

PANTHERA LEO

Gene preservation program

SCIENTIFIC CLASSIFICATION

- **Domain:** Eukaryota
- **Kingdom:** Animalia
 - **Phylum:** Chordata
- **Subphylum:** Vertebrata
- **Superclass:** Tetrapoda
 - **Class:** Mammalia
- **Subclass:** Trechnotheria
 - **Infraclass:** Zatheria
 - **Order:** Carnivora
 - **Suborder:** Feliformia
 - **Family:** Felidae
 - **Genus:** Panthera
- **Species:** *Panthera leo*
- **Subspecies:** *P. l. krugeri*

Introduction

As far back as 2002, Zwahili made the decision to re-introduce as many of the original mammal and plant species as possible. This included the replanting of 680 Bushveld trees to date as well as the establishment of sustainable antelope herds as could be found before the immediate intervention of man on the environment.

As a patron, you have demonstrated the same intention and we applaud your contribution to our efforts.

Several specific programs were developed after much research and effort. One of these was the re-establishment of Lion. Having secured a permit in 2008 for *Panthera Leo*, it would take 6 years of research and hard work before this program finally came to fruition. Critical was management's insistence on ethical values, which dictated that, the correct or as close to correct gene must first be found. In 2014, such a specimen was found with corresponding and possible husbandry potential. Our gene preservation program was finally in the starting blocks.

Obviously, any gene preservation program will produce off spring, some desirable and some not. The objective to warrant *Panthera Leo* as close as possible to the original profile as found a hundred years ago in the Springbok Flats was a daunting task. The fact is that scientific validation would be a laborious process, be very costly and take dedication beyond belief. Let us examine conservation in principle first.

Principles of conservation

Man, the sentient being, has impinged upon this planet like never before; He has made the environment change to suit his own needs and is developing technology constantly to rule. This desire to rule is governed by the need to survive and this involves commercial value. Unfortunately, this includes the plant- and animal kingdom as well. This has been more pronounced with the slaughter of Rhino, no law will control this as the rule of "supply and demand" seems currently to be the order of the day. The only way to ensure the continued existence of Rhino is to guarantee their commercial value. If they are valuable they will be protected automatically by the capitalists and hunting fraternity. We cannot wish them away but need to embrace them and develop a synergy that will ensure our animal and plant kingdoms.

While most educated and scientific minds agree that commercial value remains the only guarantee of existence for any specie, when it comes to Lion, Rhino and Elephant it becomes an emotive issue.

One cannot save every animal and every child. In order to guarantee the existence of the Lion we will have to make certain controlled sacrifices. We strive to follow our code of honour and remain focused on limiting those necessary sacrifices.

Also true is the fact that it is only public outcry that mobilises conservation regulation and garners environmental support. Mankind's conscious needs to be reminded often of the frailty of our animal and plant kingdom but at the same time needs a spurt of science and logic. However, to jump the divide from emotional to scientific, takes courage and a conscientious control of one's thoughts and emotions.

Here at Zwahili we have decided to **do** something, as the wrong thing to do, would be to do nothing.

Join us in preserving and securing this specie for future generations and especially for our children's children. Let us seek to recover the gene of the Transvaal¹ Lion.

While there exists a huge outcry from the public against the commercial value of the Lion, informed scientific minds and opinion leaders' state:

"The greatest threat to the lion's future is not from hunting, but from the potential Endangered Species Act listing." Published September 02, 2013 by Melissa Simpson, National Geographic.

This potential listing will do far more damage than is fully understood by the general public as it will effectively stunt eco-tourism and reduce revenues at the source of the resource namely Southern and Eastern Africa.

¹ Transvaal, meaning the area North of the Orange river
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LION POPULATION SUPPORTING DATA

Lion wild life populations have continued to dwindle and in fact, the rate of reduction has accelerated. Estimating African lion (*Panthera Leo*) populations with any accuracy is difficult and involves many uncertainties. While the three main surveys to date all used different methods, it is widely accepted that lion populations in Africa are in serious decline.

The IUCN states “A species population reduction of approximately 30% is suspected over the past two decades (approximately three lion generations)”. Such declines appear to be continuing.

