

## Potential fossil sites for PaleoPark in Nakhon Ratchasima, Northeastern Thailand

Pratueng Jintasakul<sup>1</sup>, Rattanaphorn Hanta, Jaroon Duangkrayom, and Wickanet Songtham

Northeastern Research Institute of Petrified Wood and Mineral Resources, Nakhon Ratchasima Rajabhat University, Suranaree subdistrict, Mueang district, Nakhon Ratchasima, 30000, Thailand

Nakhon Ratchasima is one of the nineteen provinces situated in the SW of northeastern Thailand, the so-called Khorat Plateau. The main highways from Bangkok to Nakhon Ratchasima must pass Pahonyothin Road to Saraburi then turn right via Mittaphap Road to Nakhon Ratchasima with about 256 km. totally. From Bangkok, accessing to any provinces in the Northeast must mainly pass Nakhon Ratchasima, the province is thus considered as the gateway to the Northeast and even the gateway to Indochina.

Rocks in Nakhon Ratchasima are widely ranged in ages from Paleozoic to Cenozoic. The fossils show their values in stratigraphic significances as well as life evolution from those primitive ancestors to the most advance so far. These fossils were initially evolved from a Permian Sea as a shallow continental shelf as a coral reef with various invertebrate faunas such as ammonoids, rugose corals, crinoids, bryozoas, fusulinids, bivalves, and brachiopods. The fossil assemblages indicate the presence of a shallow Tethys seaway between the two terranes, Shan-Thai and Indochina.

The time went by until Late Triassic, the period that the two terranes became amalgamation. The Northeast as a part of Indochina terrane was a large river basin generating vast volume of fluvial sediment forming the Mesozoic Khorat Group with some red-bed rock formations. The Khorat Group yields vertebrate fossils as well as abundant petrified wood, Araucariaceae. The most magnificent vertebrate fossils in the Khorat Group are from Khok Kruat Formation. Its name is derived from Khok Kruat subdistrict, the type area which is comprised of purple red mudstone, sandstone, and conglomerate. During three years of cooperation, 2007-2009, the Thailand-Japan Dinosaur Excavation Project had produced a fruitful result. The discovery was comprised a new allosaurid, iguanodontian, hadrosaurid, sauropod, and pterosaur of late Early Cretaceous.

Overlying the Khok Kruat Formation is the Plio-Pleistocene gravel deposit considerable as a rich-petrified wood formation. The fossil woods were silicified as normal petrified woods and a gemstone quality or opalized woods. The petrified woods in this region have over five genera including *Shoreoxylon parvum*, *Pahudioxylon sahnii*, *Cynometroxylon*, *Lagerstroemioxylon* cf. *parenchymatosum*, and *Careoxylon*. At Khao Kaew, petrified wood logs were deposited and still remain in the site that has been developed to be the Khorat Fossil Museum of Northeastern Research Institute of Petrified Wood and Mineral Resources. The Museum was originated from the petrified woods but currently other fossils like ancient elephants and dinosaurs have been added.

<sup>1</sup>Corresponding author, E-mail: pratueng.jin@hotmail.com

There is Cenozoic sedimentary deposit yielding a considerable number of mammalian bone remains. The bones were unearthed from some sand pits which were comprised of semi-consolidated mud, silt, sand, and gravel with about over 30 meters deep nearby the Mun River in Tha Chang and Chang Thong Subdistrict, Chaloem Phra Kiat District. At least eight genera of proboscidean can be recognized from this area with other associated mammalian fossils such as hominoid, anthracothere, rhino, equid *Hipparion*, bovid, cervid, giraffid, suid, and saber-toothed cat. The mammalian fauna discovered from this area can be sorted into three fossil assemblages of Middle Miocene, Late Miocene, and Plio-Pleistocene. Recently, at least three new taxa were reported, hominoid *Khoratpithecus piriyai*, anthracothere *Merycopotamus thachangensis*, and rhinocerotid *Chilotherium* sp. nov.

Various and diverse flora and fauna discovered in Nakhon Ratchasima Province is worth of conservation. The fossil sites ranging in age from of Paleozoic to Cenozoic are important places for not only geological but also paleontological studies for the public. We could learn our Earth history and life evolution from invertebrate fossils in Permian limestone, reptiles in Mesozoic rocks, to Cenozoic fauna, especially mammals, as well as floral remains which discovered associated to the Mesozoic and Cenozoic faunas. These fossil sites in Nakhon Ratchasima Province are great value enough for establishing a Pale Park.