

Lion

Lion^[1]
Temporal range: Early Pleistocene to recent

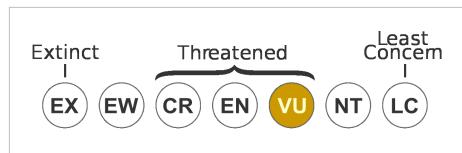


Male



Female (lioness)

Conservation status



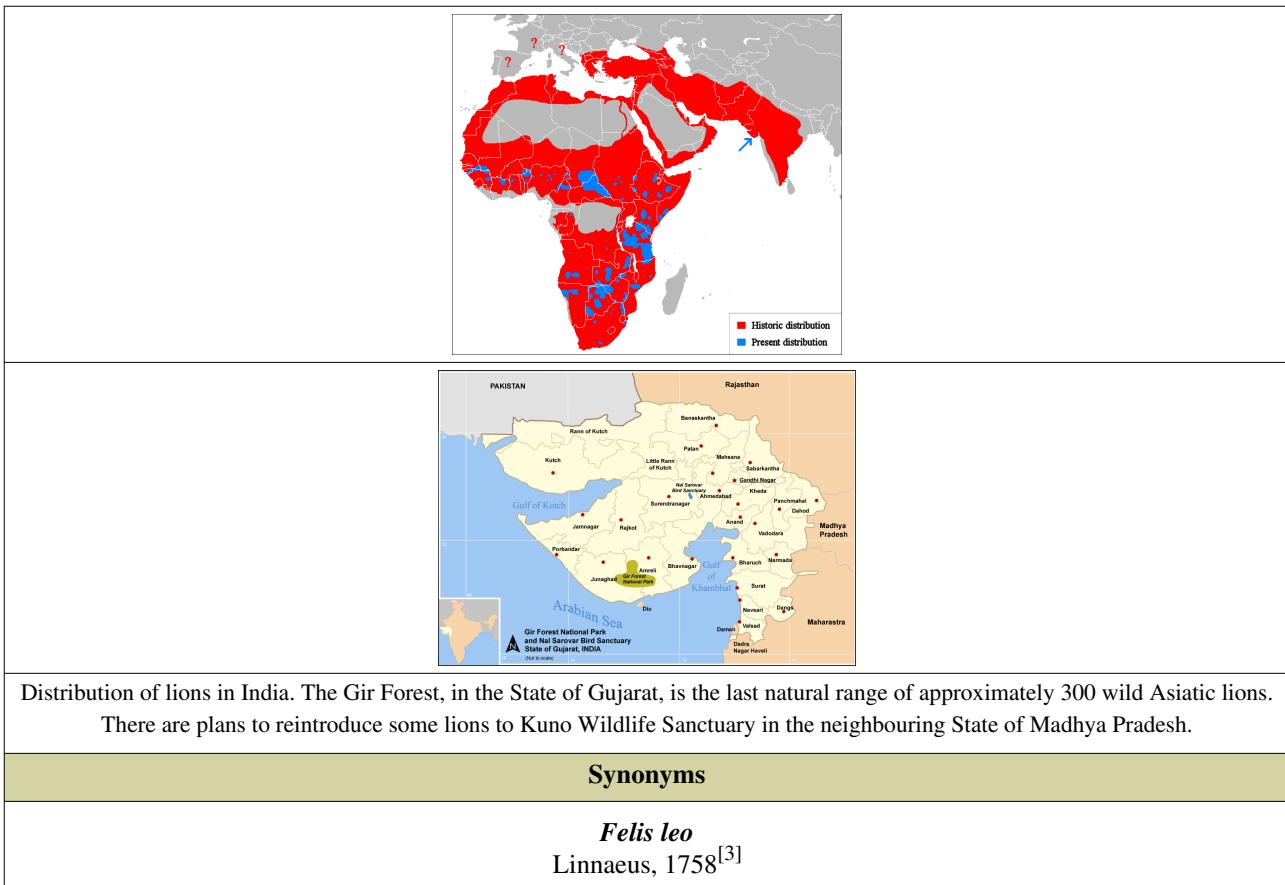
Vulnerable (IUCN 3.1)^[2]

Scientific classification

Kingdom:	Animalia
Phylum:	Chordata
Class:	Mammalia
Order:	Carnivora
Family:	Felidae
Genus:	<i>Panthera</i>
Species:	<i>P. leo</i>

Binomial name

Panthera leo
 (Linnaeus, 1758)



The **lion** (*Panthera leo*) is one of the four big cats in the genus *Panthera*, and a member of the family Felidae. With some males exceeding 250 kg (550 lb) in weight,^[4] it is the second-largest living cat after the tiger. Wild lions currently exist in Sub-Saharan Africa and in Asia with an endangered remnant population in Gir Forest National Park in India, having disappeared from North Africa and Southwest Asia in historic times. Until the late Pleistocene, about 10,000 years ago, the lion was the most widespread large land mammal after humans. They were found in most of Africa, across Eurasia from western Europe to India, and in the Americas from the Yukon to Peru.^[5] The lion is a vulnerable species, having seen a possibly irreversible population decline of thirty to fifty percent over the past two decades in its African range.^[2] Lion populations are untenable outside designated reserves and national parks. Although the cause of the decline is not fully understood, habitat loss and conflicts with humans are currently the greatest causes of concern. Within Africa, the West African lion population is particularly endangered.

Lions live for ten to fourteen years in the wild, while in captivity they can live longer than twenty years. In the wild, males seldom live longer than ten years, as injuries sustained from continual fighting with rival males greatly reduce their longevity.^[6] They typically inhabit savanna and grassland, although they may take to bush and forest. Lions are unusually social compared to other cats. A pride of lions consists of related females and offspring and a small number of adult males. Groups of female lions typically hunt together, preying mostly on large ungulates. Lions are apex and keystone predators, although they scavenge as opportunity allows. While lions do not typically hunt humans, some have been known to do so.

Highly distinctive, the male lion is easily recognised by its mane, and its face is one of the most widely recognised animal symbols in human culture. Depictions have existed from the Upper Paleolithic period, with carvings and paintings from the Lascaux and Chauvet Caves, through virtually all ancient and medieval cultures where they once occurred. It has been extensively depicted in sculptures, in paintings, on national flags, and in contemporary films and literature. Lions have been kept in menageries since the time of the Roman Empire and have been a key species sought for exhibition in zoos the world over since the late eighteenth century. Zoos are cooperating worldwide in breeding programs for the endangered Asiatic subspecies.

Etymology

The lion's name, similar in many Romance languages, is derived from the Latin *leo*,^[7] and the Ancient Greek λέων (leon).^[8] The Hebrew word לֹאֵל (*lavi*) may also be related.^[9] It was one of the many species originally described by Linnaeus, who gave it the name *Felis leo*, in his eighteenth century work, *Systema Naturae*.^[3]

Taxonomy and evolution

The lion is a species of the genus *Panthera* and its closest relatives are the other species of this genus: the tiger, the jaguar, and the leopard. *Panthera leo* itself evolved in Africa between 1 million and 800,000 years ago, before spreading throughout the Holarctic region.^[10] It appeared in the fossil record in Europe for the first time 700,000 years ago with the subspecies *Panthera leo fossilis* at Isernia in Italy. From this lion derived the later cave lion (*Panthera leo spelaea*), which appeared about 300,000 years ago.^[11] Lions died out in northern Eurasia at the end of the last glaciation, about 10,000 years ago,^[12] this may have been secondary to the extinction of Pleistocene megafauna.^[13]

Subspecies

Traditionally, twelve recent subspecies of lion were recognised, distinguished by mane appearance, size, and distribution. Because these characteristics are very insignificant and show a high individual variability, most of these forms were probably not true subspecies, especially as they were often based upon zoo material of unknown origin that may have had "striking, but abnormal" morphological characteristics.^[14] Today only eight subspecies are usually accepted,^{[12] [15]} although one of these, the Cape lion, formerly described as *Panthera leo melanochaita*, probably is invalid.^[15] Even the remaining seven subspecies might be too many. While the status of the Asiatic lion (*P. l. persica*) as a subspecies is generally accepted, the systematic relationships among African lions are still not completely resolved. Mitochondrial variation in living African lions seemed to be modest according to some younger studies and therefore all sub-Saharan lions sometimes have been considered a single subspecies. However, a recent study revealed, that lions from western and central Africa differ genetically from lions of southern or eastern Africa. According to this study, Western African lions are more closely related to Asian lions, than to South or East African lions. These findings might be explained by a late Pleistocene extinction event of lions in western and central Africa and a subsequent recolonisation of these parts from Asia.^[16] Previous studies, which were focusing mainly on lions from eastern and southern parts of Africa already showed that these can be 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.^[17] Another study, revealed, that there are three major types of lions, one North African–Asian, one southern African and one middle African.^[18] Conversely, Per Christiansen found that using skull morphology allowed him to identify the subspecies *krugeri*, *nubica*, *persica*, and *senegalensis*, while there was overlap between *bleyenberghi* with *senegalensis* and *krugeri*. The Asiatic lion *persica* was the most distinctive, and the Cape lion had characteristics allying it more with *persica* than the other subsaharan lions. He had analysed 58 lion skulls in three European museums.^[19]

Recent

Eight recent (Holocene) subspecies are recognised today:

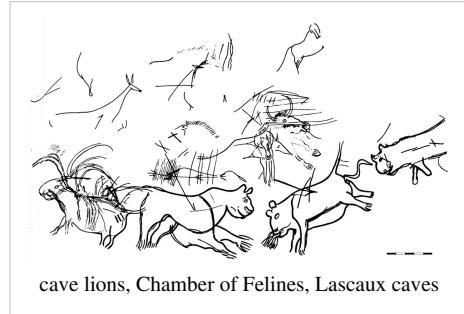
- *P. l. persica*, known as the Asiatic lion or South Asian, Persian, or Indian Lion, once was widespread from Turkey, across Southwest Asia, to Pakistan, India, and even to Bangladesh. However, large prides and daylight activity made them easier to poach than tigers or leopards; now around 300 exist in and near the Gir Forest of India.^[20] Genetic evidence suggests its ancestors split from the ancestors of subsaharan African lions between 74 and 203 thousand years ago.^[12]

- *P. l. leo*, known as the Barbary lion, originally ranged from Morocco to Egypt. It is extinct in the wild due to excessive hunting, as the last wild Barbary lion was killed in Morocco in 1922.^[21] This was one of the largest of the lion subspecies,^[22] with reported lengths of 3–3.3 metres (10–10.8 ft) and weights of more than 200 kilograms (440 lb) for males. It appears to be more closely related to the Asiatic rather than subsaharan lions. There are a number of animals in captivity likely to be Barbary lions,^[23] particularly 90 animals descended from the Moroccan Royal collection at Rabat Zoo.^[24]
- *P. l. senegalensis*, known as the West African Lion, is found in western Africa, from Senegal to the Central African Republic.^{[25] [26]}
- *P. l. azandica*, known as the Northeast Congo Lion, is found in the northeastern parts of the Congo.^[25]
- *P. l. nubica*, known as the East African, Massai Lion is found in east Africa, from Ethiopia and Kenya to Tanzania and Mozambique.^[26], a local population is known as Tsavo Lion.
- *P. l. bleyenberghi*, known as the Southwest African or Katanga Lion, is found in southwestern Africa, Namibia, Botswana, Angola, Katanga (Zaire), Zambia, and Zimbabwe.^[26]
- *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.^[26]
- *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 *P. l. krugeri*.^[15]

Pleistocene

Several additional subspecies of lion existed in prehistoric times:

- *P. l. fossilis*, known as the Early Middle Pleistocene European cave lion, flourished about 500,000 years ago; fossils have been recovered from Germany and Italy. It was larger than today's African lions, reaching the American cave lion in size^{[12] [27]}
- *P. l. spelaea*, known as the European cave lion, Eurasian cave lion, or Upper Pleistocene European cave lion, occurred in Eurasia 300,000 to 10,000 years ago.^[12] This species is known from Paleolithic cave paintings (such as the one displayed to the right), ivory carvings, and clay busts,^[28] indicating it had protruding ears, tufted tails, perhaps faint tiger-like stripes, and that at least some males had a ruff or primitive mane around their necks.^[29]



Dubious

- *P. l. sinhaleyus*, known as the Sri Lanka Lion, appears to have become extinct around 39,000 years ago. It is only known from two teeth found in deposits at Kuruwita. Based on these teeth, P. Deraniyagala erected this subspecies in 1939.^[30]
- *P. l. europaea*, known as the European Lion, was probably identical with *Panthera leo persica* or *Panthera leo spelea*; its status as a subspecies is unconfirmed. It became extinct around 100 AD due to persecution and over-exploitation. It inhabited the Balkans, the Italian Peninsula, southern France, and the Iberian Peninsula. It was a very popular object of hunting among Romans and Greeks.
- *P. l. youngi* or *Panthera youngi*, flourished 350,000 years ago.^[5] Its relationship to the extant lion subspecies is obscure, and it probably represents a distinct species.
- *P. l. maculatus*, known as the Marozi or Spotted lion, sometimes is believed to be a distinct subspecies, but may be an adult lion that has retained its juvenile spotted pattern. If it was a subspecies in its own right, rather than a small number of aberrantly coloured individuals, it has been extinct since 1931. A less likely identity is a natural leopard-lion hybrid commonly known as a leopon.^[31]

- *P. l. atrox*, known as the American Lion or American cave lion, was abundant in the Americas from Canada to Peru in the Pleistocene Epoch until about 10,000 years ago. This form likely represents a separate species, possibly more closely related to the jaguar, and can not be considered a true lion.^[32] One of the largest purported lion subspecies to have existed, its body length is estimated to have been 1.6–2.5 m (5–8 ft).^[33]

Hybrids

Further information: Panthera hybrid, Liger, and Tigon

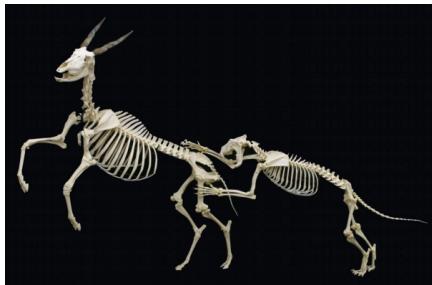
Lions have been known to breed with tigers (most often the Siberian and Bengal subspecies) to create hybrids called ligers and tiglons.^[34] They also have been crossed with leopards to produce leopons,^[35] and jaguars to produce jaglions. The marozi is reputedly a spotted lion or a naturally occurring lepon, while the Congolese Spotted Lion is a complex lion-jaguar-leopard hybrid called a lijagulep. Such hybrids were once commonly bred in zoos, but this is now discouraged due to the emphasis on conserving species and subspecies. Hybrids are still bred in private menageries and in zoos in China.



