

OLD WORLD HARVEST MOUSE

CARD 66

GROUP 1: MAMMALS

ORDER
Rodenta

FAMILY
Muridae

GENUS & SPECIES
Micromys minutus



The tiny harvest mouse is only slightly larger than the garden snail. Its small size and flexible tail enable it to scamper up and down the slender plant stems on which it builds its nest.

KEY FACTS



SIZES
Length: Head and body, 2-3 in.
Tail, 2-3 in.
Weight: Adult, 2 oz.



BREEDING
Sexual maturity: 45 days.
Mating season: May to October.
Gestation: 17-19 days.
No. of young: 3-8 per litter. May have 3 litters a year.



LIFESTYLE
Habit: Solitary. Active at night in summer and by day in winter.
Diet: Mainly seeds and insects, also some fruit.
Lifespan: In the wild, up to 18 months, but usually 6 months. Up to 5 years in captivity.



RELATED SPECIES
Although it belongs to the same family as other mice, the old world harvest mouse is the only species in its genus.



■ Range of the old world harvest mouse.

DISTRIBUTION

Throughout Europe and northern Asia.

CONSERVATION

Although not endangered, numbers have been greatly reduced by modern agricultural methods, such as combine harvesting, spraying, and stubble burning.

THE HARVEST MOUSE'S NEST



The nest of the harvest mouse is built by the female. Balancing one to two feet up a grass stem, she bends and weaves the long leaves growing from the stem to form a framework for the nest.



She then weaves pieces of grass among the leaves, forming a rounded structure three to four inches in diameter. She covers the entrance with grass after the young are born.





The harvest mouse is among the smallest of all rodents. Its specially adapted tail functions as a fifth limb and allows it to keep its paws free for gathering food as it climbs up plant stems.

HABITAT

Harvest mice live in tall grass, grain fields, vacant lots, and along roadsides. During severe winters they sometimes seek shelter in sheds and houses.

The male roams over a ter-

ritory of approximately 500 square yards, while females have smaller territories.

In summer they are active at night, but in winter they are active during the day.

DID YOU KNOW?

- American harvest mice, like old world harvest mice, also build their nests on grass stems.
- The old world harvest mouse is the only mammal in Europe with a tail that is *prehensile*—that is, adapted for seizing and grasping.
- In the wild, pregnant females drive away the males, whereas in captivity, they tolerate their presence.
- In parts of Europe, harvest mice have been found living in ham curing rooms and larders, earning them the name "bacon" mice.

BREEDING

Harvest mice breed from May to early October, often producing three litters of three to eight young in a single year. The newborns stay in the nest for 11 days, where they grow rapidly. The mother leaves to search for food but returns at regular intervals to feed and clean the young. She eats droppings so that predators are not attracted by the smell.

At two days old the young mice can push themselves around the nest. Four days later they start grooming themselves, and by the eighth day they can see clearly. At

nine days they have teeth and begin eating solid food; at 10 days, the mother begins to wean them.

The young are fully independent two weeks after birth. The mother is usually pregnant again by this time, and she abandons her litter to look for a new nesting site. The young remain near the nest for several more days and then leave to find territories of their own.

Right: Blind, naked, and helpless, the newborn mice lie in the nest built by their mother.



FOOD & FEEDING

The harvest mouse eats seeds, fruits, berries, and insects such as moths, grasshoppers, and caterpillars. What it eats depends on what is available during each season.

Although grain is one of its main foods, the mouse compensates somewhat for any damage it may do to grain crops by eating the pests that threaten those crops. Wheat aphids, such as blackfly, secrete a honeydew that harvest mice eat.

To feed on grain, the tiny harvest mouse climbs up the stalk to the seed head. It uses its *prehensile* (adapted for holding) tail to grip the plant stalk and to balance itself. Then it breaks off a seed by grasping it in its teeth and moving its head with a sideways motion. It holds the seed in its front paws, removes the husk, and gnaws into the center of the seed.



Left: Harvest mice feed on blackberries when they are in season. They like the sweet taste of the fruit.

Below: A harvest mouse balances on a stem, gripping the stalk with its strong, flexible tail while it feeds on grains of wheat.



