

# THE ANIMAL KINGDOM

**A**nimals are living things that obtain their food by eating other living things, such as plants, fungus, bacteria or other animals. There are more different animals in the world than any other type of living thing. Scientists have identified at least two million different species, from tiny worms to huge elephants and blue whales. Animals are divided into two main groups: vertebrates and invertebrates.

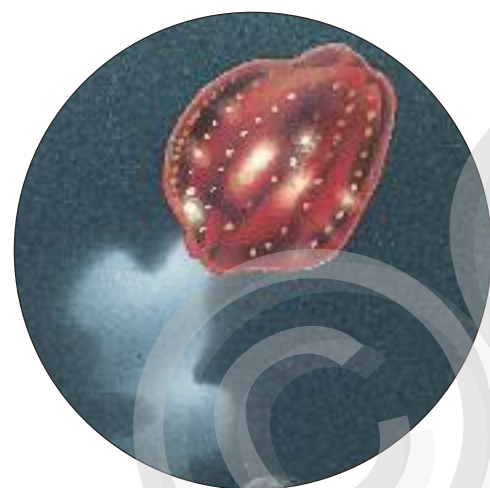
**Arboreal animals** Animals that live in the branches of trees.

**Amphibians** A class of cold-blooded, vertebrate animals that return to water to breed. The young are aquatic and breathe using gills. Most adults develop lungs.

**Aquatic** An animal that spends much of its life in water.

**Birds** Warm-blooded, vertebrate animals with four limbs, the front two of which are adapted into wings. Birds have a toothless beak and a covering of feathers.

**Browsers** Animals that feed on leaves and twigs from trees and bushes.



Red comb jelly: comb jellies are a phylum of animal.

**Camouflage** The means by which an animal can escape the notice of predators or prey by using the colours or patterns of its body to blend into its surroundings.

**Carnivore** An animal that feeds on other animals.

**Carrion** The remains of dead animals.

**Cold-blooded** Animals that are cold-blooded are only ever the same temperature as their surroundings. They depend on heat from the sun in order to have enough warmth and energy to move about.

**Fish** Cold-blooded, vertebrate animals that live in water and breathe using gills. There are two main groups: cartilaginous fish, such as sharks; and bony fish.

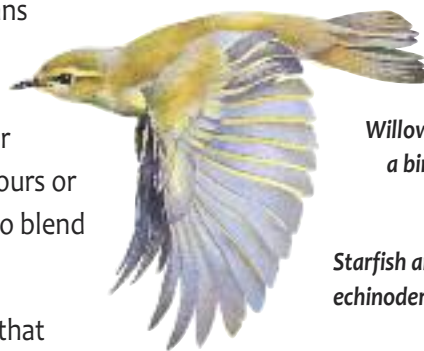
**Herbivore** An animal that feeds only on plant material.

**Hibernation** The process whereby some animals spend the winter in a state of reduced activity. Breathing and other body systems slow down, conserving energy. Animals such as dormice and some frogs, snakes and tortoises hibernate.

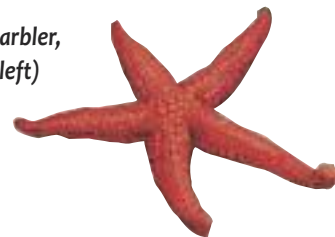
**Grazers** Animals that feed on grasses.

**Invertebrates** Animals without backbones. They include insects, arachnids, myriapods, worms, crustaceans, echinoderms, molluscs, sponges, cnidarians and comb jellies.

## A SELECTION OF ANIMAL CLASSES AND PHYLA



Willow warbler, a bird (left)



Starfish an echinoderm



Japanese pygmy angelfish (above)



Millipede (right), a myriapod



Lobster, a crustacean



Jellyfish, a cnidarian



Dolphin (right), an aquatic mammal

Chameleon (below), a reptile



Octopus (below), a mollusc

Ladybird (right), an insect



Frog, an amphibian



Earthworm, a segmented worm



Bird-eating spider, an arachnid

**Mammals** A class of vertebrate, warm-blooded animals that mostly give birth to live young and feed them with milk. All mammals care for their young after they are born. Most mammals have four limbs and a covering of fur although **sea mammals**, such as seals, whales and dolphins, have little or no hair.

**Mammary gland** An organ found on female mammals. It produces nutritious milk for their young after they are born. As the young suckle (feed on milk) they grow larger and stronger, without wasting energy searching for their own food.

**Migration** The movement of a group of animals from one place to another at a certain time of the year, to breed or feed.

