

The past, present and future of Jensen's Big Three sauropods

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In the 1970s, Jim Jensen excavated multiple gigantic sauropod dinosaurs from Dry Mesa Quarry (DMQ), Colorado. In 1985, he formally named *Supersaurus*, *Ultrasaurus* (later *Ultrasauros*), and *Dystylosaurus* based on these specimens. Later, Brian Curtice and coauthors referred the holotype vertebrae of *Ultrasauros* and *Dystylosaurus* to *Supersaurus*, and the referred scapulocoracoid of *Ultrasauros* to *Brachiosaurus*.

In 2016, we determined that a large cervical vertebra referred to *Supersaurus* in fact belongs to *Barosaurus*. Either *Supersaurus* is synonymous with *Barosaurus*, or it is distinct but some *Barosaurus* material has been incorrectly referred. The holotype of *Dystylosaurus*, an anterior dorsal vertebra, cannot belong to *Barosaurus* due to its unsplit neural spine, but no shared apomorphies support its referral to *Supersaurus* and the convenient referral of all large diplodocid material from DMQ to *Supersaurus* is no longer supportable in light of the *Barosaurus* cervical.

Nomenclatural issues pertaining to *Supersaurus* must be resolved by reference to its holotype scapulocoracoid. Jensen assigned two scapulocoracoids to *Supersaurus*, but his vague descriptions, and pervasive confusion around published specimen numbers, make it uncertain which of the two is the type. The two elements have subtle differences and may not belong to the same animal. This is unfortunate, since *Supersaurus* is the most complete, phylogenetically informative, and nomenclaturally stable of the “Big Three” Dry Mesa sauropods — or at least it was until now.

Finally, while the scapulocoracoid referred to *Ultrasauros* is probably from a titanosauriform, its coracoid does not closely resemble that of the holotype of *Brachiosaurus*, nor its scapulae those of *Giraffatitan*. In summary, the DMQ material includes at least three giant sauropods: a titanosauriform that may not be *Brachiosaurus*, and two diplodocids: *Barosaurus* and *Supersaurus* — but the diagnosis of the latter is muddled both by possible confusion with *Barosaurus*, and by definite confusion regarding the holotype.