Animals in God's Creation

How do fish live in the sea? How do birds fly in the air? Why do some animals migrate seasonally, and why do others live underground? What makes monkeys different from apes? And what happened to dinosaurs and other extinct animals?

"Then God saw everything that He had made, and indeed it was very good. So the evening and the morning were the sixth day." (Genesis 1:31)

The animal kingdom is a massive and amazing part of God's wonderful creation. We find animals living all over the world—in the water and in the air, in valleys and on mountains, in deserts and on glaciers, and even in our own homes and backyards. Whether they fly, swim, slither, gallop, crawl, or swing through trees, each animal is unique and well-suited to live in its habitat.

African lion

Zebrafish

Horned frog

Feral rock pigeon

Meerkat

Animale

The word "animal" comes from the Latin word *animale*, which means "living being" or "being which breathes." Another Latin word, *animalis,* means "animate, living," and *anima* means "breath, soul." While "animal" has been around since about the 14th century, it was rarely used until the 1600s. Even then, the King James Bible (1611) employed the word "beast." Scientists typically use Latin and Latin-sounding words to name animals when categorizing them. For instance, *Canis lupus familiaris* is the scientific name for domestic dogs, and *Columba livia* is the scientific name for the pigeons we typically see in cities.

Canadian geese

Harp seal

Puma

St. Bernard

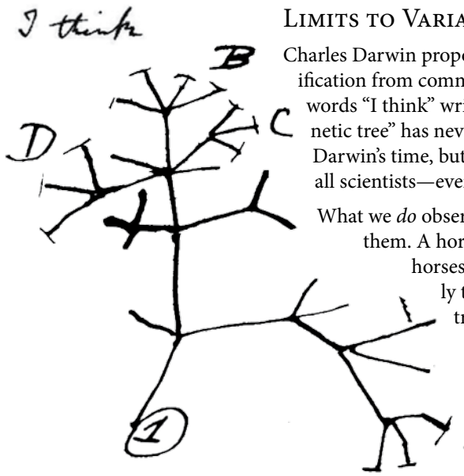
Studying Animals

Zoology, the study of animals, is a rich and fascinating field for research. The sheer variety of animals alone shows how creative God is in making each one. Not only do we see incredible engineering and design in their body structures, but we also see the evidence of God's once "very good" creation (Genesis 1:31). In observing all the interdependent relationships among them, we also see how all animals were needed right from the very start. The more we study animals, the more we can learn about how they fit into God's world and better understand our role as caretakers of the creation.

Variation Within Animal Kinds

The word "species" never appears in Scripture. Instead, the Bible uses the Hebrew word *min*, translated as "kind" in most English Bibles, to describe biological life. *Min* appears 31 times in Scripture—in the creation and Flood accounts (Genesis 1, 6–7), in the Mosaic law (Leviticus 11, Deuteronomy 14), and even once in the prophet accounts (Ezekiel 47).

In Genesis 1, *min* refers to a category of creature. For example, Genesis 1:25 states that "God made the beast of the earth according to its kind, cattle according to its kind, and everything that creeps on the earth according to its kind." According to Scripture and observation, individuals within a kind can breed only with other members of the same kind. These reproductive boundaries define the limits of each kind. God also blessed the creatures to multiply and fill the earth, so today's animals are descendants of those original created kinds.



Limits to Variation Show Animals Did Not Evolve

Charles Darwin proposed that various creatures share evolutionary lines of descent with modification from common ancestors. In fact, in one of his notebooks, he drew a "tree" with the words "I think" written by it to illustrate his idea. The problem is that his idea of a "phylogenetic tree" has never worked out. Researchers have developed many different "trees" since Darwin's time, but all of them are subjective, and almost none of them are agreed upon by all scientists—even within the secular science community.

What we *do* observe, however, is that creatures only breed with other creatures that are like them. A horse and a donkey, for instance, can breed to make a mule. That must mean horses and donkeys belong to the same *min,* or kind. One tree cannot accurately trace the relationships between living things—this requires many separate trees grouped by kind. For instance, domestic dogs, wolves, foxes, and coyotes belong to the canine kind, while cats, tigers, and lions belong to the felid kind. However, there is no connection between the canine "tree" and feline "tree" because there is a hard limit to biological change. No common ancestor exists between these two kinds and, therefore, no common ancestor exists for all life. This is why we have dogs and cats but no "cogs" or "dats."


Coyote


Gray wolf


Chihuahua


Great Dane


Polar bear

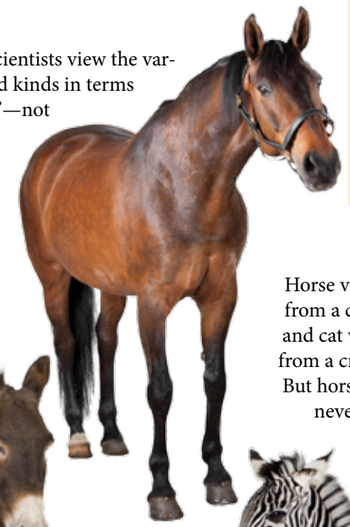

Grizzly bear

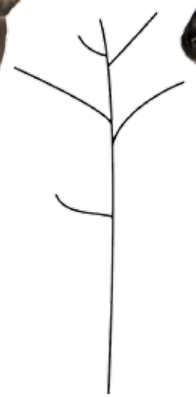

Panda bear


Black bear

Creation scientists view the various created kinds in terms of "bushes"—not one large evolutionary "tree."

> And God made the beast of the earth according to its kind, and cattle according to its kind, and everything that creeps on the earth according to its kind. And God saw that it was good.
>
> — Genesis 1:25


Horse varieties descended from a created horse, and cat varieties from a created cat. But horses and cats never shared any ancestry.


Created horse kind


Created cat kind

Designed to Swim

Then God said, "Let the waters abound with an abundance of living creatures. . . ."
So God created great sea creatures and every living thing that moves,
with which the waters abounded, according to their kind. (Genesis 11:20-21)

God created animals that live in the water on Day Five of the creation week, according to the record in the book of Genesis. About 73 percent of Earth's surface is covered with water, and most animals are marine creatures. In fact, there are more fish than all other vertebrates combined, and each one is designed to move efficiently through the water.

