

= Cheetah =

The cheetah (pronounced / ʔtʔiʔtʔ /) (*Acinonyx jubatus*) , also known as the hunting leopard , is a big cat that occurs mainly in eastern and southern Africa and a few parts of Iran . The only extant member of the genus *Acinonyx* , the cheetah was first described by Johann Christian Daniel von Schreber in 1775 . The cheetah is characterised by a slender body , deep chest , spotted coat , a small rounded head , black tear @-@ like streaks on the face , long thin legs and a long spotted tail . Its lightly built , slender form is in sharp contrast with the robust build of the other big cats . The cheetah reaches nearly 70 to 90 cm (28 to 35 in) at the shoulder , and weighs 21 ? 72 kg (46 ? 159 lb) . Though taller than the leopard , it is notably smaller than the lion . Basically yellowish tan or rufous to greyish white , the coat is uniformly covered with nearly 2 @,@ 000 solid black spots .

Cheetah are active mainly during the day , with hunting its major activity . Adult males are sociable despite their territoriality , forming groups called " coalitions " . Females are not territorial ; they may be solitary or live with their offspring in home ranges . Carnivores , cheetah mainly prey upon antelopes and gazelles . They will stalk their prey to within 100 ? 300 metres (330 ? 980 ft) , charge towards it and kill it by tripping it during the chase and biting its throat to suffocate it to death . The cheetah 's body is specialised for speed ; it is the fastest land animal . The speed of a hunting cheetah averages 64 km / h (40 mph) during a sprint ; the chase is interspersed with a few short bursts of speed , when the animal can clock 112 km / h (70 mph) . Cheetahs are induced ovulators , breeding throughout the year . Gestation is nearly three months long , resulting in a litter of typically three to five cubs (the number can vary from one to eight) . Weaning occurs at six months ; siblings tend to stay together for some time . Cheetah cubs face higher mortality than most other mammals , especially in the Serengeti region . Cheetahs inhabit a variety of habitats ? dry forests , scrub forests and savannahs .

Classified as vulnerable by the IUCN , the cheetah has suffered a substantial decline in its historic range due to rampant hunting in the 20th century . Several African countries have taken steps to improve the standards of cheetah conservation . Thanks to its prowess at hunting , the cheetah was tamed and used to kill game at hunts in the past . The animal has been widely depicted in art , literature , advertising and animation .

= = Etymology = =

The vernacular name " cheetah " (pronounced / ʔchʔ @-@ tʔ /) is derived from the Hindi word चित्ता (cʔtʔ) , which in turn comes from the Sanskrit word चित्रक (citrakʔyaʔ) meaning " bright " or " variegated " . The first recorded use of this word was in 1610 . An alternative name for the cheetah is " hunting leopard " . The scientific name of the cheetah is *Acinonyx jubatus* . The generic name *Acinonyx* could have originated from the combination of two Greek words : *akinetos* means motionless , and *onyx* means claw . A rough translation of the word would be " non @-@ moving claws " , a reference to the limited retractability (capability of being drawn inside the paw) of the claws of the cheetah relative to other cats ' . The specific name *jubatus* means " maned " in Latin , referring to the dorsal crest of this animal .

= = Taxonomy = =

The cheetah is the only extant species of the genus *Acinonyx* . It is classified under the subfamily Felinae and family Felidae , the family that also includes large cats such as the lion , tiger and leopard . The species was first described by German naturalist Johann Christian Daniel von Schreber in his 1775 publication *Die Säugethiere in Abbildungen nach der Natur mit Beschreibungen* .

The cheetah 's closest relatives are the cougar (*Puma concolor*) and the jaguarundi (*P. yagouaroundi*) . These three species together form the Puma lineage , one of the eight lineages of Felidae . The sister group of the Puma lineage is a clade of smaller Old World cats that includes the genera *Felis* , *Otocolobus* and *Prionailurus* .

Although the cheetah is an African cat , molecular evidence indicates that the three species of the Puma lineage evolved in North America two to three million years ago , where they possibly had a common ancestor during the Miocene . They possibly diverged from this ancestor 8 @. @ 25 million years ago . The cheetah diverged from the puma and the jaguarundi around 6 @. @ 7 million years ago . A genome study concluded that cheetahs experienced two genetic bottlenecks in their history , the first about 100 @, @ 000 years ago and the second about 12 @, @ 000 years ago , greatly lowering their genetic variability . These bottlenecks may have been associated with migrations across Asia and into Africa (with the current African population founded about 12 @, @ 000 years ago) , and / or with a depletion of prey species at the end of the Pleistocene .

Cheetah fossils found in the lower beds of the Olduvai Gorge site in northern Tanzania date back to the Pleistocene . The extinct species of *Acinonyx* are older than the cheetah , with the oldest known from the late Pliocene ; these fossils are about three million years old . These species include *Acinonyx pardinensis* (Pliocene epoch) , notably larger than the modern cheetah , and *A. intermedius* (mid @- @ Pleistocene period) . While the range of *A. intermedius* stretched from Europe to China , *A. pardinensis* spanned over Eurasia as well as eastern and southern Africa . A variety of larger cheetah believed to have existed in Europe fell to extinction around half a million years ago .

Extinct North American cats resembling the cheetah had historically been assigned to *Felis* , *Puma* or *Acinonyx* . However , a phylogenetic analysis in 1990 placed these species under the genus *Miracinonyx* . *Miracinonyx* exhibited a high degree of similarity with the cheetah . However , in 1998 , a DNA analysis showed that *Miracinonyx inexpectatus* , *M. studeri* , and *M. trumani* (early to late Pleistocene epoch) , found in North America , are not true cheetahs ; in fact , they are close relatives of the cougar .

= = = Subspecies = = =

The five recognised subspecies of the cheetah are :

Asiatic cheetah (*A. j. venaticus*) (Griffith , 1821) : Also called the Iranian or Indian cheetah . Formerly occurred across southwestern Asia and India . According to the International Union for Conservation of Nature and Natural Resources (IUCN) , it is confined to Iran , and is thus the only surviving cheetah subspecies indigenous to Asia . It has been classified as Critically Endangered . A 2004 study estimated the total population at 50 to 60 . Later , a 2007 study gave the total population in Iran as 60 to 100 ; the majority of individuals were likely to be juveniles . The population has declined sharply since the mid @- @ 1970s . As of 2012 , only two captive individuals are known .