NATUREWATCH

Evidence that an old world harvest mouse is nearby can be found by looking closely among tall grasses and most crop fields except barley. Its nest of shredded grass and leaves is wedged between plant stems and attached to

them, usually one to two feet above the ground. The nest is well hidden in summer when the vegetation is lush, but it is easier to spot in late fall and early winter when the plants lose their leaves.



EUROPEAN MOLE

CARD 67

GROUP 1: MAMMALS

ORDER
Insectivora

FAMILY
Talpidae

GENUS & SPECIES
Talpa europaea



Although it is seldom seen, the velvety-coated mole is one of the best-known small mammals. Living almost entirely underground, surface molehills are the only tell-tale signs of its presence.

J. Burrow/Bruce Coleman Ltd

KEY FACTS



SIZES
Length: 4-6 in.
Weight: About 4 oz. Males are heavier than females.



BREEDING
Sexual maturity: About 10 months.
Mating: March-May.
Gestation: 30 days.
No. in litter: 2-7; average 4.



LIFESTYLE
Habit: Solitary, except in breeding season.
Diet: Mainly earthworms. Also insect larvae and small invertebrates.
Lifespan: Up to 3 years.



RELATED SPECIES
There are 29 species of mole, desman, and shrew-mole, including Russian desman, *Desmana moschata*, star-nosed mole, *Condylura cristata*, found in North America, and Mediterranean mole, *Talpa caeca*.



Range of the European mole.

DISTRIBUTION

Throughout Europe including Great Britain (but not Ireland), and in northwestern Asia.

CONSERVATION

Regarded as a pest in cultivated areas. Where they cause damage to lawns and pastures, they are poisoned to control their numbers.

MOLEHILLS & MOLE FEATURES



The mole's cylindrically shaped body is covered with very short fur that aids its passage and helps prevent friction as it moves through the vertical and horizontal tunnel system.

A large molehill is usually a sign of a nest chamber beneath. The nest will be safely tucked away close to the food store.

Most common in grassland and pasture, European moles are found at sea level and at high altitudes in almost every type of soil. But they avoid areas where the soil is very rocky, waterlogged, or acidic. They are well adapted for their underground life.



I West/Natural Science Photos

BREEDING

Moles have an exceptionally short breeding season; the male goes to the female's tunnel, where mating takes place. He then leaves the female and she raises the young alone.

Birth takes place from April to June, and the young are born in

a special nest chamber dug by the female.

Naked at birth, the young develop rapidly, feeding on their mother's milk. They are covered with fur after 14 days and are ready to leave the nest after 35 days.



P. Morris

Left: The usual mole litter has four young. Each is born naked and will not grow fur for 14 days. The young leave the nest at 35 days.

FOOD & FEEDING

Earthworms are the mole's staple food, although it also eats large quantities of insect larvae and slugs. It locates food by traveling along its tunnels and feeding on whatever worms or insects it finds.

A mole requires a very large intake of food, eating half of its body weight in food every day. During the fall and winter, when earthworms are plentiful, the mole catches them, bites off their heads, and pushes them into the ground to eat later.

The mole does not have a good sense of smell, nor can it hear very well. Instead, it is extremely sensitive to touch

and is able to sense minute vibrations in the soil around it. Its snout is covered by

thousands of tiny hairs that transmit information about its surroundings.



J. Mason/Ardea, London

Left: The mole's incisors, or cutting teeth, are small but sharp. Its chewing teeth are of variable sizes. Most feeding occurs underground, and worms form the largest part of its diet.

DID YOU KNOW?

- Moles will avoid very wet ground when possible, yet they are strong swimmers. They can also climb.
- When moles are feeding entirely on earthworms, they do not need to drink because earthworms consist of 85 percent water.
- A mole's skin is more sensitive to touch than that of any other mammal.
- Moles make various noises, including squeaks and purrs.
- In 1702, the King of England, William of Orange, was killed when his horse stumbled on a molehill and threw him.

HABITS

Moles are active during the day and night, digging their tunnels and searching for food. Mole tunnels vary in depth from just below the surface to 28 inches beneath the ground. When moles dig close to the surface, they make piles of dirt called molehills.

The tunnels must be located in suitable sites to avoid flooding, as young moles often drown during heavy rain.

