



OLD WORLD BADGER

GROUP 1: MAMMALS

ORDER
Carnivora

FAMILY
Mustelidae

GENUS & SPECIES
Meles meles



These reclusive animals, also known as European badgers, spend most of their daylight hours underground, so their lifestyle is something of a mystery.

KEY FACTS



SIZES
Length: 2-3 ft., nose to tail.
Height: About 12 in. to shoulder.
Weight: Males, 20-37 lb.
 Females, 14-28 lb.



BREEDING
Sexual maturity: Males, 2 years.
 Females, from 1 year.
Mating: Late winter-midsummer.
Birth: Following spring after 10-month delayed implantation.
No. of young: Average, 3-4.



LIFESTYLE
Habit: Nocturnal and solitary.
Diet: Earthworms, roots, grasses, fruits, insects, mice, rats, shrews, gophers, and young rabbits.
Lifespan: 15 years.



RELATED SPECIES
 The 6 genera distributed world-wide include the American badger.



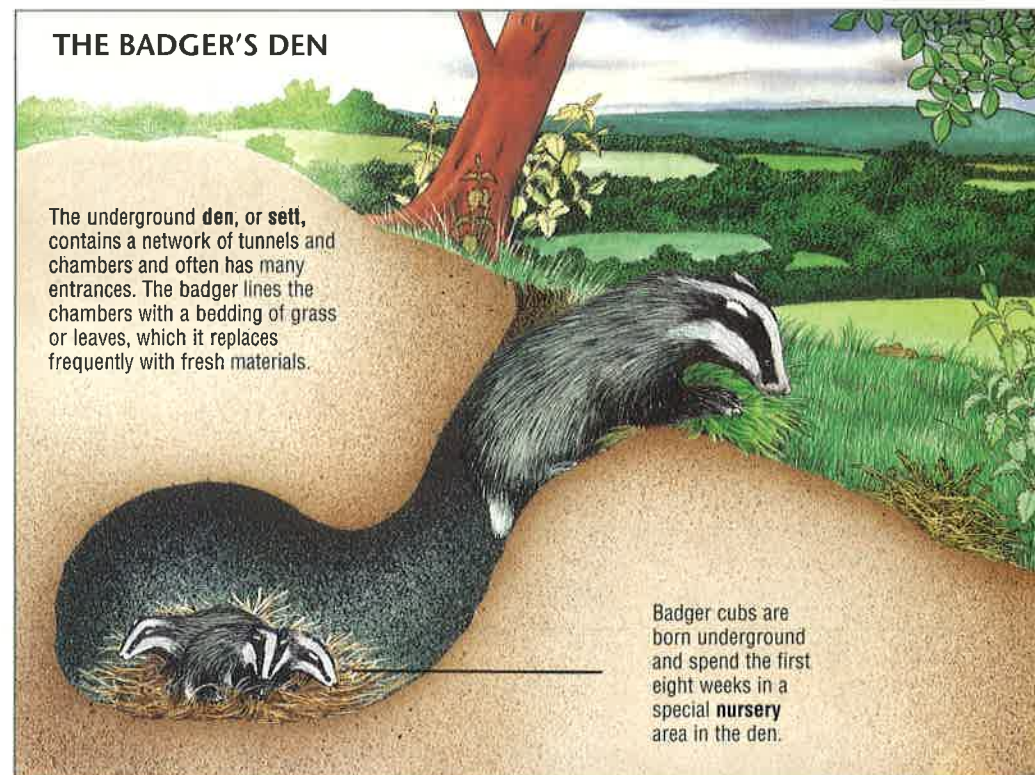
Range of the Old World badger.

DISTRIBUTION
 Inhabits forests and other densely vegetated areas of Europe and Asia.

CONSERVATION
 Population has declined in most of its European range, but numbers have recovered to between 100,000 and 200,000 in Great Britain. Hunters must be licensed to kill badgers.