Video of lion cubs in the wild, South Africa

The liger is a cross between a male lion and a tigress.^[36] Because the growth-inhibiting gene from the female tiger is absent, a growth-promoting gene is passed on by the male lion, the resulting ligers grow far larger than either parent. They share physical and behavioural qualities of both parent species (spots and stripes on a sandy background). Male ligers are sterile, but female ligers are often fertile. Males have about a 50 percent chance of having a mane, but if they grow one, their manes will be modest: around 50 percent of a pure lion mane. Ligers are typically between 3.0 and 3.7 m (10 to 12 feet) in length, and can be between 360 and 450 kg (800 to 1,000 pounds) or more.^[36] The less common tigon is a cross between the lioness and the male tiger.^[37]

Characteristics



A skeletal mount of an African Lion attacking a Common Eland on display at The Museum of Osteology, Oklahoma City, Oklahoma

The lion is the tallest (at the shoulder) of all living cats, averaging about 14 cm (5.5 in) taller than the tiger. Behind only the tiger, the lion is the second largest living felid in length and weight. Its skull is very similar to that of the tiger, although the frontal region is usually more depressed and flattened, with a slightly shorter postorbital region. The lion's skull has broader nasal openings than the tiger. However, due to the amount of skull variation in the two species, usually, only the structure of the lower jaw can be used as a reliable indicator of species.^[38] Lion coloration varies from light buff to yellowish, reddish, or dark ochraceous brown. The underparts are generally lighter and the tail tuft is black. Lion cubs are born with brown rosettes (spots) on their body, rather like those of a leopard. Although these fade as lions reach adulthood, faint spots often may still be seen on the legs and underparts, particularly on lionesses.

Lions are the only members of the cat family to display obvious sexual dimorphism—that is, males and females look distinctly different. They also have specialised roles that each gender plays in the pride. For instance, the lioness, the hunter, lacks the male's thick cumbersome mane. It seems to impede the male's ability to be camouflaged when stalking the prey and create overheating in chases. The colour of the male's mane varies from blond to black, generally becoming darker as the lion grows older.

Weights for adult lions range between 150–250 kg (330–550 lb) for males and 120–182 kg (264–400 lb) for females.^[4] Nowell and Jackson report average weights of 181 kg (400 lb) for males and 126 kg (280 lb) for females.^[21] Lions tend to vary in size depending on their environment and area, resulting in a wide spread in recorded weights. For instance, lions in southern Africa tend to be about 5 percent heavier than those in East Africa, in general.^[39]

Head and body length is 170–250 cm (5 ft 7 in – 8 ft 2 in) in males and 140–175 cm (4 ft 7 in – 5 ft 9 in) in females; shoulder height is up to 123 cm (4 ft) in males and as low as 91 cm (3 ft) in females.^[40] The tail length is 90–105 cm (2 ft 11 in - 3 ft 5 in) in males and 70–100 cm in females (2 ft 4 in – 3 ft 3 in).^[4] The longest known lion, at nearly 3.6 m (12 ft) in total length, was a black-maned male shot near Mucoso, southern Angola in October 1973; the heaviest lion known in the wild was a man-eater shot in 1936 just outside Hectorspruit in eastern Transvaal, South Africa and weighed 313 kg (690 lb).^[41] Another notably outsized male lion, which was shot near Mount Kenya, weighed in at 272 kg (600 lb).^[21] Lions in captivity tend to be larger than lions in the wild—the heaviest lion on record is a male at Colchester Zoo in England named Simba in 1970, which weighed 375 kg (826 lb).^[42] However, the frequently cited maximum head and body length of 250 cm (8 ft 2 in) fits rather to extinct Pleistocene forms, like the American lion, with even large modern lions measuring several centimeters less in length^[43]

The most distinctive characteristic shared by both females and males is that the tail ends in a hairy tuft. In some lions, the tuft conceals a hard "spine" or "spur", approximately 5 mm long, formed of the final sections of tail bone fused together. The lion is the only felid to have a tufted tail—the function of the tuft and spine are unknown. Absent at birth, the tuft develops around 5½ months of age and is readily identifiable at 7 months.^[44]

Mane

The mane of the adult male lion, unique among cats, is one of the most distinctive characteristics of the species. It makes the lion appear larger, providing an excellent intimidation display; this aids the lion during confrontations with other lions and with the species' chief competitor in Africa, the spotted hyena.^[45] The presence, absence, colour, and size of the mane is associated with genetic precondition, sexual maturity, climate, and testosterone production; the rule of thumb is the darker and fuller the mane, the healthier the lion. Sexual selection of mates by lionesses favors males with the densest, darkest mane.^[46] Research in Tanzania also suggests mane length signals fighting success in male–male relationships. Darker-maned individuals may have longer reproductive lives and higher offspring survival, although they suffer in the hottest months of the year.^[47] In prides including a coalition of two or three males, it is possible that lionesses solicit mating more actively with the males who are more heavily maned.^[46]

Scientists once believed that the distinct status of some subspecies could be justified by morphology, including the size of the mane. Morphology was used to identify subspecies such as the Barbary lion and Cape lion. Research has suggested, however, that environmental factors influence the colour and size of a lion's mane, such as the ambient temperature.^[47] The cooler ambient temperature in European and North American zoos, for example, may result in a heavier mane. Thus the mane is not an appropriate marker for identifying subspecies.^{[15] [48]} The males of the Asiatic subspecies, however, are characterised by sparser manes than average African lions.^[49]



During confrontations with others, the mane makes the lion look larger.



A maneless male lion, who also has little body hair—from Tsavo East National Park, Kenya

In the Pendjari National Park area almost all males are maneless or have very weak manes.^[50] Maneless male lions have also been reported from Senegal and from Tsavo East National Park in Kenya, and the original male white lion from Timbavati also was maneless. The testosterone hormone has been linked to mane growth, therefore castrated lions often have minimal to no mane, as the removal of the gonads inhibits testosterone production.^[51]

Cave paintings of extinct European cave lions exclusively show animals with no mane, or just the hint of a mane, suggesting that they were maneless.^[29]

White lions

The white lion is not a distinct subspecies, but a special morph with a genetic condition, leucism,^[14] that causes paler colouration akin to that of the white tiger; the condition is similar to melanism, which causes black panthers. They are not albinos, having normal pigmentation in the eyes and skin. White Transvaal lion (*Panthera leo krugeri*) individuals occasionally have been encountered in and around Kruger National Park and the adjacent Timbavati Private Game Reserve in eastern South Africa, but are more commonly found in captivity, where breeders deliberately select them. The unusual cream colour of their coats is due to a recessive gene.^[52] Reportedly, they have been bred in camps in South Africa for use as trophies to be killed during canned hunts.^[53]



White lions owe their colouring to a recessive gene; they are rare forms of the subspecies
Panthera leo krugeri

Kevin Richardson is an animal behaviourist who works with the native big cats of Africa. He currently works in a special facility called the Kingdom of the White Lion in Broederstroom^[54] which is 50 miles from Johannesburg.^[55] The site was built with the help of Rodney Fuhr^[56] and was made for the movie set of White Lion: Home is a Journey.^[55] He has 39 white lions on-site^[54] and works diligently to protect and preserve the white lion type. While the park is currently a private property, there are plans to open it to the public soon.^[57]

Behaviour

Lions spend much of their time resting and are inactive for about 20 hours per day.^[58] Although lions can be active at any time, their activity generally peaks after dusk with a period of socializing, grooming, and defecating. Intermittent bursts of activity follow through the night hours until dawn, when hunting most often takes place. They spend an average of two hours a day walking and 50 minutes eating.^[59]

Group organization

Lions are predatory carnivores who manifest two types of social organization. Some are *residents*, living in groups, called *prides*.^[60] The pride usually consists of five or six related females, their cubs of both sexes, and one or two males (known as a *coalition* if more than one) who mate with the adult females (although extremely large prides, consisting of up to 30 individuals, have been observed). The number of adult males in a coalition is usually two, but may increase to four and decrease again over time. Male cubs are excluded from their maternal pride when they reach maturity.



Two lionesses and a mature male of a pride,
northern Serengeti

The second organizational behaviour is labeled *nomads*, who range widely and move about sporadically, either singularly or in pairs.^[60] Pairs are more frequent among related males who have been excluded from their birth pride. Note that a lion may switch lifestyles; nomads may become residents and vice versa. Males have to go through this lifestyle and some never are able to join another pride. A female who becomes a nomad has much greater difficulty joining a new pride, as the females in a pride are related, and they reject most attempts by an unrelated female to join their family group.

The area a pride occupies is called a *pride area*, whereas that by a nomad is a *range*.^[60] The males associated with a pride tend to stay on the fringes, patrolling their territory. Why sociality—the most pronounced in any cat species—has developed in lionesses is the subject of much debate. Increased hunting success appears an obvious reason, but this is less than sure upon examination: coordinated hunting does allow for more successful predation, but also ensures that non-hunting members reduce per capita caloric intake, however, some take a role raising cubs, who may be left alone for extended periods of time. Members of the pride regularly tend to play the same role in hunts. The health of the hunters is the primary need for the survival of the pride and they are the first to consume the prey at the site it is taken. Other benefits include possible kin selection (better to share food with a related lion than with a stranger), protection of the young, maintenance of territory, and individual insurance against injury and hunger.^[21]

Lionesses do the majority of the hunting for their pride, being smaller, swifter and more agile than the males, and unencumbered by the heavy and conspicuous mane, which causes overheating during exertion. They act as a co-ordinated group in order to stalk and bring down the prey successfully. However, if nearby the hunt, males have a tendency to dominate the kill once the lionesses have succeeded. They are more likely to share with the cubs than with the lionesses, but rarely share food they have killed by themselves. Smaller prey is eaten at the location of the hunt, thereby being shared among the hunters; when the kill is larger it often is dragged to the pride area. There is more sharing of larger kills,^[61] although pride members often behave aggressively toward each other as each tries to consume as much food as possible.