Each mole occupies its own network of underground

passages that extend 100 to 165 feet. Moles spend four hours at a time looking for food in their tunnels, after which they spend an equal amount of time resting.

The territories of several moles may overlap slightly, but the moles will avoid each other unless it is breeding season.

Some scientists believe that moles mark their tunnels with scent from their bellies as they travel along underground.



E. Hansen/Biotope

J. Mason/Ardea, London

Moles have long claws on each forefoot for digging (far left, top) and short, strong "arms." The hind feet (far left, bottom) press against the tunnel sides when digging. Above ground, it moves using the hind feet and inside edges of the forefeet.

NATUREWATCH

The presence of moles can be confirmed by their tell-tale molehills. The molehills are mounds of fresh earth, up to a foot in diameter. Sometimes a mole will come out of its tunnel for a few seconds.

In hot, dry summer weather, moles are sometimes seen on the surface for extended periods, forced above ground to look for water. In very dry weather, they can die of dehydration.

GRIZZLY BEAR

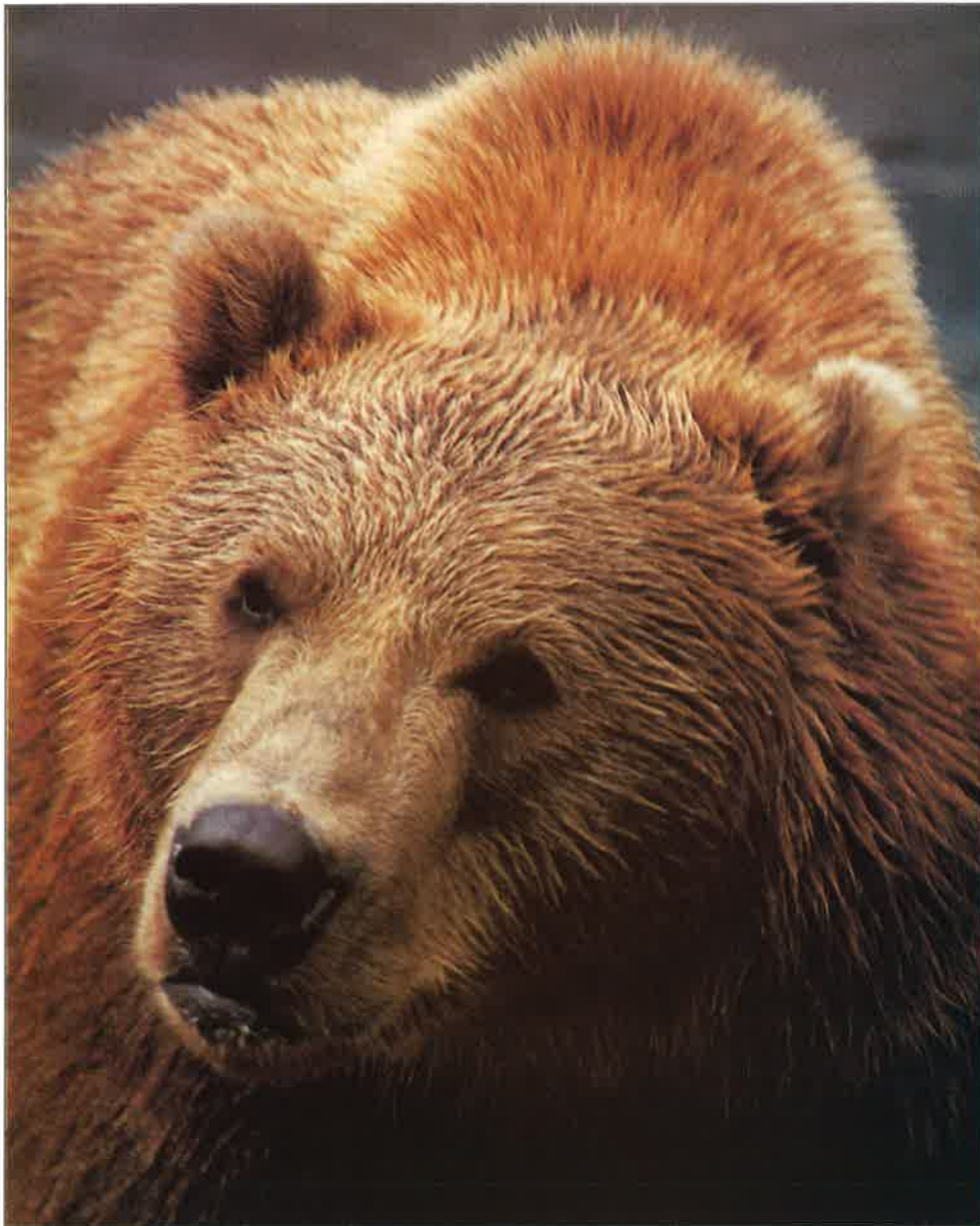
CARD 68

GROUP 1: MAMMALS

ORDER
Carnivora

FAMILY
Ursidae

GENUS & SPECIES
Ursus arctos horribilis



The grizzly bear takes its name from the long, silver-tipped hairs on its back and shoulders, which give its coat a grizzled look. The grizzly is the fiercest and most aggressive of all bears.

KEY FACTS



SIZES
Standing height: Average, 6 ft.
Weight: Varies from 200-650 lb., according to location.



BREEDING
Sexual maturity: Males, 4 years.
Females, 3 years.
Mating: June.
Gestation: 180-250 days.
No. of young: Usually 2.



LIFESTYLE
Habit: Solitary, except during mating season.
Diet: Wide variety of fruits, berries, bulbs, tubers, and nuts; also insects and grubs, honey, fish, rodents, and lizards.
Lifespan: Maximum 30 years.



RELATED SPECIES
The grizzly is a subspecies of the European and Asian brown bear. There are five other closely related species, including black and polar bears.



Range of the grizzly bear.

DISTRIBUTION

Found in Canada, Alaska, and reserves in Montana, Idaho, Wyoming, and Washington. The largest United States population is in Yellowstone National Park.

CONSERVATION

Once widespread throughout North America, it was wiped out by hunting and habitat disturbance. It was listed as an endangered species in 1975 and is protected.

