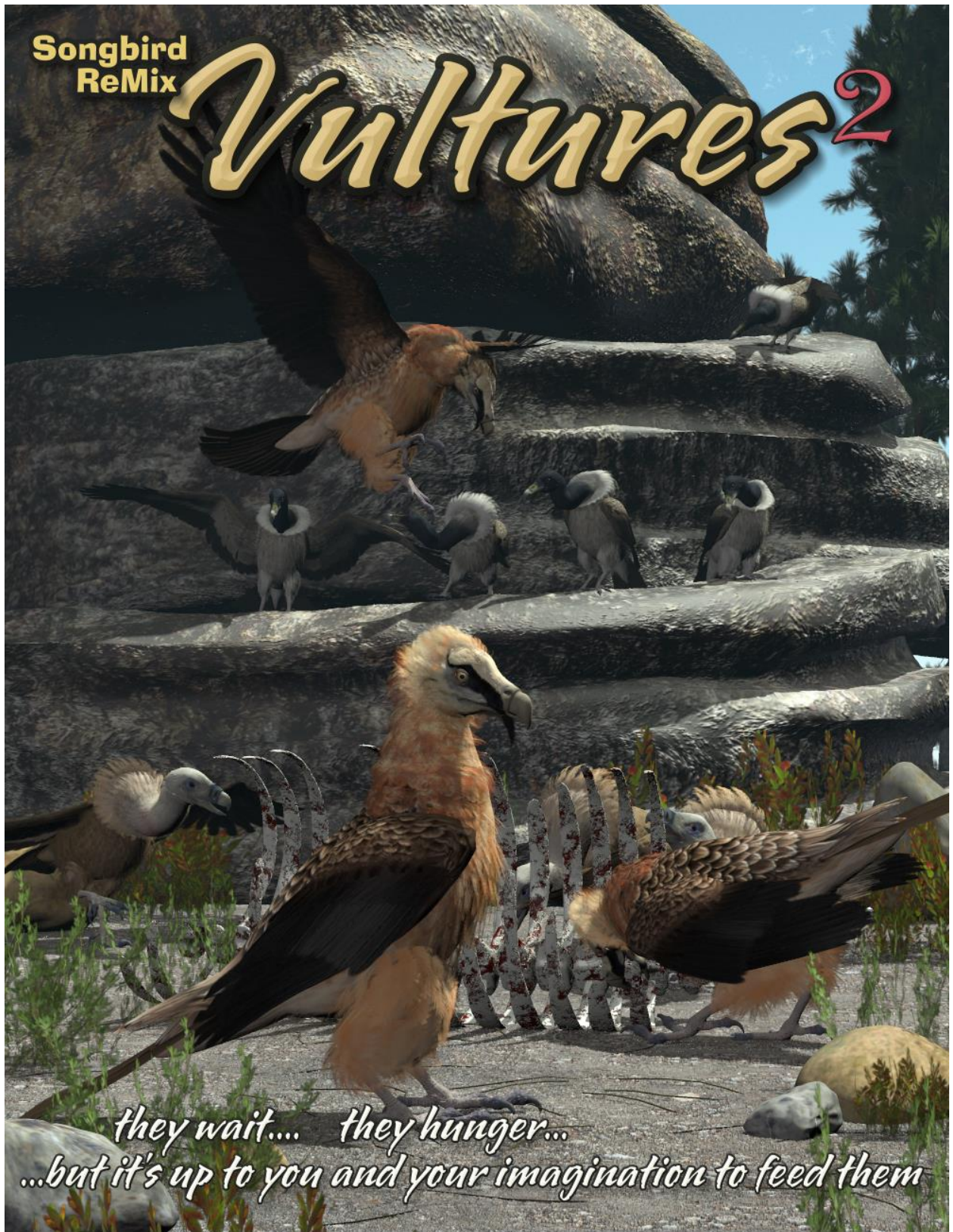


Songbird
ReMix

Vultures²



*they wait... they hunger...
...but it's up to you and your imagination to feed them*

Avian Models for 3D Applications
by Ken Gilliland

Songbird ReMix *Vultures2*

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Songbird ReMix *Vultures2*

Introduction

They wait... they hunger... ...but it's up to you and your imagination to feed them.

"Vultures 2" encompasses the remaining Vultures not found in the first volume. It contains 12 Old and New World vultures from the turkey-like King Vulture of South America to the uniquely bearded Lammergeier, to the high flying vultures of the Himalayas.

Whether your character is crawling across the desert or stumbling through snow drifts, this package guarantees you'll have a vulture flying overhead ready to take care of business.

Overview and Use




Select **Figures** in Runtime Folder and go to the **Songbird ReMix** folder. Here you'll find an assortment of files that are easily broken into 2 groups: **Conforming Parts** and **Bird Base models**. Let's look at what they are and how you use them:

- **Bird Base Models**
 - **<V> SBRM Vulture Base Model** - This model is specifically for use with Vultures. See the "V" icon in the lower right corner? This corresponds with characters in the Pose folders. All MAT/MOR files with the "V" icon use this model. Load this model first and then the appropriate *Conforming Parts* if needed.
 - **<V2> SBRM Short-necked Vulture Base Model** - This model is specifically for use with Vultures. See the "V2" icon in the lower right corner? This corresponds with characters in the Pose folders. All MAT/MOR files with the "V2" icon use this model. Load this model first and then the appropriate *Conforming Parts* if needed.
- **Conforming Parts** - (All Conforming Crests have alpha-numeric icons in the lower right corners such as "C02", "C07" or "T4". This corresponds with characters in the Pose folders. All MAT/MOR files with the same icon use that

particular Conforming Part. **Be sure to read this:** Most conforming parts are Crest which covers the head part. When posing the Base Model, the Conforming Part will follow any Bend, Twist or Rotate Commands. It will not obey any **SCALE** or **MORPH** commands you give the Base Model. You must manually scale the Conforming Part and with morphs such as “OpenBeak” you must also set it’s counterpart in the head part of the Conforming Crest. So Now let’s look at what’s included in Conforming Parts:

- **<C34> Crest 34** for use with the King Vulture

Conforming Crest Quick Reference

Load Model(s)	To Create... (apply MAT/MOR files)
 <p>Vulture Base Songbird ReMix 3</p>	<ul style="list-style-type: none"> • Lesser Yellow-headed Vulture • Greater Yellow-headed Vulture • Himalayan Vulture • Indian Vulture • Slender-billed Vulture • White-rumped Vulture • White-backed Vulture • Cape Vulture • Hooded Vulture • Rüppell's Vulture
 <p>Vulture Base Conforming Crest 34 for the Vulture Songbird ReMix C34</p>	<ul style="list-style-type: none"> • King Vulture
 <p>Short-necked Vulture Base Songbird ReMix 3</p>	<ul style="list-style-type: none"> • Lammergeier or Bearded Vulture

Creating a Songbird ReMix Bird

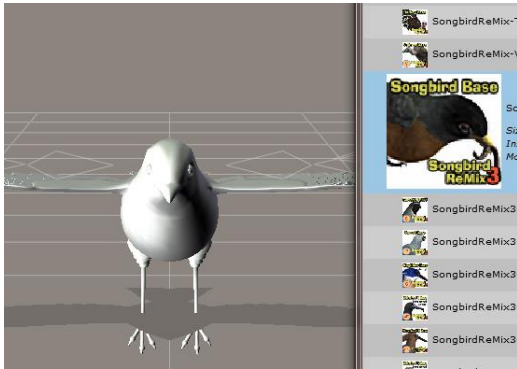
1. Choose what you want to load. For this example, we'll create a Vulture species.
2. Load Poser or DAZ Studio and select **FIGURES** and the Songbird ReMix folder. DAZ Studio users will select the "Poser Formats" → "My Library" → "FIGURES" → "Songbird ReMix".
3. Because all of the Vultures use a "Vulture" base model we'll load either the SongbirdReMix-Vulture or the SongbirdReMix-Vulture2.
4. Go to the **POSES** folder and **Songbird ReMix** Master folder, then select the appropriate Songbird Remix library. This again, for DAZ Studio users will be found in the "Poser Formats" file section.
5. Select one of the Vulture Species and click on it to apply it to the Songbird ReMix base model. This species pose contains morph and texture settings to turn the generic model into the selected Vulture. It will automatically apply the correct DAZ Studio material settings if you are using DAZ Studio.

Updates and Freebies

The Songbird ReMix series is constantly growing and improving. New morphs and additions to upcoming and future products often end up benefiting existing sets with new geometry, morphs and textures.

