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EARTH HERO

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REPTILES
(THE ESTUARINE CROCODILE)

(Photos by: Mark Louis Benedict)

This month, we will have a closer look at the estuarine crocodile - a species that has existed for 200 million years and is known as a living fossil.

The estuarine crocodile is the largest species of reptile, with scattered populations from India to Australia. They are found across Southeast Asia and in Malaysia, they exist in both peninsular Malaysia and Borneo. Also known as saltwater crocodiles, these animals are highly adapted to living in and around water in the estuaries. Their main habitats are tidal rivers, coastal floodplains, swamps, and lagoons. Typically, they live in the lower parts of the river. Physical barriers like rocky cliffs appear to be one of the main factors that prevent them from moving upstream. The main characteristic that sets the estuarine crocodile apart from the other crocodiles is its ability to live in saltwater. They are generally solitary animals that live in waters that have a stable salt content. This adapts them to living in brackish water, which has a higher salinity than fresh water but lesser than seawater. Though other crocodiles also have salt glands that help them to expel excess salt and survive in saltwater, most other species would not swim out to sea except in extreme cases.

Estuarine crocodiles can be identified by their long, well-toothed snouts, eyes and nostrils which are set atop the head, thick skin with embedded bone plates, and long muscular tails. Adults commonly have a large frame and coloration that ranges from a golden tan to a grey or nearly black, with random dark mottled skin. The body and tail of juveniles are vividly patterned, often a light brown with black dots and stripes. The underside of the estuarine crocodiles is cream in colour. Adult male estuarine crocodiles normally measure from 4.3 to 5.2 meters long and weigh from 410 to 520 kilograms. Meanwhile, adult females are between 76 and 100 kilograms in weight and are between 2.7 and 3.4 meters in total length. However, the average size varies depending on the environment and ecology of the area. In the wild, estuarine crocodiles can live for up to 70 years.

Living as cold-blooded reptilian, crocodiles commonly seen sunbathing on the river bank with their mouths open. This helps them regulate their body temperature and avoid overheating. Besides sunbathing, crocodiles spend much of their time in the water hunting for food. When hunting for prey, the estuarine crocodiles will swim over to get close to the prey while still submerged, waiting for the right moment before striking. Estuarine crocodiles propel themselves through the water mostly with the help of their strong muscular tails. With a prey secured in its mouth, a crocodile will flick its head from side to side or perform a "death roll" by turning its body sideways many times to pull the limbs off its prey to make it easier to swallow. Crocodiles are thought to have the strongest bite pressure in the animal kingdom. Up to two tonnes of pressure may be produced by the jaw muscles of a 4.6-meter estuarine crocodile, which is enough for its teeth to pierce through a metal plate.

In addition to being able to bite through the hard shells of creatures like turtles and crabs, crocodiles use their powerful bite to hold onto their food for a long period of time.

Estuarine crocodiles are mostly active at night, but they will hunt during the day if the opportunity arises. They will consume almost anything they can capture. Small estuarine crocodiles primarily eat crustaceans, fish, and insects. In contrast, larger crocodiles consume less frequently and on larger prey such as birds, sea turtles, flying foxes, sambar deer, pigs, cattle, and small primates. As much as 50, sometimes up to 70 percent, of the food a crocodile consumes is turned into flesh and energy. With this capability, crocodiles can live for months without hunting other prey.

Estuarine crocodiles can reproduce once they reach sexual maturity. Males attain sexual maturity at a length of around 3.3m and an age of about 17 years. Females reach sexual maturity around 12 years old and at a length of around 2.3m. During the breeding season, male crocodiles are extremely active, seeking access to and attention from breeding females. Sometimes it can lead to a fight with other males that involves head-slapping, growling, and chasing. Female crocodiles will build a ‘mound nest’ during the wet seasons to protect and incubate the eggs until they hatch. It will choose an area on land with dense vegetation and access to water.

Once the mound has been built, the female crocodile excavates an egg chamber and typically lays between 40 to 60 eggs. The time of incubation ranges from 65 to 114 days. The female crocodile guards the nest against predators like other crocodiles, monitor lizards, wild pigs, and people for the duration of incubation. Once hatched, the mother takes the hatchlings in its mouth to the water. The calls of other hatchlings in the water help hatchlings to move in a group. They are watched over and protected by the mother for a few months. All young hatchlings are born with a predatory instinct to search for food without relying on their mother.

This unique creature has a big role in maintaining the ecosystem. Crocodiles are essential to keep the environment in balance. They have significant ecological value because they help to preserve the diversity and productivity of wetlands and freshwater ecology. They keep the aquatic population healthy by consuming sick fish, letting the healthy ones rebuild and thrive free from competition or the threat of infections. They control and stop the dominance of a single fish species. Besides that, crocodiles act as ‘nature's garbage disposal.’ The fierce digestive system of members of the crocodilian family is resistant to germs, viruses, and bacteria.

They consume their victims whole, preventing the decomposition of flesh and spreading of dangerous pathogens. Despite their resilience to natural illnesses, crocodiles are vulnerable to human activities and chemicals. They serve as an early-warning system for excessive pollution because they are sensitive to pollutants, herbicides, and fertilisers. A lack of food sources has often resulted in incidents where humans are targeted as easy prey. Despite their fearsome reputation, people who live near estuaries find ways to coexist with them, understanding their vital roles in maintaining the ecosystems they live in.