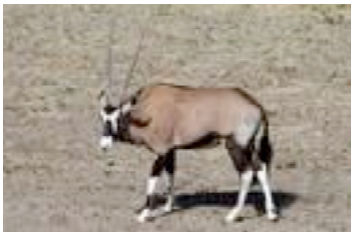
Mammals at the KMP – a Guide

This guide is intended for visitors to the Kalahari Meerkat Project who wish to have some more background about mammals other than meerkats that live on the project's land. The content is derived from various online sources cited in each section. It may be that they do not represent the latest findings on the species' biology or ecology, but will give a fairly good overview over the species.

Guide books are available at both farm houses, on request. Please do not hesitate to ask the researchers if you wish to learn more about a certain species, especially if it is researched at the project (e.g. slender mongooses).

1. Gemsbok (Oryx gazella)



Geographic Range: The range of gemsbok, Oryx gazella, mostly consists of southern east Africa, though formerly the range included South Africa. Gemsbok have been introduced into Mexico, as well as the southwestern United States.

Habitat: Gemsbok are found at elevations from 900 to 1,200 meters, in wooded grasslands as well as wetter grasslands. They can survive in areas of low productivity. Gemsbok prefer stony plains with at least limited water access, but can subsist in areas of dunes, rocky mountainous areas, and arid habitats with little seasonal water. Gemsbok also frequent open areas more than areas with increased tree density.

Physical Description: Gemsbok are large bovids with very thick, muscular necks, covered in dense, inelastic skin. Oryx gazella is the largest of the Oryx species. Gemsbok measure 115 to 125 cm high at the shoulder, and have total body lengths between 180 and 195 cm. Females weigh from 180 to 225 kg, whereas males are slightly larger, weighing between 180 and 240 kg. The slightly curved, ringed horns range from 60 to 150 cm in length. The horns of females are often shorter and more slender than those of males.
Black markings on the face extend down from the base of the horns to above the muzzle, and sweep back in stripes over the eyes and cheeks. Black continues down the neck and around the underbody, forming bands around all four legs. A stripe also runs up the spine, starting at the tip of the tail and ending at a short thick mane of black. There are black markings on the front of all four legs. The lower portion of the legs, muzzle, and underbelly are all white, whereas the body and neck are a gray or tan color. In instances of high productivity grazing, fat deposits under the skin become noticeable.
Inidividuals in northern populations have characteristic black tufts on the ears and are generally darker in color with thinner black markings than are individuals from southern populations.

Reproduction: Gemsbok are polygynous. The resident bull of the herd mates with receptive females. Solitary territorial males are known to attempt to herd mixed or nursery herds onto their territories, thereby securing exclusive mating access to the females. (Buchart, 2003; Estes, 1991)
There is not a specific breeding season for gemsbok, though young within a herd tend to be of similar ages, indicating a reproductive synchrony in females. Females become sexually mature at about 2 years of age, and can conceive almost immediately after an 8.5 month gestation. Gemsbok are classified as "hiders", meaning the young are not seen present with the mother, but are hidden in the general vicinity, with the mother returning to nurse the calf 2 to 3 times each day. The young weigh between 9 and 15 kg at birth. At birth, calves are entirely brown in color. They

develop the characteristic markings at about 3.5 months. At this point, the young are weaned. The males disperse and females join the maternal herd about a month after weaning.
Like most ungulates, pregnant gemsbok isolate themselves from the herd before calving. The single neonate is kept concealed, usually within sight of the mother. This hiding behavior continues up to six weeks of age, ending with reconciliation with the herd.
Males are not reported to participate directly in parental care, so the feeding, sheltering, protection, and grooming of the young are all accomplished by the mother. As is the case with most bovids, the young are able to stand shortly after birth, and can move around with the mother as needed.

Lifespan/Longevity: The average life span is approximately 18 years in the wild, and 20 in captivity.

Behavior: Gemsbok are typically gregarious and nomadic in nature, forming groups that can range from about 50 individuals to 200 in times of rain or migration, but the average is about 14. In larger groups, the sex ratio is typically female-biased, but the herd remains mixed. In smaller groups, however, composition can consist of all females and young (nursery herds), females with one male, or all males (bachelor herds).
The sociality of males and females differs. A large proportion of males remain solitary and defend a territory. This may be due to differences in activity budget optimization. Single sex groups are more optimal for grazing. However, smaller herd sizes limit protection from predators. Also, increasing distance from the opposite sex limits reproduction.
Within groups, a distinct hierarchy is in place. The dominant male is at the top, followed by the dominant female. In large groups, there may be a second-ranked male, called a beta male. Herd leaders are typically identifiable by their position in the herd. The dominant male typically brings up the rear and retrieves stragglers. The dominant lead female typically takes the foremost position. The male will lead by aggressive displays, playing the role of main director of the movement of the animals. This hierarchy remains intact until a water scarcity, at which point the males take precedence over all females.
Aggressive displays are used by the males to establish the dominance hierarchy, and contact is usually minimal. Horns are used in both sidelong jabs and "fencing". As a result, distribution of animals in the herd is uniform, since gemsbok stand stand a horn's length from each other.
Herds are semi-closed to strangers, but not to adults older than one and a half years. Resident males will accept males into the group as well after little aggression.

Home Range: Territoriality and ranging behavior are greatly influenced by access to water in low rainfall areas (50 to 250mm). Home range is of loose construct due to the nomadic nature of the animals, resulting from patchy resource availability. Solitary males have been shown to defend a territory.

Communication and Perception: Communication is particularly evident through dominance displays and aggressive behaviors. However, more subtle communication is conveyed by scent glands in the hooves, as well as urine sampling (primarily used to determine fertility). The animals have excellent hearing and smell, accounting for the prominence of stripe displays and scent marking. Although not specifically reported for these animals, as mammals it is likely that they use some accoustic means of communication. Tactile communication is also likely to play a role in reproductive activities.

Food Habits: Although generally a grazer, O. gazella will revert to browsing during droughts or whenever grasses are not available. These animals will also dig up to a meter to find tubers and roots. These, supplemented with wild tsama melons and cucumbers, provide all the water needed to sustain gemsbok (approximately three liters per 100 kg daily). The dentition is highly adapted to cutting coarse desert grasses short, with high crowned molars and a wide incisor row. Desert dwellers can eat dry grass, but prefer green grasses. Activity at dawn and dusk allow for the consumption of the condensation present on the grasses. Plant

Predation: Top predators of African grasslands are threats to the gemsbok. These include lions, cheetahs, leopards, and spotted hyenas. Even hunting dogs will attack them. Humans occasionally hunt these animals. The primary response to predation is flight, despite impressive weaponry. The young are typically targeted, since attacking the adults involves a risk of puncture wounds. However, it is debatable whether or not fatal stab wounds have ever been inflicted upon a predator, or whether predators show any avoidance of gemsbok in general. Predation may account for the high mortality rate in young. In the northern part of their range, 80% of spotted hyena kills are gemsbok calves.

Ecosystem Roles: Gemsbok exploit areas that few other animals can inhabit; they tend not to interact with many other species. Also, because they are nomadic, they tend not to overgraze areas.
In regions of the North American Southwest where gemsbok (and other exotic species) have been introduced, overgrazing has occurred, leading to the degradation of the areas populated by these herds.

Economic Importance for Humans: Negative: There are no negative economic impacts of this species on humans. Positive: Gemsbok are hunted for their thick skin, which is used for shield covers by local African peoples. The horns

are also used in making spears. This species is a common game ranch species since both females and males have horns, making trophies cheaper to produce.

Conservation Status: The current total population of gemsbok is around 275,000 individuals. Though the numbers do not indicate a threatened population, large declines in several areas have resulted from livestock overgrazing, human encroachment on land, climate change, and habitat destruction. Other gemsbok populations have been declining due to over hunting.

Other Comments: Gemsbok are thought to have evolved reduced sexual dimorphism to facilitate longer acceptance of juvenile male presence by the territorial males.
Gemsbok are able to increase their body temperature to 45 degrees from 35.7 degrees C in order to delay evaporative cooling.
The species has been recognized since 1758.
There are seven identified subspecies, but none of them have been formally recognized yet.

Source: Lundrigan, B., Biology of Mammals and S. Sanders. 2005. "Oryx gazella" (On-line), Animal Diversity Web. Accessed March 05, 2009 at http://animaldiversity.ummz.umich.edu/site/accounts/information/Oryx_gazella.html.

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2. Springbok – Antidorcas marsupialis

Geographic Range: Springbok range includes south and southwestern Africa, mainly in the countries of Namibia, Botswana, Angola and the Republic of South Africa.

