

PLESIOSAURUS

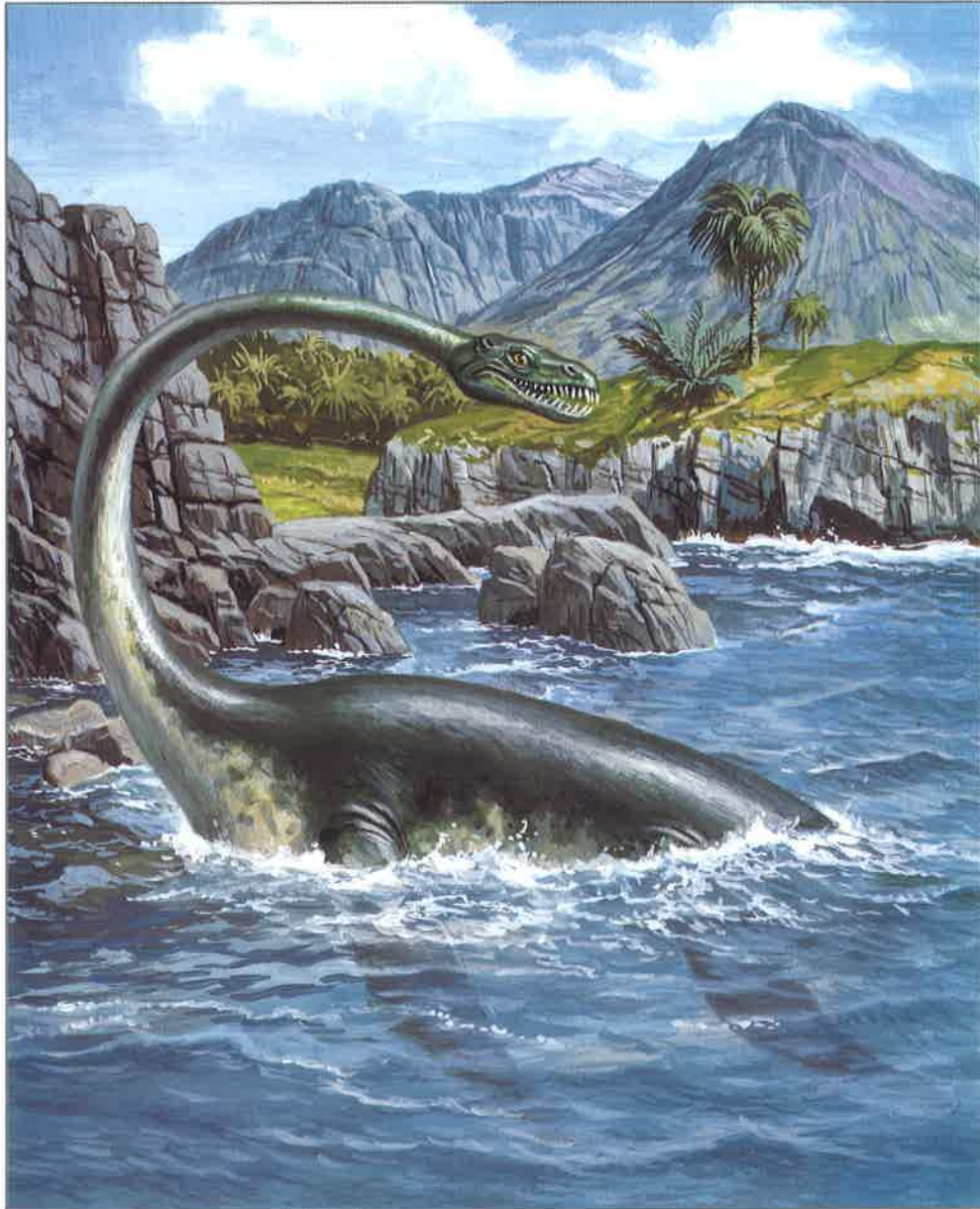
CARD 12

GROUP 7: PREHISTORIC & EXTINCT ANIMALS

ORDER
Plesiosauria

FAMILY
Plesiosauridae

GENUS & SPECIES
Plesiosaurus dolichodeirus



Plesiosaurus inhabited the oceans 200 million years ago, "flying" underwater with four winglike limbs. Its sharp teeth and snapping jaws formed a deadly trap for small aquatic animals.

KEY FACTS



SIZES
Length: 10 ft.
Weight: Unknown. Possibly about one ton.



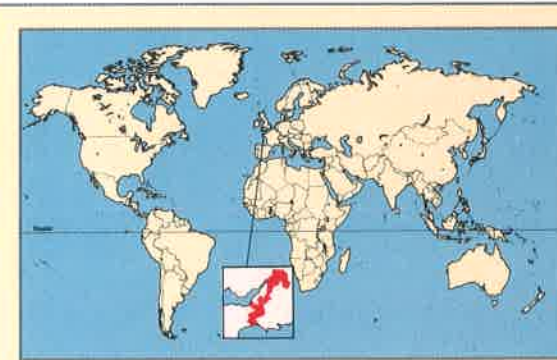
BREEDING
Mating: Unknown. Probably internal fertilization.
Number of eggs: Unknown.
Incubation: Unknown. May have given birth to live young.



LIFESTYLE
Diet: Small to medium-sized fish, squidlike cephalopods, maybe shrimplike crustaceans.
Habit: Active hunter in the sea and maybe in estuaries.



RELATED SPECIES
Other plesiosaurs were the longer-necked *Microcleidus* and the even longer-necked *Elasmosaurus*, 50 ft. long with a 25 ft. long neck and a small head. They probably used their flexible necks to help catch prey.



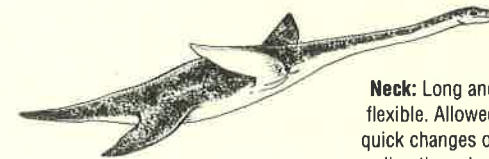
Location of fossil finds.

WHEN AND WHERE THEY LIVED

Plesiosaurus fossils were discovered in Great Britain in rocks that were first laid down in the Lower Jurassic period, about 200 million years ago, on what was then the seabed. Related plesiosaurs, often incorrectly called *Plesiosaurus*, have been found in marine rocks in North America and elsewhere.

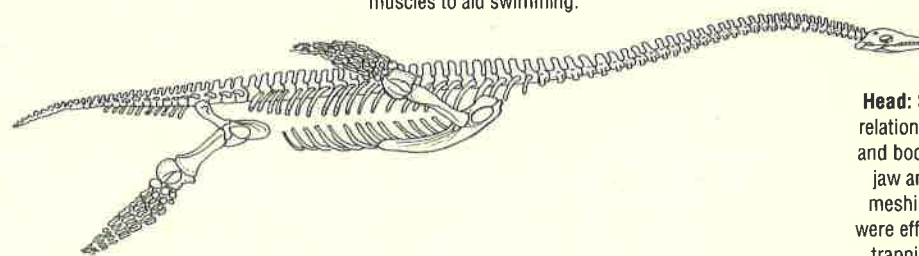
FEATURES OF PLESIOSAURUS

Swimming: Both fore- and hind limbs were used in flapping motion to propel *Plesiosaurus* through the water. Short tail was probably not used for propulsion.



Neck: Long and flexible. Allowed quick changes of direction when *Plesiosaurus* was pursuing prey or being pursued by predators.

