

AFRICAN ELEPHANT

CARD 1

GROUP 1: MAMMALS

CLASS
Proboscidea

ORDER
Elephantidae

FAMILY
Loxodonta africana



Although the African elephant is the largest and most powerful of all living land mammals, it is also among the most gentle, living in peaceful family units.

C. Zuber/B. Coleman Ltd

KEY FACTS



SIZES

Height: Male 10 ft. to shoulder. Female a little smaller.
Weight: Male up to 6 tons. Female up to 4 tons.



BREEDING

Sexual maturity: 14-15 years.
Mating: Any time.
Gestation: 22 months.
No. of young: Usually 1 calf.



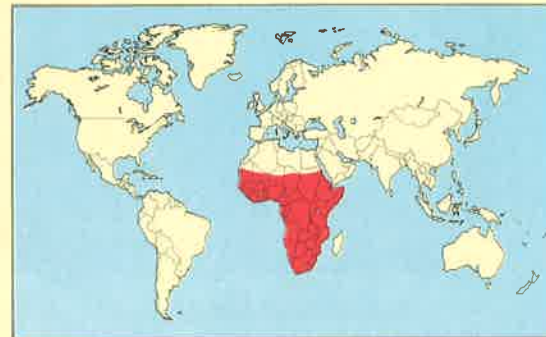
LIFESTYLE

Habit: Live together in family units; adult males are solitary.
Call: A throaty rumbling as constant communication or loud trumpeting when angry.
Diet: Entirely vegetarian—grass, foliage, fruit, branches, twigs.
Lifespan: About 70 years.



RELATED SPECIES

The slightly smaller Asian elephant (*Elephas indicus*).



Range of the African elephant.

DISTRIBUTION

In most parts of Africa, south of the Sahara.

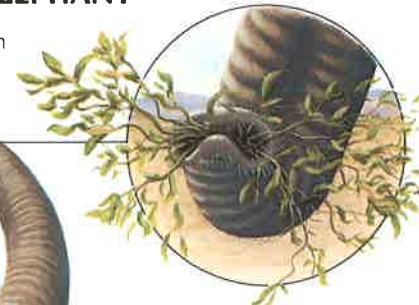
CONSERVATION

The African elephant is now endangered. Hunting is banned, but poaching for ivory is still widespread. In Kenya alone, numbers have been reduced from 150,000 to 30,000 in the last 10 years. Gamekeepers are almost powerless against the sophisticated machine guns used by poachers.

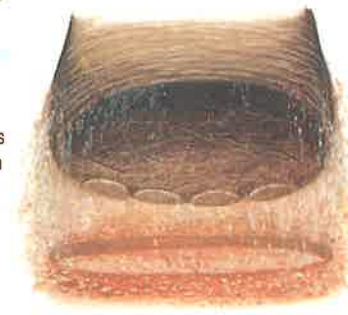
SPECIAL FEATURES OF THE AFRICAN ELEPHANT

Ears: Used as fans to create a stream of air over the animal's body.

Trunk: Used for breathing and smelling, and as an extra limb for picking up food, browsing in tall branches, drinking, and bathing.



Feet: Undersides soft and cushioned so it can carry its great weight almost noiselessly.



Teeth: Only 4 functional teeth 12 inches long, 1 in each quarter of jaw. They can be replaced 6 times.

Tusks: Elongated incisor teeth that continue to grow throughout the elephant's lifetime.



Left: African elephants never stray far from water.

Inset: A calf protects its skin against insect bites with a dust bath.

DID YOU KNOW?

- Elephants will eat up to 500 pounds of vegetation a day and drink up to 40 gallons of water at a time.
- An elephant can walk faster than a man, maintaining a steady speed of 5-5 1/2 miles per hour. A herd on the march can easily cover a distance of 50 miles a day.
- When water is scarce during the dry season, elephants will dig for water in the sandy bed of a river that has stopped flowing.
- The largest tusk ever recorded was 10 feet long and weighed nearly 230 pounds.

Essentially an animal of open grasslands, the African elephant is adaptable enough to live happily in a variety of habitats within its sub-Saharan African homeland. But wherever it lives, the elephant never strays far from a supply of drinking and bathing water.



