

Megalograptus is a [genus](#) of [eurypterid](#), an extinct group of aquatic [arthropods](#). Fossils of *Megalograptus* have been recovered in deposits of [Katian](#) ([Late Ordovician](#)) age in [North America](#). The genus contains five species: *M. alveolatus*, *M. ohioensis*, *M. shideleri*, *M. welchi* and *M. williamsae*, all based on fossil material found in the [United States](#). Fossils unassigned to any particular species have also been found in [Canada](#). The generic name translates to "great writing" and originates from the mistaken original belief that *Megalograptus* was a type of [graptolite](#), often given names ending with *-graptus* (meaning 'writing').

Megalograptus was a large predatory [megalograptid](#) eurypterid, with the largest and best known species, *M. ohioensis*, reaching lengths of 78 centimeters (2 ft 7 in). Some species were substantially smaller, with the smallest, belonging to a hitherto undetermined species, only growing to about 10 cm (3.9 in) in length. [Morphologically](#), *Megalograptus* was highly distinct. The two most distinctive features of *Megalograptus* were its massive and spined forward-facing [appendages](#), far larger than similar structures in other eurypterids, and its [telson](#) (the last division of the body). The sharp spike-shaped telson of *Megalograptus* was not [venomous](#), but it was specialized in that it was surrounded by unique cercal blades, capable of grasping. Certain fossils of three different species, *M. ohioensis*, *M. shideleri* and *M. williamsae*, are so well-preserved that researchers have been able to infer the coloration they might have possessed in life. All three were deduced to have been brown and black in color, with *M. ohioensis* being darker than the others.

First described by Samuel Almond Miller in 1874, based on fragmentary fossil remains of the species *M. welchi*, *Megalograptus* being a graptolite was not formally questioned until 1908, when [Rudolf Ruedemann](#) recognized the fossils as eurypterid remains. *Megalograptus* was noted as being similar to [Echinognathus](#) by [August Foerste](#) in 1912 and the two genera have been considered closely related since then, and have been grouped together in the Megalograptidae since 1955. In 2015, the genus [Pentecopterus](#) was also assigned to the family. Kenneth E. Caster and Erik N. Kjellesvig-Waering revised *Megalograptus* in 1955, owing to the discovery of more complete fossil material of the new species *M. ohioensis*. Caster and Kjellesvig-Waering conducted further work on *Megalograptus* over the following years. In 1964, they named the species *M. shideleri* and *M. williamsae* and reclassified the fragmentary eurypterid [Ctenopterus](#) *alveolatus* as a species of *Megalograptus*.

Megalograptus lived in near-shore marine environments, where it used its large appendages, and possibly its telson and cercal blades, to capture prey. Possible [coprolites](#) (fossilized dung) are known from *M. ohioensis*, which contain fossil [trilobite](#) fragments as well as fragments of *M. ohioensis* itself. This suggests that *Megalograptus* might have been [cannibalistic](#) at times, like many modern [chelicerates](#).

Size

Megalograptus was a [genus](#) of large [megalograptid eurypterids](#). The largest species was *M. ohioensis*, which ranged in length from 49 to 78 centimeters (1 ft 7 in to 2 ft 7 in). *M. ohioensis* was the second largest megalograptid and the second largest eurypterid of the [Ordovician](#) period, smaller only than the related [Pentecopterus](#), which could grow to 170 cm (5 ft 7 in).^[1] Previous estimates have placed the size of some species of *Megalograptus* as substantially larger, with the type species *M. welchi* once believed to have reached lengths of 150 cm (4 ft 11 in) in length. According to a 2009 study by James Lamsdell and Simon J. Braddy, such estimates are dubious as they are based on [ornamentation](#) in incomplete fossils.^[2] In the case of *M. shideleri*, once estimated to have reached lengths of 200 cm (6 ft 7 in),^[2] the size estimate was based only on two fragmentary [tergites](#) (upper portions of body [segments](#)), wherein the dimensions of the ornamental scales were unusually large, interpreted as suggesting a giant body size. The fact that scales can vary in size across the bodies of megalograptid eurypterids and that one of the relevant tergites of *M. shideleri* was not longer than 3 cm (1.2 in) suggests that this species did not reach lengths of more than 56 cm (1 ft 10 in).^[1] The length of the species *M. alveolatus* is uncertain,^[2] but it was much smaller than *M. ohioensis*,^[3] and *M. williamsae* grew to about 50 cm (1 ft 8 in). The smallest known species of *Megalograptus* was an as yet [undescribed](#) Canadian species which only grew to 10 cm (3.9 in) in length.^[2]