Northwest African cheetah (*A. j. hecki*) Hilzheimer , 1913 : Also called the Saharan cheetah . Found in northwestern Africa ; the IUCN confirms its presence in only four countries : Algeria , Benin , Burkina Faso and Niger . Small populations are known to exist in the Ahaggar and Tassili N 'Ajjer National Parks (Algeria) ; a 2003 study estimated a population of 20 to 40 individuals in Ahaggar National Park . In Niger , cheetahs have been reported from the Air Mountains , Ténéré , Termit Massif , Talak and Azaouak valley . A 1993 study reported a population of 50 from Ténéré . In Benin , the cheetah still survives in Pendjari National Park and W National Park . The status is obscure in Burkina Faso , where individuals may be confined to the southeastern region . With the total world population estimated at less than 250 mature individuals , it is listed as Critically Endangered .

South African cheetah (*A. j. jubatus*) (Schreber , 1775) : Also called the Namibian cheetah . Occurs in southern African countries such as Namibia , Botswana , Zimbabwe , South Africa and Zambia . Diverged from the Asiatic cheetah nearly 0 @. @ 32 ? 0 @. @ 67 million years ago . In 2007 the population was roughly estimated at less than 5 @, @ 000 to maximum 6 @, @ 500 adult individuals . Not listed by the IUCN .

Sudan cheetah (*A. j. soemmeringii*) (Fitzinger , 1855) : Also called the central or northeast African cheetah . Found in the central and northeastern regions of the continent and the Horn of Africa . This subspecies was considered identical to the South African cheetah until a 2011 genetic analysis demonstrated significant differences between the two .

Tanzanian cheetah (*A. j. raineyii* syn . *A. j. fearsoni*) Heller , 1913 : Also called the east African

cheetah . Found in Kenya , Somalia , Tanzania , and Uganda . The total population in 2007 was estimated at 2 @, @ 572 adults and independent adolescents . Significant populations occur in the Maasai Mara and the Serengeti ecoregions .

= = Genetics = =

The diploid number of chromosomes in the cheetah is 38 , the same as in any other felid (though for the ocelot and the margay the number is 36) . A remarkable feature of the cheetah is its unusually low genetic variability in comparison to other felids . Consequently , individuals show considerable genetic similarity to one another , as illustrated by skin grafts , electrophoretic evidence and reproductive surveys . A prolonged period of inbreeding , following a genetic bottleneck during the last ice age , is believed to be the reason behind this anomaly . The consequences of such genetic uniformity might include a low sperm count , motility , deformed flagella , difficulty in captive breeding and susceptibility to disease .

= = = King cheetah = = =

The king cheetah is a variety of cheetah with a rare mutation for cream @-@ coloured fur marked with large , blotchy spots and three dark , wide stripes extending from their neck to the tail . In 1926 Major A. Cooper wrote about an animal he had shot near modern @-@ day Harare . Describing the animal , he noted its remarkable similarity to the cheetah , but the body of this individual was covered with fur as thick as that of a snow leopard and the spots merged to form stripes . He suggested that it could be a cross between a leopard and a cheetah . After further similar animals were discovered , it was established they were similar to the cheetah in having non @-@ retractable claws ? a characteristic feature of the cheetah .

English zoologist Reginald Innes Pocock described it as a new species by the name of *Acinonyx rex* (" rex " being Latin for " king " , the name translated to " king cheetah ") ; However , he reverted from this in 1939 . English hunter @-@ naturalist Abel Chapman considered it to be a colour morph of the spotted cheetah . Since 1927 the king cheetah has been reported five more times in the wild ; an individual was photographed in 1975 .

In May 1981 two spotted sisters gave birth at the De Wildt Cheetah and Wildlife Centre (South Africa) , and each litter contained one king cheetah . Each sister had mated with a wild male from the Transvaal region (where king cheetahs had been recorded) . Further king cheetahs were later born at the Centre . They have been known to exist in Zimbabwe , Botswana and northern Transvaal . In 2012 the cause of this alternative coat pattern was found to be a mutation in the gene for transmembrane aminopeptidase Q (Taqpep) , the same gene responsible for the striped " mackerel " versus blotchy " classic " patterning seen in tabby cats . Hence , genetically the king cheetah is simply a variety of the common cheetah and not a separate species . This case is similar to that of the black panthers . The mutation is recessive , a reason behind the rareness of the mutation . As a result , if two mating cheetahs have the same gene , then a quarter of their offspring can be expected to be king cheetahs .

= = Characteristics = =

The cheetah is a big cat with several distinctive features ? a slender body , deep chest , spotted pelage , a small rounded head , black tear @-@ like streaks on the face , long thin legs and a long spotted tail . Its lightly built , slender form is in sharp contrast with the robust build of the other big cats . The head @-@ and @-@ body length ranges from 112 ? 150 centimetres (44 ? 59 in) . The cheetah reaches 70 ? 90 centimetres (28 ? 35 in) at the shoulder , and weighs 21 ? 72 kilograms (46 ? 159 lb) . Thus , it is clearly taller than the leopard , which stands nearly 55 ? 70 centimetres (22 ? 28 in) at the shoulder . The weight range of the cheetah overlaps extensively with that of the leopard , which weighs 28 ? 65 kilograms (62 ? 143 lb) . On the other hand , the cheetah is significantly shorter than the lion , whose average height is nearly 120 centimetres (47 in) .

Moreover , it is much lighter than the lion , among which females weigh 126 kilograms (278 lb) and the much heavier males weigh 186 kilograms (410 lb) . Based on measurements , the smallest cheetahs have been reported from the Sahara , northeastern Africa and Iran . A sexually dimorphic species , males are generally larger than females .

The head is small and streamlined , adding to the agility of the cheetah . Saharan cheetah have narrow canine faces . Small , short , and rounded , the ears are marked by black patches on the back ; the edges and base of the ears are tawny . The high set eyes have round pupils . The whiskers , shorter and fewer in number than those of other felids , are fine and inconspicuous . The pronounced tear streaks are unique to the cheetah . These streaks originate from the corner of the eyes and run down the nose to the mouth . Their role is obscure ? they may be serving as a shield for the eyes against the sun 's glare , a helpful feature as the cheetah hunts mainly during the day ; another purpose could be to define facial expressions .

Basically yellowish tan or rufous to greyish white , the coat of the cheetah is uniformly covered with nearly 2 ,000 solid black spots . The upper parts are in stark contrast to the underbelly , which is completely white . Each spot measures nearly 3 @ 2 ? 5 @ 1 centimetres (1 @ 3 ? 2 @ 0 in) across . Every cheetah has a unique pattern of spots on its coat ; hence , this serves as a distinct identity for each individual . Cheetah fur is short and often coarse . Fluffy fur covers the chest and the ventral side . Several colour morphs of the cheetah have been identified , including melanistic and albino forms . Black cheetah have been observed in Kenya and Zambia . In 1877 ? 1878 , English zoologist Philip Sclater described two partially albino specimens from South Africa . A ticked (tabby) cheetah was photographed in Kenya in 2012 . Juveniles are typically dark with long , loose , blue to grey hair . A short mane , about 8 centimetres (3 @ 1 in) long , on the neck and the shoulders , is all that remains of the cape in adults . The exceptionally long and muscular tail measures 60 ? 80 centimetres (24 ? 31 in) , and ends in a bushy white tuft . While the first two @ thirds of the tail are covered in spots , the final part is marked with four to six dark rings or stripes . The arrangement of the terminal stripes of the tail differs among individuals , but the stripe patterns of siblings are very similar . In fact , the tail of an individual will typically resemble its siblings ' to a greater extent than it resembles its mother 's or any other individual 's .

