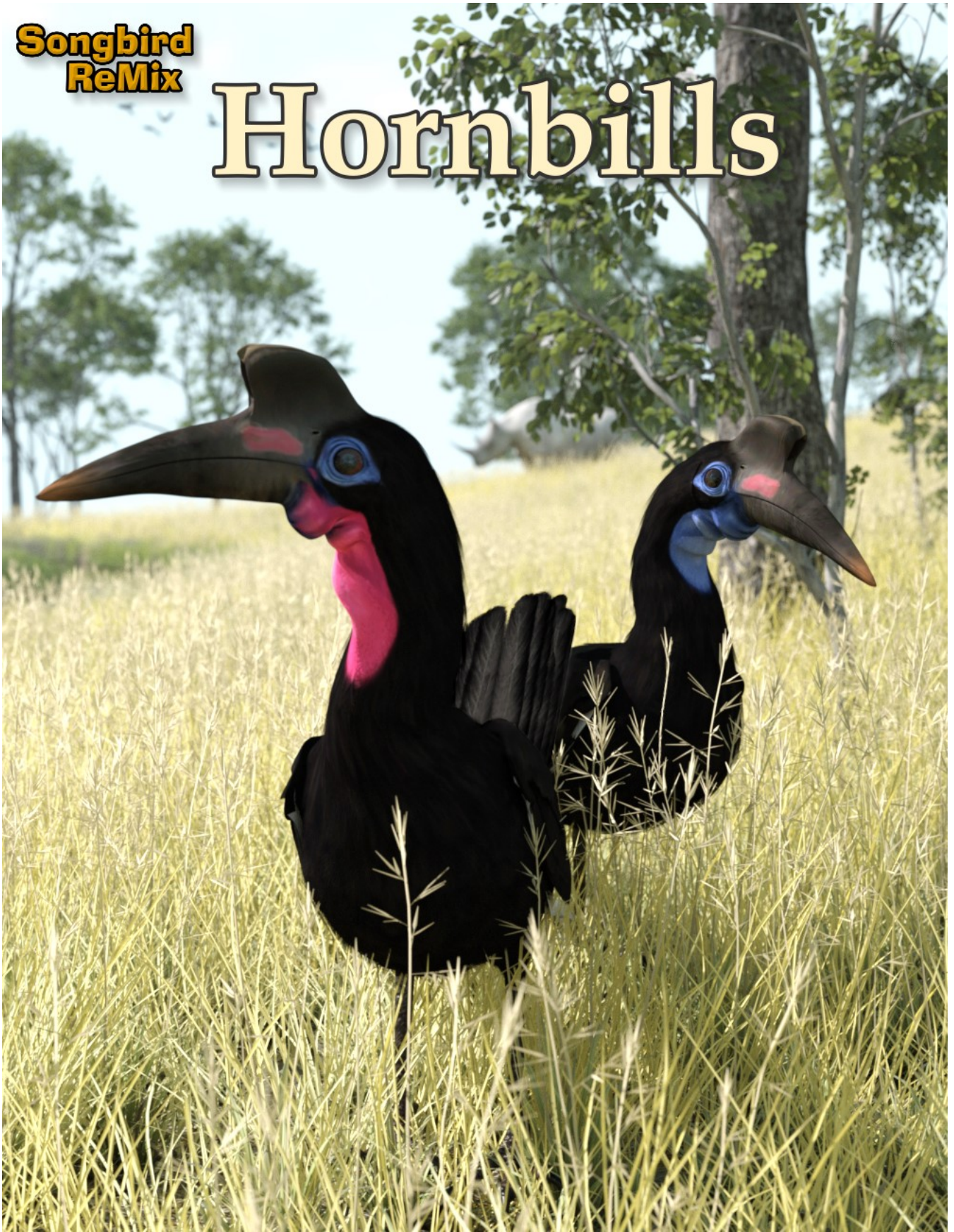


**Songbird  
ReMix**

# Hornbills



**Avian Models for 3D Applications**  
Characters and Texture Mapping by Ken Gilliland

# Hornbills

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## Songbird ReMix

# Hornbills

## Introduction

Hornbills are birds found in tropical and subtropical Africa, Asia and Oceania from the family Bucerotidae. There are 55 different species in this family. They are characterized by a long, down-curved bill which is frequently brightly colored and sometimes has a horn-like extension on their upper mandible.

Hornbills show considerable variation in size and colors. The smallest species is only 13 inches (32 cm), while the largest has a wingspan of 71 inches (180 cm). Its casque (horn on top of the bill) can range from a slight bump to a massive Rhinoceros-like horn.

This set includes 10 iconic hornbills including the Abyssinian Ground-Hornbill of Africa, the massive Giant Hornbill, the iconic Rhinoceros Hornbill and the colorful Knobbed Hornbill.

The Songbird ReMix version of these iconic birds includes all the standard Songbird ReMix series features you've come to expect, such as working wings and fully articulated body parts.

There are two versions of this set for native support in Poser and DAZ Studio. Materials have been tuned to support Iray, 3Delight, Superfly and Firefly renderers.

## Overview and Use

The set is located within the **Animals : Songbird ReMix** folder. Here is where you will find a number of folders, such as **Bird Library**, **Manuals** and **Resources**. Let's look at what is contained in these folders:

- **Bird Library:** This folder holds the actual species and poses for the "premade" birds. Birds are placed into a "type" folder (such as "Birds of Prey (Order Falconiformes)") which for example would hold falcons, hawks and eagles). The birds for this set can be found in the following folder(s):
  - **Hornbills and Hoopoes (Order Bucerotiformes)**
- **Manuals:** Contains a link to the online manual for the set.
- **Props:** Contains any props that might be included in the set
- **Resources:** Items in this folder are for creating and customizing your birds
  - **Bird Base Models:** This folder has the blank, untextured model(s) used in this set. These models are primarily for users who wish to experiment with poses or customize their own species of bird. When using physical renderers such as Iray and Superfly, SubD should be turned to at least "3".

## Poser Use

Select **Figures** in the **Runtime** Folder and go to the **Animals : Songbird ReMix** folder. Select the bird from the renderer (*Firefly or Superfly*) folder you want and simply click it to load. Some birds in the Songbird ReMix series may load with attached parts (*Conformers*) such as tail or crest extensions. Some of these parts have specific morphs. You will need to click on the attached part to access those controls. Associated poses can be found in the same folder- **Bird Library : (Type) : Poses**.

## DAZ Studio Use

Go to the **Animals : Songbird ReMix** folder. Select the bird from the renderer (*3Delight or Iray*) folder you want and simply click it to load. Some birds in the Songbird ReMix series may load with attached parts (*Conformers*) such as tail or crest extensions. Some of these parts have specific morphs. You will need to click on the attached part to access those controls. Associated poses can be found in the same folder- **Bird Library : (Type) : Poses**. **Note:** Using the "Apply this Character to the currently selected Figure(s)" option **will not** properly apply the correct scaling to the bird selected. It is better to delete the existing character first and load the one you want to use.