C. Haagner/Ardea London



B. Davidson/Survival Anglia

HABITS

Elephants are social animals with strong family ties. So close are the relationships that they even bury their dead with twigs and leaves. They also grieve over their loss, staying by the "grave" for many hours.

Cows (females) and their calves, live in family units under the leadership of a mature female, to whom every other member of the group is related.

Young bulls (males) are driven from the family when they reach puberty to live in

separate bachelor herds. Adult bulls live alone and join a family unit only briefly when a female is ready to mate.

Herds may wander great distances, but they never move far from water. Elephants like baths every evening, so they stay close to any available pool or stream.

They'll make do with a shower—squirted from the trunk—if water is scarce. After bathing they coat their skin in dirt for protection from insects.

COMMUNICATION

When elephants are foraging for food out of sight of one another, they communicate by making rumbling noises similar to gargling. If an elephant senses possible danger, it will alert the others by stopping the noise.

Conflicts between elephants are communicated by a threat display in which the superior will twirl its trunk or throw dust into the air. Sometimes an elephant will also make the trumpeting noise for which it is famous. The display is also used to warn enemies. If its signals are ignored, the threatened elephant may charge at its attacker. But charges are rarely carried through; at the last moment, the elephant either stops short or turns aside.



FOOD & FEEDING

Elephants are entirely vegetarian. They eat a wide variety of grasses, foliage, fruit, and small branches and twigs. They gather food with the aid of their trunk and then place it into their mouths.

The few teeth elephants have are used to grind their food. Once an elephant has

lost all its teeth, usually around the age of seventy, it can no longer feed itself and it dies of starvation.

Elephants have gigantic appetites. Night, early morning, and evening are their favorite eating and drinking times, but they also eat all day on the move.

BREEDING

Elephants mate when they are 14 or 15 years old.

Courtship involves a display of affection between the cow and bull in which they caress each other with their trunks. A single calf, standing about 33 inches high and weighing approximately 250 pounds is born 22 months later.

The calf is suckled for at least 2 years and remains in the family unit after the birth of its mother's next calf. A cow usually gives birth about every 4 years and will often have two or three calves with her at the same time.

Cows defend their young vigorously, charging any intruders.

Below: A three-day-old calf stands knee-high to its mother.



J&D Bartlett/Bruce Coleman Ltd

Right: All elephants like to bathe daily and will immerse themselves completely if the water is deep enough.



D&P Sullivan/Bruce Coleman Ltd

GORILLA

CARD 2



GROUP 1: MAMMALS

ORDER
Primates

FAMILY
Pongidae

GENUS & SPECIES
Gorilla gorilla



K. Lucas/Planet Earth Pictures

Largest and most powerful of all primates, the gorilla is a peaceable and sociable animal. Small family groups live in the highlands and forests of Africa.

KEY FACTS



SIZES

Height: Males, 6 ft. Females, 5 ft.
Weight: Males, up to 600 lb.
Females, up to 200 lb.



BREEDING

Sexual maturity: Males, 7-8 years.
Females, 6-7 years.
Mating: No particular season.
Gestation: 251-289 days.
No. of young: 1.



LIFESTYLE

Habit: Sociable.
Diet: Entirely vegetarian, mainly fruit, leaves, and juicy stems.
Lifespan: At least 30 years.



RELATED SPECIES

Western, mountain, and eastern lowland gorillas of central Africa.



Range of the gorilla.

DISTRIBUTION

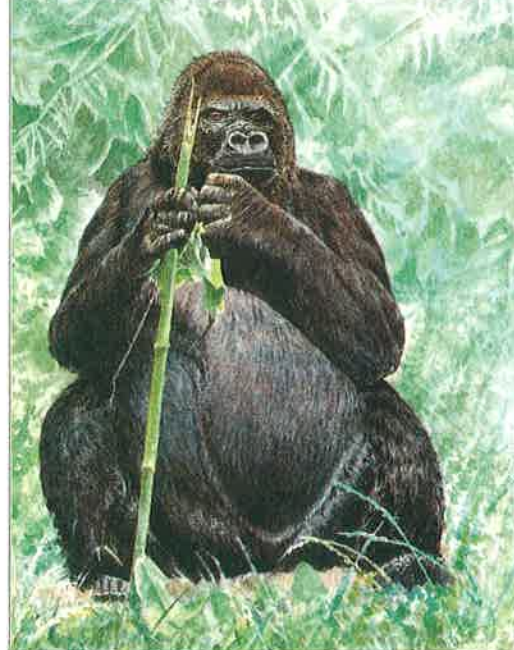
The mountain gorilla is found only in the Virunga volcano region in the highlands on the border of Zaire, Rwanda, and Uganda. Lowland gorillas live in forest areas of Nigeria, Cameroon, Guinea, Gabon, Congo, and Zaire.