The cheetah is often confused with the leopard and the cougar and can be distinguished by its small round spots in contrast to the leopard 's rosettes and the cougar 's plain coat ; in addition , the leopard lacks the tear streaks of the cheetah . The cougar possesses neither the tear streaks nor the spotted coat pattern of the cheetah . The serval has a form very similar to that of the cheetah but is significantly smaller . Moreover , it has a shorter tail and spots that fuse to form stripes on the back .

= = = Anatomy = = =

The morphology of the cheetah differs notably from the other big cats . The face and the jaw are unusually shortened and the sagittal crest is poorly developed , possibly to reduce weight and enhance speed . In fact , the skull resembles that of the smaller cats . Another point of similarity to the small cats is the long and flexible spine , in contrast to the stiff and short one of other large felids . A 2001 study of felid morphology stated that the truncation of the development of the middle phalanx bone in the cheetah at a relatively younger age than other felids could be a major reason for the peculiar morphology of the cheetah . Interestingly , the cheetah appears to show convergent evolution with canids in morphology as well as behaviour . For example , the cheetah has a relatively long snout , long legs and deep chest , tough foot pads and blunt , semi @ retractable claws ; moreover , its hunting behaviour resembles that of canids . In the 2001 study , it was observed that the claws of cheetah have features intermediate between those of felids and the wolf . In the Puma lineage , the cheetah 's skull morphology is similar to that of the puma ? both have short , wide skulls ? while that of the jaguarundi is different .

The cheetah has a total of 30 teeth ; the dental formula is 3 @ 1 @ 3 @ 13 @ 1 @ 2 @ 1 . The deciduous dentition is 3 @ 1 @ 23 @ 1 @ 2 . The sharp , narrow cheek teeth help in tearing flesh , whereas the small and flat canine teeth bite the throat of the prey to

suffocate it . Males have slightly bigger heads with wider incisors and longer mandibles than females . The muscles between the skull and jaw are short , and thus do not allow the cheetah to open its mouth as much as other cats . Digitigrade animals , the cheetah have tough foot pads that make it convenient to run on firm ground . The hind legs are longer than the forelegs . The relatively longer metacarpals , metatarsals (of the lower leg) , radius , ulna , tibia , and fibula increase the length of each jump . The straightening of the flexible vertebral column also adds to the length .

Cheetahs have a high concentration of nerve cells , arranged in a band in the centre of the eyes . This arrangement , called a " visual streak " , significantly enhances the sharpness of the vision . Among the felids , the visual streak is most concentrated and efficient in the cheetah . The nasal passages are short and large ; the smallness of the canines helps to accommodate the large nostrils . The cheetah is unable to roar due to the presence of a sharp @-@ edged vocal fold within the larynx .

The paws of the cheetah are narrower than those of other felids . The slightly curved claws lack a protective sheath and are weakly retractable (semi @-@ retractable) . This is a major point of difference between the cheetah and the other big cats , which have fully retractable claws , and a similarity to canids . Additionally , the claws of the cheetah are shorter as well as straighter than those of other cats . Absence of protection makes the claws blunt ; however , the large and strongly curved dewclaw is remarkably sharp .

= = Ecology and behaviour = =

Cheetahs are diurnal (active mainly during the day) , whereas the leopards , tigers , and lions are nocturnal (active mainly at night) ; diurnality allows better observation and monitoring of the animal . Hunting is the major activity throughout the day ; peaks are observed during dawn and dusk indicating crepuscular tendencies . Groups rest in grassy clearings after dusk , though males and juveniles often roam around at night . The cheetah is an alert animal ; individuals often inspect their vicinity at observation points such as elevations . Even while resting , they take turns at keeping a lookout .

= = Social organisation = =

Apart from the lion , the cheetah is the only cat that is gregarious ; however , female cheetahs tend to remain solitary . Tim Caro , of the University of California , Davis , identified the various social classes and their longevity . Pregnant and nursing females , a few adolescents , and males who have not joined any groups are typically solitary . Non @-@ lactating females , their cubs , adolescent siblings , and several males will form their own groups . A loose association between individuals of the opposite sex can be observed during the breeding season . These social groups typically keep away from one another .

Adult males are typically gregarious despite their territoriality , and may group together for life and form " coalitions " . These groups collectively defend their territories . In most cases , a coalition will comprise brothers born in the same litter who stayed together after weaning . However , if a cub is the only male in the litter , then two or three lone males may form a small group , or a lone male may join an existing group . Males in coalitions establish territories that ensure maximum access to females . Solitary males may or may not be territorial . Some males alternate between solitude and coalitions , whichever ensures encounters with a greater number of females . Although a coalition , due to its larger membership , demands a greater amount of resources than do the solitary males or their groups , the coalition has a greater chance of encountering and acquiring females for mating .

Females are not territorial , and live alone or with their offspring . Juveniles form mixed @-@ sex groups after weaning , but most of the young females stay back with their mother , with whom they do not show any significant interaction . Males eventually mature and try to acquire territories .

= = Home ranges and territories = =

Males in coalitions establish territories in locations that ensure maximum access to females . Males exhibit marking behaviour ? territories , termite mounds , trees , common tracks and junctions , and trees are marked by urine , faeces , and claw scratches . The sizes can be location specific . For example , territories range from 33 to 42 km² (13 to 16 sq mi) in the Serengeti , while in the Phinda Private Game Reserve , the size can be 57 to 161 km² (22 to 62 sq mi) . Territorial solitary males establish considerably larger territories , as large as 777 km² (300 sq mi) in the Serengeti or 1 @, @ 390 km² (540 sq mi) in central Namibia . A 1987 study of the social organisation in males showed that territoriality depends on the size and age of the males and the membership of the coalition . It concluded that solitary as well as grouped males have a nearly equal chance of coming across females , but the males in coalitions are notably healthier and have better chances of survival than their solitary counterparts . In the Serengeti , only 4 % of the solitary males hold territories , while those who joined coalitions were far more successful . The average period for which territories are held is four months for singletons , seven @-@ and @-@ a @-@ half months for pairs , and 22 months for trios .