FEATURES OF THE GRIZZLY

Its **paws** are broad and flat, with long claws that cannot be drawn back. The grizzly uses its front paws as clubs and to catch fish. One blow from a grizzly's paw can kill an animal of equal size.



A grizzly cub's **length at birth** measures only one-tenth of its mother's length. (The average human baby measures about one-third of its adult height).



The grizzly bear, found only in North America, is a subspecies of the more widespread brown bear. It leads an almost solitary existence in wild mountains and thick forests.

HABITS

In its natural home, the grizzly has no enemies or predators. It is not especially territorial and will tolerate other grizzlies. The grizzly rarely fights, but when it does, it usually wins. Most fights occur during the mating season or when a sow (adult female) must defend her cubs from attacks.

Grizzlies forage for food in the spring and summer. They feed heavily in the fall to build reserves for their winter sleep.

Most grizzlies move into their dens when the ground is covered with snow and stay there until spring. The bears

usually dig their dens in autumn. They fall into a *torpor* (deep sleep) during cold weather, similar to hibernation. On warm, sunny days, however, they awaken and search for food.

Male and female grizzlies without cubs generally emerge first, but the timing depends on climate and on each individual bear.

After they leave their dens in the spring, the grizzlies need food. They will feed near their dens and return to them at night until the weather gets warmer.

BREEDING

Male grizzlies attract mates by making low snorts and nibbling the females' backs and necks. Although mating occurs in June, the fertilized eggs are not implanted into the womb until fall. This gives the pregnant sow time to feed and amass a winter store of food for herself and her cubs.

Gestation takes 180 to 250 days, and the birth occurs in the den during the winter. The newborn cubs are blind, toothless, and almost hairless. They are 8 inches long and weigh between 1 and 1½

pounds. The cubs will remain in the den with their mother until the spring, feeding on her rich milk.

In April or May, the mother takes her cubs out and teaches them to forage and hunt. They stay with her during their first winter after birth. In the second year, they may stay with their mother, or they may share dens with other young bears.