## Posing & Shaping Considerations

This volume has various species, so when using generic poses not every pose will work perfectly with every bird. You may find that some minor alteration on the stock poses may be warranted.

Here are some of the most common alterations you may need to make:

- Birds will not be flat on the zero plane due to leg size and overall scale.
- Because of the numerous beak shapes, closing the beak may range from 0.5 to 1. Usually 0.8 is about right.

## The Throat Sac

Most hornbills have a throat sac. Its look will vary depending on the species. In some poses, it may look awkward. There are several ways to improve the look of the throat sac. There are a few morphs in the "**Corrective Controls**" that may help. You can also go into "**Creation Controls / Body Controls**" section and dial back the active Throat Sac morphs and/or blend them with other Throat Sac morphs.

## IK Concerns

Some poses may go askew when IK is turned on. By default, Poser's IK feature is turned off when loading a bird. To turn it on, select the "Figure" category from the main tool bar and "Use Inverse Kinematics" from the submenu.

By default, DAZ Studio's IK feature is turned on when loading a bird. This will cause the thigh and shin rotations change when the character is moved. The **CTRL K** keypress will turn IK on and off in DAZ Studio. I usually just remove IK when working in DAZ Studio by selecting the character in the **Scene tab** and simply deleting the two IK body parts.

If you want to use IK in DAZ Studio, here's how it works...

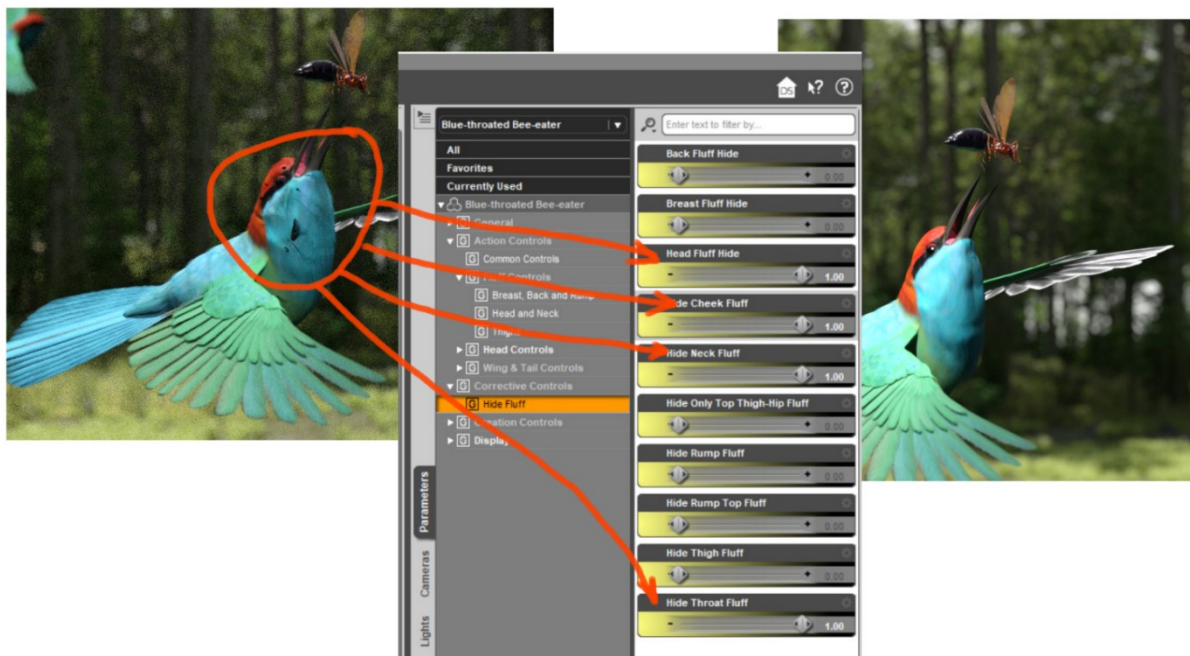
1. First, go to the Scene Tab, and select the "**IK-...: Left (or Right) Leg**".
2. On the "Parameters" Tab, select "Inverse Kinematics".

3. Turn off “Pin Translation” and “Pin Rotation” to pose the feet to a perch and then “ON” when posing the rest of the bird.

## Physical-based Rendering

Iray and Superfly requires more CPU and memory horsepower than the legacy renderers because of ray-trace bounces and higher resolution meshes needed for displacement. Poser’s Superfly renderer will require that the “Min Transparent Bounces” be set to **at least 16** and that the “Max Transparent Bounces” be set to **at least 32** in render settings. Superfly renders may show artifacts in the head area. The higher the bounce settings, less chance those will be apparent. This is a known Poser issue and may be addressed in the future. Increasing the SubD may minimize this issue.

A good work around solution for Iray or Superfly artifacts is to **HIDE Fluff areas (Correction Controls)**.



## Where to Find your Birds & Poses

Type Folder	Bird Species
<input type="checkbox"/> Hornbills and Hoopoes (Order <i>Bucerotiformes</i> ) <input type="checkbox"/>	All Species and Poses

# Hornbills

## FIELD GUIDE

### African Hornbills

Abyssinian Ground-hornbill  
Southern Yellow-billed Hornbill  
Eastern Yellow-billed Hornbill  
Silvery-cheeked Hornbill

### Asian Hornbills

Knobbed Hornbill  
Great Hornbill  
Wreathed Hornbill  
Rhinoceros Hornbill  
Writhe-billed Hornbill  
Helmeted Hornbill

