

Module # 7 – Component # 9

African Elephant

Introduction

The only **extant** (living) species in the Order Proboscidae are the elephants. The order, however, includes several other, now extinct species. The earliest record of a member in this group was a small pig-like creature called *Moertherium*. It lived in a swamp area in what is now modern day Egypt some 50 million years ago. There were many other species like it who in turn evolved into the **Woolly Mammoths** and **Imperial Mammoths**. From these earlier forms of the Proboscidae we now have the last two living species of elephant, the **Asian** and **African** Elephant.

There has been much debate over the status of the **Forest elephant** (*Loxodonta cyclotis*), which is found in West and Central Africa. Originally classed as a **sub-species** of the African elephant, new research has indicated that the two may in fact be separate species. The African elephant and Forest elephant are morphologically different and exhibit different social behaviours, but these differences were previously ascribed to a physical adaptation to different habitats. Genetic research has indicated that the differences at the cellular level between the two sub-species may be significant enough to recognise two distinct species. The debate is yet to be resolved.

A great deal of mythical folklore surrounds these magnificent giants of the bush. A few of these legends are worthy of being recounted. However, the origin of these myths has become quite unclear over the years, and no specific tribe of people can be directly credited with them. The most likely source though, would appear to be the Shona, a tribe ancestrally inhabiting the northern regions of Southern Africa.



Classification

Elephant are classified in the following manner:

Kingdom	Animalia
Phylum	Chordata
Class	Mammalia
Order	Proboscidae
Family	Elephantidae
Genus	<i>Loxodonta</i>
Species	<i>africana</i>

Common names:

English	Elephant
German	Elefant
French	Elephant
Afrikaans	Olifant
Zulu	Ndlovu
Swahili	Ndovu, Tembo



Myth & Legend

Indigenous people speak about the pair of "wisdom sticks" that the elephant carries on either side of his temples. They believe that these sticks enable the elephant to know time and place of its own death. That is why they believe that very old tuskless elephants are often seen without their herd, preferring to find a hiding place to die, thus maintaining their dignity, as they wish to die alone and in peace.

There are also many superstitions regarding the hunting of elephants by local people. A hunter that sets out nursing a secret grief or grudge, will only wound his prey and will not get a kill. Also, tuskless elephants will charge and kill those who are guilty of adultery, unless they immediately confess their guilt to the elephant. Thus, no hunter will allow others to accompany him, unless he is sure that his companions are not harbouring grief or a grudge or are guilty of adultery.

If the hunter meets an elephant with his trunk curled around his head, he will know that some tragedy has struck his home. Should he see an elephant flinging earth over his back he will know that his wife is bathing or swimming, not something that she is supposed to be doing while he is out hunting. And lastly elephants are believed to swallow a pebble every year, to keep a count of their age.



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Vital Statistics

Height	3.28m (11 ft) ♂	2.83m (9ft) ♀
Weight	5500kg (12 100 lb.) ♂	3700Kg (8140 lb.) ♀
Gestation period	22 months	
Food preference	50% grass, 50% trees	
Maximum charging speed	40kph (25mph)	
Average walking speed	10kph (6mph)	
Social grouping	Matriarchy	
Territory size	15 - 2200Km ²	
Longevity	± 65 years	
Record Game Auction price	R 250, 000.00 - large tusker	
Record Game Auction price	R 90, 000.00 - average specimen	
Record Tusk Weight	102.3 kg [225 lb.] - L	97 kg [213 lb.] - R



African Elephant - *Loxodonta africana* (Blumenbach 1797)

The African Elephant is the **largest land mammal**, with mature bulls reaching a record weight of 7 tons [**15 400 lbs.**]. Elephant cows average **two and a half metres tall** and three tons. **Both sexes have tusks**. Sexing elephants is not easy, but a few differences other than size may be apparent. During periods of heightened sexuality males may exhibit a large wet area on the side of their heads from a large gland. Females seem to have a more convex rounded forehead than the males. **The height of elephants can be roughly calculated** from foot prints, as twice the circumference of their front foot gives their approximate height in **normal habitat**.

Elephant are also known as **pachyderms** (Greek). This is a reference to their very thick skin which may be more than 3cm [**1 in.**] **thick** in places, specifically their **legs** and **rump**.

Elephants have the **second longest potential lifespan** of all terrestrial mammals after man. This is primarily since elephants **only have six molar teeth during their life**. When the last is either worn away or lost, they **cannot feed and thus they die**. This occurs at around **65 years of age**.



Image: Andrew Russell

Food and Feeding

Elephants are both **browsers** and **grazers**, utilising a very wide range of plants. Ecologists now classify them as mixed feeders, a term also applicable to Impala and Eland. **Grasses** are most often taken just **after a rainy season**, with **trees** and browse making up much of **their diet**. Over **90 different tree species** are utilised by elephant, although the **Mopane tree** (*Colophospermum mopane*) seems to be highly favoured.

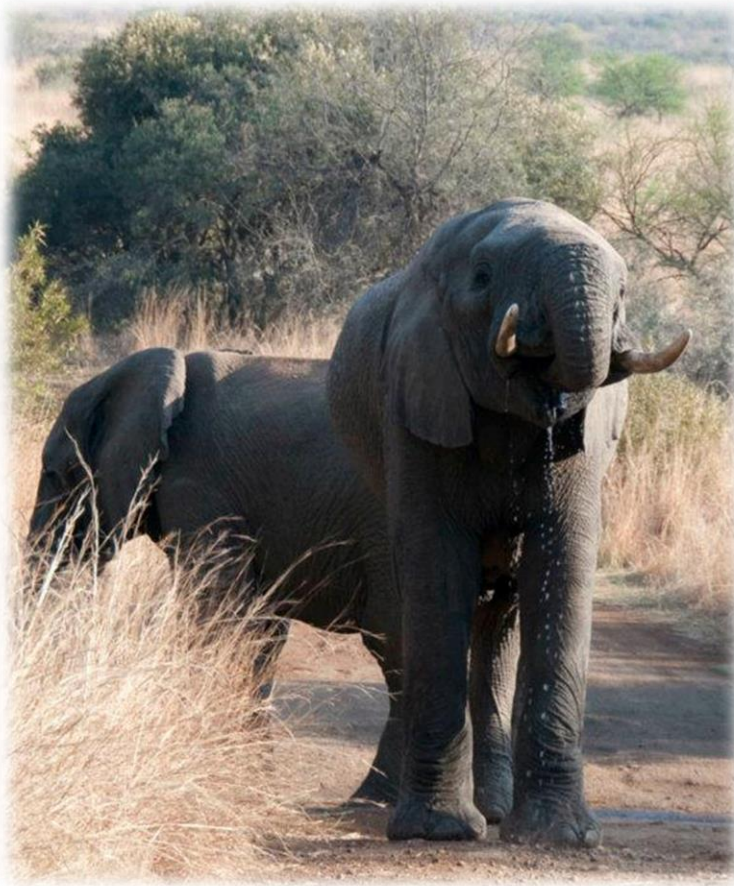
When eating off a tree, the **leaves** as well as **bark** and occasionally the **roots** are taken. This often has a **real detrimental effect on the tree**, especially when a whole tree may be pushed over just to reach the choice new growth in the canopy. Thus, when elephant populations exceed their **ecological carrying capacity** large areas of woodland may be **severely damaged**. Eventually this will impact on their numbers, but the destruction is **first felt** by lesser browsing species such as antelope. However, in areas where **severe bush encroachment** has taken place, especially by Mopane, the elephant is quite beneficial, **improving the habitat** by opening dense woodland for other species.

