

Module # 6-Component # 6



Juvenile bateleur-*Terathopius ecaudatus*

Introduction

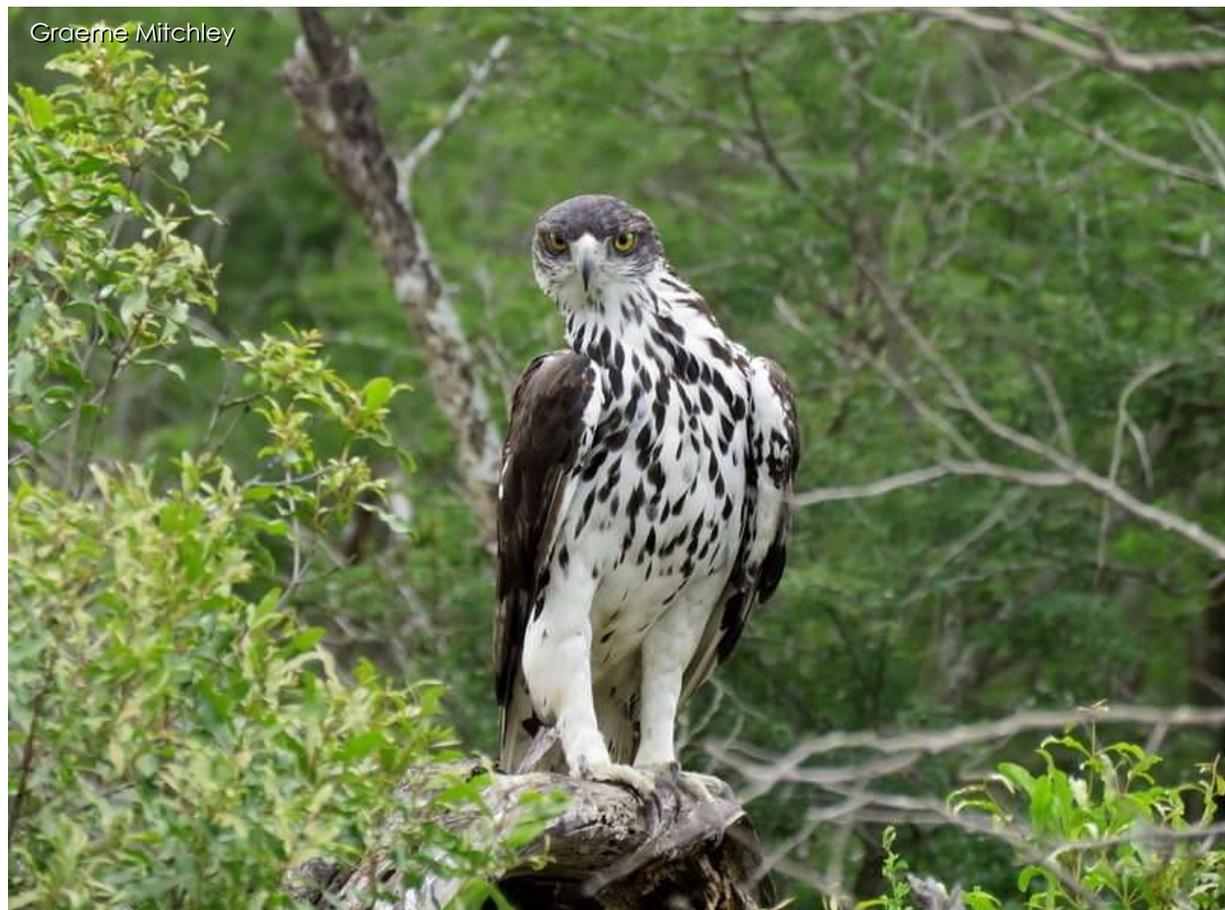
There are **17 eagle** species in **southern Africa**. The group is subdivided into **2 groups**:

- **Snake eagles** are characterised by having **unfeathered legs**. Except for **bateleurs**, they are all classed in a **single** genus, *Circaetus*. There are **5 members of the snake eagle** group in the region. **Bateleurs** (*Terathopius ecaudatus*) are hyper-aerial, scavenging **snake eagles**. In contrast, **black-breasted snake eagles** (*Circaetus pectoralis*) often **soar** and **hover** for prey. The remaining snake eagles are **ambush predators** of snakes. They are **not immune** to snake venom and may be immobilised by it. Their **tarsi have thick scales**, which are thought to protect them against snake bites.
- **True eagles** have **feathered legs** that extend down to their feet. Only **5** of the true eagle species are found in the same **Genus** *Aquila*. There are **12 true eagle species** in the region. The true eagles have **large talons**, **heavy bills** and usually **hunt from the air**.

Eagles of southern Africa

Subfamily: Buteoninae

- **African crowned eagle**-*Stephanoaetus coronatus*
- **African fish eagle**-*Haliaeetus vocifer*
- **African hawk-eagle**-*Aquila spilogaster*
- **Ayres's hawk-eagle**-*Aquila ayresii*
- **Bateleur**-*Terathopius ecaudatus*
- **Booted eagle**-*Hieraetus pennatus*, also classified as *Aquila pennata*
- **Lesser spotted eagle**-*Aquila pomarina*
- **Long-crested eagle**-*Lophaetus occipitalis*
- **Martial eagle**-*Polemaetus bellicosus*
- **Steppe eagle**-*Aquila nipalensis*
- **Tawny eagle**-*Aquila rapax*
- **Verreaux's eagle**-*Aquila verreauxii*
- **Wahlberg's eagle**-*Hieraetus wahlbergi*



African hawk-eagle-*Aquila spilogaster*

Subfamily: Circaetinae

- **Black-breasted or black-chested snake eagle**-*Circaetus pectoralis*
- **Brown snake eagle**-*Circaetus cinereus*
- **Southern banded or Fasciated snake eagle**-*Circaetus fasciolatus*
- **Western banded snake eagle**-*Circaetus cinerascens*

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Black-breasted or black-chested snake eagle-*Circaetus pectoralis*

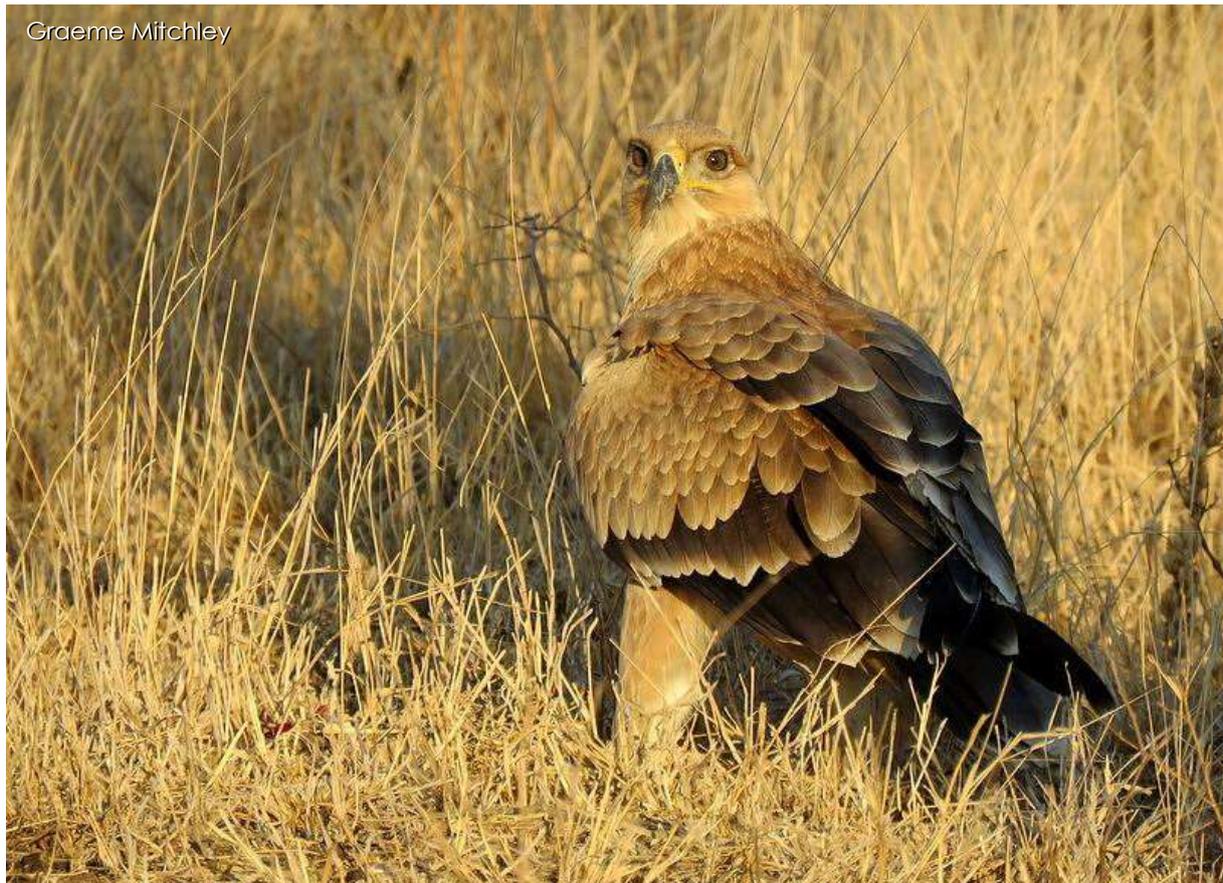
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Long-crested eagle-*Lophaetus occipitalis*

In this component, we will focus on the following eagle species:

- **African fish eagle**-*Haliaeetus vocifer*
- **Bateleur**-*Terathopius ecaudatus*
- **Brown snake eagle**-*Circaetus cinereus*
- **Martial eagle**-*Polemaetus bellicosus*
- **Tawny eagle**-*Aquila rapax*
- **Verreaux's eagle**-*Aquila verreauxii*
- **Wahlberg's eagle**-*Hieraetus wahlbergi*



