

THE SILENT MORTUARY ATTENDANTS

Turkey Vultures (*cathartes aura*): close-up experiences in Ontario

Distribution

Probably because of the cowboy-dying-desert and African-corpse-squabbling stereotyping of vultures (all tropical vulture species, mostly Old World in origin) many people are amazed that there really are vultures breeding in Canada as far north as Georgian Bay and farther (latitude 50°) but they have been steadily increasing their range northward for many years. About 1912, an American birder noted that Turkey Vultures, which are considered New World Vultures, were then as far north as—good heavens—New Jersey (latitude 40°). Along with the Red-tailed Hawk, the Turkey Vulture is the commonest soaring raptor that draws the eye skyward in southern Ontario. You'll see them between March and November, sometimes December, if you just look up. (*Not* while driving—I know a passenger who had to yell, “Darling, pick a lane!” to her birdwatching husband.)

Taxonomy

The old standard of bird classification has been by morphology; that is, grouping birds by their shape, their form. By this classification, vultures were thought to be related to raptors, because they ate meat and had a hooked beak-tip to rip it. The word “raptor” comes from the Latin “to seize” as hawks and owls do with their live prey. This the vultures do not do. They are designed to be excellent scavengers. They have a large, tough, cupped tongue for rasping. They have no speed—one cannot be designed for superb effortless soaring and also be a fast flier—and their feet not in the least like those of raptors; the claws on their large, reddish chicken-like feet are big but rather blunt, not like killing talons, and lack a powerful hind killing talon. Their legs and feet are not designed to snatch or even to clutch as raptors do, and those we watched when ours were eating did not try to grip the corpse, though they sometimes stood on part of it. We also noticed that they ate with small, neat bites. Another major difference between the hawk-eagle family and vulture is that the former has hard plates covering their legs and feet, while the latter has soft, red skin. In fact it is so soft that banding of them is forbidden, as the bands that were tried many years ago made the legs raw. The natural redness of the legs and feet is not always apparent because in order to cool themselves, vultures direct their semi-liquid droppings down their legs for evaporation, making them whitish; this is something that raptors would never do.

Whoever named the Turkey Vulture had a wry sense of humour. *Cathartes*, from the Greek *kartharsis*, “purgative, getting rid of,” and *aura*, “a subtle emanation or odour, as from flowers.” He



apparently had a close-up and personal encounter to commemorate.

However, recent DNA studies (such as the Sibley-Monroe system) have discovered that vultures are not closely related to hawks and eagles, but are instead in a separate Infraorder that includes herons, loons, grebes, gannets, anhingas, cormorants, pelicans, albatrosses and penguins, to name some of them. So surprising.**

Soaring and Gliding

The vultures are the CEOs of the bird world, rising late and going to work when conditions suit. They stay in their roost trees, preening and drying the dew from their outstretched wings until there is enough warmth to provide thermal air columns from the earth to soar on. Then up they go. Even at great heights a vulture is identified by the angle of the huge outspread wings—a shallow “V” or dihedral, that causes characteristic tilting and rocking on the warm air that spirals them upward. Designed to be excellent static soarers, they have an amazing ability to hold their great wingspan out at full stretch for long periods without flapping, and have wide slots—deep emarginations—at the tips of their wings that reduce air turbulence; instead of turbulence swirling around the whole end of the wing there are just nine little swirls around each separated primary feather-tip. Another unmistakable distant field-mark in flight is the oddly “headless” look, and only quite close or with binoculars can the slim, featherless head be seen.

And I discovered on a post-mortem one day that the radius and ulna—the long forearm bones—are hollow and air-filled (pneumatic): so far all birds I have examined have marrow in their forearm bones. It is generally said that “birds have hollow bones” but this inaccurately implies all bones. *Most* birds have little tunnels of air from their lungs into the body bones such as pelvis, ribs, coracoid, and most have some hollow *long* (limb) bones, but some don’t have any air-filled limb-bones at all, e.g. loons and gulls, who need more marrow factories to increase their oxygen-carrying capacity. For vultures, it seems that lightness is more important.