Paddles: Toes fused together to form a "mitten." Grew from shoulder and hip girdles with large, platelike bones supporting strong muscles to aid swimming.



Head: Small in relation to neck and body. Wide jaw and intermeshing teeth were efficient at trapping prey.

The long-necked Plesiosaurus gave its name to the plesiosaurs, a group of flesh-eating marine reptiles that are extinct. Along with the dolphinlike ichthyosaurs and other marine reptiles, plesiosaurs were the "sea dragons" that inhabited the seas from 200 to 65 million years ago, while the dinosaurs were dominant on land.

CHARACTERISTICS

Plesiosaurus was first identified in 1821 by two amateur scientists who were studying ichthyosaurs in a museum in Great Britain. Finding that they had some odd bones, they concluded that the bones must have belonged to a new animal. They were proved right in 1824 by Mary Anning, a famous fossil collector in Dorset, England. She discovered the first complete *Plesiosaurus* skeleton, which is now in the Natural History Museum in London. *Plesiosaurus* gave its name to the plesiosaurs because it was the first of its group to be discovered.

Plesiosaurus, like other plesiosaurs, swam with its legs rather than its tail, using its paddlelike forelimbs the way penguins and sea lions do. But while penguins and sea lions use only their hind limbs for steering or for moving on land, *Plesiosaurus* used both its fore and hind limbs to propel itself through water. To help it stay underwater, the animal may have swallowed stones to prevent the air in its lungs from bringing it to the surface.

Some plesiosaurs had much longer necks than *Plesiosaurus*. Others had enormous heads, often on shorter necks.

BREEDING

Nothing is known about the breeding habits of *Plesiosaurus*, because no fossil nests, juveniles, or pregnant females have been found. It may have laid its eggs in holes dug in a sandy beach, or it may have incubated its eggs in nests on land. But the foot paddles of *Plesiosaurus* do not seem suited

to moving about on land or to digging nests.

It seems more likely that *Plesiosaurus* gave birth to live young in the water, the way sea snakes do, or on the beach like sea lions. The young may have lived in estuaries until they became big enough to move to the open sea.

FOOD & HUNTING

Plesiosaurus had a small head on a long neck. Its teeth were long and pointed, and the teeth of the upper and lower jaws intermeshed. *Plesiosaurus* used its teeth to catch its food, not to chew it. It probably ate fish, squidlike cephalopods, and shrimplike crustaceans. Its U-shaped jaws acted as fish traps and allowed *Plesiosaurus* to swallow food whole.

Plesiosaurus probably struck at prey by lashing out with its long neck and then snatching its victims with its sharp teeth. Its neck would have acted as a long rudder when negotiating turns while chasing prey.

ENEMIES

Plesiosaurus was probably preyed on by larger marine reptiles that lived in the same seas. These reptiles included the ichthyosaur *Temnodontosaurus* (as big as a killer whale) and the 16-foot-long plesiosaur *Rhomaleosaurus*.

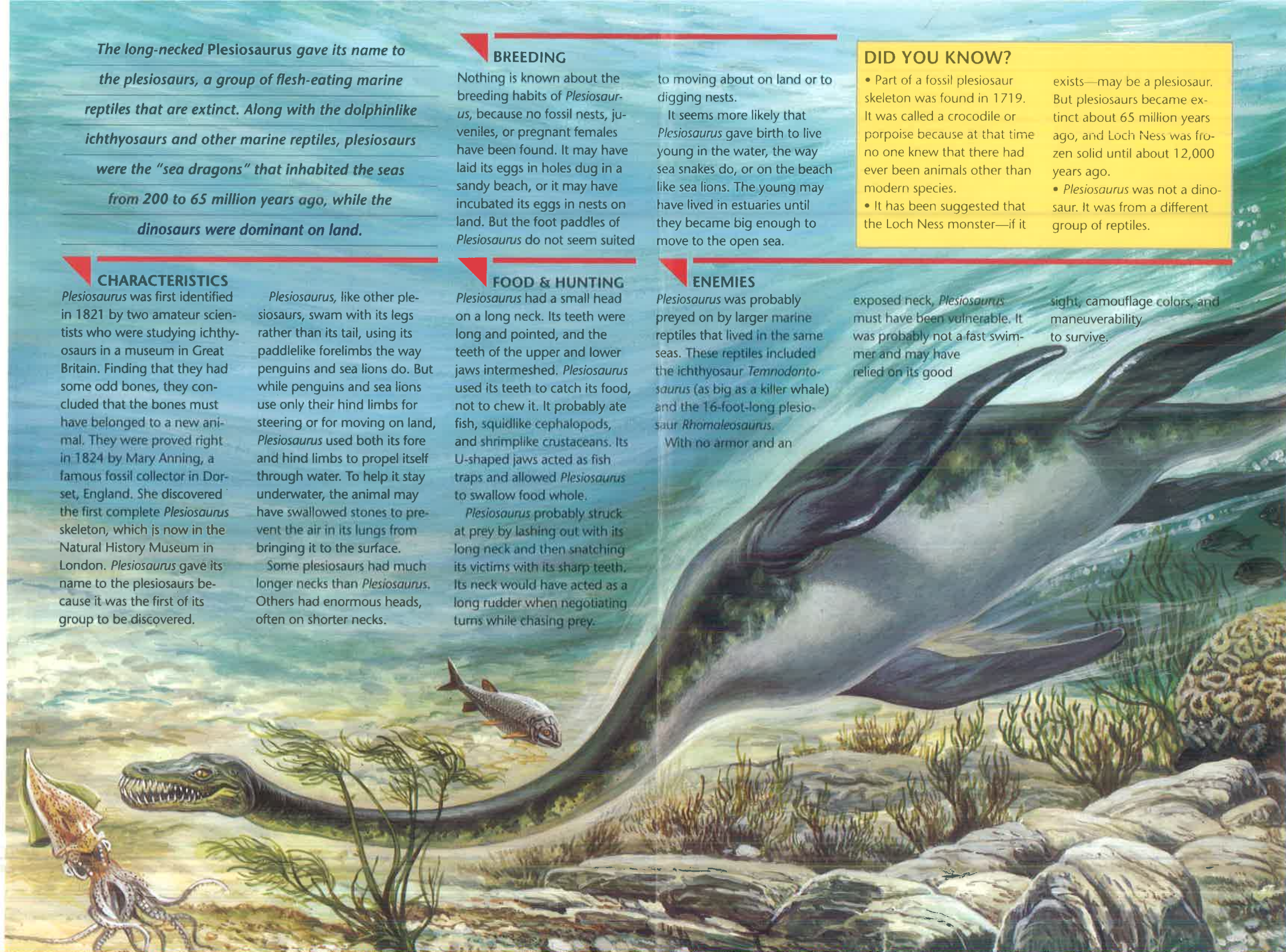
With no armor and an

DID YOU KNOW?

- Part of a fossil plesiosaur skeleton was found in 1719. It was called a crocodile or porpoise because at that time no one knew that there had ever been animals other than modern species.
- It has been suggested that the Loch Ness monster—if it

exists—may be a plesiosaur. But plesiosaurs became extinct about 65 million years ago, and Loch Ness was frozen solid until about 12,000 years ago.

- *Plesiosaurus* was not a dinosaur. It was from a different group of reptiles.