Elephant are **not very efficient** feeders, not only in their physical taking of vegetation, but also digestively. In fact, elephants only **digest some 40 %** of what they eat, and being of such immense size, they require at **least 170 Kg [470 lb.] of plant matter daily**. Elephants are also **highly dependent on a stable water supply**, drinking up to **160 litres [42 gallons] of water per day**.



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Social Organisation



Elephants are organised into several social groups. The first and most common are **large herds led by a matriarch**. This consists of a **related group of females** incorporating mothers, their young, grown daughters and their offspring. Herd size may range between **two and twenty-four**, but typically 9 - 11. However, reliable accounts have recorded elephant herds **numbering 200 individuals and more**. These usual numbers may be due to **habitat degradation** or **limited resources**, encouraging herds to gather around available resources.

The members of this family group keep together, rarely venturing 50 metres from their nearest neighbour.

Activity, direction and rate

of movement are all **set by the matriarch**, who is recognised as the **largest cow**. When the herd is disturbed, they all cluster around and turn to the matriarch for leadership. Since leadership and experience play such a crucial role in the lives of elephant herds, the females' lifespan extends far beyond their age of reproduction. **Long term post reproductive survival is also true of man**, but otherwise quite **rare** in the animal kingdom. When matriarchs become between 50 and 60 years old, they either leave or are abandoned by the herd, and the next oldest cow assumes leadership.

Male elephants leave the maternal herds at **adolescence around 12 to 19 years**. Separation is a gradual process, and the adolescent bulls may become peripheral, following the maternal herd at a distance. They **don't necessarily leave voluntarily**, but are pushed out by the older females or their mothers due to an intolerance of the boisterous and sexual precociousness of pubescent males. After becoming independent, they either wander alone, or more commonly join **bachelor herds**. These herds typically number between 2 and 14, but may grow up to **144 individuals** in some sort of temporary arrangement.

The period when bulls seek cows for mating is called the **musth**, at which time mature bulls **leave their herds and wander alone in search of receptive cows**. When bulls are in musth they are very noticeable by a combination of the following characteristics:

- Their **temporal glands** are functional and discharge a copious, strong smelling, **watery secretion** that runs down the sides of their faces.
- They may be constantly **dribbling urine**
- Their penis may take on a **greenish tinge**
- Increased **aggression**
- Increased association with female herds

Because **musth** is **correlated** with a period of **increased sexual activity** and **aggressiveness**, an elephant bull encountered in this condition should be left well alone. Few of those elephants that come into musth will get the opportunity to mate, and therefore there will certainly be many very **frustrated animals** about, each quite capable of overturning your vehicle – keep a safe distance.

Among males **25 – 35 years of age**, musth may only last **several days or weeks**. In older animals musth may continue for up to 5 months. During this period males often **wander over great distances** in search of a receptive female in oestrus. Musth may also be an **accurate indicator of the health** of elephants. It has been found that animals in poor condition do not come into musth and animals that become ill or are wounded while in this condition drop out of it. This is another mechanism of **natural selection** to ensure that only the stronger genetic material is passed on.

For more information on Natural Selection, please refer to Module # 1, Component # 2 – Evolution and Natural Selection.



Communication

Before examining their reproductive behaviour, some mention of elephant communication is necessary. This has been particularly well studied, and includes **tactile, olfactory, vocal** and **posturing communication**. Their very wide array of signals and gestures include **greeting, caressing, slapping, checking reproductive condition, rumbling, trumpeting, squealing, screaming** and over 30 postures and movements covering **dominance, threatening, defensive, submissive** and **fighting displays** of various degrees.

These are all readily observed and seemingly understood by us, but recent on - going research is exploring the elephant's ability to communicate **ultrasonically** in what scientists are now calling **Infrasound**. These are sounds outside of our range of hearing, but can travel **tens of kilometres**.



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Reproduction

Female elephants in oestrus exhibit certain behaviours in the presence of adult bulls. Cows out of oestrus allow any bull to check on their reproductive condition, but cows that are nearing receptiveness acquire what is known as an **oestrus walk**. In this condition the female **becomes wary** of any approaching bull and walks away. If he is persistent, the oestrus walk changes into an oestrus chase. She only stops moving when and if he manages to touch her. First, he lays his trunk on her shoulder and head, and then rests his tusks or chin on her rump, for a bit of leverage to mount her. Bulls have been described as at their most magnificent now, and may **display an erection between a metre and two metres long** [3 – 6 ft.] **weighing up to 30 kilograms** [66 lb.]. Mounting and copulation are usually **completed within 45 seconds**.

*As an aside the elephant does not qualify for the most well-endowed male in proportion to body size. This honour belongs to a species of **fly** in the Class *Insecta*, who is endowed with a reproductive organ more than **two and a half times his body length** when extended.*

After the longest gestation period of any animal, some **22 months**, a **single calf** is born. Cows give birth standing, amid the herd, and the new calf may weigh 129 Kg [**284 lbs.**] and stand 90 cm [**36 in.**] at the shoulder. The calf can stand and walk within a few hours, and **suckles with its mouth, not trunk** from two mammae between the mother's front legs. The calf will **suckle for two years**, or until its tiny protruding tusks begin to irritate its mother. The calf starts to **experiment on vegetation** at six months. They will basically be fully independent in **ten years**, the second longest period of **adolescent dependency** after humans.