Morphology

Megalograptus was [morphologically](#) unique and easily distinguishable from other eurypterids. The [carapace](#) (head plate) of *Megalograptus* was vaguely quadratic in shape and flattened, lacking a marginal rim, which was present in some other eurypterids. At the front of the carapace there was a downturn and six small downward-facing spikes, possibly an adaptation for digging in the mud. The [compound eyes](#) of *Megalograptus* were medium-sized and reniform (kidney-shaped), located close to the edge of the carapace. The [ocelli](#) (simple eyes located more centrally) were small. Some of the [appendages](#) of *Megalograptus* unusually had one more joint than was common in eurypterids.^[3]

Among the appendages, the third pair (counting the simple [chelicerae](#), pincers or mouth parts, as the first pair) are the most notable. In *Megalograptus* these were massive structures, covered in pairs of great spines, only comparable to the same structures in [Mixopterus](#), another eurypterid. The appendages of *Megalograptus*, about 3.5 times the length of the carapace, were significantly larger than those of *Mixopterus*. On the fourth joint of the appendages, one pair of spines end in bulbous structures, rather than sharp points, and were perhaps sensory. The fourth pair of appendages were short and spiny, but the fifth pair, immediately preceding the swimming paddles (placed on the sixth and final pair of appendages), were completely spineless. This unusual limb is similar to the same appendage in the distantly related genus [Eurypterus](#), where it has been interpreted as a balancing organ. The third joint of the swimming paddles of *Megalograptus* bent the appendages forwards, a rare feature in the eurypterids, otherwise mostly known from the distantly related genus [Dolichopterus](#). The wide swimming paddles of *Megalograptus* were formed from the sixth joint of the appendage. The seventh joint, which in many genera formed a major part of the paddle, was reduced to a relatively small structure. The eighth joint, not preserved in any known *Megalograptus* fossil material, is indicated as existing by attachment points in the seventh joint, which also indicate that it was significantly smaller than in other eurypterids.^[3]

The [mesosoma](#) of *Megalograptus* (the first six segments after the head) was distinctly similar to the same segments in modern [scorpions](#) and different from the mesosomas of other eurypterids. The body contracted after the last segment of the mesosoma, rather than after the first segment of the [metasoma](#) (the last six segments), which was otherwise typical for eurypterids. In most eurypterids, the mesosoma was widest at the fourth or fifth segment, but in *Megalograptus* it was widest at the third. The first segment of the mesosoma was considerably shorter than the succeeding segments, which were otherwise approximately of the same length. The last few segments of the body were slightly longer than the preceding segments. The [metastoma](#) (a large plate located on the underside of the body) of *Megalograptus* was roughly egg-shaped, unusually

wide and broadly subtriangular (almost triangular) in shape, differentiating it from the same structure in all other eurypterids, where it was usually cordate (heart-shaped).^[3]

The most unusual feature of *Megalograptus* was the structure formed by the [telson](#) (the last division of the body) and the immediately preceding segment (the pretelson). *Megalograptus* had, alongside the sharp and stout telson spike, two paired and rounded blade-formed lobes, the so-called cercal blades. These were attached beneath the telson, directly to the pretelson. The blades were capable of articulation, in effect forming a large grasping organ. In other eurypterids, the telson tends to be an undivided structure in the shape of a paddle or spike, meaning that the cercal blades distinguish *Megalograptus* from nearly all other eurypterids.^[3] Cercal blades are only known from one other eurypterid, [Holmipterus](#),^[4] and are lacking in the [basal](#) ("primitive") megalograptid *Pentecopterus*.^[1] Taken together with the telson, the telson–pretelson assemblage of *Megalograptus* forms a flattened structure, superficially similar to the flattened telsons of many genera in the superfamily [Pterygotioidea](#).^[3]

Megalograptus was ornamented with small scales of irregular size across its body. On the carapace, they were flat and disc-like and scattered without any obvious pattern. On the fifth pair of appendages, the scales were more elongated. On the main body, the scales were rounded, raised and nearly elliptical in shape. Many of the scales on the carapace, the fifth pair of appendages, the mesosoma and metasoma and some on the appendages had holes in their center, suggesting that they once supported [bristles](#) (stiff hairs). In life, *Megalograptus* may have had an almost hirsute (hairy) appearance.^[3]