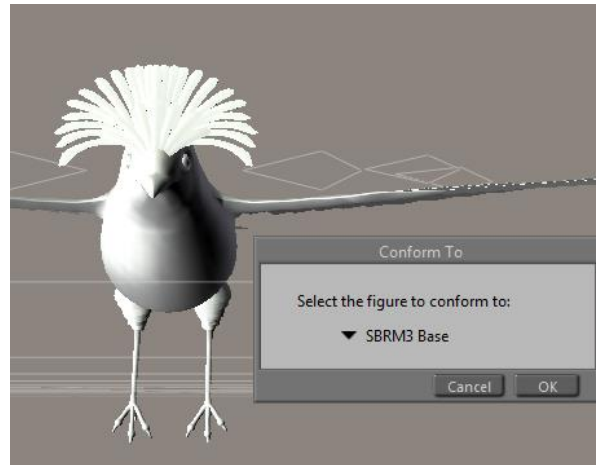
Songbirdremix.com always has the latest updates and additions to existing Songbird ReMix products (often months before they are updated at DAZ), plus the latest digital and real bird news, tutorials, videos, all the Field Guides, free bird characters, props and much more at www.songbirdremix.com

How to build a Songbird ReMix Character with a Conforming Crest in Poser

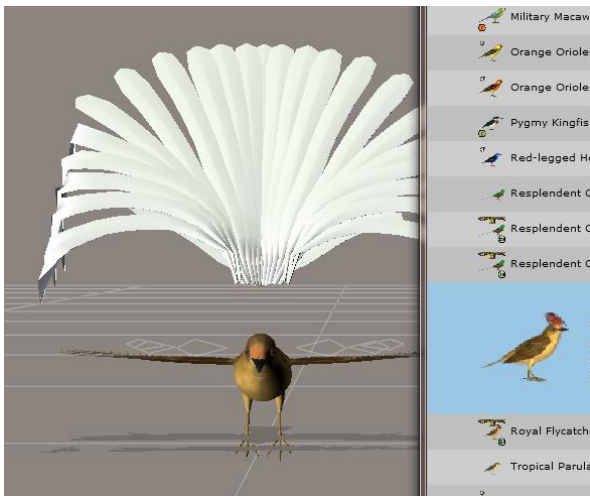


1. In the Figures section, load a Bird base Model. Then load the appropriate conforming part for the bird you're trying to create.

2. **Conform** it to the bird base model.



3. Select the Base Model and go to **POSES**. Select and apply the appropriate Character/Material pose setting for the bird you're creating.



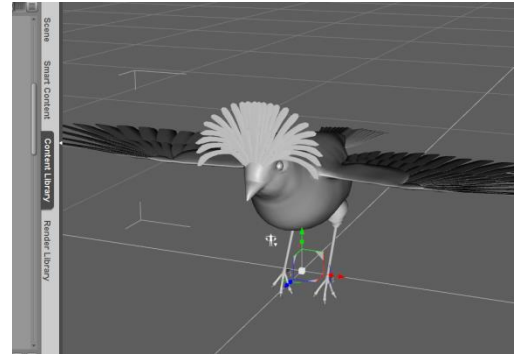
4. The Conforming part will look wrong. That's okay—we're going to fix that now. Select the conforming part and apply appropriate Character/Material pose for the part.

5. Voila! Your bird is done. Just remember to select the bird base when posing and often there are additional morphs in the conforming part you can use.

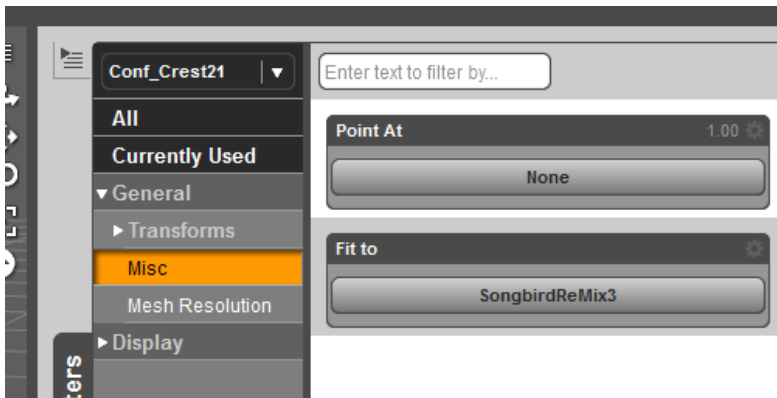


How to build a Songbird ReMix Character with a Conforming Crest in DAZ Studio

In the **Runtime** folder, select **Figures** and load the Songbird ReMix Model and the appropriate Conforming Crest in Studio. Select the Conforming Crest by selecting on the screen or in the **Scene** Tab.



Now, using the "FIT TO" command in the Parameters Tab, Select the Songbird ReMix Model. Go back to the **Scene** Tab and select the Songbird ReMix Model.

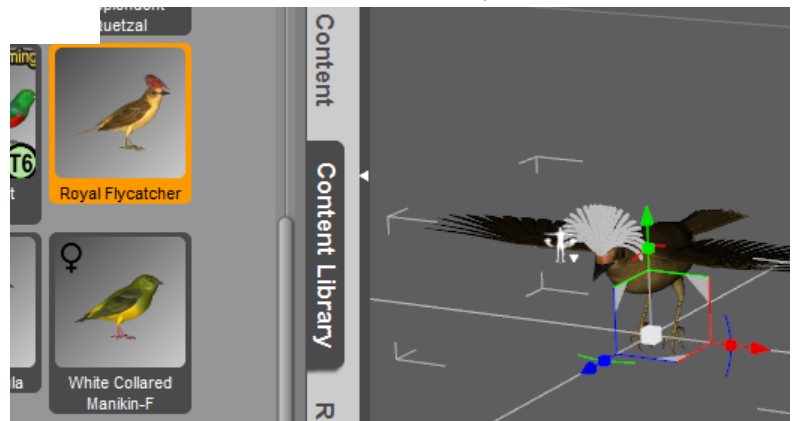


Select the Studio **Content** Folder and go to the **Animals : SBRM :** **!CreateYour Own : Characters** folder and select the appropriate Songbird Remix library. Apply the Character setting to the bird base. It will probably reduce the size significantly and change the shape of the bird.

Now that the bird is sized, select the

conforming part and apply the conforming part character settings.

Voila! Your bird is done. Just remember to select the bird base when posing and often there are additional morphs in the conforming part you can use.



Tips and Tricks

Being Hip in Poser... you may want to turn off IK for the feet. While IK can affect preset poses and does affect leg movement, IK can be very helpful in **HIP** XYZ rotations and translation.

Displacement... “Vultures” do use displacement maps. You must turn on displacement in the Poser render settings; DAZ|Studio does this automatically.

Being Fluffy... the collar and fluff morphs in **NECK1-3** can be helpful in awkward looking neck/hip bends. Try using neck morphs “Cllr-BottomBendExpand”, “Cllr-TaperBottom”, and various “Fluffs”. You’ll find “FluffUp” morphs very helpful, too.

Varying individuals... Since most vultures feed together you’ll probably want to include more than one Vulture in a scene. You can vary appearance slightly with the arsenal of head and neck morphs included. In **HEAD**, try slight adjustments to beak and facial hair.

Jaw Gaps and Tongue Poke-throughs... Because of the generic nature of the Vulture some species may exhibit jaw gaps and lower beak poke through. Several morphs in the **HEAD’s** Beak section will correct this. “BkB-Fix 1” and “2” control the lower beak width. “Bk-CornerBack” or “Bk-CornerDown”, as well as the Beak joint controller will help on Jaw gaps. Tongue poke-through can be corrected by using the “Throat” sections’ “Jaw-CloseLumpFix” Morph

Throat Issues... Sometimes, the Throat hair bunches together to form a straight line in extreme bend-down angles with the head. The **HEAD** morph (in Hair Morphs Section) called “ChinFuzzGone” will take care of it. Chin hairs showing up in the throat can be corrected by “ChinFuzz-Fix”

Field Guide

New World Vultures

King Vulture
Lesser Yellow-headed Vulture
Greater Yellow-headed Vulture

Old World Vultures

Lammergeier or Bearded Vulture
Himalayan Vulture
Indian Vulture
Slender-billed Vulture
White-rumped Vulture
White-backed Vulture
Cape Vulture
Hooded Vulture
Rüppell's Vulture

General Information on Vultures

(edited from Wikipedia.com by Ken Gilliland)

Vultures are scavenging birds, feeding mostly on the carcasses of dead animals. They are found on every continent except Antarctic, and Oceania.

A particular characteristic of many vultures is a head devoid of feathers. Research has shown that the bare skin may play an important role in thermoregulation.

A group of vultures, resting in trees, is occasionally called a venue. When circling in the air a group of vultures is called a kettle. In some English Poetry vultures are referred to by the word *Geier*, which is taken from the German language and does not have a precise meaning in ornithology.

Classifications

Vultures are classified into two groups: **Old World vultures** and **New World vultures**. The similarities between the two different groups are due to convergent evolution.

