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Abstract: Encyclopaedia text on cheetahs including information on distribution. The ecology of the species is illustrated with examples from the Serengeti plains.

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# CHEETAH

*Acinonyx jubatus* V

Sole member of genus.

Family: Felidae.

Distribution: Africa, S Asia, Middle East.



Habitat: most habitats in Africa except rain forest.

Size: head-body length 112-135cm (44-53in); tail length 66-84cm (26-33in); weight 39-65kg (86-143lb). Males usually slightly larger than females.



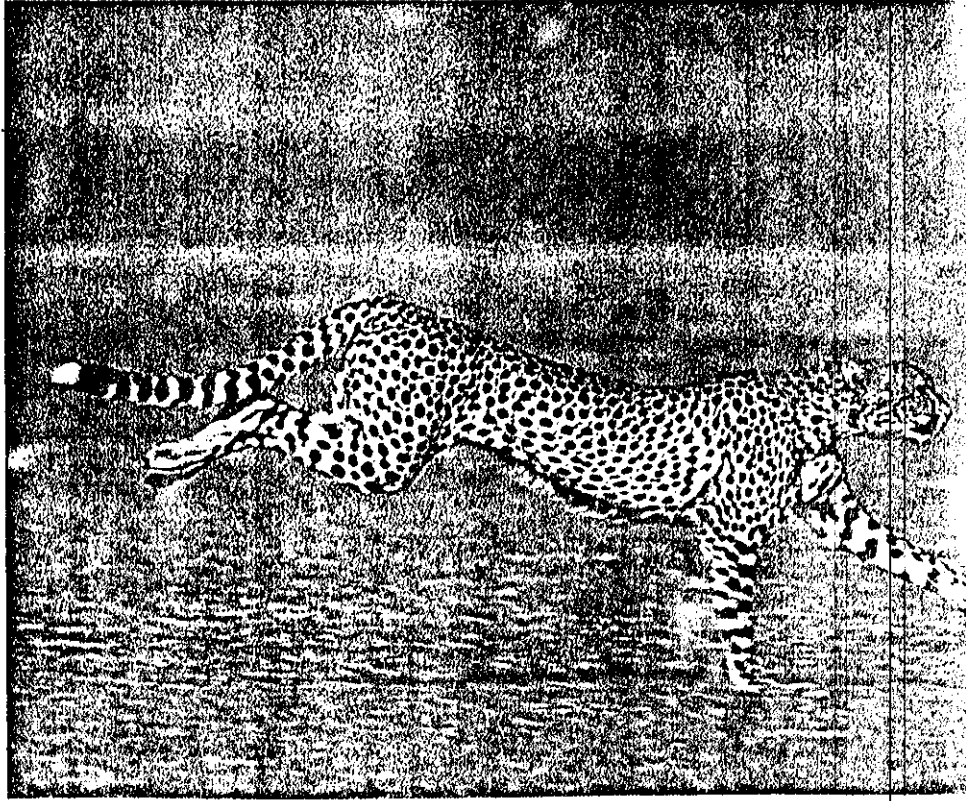
Coat: tawny with small round black spots. Face marked by conspicuous "tear stripes" running from the corner of the eyes down sides of nose; cubs under three months old blackish, with a mantle of long blue-gray hair on top of the back and neck.

Gestation: 91-95 days.

Longevity: up to 12 years (17 in captivity).

Subspecies: 2 **African cheetah** (*A. j. jubatus*) and **Asiatic cheetah** E (*A. j. venaticus*). (**King cheetah**, a mutant form occurring only in S Africa, was once incorrectly described as a separate species, *Acinonyx rex*. Coat: spots along spine joined together in stripes, with small splotches on the body.)

E Endangered. V Vulnerable.



**T**HE fastest animal on land, the cheetah can sprint at up to 96 kilometers an hour (60mph) for a brief part of its chase. It still occurs over most of Africa, but very few now remain in southern Asia (where it probably evolved) and the Middle East.