Both males and females defend the pride against intruders. Some individual lions consistently lead the defence against intruders, while others lag behind.^[62] Lions tend to assume specific roles in the pride. Those lagging behind may provide other valuable services to the group.^[63] An alternative hypothesis is that there is some reward associated with being a leader who fends off intruders and the rank of lionesses in the pride is reflected in these responses.^[64] The male or males associated with the pride must defend their relationship to the pride from outside males who attempt to take over their relationship with the pride. Females form the stable social unit in a pride and do not tolerate outside females;^[65] membership only changes with the births and deaths of lionesses,^[66] although some females do leave and become nomadic.^[67] Subadult males on the other hand, must leave the pride when they reach maturity at around 2–3 years of age.^[67]



Video of a lion in the wild

Hunting and diet

Lions are powerful animals that usually hunt in coordinated groups and stalk their chosen prey. However, they are not particularly known for their stamina—for instance, a lioness' heart makes up only 0.57 percent of her body weight (a male's is about 0.45 percent of his body weight), whereas a hyena's heart is close to 1 percent of its body weight.^[68] Thus, they only run fast in short bursts,^[69] and need to be close to their prey before starting the attack. They take advantage of factors that reduce visibility; many kills take place near some form of cover or at night.^[70] They sneak up to the victim until they reach a distance of around 30 metres (98 ft) or less. The lioness is the one who does the hunting for the pride, since the lioness is more aggressive by nature. The male lion usually stays and watches its young while waiting for the lionesses to return from the hunt. Typically, several lionesses work together and encircle the herd from different points. Once they have closed with a herd, they usually target the closest prey. The attack is short and powerful; they attempt to catch the victim with a fast rush and final leap. The prey usually is killed by strangulation,^[71] which can cause cerebral ischemia or asphyxia (which results in hypoxicemic, or "general", hypoxia). The prey also may be killed by the lion enclosing the animal's mouth and nostrils in its jaws^[72] (which would also result in asphyxia). Smaller prey, though, may simply be killed by a swipe of a lion's paw.^[4]



While a lioness such as this one has very sharp teeth, prey is usually killed by strangulation



Lioness in a burst of speed while hunting in the Serengeti

The prey consists mainly of large mammals, with a preference for wildebeest, impalas, zebras, buffalo, and warthogs in Africa and nilgai, wild boar, and several deer species in India. Many other species are hunted, based on availability. Mainly this will include ungulates weighing between 50 and 300 kg (110–660 lb) such as kudu, hartebeest, gemsbok, and eland.^[4] Occasionally, they take relatively small species such as Thomson's gazelle or springbok. Lions hunting in groups are capable of taking down most animals, even healthy adults, but in most parts of their range they rarely attack very large prey such as fully grown male giraffes due to the danger of injury.

Extensive statistics collected over various studies show that lions normally feed on mammals in the range 190–550 kg (420–1210 lb). In Africa, wildebeest rank at the top of preferred prey (making nearly half of the lion prey in the Serengeti) followed by zebra.^[73] Most adult hippopotamuses, rhinoceroses, elephants, and smaller gazelles, impala, and other agile antelopes are generally excluded. However giraffes and buffalos are often taken in certain regions. For instance, in Kruger National Park, giraffes are regularly hunted.^[74] In Manyara Park, Cape buffaloes constitute as much as 62% of the lion's diet,^[75] due to the high number density of buffaloes. Occasionally hippopotamus is also taken, but adult rhinoceroses are generally avoided. Even though smaller than 190 kg (420 lb), warthogs are often taken depending on availability.^[76] In some areas, lions specialise in hunting atypical prey species; this is the case at the Savuti river, where they prey on elephants.^[77] Park guides in the area reported that the lions, driven by extreme hunger, started taking down baby elephants, and then moved on to adolescents and, occasionally, fully grown adults during the night when elephants' vision is poor.^[78] Lions also attack domestic livestock; in India cattle contribute significantly to their diet.^[49] Lions are capable of killing other predators such as leopards, cheetahs, hyenas, and wild dogs, though (unlike most felids) they seldom devour the competitors after killing them. They also scavenge animals either dead from natural causes (disease) or killed by other predators, and keep a constant lookout for circling vultures, being keenly aware that they indicate an animal dead or in distress.^[79] A lion may gorge itself and eat up to 30 kg (66 lb) in one sitting,^[80] if it is unable to consume all the kill it will rest for a few hours before consuming more. On a hot day, the pride may retreat to shade leaving a male or two to stand

guard.^[81] An adult lioness requires an average of about 5 kg (11 lb) of meat per day, a male about 7 kg (15.5 lb).^[82]

Because lionesses hunt in open spaces where they are easily seen by their prey, cooperative hunting increases the likelihood of a successful hunt; this is especially true with larger species. Teamwork also enables them to defend their kills more easily against other large predators such as hyenas, which may be attracted by vultures from kilometres away in open savannas. Lionesses do most of the hunting; males attached to prides do not usually participate in hunting, except in the case of larger quarry such as giraffe and buffalo. In typical hunts, each lioness has a favored position in the group, either stalking prey on the "wing" then attacking, or moving a smaller distance in the centre of the group and capturing prey in flight from other lionesses.^[83] Young lions first display stalking behaviour around three months of age, although they do not participate in hunting until they are almost a year old. They begin to hunt effectively when nearing the age of two.^[84]



Four lions take down a cape buffalo in the central Serengeti, Tanzania

Predator competition

Lions and spotted hyenas occupy the same ecological niche (and hence compete) where they coexist. A review of data across several studies indicates a dietary overlap of 58.6%.^[85] Lions typically ignore spotted hyenas, unless they are on a kill or are being harassed by them, while the latter tend to visibly react to the presence of lions, whether there is food or not. Lions seize the kills of spotted hyenas: in the Ngorongoro crater, it is common for lions to subsist largely on kills stolen from hyenas, causing the hyenas to increase their kill rate. Lions are quick to follow the calls of hyenas feeding, a fact which was proven by Dr. Hans Kruuk, who found that lions repeatedly approached him whenever he played the tape-recorded calls of hyenas feeding.^[86] When confronted on a kill by lions, spotted hyenas will either leave or wait patiently at a distance of 30–100 m (100–350 ft) until the lions have finished.^[87] In some cases, spotted hyenas are bold enough to feed alongside lions, and may occasionally force the lions off a kill. The two species may act aggressively toward one another even when there is no food involved. Lions may charge at hyenas and maul them for no apparent reason: one male lion was filmed killing two matriarch hyenas on separate occasions without eating them,^[88] and lion predation can account for up to 71% of hyena deaths in Etosha. Spotted hyenas have adapted by frequently mobbing lions which enter their territories.^[89] Experiments on captive spotted hyenas revealed that specimens with no prior experience with lions act indifferently to the sight of them, but will react fearfully to the scent.^[86]

Lions tend to dominate smaller felines such as cheetahs and leopards where they co-occur, stealing their kills and killing their cubs and even adults when given the chance. The cheetah has a 50% chance of losing its kill to lions or other predators.^[90] Lions are major killers of cheetah cubs, up to 90% of which are lost in their first weeks of life due to attacks by other predators. Cheetahs avoid competition by hunting at different times of the day and hide their cubs in thick brush. Leopards also use such tactics, but have the advantage of being able to subsist much better on small prey than either lions or cheetahs. Also, unlike cheetahs, leopards can climb trees and use them to keep their cubs and kills away from lions. However, lionesses will occasionally be successful in climbing to retrieve leopard kills.^[91] Similarly, lions dominate African wild dogs, not only taking their kills but also preying on young and (rarely) adult dogs. Population densities of wild dogs are low in areas where lions are more abundant.^[92]

The Nile crocodile is the only sympatric predator (besides humans) that can singly threaten the lion. Depending on the size of the crocodile and the lion, either can lose kills or carrion to the other. Lions have been known to kill crocodiles venturing onto land,^[93] while the reverse is true for lions entering waterways, as evidenced by the occasional lion claws found in crocodile stomachs.^[94]

Reproduction and life cycle

Most lionesses will have reproduced by the time they are four years of age.^[95] Lions do not mate at any specific time of year, and the females are polyestrous.^[96] As with other cats, the male lion's penis has spines which point backwards. Upon withdrawal of the penis, the spines rake the walls of the female's vagina, which may cause ovulation.^[97] A lioness may mate with more than one male when she is in heat;^[98] during a mating bout, which could last several days, the couple copulates twenty to forty times a day and are likely to forgo eating. Lions reproduce very well in captivity.



Lions mating in Ngorongoro Conservation Area, Tanzania

The average gestation period is around 110 days,^[96] the female giving birth to a litter of one to four cubs in a secluded den (which may be a thicket, a reed-bed, a cave or some other sheltered area) usually away from the rest of the pride. She will often hunt by herself while the cubs are still helpless, staying relatively close to the thicket or den where the cubs are kept.^[99] The cubs themselves are born blind—their eyes do not open until roughly a week after birth. They weigh 1.2–2.1 kg (2.6–4.6 lb) at birth and are almost helpless, beginning to crawl a day or two after birth and walking around three weeks of age.^[100] The lioness moves her cubs to a new den site several times a month, carrying them one by one by the nape of the neck, to prevent scent from building up at a single den site and thus avoiding the attention of predators that may harm the cubs.^[99]

Usually, the mother does not integrate herself and her cubs back into the pride until the cubs are six to eight weeks old.^[101] However, sometimes this introduction to pride life occurs earlier, particularly if other lionesses have given birth at about the same time. For instance, lionesses in a pride often synchronise their reproductive cycles so that they cooperate in the raising and suckling of the young (once the cubs are past the initial stage of isolation with their mother), who suckle indiscriminately from any or all of the nursing females in the pride. In addition to greater protection, the synchronization of births also has an advantage in that the cubs end up being roughly the same size, and thus have an equal chance of survival. If one lioness gives birth to a litter of cubs a couple of months after another lioness, for instance, then the younger cubs, being much smaller than their older brethren, are usually dominated by larger cubs at mealtimes—consequently, death by starvation is more common amongst the younger cubs.

In addition to starvation, cubs also face many other dangers, such as predation by jackals, hyenas, leopards, martial eagles and snakes. Even buffaloes, should they catch the scent of lion cubs, often stampede towards the thicket or den where they are being kept, doing their best to trample the cubs to death while warding off the lioness. Furthermore, when one or more new males oust the previous male(s) associated with a pride, the conqueror(s) often kill any existing young cubs,^[102] perhaps because females do not become fertile and receptive until their cubs mature or die. All in all, as many as 80 percent of the cubs will die before the age of two.^[103]



A pregnant lioness (right)

When first introduced to the rest of the pride, the cubs initially lack confidence when confronted with adult lions other than their mother. However, they soon begin to immerse themselves in the pride life, playing amongst themselves or attempting to initiate play with the adults. Lionesses with cubs of their own are more likely to be tolerant of another lioness's cubs than lionesses without cubs. The tolerance of the male lions towards the cubs varies—sometimes, a male will patiently let the cubs play with his tail or his mane, whereas another may snarl and bat the cubs away.^[104]

Weaning occurs after six to seven months. Male lions reach maturity at about 3 years of age and, at 4–5 years of age, are capable of challenging and displacing the adult male(s) associated with another pride. They begin to age and weaken between 10 and 15 years of age at the latest,^[105] if they have not already been critically injured while defending the pride (once ousted from a pride by rival males, male lions rarely manage a second take-over). This leaves a short window for their own offspring to be born and mature. If they are able to procreate as soon as they take over a pride, potentially, they may have more offspring reaching maturity before they also are displaced. A lioness often will attempt to defend her cubs fiercely from a usurping male, but such actions are rarely successful. He usually kills all of the existing cubs who are less than two years old. A lioness is weaker and much lighter than a male; success is more likely when a group of three or four mothers within a pride join forces against one male.^[102]



The tolerance of male lions towards the cubs varies. They are, however, generally more likely to share food with the cubs than with the lionesses.

Contrary to popular belief, it is not only males that are ousted from their pride to become nomads, although most females certainly do remain with their birth pride. However, when the pride becomes too large, the next generation of female cubs may be forced to leave to eke out their own territory. Furthermore, when a new male lion takes over the pride, subadult lions, both male and female, may be evicted.^[106] Life is harsh for a female nomad. Nomadic lionesses rarely manage to raise their cubs to maturity, without the protection of other pride members. One scientific study reports that both males and females may interact homosexually.^{[107] [108]}

Health

Although adult lions have no natural predators, evidence suggests that the majority die violently from humans or other lions.^[109] Lions often inflict serious injuries on each other, either members of different tribes encountering each other in territorial disputes, or members of the same tribe fighting at a kill.^[110] Crippled lions and lion cubs may fall victim to hyenas, leopards, or be trampled by buffalo or elephants, and careless lions may be maimed when hunting prey.^[111]

Various species of tick commonly infest the ears, neck and groin regions of most lions.^{[112] [113]} Adult forms of several species of the tapeworm genus *Taenia* have been isolated from intestines, the lions having ingested larval forms from antelope meat.^[114] Lions in the Ngorongoro Crater were afflicted by an outbreak of stable fly (*Stomoxys calcitrans*) in 1962; this resulted in lions becoming covered in bloody bare patches and emaciated. Lions sought unsuccessfully to evade the biting flies by climbing trees or crawling into hyena burrows; many perished or emigrated as the population dropped from 70 to 15 individuals.^[115] A more recent outbreak in 2001 killed six lions.^[116] Lions, especially in captivity, are vulnerable to the canine distemper virus (CDV), feline immunodeficiency virus (FIV), and feline infectious peritonitis (FIP).^[14] CDV is spread through domestic dogs and other carnivores; a 1994 outbreak in Serengeti National Park resulted in many lions developing neurological symptoms such as seizures. During the outbreak, several lions died from pneumonia and encephalitis.^[117] FIV, which is similar to HIV while not known to adversely affect lions, is worrisome enough in its effect in domestic cats that the Species Survival Plan recommends systematic testing in captive lions. It occurs with high to endemic frequency in several wild lion populations, but is mostly absent from Asiatic and Namibian lions.^[14]



One of the tree climbing Lions of the Serengeti, Tanzania

Communication

When resting, lion socialization occurs through a number of behaviours, and the animal's expressive movements are highly developed. The most common peaceful tactile gestures are head rubbing and social licking,^[118] which have been compared with grooming in primates.^[119] Head rubbing—nuzzling one's forehead, face and neck against another lion—appears to be a form of greeting,^[120] as it is seen often after an animal has been apart from others, or after a fight or confrontation. Males tend to rub other males, while cubs and females rub females.^[121] Social licking often occurs in tandem with head rubbing; it is generally mutual and the recipient appears to express pleasure. The head and neck are the most common parts of the body licked, which may have arisen out of utility, as a lion cannot lick these areas individually.^[122]



Head rubbing and licking are common social behaviours within a pride

Lions have an array of facial expressions and body postures that serve as visual gestures.^[123] Their repertoire of vocalizations is also large; variations in intensity and pitch, rather than discrete signals, appear central to communication. Lion sounds include snarling, purring, hissing, coughing, miaowing, woofing and roaring. Lions tend to roar in a very characteristic manner, starting with a few deep, long roars that trail off into a series of shorter ones. They most often roar at night; the sound, which can be heard from a distance of 8 kilometres (5.0 mi), is used to advertise the animal's presence.^[124] Lions have the loudest roar of any big cat.