Tusks and Trunks



There are many striking features belonging to the elephant. One is naturally the trunk. This is essentially an **extended nose**. This is a very powerful organ, which is **highly flexible** and **dextrous**. The tip of the trunk ends in two almost finger like **prehensile projections**, capable of some very precise co-ordination. The organ is used in **drinking by sucking water up it, and then squirting it into the animal's mouth**. It is also used in eating, with the prehensile tips picking food from the ground or directly from a tree and directing it into the mouth. The trunk is also obviously used for **smelling**.

The second striking feature is also the feature that **has almost resulted in the animal's extinction**, its tusks. Although both sexes may possess them, they are far **larger in the males**.

In the cows if they grow tusks at all, they cease growing when the cows are fully mature at 20 to 30 years. However, tusk growth in males begins almost exponentially from the time they **mature to the time they die**. Not only do they grow longer, but they **thicken** substantially. Their two pillars of ivory are basically **elongated upper incisor teeth** that protrude from the mouth.

Ivory has been much sought after for millennia. It has been used in a multitude of ways from **carved figurines** to **knife handles**. It has been ground up for **traditional medicines** and manufactured as **cue balls** and **piano keys**. For these reasons the elephant has been ruthlessly hunted to the point of near extinction.

The Magnificent Seven

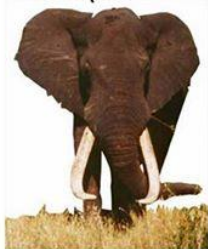
Over thirty years ago, seven impressive elephant bulls, all with tusks weighing more than 50 kg each, could be found in Kruger National Park.

The Chief Warden at the time, Dr U de V Pienaar, decided to publicise these elephants as a successful example of Kruger's conservation work. He named those bulls that had not already been identified and coined the collective name, the Magnificent Seven, based on the 1960 Hollywood film.

The promotion was launched in 1980 with specially commissioned paintings by celebrated wildlife artist Paul Bosman and illustrated articles written by the park's Senior Research Officer, Dr Anthony Hall-Martin.

The public reaction was staggering and, when each of these great elephants died, it was decided to retrieve their tusks and skulls to display them. The Elephant Hall at Letaba Rest Camp now holds the tusks of Dzombo, Kambaku, Mafunyane, Ndlulamithi, Shawu and Shingwedzi.

Dzombo (1935–1983)



Mafunyane (Died 1983)



Kambaku (1930-1985)



João (date unknown)



Shawu (October 1982)



The Magnificent Seven

Ndlulamithi (1927–1985)



Shingwedzi (1934-1981)



Wild Heart Wildlife Foundation

Dzombo (c.1935–1983)



Origin of Name: Named after the Dzombo stream that traverses the Mopani Flats between the Shingwedzi and Shawu valleys. (The word Dzombo is derived from the Tsonga word Dzombolo meaning 'to wait for something that is slow in coming')

Range: He lived in the area bounded by the Tsendze, Letaba and the Shingwedzi Rivers and was most frequently seen along the grassy vleis system of the Shawu valley.

Special Features: Dzombo's tusks are the classic shape of the Kruger National Park Elephants, bowed and curved pointing forward and slightly upwards. They were also almost identically shaped in length, weight and thickness.

General: Dzombo was the only one of the "Magnificent Seven" to be killed by poachers and it was only by a stroke of luck that Dzombo's two tusks were not taken. He died in a hail of bullets from an AK 47 fired by a poacher from Mozambique in October 1985. The miscreants were in the act of chopping out the tusks when they were disturbed by the approach of Ranger Ampie Espag and fled leaving their trophies behind. Dzombo met an untimely death at the age of 50 years.

(Dzombo's tusks are on display in the Letaba Elephant Hall)

Tusk Data	Left	Right
Length (cm)	237cm (255cm)	237cm (237cm)
Mass (kg)	56.8kg (55,5kg)	56.8kg
Circumference at Lip (cm)	50cm	51cm

João (date unknown)



Origin of Name: Named by Anthony-Hall Martin for Prester John, legendary priest-king of ancient Africa. (João being the Portuguese for 'John') João was also to be found near the waterhole of this name along the Shingwedzi River. This waterhole was named in 1961 by Dr Tol Pienaar (former Warden of KNP and CEO of SANParks) after a former mechanic from Shingwedzi who assisted Dr Pienaar with fish surveys along the Shingwedzi River.

Range: João was first seen near a windmill called João, in the Shingwedzi region, he was known to frequent the area south of the Shingwedzi River. There were times however that he moved as far south as Mahlangene and Shilowa

(East Mopani).

Special Features: João was a very large bull, with a shoulder height of 340cm.

General: João was wounded by poachers in 1982. He was immobilized to investigate the damage.

Fortunately, the wounds were not fatal, and after a dose of antibiotics and cleaning of the wounds he was revived. While immobilized he was fitted with a radio collar and measurements of his tusks taken, he tusks were an estimated combined 130kg which at the time would have made him the heaviest ivory carrier of the Magnificent Seven. In 1984 (approximate age, 45 years) João broke both tusks close to the lip line (20-30cm), presumably in a fight with another bull. Unfortunately, the pieces were never found and as a result João is the only member of the Magnificent Seven who is not represented in the Letaba Elephant Hall.

Tusk Data	Left	Right
Length (cm)	271cm	250cm
Mass (kg)	70kg	60kg
Circumference at Lip (cm)	51cm (55cm)	51cm (55cm)

Kambaku (c.1930-1985)



Origin of Name: Kambaku is the Tsonga word for 'Great Tusker' or 'Old Elephant Bull'.

Range: This bull moved over a huge tract of country stretching from Satara/Orpen and the Timbavati to Crocodile Bridge.

Special Features: Kambaku's left ear had a perfectly round hole in it close to the outer edge, and towards the end of his life he had no tail hairs. He was also recognized by the prominent markings on his trunk, which had the appearance of a round patch of smooth skin.

General: Kambaku was the third member of the Magnificent Seven. He was commonly seen by the rangers of the Kingfisherspruit area and was photographed by many visitors to the Kruger National Park. Uniquely unlike several of the other Magnificent Seven bull, Kambaku was always seen alone.

He was more than 55-years-old when he was shot in late 1985 by Regional Ranger Lynn van Rooyen from the Lower Sabie Ranger Section. The bull was in obvious pain from a bullet wound suffered during a foray across the Crocodile River into a neighboring sugar cane fields. The bullet penetrated his left shoulder, leaving a large wound which eventually became septic. When he could no longer walk and it was clear that death was imminent, he was mercifully shot.