It is these extremely long forearms that make vultures, eagles and ospreys look hunch-shouldered at rest. What look like “shoulders” are really their wrists. But despite their great wings, vulture pectorals (the main lifting and flying muscles) are really small—a pigeon has larger ones. This means that getting that big body airborne is slow and takes a lot of effort, which is why many get killed on the roads attending the previous victims of vehicles.



forearm bones radius (white rings) and ulna (larger rings) sawed in half and bent backward on themselves to reveal the hollowness filled with air

Vehicles

Though some people may shrink from their great dark size, especially when they glide gently downward and appear menacing, vultures are of course entirely harmless to the living and are valuable recyclers of unwanted carrion, much of it killed beneath our wheels. As you drive along our happy highways, keep the other eye watching ahead for corpses and their silent mortuary attendants, remembering that though they are grand at soaring they are very slow and

heavy on lift-off. Being whacked by a 2kg body doesn't do the vehicle any favours either.

Each roadkill is often heralded by the low gliding arrival of a few observant crows or ravens, followed by hawks and vultures. Conscientious drivers stop to remove corpses. It's useful to carry a shovel or glove to toss or shove it into the ditch, where the scavengers can recycle in safety. In the past I had garbage bags too for the bodies of grouse, rabbits or squirrels (preferably unflattened) that made a welcome change of diet for the injured hawks, owls and vultures we cared for.



3460 mugshot showing distribution of jewelry.
Note perforate nostrils

The head

The face is bare but the forehead and top of the head is covered with soft newborn-baby black hair. The nostrils are pervious—one can see right through them from one side to the other—that might increase the ability to smell and allows easy breathing and lat-



another Turkey Vulture's face

er clean-up when the bird's beak, even its head, goes deeply into a corpse. Turkey Vultures have an excellent sense of smell (you have to wonder how they can stand the foul odour of their own regurgitation and the decomposing corpse leftovers in their nests!). They have even been useful indicators of

leaks in gas pipe-lines when a small amount of vile-smelling compound was added to the gas.

The 28 adults we have had had gray eyes and faces of vermilion red topped with

worried furrows and that soft black fuzz, and ending with a white-tipped beak. The red and white clearly identifies breeding maturity, even at a distance. Their gray eyes, and for some, their foreheads as well, are decorated with curious groups of ivory bas-relief decorations; to me, it is an elegant and fascinating face. The skin's red colour is not created by a pigment, but by blood—a rich blood supply in the thin skin itself, which we discovered when a vulture broke a toenail and bled heavily; his face became paler and paler till only the creases remained reddish in a putty-coloured face. We also have seen fear and stress cause temporary pallor. Two admissions had purple faces caused by poor oxygenation: their lungs were in bad shape.

The young have brown eyes and gray faces until they mature. Could the sombre colour be due to a pigment such as melanin, which masks the redness of their blood supply? How does dark vulture skin change to red as it matures?

Vulture heads, at least their crowns, are protected from cold by a blood counter-current circulatory *rete mirabile* system which, as it does in rooster combs, prevents freezing. We had one overwinter here once, and the cold didn't bother him.

What *do* those decorations signify?

The young have no facial decorations. The adults develop series of white knobby “jewels” emphasizing their eyes and their foreheads. Having taken several mug shots, I have noticed that the patterns vary somewhat. Some only have a few, others have groups under the eyes and on the foreheads. What could they be for? Do they identify a gender or an individual, or have they another purpose altogether?

One possible answer is that the decorations may be pleasurably sensitive to touch, or they give off a scent or a taste when stimulated (I haven't tried.) One winter we had a Red-tailed Hawk, a Roughlegged Hawk and a Turkey Vulture



The Boss



The unusual trio: The Boss, the mature Red-tail (centre) and a Rough-legged Hawk. Red-tail belly-bands tend to diminish with age

recuperating in the same aviary (the vulture was originally separated, but he gate-crashed their enclosure, so we just watched closely to see how they got on). The hawks shared much of the same buteo body-language, but the vulture was of a different culture; he definitely became The Boss, and when he hissed and growled or made feints with his beak at one of them they deferred. One day in spring, however, I saw a strange sight. The vulture and the Red-tail were roosting

on everyone's favourite long perch. The vulture sidled up to the Red-tail and gently began preening the hawk's lower eyelids! The Redtail, probably frozen with astonishment, stood like a statue, blinking rather rapidly. Imagine having that big red and white beak with its hook nibbling so close to the eyeball. It looked like a form of courting (no doubt the vulture was frustrated). The nibbled area was where the largest necklaces of white knobby decorations would be on a vulture, so perhaps that gesture is part of a courtship ritual.