DODO

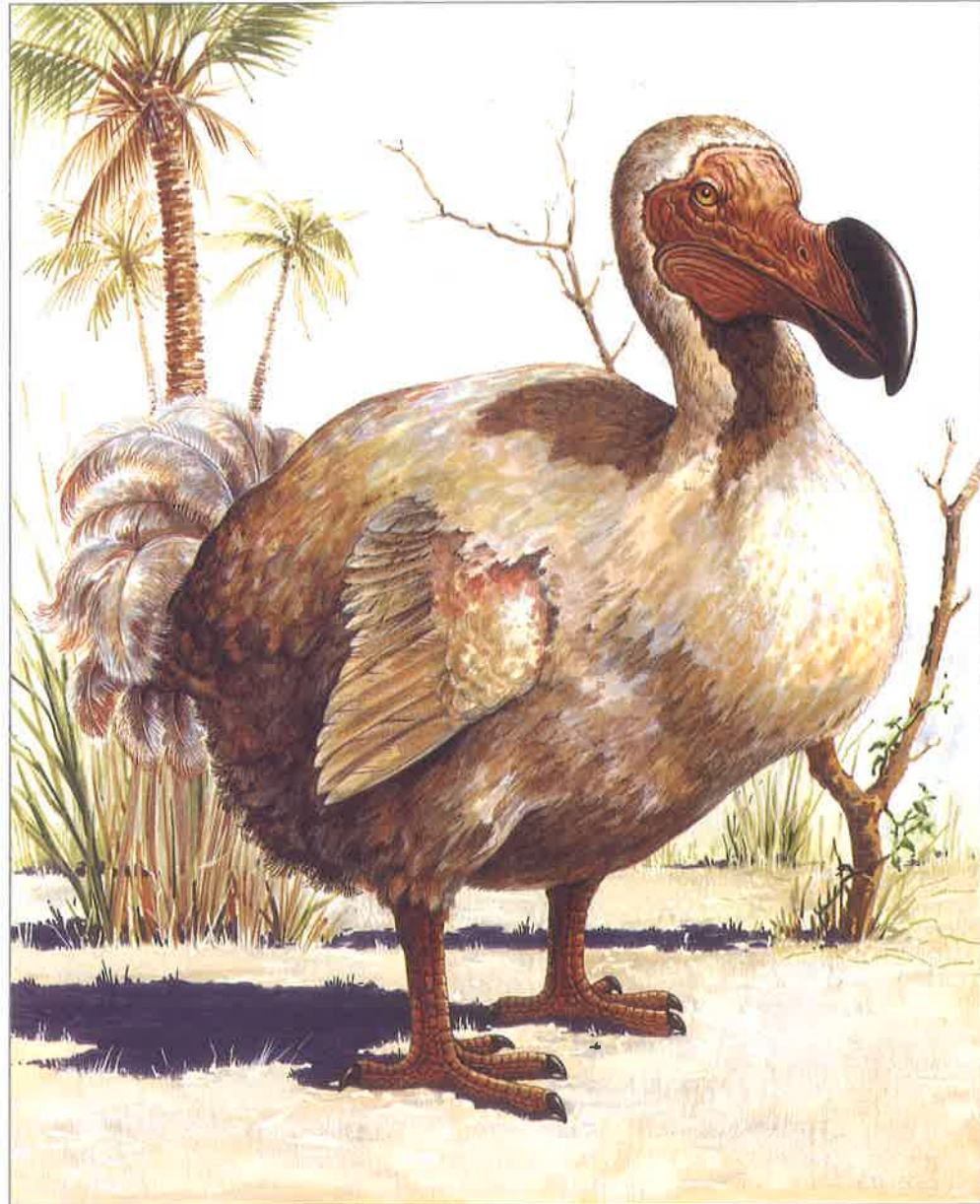
CARD 10

GROUP 7: PREHISTORIC & EXTINCT ANIMALS

ORDER
Columbiformes

FAMILY
Raphidae

GENUS & SPECIES
Raphus cucullatus



The dodo flourished for millions of years on the island of Mauritius in the Indian Ocean. Less than two centuries after man discovered this odd-looking bird, it had become extinct.

KEY FACTS



SIZES
Length: 3 ft.
Bill: 9 in.
Weight: Up to 45 lb.



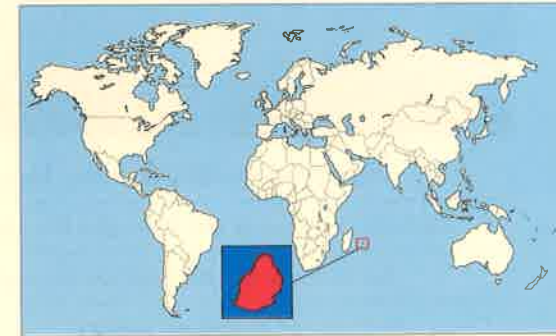
BREEDING
Breeding season: Year-round.
Mating: Birds thought to pair for life.
Eggs: Probably 1 each year.



LIFESTYLE
Diet: Plants, seeds, and fruit.
Habit: In pairs or small groups.
Call: Some sources say the bird made no sound; others say its cry resembled that of a young goose.



RELATED SPECIES
Two close relatives that inhabited the Mascarene Islands in the Indian Ocean were the white dodo, or solitaire, *Raphus solitarius*, and the Rodriguez solitaire, *Pezophaps solitaria*.



■ Range of the dodo.

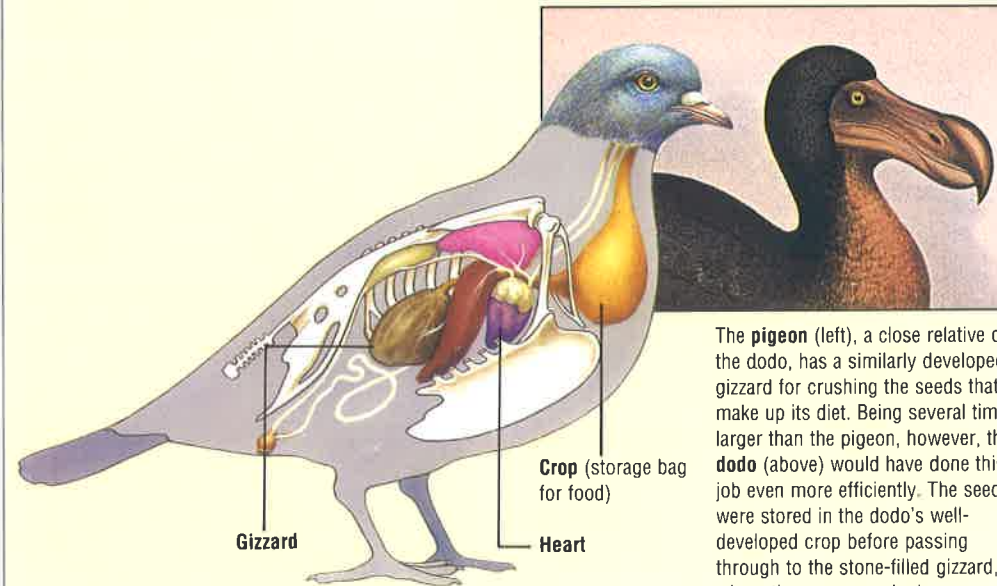
DISTRIBUTION

Existed only on Mauritius, a small island off the coast of Madagascar in the Indian Ocean.