Habitat: Springboks are mostly confined to game reserves and farms in treeless savanna associated with the edges of dry lake beds.

Physical Description: The springbok is a strikingly marked, gazellelike antelope. It has a white face with dark stripes from the mouth to the eyes, a reddish-brown coat that turns to a darker shade and then to white on the lower third of its body, and a white backside. It stands approximately 80cm high at the shoulders and is characterized by a fold of skin that runs from the midback to the rump. This fold can be opened in times of excitement to display a crest of white hair. Both sexes also have black, curved, lyre-shaped horns. Larger males can have horns 36-48cm in length.

Reproduction: The springbok generally mates during the dry season and lactates during the hot, wet season when resources are most abundant. Birth takes place in Oct-Nov, the start of the wet season. Gestation is approximately 4-6 months and females generally reproduce every 2 years, starting between the ages of 1 and 2. Weaning usually occurs from 6 months to 1 year. The parental contribution is mainly by the mother, as springboks tend to live in herds of females and their offspring along with very few dominant males. Life expectancy of an average springbok is 7-9 years.

Behavior: During mating season, most males wander together in search of mates, while females live in herds with their offspring and very few dominant males. The wandering males are of lower status for a variety of reasons. Some are lower ranking due to being young or very old. Others have lost out in competition with dominant males for estrus females. When frightened or excited, a springbok makes a series of stiff-legged vertical leaps up to 3.5m high. This behavior is known as pronking and is performed with the head down, the hooves bunched, and the back arched. The leaps are said to distract predators, such as lions and cheetahs.
Springboks used to travel/live in mega-herds, known as "treks," but because springboks are now mostly confined to private farms and game reserves, treks are few and are limited to remote areas of Angola and Botswana.

Food Habits: The springbok is an intermediate browser, using both grass and browse. The shift from one food source to the other takes place seasonally. It is largely due to the need for water in the hot, dry season when the natural water supplies are not constant, during which time flowers are eaten. These flowers have double the mean water content of the grass that is consumed in times of water availability (during the hot, wet season). Utilizing food resources in this way allows springboks to remain independent of a constant water supply, whether it be from man-made watering holes, natural water holes, or other water supplies. This is a great advantage in a climate where droughts are common.

Economic Importance for Humans: Negative: Previously, when the springbok traveled in large numbers, they caused extensive crop damage to the Dutch farms. Positive: The springbok is the Republic of South Africa's sporting

emblem. It is respected and honored in that country, which has lead to a moderate increase in protection. Only with special permission or a special license can hunters pursue the springbok. Springbok are popular attractions for tourists at game reserves and private farms. Previously, when hunting without a license for springbok was legal, the meat of springboks provided an abundant supply of protein to a growing population in southern Africa.

Conservation Status: Springbok once traveled by the hundreds and even millions. Springbok were hunted by the Dutch farmers whose crops were ruined by "treks" of springbok travelling in search of food and water. Springbok are now being introduced in game reserves and private farms in an effort to preserve the species.

Source: Barnard, J. 1999. "Antidorcas marsupialis" (On-line), Animal Diversity Web. Accessed March 05, 2009 at http://animaldiversity.ummz.umich.edu/site/accounts/information/Antidorcas_marsupialis.html.

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3. (Red) Hartebeest - Alcelaphus buselaphus

Geographic Range: The hartebeest, Alcelaphus buselaphus, was originally found in grasslands throughout the African continent. It ranged from Morroco to northeastern Tanzania and, south of the Congo, it ranged from southern Angola to South Africa. Its range has been drastically reduced, however, due to hunting by humans, habitat destruction and foraging competition with domestic cattle. Now the hartebeest is found only in parts of Botswana, Namibia, Ethiopia, Tanzania, and Kenya.

Habitat: A. buselaphus inhabits the savannahs and grasslands of Africa. It is tolerant of high grasses and may be found in woodland or scrubs areas more than other alcelaphines.

Physical Description: The hartebeest is a large ungulate ranging from 1.5 m to 2.45 m in length. Its tail is 300 to 700 mm and shoulder height is 1.1 to 1.5 m. It is characterized by a steeply sloping back, long legs, large glands below the eyes, a tufted tail, and a long, narrow rostrum. The body hair is about 25mm long and is quite fine in texture. It has paler patches of hair on most of its rump and chest and on parts of its face. It has been suggested that the pale hair on the rump may be presented in attracting mates or to ward off aggressors. There are several subspecies which are distinguished from each other by coat color, which varies from pale brown to brownish gray, and by horn shape. All subspecies have 2 horns, in both sexes, that rise from a single pedicel and are 450 to 700mm in length. Sexual maturity may occur as early as 12 months, but members of this species do not reach their maximum weight until 4 years of age (Kingdon 1989). The hartebeest has a lifespan of 11 to 20 years.

Reproduction: Breeding in A. buselaphus takes place in territories that are defended by single males, preferably in open areas on plateaus or ridges. Territorial males sniff the female's genitalia. If she is estrous, the male follows her around with his ears depressed. He will occasionally position himself laterally to the female and attempt to block her way. Once the female stands still, she allows the male to mount her. Copulation is brief but may be repeated several times. Copulation is always interrupted if another male intrudes. The intruder is usually chased away. Reproduction varies seasonally depending on the population or subspecies of Hartebeest involved. Nowak (1997) reports that there are birth peaks from October to November in South Africa, December to February in Ethiopia, and February to March in Nairobi National Park. Gestation is 214-242 days and usually a single calf is born. Females isolate themselves in scrub areas to give birth. This is markedly different than the birthing habits of their close relative the wildebeest, which give birth in groups on the open plains. Female A. buselaphus then leave their young hidden in the scrub for a few weeks, coming back only to suckle. Young are weaned at four months.

Behavior: Hartebeests are social animals living in organized herds of up to 300 animals. They have been known to form aggregations of up to 10,000 animals. Within a herd, there four types of animals: territorial adult males, nonterritorial adult males, groups of young males, and groups of females and young. Females within a herd form groups of 5-12 animals with up to four generations of offspring in their group. They do not form secure groups with other adult females. It is thought that there are strong dominance relationships between females and that these groups define the social organization for the entire herd. Females have been observed to occasionally fight one another. Male offspring may remain with their mother for up to three years, but usually leave their mothers at about 20 months to join groups of other young males. At 3 to 4 years old, males may begin to attempt to take over a territory and the females within it. Once a territory has been established, the male will defend it and does not usually leave. Males are aggressive and if challenged will fight. A series of head movements and stances, and depositing droppings on established dung piles, precedes any contact. If that does not suffice, males bend forward and leap with their horns lowered. Injuries and fatalities do occur but are quite rare. Females and young may move in and out of the territories freely, following the best grazing. Males lose their territory after 7 to 8 years.

Hartebeests are usually conspicuous and sedentary. They may have a sentinel to warn the herd of predators. Although appearing slightly awkward, they may reach speeds of 70 to 80 kph. Schaller notes that they are very alert and cautious in comparison to other plains ungulates. Hartebeests rely primarily on their vision to spot predators, and they snort to warn each other of approaching danger. They gallup away in single file, after they see one of the members of the herd bolt. They have been observed tacking, that is making a sharp 90 degree turn after taking only 1-2 strides in a given.
A. buselaphus does not migrate, although during extreme conditions, such as a drought, a population may significantly change location.

Food Habits: Hartebeests are grazers that feed almost entirely on grass. Greater than 95% of their food in the wet season (October to May) is grass and grass never comprises any less than 80% of their diet. Schuette determined that A. buselaphus in Burkina Faso, West Africa eats primarily Andropogon grass during the rainy season. Between seasons their diet is primarily Culms grass. It eats a small percentage of Hyparrhenia (a grass) and legumes throughout the year. Jasminium kerstingii is also part of its diet at the beginning of the rainy season. The hartebeest is exceptionally tolerant of poor-quality food. Schuette argues that the long rostrum in A. bucelaphus enhances mastication ability and allows it to crop grasses better than other bovids. Thus, when availibility of succulent grasses is limited, as in the dry season, the hartebeest is able to eat the tougher senescent grasses. It has been substantiated elsewhere that A. buselaphus is able to digest a higher percentage of its food than other bovids.

