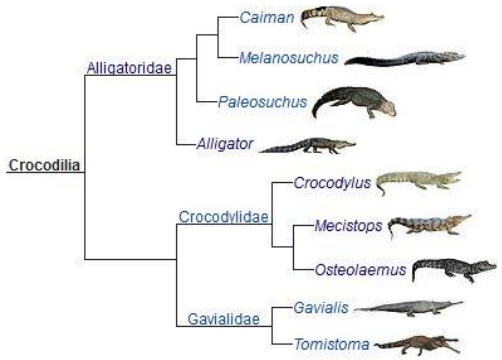
See You Later, Crocodile? The Differences Between Crocodiles and Alligators!

Crocodilians, which are somewhat of a catch-all term used in some fields of zoology, veterinary medicine, conservation, and herpetocultural fields, consist of the well known crocodiles, alligators, caiman, and gharials, or gavials. Most, if not all crocodilians are very familiar forms of reptiles, typically superficially resembling large lizards, with broad, elongated, and powerful jaws and teeth used for gripping and killing prey, numerous dorsal osteoderms along their backs used for protection and thermoregulation, laterally compressed and powerful tails, and overall semi-aquatic natural histories and lifestyles, including their highly set eyes, ears, and nostrils, which can remain functional even when partially or wholly submerged underwater.

First appearing roughly 95 million years ago (MYA), during the Late Cretaceous period, crocodilians are also the order of reptiles most closely related to birds, belonging to the clade known as Archosauria. Even earlier ancestors of crocodilians appeared much earlier back in the clade Pseudosuchia, some 250 million years ago as far back as the early Triassic period. Today, all extant, or currently living species of crocodilians belong to the order of reptiles known as Crocodilia, which include several families, or sub-families, including the "True Crocodiles" (family Crocodylidae), Alligators and Caiman (familu Alligatoridae), and the Gharials, Gavials, and False Gharials (family Gavialidae). Nine genera in the family Crocodilia, and approximately twenty-four species are currently recognized.



**Clade Diagram of All Extant, or Currently Living Crocodilian Genera.*

Crocodilians have also featured heavily across all forms of popular culture, form books and novels, to films, movies, and television shows, to even symbols of many different cultures and religions throughout the world! But besides this scientific taxonomy and classification, what are some of the more physical, morphological, or readily apparent differences between crocodiles and alligators? What makes a caiman different from an alligator? Are they all different, or all one in the same? As it happens to be, there are several visual differences which are, for the most part, reliable in distinguishing these different groups of reptiles, although, just as with any rules of thumb, there are always oftentimes exceptions! Different species and different genera can have different habits, lifestyles, and physical appearances, all

depending on their ecological niches and how they've evolved, and even different individual growth rates and development can affect many of the identifiers we often come to learn and recognize as distinguishing between crocodiles and alligators.

But with all of this mentioned, here are some of the most generalized distinguishing traits which can help differentiate alligators from crocodiles from caiman. Some other traits mentioned also tend to be largely anecdotal or much less consistent as well, thus lending themselves to yet even more exceptions to the rules as they can very much more so reflect individual differences in an individual animal's or specimen's temperament or other individualized differences.

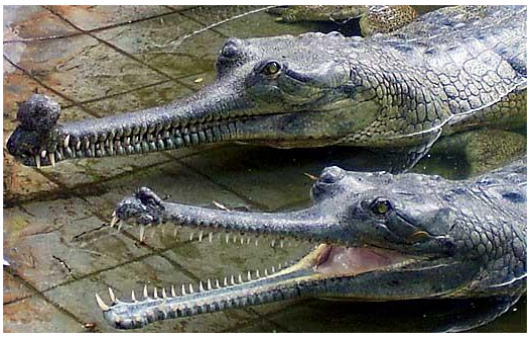

**American Crocodile Jawline, Left, with both upper and lower teeth visible. © TheAnimalFacts.com*
**American Alligator Jawline, Right, with only upper teeth visible. © Texas Parks and Wildlife.*

1. Jaw Lines. One (usually) readily identifiable feature distinguishing most crocodiles from most alligators are their jawlines and differences in tooth placement and visibility when the jaws, or mouths are closed. Generally, in alligators, the teeth on their lower jaws fit into sockets in their upper jaws, leaving only the teeth on the upper jaw visible when the mouth is closed. In most crocodiles, the teeth on the lower jaw fit into grooves on the outside of the top jaw, so that teeth on both the upper and lower jaws are visible when the mouths are closed. Furthermore, it can also often be said that the fourth tooth of the lower jaw of crocodiles fits into a noticeably larger groove or gap on the upper jaw as well. Thus, generally, giving crocodiles a much "toothier" appearance than alligators.


**American Crocodile Snout, Top View, Left, "V-Shaped". © Bio.Miami.edu*
**American Alligator Snout, Top View, Right, "U-Shaped". © Bio.Miami.edu*

2. Jaw and Snout Shape. Another common, and widely used feature which, again, usually can

differentiate alligators from crocodiles are the overall shapes and lengths of their jaws and snouts. Generally, in alligators, the snout is much broader, rounded, and shovel-shaped, or otherwise “U” shaped, whereas in most crocodiles, the snout is comparatively longer, narrower, and pointed, or “V” shaped. And in the extreme cases of Gavials and Gharials, the snout is extremely long and thin, and the very end, or tip of the snout noticeably bulbous, a readily noticeable adaptation for catching and eating fish. It should be mentioned that the jaw and snout shapes in crocodilians overall are often a function of their evolutionary and dietary histories, and can often reflect differences among species, even when they may be taxonomically classified as “alligators”, “crocodiles”, or “caiman”.