Right: *In spite of their mother's care, many young grizzlies die, often from attacks by mature bears.*



FOOD & HUNTING

The grizzly is an *omnivore*, which means that it is equally satisfied by both vegetable and animal matter. Its diet includes fruits, berries, nuts, roots, fish, rodents, and occasionally, other mammals. It even eats *carrion* (dead flesh), which it can smell from as far as 18 miles away. The grizzly's teeth have become modified over the centuries to suit such a varied diet.

When a grizzly bear kills a large animal, such as caribou, it chooses one that is young, old, weakened, or

wounded. The kill can feed a sow and her cubs for four or five days. The mother hides the carcass from other animals between feeding times. Grizzlies may also dig out smaller prey, such as ground squirrels, with their long, sharp claws.

The grizzly bear is skilled at catching fish. Sometimes, it stands close to the bank and flips salmon out of the water with its paw. Or, it may wait for a salmon to swim past; it then dives in and breaks the salmon's back by pinning it to the riverbed.

DID YOU KNOW?

- Fossil records show that the first bears appeared in Europe about 13 million years ago.
- An estimated 50,000 grizzlies still live in Canada and Alaska, but there are fewer than 1,000 in the rest of North America.
- The phrase "licked into shape" comes from an old belief that bears were born so soft and shapeless that their mothers had to lick them into the shape of a bear.



Above and right: *Bears living near rivers become skilled at catching the salmon that swim upstream to their spawning grounds. They will seize leaping fish and eat them on a nearby rock.*



DHOLE

CARD 69



GROUP 1: MAMMALS

ORDER
Carnivora

FAMILY
Canidae

GENUS & SPECIES
Cuon alpinus



The dhole is an efficient hunter. Like many other wild dogs it hunts in packs and is capable of killing an animal the size of a buffalo by steadily wearing its victim down.

KEY FACTS



SIZES

Length: Head and body, 3-4 ft.
Tail, about 1 ft.
Shoulder height: About 1 1/2 ft.
Weight: Up to 40 lb.



BREEDING

Mating: Usually winter.
Gestation: About 60 days.
No. of young: 2-6.



LIFESTYLE

Habit: Solitary and nocturnal.
Call: Whine, yelp, chatter, howl, whistle, and hiss.
Diet: Hoofed mammals, small mammals, and birds.



RELATED SPECIES

Some of the southern animals of the genus *Cuon* grouped in species *primoevus*, *sumatrensis*, *dukhunensis*, *rutilans*, or *javanicus*.



Range of the dhole.

DISTRIBUTION

Southeast Asia from India to Indonesia; parts of the Soviet Union, China, and Korea.

