Animal Fact File is a visual guide to the most important—and most interesting—unique anatomical features of the world's most irresistible and fascinating mammals. Covering animals from diverse corners of the globe, from the trees of the Amazon basin to the depths of the ocean, the blazing floor of the desert to the frozen tundra of the Arctic, this book features more than 90 mammals, from aardvarks to wombats.

Each animal is featured on a two-page, full-color illustrated spread that highlights special features of its body, accompanied by X-ray views showing the skeleton with clear annotations. Fact boxes and captions provide additional information, such as size, color, distinguishing features and feeding habits.

Animal Fact File is the perfect introduction to the animal world for the general reader and an essential reference for any young adult with an interest in these remarkable mammals.

About the Author

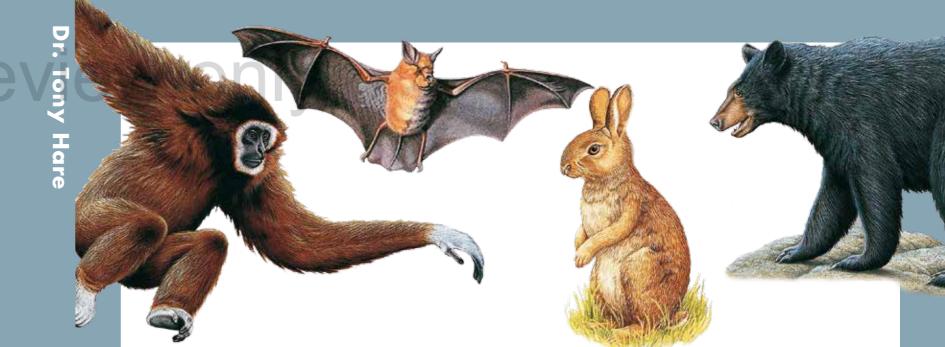
Dr. Tony Hare (1954–2010) was a botanist, author, film-maker and conservationist who co-founded the charity Plantlife, which works nationally and internationally to save threatened wild flowers, plants and fungi. He also worked alongside some of the world's leading environmental organizations such as World Wildlife Fund and Water Aid, and appeared on children's environmental TV programmes in the UK. Some of his previous publications include *Animal Habitats: Discovering How Animals Live in the Wild* and *Animal Life Cycles: Growing Up in the Wild*.



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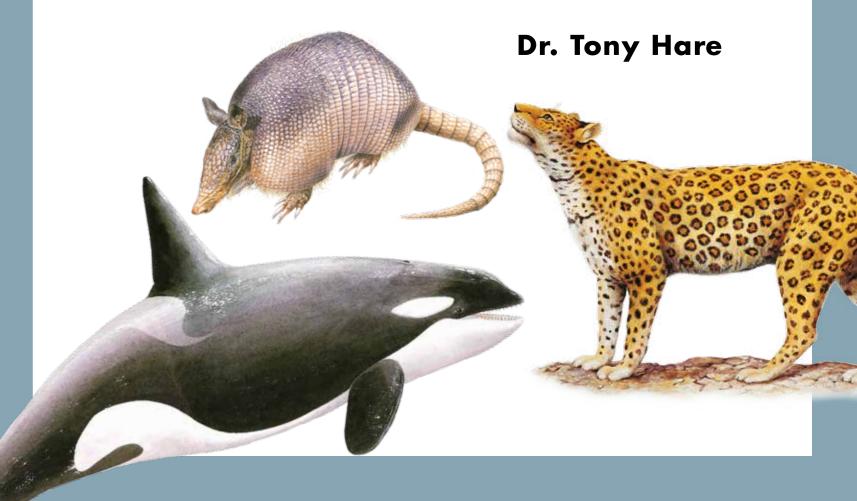






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HEAD-TO-TAIL PROFILES OF MORE THAN 90 MAMMALS