Flippers, Fins, and Hydrodynamics

Flippers and fins work much like how an airplane's flaps function. By turning one of these appendages so its broadest side is to the water, the animal can produce a significant cornering force. Scientists have investigated fish design and the water they swim through as part of a discipline called hydrodynamics—the study of forces acting on or exerted by fluids. Many fish, such as tuna, have an ideal design for movement, and fluid engineers have learned much by studying their swimming ability.

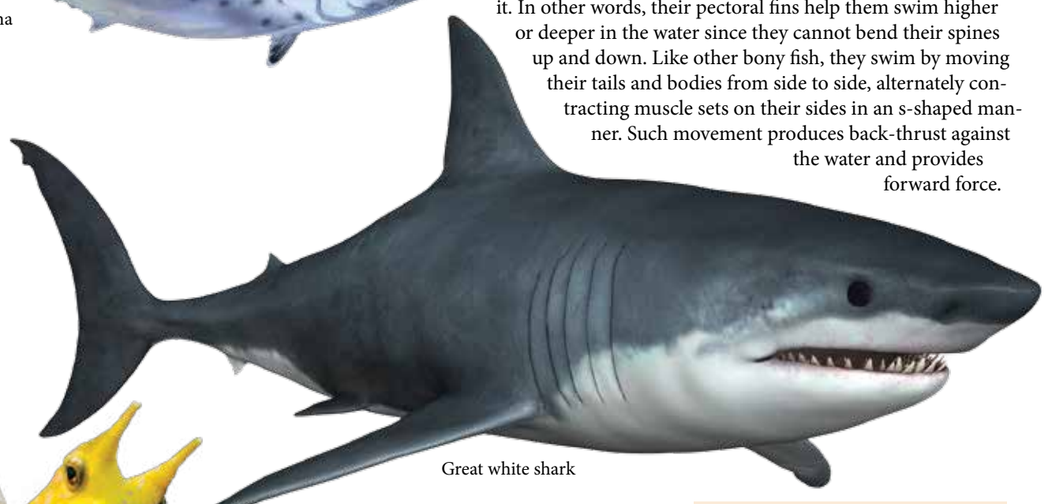
Tuna

Fish

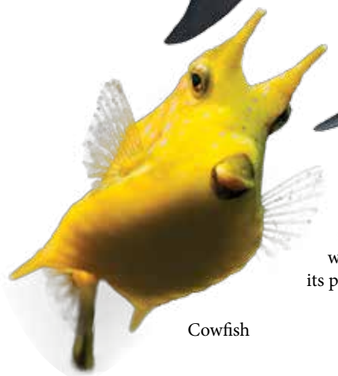
Salmon

Most fish have streamlined—or fusiform—bodies that decrease the amount of friction (pressure drag) when they move through the water. Most fish have fins and scales, and some have drag-reducing mucus covering their scales. If they stopped swimming, they would sink because their body tissue is denser than water. Many bony fish have an adjustable, internal swim bladder that contains gases, providing them with neutral buoyancy.

Some fish, like sharks, do not have scales but instead have tiny toothlike structures called denticles. Sharks also have pectoral fins that cause dynamic lift, a condition in which fluid (in this case, water) flows past the surface of a body and exerts an upward force on it. In other words, their pectoral fins help them swim higher or deeper in the water since they cannot bend their spines up and down. Like other bony fish, they swim by moving their tails and bodies from side to side, alternately contracting muscle sets on their sides in an s-shaped manner. Such movement produces back-thrust against the water and provides forward force.



Great white shark



Cowfish

Streamlined?
This strange-looking creature is called a cowfish, and while it looks clumsy, it can swim using a median-paired fin gait. In other words, it swims using the combined function of its paired fins.

Did you know?

Sharks have large livers that make up almost one-third of their weight. Shark livers, along with oils in their bodies, help them control their buoyancy without needing a swim bladder.

Mammals

We usually think of mammals as living on land, but some are designed to swim in lakes, rivers, streams, and oceans. Like land mammals, these animals breathe air and come to the surface (or completely out) of the water to breathe. However, some of them can hold their breaths for long periods of time, from five minutes to over an hour.

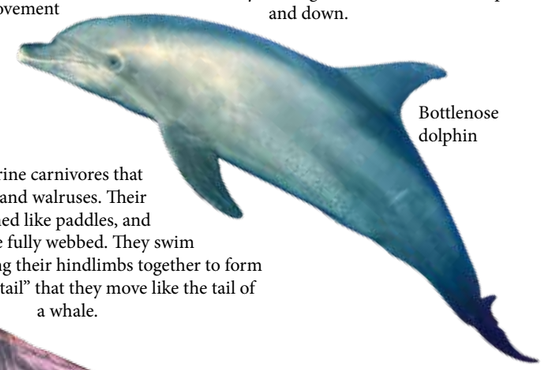
Sperm whale

Did you know?

Sperm whales can hold their breaths for up to 90 minutes!

Cetaceans

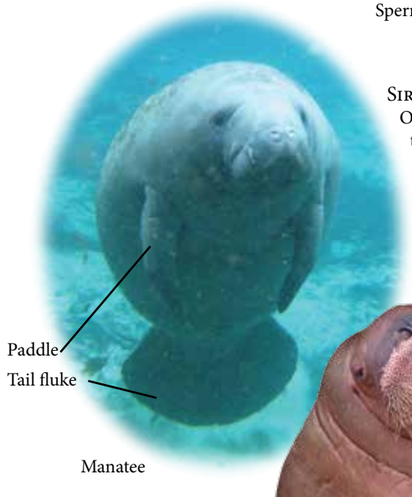
The order of Cetacea is an entirely aquatic group of mammals that includes the baleen and toothed whales and dolphins. Their forelimbs are paddles that they use for stability while their horizontal tail fin propels them through the water. Unlike bony fishes and sharks that move their bodies and tails from side to side, cetaceans swim by moving their bodies and tails up and down.