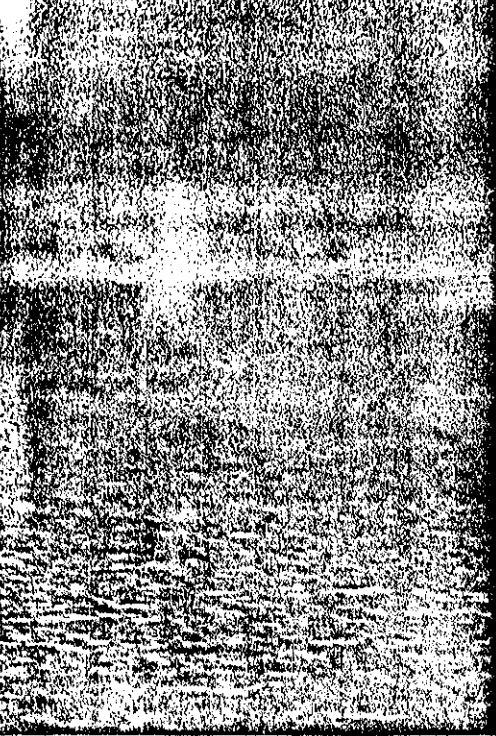
The cheetah is easily distinguished from other cats, not only by its distinctive markings, but also by its loose and rangy build, small head, high-set eyes and small, rather flattened ears. The usual prey consists of gazelles, impala, wildebeest calves and other hoofed mammals up to 40kg (88lb) in weight. In some areas, hares are also an important food. The prey is hunted by stalking from a few seconds up to several

hours, until the prey is within 30m (100ft), before chasing. About half the chases are successful and an average chase is 170m (550ft) and lasts 20 seconds, rarely exceeding one minute. The prey is suffocated by biting the underside of the throat. On average, an adult eats 2.8kg (6.2lb) of meat per day. Drinking is seldom more frequent than once every four days and sometimes as infrequent as once in 10 days.

Sexual maturity occurs at 20-23 months old. Courting females and males probably already know each other because their home ranges overlap. Females in heat squirt urine on bushes, tree trunks and rocks to attract males which, when they discover the scent, hurriedly follow the trail, calling with yelps. The receptive female responds to the yelps by approaching the male. Mating sometimes occurs immediately, with copulation lasting less than one minute. They stay together for a day or two and mate several times. The males have a hierarchy and apparently it is usually only the dominant male that mates, while his companions wait nearby.

There is no regular breeding season and cubs are born in all months. The litter size is 1-8, but the average is three. Newborn cubs weigh 250-300g (8-11oz) and are up to 30cm (12in) long from the nose to the root of the tail. Their eyes open at 2-11 days old. Cubs remain hidden under bushes or in dense grass, but their mother carries them to a new hiding place every few days. By 5-6 weeks old, cubs are able to follow their mother and begin eating from the prey their mother catches. Males do not help to raise





## The Cheetah's Niche

Where cheetahs are found so also are other large carnivores such as lions, leopards, hyenas, wild dogs and jackals—and other meat-eaters such as vultures. But if different species are to coexist in the same area they must exploit available resources in ways that minimize the likelihood of direct competition and open conflict. One way of achieving this is to evolve an anatomy that is highly specialized for a particular method of hunting.

A slender build and highly flexible spine enable the cheetah to make astonishingly long and rapid strides; and, unlike other cats, the cheetah's claws when retracted are not covered by a sheath but are left exposed to provide additional traction during rapid acceleration. However, with great sprinting prowess comes limited endurance and this means that the cheetah can only hunt effectively in open country where there is enough natural cover for stalking.

A sure method of killing prey is also important. The small upper canine teeth have correspondingly small roots bounding the sides of the nasal passages, permitting an increased air intake that enables the cheetah to maintain a relentless suffocating bite.

The cheetah usually hunts and eats later in the morning and earlier in the afternoon than other large carnivores, which tend to sleep in the heat of the day; its less-developed whiskers suggest less nocturnal activity than other cats.