Old World vultures are found in Africa, Asia, and Europe. They belong to the family *Accipitridae*, which also includes eagles, kites, buzzards, and hawks. Old World vultures find carcasses exclusively by sight.

New World vultures and condors are found in warm and temperate areas of the Americas. They are not closely related to the superficially similar *Accipitridae* (Old World Vultures), instead they belong in the family *Cathartidae*, which is quite close to the storks. Several species of these New World vultures have a good sense of smell, unusual for raptors, and are able to smell the dead they focus upon from great heights.

Feeding

Vultures seldom attack healthy animals, but may kill the wounded or sick. Vast numbers have been seen upon battlefields. They gorge themselves when prey is abundant, until their crop bulges, then they sit, sleepy or half torpid, to digest their food. They do not carry food to their young in their claws, but disgorge it from the crop. These birds are of great value as scavengers, especially in hot regions. Botulinum toxin, the toxin that causes botulism, does not affect them, and they can eat rotten flesh containing anthrax and cholera bacteria. When a vulture's dinner has too thick of a hide for his beak to open, he waits for another scavenger to eat first.

In India and Pakistan Diclofenac poisoning has caused the vulture population to decline by up to 95% in the past decade, and two or three of the species of vultures in South

Asia are nearing extinction. Farmers administer Diclofenac (a NSAID: non-steroidal anti-inflammatory drug) to keep farm animals that are ill or in pain working longer. But if the ill animals die, their carcasses, which still contain diclofenac, are left out in the open, so the vultures can tidy up. However, since the vultures are sensitive to diclofenac, they suffer kidney failure, visceral gout, and death as a result of this poisoning.

Meloxicam (another NSAID) has been found to be harmless to vultures and should prove an acceptable alternative to diclofenac. But, although the Government of India banned diclofenac, over a year later, in 2007, it was continuing to be sold and it is still a problem in other parts of the world.

The decline in vultures has led to hygiene problems in India as carcasses of dead animals now tend to rot or be eaten by rats or wild dogs, rather than be tidied up by vultures. Since rabies among these other scavengers is a major health threat, India, as a result has one of the world's highest incidences of rabies.

In certain communities, such as the Parsi, the decline in the vulture population causes particular problems, for the inhabitants there practice sky burials. In these the human dead are put on the top of Towers of Silence and are eaten by vultures, who leave only dry bones.

In Culture

Because the Nubian vultures, in Southern Africa, are always seen in pairs, mother and child remaining closely bonded together, their name is synonymous with the term applied to lovers. Besides pairing, bonding, protecting, and loving being essential attributes associated with this vulture, it is also known for its size and its ability to soar high in the sky.

The Egyptians also considered the vulture to be an excellent mother, with its wide wingspan providing an all-encompassing and protective cover to her infants. The white Egyptian vulture was the animal picked to represent Nekhbet, the mother goddess and protective patron of the southern part of Upper Egypt. The vulture hieroglyph was the uniliteral sign used for the glottal sound including words such as mother, prosperous, grandmother, and ruler.

Although the vulture plays an important natural role, in the Western world, its image is quite negative, with 'vulture' used as a metaphor for those who prey on the weak or dying, with associated negative connotations of cowardice and selfishness.

Common Name: King Vulture

Scientific Name: *Sarcoramphus papa*

Size: 27-32 inches (67-81 cm); **Wingspan:** 48-80 inches (120-200 cm)

Habitat: Central and South America; The King Vulture inhabits an estimated 14 million km² (5.4 million mi²) between southern Mexico and northern Argentina. In South America, it does not live west of the Andes, with the exception of western Ecuador, north-western Colombia and far north-western Venezuela.



It primarily inhabits undisturbed tropical lowland forests as well as savannas and grasslands where these forests are nearby. Also it is often seen near swamps or marshy places in the forests. King Vultures generally do not live above 1500 m (5000

ft), although east of the Andes they have been seen at 2500 m (8000 ft) altitude, and rarely they have been recorded up to 3300 m (10000 ft).

Status: Least Concern. **Global Population:** 670-6700 mature individuals. Despite the fact that the population trend appears to be decreasing, the decline is not believed to be sufficiently rapid to approach the thresholds for Vulnerable under the population trend criterion.

Diet: Wide variety of carrion. Since King Vultures lack the ability to smell carrion, they follow the Greater Yellow-headed Vultures to carcasses. There the King Vulture tears open the skin of the dead animal. This allows the smaller Greater Yellow-headed Vulture access to food, as its bill is not strong enough to tear the hide of larger animals. This is an example of mutual dependence between species. Due to its smaller size the Greater Yellow-headed Vultures are generally displaced from carcasses by the larger Turkey Vultures and King Vultures.

Nesting: Its body is largely white, with contrasting black remiges and a blackish neck ruff. The head and neck are bare and covered in protruding skin folds with intricate patterns of purple, orange, and yellow. Young birds are entirely dark, and attain the white plumage and colorful head and neck of adults gradually over the course of their first four years.

The reproductive behavior of the King Vulture is poorly studied in the wild, so much of the knowledge about them has been gained from observing birds in captivity. An adult King Vulture sexually matures when it is about four or five years old, with females maturing slightly earlier than males. The birds mate for life and mainly breed during the dry season.

The female generally lays a single unmarked white egg in its nest in the hollow of a tree. To ward off potential predators, the vultures keep their nests foul-smelling. The parents share incubation of the egg for the 52 to 58 days before it hatches and brooding duties until the chick is about a week old, after which they often stand guard rather than brood.. The young are semi-altricial—they are helpless when born but are covered in downy feathers and their eyes are open at birth. Developing quickly, the chicks are fully alert by their second day, and able to beg and wriggle around the nest, and preen themselves and peck by their third day. They start growing their second coat of white down by day 10, and stand on their toes by day 20. From one to three months of age, chicks walk around and explore the vicinity of the nest, and take their first flights at about three months of age.

Cool Facts: It is the only surviving member of the genus *Sarcoramphus*, although fossil members are known. The Kern Vulture (*Sarcoramphus kernense*), lived in southwestern

North America during the mid-Pliocene (Piacenzian), some 3.5–2.5 million years ago). It was a little-known component of the Blancan/Delmontian faunal stages.

There are two theories on how the King Vulture earned the "King" part of its common name. The first is that the name is a reference to its habit of displacing smaller vultures from a carcass and eating its fill while they wait. An alternative theory reports that the name is derived from Mayan legends, in which the bird was a king who served as a messenger between humans and the gods. This bird was also known as the "White Crow" by the Spanish in Paraguay. It was called *cozcacuauhtli* in Nahuatl, derived from *cozcatl* "collar" and *cuahtli* "bird of prey".

The King Vulture is one of the most common species of birds represented in codices of the Mayans. The glyphs are easily distinguishable by the knob on the bird's beak and by the concentric circles that make up the bird's eyes. Sometimes the bird is portrayed as a god with a human body and a bird head. According to Mayan mythology, this god often carried messages between humans and the other gods. It is also used to represent *Cozcaquauhtli*, the thirteenth day of the month (13 Reed) in the Mayan calendar.



Common Name: Lesser Yellow-headed Vulture
Scientific Name: *Cathartes burrovianus*

Size: 21-26 inches (53-66 cm); **Wingspan:** 59-65 inches (150-165 cm)

Habitat: Central and South America; found from eastern Mexico south through Central America, and patchily in South America east of the Andes and south to Uruguay.

Lesser Yellow-headed Vultures prefer open areas with low, seasonally wet grasslands.



Status: Least Concern.

Global Population:

Unknown amount of mature adults. The population trend appears to be stable, and hence the species does not approach the thresholds for Vulnerable under the population trend criterion.

Diet: Wide variety of carrion. Usually last in the Vulture pecking order; it is dependent on larger vultures, such as the King Vulture, to open the hides of larger animal carcasses as its bill is not strong enough to do this.

Nesting: Its plumage is black with a green sheen. The throat, head, including the sides of the head, and neck are featherless. The

skin is yellow, with a reddish forehead and nape and a gray-blue crown. The irises of its eyes are red, its legs are white, and its beak is flesh-colored. The eye has a single incomplete row of eyelashes on the upper lid and two rows on the lower lid. The tail is

rounded and relatively short for a vulture; the tip of the closed wing extends beyond the tail. Immature Lesser Yellow-headed Vultures have browner plumage, a dusky head, and a white nape.

Lesser Yellow-headed Vultures do not build nests, but rather lay eggs on the ground, cliff ledges, the floors of caves, or in the hollow of a tree. Eggs are cream colored and heavily blotched with brown and gray spots, particularly around the larger end. Two eggs are generally laid. The chicks are blind, naked and relatively immobile upon hatching. The chicks do not grow their down feathers until later. The parents feed their young by regurgitating pre-digested food into their beak, where the chicks then drink it. Young fledge after two to three months.