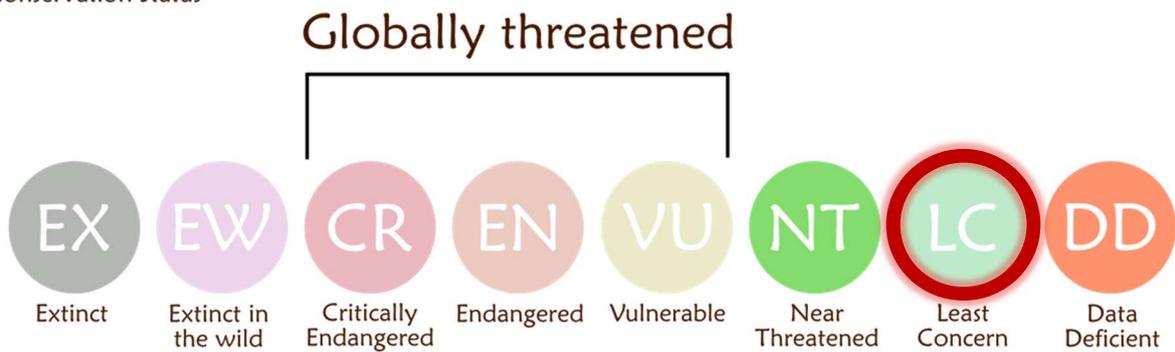
Tawny eagle-*Aquila rapax*

African fish eagle- *Haliaeetus vocifer*

Vital statistics

Wingspan	2.4 m [7.9 ft] ♀ 2 m [6.6 ft] ♂
Weight	3.2-3.6 kg [7.1-7.9 lb] ♀ 2.0-2.5 kg [4.4-5.5 lb] ♂
Preferred prey	Fish specialists. Will hunt other vertebrates and take carrion.
Incubation period	42-45 days.
Clutch size	1-4 (usually 2).
Status	Locally common resident.
Nesting site	Flat-topped trees, in forks of tall trees, and on cliffs. Less than 100 m [328 ft] from water, but up to 2 km [1.2 mi] away where large trees are scarce.
Nestling period	70-75 days.
Hunting success	13% (of each attempt).
Habitat	Near water. Natural or artificial.

Conservation Status



Description

African fish eagles (*Haliaeetus vocifer*) are of the **best known** of all the raptors. This is partly due to the wide variety of footage recorded of these **birds catching fish from water**. You also do not need to be a serious birder to recognise their melodic calls.

African fish eagles are **not true eagles** (although they **do have feathered legs**) but belong to the *Haliaeetus* genus of **sea eagles**, alongside **7 other species worldwide** that include **American bald eagles** and **Eurasian white-tailed eagles**. This is **one of the most ancient genera among all living birds**.

African fish eagles are **easy to identify**. They have distinctive white **heads, breasts, and mantles**, offset by chestnut brown **abdomens, shoulders**, and black **wings**.



They also have short white **tails** that are often concealed by their folded wings. Their **faces** and **legs** are dull yellows, and their **bills** are grey. **Females can be distinguished** from males, being **10-15%** larger when seen perched together, and have a **squarer bib**, which is not as deep as the males. Some may confuse them with **American bald eagles**, but these birds are not African residents.

Juvenile African fish eagles are **drab brown** with **whitish heads**. Their bib is also **whitish** but **streaked with brown**. They too, have **white tails** that are **longer than those of adults**. However, their **tails have a conspicuous black terminal band**, a clear diagnostic characteristic seen in flight. The transition from immature plumage to adult takes about **5 years**, but individuals may breed before reaching full adult plumage.



Eagles

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Diet, fishing and feeding

African fish eagles are **not unique in utilising fish** as a food resource, but they are the **most majestic** in their mode of obtaining them. These birds have long **talons** with **spicules** (tiny hooks) **on the pads** of their feet to **aid in grasping** their favoured prey. In addition, their **broad wings** enable them to soar even in light breezes. They **give maximum lift when rising off water** with fish.



They hunt from either a **perch** or **on the wing**. Fish are caught in a shallow dive, both feet being thrown forward just before the strike. They usually **maintain momentum** and **swoop up gracefully**, clutching the fish. Fish are typically caught **15 cm** [6 in] below the water and never below **30 cm** [12 in], so the birds **do not immerse** themselves during a kill.

The most frequent prey are surface-swimming fish. **Tilapia** (*Cichlidae*), **catfish** (*Clarias* species) and **mullet** (*Mugilidae*) are frequently taken in estuaries. Prey is normally **located by sight**, although recent evidence suggests that the **sound of splashing** fish may be used in prey detection. They are also able to catch fish in choppy or murky water.



C: Sibylle Hähner

Occasionally, they may **literally bite off more than they can chew**. In these cases, these **large fish will be killed by the gripping talons before take-off**. However, if fish are too large to carry off, the birds may **paddle to shore** using their wings while dragging the fish. A far less graceful sight to their usual *modus operandi*.



Although considered quite accomplished hunters, an average of **7.5 strikes** are attempted for every successful capture. African fish eagles are also quite **skilled pirates**, capable of considerable speed and dexterity on the wing and taking prey from various other avian species, including **pelicans, goliath herons** and **saddle-billed storks**. They kleptoparasitise piscivores down to the size of **pied kingfishers**. Only **storks** and occasionally **western ospreys** can avoid piracy. Their prey resource base is also **far from being limited to fish**, as they hunt other **birds, reptiles**, and **amphibians**. **Mammalian prey** is rarely taken, but they are **not above scavenging carrion**. They are occasionally seen in the company of **vultures** at carcasses.

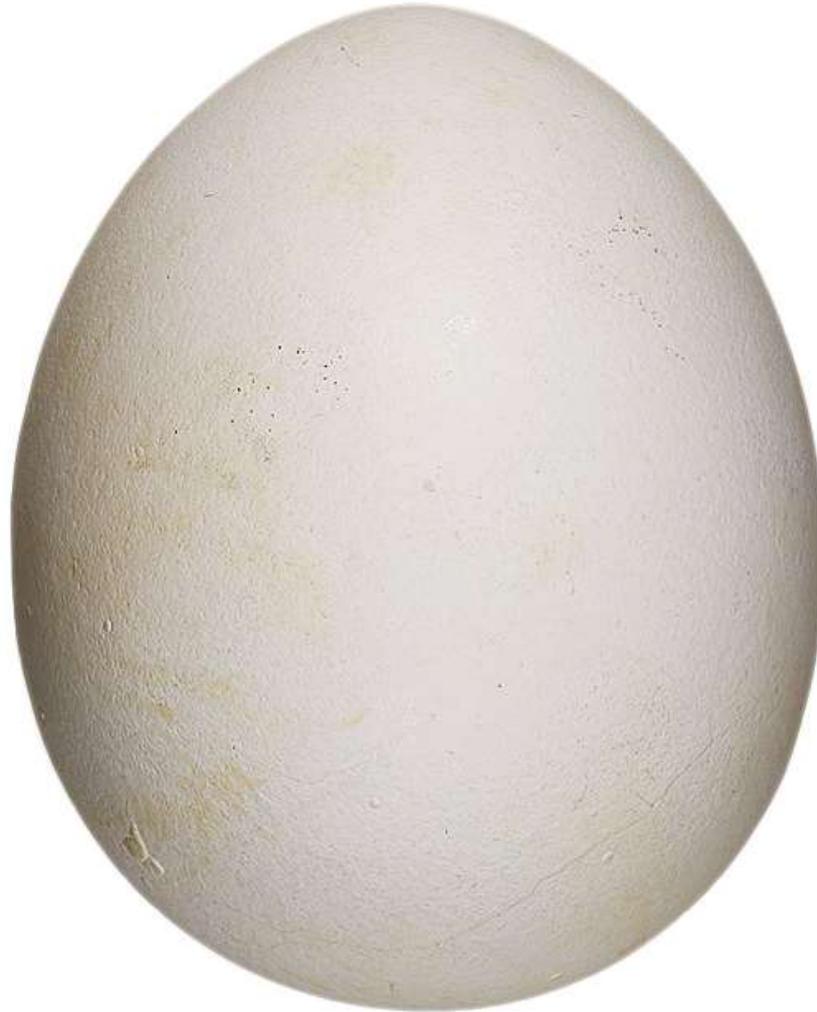
Courtship and reproduction

Fish eagles form **bond pairs** to mate, and pairs can often be seen **duetting**. This not only strengthens the bond pair but is an integral part of their nuptial display. When their **vocalisation increases**, the start of their **breeding season** is initiated. This also **stimulates other pairs** in the vicinity. Their calling is accompanied by aerial displays, where they perform undulating dives and upward swoops. This is intensified when the male rises high above his mate and dives toward her. As he reaches her, she turns on her back, presenting her talons to his. Occasionally, the pair may lock talons and fall hundreds of metres in whirling flight.



Nests are built in tall trees, which are usually difficult to climb. **Thorny acacias, smooth-barked trees** and **euphorbias** are commonly used. Their nests are built within tree canopies or on top of them and **never far away from water**. The size and shape of nests vary, depending on their duration of use. Both sexes' help in **construction**, and new nests may be built in about **2 months** or old ones repaired in a few weeks. **Regularly used** nests may persist for **10 years**, and one studied site had the nest being used annually for **21 years**. In southern Africa, **eggs are laid during April through to June**, and a typical clutch consists of **2 plain white eggs**.

Incubation is undertaken **mainly by females**, but males will readily incubate while females are hunting. However, most of incubation at night is done by females. The incubation period is **42-45 days**. Eggs hatch **2-3 days** apart, and nestlings begin flying at **75 days**. They become **fully independent** of the adults about **2 months** after leaving the nest.



Egg of an African fish eagle (not to scale)

Collection of René de Naurois/Jacques Perrin de Brichambaut

The brood is often reduced directly or indirectly by **sibling aggression**. The older chick will mercilessly attack the younger chick, even when there is enough food for both of them. Adults will ignore this sibling aggression. By about **7 weeks**, competition for food increases, but aggression decreases because the chicks can defend themselves. **Cainism** (killing of a younger sibling by an older) in African fish eagles is believed to be facultative because **2** or **3** chicks sometimes survive to fledging.

Home range

Adult African fish eagles are generally **sedentary** and stay within relatively **small territories** if conditions suit them. The juveniles are, however, prone to wandering before they settle. For example, **1 ringed immature individual** was found **200 km [80 mi]** from the nest where it had been ringed some **2.5 years earlier**.



Conservation status

Not threatened globally, but vulnerable in Namibia because of a small population. In South Africa, there is no evidence of decreases despite high pesticide levels in at least some eggs.