THE BADGER'S DEN

The underground **den**, or **sett**, contains a network of tunnels and chambers and often has many entrances. The badger lines the chambers with a bedding of grass or leaves, which it replaces frequently with fresh materials.



Badger cubs are born underground and spend the first eight weeks in a special **nursery** area in the den.

Old World, or European, badgers live in the forests and woodlands of Europe and Asia. They are distinguished by their black-and-white striped faces and gray-black fur. Their broad, thick-set bodies set on short legs make badgers look awkward when they run.



HABITS

Old world badgers live in family groups during spring and summer, when young are being reared. The size of a group depends on food supplies. Sometimes, several groups of badgers live in the same location.

Each family lives in an underground den. Group members scent-mark each

other for recognition.

Badgers often travel long distances over frequently used paths in search of food. Males, called boars, also roam during the breeding season, looking for mates.

Badgers do not hibernate, but in cold weather, they may sleep in the den for two or three nights in a row.

BREEDING

Badgers mate year-round, but are most active from late winter to midsummer. Implantation of the eggs in the womb is delayed until December, and the young are born in the following February.

Usually, three to four cubs are born underground in a

special nursery area. The mother suckles them for eight weeks. The cubs then begin hunting for food with her, although they will not be completely weaned until they are 32 weeks old.

Right: *Four-week-old badger cubs. They are blind for about five weeks after birth.*



FOOD & HUNTING

The badger is a true *omnivore*: it eats both plant and animal life. Its usual food includes earthworms, slugs, insects, and frogs, a variety of roots, plants, and fruits, and mammals, such as rabbits, moles, and rats—especially their young.

Badgers search for food at dusk. Their eyesight is poor,

so they rely on their sharp senses of smell and hearing to detect food sources.

Groups of badgers often forage together, although the dominant boar takes the best for himself.

Below: *A European badger forages through soft earth looking for earthworms.*



BADGER & MAN

The badger's only natural enemy is man. Probably the greatest danger comes from motorists.

Hunters trap badgers for their fine hair, which is made into shaving and artists' brushes. The so-called sport of badger baiting, which results in slow and painful death, is now illegal, but still continues in some places.

Fox hunters sometimes block the entrances to badger dens to keep foxes from escaping into them. Although the badgers dig out their entrances again, naturalists say that the reduced air flow to the dens interferes with the badgers' feeding and causes undue stress to the animals.



NATUREWATCH

Badgers are easiest to see in summer. The best location for viewing them is from the low branches of a tree above and downwind from a den's entrances. Just before sunset, a snout will appear from the entrance and will sniff the air for danger; if all is clear, the badger will then emerge to begin hunting, followed by the rest of the family.



DID YOU KNOW?

- A quarter of all badgers die before they are 2 months old. Only one-third survive their first three years.
- A badger holds fresh bedding between its chin and forepaws and enters the den backward.
- Rabbits, mice, and foxes may share badgers' dens.

- The badger's strong jaw is designed in such a way that it cannot be dislocated unless the skull is fractured.
- Scars above the tail indicate a skirmish with another badger to establish dominance.
- The badger has a strong, flexible snout that helps it to poke through the soil.



HIPPOPOTAMUS

GROUP 1: MAMMALS

ORDER
Artiodactyla

FAMILY
Hippopotamidae

GENUS & SPECIES
Hippopotamus amphibius



The great African hippopotamus is second in weight only to the elephant. It spends up to 18 hours a day in water to keep cool and minimize heat loss, and to support its huge body.

KEY FACTS



SIZES

Height: 5 ft.
Length: 10-11 ft.
Weight: Males, 3,300-7,000 lb.
Females, up to 3,300 lb.



BREEDING

Sexual maturity: Males, 7 years (though do not usually breed until age 20).
Gestation: 240 days.
Birth season: Coincides with rainy season.
No. of young: 1.



LIFESTYLE

Habit: Sociable, living in groups of 10-20, but can be up to 150.
Diet: Grasses.
Call: Roars and bellows.
Lifespan: 45-50 years.