Other behaviour

The trio made up their differences and all slept at night on that favourite perch. Surprisingly, the Boss would lie down crosswise, like a great black pillow; an odd sight, flanked by the standing hawks.

One aspect of vulture behaviour cannot be ignored: they regurgitate with great ease when alarmed, actually rather like Great Blue Herons do (they both feed their young by regurgitation) but with a difference. The foulness of it is beyond words. In twelve years of nursing I never smelled anything as awful, and even a few drops make me retch. The smell doesn't wash off for days, either; it reminds me of a time when I foolishly handled a Stinkhorn fungus, perhaps *phallus ravenelii*. Compared to either of them, I'll take skunk smell. So, for anyone who kindly takes in a wounded Turkey Vulture, watch closely for the signs of the inevitable upcoming and immediately get the bird outside. In fact, why not keep him outside anyway; he won't be as fearful out there.

I read a report somewhere that the acid or enzymes of the stomach are so powerful that anthrax bacilli passing through the gut are completely destroyed. In his book *Vulture*, Wayne Grady writes, "The acid in a vulture's stomach is so strong that botulism and cholera that would wipe out whole villages pass through vultures like milk through a baby." Perhaps the bacteria are overcome by the smell.



barf!

Gender

With the small number I have studied so far (31) there have been differences in facial patterns, but the patterns were not indicative of gender. Proven males and proven females (by post-mortem) weighed from about 1500g to 2100g; their wing-chord measurements (from the wrist to the tip of the longest primary, unflattened) were from about 500mm to 545mm, with the few females being slightly bigger. One-third of our admissions were released, so their gender was unknown. In short, I don't think one can tell a lady from a gent unless a vulture is surprised in the act of laying an egg.

Statistics

Causes of injuries: of those known, mostly vehicle collisions and shot. There was one definite leghold trap, and a few suspiciously like it

Causes of death: commonest (besides euthanasia for hopeless fractures) internal haemorrhage from smashed livers.

Commonest fracture: humerus. The coracoid, pelvis and femur were never fractured.

Of 30, one-third were released

Two Case Histories

case # 4783 Dec 1. Adult. 2145g. Transferred from ———Centre where it had been since Nov 24. The left ulna had been fractured in two places, the right proximal radius in one. All healed without limitation. The wings had been trussed up, which was totally unnecessary, as both these single-bone fractures have a natural internal splint—the partnering bone—and they heal perfectly well on their own, without any limitation of the bird’s natural comfort movements. Besides, I have never seen a vulture even try to flap in captivity. This adult had acquired damaged primary feathers from a small cage too long, and probably from the bandaging as well. We released the vulture the very next day.

4200 Aug 28, juvenile. Found in water at foot of cliff below a nest, 7pm. Fisherman put him up on a rock; next a.m. still there. Weak, could not be turned on back for XRay because of gasping. At first uninterested in food, but with much patient coaxing ate bits and began to regain appetite. A small dollop of vomit appeared late in day, a warning he was feeling more spirited. in two days self-feeding from chopped mice and hissing, growling occasionally. Weighed 1655g after copious vomit, which he re-ate quite happily, even while still bundled on scale! (Great Blue Herons do this too.. “Waste not, want not.”)



Natural amputation of middle toe from leghold trap. Note small, weak hind toe

On Day 4 I saw him have a sort of seizure, a sudden involuntary neck extension spasm, as if wiping back of his head on his back, followed by falling onto his back on ground and having hard time getting up again, but that was the only sign of closed-head injury I saw during his ten days with us. Whatever the brain-damage was it went away, his behaviour became normal and he was released by the fisherman and one of my assistants, who boated to site at foot of cliff where he had been found, climbed a path up the cliffside and let him go there. Another TUVU was flying nearby. Nest was seen in a sheltered rock site.