**Nocturnal** Active during the night and inactive during the day.

**Omnivore** An animal that eats both plants and other animals.

**Predator** An animal that obtains its food by hunting and killing other animals.

**Prey** An animal that is killed and eaten by predators.

**Reptiles** A group of cold-blooded vertebrate animals with scaly skin. Reptiles include snakes, lizards, turtles and crocodiles. Most reptiles lay eggs but some give birth to live young.

## ANIMAL CLASSIFICATION

Living things are organized into groups of increasing size, which show how closely related they are to one another. Here we see how they apply to the lion:

**SPECIES:** The smallest grouping of animals. All lions have the same unique body structure and can breed together.

**GENUS:** A group of very similar species. The genus *Panthera* contains four species: the lion, the tiger, the jaguar and the leopard.

**FAMILY:** The genus *Panthera* belongs to the cat family. All cats have similar bodies and feed only on meat. However, they vary in size, habitat and hunting behaviour.

**ORDER:** The cat family belongs to the carnivore order. All carnivores have strong jaws and sharp teeth and most are hunters.

**CLASS:** The carnivore order belongs to the mammal class. All mammals are warm-blooded and suckle their young on milk.

**PHYLUM:** Mammals belong to a larger group called the chordates, which includes all vertebrate animals.

**KINGDOM:** The chordate phylum is one of over 30 phyla in the animal kingdom, to which all animals belong.

**Scavengers** Animals that feed on the remains of food killed or collected by other animals.

**Species** A group of animals that are similar in body structure. Animals of the same species are able to breed together and produce young that can also breed.

**Vertebrate** An animal with a backbone. Mammals, birds, reptiles, amphibians and fish are all vertebrates. Vertebrates are also known by their scientific name, chordates.

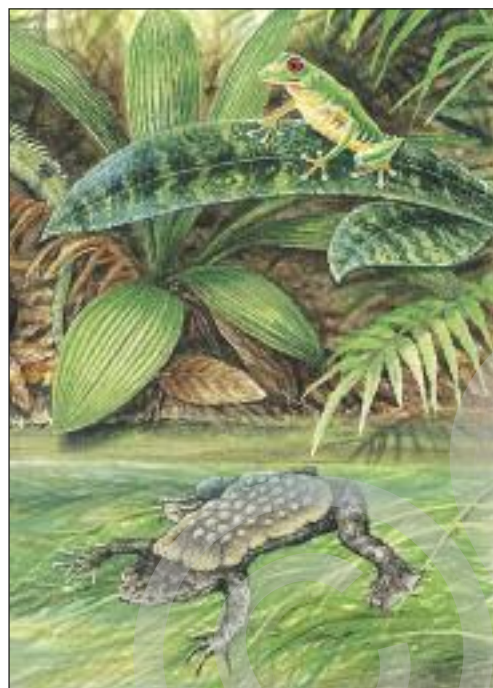
**Warm-blooded** Warm-blooded animals maintain their internal temperature independently of their surroundings. They do this by "burning" fuel (food) for energy.

# AMPHIBIANS

**A**mphibians are a class of cold-blooded, carnivorous animals that includes frogs, toads and salamanders. The word amphibian means “double life”. Most amphibians spend the first part of their lives underwater, breathing through gills. Their adult lives are spent on land, breathing through lungs. They return to the water to lay eggs. Most adults can also breathe through their skin. They have to stay moist to do this, so they live in damp, cool conditions. Many species can produce poisonous substances from their skins. Bright markings warn predators that they taste bad.

**Axolotl** An aquatic salamander from Mexico. As an adult it retains many larval features, such as its feathery gills, but it can still reproduce.

**Bullfrog** A large frog from North America. It grows up to 20 cm long and eats almost anything, including birds and mice. It is known for its booming mating call.



A tree frog (top) and a Surinam toad (above), which carries its eggs on its back until they hatch.



Fire-bellied toad

**Caecilian** A long, snake-like amphibian with no limbs. Caecilians have small, almost sightless, eyes and live underground in tropical regions.

**Congo eel** A North American salamander with a long thin body and four tiny, useless legs. It lives at the bottom of streams, feeding on frogs, fish and snakes.



Japanese giant salamander

**Japanese giant salamander**  
The world’s largest amphibian.

It can grow to lengths of up to 1.5 m. It lives in streams where water supports the great weight of its body. It sucks up fish and worms with its large, gaping mouth.

**Darwin’s frog** A small South American frog with a pointed snout. It stores its eggs in a sac of skin in its throat until they mature and jump out as miniature adults.

**Fire-bellied toad** An Asian toad with a brightly coloured belly. If threatened, it twists to show its belly as a warning that it tastes bad. This action, called the **unken reflex**, is also used by some salamanders.

