



### Exhibit message

The Australian saltwater crocodile can sense the presence of prey through changes in water pressure, as well as using other senses such as vision and hearing. Large crocodiles grab prey with awesome force before they crush or drown their capture.

### Quick fact

Crocodiles are the last surviving reptilian representatives of *Archosauria*—a type of dinosaur. The Australian saltwater croc is the heaviest reptile alive today. They can weigh up to 1000 kilograms.

### Graphic panel text

Australian saltwater crocodile (*Crocodylus porosus*)

When hunting, saltwater crocodiles keep their eyes just above water, and the rest of their head underwater.

Small 'goose bumps' along the crocodile's jaws, nose and eyes detect changes in water pressure caused by prey swimming past or entering the water.

Crocodiles sneak up to prey, then lunge out of the water to catch their meal, usually with a sideways bite.

The crocodile then 'throws' its capture further back into its jaws, where it crushes and kills the prey with forceful bites.

Sometimes prey is pulled underwater to be drowned, crushed and swallowed.

Small 'goose bumps' detect changes in water pressure.



The crocodile 'throws' prey further back into its jaws to crush it.

### Want to know more about the Australian saltwater crocodile

The Australian saltwater crocodile is a giant in the crocodile world. Most crocodiles are much smaller in size.

Crocodiles tend to hunt at night, so they rely on senses other than vision to find something to eat.

A saltwater crocodile's diet depends on its size and whether it lives in freshwater or brackish water. It is unusual for saltwater crocodiles to grow larger than five metres, although the largest recorded crocodile has been measured at 6.3 metres.

Smaller, younger crocodiles eat insects, amphibians, mud or fiddler crabs, prawns, molluscs, mudskippers small reptiles and fish. Larger crocodiles (over two metres) also eat turtles, reptiles and birds, and very large adult crocodiles have been known to eat buffalo, cows, wild boars and other mammals.

Most crocodile species have long, elongated snouts and small teeth. This is particularly true of those crocodile species that almost exclusively eat fish. The Australian saltwater crocodile has 64–68 teeth.



### Extra for experts

All crocodiles and alligators have dark, tiny goose bumps on their scales. These bumps are called 'integumentary sense organs' or ISOs.

When a crocodile's head is underwater, they have reduced vision and smell. The ISOs along their head seem to detect changes in water pressure by acting as mechanoreceptors. This is useful if prey is swimming past, or prey is on the water's edge and wading into the water for a drink. The ISOs seem to detect whether prey is present and the direction of the prey, so the crocodile can judge if the prey is within range and able to be attacked.

Alligators and caimans (family *Alligatorinae*) only have ISOs around their head, such as their upper jaw, nose, eyes, lower jaw and upper palate (roof of their mouth). Crocodiles (family *Crocodylinae* and *Gavialinae*) have ISOs on their head and body.

The function of ISOs along a crocodile's body is more uncertain. About one ISO per scale is found on the on the belly, legs, tail and cloaca of crocodiles. One theory is that these ISOs may be used by crocodiles to detect changes in water salinity, along with salt glands in their mouth. Alligators do not have ISOs along their body. You can see this if your purchase alligator leather products.

To capture prey, the saltwater crocodile rotates its head sideways and uses the teeth on one side of their snout to grasp the prey. The prey is then repositioned in its mouth by a forceful bite, crushing and throwing the prey further back inside its jaws. Some larger prey may be held tightly in the crocodile's jaws and dragged underwater, so the prey drowns and stops struggling.

The Australian saltwater crocodile needs to keep its head in mid-air above the water's surface as it captures then repositions prey in its mouth by throwing it backwards. If crocodiles try to swallow prey underwater, the crocodile would break the seal between their tongue and palate, flooding their oesophagus and possibly drowning.

Many reptiles transport food back into their throats by moving their tongue forward and under the food. As they lift the food with their tongue, the food is pulled back down into their oesophagus.

Crocodiles, (and some lizards and snakes) have developed inertial feeding, where the prey is physically thrown back into the gullet. The wide and flat crocodilian tongue cannot transport prey very well, so crocodiles mostly use the inertia of prey to throw it back into their mouth.

As the weight and size of the prey increases, it tends to stick more to the reptile's tongue. Some reptiles have developed large tongues to deal with larger prey.

Crocodiles eat relatively large prey compared to other reptiles. Supporting large, active prey with a large tongue requires an increase in jaw gape. This means their grip on the prey is weakened and the prey is more likely to escape.

### Further information

An ancient sensory organ in crocodylians. *Nature*. Daphne Soares. 16 May 2002. Vol 417: 241–242.

Feeding—Form, Function, and Evolution in Tetrapod Vertebrates. 2000. Edited by Kurt Schwenk.

Crocodylian Biology Database (by Dr Adam Britton) Home page <http://crocodylian.com/>

Australian saltwater crocodile [http://www.flmnh.ufl.edu/cnhc/csp\\_cpor.htm](http://www.flmnh.ufl.edu/cnhc/csp_cpor.htm)