RELATED SPECIES

The hippo family includes the rarer pygmy hippopotamus (*Choeropsis liberiensis*).



Range of the hippopotamus.

DISTRIBUTION

Hippos are found in western, central, eastern, and southern Africa, with the highest concentration in the Rift Valley of eastern and central Africa.

CONSERVATION

Not in danger of extinction, and in many areas, overgrazing by large hippo populations has caused serious soil erosion, resulting in their removal by organized hunting.

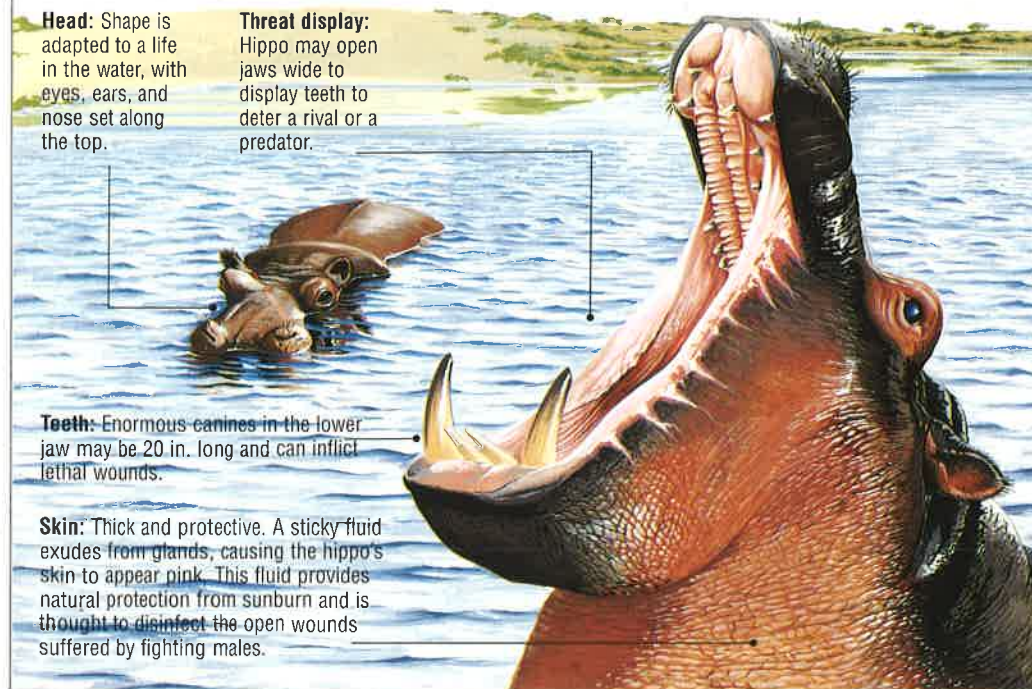
SPECIAL FEATURES OF THE HIPPOPOTAMUS

Head: Shape is adapted to a life in the water, with eyes, ears, and nose set along the top.

Threat display: Hippo may open jaws wide to display teeth to deter a rival or a predator.

Teeth: Enormous canines in the lower jaw may be 20 in. long and can inflict lethal wounds.

Skin: Thick and protective. A sticky fluid exudes from glands, causing the hippo's skin to appear pink. This fluid provides natural protection from sunburn and is thought to disinfect the open wounds suffered by fighting males.





The African hippopotamus is ideally adapted to the deep rivers and grassy feeding grounds that form its habitat. Its skin secretes a sticky, pink mucus that protects it from the sun and helps it to retain water on dry land.

HABITS

The hippopotamus usually lives in groups of 15 to 20 animals, although some groups can be much larger. The hub of the group is the band of females and their young. This group lives on territory patrolled by a dominant, solitary male who is at least 20 years old.