(Kambaku's tusks are on display in the Letaba Elephant Hall)

Tusk Data	Left	Right
Length (cm)	259cm	265cm
Mass (kg)	63.2kg	64kg
Circumference at Lip (cm)	51cm	52cm

Mafunyane (Carcass discovered 16th Nov 1983)



Origin of Name: This bull was named after former warden of the Kruger National Park Lou Steyn who was well known for his quick temper. (Mafunyane is the Tsonga word for 'the irritable one' which appropriately refers to the elephant's disdain for, and intolerance of humans.) Kloppers & Bornman (2005) (A Dictionary of KNP Place Names) gives the meaning of the name as "One who eats greedily")

Range: This bull roamed in the Shongoni section of the Kruger National Park, which includes the upper reaches of the Shingwedzi River and southwards up to the Bububu stream.

Special Features: Mafunyane's tusks are fairly straight and their tips are worn to a chisel-edge by as a result of being rubbed on the ground as he moved.

His tusks were perfectly symmetrical and of identical length and mass. The bull had a 10cm hole in the right side of his skull that extended into his nasal cavity allowing him to breathe through this passage. One of his toes on his left hind foot was splayed to one side so that he left a distinctive impression, distinguishable from other elephants.

General: Mafunyane was the most famous of the "Magnificent Seven" although he was only seen in the wild by a handful of people, and was rarely seen by visitors as he kept well away from roads. This could be attributed to his shyness or to the fact that he chosen roaming area was very remote. Mafunyane despite having impressive tusks, was not a large bull and was only 327cm at the shoulder, when compared with the average 340cm shoulder height of the other members of the Magnificent Seven. The immobilization of Mafunyane on the 8 June 1983 to fit a radio collar and to make plaster cases of the bull's ivory nearly spelled the end for this bull. When given the antidote to the immobilization drugs Mafunyane due to his immense tusk size was unable to 'rock' himself onto his chest which would have allowed him to stand up, and his repeated efforts caused him to dig his tusks further into the ground.

Several strategies were tried to raise him but all failed. After he had been down for several hours and front end loader was brought into assist the team. Mafunyane was eventually 'scooped' to his feet and the bull rose and ran into the nearby Mopane bushes much to the relief of the capture team. Mafunyane's remains were found on 16 November 1983 near Tari River, Northwest of Shingwedzi. He had been dead for approximately 3-4 weeks and appeared to have died of natural causes. He was about 57 years old when he died.

(Mafunyane's tusks are on display in the Letaba Elephant Hall)

Tusk Data	Left	Right
Length (cm)	251cm	251cm
Mass (kg)	55.1kg	55.1kg
Circumference at Lip (cm)	48cm	48cm

Ndlulamithi (c.1927–1985)



Origin of Name: Ndlulamithi earned his name from his appearance, which is a traditional Tsonga word meaning “taller than the trees”.

Range: His range was known to occupy a large area between the main road from Mooiplaas to the western boundary and stretching from Byashishi drainage system across to Shingwedzi River to the Phongol River.

Special Features: The handsomely curved tusks of Ndlulamithi, the left one sweeping low and well forward, are significantly more twisted than those of the other large bulls. He was considered a tall

Elephant probably around 340 – 345cm high at the shoulder.

General: Ndulamithi was first identified in 1980 along the Nkokodzi River in northern Kruger National Park. He was an aggressive yet secretive elephant, and was seldom seen. This bull received some fame for charging Dr Anthony Hall-Martin and his assistant while they were trying to photograph him on foot, his intentions unmistakable. He died of natural causes in 1985 in the Shangoni area at an estimated 58 years of age. Paul Zway section ranger of Shangoni at the time found his remains not far from the Nkokodzi Spruit.

(Ndulamithi's tusks are on display in the Letaba Elephant Hall)

Tusk Data	Left	Right
Length (cm)	287cm	273cm
Mass (kg)	64.6kg	57.2kg
Circumference at Lip (cm)	48.5cm (48.8cm)	48cm

Shawu (October 1982)



Origin of Name: The "Shawu Bull" was named after the Shawu valley (Vlei) in which he spent much of his life.

Range: Shawu moved over a large range which spanned the flat Mopani covered plains country between the Letaba and Shingwedzi rivers and stretched from the main road to Lebombo Hills. He did not however, cover this enormous area regularly, but drifted around slowly, taking about 6 months to move from South to North.

Special Features: Shawu's tusks are the longest on record in the Kruger National Park and one of the 6th longest to ever come out of Africa.

General: Shawu was a fairly approachable animal and showed no particular fear or distrust of vehicles. He was a large bull having a shoulder height of 340cm. Due to the pincer formed by his large tusks

he was sometimes referred to in Afrikaans as "Groot Haaktand". In 1981 it was decided to fit Shawu with a collar as poaching was a constant threat from Mozambique, this was successfully and he was monitored on a regular basis.

Shawu died of old age in the Kostini area east of Shingwedzi, near the northern watershed of the Shawu Valley (Vlei) in October 1982. He had been ill for some time and his condition and movements were monitored daily towards the end of his life by means of a radio transmitter which had been fitted in a collar around his neck. He was close to 60 years old when he died.

(Shawu's tusks are on display in the Letaba Elephant Hall)

Tusk Data	Left	Right
Length (cm)	317cm	305cm (305.5cm)
Mass (kg)	52.6kg (52.7kg)	50.8kg
Circumference at Lip (cm)	45cm	45cm

Shingwedzi (c.1934-1981)



Origin of Name: Shingwedzi was named after the river and rest camp where he spent the last few years of his life. (Shingwedzi means, “place of ironstone” referring to the gabbro rock outcrops common to the area. Shingwedzi is derived from the Tsonga word Ngwetse which means ‘the sound of metal objects rubbing against each other’).

Range: Shingwedzi was known to move as far west as Nkokodzi and Chugamila hills and as far as the Lebombo’s near Shingwedzi Rest Camp.

Special Features: Shingwedzi’s ivory offers a good example of the classic master servant tusks. He had a large right servant tusk and a shorter left master tusk.

General: Shingwedzi was found dead under a Sycamore Fig and short distance from Shingwedzi camp in January 1981, and as far as can be determine he died of natural causes. The age of an Elephant can be accurately determined from the state of wear of the teeth. In the case of Shingwedzi the last molar (molar 6) was well worn down, giving him an estimated age of 65 (56) years.