CONSERVATION

Both mountain and lowland gorillas are endangered. Fewer than 450 mountain gorillas exist in the wild.

THE GORILLA'S HANDS AND FEET

The gorilla moves on all fours with its knuckles on the ground, but its weight is supported by its feet.



Strikingly human in appearance, the **hands** are very broad and strong. The thumbs are smaller than the fingers, which helps the gorilla to grip as it climbs trees or foliage.

The gorilla's **feet** are characterized by the big toe. Unlike those of most apes, it is not widely separated from the other toes.



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Gorillas live in the wild only in the Zaire River basin.

The two species—mountain and lowland—are separated by about 600 miles. Both are now recognized as endangered.

BREEDING

Gorillas mate year-round. The female produces a single offspring about every fourth year. If her offspring dies in infancy, which happens 40 to 50 percent of the time, she will breed more frequently. A young gorilla remains with its parents for three years after its birth.

Gorillas live in groups of 10

to 30 females and their young, with one or more mature males, called silverbacks. Young adult males generally live alone, sometimes joining groups for short periods. Afterward, they resume their solitary existence. Occasionally, they take females with them and start their own groups.

DID YOU KNOW?

- When a gorilla drinks, which is rarely, it soaks the back of its hand and sucks the water from its fur.
- As he matures, a male gorilla's skull develops a bony ridge, which makes his head dome-shaped.
- Social grooming can relax a gorilla to the point that it will go into a trance.

BEHAVIOR

Each family group lives within a fairly small area. However, groups that occupy the same area coexist peacefully.

One way in which gorillas establish and reinforce bonds is by social grooming. One gorilla will groom the other by combing through its fur with its fingers and teeth. In addition to the cleanliness it pro-

motes, social grooming allows for close contact and touch between the animals.

Each evening, gorillas build nests in trees in which to spend the night. Up to the age of 3, the young share their mothers' nests. However, the nest-building instinct is so strong that they experiment with making their own nests at

an early age.

Nest-building is not a painstaking process. The gorilla simply pulls in any branches that it can reach and then squats on them to make a platform.

Below: A family group; the dominant male is known as a silverback because the hair on his back turns gray with age.



P. Ward/Frank Lane Agency

Silvestris/Frank Lane Agency



WARNING DISPLAY

The unexpected appearance of a strange male in the group may cause the silverback to mount an elaborate warning display. He hoots excitedly, building to an ear-splitting roar at the intruder. Then, after having risen to his full height, tearing at twigs and branches, the gorilla beats his chest with the cupped palms of his hands. He may take a few steps toward the intruder, growling and gnashing his teeth.

If this does not deter the stranger, the silverback may be provoked to charge, waving his arms and screaming with rage. The charge usually stops short of actual contact. The silverback will thrust his face right up into the intruder's, and they will stand nose-to-nose, glaring at each other, until one or the other turns and stalks away.

GORILLA & MAN

The gorilla's easy-going nature has made it possible for humans to mingle with wild family groups, and thus, there has been considerable study of the gorilla.

Unfortunately, gorillas have also been widely hunted for food, sport, and poaching.

The greatest risk to the gorilla, however, comes from man's invasion of its habitat.

Right: A small group of gorillas crossing the road in Kahuzi-Biega National Park, Zaire. Note the position of the hands.



The forests on which its survival depends are steadily being inhabited by farmers

and ranchers who are taking advantage of the region's fertile land.