A dominant male is able to defend his territory for as

long as 10 years, until a fierce fight with a younger rival male may end his dominance—and even result in his death. Young males who do not have their own groups form small bachelor groups. If a male successfully challenges a rival, he leaves the bachelor group and becomes the dominant male in his new territory.

FOOD & FEEDING

The hippopotamus spends up to 18 hours a day in the water keeping cool. It feeds during the hours following sunset. With the exception of mothers and their offspring, hippos leave the water singly to make their way along well-worn paths to their feeding areas.

If the hippo finds a wallow of muddy water, it may remain immersed in it for much of the day. It may feed in the new area rather than returning to its usual feeding ground.

For such a large animal, the hippo eats surprisingly little—about 90 pounds a night. This is partly because it stays submerged in water most of the time, using up little energy.

Left: As the only refuge from the scorching sun, a river offers the hippo a cooling, tranquil rest.

DID YOU KNOW?

- Because it loses water through its skin much faster than other mammals, a hippo cannot survive for long on dry land in hot weather.
- A hippo can stay underwater for up to five minutes, and often walks along the bottoms of lakes.
- Turtles, birds, and even young crocodiles often bask in the sun on the backs of hippopotamuses.
- The term “sweating blood” comes from the hippo’s function of secreting a pink fluid from glands beneath its skin.



BREEDING

When a female is ready to mate, she will seek out an adult male. After approximately 34 weeks, the female leaves the group and gives birth to a single young. Sometimes, the birth takes place underwater, and the young must surface quickly to take its first breath.

Within five minutes of birth, the young hippo can swim and walk. The mother suckles the young hippo for only eight months, although it will remain with her for several years.

A female is often seen with several young following her; the youngest walking closest and the oldest following at the end.

Right & inset: A mother guards her calf while young males indulge in a bout of wrestling.



LEOPARD

CARD 36

GROUP 1: MAMMALS

ORDER
Carnivora

FAMILY
Felidae

GENUS & SPECIES
Panthera pardus



J. Scott/Planet Earth Pictures

The solitary leopard is extremely difficult to spot in the wild. It is renowned for its sharp vision and keen sense of hearing, and for its unique ability to avoid detection.

KEY FACTS



SIZES
Shoulder height: 20-24 in.
Length: 40-50 in. from head to end of back.
Weight: 80-175 lb.



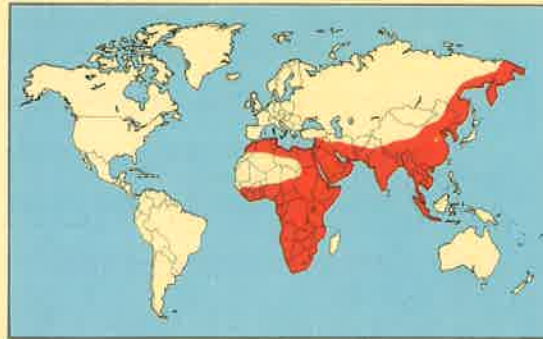
BREEDING
Sexual maturity: 2-3 years.
Mating: Year-round in tropics, seasonal in other areas.
Gestation: 90-112 days.
Litter size: 2-3 cubs, occasionally as many as 6.



LIFESTYLE
Habit: Solitary.
Diet: Mammals and birds.
Call: Roar or growl.
Lifespan: 12 years.



RELATED SPECIES
The closely related South American jaguar, *Panthera onca*, has similar markings, but is larger than the leopard and more powerfully built.



Range of the leopard.