Cool Facts: The Lesser Yellow-headed Vulture closely resembles the Greater-Yellow-headed Vulture (*Cathartes melambrotus*), and overlaps with that species in northern South America. Both species are largely black with yellowish heads. The Lesser has less feathering on the neck, a shorter tail, and browner plumage tones than the Greater.

The Lesser Yellow-headed Vulture was first described in 1845 by John Cassin. It is sometimes recognized as having two subspecies. The first, *Cathartes burrovianus urubitinga*, described by Austrian ornithologist August von Pelzeln in 1851, is the larger of the two and is found from Argentina north to Colombia, while the nominate subspecies, *Cathartes burrovianus burrovianus*, is smaller and found from northwestern South America through Central America to Mexico. The Lesser Yellow-headed Vulture's genus, *Cathartes*, means "purifier" and is from the Latinized form of the Greek *kathartēs* or *καθαρτης*.

Common Name: Greater Yellow-headed Vulture
Scientific Name: *Cathartes melambrotus*

Size: 25-30 inches (64-75 cm); **Wingspan:** 65-70 inches (166-178 cm)

Habitat: South America; found in the Amazon Basin of tropical South America; specifically in south-eastern Colombia, southern and eastern Venezuela, Guyana, French Guiana, Suriname, northern and western Brazil, northern Bolivia, eastern Peru and eastern Ecuador. It is not found in the Andes, in the lowlands west or north of the Andes, in the relatively open regions of northern South America, eastern South America, or in the southern subtropical regions.



It is common in heavily forested regions. It may wander over grasslands, but rarely strays far from forested areas, which provide shelter and nesting areas.

Status: Least Concern. **Global Population:** Unknown amount of mature adults. Despite the fact that the population trend appears to be decreasing, the decline is not

believed to be sufficiently rapid to approach the thresholds for Vulnerable under the population trend criterion.

Diet: Wide variety of carrion. Usually last in the Vulture pecking order; it is dependent on larger vultures, such as the King Vulture, to open the hides of larger animal carcasses as its bill is not strong enough to do this.

Nesting: The sexes are outwardly similar. Its plumage is black with a green or purple sheen. The throat and the sides of the head are featherless. The skin on the head ranges in color from deep yellow to pale orange with a blue crown. The nape and the area near the nostrils are pale pinkish. The undersides of the wings are black, while the flight feathers are a lighter shade. The quills of the eleven primary feathers appear to be white when seen from above. The tail is rounded and long for a vulture, extending to or slightly beyond the tip of the closed wing. The head is dull greyish in juveniles, which otherwise resemble adults.

The irises of its eyes are red, its feet are black, and its beak is flesh-colored. The eye has a single incomplete row of eyelashes on the upper lid and two rows on the lower lid. Its beak is thick, rounded, and hooked at the tip. Because of its habit of urohidrosis, the scaly portions of its legs are often streaked white with uric acid. The front toes are long with small webs at their bases and are not adapted to grasping. The opening of the nostril is longitudinal and set in a soft cere, and the nostril lack a septum.

They do not build nests, but rather lay eggs on the ground, cliff ledges, the floors of caves, or in the hollow of a tree. Eggs are cream colored and heavily blotched with brown spots, particularly around the larger end. Two eggs are generally laid. The chicks are blind, naked and relatively immobile upon hatching. The chicks do not grow their down feathers until later. The parents feed their young by regurgitating pre-digested food into their beak, where the chicks then drink it. Young fledge after two to three months.

Cool Facts: Due to confusion with the smaller Lesser Yellow-headed Vulture (*Cathartes burrovianus*), the Greater Yellow-headed Vulture was not described as a species until 1964. It differs in appearance from the similar Lesser Yellow-headed Vulture in several ways. It is larger than the Lesser Yellow-headed Vulture, with a longer, broader tail. The plumage is a dark, glossy black in contrast to the Lesser Yellow-headed Vulture's browner plumage. Its legs are darker in color and its head is more yellow and less orange/pink than that of the Lesser Yellow-headed Vulture. Its wings are broader and its flight is also steadier. Unlike the other members of the genus

Cathartes, the Greater Yellow-headed Vulture has relatively dark inner primaries, which contrast slightly with the paler secondaries and outer primaries. The Greater Yellow-headed Vulture prefers to live in forests while the Lesser Yellow-headed Vulture prefers to inhabit savannas, and it is more heavily built than the Lesser Yellow-headed Vulture. The Greater Yellow-headed Vulture also has the unusual habit of urohydrolysis, in which it urinates or defecates on its legs to cool them evaporatively.



Common Name: Lammergeier or Bearded Vulture
Scientific Name: *Gypaetus barbatus*

Size: 37-49 inches (94-125cm); **Wingspan:** 90-112 inches (231-283 cm)

Habitat: Europe, Africa and Asia; found in mountainous regions from Europe through much of Asia and Africa. In Eurasia, it's found in the Pyrenees, the Alps, the Caucasus region, the Zagros Mountains, the Alborzs, the Altai Mountains, the Himalayas, western and central China, Israel and the Arabian Peninsula. In Africa, it is found in the Atlas Mountains, the Ethiopian Highlands and down from Sudan to northeastern Zaire, central Kenya and northern Tanzania. An isolated population inhabits the Drakensberg of South Africa.



This species is almost entirely associated with mountains and inselbergs with plentiful cliffs, crags, precipices, canyons and gorges. They are also often found near alpine pastures and meadows, montane grassland and heath, steep-sided, rocky wadis, high steppe and occasionally around forests. They seem to prefer desolate, lightly-populated areas where predators who provide many bones, such as wolves and Golden eagles,

have healthy populations. In Ethiopia, they are now common at refuse tips on the outskirts of small villages and towns.

Bearded Vultures normally reside above 2,000 m (6,600 ft). Typically they are found around or above the tree line which are often near the tops of the mountains: in Europe up to 2,000 m (6,600 ft), in Africa up to 4,500 m (14,800 ft) and in central Asia up to 5,000 m (16,000 ft). They have even been observed living at altitudes of 7,500 m (24,600 ft) on Mount Everest and been observed flying at a height of 24,000 ft (7,300 m). Occasionally they descend to 300–600 m (980–2,000 ft), but they are rare below an elevation of 1,000 m (3,300 ft).

Status: Least Concern. **Global Population:** 1300-6700 mature individuals. Despite the fact that the population trend appears to be decreasing, the decline is not believed to be sufficiently rapid to approach the thresholds for Vulnerable under the population trend criterion. Poisoning, both accidental and targeted, as well as habitat degradation, disturbance of breeding sites and collision with power lines are considered to be the main threats.

Diet: Wide variety of carrion. It usually disdains the actual meat, living on a diet that is typically comprised of 85-90% bone marrow. This is the only living bird species that specializes in feeding on marrow. The Lammergeier has learned to crack bones too large to be swallowed by carrying them in flight to a height of 50–150 m (160–490 ft) above the ground and then dropping them onto rocks below, which smashes them into smaller pieces and exposes the nutritious marrow. They can fly with bones up to 10 cm (3.9 in) in diameter and weighing over 4 kg (8.8 lb), or nearly equal to their own weight. After dropping the large bones, the Bearded Vulture spirals or glides down to inspect them and may repeat the act if the bone is not sufficiently cracked. This learned skill requires extensive practice by immature birds and takes up to seven years to master. Its old name of Ossifrage ("bone breaker") relates to this habit. Occasionally perched birds have been observed trying to break bones (usually of a medium size) by hammering them with their bill, directly into rocks.

Nesting: In Eurasia, vultures found around the Himalayas tend to be slightly larger than those from other mountain ranges. Females are slightly larger than males. Bearded Vultures do not have bald heads. This species is relatively small headed, although its neck is powerful and thick. It has a generally elongated, slender shape, sometimes appearing bulkier due to the often hunched back of these birds. The gait on the ground is waddling and the feet are large and powerful. The adult is mostly dark gray, rusty and

whitish in color. It is gray-blue to gray-black above. The creamy-colored forehead contrasts with a black band across the eyes and lores which bristles under the chin, forming a black beard that gives the species its English name. The variably orange or rust on the head, breast and leg feathers of the Bearded Vultures is actually cosmetic. This coloration may come from dust-bathing, rubbing mud on its body or from drinking in mineral-rich waters. The tail feathers and wings are gray. Juvenile birds are dark black-brown over most of their bodies, with a buff-brown breast. They take five years to reach full maturity.

The Lammergeier is silent, apart from shrill whistles in their breeding displays and a falcon-like '*cheek-acheek*' call made around the nest.

The Bearded Vulture occupies an enormous territory year-around. It may forage over two square kilometers each day. The breeding period is variable, being December through September in Eurasia, November to June in the Indian Subcontinent, October to May in Ethiopia, throughout the year in eastern Africa and May to January in southern Africa. Although generally solitary, the bond between a breeding pair is often quite close. Seldom have cases of polyandry been recorded in the species. The territorial and breeding display between Bearded Vultures is often spectacular, involving the showing of talons, tumbling and spiraling while in solo flight. The large birds also regularly lock feet with each other and fall some distance through the sky together.