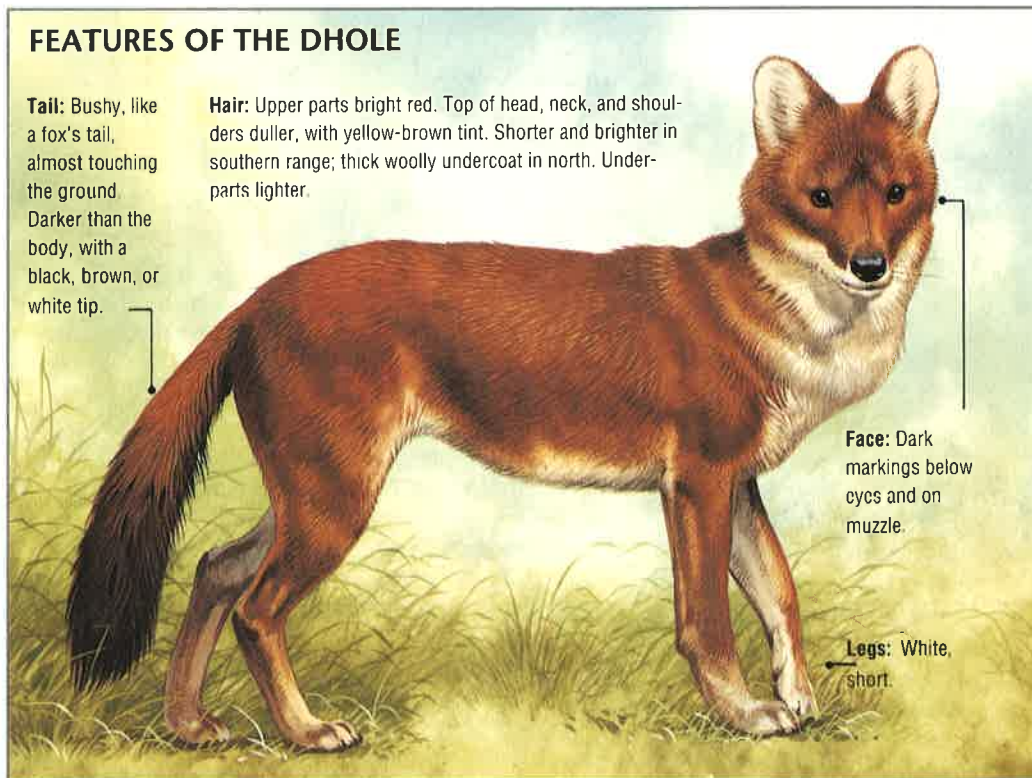
CONSERVATION

Depletion of its prey makes the dhole vulnerable throughout much of its range. The dhole is killed in areas where it preys on herds of deer.

FEATURES OF THE DHOLE

Tail: Bushy, like a fox's tail, almost touching the ground. Darker than the body, with a black, brown, or white tip.

Hair: Upper parts bright red. Top of head, neck, and shoulders duller, with yellow-brown tint. Shorter and brighter in southern range; thick woolly undercoat in north. Underparts lighter.



Face: Dark markings below eyes and on muzzle.

Legs: White, short.



The dhole is also known as the Indian wild dog. It is a social animal that lives in packs, cooperating to hunt and rear young. Despite its ferocity as a hunter, the dhole is a shy animal that keeps away from humans.

HABITS

The dhole prefers to live in forested, mountainous country. In the parts of its range with no forest, such as Tibet, it lives on the high plains. The dhole lives in a wider variety of climates than any other canid (genus *Canidae*)—from freezing cold to tropical heat.

Packs of dholes can be made

up of one family or several families banded together.

Before prey became scarce, the dhole migrated only when its prey did. But in recent years the dhole's territory has expanded, since increasingly smaller food supplies have forced it to move farther afield.

FOOD & HUNTING

The dhole preys on hoofed mammals. In India it eats deer, wild pig, buffalo, and wild goats; in southeast Asia it feeds on deer, gaur, and banteng; and in Siberia it eats deer, wild sheep, and caribou.

The dhole is a tireless hunter. It tracks its prey at a steady trot for several miles. When the prey is exhausted, the chase is over, and the dhole makes an easy kill. Although one dhole can overtake a deer without

assistance, large animals such as the Indian buffalo require a highly organized pack of dholes. Then, some of them distract the prey by biting its head while others attack its flanks and belly.

When prey is migratory, the dhole migrates too. In Siberia, dholes follow the caribou. They both live high in the Sayan mountains during the summer and move down to the lowlands in the winter.

Left: The dhole uses its highly developed sense of smell to hunt.

Below: Dholes hunt in packs to kill large prey.



Above: The females of the pack give birth at different times. Other adults help to rear the pups. They bring food to the den and regurgitate it for the pups. They also help protect them from predators.



BREEDING

In its southern range the dhole has no set breeding season. Further north, breeding usually takes place in late winter, with pups born from February to April.

During the breeding season the female makes her den in a cave, a crevice, or a burrow. She often shares it with other females. When she comes into heat, the male pursues her until they mate. The pups are born about 60 days later, blind and fluffy. They grow

fast, but their eyes do not open for two weeks.

After a month the pups start being weaned, and they

begin to chew on small bits of meat. Six weeks later they become more independent.



DID YOU KNOW?

- According to legend, the dhole uses its urine to blind its prey temporarily, making it easier to catch.
- A male dhole once escaped from its pen in the Moscow zoo by leaping a series of ditches and fences 20 feet long and seven feet high.
- One of the dhole's calls is a whistle. Indian hunters imitate this sound to attract the animals to them.

RATEL

CARD 70



GROUP 1: MAMMALS

ORDER
Carnivora

FAMILY
Mustelidae

GENUS & SPECIES
Mellivora capensis



Despite its small size, the nocturnal ratel is one of the most aggressive and ferocious of all animals. It attacks venomous snakes as well as mammals several times larger than itself.