CONSERVATION

Became extinct in 1680, less than 200 years after it was first discovered. It was exterminated through over hunting and by falling prey to the domestic animals that were brought to Mauritius.

THE DODO'S CLOSEST LIVING RELATIVE



The **pigeon** (left), a close relative of the dodo, has a similarly developed gizzard for crushing the seeds that make up its diet. Being several times larger than the pigeon, however, the **dodo** (above) would have done this job even more efficiently. The seeds were stored in the dodo's well-developed crop before passing through to the stone-filled gizzard, where they were crushed.



The strange-looking dodo—a huge, flightless relative of the dove and the pigeon—has become the best-known example of an extinct species.



Left: *The Reunion solitaire, or white dodo, became extinct at the same time as the Mauritius dodo. No remains have been found, so it is known only through drawings and written records.*



Left: *Though remains of the Mauritius dodo have been studied, little is known about it.*

Right: *The Rodriguez solitaire became extinct during the late 1700s.*



DID YOU KNOW?

- The passenger pigeon of North America was a relative of the dodo. It was once the world's most abundant bird. One flock in 1870 was said to have had two billion birds.
- The elephant bird of Madagascar was the largest bird ever to have lived. It was 10 feet tall and weighed over 1,000 pounds.

APPEARANCE

The dodo had large feet, stubby wings, a short neck, and a large, hooked, black bill. It had three short, plumed tail feathers at the end of its squat body. The ungainly dodo waddled on its stout, three-toed feet.

As in many island habitats, the dodo evolved in the absence of predators. It became flightless because it had no natural enemies to escape from.

LIFESTYLE

Little is known about the dodo, despite the fact that it was abundant when people first reached Mauritius. The dodo ate a variety of plants and seeds. To aid digestion, it swallowed large numbers of pebbles, which have been found among dodo bones.

The dodo performed a courtship dance by flapping its wings. The female laid a single egg on a bed of grass.

HOW THE DODO BECAME EXTINCT

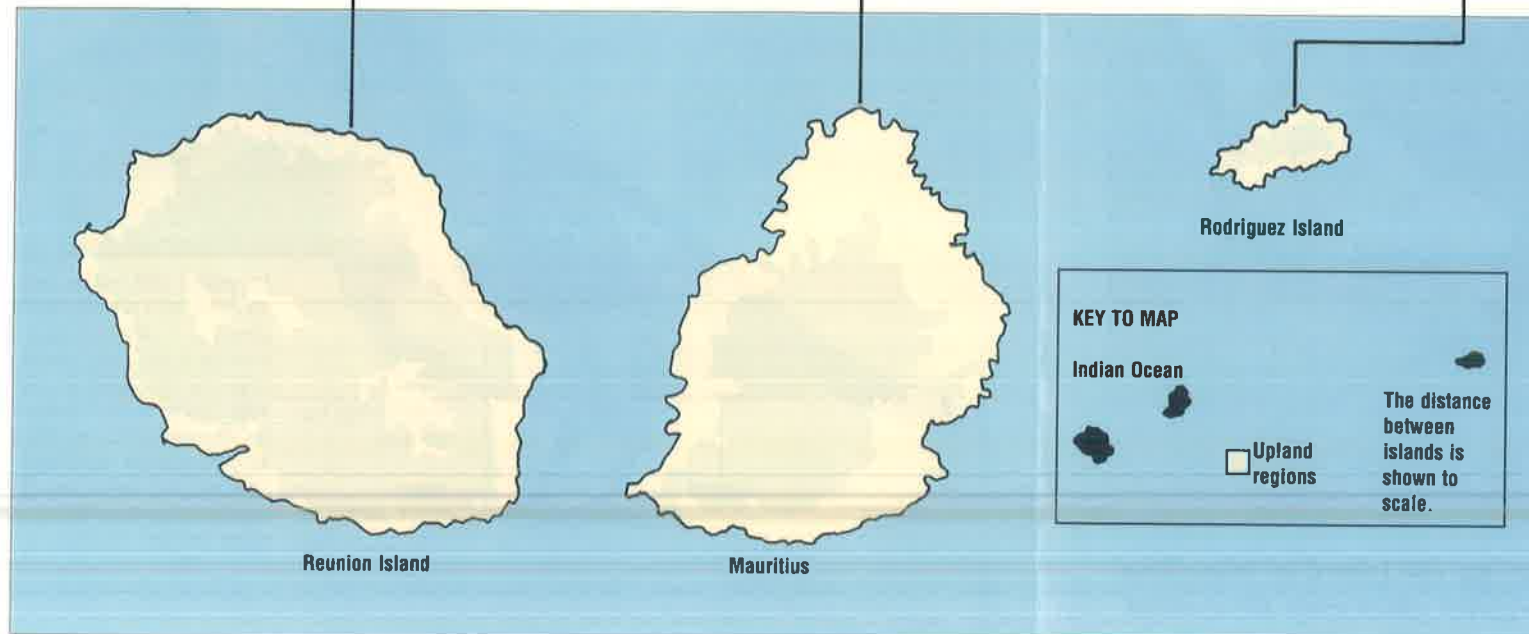
The early explorers of Mauritius had never seen anything like the dodo. They said it looked like a "hooded swan" and a "wild turkey."

The dodo had never experienced predators and was unafraid of the settlers. This made the dodo easy prey, and the settlers killed the bird by the thousands.

Although killed mainly for its meat, early accounts de-

scribe the dodo's flesh as being tough and bitter. But many of the hunters were sailors who were eager for any fresh meat after long periods at sea.

Another reason for the bird's extinction was the introduction of animal predators to the island. Accompanying the first settlers were pigs, monkeys, rats, dogs, and cats, which all found the dodo eggs and chicks easy prey.



Right: *After the dodo became extinct, the Calvaria major tree, found only in Mauritius, became scarce. The dodo had fed on its fruit, and the seeds passed through its digestive system to the ground, where they germinated. Without the dodo, new germinating methods had to be found.*



SABER-TOOTHED CAT

CARD 9

GROUP 7: PREHISTORIC & EXTINCT ANIMALS

ORDER
Carnivora

FAMILY
Machairodontidae

GENUS
Smilodon



The saber-toothed cat had large, daggerlike teeth that gave it a terrifying appearance. This prehistoric cat was slightly larger than the present-day lion.

KEY FACTS



SIZES

Length: 5 ft.
Skull: 1 ft.



BREEDING

Sexual maturity: Unknown.
No. of young: Unknown.



RELATED SPECIES

Megantereon (dirk-toothed cats).
Homotherium (scimitar-toothed cats).
Dinofelis (false saber-toothed cats).



DISTRIBUTION

North and South America.



LIVED

Pleistocene period.



Location of fossil finds.

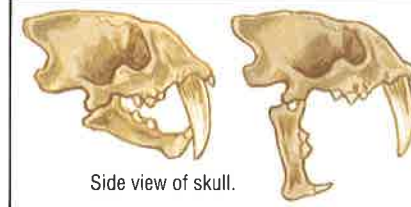
WHERE AND WHEN IT LIVED

Smilodon lived in what is present-day North and South America. It lived during the Pleistocene period, from about 1.6 million years ago until 8,000 years ago. The reason why Smilodon became extinct is unknown.

The remains of other species of saber-toothed cats have been found in Africa, Europe, and Asia.