DISTRIBUTION

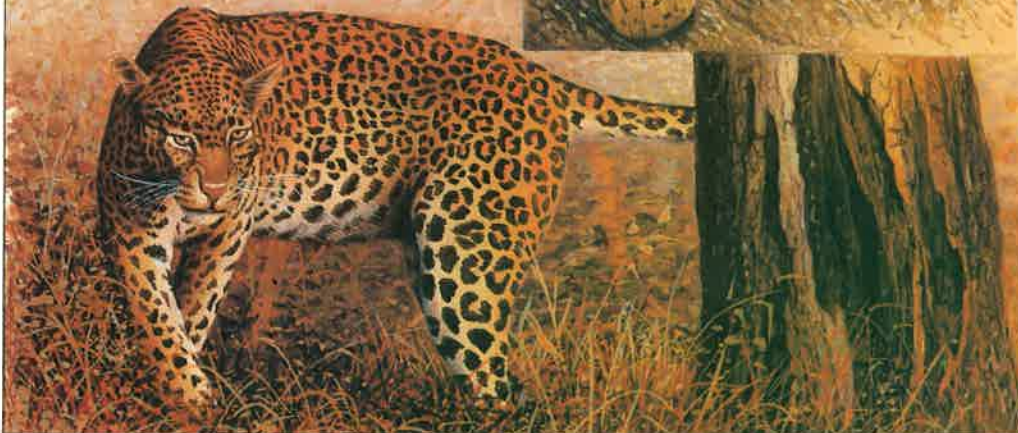
Throughout most of Africa and Asia from the Middle East to the former Soviet Union, Korea, China, India, and Malaysia.

CONSERVATION

Numbers greatly diminished, especially in Asia Minor, Manchuria, and settled areas. The international fur trade is collaborating in regulating trade in leopard skins.

THE LEOPARD'S CAMOUFLAGE

The leopard's strongly contrasting markings visually break up the outline of its body and allow it to blend in with its surroundings whether it is resting in a tree (right) or moving through the tall grass (below). With its silent movements and the excellent camouflage that its coat provides, the leopard can get as close as possible to its prey without being noticed, before attacking the surprised animal.



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Although most frequently found in forest regions, the leopard can live successfully in a variety of habitats, from semidesert to the lower altitudes of mountains just below the snowline. Its coat color varies from a very pale yellow to black, but it is always spotted.



J.Scott/Planet Earth Pictures

HABITS

Except for the brief times during mating and when the female is rearing her young, the leopard leads a solitary life within a defined territory. Like other members of the cat family, the leopard marks its territory with urine. It will also shred the bark of particular trees within its

territory. In areas that are rich in game, territories are smaller than in those areas that have less prey. The territories of males are usually larger than those of females and will often overlap several females' territories. However, males never share portions of their territories.

BREEDING

Male and female leopards come together to breed for only a week, when the female is in heat. The male is drawn to her by the strong smell of urine that she sprays on the trees at this time. After mating, the male returns to his territory, leaving the female to give birth and rear the young alone.

The birth takes place in a hidden lair after a gestation period of three months. If the female carried her young for a longer period of time, it would restrict her ability to hunt, preventing her from killing enough food for herself and her cubs. But the short gesta-

tion period means that the cubs are born underdeveloped; they are helpless and weigh only 15-20 ounces.

While the cubs are still small, their mother carries them to a new hiding place every few days to lessen their chances of falling prey to lions, hyenas, and even male leopards. At this stage in their growth, the spots on their coats are so dense that they appear to be solid gray. Their milky, blue eyes, characteristic of the young of all species of cat, open after nine days.

The cubs generally stay with their mother for two years.

Left: A leopard rests in a tree after a successful kill.

Below: A female and her cubs emerge from their lair.



D & M Plage/Survival Anglia

Left: Prey, even a large impala, is stored safely above the ground.



S.Mayers/Ardea London

LEOPARD & MAN

The leopard has been hunted for its beautiful coat for many years. In the early 1960s, leopard poaching reached an all-time high when an estimated 50,000 leopards were killed in East Africa.

Today, the leopard is a

protected species, but it is still hunted by herdsmen, shepherds, and poachers. Yet, it is recognized by farmers as having a useful function: it controls such animals as baboons and bushpigs, which do great damage to crops.



J.Scott/Planet Earth Pictures

FOOD & HUNTING

The leopard usually hunts at dawn or dusk. After waiting silently among the brush or in a tree, the leopard ambushes its prey. The leopard kills by biting its prey on the throat or on the back of the neck.

