Ankylosaurus

Introduction

Ankylosaurus is a genus of thyreophoran dinosaur. Fossils of *Ankylosaurus* have been found in geologic formations dating to the end of the Cretaceous Period in western North America, making it among the last of the non-avian dinosaurs. A handful of specimens have been excavated to date, but a complete skeleton has not been discovered. Though other members of Ankylosauria are represented by more extensive fossil material, *Ankylosaurus* is often considered the archetypal member of its group.

Description

Size and Shape

The largest known ankylosaurid, *Ankylosaurus* measured between 6.25 and 9 m in length, roughly 1.7 m in height, and approximately 6 tons in weight. These dimensions are based on the largest known skull (NMC 8880). It was a quadrupedal animal, with a broad, robust body. It had a wide, low skull, with two horns pointing backwards from the back of the head, and two horns below these that pointed backwards and down. The front part of the jaws were covered in a beak, with rows of small, leaf-shaped teeth further behind it. It was covered in armor plates, or osteoderms, with bony half-rings covering the neck, and had a large club on the end of its tail.

Skeletal Characteristics

The structure of much of the skeleton of *Ankylosaurus*, including most of the pelvis, tail and feet, is still unknown. It was quadrupedal and its hind limbs were longer than the forelimbs. The scapula and coracoid were fused and had entheses for various muscle attachments. The humerus was short and very broad. The femur was very robust. While the feet of *Ankylosaurus* are incompletely known, the hind feet probably had three toes, as is the case in related animals.

Active Characteristics

Ankylosaurus is thought to have been a generally slow-moving animal, but able to make quick movements when necessary. Its broad muzzle indicates it was a non-selective browser. Sinuses and nasal chambers in the snout may have been for heat and water balance or may have played a role in vocalization. The tail club is thought to have been used in defense against predators or in intraspecific combat.

Classification and Naming

Ankylosauria and Stegosauria are now grouped together within the clade Thyreophora. In addition to Ankylosauridae, Ankylosauria has been divided into the families Nodosauridae, and sometimes Polacanthidae. *Ankylosaurus* is considered part of the subfamily Ankylosaurinae within Ankylosauridae. *Ankylosaurus* appears to be most closely related to *Anodontosaurus* and

Euoplocephalus.

The genus name is derived from the Greek words '*αγκυλος*/*ankulos* ('bent' or 'crooked') – referring to the medical term ankylosis, the stiffness produced by the fusion of bones in the skull and body – and *σαυρος*/*sauros* ('lizard'). The name can be translated as "fused lizard", "stiff lizard", or "curved lizard". The type species name *magniventris* is derived from the Latin *magnus* ('great') and *venter* ('belly'), referring to the great width of the animal's body.

History of Discovery

Dr. Barnum Brown, 1906-1910

In 1906, an American Museum of Natural History expedition led by paleontologist Barnum Brown discovered the type specimen of *Ankylosaurus magniventris* in the Hell Creek Formation, near Gilbert Creek, Montana. The specimen consisted of the upper part of a skull, two teeth, part of the shoulder girdle, cervical, dorsal, and caudal vertebrae, ribs, and more than thirty osteoderms.

In 1910, another AMNH expedition led by Brown discovered an *Ankylosaurus* specimen in the Scollard Formation by the Red Deer River in Alberta, Canada. This specimen included a complete skull, mandibles, the first and only tail club known of this genus, as well as ribs, vertebrae, limb bones, and armor.

Drs. Sternberg and Channey, 1947-1960s

In 1947, fossil collectors Charles M. Sternberg and T.P. Channey collected a skull and mandible, a kilometer north of where the 1910 specimen was found. This is the largest known *Ankylosaurus* skull, but it is badly preserved. In the 1960s, a section of caudal vertebrae was discovered in Montana in the Powder River drainage. In addition to these five incomplete specimens, many other isolated osteoderms and teeth have been found.