KEY FACTS



SIZES

Length: Up to 3 ft., including tail.
Height: 12 in. to shoulder.
Weight: 18-35 lb. Male heavier than female.



BREEDING

Sexual maturity: Not known.
Mating: Not known.
Gestation: 6-7 months.
Litter size: 1-2 young.



LIFESTYLE

Habit: Nocturnal; usually solitary.
Diet: Birds, fish, reptiles, carrion, roots, tubers, fruit, and berries.
Call: Grunts, growls, and howls.
Lifespan: 25 years in captivity. Average lifespan in the wild not known.



RELATED SPECIES

The European common badger, *Meles meles*, and the North American badger, *Taxidea taxus*, are similar in appearance and habits.



■ Range of the ratel.

DISTRIBUTION

Found over most of Africa from southern Morocco to the Cape. Also found in the Middle East, Soviet Union, Afghanistan, Nepal, and India.

CONSERVATION

The ratel is in no danger of extinction, but it is becoming rarer where human population and agriculture have spread.

THE RATEL AND THE HONEYGUIDE

The ratel has a unique partnership with the honeyguide bird. The honeyguide locates a beehive and then calls the ratel to follow it.



When the ratel reaches the beehive, it climbs up to it and rips it open. It then eats the honey before leaving the hive for the bird, which feeds on the larvae and wax.

Although the ratel somewhat resembles a badger, it is a member of the weasel family.

Within Africa and the Middle East, the ratel is found in tropical rainforests, open grassland, deserts, and mountainous regions at altitudes as high as 10,000 feet.

BREEDING

The ratel, sometimes called the "honey badger," is so secretive that little is known about its breeding habits. One or two young are born after a gestation period of six

to seven months. Birth takes place in a burrow, rock crevice, or hollow tree. Researchers believe that the male takes no part in raising the young.



C&T Stuart/Aquila Photographics

Left: The ratel's skin is so thick that it is rarely penetrated by porcupine quills, snake fangs, stings, or the teeth and claws of predators.

Right: The ratel climbs trees to get to beehives, but it spends most of its time on the ground.

DID YOU KNOW?

- In arid regions the ratel digs holes in dry riverbeds to obtain water. The action also benefits other species in the area. The elephant is one of the few other animals that digs for water.

- The ratel kills tortoises by biting through and smashing the shells to get at the flesh.
- If it is grabbed by the back of its neck, the ratel can turn around inside its loose skin to bite the assailant.

FOOD & HUNTING

The ratel eats almost anything it finds. Its varied diet includes small mammals and birds, as well as snakes, fish, scorpions, and termites and other insects. It also eats eggs, berries, fruit, tubers, roots, and honey—even the deadly

mamba snake.

When it is searching for food, the ratel digs into the burrows of meerkats, ground squirrels, rats, and mice, killing and eating the occupants. It also kills domestic sheep and chickens.



A. Barnister/NHPA

Right: The ratel digs at an incredibly fast speed. It sometimes does so as a means of defense.



D&J Brittel/Survival Anglia

Left: This ratel has killed a python. In addition to attacking poisonous snakes, ratels also kill scorpions.

HABITS

The ratel is mainly nocturnal. It spends the day below ground and emerges at dusk to hunt through the night. If it is undisturbed the ratel sometimes emerges from its burrow by day as well.

The ratel either digs its own burrow or takes over one belonging to another animal, such as the armadillo. It may also live in a rock crevice or in a hole among tree roots. When it digs its own burrow, the ratel creates a tunnel 40 feet long that may be as

much as five feet deep.

Despite its small size, the ratel is one of the most ferocious of all animals. Its fierceness is especially evident in the breeding season, when it attacks for no apparent reason. If the ratel is threatened by a person or another animal, its defense is to attack. It grips the intruder in its powerful jaws and maintains its hold.

The ratel is generally solitary by nature, although males and females may occasionally be seen together in pairs.



D&J Brittel/Survival Anglia



SPECIAL ADAPTATIONS

The ratel's contrasting black and white markings make it conspicuous in its habitat. Thus larger animals are warned to leave the ratel alone. The ratel squirts

intruders with a skunklike scent from glands located under its tail. The ratel's long, thick, and sharp front claws are used for digging, attack, and defense.