Lions are listed as Convention of International Trade in Endangered Species (CITES) Appendix II, and are regarded as ‘vulnerable’ by the International Union for the Conservation of Nature (IUCN) Red List [Version 3.1 2001]. The criteria for classification being:

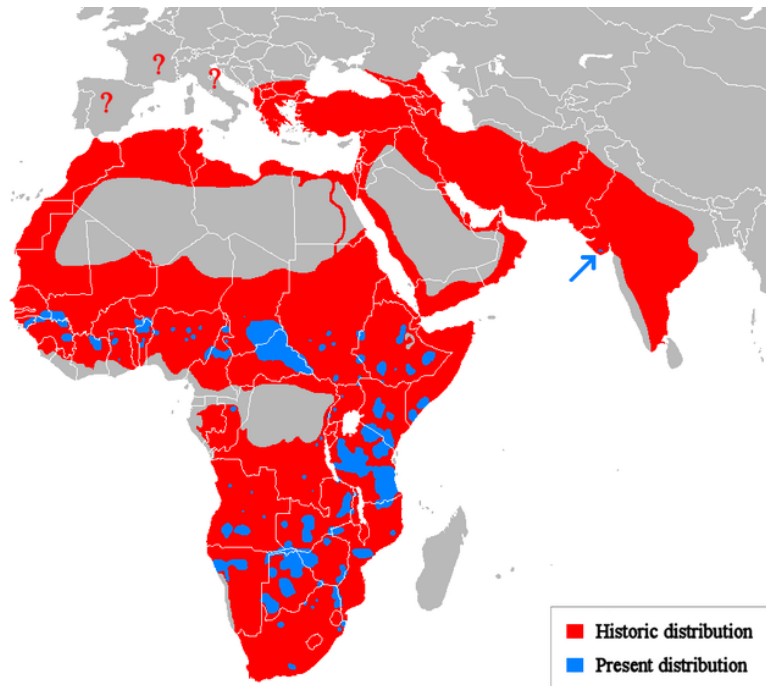
“An observed, estimated, inferred or suspected population size reduction of $\geq 30\%$ over the last 10 years or three generations, whichever is the longer, where the reduction or its causes may not have ceased OR may not be understood OR may not be reversible, based on:

- *direct observation*
- *an index of abundance appropriate to the taxon*
- *a decline in area of occupancy, extent of occurrence and/or quality of habitat*
- *actual or potential levels of exploitation”*

The most recent published estimate of lion population size and distribution

Source: Riggio J, Jacobson A, Dollar L, Bauer H, Becker M, Dickman A, Funston P, Groom R, Henschel P, de longh H, Lichtenfeld L, Pimm S (2012) The size of savannah Africa: a lion's (*Panthera leo*) view. Biodiversity Conservation Dec 12 DOI 10.1007/s10531-012-0381-4

| REGION | LION POPULATION ESTIMATE |
|-----------------------------------------------|--------------------------|
| Northern Africa | 0 |
| West Africa | 480 - 525 |
| Central Africa | 2,267 - 2,419 |
| East Africa | 18,308 - 19,972 |
| Southern Africa | 11,160 - 12,036 |
| 32,260 - 34,907 of which SA has 2-3000 | |



Wildlife Research, 37, 194-206 (Shashe Limpopo Predator Research Group (2010) In: Riggio JS (2011) The African lion (*Panthera leo*): A continent-wide species distribution study and population analysis

Estimate of lion population in Kruger National Park is at 1,684 individuals.
 Estimate of lion population in the Greater Mapungubwe TFCA (incorporating parts of Botswana and Zimbabwe) at 25 lions. (Shashe Limpopo Predator Research Group, 2010)

Source: Ferreira SM, Funston PJ (2010). Estimating lion population variables: prey and disease effects in Kruger National Park, South Africa.

AFRICAN LION CHARACTERISTICS

The African lion was the second largest and heaviest subspecies after the Barbary lions. A fully-grown maned cat could reach 3 meters in length and weigh up to 250kg. This lion was recognized by his large size and his thick black mane with a tawny fringe around the face. Tips of the ears were also black.

The Barbary Lion



Barbary lion from Algeria (Photographed by Sir Alfred Edward Pease around 1893)

The former popularity of the Barbary lion as a zoo animal has meant that scattered lions in captivity are likely to be descendants of Barbary Lion stock. This includes 12 lions at Port Lympne Wild Animal Park in Kent, England that have descended from animals owned by the King of Morocco. Another 11 animals believed to be Barbary lions were found in Addis Ababa zoo were descendants of lions owned by Emperor Haile Selassie. WildLink International, in collaboration with Oxford University, launched an ambitious International Barbary Lion Project with the objective of identifying and breeding these animals in captivity for reintroduction into a national park in the Atlas Mountains of Morocco.

Following the detection of decline of lion population in Africa, a number of coordinated efforts involving conservation have been planned in an attempt to overturn this decline. Lions are one of the species included in the Species Survival Plan, a coordinated endeavor by the Association of Zoos and Aquariums to enhance its chances of survival. The plan was initially started in 1982 for the Asiatic lion, but was discontinued when it was discovered that most Asiatic lions in North American zoos were not genetically pure, having been hybridized with African lions. The African lion plan started in 1993, focusing especially on the South African subspecies, although there are difficulties in assessing the genetic diversity of captive lions, since most individuals are of unknown origin, making maintenance of genetic diversity a problem.