Bottlenose dolphin

Sirenians

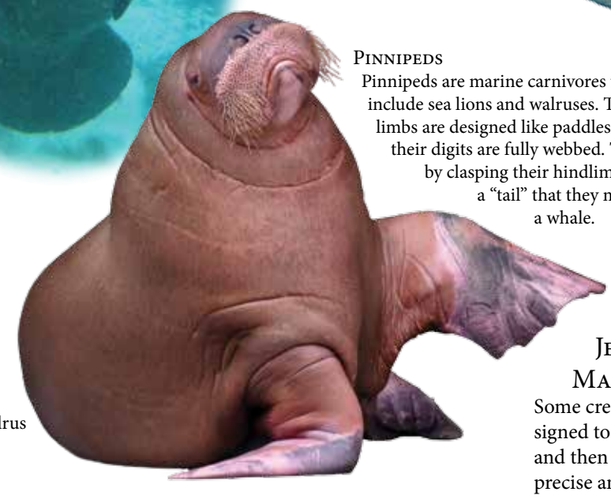
One group of animals that lives exclusively in the water is the sirenians (dugongs and manatees). The digits of their forelimbs are joined to form large paddles with free movement at the wrist and elbows. They also have a horizontal tail fluke that aids in swimming.



Manatee

Pinnipeds

Pinnipeds are marine carnivores that include sea lions and walruses. Their limbs are designed like paddles, and their digits are fully webbed. They swim by clasping their hindlimbs together to form a "tail" that they move like the tail of a whale.



Walrus

Aquatic Insects

Some insects are aquatic and live part of their life cycles in the water. For instance, 90 percent of all species of water striders, like the pond skater, inhabit freshwater surfaces. When they are adults, they use their hind legs to steer while they use their middle legs like oars to row, allowing them to glide on the water's surface rapidly. They balance on the surface using millions of micro-hairs on their bodies, which repel the water.

Water strider

Jet-Propelled Marine Animals

Some creatures are designed to take in water and then squirt it out in precise and direct bursts like a water jet. These animals include scallops, squids, and some cnidarians like jellyfish. Squids in particular are masters of water jet propulsion. They take water into their mantle cavities using a siphon and then rapidly propel it out in a strong jet.

Pelagia noctiluca jellyfish

Animals on the Ark

God instructed Noah to build the Ark that would accommodate his family and two of every land animal kind (and seven each of the clean animals) for the year-long Flood. Nearly all animals have an instinctive ability to migrate when faced with danger and can go into a hibernation-like state until the danger passes. God, the Creator of animals, probably instilled these behaviors into the chosen pairs, led them to the Ark, and their descendants retain the same behaviors today.

The Ark would have had plenty of room for all its human and animal passengers. Scripture tells us the size of the Ark was about 450 feet long, 75 feet wide, and 45 feet high—about 1.5 million cubic feet of space. The purpose of the Ark was to preserve each kind of animal that would later reproduce and repopulate Earth. The animals on board would have been young, healthy, and able to accomplish this purpose. So, most of the animals on the Ark, including the dinosaurs, were not large.

An animal "kind," which is a broader category than "species," probably relates to the potential to breed. For instance, domestic dogs can mate with coyotes and wolves, and thus they would be within the same kind even though they are categorized as different species today. Post-Flood adaptations have produced our modern animal varieties. Generous estimates place the total number of animals on the Ark at fewer than 25,000 pairs (probably even fewer), and the average size of all animals is surprisingly small. There are only a few large animals, but there are many small ones, with the average size being smaller than a house cat.

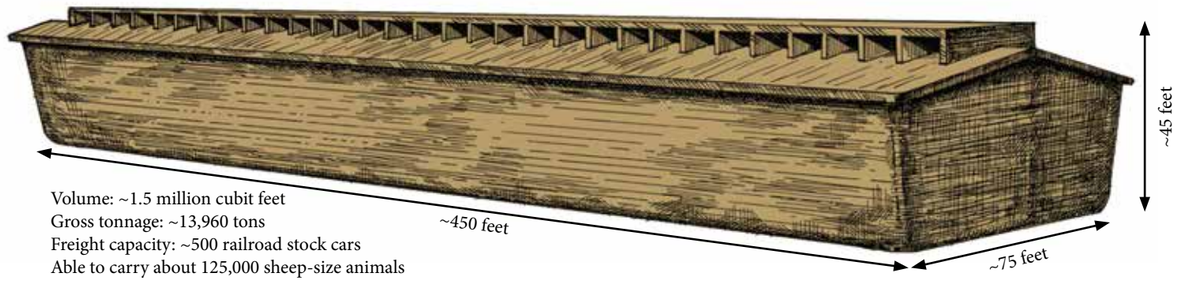
Caring for the Animals

Did the eight people aboard the Ark have to constantly care for, feed, water, and maintain each animal? Most likely not. All known animal groups are able to undergo a type of dormancy or hibernation—an extended time of lowered body temperature and decreased metabolism that can last for months. In such a state, they would produce little waste and need virtually no exercise and little food. Some endotherms (warm-blooded animals) may have also entered a condition called torpor that, like hibernation, causes the body temperature to drop significantly. Such a condition would have made it easier for Noah and his family to care for the animals.