FEATURES OF SMILODON

Smilodon belonged to the saber-toothed cat family. It was powerfully built and 5 feet long—about two-thirds as long as a Bengal tiger. Its skull was about a foot long. When its mouth was closed, the tips of its long canine teeth extended below its chin.



Side view of skull.

Smilodon could open its jaws as wide as 120 degrees, twice as wide as a modern-day lion can. Its long teeth had serrated edges.



The saber-toothed cat belonged to a group

of carnivores that are now extinct.

Smilodon, the best-known member of this group,

was a ferocious hunter. Remains of this creature

have been found in the tar pits in Los Angeles.

FOSSIL FINDS

The best-known Smilodon fossils were discovered in the fossil tar pits at Rancho La Brea in Los Angeles, California. The tar pits were formed by oil seeping up to the ground's surface.

They created sticky traps for herbivorous (plant-eating) animals, which attracted carnivores (meat eaters), like Smilodon. Both types of animals were trapped in the tar.

FOOD & HUNTING

The saber-toothed cat called Smilodon existed in North and South America from about 1.6 million years ago to 8,000 years ago.

Most modern-day cats kill their prey by suffocation or with a bite on the neck. But a saber-toothed cat, such as Smilodon, used its large upper canine teeth to inflict fatal wounds on its prey.

Smilodon had small serrations along the edges of its elongated upper canine

teeth. It probably severed major blood vessels in the neck area of its victims.

Its killing technique enabled it to eat prey that would be too large for a conical-toothed cat of the same size.

Studies of Smilodon skulls indicate that the mouth could be opened very wide. The maximum jaw gape was about 120 degrees compared to the 65-degree jaw gape of a modern-day lion.

Fossil remains show that Smilodon's canine teeth were fragile and easily broken. Numerous fossil fragments of broken teeth have been discovered. In one case the tip of a canine tooth was found lodged in the skull of a wolf.

Fossil remains also indicate that Smilodon was not built for speed. It was powerful, but it had relatively short limbs. To capture its prey, it relied on ambush rather than a long chase.

DID YOU KNOW?

- Saber-toothed cats are often mistakenly called saber-toothed tigers. They are not closely related to modern-day tigers.
- Many different species of saber-toothed cat existed all over the world.
- There were two major groups of saber-toothed cats: scimitar-toothed and dirk-toothed cats. Smilodon belonged to the latter group.

Sticky tar trapped various animals, making them easy prey for the saber-toothed cat. But once the cat entered the tar pit, it was trapped too.



Smilodon used its daggerlike teeth to kill its prey. Serrated edges cut flesh easily.

Between 1,000 and 2,000 Smilodon skeletons have been discovered in the Rancho La Brea tar pits.

STEGOSAURUS

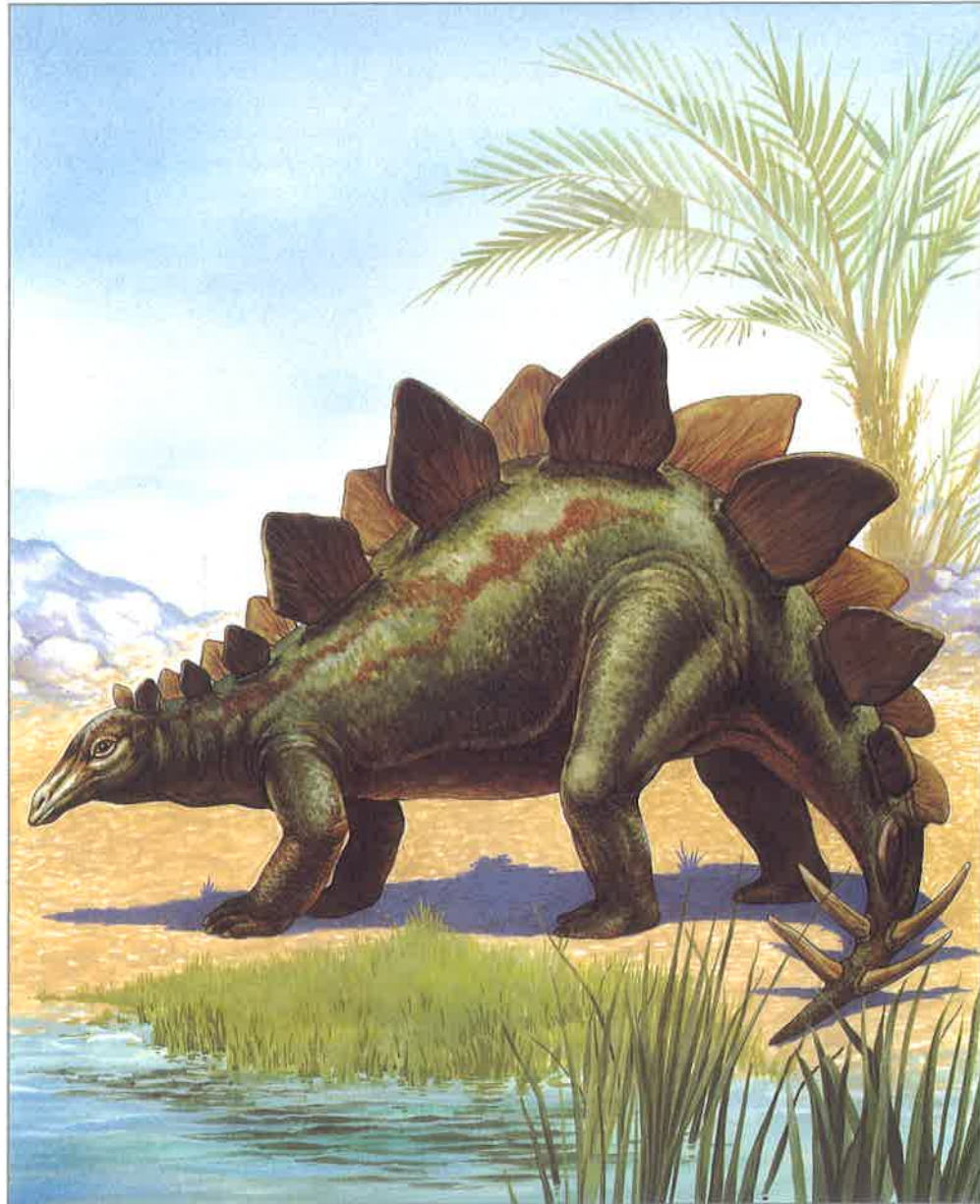
CARD 7

GROUP 7: PREHISTORIC & EXTINCT ANIMALS

ORDER
Ornithischia

FAMILY
Stegosauridae

GENUS & SPECIES
Stegosaurus stenops



The stegosaurus was one of a family of massively armored dinosaurs that lived 170 million years ago. If it was attacked, it lashed out in defense with its sharply spiked tail.

KEY FACTS



SIZES

Length: Average adult, 20 ft.
Weight: 2 tons.
Head size: About 18 in.
Brain size: 1 in.
Back plates: Largest, 24 in. high.
Tail spikes: Each about 3 ft. long.



BREEDING

Mating: Not known, although there may have been some fighting between males to establish a courtship pecking order.
No. of eggs: Not known, but possibly several clutches a year.



LIFESTYLE

Habitat: Subtropical.
Diet: Vegetation.
Habit: Lived in herds.



RELATED SPECIES

Other stegosaurs include the 16-ft. *Kentrosaurus* from Africa and the 23-ft. *Trogiangosaurus* from China.



Range of the stegosaurus.