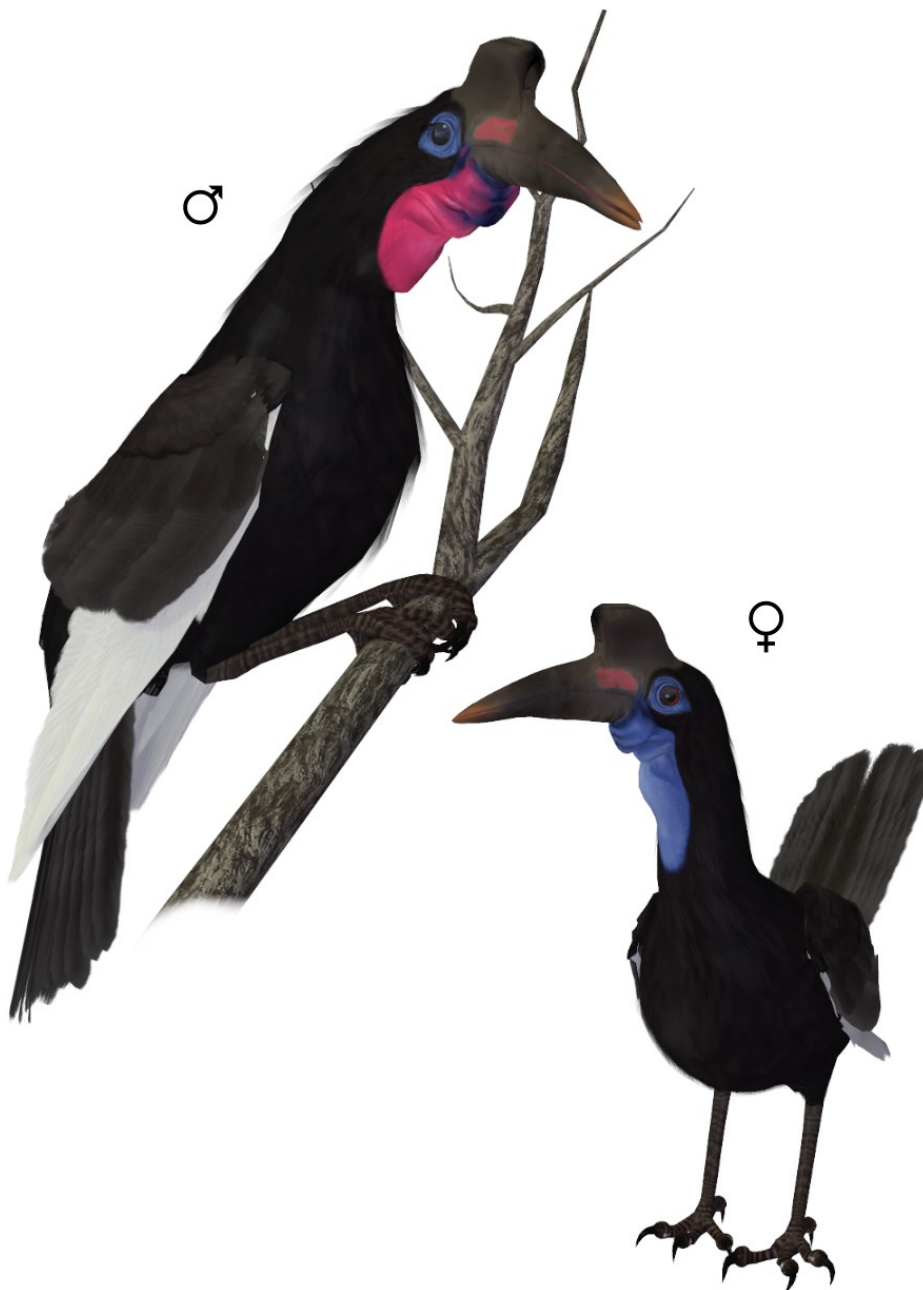
**Common Name:** Abyssinian Ground-hornbill

**Scientific Name:** *Bucorvus abyssinicus*

**Size:** 35.4-39.4 inches (90-100 cm)

**Habitat:** Africa; it occurs in a band across the Afro-tropics from Senegal, Gambia (where it may have all but disappeared from the Western Region) and southern Mauritania through West Africa and across to northern Kenya, Uganda, Eritrea, Ethiopia, and northwestern Somalia. It is becoming increasingly restricted to protected areas (e.g. in Togo, Benin, Niger, Nigeria, Uganda), and may be disappearing from these areas also.

It is predominantly found in savanna and sub-desert shrubland, as well as possibly occurring in rocky areas, riparian habitats, and woodlands.



**Status:**

Vulnerable.

**Global population:**

Unknown amount of adult individuals with a rapidly decreasing population trend. This species is widespread and common, but sparse in population. Habitat loss may be having a significant impact on this species, with the species now potentially being mainly restricted to protected areas. In Togo, it may also have disappeared from most faunal reserves as a result of illegal habitat clearance for farming, logging etc., and may only persist

in Fazao-Malfakassa National Park - although this site is now also under threat from a planned road development. Forest reserves in Benin are also being invaded by farmers, which could threaten populations of the species in this country too. Urban development may also be impacting this species. It is not only threatened by habitat conversion, as in certain areas hunters may kill individuals and use their stuffed heads as disguises while stalking game, although it is treated as a totem species in some areas and so may be relatively protected in such places as a result of this.

**Diet:** A wide variety of small vertebrates and invertebrates, including tortoises, lizards, spiders, beetles and caterpillars. It also takes carrion, and some fruits, seeds and ground nuts.

It forages in pairs, or with one or two offspring. While rare, as many as 20 may gather at an abundant food source. It walks slowly across ground in search of prey, which it catches with the bill.

**Nesting:** Sexes are dimorphic. It is a very large hornbill with high casque, and yellow to orange patch at base of the upper mandible. It is all black with white primaries. The male has bare facial skin that is bluish and an inflatable throat with bluish and reddish skin. The female is similar to male, but lacks any of the red skin in the throat. The juvenile is browner than the adult, with black flecks in primaries. It also lacks the casque, and has only a rather dull yellow patch on bill. Its facial and throat skin is pale gray. The juvenile takes 3 years to reach maturity but the sex is evident after one year.

It lays eggs mainly in June through August in western Africa, from as early as January in Nigeria and Uganda, or as late as November in Kenya. The nest is placed in a cavity of a large tree, especially baobab or palm stump. The male supplies most of deep lining which it usually dry leaves. The entrance is not sealed. In captivity, this hornbill normally lays 2 eggs at interval of 4–5 days. The incubation lasts 37–41 days and is performed by the female. She is fed at the nest by the male during this period. Chicks are born with pink skin that turns black within 10 days. They fledge at 80–90 days. The female leaves the chicks and helps the male with feeding at 21–33 days.

**Cool Facts:** It is also known as the “Northern Ground-hornbill”. A captive pair of hornbills has lived for at least 40 years.



**Common Name:** Southern Yellow-billed Hornbill

**Scientific Name:** *Tockus leucomelas*

**Size:** 15.7 inches (40 cm)

**Habitat:** Africa; it is endemic to southwestern Angola and Namibia eastward to southern Malawi, western Mozambique and the northern portion of South Africa.

It is found in scattered trees along watercourses in semi-desert areas in the west and throughout open savanna and woodland in the east.



**Status:** Least concern. **Global population:** Unknown amount of adult individuals with a decreasing population trend. The population is suspected to be in decline owing to destruction of large trees which provide nesting sites.

**Diet:** Mainly arthropods (especially termites), ants, beetles, caterpillars and grasshoppers. It will also take centipedes, scorpions and solifugids (camel

spiders). Some rodents are taken, mainly during plagues, and bird eggs. It will feed on some fruit and seeds (when available).

It forages mainly on ground, picking off small animals, insects and fruit from surrounding vegetation and ground litter. It digs only infrequently, but turns over debris or chases prey when necessary.

**Nesting:** Sexes are dimorphic. A smaller black and white hornbill with spotted wing-coverts. The blackish outer tail is white. It has a long yellow bill with only slight casque. The male's casque extends to the tip of the bill. There is bare skin around the eyes and on the throat which is dark fleshy in color. The irises are yellow (occasionally brown). The female is slightly smaller, with a shorter casque. The juvenile has dark brown blotches on a shorter dull yellow bill. It also has gray eyes.

**Cool Facts:** It is close to the Eastern Yellow-billed Hornbill (*T. flavirostris*), and in the past usually treated as conspecific. It is distinguished from the former by the color of the circumorbital and throat skin.