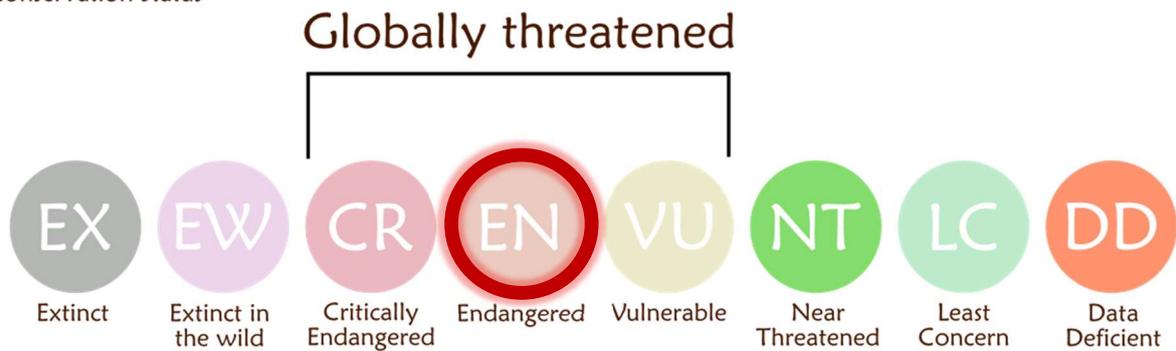


Bateleur-*Terathopius ecaudatus*

Vital statistics

Wingspan	186 cm [73.2 in].
Weight	2-3 kg [4.5-6.5 lb].
Preferred prey	Scavenge on small animal carcasses (70-85%); also hunt small mammals, birds and reptiles.
Incubation period	55 days.
Clutch size	1 egg.
IUCN Status	Endangered (less than 1 500 birds remain in South Africa).
Nesting site	Treetops, usually <i>Acacia (Vachellia)</i> species or other thorn trees.
Nestling period	95-195 days.
Habitat	Open grassland and Savanna woodland.

Conservation Status



Description

Bateleurs (*Terathopius ecaudatus*) are **medium-sized eagles** in the family Accipitridae (diurnal raptors). Their closest relatives are **snake eagles**. The name '**bateleur**' is French for '**tightrope-walker**'. This name was probably given to these birds because of their **distinctive aerial acrobatics**. Their **scientific name** is a mixture of Greek and Latin and is translated as '**marvellous face**'; '**without tail**'.



Bateleurs are arguably the **most striking looking** of the greater group of eagles. It is difficult to wrongly identify them, with their **red faces, legs, and feet**. These bulky looking eagles are mostly black with grey wing coverts. They also have a creamy white patch on their upper **backs**. Their **eyes** are a deep honey brown, and their **bills** grey tipped, merging to yellow at the base. These birds are also very distinctive in flight, **appearing almost tailless**.

Bateleurs are **sexually dimorphic**. Both adults have black plumage, chestnut mantles and **tails**, grey **shoulders**, tawny **wing coverts**, red **facial skin**, **bills** and **legs**. Females also have tawny **secondary wing feathers**. Less commonly, their **mantles** may be white. It is quite easy to distinguish between males and females in flight. **Females'** wings will appear mostly **white** underneath, where **males** will show **all-black primaries**.



Bateleurs in flight

Male showing black primaries (left) and **female** showing mostly white (right)

Juveniles are very different, being **mostly light brown**. Their **faces** are a pale greenish-blue, and their **legs** and **feet** whitish-grey. These characteristics often lead to them being mistaken for **brown snake eagles**.



Progression from **1st juvenile plumage to full adulthood** is a lengthy period, taking **7-8 years**, as they pass through a succession of gradual moults.



Eagles

Flight, diet and feeding

Although bateleurs are capable of **rigorous powered flight**, like most raptors, they prefer to **soar slowly**. Also, like many of the other raptors, they wait for **warm thermals** to gain their lift into the air. Therefore, they may be considered late risers, only taking to the wing in mid to late morning. On rainy or overcast days, they **remain grounded** and do not hunt.

Bateleurs are undoubtedly accomplished hunters and have been found to take a wide variety of prey species, ranging from **other birds** to **mammals** up to **4 kg [9 lb]** in weight. In addition, an assortment of **reptiles**, including **venomous snakes** to which the bird is not immune, is also taken. With all this said, however, **two-thirds** of their diet consist of **carrion**.



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They are, therefore, magnificent scavengers and hunters. They locate their prey from the air, sometimes attacking with violent downward swoops for several hundred metres or a slow parachute-like drop.

They are adept at finding small carcasses before other scavengers by following roads and looking for road kills. Their high dependence on carrion has almost confined them to the status of **game reserve species**, having totally disappeared from most other regions of the country. This is due to the **diminishing number of carcasses** and the **poisoning** of many others. In many ways, they have suffered the same plight as **vultures**. Ironically, the pest species that the poisoning was meant to quell, **jackals**, remain in undiminished numbers after decades of poisoning. Within conservation areas, these birds have reached relatively high densities. They may stay in the **same territory** with the **same mate** throughout their lives.

Courtship and reproduction

Bateleur courtship involves some **spectacular flight displays**. In these flights, the males chase the females. The male, who can reach up to **80 kph** [50 mph] in-flight, dives at the female, who rolls and presents her talons at him. He may then execute several **360° rolls** and start for her again. This is all accompanied by loud calling by the male and an odd sound made by his wings that sounds like loose sails flapping in the wind.

Nests, mainly built by males, are situated in large trees, usually at **10-15 m** [33-50 ft]. They are built within the canopy and are **shaded** for most of the day. Although a variety of trees may be used, **thorny Acacia** (*Vachellia*) are favoured. Small dry sticks are used to build a platform. The cup is lined with lots of green leaves.

A **single egg** is laid between **January-April** (Southern hemisphere summer). Several studies indicate that both sexes incubate the egg.

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Males will **vigorously defend** nests if an egg or nestling is present by frequently dive-bombing any intruders. If the intruder is still not dislodged, he will settle on a tree between the intruder and nest and make **threatening postures** by raising his wings.

Incubation generally lasts **55 days**, and **nestling periods** have been observed between **95** and **195 days**. Once the juveniles begin flying, they still stay around the nest for about **3 months**, where the **adults still feed them**.

Both sexes contribute equally to brooding and feeding chicks. However, males will sometimes pass prey to females if they spend more time at the nest. Bateleurs will partly swallow snakes to carry to their nests but are apparently **unable to regurgitate** other prey to their chicks.

Breeding success:

In Zimbabwe and Kruger National Park, studies showed that approximately **70-80%** of the broods will be successful. Most failures are due to predation on eggs and nestlings, and human interference at nest sites. The high predation risk at the nest is linked to the wide-ranging aerial foraging by the adults, resulting in low nest attendance. **Adults will readily desert their nests if disturbed.**



Conservation status

Bateleurs are **not globally threatened** but are regarded as **endangered** in South Africa. Their range has declined dramatically over the last **100 years** and now depends almost entirely on protected areas. Reasons for their decline include **eating poisoned meat** and getting **trapped** for their feathers that traditional healers use.

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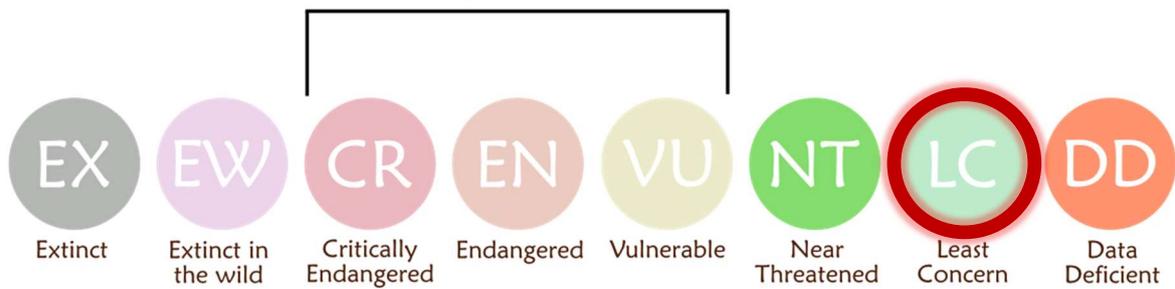
Brown snake eagle- *Circaetus cinereus*

Vital statistics

Wingspan	160-185 cm [63-72.8 in].
Weight	1.5-2.5 kg [3.3-5.5 lb]
Preferred prey	Mainly snakes (including mambas over 2.5 m [8.2 ft] long).
Incubation period	48-53 days.
Clutch size	1 egg.
Status	Least concern. Uncommon, resident or nomadic.
Nesting site	Placed on top of a flat-topped tree (Knob thorns and large Euphorbia species).
Nestling period	95-112 days.
Habitat	Wide range of woodlands, including Mopane (<i>Colophospermum mopane</i>) and Kalahari thornveld.

Conservation Status

Globally threatened



Description

Brown snake eagles (*Circaetus cinereus*) are beautiful eagles with a **warm chocolate brown** overall colour. Adult **sexes** are **alike** in plumage. **Females** are **slightly larger** than **males**. Their brown feathers have blackish shaft streaks. Their **tails** are also brown with **3 narrow pale-brown bars** on the **uppertail**. Their **undertail** is also brown, with prominent pale coloured bars. They have black **bills** with pale **ceres** and big yellow **eyes**. Being snake eagles, their **legs and feet are featherless** and appear a pale yellow colour. Their characteristic **square heads** make them relatively easy to identify when perched in trees.

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Juveniles are highly variable, with some resembling adults on fledging. In contrast, others have **extensive white bases** to the feathers of their **chests** and **bellies**. Their **eyes**, **bills** and **ceres** resemble the adults'.

Diet and feeding

Brown snake eagles **hunt** mainly from a **perch**. Occasionally, they can be seen soaring while looking for food. They **kill their prey** by **dropping onto it, smashing the spine** with their **small, powerful talons**, then giving twisting bites to the back. They **crush the heads of snakes** and **swallow them first**. Snakes caught by the eagles will strike at them, usually ineffectively. On occasion, brown-snake eagles get coiled by larger snakes like **mole snakes** (*Pseudaspis cana*) or **southern African pythons** (*Python natalensis*). Their heavily scaled legs provide **some protection** against snake bites. However, they are **not immune to snake venom**.



Prey is **swallowed on the ground** or from **an elevated perch**, but **not during flight**. Their characteristically large (square) **heads** may be associated with their large gapes. Their large gapes enable them to swallow thick snakes such as **large puff adders (above)** (*Bitis arietans*). They will swallow, withdraw and re-swallow large snakes up to **6 times** to seat them comfortably in their stomachs. They eat both venomous and non-venomous snakes. The largest prey recorded was a **2.78 m [9.1 ft] black mamba** (*Dendroaspis polylepis*).