(Shingwedzi’s tusks are on display in the Letaba Elephant Hall)

Tusk Data	Left (Master Tusk)	Right (Servant Tusk)
Length (cm)	207cm	264cm
Mass (kg)	47.2kg	58.1kg
Circumference at Lip (cm)	47.5cm	48cm

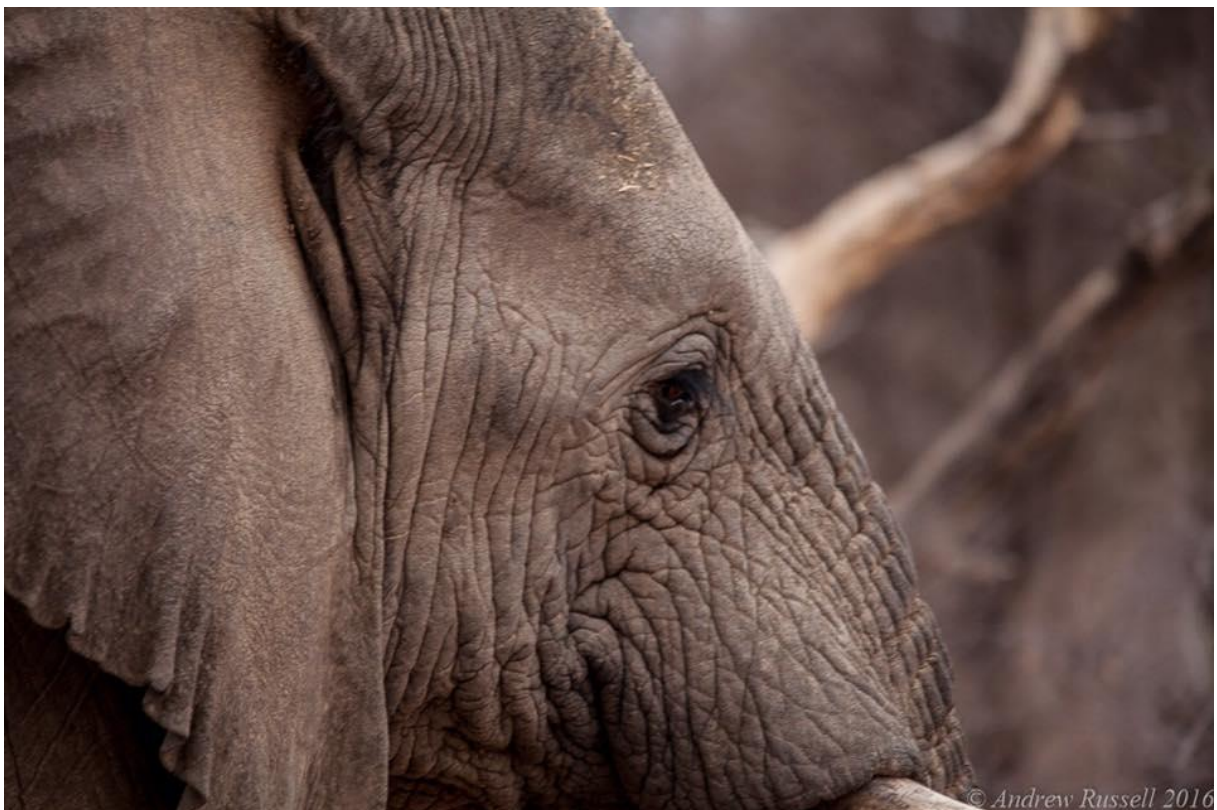
Emerging Tuskers

The legend of the Magnificent Seven lives on in Kruger National Park through several animals carrying impressive ivory.

Scientists are studying these impressive animals and you can help by providing information on any tusker you see in the park. When a new tusker is identified we currently name it after a Ranger or other member of staff who has given many years of service to the Kruger National Park. It is traditional for rangers to be given an ethnic title by their colleagues and staff, and it is these 'nicknames' that are used for the tuskers.

As of Oct 2012, 17 bulls have been identified as having the potential to reach **Magnificent Status** - developing tusks more than 50Kg each. Time will tell.

Visit www.SanParks.org to see an impressive resource that also includes **Past Tuskers** and **Female Tuskers**.



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Conservation Status

Elephant Poaching Statistics via <http://www.poachingfacts.com>

African elephants are split into two distinct species: the African bush elephant, the most prevalent species, and the smaller African forest elephant. The bush elephant is the world's largest living species of land animal. In both African elephant species the males and females have tusks; these are modified incisors that can grow to weigh dozens of kilograms and are used for a variety of essential purposes in an elephant's daily life. These tusks are a significant source of ivory which is used in ivory ornaments and jewelry, however mammoth tusks are also being excavated and their ivory traded legally.

In 1989 Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) listed African elephants under Appendix I, which restricts international trade of their parts. However, demand for ivory has continued to stimulate illegal trafficking and poaching of elephants. In 1997 and 2008 there were CITES-approved, one-off sales of government-held ivory stockpiles held by southern African governments.

From 2003-2014, with the exception of 2005, CITES reports have shown that estimated levels of illegal elephant killings in Central Africa have been occurring at unsustainable levels relative to natural population growth. This means that elephants in this region are dying faster than they are able to reproduce. The same report indicates West Africa is also thought to be suffering from unsustainable levels of elephant poaching from 2007-2009 and 2011-2014. As a means of mitigating localized population losses a number of programs have arisen to protect elephants, reduce human-elephant conflict where elephants regularly come into contact with farms, and stop poaching. For decades there have also been elephant relocation programs, also known as translocation projects, which move elephants from areas of high-population or over-population to habitats that can sustain and benefit from their reintroduction. African bush elephant populations were estimated by the Great Elephant Census, which concluded in August 2016, at roughly 350,000 and in a separate census of African forest elephants an estimated 18,000-36,500 individuals in select protected parks.

Botswana

Botswana is presently home to roughly one third of Africa's largest elephant species and is a popular destinations for tourists seeking the scenery of the ancient Kalahari Desert and the huge concentrations of wildlife in Chobe National Park. In the past Botswana has faced severe poaching problems and within the last several years has made significant investments in the protection of its wildlife; wildlife relocation to safer internal areas; translocation of wildlife from dangerous areas of South Africa by the Rhino Without Borders campaign; wildlife monitoring through governmental and non-governmental organizations; and support of its tourism industry.

Limited or historical data on elephant poaching in Botswana will be updated at a later date.