WHEN & WHERE IT LIVED

The stegosaurus lived in the mid-Jurassic period, about 170 million years ago. Its home was in the region we now call North America—fossils have been found in Colorado, Oklahoma, Utah, and Wyoming, sometimes in huge numbers spread over several miles. Related species moved into other regions, ranging widely throughout western Europe, eastern Asia, and East Africa.

FEATURES OF THE STEGOSAURUS

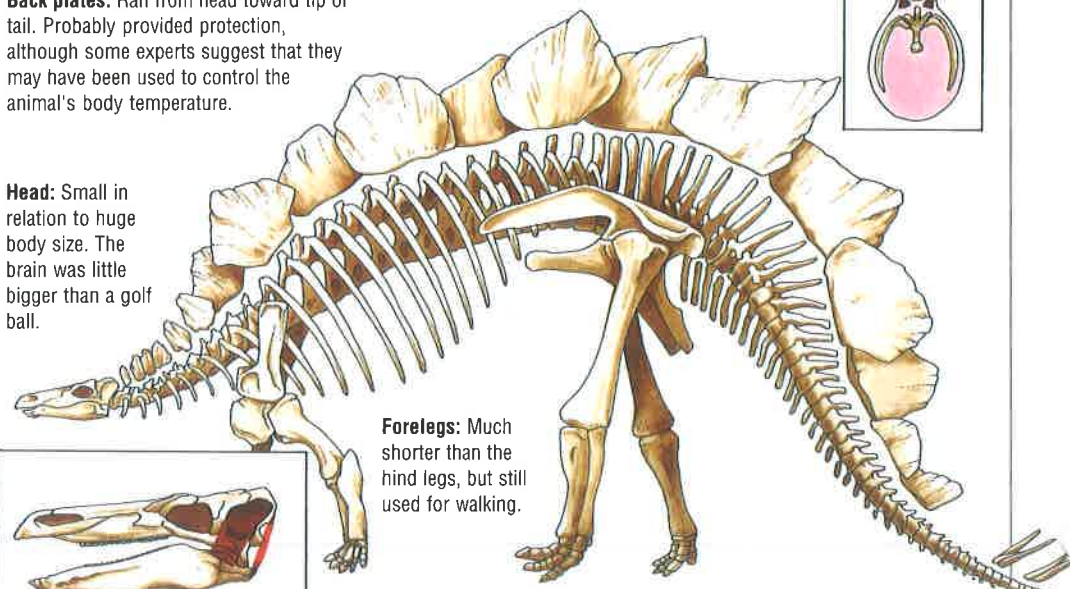
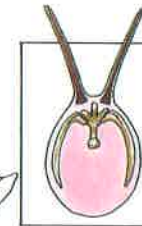
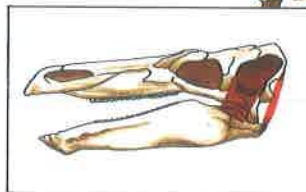
Back plates: Ran from head toward tip of tail. Probably provided protection, although some experts suggest that they may have been used to control the animal's body temperature.

Head: Small in relation to huge body size. The brain was little bigger than a golf ball.

Forelegs: Much shorter than the hind legs, but still used for walking.

Hind legs: Powerful hind legs could support the full weight of the animal.

Tail spikes



Despite its frightening appearance, the stegosaurus is believed to have been a peaceful plant eater. Although it was heavily armored, it probably lived in herds and relied on safety in numbers—rather than the ability to fight—as its defense against predators.

CHARACTERISTICS

The stegosaurus, with its distinctive twin rows of bony plates along its back, is one of the most easily recognizable of all dinosaurs.

There has been much scientific speculation about the purpose of the stegosaurus's bony plates. Most fossil experts believe that the plates served as part of the animal's defensive armor. Others believe that the stegosaurus used the plates to control its body temperature. If the plates were actually covered with vein-rich skin, rather than with a bonelike material, the animal could have controlled its body temperature by alternately facing toward and turning away from the sun.

The stegosaurus was not one of the larger dinosaurs, but it still reached a massive length of around 20 feet. Its forelegs were only half the size of its hind legs, but, unlike the forelegs of *Tyrannosaurus rex*, which are thought to have been fairly useless, the stegosaurus used its forelegs for walking.

HABITAT

The stegosaurus lived 170 million years ago and inhabited a landmass that is now North America. At that time, the continent had a warm, almost tropical, climate that was ideally suited for a plant eater like the stegosaurus.

The vegetation was similar to that found in tropical forests today, although many modern-day plants had not yet evolved. Sprawling, palm-like plants called *cycads* were common, along with ferns and conifers.

The stegosaurus's short forelegs meant that it sloped forward from the hips when walking on all fours. Strong hind legs enabled it to browse upright among the trees.

FEEDING

The stegosaurus was completely herbivorous. During the period in which it lived, a subtropical climate provided a plentiful amount of lush vegetation on which to feed.

Study of fossilized skeletons has shown that the stegosaurus probably had strong back muscles that were linked to its

hips and tail. These muscles enabled it to lift its forelegs off the ground and stand on its hind legs so that it could feed from branches.

Still, its teeth were not well adapted for eating vegetation, and it most likely had to swallow stones to grind up and digest tough plant fibers.

The fierce-looking and heavily armored stegosaurus ate plants.

The stegosaurus once roamed in herds across what is now the western United States.

BREEDING

Although the information regarding the stegosaurus's breeding habits is not complete, scientists are continually making new discoveries.

It is known that many dinosaurs, including the stegosaurus, laid clutches of relatively small eggs in shallow holes scraped in the ground. They may have been covered with sand and left to hatch in the warmth of the sun.

Once the eggs hatched, the young would have grown quickly as some measure of protection from predators. The young would have been further protected by remaining in the center of the herd.

As an animal that lived in herds, the stegosaurus would probably have fought to establish breeding rights and herd leadership. As a plant eater, the stegosaurus was most likely not a vicious fighter, but rather used scare tactics to assert dominance.

The four menacing spikes at the end of the heavy tail could cause serious injury to predators.

PREDATORS

As a non-aggressive plant eater, the stegosaurus often fell prey to more violent, meat-eating dinosaurs such as the ferocious *Tyrannosaurus rex*.

The stegosaurus was slow moving and vulnerable to attack. Since it was unable to run quickly to make an escape, it probably stood its ground and used its spiked tail as a defensive weapon.

The tail spikes were grouped in pairs and were approximately three feet long. By lashing its tail, the stegosaurus would have severely injured its attacker with the long spines.

DID YOU KNOW?

- Fossilized remains similar to those of the stegosaurus have been found in Europe.
- Although it lived during a period of ideal climatic conditions, the stegosaurus appears to have existed for a relatively short time, as indicated by geological records.
- Many of today's reptiles look strikingly similar to the dinosaurs.
- The four-inch-long horned lizard of Africa has spines like those of the stegosaurus's tail around its head and body.



TASMANIAN WOLF

CARD 6

GROUP 7: PREHISTORIC & EXTINCT ANIMALS

ORDER
Dasyuridae

FAMILY
Thylacinidae

GENUS & SPECIES
Thylacinus cynocephalus



The Tasmanian wolf was first sighted by Europeans in 1805. Less than 150 years later the unique animal had disappeared, hunted to extinction by settlers.

KEY FACTS



SIZES
Length: 5 ft.
Height: 22 in.
Weight: 50 lb.