Narshall Cavendish Edition

ANIMAL FACT

FILE

For Review only



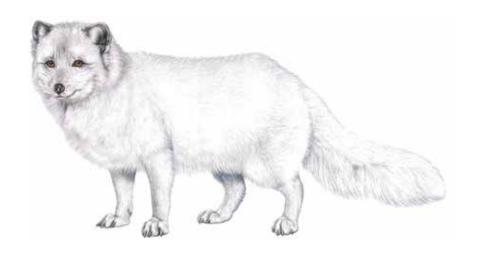








For Review only ANIMAL FACTFILE HEAD-TO-TAIL PROFILES OF MORE THAN 90 MAMMALS



Dr. Tony Hare





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There are over 4,000 species of mammals, covering animals from diverse corners of the globe: ranging from the trees of the Amazon basin to under the sea, the blazing floor of the desert to the freezing tundra of the Arctic.

Despite their diversity, all mammals share certain characteristics which, taken together, set them apart from other animals. They all have mammary glands, which are the organs used by the females to feed milk to their young, and from which they get their name. All mammals are 'warm-blooded', which means that they can maintain a regular internal body temperature using the heat generated in their muscles and other body tissues. Mammals have hair or fur to retain this heat and keep them warm in cold weather. Many have fur all over their body, and some over parts of their body, while some mammals, such as whales, have only a few hairs.

Mammals have four limbs (though in some sea mammals, such as dolphins, these have become flippers), well-developed brains and efficient hearts with four separate chambers, which keep apart oxygen-rich blood and blood from which most of the oxygen has been removed in its journey around the body.

All the mammals living today can be divided into 21 groups or orders (shown opposite).

| SCIENTIFIC NAME | TYPICAL SPECIES |
|-----------------|------------------------------|
| Artiodactyla | pig, hippo, antelope, cattle |
| Carnivora | cat, dog, bear, raccoon |
| Cetacea | whale, dolphin, porpoise |
| Chiroptera | bat |
| Dermoptera | flying lemur |
| Edentata | armadillo, anteater |
| Hyracoidea | hyrax |
| Insectivora | shrew, hedgehog, mole |
| Lagomorpha | rabbit, hare, pika |
| Macroscelidea | elephant shrew |
| Marsupialia | kangaroo, koala, wombat |
| Monotremata | platypus |
| Perissodactyla | horse, zebra, rhinoceros |
| Pholidota | pangolin |
| Pinnipedia | seal, sea lion |
| Primates | monkey, lemur, ape, man |
| Proboscidea | elephant |
| Rodentia | rat, mouse |
| Scandentia | tree shrew |
| Sirenia | sea cow, manatee |
| Tubulidentata | aardvark |

AARDVARK



The aardvark (above left) measures up to 63 in (160 cm) long and may weigh as much as 180 lb (82 kg), although most individuals weigh 110-154 lb (50-70 kg). Hyraxes (above right) measure 12-25 in (30-63 cm) from head to tail and weigh up to 12 lb (5.4 kg). The tail is only 0.4-1.2 in (1-3 cm) long, or is lacking altogether.



NOSTRILS

On the tip of the snout are two circular nostrils from which grow a number of whitish, curved hairs, each 1-2 in (22-50 mm) long. The nostrils can be sealed shut to keep out soil when digging.

THE EARS

are long and tubelike, and the skin is smooth and waxy. The aardvark can move them independently of one another, and when it is digging it folds them back to keep dirt out.



A hyrax walks on its soles. Naked toe pads, moistened by special glands, grip rocks or bark very tightly. A muscle in the center of each pad draws the center in so that it forms a suction cup.



HYRAX FOREFOOT HIND FOOT



TREE HYRAX HIND FOOT

and its hind foot can be revolved on its axis.



tree hyrax is a skilled climber,



with a circumference of about 16 In (40 cm). It often leaves a distinctive trail on soft ground.

AARDVARK Location: Africa (south of the Sahara)

Head-body length: 40-63 in (100-160 cm)

Pinkish gray skin with a sparse covering of hair

Long snout ending in a piglike muzzle.

Large, waxy, naked ears.

to the rest of the body.

Tapering tail.

that varies in color from brown to yellowish gray.