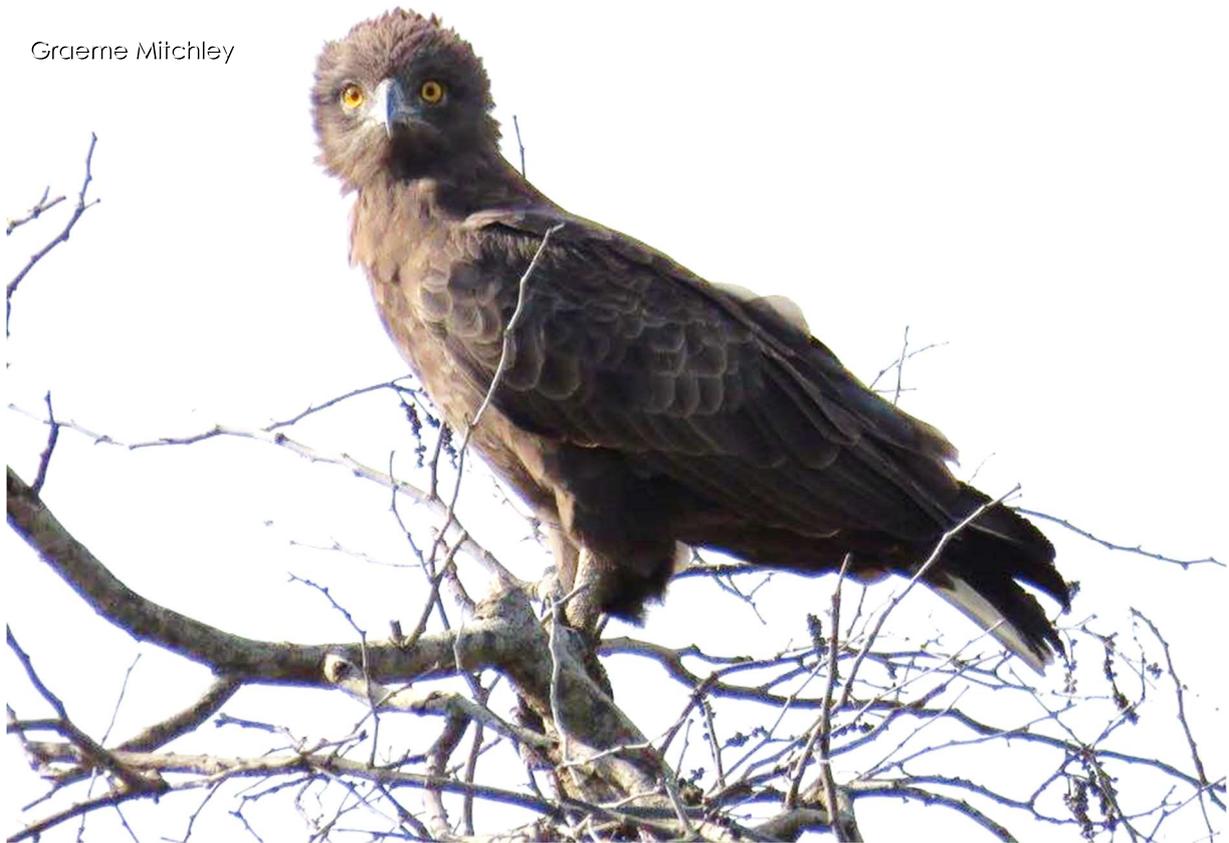
Courtship and reproduction

Brown snake eagles are considered to be **monogamous**. They are also **solitary nesters**. The **aerial displays** are both **territorial** and for **courtship**. They usually involve one bird soaring and diving over the territory while the other one is calling. They have also been observed in hovering 'butterfly' flight, where one bird follows the other whilst hovering. Observations of **2 birds** briefly locking talons in flight may be **courtship** or **territorial** disputes. Pairs may have fairly larger territories of up to **200 km²** [77 mi²].

Nests are **built by both sexes** in approximately **1 month**. They are placed on top of flat-topped trees and made with small, thin sticks. The cups are lined with leaves. Just before laying, through incubation and early chick stages, females (mainly) will keep bringing fresh new sprigs to their nests to line them. Favourite trees include **thorn trees** like *Senegalia nigrescens* and large *Euphorbia* species. Nests of other raptors are also occasionally used, including those of **tawny eagles**, **Wahlberg's eagles** and **African hawk-eagles**.

Peak **egg-laying times** in South Africa are from **December-February**. **1 chalky white** and **elliptical egg** is laid. The **incubation** period is **48-53 days** and is almost entirely done by the **females**. **Males will feed females** during this time. When approached at their nests, females crouch down flat onto them. The egg takes up to **60 hours** to hatch, and the newly hatched chick is scarcely covered in white down. At about **6 weeks**, the chick will do its first wing-flapping exercises. The fledgeling period is about **95-112 days**. The adults provide up to **3 snakes per day**. However, the number of feeds decreases towards the end of the nestling period. The snake is transported to the nest in the stomach with only the tail protruding from the bill. The chick can take the snake from the adult's bill at about **19 days** and stands and tears up large snakes at **5 weeks**. Nestlings eat both venomous and non-venomous snakes.

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Conservation status

Brown snake eagles are considered **not threatened**. However, the densities of these birds are much higher in protected areas than outside of the protected areas. This suggests susceptibility to habitat destruction and human disturbance outside reserves.

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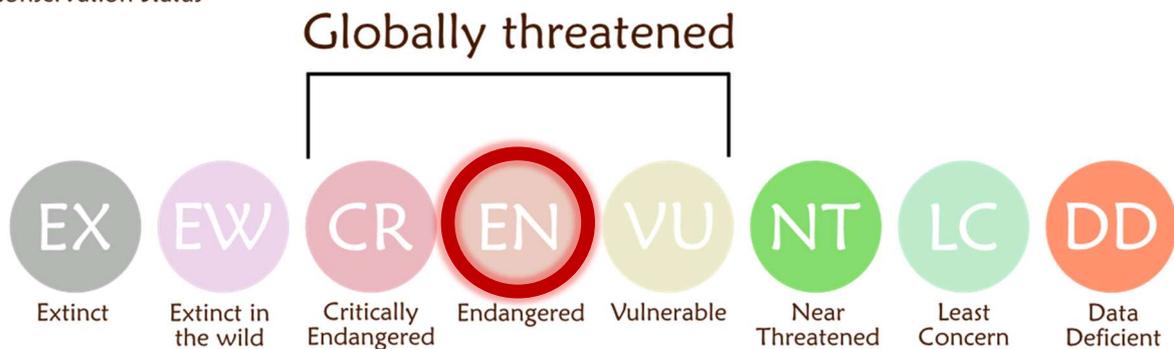


Martial eagle- *Polemaetus bellicosus*

Vital statistics

Wingspan	188-227 cm [74-89.3 in].
Weight (average)	2.2-3.14 kg [4.9-6.9 lb].
Preferred prey	Mainly small mammals such as hares, small antelope, jackals and small baboons. They also take game birds and reptiles.
Incubation period	45-53 days.
Clutch size	1 egg every 2 years.
IUCN Status	Endangered.
Nesting site	Tree-tops or electricity pylons.
Nestling period	96-109 days.
Hunting success	20% (of each attempt).
Habitat	Open grassland and Savanna woodland.

Conservation Status



Description

Martial eagles (*Polemaetus bellicosus*) are the **largest species of eagle in Africa** and the **5th heaviest in the world** based on **average weight**. For a species that is relatively homogeneous in its genetic make-up, the body mass of martial eagles is surprisingly variable. To some extent, the variation of body masses is attributed to considerable **reverse sexual dimorphism** and varying environmental conditions of various eagle populations. Unsexed martial eagles from multiple studies have been found to have weighed an average of **3.93 kg** [8.7 lb] in **17 birds**, **3.97 kg** [8.8 lb] in **20 birds** and **4.23 kg** [9.3 lb] in **20 birds**. In comparison, the average weight of martial eagles shot by game wardens in the early **20th century** in South Africa was listed as **4.71 kg** [10.4 lb].



They are most distinctive, although the inexperienced observer may confuse them with **black-breasted snake eagles**. Martial eagles have dark brown **heads** and **upper breasts**. This contrasts with white underparts, which are spotted with light brown. They have broad flat **heads**, with a short crest at the back. Their **eyes** are a deep yellow, and they have greyish-black **bills**.

Martial eagles have a **bold stance** when perched, which is accentuated with long, **white-feathered legs**. The **sexes are alike** in plumage, with the **females** being **slightly larger** and **more heavily built**.