**Gharial, or Gavial Snout View, Being Extremely Long, Narrow, and With Bulbous Nostrils. © FactZoo.com*

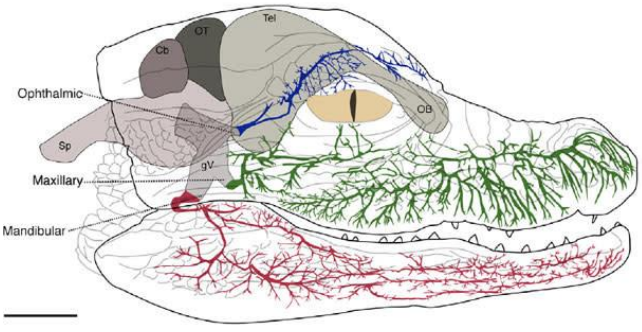
3. Functioning Salt Glands. A much less readily visible characteristic of crocodilians are their modified salivary glands known as salt glands, located on their tongues. In crocodiles, these salt gland organs are present, and are used to excrete salts, enabling crocodiles to live, move through, and adapt much more readily in coastal brackish or even saline and saltwater environments than do alligators. In alligators, these organs and abilities have either been lost altogether, or can only excrete salts in much smaller quantities, thus usually restricting alligators to more freshwater environments, although their ability to also live in tidal and coastal areas should not be ruled out altogether, although more rarely.

4. Geographic Distribution. There are only two, currently extant species of alligators, the American Alligator (*Alligator mississippiensis*) found in freshwater, or more rarely coastal habitats of the southeastern United States (U.S.), and the critically endangered Chinese Alligator (*Alligator sinensis*), endemic only to freshwater habitats of China. Caiman, belonging to the Alligatoridae subfamily, Caimaninae, occupy freshwater to mangrove, or coastal habitats of Mexico, through Central America, and into South America, and are not found elsewhere in the world, at least not naturally. Aside from the American Crocodile (*Crocodylus acutus*), being the only species of “true” crocodile native to the United States in south Florida, all other crocodile species occupy other areas of the world in which there are no alligators or caiman in Africa, Asia, and Australia.

Several other crocodile species do occur in Central and South America as well, namely the Orinoco Crocodile (*Crocodylus intermedius*) of Colombia and Venezuela, the Morelet’s Crocodile (*Crocodylus moreletii*) of the Atlantic coastal regions of Mexico, Belize, and Guatemala, and the Cuban Crocodile (*Crocodylus rhombifer*), of Cuba. Thus, an Old World vs. New World distinction between crocodiles and alligators, as can be seen above, often does not necessarily apply.


**Spectacled Caiman Head and Snout View. Note the Comparatively Shorter, Slightly Upturned Snouts of Most Caiman Compared to Alligators or Crocodiles. © The Herpetological Society of Ireland.*
**Right, Cuvier's Dwarf Caiman. Note the Much More Heavily Armored and Irregular Scales and Osteoderms.*

5. Caiman Distinctions. While belonging to the same family Alligatoridae as alligators, there are several additional features which distinguish the caiman in their own sub-family Caimaninae. Generally speaking, caiman lack a bony septum between their nostrils, as alligators have, and their dorsal and ventral, or belly scalation is comprised of much more armored, bony and overlapping scutes formed from two parts united by a suture. Most caiman also generally have longer and more slender appearing teeth than alligators as well. Several species of caiman, such as the Spectacled Caiman (*Caiman crocodilius*), also possess a set of bony ridges between the eyes and/or snouts as well, unlike alligators. Some species of dwarf caiman (*Paleosuchus spp*.) can be comparatively more terrestrial than most other crocodilian species as well.

**Close-Up View of the Integumentary Sensory Organs (ISOs). © BMC Blog Network.*
**Nerve, or Internal Diagram of these Sensory Organs in Crocodilians. © Discover Magazine.*

6. Integumentary Sensory Organs. All species of crocodilians possess small, dark, nodule or pit-like sensory organs known as Integumentary Sensory Organs (ISOs) or Dermal Pressure Receptors (DPRs). These organs are extremely sensitive, much more so than a human's sense of touch, and allow crocodilians to sense changes in water pressure around them, as well as acting as sensory organs used in locating and capturing prey, and maintaining their balance and orientation. They also can serve as additional chemosensory receptors to detect changes in water salinity as well. While these receptors can be difficult to see, alligators generally only have these receptors along their heads, and upper and lower jaws, whereas crocodiles not only possess them along their heads, but nearly throughout their bodies.

7. Temperaments and Dispositions. A final, and much less consistent and reliable difference which is still commonly believed are that crocodiles tend to be more "dangerous" or more "aggressive" than alligators. While all species of crocodilians certainly are difficult and/or potentially dangerous animals to handle, whether in captivity or in the wild, only a small handful of species, roughly six or so of the twenty-four, have been implicated in unprovoked human attacks and/or fatalities. Most notably of interest are the Saltwater Crocodiles (*Crocodylus porosus*) of Australia and Southeastern Asia, and the Nile Crocodiles (*Crocodylus niloticus*) of Africa. American alligators are often said to be comparatively docile among crocodilian species in captivity, although they too have been implicated in some humane attacks or fatalities in the wild as well. Much of the differences between an alligator's and crocodile's temperaments result more from behavioral differences, or propensities, between different species of crocodilians, and also oftentimes individual differences in temperaments, dispositions, or even personalities. Thus, temperaments and dispositions are perhaps the least reliable means of distinguishing alligators from crocodiles.