

# Crocodiles

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Literature Review



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## *Introduction*

The long, tough body, powerful tail, and big, scary jaws of crocodiles have long tormented the minds of those that have come across these largely nocturnal reptiles. However, beneath its tough framework lays a very interesting creature whose habitat, behavior and reproductive strategies have contributed to its success. Different species show several variations in body form depending on their native home, which range from African rivers to American estuaries. Crocodiles are also patient predators that change their diet many times before adulthood in order to fit their needs and capabilities. Also, in its constant movement from water to land, they greatly contribute to the ecological balance of the ecosystem (Mazzotti 2007). This paper will discuss the classification, distribution, diversity, behavior, dietary habits and reproduction of the crocodile, providing species specific examples of each aspect of the remarkable animal.

## *Classification*

Crocodiles are among the largest living reptiles, a group that is evolutionarily more advanced than amphibians because of their well developed lung, an amniotic egg, and dry, scaly skin that decreases the amount of water that passes through (Ross 1989). Crocodiles belong to a group of modern reptiles named order Crocodylia, which consists of 25 species that can be broadly divided into four types. Besides crocodiles, there other three groups are gavials, alligators, and caimans. The gavial solely populates the area of India and Burma and constitutes a group that eats fish and has long, thin snouts. The third type includes two existing species of alligators that inhabit southern United States and China. Finally, the Caiman, an organism similar to alligators but native of Central America, is also considered a Crocodylian (Smith 2001).

## *Differences between Crocodiles and Alligators*

Although crocodiles and alligators might seem very similar at first glance, there are major differences between the two animals. Alligators are very common in America and inhabit freshwater ponds, canals, lakes, rivers, streams, borrow pits, marshes, and, rarely, estuarine

habitats. The main identifying feature of the alligator is that it is the darkest in color of Crocodylians, and its snout is very rounded. In contrast, crocodiles sport a brown to olive green color and have slender snout that gets narrower towards the tip. Additionally, the upper jaw is irregularly in place anterior to the fourth tooth, making the lower jaw visible at all times. Finally, the habitat and distribution of crocodiles is far more extensive than that of alligators (Bartlett 2006).

### *Distributions/Habitat and Diversity*

Among the most common crocodiles are those that inhabit the African continent. The Nile crocodile, *Crocodylus niloticus*, was the first crocodylian that Europeans encountered and has long served as the model for a crocodile. In West Africa crocodiles are found in coastal lagoons, estuaries, and in rivers of the savanna that border the equatorial forest; they also inhabit small, isolated lakes like Lake Chala (Guggisberg 1972). An adult is 3.80 to 5 meters in length, with dark bronze on top, black spots on the back, a yellow belly, and green eyes (Alderton 1991). In addition, the African Long-nosed crocodile, or African gavia *Crocodylus cataphractus*, differs from the Nile crocodile by its high convex forehead and long, narrow and pointed snout. It has four tiny oval scales behind its head, then six nuchal (in the neck) and dorsal shields, and bony plates to protect the belly. Also in Africa is the 1.20 meter long Broadfronted or Dwarf crocodile, *Osteolaemus tetraspis*, which has a short, rounded muzzle, prominent eye ridges, and four big nuchal shields arranged in a square (Guggisberg 1972).

The diversity among crocodile species can be further examined in India, where the Marsh crocodile, *Crocodylus palustris* has found its home. This ally of the Nile crocodile inhabits marshlands, jungle pools, and artificial ponds extending from Sind to Assam and Burma. The Marsh crocodile is very blunt, with a short snout, and no ridges (Welsbacher 2005). Freshwater species like *Crocodylus novaeguineae* occur in the island of New Guinea and grow to a length of 2.40 to 2.85 meters, with a longitudinal ridge, and a pointy muzzle. Still, the Australian Freshwater *Crocodylus johnstoni* is representative of the typical fish eating crocodile with its long, narrow muzzle. Meanwhile, Estuarine crocodiles live in mangrove swamps, deltas, and in the lower brackish reaches of tidal rivers. The *Crocodylus porosus* can reach a length of 6

meters, have a long muzzle, and three prominent ridges going from the nose to the eyes (Shaner 2007).

