A new Shachemydn turtle (Testudines: Cryptodira: Adocidiae) from the Early Cretaceous Sao Khua Formation, Khorat Group, NE Thailand

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A new Early Cretaceous vertebrate locality, Phu Din Daeng, in Nakhon Phanom Province, NE Thailand is reported recently (Tong et al., in press). The Phu Din Daeng site has yielded a diverse vertebrate assemblage, including sharks (Heteropodychodus steinmanni), bony fishes (Pycnodontiformes; Sinamidae cf. Siamamia and ?Vidalimimidae; and Ginglomyidae), adocid turtles, indeterminate neosuchian crocodiles, pterosaurs and dinosaurs (spinosaurs and indeterminate theropods). Field investigations on the geology and comparisons with other vertebrate faunas place Phu Din Daeng site in the Sao Khua Formation (Barremian) of the Khorat Group.

Turtle assemblage from Phu Din Daeng is composed of trionychoid adocids. A new adocid turtle, Protoshachemyx rubra Tong, Buffetaut, Suteethorn, Suteethorn, Cuny, Cavin, Deesri, Martin, Wongko, Naksri and Claude, 2019, is described on the basis of shell material. As a member of the subfamily Shachemydinae, P. rubra is characterized by a combination of primitive and derived characters, including smooth shell surface with sparse pores; flat carapace with a serrated posterior margin; nuchal roughly as long as wide; reduced neural series, narrow neurals with a tetragonal neural 1 followed by a hexagonal neural 2; two suprapygal, the first one much smaller than the second; narrow cervical scute; vertebral 1 not extending to the peripheral 2; lateral marginals extending onto the costals 1-5; marginal 11 and 12 elongate and greatly overlapping the suprapygal 2 and also slightly the costal 8; plastron with truncated anterior margin, entoplastron shortened anteriorly, and absence of a hinge between epiplastra and entepiplastra. Protoshachemyx is the oldest known representative of Shachemydinae and considered as the basalmost member of that group. A more advanced form, Shachemyx, has been reported from the overlying Khok Kroat Formation (Aptian) in Thailand and its lateral equivalent, the Grés Supérieurs Formation in Laos (Lapparent de Broin, 2004; Tong et al., 2005), and from the Late Cretaceous of Central Asia (Danilov, Syromyatnikova & Sukhanov, 2007).