Economic Importance for Humans: Negative: The hartebeest competes with cattle for grazing land. Although their meat it desirable, hartebeests exhibit a complex social system and are hard to maintain in a closed environment. For this reason, they are not good candidates for domestication. They are rare at zoos because they are dangerous to people and each other if closely confined. Positive: The hartebeest is a prized game animal both for its meat, which is recognized as having excellent flavor, and as a trophy. Presently, hunting travel packages that include seeking hartebeests are easy to come by on the internet. Since it is fairly sedentary and easily visible, the hartebeest is fairly easy to hunt.

Conservation Status: Swayne's hartebeest (A. buselaphus swaynei) and the Tora hartebeest (A. buselaphus tora) are endangered because of small and continually declining populations. Four other subspecies are classified as lower risk by the IUCN, but will be rated threatened or endangered if ongoing conservation efforts are ended. The reasons for population declines are unknown but have been attributed to the expansion of cattle into hartebeest feeding territories and, to a lesser extent, habitat destruction and hunting. Kindon (1989) remarks that "the hartebeest has probably suffered the greatest contraction in range of all African ruminants." Once prolific in Africa it now has very limited territories.

Other Comments: There is evidence that the hartebeest once was domesticated by the ancient Egyptians and used as a sacrificial animal.

Source: Batty, K. 2002. "Alcelaphus buselaphus" (On-line), Animal Diversity Web. Accessed March 05, 2009 at http://animaldiversity.ummz.umich.edu/site/accounts/information/Alcelaphus_buselaphus.html.

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4. Blue wildebeest – Connochaetus taurinus

Geographic Range: The range of the wildebeest includes the plains and acacia savannas of eastern Africa. This range extends from the equator to the tip of South Africa.

Habitat: Wildebeests thrive in areas that are neither too wet nor too dry. They can be found in places that vary from overgrazed areas with dense bush to open woodland floodplains. Wildebeests prefer the bushlands and grasslands of the southern savanna.

Physical Description: Blue wildebeest are large African bovids with robust muzzles and cow-like horns. The horns are long without ridges and the males' horns are thicker with the appearance of a boss. Wildebeests have short hair covering their bodies, and their color ranges from slate gray to dark brown, with males darker than females. There are black vertical stripes of longer hair on their backs. Wildebeests also have black faces, manes, and tails. The different subspecies of wildebeest vary in color. Connochaetes t. johnstoni is the largest subspecies and the western white-bearded wildebeest (C.t. mearnsi) is the smallest. Connochaetes t. mearnsi is the darkest group of wildbeest and C.t.

albojubatus is the palest. Connochaetes t. taurinus individuals are slate gray in color, the origin of the common name "blue" wildebeest.

Reproduction: Unlike most African mammals, the wildebeest has a three week period in which most of the young are born. The conception rate among wildebeests is very high because their sexual peak is associated with good climate conditions. The sexual peak occurs at the end of the rains and the animals are in good condition. Wildebeest, if properly nourished, can begin to conceive at 16 months; they commonly first breed, however, at 28 months. The gestation period is eight to eight and a half months. Most of the calves are born at the beginning or a month before the peak of the rain season. Labor lasts one and a half hours at the most. Once a calf is delivered, the mother begins to lick it. After six minutes, the calf is able to stand on its feet and attempts to be nursed. It is very important that the mother stays close to the calf for two days in order to assure that imprintation occurs, which begins with the first suckling. Mothers initially identify their calf by scent alone. Young have a better chance for survival in a large group than in a small group. At eight months, the young leave their mothers and form peer groups.

Behavior: The wildebeest is a territorial, gregarious animal. Small herds are made up of females and their calves. These herds tend to occupy a small amount of space, and different herds overlap. Males leave these herds after a year and enter into a bachelor group. When males reach the age of four or five, they leave the bachelor groups and become territorial. The makeup of groups with cows remains constant and if a new cow tries to enter, it is harassed. When there are many herds grouped close together, it is common for cows to transfer from one group to another. At the end of the rains, cows emerge in their own groups but as the dry season goes on, the separate groups lose their identities. The number of times a group moves and how many cows are in a group depends on the rainfall, the dry season pasture, and other environmental factors. One large migration of wildebeest is known as the Serengeti migration. During this migration, wildebeest move from the open plains to Lake Victoria in search of forage. On this journey, wildebeests swim across rivers and many wildebeests are killed. When the wildebeest travel across land, they walk with their heads bowed down, which is most likely related to the fact that the scent gland for wildebeest are in their hooves and they bow to follow the group.
The beginning of rut in wildebeests is associated with the full moon. Territorial bulls, however, are always ready to mate. Whenever they are approached by another wildebeest, they greet the stranger with a rocking canter movement. If the newcomer is a female, the bull tries to herd or mount her. There is considerably more calling, herding, and fighting among the wildebeests during periods of sexual activity. A male that is sexually excited tries to herd as many females as possible and does not eat or sleep as long as a female is in his territory. Every territorial bull that sees a female in heat will try to mount her. If a female stands still, copulations are repeated often, at a rate of over two a minute. A female may encounter several dozen males in a day if her group is moving. A female in full heat will always be found by the side of a male.

Food Habits: The wildebeest is a grazing animal. They need water almost daily. Wildebeests feed in the morning and afternoon. Wildebeests have been known to eat tree leaves if there is not any grass available.

Economic Importance for Humans: Negative: Even though wildebeests have helped farmers in the past, they are now considered more of a nuisance. Farmers claim that the competition with the cattle for food and the diseases that they spread to the cattle are quite devestating to their overall production. Positive: In the past, wildebeests were captured by local farmers and were herded with cattle. Those wildebeests that lactated were used to feed the calves in the herd so that the cattles' milk could be used for human consumption. Besides their usefulness on ranches, wildebeests are also prevalent at zoos throughout the world (Kingdon, 1989).

Conservation Status: unknown. (not endangered)

Source: Newell, T. 1999. "Connochaetes taurinus" (On-line), Animal Diversity Web. Accessed March 05, 2009 at http://animaldiversity.ummz.umich.edu/site/accounts/information/Connochaetes_taurinus.html.

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5. Eland – Taurotragus oryx

Geographic Range: Confined to Africa from Ethiopia and southern Zaire to South Africa.

Habitat: Elands live in both steppe and sparse forests. They are also found in semidesert areas and at elevations up to 14400 ft. During the heat of the day, they are often found in shaded areas.

Physical Description: Eland males are much larger than females, weighing 400-1000 kg

compared to 300-600 kg for females. Hides are a uniform fawn color with some vertical white striping on the upper parts. A dewlap, thought to be an adaptation for heat dissapation, hangs from the throat and neck. Heavy horns are twisted in a corkscrew fashion and grow up to 4 ft. long on males, 2.2 ft. long on females. A short mane occurs on the nape, and males have long hairs on the throat.

Reproduction: Dominant males mate with multiple females. In some areas, there are distinct breeding seasons--in Zambia, for example, young are born in July and August. Gestation lasts from 8.5-9 months and only single young are born. Male young weigh between 28-35 kg, while female young weight between 23-31 kg. Small calves lie in concealment rather than remaining with their mothers. Weaning occurs after 6 months, and sexual maturity occurs at about 3 years. Maximum lifespan is 25 years. Young often associate in groups of their peers.

Behavior: Herds usually number up to 25 individuals, although larger temporary aggregations of females and calves occur during the wet season. There may be more than one adult male in a herd, but there is a strict dominance hierarchy that controls access to breeding females. Home ranges of females, which make extensive movements during the wet season, are much than those of males, . Male territories occur primarily in wooded areas. Fighting between males is done with horns. Males feel out each others' horns, and then push with all their might.

Food Habits: The diet of elands consist of grasses, herbs, tree leaves, bushes, and succulent fruits. They generally forage in open areas. Water is consumed voraciously when available, but elands can abstain from drinking in dry seasons.

Economic Importance for Humans: Negative: None. Positive: Elands provide large amount of tender meat, as well as high-quality hides. There has been efforts to domesticate them for both their meat and their milk, which has much higher protein content and milkfat than the milk of cows. To date, only one of these domestication attempts has been successful.

Conservation Status: Eland populations have declined or have been extirpated in many parts of their range, but overall are still relatively common. Overhunting has been one cause of the declining numbers.

Other Comments: Natural enemies include lions and African hunting dogs. Although elands are massive, they are excellent jumpers and can clear heights of 1.5 meters.