As we approach the Americas, the number of crocodile species decreases to just four species, amongst this is the American crocodile *Crocodylus acutus*. This seagoing species, whose favorite habitat is brackish swamps, is seen from the Equator along the Pacific Coast to Mexico, Guatemala, Venezuela, and through the Caribbean to the tip of Florida. It has a triangular, pointed head, a long snout that looks like it is swollen near the eyes, and ranges from 3.60 to 7 meters in length (Mazzotti 2007).

### *Behavior*

The daily routine of a crocodile is *slightly* different from our habitual walk at the park. As the sun rises and the ground becomes warm, crocodiles exit the river and open their mouth widely, a behavior called basking. Since crocodiles are ectothermic, this mechanism helps the organism maintain a desired body temperature by evaporation of the water soaked in by the mouth after a long night submerged underwater (Summers 2005). When the heat reaches its maximum capacity at noon, the individuals continue to bask under the shade of trees or bushes. By the afternoon, they exit the shade into the open air, where it interacts in special ways with other species of animals. In Africa, the Nile crocodile has a mutualistic relationship with the spurwing plover, a bird that enters the mouth of the crocodile and cleans up its teeth, thereby obtaining nutrients that are beneficial to it. However, not all animals are as lucky to enter the jaws of the crocodile; it also in the afternoon that they patiently wait for their meal to appear before their eyes (Guggisberg 1972).

### *Dietary Habits*

According to Guggisberg, natural historians list “donkeys, horses, cattle, camels, antelopes, birds, and, of course, the self-styled *Homo sapiens*” as the prey of crocodiles. Studies involving *Crocodylus niloticus* reveal that their diet changes significantly as the organism matures. Young crocodiles, 1.50 to 2.50 meters in length, spend most of their time on land and consume insects, frogs, and toads. They change their diet at a length of about 1.0 meter, and

begin developing strategies by catching fish in active pursuit. The crocodile bites the fish, lifts its head above the water, and swallows it head first (Behler 1998). Furthermore, when a length over 2.0 meters is reached, catching fish becomes difficult and they move on to other mammals and reptiles, including their own species. Crocodiles will wait until their prey is near the water, and suddenly shoot forward and drag the drinking animal down to the water until it gives up the fight. However, even the dominant predator of African waters, the crocodile, can make mistakes and perish during a day's battle for food (Ross 1989).

### *Reproduction*

Crocodiles also have a habit of aestivation, a period of inactivity during the summer time in which crocodiles hide in deep burrows that eventually clear out, forcing crocodiles to bury themselves in the mud to maintain humidity. Similarly, after the beginning of dry season, the female selects a nesting site on a damp, warm spot near bushes or trees; at night, she digs a hole half a meter into the sand to lay her eggs. The eggs of a Nile crocodile measure 9 X 6 cm, are equal at both ends, and have a hard calcareous shell. After the hole is covered, the female may micturate on the nesting site to dampen the soil. Additionally, incubation lasts eleven to thirteen weeks; when the egg is ready, the baby crocodiles make croaking sounds to call the mother for help. The hatchlings use a small, sharp piece of lime on the tip of the snout to force their way out of the soil. The babies grow rapidly to adapt to their surroundings (Alderton 1991).

### *Conclusion*

Despite the abundance of nests during mating season, many crocodilians currently face extinction. Some species like *Crocodylus Siamensis* from South-East Asia battles against the human poaching of crocodile skin to make fashionable products, resulting in decline in numbers and are therefore, their endangerment. In 1973, 81 nations gathered in Washington D.C. to draft the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES), which requires the participating members to prohibit imports of wildlife exported illegally. The future seems brighter for crocodiles as trade has been regulated, and management programs have been developed by those who care about the success of these important creatures (Ross 1989).

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