The nest is a massive pile of sticks with a covering of various animal matter from food. When first constructed it measures around 1 m (3.3 ft) across and 69 cm (27 in) deep. After repeated uses this increases to 2.5 m (8.2 ft) across and 1 m (3.3 ft) deep. The female usually lays a clutch of 1 to 2 eggs, though 3 have been recorded on rare occasions. They are incubated for 53 to 60 days. After hatching the young spend 100 to 130 days in the nest before fledging. The young may be dependent on their parents for up to 2 years. So on a regular basis the parents are forced to nest in alternate years. Typically, the Bearded Vulture nests in caves on steep rock walls, on ledges and rock outcrops. This makes their nests very difficult for nest-predating mammals to access.

Cool Facts: It is the only member of the genus *Gypaetus*. Traditionally, the Lammergeier has been considered an Old World vulture, but it and its closest living relative, the Egyptian Vulture (*Neophron percnopterus*), to which it is only distantly related, are not closely related to vultures, actually they form a minor lineage to the Accipitridae (Hawk family). Although dissimilar, Egyptian and Bearded Vultures both have a lozenge-shaped tail and feathered neck that is unusual among birds of prey.

Common Name: Himalayan Griffon Vulture
Scientific Name: *Gyps himalayensis*

Size: 41-43 inches (103-110 cm); **Wingspan:** 102-120 inches (260-315 cm)

Habitat: Asia; found mainly in the higher regions of the Himalayas, the Pamirs, Kazakhstan and on the Tibetan Plateau. Juvenile birds may however disperse further south and vagrants have been recorded in Thailand, Burma, Singapore and Cambodia.

Sightings of the Himalayan Vulture have been recorded at incredible heights. It is capable of weathering the low air pressure and cold temperatures that are found at higher altitudes because it is a mountain dwelling bird..

Status: Least Concern.

Global Population:

Unknown amount of mature individuals. They are susceptible to toxicity induced by diclofenac, a drug whose residues in domestic animal carcasses has possibly led to rapid declines in populations of other *Gyps* vultures across Asia. However, the Himalayan Griffon Vulture populations have not shown signs of rapid decline, although reductions in nesting birds have been noted in some parts of its range in Nepal.



Diet: Wide variety of carrion. On the Tibetan Plateau 64% of their diet is obtained from dead domestic yak. They feed on old carcasses sometimes waiting a couple of days near a dead animal. They have been observed feeding on pine (*Pinus roxburghii*) needles, an unexplained behavior that cannot be for obtaining nutrition.

Nesting: The Himalayan vulture is considered the largest and heaviest bird found in the Himalayas. Adults have a ruff that is long and pale brown with white streaks. The ruff feathers are long and spiky, the head is covered in down and the legs are feathered. The upper-side is unstreaked buff, has a pale blue facial skin (dark blue in *Gyps fulvus*), a yellowish bill and pinkish legs. Younger birds have pale parts to the bill. In flight the long fingers are splayed and there is a pale patagial stripe on the under-wing. The wing and tail feathers are dark and contrast with the pale coverts and body. The feathers on the body have pale shaft streaks.

Himalayan Vultures are very social, like all members of the griffon family. They enjoy feeding, roosting, and even nesting in colonies. The breeding season begins in January. The nest is a platform of sticks placed on an inaccessible ledge on a cliff. Several pairs may nest on the same cliff face. A single white egg marked with red splotches is the usual clutch. In captivity the incubation period was about 54-58 days. The young birds stay on with the parents for six to seven months.

Cool Facts: The Himalayan Griffon Vulture perches on crags, favorite sites showing white marks from regular defecation. They bask in the sun on rocks. They soar in thermals as they are not capable of sustained flapping flight. Flocks may follow grazers up the mountains in their search for dead animals.

The Himalayan vulture plays a very important role in the history of the Tibetan culture. For most of the year, it was not possible to bury the dead in the rocklike frozen soil. Neither could bodies be cremated, as wood was both rare and expensive. After funeral rites were performed in the home, the body of the dead was taken to the "disposer of bodies." This individual was responsible for feeding the body to the vultures, and ensuring that every last bit of it was consumed. With the Griffons and Cinereous to take care of the meat, and the Lammergeiers to finish off the bones, there was never any problem disposing of the dead. It was also key to the Buddhist reincarnation theory that souls could not be born into a new body until their old one was destroyed. This method is still practiced today, though on a much smaller scale.

Common Name: Indian Vulture
Scientific Name: *Gyps indicus*

Size: 31-41 inches (80-103 cm); **Wingspan:** 77-92 inches (196-238 cm)

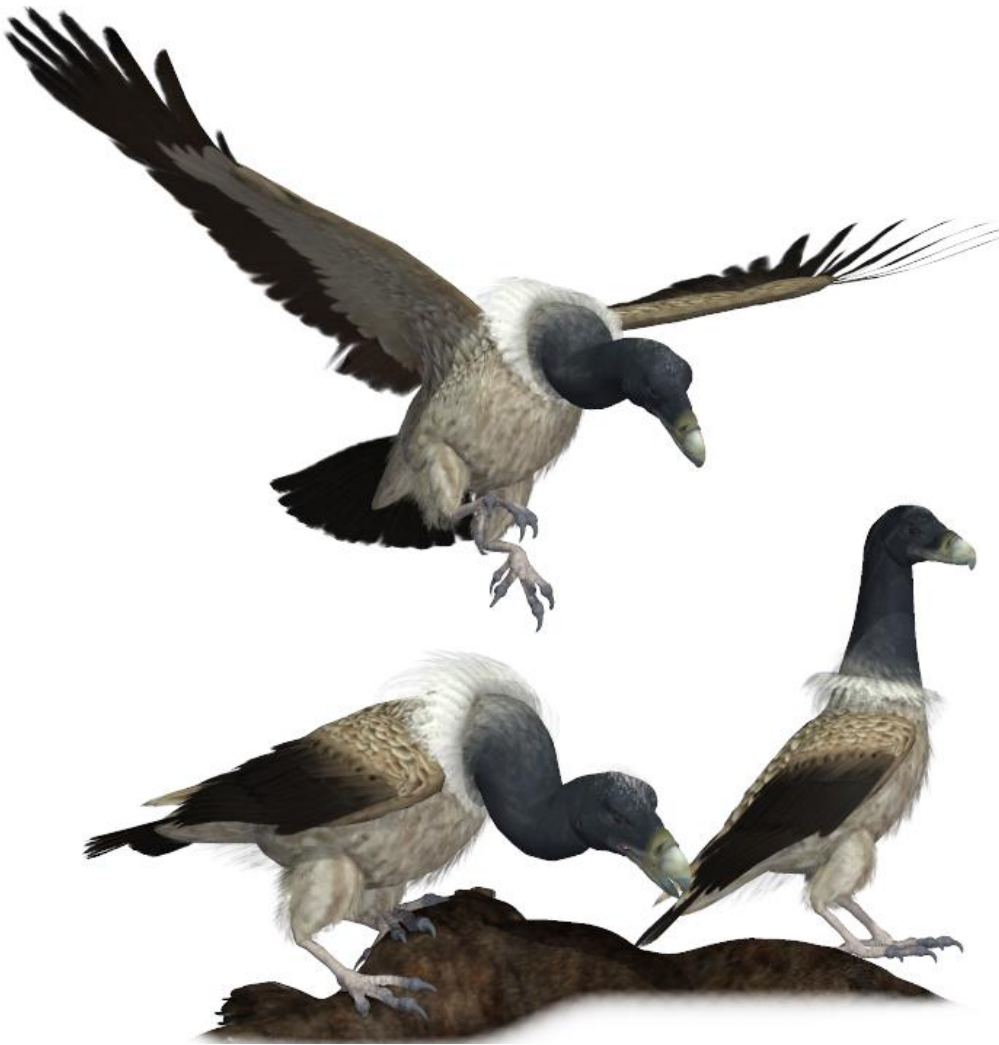
Habitat: Asia; south-east Pakistan and peninsular India south of the Gangetic plain, north to Delhi, east through Madhya Pradesh, south to the Nilgiris, and occasionally further south.

It is found in cities, towns and villages near cultivated areas, and in open and wooded areas.

Status: Critically Endangered. **Global**

Population: 45,000 mature individuals.

