

Reptile diversity:

Traditionally (if we ignore cladistics), Reptiles have been divided into four orders:

Crocodylia - Crocodiles, Alligators, Caimans.

Sphenodonta - Tuataras

Testudinae - Turtles and Tortoises

Squamata - Lizards, Snakes, and Amphisbaenids

We will follow the traditional classification.

Crocodylia:

Divided into three families (we'll look at all three).

All are fairly easy to distinguish from other animals (you don't confuse crocodiles with anything else):

Long snout, toothed jaws, compressed tail, thick strong limbs, osteoderms, etc.

Found near water

Thecodont dentition

Four chambered heart

Bypass for lungs exists for use when diving

Lungs with alveoli

Breathe with ribs, but have another muscle called the “diaphragmaticus” that behaves like a diaphragm (not homologous).

Some can run quite quickly on land (17km/h for the Australian freshwater crocodile, *Crocodylus johnsoni* (that's 10.5 mph)

Can place limbs under their body for more erect locomotion and “gallop”.

Osteoderms (bony plates) in their skin/scales

Pressure receptors lining jaws (black speckles) that are extremely sensitive to pressure differences.

True cerebral cortex

Oviparous, internal fertilization, parental care (sometimes includes male).

First real crocodile fossil is from *Protosuchus* (early Jurassic).

Not a “modern” crocodile - need to wait until the Cretaceous for that.

Gavialidae:

India and southeast Asia

Long thin snouts. Used for catching fish.

Easier to move through the water than a big flat snout.

Not really useful for catching other things.

(However, *Tomistoma* seems to eat more usual prey - mammals (esp. monkeys), birds.

Two species (some debate about the “false gharial”, *Tomistoma*, but this is usually placed in this family).

Alligatoridae:

Mostly New World, with one species found in China.

Includes (obviously), the Alligator but also Caimans.

Snouts are much broader. Eat a wide variety of prey.

Nine species divided into two subfamilies (Alligators and Caimans).

Teeth in lower jaw lie within upper jaw (covered up).

American alligators were endangered until government protections kicked in.

Now are again quite common

Chinese alligator is critically endangered.

Caimans are in reasonable shape at the moment, but there is worry that habitat destruction and overharvesting will cause problems fairly soon.

(Caimans seem particularly resilient and can exploit a wide range of habitats).

Crocodylidae:

Found worldwide in tropical areas.

Large range in size (from 2.5m, to 7m)

4th tooth visible when mouth is closed.

14 species all together.

All of these have well developed salt glands that help them remove salt (most can move into saltwater, the saltwater crocodile is frequently seen out in the open ocean (even known to prey on sharks)).

Should mention that this groups includes some well known man-eaters.

Most notorious are probably the Nile crocodile and the Saltwater crocodile.

Nile crocodiles attack hundreds of people every year (one study shows between 275 and 754 attacks per year, 63% of which are fatal).

Live in close proximity to humans.

Saltwater crocodiles have a much lower rate - estimated at about 30, of which 50% are fatal.

However, one of the biggest losses of life is attributed to this species:

In world war II, 900 Japanese soldiers were chased into a swamp by the Royal Navy. 500 escaped, 20 were captured. The rest were eaten by crocodiles (there are descriptions of screams heard by the British soldiers).

A few historians discount this episode (but even they admit that the Saltwater crocodile is known for attacks on humans)

Also been known to grab people out of boats.

Other species also occasionally attack humans (American crocodile, mugger crocodile).

Rhynchocephalia (tuataras):

Only two (possibly one) species (genetic studies are to blame for the confusion).

Only occur off some islands off of New Zealand (until recently - a nest was found on the mainland).

Skull is remarkably different from other reptiles, though we'll skip the details.

(Teeth are fused to skull, and will wear away as tuataras get older).

Were originally classified as lizards until British museum got a skull in 1831.

Also well known for the parietal eye (complete with lens, cornea, etc.), but this eye is eventually covered up by scales as tuataras grow up.

Mostly nocturnal.

Rats have caused massive problems - eradication campaigns have proved very successful in helping re-establish tuataras in many areas.

Maybe be very long lived (some estimates put their maximum age at 200 years), although book mentions 50 - 60 years.

One captive male is still reproductively active at 111 years.