

New Material from the Miocene of Ningxia (Western China) Reveals Life History of *Platybelodon*

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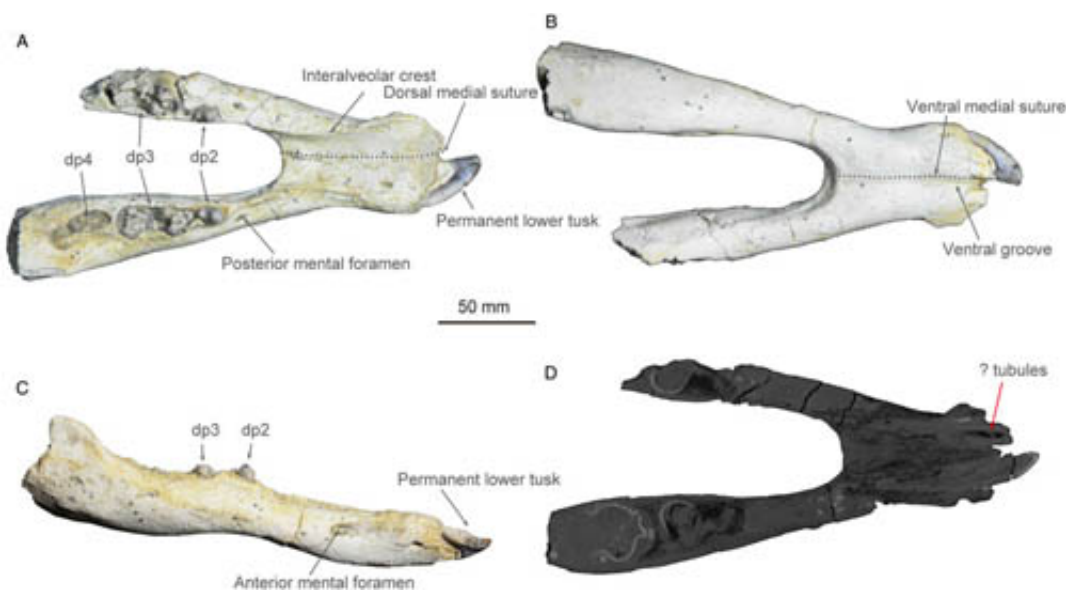


Fig.1 Mandible of a newly born *Platybelodon danovi* (IVPP V18961). (A) Dorsal view, (B) ventral view, (C) lateral view and (D) tomographic image scanned by a CT scanner. Credit: WANG Shiqi

The middle Miocene Dingjiaergou Fauna in Tongxin County, Ningxia Hui Autonomous Region, western China has yielded 27 taxa from more than 10 families and is approximately equivalent to European Neogene mammal zone (MN) 6. During recent fieldwork, Drs. WANG Shiqi and YE Jie, Institute of Vertebrate Paleontology and Paleoanthropology (IVPP) of the Chinese Academy of Sciences, collected a well-preserved

newborn mandible and an incomplete left pes of *Platybelodon*. As the pes of *Platybelodon* has not been described before, these new material provides important paleobiological information on *Platybelodon*. A study published online May 23 in *Historical Biology* shows that *Platybelodon* has an early evolution of tooth succession independent from other proboscideans, and owns a light-built body and rapid locomotion relative to other gomphotheres and elephants.

In the specimen of newborn mandible, erupted left and right permanent lower tusks (the exposed part of the left tusk is broken), erupted left and right dp2s, erupting left and right dp3s and unerupted right dp4 were preserved. Comparison studies show that the reduction of dp2 in *Platybelodon* is an independent tendency distinct from that of gomphotheres. Tooth succession in *Platybelodon* is very specialised, including a tendency to lose the dp2, an early loss of the di2 perhaps at the foetal stage, a tendency to lose the p3 and a tendency to reduce the P4 and the p4. "The relatively derived tooth succession of *Platybelodon* occurred at a relatively early geological time, thus representing an early evolution of tooth succession independent from other proboscideans", said study coauthor YE Jie, an emeritus professor of the IVPP.