ARCTIC WOLF

CARD 4

GROUP 1: MAMMALS

ORDER
Carnivora

FAMILY
Canidae

GENUS & SPECIES
Canis lupus arctos



Jim Brandenburg/Planet Earth Pictures

The majestic arctic wolf lives in the silent vastness of the barren polar region, where darkness cloaks the land for up to five months of the year. Here it hunts almost every other living animal.

KEY FACTS



SIZES

Length: Head and body, 3-5 ft.
Shoulder height: 25-31 in.
Weight: Up to 175 lb. Females lighter.



BREEDING

Sexual maturity: Males, 3 years.
Females, 2 years.
Gestation: 63 days.
Litter size: 4-5 cubs.



LIFESTYLE

Habit: Family packs of about 7-10.
Call: Chorus of howls.
Diet: Mainly arctic hares, musk ox, caribou, and lemmings.
Lifespan: 8-16 years.



RELATED SPECIES

The arctic wolf is a subspecies of the gray wolf. Others include the timber wolf of America and the common wolf of Eurasia.



Range of the arctic wolf.

DISTRIBUTION

Throughout the Arctic land mass, but not on the permanent sheets of sea ice.

CONSERVATION

Wolves in general have been threatened throughout history. The arctic wolf is the only subspecies still found over the whole of its original range, largely because it rarely encounters humans.

THE SOCIAL STATUS IN A WOLF PACK

Social status within the wolf pack is expressed by a complex "language" of gestures, barks, and growls. High-ranking wolves constantly assert their position, making lesser members cringe or lie on their backs in a gesture of submission. Despite this behavior, or perhaps because of it, there is very little friction.



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Able to tolerate years of sub-zero temperatures, months of darkness, and weeks without food, the arctic wolf lives in one of the few places on earth where it is safe from the greatest threat of all—man.

HABITAT

Arctic wolves inhabit some of the most inhospitable terrain in the world. In April, the air temperature rarely rises above -22° F, and the ground is frozen year-round. The arctic wolf is one of the few mammals that can tolerate these conditions.

The wolf preys on lemmings and arctic hare, but its most substantial source of food is

the musk ox and caribou. Because of the scarcity of grazing plants, animals must roam a large area in order to find enough food to survive. Consequently, the wolf pack has to travel over areas of up to 800 square miles in search of prey.

When winter temperatures plummet, the wolves may follow migrating caribou south.

DID YOU KNOW?

- Wolves will often go days without food, but can then eat up to 10 pounds of meat at one time.
- Food is so scarce in the Arctic that no part of a wolf's prey is wasted; a wolf will eat

every part of an arctic hare, including the skin, fur, and bones.

- Several of the younger pack members will "babysit" the cubs while the mother wolf is hunting.

FOOD & HUNTING

Full-grown caribou and musk oxen are far too powerful for a single wolf to attack alone, so wolves must always work together as a pack when hunting large prey.

Surprise attacks are almost impossible on the open

tundra; by the time the pack approaches, its prey is in a defensive stance. Musk oxen, for example, will form a circle, with their calves safely on the inside. The wolf pack must then try to disrupt the herd.

The wolves circle the herd

and prowl around, forcing the oxen to shift their ground to face them. If the wolves are successful, the oxen scatter.

Once the herd has scattered, the wolves give chase, trying to isolate a young or weak animal. If one wolf

catches a victim, the others will aid in killing it. A musk ox provides enough food to last the wolves for several days.

Below: To kill a musk ox, the pack must first split the herd and then pick a victim that is too young, too old, or too sick to put up a fight.



BREEDING

Throughout the fall and winter, wolves keep on the move. But after mating in March, the pregnant female leaves the pack to find a nursery den. She may dig a new one, but where the ground is frozen, she will be forced to return to an old den in a cave or rock cleft.

The cubs are born deaf, blind, and helpless. They are totally dependent on their mother, and she in turn relies on her mate to bring her the food she needs.

After a month, the cubs are able to eat meat. From then on, the whole pack shares in the job of feeding them with regurgitated meat from a kill.

The cubs may strike out on their own the following year.



Above: A unique glimpse of 3-week-old cubs sleeping inside their den.

Right: Almost weaned, three cubs suckle their patient mother.