Survey results indicate that declines throughout the Indian Subcontinent probably began in the 1990s and were extremely rapid, resulting in an overall population decline of greater than 97% over a 10-15 year period. By mid-2000, Gyps vultures were



being found dead and dying in Pakistan and throughout India, and major declines and local extirpations were being reported. The anti-inflammatory drug diclofenac, used to treat domestic livestock, has been identified as the cause of mortality, with renal failure resulting in visceral gout in the vast majority of examined vultures. Modeling has shown that to cause the observed rate of decline in the species just one in 760 livestock carcasses need contain diclofenac residues.

Despite awareness programs to educate locals about the association between diclofenac and vulture mortality, a survey in Nepal indicated that the vast majority of people still do not link diclofenac use to a decline in vulture populations. This potentially leads to a slower change to meloxicam (a safe alternative). A second veterinary drug in use in India, ketoprofen, has also recently been identified as being lethal to the species. Measurements of its residue levels in ungulate carcasses indicates that concentrations are sufficient to cause vulture mortalities. Other likely contributory factors are changes in human consumption and processing of dead livestock (which have occurred in response to the collapse in vulture numbers), poison and pesticide use, and possibly avian malaria, although these are probably of minor significance.

The Indian government has now passed a bill banning the manufacture of the veterinary drug diclofenac that has caused the rapid population decline across the Indian subcontinent; their aim was to phase out its use by late 2005, although its sale has not been banned and it is likely to remain in widespread use for several years. Similar laws banning import and manufacture of diclofenac are now in place in Nepal and Pakistan. A letter from the Drug Controller General of India in 2008 warned more than 70 drugs firms not to sell the veterinary form of diclofenac, and to mark human diclofenac containers 'not for veterinary use'. In October 2010, the government of Bangladesh banned the production of diclofenac for use in cattle, and the distribution and sale of the drug were due to be outlawed there during the first half of 2011. Efforts to replace diclofenac with a suitable alternative are ongoing; drug companies have now developed meloxicam, an alternative to diclofenac, which has been tested on Gyps vultures with no ill-effects. The Report of the International South Asian Vulture Recovery Plan Workshop in 2004 gave a comprehensive list of recommendations including establishing a minimum of three captive breeding centers each capable of holding 25 pairs (Bombay Natural History Society 2004) - ultimately at least 150 pairs of the three species should be held in captivity to ensure sufficient birds are available to re-establish wild colonies in the future. Captive breeding efforts are ongoing and during 2008-2009 there were 71 individuals in captivity at two captive breeding centers in India. In 2009, captive birds laid eggs, raising hopes that they will successfully breed in captivity in the near future.

Diet: Wide variety of carrion. This species feeds almost entirely on carrion, and often associates with White-rumped Vultures (*G. bengalensis*) when scavenging at rubbish dumps and slaughterhouses.

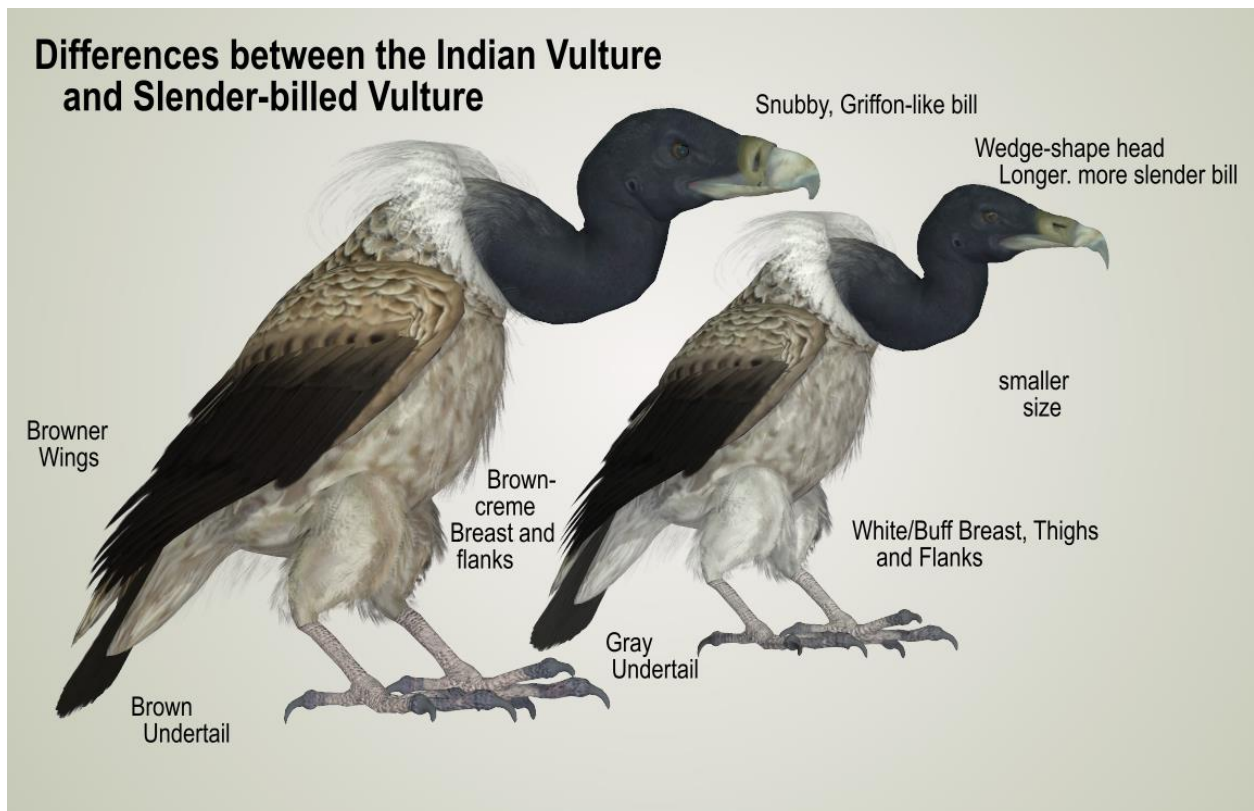
Nesting: Robust, strong features give it eagle-like bearing. Perched adults have pale-yellowish bill and cere; pale eyerings; large white neck-ruff; buff back and upper wing

coverts.. The stout blackish neck has pale down. Juveniles have dark bill with pale culmen; pinkish head and neck covered in pale down and dingy heavily streaked underpants.

It nests almost exclusively in colonies on cliffs and ruins in central and peninsular India, although in one area, where cliffs are absent, it has been reported nesting in trees.

Cool Facts: The Indian Vulture (*Gyps indicus*) is closely related to the Griffon Vulture (*G. fulvus*). The birds in the northern part of its range once considered a subspecies are now considered a separate species, the Slender-billed Vulture (*Gyps tenuirostris*). These were lumped together under the name Long-billed Vulture.

Vultures also play a key role in the wider landscape as providers of ecosystem services, and were previously heavily relied upon to help dispose of animal and human remains in India.



Common Name: Slender-billed Vulture
Scientific Name: *Gyps tenuirostris*

Size: 31-37 inches (80-95 cm); **Wingspan:** 77-92 inches (196-238 cm)

Habitat: Asia; found in India from the Gangetic plain north, west to Himachal Pradesh, south potentially as far as northern Odisha, and east through Assam. It is also found in north and central Bangladesh, southern Nepal, Burma and Cambodia. Movements are poorly known, and the degree of connectivity of apparently separate populations is not known.

It inhabits dry open country and forested areas usually away from human habitation. In South-East Asia it was found in open and partly wooded country, generally in the lowlands.



Status: Critically Endangered. **Global Population:** 1000-2499 mature individuals. The population of this species and the Indian Vulture declined by 97% overall and in India annual decline rates for both species averaged over 16% between 2000-2007. Wild populations remain from northern and eastern India through southern Nepal and Bangladesh, with a small population in Burma. The only breeding colony in Southeast Asia is in the Steung Treng province of Cambodia. This colony is thought to number

about 50–100 birds. The survival of the vultures in Cambodia may have been partly because diclofenac, which is poisonous to vultures, is not available there. The Royal Society for the Protection of Birds (RSPB) has placed the approximate number of slender-billed vultures living beyond confines at about 1,000 in 2009 and predictions estimate total extinction within the next decade amongst the wild population.

Diet: Wide variety of carrion, scavenging at rubbish dumps and slaughterhouses, and on carcasses dumped in the fields and along rivers.

Nesting: This vulture is mostly grey with a pale rump and grey under tail coverts. The thighs have whitish down. The neck is long, bare, skinny and black. The black head is angular and narrow with the dark bill appearing narrow midway. The ear opening is prominent and exposed.

It has only been recorded nesting in trees, usually large ones, at a height of 7-25 m. Sometimes it nests near villages, but customarily in more remote areas. It is a solitary nester. While feeding, considerable mixed species aggregations can form, and regular communal roost sites are used. It is social and usually found in conspecific flocks, interacting with other vultures at carcasses.

