# North America’s Carcharodontosaurian-Grade Theropods

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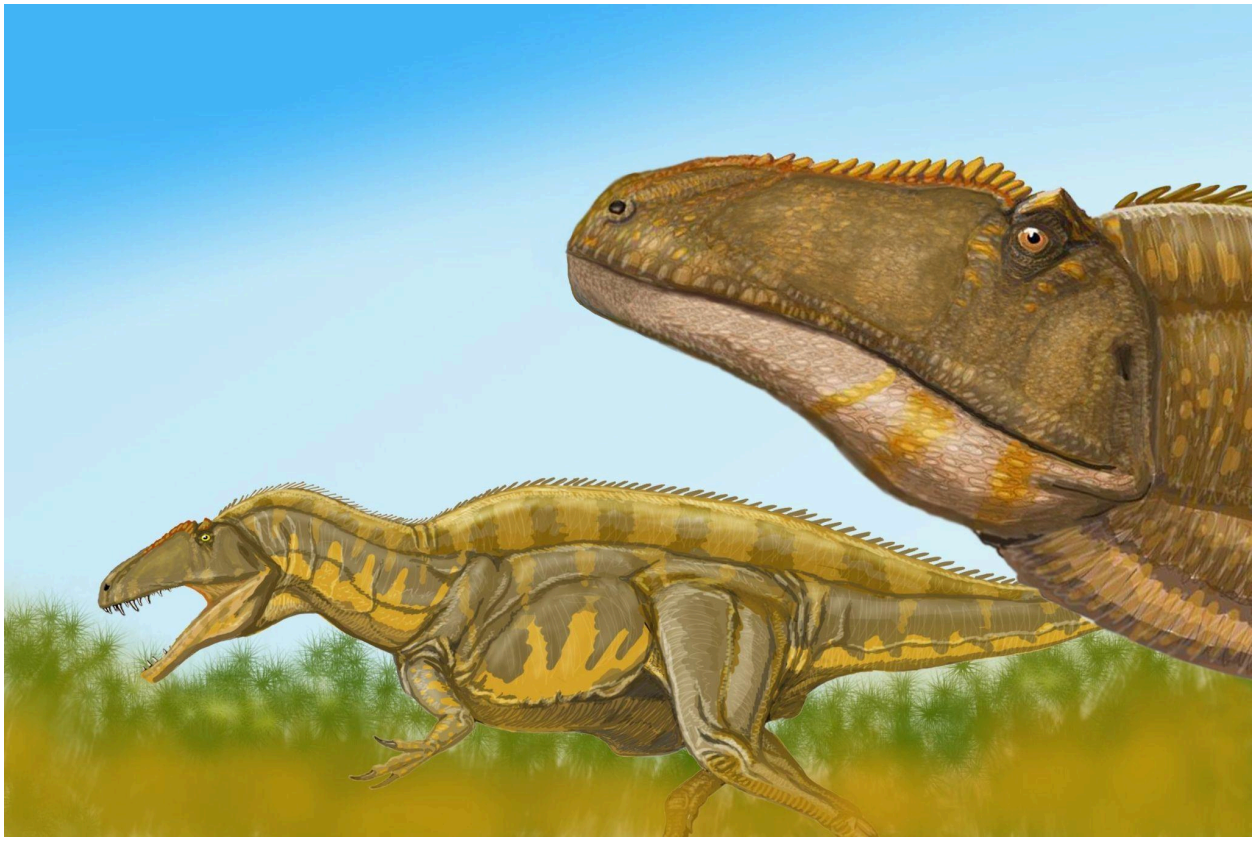