Brown bear cub

Elephant calf

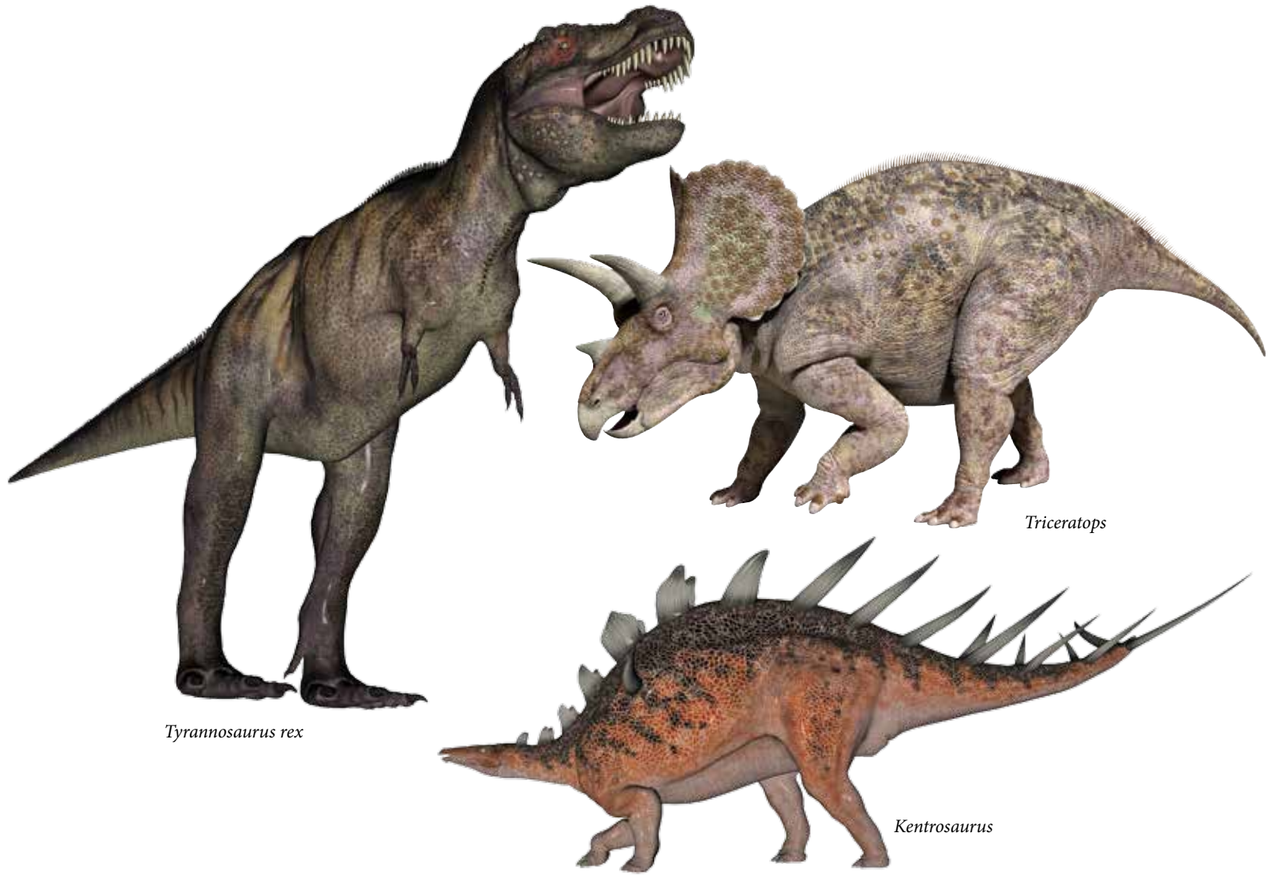
Ostrich chick



Volume: ~1.5 million cubit feet
Gross tonnage: ~13,960 tons
Freight capacity: ~500 railroad stock cars
Able to carry about 125,000 sheep-size animals

Dinosaurs on the Ark

Since God made dinosaurs during the creation week, that means dinosaurs were on the Ark. They were a special category of reptile, so we can look at other large reptiles to see how they were able to fit on board. Many larger reptiles like crocodiles and snakes live for years and do not stop growing throughout their lives. The Ark's purpose was for survival and reproduction after the Flood, so God may not have chosen the oldest and largest specimens to go aboard. More likely, He would have selected young, strong pairs that were able to reproduce. Crocodiles and snakes are quite small when they are young, so the dinosaurs aboard the Ark were probably also small juveniles.



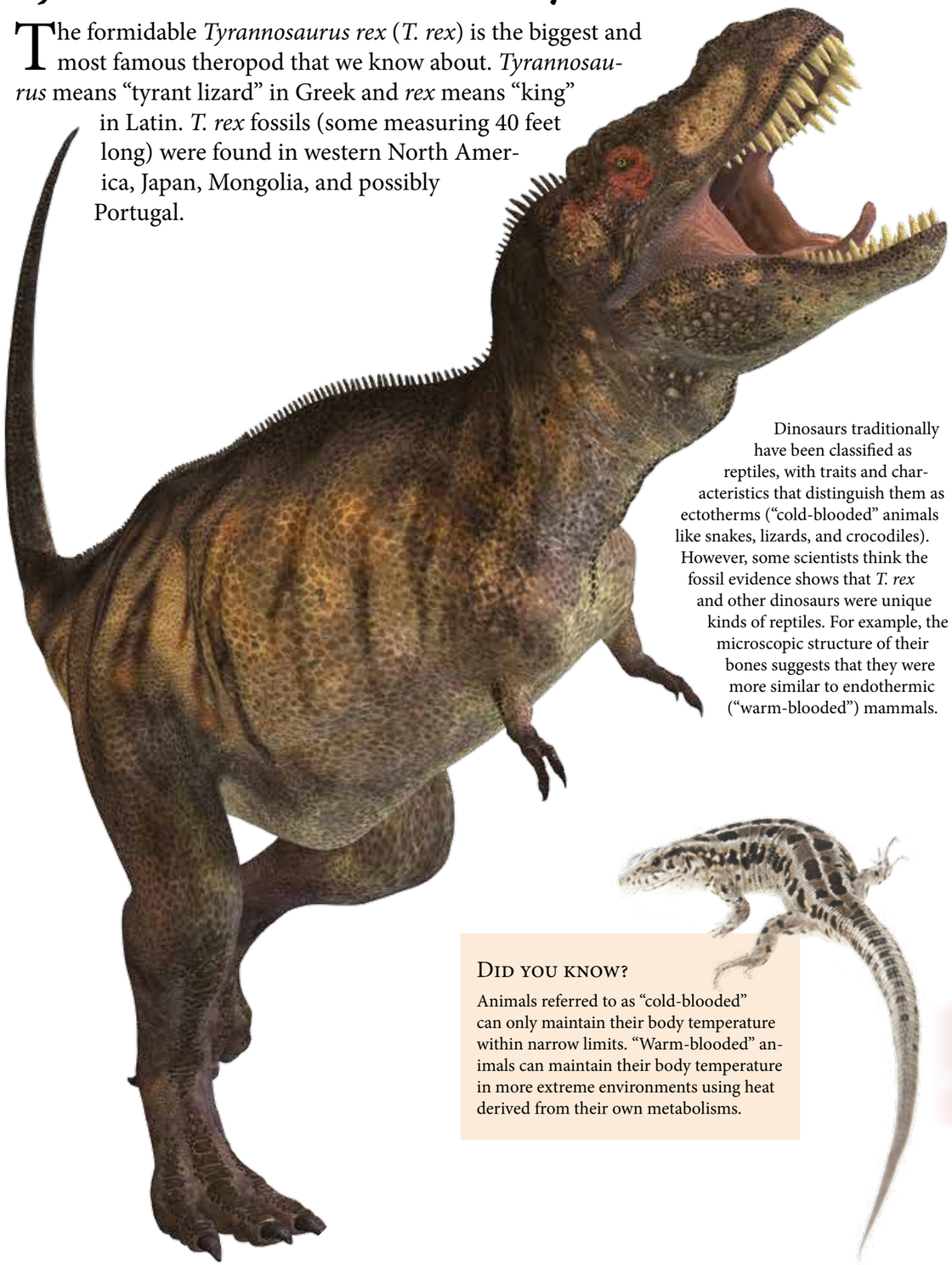
Tyrannosaurus rex

Triceratops

Kentrosaurus

Tyrannosaurus rex—The "Tyrant Lizard"