The leopard will then take its kill, which may be as heavy as itself, up into a tall tree, lodging it in the branches. Here it is safely stored beyond the reach of scavengers, such as hyenas and jackals. After eating, the leopard drinks at a water hole.

The leopard eats a wide range of animals, from baboons, warthogs, and medium-sized antelopes, to small mammals and birds. Individual leopards will sometimes develop a preference for particular types of food. It is thought that man-eating leopards, which are rare, develop a liking for human flesh after they have tasted it once.

DID YOU KNOW?

- The range of a leopard's hearing is twice that of a human's, and, in dim light, its sight is six times better.
- The leopard likes to drink daily, but can go for as long as a month without water.
- Leopards have a highly developed homing instinct. A group found wandering in a suburb of Nairobi was captured and released in the Tsavo National Park, 200

miles away. Within a few weeks, the leopards found their way back to Nairobi.

- Black leopards, called black panthers, were once regarded as a separate species, but they are now considered true leopards. Although they are black, their rosettes of spots are still faintly visible, and sometimes they are even born into the same litters as common leopards.

WALRUS

CARD 37

GROUP 1: MAMMALS

ORDER
Pinnipedia

FAMILY
Odobenidae

GENUS & SPECIES
Odobenus rosmarus



The walrus lives in the Arctic. Despite its isolation, its long tusks, deeply wrinkled skin, and bristly mustache make the walrus familiar to all.

KEY FACTS



SIZES
Length: Bulls, 10-12 ft.
Height: To 5 ft.
Weight: 2,000-3,500 lb.



BREEDING
Sexual maturity: Females, usually 6-7 years. Males, 15 years.
Mating: January-March.
Gestation: 15 months, including 3 months delayed implantation.
No. of young: 1.
Weaning time: 18-24 months.



LIFESTYLE
Habit: Gregarious, living mainly in herds.
Diet: Mainly bivalve mollusks, but also other invertebrate marine animals, fish, and sometimes seals.
Lifespan: Up to 40 years.



RELATED SPECIES
The only species in its genus.
Related to fur seals and sea lions.



Range of the walrus.

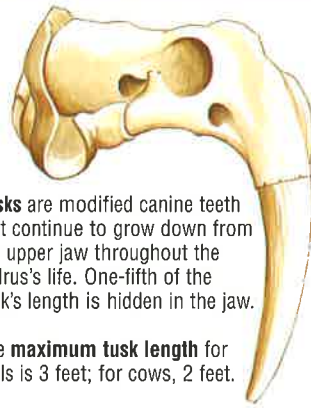
DISTRIBUTION

The walrus is found in the Arctic seas from Alaska to the former Soviet Union.

CONSERVATION

Commercial overhunting has endangered the species throughout its range. The population has improved in the north Pacific, but those in the north Atlantic remain under threat.

THE WALRUS'S TUSKS



Tusks are modified canine teeth that continue to grow down from the upper jaw throughout the walrus's life. One-fifth of the tusk's length is hidden in the jaw.

The **maximum tusk length** for bulls is 3 feet; for cows, 2 feet.



A walrus may use its tusks to get a firm grip when hauling out on the ice or to support its head as it rests. Tusks are used as weapons against rivals during the breeding season, and they are used as a status symbol within the herd.



BREEDING

Large herds of walrus gather during the breeding season. The bulls fight for cows, and the largest bulls with the longest tusks usually win. Each winner will mate with several females.

Birth occurs about 15 months after mating, often from April to June, as the herds are heading north after the winter. The female hauls out to an ice floe to give birth to a single calf that measures about 50 inches.

Left & inset: In the spring breeding season, walrus assemble with their calves in groups that are dominated by males.

At first, the calf travels by hanging onto its mother's neck. After two weeks, it is able to swim.