Greater daytime activity, however, brings the cheetah into contention with vultures—soaring on daytime thermals. Vultures sometimes drive a cheetah away from its kill and their descent also attracts other carnivores who may then appropriate the cheetah's meal. The problem is minimized by the cheetah's stealth as a hunter and by its habit of dragging its prey to a hiding place before eating.

▲ A rate of acceleration comparable to that of a high-powered sports car enables the cheetah to outrun all other animals over short distances.



▲ A solitary hunter, the cheetah uses a stalk-and-rapid-chase technique. This female has spotted her quarry and is about to begin stalking.

► A strangling throat bite killed this Thomson's gazelle; the carcass is now dragged away to cover.

◀ Mantle of blue-gray hair indicates that these cubs, feeding with their mother, are under three months old.

the cubs. Weaning occurs at about three months of age. Fewer than one-third of the cubs, on average, survive to adulthood.

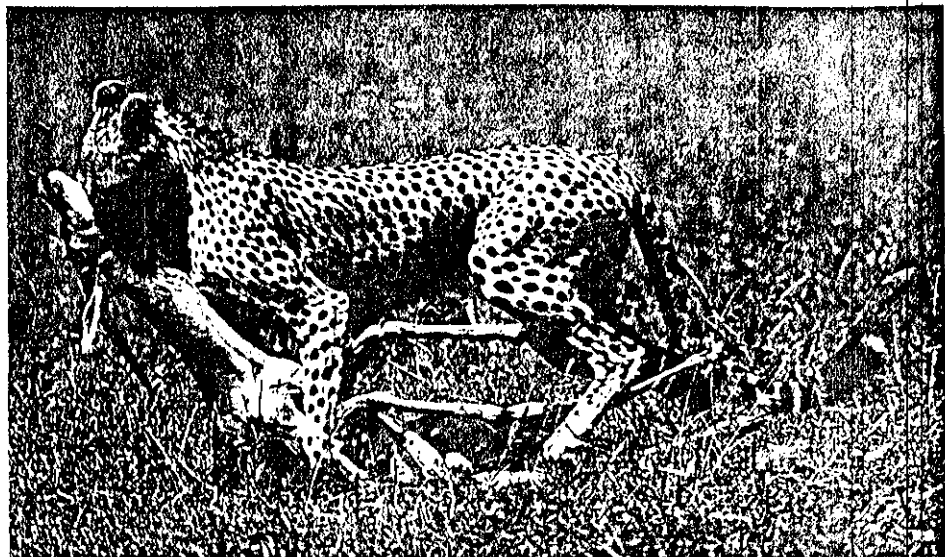
Adult females are solitary, except when they are raising cubs. They rarely associate with other adults, and when they do, it is likely to be for only a few hours following a chance encounter with a sister or when found by territorial males. Males are more gregarious than females and often live in permanent groups, which are sometimes composed of littermates.

In the 16th century, cheetahs were commonly kept by Arabs, Abyssinians and the Mogul emperors to hunt antelopes. More recently, cheetahs have been in demand for their fur, which is used for women's coats. In the wild, cheetahs are widely protected,

but so long as the trade in skins in many European countries and Japan remains legal, widespread poaching will continue to occur. An estimated 5,000 cheetah skins were traded annually in recent years.

A more substantial threat to the cheetah's survival is the loss of habitat, which deprives it of suitable prey, reduces its hunting success, causes more cubs to die of starvation and fall victim to predators, increases the proportion of kills stolen by other large carnivores, and causes conflict with man through increased attacks on domestic livestock. Captive breeding, although successful, is not a suitable alternative to preserving the natural habitat. The total surviving cheetah population in Africa is probably only about 25,000

GWF



# Cheetahs of the Serengeti

## Male-female differences in habitat exploitation

Spacing behavior among cheetahs shows how they exploit their habitat and prey. In areas such as the Serengeti in East Africa, where prey species are migratory, adult female cheetahs (with or without cubs) migrate annually over a home range of about 800sqkm (310sqmi). Each adult female travels her home range in an annual cycle and appears to use the same area year after year.

Cheetah litters separate from their mother when they are adult size, at 13-20 months old. The siblings usually remain together for several months longer. One by one the females, when 17-23 months old, leave their littermates.