**Fire salamander** A European salamander with black and yellow markings. It lives in cool forests or mountainous regions.

**Larva** The young of an animal before it goes through metamorphosis. Larvae look very different to adults of the same species. For example, the larvae of many amphibians have gills or tails, which are lost when they become adults.

**Metamorphosis** The process whereby some animals change their bodies and behaviour between the young (larval) and adult states of their life.

**Midwife toad** A dull-coloured toad from Europe and North Africa. The male wraps the female’s eggs around his legs to protect them until they are ready to hatch.

**Flying frog** A frog with large, webbed feet that act as parachutes to help it glide between trees. Some can glide up to 15 m.

**Frog** A short, tail-less amphibian with long hind legs and smooth skin. Frogs live on land, in trees or in fresh water. They can make huge leaps and swim quickly.

**Gills** The breathing organs of water creatures. As water passes in through the mouth and out over the gills, oxygen is filtered out by blood vessels. Amphibian larvae have flap-like, external gills.



An adult male great crested newt

**Mole salamander** A thick-bodied North American salamander with colourful markings. Adults live in burrows, returning to the water only to lay their eggs.

**Mudpuppy** An aquatic salamander from North America, also known as a **waterdog**. It keeps its gills into adulthood.



Flying frog

**Newt** A member of the salamander family with a long, flattened tail. Many species of newt are brightly-coloured to warn predators that they are toxic.

**Olm** A large, aquatic salamander that lives in European caves. It has pale skin, blind eyes and flap-like, external gills.

**Poison-arrow frog** A frog from the rainforests of Central and South America that secretes a powerful poison. This is used by rainforest people to coat the tips of their darts and arrows for hunting.

**Salamander** An amphibian with a long body and tail. Some salamanders are fully aquatic, while others live on land and return to the water only to lay their eggs.

**Siren** An aquatic salamander with small front legs and no back legs.

**Spawn** The jelly-like eggs of aquatic animals, such as frogs and toads. Many frogs and toads leave their eggs to hatch on their own. Others carry them on their backs or in their mouths to protect them.

**Tadpole** The plant-eating young of a frog or toad. At first, tadpoles breathe through gills and use their tails to swim. Gradually, their legs emerge, they develop lungs and finally they lose their tails.



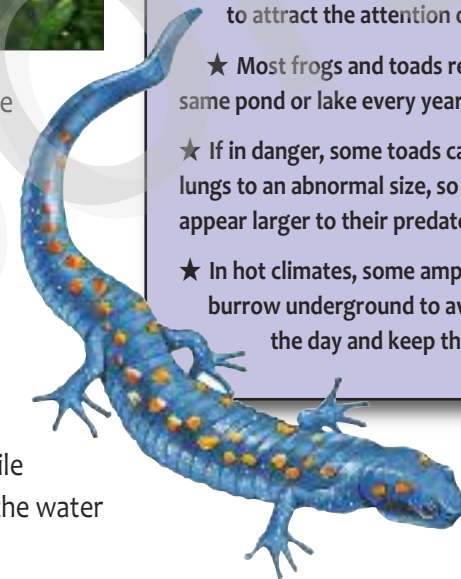
The tadpoles’ legs emerge and they develop lungs.



The tadpoles come to the surface and their front limbs appear (above). They lose their tails, their eyes grow bigger and their mouths become wider. They are now adult frogs (right).

## FACTFILE

- ★ Amphibians were the first vertebrates to live on land more than 300 million years ago. They evolved from fish that had moved on to the land and developed lungs. Early amphibians looked similar to salamanders.
- ★ The smallest amphibian is the Brazilian short-headed frog, which is only 1 cm long.
- ★ Many amphibians become more brightly coloured in their breeding season in order to attract the attention of a mate.
- ★ Most frogs and toads return to the same pond or lake every year to breed.
- ★ If in danger, some toads can inflate their lungs to an abnormal size, so that they appear larger to their predators.
- ★ In hot climates, some amphibians burrow underground to avoid the heat of the day and keep their skin cool.



Blue salamander

**Toad** A short, tail-less amphibian with a fat body and lumpy skin. Toads live mostly on land. They have shorter legs than frogs and crawl or hop rather than leap.

**Tree frog** A frog that lives and hunts in trees using its sticky toe pads to give it grip. Most species leave the trees to lay their eggs in pools or rivers, but some lay their eggs on leaves overhanging water.

**Vocal sac** An inflatable bag of skin that male frogs use to amplify their calls. Calls are used to attract mates or ward off rivals.