The smaller and paler western race *elegans* is considered not worthy of recognition (as a full separate species), but differs from other populations in bare-part colors. Birds from the far east of range have been proposed as race *parvior* on basis of smaller size, but degree of variation in all populations is uncertain. The two recognized subspecies are:

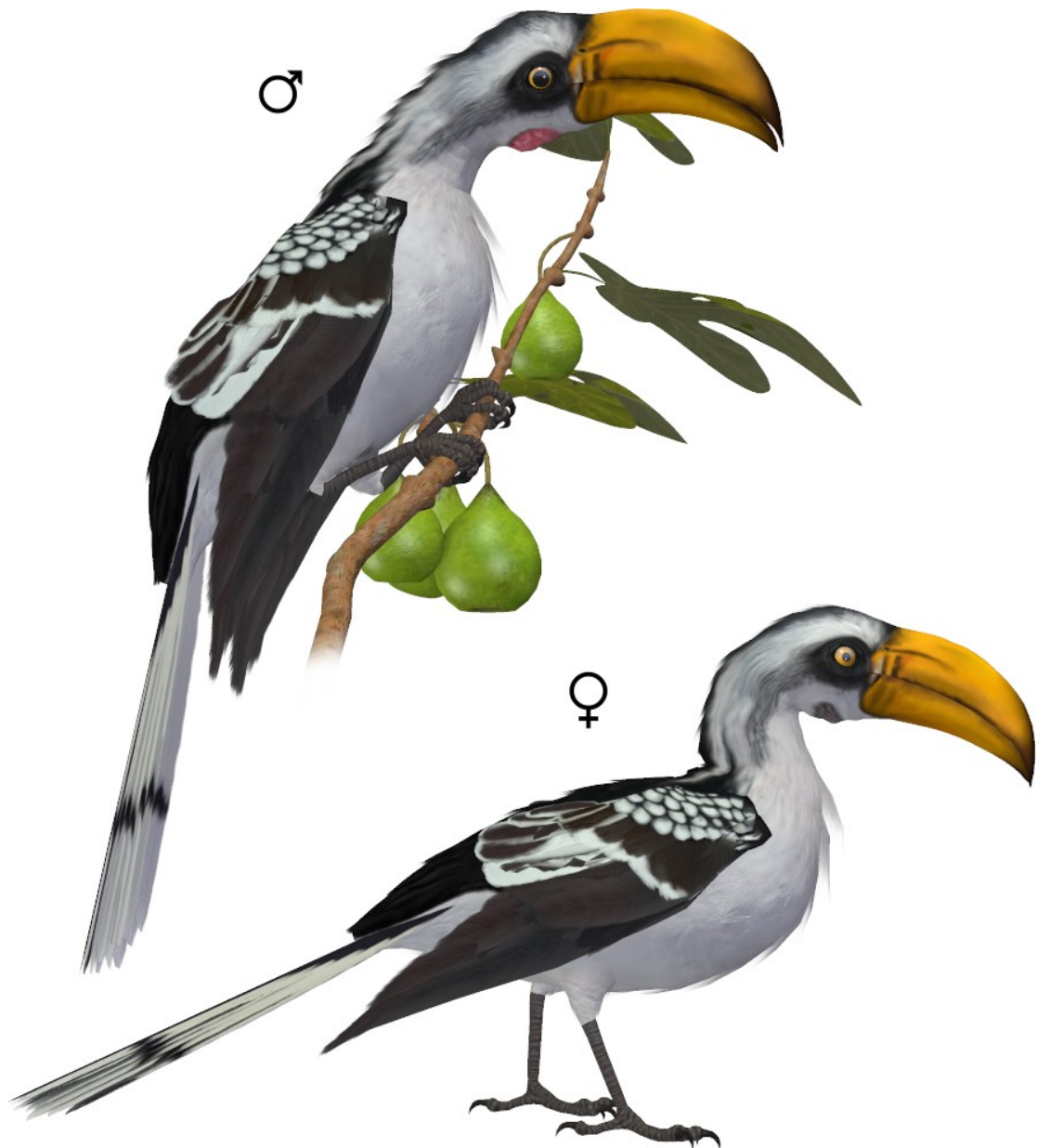
- *T.c. elegans*. It is found in southwestern Angola and northwestern Namibia. It is a smaller and paler than the nominate.
- *T.c. leucomelas*. The nominate race is found in northern and central Namibia east to southern Malawi, western Mozambique, and northern and eastern South Africa.

**Common Name:** Eastern Yellow-billed Hornbill

**Scientific Name:** *Tockus flavirostris*

**Size:** 15.7 inches (40 cm)

**Habitat:** Africa; it is found in Eritrea, Ethiopia, Djibouti and Somalia south to southeastern South Sudan, northeastern Uganda, Kenya and northeastern Tanzania.



It prefers open thornbush savanna and Commiphora woodlands.

**Status:** Least Concern. **Global population:** Unknown amount of adult individuals with a decreasing population trend.

**Diet:** Orthopterans and termites are common in diet, together with some figs, and fruits of Commiphora and Boscia.

It forages mainly on ground, simply picking up most food items. It feeds regularly in trees to take fruit. It has mutualistic association with dwarf mongooses (*Helogale undulata*), feeding on flushed insects, especially locusts, in exchange for predator surveillance. It may drink regularly when water available.

**Nesting:** Sexes are dimorphic. A small, black and white hornbill with spotted wing-coverts. It has white in outer tail and has a large orange-yellow bill with only slight casque. The male's casque extends to tip of the bill. There is bare skin around eye which is black. The throat skin is pink. The throat is inflated when breeding. The eyes are yellow. The female is smaller, the casque smaller, and throat skin black. The juvenile is smaller and has a dull yellow bill with brown patches.

It lays egg in February through March in Kenya, in March to May (possibly October to November) in Ethiopia and Somalia. It is territorial in pairs, with head-down open-winged display. They nest in a natural cavity 1.5–4.5 m up in tree or rock face, lined with bark and wood chips. The clutch 2–3 eggs. The female is fed in the nest by the male with single items carried in the bill tip.

**Cool Facts:** It's song is a series of cackling notes, often breaking into 'laughter', "*roh-roh-roh-roh-roh-RAH-RAH-RAH-RAH*". This call is similar to the Southern Yellow-billed Hornbill (*T. leucomelas*) but hoarser and lower-pitched.