Large hindquarters, seemingly out of proportion

Weight: 110-155 lb (50-70 kg)

CLASSIFICATION

Species: afer

COLORATION

FEATURES

SIZE

Genus: Orycteropus

tapers away from a stout base

THE TAIL

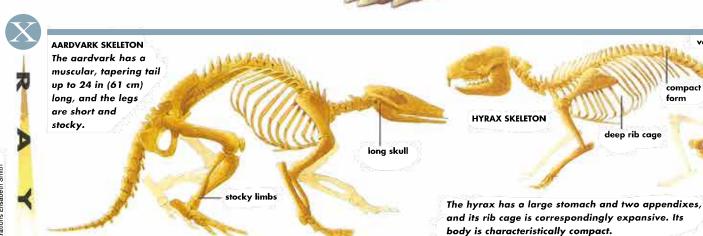
THE TONGUE

EACH EYE

contains a special

membrane-the umbraculum—that acts as a shade for the pupil and allows the animal to sit motionless on a rock apparently gazing directly at the sun.

is long and tapering and is often left hanging outside the mouth, with the end coiled up like a clock spring.





The teeth are tubular, and each is made up of many long, six-sided tubes of dentine. The tooth is surrounded by a layer of cementlike material instead of enamel.



THE CLAWS

AARDVARK SKULL

are long, slightly curved, and

spoon shaped, with sharp edges for

digging. There are four claws on the forefeet and five on the hind feet.

> with simple dentition; there are only about five flat, rootless cheek teeth on each side of each jaw. There are

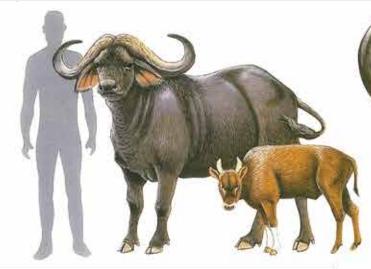
no incisors or canines.

The skull is long and narrow tusklike



The hyrax first grows milk teeth-12 incisors and a canine tooth in the upper jaw. With the arrival of permanent molars, only one incisor is left in the upper jaw and no canines remain.





The African buffalo is the largest and most feared of the wild cattle. The mountain anoa (above right) is the smallest, measuring up to 5 ft (1.5 m) long and weighing up to 660 lb (300 kg).





AFRICAN **BUFFALO HOOVES**

The cloven hooves are exceptionally broad, with a wide spread for easy wading in swampy conditions. As in all artiodactyls, they have evolved to retain an even number of toes.

THE HEAD

is massive, with a prominent forehead. The broad muzzle is naked and permanently moist, and the nostrils are broad and flared. The eyes are comparatively small.

THE EARS

grow at right angles to the head, but hang droopily behind and below the horns. They are set far back and made to look even bigger by the fringe of soft hairs.

For Review

WATER BUFFALO

Horn shape and size vary widely among the wild cattle. Those of the yak grow to a length of 37 in (95 cm). The water buffalo's elegant, backswept horns are the

longest of any bovid, and measure 48 in (122 cm) along the outside

edge—the record length is 76 in (194 cm). By comparison, the tamarau's stout horns measure a mere 20 in (51 cm).

YAK

CLASSIFICATION

Genus: Syncerus Species: caffer

SIZE

Head-body length: 6.8-11 ft (2.1-3.4 m) Height to shoulder: 3.3-5.5 ft (1-1.7 m) Average length of horns from root to tip:

AFRICAN BUFFALO Location: Africa (south of the Sahara)

3.3 ft (1 m)

Tail length: 28 in (71 cm)

Weight: 660-1,984 lb (300-900 kg)

Males are 30-50 percent larger than females.

Weight at birth: 88 lb (40 kg)

with a thick neck and strong shoulders. The humps of

other cattle, such as the gaur COLORATION

and zebu, are formed from two massive muscles surrounded by fatty tissue.

is typically "cattle shaped,"

TAMARAU

THE TAIL

THE BODY

is slender, ending in a tuft of hairs. Of all the wild cattle, the kouprey's tail probably has the bushiest tip.

THE COAT

is dark brown to black in the male. The female's coat is paler in color. As animals mature, the coats become more sparse, particularly so in old bulls, when the dark brown hide often shows through. White patterns of grizzled hair may appear on the head.