The walrus calf nurses on its mother's rich milk for at least 18 months. At 6 months, it begins to eat solid food, and after a year it has usually tripled in weight. Its tusks show now, but they are only about 1 inch long. At 2 years, the calf leaves its mother and joins a herd of other young walrus.

Because of the length of time that she cares for her calf, a female breeds only once every two years.



Above: Walrus haul out in vast numbers on the shore of Round Island, Alaska.

The walrus is equipped with

immensely thick skin and blubber to

protect it from the cold temperatures

of Arctic waters. Its long tusks are

not only weapons in defense or attack,

but they also serve as ice picks.

FOOD & FEEDING

The walrus gathers its main food from the seabed, including clams, cockles, mussels, shrimp, worms, sea cucumbers, and even octopus, as well as some fish. Sometimes, a bull will eat a seal after attacking it with its tusks.

Although it can dive as deep as 250 feet for up to 10 minutes, the walrus usually searches for food in much shallower waters. The waters that the walrus feeds in are

often murky, so it probably uses the sensitive bristles of its mustache to locate food. It may also uncover mollusks from soft mud by squirting water from its mouth.

WALRUS & MAN

Eskimos have hunted the walrus for hundreds of years. They use almost every part of the animal. Because they traditionally hunted them using strong fishing lines, they did not catch enough walrus to reduce its population. Eskimos are still allowed to hunt the walrus, but now they use high-powered rifles. They can kill many more walrus than they did with fishing lines.

In the last 300 years, commercial hunters caught so many walrus that the species is almost extinct. There are now about 250,000 walrus in the Bering Sea, but extinction is still a possibility because of their slow breeding rate and the fragile environment in which they live. Even though commercial hunting is no longer allowed, the walrus is still endangered.

HABITS

The walrus spends its days in open water near the shore or resting on ice floes. When there are no floes, it hauls out (pulls itself out of the sea) onto rocky shores, often alongside many other walrus. In limited space, walrus may even lie on top of each other.

Flat flippers, instead of feet, enable the walrus to swim. The forelimbs serve as rudders. When on land, the walrus can walk almost

upright on all fours by turning its back flippers forward. The bumpy bottoms of the flippers help the walrus to grip the ice.

When the ice spreads and thickens into pack ice in the winter, walrus usually head south. They cannot break through the thick ice to make airholes, which they need to breathe through when underwater.

Blubber (fat) and thick skin keep the walrus warm

in the freezing Arctic temperatures. Blubber may be as much as 6 inches thick.

Right: An unexpected meeting: naturalists and a young walrus exchange cautious greetings.



DID YOU KNOW?

- *Odobenidae*, the walrus's family name, comes from an ancient Greek word that means "one who walks with his teeth."
- The walrus turns red when it sunbathes. The heat causes

its arteries to enlarge, and the blood rushes to the skin, causing redness.

- When the walrus bellows, the noise sometimes resembles the ringing of distant church bells.

- The skin from a bull's neck can be 3 inches thick. It is valued for polishing and buffing metal objects.
- The longest walrus tusk on record was 37 inches long and 11 inches in diameter.

RED KANGAROO

CARD 39

GROUP 1: MAMMALS



ORDER
Marsupialia

FAMILY
Macropodidae

GENUS & SPECIES
Macropus rufus



The red kangaroo is the largest of the many species of marsupial, or pouched animal, and is found only in Australia. It sustains itself on a diet of nothing but grass and shrubs.

KEY FACTS



SIZES
Height: Head and body length, up to 5 ft. Tail, up to 3 ft.
Weight: Males, up to 180 lb., but usually 120 lb. Females, 65 lb.



BREEDING
Sexual maturity: 18 months-2 years.
Mating: Year-round, but dependent on availability of food.
Gestation: 33 days. 6-11 months spent in the pouch.
No. of young: 1.



LIFESTYLE
Habit: Nocturnal. Lives in herds.
Diet: Grasses, shrubs, and leaves.
Lifespan: 12-18 years. Up to 25 years in captivity.