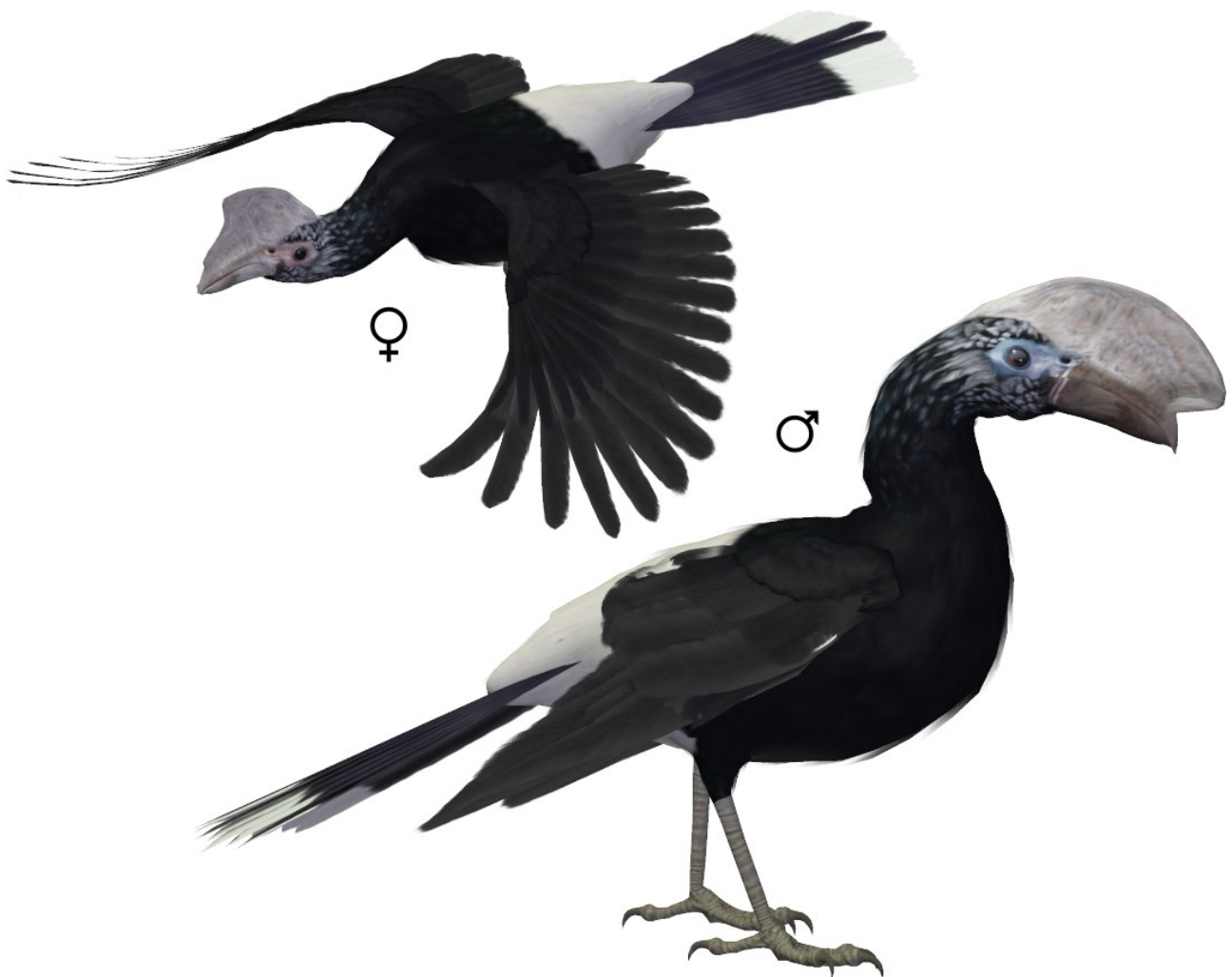
**Common Name:** Silvery-cheeked Hornbill

**Scientific Name:** *Bycanistes brevis*

**Size:** 23.6-27.6 inches (60-70 cm)

**Habitat:** Africa; it is found in the Ethiopian Highlands, south-eastern South Sudan and central Kenya southward to eastern and southern Tanzania, northern and southern Malawi, central Mozambique and southeastern Zimbabwe. Its status is currently uncertain in Eritrea.

It inhabits montane and coastal evergreen forests, extending to the gallery. It is also found in riverine and tall deciduous forests and woodlands . It occurs up to 2600 m elevations.



**Status:** Least Concern. **Global population:** Unknown amount of adult individuals with a decreasing population trend. It is locally common, but with patchy distribution, and erratic occurrence in marginal habitats and during droughts. Locally vulnerable to deforestation, but does use variety of habitats, and able to move about in search of food and nesting sites.

**Diet:** Mainly fruit (from at least 26 plant genera), especially cherry-sized drupes and figs. It will take some small animals, but mainly insects. Its diet includes spiders, centipedes, lizards, and birds and nest contents.

It forages mainly among foliage, but some food is taken on the wing. It sometimes will descend to the ground to feed. It rarely drinks water (instead getting its moisture from fruit).

**Nesting:** It is sexually dimorphic medium-sized to large black hornbill with noticeable silvery-gray feathering on the face. It has a white back, rump and tail-coverts. There are broad white tips to the outer tail feathers, and a white-yellowish line across base of dark brown bill. The males cream-colored casque is large and curved. The circumorbital skin is bluish-black. The female is smaller than male, with a casque that is smaller and darker. It has pink circumorbital skin. The juvenile does not have the whitish-silvery facial feathers. Its bill is smaller and it lacks the casque.

Egg laying occurs from February to July in Ethiopia, October and November in Kenya, and August through November in Tanzania and farther south. It is monogamous and nests in natural cavities in large trees. Both sexes seal the nest entrance with mud pellets formed by the male. The female lays a clutch of 1–2 eggs and the incubation takes approximately 40 days. The chick is born with pink skin which changes to dark gray within a few days of hatching. The male feeds the female with fruits regurgitated at the nest. It is estimated that 24,000 fruits are delivered in total of 1600 visits over the entire nesting cycle. The female remains in the nest until the chick fledges. Fledging takes place at about 77–80 days with the whole nesting cycle lasting 107–138 days.

**Cool Facts:** It makes long flights in search of fruiting trees, including from communal roosts of up to 200 birds, often with the Trumpeter Hornbill (*B. bucinator*).

**Common Name:** Knobbed Hornbill  
**Scientific Name:** *Rhyticeros cassidix*

**Size:** 27.6-31.5 inches (70-80 cm)

**Habitat:** Asia; it is endemic to Sulawesi, and the off-shore islands of Lembeh, Togian Islands, Muna and Butung.



Its favored habitat are evergreen forests (up to 1800 m). It is quite common in lowlands (below 1100 m), where extends into patches of secondary forest, woodlands and plantations, where it forages.

**Status:** Vulnerable. **Global population:** Unknown amount of adult individuals with a decreasing population trend. It has a rapidly declining population owing to destruction of its forest habitat, hunting, gold mining and fires. 60% of the lowlands have been deforested, and removal of forest is an ongoing process, especially on smaller islands.

**Diet:** Mainly fruit. It will take insects, and bird eggs and nestlings, but that only represents 1% of its diet. Fruits of at least 35 plant species in 13 genera recorded during non-breeding season. 17 fig species form 85% of diet.

It forages mainly in the canopy, even plucking off fruits in flight. It also digs in soft wood for insects. It will chase off other birds and primates at its feeding sites.