The formidable *Tyrannosaurus rex* (*T. rex*) is the biggest and most famous theropod that we know about. *Tyrannosaurus* means "tyrant lizard" in Greek and *rex* means "king" in Latin. *T. rex* fossils (some measuring 40 feet long) were found in western North America, Japan, Mongolia, and possibly Portugal.



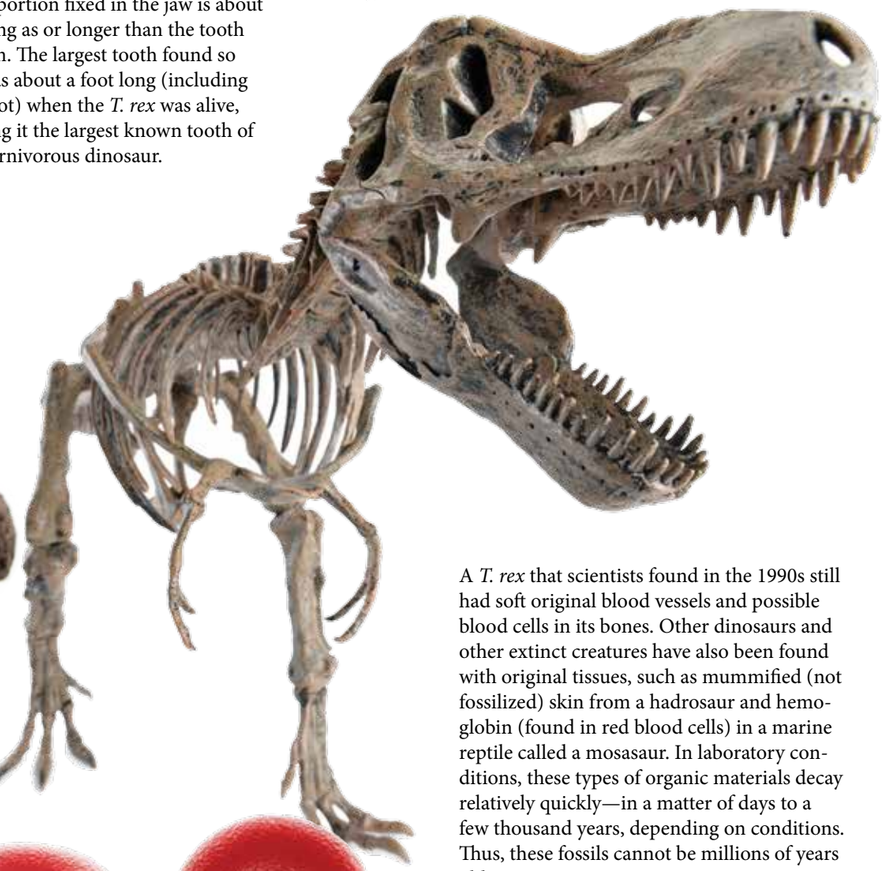
Dinosaurs traditionally have been classified as reptiles, with traits and characteristics that distinguish them as ectotherms ("cold-blooded" animals like snakes, lizards, and crocodiles). However, some scientists think the fossil evidence shows that *T. rex* and other dinosaurs were unique kinds of reptiles. For example, the microscopic structure of their bones suggests that they were more similar to endothermic ("warm-blooded") mammals.

Did you know?

Animals referred to as "cold-blooded" can only maintain their body temperature within narrow limits. "Warm-blooded" animals can maintain their body temperature in more extreme environments using heat derived from their own metabolisms.

Viewing the root of a "typical" *T. rex* tooth (*T. rex* displayed marked differences in tooth shape), the portion fixed in the jaw is about as long as or longer than the tooth crown. The largest tooth found so far was about a foot long (including the root) when the *T. rex* was alive, making it the largest known tooth of any carnivorous dinosaur.

Researchers have unearthed about 30 specimens of *T. rex,* a number of which are reasonably complete skeletons. Although we can learn a great deal from these fossilized remains, scientists are still unsure about a lot of things, such as *T. rex*'s taxonomy (classification), physiology, feeding habits, specific locomotion (how it moved), and how fast it could run.



A *T. rex* that scientists found in the 1990s still had soft original blood vessels and possible blood cells in its bones. Other dinosaurs and other extinct creatures have also been found with original tissues, such as mummified (not fossilized) skin from a hadrosaur and hemoglobin (found in red blood cells) in a marine reptile called a mosasaur. In laboratory conditions, these types of organic materials decay relatively quickly—in a matter of days to a few thousand years, depending on conditions. Thus, these fossils cannot be millions of years old.

How Animals See

The animal kingdom has many types of visual receptors, or eyes. Research shows that eyes are more like extensions of the brain rather than separate organs. Eyes have photoreceptors and supporting cells, as well as a lens system that focuses incoming light onto the receptors. Nerves in the receptors conduct these impulses to a special visual section of the brain. This process produces a continuous stream of sharp images. The variety of basic animal eye forms and the precise placement of their many required parts showcase the handiwork of the Creator.

How Vision Works

Visual receptors in various creatures all use light-absorbing pigments. When a photon of light strikes one of these pigment molecules, a rapid and complicated chemical process converts the incoming light into an electrochemical signal that travels to the brain. The brain then interprets those signals into images.