Life reconstruction Acrocanthosaurus of Image credit: Dmitry Bogdanov

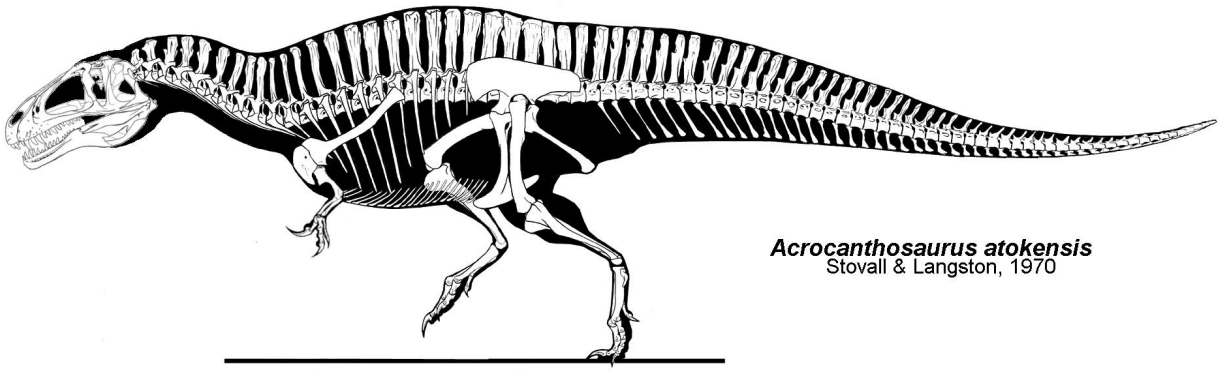
During the Early to early-stage Late Cretaceous, North America hosted a lineage of large-bodied allosauroid predators that belonged to, or closely approached, the family Carcharodontosauridae. This is a group of dinosaurs best known from Africa, South America, and Europe. These “*shark-toothed lizards*” are defined by laterally compressed, finely serrated teeth and cranial adaptations suited for delivering deep, slicing bites rather than the bone-crushing, a strategy seen later in tyrannosaurids (Novas et al., 2005).

For much of the twentieth century, their North American presence was considered limited and poorly documented, but recent discoveries suggest a more complex and enduring role within Early Cretaceous ecosystems than previously assumed.

The cornerstone species for this family on the continent is Acrocanthosaurus atokensis. This species was a massive theropod that lived during the Aptian to early Albian stages, (approximately 125–100 million years ago).

Known from multiple skeletons across Texas, Oklahoma, and Wyoming, Acrocanthosaurus represents one of the best-documented large predators of the Early Cretaceous in North America (Stovall and Langston, 1950; Currie and Carpenter, 2000). Additional evidence from farther east consists largely of trackways and isolated or fragmentary material rather than well-preserved skeletal remains, and should be interpreted cautiously (Nydam, 2013).

Its tall neural spines, powerful forelimbs, and large, blade-like teeth indicate a predator well adapted for tackling large-bodied herbivores such as sauropods and iguanodontians within broad floodplain and coastal plain environments. Phylogenetically, Acrocanthosaurus is widely regarded as a derived member of Carcharodontosauridae or a very close relative within Carcharodontosauria. Thus, forming a bridge between the classic Gondwanan forms such as Carcharodontosaurus and Giganotosaurus and the Laurasian allosauroids (Brusatte and Sereno, 2008). This placement implies that carcharodontosaurids achieved a near-global distribution by the Early Cretaceous, dispersing across northern landmasses before continental fragmentation fully isolated regional faunas.




Skeletal diagram of Acrocanthosaurus. Image credit: Jaime A. Headden

Acrocanthosaurus is thought to have inhabited warm, semi-arid to seasonally humid lowland environments, particularly broad floodplains, river systems, and coastal plain settings represented by the Antlers and Cloverly formations of North America (Nydam, 2013; Zanno and Makovicky, 2011). As a large-bodied, apex allosauroid theropod, it likely maintained a wide-ranging, active predatory lifestyle, using its powerful hind limbs for sustained pursuit and its robust skull and recurved, serrated teeth for dispatching large prey (Eddy and Clarke, 2011). Trackway evidence and skeletal proportions suggest it was capable of efficient terrestrial locomotion and may have exploited open environments where large herbivorous dinosaurs were abundant (Henderson, 2003). Its primary prey likely included medium to large sized ornithopods such as Tenontosaurus, as well as juvenile or subadult sauropods. Therefore, reflecting a trophic role comparable to later giant theropods like tyrannosaurids and carcharodontosaurids in structuring Early Cretaceous ecosystems (Forster, 1990; Zanno and Makovicky, 2011).

Another important, though more controversial, taxon associated with this lineage is Siats meekerorum from the Cedar Mountain Formation of Utah. Dated to the Cenomanian stage of the early Late Cretaceous, roughly 95 million years ago, Siats is known from fragmentary but diagnostic skeletal remains that indicate a very large-bodied predator comparable in size to Acrocanthosaurus (Zanno and Makovicky, 2013).


Skeletal diagram of known remains of Siats meekerorum. Image credit: DaCaTaraptor & Paleocolour.

While some analyses place it within Neovenatoridae rather than Carcharodontosauridae proper, its close relationship to carcharodontosaurians reinforces the idea that this broader clade persisted in North America later than once believed. It should be noted, some recent analyses (such as Kellermann et al., 2025) suggest Siats may be a megaraptoran.