BREEDING
Mating: Not known. Possibly December.
No. of young: 4.
Gestation: 35 days.



LIFESTYLE
Habitat: Thick woodland.
Diet: Kangaroos, wallabies, ground birds, and sheep.
Habit: Solitary.



RELATED SPECIES
Other members of the *Dasyuridae* order include the marsupial mouse and the Tasmanian devil.



Range of the Tasmanian wolf.

DISTRIBUTION

Was widespread throughout Australia and New Guinea.

CONSERVATION

The Tasmanian wolf disappeared from mainland Australia about 3,000 years ago. The last authenticated record of a living animal was of one that died in 1933, although there have been several unconfirmed sightings since that time.

FEATURES OF THE TASMANIAN WOLF

Pouch: Rear opening, to prevent intrusion of leaves, twigs, and grass.
Young: Born 35 days after mating. Spent at least three months in pouch after birth.



Jaws: Immensely strong. Capable of opening to almost 180 degrees and smashing the skull of prey with one snap.

Skull: Pointed shape and teeth very similar to a wolf's.



*The Tasmanian wolf was the largest
carnivorous marsupial on earth until
it became extinct in 1933. It was exterminated
so quickly that there was no opportunity
for scientific study to be done, so little is
actually known about the animal.*

APPEARANCE

The Tasmanian wolf's features were similar to those of several different animals that still exist. Its head and teeth were shaped like a wolf's, and its red-brown coat and striped markings were similar

to those of a tiger. Its tail was like a kangaroo's.

The Tasmanian wolf was a *marsupial*, so the female had an external abdominal pouch in which to carry her young.

TASMANIAN WOLF & MAN

Natural causes wiped out the Tasmanian wolf population on mainland Australia approximately 3,000 years ago. But the animal remained relatively widespread on the isolated island of Tasmania. Aborigines hunted it for food, but there were so few people on

the island that their hunting did not affect the animal's overall population.

The slaughter of the Tasmanian wolf did not begin

FOOD & HUNTING

Despite its resemblance to the wolf, the Tasmanian wolf could not run as fast. It moved at a slow trot, occasionally breaking into a canter. But the Tasmanian wolf's endurance allowed it to pursue its prey until the victim collapsed from exhaustion.

The Tasmanian wolf had sharp teeth and a strong jaw that it could open to almost 180 degrees. It smashed the skull of its prey with a single snap of its jaws. The Tasmanian wolf then ate only the heart, lungs, liver, and kidneys of the prey.

HABITS

The Tasmanian wolf was a solitary animal. Its scent glands were not adequately developed to produce scent to mark its territory. But it probably had its own home territory, since it made little or no attempt to move from the area when hunted.

The Tasmanian wolf spent the day in its lair, which was located in a cave, a rock pile, or a hollow tree or log.

BREEDING

The female Tasmanian wolf gave birth to four young 35 days after mating. The young

DID YOU KNOW?

- Based on reports of a sighting in 1958, a Disney camera crew made an unsuccessful effort to locate and film the Tasmanian wolf the following year.
- The Tasmanian wolf appears on the Tasmanian state coat of arms.
- Tasmania once traded its wolves to zoos in exchange for other animals.
- The Tasmanian wolf was said to have been unable to bite if its tail was being held.
- Reports that Tasmanian wolves hop on their hind legs like kangaroos were probably untrue.
- The scientific name for the Tasmanian wolf, *Thylacinus cynocephalus*, means "pouched dog with a wolf head."

then spent at least three months in her pouch. Once they left the pouch, the

young stayed close to their mother, except when she left them to hunt.

wolf. Because they relied on the livestock for survival, the settlers began to kill the Tasmanian wolf.

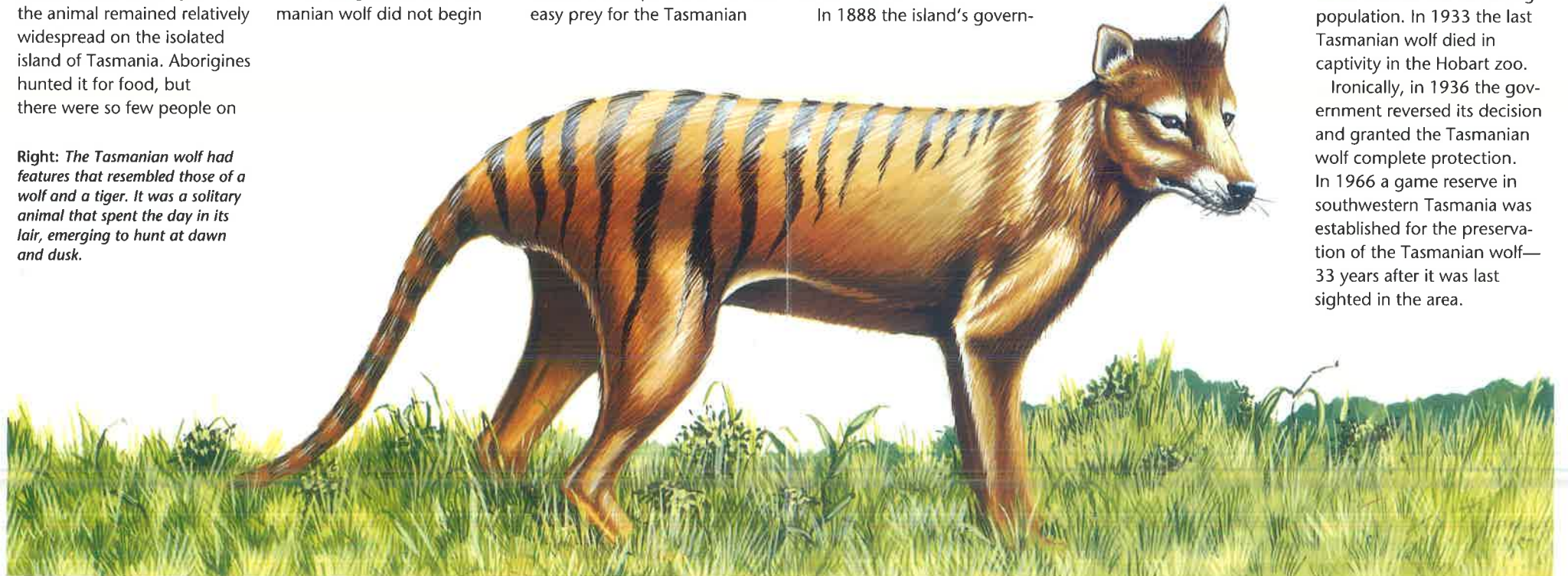
In 1888 the island's govern-

ment offered a bounty for Tasmanian wolves. During the next 26 years

more than 2,268 wolves were trapped or killed. In 1910 an epidemic similar to distemper killed most of the remaining population. In 1933 the last Tasmanian wolf died in captivity in the Hobart zoo.

Ironically, in 1936 the government reversed its decision and granted the Tasmanian wolf complete protection. In 1966 a game reserve in southwestern Tasmania was established for the preservation of the Tasmanian wolf—33 years after it was last sighted in the area.