Traditionally, 12 recent subspecies of lion were recognized, the largest of which has been recognized as the Barbary_Lion. The major differences between these subspecies are location, mane appearance, size, and distribution. Because these characteristics are very insignificant and show a high individual variability, most of these forms were debatable and probably invalid; additionally, they were often based upon zoo material of unknown origin that may have had "striking, but abnormal" morphological characteristics. Today, only eight

subspecies are usually accepted, but one of these (the Cape Lion formerly described as *Panthera leo melanochaita*) is probably invalid. Even the remaining seven subspecies might be too much; mitochondrial variation in recent African lions is modest, which suggests that all Sub-Saharan lions could be considered a single subspecies, possibly divided in two main clades: one to the west of the Great Rift Valley and the other to the east. Lions from Tsavo in Eastern Kenya are much closer genetically to lions in Transvaal (South Africa), than to those in the Aberdare Range in Western Kenya.

Eight recent subspecies are recognized today:

- ***P. l. persica***, known as the **Asiatic Lion** or **South Asian, Persian, or Indian lion**, was once widespread from Turkey, across the Middle East, to Pakistan, India, and even Bangladesh. However, large prides and daylight activity made it easier to poach than tigers or leopards; now around 300 exist in and near the Gir Forest of India.
- ***P. l. leo***, known as the **Barbary Lion**, is extinct in the wild due to excessive hunting, although gene remnants of captive individuals may still exist. This was one of the largest of the lion subspecies, at approximately 3–3.5 metres (10–11.5 ft) long and weighing over 150 kilograms (330 lb). They ranged from Morocco to Egypt. The last wild Barbary Lion was killed in Morocco in 1922.
- ***P. l. senegalensis***, known as the **West African lion**, is found in Western Africa, from Senegal to Nigeria.
- ***P. l. azandica***, known as the **North East Congo lion**, is found in the Northeastern parts of the Congo.
- ***P. l. nubica***, known as the **East African Lion** or **Massai lion**, is found in East Africa, from Ethiopia and Kenya to Tanzania and Mozambique.
- ***P. l. bleyenberghi***, known as the **Southwest African lion** or **Katanga lion**. It is found in South-western Africa, Namibia, Botswana, Angola, Katanga (Zaire), Zambia, and Zimbabwe.
- ***P. l. krugeri***, known as the **Southeast African lion** or **Transvaal lion**, is found in the Transvaal region of Southeastern Africa, including Kruger National Park.
- ***P. l. melanochaita***, known as the **Cape Lion**, became extinct in the wild around 1860. Results of mitochondrial DNA research do not support the status as a distinct subspecies. It seems probable that the Cape lion was only the southernmost population of the extant southern African lion.

HISTORIC DATA



Stuffed specimen of Cape lion at the Wiltshire Museum.

Please note that the mane begins lighter in colour and then deepens. This specimen is an example of what is not desired.

What are the major causes of the decline in Lion populations?

Primarily, loss of habitat and the influence of man. Strangely enough, commercial hunting has strengthened their numbers according to latest research. This probably due to commercial interests.

Secondary, lion have lost much of their inherent immunity to tuberculosis and feline aids. This decline in immunity is primary due to inbreeding and of course mankind's impact on our natural resources.

For how long does the dominant male rule the pride under normal and natural conditions?

Males are seldom able to hold onto the hierarchy past the age of 6 years as they already begin contending from the age of 4 years.

When will the Zwahili lions be released?

As we are busy with a gene preservation program in line with current legislation and according to this the Lions have to spend rehabilitation time in separated camps. Release onto the larger reserve will occur once permission is obtained. Until then, daily monitoring and evaluation continues. The objective remains the re-establishment of Panthera Leo in our reserve and biosphere, true to the original gene found geographically 150 years ago. The research into this threatened species continues.

Why could the male at Zwahili be separated from the female?

Some of the cubs previously born at Zwahili were either abandoned after several days or infanticide occurred. We are not sure which animal caused the infanticide. We are not willing to risk this and will separate the male so as to reduce the risk.

What will happen to the cubs?

The cubs will remain under evaluation until the age of 26 months. It is only at this age that proper development manifests and only then may a scientific evaluation take place. However, sexual maturity may take place before then and separation between males and females is required.

The juvenile males will then be placed into a separate camp, much as would happen in the wild with bachelor groups.

How can one support and ensure Panthera Leo's existence?

Fact is that any preservation program costs money and time, no matter what type of preservation one is attempting. All contributions will be welcomed and your reserve warden will gladly assist you.