Female cheetahs, although not territorial, avoid each other. Adult females are not aggressive to other females or to males, but if they see another cheetah nearby they usually walk farther away or hide. Their mutual avoidance means that non-related or distantly related females, as well as close relatives, have home ranges that overlap each other, but in which they rarely interact.

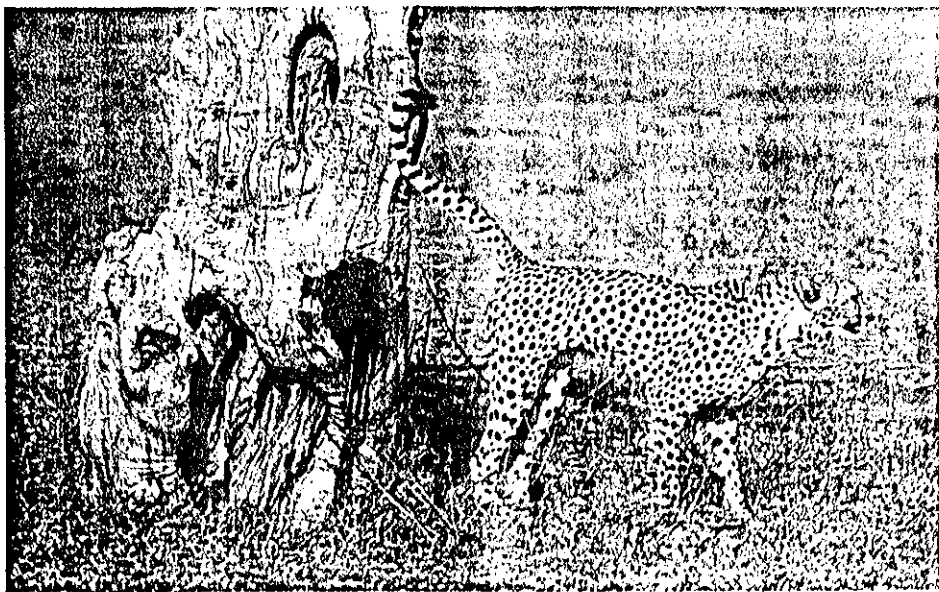
Young adult male cheetahs leave their mother's home range as a group. Apparently they are chased away by older and stronger territorial males. The young males disperse about 20km (12mi), and probably sometimes much farther, beyond their mother's home range. Adult male littermates often remain together for life and non-littermates sometimes join together in groups of 2-4.

Territorial males defend a well-defined area throughout which they regularly mark prominent trees, bushes and rocks with urine, feces and scratch marks. Territories of males in the Serengeti cover about 30sqkm



▲ A vigilant female sits aloft on a termite mound for a better view of her surroundings, while her cubs frolic nearby.

◀ Scent-marking its territory, a male cheetah sprays urine backward onto a conspicuous landmark, one of many similarly marked by the same animal in its territory.

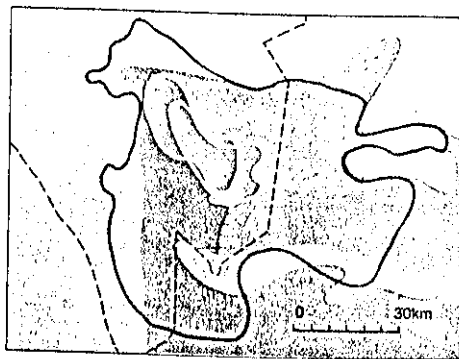
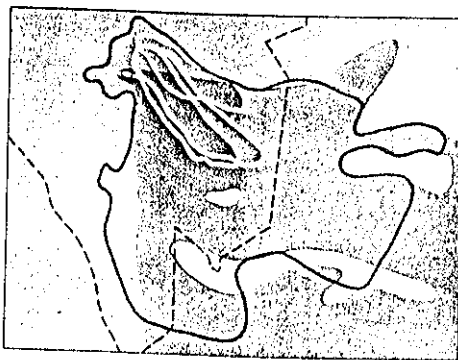
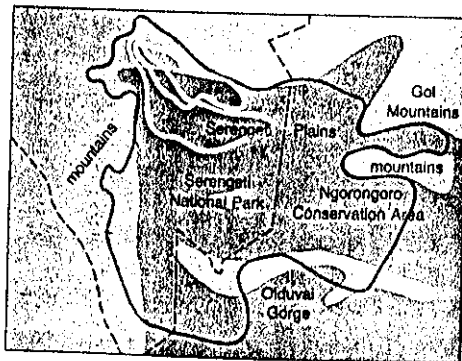


