## A sinraptorid theropod from Thailand

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In the course of excavating a giant turtle shell at a new vertebrate site near Ban Kham Phok in Mukdahan Province (NE Thailand), a fairly well preserved but isolated theropod left tibia was discovered. The locality is in grey siltstones of the Phu Kradung Formation, the lowermost unit of the Khorat Group (*sensu* Racey et al., 1996), the age of which is considered as either latest Jurassic or basal Cretaceous (Racey et al., 1996). The theropods from the Phu Kradung Formation are still poorly known, although it has yielded isolated teeth and bones The tibia from Ban Kham Phok appears to be identifiable at the family level and thus provides interesting new evidence about the dinosaur assemblage from the Phu Kradung Formation.

The 618 mm long bone is generally well preserved, although its proximal head has suffered some abrasion in its caudal part. It has a robust straight shaft and a well marked cnemial crest. The fibular crest is strong. The surface for reception of the ascending process of the astragalus is well defined proximomedially by a strong oblique ridge.

The tibia from Ban Kham Phok differs from that of ceratosauroids by its cnemial crest, which is less prominent proximocranially. It is less massive and less expanded distally than the tibia of *Torvosaurus*. Although it is generally similar to the tibia of *Allosaurus*, it differs from it in the shape of the proximal articular end, which in the Thai form is broader and shows a smoothly rounded rather than subrectangular incisura tibialis between the cnemial crest and the surface for the articulation of the fibula. The greatest similarities are with sinraptorids, especially *Sinraptor* (Currie & Zhao, 1993), in which the proximal articular surface is short and broad, with a rounded incisura tibialis. As shown by its insertion area on the cranial face of the shaft, the ascending process of the astragalus was relatively short, representing 13% of the total length of the bone, which compares well with the condition in *Sinraptor dongi* (12%). The corresponding ratio is 20% in allosaurids and up to 33% in tyrannosaurids (Currie & Zhao, 1993). On the basis of these comparisons, it seems justified to refer the tibia from Ban Kham Phok to the family Sinraptoridae.

Sinraptorids are large allosauroid theropods represented by two genera from the Late Jurassic of China, *Sinraptor* and *Yangchuanosaurus*. The occurrence of a sinraptorid in the Phu Kradung Formation is in good agreement with the presence in that formation of euhelopodid sauropods (Buffetaut & Suteethorn, 2004), which occur together with sinraptorids in the Late Jurassic of China. Not unexpectedly in terms of palaeogeography, the dinosaur assemblage from the Phu Kradung Formation, which also includes a stegosaur and a small ornithopod, is reminiscent of those from the Upper Shaximiao Formation of Sichuan and the Shishugou Formation of Xinjiang, which are both referred to the Late Jurassic. This suggests that the Phu Kradung Formation is Late Jurassic rather than Early Cretaceous in age.

### References

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