Source: Fahey, B. 1999. "Taurotragus oryx" (On-line), Animal Diversity Web. Accessed March 05, 2009 at http://animaldiversity.ummz.umich.edu/site/accounts/information/Taurotragus_oryx.html

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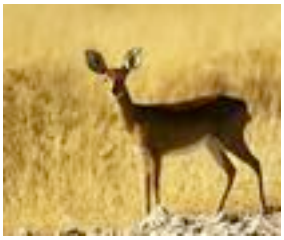
6. Steenbok (Steinbuck) – Raphicerus campestris



Geographic Range: The steinbuck is found in the southern and eastern savanna of Africa. There are two main populations of steinbuck, separated from one another by the miombo woodlands.

Habitat: Steinbucks prefer open areas, but they require cover nearby. Steinbucks are never found in wooded or broken areas. They are beginning to be found in slightly wooded areas and areas where the environment is more open due to cultivation and road building.

Physical Description: The steinbuck is a small antelope. The length of its head and body ranges from 70 - 95 cm. The shoulder height varies from 45 - 60 cm. The tail is very short, with total length ranging from 4 - 6 cm. The horns are only found on males; they range in height from 9- 19 cm and are vertical in orientation. The coloration of the steinbuck is reddish-fawn, with a white throat and belly. They also have large, white lined ears. The hooves are sharp and serve a variety of functions.

Reproduction: Steinbucks breed throughout the year, but calves are usually born in the summer. The interval between births ranges from five and a half to nine months. The gestation period ranges from 168 - 177 days. At birth, the young steinbucks weigh around one kilogram. Within five minutes of birth, steinbucks begin to feed from their mothers. Steinbucks begin to eat grass around two weeks after birth. For the first few weeks, young steinbucks remain hidden. Steinbucks are weaned in three months.

Behavior: Steinbucks are usually found singly or in pairs, and they are a territorial species. Sometimes, however, steinbucks occur in small grazing groups. The home range of a steinbuck is estimated to be around 4 - 5 hectacres.

Males maintain the same territory for a long period of time. Territories are confirmed by the chasing away of other steinbucks. Territories are also marked by dung piles. Steinbucks eat in the early morning and in the late afternoon. When a predator approaches, the steinbuck freezes. If the predator comes too close, the steinbuck flees.

Food Habits: The diet of the steinbuck ranges from grasses to roots and tubers of some plants. Steinbucks prefer the shoots of buchland trees and shrubs. They prefer foods that are rich and easily digestible. Steinbuck tend to eat more grasses in the early rainy season or after burns.

Economic Importance for Humans: Positive: In Africa, steinbucks have been hunted for sport and meat. They are captured by snaring or by hunting with dogs.

Conservation Status: No special status.

Other Comments: Steinbucks are mainly hunted by cheetahs, wild dogs, caracals, jackals, and hyaenas. Unlike some animals in Africa, steinbucks have probably benefited from human presence.

Source: Newell, T. 1999. "Raphicerus campestris" (On-line), Animal Diversity Web. Accessed March 05, 2009 at http://animaldiversity.ummz.umich.edu/site/accounts/information/Raphicerus_campestris.html

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7. Yellow mongoose (Cynictis penicillata)

Geographic Range: The yellow mongoose is endemic to and widely distributed throughout Southern Africa. Highly populated areas include Namibia, Botswana, the Orange Free State, northwestern Natal, western Transvaal, Zimbabwe, and throughout the Cape Providence (Taylor and Meester, 1993).

Habitat: The yellow mongoose prefers semi-arid, open habitats (grasslands, scrub, and semi-desert scrub) and is almost entirely absent from desert, forest, and montane habitats (Taylor and Meester, 1993).

Physical Description: As many as 12 subspecies of yellow mongoose have been recognized in the past, distinguished predominantly by color, size, and length of hair and tail (Skinner and Smithers 1990). There is a zone of rapid geographic change which separates individuals from northern Nambia, Botswana and northern Transvaal from individuals in the south. Individuals between these two areas may be intermediate in traits. This creates clinal variation, making the distinction between subspecies impossible (Skinner and Smithers 1990). Variation may be genetic or may be due to the amount and intensity of sunlight at a given location (Taylor et al. 1990). Southern specimens (South Africa, Namibia) are usually larger with tawny-yellowish pelage whereas northern individuals (Botswana) are smaller with a grizzled, greyish-yellow coat. This grizzled appearance results from contrasting, alternating black (eumelanin) and pale yellow (phaeomelanin) bands in individual guard hairs (Taylor and Meester 1993). Seasonal variation in pelage color has been seen in southern specimens, but not so much in specimens from the north (Taylor et al. 1990). Southern specimens of the yellow mongoose have long, white-tipped tails and long-haired coats whereas northern individuals have shorter hair and possess a shorter tail without a white tip (Skinner and Smithers 1990). In all yellow mongoose specimens, the longest hair is found in the tail. This bushy tail, and relatively large, rounded ears gives the yellow mongoose a fox-like appearance.
Five digits are present on the forefeet and four on the hindfeet of the yellow mongoose. The first digit in the forefoot is raised above the rest of the digits and it does not make an impression in the spoor (Taylor and Meester 1993). The palm is basically naked in the forefeet and hairy in the hindfeet. Claws are longer in the forefeet than the hindfeet.
The yellow mongoose is smaller than most other mongooses. Within the same geographic region, there is no body size differences between males and females.
The yellow mongoose possesses a glandular anal sac that contains a milky fluid with a sour, cheesy smell (Taylor and Meester 1993).

Reproduction: Many individuals of the yellow mongoose begin mating in the first week of July. Copulation lasts for about 30-60 seconds, during which the male makes a soft purring sound while the female bites or licks the male's ears and neck continuously (Taylor and Meester 1990). The gestation period varies between 42 and 57 days. The birth season is estimated to occur from August to November, possibly extending into January. The reproductive season might be more prolonged in northern specimens of the yellow mongoose (Taylor and Meester 1993). Young

are born in clean chambers in the burrows which are devoid of bedding material. The mean litter size is 1.8 young per litter. Females have three pairs of abdominal mammae (Skinner and Smithers 1990).
Weaning takes place at about 10 weeks of age. It is not known if the male participates in the feeding and caring of the young. It is believed that males and females are not capable of reproducing until at least one year of age (Taylor and Meester 1993).

Behavior: The yellow mongoose is primarily diurnal, spending most of its day foraging, although it is sometimes active at night. These mongooses are known to rest or sunbathe outside of their dens before beginning to feed and travel (Cavallini 1993a). Time of the start of activity is positively correlated to sunrise time, mist hours, and weather conditions. Time of activity cessation is positively correlated to sunset time and maximum temperature, and negatively correlated to windspeed (Cavallini 1993a). The yellow mongoose occupies permanent burrows which it often cohabits with ground squirrels and suricates although it is capable of making very complex burrows (Taylor and Meester 1993). Burrows are a thermoregulatory advantage since the microenvironment is buffered against extremes (Skinner and Smithers 1990).
The yellow mongoose is a social species. Colonies are usually centered around a family group consisting of a male and a female, their youngest offspring, and other individuals consisting of subadults, very old adults, or individuals with some sort of association to the group (Taylor and Meester 1993).
Male home ranges often overlap and are larger than those of females (Cavallini 1993b). This suggests that the social units of the yellow mongoose may be more complex than a simple family unit. Females from different dens have contiguous but nonoverlapping ranges suggesting some territorality may exist (Cavallini 1993b).
The yellow mongoose is a quiet animal though it is known to scream (during fights), growl (if threatened), bark, and purr. It is believed that the tail may be used in communication (Taylor and Meester 1993).

Food Habits: The yellow mongoose is primarily insectivorous, although it opportunistically feeds on vertebrate prey. Carrion has also been utilized as a food source (Skinner and Smithers 1990). Stomach analyses of mongooses from several yellow mongoose populations have found many different organisms including beetles (adult and larval forms), termites, locusts, caterpillars, ants, mice, birds, grass, seeds, reptiles, and amphibians (Taylor and Meester, 1993). The yellow mongoose has also been known to take hen's eggs and free-ranging chickens.

Economic Importance for Humans: Negative: Yellow mongooses are regarded as the most important rabies vectors on the central plateau of South Africa (Penzhorn and Chaparro 1994). The geographical incidence of this disease corresponds closely with the distribution of the species. The prevalence of rabies in the yellow mongoose is attributed to their abundance in certain areas and their burrow-dwelling habit. Living in burrows brings individuals into close proximity, thereby increasing the chances of transmitting the virus. There is a high correlation between the seasonal incidence of rabies and the breeding cycle of the yellow mongoose (Taylor and Meester 1993). Many farmers feel that the yellow mongoose is a danger and a pest to themselves and their livestock. Many methods of extermination have been attempted to decrease the number of possible carriers. These methods included sealing and gassing burrows with cyanide gas, phospine, carbon monoxide, or carbon dioxide followed by setting traps for possible survivors (Taylor and Meester 1993). Positive: May help control harmful species of insects and rodents.