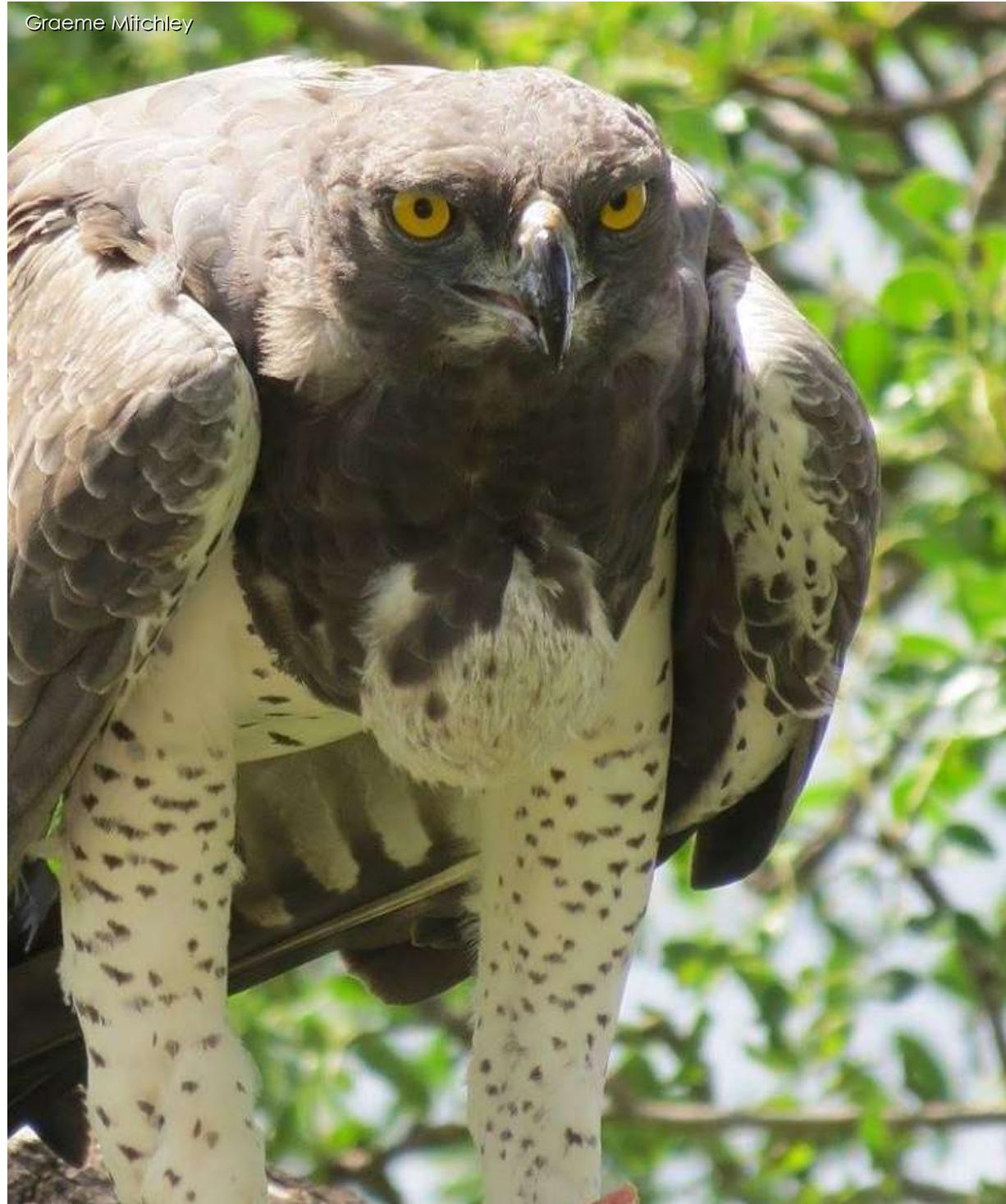
Juveniles have grey **upperparts**, with white edges to their feathers and immaculate white below. Their **eyes** are also **dark brown**. Transition to adult plumage takes between **6-7 years** and only begins when these immature birds are at least **2 years** old.

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Diet and feeding

Being the largest of the eagles' in Africa, martial eagles are the **most revered of all avian hunters**. These great birds can **soar kilometres up**, and they frequently do in their search for prey. They also have **incredible eyesight, at least 10 times more acute than our own**. Therefore, their combination of such power and superior vision makes them master hunters.



Martial eagles capture **a wide variety of prey**, including animals from all the vertebrate classes. Large avian species recorded caught include **African spoonbills, black-headed herons, white-bellied storks** and **spurwing geese**. These are in the same weight range as, or larger than, the **6 kg [13 lb]** of the eagle.

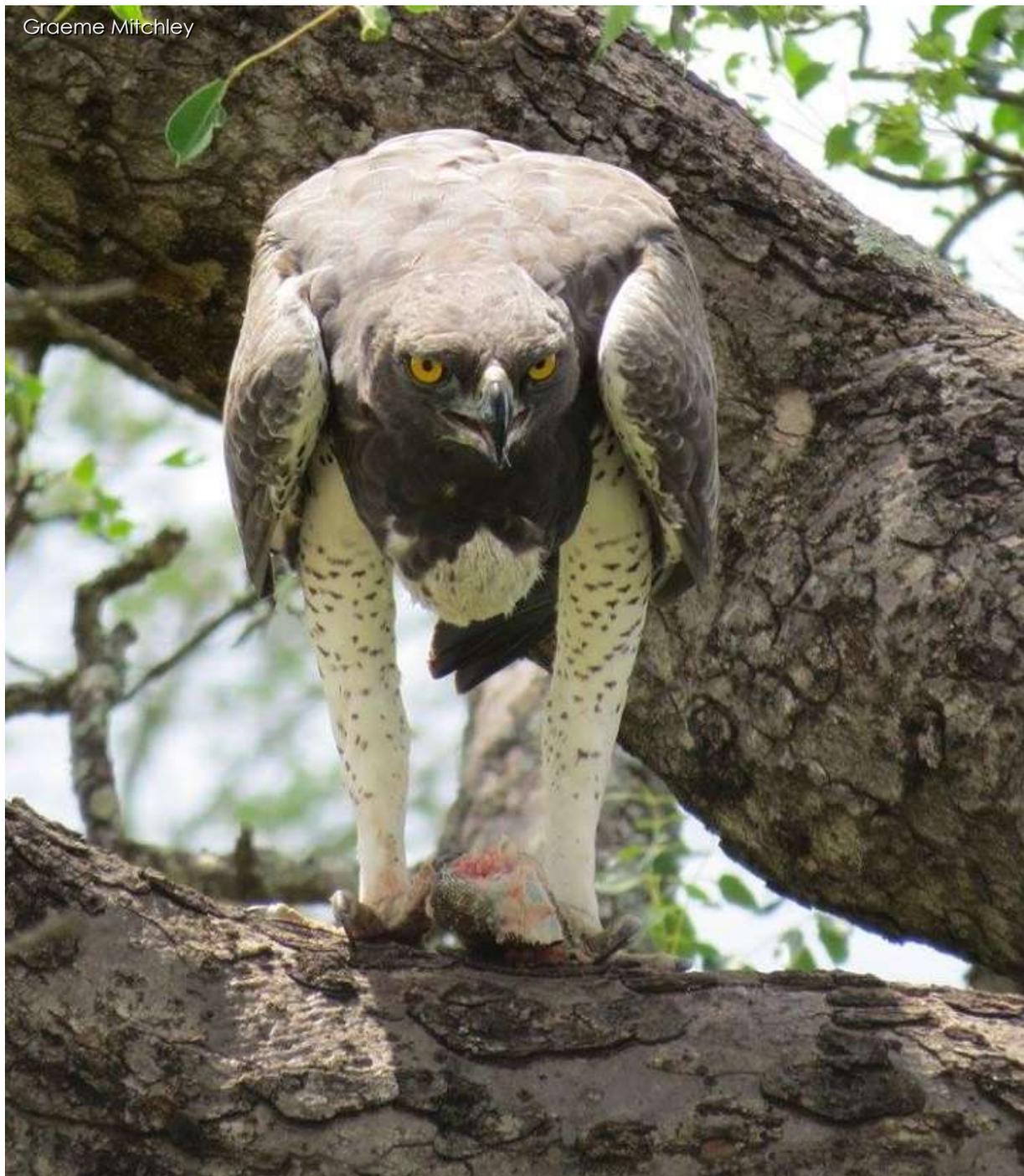
More impressive are **the mammal species that they can catch and kill**. These include many **small antelope** up to the **20 kg [44 lb]** range (please refer to the **mammal module, antelope component** for antelope weights and sizes). A spectacular example includes an adult martial eagle killing a **37 kg [82 lb] red duiker**, which it **grasped around the neck** and **strangled**.



They have also been observed hunting young **baboons, vervet monkeys, black-backed jackals, dassies, springhares, warhogs, wild cats, servals, caracals, striped polecats, genets, suricates, mongoose, squirrels** and even **pangolins**.

Although these birds take **snakes**, including venomous ones, their preferred reptilian prey are large **monitor lizards** (or **leguaans**). Also, like all other large eagles, martial eagles **will occasionally eat carrion** when available. Their actual hunting modes consist of long shallow swoops as their target is sighted, frequently **beginning their descent onto their prey from kilometres away**. When closer to their quarry, they dive at a steeper angle. At this point, they may be flying more than **60 kph** [38 mph]. They shoot their long legs forward at the point of the kill, grabbing their victims and most often **killing them on impact**.

Martial eagles' will perch in cover at waterholes to attack large birds coming in to drink. When an unsuspecting bird walks past underneath its perch, the eagle will drop down onto it, killing it on impact or strangling it.



Eagles

Courtship and reproduction

Martial eagles are **not known for any special courtship behaviour**. It basically consists of the pair flying around and calling each other. **Breeding only takes place every 2 years**, and when it does occur, eggs are laid from **March** through to **August**. This is because chicks are still dependent on both parents (even after leaving the nest) for another **6-12 months**.

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Martial eagles typically nest in trees, but many have been found on high tension **electricity pylons**. This habit seems to be increasing. The nests themselves are quite sturdy constructions made from robust sticks and branches. Because nests may be continually repaired and reused year after year, some old ones have reached **massive proportions** of **2 m** [6.5 ft] across and just as deep.

Only **1 white egg** is laid at a time, and **females are responsible for 90% of the incubation**. **Males feed the females**, and the females hunt when they have the opportunity. The **incubation period** seems to average at **45-53 days**. Nestling periods have been recorded between **96** and **109 days, averaging 99**. As mentioned above, juveniles **may persist at the nest** anywhere from **6-12 months** while still being fed by their parents. However, one noteworthy aspect of their development is that most eaglets can soar quite competently just **1 day after their first flight**.

Conservation status

Martial eagles maintain a **low population density** even in **optimal conditions**, with **1 pair** every **100 to 150 mi²** [38-57 mi²]. Because of persecution by farmers blaming them for domestic stock kills (which are **unfounded accusations**), the birds remain scarce outside larger conservation areas.



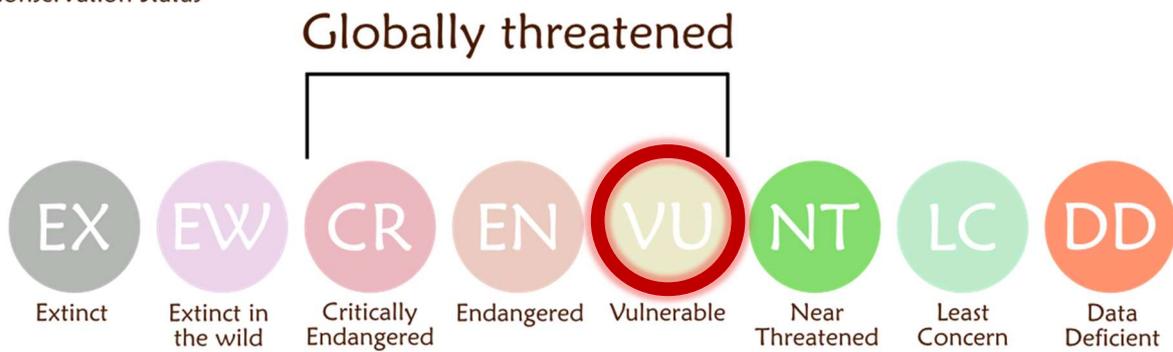
Martial eagles generally prefer remote areas **away from human habitation**, so human population growth and habitat loss are also significant contributors to their decline. They have always been uncommon throughout most of their range, likely due to large home ranges. They are now almost exclusively found in protected areas. Martial eagles are listed as **endangered** on the **IUCN Red Data List**.