Cool Facts: For some time, it was categorized with its relative, the Indian Vulture, under the name of "Long-billed Vulture". However, these two species have non-overlapping distribution ranges and can be immediately told apart by trained observers, even at considerable distances. The Indian Vulture is found only to the south of the Ganges and breeds on cliffs while the Slender-billed Vulture is found along the Sub-Himalayan regions and into Southeast Asia and nests in trees.

Common Name: White-rumped Vulture
Scientific Name: *Gyps bengalensis*

Size: 29–33 inches (75-85 cm); **Wingspan:** 76-102 inches (192-260 cm)

Habitat: Asia; northern and central India, Pakistan, Nepal, and Southeast Asia. Movements are poorly known, although satellite-tagged birds have shown that they will forage over a vast range.

It occurs mostly in plains and less frequently in hilly regions where it utilizes light woodland, villages, cities, and open areas.

Status: Critically Endangered.

Global Population: 2500-9999

mature individuals. As recently as 1985 the species was described as "possibly the most abundant large bird of prey in the world". Since then, the species declined in South-East Asia, apparently as a result of the collapse of large ungulate populations owing to over-harvesting by human hunters. Declines in the major part of the population throughout the Indian Subcontinent probably began in the 1990s and was very rapid, resulting in an overall population decline of greater than 99% over a 10-15

year period. The anti-inflammatory veterinary drug diclofenac, used to treat domestic livestock, has been identified as the cause of mortality, with renal failure resulting in visceral gout in the vast majority of examined vultures. This has been reported from many protected areas across its range.

The governments of India, Nepal and Pakistan passed legislation in 2006 banning the manufacture and importation of diclofenac as a veterinary drug, with India passing



further legislation in 2008 banning the manufacture, sale, distribution or use of veterinary diclofenac.

Diet: Mostly livestock carrion, both putrid and fresh. While feeding considerable aggregations can form, and regular communal roost sites are used. It is social and usually found in conspecific flocks.

Nesting: The White-rumped Vulture is a typical, medium-sized vulture. It has an unfeathered head and neck with a white neck ruff, very broad wings, and short tail feathers. The adult's whitish back, rump, and under wing coverts contrast with the otherwise dark plumage. The body is black and the secondaries are silvery grey. The head is tinged in pink and bill is silvery with dark ceres. The nostril openings are slit-like. Juveniles are largely dark and take about four or five years to acquire the adult plumage. In flight, the adults show a dark leading edge of the wing and has a white wing-lining on the underside. The under tail coverts are black.

This vulture builds its nest on tall trees often near human habitations. The preferred nesting trees are Banyan, Peepul, Arjun, and Neem. The main nesting period is November to March with eggs being laid mainly in January. The male initially brings twigs which are arranged to form the nest by the female. Courtship involves the male billing the head, back and neck of the female. The female invites copulation and the male mounts and holds the head of the female in his bill. Several pairs may nest in the vicinity of each other. Isolated nests tend to be those of younger birds and are sometimes taken over by the Red-headed Vulture or large owls such as the The Dusky Eagle Owl (*Bubo coromandus*).

Nests are nearly 3 feet in diameter and half a foot in thickness. Prior to laying an egg, the nest is lined with green leaves. A single egg is laid which is white with a hint of bluish-green. Female birds are reported to destroy the nest on loss of an egg. They are usually silent but make hissing and roaring sounds at the nest or when jostling for food. The eggs hatch after about 30 to 35 days of incubation. The young chick is covered in grey down. The parents feed them with bits of meat from carcasses. The young birds remain for about three months at the nest.

Cool Facts: This is the smallest of the *Gyps* vultures.

These birds are usually inactive until the morning sun has warmed up the air with sufficient thermals to support their soaring. They circle and rise in altitude in groups and glide to change thermals.

Common Name: White-backed Vulture
Scientific Name: *Gyps africanus*

Size: 31-39 inches (78-94 cm); Wingspan: 72-84 inches (196-225 cm)

Habitat: Africa; occurs from Senegal, Gambia and Mali in the west, throughout the Sahel region to Ethiopia and Somalia in the east, through East Africa into Mozambique, Zimbabwe, Botswana, Namibia and South Africa in the south.

The white-backed vulture is primarily a lowland species of open wooded savanna, particularly areas of Acacia forests.

Status: Endangered. **Global Population:** 270,000 mature individuals. *Gyps africanus* is the most widespread and common vulture in Africa, although it is now undergoing



rapid declines. Declines have exceeded 90% in West Africa, and have also occurred in other parts of the range including Sudan and Kenya, but populations are apparently stable in Ethiopia and Tanzania. Scientists documented an apparent decline of c.52% over c.15 years in the numbers of *Gyps* vultures present in the Masai Mara (Kenya) during the ungulate migration season, while in central Kenya an apparent decline of

69% was noted in the numbers of Gyps vultures between 2001 and 2003. As these are visiting individuals from a wide-ranging population, declines observed in the Masai Mara study may be representative of declines in Gyps populations ranging across East Africa from Southern Ethiopia to Southern Tanzania. Overall trends are difficult to quantify but are suspected to have exceeded 50% decrease over three generations (55 years).

Diet: Wide variety of carrion. White-backed Vultures are a gregarious species congregating at carcasses.

Nesting: Brownish to cream colored as an adult. Contrasting dark tail and flight feathers, especially from below. White rump patch and ruff. Dark neck and paler head with an all dark bill. Juvenile birds are darker. Within its range most likely to be confused with *G. rueppellii* or *G. fulvus*. Both of these species have a pale outer half to their bill and do not show such a marked contrast between the under wing-coverts and flight feathers from below.

It requires tall trees for nesting and nests in loose colonies. Nests are approximately 3 feet in diameter and contain one egg.

Cool Facts: Once the most widespread and most common vulture in Africa, scientists determined it to be rarer than previously believed and its conservation status was reassessed from Least Concern to Near Threatened in the 2007 IUCN Red List. In 2012 it was further uplisted to Endangered.

The Shona tribe of southern Rhodesia uses the heart of the White-Backed vulture in a ritual for predicting the future. A diviner grinds the heart of the vulture along with special plants, and, with divining bones, predicts future events over the concoction. The Shonas recognize the incredible ability of Vultures to find their way to food almost anywhere, and believe that they can do this because of an ability to visit the future.

Common Name: Cape Vulture
Scientific Name: *Gyps coprotheres*

Size: 38-45 inches (96-115 cm); **Wingspan:** 90-102 inches (226-260 cm)

Habitat: Africa; found mainly in South Africa, Lesotho, Botswana and in some parts of northern Namibia.

Status: Vulnerable. **Global Population:** 5300-6700 mature individuals. The population is estimated to have declined by 10% between 1994 and 1999, and over the period 1992-2007, the species declined by 60-70% in eastern South Africa. Until further analysis is carried out the overall rate of decline is presumed to be at, or just exceeding 20% over three generations.



Sixteen known or suspected mortality factors were identified and ranked at an expert workshop with a decrease in the amount of carrion (particularly during chick-rearing), inadvertent poisoning, electrocution on pylons or collision with cables, loss of foraging habitat and unsustainable harvesting for traditional uses considered the most important factors. Further threats include disturbance at colonies, bush encroachment and drowning. In southern Africa, vultures are caught and consumed for perceived medicinal and psychological benefits. It is estimated that 160 vultures are sold and that there are 59,000 vulture-part consumption events in eastern South Africa each year, involving an estimated 1,250 hunters, traders and healers. At current harvest levels, the populations of this species in the Eastern Cape, KwaZulu-Natal and Lesotho could become locally

extinct within 44-53 years. Should the populations of White-backed Vultures *G. africanus* become depleted first, the resultant increase in hunting pressure on *G. coprotheres* could cause a population collapse within the subsequent 12 years. Extrapolation from a limited study of traditional healers in Maseru, Lesotho, suggests that, conservatively, nearly 7% of the breeding population in that country would be lost annually for such use. The species suffers mortality from the ingestion of poison left for pests (not vultures) and potentially Diclofenac, a non-steroidal anti-inflammatory drug often used for livestock, and which is fatal to *Gyps* spp. when ingested at livestock carcasses. In 2007, Diclofenac, was found to be on sale at a veterinary practice in Tanzania. In addition, it was reported that in Tanzania, a Brazilian manufacturer has been aggressively marketing the drug for veterinary purposes and exporting it to 15 African countries. A single poisoning incident can kill 50-500 birds, making the species susceptible to sudden local declines. The collapse of a key colony in eastern Botswana has been attributed to human disturbance and is especially insensitive. The ongoing urbanization around Hartbeespoort Dam and the Magaliesberg Mountains, South Africa, has limited the extent of natural areas for foraging by vultures, perhaps resulting in their reliance on supplementary food at vulture "restaurants". If such restaurants were closed, vultures might be exposed to unsafe carcasses. Poor grassland management in some areas has promoted bush encroachment, making finding carcasses more difficult for vultures.