Conservation Status: least concern.

Source: Light, J. 1999. "Cynictis penicillata" (On-line), Animal Diversity Web. Accessed March 07, 2009 at http://animaldiversity.ummz.umich.edu/site/accounts/information/Cynictis_penicillata.html.

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8. Slender Mongoose (Galerella sanguinea)

Geographic Range: Galerella sanguinea has as many as 40 subspecies, which are distributed throughout savanna and semiarid regions of subsaharan Africa. They are not known to inhabit extreme desert or the densely forested parts of equatorial Africa.

Habitat: Slender mongooses are not picky when it comes to habitat, inhabiting a wide variety of biomes within their broad geographic range. They seem to avoid dense tropical forest, but will live anywhere from "arid hills on which there is only a little stunted vegetation, or thick scrub or low forest, or level sandy plains whether comparatively open, bush-covered or lightly wooded."

Physical Description: As its common name, the "slender mongoose", implies, Galerella sanguinea is one of the smallest mongooses. Like other mongooses, it has short legs and a long, slim body. On average, males are 10-20%

larger than females. They are usually reddish, yellowish or gray in color, more rarely dark brown, often speckled, and have a black or red tip of the tail. Ventral pelage ranges from pale yellowish-brown to white. There is considerable variability in coloration among subspecies, usually correlated with soil color for camouflage. They have finer, silkier fur than other African herpestids.
The dental formula for G. sanguinea is 3/3, 1/1, 4/3, 2/2 = 38 (most closely related species have 4 lower premolars) (Taylor, 1975). The first upper premolar is small and occasionally absent; the carnassials are robust. It has five toes on both fore and hind feet.

Reproduction: A dominant male's range generally includes the range of several females. Scent cues inform him when a female is in estrus, and a brief courtship occurs. In Galerella sanguinea, the male takes no part in the raising of the young.
Timing of pregnancy varies depending on the location and the subspecies, but reproductive activity seems to be concentrated in the period from October to April. Gestation period is believed to be 60-70 days. 2 young are usually born per pregnancy.
G. sanguinea are believed to reach sexual maturity between 1 and 2 years of age, and may live to be 10 years old.

Behavior: G. sanguinea is is quick and agile, and more arboreal than other mongooses. Its skill in climbing trees has been compared to a squirrel's, and it can hunt birds in trees. Therefore, according to Macdonald (1984), "Birds often mob and divebomb this species while ignoring others which pose less of a threat." Like other well-adapted arboreal animals, and unlike most mongooses, it climbs down trees headfirst.
They are primarily diurnal, but will hunt at night when there is a moon and the weather is warm. They den during the warmest part of the day. Members of G. sanguinea usually share their ranges with members of several related species. They are able to reduce competition with these by being diurnal, as most of their viverrid and herpestid relatives are nocturnal.
For shelter, G. sanguinea will make use of whatever is available: hollow trees or logs, holes among tree roots, crevices between rocks, and abandoned burrows.
Galerella sanguinea is commonly observed singly or in pairs, they are less social than some other mongoose species. Mothers and young form the only stable groups. They do not appear to be strongly territorial, but they do maintain more-or-less fixed home ranges. The ranges of adult males overlap, and a dominance hierarchy dictates which among them will mate with the local females, whose ranges are smaller. Home ranges may be as small as 1 square km where food is abundant, but are much larger in arid regions.
Scent marking is an important means of communicating with conspecifics. Adults are generally silent, but young animals will make soft, repetitive vocalizations.
Their most important natural enemies are birds of prey, and they are very alert to large birds flying overhead. They will commonly stand on their hind legs, using their tails for balance, to get a better view of their surroundings. At the first sign of danger they will usually freeze, and then dive for cover if threatened. When excited, their hair will stand erect, making them appear much larger.

Food Habits: G. sanguinea are opportunistic feeders. Insects make up the largest portion of the diet, supplemented by lizards, rodents, snakes, birds, amphibians, and fruit. (Smithers, 1983) They will eat carrion and eggs, which they crack open by propelling with the forefeet backward between the hind feet against a hard object. Like other mongooses, they are capable of killing large, venomous snakes, which they then eat, but these are not a significant portion of their diet.

Economic Importance for Humans: Negative: G. sanguinea is believed to be an important vector for rabies in East Africa. (Hinton, 1967) They will also kill domestic poultry when available. Mongooses have been the targets of extermination efforts for these reasons. Positive: They help to control insect and rodent pests. For this reason, other species of mongoose have been introduced around the world, but often do more harm than good.

Conservation Status: Lower Risk - Least Concern. As a single species, G. sanguinea is widespread and not endangered. Little reliable information exists about most of its subspecies. As G. sanguinea is subject to the same pressures as its African herpestid and viverrid relatives, some of which are endangered, it is likely that some subspecies are threatened with extinction.

Other Comments: Nothing approaching a consensus has emerged regarding the taxonomy of G. sanguinea and its subspecies. In most of the existing literature, it is referred to as Herpestes sanguineus, of the subfamily Herpestinae, part of the family Viverridae.

Source: Tislerics, A. 2000. "Galerella sanguinea" (On-line), Animal Diversity Web. Accessed March 07, 2009 at http://animaldiversity.ummz.umich.edu/site/accounts/information/Galerella_sanguinea.html.

9. African Wild Cat (Felis silvestris lybica)

Geographic Range: Wild cats are found throughout continental Europe, southwestern Asia, and the savannah regions of Africa. Felis silvestris is currently regarded as being made up of three, distinct groups (or subspecies): F. silvestris lybica, African wild cats, F. silvestris silvestris, European wild cats, and F. silvestris ornata, Asiatic wild cats. African wild cats are found in appropriate habitat throughout Africa and the Arabian Peninsula. European wild cats are found throughout Europe and western Russia, except for much of the British Isles (they are found in Scotland) and Scandinavian countries. Asiatic wildcats are found in the Middle East, southern Russia, western China, and western India. Some authorities recognize F. s. silvestris as a species distinct from both F. s. lybica and F. s. ornata. Domestic cats are thought to be descended from African wild cats and are found virtually worldwide in association humans.

Habitat: African wild cats occur throughout Africa in a wide variety of habitats. They are absent only from tropical rainforest. In desert regions they are restricted to mountainous areas and waterways. They occur up to >3000 m in montane areas.
Asiatic wild cats are found primarily in scrub desert, but can be found in a wide variety of habitats. They are absent from alpine and steppe grasslands and the northern limit of their distribution may be determined by snow depth. They can be found up to 3000 m in mountains and are usually found in areas near water sources.
European wild cats are found primarily in deciduous forests. They are also known from coniferous forests, but these may be marginal habitats. They are restricted in their northern distribution by snow depth and are typically found in areas of low human populations. European wild cats cannot persist in areas where snow depth in the winter is more than 20 cm deep for more than 100 days. They are known from human dominated landscapes where grazing is the dominant form of agriculture and, therefore, land use is not intensive. They are also known from scrublands, riparian habitats, and coastal areas.
Domestic cats occur in many habitat types because of their association with humans. They do best in areas where winters are not severely cold.

Physical Description: Wild cats range in weight from an average of 2.7 to 4 kg in females (F. s. silvestris average 3.5 kg, F. s. notatus average 2.7 kg, F. s. libyca average 4 kg) to an average of 4 to 5 kg in males (F. s. silvestris average 5 kg, F. s. notatus average 4 kg, F. s. libyca average 5 kg), although the weight of individual cats varies substantially throughout the year. Domestic cats are similar in size, though can become much heavier as a result of over-feeding. Body length is usually 500 to 750 mm and tail length ranges between 210 and 350 mm.
Wildcats are generally grey-brown with bushy tails and a well-defined pattern of black stripes over their entire body. Their fur is short and soft. Their coloration is similar to that of a tabby domestic cat and makes them difficult to see in their forested habitats. European wild cats (F. s. silvestris) have thick, winter fur, which sometimes makes them look larger than other wild cats. Asiatic wild cats (F. s. notatus) tend to have a background fur color that is more reddish or yellow, with an overlying pattern of dark spots that sometimes converges into stripes. African wild cats (F. s. libyca) are difficult to distinguish from domestic cats. Their fur is lighter and less dense than European wild cats, and their tails are thin and tapering. African wild cats (F. s. libyca) span a large geographic range, though, and coat coloration and density varies with latitude, ranging from sandy yellow to gray and brown, with darker stripes and spots. They have a characteristic reddish tint to the fur on the backs of their ears.
Domestic cats have been selected by humans to display a wide array of body shapes and colors, from hairless forms to long-haired Persians and tail-less Manx cats to very large Maine coon cats. Colors range from black through white, with mixtures of reds, yellows, and browns also occurring.
Wildcats have five toes on each of their forepaws, but only four toes on each back paw. Cats have claws that can be drawn back into sheaths when not in use, thus keeping them quite sharp.
Cat teeth are highly specialized for carnivory. Canines are excellent for stabbing and holding prey as the upper ones point almost straight down and the lower ones are curved. Molars are specialized for cutting. Since wildcats lack any teeth for crushing, they eat their food by slicing it. The tongue is covered with tiny, curved projections called papillae. These are used for grooming and licking meat off bones. Although cats have whiskers, they lack eyelashes. They have a full inner eyelid, or nictitating membrane, which protects the eye from damage and drying.