BEHAVIOR

Wolves usually live in small packs, or family groups, that consist of a breeding pair, their cubs, and their unmated offspring from the previous two or three seasons. The two dominant wolves, the breeding pair, are known as the alpha male and the alpha female. The other wolves defer to them. All of the adults in the pack cooperate in feeding and caring for the cubs.

Lone wolves are usually young males that have left the pack in search of their own territories. They avoid other wolves, unless they are potential mates. If a lone wolf finds unoccupied territory, it will claim it by marking it with its scent. It then attracts a mate and starts a new pack.

GIANT PANDA

CARD 7



GROUP 1: MAMMALS

ORDER
Carnivora

FAMILY
Procyonidae

GENUS & SPECIES
Ailuropoda melanoleuca



G. Kimes/Natural Science Photos

Among the shyest and rarest of wild animals, the bear-faced panda, with its black and white coat and prominent black eye markings, is one of the world's best-known mammals.

KEY FACTS



SIZES

Height: 5 ft. standing erect. Females slightly smaller.
Weight: Up to 265 lb. Females weigh less.



BREEDING

Sexual maturity: Not known.
Breeding season: Not known, but thought to be April.
Gestation: 5 months.
No. of young: Usually single cub.



LIFESTYLE

Habit: Solitary.
Diet: Mainly bamboo, supplemented by berries, fruit, flowers, fungi, grasses, bark, and occasionally small animals.



RELATED SPECIES

The name panda is taken from the animal now known as the cat-bear. The cat-bear is also known as the lesser or red panda.



Range of the giant panda.

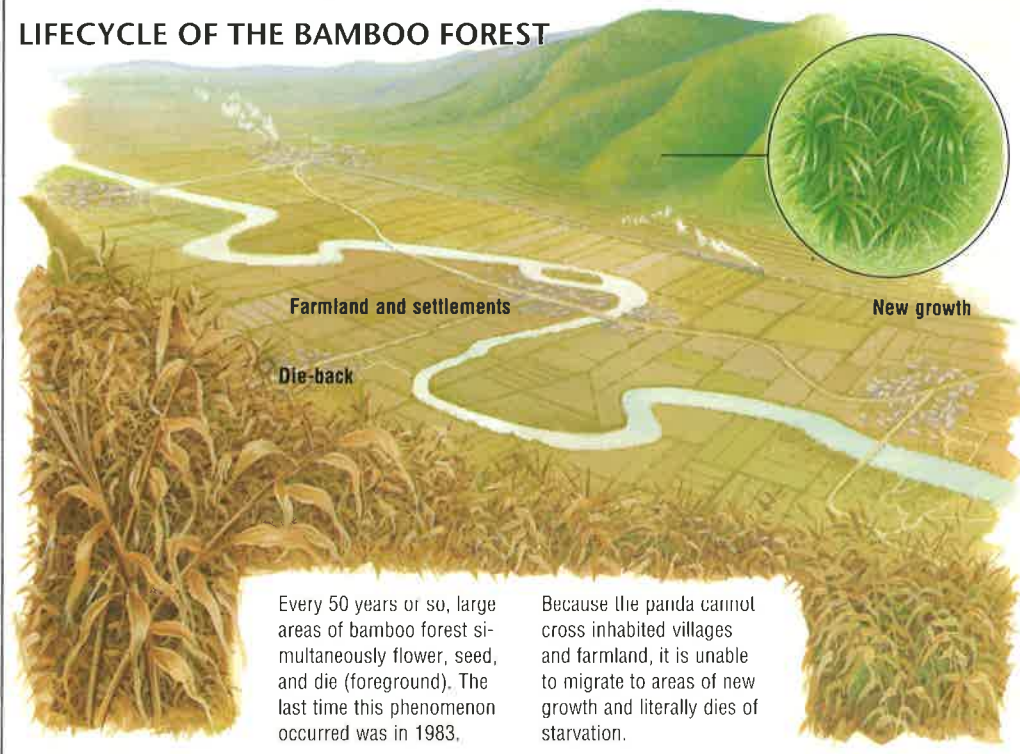
DISTRIBUTION

Southwestern China, notably the Qionglai, Daxiangling, Xiaoxionging, and Liang Mountains in Sichuan Province; also the Min Mountains and Qinling Range in Shaanxi Province.