Tawny eagle- *Aquila rapax*

Vital statistics

Wingspan	157-190 cm [62-75 in].
Weight	1.5-3.1 kg [3.3-6.8 lb]
Preferred prey	Opportunistic hunters; small mammals, birds, reptiles, frogs, fish and insects. They will scavenge at carcasses.
Incubation period	39-44 days.
Clutch size	1-3 eggs.
Status	Fairly common in protected areas. South African status is endangered. Global status is vulnerable.
Nesting site	Nests are placed on top of tree canopies or pylons.
Nestling period	11-12 weeks (fledges), stay at the nest for at least 6 weeks post-fledging.
Habitat	Savanna and Karoo plains.

Conservation Status



Description

In **tawny eagles** (*Aquila rapax*), **sexes are alike**, with **females being slightly larger** and **usually darker** in colour. They are the quintessential '**bushveld**' eagles. Tawny eagles are **commonly seen** but can be quite difficult to distinguish between the rest of the large brown eagles. Like all eagles, they belong to the family *Accipitridae*. Their **heavily feathered legs** illustrate them as members of the subfamily *Aquilinae*, also known as '**booted eagles**'.



Eagles

The plumage of the adults can be **confusingly variable**, from **dark rufous-brown** to pale buff-coloured, also referred to as the '**blondes**'. The 'blondes' are most likely to be confused with **steppe eagles** (*Aquila nipalensis*).

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Tawny eagles have **thickset bodies, robust bills, yellowish or honey-coloured eyes, short gape flanges, thick shaggy leggings** and body colours with some warmer tones. Their **eyes are paler** than **steppe eagles** but **slightly darker** in colour than **lesser spotted eagles**.

Tawny eagles have **fairly long necks**, and **deep bills** with gape lines level with their eyes. They have **moderately long wings** and **fairly pronounced 'fingers'**. Their **short tails** are slightly rounded to **almost square** (which remind us more of vultures than eagles).

In flight, they are identified by the **absence of dark rear edges to the secondaries**, **lack of black carpal patches** and **warm brown underwing coverts contrasting against darker flight feathers**. When flying, they appear as large raptors with prominent protruding **heads** on long **necks**, deep chests, long and broad wings with somewhat narrower **7 fingered hands**. Their wings' trailing edges are slightly curved outwards, **indenting at the junction** of the **primaries** and **secondaries**, while their **shortish rounded tails** are usually held spread out. They are **powerful fliers** and **usually soar** with **flat wings** or very slightly raised, and hands only slightly lower. Their underparts are often a rufous colour, with no black on their **bellies**. Their **tails** are brown (except in pale morph birds) with **no black terminal tail bar**. Tawny eagles have a weak **white 'U' mark** on their **rumps**. They are **usually found alone or in pairs**.

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Diet and feeding

Tawny eagles are unique as *Aquila* eagles in the **lack of specialisation** in their **feeding behaviour**. While most other *Aquila* will opportunistically scavenge, **tawny eagles freely take to scavenging on carrion**. You can often see these eagles at refuse dumps, slaughterhouses, near villages or on roadside kills. They are also very **skilled pirates**, often **kleptoparasitising** other **raptors**. Tawny eagles are very rapacious predators that attack a wide range of live prey. They hunt with a short dive or pounce from a perch or by stooping down from up high in a soaring flight.



Tawny eagles **may hunt in pairs**; this is done by the **one bird engaging in conspicuous flight** to **distract the quarry** while the **other bird will sneak up on the prey** and **kill it**. More than **200 species**, including live prey and carrion, are known to be eaten by tawny eagles, and they may have **one of the most varied diets of all raptors**.

Tawny eagles can often be seen at **termite mounds**, devouring the **alates** (winged termites) as they emerge from the mound. Although tawny eagles hunt for food, they **also rely on carrion**. They have been recorded feeding on a vast range of carcasses, from **African elephants** (*Loxodonta africana*) to **small primates**.



Tawny eagles also **steal food from other raptors**. Their Afrikaans name is '**roofarend**', which means '**robber eagle**'. They are quite fearless in their attacks at times. They are certain to engage in attacks more than other members of the booted eagle clan. There seem to be few limits to the raptorial birds that the tawny eagle will not pirate from given the opportunity.

Courtship and reproduction

These large raptors **pair for life** and are **very territorial**. The most common form of display is single or mutual high circling or soaring in wide spirals. The males will often swoop down repeatedly towards the females. Occasionally they will lock talons and cartwheel down **30 m** [9.8 ft] or more. In other related eagles of the Aquilinae subfamily, cartwheeling is considered more aggressive and seen as a **territorial dispute**. Undulating 'sky dances' are also sometimes performed by the males. These are magnificent displays where males perform a series of descents and upward swoops on partially closed wings while calling.

The peak breeding season in southern Africa is from **April-June**. Mating will generally occur in and around the nest vicinity.



Both sexes participate in building nests. Their nests are **large platforms**, comprising mainly of **dry sticks** but may also incorporate **animal bones**. Nesting sites tend to be in open country with good views of the surrounding area. Nests are placed on the top of large trees and only very rarely beneath the canopies. It can take up to **7 weeks** to complete a nest. Nests are usually lined with grass, leaves, old seedpods, fur, and odd objects like newspapers and paper bags.

Eggs are laid at **intervals of several days**, mainly **timed to the dry season**. Clutch sizes range from **1-3 eggs** per nest. The eggs are **incubated by the female** for the first **40-44 days**, with the male **sometimes relieving** the female.



Eggs of a tawny eagle (not to scale)

Two specimens of the same spawn
Collection of Jacques Perrin de Brichambaut

The juvenile eaglets can stand at about **3 weeks**, walk around in the nest at **4 weeks** and start to wing flap about a week later. Only **1 chick** survives after hatching. This is due to **cainism**. The first flight attempts are around **7-10 weeks**, but the chick is fully grown and capable of fledging the nest fully after **10-12 weeks**. The juvenile tawny eagle may sometimes stay with its parents until the next breeding season.

Juvenile eaglets often die. They are either killed by their siblings or by other predators at the nest. Nestling success is driven by the quality of habitat and food access.

Conservation status

Tawny eagles still occupy a large range. They are **fairly common in protected areas**. However, their numbers are decreasing outside of the protected areas due to poisoning. As a result, their conservation status **in South Africa is endangered**.

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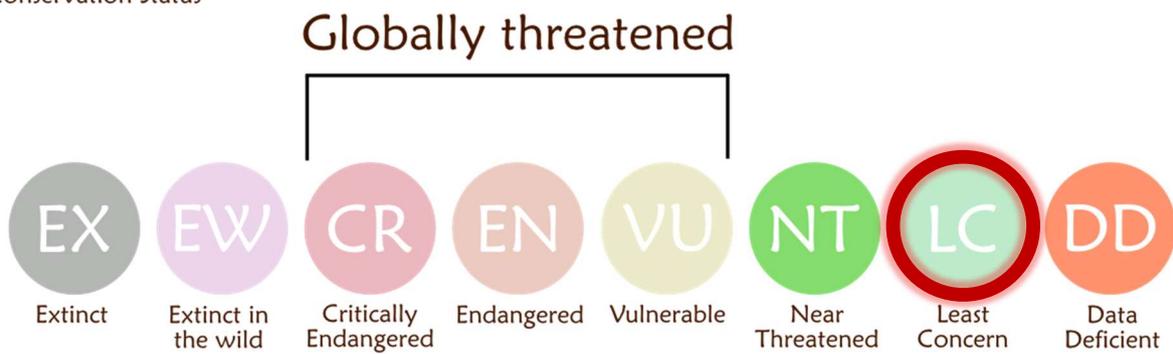


Verreaux's eagle-*Aquila verreauxii*

Vital statistics

Wingspan	1.81-2.3 m [5.9-7.5 ft].
Weight	3-4.2 kg [6.6-9.3 lb] ♂ 3.1-7 kg [6.8-15.4 lb] ♀
Preferred prey	Their main prey is hyraxes (<i>Procavia</i> species), but they also take monkeys, young baboons and antelope, as well as game birds.
Incubation period	43-47 days.
Clutch size	1-2 eggs.
Status	Locally fairly common resident. Considered vulnerable in South Africa.
Nesting site	Steep and inaccessible cliffs.
Nestling period	Approximately 3 months.
Habitat	Mountainous and rocky areas with large cliffs.