Reproduction: Breeding in wild cats occurs at different times of the year, depending on local climate. In European wild cats (F. s. silvestris) breeding occurs in late winter (January to March) and births occur in the spring, usually in May. Breeding has been recorded nearly year round in Asiatic wild cats (F. s. notatus) and, in African wild cats (F. s. libyca) breeding has been recorded from September through March. Females are pregnant for 56 to 68 days and give birth to 1 to 8 young, with an average of 3.4, in a protected burrow, often a space under rocks or in dense vegetation. Females become sexually mature at about 10 to 11 months old, and males from 9 to 22 months old.

Domestic cats may breed much more frequently, as often as 3 times a year, as they are not typically limited by nutrition or climate. Average litter size in domestic cats is 4 to 6. The gestation period averages 65 days. Domestic kittens are weaned at about 8 weeks old and become independent at about 6 months old. Females become sexually mature as early as 6 months old.
The young are born with eyes closed and are unable to walk. They are nursed and cared for in the den by their mother for 4 to 12 weeks. Their eyes open at 10 days old and they nurse for about 30 days. They remain with their mother, learning hunting and survival skills for from 4 to 10 months, usually around 5 months. After that they are driven from their mother's range and must become independent. Males do not help to care for kittens.
European wildcats live up to 15 years in the wild, though most die before the end of their first year. Domestic cats may live for longer in captivity: 30 years or longer in unusual cases.

Behavior: Wild cats, and their domestic counterparts, are usually active at night or at dusk and dawn, although they are also active during the day, particularly in areas with little human disturbance. Asiatic wild cats in particular are often active during the day. Wild cats often travel widely at night in search prey. One European wild cat was recorded traveling 10km in a night.
Wild cats are primarily solitary animals, their domestic counterparts are more social and can occur in small family groups. Domestic cats are also usually solitary, but may form small colonies in areas where food sources are clustered, such as garbage dumps. In unrestrained domestic cat populations, female cats typically stay in their area of birth while males leave their area of birth and attempt to establish a home range elsewhere. In areas with concentrations of free-ranging domestic cats a sort of hierarchy is formed. Newcomers must go through a series of fights with resident animals before their position in the hierarchy is established
Male wild cats have home ranges that overlap with the ranges of several females. A male African wild cat was recorded with a home range of 4.3 square kilometers.
The home ranges of domestic cats varies widely with the concentration of resources and the density of restrained versus feral cats.

Communication and Perception: Wild cat males mark territories by spraying strong urine on objects throughout their home ranges. Females also communicate when they are ready to breed with scents that they emit which are highly attractive to males. Cats have scent glands on their foreheads, around their mouths, and near the bases of their tails. A cat rubs these glands against objects to mark them with its scent.
Wild cats communicate with visual cues, such as raising the hair on their backs, moving their tails, and facial expressions. They also have a variety of sounds that communicate different intents, including aggressive hisses and yowls, affectionate purring, and a 'be quiet' squeak used to silence kittens.
Wild cats have a well developed sense of smell and hearing. The ears of a cat can rotate rapidly to identify the source of a particular sound and are able to respond to frequencies up to 25,000 vibrations per second. Because of this ability, cats can hear even ultrasonic noises made by small rodents. This sometimes allows them to locate and capture prey without seeing it. Their sight is good but probably not better than that of humans. The range of colors seen by cats is smaller than the human range. The eyes of cats are located on the front of the head. Although this allows them to have excellent depth perception, a useful tool in hunting, cats cannot see directly under their noses. They also have the ability to see even tiny movements, helping them to locate prey. Their eyes are adapted for vision in dim light for hunting just after dusk or before dawn.
Another notable mode of sensation in cats are whiskers, or vibrissae. Whiskers are special hairs that are used as highly sensitive touch organs. A cat uses its whiskers to determine if their bodies can fit through small openings such as small pipes, and other various objects. They also use them to detect the movement of prey.

Food Habits: As with most small cat species, the diet of wild cats, or domestic cats, is mainly made up of small rodents, such as mice and rats. Rabbits may be preferred prey in some areas and seem to be the dominant prey for European wild cats (F. s. silvestris). Other prey items include birds, young ungulates, reptiles, amphibians, eggs, and large insects and arachnids. European wild cats (F. s. silvestris) have been recorded scavenging carrion, but this is reported to be rare in African and Asiatic wild cats (F. s. libyca and F. s. notatus). Food caching has been reported in European wild cats (F. s. silvestris). Rodents preyed on by Asiatic wild cats (F. s. notatus) include jerboas, gerbils, voles, and mice. Occasionally, cats eat grass in order to clear their stomach of indigestible food, like bones, fur, and feathers. Wild cats are able to subdue prey almost as large as themselves and tend to avoid prey that is spiny, has shells, or has an offensive odor. Female wild cats may teach their young how to capture prey by bringing them injured animals on which to practice.

Predation: Most wild cats are preyed upon as young cats by larger predators, such as foxes, wolves, other cats, and large birds of prey, such as owls and hawks.
Wild cats are fierce when threatened and can protect themselves from animals larger than themselves. They are also secretive and agile.

Ecosystem Roles: European wildcats play an important role in controlling populations of rodents and other small mammals. Indeed, it is this characteristic that probably led to the domestication of European wildcats. Domestic cats are still primarily kept worldwide to control rodent populations in urban and agricultural areas.

Economic Importance for Humans: Negative: Domestic cats carry a number of diseases that may be transmitted to humans, including rabies, cat-scratch fever, and several parasitic infections. Domestic cats are also responsible for population declines and extinctions of many species of birds and mammals, particularly those restricted to islands. Efforts to control populations of domestic cats that have been introduced to islands cost many thousands of dollars to those governments, and cost us all valuable parts of global biodiversity. Wild cats generally have little or no negative impact on humans. Positive: Domestic cats are highly valued as pets and as working animals throughout the world. They help to control rodent populations and have been used as animal subjects in behavioral and physiological research. Wild cats are important members of natural ecosystems. They are instrumental in controlling populations of small mammals throughout their range.

Conservation Status: Least Concern. African and Asiatic wild cats remain fairly common throughout their range, although habitat destruction continues to result in a loss of suitable habitats.
European wildcats are critically endangered in their native range. They were largely exterminated from western and central Europe during the 19th and 20th centuries because they were considered a danger to game and domestic animals. They continue to be threatened by habitat loss, but populations are making a recovery in many parts of their former range. Other threats to European wildcats include population isolation, deaths from being hit by automobiles, and vulnerability to diseases transmitted by domestic cats. They are currently protected throughout Europe and several re-introduction efforts are underway.
The main threat to all wild cat populations, especially those of European wildcats, is continuing hybridization (inter-breeding) with domestic forms. Hybridization results in decreased genetic purity of the wild forms. Some researchers suggest that genetically pure European wild cats are extinct as a result of extensive hybridization.
Domestic cats are not threatened. Instead population control mechanisms are needed in most areas.

Other Comments: African wild cats (F. silvestris libyca) were present in towns in the middle east at least 7,000 years ago. They were domesticated in Egypt about 4,000 years ago and began to be introduced outside of that area about 2,000 years ago. Domestic cats were probably attracted to the high rodent populations near human settlements and were welcomed as a way of controlling rodent populations. However, true domestication may have had a religious basis. An Egyptian cult centered in the ancient city of Bubastis worshiped cats. Followers of the goddess Bast, the goddess of pleasure, created sanctuaries with bronze statues of cats and mummified hundreds of thousands of cats. It is estimated that there are more than 30 breeds of domestic cat currently.