Males exhibit pronounced marking behaviour ? territories , termite mounds , trees , common tracks , and junctions are marked by urine , faeces , and claw scratches . Males marking their territory by urination stand less than a metre away from a tree or rock surface with the tail raised , pointing the penis either horizontally backward or 60 ° upward . Territorial clashes can take place between two coalitions , or coalitions and solitary males ; fights , however , are rarely gruesome . Another major reason for fights is to acquire dominance in the breeding season . These can even involve cannibalism .

Unlike male and other felines , female cheetahs do not establish territories . Instead , they live in unguarded areas , known as " home ranges " . Though home ranges often overlap , there is hardly any interaction between the females . Females are regular visitors to male territories . The size of a home range depends mainly on the availability of prey . The greater the density of prey animals in an area , the smaller the home range of a female cheetah there . In areas with nomadic prey animals (such as the Thomson 's gazelle in the Serengeti and the springbok the in Kalahari Desert) , the home ranges cover hundreds of square kilometres . In contrast , home ranges are merely 100 ? 200 square kilometres (39 ? 77 sq mi) large where sedentary prey , such as the impala in the Kruger National Park , is available .

= = = Communication = = =

= = = = Vocalisations = = = =

The cheetah is a prominently vocal felid . They cannot roar but instead purr . A wide variety of cheetah vocalisations have been identified by several terms , but most of these lack a detailed acoustic description , which makes it difficult to assess reliably which term denotes which sound . In 2010 Robert Eklund (of the University of Göteborg , Sweden) and colleagues published a detailed report on the purring of the cheetah and compared it with that observed in other felids . The cheetah purrs when content , or to greet known individuals . A characteristic of purring is that it is realised on both egressive and ingressive airstreams . Other vocalisations Eklund identified include :

Growling : Often accompanied by hissing and spitting , the cheetah growls to show its annoyance , or when faced with danger . A study showed that growls consist of numerous short pulses with a combined duration of up to five seconds .

Moaning or yawling : This is an escalated version of growling and is often combined with it . It is typically displayed when the danger increases . A study found that yowls could last as long as two seconds .

Agonistic vocalisations : Eklund used this term as a reference to a combination of growls , moans , and hisses that is followed by spitting , a feature more conspicuous in cheetah than in other cats . In addition to spitting , the cheetah will hit the ground with its front paws .

In a 1991 book , biologist R. D. Estes had enlisted , in addition to the aforementioned vocalisations ,

some other sounds made by the cheetah :

Bleating : Similar to the meow of the domestic cat , the cheetah can bleat , and sometimes moan , when a larger predator deprives it of its prey .

Chirping or stutter @-@ barking : A cheetah chirps when excited (for instance , when gathered around a kill) . This vocalisation can also be used at social meetings , during courtship , or in attempting to find another ; the chirp of a mother searching for her cubs , which sounds more like the yelp of a dog than the chirp of a bird , can be heard up to 2 kilometres (1 @. @ 2 mi) away . A study estimated the chirp 's total duration as 0 @. @ 09 to 0 @. @ 5 seconds .

Churring : The purpose of this sound is similar to that of the chirp . It may resemble a growl . Zoologist Jonathan Kingdon considered the chirp of the cheetah as similar to the soft roar of the lion , and its churr as the latter 's loud roar . The churr , is staccato and has a shorter range than the chirp . A study showed that churrs comprise 3 to 15 separate pulses and last 0 @. @ 1 to 1 @. @ 3 seconds .

Mother @-@ cub vocalisations : Apart from chirping , mothers use some other sounds to interact with their cubs . A repeated ihh ihh is used to gather the cubs , while a prr prr is used to guide them on a journey . A low @-@ pitched alarm call is used to warn the cubs to stand still in the presence of danger .

Whirring : This sound is produced by cubs bickering over a kill ; the pitch rises with the intensity of the quarrel , and ends on a harsh note .

= = = = Other methods = = = =

Scent plays a significant role in olfactory communication . Cheetahs often investigate urine @-@ marked places (territories or common landmarks) for a long time by crouching on their forelegs and carefully smelling the place . Then the male will itself urinate there and sniff at its own scent before leaving . Other observing individuals will repeat the ritual . Females may also show marking behaviour but less prominently than the males . Females in oestrus will show maximum urine @-@ marking , and her excrement can attract males from far off .

Social meetings are marked by mutual sniffing in oral and genital areas , grooming one another , rubbing the cheeks , and face @-@ licking . Further physical contact has not been observed .

The tear streaks are a means of visual communication . The tear streaks combined with the black lips and the contrasting white fur give the face a striking appearance and form clear expressions when viewed from a close range . The ears and the face are obscure from a distance , and so are the expressions . On the other hand , the tail is quite conspicuous and is probably used by mothers to direct juveniles to follow them .

= = = = Display behaviour = = = =

Cheetahs engage in several displays during fights , hunting , or self @-@ defence . Prior to a sprint , the cheetah will hold its head down , with aggression on its face , and approach the target in a stiff gait . The aggressive expression is maintained during the run . To defend itself or its prey , a cheetah will hold its body low to the ground , and produce a snarl with its mouth wide open , the eyes staring threateningly ahead and the ears folded backward . This may be accompanied by moans , hisses , and growls . In more severe cases , the ground is hit with the paws . Fights are characterised by biting , tearing out the fur and attempts at strangling on both sides .

= = = = Hunting and competitors = = = =

The cheetah is a carnivore that prefers medium @-@ sized prey with a body mass ranging from 23 to 56 kg (51 to 123 lb) . Blesbok , duiker , Grant 's gazelle , impala , reedbuck , springbok , and Thomson 's gazelle are some of the common targets of the cheetah . Other prey animals include the bat @-@ eared fox , bushbuck , kudu , hartebeest , nyala , oribi , roan antelope , steenbok , sable antelope , and waterbuck ; they prey less frequently on African buffalo , gemsbok , giraffe , ostrich ,

warthog , wildebeest , and zebra . A study showed that a major proportion of the diet of Asiatic cheetahs consists of livestock ; local species such as chinkara , desert hare , goitered gazelle , ibex , rodents , and wild sheep are also hunted . Generally , only groups of cheetahs will attempt to kill large animals such as hartebeest , although mothers with young cubs will attempt to secure a large prey all by themselves . There are no records of cheetah killing human beings . The diet of a cheetah depends on the area in which it lives . For example , on the East African plains , its preferred prey is the Thomson 's gazelle , somewhat smaller than the cheetah . In contrast , in Kwa @-@ Zulu Natal the preferred prey is the significantly larger nyala , males of which can weigh up to 130 kg (290 lb) . They do , however , opt for young and adolescent targets , which make up about 50 % of the cheetah diet despite constituting only a small portion of the prey population .