CONSERVATION

The giant panda is threatened with extinction. From an estimated 1,000 in 1983, the numbers have dropped to 300 following die-back of forest (see below).

LIFECYCLE OF THE BAMBOO FOREST



Every 50 years or so, large areas of bamboo forest simultaneously flower, seed, and die (foreground). The last time this phenomenon occurred was in 1983.

Because the panda cannot cross inhabited villages and farmland, it is unable to migrate to areas of new growth and literally dies of starvation.



WWF/K. Tanaka/Bruce Coleman Ltd

At first glance, the giant panda

seems to resemble a bear, but in fact

its features have much in common with those of a

racoon. Although its ancestors were meat eaters,

the retiring and peaceful panda is a plant eater,

feeding almost entirely on bamboo.



WWF/K. Tanaka/Bruce Coleman Ltd

DID YOU KNOW?

- The giant panda has larger molar teeth than any other mammal.
- The giant panda spends 16 hours a day eating, in which time it digests only a small portion of the food.

- The giant panda was unknown in the Western world until 1869.
- The panda's stumplike tail is used to spread secretions produced by the scent glands, which are located

- beneath the tail, onto the surrounding area.
- The panda's hearing is so acute that it can detect even the most stealthy predators.
- The panda does not hibernate.

GIANT PANDA & MAN

At one time, the greatest threat to the giant panda's survival was man, who hunted it for its pelt. Today the principal cause of its decline is the erosion of its habitat due to crop cultivation or from natural causes such as die-back of bamboo. As its natural habitat becomes increasingly surrounded by human settlement, the panda can no longer migrate to unaffected areas.

The Chinese people now support any measures neces-

sary for the panda's protection. As a result, those caught hunting the animal face severe penalties.

Special sanctuaries have been established in the panda's natural habitat with enough space for 500 to 600 animals. Scientists are studying the animal's habits and instituting a comprehensive conservation program.

Zoos are also collaborating in the development of a captive breeding project.

HABITS

Pandas are solitary animals. They spend two-thirds of their day feeding and the remainder of the day resting. Extremely agile climbers, they usually climb only when they are in danger from predators such as brown bears, leopards, and wild dogs. They take refuge in the nearest tree until danger has passed.

Pandas have no particular resting place; they simply lie down on the ground wherever they happen to be.

Pandas live in cold, damp conditions. They have exceptionally dense waterproof coats that give protection against these conditions.

FOOD & FEEDING

Although the panda is classified as a carnivore, its diet consists almost exclusively of the stems, leaves, and young shoots of various types of bamboo. Because bamboo has a low nutritional value, the panda needs to eat huge

quantities—25 to 45 pounds a day—to sustain itself.

It also eats eggs and some seasonal vegetation.

Right: The peaceful panda requires nothing more than a plentiful supply of bamboo to survive.

SPECIAL ADAPTATIONS

The panda has adapted well to its diet. It uses its *caninial* (meat-tearing) teeth to slice through bamboo shoots.

The forepaws of the panda have an extra "thumb" which, when used in conjunction with its "forefingers," enables the panda to grasp even small bamboo shoots with precision. Its paws are broad and have long, retractable claws.



WWF/K. Tanaka/Bruce Coleman Ltd

BREEDING

The mating season is the only time pandas come together.

A single cub is born five months after mating in a nest constructed of bamboo. A panda rarely gives birth to twins; if she does, the second cub is unlikely to survive.

The tiny newborn panda cub is blind; it is six inches long and weighs only three ounces. It stays with its mother for 18 months, until it is independent enough to establish its own territory.

Left: Panda mother and young, Madrid Zoo. Pandas rarely breed in captivity and are seldom seen with young in the wild.



J.M. Marcos/Frank Lane Agency

NINE-BANDED ARMADILLO

GROUP 1: MAMMALS



ORDER
Xenarthra

FAMILY
Dasypodidae

GENUS & SPECIES
Dasyus novemcinctus



The solitary and nocturnal armadillo has an armored skin composed of hard, bony plates. Its head, legs, and tail are similarly protected with bony scales.

KEY FACTS



SIZES
Length: Body, up to 32 in.
Weight: 12-15 lb.