Source: Dewey, T. 2005. "Felis silvestris" (On-line), Animal Diversity Web. Accessed March 07, 2009 at http://animaldiversity.ummz.umich.edu/site/accounts/information/Felis_silvestris.html.

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10. Bat-eared fox (Otocyon megalotis)

Geographic Range: Two populations are known, one from Ethiopia and southern Sudan to Tanzania; the other from southern Angola and Zimbabwe to South Africa.

Habitat: Bat-eared foxes are found in arid grasslands and savannas, preferring areas where the grass is short. They are capable diggers and live in dens that are dug by the foxes themselves or those left by other animals such as aardvarks. Dens have multiple entrances and chambers and several meters of tunnels. A family may have several dens in its home range.

Physical Description: The bat-eared fox's name comes from its enormous ears, which are 114 to 135 mm long. The body is generally yellow-brown; the throat and underparts are pale; the outsides of the ears, raccoon-like "face-mask," lower legs, feet, and tail tip are black. Besides the large ears, the bat-eared fox is set apart from other foxes by its unique dentition. It has more teeth than any other heterodont placental mammal with a total between 46 and 50 (Nowak, 1983). Whereas in all other canids there are no more than two upper and three lower molars, the bat-eared fox has at least three upper and four lower molars. On the lower jaw, a large step-like protrusion anchors the large digastric muscle that is used for rapid chewing of insects. The legs are relatively short.

Reproduction: Bat eared foxes are usually monogamous; a few observations have suggested that sometimes there may be two females with one male, and one record exists of communal nursing (Macdonald, 1984).

Bat-eared foxes breed annually, in self-dug dens. Pups' eyes open at 9 days and they emerge from the den at 17 days. Newborns are sparsely covered with gray underfur and change to adult color by 4-5 weeks. Offspring are suckled for 15 weeks before beginning to forage with their parents. Pups are full grown by 5 or 6 months.After reaching maturity, most disperse at the breeding season. Some young females may stay with their natal group and breed. Males participate in guarding, grooming, and playing with the young as much as or even more than the mother. Mating behavior has not been described in the wild, but in a zoo, a pair mated 10 times a day for a week (Estes, 1991). The female showed no estrous swelling. The male followed the female intently, licking her vulva and periodically mounted. After intromission, the pair remained tied, as in many canids (Estes, 1991).

Behavior: 85 percent of activity occurs at night in the Serengeti, while in South Africa bat-eared foxes are mainly diurnal in winter and nocturnal in summer. In the Serengeti, one study showed that families occupied exclusive home ranges of 0.25 to 1.5 km^(2). The marked the home range boundaries with urine. These groups consisted of an adult mated pair and their young. Pairs sleep in the same burrow, forage and rest together, often lying in contact, social-groom and play with one another, and protect and assist each other (Estes, 1991). In South Africa, homeranges overlap extensively, with little or no territorial marking (Nowak, 1983). In these areas two or three breeding dens are sometimes clustered within a few hundred meters, probably due to locally suitable soil or vegetation. Population density may reach 10 individuals per km^(2). Benefits of group living for bat-eared foxes include increased termite harvesting, enhanced predator-detection, and the opportunity for offspring to learn by imitation what to eat and how to get it (Estes, 1991).
Play behavior among young pups shows similarities to escape behavior because, as adults, bat-eared foxes tend to show escape behavior rather than fighting behavior (Delany and Happold, 1979).

Food Habits: Their diet primarily consists of insects and other arthropods, and occasionally small rodents, lizards, the eggs and chicks of birds, and plant matter. The Harvester termite (Hodotermes) and dung beetles (Scarabidae) can make up 80 percent of the fox's diet (Macdonald, 1984). According to Delany and Happold (1979), bat-eared foxes obtain much of their water from the body fluids of these insects. The termites often feed on grass above ground, where they are then eaten by the foxes. Because large herbivores such as wildebeest, zebra and buffalo also feed on this grass, bat-eared foxes are usually found near large herds of these hoofed animals. Furthermore, bat-eared foxes are also associated with these mammals since they eat the dung beetles that feed on and lay eggs in the ungulate's feces. The foxes use their large ears to listen for beetle larvae gnawing their way out of the dung balls (Macdonald, 1984). Bat-eared foxes usually forage alone. However, where insect prey is abundant, bat-eared foxes may occur in very high densities. They can actually harvest more termites by foraging in a group than if they hunted separately over the same ground at the same time (Estes, 1991).

Predation: To escape from predators, the bat-eared fox relies on speed and its incredible dodging ability. It can effectively reverse direction at a flat run without losing speed (Estes, 1991).
Bat-eared foxes are susceptible to predators down to the size of jackals and eagles. Diurnal birds of prey generally represent the greatest threat for young bat-eared foxes (Estes, 1991).

Economic Importance for Humans: Positive: There is no apparent commercial use of bat-eared foxes, but they are hunted in Botswana for their pelts by indigenous people.

Conservation Status: Least Concern.

Other Comments: Otocyon megalotis is the only species in the genus Otocyon.

Source: Thomson, P. 2002. "Otocyon megalotis" (On-line), Animal Diversity Web. Accessed March 07, 2009 at http://animaldiversity.ummz.umich.edu/site/accounts/information/Otocyon_megalotis.html.

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11. Black-backed Jackal (Canis mesomelas)

Geographic Range: The black-backed jackal can be found only in Africa. The species lives in two discrete areas separated by roughly 900km. One region includes the southern-most tip of the continent including South Africa, Namibia, Botswana, and Zimbabwe. The other area is along the eastern coastline, including Kenya, Somalia, and Ethiopia (Smithers 1983). This separation may exist for geographical reasons. Between both populations lies Olduvai Gorge (part of the Great Rift Valley) in northern Tanzania. This landscape is extremely arid making living conditions for most organisms extremely difficult.

Habitat: The habitat of the black-backed jackal is quite variable ranging from small cities and the suburbs of large cities to the Namib desert (Ginsberg 1990). They tend to be more common in dry areas that receive an annual rainfall of between 100-200 cm (Downs et al. 1991). These jackals are associated with open terrain and not forest or heavy brush. This species can scavenge in an area where bigger game is hunted and killed or it can feed off the remnants of human handouts. Furthermore, in the open grasslands of today, human development in the form of agriculture provides an additional source of food for this species.

Physical Description: The main characteristic of the black-backed jackal, which gives it its name, is the black hair running from the back of the neck to the tail (Van Valkenburgh 1994). The chest is white, and the under parts are white to rusty-white, whereas the rest of the body ranges from reddish brown to ginger in appearance. Adults stand about 38cm at the shoulder and are nearly a meter long in length. The head is dog-like, with a pointed muzzle and high pointed ears.
The winter coat of male adults develops a reddish to an almost deep russet red color. Females tend to be less richly colored (Ginsberg 1990). Sexual dimorphism does exist; males tend to be larger than females, but this difference is small. (Ginsberg, 1990)

Reproduction: The female usually has her litter underground in a vacated but semi-elaborate antbear burrow allowing for multiple entrances and escape routes. Black-backed jackals less frequently use caves and rock crevices where typically only a single entrance exits. Mating occurs anytime between May and August. Gestation lasts approximately 60 days; litter size at birth averages around 4 pups, but commonly only 1-3 survive. A pup becomes sexually mature at 11 months and can live up to 14 years in captivity but at most 8 years in the wild. Male and female parents both take part in the rearing and feeding of young. The social unit usually consists of the two parents and their young. The only exception is when multiple jackals hunt in large packs. Pups usually follow the parents out of the den at 3 months and are on their own within a year (Smithers 1983).

Behavior: Black-backed jackals are active both diurnally and nocturnally, but near the outskirts of urbanization they are mainly nocturnal (Fox 1971). When active, this species is usually out searching/scavenging for food. Normal movement is at a trot; when hunting an individual walks slowly with its ears pricked and alert. Their senses are extremely acute and well-developed, especially their senses of hearing and smell. If startled, a jackal will retreat a certain distance and then circle back in a wide arc in order to interpret the scent of the disturbance. Jackals are wary of humans and are not considered "aggressive" towards larger animals. Jackals are also cunning. They tend to be territorial and will become aggressive only to defend the boundaries of their territories. Paired adults have smaller home ranges (almost 75% smaller) than do unpaired adults who are searching for mates.