RELATED SPECIES
Wallabies belong to the same family as kangaroos, and together there are more than 50 different species.



Range of the red kangaroo.

DISTRIBUTION

Found only in the interior of Australia, where it is widespread in desert and semidesert regions.

CONSERVATION

Although more than three million kangaroos are killed each year because of competition with domestic livestock, the red kangaroo is still one of the most numerous of kangaroo species and is in no danger of extinction.

THE DEVELOPMENT OF THE YOUNG

After birth, the young kangaroo uses its strong forearms to crawl into its mother's pouch by following a trail of saliva that the mother places on her abdomen. Kangaroos can breed continuously—a female often nurses two offspring at the same time.



In its mother's pouch, the naked joey instantly takes hold of a nipple and remains attached to it for 70 days. By the time it leaves the pouch, the joey weighs about seven pounds. A young kangaroo continues to feed from its mother until it is a year old.

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Standing as tall as, or taller than, a man, the adult male red kangaroo is recognized by its reddish-colored fur. The females and young are a bluish-gray color. The red kangaroo is widespread throughout the arid central region of Australia and has few predators.



HABITS

The red kangaroo is a grazing animal that inhabits Australia's arid interior region. The kangaroos are widespread and live together in groups, called *mobs*, of more than 100 animals.

The home range of the kangaroo is approximately 115 square miles. Each group of kangaroos contains at least

one adult male. If there are several males in the group, the dominant male will lead the mob.

The red kangaroo is a nocturnal animal. Remaining inactive during the day helps it to stay cool. It rests under the shade of trees or shrubs, and sometimes digs a shallow depression in the ground, in

which it lies to escape the heat.

The kangaroo's forearms, which have no fur, carry blood vessels close to the surface of the animal's skin. In high temperatures, the kangaroo will lick its forearms to help cool itself. It will also pant to get rid of excess body heat.

BREEDING

The dominant male in a mob of red kangaroos has access to all females for mating. A female is fertile throughout the year, but she can time her breeding to coincide with the availability of food and water. Gestation is little more than a month. The young kangaroo is still quite undeveloped when born, but its forearms are strong enough for it to crawl

into its mother's pouch.

Because she can breed continuously, a female kangaroo produces different kinds of milk to meet the nutritional needs of more than one offspring at a time. A joey that has left the pouch requires fat-rich milk for energy; its pouch-bound younger sibling gets more carbohydrates.

FOOD & FEEDING

The red kangaroo feeds on grass and the foliage of low-growing shrubs. Kangaroos are usually found near water-courses—both natural and man-made—where plant growth is more plentiful.

Red kangaroos wander extensively over their home range. When rain falls on the desert areas, they gather to feed on plant seedlings that suddenly germinate. The red kangaroo can go for long periods without water, if necessary.

Below: A mother feeds while her 6-month-old joey ventures out.



Left: Dominance between rival males is established by fighting. The winner will head a mob of about 100 animals.

Right: Its tail and a leg still dangling, a joey joins its parents in looking for the threat that has sent it scrambling back into its mother's pouch.



DID YOU KNOW?

- A red kangaroo can travel up to 40 miles per hour. It can also jump more than 40 feet in a single leap.
- Adult male red kanga-

roos are called "boomers;" females are called "blue fliers."
• At birth, a red kangaroo is no bigger than a human thumb, but a

mature kangaroo can be taller than a man.
• Strong tendons in the kangaroo's hind legs provide effortless propulsion for its bounding leaps.

RED KANGAROO & MAN

The red kangaroo has long been hunted by man for its meat and skin, first by the Aborigines and then by settlers. Today, the red kangaroo is considered a pest

by farmers, whose sheep and cattle must compete with it for the available grass.

Where man has created water holes for grazing livestock, the kangaroos also

take advantage of the supply. Because they can leap such great distances, farmers find it almost impossible to fence kangaroos out of their livestock grazing areas.