There are records of at least 120 individuals (21 incidents) of this species drowning in small farm reservoirs in southern Africa between the early 1970s and late 1990s, although modifications to many reservoirs have now been made. Raptors are thought to drown after attempting to bathe or drink, with mass vulture drownings probably due to the triggering of group behavior by the actions of one bird. In Magaliesberg, a large number of fatalities have been associated with powerline collisions and electrocutions, and this is one of the main factors causing the ongoing decline of the species in South Africa. Patterns in the contraction of the species' range since the 1950s imply that climate change could be an underlying factor driving its decline through changes in habitats and decreases in prey populations, though further research is required to confirm a link.

Diet: Wide variety of carrion; specializing on large carcasses, it flies long distances over open country, although usually found near mountains, where it breeds and roosts on cliffs.

Nesting: Very large vulture with near-naked head and neck. Adult creamy-buff, with contrasting dark flight- and tail-feathers. Pale buff neck-ruff. Under wing in flight has pale silvery secondary feathers and black alula. Yellowish eye, black bill, bluish throat and facial skin, dark neck. Juveniles and immatures generally darker and more streaked, with brown to orange eyes and red neck. The White-backed Vulture (*G. africanus*), while similar is smaller and, usually, darker, with more streaking and different wing pattern.

It nests on cliffs and lays one egg per year

Cool Facts: The Cape Vulture is also known as the Griffon Cape or Kolbe's Vulture. After the Himalayan Griffon Vulture and the Cinereous Vulture, the Cape vulture is the third largest Old World Vulture.

It is reported that a lack of adult females in the relict Namibian population may have led to four males breeding with the White-backed Vulture (*G. africanus*), although this is not thought to be a problem across southern Africa.

Common Name: Hooded Vulture
Scientific Name: *Necrosyrtes monachus*

Size: 25-28 inches (62–72 cm); **Wingspan:** 61-65 inches (155-165 cm)

Habitat: Africa; widespread in sub-Saharan Africa; from Senegal and southern Mauritania east through southern Niger and Chad, to southern Sudan, South Sudan, Ethiopia and western Somalia, southwards to northern Namibia and Botswana, and through Zimbabwe to southern Mozambique and north-eastern South Africa.

The species is often associated with human settlements, but is also found in open grassland, forest edge, wooded savanna, the desert and along coasts. It occurs up to 4,000 m, but is most numerous below 1,800 m.



Status: Endangered. **Global Population:** 197,000 mature individuals. This species' population is estimated to be undergoing a decline equivalent to at least 50% over the last 50+ years. Major threats to this species include non-target poisoning, capture for traditional medicine and bushmeat, and direct persecution. Hooded Vulture meat is reportedly sold as chicken in some places.

Intentional poisoning of vultures may be carried out in some areas by poachers in order to hide the locations of their kills. Secondary poisoning with carbofuran pesticides at livestock baits being used to poison mammalian predators is also an issue in East Africa. Declines have also been attributed to land conversion through development and improvements to abattoir hygiene and rubbish disposal in some areas. The species may also be threatened by avian influenza (H5N1), from which it appears to suffer some mortality and which it probably acquires from feeding on discarded dead poultry. No targeted conservation actions are known but this widespread species does occur in a large number of protected areas.

Diet: Feeds mainly on carrion, but also takes insects.

Nesting: A typical vulture, with a bald pink head and a greyish "hood". It has fairly uniform dark brown body plumage. It is a small species compared to most vultures.

It breeds in a stick nest in trees (often palms) in much of Africa south of the Sahara, laying one egg. Birds may form loose colonies. In West Africa and Kenya it breeds throughout the year, but especially from November to July. Breeding in north-east Africa occurs mainly in October-June, with birds in southern Africa tending to breed in May-December. It is an arboreal nester and lays a clutch of one egg. Its incubation period lasts 46-54 days, followed by a fledging period of 80-130 days. Young are dependent on their parents for a further 3-4 months after fledging.

Cool Facts: If these birds are disturbed when at their nest, they utter a squealing cry of "MAMA MAMA".

Common Name: Rüppell's Vulture
Scientific Name: *Gyps rueppellii*

Size: 33-41 inches (85-103 cm); **Wingspan:** 87-102 inches (226-260 cm)

Habitat: Africa; occurs throughout the Sahel region of Africa from Senegal, Gambia and Mali in the west to Sudan, South Sudan and Ethiopia in the east. Also south through the savanna regions of East Africa in Kenya, Tanzania and Mozambique. Formerly abundant, the species has experienced extremely rapid declines in much of its range, particularly West Africa.

It frequents open areas of Acacia woodland, grassland and montane regions, and it is gregarious, congregating at carrion, soaring together in flocks and breeding mainly in colonies on cliff faces and escarpments at a broad range of elevations.

Status: Endangered.

Global Population:

Unknown amount of mature adults. This species faces similar threats to other African vultures, being susceptible to habitat conversion to agro-

pastoral systems, loss of wild ungulates leading to a reduced availability of carrion, hunting for trade, persecution and poisoning. In East Africa, the primary issue is poisoning (particularly from the highly toxic pesticide carbofuran), which occurs primarily outside protected areas; the large range sizes of this and *G. africanus* puts them both at significant risk as it means they inevitably spend considerable time outside protected



areas. In addition, the ungulate wildlife populations on which this species relies have declined precipitously throughout East Africa, even in protected areas. In 2007, diclofenac, a non-steroidal anti-inflammatory drug often used for livestock, and which is fatal to *Gyps* spp. when ingested at livestock carcasses, was found to be on sale at a veterinary practice in Tanzania. In addition, it was reported that in Tanzania, a Brazilian manufacturer has been aggressively marketing the drug for veterinary purposes and exporting it to 15 African countries. The West African population has been heavily exploited for trade, with birds commonly sold in fetish markets. For example, the Dogon of central Mali climb the Hombori cliffs to take eggs and chicks of this species. The



decline and possible extirpation in Nigeria appears to be entirely attributable to the trade in vulture parts for traditional juju. It is apparently also captured for international trade. In 2005, 30 birds were reportedly confiscated by the Italian authorities. Disturbance, especially from climbers, is a particular problem for this species. In Mali, the Hombori and Dyounde massifs are dotted with at least 47 climbing routes, on which expeditions take place every year, mainly during the species' breeding season.

Diet: Wide variety of carrion. They are silent as a rule, but become vocal at the nest and when at a carcass, squealing a great deal.

Nesting: Overall dark brown plumage with extensive pale creamy edging to body feathers. Dark flight feathers. Has a white ruff, dark neck and pale head. Distal half of the bill is pale. Juveniles have an all dark bill and paler body plumage. The centers to their body feathers are altogether less dark. Within its range this species could be confused with *G. fulvus* or *G. africanus*. However, both of those species are less mottled and have uniform light brown body plumage. *G. adrikanus* has an all dark bill.

Lays a single egg on a cliff perched nest.

Cool Facts: Rüppell's Vulture is named in honor of Eduard Rüppell, a 19th-century German explorer, collector, and zoologist. Rüppell's Vulture is considered to be the highest-flying bird, with confirmed evidence of a flight at an altitude of 11,000 m (36,100 ft) above sea level. The birds have a specialized variant of the hemoglobin alphaD subunit; this protein has a high affinity for oxygen, which allows the species to take up oxygen efficiently despite the low partial pressure in the upper troposphere. A Rüppell's Vulture was confirmed to have been ingested by a jet engine of an airplane flying over Abidjan, Côte d'Ivoire on November 29, 1973 at an altitude of 11,000 meters (36,100 ft). In August 2010, a Rüppell's Vulture escaped a bird of prey site in Scotland, prompting warnings to pilots in the area to keep an eye out due to the danger of collision.

Rüppell's Vultures have several adaptations to their diet and are specialized feeders even among the Old World vultures of Africa. They have an especially powerful build and, after the most attractive soft parts of a carcass have been consumed, they will continue with the hide, and even the bones, gorging themselves until they can barely fly. They have backward-facing spines on the tongue to help remove meat from bone. Despite their size, power and adaptations, they are not the most dominant vulture in their range, which is considered to be the even larger Lappet-faced Vulture.

Special Thanks to...

....our beta testers (Flinthawk, Jan and Rhonda)

Species Accuracy and Reference Materials

The author-artist has tried to make these species as accurate to their real life counterparts as possible. With the use of one generic model to create dozens of unique bird species, some give and take is bound to occur. The texture maps were created in Painter with as much accuracy as possible. Photographic references from photographs from various Goggle searches and several field guides were used.

Field Guide Sources:

Books in Print

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- “Vultures: Animal Scavengers” by Sandra Markle
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- **Wikipedia** (<http://www.wikipedia.com>)
- **Neotropical Birds Online** (<http://neotropical.birds.cornell.edu/portal/home>)
- **Birdlife International** (<http://www.birdlife.org>)

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