Cheetahs hunt primarily throughout the day , but geographical variations exist . For instance , cheetahs in the Sahara and the Masai Mara hunt after sunset to escape the high temperatures of the day . In the Serengeti they hunt when the lions and hyenas are inactive . A study in Nairobi National Park (Kenya) showed that the success of the hunt depends on the species , age , sex , and habitat of the prey , and the size of the hunting herd or the efficiency of the hunting individual . Cheetahs hunt by vision rather than by scent . Prey is located from observation points or while roaming . Animals toward the edges of the herd are preferred . The cheetah will stalk their prey to within 100 ? 300 m (330 ? 980 ft) ; it will try to approach it as closely as possible while concealing itself in cover , sometimes even up to 60 m (200 ft) of the prey . The cheetah will crouch and move slowly while stalking , occasionally becoming motionless . The chase usually lasts less than a minute ; if the cheetah fails to make a kill quickly , it will give up . Cheetahs have an average hunting success rate of 40 to 50 % .

Cheetahs kill their prey by tripping it during the chase ; the cheetah can use its strong dewclaw to knock the prey off its balance . To kill medium- to large @-@ sized prey , the cheetah bites the prey 's throat to suffocate it to death . A bite on the back of the neck or the snout is enough to kill smaller prey . The prey is then taken to a shaded place ; the cheetah , highly exhausted after the chase , rests beside the kill and pants heavily for nearly five to 55 minutes . Groups of cheetah devour the kill peacefully , though minor growling may be observed . Cheetahs not involved in hunting will immediately start eating . Cheetah can consume large quantities of food . In a study at the Etosha National Park (Namibia) , the cheetah consumed as much as 10 kilograms (22 lb) within two hours and stayed close to the remains for 11 hours . Cheetah move their head from side to side so that the sharp carnassial teeth effectively tear the flesh , which can then be swallowed without chewing . They typically begin with the hindquarters , and then progress toward the abdomen and the spine . Rib bones are chewed on at the ends , and the limbs are not generally torn apart while eating .

The cheetah , especially mothers with young cubs , are highly vigilant ; they need to remain on a lookout for large carnivores who might steal the prey or harm the cubs , and for any potential prey . The cheetah will surrender its kill to sturdier carnivores such as lions , leopards , spotted hyena , brown hyena , and wild dogs . Cheetahs lose around 10 to 15 % of their kills to other predators ; the percentage was found to be as high as 50 % in a 1986 study . Cheetahs have rarely been observed to feed on the kills of other carnivores ; this may be due to vultures and spotted hyena adroitly capturing and consuming heavy carcasses within a short time .

= = = Speed and acceleration = = =

= = = = Adaptations = = = =

The cheetah 's body is specialised for speed , and it is the fastest land animal . Estes describes the cheetah as the " felid version of the greyhound " , as both have similar morphology and the ability to reach tremendous speeds in a shorter time than other mammals . The thin and light body of the cheetah makes it well @-@ suited to short , explosive bursts of speed , rapid acceleration , and an ability to execute extreme changes in direction while moving at speed . These adaptations account

for much of the cheetah's ability to catch fast @-@ moving prey .

The large nasal passages ensure fast flow of sufficient air , and the enlarged heart and lungs allow the enrichment of blood with oxygen in a short time . This allows cheetahs to rapidly regain their stamina after a chase . During a typical chase , their respiratory rate increases from 60 to 150 breaths per minute . While running , in addition to having good traction due to their semi @-@ retractable claws , cheetahs use their tail as a rudder @-@ like means of steering that enables them to make sharp turns , necessary to outflank antelopes that often change direction to escape during a chase . The protracted claws increase grip over the ground , while foot pads make the sprint more convenient over tough ground . The tight binding of the tibia and the fibula restrict rotation about the lower leg , thus stabilising the animal throughout the sprint ; the downside , however , is that this reduces climbing efficiency . The pendulum @-@ like motion of the scapula increases the stride length and assists in shock absorption . The extension of the vertebral column can add as much as 76 centimetres (30 in) to the length of a stride . During more than half of the time of the sprint , the animal has all four limbs in the air ; this also contributes to the stride length .

In the course of a sprint , the heat production in cheetah exceeds more than 50 % of the normal . The cheetah retains as much as 90 % of the heat generated in its body during the chase , which is considerably larger than the 20 % in the case of the domestic dog . The cheetah does not indulge in long distance chases , lest it develop dangerous temperatures , nearly 40 to 41 ° C (104 to 106 ° F) . The cheetah will run no more than 500 m (1 @, @ 640 ft) at the tremendous speeds of 80 to 112 km / h (50 to 70 mph) ; very rarely do they run at these speeds as most chases are within 100 metres (330 ft) .

== = Recorded values == =

In general , the speed of a hunting cheetah averages 64 km / h (40 mph) during a chase , interspersed with a few short bursts when the speed may vary between 104 and 120 km / h (65 and 75 mph) ; the most reliable measurement of the typical speed during a short chase is 112 km / h (70 mph) . As this is an averaged value , a cheetah's maximum speed may be still higher ; the value of the maximum speed is , however , disputed . The speeds attained by the cheetah are only slightly greater than those achieved by the pronghorn 88 @. @ 5 km / h (55 @. @ 0 mph) and the springbok 88 km / h (55 mph) . Yet the cheetah has a greater probability of succeeding in the chase due to its exceptional acceleration ? it can attain a speed of 75 km / h (47 mph) in just two seconds . One stride or jump of a galloping cheetah averages 7 metres (23 ft) . Similarly , the ability to rapidly change direction is pivotal in ensuring hunting success . Cheetahs typically walk at 3 ? 4 kilometres per hour (1 @. @ 9 ? 2 @. @ 5 mph) .

Speed and acceleration values for the hunting cheetah may be different from those for the non @-@ hunting because , while engaged in the chase , the cheetah is more likely to be twisting and turning and may be running through vegetation . In 2012 an 11 @-@ year @-@ old cheetah from the Cincinnati Zoo named Sarah made a world record by running 100 m (330 ft) in 5 @. @ 95 seconds over a set run , during which she ran a recorded maximum speed of 98 kilometres per hour (61 mph) . A study of five wild cheetahs (three females , two males) during hunting reported a maximum speed of 93 km / h (58 mph) , with an average of 48 to 56 km / h (30 to 35 mph) . Speed can be increased by almost 10 km / h (6 mph) in a single stride . The average chase is 173 m (568 ft) and the maximum ranges from 407 to 559 m (1 @, @ 335 to 1 @, @ 834 ft) .

