes. The New World vultures, in the family Cathartidae, consist of seven species in five genera. Among the New World vultures include the *Cathartes aura*, also known as the Turkey Vulture.

Scientists say that turkey vultures are shy, inoffensive birds. Some researchers have discovered that the bird is very helpful to the environment. Its habit of cleaning up decaying and diseased carcasses makes it a sanitary engineer par excellence, while its keen sense of smell has been pressed into service to find wasteful and dangerous gas leaks. And the vulture's unique knack for conserving energy has intrigued scientists for years.

Although the turkey vulture has a large, turkeylike body and sporty red head, it is not even distantly related to the turkey. Instead, turkey vultures-along with their cousins in the United States, the black vulture of the South and East, and the nearly extinct California condor-belong to a group of raptors called New World vultures. Chromosome analysis shows that the New World vultures are actually more closely related to storks than to the vultures of Europe, Asia, and Africa.

Turkey vultures are remarkably successful birds. They range everywhere from parts of Canada and much of the United States to South America. At home in deserts, prairies and woodlands, they have even settled close to people in a number of urban and suburban areas.

Observed in flight, the turkey vulture appears black with the underside of its wings grayish or silvery, giving the birds a two-toned appearance. They characteristically hold their wings in a slight V, or dihedral, thus aiding identification. On rare occasions, they hold their wings flat and eagle-like which, if seen at a great distance, may cause the birds to resemble eagles. In flight, the turkey vulture holds its naked head, crimson-red as adults and grayish-black as immatures, downward in contrast to eagles, which hold their heads forward.

The tail of the turkey vulture extends far beyond the rear edge of its wings. They typically rock or tilt from side to side while gliding or soaring on updrafts or circling overhead. Their occasional wingbeats are powerful and labored. Turkey vultures are large birds with wingspreads of about six feet. Their wings are long, moderately wide, and have strongly slotted tips. Typically, the wings are held slightly above a horizontal plane when the bird is aloft. This forms a characteristic dihedral which is very useful in making correct field identification. Although turkey vultures use thermals, they are more dependent upon updrafts when migrating along mountains. The birds use the air currents skillfully and seldom exert much energy by flapping their wings.

Much of the credit for the bird's success, scientists say, belongs to its efficient use of energy. Turkey vultures are marvels of energy conservation. It seems a turkey vulture's whole life is spent trying to conserve every little calorie it gets. If there's some small way it can save burning its own body fat and tissue, it will. Like an energy-conscious homeowner, a vulture turns down its thermostat at night. During the night, a turkey vulture's body temperature drops a few degrees. The result is a savings in the

vulture's energy bank. To warm up again in the morning without burning much fuel, the prehistoric-looking bird spreads its wings and soaks up all the sun it can.

Another trick performed by the turkey vulture is a behavior called urohidrosis. Like all birds, the turkey vulture has no sweat glands. To cool itself during hot spells, it frequently defecates on its own legs. The slurry of white uric acid in the feces contains moisture that cools by evaporating. The behavior, shared by other vultures and storks, is more efficient than sweating since it requires no boost in metabolism.

The turkey vulture's most basic ploy for saving energy is simply staying put. If the weather is bad for flying, they can and will sit at their roost for days. Since their metabolism is low compared to many other birds, fasting seems to bother them little, if at all. This ability to go without food comes in handy for another reason. The animal's food supply is extremely unpredictable. They don't know where their next meal is coming from.

The birds are well-equipped to get that next meal though. Compared with the heavier, chunkier black vultures, turkey vultures have light bodies and long, broad wings which provide excellent lift. They don't use or lose a lot of energy landing and taking off, so they're able to exploit small food items efficiently. As a result, you'll often see a turkey vulture at a road-killed mouse, something the black vulture wouldn't consider doing.

Turkey vultures are also masters of effortless flight. By riding thermals, they can search for carcasses over dozens of square miles with only a few flaps of their wings. From a vulture's point of view, finding a carcass is a race against time. Not only do vultures have to beat mammalian scavengers, already on the ground ready to follow a

scent trail to the prize, but they also have to find the body before insects render it an inedible, maggot-ridden soup.

The turkey vulture's total dependence on its sense of smell to find food in the forest can be easily demonstrated by putting out carcasses, some left uncovered and some hidden completely by a pile of leaves. The birds find the hidden carcasses just as quickly as those in the open. Turkey vultures hunt by flying just above the level of the tree canopy, sniffing the air all the time. As soon as they get a whiff of rotting meat, they start to circle to determine where the aroma is strongest. They then fly down into the forest, following the scent trail from tree to tree, until they are led to their reward on the forest floor. Because an airborne bird on the scent is usually within sight of many others that are quick to follow, good numbers of vultures of various species can congregate at a carcass within minutes.

Turkey vultures could not detect carrion less than about twelve hours old. A carcass twenty-four hours old, however, emits a sufficient stench to attract vultures readily. These birds have a reputation for savoring stinking, rotting meat, but when offered a choice of relatively fresh or rotting meat, they strongly preferred the fresh. Badly decayed meat contains unpleasant bacterial compounds that either impede digestion or are actively toxic. Vultures will eat rotten meat if they are extremely hungry, but if they are not short of food, they will give bad meat a miss and wait for the scent of something more palatable. Turkey vultures can tell from the smell coming through the tree canopy how long an animal has been dead, probably because the smells given out by the bacteria that develop in meat change with the age of the carcass. Thus, vultures do not even bother to fly down to old carcasses as often as they do to day-old

carrion. Only turkey vultures can locate food by smell; black and king vultures lack this ability completely.

Once the scavenging birds find something dead in the wild, another set of unique abilities comes into play. Since decaying meat is not the most healthful of foods, turkey vultures have evolved into veritable detoxification plants. Not only can they eat food so rotten that it could kill most other creatures, they benefit people and the environment by preventing the spread of diseases. Among these is botulism, a deadly sickness caused by a bacterial poison that attacks nerve-muscle junctions and leads to death by suffocation. Biologists have found that turkey vultures have both botulism-resistant nervous systems and heavy duty immune systems that ward off the bacterial toxin. In one experiment, a scientist injected one turkey vulture with a dose of botulinus toxin lethal enough to kill 300,000 guinea pigs. The bird never showed a moment's illness.

But while turkey vultures are formidable foes of bacteria, they are shy, cautious and docile when confronted by virtually any creature larger than a microbe. This shyness is often carried to an extreme. When the birds are trapped and handled, they are totally docile. Being submissive is only one way a turkey vulture acts when stressed. When frightened, they tend to regurgitate. Whether the act is intentional or not, it provides the dual benefit of lightening the load for a quick getaway and repelling any would-be antagonist with the stomach content's foul odor.

The turkey vultures' foul and sinister reputation, however, finally seems to be changing. In fact, the infamous scavengers are actually finding themselves appreciated by some people. Each year, for example, thousands of people jam the town of Hinckley, Ohio, on one Sunday in March. The occasion is called Buzzard Day. This is the day that the vultures are scheduled to drift in from their southern wintering grounds. People from all over the area gather to watch their beloved birds reappear.