Siats is inferred to have inhabited warm, semi-arid to seasonally wet floodplain and riverine environments of the Late Cretaceous (early Cenomanian), preserved in the Mussentuchit Member of the Cedar Mountain Formation of Utah (Kirkland et al., 2013; Zanno and Makovicky, 2011). The open, lowland habitats it occupied would have supported abundant large herbivores, and its ecological role was likely analogous to that of later tyrannosaurids in structuring terrestrial food webs before tyrannosauroids rose to dominance in North America (Zanno and Makovicky, 2011). Its probable prey included medium to large bodied ornithopods, early hadrosauroids, and juvenile sauropods, reflecting a trophic niche centered on exploiting the most abundant and energetically profitable herbivores of its ecosystem (Kirkland et al., 2013; Forster, 1990). As Siats appeared several million years after Acrocanthosaurus disappeared from the fossil record, there was no competition between the species. Siats filled a similar ecological role.

A major expansion of this picture comes from the 2025 study “Here Be Dragons: Shed Teeth Potentially Indicate the Presence of Multiple Unidentified Allosauroids from the Early Cretaceous Cedar Mountain Formation” by Oswald and colleagues. This research analyzed isolated theropod teeth recovered from the Yellow Cat Member of the Cedar Mountain

Formation in eastern Utah. This unit dates to the Barremian–Aptian, over 125 million years old (Oswald et al., 2025). Using morphometric comparisons, the authors found that several of these teeth fall squarely within the range of carcharodontosaurian morphology, representing the earliest direct evidence for this lineage in North America.

Crucially, the study demonstrated that these teeth do not form a single uniform group. Variations in crown curvature, denticle density, and cross-sectional shape suggest the presence of more than one large allosauroid taxon within the same stratigraphic horizon (Oswald et al., 2025). Some specimens previously attributed to Acrocanthosaurus differ significantly in serration patterns, implying that additional, as-yet-unnamed carcharodontosaurids or or neovenatorid-grade theropods were sharing the landscape. This challenges the long-standing assumption that a single dominant large theropod monopolized Early Cretaceous predator niches in western North America.

Ecologically, this emerging diversity paints a picture of complex predator guilds. The Yellow Cat Member preserves evidence of coexisting large theropods, including the giant dromaeosaurid Utahraptor, smaller coelurosaurs, and now multiple carcharodontosaurian forms (Oswald et al., 2025).

Such assemblages imply niche partitioning based on prey size, hunting strategy, or habitat preference, with carcharodontosaurids likely specializing in ambush predation along river systems and forested floodplains where large herbivores congregated.

By the later stages of the Late Cretaceous, however, the carcharodontosaurid signal fades from the North American fossil record. No definitive members of the family are known from Campanian or Maastrichtian formations, which are instead dominated by tyrannosaurids such as Gorgosaurus and Tyrannosaurus (Brusatte et al., 2010). This transition marks a major ecological shift, in which the slicing-tooth predators of the Early and mid-Cretaceous were replaced by bone-crushing, more heavily built theropods that came to dominate terminal Cretaceous ecosystems.

Despite this, the clade persisted and diversified in other parts of the world, particularly across Gondwanan landmasses, where they remained among the dominant apex predators well into the Late Cretaceous (Coria and Salgado, 1995; Novas et al., 2013). In South America, gigantic forms such as Giganotosaurus carolinii and Mapusaurus roseae occupied top trophic positions in vast floodplain and coastal plain ecosystems, preying on abundant large-bodied sauropods and ornithopods (Coria and Salgado, 1995; Coria and Currie, 2006).

In Africa, Carcharodontosaurus saharicus flourished in fluvial and deltaic environments of the Cenomanian, reflecting a continued dominance of the group in northern Gondwana (Sereno et al., 1996).

This geographic persistence suggests that regional environmental conditions, prey availability, and biogeographic isolation allowed carcharodontosaurids to thrive long after their disappearance from Laurasian ecosystems, highlighting a pronounced hemispheric asymmetry in large theropod evolution during the Late Cretaceous (Novas et al., 2013; Brusatte et al., 2009).

The record of Carcharodontosauridae in North America now appears far richer and more complex than once thought. From the towering presence of Acrocanthosaurus, through the enigmatic Siats, to the newly recognized diversity revealed by isolated teeth in Utah, these predators were a persistent and influential component of Cretaceous food webs for tens of millions of years. Ongoing discoveries and quantitative analyses continue to refine this narrative, revealing a continent that once supported not just one, but a hidden array of “shark-toothed” giants shaping its prehistoric landscapes (Oswald et al., 2025; Novas et al., 2005).

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