Food Habits: Black-backed jackals are like other social canids in their foraging (Colby 1965). They often hunt in packs to make it possible to bring down large prey. However, black-backed jackals have also been found to hunt alone or in mated pairs.
In a sample of 96 stomachs (Smithers 1983), insects occurred most frequently (52%); this was followed closely by ominivorous remains (37%); vegetable matter and "other" made up the rest (11%). Black-backed jackals are known to kill domesticated animals (dogs, young sheep, and poultry), but mainly feed on smaller mammals such as rodents, hares, and small antelopes. Many jackals have been observed scavenging the remains of a feline kill such as that of a lion or leopard before vultures pick everything clean. (Colby, 1965; Smithers, 1983)

Economic Importance for Humans: Negative: In South Africa and elsewhere, the black-backed jackal carries the reputation of a killer of poultry and other domesticated livestock. They also prey on sheep, but primarily during lambing. Positive: Humans have sold the pelts of the black-backed jackal. In South Africa, the jackal may be hunted throughout the year for its meat (Ginsberg 1990).

Conservation Status: Occurs in numerous protected areas including the Serengeti National Park, Tanzania, and the Kruger National Park and Giant's Castle Game Reserve, South Africa.

Source: Fishman, B. 2000. "Canis mesomelas" (On-line), Animal Diversity Web. Accessed March 07, 2009 at http://animaldiversity.ummz.umich.edu/site/accounts/information/Canis_mesomelas.html.

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12. Aardvark (Orycteropus afer)

Geographic Range: Aardvarks occur throughout much of sub-Saharan Africa with the exception of the rainforests of the west-central parts of the continent.

Habitat: Aardvarks occur in a variety of habitats: grassy plains, bushland, woodland, and savanna. The presence of sufficient quantities of ants and termites seems to be the limiting factor.

Physical Description: Aardvarks have a superficial resemblance to a long snouted pig. The skin is thick, sparsely covered by hairs and varies in color from dull brownish gray to dull yellowish gray. The pinnae of the ears are large (150-210 mm) and can fold back to protect the ears while the aardvark is burrowing. The blunt snout has circular nostrils. The tongue is tapered. The dental formula is usually 0/0 0/0 2/2 3/3 for a total of 20 teeth in the adult. The cheek teeth are composed of numerous hexagonal prisms of dentin, which are perpendicular to the occlusal surface. Each prism is pierced by a tubule that is homologous to the pulp cavity, not the Tomes fibres. This unusual dental structure is the origin for the ordinal and familial names. The cranium is long and relatively low and the mandible is straight and blade-like anteriorly.

Reproduction: Aardvarks are thought to be polygamous, in part because only females maintain consistent home ranges. Gestation lasts approximately 7 months and single births are normal, though twinning does occur occasionally. The timing of birth varies across Africa. Neonates weigh between 1.8 and 2 kg and are approximately 550 mm long. Young remain in the burrow for several weeks following birth before venturing out with the mother on nightly foraging trips. Young excavate their own burrows at 6 months old, though they remain in association with the mother until the following mating season. Sexual maturity is attained at 2 years after birth.

Behavior: Aardvarks are excellent diggers and excavate burrows that are typically 2-3 m long, although they may be much more extensive. In soft earth, an aardvark can dig faster than several humans using shovels. Aardvarks are nocturnal and sleep during the day curled in a tight circle in the burrow. They are solitary and may be territorial. Males and females occupy separate burrows. Within its territory, an aardvark uses the same network of paths over an interval of about a week. While foraging, aardvarks cover a strip of ground about 30 m wide in a zig-zag path with the ears directed forward and the snout close to the ground, emitting snuffling sounds while searching for prey. Aardvarks feed by digging into termite or ant mounds with their powerful forelimbs and lapping up the residents with their sticky tongues, which can be thrust 250-300 mm out of the mouth. An unusual behavior of aardvarks is the burying of feces, which they do regularly in shallow excavations 10cm deep. This may be to avoid detection by other aardvarks.

Food Habits: The principal food items are ants and termites, which are gathered with the long, sticky tongue. Other insects are occasionally taken, and predation on mice has been reported. Aardvarks also eat the fruit of a wild cucumber, known as the aardvark pumpkin, apparently as a source of water.

Economic Importance for Humans: Negative: Aardvark burrows can cause damage to farmlands and are a hazard to vehicles and horses. Positive: Aardvarks have long been hunted by Africans as well as European colonists for their flesh, hide and for sport. The meat is said to look like coarse beef and taste like pork. Many aardvark parts are valued as charms or curios. Aardvarks are also important as a control on termites.

Conservation Status: Aardvarks are listed under CITES Appendix II due to a lack of precise information on its status.

Other Comments: Aardvarks are color blind.

Source: Fox, D. 1999. "Orycteropus afer" (On-line), Animal Diversity Web. Accessed March 07, 2009 at http://animaldiversity.ummz.umich.edu/site/accounts/information/Orycteropus_afer.html.

Depicted is the aardvark observed at the KMP in August and September 2009, who was filmed for Meerkat Manor as “Murray’s opponent”.

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13. Cape porcupine (Hystrix africaeaustralis)

Geographic Range: Hystrix africaeaustralis is found only in sub-saharan Africa, excluding the coastal desert of the southwest.

Habitat: South African porcupines are found from sea level to 2000 m above sea level in most areas with vegetation. They prefer rocky hills and outcrops, as they must have shelter during the day. They often take shelter in caves or antbear (Orycteropus afer) holes. They also build dens which can be up to 20m long with a 2m deep living chamber.

Physical Description: South African porcupines are the largest rodent in their region. Females are, on average, about one kilogram heavier than males and both sexes are larger than half a meter long.
These porcupines are covered with flat, bristly hairs and have quills and spines on the posterior back and flanks. The difference between quills and spines is largely one of length and thickness, with spines up to 50 cm long and quills up to 30 cm long. The white and black crest of spines and quills can be erected at will to make the animal look enormous and threatening. Some spines on the tail are hollow and make a rattling sound when shaken. The very sharp spines and quills come off when touched by a predator or shaken off, but they grow back rapidly. South African porcupines also have very long mobile whiskers.

Reproduction: Because of their dangerous anatomy, females initiate copulation by presenting to the males.
Male porcupines reach sexual maturity between eight and eighteen months, while females reach sexual maturity between nine and sixteen months. Gestation lasts for three months.
The young are born in litters of one to four into a grass-lined chamber in the parents' den during the wet months of August to March. The average litter size is 1.5 and the average newborn mass is 311g.
Young porcupines nurse for three to four months, at which point they will weigh four to five kilograms. After the weaning of their young, female porcupines can not conceive for another three to five months.
Young are born relatively well-developed, with their eyes open and teeth present. They have soft quills and spines at birth (most likely to ease the birthing process) but they quickly harden in the air. The young grow rapidly, reaching full size in about a year.
These porcupines are long-lived for rodents, surviving 12 to 15 years in the wild.

Behavior: South African porcupines are primarily nocturnal, although they may be seen during the day.
South African Porcupines are described as either solitary creatures or living in small family groups. Storch (1990) portrays them as living in clans of up to six family members in which both parents give long-term care to young. They have also been reported to be intraspecifically aggressive, although the exact situation was not mentioned.

Food Habits: South African porcupines are mostly vegetarian, using their strong digging claws to get roots, tubers, and bulbs. They are also fond of fallen fruits and will sometimes gnaw on bark. Their anterior large intestine and enlarged appendix contain microorganisms that break down undigested plant fibers.
They have also been reported to eat carrion in some instances. In areas deficient in phosphorous they practice osteophagia, or gnawing on bones. These porcupines will often accumulate large piles of bones in their dens. (Nowak, 1999; Storch, 1990)

Predation: Hystrix africaeaustralis have interesting defensive behaviors. They have quite acute hearing and will freeze when approached by predators, such as big cats, large predatory birds, or hyaenas. When cornered, these porcupines can be aggressive, running sideways or backwards to embed their sharp quills in an attacker. Contrary to myth, they can not throw their quills, but they may become dislodged when they shake their hollow rattling quills. Another defensive behavior is to hide in their holes facing in and erect their spines so that they can not be dislodged.

Economic Importance for Humans: Negative: Porcupines eat vegetable crops and are destructive feeders. That is, they dig up and destroy much more food than they eat. (Smithers, 1983). Positive: Porcupines are important members of healthy ecosystems. Porcupine foraging has important impacts on the plant communities in which they live.

Conservation Status: Least Concern. South African porcupines are not considered threatened currently.

Source: DeBruine, L. 2000. "Hystrix africaeaustralis" (On-line), Animal Diversity Web. Accessed March 07, 2009 at http://animaldiversity.ummz.umich.edu/site/accounts/information/Hystrix_africaeaustralis.html.