**Nesting:** Sexes are dimorphic. A large hornbill with a white tail and tall casque. The males crown and nape are deep rufous, with the head sides and neck being a paler rufous to creamy color. The body and wings are black. The bill is yellow with a ridged base that is orange and brown. The casque appears wrinkled and is reddish-brown in color. The bare skin around the eyes is a pale blue. There is an extensive bare throat skin patch that is light blue, dark blue and black. The female is smaller, with the head and neck black, a smaller yellow casque, and the throat skin with a smaller black band. The juvenile looks like the adult male, but its small casqueless bill is plain yellow.

Egg laying begins in June through September. Breeding season is probably triggered by end of the rains, so that fruiting peaks when the chick fledges. The nest is in natural hole 13–53 m up in tall forest tree. Tree holes are often reused in successive seasons. The female seals the entrance with her own droppings. There is a clutch of 2–3 eggs but only 1 chick usually raised. The incubation lasts 32–35 days and the chick hatches with pink skin that soon turns black. The male feeds the female and chick(s), regurgitating food items at nest. The female emerges after 58–140 days and assists the male with brood-feeding. The total nesting cycle lasts about 139 days. Young fledged from about 80% of nesting attempts.

**Cool Facts:** This hornbill is one of the most important seed disperser for Mahogany (*Meliaceae*) and Nutmeg (*Myristicaceae*) trees.



**Common Name:** Great Hornbill  
**Scientific Name:** *Buceros bicornis*

**Size:** 37-41.3 inches (95–105 cm)

**Habitat:** Asia; It is found in the Western Ghats (southern India); southern Himalayas (Garhwal and Kumaon) eastward to north-central Myanmar, southern China (west Yunnan) and Vietnam, and south to the Malay Peninsula and Sumatra.

It is found in large tracts of primary evergreen forest, but will cross open areas between forest patches. It occurs at up to 2000 m.

**Status:** Vulnerable. **Global population:** 13,000-27,000 mature individuals with a decreasing population trend. This species is restricted to large tracts of undisturbed forest within a region experiencing high rates of deforestation. High hunting pressure is likely exacerbating the population decline caused by habitat loss. The species is suspected to undergo a large population reduction over the next three generations.



**Diet:** Mainly fruit, rarely flowers and buds. It will take many types of large insects and other arthropods. Also, it feeds upon various small reptiles, birds and mammals. It eats many species of fig, which comprised 73% of food delivered to nests in India. Also drupes of Vitex, and various other lipid-rich fruits from at least 18 species.

It feeds mainly in the canopy, but will descend to the ground for fallen fruit. It is usually seen feeding in pairs or in family groups. Sometimes it gathers in numbers at fruiting trees and roosts in flocks of up to 200 in non-breeding season.

**Nesting:** Sexes are dimorphic. A very large, pied hornbill with black band across white tail. It has a long, deep bill, and white plumage areas of the head, neck and wing-coverts. It usually is cosmetically colored yellow with green oil. The male has a flat casque which is double-pointed at the front, with a black rim. The face is black with red orbital skin. The iris is red on the male. The female is smaller, with a smaller casque and lacks the black edging. The eyes are white, with the red rim that flushes brighter when breeding. The juvenile has blue-gray eyes and a smaller casqueless bill which grows to maturity over five years.

It lays eggs in January to April across its whole range. It is monogamous and territorial, sometimes engaging in aerial casque-butting. The nest is a natural hole in large forest tree, usually 8–35 m up. The hole is sealed sealed by both sexes. Usually two eggs are laid at intervals of 4–5 days, after pre-laying period 1–4 days. The incubation lasts 38–40 days. The female and chicks are fed in nest by the male and can include up to 185 items daily which are regurgitated from gullet. The female molts remiges and rectrices once enclosed, usually emerges when the oldest chick is 14–59 days old (well before it fledges). Fledging takes about 72–96 days.

**Cool Facts:** It is the largest hornbill with almost a 6 foot (180 cm) wingspan. Its lifespan in captivity has been recorded over 41 years.

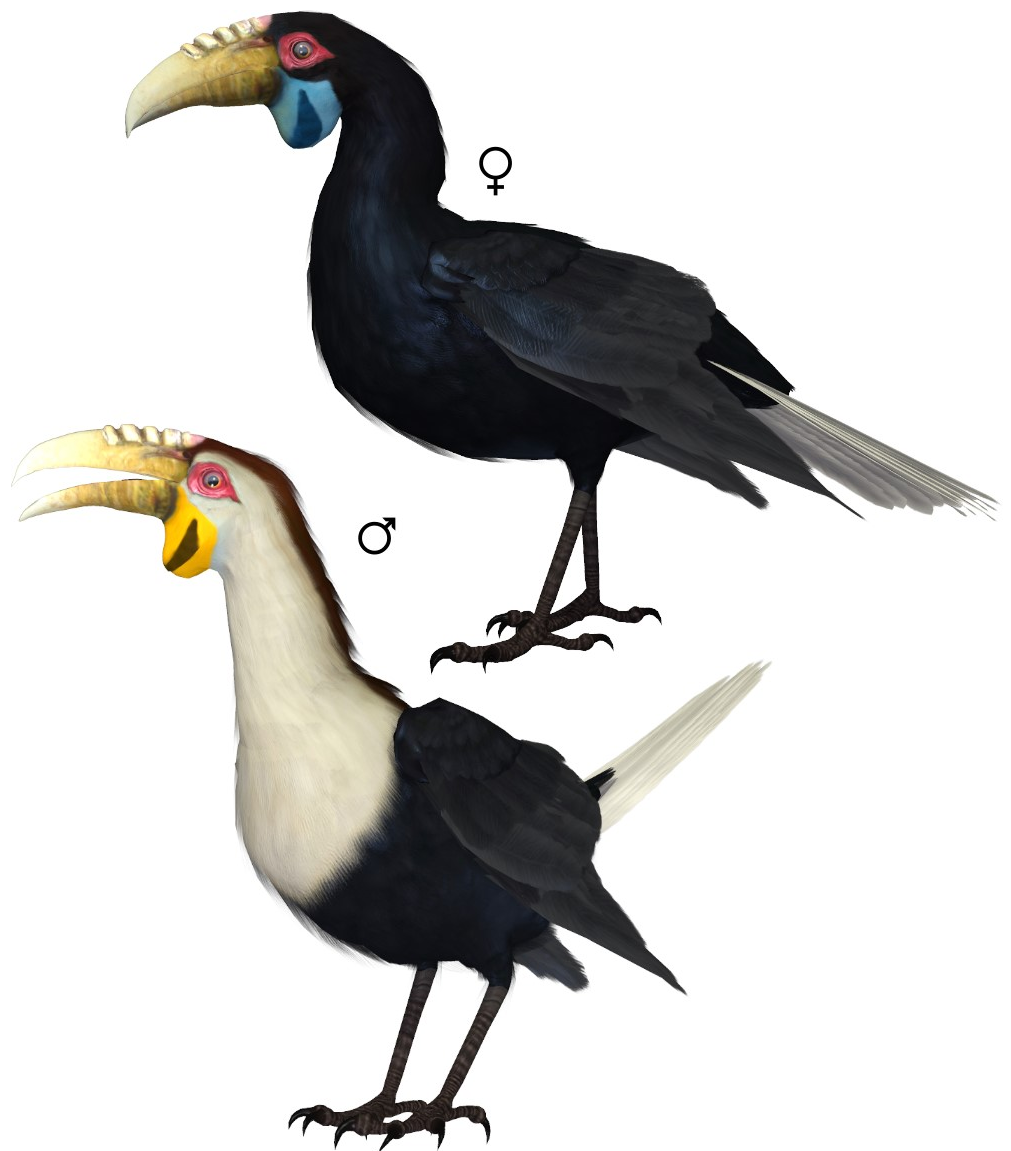
**Common Name:** Wreathed Hornbill  
**Scientific Name:** *Rhyticeros undulatus*

**Size:** 29.5-33.5 inches (75-85 cm)

**Habitat:** Asia; it is endemic to southern Bhutan and northeastern India east to Vietnam (north Annam), and southward to Sumatra, Borneo, Java and Bali, including several intervening offshore islands.