Adult bulls are dark brown to black.

Hair gradually thins out as animals mature, until large patches of dark hide are exposed. This may be accompanied by patchy markings on the face.

Cows are paler in color, and calves are a reddish

FEATURES

Massive, typical bovine appearance.

Long, shallow curving horns, meeting in a helmet, or "boss," on the crown in males.

Horns taper to a pointed tip.

Long, drooping ears fringed with hairs.

Permanently moist muzzle.

Long tail ending in a bushy tip.

BUFFALO SKELETON

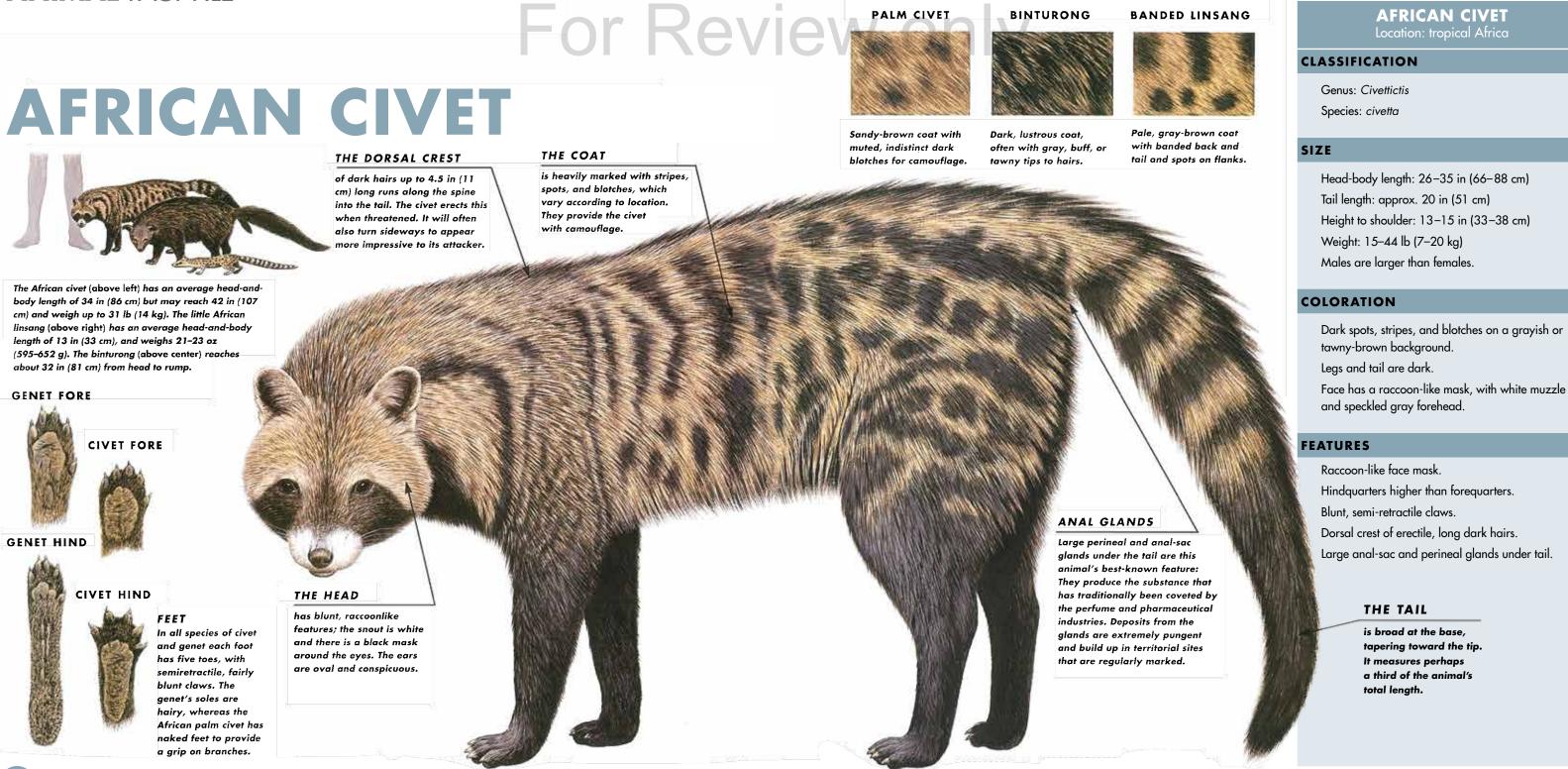
The buffalo's body plan is characterized by its sheer sense of scale—there are massive, stout bones in the pelvis, limbs, and forequarters. Long fingers of bone extending from the upper vertebrae provide extra anchorage for the huge muscles that operate the shoulders and forelimbs. The skull is low-slung, enabling the embossed horns to serve as defensive weaponry.