India

Like some of the ancient and modern cultures in Vietnam and Thailand, select cultures in India have broken and trained wild elephants for domestic and military use over the past several hundred years. As many as 40% of Asia's 50,000 elephants are thought to live in captivity today. In 1990 India had an estimated 17,000 to 22,000 wild elephants with at least another 2,200 living in captivity (10-13%) throughout 11 of India's 25 states (now 29).

Legal and illegal hunting has taken a great toll on India's elephant populations over the past two centuries. However the Asian elephant's declining numbers can also be attributed to habitat loss and related results of human encroachment including deaths from road accidents (cars and trains), electrocution on high-voltage fence-lines, and as-of-yet unexplained mortality among young elephants. A longer-term problem faced by all three subspecies of Asian elephant rarely reflected in any poaching statistics will inevitably be the ability for females to find suitable mates. In Asian elephants males have tusks while females have no visible tusks at all. This has resulted in a disproportionate reduction in males in some regions and can cause negative population growth.

Note: The below chart does not comprehensively represent all elephant poaching in India. Further information will be compiled at a later date.

Elephant Poaching in Select Regions Confirmed by WPSI in India (2006-2014)

Sources: Wildlife Protection Society of India (WPSI), some data from unpublished WPSI sources.

Kenya

Kenya is home to many national parks and national reserves that have provided a home to tens of thousands of elephants and thousands of rhinoceros. The Amboseli, Tsavo East, and Tsavo West National Parks, as well as the Maasai Mara National Reserve, are among the most popular tourist destinations in the country and help bring in hundreds of thousands of local and international visitors each year. Many of these parks and reserves are protected by the Kenya Wildlife Service (KWS), established in 1990, which employs anti-poaching rangers and other personnel to combat local wildlife poaching as well as cross-border operations to arrest major wildlife parts traffickers. These traffickers bring ivory, leopard skins, and rhino horn into the country with the express intent to smuggle the products to foreign markets.

In an inventory conducted by Kenyan authorities and external groups concluded on 27 August, 2015 Kenyan authorities reported that government-held stockpiles were in possession of 25,052 pieces of ivory weighing 137,679 kg (303,530 pounds). The various stockpiles include raw elephant ivory collected by KWS from elephants who have died of natural and unnatural causes as well as ivory recovered by other agencies from poachers, traffickers, and raw and worked ivory shipments originating from inside and outside the country.

In a 2013 annual report the Kenya Wildlife Service reported 302 elephants were lost to poaching that year. However according to the census cited in that annual report elephant populations within KWS-monitored areas were steadily growing and in 2013 had reached 1,940 individuals. The country is known to have lost 137 elephants and 24 rhinoceros to poachers in 2014. The total elephant population within Kenya is estimated at roughly 38,000 according to the KWS annual report of 2012.

Elephant Poaching in Kenya (2005-2014)

Sources: Kenya Wildlife Service Annual Report 2008, KWS Annual Report 2009, KWS Annual Report 2010, KWS Annual Report 2011, KWS Annual Report 2012, KWS Annual Report 2013, TRAFFIC.org.

Namibia

Namibia does not appear to regularly report to the public the poaching statistics within its borders. However the Namibian Sun reported 116 elephant deaths due to poaching and 10 rhinos poached from the period January 2012 – May 2014. According to news reports Namibia has suffered 101 elephants killed by poachers in 2016.

South Africa

South Africa has the largest populations of rhinoceros of any African nation, but also boasts a prodigious elephant population within its national parks. For a number of reasons the famous Kruger National Park, an expansive 19,633 square kilometers (7,580 sq. mi), is the largest target in southern Africa and most of the statistics available focus on this region. In the past South Africa's Department of Environmental Affairs as well as the South African National Parks (SAN Parks) has released quarterly data on both rhinoceros poaching statistics and arrests of suspected poachers, as of 2015 this data is released roughly twice a year and now includes elephant poaching statistics.

Over the years South Africa has culled for a variety of reasons, but ended this practice in 1994. At that time South Africa had an estimated population of nearly 8,000 elephants (page 10) and had culled 7,325 elephants between 1980 and 1994 (page 13). During that same period 1,259 elephants had been translocated out of Kruger National Park (page 8) to protected areas, zoos, or other regions within the country or to other countries such as Namibia. This data is shown below to provide a comparison to historical elephant population numbers and to historical poaching numbers. Culling statistics for Kruger National Park (KNP), added to the number of elephants poached, makes up the "Total Deaths by Unnatural Causes" grand total which gives a general idea of population decline due to human intervention.

Notes: The data below reflects official numbers provided by SAN Parks and related authorities to the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) but only applies to Kruger National Park. Data on elephant poaching was not provided by internal region and was not provided for other public land as more recent data on rhino poaching has been.

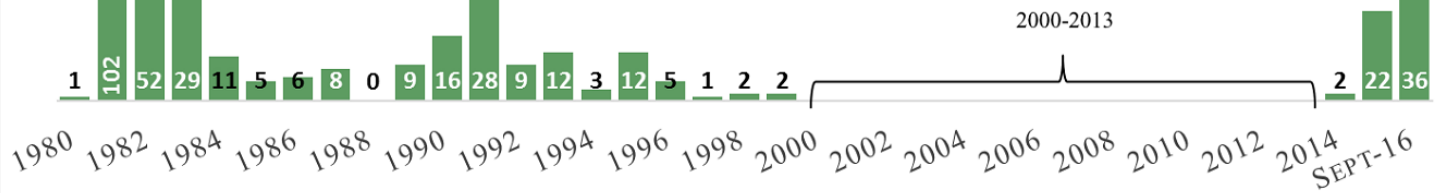
Only reports from 1998 and 1999 provided data on ivory seizures as a result of law enforcement or anti-poaching operations or recovery from dead elephants in Kruger National Park. Fifty-three tusks were seized in 1998 and 20 were seized in 1999.

Historical Elephant Mortality Statistics in Kruger National Park (KNP) (1980-1999)

Sources: South African Population of the African Elephant report by CITES. SAN Parks. ESPU 1999 (unpublished) Ivory Markets of Africa.

Below is more than 25 years' worth of data on elephant poaching within Kruger National Park. 22 elephants were killed within the park during 2015, the previous year had only 2 illegal killings. This had followed a roughly 14-year period of no elephant poaching within the park (2000-2013). As of the middle of September 2016 there have been 36 elephants illegally killed within the park.

Elephant Poaching in Kruger National Park South Africa (1980-2016)



Sources: South African Population of the African Elephant report by CITES. SAN Parks. ESPU 1999 (unpublished) Ivory Markets of Africa. Elephant poaching on the rise in Kruger by Oxpeckers. ENS-Newswire.