**Status:** Vulnerable. **Global population:** Unknown amount of adult individuals with a decreasing population trend. This species is considered intolerant of habitat loss, requiring large areas of undisturbed forest, in a region which is experiencing high rates of deforestation. High hunting pressure is likely exacerbating the population decline caused by habitat loss. The species is suspected to undergo a large population reduction over the next three generations. It is still hunted in several areas.

**Diet:** Mainly fruit; but also small animals (especially when breeding). Fruits of at least 30 plant genera have been recorded. Figs and lipid-rich drupes make up most of the fruit diet. Animal food is generally less than 5% of diet, and includes nestlings, reptiles, snails, insects, centipedes, millipedes and crabs.



It forages mainly in the canopy and descends to ground for fallen fruit and to take animals (especially during midday rest period).

**Nesting:** Sexes are dimorphic. A large, black hornbill with a white tail. The male has its crown and nape a dark red-brown. The head and neck to upper breast are a creamy white. Its bill is pale yellow; the basal half of both mandibles have prominent orange-brown ridges. The low wreathed casque is brownish and yellow. The bare skin around the eyes is pinkish-red and the inflatable throat skin is yellow with a blue-black central bar. The female is smaller and from head to breast, it is all black. The throat sac is blue with a darker band. The juvenile is similar to the adult male, but has a smaller bill with no casque.

Egg laying starts in April through June in India, and January to March elsewhere. The nest is in natural hole 18–28 m up in a tree, often *Dipterocarpus* or *Syzygium* species. The same cavity often used in successive seasons. The female seals the nest entrance with her droppings. The clutch usually two eggs, but only one chick ever raised. The incubation lasts about 40 days. Chicks hatch with pink skin that soon turns black. The male feeds female and chick in nest by regurgitation, up to 120 fruits per visit. The female emerges from nest when the chick fledges, does not always molt remiges and rectrices together while breeding. The fledging period takes about 90 days. The juvenile remains with parents for several months after leaving nest.

**Cool Facts:** It is distinguished from the Plain-pouched hornbill (*R. subruficollis*) by its larger size, the dark bar across throat sac and ridged mandibles.

**Common Name:** Rhinoceros Hornbill

**Scientific Name:** *Buceros rhinoceros*

**Size:** 31.5-35.4 inches (80–90 cm)

**Habitat:** Asia; endemic to southern Thailand, Peninsular Malaysia, Sumatra, Java and Borneo.



It prefers large areas of primary evergreen forest, extending into tall secondary forests. It is seen often crossing more open habitats and occurs at up to 1400 m.

**Status:** Vulnerable. **Global population:** Unknown amount of adult individuals with a decreasing population trend. Its distribution and numbers have been reduced in many areas over a wide range, mainly through cutting of forest for timber and agriculture. It is hunted in many areas for its bill and tail feathers, which are used in ceremonial dress. It is also captured for trade and for food.

It does occur in several protected areas, including Taman Negara National Park (Malaysia), Gunung Leuser, Bukit Barisan Selatan and Way Kambas

National Parks and Berbak Game Reserve (Sumatra), Bukit Baka Bukit Raya National Park and Kapuas Hulu District (West Kalimantan, Indonesia) and Danum Valley Conservation Area (Borneo).

**Diet:** Mainly fruits, especially figs, but also various lipid-rich capsules and drupes. In addition, it will eat any small animals that it can capture (mostly arthropods, but occasionally lizards, tree-frogs and bird eggs).

It usually forages in pairs and sometimes in small flocks when not breeding.

**Nesting:** Sexes are dimorphic. It is a large, mostly black hornbill with white thighs and vent. There is a black band across white tail. The bill and casque are cosmetically colored orange and red with preen oil. The male of the nominate race has a large casque which is black at its base, and more or less recurved at the tip. It has black-rimmed red eyes. The female is smaller, its casque smaller and without black. It has red-rimmed white eyes. The juvenile is with a small, casqueless bill and blue-gray eyes.

It lays eggs seasonally, in January, March through June, September and November. It sometimes will breed co-operatively. The nest is placed in a natural cavity 9–15 m up in tall forest tree. The entrance hole often an elongated slit. The clutch is 1–2 eggs with an incubation period of 37–46 days. The male feeds the nest occupants by regurgitating multiple food items from gullet. The female molts remiges and rectrices after being enclosed in the nest cavity and emerges 39–51 days after chicks hatch. The fledging period lasts 78–80 days.

**Cool Facts:** There are 3 subspecies:

- *B.c. rhinoceros*. The nominate race is found in southern Thailand, Peninsular Malaysia and Sumatra.
- *B.c. borneoensis*. This race is found in Borneo, It is smaller than the nominate race with a shorter and broader casque that is more sharply recurved at tip.
- *B.c. silvestris*. This race is found in Java, It has a broader black tail-band and the anterior casque is normally not rolled back.

**Common Name:** Writhe-billed Hornbill  
**Scientific Name:** *Rhabdotorrhinus waldeni*

**Size:** 24-25.6 inches (60-65 cm)

**Habitat:** Asia; endemic to the central Philippines; Panay and the Negros (almost extinct in latter). It is now extinct on the Guimaras.

It inhabits evergreen forests with closed canopies, but will also use selectively logged forests. It occurs from coast up to 950 m on the Negros, to 1200 m on Panay. It seems to require larger trees for nesting than does partially sympatric Visayan hornbill (*Penelopides panini*).

**Status:** **Critically Endangered**. **Global population:** 1,000-2,499 mature individuals with a decreasing population trend. The remaining population of this species is extremely small and severely fragmented. A combination of



extensive loss of low to mid-altitude forest and hunting have resulted in an extremely rapid population decline, although effective conservation measures on Panay offer hope that declines can be stopped.

**Diet:** Mainly fruit, including figs.

It is usually encountered in only small groups of up to 4 birds, rarely 25–30.

