

## Ontogeny and variation in the skull roof and braincase of the hadrosaurid dinosaur *Maiasaura peeblesorum* from the Upper Cretaceous of Montana, USA

Bradley McFeeters, David C. Evans, and Hillary C. Maddin

*Acta Palaeontologica Polonica* 66 (3), 2021: 485-507 doi:<https://doi.org/10.4202/app.00698.2019>

Five new partial skulls of the hadrosaurid dinosaur *Maiasaura peeblesorum* from the Linster Quarry bone bed (Two Medicine Formation, Campanian) in Montana, USA, provide the basis for a description of the skull roof and braincase morphology of this taxon. These skulls additionally form an ontogenetic series consisting of one subadult, two small “intermediate adults”, and two larger “mature adults”. The subadult skull is approximately two thirds as wide as the largest adult and lacks a nasofrontal crest, suggesting that the crest formed relatively late in ontogeny compared to some other hadrosaurids. As in closely related taxa, larger skulls of *M. peeblesorum* have a proportionately wider braincase and a larger, more rugosely ridged nasofrontal contact for supporting a larger crest. In the two largest adults, the skull roof incipiently overhangs the anterior margin of the dorsotemporal fenestrae. In the largest skull examined, the crest is semicircular in anterior view and incorporates flared, anteriorly concave prefrontals in its lateral margins. Intraspecific variation in *M. peeblesorum* is observed in cranial characters previously discussed as interspecific variation in related taxa, including the prominence of dorsal depressions on the frontal, and the position of the foramen for the facial nerve (CN VII). Although cranial ontogeny in *Maiasaura* shares some trends with *Brachylophosaurus* and *Probrachylophosaurus*, it deviates in other ways from the previous heterochronic model proposed for the evolution of Maiasaurini.

**Key words:** Dinosauria, Hadrosauridae, ontogeny, Two Medicine Formation, Campanian.


Bradley McFeeters [[bradleymcfeeters@cmail.carleton.ca](mailto:bradleymcfeeters@cmail.carleton.ca)] and Hillary C.

Maddin [[hillary.maddin@carleton.ca](mailto:hillary.maddin@carleton.ca)], Department of Earth Sciences, Carleton

University, 1125 Colonel By Drive, Ottawa, Ontario, Canada, K1S 5B6. David C.

Evans [[davide@rom.on.ca](mailto:davide@rom.on.ca)], Department of Palaeobiology, Royal Ontario Museum, 100 Queen’s Park, Toronto, Ontario, Canada, M5S 2C6; and Department of Ecology and Evolutionary Biology, University of Toronto, 25 Willcocks Street, Toronto ON, M5S 3B2.

This is an open-access article distributed under the terms of the Creative Commons Attribution License (for details please see [creativecommons.org](https://creativecommons.org)), which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.

 [Full text \(2,494.3 kB\)](#)