Conservation Status

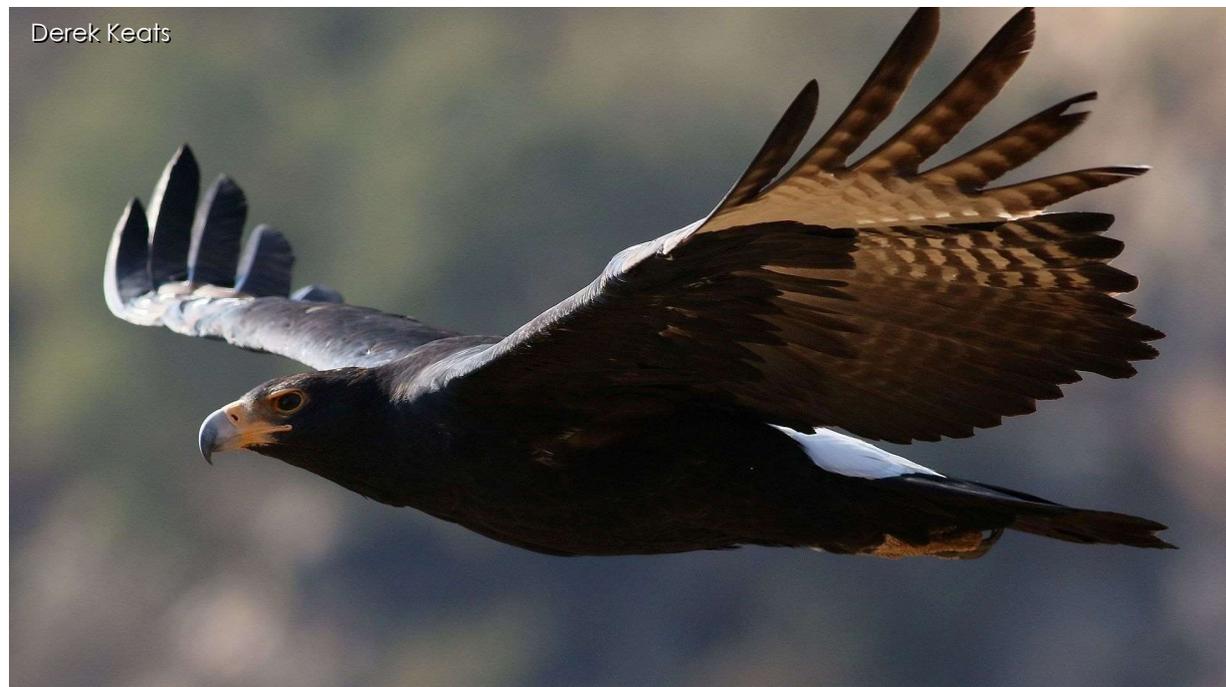


Description

Verreaux's eagles (*Aquila verreauxii*) are **mostly black**, with a **very distinctive white 'V' on their backs**. They have **white feathers** on the **underside of their wings** and at the **base of their backs**. Their **shiny black colour** contrasting with **white** makes them relatively easy to identify. The **yellow** colouration of their **ceres, eye-rings** and **'eye-brows'** all **stand out in contrast to their black plumage**. Their **bills** are **gun-metal grey**.

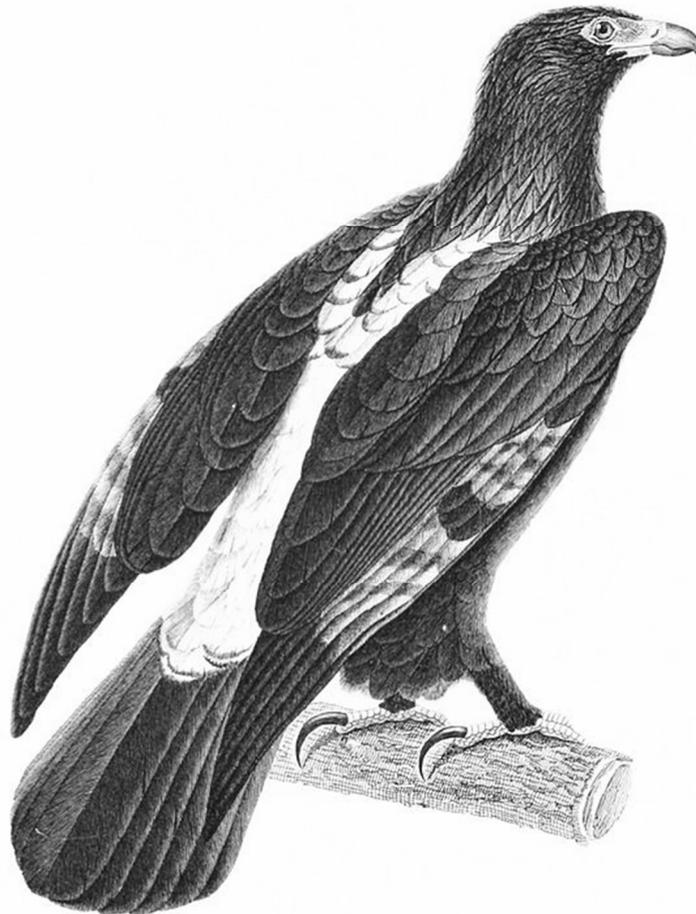
Sexes are alike. Females are slightly larger than males, which is **typical of raptors**. Although the Verreaux's eagles are **not as large** as **martial eagles** (discussed above), they are still **formidable raptors**. They are one of the most **specialised species** of *Accipitridae* in the world, with their distribution and life history revolving around their favourite prey species, **rock hyraxes**.

They were **previously** called **black eagles**, leading to potential confusion with **Indian black eagles** (*Ictinaetus malaiensis*), found further to the east in Asia.



Verreaux's eagles were **first described** by **René Primevère Lesson** in his **1830 publication**, *Centurie zoologique, ou choix d'animaux rares, nouveaux ou imparfaitement connus*, as *Aquila Verreauxii*. The species' name commemorates the French naturalist **Jules Verreaux** (as you will recall from the **bird names section** of this module), who visited southern Africa in the early **19th century** and collected the **type specimen** for the **French Academy of Sciences** (Mearns, Barbara, & Mearns, Richard. (1988). *Biographies for Birdwatchers*).

Pl. 58.



Protre pine!

Impr. de Langlois.

M^{me} Masecard sculp.

AIGLE Verreaux.

AQUILA Verreauxii, Less.

(Cap de Bonne Espérance)

Illustration from the species description by Lesson published in 1830

These large eagles measure **75-96 cm** [29.5-38 in] long from the **bill** to the **tip of the tail**, making them the **6th longest eagles** in the **world**. Their **average weight** is **approximately 4.19 kg** [9.3 lb].

Juvenile and **immature plumages differ** markedly from the plumage of adults. They are **overall a dark brown colour**. **Full adult plumage** is probably **attained in 5-6 years**.

While juveniles are quite different from adult's, their plumage is **no less distinctive**. No other accipitrids share their mottled brownish coloured **bodies**, blackish **wings** with large white patches or contrasting whitish, rufous and golden colour around their **heads** and **necks**.

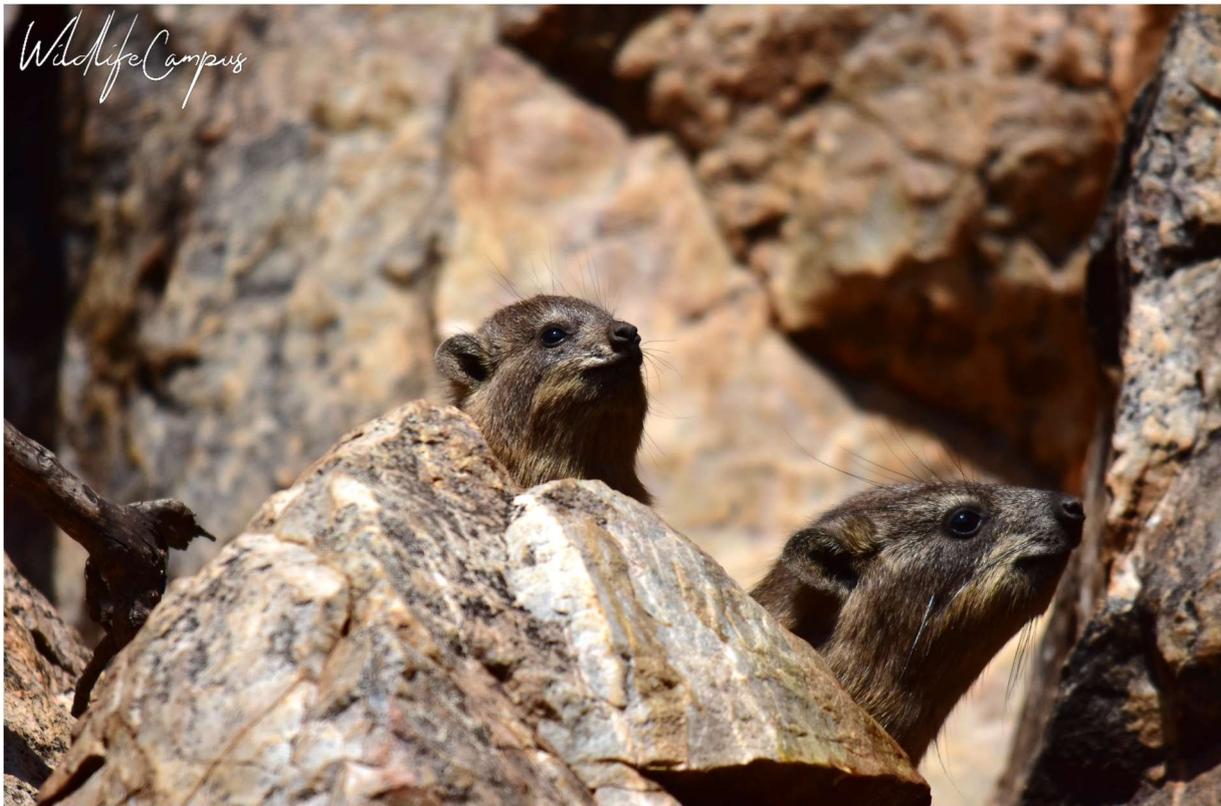
Their **flight profile** is also **distinctive**. Their wings are **dihedral**, **held slightly above their backs** and **primaries upturned at the tips to make a 'V' shape** (dihedral is the angle between **2 intersecting planes**). They are the **only *Aquila* species in Africa** to **soar in a pronounced dihedral**.



Diet and feeding

Verreaux's eagles have **specific habitat** requirements and are **rare outside** of their particular habitat type. They prefer to live in **koppies**, which are **dry, rocky environments**. They are anything from rocky hills to high mountains often surrounded by **Savanna, thornbush** and **sub-desert**. They are typically found in the **drier regions** of the country.

2 species comprise considerably more than half of (often more than **90%** of) their diet: **rock hyraxes** (*Procavia capensis*) and **yellow-spotted rock hyraxes** (*Heterohyrax brucei*). Few other accipitrids are as singularly specialised to hunt a single prey item.



Verreaux's eagles often hunt in low-level flight, with **rock hyraxes** mainly being **caught after a rapid, somewhat twisting dive** in the few seconds after the eagle surprises it. Verreaux's eagles **use natural contours** of the **ground in rocky and mountainous habitats** to **increase the element of surprise**. Hunting hyrax cooperatively has been recorded, with one eagle flying past and distracting the prey while the other strikes from behind. Verreaux's eagles may knock hyraxes off cliffs and take arboreal prey from treetops, but they usually kill on the ground.

Verreaux's eagles will take other prey, which is infrequent in areas with healthy rock hyrax populations.

