

Phylum Chordata – Vertebrates; Reptilia

8000 species; 340 sp. in US & Canada

Very successful group today, occupy a great variety of terrestrial habitats and some have returned to ocean and freshwaters.

Skin

Tough dry skin with scales, same 2 basic layers epidermis and dermis;

Epiderm is much thicker than amphibians contains lipids and waxy keratin very effective water proofing some of this keratin hardened into thick epidermal scales protection from drying, abrasion, predators and shed periodically.

Reptiles scales are homologousto feathers and fur of birds and mammals. Some extinct forms (dinosaurs & relatives) had feathers or hair in addition to scales.

Dermis thick layer with chromatophore cells.

Skeleton & Support

New features appear in reptile skeleton: fewer skull bones teeth still simple and peg like but in more efficient and stronger jaws (more biting force). Nasal cavity separated from mouth by shelf of bone = palate. Limbs stronger, more flexible & closer to body (better designed for walking) and toes with claws.

Movement

More powerful muscles than amphibians limbs are stronger and more flexible for walking, some reptiles can glide.

Most land reptiles can burrow to mud eg. turtles and small lizards and most reptiles swim easily.

Feeding and Digestion

Most reptiles are carnivores it is jaws are more efficient for crushing and gripping prey

tongue is muscular and mobile used to help catch prey (tongue never attached to front of mouth) in some reptiles tongue serves as touch receptor, most reptiles have teeth (crocodilian teeth are constantly replaced) in some reptiles salivary glands are

modified into poison glands. Stomach often has pebbles to help grind food. Liver and pancreas produce wide variety of digestive enzymes.

Respiration

Reptiles never have gills, since skin is thick and dry most reptiles depend completely on lungs for gas exchange and it is lungs are more developed, more folding, more surface area. Reptiles still has relatively low breathing rate since still cold blooded.

Circulation

Like amphibians, most with three chambered hearts with 2 atria and 1 ventricle, but partial septum separates the ventricle. Two separate circuits of blood flow: pulmonary and systemic, the respiratory and circulatory systems of reptiles provides more oxygen to tissues than that of amphibians and more efficient heart, higher blood pressure but still less efficient than that of birds and mammals.

Senses

1. Vision
2. smell & taste
3. heat sensors
4. hearing

Excretion & Salt/Water Balance

More efficient (metanephric) kidneys, in amphibians excrete (N) wastes as ammonia requires lots of water to dilute it, most reptiles (and birds) secrete uric acid, not urea or ammonia requires much less water most excess water is reabsorbed by bladder.

Reproduction

Dioecious, but hard to tell male from female a few have sex chromosomes. In many reptiles the gene that controls gender depends on temperature during critical period of development all have internal fertilization so don't need water for fertilization.

After copulation, sperm may remain in female for months or years before it is used to fertilize egg. A few are parthenogenetic (egg develops without

fertilization). Many reptiles have well developed abilities to regenerate missing body parts.

Kinds of Reptiles

Today only 4 groups of reptiles (3 major, 1 minor)

1. Turtles (~300 species)
2. Lizards & Snakes (6000sp.)
3. Crocodiles & Alligators (21 species)
4. Tuataras (nocturnal reptiles) lizard like found in New Zealand

Turtles

Turtles are reptiles of the order Testudines characterized by a special bony or cartilaginous shell developed from their ribs and acting as a shield. Turtles are ectotherms animals commonly called cold-blooded meaning that their internal temperature varies according to the ambient environment. However, because of their high metabolic rate, leatherback sea turtles have a body temperature that is noticeably higher than that of the surrounding water.

Systematic position

Kingdom:	Animalia
Phylum:	Chordata
Class:	Reptilia
Clade:	Testudinata
Order:	Testudines

Asiatic soft-shell turtle

Large soft-shell turtle is mainly nocturnal, by day it spends much of its time buried in the mud or sand at the bottoms of ponds, lakes and streams, rising occasionally to the surface to take a gulp of air. It feeds on a wide variety of plant and animal matter, eating everything from fish and amphibians to fallen fruit.



Indian narrow-headed soft-shell turtle

It has a soft shell, with the carapace almost merging into the skin of the neck, and lives on the Indian subcontinent. It inhabits the clear, sandy sections of large rivers. The Indian narrow-headed soft-shell turtle is highly aquatic and only leaves the water to lay its eggs in late August or early September each year. Although omnivorous, this turtle gets most of its food by hunting fish.



Cantor's giant soft-shell turtle

Is an enormous freshwater turtle, growing to lengths of more than 2m including its neck and head. Cantor's giant soft-shell turtle is an omnivore but like the Indian narrow-headed soft-shell, gets most of its nourishment from fish and other animal prey. Cantor's giant soft-shell turtle is highly aquatic and able to absorb oxygen from the water through its pharynx. As a result of this adaptation it can stay submerged for hours at a time, sometimes only rising to the surface twice a day to breathe.