== = Reproduction == =

Cheetahs breed throughout the year ; they are induced ovulators . Females become sexually mature at 21 to 22 months of age . Females are polyoestrus ? they have an oestrus (" heat ") cycle every 12 days (this can vary from 10 to 20 days) , each oestrus lasting one to three days . A female can give birth again after 17 to 20 months ; however , on the loss of a whole litter mothers can mate again . Urine @-@ marking in males becomes more pronounced when a female in their vicinity comes into oestrus . Males fight among one another to secure access to the female ; even

males in a coalition may show some aggression toward one another on approaching a female . One male eventually wins dominance over the others . Mating , observed mainly at night , begins with the male approaching the female , who lies down on the ground . No courtship behaviour is observed ; the male immediately secures hold of the female 's nape and copulation takes place . The pair then ignore each other and part ways . However , they meet and copulate a few more times within the next few days . Polyandrous , females can mate with several males . The mean number of motile sperm in a single ejaculation is nearly 25 @. @ 3 million .

Gestation is nearly three months long . The number of cubs born can vary from one to eight , though the common number is three to five . Birth takes place in a sheltered place such as thick vegetation . Each cub weighs nearly 150 ? 400 g (5 @. @ 3 ? 14 @. @ 1 oz) at birth ; the eyes , shut at birth , open in 4 to 11 days . Newborn cubs can crawl and spit ; they can start walking by two weeks . Their nape , shoulders and back are thickly covered with long bluish grey hair . This downy underlying fur , called a " mantle " , gives them a Mohawk @-@ type appearance ; this fur is shed as the cheetah grows older . A study noted that this mane gives a cheetah cub the appearance of the honey badger ; this could act as a camouflage in both animals . Cheetah cubs are highly vulnerable during the first few weeks of their life ; mothers keep their cubs hidden in dense vegetation for the first month .

Cubs start following their mothers at six weeks . The mother frequently shifts the cubs to new locations . A study of play behaviour of cheetah cubs showed that cubs tend to play after nursing or while they are on the move with their mothers . Play involves plenty of agility ; attacks are seldom lethal . Playing cubs stay near their mothers . The study further revealed that while the cubs showed improvement in catching each other as they grew up , the ability to crouch and hide did not develop remarkably . Thus , it was suggested that play helps develop only certain aspects of predator defence . Weaning occurs at three to six months of age . The mother brings kills to her cubs ; the cubs might purr as the mother licks them clean after the meal . Cubs as young as six months try to capture small prey like hares and juvenile gazelles . However , they may have to wait until as long as 15 months of age to make a successful kill on their own .

The offspring may stay with the mother for 13 to 20 months , associating with one another and feeding on kills together . After weaning , juveniles may form mixed @-@ sex herds ; young females may stay back with their mother , but there is hardly any interaction between the mother and daughters . The females in the mixed @-@ sex herd gradually move out as they near sexual maturity . In the Serengeti , average age of independence of 70 observed litters was 17 @. @ 1 months . Young females had their first litters at the age of about 2 @. @ 4 years and subsequent litters about 20 months later . The lifespan of wild cheetahs is 14 to 15 years for females ; their reproductive cycle typically ends by 12 years of age . Males generally live as long as 10 years .

= = Mortality = =

High mortality rates have been recorded in the Serengeti . In a 1994 study , nearly 77 % of litters died before eight weeks of birth , and nearly 83 % of those alive could not make it to adolescence (14 weeks) . Lions emerged as the major predator of juveniles , accounting for nearly 78 % of the deaths . The study concluded that the survival rate of cubs till weaning was a mere 4 @. @ 8 % . This was attributed to the open terrain of the region , which does not allow cheetahs to conceal themselves . Cheetah cubs face higher mortality than most other large mammals .

It has been suggested that the significant lack of genetic diversity in cheetahs is a cause of poor quality and production of sperm , and birth defects such as cramped teeth , kinked tails , and bent limbs . Cheetahs do have low fertility rates , but they appear to have flourished for thousands of years with these low levels of genetic variance . Cheetah expert Laurie Marker points out that the high level of genetic uniformity would mean that if an infectious disease surfaced in a population , all of them have (or lack) the same level of immunity . In 1982 , 60 % of the cheetah population in the Wildlife Safari (Oregon , United States) died due to a peritonitis epidemic .

= = Distribution and habitat = =

The cheetah inhabits a variety of habitats ; in Africa it has been observed in dry forests , scrub forests , and savannahs . However , the distribution of prey may influence habitat preferences ; in a study in the Kruger National Park , female cheetahs were found to spend a significant amount of time in woodlands , where impala occurred . It was suggested that though the forested area was unsuitable for hunting , the females preferred woodlands to encounter more impala . Male coalitions , on the other hand , shunned dense habitats and spent most of the time in open savannahs . An explanation given for this was that the coalitions prefer larger prey than impala . Though they do not prefer montane regions , cheetahs can occur at elevations as high as 4 @, @ 000 m (13 @, @ 000 ft) . An open area with some cover , such as diffused bushes , is probably ideal for the cheetah because it needs to stalk and pursue its prey over a distance , exploiting its speed . This also minimises the risk of encountering larger carnivores . Complete lack of cover , however , can be a cause of prey loss and mortality .

In prehistoric times , the cheetah was distributed throughout Asia , Africa , Europe , and North America . Gradually , it vanished from Europe and North America . Nearly 500 years ago , the cheetah was still common throughout Africa , though it avoided deserts and tropical forests . Afghanistan , Iran , Iraq , Palestine , Syria , and the Ganga and Indus river valleys sheltered large numbers of cheetahs . However , today the cheetah has been exterminated from the majority of its earlier range . The IUCN estimates that the total expanse of the range of the cheetah in earlier times was approximately 25 @, @ 344 @, @ 648 km² (9 @, @ 785 @, @ 623 sq mi) ; the range (as of 2015) has since then reduced to 2 @, @ 709 @, @ 054 km² (1 @, @ 045 @, @ 972 sq mi) , a substantial decline of 89 % .