In the incomplete left pes, MT III, MT IV, MT V (all the proximal surfaces of the three bones are broken), proximal phalanx IV and proximal phalanx V are well preserved. The limb bones of elephants are extremely specialised for supporting huge weights. Researchers compared the MT III and MT IV of *Platybelodon* with other gomphothere taxa and found that the platybelodont pes shows some modifications from that of basal Gomphotherium, with metatarsals IV and III nearly equal in length, metatarsal IV less twisted than metatarsal III, metatarsals IV and III more anteroposteriorly compressed and metatarsals aligned nearly at the same level. These modifications indicate that the standing and moving postures of *Platybelodon* were distinct from other gomphotheres and true elephants, and *Platybelodon*

should have been more lightly built than other gomphotheres, and may have been adapted for relatively rapid movement, distinct from other gomphotheres.

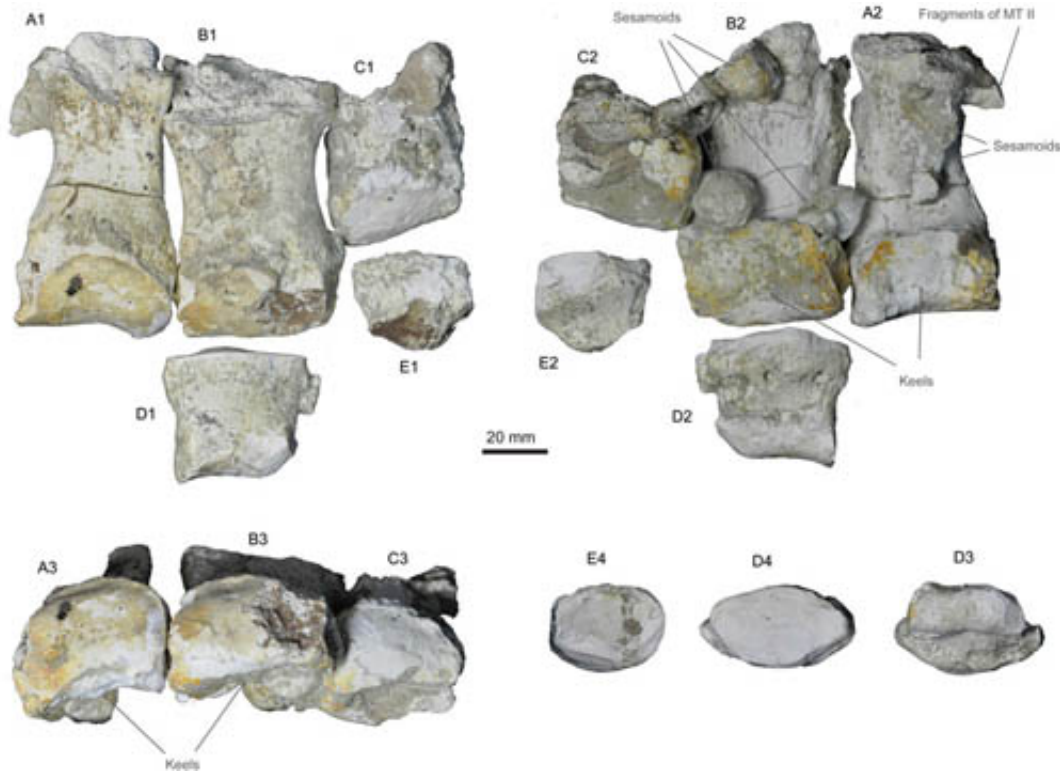


Fig.2 Podalic bones of *Platybelodon danovi* (IVPP V18962). (A) MT III, (B) MT IV, (C) MT V, (D) proximal phalanx IV and (E) proximal phalanx V. X1–X4 are in dorsal, plantar, distal and proximal views, respectively. Credit: WANG Shiqi

"These findings have important paleobiological significance, adding to our knowledge of the life history of *Platybelodon* and the diverse adaptations of ancient proboscideans", said WANG Shiqi, lead author of the study.

Provided by Chinese Academy of Sciences

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