Right: *The Tasmanian wolf had features that resembled those of a wolf and a tiger. It was a solitary animal that spent the day in its lair, emerging to hunt at dawn and dusk.*



ARCHAEOPTERYX

GROUP 7: PREHISTORIC & EXTINCT ANIMALS

ORDER
Archaeopterygiformes

FAMILY
Archaeopteridae

GENUS & SPECIES
Archaeopteryx lithographica

CARD 5



When the first archaeopteryx fossil was found in 1861, the discovery shook the scientific world. For the first time, a possible link between reptiles and the ancestors of birds

KEY FACTS



SIZES
Length: 14 in.
Weight: Approximately 10-15 oz.



BREEDING
Mating: Possibly no fixed season as it lived in a tropical climate.
Incubation: Not known, but modern birds of similar size take 4 weeks.



LIFESTYLE
Habitat: Tropical forest.
Diet: Probably exclusively insects, especially beetles and dragonflies.
Habit: Mainly tree-dwelling; capable of limited flight.



FULL CLASSIFICATION
Class: *Aves*.
Sub-class: *Archaeornithes*.
Order: *Archaeopterygiformes*.
Genus & species: *Archaeopteryx lithographica*.



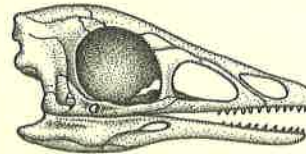
Location of fossil finds.

WHERE AND WHEN THEY LIVED

Five archaeopteryx fossils have been found—all in Bavaria, Germany. When the archaeopteryx lived, Germany was part of a differently shaped land mass that had a much more tropical climate than it does today.

By dating the rocks that contain the archaeopteryx fossils, we know that it lived during the late Jurassic period, about 150 million years ago.

THE SKELETON OF THE ARCHAEOPTERYX



The archaeopteryx's bird-like **beak** was lined with teeth.

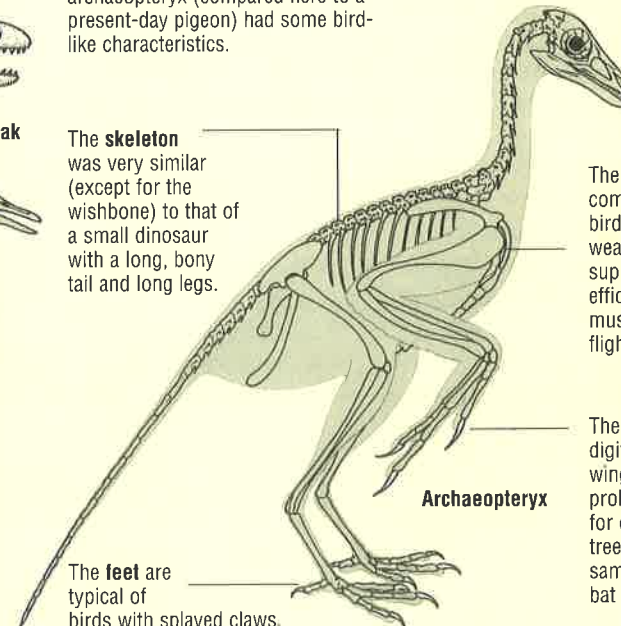


Pigeon

Resembling a small dinosaur, the archaeopteryx (compared here to a present-day pigeon) had some bird-like characteristics.

The **skeleton** was very similar (except for the wishbone) to that of a small dinosaur with a long, bony tail and long legs.

The **feet** are typical of birds with splayed claws.



Archaeopteryx

The **wishbone**, common to all birds, was too weak to have supported efficient wing muscles for flight.

The three-clawed digits on each wing were probably used for climbing trees in the same way as a bat does.

The archaeopteryx is the earliest known animal to resemble modern-day birds.

Fossilized remains of Archaeopteryx show that it was covered in feathers and had long, clawed feet.



B. Booth/Geoscience Features

HABITS

The archaeopteryx was probably capable of limited true flight. It could have run on the ground until it had enough momentum to launch itself into the air.

It is also likely that the

archaeopteryx spent much of its time in trees, using the sharp claws on its feet and wings to climb. It could then have used its wings to glide from branch to branch or swoop down to the ground.

BREEDING

The archaeopteryx had a good covering of feathers, and was probably warm-blooded. It could have incubated its young in the same way as modern-day birds. If so, it would have built a crude nest on a rocky cliff face or in a tree as protection against predators.

It is likely that the young archaeopteryx would have

emerged from their eggs without feathers, like modern-day birds. (Dinosaurs probably hatched as small, self-sufficient versions of their parents.) The young archaeopteryx would have been extremely vulnerable during their first few weeks, so it is probable that the parents showed some degree of care, as do most of today's birds.



FOOD & HUNTING

Its large, tooth-lined beak and long, well-developed legs indicate that the archaeopteryx was probably not a vegetarian. Because dinosaurs would have been too large for the 14-inch archaeopteryx to overpower, it was probably

not a true carnivore, either. It is likely that insects provided the staple diet of the archaeopteryx. Such insects as beetles and small dragonflies could have been caught either on the ground, in the trees, or on the wing.

ENEMIES

The archaeopteryx would have had many potential enemies in a world of carnivorous dinosaurs. But its ability to run quickly, climb trees, and fly would have made it hard to catch.

Today, the greatest enemy of small, flying birds is larger birds of prey, such as hawks and falcons. Pterosaurs, large flying reptiles, also lived at this time, but it is likely that they were far less agile than today's birds of prey and found it difficult to catch the nimble archaeopteryx.

DID YOU KNOW?

- It is generally believed that the archaeopteryx evolved from small, two-legged dinosaurs that began to climb trees.
- No fossils have been found of birds that lived in the 30 million years following the archaeopteryx.
- Some scientists believe that modern-day birds are actually dinosaurs, alive millions of years after their relatives had become extinct.
- The archaeopteryx fossils were once thought to be a man-made hoax.

A LIVING FOSSIL?

The modern bird most similar to the archaeopteryx is the South American hoatzin. It has weak flight muscles and climbs trees to glide, rather than fly, from branch to branch. Hoatzin chicks have claws on their wings.

Right: A hoatzin chick spreads its weak, primitive wings.

Below: A hoatzin sits on its nest.



A. Warren/Ardea



A. Warren/Ardea

HAIRY MAMMOTH

CARD 4

GROUP 7: PREHISTORIC & EXTINCT ANIMALS

ORDER
Proboscidea

FAMILY
Elephantidae

GENUS & SPECIES
Mammuthus primigenius



One of several species of huge, hairy, elephantlike creatures, the now extinct mammoth roamed the earth until as recently as 10,000 years ago.

KEY FACTS



SIZES
Height: 12 ft.
Tusks: Up to 16 ft.
Weight: 13,225-15,450 lb.



BREEDING
Sexual maturity: 10-12 years.
Gestation: Probably 22 months.
No. of young: 1.



LIFESTYLE
Habit: Sociable.
Lifespan: Up to 60 years.



OTHER MAMMOTHS
M. meridionalis evolved in the open woodlands of southern Europe about 2 million years ago. It resembled the modern Indian elephant. *M. trogontherii* of central Europe was probably one of the first mammoths to develop a protective hairy coat.



Location of mammoth fossil finds.

WHEN & WHERE THEY LIVED

Remains have been found in Siberia, northern Europe, northern Eurasia, and North America. Mammoths existed until about ten thousand years ago.

ARCTIC NEIGHBOR

The mammoth shared the Arctic wastes of eastern Asia and Europe with the woolly rhinoceros *Coelodonta*.

FOOD AND ENEMIES OF THE MAMMOTH