BUFFALO SKULL The horn helmet, or "boss," adds to the great size of the cranium. In spite of their size, the horns are surprisingly light and may help the animal to float in water.

tapering muzzle

The male's horns (below) are massive and spreading, and their central base forms a "boss" on the skull. Viewed from the front, they form a shallow W shape. The female's horns are similar but smaller, and there

is no central boss.

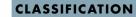




X-ray illustrations Elisabeth Smith

AFRICAN WILD DOG





Genus: Lycaon

Species: pictus

SIZE

Head-body length: 30-40 in (75-100 cm) Tail length: 12-16 in (30-40 cm) Average weight: 44-60 lb (20-27 kg) Males are some 10 percent heavier than females.

AFRICAN WILD DOG Location: from the Sahara to South Africa

COLORATION

Sparse coat of random but well-defined black, tan in older animals the skin is clearly visible. Each individual has a different coat pattern, but the has a white tip.

Long, slim legs with four toes on each foot.

White-tipped tail.

yellow, and white blotches on grayish black skin; muzzle is always black and the tufted tail always

FEATURES

Lithe, slender build.

Broad, dark muzzle with conspicuous teeth.

Large, rounded ears.



The African wild dog (above) is roughly the size of a wolf, but far more slender. Males and females are very similar in size, although males tend to be some 10 percent heavier than their sisters. For comparison, the Asian dhole has a similar build, while the bush dog of South America is barely the size of a badger (neither is shown above).



The African wild dog runs on its toes, with strong, nonretractile claws to increase grip at speed. Uniquely among canids, the wild dog has lost the dewclaw from each forefoot.

THE EARS

are mobile and unusually large, enabling the dog to use them for visual communication at long range. Well supplied with blood vessels, they act as heat radiators to help keep the dog cool in the tropical climate.

THE MUZZLE

is short and broad and always black. The dog hunts mainly by sight and is less inclined to use scent signals than most canids, but despite this, its sense of smell is acute thanks to the large surface area of nasal membranes within its muzzle.

FOREFOOT



THE LEGS

THE TAIL

THE COAT

out even further to reveal the black skin beneath. The

are similarities between members of the same family.

THE BODY

is lean but wiry, like that of

deep chest contains the bia

lungs needed to obtain the

oxygen to fuel long chases.

Its elastic stomach enables it

to gulp down up to 11 lb (5

is tasseled, and always has a conspicuous white tip; it is used as a visual signal to other dogs in the pack.

kg) of meat at a sitting.

any endurance runner. A

The fur is short and scant, and in older dogs it thins

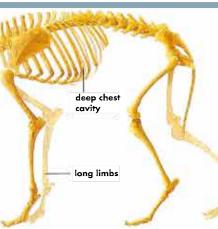
coat pattern is unique to each individual, but there

are long and slender, but well muscled to propel the dog at speeds of up to 40 mph (65 km/h) as it closes on its prey.

