

Can we identify Desmostylia based on only humeral morphology?

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Desmostylia is one clade of extinct marine mammals. They belong Tethytheria (Afrotheria) or Perissodactyla (Laurasiatheria) and existed during the period between the early Oligocene and late Miocene. All occurrences of their fossils are limited to marine strata along the coasts of the North Pacific Ocean. Desmostylian fossils in many shapes and forms, including whole or partial skeletons, skulls, teeth, and fragmentary bones have been discovered from both Pacific coasts, but detailed taxonomic identification based on fragmentary or isolated postcranial materials has been difficult owing to our limited knowledge of the postcranial diagnostic features of desmostylian taxa.

For this reason, I established desmostylian diagnostic characters found in the humerus to identify desmostylian genus. I could found 6 diagnostic characters for desmostylia, 5 diagnostic characters for *Behemotops*, 7 diagnostic characters for *Archaeoparadoxia*, 7 diagnostic characters for *Paleoparadoxia*, 4 diagnostic characters for *Neoparadoxia*, 6 diagnostic characters for *Ashoroa*, and 6 diagnostic characters for *Desmostylus*. All these characters found in this study can be used to identify isolated desmostylian humeri to genus level. Therefore, these results will contribute a better understanding of the stratigraphic and geographic distribution of each desmostylian genus.

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