BREEDING
Sexual maturity: 6-12 months.
Breeding season: Summer months.
Gestation: 120 days after delayed implantation.
No. of young: Always 4 identical young of the same sex.



LIFESTYLE
Habit: Nocturnal, solitary, and burrowing.
Diet: Insects, small animals, birds' eggs, roots, fruits, and carrion.
Call: Grunts, squeals, and snuffling.
Lifespan: 12-15 years.



RELATED SPECIES
There are 6 species of long-nosed armadillo found in 3 subgenera. All inhabit Central and South America.



■ Range of the nine-banded armadillo.

DISTRIBUTION

From Kansas and Missouri through Mexico and Central America to Argentina and Uruguay.

CONSERVATION

Common enough to be considered a pest in some areas. It has colonized new areas in the northern and southern extremes of its range and has been introduced into other places to combat insect plagues.

THE NINE-BANDED ARMADILLO'S DEFENSES

The hard, bony **plates** covering the body provide effective armor against attack. The plates are arranged in bands over the middle of the back and are attached to flexible skin.



Fore and hind **limbs** have strong, curved claws for digging in the ground. Armadillos dig to find food, to make nest burrows, and to escape predators, such as jaguars, pumas, and coyotes.



The armadillo's **underside** has no armor. The nine-banded armadillo protects itself by lying flat on the ground with its legs tucked under the shields on its shoulders and hips.



The nine-banded armadillo is the most widespread of all armadillo species. It inhabits the open grasslands and tropical forests of North and South America. Still, it is unable to survive in arid regions, such as deserts, or in areas that are very cold.

HABITS

Armadillos generally spend the day sleeping in the safety of their burrows. They may have as many as 12 burrows located throughout their ranges, which they dig with their strong front claws, kicking away the excavated dirt with their hind legs.

Each burrow may be from 20 inches to 12 feet below the surface of the ground. The burrow consists of a labyrinth of tunnels that may be as long as 23 feet. Two or more of the tunnels have nest chambers in them,

which the armadillo lines with grass and weeds.

Nine-banded armadillos will share their burrows only with members of the same sex. Each animal has its own territory, but those of males will often overlap. Territories are marked with scent.

Days are spent in whichever burrow is nearest at the end of a night's wandering.

Top: Farmers value the nine-banded armadillo because it preys on harmful insects, but its digging can cause soil erosion.

Right: A young nine-banded armadillo digs for food.

Below: Some armadillos roll themselves into armor-plated balls.



FOOD & FEEDING

At night, the armadillo emerges from its burrow to look for food: insects, small animals, birds' eggs, fungi, roots, fruits, and carrion (rotting animal flesh). It uses its strong sense of smell to detect food. The armadillo's

long snout has particularly sensitive nostrils.

In the southern parts of its range, the nine-banded armadillo feeds on ants and termites. It pokes its long, sticky tongue into the nests and draws out the insects and

their larvae. If food is detected underground, the armadillo digs frantically. It uses its powerful forelegs to loosen the soil and, balancing on its forelegs and tail, kicks away the dirt from beneath its body using its hind legs.



BREEDING

Mating takes place during the summer, but the exact time varies according to location. Since nine-banded armadillos have poorly developed senses of sight and hearing, it is thought that the males rely on their sense of smell to detect when a female is ready to mate.

After mating, the fertilized egg is not implanted into the female's uterus wall for three months. This delays the birth of the young until the following spring, when more food is available.

Right: The female always gives birth to four identical young, as the fertilized egg divides into four parts. They are born in the nest chamber and have a soft, pinkish, leathery skin at birth. This hardens in a few weeks to form the armor-like covering of plates and scales.



DID YOU KNOW?

- The nine-banded armadillo is the only armadillo species that can swim. It does this by inflating its stomach and intestines with air to keep it buoyant. It can also cross a small river or stream by walking on the bottom while holding its breath.
- Using its long, sticky tongue, the armadillo can eat more than 40,000 ants in one feeding.
- Armadillos sometimes fall asleep on their backs, away from the safety of their burrows. When they do, they expose their vulnerable underside to attack from predators.
- The name armadillo comes from the Spanish word *armado*, which means "one that is armed."
- When digging for prey, the armadillo avoids getting dust up its nose by holding its breath for up to six minutes.