Specially designed ocular muscles that are controlled by four nerves operate eye movement. One muscle is the superior oblique located on top of the eyeball. It loops through a tiny ligament called the trochlea to work like a pulley. Without its pulley-like suspension, the superior oblique would squish the eye, deforming the image and causing damage. Precise nerve impulses—all involuntary—coordinate the two eyes to operate as a unit, giving steady binocular (two eye) vision.

Burrowing owl

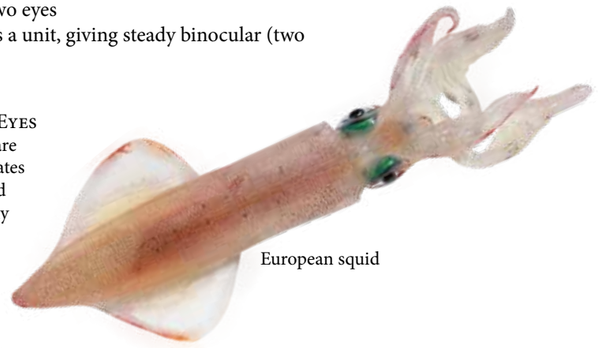
Did you know?

Owls do not have ocular muscles to move their eyes. If they want to look around them, they have to turn their heads—even all the way around to see behind them. Chameleons have ocular muscles that allow them to turn their eyes in different directions. One eye can look forward while the other looks backward.

Tarsier monkey

Single-Lens Eyes

Single-lens eyes are found in invertebrates and vertebrates, and they focus differently depending on the type of animal. The basic architecture of the eye is the same design for all of them, showing that one Designer made them.



European squid

Mantis shrimp

Compound Eyes

Compound eyes are designed to contain many ommatidia, or optical units, and each unit has its own light-focusing lens. Some creatures have thousands of ommatidia that give them excellent eyesight. Animals such as crustaceans, insects, and even a few annelids (segmented worms) have compound eyes.

Honey bee

Ommatidia collectively generate a mosaic image. In honey bees, for example, the ommatidia can detect the direction of incoming ultraviolet light (radiation), even on cloudy days. They use this data to calculate a route, like an internal GPS. Just as He did with the vertebrate eye, the Lord did not construct invertebrate eyes to barely get the job done. Instead, He optimized their performance potential.

Did you know?

God designed many flowers with specific patterns, or nectar guides, that are invisible to most mammal eyes and can only be detected by ultraviolet (UV) detectors. Insect eyes, however, can detect both UV and visible light, so the nectar guides lead pollinating insects like bees to the source of nectar. Some birds, such as hummingbirds, ducks, kingfishers, and songbirds can also see at UV wavelengths.

Hibiscus

Seeing Differently

Some animals have vision similar to humans, but others see differently. For instance, dogs and cats do not have strong vision and rely more on scent and sound. However, they have better night vision than humans. Bird eyes have more cones than human eyes, so they can see more color hues than we can. It is clear that each creature was outfitted with just the right type of eye it needs to thrive in its habitat.

Domestic shorthair

Feral pigeon

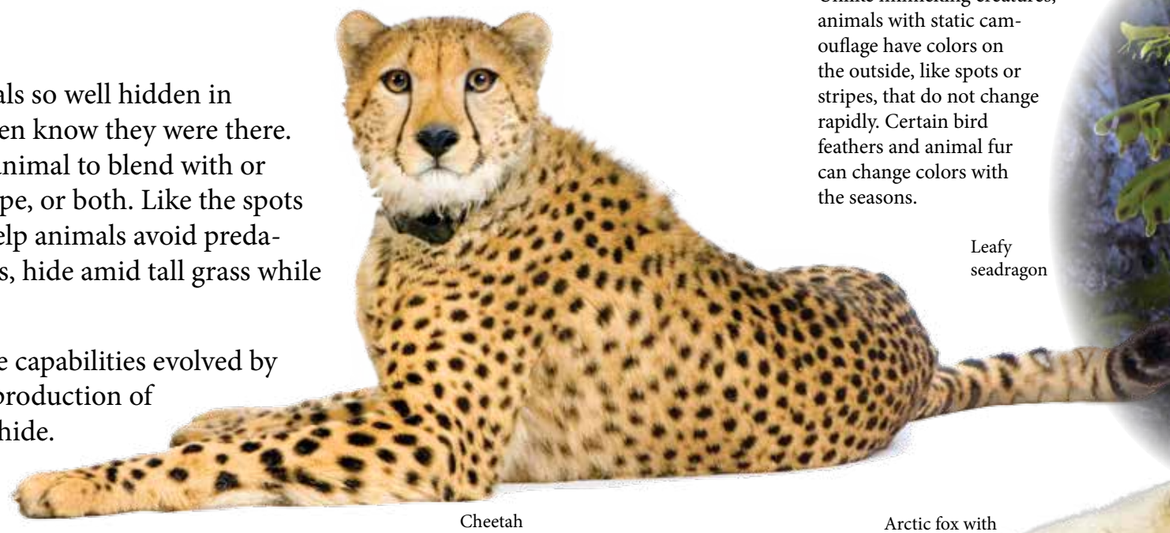
Jellyfish Have Eyes?

Recently, researchers discovered that some jellyfish do in fact have eyes. For example, the box jellyfish uses four different types of eyes to generate useful images—without a brain!

Box jellyfish

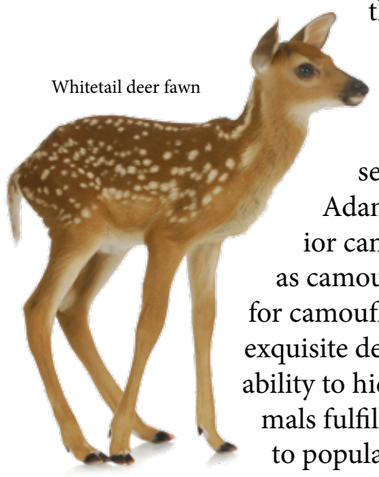
Camouflage—Animals Hiding in Plain Sight

You may have walked or swum by animals so well hidden in their environments that you did not even know they were there. Crypsis, or camouflage, is the ability of an animal to blend with or hide in its environment due to its color, shape, or both. Like the spots on a dappled fawn's coat, camouflage can help animals avoid predators. It can also help predators, like cheetahs, hide amid tall grass while hunting for food.