Distribution and habitat

In Africa, lions can be found in savanna grasslands with scattered *Acacia* trees which serve as shade;^[126] their habitat in India is a mixture of dry savanna forest and very dry deciduous scrub forest.^[127] The habitat of lions originally spanned the southern parts of Eurasia, ranging from Greece to India, and most of Africa except the central rainforest-zone and the Sahara desert. Herodotus reported that lions had been common in Greece around 480 BC; they attacked the baggage camels of the Persian king Xerxes on his march through the country. Aristotle considered them rare by 300 BC. By 100 AD they were extirpated.^[128] A population of Asiatic lions survived until the tenth century in the Caucasus, their last European outpost.^[129]



Two male Asiatic lions in Sanjay Gandhi National Park, Mumbai, India. The wild population of the endangered Asiatic lions is restricted to the Gir Forest National Park in western India.^[125]

The species was eradicated from Palestine by the Middle Ages and from most of the rest of Asia after the arrival of readily available firearms in the eighteenth century. Between the late nineteenth and early twentieth century they became extinct in North Africa and Southwest Asia. By the late nineteenth century the lion had disappeared from Turkey and most of northern India,^{[14] [130]} while the last sighting of a live Asiatic lion in Iran was in 1941 (between Shiraz and Jahrom, Fars Province), although the corpse of a lioness was found on the banks of the Karun river, Khūzestān Province in 1944. There are no subsequent reliable reports from Iran.^[80] The subspecies now survives only in and around the Gir Forest of northwestern India.^[20] About 300 lions live in a **sanctuary** in the state of Gujarat, which covers most of the forest. Their numbers are slowly increasing.^[131]

Population and conservation status

Most lions now live in eastern and southern Africa, and their numbers there are rapidly decreasing, with an estimated 30–50% decline over the last two decades.^[2] Estimates of the African lion population range between 16,500 and 47,000 living in the wild in 2002–2004,^{[133] [134]} down from early 1990s estimates that ranged as high as 100,000 and perhaps 400,000 in 1950. Primary causes of the decline include disease and human interference.^[2] Habitat loss and conflicts with humans are considered the most significant threats to the species.^{[135] [136]} The remaining populations are often geographically isolated from one another, which can lead to inbreeding, and consequently, reduced genetic diversity. Therefore the lion is considered a vulnerable species by the International Union for Conservation of Nature, while the Asiatic subspecies is endangered.^[137] The lion population in the region of West Africa is isolated from lion populations of Central Africa, with little or no exchange of breeding individuals. The number of mature individuals in West Africa is estimated by two separate recent surveys at 850–1,160 (2002/2004). There is disagreement over the size of the largest individual population in West Africa: the estimates range from 100 to 400 lions in Burkina Faso's Arly-Singou ecosystem.^[2] Another population in northwestern Africa is found in Waza National Park, where only about 14–21 animals persist^[138]



The Asiatic lion, whose habitat once ranged from the Mediterranean to north-west Indian subcontinent, is today found only in the Gir Forest of Gujarat, India. Only about 320 Asiatic lions survive in the wild.^[132]

Conservation of both African and Asian lions has required the setup and maintenance of national parks and game reserves; among the best known are Etosha National Park in Namibia, Serengeti National Park in Tanzania, and Kruger National Park in eastern South Africa. Outside these areas, the issues arising from lions' interaction with livestock and people usually results in the elimination of the former.^[139] In India, the last refuge of the Asiatic lion is the **unknown operator: u','unknown operator: u','unknown operator: u',' (unknown operator: u**'unknown operator: u**',sq mi)** Gir Forest National Park in western India which had about 359 lions (as of April 2006). As in Africa, numerous human habitations are close by with the resultant problems between lions, livestock, locals and wildlife officials.^[140] The Asiatic Lion Reintroduction Project plans to establish a second independent population of Asiatic lions at the Kuno Wildlife Sanctuary in the Indian state of Madhya Pradesh.^[141] It is important to start a second population to serve as a gene pool for the last surviving Asiatic lions and to help develop and maintain genetic diversity enabling the species to survive.

The former popularity of the Barbary lion as a zoo animal has meant that scattered lions in captivity are likely to be descended from Barbary lion stock. This includes twelve lions at Port Lympne Wild Animal Park in Kent, England that are descended from animals owned by the King of Morocco.^[142] Another eleven animals believed to be Barbary lions were found in Addis Ababa zoo, descendants of animals owned by Emperor Haile Selassie. WildLink International, in collaboration with Oxford University, launched their ambitious International Barbary Lion Project with the aim of identifying and breeding Barbary lions in captivity for eventual reintroduction into a national park in the Atlas Mountains of Morocco.^[143]

Following the discovery of the decline of lion population in Africa, several coordinated efforts involving lion conservation have been organised in an attempt to stem this decline. Lions are one species included in the Species Survival Plan, a coordinated attempt by the Association of Zoos and Aquariums to increase its chances of survival. The plan was originally started in 1982 for the Asiatic lion, but was suspended when it was found that most Asiatic lions in North American zoos were not genetically pure, having been hybridised 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.^[14]

Man-eaters

While lions do not usually hunt people, some (usually males) seem to seek out human prey; well-publicised cases include the Tsavo maneaters, where 28 railway workers building the Kenya-Uganda Railway were taken by lions over nine months during the construction of a bridge over the Tsavo River in Kenya in 1898, and the 1991 Mfuwe man-eater, which killed six people in the Luangwa River Valley in Zambia.^[144] In both, the hunters who killed the lions wrote books detailing the animals' predatory behaviour. The Mfuwe and Tsavo incidents bear similarities: the lions in both incidents were larger than normal, lacked manes, and seemed to suffer from tooth decay. The infirmity theory, including tooth decay, is not favored by all researchers; an analysis of teeth and jaws of man-eating lions in museum collections suggests that, while tooth decay may explain some incidents, prey depletion in human-dominated areas is a more likely cause of lion predation on humans.^[145]

In their analysis of Tsavo and man-eating generally, Kerbis Peterhans and Gnoske acknowledge that sick or injured animals may be more prone to man-eating, but that the behaviour is "not unusual, nor necessarily 'aberrant'" where the opportunity exists; if inducements such as access to livestock or human corpses are present, lions will regularly prey upon human beings. The authors note that the relationship is well-attested amongst other pantherines and primates in the paleontological record.^[146]

The lion's proclivity for man-eating has been systematically examined. American and Tanzanian scientists report that man-eating behaviour in rural areas of Tanzania increased greatly from 1990 to 2005. At least 563 villagers were attacked and many eaten over this period—a number far exceeding the more famed "Tsavo" incidents of a century earlier. The incidents occurred near Selous National Park in Rufiji District and in Lindi Province near the Mozambican border. While the expansion of villagers into bush country is one concern, the authors argue that conservation policy must mitigate the danger because, in this case, conservation contributes directly to human deaths. Cases in Lindi have been documented where lions seize humans from the center of substantial villages.^[147] Another study of 1,000 people attacked by lions in southern Tanzania between 1988 and 2009 found that the weeks following the full moon (when there was less moonlight) were a strong indicator of increased night attacks on people.^[148]

Author Robert R. Frump wrote in *The Man-eaters of Eden* that Mozambican refugees regularly crossing Kruger National Park at night in South Africa are attacked and eaten by the lions; park officials have conceded that man-eating is a problem there. Frump believes thousands may have been killed in the decades after apartheid sealed the park and forced the refugees to cross the park at night. For nearly a century before the border was sealed, Mozambicans had regularly walked across the park in daytime with little harm.^[149]

Packer estimates more than 200 Tanzanians are killed each year by lions, crocodiles, elephants, hippos, and snakes, and that the numbers could be double that amount, with lions thought to kill at least 70 of those. Packer has documented that between 1990 and 2004, lions attacked 815 people in Tanzania, killing 563. Packer and Ikanda are among the few conservationists who believe western conservation efforts must take account of these matters not just because of ethical concerns about human life, but also for the long term success of conservation efforts and lion preservation.^[147]

A man-eating lion was killed by game scouts in Southern Tanzania in April 2004. It is believed to have killed and eaten at least 35 people in a series of incidents covering several villages in the Rufiji Delta coastal region.^[150] Dr Rolf D. Baldus, the GTZ wildlife programme coordinator, commented that it was likely that the lion preyed on humans because it had a large abscess underneath a molar which was cracked in several places. He further commented that "This lion probably experienced a lot of pain, particularly when it was chewing."^[151] GTZ is the German development cooperation agency and has been working with the Tanzanian government on wildlife



The Tsavo Man-Eaters on display in the Field Museum of Natural History in Chicago, Illinois.

conservation for nearly two decades. As in other cases this lion was large, lacked a mane, and had a tooth problem.

The "All-Africa" record of man-eating generally is considered to be not Tsavo, but the lesser-known incidents in the late 1930s through the late 1940s in what was then Tanganyika (now Tanzania). George Rushby, game warden and professional hunter, eventually dispatched the pride, which over three generations is thought to have killed and eaten 1,500 to 2,000 in what is now Njombe district.^[152]

In captivity

Lions are part of a group of exotic animals that are the core of zoo exhibits since the late eighteenth century; members of this group are invariably large vertebrates and include elephants, rhinoceroses, hippopotamuses, large primates, and other big cats; zoos sought to gather as many of these species as possible.^[153] Although many modern zoos are more selective about their exhibits,^[154] there are over 1,000 African and 100 Asiatic lions in zoos and wildlife parks around the world. They are considered an ambassador species and are kept for tourism, education and conservation purposes.^[155] Lions can reach an age of over 20 years in captivity; Apollo, a resident lion of Honolulu Zoo in Honolulu, Hawaii, died at age 22 in August 2007. His two sisters, born in 1986, are still living (as of August, 2007).^[156] Breeding programs need to note origins to avoid breeding different subspecies and thus reducing conservation value.^[157]

Lions were kept and bred by Assyrian kings as early as 850 BC,^[128] and Alexander the Great was said to have been presented with tame lions by the Malhi of northern India.^[158] Later in Roman times, lions were kept by emperors to take part in the gladiator arenas. Roman notables, including Sulla, Pompey, and Julius Caesar, often ordered the mass slaughter of hundreds of lions at a time.^[159] In the East, lions were tamed by Indian princes, and Marco Polo reported that Kublai Khan kept lions inside.^[160] The first European "zoos" spread amongst noble and royal families in the thirteenth century, and until the seventeenth century were called seraglios; at that time, they came to be called menageries, an extension of the cabinet of curiosities. They spread from France and Italy during the Renaissance to the rest of Europe.^[161] In England, although the seraglio tradition was less developed, lions were kept at the Tower of London in a seraglio established by King John in the thirteenth century,^{[162] [163]} probably stocked with animals from an earlier menagerie started in 1125 by Henry I at his palace in Woodstock, near Oxford; where lions had been reported stocked by William of Malmesbury.^[164]



Male African lion of the Transvaal subspecies (*P. l. krugeri*)

Seraglios served as expressions of the nobility's power and wealth. Animals such as big cats and elephants, in particular, symbolised power, and would be pitted in fights against each other or domesticated animals. By extension, menageries and seraglios served as demonstrations of the dominance of humanity over nature. Consequently, the defeat of such natural "lords" by a cow in 1682 astonished the spectators, and the flight of an elephant before a rhinoceros drew jeers. Such fights would slowly fade out in the seventeenth century with the spread of the menagerie and their appropriation by the commoners. The tradition of keeping big cats as pets would last into the nineteenth century, at which time it was seen as highly eccentric.^[165]

The presence of lions at the Tower of London was intermittent, being restocked when a monarch or his consort, such as Margaret of Anjou the wife of Henry VI, either sought or were given animals. Records indicate they were kept in poor conditions there in the seventeenth century, in contrast to more open conditions in Florence at the time.^[166] The menagerie was open to the public by the eighteenth century; admission was a sum of three half-pence or the supply of a cat or dog for feeding to the lions.^[167] A rival menagerie at the Exeter Exchange also exhibited lions until the early nineteenth century.^[168] The Tower menagerie was closed down by William IV,^[167] and animals transferred to the London Zoo which opened its gates to the public on 27 April 1828.^[169]

Animal species disappear when they cannot peacefully orbit the center of gravity that is man.