In **South Africa**, the **most common food types in descending order of preference** are:

- **Rock hyrax**-*Procavia capensis* and **yellow-spotted rock hyrax**-*Heterohyrax brucei*
- **Smith's red rock rabbit**-*Pronolagus rupertris*
- **Meerkat**-*Suricata suricatta*
- **Mountain reedbuck**-*Redunca fulvorufula*
- **Goats and sheep**
- **Scrub hare**-*Lepus saxatilis*
- **Cape francolin**-*Francolinus capensis*
- **Helmeted guineafowl**-*Numida meleagris*
- **Yellow mongoose**-*Cynictis penicillata*
- **Angulate tortoise**-*Chersina angulata*

(Raptors of the World by Ferguson-Lees, Christie, Franklin, Mead & Burton. Houghton Mifflin (2001)).

Although they are the **most specialised predators** of **rock hyraxes** in the world, they do not have a sole right over this prey type. **Many wild predators** are also **attracted to rock hyraxes**, which puts them in **potential competition** with Verreaux's eagles. Among the other very large eagles widely found in sub-Saharan Africa, both **crowned eagles** and **marial eagles** may also locally favour **rock hyraxes** in their diets. **However**, these species have **highly different habitat preferences** and **hunting techniques**. (The **crowned eagle** is a **forest-dweller**, and the **marial eagle** hunts in **open** Savanna-woodland areas).



Courtship and reproduction

Their nests are **typically found on cliffs**, often in **overhung crevices** or **small caves**, **sometimes** on **open ledges**. By virtue of location on narrow ledges, nests tend to be much broader than deep and relatively small for the size of these eagles.



Nest sites are generally **marked** by a 'whitewash' **formed by their droppings**. Verreaux's eagles are the **most cliff dependent** of all eagle species. **Both sexes** participate in **nest construction**, though **females usually take the lead**. Predation of chicks in the nest is suspected by **southern African pythons, baboons** and **caracals**. However, **predation** is believed to be **quite rare** because of a **combination of factors**. These include the **inaccessibility of most nests** by foot and the **bold defences** of the eagle parents.

The peak egg-laying dates are from **May-June** in southern Africa. In an unusual behaviour for eagles, males may bring food to females **before egg-laying**. More typically, males bring almost all the food during the incubation stage. The female will **usually lay 2 eggs**. The **eggs are laid at 3-day intervals**. **Both sexes incubate**, but **females** take the **major share** and tend to incubate **more at night** than males do. **Incubation** is **43-47 days**. They are considered '**obligate cainists**'. The older sibling normally kills the younger one by either starvation or direct attack. Aggression may continue for up to **70 days** after hatching (Gargett, Valerie (1990). The black eagle: A Study. South Africa).

The eaglet fledges from the nest in approximately **3 months**. After leaving the nest, family parties may be together for up to **6 months**.

Conservation status

Verreaux's eagles are fairly common in South Africa. Unlike the other **2 big African eagles**, they **do not often take carrion**, so they are at little risk of poisoning from carcasses left out to control **jackals**. Nonetheless, some people shoot at or otherwise persecute them when given the opportunity due to the largely mistaken belief that they threaten small livestock.

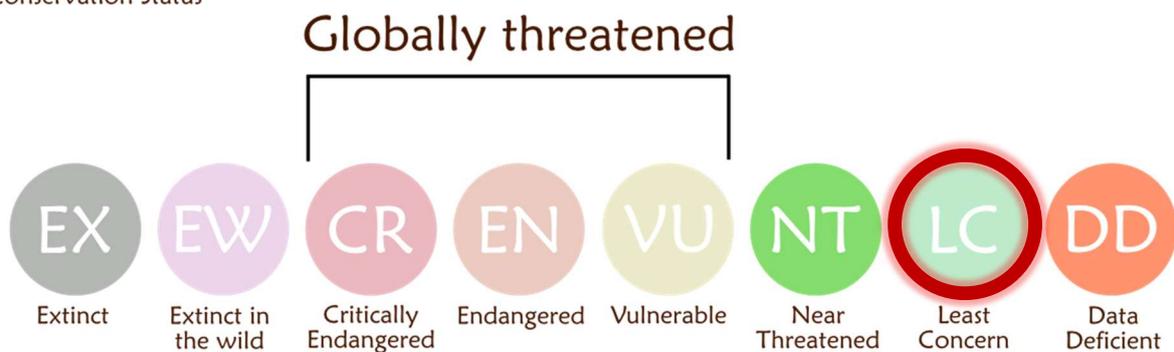


Wahlberg's eagle-*Hieraaetus wahlbergi*

Vital statistics

Wingspan	130-146 cm [51-57 in].
Weight	437-845 g [15.4-29.8 oz] ♂ 670-1400 g [1.48-3.09 lb] ♀
Preferred prey	Predominantly birds, reptiles and small mammals.
Incubation period	44-46 days.
Clutch size	1 or 2 eggs.
Status	Common breeding Intra-African migrants.
Nesting site	Below the canopies of tall trees.
Nestling period	70-75 days.
Habitat	Well-wooded Savanna.

Conservation Status



Description

Wahlberg's eagles (*Hieraaetus wahlbergi*) are named after the Swedish naturalist **Johan August Wahlberg** (as you will recall from the **bird names section** of this module). Like all eagles, they belong to the **family Accipitridae**. They are **medium-sized** raptors, and **sexes are alike**. They are the **smallest** of the so-called '**brown eagles**'. They are about **53-61 cm** [20-24 in] long. Their **heads** have a **small crest**, and their **legs** are yellow. The **colour** of their plumage is **variable** but is mostly a **dark brown** except for dark-streaked grey undersides to the flight feathers and a barred grey undertail. A **pale variant** may be lighter brown with whitish rather than grey undertail and flight feather undersides.



While large brown eagles are generally a tricky group to identify, Wahlberg's eagles have some **distinctive features**. A **small, pointed crest** is usually visible. **This species is very cross-shaped in flight**, with long, evenly **wide wings**, **slim bodies**, and **narrow, square-ended tails**. Their wings are held very flat.

Diet and feeding

Wahlberg's eagles prey on various animals, especially **birds**, **mammals** and **reptiles**, often hunting from a perch. They also soar across the sky in search of prey. If they spot something, they gradually descend and then rapidly plunge to the ground, straight onto their prey.

The following food items have been recorded in their diets:

Vertebrates-birds

Doves and pigeons (Columbidae)

- ☛ *Streptopelia capicola* (Cape turtle dove)
- ☛ *Streptopelia senegalensis* (Laughing dove)
- ☛ *Treron calvus* (African green-pigeon, green pigeon)

Francolins, spurfowl and guineafowl (Galliformes)

- ☛ *Numida meleagris* (Helmeted guineafowl)
- ☛ *Lophotis ruficrista* (Red-crested korhaan)
- ☛ *Dendroperdix sephaena* (Crested francolin)
- ☛ *Peliperdix coqui* (Coqui francolin)
- ☛ *Pternistis natalensis* (Natal spurfowl)
- ☛ *Scleroptila shelleyi* (Shelley's francolin)

Perching birds (Passeriformes)

- ☛ *Bubalornis niger* (Red-billed buffalo weaver)
- ☛ *Spermestes cucullatus* (Bronze mannikin)
- ☛ *Anthus cinnamomeus* (African pipit, Grassveld pipit)
- ☛ *Lamprotornis australis* (Burchell's starling)
- ☛ *Lamprotornis nitens* (Cape glossy starling)
- ☛ *Turdoides jardineii* (Arrow-marked babbler)

Other

- ☛ *Alopochen aegyptiacus* (Egyptian goose)
- ☛ *Melierax gabar* (Gabar goshawk)
- ☛ *Tyto alba* (Western barn owl)
- ☛ *Tockus erythrorhynchus* (Red-billed hornbill)
- ☛ *Tockus leucomelas* (Southern yellow-billed hornbill)
- ☛ *Colius striatus* (Speckled mousebird)
- ☛ *Coracias caudatus* (Lilac-breasted roller)
- ☛ *Chrysococcyx caprius* (Diederik cuckoo)
- ☛ *Turnix sylvaticus* (Kurrichane buttonquail)
- ☛ *Bubulcus ibis* (Cattle egret)
- ☛ *Vanellus coronatus* (crowned lapwing)

Chicks and eggs

- *Quelea quelea* (Red-billed quelea)
- *Aviceda cuculoides* (African cuckoo hawk)
- Herons (Ardeidae)
- Weavers (Ploceidae)

Mammals

- *Paraxerus cepapi* (Tree squirrels)
- *Lepus* (Hares)
- Mongooses (Herpestidae)

Reptiles

- *Gerrhosaurus* (Plated lizards)
- *Varanus* (Monitor lizards)
- Skinks (Scincidae)
- Snakes (Serpentes)

Frogs

- *Pyxicephalus adspersus* (African bullfrog)

Invertebrates

- Termites
- Grasshoppers (Orthoptera)
- Coleoptera (Beetles)

Taken from: Hockey PAR, Dean WRJ and Ryan PG 2005. Roberts-Birds of southern Africa, VIIIth ed. The Trustees of the John Voelcker Bird Book Fund, Cape Town.

Courtship and reproduction

Wahlberg's eagles are **monogamous** with very strong pair bonds. They are **solitary nesters** and are quite **territorial**. Territorial conflicts result in **cartwheeling through the air**.

Nests are built by **both sexes**, starting within days of arrival in South Africa. A new nest takes **2-6 weeks** to complete. The main nest structures are **small, robust platforms** of **thin, dry sticks**. They are then **lined** with copious amounts of **fresh green leaves**. Nests can be used repeatedly, and pairs usually have between **1-5 nests per territory**. Nests are placed below canopies of tall trees, usually along dry riverbeds.

The main egg-laying dates in South Africa are from **August-January**. They will usually only lay **1 or 2 eggs**. The eggs are an **off-white colour** and **elliptical**. The incubation period is **44-46 days** long. **Incubation** is done mainly by **females** and **relieved** for short periods by **males**.

Newly hatched chicks are covered in **soft dark brown down**. Their **eyes are brown**, **ceres** and **feet** pale yellow. **Males provide most** of the **food**, which **females** will **tear up into smaller pieces** for the chicks. Because the laying of **2 eggs** is rare, **sibicide** or **cainism** is **rarely recorded**. The fledging period is about **70-75 days**. The post-fledging period is unknown.



Conservation status

Wahlberg's eagles are **not threatened**. Some populations are, however, decreasing due to habitat transformation and poisoning. The density in protected areas in South Africa is almost twice as much as outside of protected areas.

Graeme Mitchley



Eagles