Image: Andrew Russell

Botswana Elephant Status 2016-2017

'Our living dinosaurs'

There are far fewer African elephants than we thought, study shows
By David McKenzie and Ingrid Formanek, CNN
September 1, 2016

Linyanti Swamp, Botswana (CNN) Scanning Botswana's remote Linyanti swamp from the low flying chopper, elephant ecologist Mike Chase can't hide the anxiety and dread as he sees what he has seen too many times before.

"I don't think anybody in the world has seen the number of dead elephants that I've seen over the last two years," he says.

From above, we spot an elephant lying on its side in the cracked river mud. From a distance it could be mistaken for a resting animal.

But the acrid stench of death hits us before we even land.

Up close, it is a horror.



Elephant ecologist Mike Chase examines an elephant whose face was hacked off by poachers in Botswana

He was a magnificent bull right in his prime, 45 to 50 years old. To get at his prized ivory tusks, poachers hacked off his face. Slaughtered for their ivory, the elephants are left to rot, their carcasses dotting the dry riverbed; in just two days, we counted the remains of more than 20 elephants in a small area.

Visitors and managers at the tourist camps here are frequently alarmed by the sound of gunshots nearby. And Chase worries that if Botswana can't protect its elephants, there's little hope for the species as a whole.

AN UNPRECEDENTED SURVEY

A third of Africa's elephants wiped out in 7 years

Chase, the founder of Elephants Without Borders (EWB), is the lead scientist of the Great Elephant Census, (GEC) an ambitious project to count all of Africa's savannah elephants -- from the air.

Before the GEC, total elephant numbers were largely guesswork. But over the past two years, 90 scientists and 286 crew have taken to the air above 18 African countries, flying the equivalent of the distance to the moon -- and a quarter of the way back -- in almost 10,000 hours.

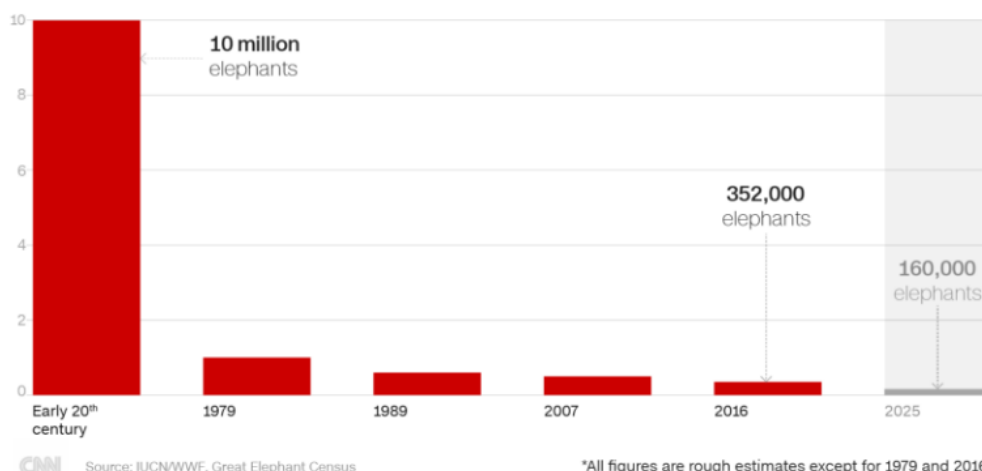
Prior to European colonization, scientists believe that Africa may have held as many as 20 million elephants; by 1979 only 1.3 million remained -- and the census reveals that things have gotten far worse.

According to the GEC, released Thursday in the open-access journal PeerJ, Africa's savannah elephant population has been devastated, with just 352,271 animals in the countries surveyed -- far lower than previous estimates.

Three countries with significant elephant populations were not included in the study. Namibia did not release figures to the GEC, and surveys in South Sudan and the Central African Republic were postponed due to armed conflict.

A bleak future for Africa's elephants

New research shows the shocking decline of elephants over the past 100 years -- and a worrying trend for the future.



In seven years between 2007 and 2014, numbers plummeted by at least 30%, or 144,000 elephants.

And the specific cases are even more disturbing:

In the Selous Game Reserve in Tanzania, and Mozambique's Niassa Reserve, elephant populations have plummeted by more than 75% in the past ten years as poachers cut down family herds, according to the survey.

The Babile Elephant Sanctuary in Ethiopia hasn't lived up to its name: Chase and the team counted just a single herd of 36 elephants -- the last in the Horn of Africa, a vast area roughly the size of Mexico.



A survey plane spots a herd of elephants in Botswana

"When you think of how many elephants occurred in areas 10 or 20 years ago, it's incredibly disheartening," says Chase.

"Historically these ecosystems supported many thousands of elephants compared to the few hundreds or tens of elephants we counted."

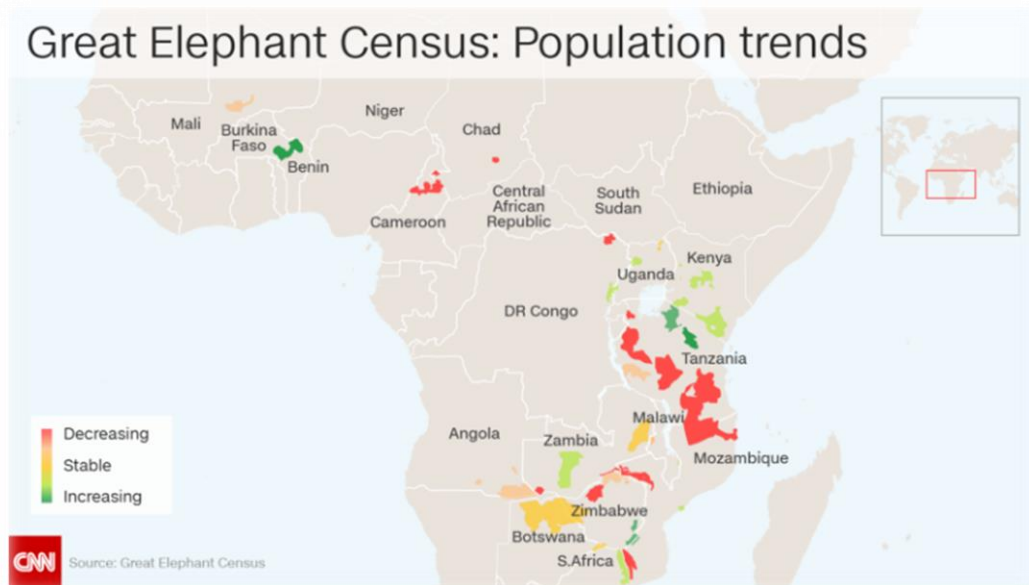
The current rate of species decline is 8%, meaning that elephant numbers could halve to 160,000 in nine years if nothing changes, according to the survey -- and localized extinction is almost certain.