Pierre-Amédée Pichot, 1891^[170]

The wild animals trade flourished alongside improved colonial trade of the nineteenth century. Lions were considered fairly common and inexpensive. Although they would barter higher than tigers, they were less costly than larger, or more difficult to transport animals such as the giraffe and hippopotamus, and much less than pandas.^[171] Like other animals, lions were seen as little more than a natural, boundless commodity that was mercilessly exploited with terrible losses in capture and transportation.^[172] The widely reproduced imagery of the heroic hunter chasing lions would dominate a large part of the century.^[173] Explorers and hunters exploited a popular Manichean division of animals into "good" and "evil" to add thrilling value to their adventures, casting themselves as heroic figures. This resulted in big cats, always suspected of being man-eaters, representing "both the fear of nature and the satisfaction of having overcome it."^[174]

Lions were kept in cramped and squalid conditions at London Zoo until a larger lion house with roomier cages was built in the 1870s.^[175] Further changes took place in the early twentieth century, when Carl Hagenbeck designed enclosures more closely resembling a natural habitat, with concrete 'rocks', more open space and a moat instead of bars. He designed lion enclosures for both Melbourne Zoo and Sydney's Taronga Zoo, among others, in the early twentieth century. Though his designs were popular, the old bars and cage enclosures prevailed until the 1960s in many zoos.^[176] In the later decades of the twentieth century, larger, more natural enclosures and the use of wire mesh or laminated glass instead of lowered dens allowed visitors to come closer than ever to the animals, with some attractions even placing the den on ground higher than visitors, such as the Cat Forest/Lion Overlook of Oklahoma City Zoological Park.^[14] Lions are now housed in much larger naturalistic areas; modern recommended guidelines more closely approximate conditions in the wild with closer attention to the lions' needs, highlighting the need for dens in separate areas, elevated positions in both sun and shade where lions can sit and adequate ground cover and drainage as well as sufficient space to roam.^[155]

There have also been instances where a lion was kept by a private individual, such as the lioness Elsa, who was raised by George Adamson and his wife Joy Adamson and came to develop a strong bond with them, particularly the latter. The lioness later achieved fame, her life being documented in a series of books and films.



Albrecht Dürer, Lions sketch. Circa 1520



Lion at Melbourne Zoo enjoying an elevated grassy area with some tree shelter

Sleep

Further information: Sleep (non-human)

The average sleep time of a captive lion is said to be 13 and a half hours.^[177]

Baiting and taming



Nineteenth century etching of a lion tamer in a cage of lions

Lion-baiting is a blood sport involving the baiting of lions in combat with other animals, usually dogs. Records of it exist in ancient times through until the seventeenth century. It was finally banned in Vienna by 1800 and England in 1825.^[178] [179]

Lion taming refers to the practice of taming lions for entertainment, either as part of an established circus or as an individual act, such as Siegfried & Roy. The term is also often used for the taming and display of other big cats such as tigers, leopards, and cougars. The practice was pioneered in the first half of the nineteenth century by Frenchman Henri Martin and American Isaac Van Amburgh who both toured widely, and whose techniques were copied by a number of

followers.^[180] Van Amburgh performed before Queen Victoria of the United Kingdom in 1838 when he toured Great Britain. Martin composed a pantomime titled *Les Lions de Mysore* ("the lions of Mysore"), an idea that Amburgh quickly borrowed. These acts eclipsed equestrianism acts as the central display of circus shows, but truly entered public consciousness in the early twentieth century with cinema. In demonstrating the superiority of human over animal, lion taming served a purpose similar to animal fights of previous centuries.^[180] The ultimate proof of a tamer's dominance and control over a lion is demonstrated by placing his head in the lion's mouth. The now iconic lion tamer's chair was possibly first used by American Clyde Beatty (1903–1965).^[181]

Cultural depictions

The lion has been an icon for humanity for thousands of years, appearing in cultures across Europe, Asia, and Africa. Despite incidents of attacks on humans, lions have enjoyed a positive depiction in culture as strong but noble. A common depiction is their representation as "king of the jungle" or "king of beasts"; hence, the lion has been a popular symbol of royalty and stateliness,^[182] as well as a symbol of bravery; it is featured in several fables of the 6th century BC Greek storyteller Aesop.^[183]

Representations of lions date back 32,000 years; the lion-headed ivory carving from Vogelherd cave in the Swabian Alb in southwestern Germany has been determined to be about 32,000 years old from the Aurignacian culture.^[12] Two lions were depicted mating in the Chamber of Felines in 15,000-year-old Paleolithic cave paintings in the Lascaux caves. Cave lions are also depicted in the Chauvet Cave, discovered in 1994; this has been dated at 32,000 years of age,^[28] though it may be of similar or younger age to Lascaux.^[184]



Lion on a decorative panel from Darius I the Great's palace during Persian Empire (550–330 BC).

Ancient Egypt venerated the lioness (the fierce hunter) as their war deities and among those in the Egyptian pantheon are, Bast, Mafdet, Menhit, Pakhet, Sekhmet, Tefnut, and the Sphinx.^[182] The Nemean lion was symbolic in Ancient Greece and Rome, represented as the constellation and zodiac sign Leo, and described in mythology, where its skin was borne by the hero Heracles.^[185] The lion was a prominent symbol in ancient Mesopotamia (from Sumer up to Assyrian and Babylonian times), where it was strongly associated with kingship.^[186] The classic Babylonian lion motif, found as a statue, carved or painted on walls, is often referred to as the *striding lion of Babylon*. It is in Babylon that the biblical Daniel is said to have been delivered from the lion's den.^[187]



The Lion Gate of Mycenae (detail)—two lionesses flank the central column, c. 1300 BC

In the Puranic texts of Hinduism, Narasimha ("man-lion") a half-lion, half-man incarnation or (avatar) of Vishnu, is worshipped by his devotees and saved the child devotee Prahlada from his father, the evil demon king Hiranyakashipu.^[188] Vishnu takes the form of half-man/half-lion, in Narasimha, having a human torso and lower body, but with a lion-like face and claws.^[189] Singh is an ancient Indian vedic name meaning "lion" (Asiatic lion), dating back over 2000 years to ancient India. It was originally only used by Rajputs a Hindu Kshatriya or military caste in India. After the birth of the Khalsa brotherhood in 1699, the Sikhs also adopted the name "Singh" due to the wishes of Guru Gobind Singh. Along with millions of Hindu Rajputs today, it is also used by over 20 million Sikhs worldwide.^{[190] [191]} Found famously on numerous flags and coats of arms all across Asia and Europe, the Asiatic lions also stand firm on the National Emblem of India.^[192] Further south on the Indian subcontinent, the Asiatic lion is symbolic for the Sinhalese,^[193] Sri Lanka's ethnic majority; the term derived from the Indo-Aryan *Sinhala*, meaning the "lion people" or "people with lion blood", while a sword wielding lion is the central figure on the national flag of Sri Lanka.^[194]

The Asiatic lion is a common motif in Chinese art. They were first used in art during the late Spring and Autumn Period (fifth or sixth century BC), and became much more popular during the Han Dynasty (206 BC – AD 220), when imperial guardian lions started to be placed in front of imperial palaces for protection. Because lions have never been native to China, early depictions were somewhat unrealistic; after the introduction of Buddhist art to China in the Tang Dynasty (after the sixth century AD), lions were usually depicted without wings, their bodies became thicker and shorter, and their manes became curly.^[195] The lion dance is a form of traditional dance in Chinese culture in which performers mimic a lion's movements in a lion costume, often with musical accompaniment from cymbals, drums and gongs. They are performed at Chinese New Year, the August Moon Festival and other celebratory occasions for good luck.^[196]

The island nation of Singapore derives its name from the Malay words *singa* (lion) and *pura* (city/fortress), which in turn is from the Tamil-Sanskrit சிங்க *singa* सिंह *simha* and பூர் டார் *pura*, which is cognate to the Greek πόλις, *pólis*.^[197] According to the Malay Annals, this name was given by a fourteenth century Sumatran Malay prince named Sang Nila Utama, who, on alighting the island after a thunderstorm, spotted an auspicious beast on shore which appeared to be a lion.^[198]



"Lion" was the nickname of several medieval warrior rulers with a reputation for bravery, such as the English King Richard the Lionheart,^[182] Henry the Lion (German: *Heinrich der Löwe*), Duke of Saxony and Robert III of Flanders nicknamed "The Lion of Flanders"—a major Flemish national icon up to the present. Lions are frequently depicted on coats of arms, either as a device on shields themselves, or as supporters. (The lioness^[199] is much more infrequent.) The formal language of heraldry, called blazon, employs French terms to describe the images precisely. Such descriptions specified whether lions or other creatures were "rampant" or "passant", that is whether they were rearing or crouching.^[200] The lion is used as a symbol of sporting teams, from national association football teams such as England, Scotland and Singapore to famous clubs such as the Detroit Lions^[201] of the NFL, Chelsea^[202] and Aston Villa of the English Premier League,^[203] (and the Premiership itself) to a host of smaller clubs around the world.

Lions continue to feature in modern literature, from the messianic Aslan in *The Lion, the Witch and the Wardrobe* and following books from The Chronicles of Narnia series written by C. S. Lewis,^[204] to the comedic Cowardly Lion in *The Wonderful Wizard of Oz*.^[205] The advent of moving pictures saw the continued presence of lion symbolism; one of the most iconic and widely recognised lions is Leo the Lion, which has been the mascot for Metro-Goldwyn-Mayer (MGM) studios since the 1920s.^[206] The 1960s saw the appearance of what is possibly the most famous lioness, the Kenyan animal Elsa in the movie *Born Free*,^[207] based on the true-life international bestselling book of the same title.^[208] The lion's role as King of the Beasts has been used in cartoons, from the 1950s manga which gave rise to the first Japanese colour TV animation series, *Kimba the White Lion*, Leonardo Lion of *King Leonardo and his Short Subjects*, both from the 1960s, up to the 1994 Disney animated feature film *The Lion King*,^[209] [210] which also featured the popular song "The Lion Sleeps Tonight" in its soundtrack. A lion appears on the 50-rand South African banknote.

Notes

- [1] Wozencraft, W. Christopher (16 November 2005). "Order Carnivora (pp. 532-628)" (<http://www.bucknell.edu/msw3/browse.asp?id=14000228>). In Wilson, Don E., and Reeder, DeeAnn M., eds. *Mammal Species of the World: A Taxonomic and Geographic Reference* (<http://google.com/books?id=JgAMbNSt8ikC&pg=PA532>) (3rd ed.). Baltimore: Johns Hopkins University Press, 2 vols. (2142 pp.). ISBN 978-0-8018-8221-0. OCLC 62265494..
- [2] Bauer, H., Nowell, K.; Packer, C. (2008). "*Panthera leo*" (<http://www.iucnredlist.org/apps/redlist/details/15951>). *IUCN Red List of Threatened Species. Version 2010.2*. International Union for Conservation of Nature. . Retrieved 28 August 2010.
- [3] Linnaeus, Carolus (1758) (in Latin). *Systema naturae per regna tria naturae :secundum classes, ordines, genera, species, cum characteribus, differentiis, synonymis, locis*. (<http://www.biodiversitylibrary.org/page/726936>). 1 (10th ed.). Holmiae (Laurentii Salvii). p. 41.. Retrieved 8 September 2008.
- [4] Nowak, Ronald M. (1999). *Walker's Mammals of the World*. Baltimore: Johns Hopkins University Press. ISBN 0-8018-5789-9.
- [5] Harington, C. R. (Dick) (1969). "Pleistocene remains of the lion-like cat (*Panthera atrox*) from the Yukon Territory and northern Alaska". *Canadian Journal of Earth Sciences* 6 (5): 1277–88. doi:10.1139/e69-127.
- [6] Smuts, G.L. (1982). *Lion*. Johannesburg: Macmillian South Africa (Publishers)(Pty.) Ltd.. p. 231. ISBN 0-86954-122-6.
- [7] Simpson, D.P. (1979). *Cassell's Latin Dictionary* (5th ed.). London: Cassell Ltd.. p. 342. ISBN 0-304-52257-0.
- [8] Liddell, Henry George Scott, Robert (1980). *A Greek-English Lexicon (Abridged Edition)*. United Kingdom: Oxford University Press. p. 411. ISBN 0-19-910207-4.
- [9] Simpson, John; Weiner, Edmund, ed (1989). "Lion". *Oxford English Dictionary* (2nd ed.). Oxford: Clarendon Press. ISBN 0-19-861186-2.
- [10] Yamaguchi, Nobuyuki; Cooper, Alan; Werdelin, Lars; Macdonald, David W. (August 2004). "Evolution of the mane and group-living in the lion (*Panthera leo*): a review". *Journal of Zoology* 263 (4): 329–42. doi:10.1017/S0952836904005242.
- [11] Turner, Allen (1997). *The big cats and their fossil relatives : an illustrated guide to their evolution and natural history*. New York: Columbia University Press. ISBN 0-231-10229-1.