In Africa , the cheetah occurs mainly in eastern and southern Africa ; the range across the continent has declined to a mere 10 % of the historic expanse . The range in eastern Africa has reduced to 6 % of its original range , so that presently it is distributed in an area of 310 @, @ 586 km² (119 @, @ 918 sq mi) . In the Horn of Africa , the cheetah occurs in Ethiopia , Kenya , South Sudan , Tanzania , and Uganda . The range has not reduced as much in the southern part of the continent , where it occurs in an area of 1 @, @ 223 @, @ 388 km² (472 @, @ 353 sq mi) , 22 % of its original range . Though cheetahs no longer occur in Malawi , significant populations thrive in south @-@ western Angola , Botswana , south @-@ western Mozambique , Namibia , northern South Africa , southern Zambia , and Zimbabwe . Very few isolated populations occur in the Sahara ; the population density in this region is as low as two to three individuals per 10 @, @ 000 km² (3 @, @ 900 sq mi) . They occur in very low numbers in northern and western Africa . In the past , the cheetah ranged across vast stretches of Asia : from the Mediterranean and the Arabian Peninsula in the west to the Indian subcontinent in the east , and as far north as the Caspian and Aral Seas . However , the cheetah has disappeared from the majority of its historic range , save for Iran and possibly a few areas in Afghanistan , the Indian subcontinent , and Turkmenistan .

= = Status and threats = =

The cheetah has been classified as Vulnerable by the IUCN ; it is listed under Appendix I of the Convention on the Conservation of Migratory Species of Wild Animals (CMS) and Appendix I of CITES (Convention on International Trade in Endangered Species) . In 2014 the CITES Standing Committee recognised the cheetah as a " species of priority " in their strategies in northeastern Africa to counter wildlife trafficking . As of 2015 , the IUCN gives the total number of surviving individuals as nearly 6 @, @ 700 . Regional estimates have been given as : 1 @, @ 960 in eastern Africa (as of 2007) ; 4 @, @ 190 in southern Africa (as of 2007) ; and 440 in western , central , and northern Africa (as of 2012) . The southern half of the continent , therefore , is home to the largest number of cheetah . 29 sub @-@ populations have been identified , of which most consist of no more than 500 individuals . A small population of 60 to 100 individuals was reported from Iran in 2007 . Populations are feared to be declining , especially those of adults .

The cheetah is threatened by habitat loss through agricultural and industrial expansion ; moreover , the animal apparently requires a large area to live in as indicated by its low population densities .

The cheetah appears to be less capable than the leopard of coexisting with humans . As such , human interference can disturb the activities , such as hunting and feeding , of cheetah . With 76 % of their range consisting of unprotected land , the cheetah are often targeted by farmers and pastoralists who attempt to protect their livestock . However , cheetahs typically do not prefer livestock for prey . Game hunters may also try to harm cheetah as these carnivores can deprive them of valuable game . Roadkill can be another threat , especially in areas where roads have been constructed near the natural habitat or protected areas . Cases of roadkill involving cheetahs have been reported from Kalmand , T?r?n , and Bafq . The threat is posed by infectious diseases is minor , given the low population densities and hence the minimal chance of infection .

= = Conservation measures = =

The IUCN has recommended co @-@ operation between countries across the cheetah 's range to minimise the conflict between cheetahs and human beings . A 2016 study showed that ecotourism can have a significantly positive impact on the conservation of the cheetah . Although the requirement of space for the habitat would have to be compromised in most cases , establishment of private reserves for cheetahs and ensuring the absence of predators and poachers could be a successful conservation measure . Additionally , the financial benefits accrued and the awareness generated can further aid the cause of the cheetah . At the same time , the animals should not be unnecessarily handled or disturbed , as cheetahs are particularly sensitive to human interference .

= = = In Africa = = =

The Range Wide Conservation Program for Cheetah and African Wild Dogs (RWCP) , the brainchild of Sarah Durant and Rosie Woodroffe (of the Zoological Society of London) , was started in 2007 with the primary aim of ensuring better conservation measures for the cheetah and the wild dog ? two species with very low population densities . A joint initiative by the ZSL , the Wildlife Conservation Society , and the IUCN Cat Specialist Group , the program has among its major goals a review of the conservation policies adopted by the South African countries , and study and action on illegal hunting and trade of the cheetah . In a 2007 publication , Durant emphasised the role of land management and improvement in connectivity across the range in cheetah conservation , in the lack of which the populations might face severe fragmentation .

Benin (2014) , Botswana (2007) , Chad (2015) , Ethiopia (2010) , Kenya (2007) , Mozambique (2010) , Namibia (2013) , Niger (2012) , South Africa (2009) , South Sudan (2009) , Tanzania (2013) , Zambia (2009) , and Zimbabwe (2009) have formulated action plans for the conservation of the cheetah (the years in which the workshops were held are given in brackets) .

= = = In Asia = = =

In the 20th century , the populations of cheetah in India saw a drastic fall . The last physical evidence of the cheetah in India was three individuals , all shot by the Maharajah of Surguja in 1947 in eastern Madhya Pradesh , a man also noted for holding a record for shooting 1 @, @ 360 tigers . During the early 2000s , scientists from the Centre for Cellular and Molecular Biology (CCMB) , Hyderabad , proposed a plan to clone Asiatic cheetahs obtained from Iran . India asked Iran to transport one live pair to India , or , if that was not possible , allow them to collect sperm and of the cheetah pair in Iran itself . However , Iran rejected both proposals .

In September 2009 , the then Minister of Environment and Forests , Jairam Ramesh , assigned the Wildlife Trust of India and the Wildlife Institute of India with the task of examining the potential of cheetah reintroduction in the nation . The report , submitted in 2010 , showed that the Kuno Wildlife Sanctuary and Nauradehi Wildlife Sanctuary in Madhya Pradesh , and Shahgarh Landscape and Desert National Park in Rajasthan have a high potential to support reintroduced cheetah populations . These areas were found to be spacious ; of these four areas , the Kuno Wildlife Sanctuary had the largest available area , 6 @, @ 800 square kilometres (2 @, @ 600 sq mi) . Moreover , these were

rich in prey availability . The Sanjay National Park , though comprising an area of 12 @.@ 500 square kilometres (4 @.@ 826 sq mi) and having supported cheetah populations before the independence of India in 1947 , is no longer suitable for the cheetah due to low prey density and risks of poaching .

In 2001 the Iranian government collaborated with the Cheetah Conservation Fund , the IUCN , Panthera , United Nations Development Programme (UNDP) , and the Wildlife Conservation Society on the Conservation of Asiatic Cheetah Project (CACP) to protect the natural habitat of the Asiatic cheetah and its prey , to ensure that development projects do not hamper its survival , and to highlight the plight of the Asiatic cheetah . Iran declared 31 August as National Cheetah Day in 2006 .