Cheetah

Secular science tends to say that camouflage capabilities evolved by selective pressures (factors that threaten reproduction of a species), creating the need for animals to hide. This is an inexact and confusing explanation, and it does not fit the concept of evolution. For instance, both chameleons and octopi can change their colors using specially designed cells in their skin called chromatophores. However, chameleons (a type of lizard) and octopi (a type of mollusk) do not share a common evolutionary line of descent. Also, there are plenty of examples of animals that survive even though they do not blend with their environments.

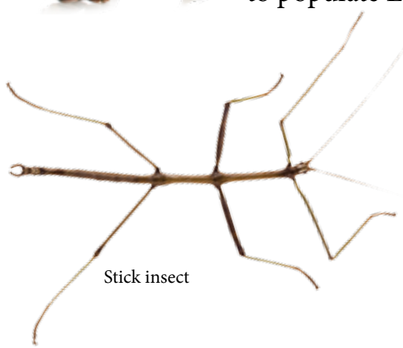


Whitetail deer fawn

In the beginning when God created the animals, predator/prey relationships did not yet exist. So, it is possible that camouflage served a different purpose rather than helping animals hide prior to Adam's sin and mankind's Fall. Afterward, death and predatory behavior came into the creation, and that original purpose began to function as camouflage. Whatever the original reason for camouflage, animals that have it today show exquisite design and pioneering abilities. The ability to hide from predators or prey helps animals fulfill God's first command and blessing to populate Earth (Genesis 1:22).

Mimicking

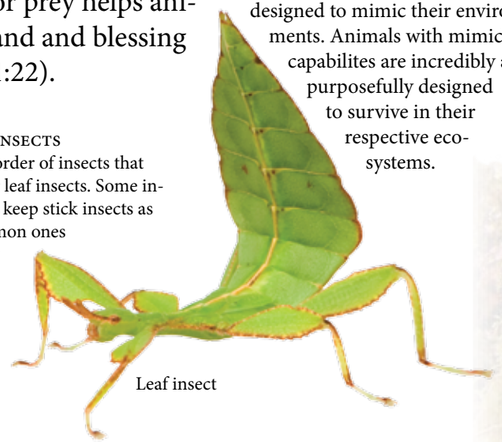
Have you ever seen a twig walking around or a leaf crawling? You were looking at creatures that are designed to mimic their environments. Animals with mimicking capabilites are incredibly and purposefully designed to survive in their respective ecosystems.



Stick insect

Stick and Leaf Insects

Phasmatodea is an order of insects that includes the stick or leaf insects. Some individuals or schools keep stick insects as pets, the most common ones being the *Carausius morosus* that go by the names of "common," "Indian," or "laboratory" stick insects.



Leaf insect

Static Camouflage

Unlike mimicking creatures, animals with static camouflage have colors on the outside, like spots or stripes, that do not change rapidly. Certain bird feathers and animal fur can change colors with the seasons.

Leafy seadragon

The leafy seadragon is an endangered species protected by the Australian government. The female produces over 200 eggs at a time, but only about five percent of them survive. These fish are slightly larger than sea horses and eat small aquatic insects and plankton through their tubular snouts. The leaf-like extensions of their bodies look like seaweed.

The nightjar, or New World nighthawk, is a nocturnal bird with long, pointed wings. Its plumage is designed to look like leaves or bark. Nightjars sometime build their nests on the ground, and their eggs also have camouflaging colors.

Nightjar

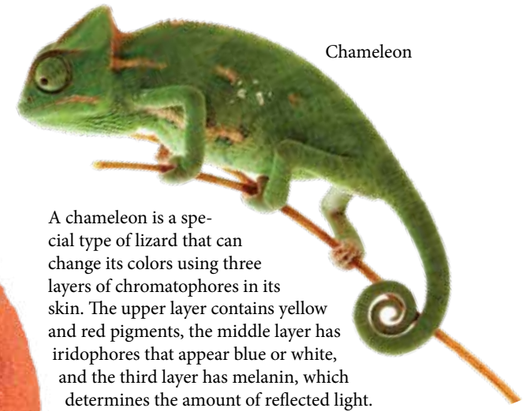
Arctic fox with white coat

Changing with the Seasons

Foxes and rabbits can grow white fur coats in the winter, which helps them hide in the snow. When the winter is over, they can grow colorful fur coats again.

Dynamic Camouflage

Certain animals can change color almost instantly. They have special cells in their skin called chromatophores, which are designed with cellular powerhouses, muscle fibers, tiny packets of pigment, and special nerves that allow a color change in less than a second. Other color-changing cells include leucophores and iridophores.



Chameleon

A chameleon is a special type of lizard that can change its colors using three layers of chromatophores in its skin. The upper layer contains yellow and red pigments, the middle layer has iridophores that appear blue or white, and the third layer has melanin, which determines the amount of reflected light.

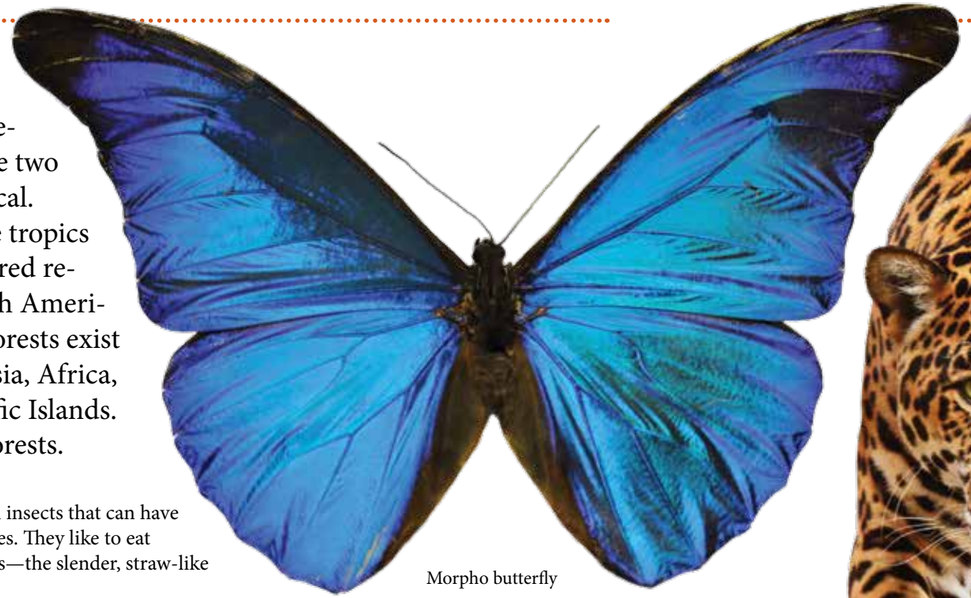
Octopus

Instant Color Change

Octopi have chromatophores in their skin that contain brown, black, red, yellow, or orange pigments. When hiding from a predator or trying to catch food, they can change their color almost instantly.