► In defense of their territory, males close in on one of three intruding males; this one was subsequently killed. It is now known that male cheetahs, often close relatives, sometimes work together to hold and defend a territory. Previously it was supposed that a territory was always held and defended by one dominant animal.

► **Home ranges** of members of three cheetah families observed on the Serengeti Plains, Tanzania, over the same period. Home ranges of other families overlapped these, too. The home ranges of two female cheetah littermates partly overlap each other and the ranges (not shown) of their mother, other females, territorial males and nomadic males. The home ranges of these sisters are large because they follow the migratory prey. Each home range shown represents the limit of movement in a full year; for several weeks, the cheetah remains in one locality within her range, making zig-zag and circular movements in search of prey. When hunting becomes poor, she moves on a few kilometers to a new locality.

**CENTER** In this typical cheetah family two young adult daughters (white) remain near and overlap their mother's home range (blue), while the young adult males (dotted yellow line) probably left because of aggression by territorial males in their mother's area, and they remain nomadic until they are able to defend a territory. About half the males remain in groups, whereas females are always solitary. Some male groups consist of littermates, some consist of males who were born to different mothers and some groups are a mixture of both. Male group size is 2-4.

**RIGHT** The home ranges of this mother (blue) and daughter (white) are entirely in the grasslands. Cover is, however, available in drainages with tall dense herbs and in rocky outcrops with bushes. In this case the two sons (dotted yellow line) emigrated more than 18km (11mi) from their mother's home range, ousted two territorial males from a woodland territory and established themselves there.



(12sqmi). Territorial males do not migrate 50-80km (30-50mi) to follow the prey, as the females do, but when there is no food or water within the territory they temporarily leave to feed and drink nearby. Lone males and groups of males are known to hold their territories for at least four years, but eventually they are ousted or killed by stronger males, either another lone male, or a group of males in coalition.

The males' tendency to live in small groups, as well as to hunt and eat together, is most probably due to an increased success in establishing and defending a territory compared with the chance they would have as solitary males. The males hold territories in places of moderate vegetative cover, such as woodlands and bushed drainages (see movements of emigrating males, LEFT).

Not all male cheetahs are territorial; some males seem to be nomadic. These nomads frequently encounter territorial males, who respond aggressively to them. One fight observed between a group of three territorial males and a group of three intruding males began when the territorial males chased and caught one of the intruders. All three territorial males fought with the intruder, biting him repeatedly all over his body and pulling out mouthfuls of fur. Eventually one of the territorial males inflicted a suffocating bite on the underside of the neck, the same bite that is used in killing prey.

Immediately after killing the first intruder, the territorial males walked towards the other two intruders, who were watching from about 275m (300yd) away. They fought briefly, then one territorial male chased an intruder at least 1km (1,100yd). Soon after, all three fought with the remaining intruder, but eventually left him alone. The result of this territorial encounter was one intruder lying dead, one injured and one chased away. The defenders were unharmed except for one bloody lip.

The social system of male territoriality in itself restricts the density of cheetahs. When the cheetah population increases, more of the available habitat is claimed by territorial males, leading to increased conflict and more deaths. Females, too, are affected through increased harassment from the sexually motivated males. Sometimes, territorial males intent on mating virtually hold a mother cheetah captive for a day or two, which prevents her from tending her cubs. This probably leads to a greater number of cub deaths, by making cubs more conspicuous in their behavior and therefore vulnerable to predators, and by reducing the mother's ability to feed them.