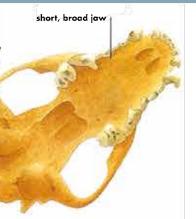


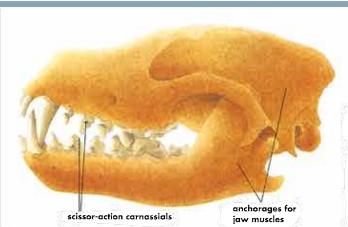
SKELETON

The African wild dog has a strong but relatively inflexible spine and a deep chest cavity to contain large-capacity lungs. Its limbs are specialized for running at speed, being elongated by extra long shoulder blades and a digitigrade stance. The collarbone, or clavicle, is redundant and has virtually disappeared.



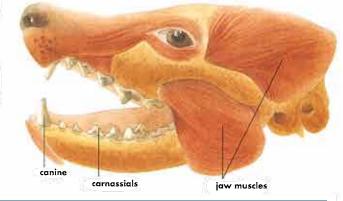
The lower carnassial teeth have two knifelike cusps in line. These act against the upper carnassials like scissor blades to shear through tough hide, sinew, and flesh. In most other dogs, each lower carnassial has twinned rear cusps that form a flattened grinding surface for chewing tough vegetable food.





The jaw is broader and shorter than that of a more typical canid, such as a wolf. This increases the leverage that can be exerted on the long canine teeth by the big jaw muscles attached to the crest at the back of the skull, enabling the dog to hang on to powerful, struggling prey. The eyes face forward, giving the binocular vision essential for judging distances.





X-ray illustrations Elisabeth Smith



The lion is the second largest of the cats (the tiger is the largest) and one of the world's biggest land carnivores. Males can exceed 9.8 ft (3 m) in head-to-tail length and stand as high as 3 ft (1 m) at the shoulder. The black-footed cat of southern Africa is only 2.3 ft (70 cm) long and, at 2-4 lb (1-2 kg), averages only one-hundredth the weight of its mighty relative.

SENSITIVE WHISKERS

help the lion find its way in dense cover or on moonless nights. Moving in for the kill, it spreads its whiskers like a living circular net, which helps it select the best spot to clamp its great jaws on its victim.



HEAD COMPARISON

In contrast to other cats—in which males and females, though differing in size, look very similar—adult male lions are easily distinguished from females because of their luxuriant manes. SHORT HEAD

The face is much shorter and rounder than that of a wolf, hyena, or other carnivore, a result of the reduction in the length of the nasal cavity and a shortening of the jaws.

MANE

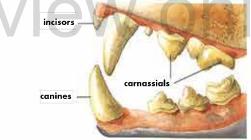
The mane of the male lion serves a dual function. It makes the lion look bigger and more imposing to rival males, giving an illusion of

areat size without the

event of a fight.

drawback of an increase in weight. It also provides the

throat with padding in the



VIEW FROM INSIDE incisors

SCISSORLIKE TEETH

VIEW FROM OUTSIDE

The lion uses its two pairs of greatly enlarged, cruelly pointed canine teeth to seize and throttle its prey. The small incisors, lying between the great canines, chop mouthfuls of flesh from the carcass. The molars and premolars are modified to form the carnassial teeth; their sharp cutting edges work against one another like shears to slice up prey.

HIND LIMBS

are sturdy and strongly muscled
to provide power for the final
sprint to catch prey and for
leaping if necessary. A lion
can run for short
distances at about
40 mph (65 km/h)
and leap up to

39 ft (12 m).

FORELIMBS

have powerfully developed muscles to enable the lion to knock down smaller prey with a single stroke and to seize and wrestle larger prey to the ground, where it can then give it a killing bite.

LION

Location: southern Sahara to South Africa

CLASSIFICATION

Genus: Panthera Species: leo

SIZE

Head-body length/male: 8–9 ft (2.4–3.3 m)
Head-body length/female: 7–8 ft (2.3–2.6 m)
Shoulder height/male: up to 4 ft (1.2 m)
Shoulder height/female: up to 3.6 ft (1.1 m)
Weight/male: 330–550 lb (150–240 kg)
Weight/female: 270–300 lb (120–180 kg)
Weight at birth: 2–4 lb (1.1–2 kg)

COLORATION

Typically pale sandy or tawny yellow, but varying from grayish buff to yellowish red and dark ocher; white around mouth and on chin, underparts, and inner sides of legs.