Rainforest Animals

Rainforests, as their name implies, experience high levels of rainfall. There are two types of rainforests—temperate and tropical. Temperate forests are located between the tropics and the polar circles of the globe in scattered regions such as New Zealand, western North America, and southeastern Australia. Tropical forests exist near the equator in many areas such as Asia, Africa, Central and South America, and the Pacific Islands. Many animals make their homes in rainforests.

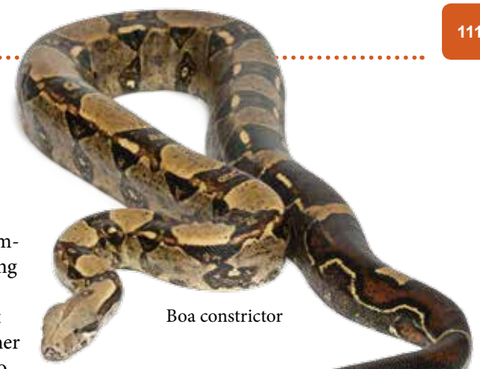


Morpho butterflies are beautiful insects that can have wingspans up to five or six inches. They like to eat rotting fruit with their proboscis—the slender, straw-like tube part of their mouth.

Morpho butterfly

Jaguars are the largest cat in the Americas and the third-largest feline species in the world, after tigers and lions. Unlike other big cats, jaguars love to swim, bathe, hunt, and play in water.

Jaguar



Boa constrictors are nonvenomous snakes that kill by wrapping their bodies around prey and constricting the victim until it asphyxiates. These snakes slither across the ground and can also climb up and across trees.

Boa constrictor

Piranha

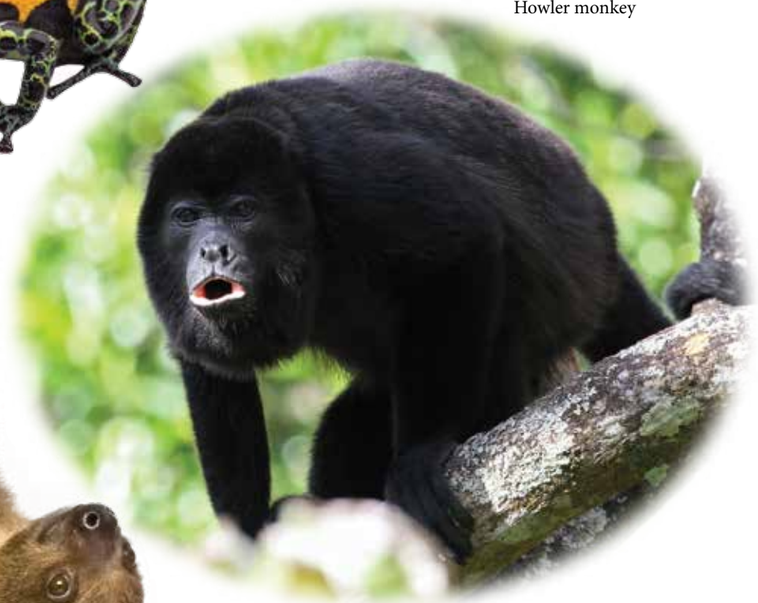
Piranhas are freshwater fish known for their sharp, triangle-shape teeth. Sometimes they swim in large schools, but they most often travel alone, eating smaller fish, seeds, and fruits that fall into the water.

More than 100 species of poison dart (or arrow) frogs live in the rainforests of Central America, South America, and on some of the Hawaiian Islands. Humans have used their secretions to poison darts, thus giving these creatures their name.

Poison dart frog

Howler monkeys get their name from the howling noise they make, especially in the morning and evening.

Howler monkey

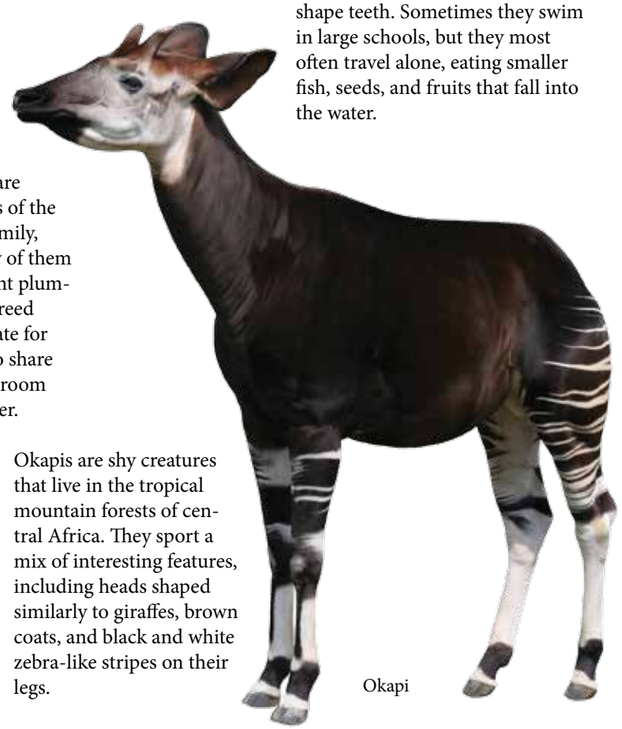


Two-toed sloth

Sloths move so slowly that algae are able to grow in their fur. About 18 hours a day, they hang upside down from a tree branch and sleep.

Macaw

Macaws are members of the parrot family, and many of them have vibrant plumage. They breed with one mate for life and also share food and groom one another.



Okapi

Okapis are shy creatures that live in the tropical mountain forests of central Africa. They sport a mix of interesting features, including heads shaped similarly to giraffes, brown coats, and black and white zebra-like stripes on their legs.