= = Interaction with human beings = =

= = = Taming = = =

The cheetah in general shows no hostility toward human beings , probably due to its sociable nature . This might be a reason why the cheetah can be easily tamed , as it has been since antiquity . Reliefs in the Deir el @-@ Bahari temple complex tell of an expedition by Egyptians to the Land of Punt during the reign of the pharaoh Hatshepsut (1507 ? 1458 BC) that fetched , among other things , animals called " panthers " for Egypt . Two types of " panthers " were depicted in these sculptures : leashed cheetahs , referred to as " panthers of the north " , and sturdy leopards , referred to as " panthers of the south " . During the New Kingdom (16th to 11th centuries BC) , cheetahs were common pet animals for the royalty , who decorated the animals with beautiful collars and leashes . The Egyptians would use their dogs to bring the concealed prey out in the open , after which a cheetah would be set upon it to kill it . A Sumerian seal dating back to nearly 3000 BC , featuring a leashed animal resembling a cheetah , has fuelled speculation that the cheetah might have been first domesticated and used for hunting in Sumer (Mesopotamia) . However , Thomas T. Allsen (of The College of New Jersey) argues that the depicted animal might not be a cheetah given its largely dog @-@ like features ; moreover , the background gives an impression of a montane area , which the cheetah does not typically inhabit .

Mainly two kinds of theories have been put forth to explain the subsequent expansion of the cheetah into Asia , Europe , and the rest of Africa . Historians who accept the Sumerian origin of the domesticated cheetah ? such as Heinz F. Friederichs and Burchard Brentjes ? hold that the animal gradually spread out to central and northern Africa , from where it reached India . On the other hand , historians such as Frederick E. Zeuner accept the Egyptian origin and state that the cheetah gradually spread into central Asia , Iran , and India . In the third century AD , Roman author Claudius Aelianus wrote of tame panthers in India and " smaller lions " that would be used for tracking and hunting ; the account cannot be very reliable as Roman , as well as Greek , literature is not generally clear in its references to different types of cats .

Hunting with cheetahs became more prevalent toward the seventh century AD . In the Middle East , the cheetah would accompany the nobility to hunts in special seats behind saddles . Cheetahs continued to be associated with royalty and elegance in western Asia till as late as the 19th century . The first phase of taming would take several weeks , in which the cheetah would be kept tethered and made to get accustomed to human beings . Next , the cheetah would be tempted with food and trained to mount horses . Finally , its hunting instincts would be aroused by slaughtering animals before it . The whole process could take as long as a year to complete . In eastern Asia , the records are confusing as regional names for the leopard and the cheetah may be used interchangeably . The earliest depiction of cheetahs from eastern Asia dates back to the Tang dynasty (7th to 10th centuries AD) ; paintings depict tethered cheetahs as well as cheetahs mounted on horses . Chinese emperors would use cheetahs , as well as caracals , as gifts . In the 13th and the 14th centuries , the Yuan rulers bought numerous caracals , cheetahs , and tigers from the western parts of the empire and Muslim merchants in return for gold , silver , cash , and silk . According to the

Ming Shilu , the subsequent Ming dynasty (14th to 17th centuries) continued this practice . The cheetah gradually entered Eurasia toward the 14th century , though they never became as popular as they had in the Middle East . The Mughal ruler Akbar the Great (1556 ? 1605) is said to have kept as many as 1000 cheetahs . However , his son Jahangir wrote in his memoirs , *Tuzk @-@ e @-@ Jahangiri* , that only one of them gave birth to cubs . Mughal rulers trained cheetahs as well as caracals in a similar way as the West Asians , and used them to hunt game ? especially blackbuck . The rampant hunting severely affected the populations of wild animals .

= = = In captivity = = =

Mortality under captivity is generally high ; reasons include stillbirths , birth defects , cannibalism , hypothermia , neglect of cubs by mothers , and infectious diseases . A study comparing the health of captive and wild cheetahs noted that despite having similar genetic make @-@ up , wild cheetahs are far healthier than their captive counterparts . The study identified possible stress factors such as restricted habitat and interaction with human beings and other carnivores , and recommended private and spacious areas for captive cheetahs . A study of diseases suffered by captive cheetahs in the period 1989 ? 92 in several North American zoos showed that hepatic veno @-@ occlusive disease , a disease of the liver , had affected 82 % of the deceased cheetahs , caused nine deaths , and occurred in 51 % of living females . Chronic gastritis was detected in 91 % of the population . Glomerulosclerosis , a disease of the kidneys , emerged as another significant disease , affecting 84 % of the cheetahs ; another renal disease , nephrosclerosis , affected 39 % of the cheetahs . Feline infectious peritonitis caused two deaths . Pneumonia was a major cause for juvenile deaths . Another study concluded that excess of vitamin A in their diets could result in veno @-@ occlusive disease in their livers .

Moreover , cheetahs are poor breeders in captivity , while wild individuals are far more successful . In a 1992 study , females in Serengeti were found to have 95 % success rate in breeding . In contrast , only 20 % of the North American captive cheetahs bred successfully in 1991 . Studies have shown that in @-@ vitro fertilisation in cheetah poses more difficulties than are faced in the case of other cats .

= = = In popular culture = = =

The cheetah has been widely portrayed in a variety of artistic works . In *Bacchus and Ariadne* , an oil painting by the 16th @-@ century Italian painter Titian , the chariot of the Greek god Dionysus (Bacchus) is depicted as being drawn by two cheetahs . The cheetahs in the painting were previously considered to be leopards . In 1764 English painter George Stubbs commemorated the gifting of a cheetah to George III by the English Governor of Madras , Sir George Pigot in his painting *Cheetah with Two Indian Attendants and a Stag* . The painting depicts a cheetah , hooded and collared by two Indian servants , along with a stag it was supposed to prey upon . The 1896 painting *The Caress* , by the 19th @-@ century Belgian symbolist painter Fernand Khnopff , is a representation of the myth of Oedipus and the Sphinx . It portrays a creature with a woman 's head and a cheetah 's body (often misidentified as a leopard 's) .

A variety of literature mentions the cheetah . In 1969 author Joy Adamson , of *Born Free* fame , wrote *The Spotted Sphinx* , a biography of her pet cheetah Pippa . Hussein , *An Entertainment* , a novel by Patrick O 'Brian set in the British Raj period in India , illustrates the practice of royalty keeping and training cheetahs to hunt antelopes . The book *How It Was with Dooms* tells the true story of a family raising an orphaned cheetah cub named Dooms in Kenya . The 2005 film *Duma* was loosely based on this book .

The cheetah has often been featured in marketing and animation . In 1986 Frito @-@ Lay introduced the Chester Cheetah , an anthropomorphic cheetah , as the mascot for their Cheetos . The first release of Apple Inc . ' s Mac OS X , the Mac OS X 10 @.@ 0 , was code @-@ named " Cheetah " ; the subsequent releases have been named after big cats . The animated series *ThunderCats* had a character named " Cheetara " , an anthropomorphic cheetah , voiced by Lynne

Lipton . Comic book superheroine Wonder Woman 's chief adversary is Dr. Barbara Ann Minerva , alias The Cheetah .