- [12] Burger, Joachim *et al.* (March 2004). (fulltext) "Molecular phylogeny of the extinct cave lion *Panthera leo spelaea*" (<http://www.uni-mainz.de/FB/Biologie/Anthropologie/MoLA/Download/Burger 2004.pdf>). *Molecular Phylogenetics and Evolution* **30** (3): 841–49. doi:10.1016/j.ympev.2003.07.020. PMID 15012963. (fulltext). Retrieved 20 September 2007.
- [13] Harington, C.R. (Dick) (1996). "American Lion" (<http://www.beringia.com/research/lion.html>). Yukon Beringia Interpretive Centre website. Yukon Beringia Interpretive Centre. . Retrieved 25 January 2011.
- [14] Grisham, Jack (2001). "Lion". In Catherine E. Bell. *Encyclopedia of the World's Zoos*. **2: G–P**. Chofago: Fitzroy Dearborn. pp. 733–39. ISBN 1-57958-174-9.
- [15] Barnett, Ross; Nobuyuki Yamaguchi, Ian Barnes and Alan Cooper (August 2006). "Lost populations and preserving genetic diversity in the lion *Panthera leo*: Implications for its *ex situ* conservation". *Conservation Genetics* **7** (4): 507–14. doi:10.1007/s10592-005-9062-0.
- [16] Bertola et al. (2011). *Genetic diversity, evolutionary history and implications for conservation of the lion (*Panthera leo*) in West and Central Africa*. Journal of Biogeography. Volume 38, Issue 7, pages 1356–1367. *online link* (<http://onlinelibrary.wiley.com/doi/10.1111/j.1365-2699.2011.02500.x/abstract>)
- [17] Dubach, Jean; *et al* (January 2005). "Molecular genetic variation across the southern and eastern geographic ranges of the African lion, *Panthera leo*". *Conservation Genetics* **6** (1): 15–24. doi:10.1007/s10592-004-7729-6.
- [18] Barnett, Ross; Yamaguchi, Nobuyuki; Barnes, Ian; Cooper, Alan (2006). "The origin, current diversity and future conservation of the modern lion (*Panthera leo*)" (<http://www.adelaide.edu.au/acad/publications/papers/Barnett PRS lions.pdf>) (PDF). *Proceedings of the Royal Society B: Biological Sciences* **273** (1598): 2119–25. doi:10.1098/rspb.2006.3555. PMC 1635511. PMID 16901830. . Retrieved 4 September 2007.
- [19] Christiansen, Per (2008). "On the distinctiveness of the Cape lion (*Panthera leo melanochaita* Smith, 1842), and a possible new specimen from the Zoological Museum, Copenhagen". *Mammalian Biology* **73** (1): 58–65. doi:10.1016/j.mambio.2007.06.003.
- [20] Wildlife Conservation Trust of India (2006). "Asiatic Lion—History" (<http://www.asiaticlion.org/asiatic-lion-history.htm>). *Asiatic Lion Information Centre*. Wildlife Conservation Trust of India. . Retrieved 15 September 2007.
- [21] Nowell, Kristin; Jackson, Peter (1996). "Panthera Leo" (<http://carnivoractionplans1.free.fr/wildcats.pdf>) (PDF). *Wild Cats: Status Survey and Conservation Action Plan*. Gland, Switzerland: IUCN/SSC Cat Specialist Group. pp. 17–21. ISBN 2-8317-0045-0. .
- [22] Yadav, P. R. (2004). *Vanishing And Endangered Species* (<http://books.google.com/?id=ecgil9AfV1QC&pg=PA178&dq=Barbary+lion#v=onepage&q=Barbary+lion&f=false>). Discovery Publishing House. pp. 176–78. ISBN 81-7141-776-0. . Retrieved 14 December 2010.
- [23] Burger, Joachim; Hemmer, Helmut (2006). "Urgent call for further breeding of the relic zoo population of the critically endangered Barbary lion (*Panthera leo leo* Linnaeus 1758)" (<http://www.uni-mainz.de/FB/Biologie/Anthropologie/MoLA/Download/Burger Hemmer 2006.pdf>). *European Journal of Wildlife Research* **52**: 54. doi:10.1007/s10344-005-0009-z. .
- [24] Black, Simon; Yamaguchi, Nobuyuki; Harland, Adrian; Groombridge, Jim (2010). "Maintaining the genetic health of putative Barbary lions in captivity: an analysis of Moroccan Royal Lions". *European Journal of Wildlife Research* **56**: 21–31. doi:10.1007/s10344-009-0280-5.
- [25] M. E. Sunquist & F. C. Sunquist (2009). *Family Felidae (Cats)*. In: Don E. Wilson , Russell A. Mittermeier (Hrsg.): *Handbook of the Mammals of the World. Volume 1: Carnivores*. Lynx Edicions, 2009, ISBN 978-84-96553-49-1, (S. 137 f.).
- [26] Macdonald, David Wayne (2006). *The Encyclopedia of Mammals*. pp. 628–635. ISBN 0-87196-871-1.
- [27] Ernst Probst: Deutschland in der Urzeit. Orbis Verlag, 1999. ISBN 3-572-01057-8
- [28] Packer, Craig; Jean Clottes (November 2000). "When Lions Ruled France". *Natural History*: 52–57.
- [29] (German) Koenigswald, Wighart von (2002). *Lebendige Eiszeit: Klima und Tierwelt im Wandel*. Stuttgart: Theiss. ISBN 3-8062-1734-3.
- [30] Kelum Manamendra-Arachchi, Rohan Pethiyagoda, Rajith Dissanayake, Madhava Meegaskumbura (2005). "A second extinct big cat from the late Quaternary of Sri Lanka" (<http://rmbr.nus.edu.sg/rbz/biblio/s12/s12rbz423-434.pdf>). *The Raffles Bulletin of Zoology Supplement* (National University of Singapore) **12**: 423–34. . Retrieved 31 July 2007.
- [31] Shuker, Karl P.N. (1989). *Mystery Cats of the World*. Robert Hale. ISBN 0-7090-3706-6.
- [32] Christiansen, Per, & Harris, John M. (2009). "Craniomandibular Morphology and Phylogenetic Affinities of *Panthera atrox*: Implications for the Evolution and Paleobiology of the Lion Lineage". *Journal of Vertebrate Paleontology* **29** (3): 934–945. doi:10.1671/039.029.0314.
- [33] Martin, Paul S. (1984). *Quaternary Extinctions* (<http://books.google.com/?id=O8SgPwAACAAJ>). Tucson, Arizona: University of Arizona Press. ISBN 0-8165-1100-4. .
- [34] Guggisberg, Charles Albert Walter (1975). *Wild Cats of the World*. New York: Taplinger Publishing. ISBN 0-8008-8324-1.
- [35] Doi H, Reynolds B (1967). *The Story of Leopons*. New York: Putnam. OCLC 469041.
- [36] Markel, Scott; Darryl León (2003). *Sequence Analysis in a Nutshell: a guide to common tools and databases*. Sebastopol, California: O'Reilly. ISBN 0-596-00494-X.
- [37] "Tigon—Encyclopædia Britannica Article" (<http://www.britannica.com/EBchecked/topic/595552/tigon>). . Retrieved 25 January 2011.
- [38] Heptner, V.G.; Sludskii, A.A. (1992). *Mammals of the Soviet Union, Volume II, Part 2*. Leiden u.a.: Brill. ISBN 90-04-08876-8.
- [39] Scott, Jonathon; Scott, Angela. (2002) *Big Cat Diary: Lion*, p. 80
- [40] Carnivores | Carnivore Conservation Malawi (<http://www.carnivoreconservationmalawi.org/carnivores.html>)
- [41] Wood, The Guinness Book of Animal Facts and Feats. Sterling Pub Co Inc (1983), ISBN 978-0-85112-235-9
- [42] Jungle Photos Africa Animals mammals—lion natural history (<http://www.junglephotos.com/africa/afanimals/mammals/lionnathist.shtml>) Wood, G. 1983. The Guinness book of animal facts and feats. Sterling Pub. Co. Inc. 3rd. edition. 256 pp.
- [43] Vratislav Mazák: *Der Tiger*. Westarp Wissenschaften; Auflage: 5 (April 2004), unveränd. Aufl. von 1983 ISBN 3-89432-759-6 (S.178 ff.)
- [44] Schaller, p. 28.

- [45] Trivedi, Bijal P. (2005). "Are Maneless Tsavo Lions Prone to Male Pattern Baldness?" (http://news.nationalgeographic.com/news/2002/04/0412_020412_TVtsavolions.html). National Geographic. . Retrieved 7 July 2007.
- [46] Trivedi, Bijal P. (22 August 2002). "Female Lions Prefer Dark-Maned Males, Study Finds" (http://news.nationalgeographic.com/news/2002/08/0822_020822_TVlion.html). *National Geographic News*. National Geographic. . Retrieved 1 September 2007.
- [47] West, Peyton M.; Packer, Craig (August 2002). "Sexual Selection, Temperature, and the Lion's Mane". *Science* **297** (5585): 1339–43. doi:10.1126/science.1073257. PMID 12193785.
- [48] Yamaguchi, Nobuyuki; B. Haddane (2002). "The North African Barbary Lion and the Atlas Lion Project". *International Zoo News* **49**: 465–81.
- [49] Menon, Vivek (2003). *A Field Guide to Indian Mammals*. Delhi: Dorling Kindersley India. ISBN 0-14-302998-3.
- [50] Marjolein Schoe, Etotépé A. Sogbohossou, Jacques Kaandorp, Hans de Iongh: *Progress Report – collaring operation Pendjari Lion Project, Benin*. Funded by the Dutch Zoo Conservation Fund, 2010.
- [51] Munson, Linda (March 3, 2006). "Contraception in felids". *Theriogenology* **66** (1): 126–34. doi:10.1016/j.theriogenology.2006.03.06. PMID 16626799.
- [52] McBride, Chris (1977). *The White Lions of Timbavati*. Johannesburg: E. Stanton. ISBN 0-949997-32-3.
- [53] Tucker, Linda (2003). *Mystery of the White Lions—Children of the Sun God*. Mapumulanga: Npenvu Press. ISBN 0-620-31409-5.
- [54] flashnews. "The Lion Whisperer Kevin Richardson" (<http://www.zimbio.com/Kevin+Richardson/articles/AxEyPnHuQL/Lion+Whisperer+Kevin+Richardson>). Zimbio. . Retrieved 26 January 2011.
- [55] "About the White Lion Movie" (<http://www.whitelionthemovie.com/pages/about.html>). . Retrieved 26 January 2011.
- [56] Coder, Maria. "Kevin Richardson, Lion Tamer" (<http://www.pawnation.com/2009/04/29/lion-tamer/>). *I Work With Animals!*. Pawnation. . Retrieved 26 January 2011.
- [57] "Can we see Kevin interacting with the animals?" (<http://www.lionwhisperer.co.za/content.asp?subID=5>). *FAQ*. . Retrieved 26 January 2011.
- [58] Schaller, p. 122.
- [59] Schaller, pp. 120–21.
- [60] Schaller, p. 33.
- [61] Schaller, p. 133.
- [62] Heinsohn, R.; C. Packer (1995). "Complex cooperative strategies in group-territorial African lions". *Science* **269** (5228): 1260–62. doi:10.1126/science.7652573. PMID 7652573.
- [63] Morell, V. (1995). "Cowardly lions confound cooperation theory". *Science* **269** (5228): 1216–17. doi:10.1126/science.7652566. PMID 7652566.
- [64] Jahn, Gary C. (1996). "Lioness Leadership". *Science* **271** (5253): 1215. doi:10.1126/science.271.5253.1215a. PMID 17820922.
- [65] Schaller, p. 37.
- [66] Schaller, p. 39.
- [67] Schaller, p. 44.
- [68] Schaller, p. 248.
- [69] Schaller, pp. 247–48.
- [70] Schaller, p. 237.
- [71] Dr Gus Mills. "About lions—Ecology and behaviour" (http://www.african-lion.org/lions_e.htm). African Lion Working Group. . Retrieved 20 July 2007.
- [72] Nowak, Ronald M.: *Walker's Mammals of the World*.
- [73] *The Art of Being a Lion* pg 186, Christine and Michel Denis-Huot, Friedman/Fairfax, 2002
- [74] Pienaar U de V (1969). "Predator–prey relationships amongst the larger mammals of the Kruger National Park". *Koedoe* **12**: 108–76.
- [75] "Among the Elephants", Iain and Oria Douglas-Hamilton, 1975
- [76] Hayward, Matt W.; Kerley, Graham (2005). "Prey preferences of the lion (*Panthera leo*)". *Journal of Zoology* **267** (3): 309–22. doi:10.1017/S0952836905007508.
- [77] Kemp, Leigh. "The Elephant Eaters of the Savuti" (<http://www.go2africa.com/africa-travel-articles/elephant-eaters-of-the-savuti>). go2africa. . Retrieved 8 March 2010.
- [78] Whitworth, Damien (9 October 2006). "King of the jungle defies nature with new quarry" (<http://www.news.com.au/story/0,23599,20547955-38195,00.html>). The Australian. . Retrieved 20 July 2007.
- [79] Schaller, p. 213.
- [80] Guggisberg, Charles Albert Walter (1961). *Simba: the life of the lion*. Cape Town: Howard Timmins.
- [81] Schaller, pp. 270–76.
- [82] Schaller, p. 276.
- [83] Stander, P. E. (1992). "Cooperative hunting in lions: the role of the individual". *Behavioral Ecology and Sociobiology* **29** (6): 445–54. doi:10.1007/BF00170175.
- [84] Schaller, p. 153.
- [85] Hayward, Matt W. (2006). "Prey preferences of the spotted hyaena (*Crocuta crocuta*) and degree of dietary overlap with the lion (*Panthera leo*)" (<http://www.zbs.bialowieza.pl/g2/pdf/1598.pdf>). *Journal of Zoology* **270**: 606–14. doi:10.1111/j.1469-7998.2006.00183..