**Nesting:** Sexes are dimorphic. A medium-sized black hornbill with a broadly black-tipped white tail that becomes stained rufous from preen oil. The males

crown and hindneck are dark brown. Its head, neck and upper breast are rufous. The bill is orange-red with the base of lower mandible being ridged and highly wrinkled, as well as the casque. The bare skin around the eyes and on throat is saffron-yellow. The irises are a deep red. The female is smaller with its head to breast black. There is a blue or green tinge to its less extensive facial skin. The eyes are browner. The juvenile is similar to adult male, but its bill smaller, paler and casqueless. The facial skin is white or pinkish and the eyes are pale gray.

It probably lays eggs in March since chicks have been reported in nests in May–July. The nest is in a natural cavity in large tree, or in an old woodpecker hole. Both sexes seal the entrance. The clutch is usually 2 eggs.

**Cool Facts:** There is a conservation effort to save this species. Mt Talinis, designated for protection, is being managed as a geothermal reserve, and The Twin Lakes Balinsasayao Natural Park benefits from conservation funding. Other sites with recent records include Mt Kanla-on Natural Park (Negros) and Northern Negros Natural Park, which receives nominal protection. A nest-guarding scheme by PhilinCon (formerly PhilConserve) led to a reduction of nest poaching by 95% on Panay, and that population can be stabilized at its current size if inroads into the forest by small-scale logging can be stopped. The fledging of nearly 500 broods of one to three young each in the Central Panay Mountain Range was the consequence of this nest-protection scheme and the aim is to expand nest protection into more southerly parts of the CPMR. Confiscated hornbills have been rehabilitated and released by PESCP/PhilinCon. PhilinCon, in collaboration with CAPE, continues to monitor these crucial nest-sites at CPMR through a community-based nest warden scheme, where nest-poaching has been halted. On Negros, surveys have identified remaining populations of the species and management plans will be developed for these areas.

A five-year UNDP-GEF Biodiversity Partnership Project for the North Negros Natural Park was established in 2012. The project will support the development of conservation activities within the national park. As of December 2010, a total of 15 hornbills have been successfully bred at Mari-it Wildlife Conservation Park. Five of these captive-bred hornbills were transferred to two facilities on Negros Island. This brings a total of eight hornbills forming the captive population in Negros Island, representing the founder populations for eventual re-introduction. Massive awareness campaigns have been developed by various conservation NGOs, highlighting the plight of hornbills in the Negros-Panay faunal region. Livelihood incentives such as carabao (work animals) are being given to hunters to establish permanent agricultural plots instead of shifting cultivation. Seedlings of fruit trees, basic farm tools, rice seeds and informal training are given to hunters by the Mari-it Wildlife Conservation Park to encourage them to take up alternative livelihoods. The Philippine Hornbill Conservation Programme was formally inaugurated in 2002. Its role is to assess the species's distribution, conservation status, threats faced and conservation actions needed as well as potentially establishing several Local Conservation Areas (LCAs) for the species.



**Common Name:** Helmeted Hornbill

**Scientific Name:** *Rhinoplax vigil*

**Size:** 43-47 inches 110-120 cm)

**Habitat:** Asia; endemic to extreme southern Myanmar (south Tenasserim) and southern Thailand through Malay Peninsula to Sumatra and Borneo.

It inhabits primary evergreen forests, especially in the foothills, but appears to be able to use some selectively logged forests. It typically occurs at up to 1,100 m, occasionally 1,500 m.



**Status:** **Critically Endangered**. **Global population:** Unknown amount of adult individuals with a decreasing population trend. The species is heavily targeted by hunters and illegally traded. The species has a solid horn or casque, which is highly prized. China is the biggest consumer of the casques, which are often carved for decorations. Currently, the trade in this species is centered on Indonesia, but will likely move to Malaysia once the supply of birds becomes limiting in Indonesia. Between March 2012 and August 2014, 1,117 heads/casques were seized in Indonesia during enforcement actions, and in the same period 1,053 heads/casques were confiscated in China. It has also been recorded in trade in Laos and Thailand. Large numbers of hunters have been observed in the forests of Sumatra searching for this species, and in June 2015 a group of around 30 hunters was broken up in

northern Sumatra. Thailand Hornbill Project also reported a poaching of four Helmeted Hornbill in Southern Thailand at the end of September 2019.

The trade network is thought to be largely managed by organized crime. This means that trade pressure is likely to continue, eventually reaching every part of the species's range, and will be very difficult to control. Many traders seized have also been involved in the trade of other high-value wildlife such as Sumatran Tiger and Sunda Pangolin. In West Kalimantan, it is thought that as many as 500 birds were being killed over a month in 2013, resulting in an annual loss of 6,000 individuals. There is no information to suggest that such levels of exploitation should be any different in other Indonesian provinces; indeed trade in hundreds of birds per month from Sumatra has been reported within the last year. Owing to the species's breeding behavior, hunting is likely to have a particularly severe impact: Breeding involves the female being incarcerated for c.160 days, while the male provisions the female and nestling in the nest. Although the female will break out of the nest should the male stop providing food, she may be in heavy molt, with her ability to survive being seriously compromised. The killing of the male could lead to the subsequent death of both the chick and the female. In addition to hunting the species for its casque, it is also targeted for its feathers. Although this trade is small, it exerts an additional pressure, which is also likely to contribute to population declines.

**Diet:** Mainly fruit, especially figs, but about half of each day spent hunting small animals, including squirrels, snakes, birds, even smaller hornbill species.

It forages mainly in canopy of tall trees. It is suspected to dig under bark and into soft wood and crevices, sometimes hanging almost upside-down. Pair-members hunt separately within its home range.

**Nesting:** Sexes are dimorphic. It is a distinctive, very large hornbill, which is mostly dark brown and white with unusually long central tail feathers, and a relatively short bill which is cosmetically colored red with preen oil. It has white thighs and vent. The male has bare red areas on the neck. The bill is very short and has a tall casque. The eyes are dark red. The female is smaller, with an ivory throat. The juvenile has much shorter central rectrices, a small yellow bill, a low casque, and its bare head and neck are light greenish blue.

Lays eggs seasonally, in January–March, May and November. It is territorial in pairs, with aerial casque-butting in aggression. The nest is placed in natural hole in tall tree and the entrance sealed with mud and food remains. Its floor is lined with wood chips. The clutch is 1–2 eggs, but only 1 fledgling survives. The female is fed in nest by male, with food carried in gullet and regurgitated, except for some larger animals which are carried in the bill tip.

**Cool Facts:** Its call is a long series of short, resonant “*pooh*” calls, which sound rather high-pitched for the bird’s size and which suddenly shift to several bi-syllabic “*poohooh*” calls, ending in a harsh, cackling laugh.

## Special Thanks to my Beta-Testing Team...

*Alisa & FlintHawk*

## Species Accuracy and Reference Materials

The author 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.

## Field Guide Sources:

- **Handbook of the Birds of the World** <https://www.hbw.com/>
- **Wikipedia** [https://en.wikipedia.org/wiki/Main\\_Page](https://en.wikipedia.org/wiki/Main_Page)
- **BirdLife International** <https://www.birdlife.org/>



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