Male's mane dark tawny, reddish brown, or black.

FEATURES

Tail, just over half the length of head and body, has large tuft of long, blackish hair at tip, which conceals a horny spur.

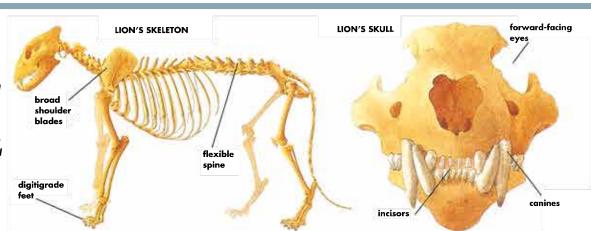
Mane of hairs in male only, up to 6.3 in (16 cm) long on sides of face and top of head, extending on to shoulders, around neck, and short way down spine.

Short hair on face, upper parts of body, flanks, and most of tail; longer on underparts and tail tip. Long, whitish whiskers arranged in parallel rows on sides of upper lip.

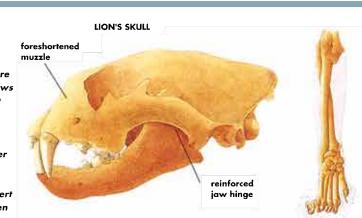
Amber eyes and blackish nose; prominent black mark at base of outside of rounded ears, used in visual communication between lions.



The lion's skeleton is strong and sturdy and its spine very flexible, enabling its owner to combine agility with power. The shoulder blades are broad, providing attachment for the great muscles that power the shoulders and forelimbs. The collarbone is reduced to a thin sliver of bone, lodged within the shoulder muscles and free at either end; this helps the lion achieve a long stride when running after its prey.



SKULL
The lion's skull is massive, thick, and heavy, weighing up to 6 lb (3 kg). There are deep ridges and hollows to provide attachment for the huge muscles that power the jaw.
The temporal muscle, running from the lower jaw to a flange at the rear of the skull, enables the lion to exert tremendous force when clamping its jaws.



The outer bones of each toe, together with its claw, can be retracted into a fleshy sheath to create a padded paw for fast running (left). They are held in place by strong elastic ligaments When the lion needs to extend its claws for attacking prey, in selfdefense against a rival, or when climbing, flexor muscles straighten the outer toe bones so that the claws protrude (right).



X-ray illustrations Elisabeth Smith

illustration Steve Kingston

OTTER

Otters range in size from the Asian small-

clawed otter, which usually measures less than 35 in (90 cm) from head to tail, to the

slightly larger Eurasian otter, to the giant otter, which can attain a length of 6 ft (1.8 m).

For Review only

EURASIAN OTTER Location: Europe, Asia & North Africa

CLASSIFICATION

Genus: Lutra Species: lutra

SIZE

SEA OTTER RIVER OTTER GIANT OTTER

Head-body length/male: 22-28 in (57-70 cm) Tail length/male: 14–16 in (35–40 cm) Height/male: 12 in (30 cm)

Weight/male: 22 lb (10 kg) Weight at birth: 2 oz (60 g)

Females are about 10 percent shorter and 25 percent lighter than males.

COLORATION

Brownish gray to brown on the back; paler on the throat and belly. Can vary seasonally. Cubs: pale gray.

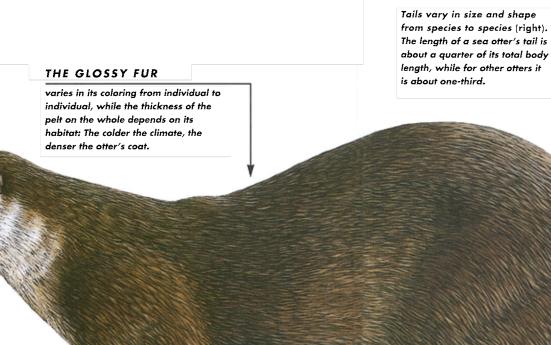
FEATURES

Small, rounded ears.

Stiff whiskers on face, throat, elbows.

Hind legs longer than front legs; feet webbed.