- [86] *Interactions between Hyenas and other Carnivorous Animals* from Hans Kruuk's *The Spotted Hyena: A Study of Predation and Social Behaviour* The University of Chicago Press, Chicago 60637, 1972
- [87] Schaller, p. 272.
- [88] Dereck and Beverley Joubert (1992). *Eternal Enemies: Lions and Hyenas* (DVD). National Geographic.
- [89] Trinkel, Martina; Kastberger, Gerald (2005). "Competitive interactions between spotted hyenas and lions in the Etosha National Park, Namibia". *African Journal of Ecology* **43** (3): 220–24. doi:10.1111/j.1365-2028.2005.00574.x.
- [90] O'Brien, Stephen J.; Wildt, David E.; Bush, Mitchell (1986). "The Cheetah in Genetic Peril" (http://www.catsg.org/cheetah/05_library/5_3_publications/N_and_O/OBrien_et_al_1986_Cheetah_in_genetic_peril.pdf). *Scientific American* (254): 68–76. .
- [91] Schaller, p. 293.
- [92] Woodroffe, Rosie; Ginsberg, Joshua R. (1999). "Conserving the African wild dog *Lycaon pictus*. I. Diagnosing and treating causes of decline". *Oryx* **33** (2): 132–42. doi:10.1046/j.1365-3008.1999.00052.x.
- [93] "Crocodies!—PBS Nova transcript" (<http://www.pbs.org/wgbh/nova/transcripts/2509crocs.html>). Pbs.org. 28 April 1998. . Retrieved 21 November 2010.
- [94] Guggisberg, Charles Albert Walter (1972). *Crocodiles: Their Natural History, Folklore, and Conservation*. Newton Abbot: David & Charles. p. 195. ISBN 0-7153-5272-5.
- [95] Schaller, p. 29.
- [96] Schaller, p. 174.
- [97] Asdell, Sydney A. (1993) [1964]. *Patterns of mammalian reproduction*. Ithaca: Cornell University Press. ISBN 978-0-8014-1753-5.
- [98] Schaller, p. 142.
- [99] Scott, Jonathon; Scott, Angela. (2002), *Big Cat Diary: Lion*, p. 45
- [100] Schaller, p. 143.
- [101] Scott, Jonathon; Scott, Angela. p. 45
- [102] Packer, C., Pusey, A. E. (May 1983). "Adaptations of female lions to infanticide by incoming males". *American Naturalist* **121** (5): 716–28. doi:10.1086/284097.
- [103] Macdonald, David (1984). *The Encyclopedia of Mammals*. New York: Facts on File. p. 31. ISBN 0-87196-871-1.
- [104] Scott, Jonathon; Scott, Angela; p. 46
- [105] Crandall, Lee S. (1964). *The management of wild animals in captivity*. Chicago: University of Chicago Press. OCLC 557916.
- [106] Scott, Jonathon; Scott, Angela. p. 68
- [107] Bagemihl, Bruce (1999). *Biological Exuberance: Animal Homosexuality and Natural Diversity*. New York: St. Martin's Press. pp. 302–05. ISBN 0-312-19239-8.
- [108] Srivastav, Suvira (15–31 December 2001). "Lion, Without Lioness" (<http://web.archive.org/web/20080514155635/http://www.teri.res.in/teriin/terragreen/issue3/feature.htm>). *TerraGreen: News to Save the Earth*. Terragreen. Archived from the original (<http://www.teri.res.in/teriin/terragreen/issue3/feature.htm>) on 14 May 2008. . Retrieved 21 July 2010.
- [109] Schaller, p. 183.
- [110] Schaller, pp. 188–89.
- [111] Schaller, pp. 189–90.
- [112] Schaller, p. 184.
- [113] Yeoman, Guy Henry; Walker, Jane Brotherton (1967). *The ixodid ticks of Tanzania*. London: Commonwealth Institute of Entomology. OCLC 955970.
- [114] (German)Sachs, R (1969). "Untersuchungen zur Artbestimmung und Differenzierung der Muskelfinnen ostafrikanischer Wildtiere [Differentiation and species determination of muscle-cysticerci in East African game animals]". *Zeitschrift für tropenmedizin und Parasitologie* **20** (1): 39–50. PMID 5393325.
- [115] Fosbrooke, Henry (1963). "The stomoxys plague in Ngorongoro". *East African Wildlife Journal* **1** (6): 124–26. doi:10.2307/1781718. JSTOR 1781718.
- [116] Nkwame, Valentine M (9 September 2006). "King of the jungle in jeopardy" (http://www.arushatimes.co.tz/2006/36/features_10.htm). The Arusha Times. . Retrieved 4 September 2007.
- [117] M.E. Roelke-Parker *et al.* (February 1996). "A canine distemper epidemic in Serengeti lions (*Panthera leo*)". *Nature* **379** (6564): 441–45. doi:10.1038/379441a0. PMID 8559247.
- [118] Schaller, p. 85.
- [119] Sparks, J (1967). "Allogrooming in primates:a review". In Desmond Morris. *Primate Ethology*. Chicago: Aldine. ISBN 0-297-74828-9. (2007 edition: 0-202-30826-X)
- [120] (German)Leyhausen, Paul (1960). *Verhaltensstudien an Katzen* (2nd ed.). Berlin: Paul Parey. ISBN 3-489-71836-4.
- [121] Schaller, pp. 85–88.
- [122] Schaller, pp. 88–91.
- [123] Schaller, pp. 92–102.
- [124] Schaller, pp. 103–113.
- [125] Miller, Brian. *Endangered animals: a reference guide to conflicting issues*. Greenwood Publishing Group, 2000. ISBN 0313308160, 9780313308161.
- [126] Rudnai, Judith A. (1973). *The social life of the lion*. Wallingford: s.n.. ISBN 0-85200-053-7.

- [127] "The Gir—Floristic" (<http://www.asiaticlion.org/gir-floristic.htm>). *Asiatic Lion Information Centre*. Wildlife Conservation Trust of India. 2006. . Retrieved 14 September 2007.
- [128] Schaller, p. 5.
- [129] Heptner, V.G.; A. A. Sludskii (1989). *Mammals of the Soviet Union: Volume 1, Part 2: Carnivora (Hyaenas and Cats)*. New York: Amerind. ISBN 90-04-08876-8.
- [130] "Past and present distribution of the lion in North Africa and Southwest Asia." (<http://web.archive.org/web/20080510060942/http://www.asiatic-lion.org/distrib.html>). Asiatic Lion Information Centre. 2001. Archived from the original (<http://www.asiatic-lion.org/distrib.html>) on 10 May 2008. . Retrieved 1 June 2006.
- [131] Wildlife Conservation Trust of India (2006). "Asiatic Lion—Population" (<http://www.asiaticlion.org/population-gir-forests.htm>). *Asiatic Lion Information Centre*. Wildlife Conservation Trust of India. . Retrieved 15 September 2007.
- [132] Desai, Darshan (23 June 2003). "The Mane Don't Fit" (<http://www.outlookindia.com/article.aspx?220509>). *Outlook India Magazine*. Outlookindia.com. . Retrieved 21 November 2010.
- [133] Bauer, H.; Van Der Merwe, S. (2002). "The African lion database". *Cat news* **36**: 41–53.
- [134] Chardonnet, P. (2002). *Conservation of African lion*. Paris, France: International Foundation for the Conservation of Wildlife.
- [135] "AWF Wildlife: Lion" (<http://www.awf.org/content/wildlife/detail/lion>). African Wildlife Foundation. . Retrieved 29 August 2007.
- [136] "NATURE. The Vanishing Lions" (<http://www.pbs.org/wnet/nature/episodes/the-vanishing-lions/introduction/545/>). PBS. . Retrieved 25 January 2011.
- [137] Breitenmoser, U., Mallon, D.P., Ahmad Khan, J. & Driscoll, C. (2008). "*Panthera leo ssp. persica*" (<http://www.iucnredlist.org/apps/redlist/details/15952>). *IUCN Red List of Threatened Species. Version 2010.4*. International Union for Conservation of Nature. . Retrieved 13 December 2010.
- [138] P. N. Tumenta, J. S. Kok, J. C. van Rijssel, R. Buij, B. M. Croes, P. J. Funston, H. H. de Iongh and H. A. Udo de Haes (2009). *Threat of rapid extermination of the lion (Panthera leo leo) in Waza National Park, Northern Cameroon*. Afr, J. Ecol. 1-7
- [139] Roach, John (16 July 2003). "Lions Vs. Farmers: Peace Possible?" (http://news.nationalgeographic.com/news/2003/07/0716_030716_lions.html). *National Geographic News*. National Geographic. . Retrieved 1 September 2007.
- [140] Saberwal, Vasant K; Gibbs, James P. ; Chellam, Ravi; Johnsingh, A. J. T. (June 1994). "Lion—Human Conflict in the Gir Forest, India". *Conservation Biology* **8** (2): 501–07. doi:10.1046/j.1523-1739.1994.08020501.x.
- [141] Johnsingh, A.J.T. (2004). "WII in the Field: Is Kuno Wildlife Sanctuary ready to play second home to Asiatic lions?" (<http://web.archive.org/web/2007092722341/http://www.wii.gov.in/publications/newsletter/winter04/wii+in+field.htm>). *Wildlife Institute of India Newsletter* **11** (4). Archived from the original (<http://www.wii.gov.in/publications/newsletter/winter04/wii in field.htm>) on 2007-09-27. . Retrieved 6 November 2010.
- [142] "Barbary Lion News" (http://web.archive.org/web/20051217091555/http://www.bigcatrescue.org/barbary_lion_news.htm). Archived from the original (http://www.bigcatrescue.org/barbary_lion_news.htm) on 2005-12-17. . Retrieved 24 September 2007.
- [143] Yamaguchi N, Haddane B (2002). "The North African Barbary lion and the Atlas Lion Project". *International Zoo News* **49**: 465–81.
- [144] "Man-eaters of the Field Museum: Lion of Mfuwe" (http://www.fieldmuseum.org/exhibits/exhibit_sites/tsavo/mfuwe.html). *Field Museum of Natural History*. Field Museum of Natural History. 2007. . Retrieved 16 September 2007.
- [145] Patterson, Bruce D.; Ellis J. Neiburger, Ellis J.; Kasiki, Samuel M. (February 2003). "Tooth Breakage and Dental Disease as Causes of Carnivore–Human Conflicts" ([http://www.bioone.org/perlserv/?request=get-abstract&doi=10.1644/1545-1542\(2003\)084<0190:TBADDA>2.0.CO;2](http://www.bioone.org/perlserv/?request=get-abstract&doi=10.1644/1545-1542(2003)084<0190:TBADDA>2.0.CO;2)). *Journal of Mammalogy* **84** (1): 190–96. doi:10.1644/1545-1542(2003)084<0190:TBADDA>2.0.CO;2. . Retrieved 6 July 2007.
- [146] Peterhans, Julian C. Kerbis; Thomas Patrick Gnoske (2001). "The Science of Man-eating" (<http://web.archive.org/web/20071030031426/http://www.man-eater.info/gpage6.html>). *Journal of East African Natural History* **90** (1&2): 1–40. doi:10.2982/0012-8317(2001)90[1:TSOMAL]2.0.CO;2. Archived from the original (<http://www.man-eater.info/gpage6.html>) on 2007-10-30. . Retrieved 7 July 2007.
- [147] Packer, C.; Ikanda, D.; Kissui, B.; Kushnir, H. (August 2005). "Conservation biology: lion attacks on humans in Tanzania". *Nature* **436** (7053): 927–28. doi:10.1038/436927a. PMID 16107828.
- [148] Packer, C; Swanson A, Ikanda D, Kushnir H (July 2011). Rands, Sean A.. ed. "Fear of Darkness, the Full Moon and the Nocturnal Ecology of African Lions". *PLoS ONE* **6** (7): e22285. doi:10.1371/journal.pone.0022285.
- [149] Frump, RR (2006). *The Man-Eaters of Eden: Life and Death in Kruger National Park*. The Lyons Press. ISBN 1-59228-892-8.
- [150] Daniel Dickinson (19 October 2004). "Toothache 'made lion eat humans'" (<http://news.bbc.co.uk/2/hi/africa/3756180.stm>). BBC News. . Retrieved 25 January 2011.
- [151] Baldus, R (March 2006). "A man-eating lion (*Panthera leo*) from Tanzania with a toothache". *European Journal of Wildlife Research* **52** (1): 59–62. doi:10.1007/s10344-005-0008-0.
- [152] Rushby, George. G (1965). *No More the Tusker*. London: W. H. Allen.
- [153] de Courcy, p. 81
- [154] de Courcy, p. 82
- [155] Dollinger P, Geser S. "Lion: In the Zoo (subpage)" (<http://www.waza.org/en/zoo/visit-the-zoo/cats-1254385523/panthera-leo>). *Visit the Zoo*. WAZA (World Association of Zoos and Aquariums). . Retrieved 5 April 2011.
- [156] Aguiar, Eloise (August 2007). "Honolulu zoo's old lion roars no more" (<http://the.honoluluadvertiser.com/article/2007/Aug/08/ln-hawaii708080394.html>). *Honolulu Advertiser*. . Retrieved 4 September 2007.