Even before the census offered proof, scientists calculated that far more elephants were dying than being born. Now the species has reached a tipping point.

AN EXTRAORDINARY INTELLIGENCE

Chase and other scientists feared they were in a race against time, which is where the Great Elephant Census came in.

The speed and scale of the project is unprecedented. Funded by Microsoft co-founder and Vulcan CEO Paul Allen, it brought together some of the best-known conservation groups and individuals, and teamed them up with the best bush pilots.



Small workhorse planes like the Cessna 206 were transformed into viewing platforms, using frames made up of rods -- in some cases telescopic golf ball retrievers -- fixed to the wing struts.

Observers on board the planes counted every elephant they saw within the grid, from Kenya's Maasai Mara to the Zambezi floodplains in Zambia.

As well as the GEC, Chase and his colleagues in EWB are tracking the movements of Africa's elephants using satellite collars which transmit real-time data on the elephants' movements.

Their work has brought to light signs of elephants' extraordinary intelligence, including evidence that they recognize a host of man-made threats -- and are willing to cross borders to escape them.

Northern Botswana is a well-known elephant corridor for herds moving from Botswana's arid Central Kalahari to the lush savannahs and forests of Angola and Zambia.

During Angola's long civil war, elephants avoided the country. After peace was declared, they moved back in -- but now, with the dramatic spike in ivory poaching, they're staying away again.

"This is really the front line," says Chase. "This is as far as they come. They will no longer move across eastern Namibia into Angola and Zambia, fearful of the consequences of poaching. Their home ranges have shrunk to within the relative safety and security of northern Botswana."

'WE'RE FAILING THE ELEPHANTS'

In northern Botswana, the Linyanti river's proximity to Namibia's Caprivi Strip -- a thin finger-like stretch of the country just 30 kilometers (18 miles) wide in parts -- makes it an ideal target for gangs of poachers.

"Poachers can act with impunity here, because there is nothing blocking their movements," explains Chase. "These borders are open to wildlife, and within a matter of minutes [they] can be in three different countries."

He looks through a neat record of GPS coordinates recorded in a leather bound notebook, listing possible elephant carcasses spotted by commercial pilots flying over the area.

Their corpses rot in the dry river grass down below. One bull's trunk has been hacked off and placed nearby -- the poachers' signature.

The killers often don't even wait until the elephant is dead before they begin their ugly butchery.

The grotesque scene is repeated again and again across Africa's savannahs.

"I've been asked if I'm optimistic or pessimistic about the future of Africa's elephants, and on days like today, I feel that we are failing the elephants," says Chase.



AN UNCONVENTIONAL WAR



Botswana Defense Force troops patrol near the Linyanti

Botswana is one of the last strongholds of savannah elephants. Along with South Africa and Zimbabwe, it accounts for more than 60% of all elephants tallied in the Great Elephant Census.

To protect the country's wildlife from poachers, the Botswana Defense Force (BDF) has deployed an infantry battalion of specially-trained soldiers; more than 700 are stationed across 40 bases in the far north.

In an immaculate camp on the banks of the Linyanti, a lieutenant lays out the morning's foot patrol on the detailed operations map.

The soldiers are armed with a controversial shoot-to-kill policy for poachers, but this is an unconventional war.



Despite their "shoot-to-kill" policy, troops are hampered by national borders they cannot cross.

"There is no clearly identified enemy," explains Brigadier Joseph Seelo. "The enemy can be everybody, an enemy could be someone we are living with on a daily basis."

Though poachers are often foreigners, Seelo says their deadly work is supported by locals, who help coordinate the teams, bury water and food, and mark the spots with GPS tags.

And every poaching team has at least one or two shooters; BDF officers say they're often ex-Zambian special forces, equipped with high caliber weapons.

A herd of elephants as seen from a survey plane flying overhead. But many poachers across Africa are less sophisticated, emptying out the entire magazine of an AK-47 to pierce an elephant's tough hide, using poison-tipped spears, spiked traps and snares, or poisoning water holes. In Angola, poachers even use grenades and mortars left over from the war to kill the animals.

"They will use anything that has the potential to inflict serious harm or kill an animal," says Chase. "This is a dismal fate."

"Who are we to sentence this animal to the verge of extinction using the most inhumane and cruel means?"

Despite the poachers' desire to make a quick buck, elephants are actually far more valuable alive than dead.

Every elephant killed will earn a poacher just a few hundred dollars -- the overwhelming majority of the tens of thousands of dollars its ivory fetches on the black market go to middlemen and organized crime gangs.

By contrast, a live elephant can earn more than a million dollars for communities involved in eco-tourism, according to a report from The David Sheldrick Wildlife Trust.



The remains of an elephant carcass on the border of Botswana and Namibia

FACING INCALCULABLE ODDS



Veterinarian Larry Patterson prepares tranquilizer for an elephant collaring.

Larry Patterson carefully draws 14 milligrams of Thianil into a syringe, and then inserts it into a long-range dart.

Even a tiny drop of the morphine derivative can kill a human, so the antidote is always close by.

Moments after being shot with the drug-tipped dart by the semi-retired veterinarian, a bull elephant snores loudly.

"These are emblematic creatures of the African continent, they are symbols of Africa, symbols of freedom," says Chase.

"These animals are facing incalculable odds. It's not just poaching, it's habitat loss, human elephant conflict, climate change. These are issues confronting us as well -- they're emblematic of the struggle for survival."



Promise the elephant comes to after being tranquilized

"They are our living dinosaurs, the romance of a bygone era, and if we can't conserve the African elephants, I'm fearful to think about the fate of rest of Africa's wildlife."

Chase and Patterson thread a tracking collar around the animal's massive neck, fixing it with four bolts and lead ballast.

We have to work quickly; the bull can't support his six-ton weight in the sedated position for long.

Before it wakes, Chase asks us to name the elephants.

We call him Promise, for the hope -- the promise, however faint -- that this creature's future can be secured.

CNN's Peter Rudden, Nick Thompson and Lauren Said-Moorhouse contributed to this report.