Males have thicker necks and broader muzzles.



THE MUZZLE

is broad, with whiskers or vibrissae (vie-BRISS-eye) on each side of the nose. These are used to detect prey in conditions of poor visibility.



EURASIAN



SEA CAT

GIANT OTTER

The hairiness of an otter's nose pad varies, becoming hairier as the otter's habitat moves nearer the equator. Nose pads range from the hairless American river otter to the very hairy giant otter.



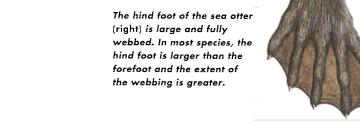


Three forepaws (left): River otters have curved claws and a large amount of webbing, while Asian small-clawed otters have narrow paws with little webbing and small claws. Sea otters have fingers that are almost fused.

(right) is large and fully webbed. In most species, the hind foot is larger than the forefoot and the extent of the webbing is greater.



is used for moving and steering while swimming, and as a supporting third leg when the otter stands on its hind legs.





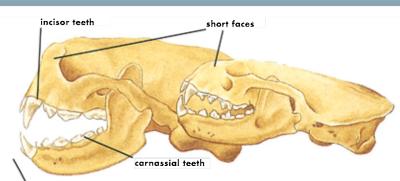
The long body and tail and hind legs longer than shortened legs allow the river otter to move gracefully in the water, though it walks awkwardly. torpedo-shaped body OTTER SKELETON



The three tribes have differently shaped bacula or penis bones. The baculum of the Lutrini tribe (top) is shaped like a hockey stick, while that of the Aonychini and Hydrictini (bottom) looks more like a baseball bat.



SEA OTTER CARNASSIALS



SEA OTTER

canine teeth

RIVER OTTER

River otters, which use their teeth mainly for gripping fish, have sharp carnassial teeth, while sea otters, which pick up food with their paws, have bigger, blunter ones for crushing their prey.

Otter skulls are longer, broader, and flatter than those of many other carnivores, and the facial portion is relatively short.

All illustrations Barry Croucher/Wildlife Art Agency

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CLASSIFICATION

THE FOLLOWING LISTS THE GENUSES OF THE MAMMALS DETAILED IN THIS BOOK.

ARTIODACTYLA African Buffalo, American Bison, Camel, Giraffe, Hippopotamus, Ibex,

Pronghorn, Red Deer, Springbok, Wild Boar, Wildebeest

CARNIVORA African Civet, African Wild Dog, Arctic Fox, Badger, Black Bear, Cheetah,

Dhole, Eurasian Wildcat, Giant Panda, Golden Jackal, Grizzly Bear, Hyena, Jaguar, Leopard, Lion, Maned Wolf, Meerkat, Otter, Pine Marten, Polar Bear, Puma, Raccoon, Red Fox, Serval, Spectacled Bear, Tiger,

Weasel, Wolf, Wolverine

CETACEABlue Whale, Dolphin, Killer Whale, Sperm Whale

CHIROPTERA Gray-headed Fruit Bat, Greater Horseshoe Bat, Pipistrelle Bat, Vampire Bat

EDENTATA Armadillo, Giant Anteater, Three-toed Sloth

INSECTIVORA European Mole, Hedgehog, Shrew

LAGOMORPHA Brown Hare, Rabbit

MARSUPIALIA Kangaroo, Koala, Opossum, Rat Kangaroo, Sugar Glider, Tasmanian

Devil, Wombat

MONOTREMATA Platypus

PERISSODACTYLA Plains Zebra, Przhevalski's Horse, Rhinoceros

PINNIPEDIA Common Seal, Fur Seals

PRIMATES Capuchin, Chimpanzee, Gibbon, Gorilla, Lesser Galago, Mandrill,

Marmoset, Orangutan, Red Colobus

PROBOSCIDEA Elephant

RODENTIA Brown Rat, Canadian Beaver, Capybara, Deer Mouse, Hamster, Lemming,

Naked Mole Rat, Porcupine, Prairie Dog, Red Squirrel, Wild Cavy

SIRENIA Manatee

TUBULIDENTATA Aardvark