Leg and foot injuries

We had four vultures with dead legs or toes that we released after debridement and surgical removal of the dead bone to the appropriate joint. Of course the loss of a leg or foot is a handicap for any bird, but perhaps adaptable for a vulture, who spends only a small amount of his time on his foot/feet; as I mentioned, it even seems that they like

to sleep lying down, which distributes the body weight, so the chance of the good foot giving out is much reduced. Our experiences with one-footed raptors here in our latitude has been dismal. One foot is not much use for hunting, and the good foot soon gives out under the doubled weight load.

For the vulture, the loss might make mating difficult or impossible, but observations in the wild may tell us more. We received one in April, probably just back from migration, that had been living for some time using a “pegleg”



this one was “peg-legging it” with an old, fully healed tarsal amputation

the shaft of dry bone of the tarsus; he was starved. However, he may have suffered other injuries at the time of his amputation that prevented him from hunting.

Any reports, photographs or authentic anecdotes of one-legged vultures in the wild would be of help. In fact any anecdotes of vulture behaviour in the wild would be of help. As these birds are never banded, only a few specialized study groups using wing-tags have any chance of following them in the wild.

Post-mortem findings

- small outpouch in esophagus—a small crop
- flattened trachea
- a soft stretchy stomach, not a gizzard. Porcupine quills were found sticking right through the wall on one occasion, and that bird had a quill through part of his intestine too. One stomach was full of finely chopped bones. I opened most stomachs, and curiously, did not notice any unpleasant smell. Is the extreme foulness of the vomit an addition of something else?
- a small second stomach, like herons. Sometimes it had stiff hairs or fur from ingesta in it
- No caeca. This is an unusual finding; so far the only other species we have found lacking these lower intestinal outpouchings are Belted Kingfishers and Pileated Woodpeckers. And possibly hummingbirds, but their insides are practically microscopic; I could have missed them.
- Intestines of one adult male measured 1310mm long. The length varies with the diet; fish-eaters have longer, more slender ones—in the osprey, for example, we have measured thin intestines 4330mm long. Even little kingfishers have intestines of about 1000mm long.
- No endoparasites seen. Only one vulture had mites and lice, and only one had maggots, which were in a dead leg. Four others with dead limbs were free of maggots.
- Testes black, or blue; one had an orange one on one side, gray-blue one on the other
- The pneumatic radius and ulna mentioned above.

Note. The vulture's knee really is inside the body skin, so a tibial cast cannot be properly applied to include the knee joint.

Finding the Feast

For feasting, anything suits, as long as it is good and dead. They have been reported enjoying the corpses of squirrels, skunks, cattle, alligators, snakes, tadpoles, turtles, fish, and even grasshoppers. Normally they eat only meat, but in 1927, 62 vultures were reported in a field, eating the interiors of frost-softened pumpkins.

For over a hundred years people have argued whether vultures find their carcasses by sharp eyesight or keen sense of smell, and many ineffective experiments have been devised to satisfy human curiosity. Why the fuss? Vultures must use all their senses along with experience and interpretation of behaviour of other diurnal animals as they (the other animals) respond to the presence of death. A corpse is not a lonely thing for long; the entire local animal community becomes aware of its presence, and hundreds of subtle changes take place at the body. Mammals, crows, ravens, gulls, beetles and flies come to share, creating new sound and activity. From its lofty level in the sky a vulture takes in the whole scene, and they have spectacular eyesight.

Here are two cadaver-finding anecdotes of our own, one for nose and one for eye.

1) On a quiet country drive, a friend of ours passed a vulture that was tugging at a well-tied, fully intact bulging grain-bag discarded by the side of the road. He stopped the car and found the sack to be full of freshly dead catfish—that didn't even smell. (What a waste of life!)

About the young still in the nest: *never try to hand-raise them*. In the absence of adult vultures, their imprinting to their own species cannot be preserved by wearing sheets, making crude puppet-heads and so on. They know perfectly well that their food is coming from humans, they become immediately, irreversibly imprinted to

humans and follow them about like large flapping puppies. We have seen two examples of this; even after only a few days of disguised human "mothers" they thereafter paid no attention at all to adult Turkey Vultures acquired for them to associate with. They must be returned to the nest-site immediately.



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