- [157] Frankham, Richard; Ballou, Jonathan; Briscoe, David (2009). *Introduction to Conservation Genetics* (<http://books.google.com?id=vLZKnsCk89wC&pg=PA437&dq=conservation+lion+breeding+captivity+subspecies+separate&q>). Cambridge University Press. p. 437. ISBN 0-521-70271-2. . Retrieved 12 September 2010.
- [158] Smith, Vincent Arthur (1924). *The Early History of India*. Oxford: Clarendon Press. p. 97.
- [159] Thomas Wiedemann, *Emperors and Gladiators*, Routledge, 1995, p. 60. ISBN 0-415-12164-7.
- [160] Baratay & Hardouin-Fugier, p. 17.
- [161] Baratay & Hardouin-Fugier, pp. 19–21, 42.
- [162] Baratay & Hardouin-Fugier, p. 20.
- [163] Owen, James (3 November 2005). "Medieval Lion Skulls Reveal Secrets of Tower of London "Zoo"" (http://news.nationalgeographic.com/news/2005/11/1103_051103_tower_lions.html). *National Geographic Magazine*. National Geographic. . Retrieved 5 September 2007.
- [164] Blunt, p. 15.
- [165] Baratay & Hardouin-Fugier, pp. 24–28.
- [166] Blunt, p. 16.
- [167] Blunt, p. 17.
- [168] de Courcy, pp. 8–9.
- [169] Blunt, p. 32.
- [170] Son of anglophilie Amédée Pichot (Baratay & Hardouin-Fugier, p. 114.)
- [171] Baratay & Hardouin-Fugier, p. 122.
- [172] Baratay & Hardouin-Fugier, pp. 114, 117.
- [173] Baratay & Hardouin-Fugier, p. 113.
- [174] Baratay & Hardouin-Fugier, pp. 173, 180–83.
- [175] Blunt, p. 208.
- [176] de Courcy, p. 69.
- [177] "40 Winks?" Jennifer S. Holland, *National Geographic* Vol. 220, No. 1. July 2011.
- [178] Hone, William (2004) [1825–1826]. "July" (<http://web.archive.org/web/20080624080642/http://www.uab.edu/english/hone/etexts/edb/day-pages/207-july26.html>). In Kyle Grimes. *The Every-Day Book*. University of Alabama at Birmingham. p. 26. Archived from the original (<http://www.uab.edu/english/hone/etexts/edb/day-pages/207-july26.html>) on 24 June 2008. . Retrieved 25 January 2011.
- [179] Blaisdell, Warren H. (November 1997). "How A Lion Fight Caused England To Stop The Breeding Of Both Ring And Pit Bulldogs" (http://web.archive.org/web/20080424001716/http://www.american-bulldog.com/how_a_lion.htm). *American Bulldog Review* 3 (4). Archived from the original (http://www.american-bulldog.com/how_a_lion.htm) on 2008-04-24. . Retrieved 5 September 2007.
- [180] Baratay & Hardouin-Fugier, p. 187.
- [181] Feldman, David (1993). *How Does Aspirin Find a Headache?*. HarperCollins. ISBN 0-06-016923-0.
- [182] Garai, Jana (1973). *The Book of Symbols*. New York: Simon & Schuster. ISBN 0-671-21773-9.
- [183] Aesop; Gibbs L (2002). *Aesop's Fables*. Oxford World's Classics. Oxford: Oxford University Press. ISBN 0-19-284050-9.
- [184] Züchner, Christian (September 1998). "Grotte Chauvet Archaeologically Dated" (<http://www.rupestre.net/tracce/12/chauv.html>). International Rock Art Congress IRAC '98, Vila Real, Portugal. . Retrieved 6 November 2010.
- [185] Graves, R (1955). "The First Labour: The Nemean Lion". *Greek Myths*. London: Penguin. pp. 465–69. ISBN 0-14-001026-2.
- [186] Cassin, Elena (1981). "Le roi et le lion" (http://www.persee.fr/web/revues/home/prescript/article/rhr_0035-1423_1981_num_198_4_4828) (in French) (PDF). *Revue de l'histoire des religions* 298 (198–4): 355–401. . Retrieved 3 December 2009.
- [187] Daniel 6
- [188] Bhag-P 1.3.18 (<http://srimadbhagavatam.com/1/3/18/en1>) "In the fourteenth incarnation, the Lord appeared as Nrisimha and bifurcated the strong body of the atheist Hiranyakasipu with His nails, just as a carpenter pierces cane."
- [189] "Bhag-P 7.8.19–22" (<http://srimadbhagavatam.com/7/8/19-22/en1>). Srimadbhagavatam.com. . Retrieved 21 November 2010.
- [190] Dr. McCleod, Head of Sikh Studies, Department of South Asian Studies, McMaster University, Hamilton, Ontario, Canada.
- [191] Khushwant Singh, *A History of the Sikhs, Volume I*
- [192] Government of India (2005). "Know India: State Emblem" (http://india.gov.in/knowindia/state_emblem.php). *National Portal of India*. National Informatics Centre. . Retrieved 27 August 2007.
- [193] Government of Sri Lanka. "Sri Lanka National Flag" ([\) on 2008-03-27. . Retrieved 6 August 2007.](http://www.gov.lk/info/index.asp?mi=19&xp=52&xi=54&xl=3&o=0&t=)
- [194] Government of Sri Lanka. "Article 6: The National Flag" (http://www.priu.gov.lk/Cons/1978Constitution/Schedle_2_Amd.html). *Official Website of the Government of Sri Lanka*. Government of Sri Lanka. . Retrieved 6 August 2007.
- [195] Li Ling (May 2002). " "The Two-Way Process in the Age of Globalization" (<http://web.archive.org/web/20050406143133/http://www.cityu.edu.hk/ccs/Newsletter/newsletter4/Lion/Lion.htm>). Archived from the original (<http://www.cityu.edu.hk/ccs/Newsletter/newsletter4/Lion/Lion.htm>) on 2005-04-06. .", translated by Ronald Egan. Ex/Change Newsletter from City University of Hong Kong, Issue 4. Retrieved 26 September 2007.
- [196] MIT Lion Dance Club—about (<http://web.mit.edu/lion-dance/www/about/index.html>). Retrieved 26 September 2007.

- [197] "Singapore" (<http://web.archive.org/web/20080629044446/http://www.bartleby.com/61/46/S0424600.html>). *The American Heritage Dictionary of the English Language: Fourth Edition*. bartleby.com. 2000. Archived from the original (<http://www.bartleby.com/61/46/S0424600.html>) on 2008-06-29. . Retrieved 14 April 2006.
- [198] "Early History" (<http://app.www.sg/who/30/Early-Names.aspx>). Ministry of Information, Communications and the Arts, Singapore. . Retrieved 6 November 2010.
- [199] "Arms of Margaret Norrie McCain, The Public Register of Arms, Flags and Badges of Canada" (<http://archive.gag.ca/heraldry/pub-reg/project-pic.asp?lang=e&ProjectID=538&ProjectElementID=1883>). . Retrieved 30 June 2010.
- [200] "Heraldic Dictionary: Beasts" (<http://www.rarebooks.nd.edu/digital/heraldry/charges/lions.html>). University of Notre Dame. . Retrieved 20 July 2007.
- [201] "Official Website of the Detroit Lions" (<http://www.detroitlions.com/index.cfm?homelink=y>). Detroit Lions. 2001. . Retrieved 8 July 2007.
- [202] "Chelsea centenary crest unveiled" (<http://news.bbc.co.uk/sport1/hi/football/teams/c/chelsea/4008257.stm>). BBC. 12 November 2004. . Retrieved 2 January 2007.
- [203] Aston Villa F.C. (2007). "The Aston Villa Crest: 2007 Onwards..." (<http://web.archive.org/web/20071011024349/http://www.avfc.premiumtv.co.uk/page/CrestTest0,,10265,00.html>). Aston Villa F.C.. Archived from the original (<http://www.avfc.premiumtv.co.uk/page/CrestTest0,,10265,00.html>) on 2007-10-11. . Retrieved 6 August 2007.
- [204] Lewis, Clive Staples (1950). *The Lion, the Witch and the Wardrobe*. HarperCollins. ISBN 0-06-023481-4.
- [205] Baum, L. Frank ; Hearn, Michael Patrick (1973). *The Annotated Wizard of Oz*. New York, NY: Clarkson N. Potter, Inc.. p. 148. ISBN 0-517-50086-8.
- [206] "TV ACRES: Advertising Mascots—Animals—Leo the MGM Lion (MGM Studios)" (http://www.tvacres.com/adanimals_leolion.htm). *TV Acres*.
- [207] Adamson, George (1969). *Bwana Game : the life story of George Adamson*. Fontana. ISBN 0-00-612145-4.
- [208] Adamson, Joy (2000) [1960]. *Born Free: A Lioness of Two Worlds*. Pantheon. ISBN 0-375-71438-3.
- [209] Schweizer, Peter (1998). *Disney: The Mouse Betrayed*. Washington D.C.: Regnery Publishing. pp. 164–69. ISBN 0-89526-387-4.
- [210] "King Leonardo and His Short Subjects" (<http://www.imdb.com/title/tt0053515/maindetails>). *Internet Movie Database*. Internet Movie Database Inc.. 2007. . Retrieved 14 September 2007.

Cited texts

- Baratay, Eric; Elisabeth Hardouin-Fugier (2002). *Zoo : a history of zoological gardens in the West*. London: Reaktion Books. ISBN 1-86189-111-3.
- Blunt, Wilfred (1975). *The Ark in the Park: The Zoo in the Nineteenth Century*. London: Hamish Hamilton. ISBN 0-241-89331-3.
- de Courcy, Catherine (1995). *The Zoo Story*. Ringwood, Victoria: Penguin Books. ISBN 0-14-023919-7.
- Schaller, George B. (1972). *The Serengeti lion: A study of predator-prey relations*. Chicago: University of Chicago Press. ISBN 0-226-73639-3.

External links

- Animal Diversity Web: *Panthera leo* (lion) (http://animaldiversity.ummz.umich.edu/site/accounts/information/Panthera_leo.html)
- African Wildlife Foundation: Lion (<http://www.awf.org/content/wildlife/detail/lion>)
- Battle at Kruger (<http://www.youtube.com/watch?v=LU8DDYz68kM>): video of a pack of lions fighting against a crocodile and buffalos over a kill
- Biodiversity Heritage Library bibliography (http://www.biodiversitylibrary.org/name/Felis_leo) for *Felis leo*
- Biodiversity Heritage Library bibliography (http://www.biodiversitylibrary.org/name/Panthera_leo) for *Panthera leo*
- BBC Nature: (<http://www.bbc.co.uk/nature/species/Lion>) Lion news, and video clips from BBC programmes past and present.
- Lion Conservation Fund (<http://www.lionconservationfund.org/>) example of a fund and its projects about the research and conservation of the lion
- Lion Research Center (<http://www.lionresearch.org/main.html>) website of the research group at the University of Minnesota that has conducted field research on lions and published peer-reviewed scientific articles

- Walk with Lions ([http://www.360cities.net/image/
protea-hotel-the-ranch-conservancy-walking-with-lions-south-africa](http://www.360cities.net/image/protea-hotel-the-ranch-conservancy-walking-with-lions-south-africa)) Example of a walk with lions educational
experience at The Ranch Conservancy in South Africa

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