



Dr Karl Guido Rijkhoek
Director

Antje Karbe
Press Officer
Phone +49 7071 29-76788
+49 7071 29-76789
Fax +49 7071 29-5566
karl.rijkhoek[at]uni-tuebingen.de
antje.karbe[at]uni-tuebingen.de
www.uni-tuebingen.de/aktuell

Press Release

Rhinoceros ancestors island-hopped from Vietnam

37m year old fossils show rhinos spread from Asia to Africa and Europe

Tübingen, 12 March 2014

A team of scientists from the University of Tübingen and the Senckenberg Center for Human Evolution and Palaeoenvironment Tübingen has discovered the fossils of two previously unknown mammal species which lived about 37 million years ago. The newly described mammals, found at the Na Duong open-cast brown coal mine in Vietnam, show a surprisingly close relationship with prehistoric species known from fossil sites in Europe. The scientists also made further discoveries, including three species of fossilized crocodiles and several new turtles.

Southeast Asia is a particularly species-rich region and even in prehistoric times was a hotspot of biodiversity. For several decades now, scientists have postulated close relationships that existed in the late Eocene (38-34 million years ago) between the faunas of that region and of Europe. The recent findings by the research team led by Prof. Dr. Madelaine Böhme show that some European species originated in Southeast Asia.

One of the newly described mammals is a rhinoceros, *Epiaceratherium naduongense*. The anatomy of its fossil teeth identifies this rhinoceros as a potential forest dweller. The other species has been dubbed the “coal beast,” *Bakalovia orientalis*. This pig-like ungulate, closely related to hippos, led a semi-aquatic lifestyle, preferring the water close to bank areas. At that time, Na Duong was a forested swampland surrounding Lake Rhin Chua. The mammals’ remains bear signs of crocodile attacks. Indeed, the excavation site at Na Duong contains the fossilized remains of crocodiles up to 6 meters in length.

In the Late Eocene, the European mainland presented a very different aspect from what it is today. Italy and Bulgaria were part of an island chain in the Tethys Sea. These islands spanned several thousand kilometers between what later became Europe and India. European fossils from that epoch are very rare, since little material has been preserved due to the folding of mountains and erosion. Yet the two new species had relatives in this area: A rhinoceros *Epiaceratherium bolcense* closely resembling the one from Na Duong was found in Italy (Monteviale). Fossil finds of *Epiaceratherium magnum* from Bavaria indicate that rhinoceroses reached continental Europe no later than 33

Please send us a copy of your article or report.

million years ago and colonized the landmass. The coal beast did not quite make it to the European mainland – but it certainly reached the so-called Balkano-Rhodopen Island: a fossilized coal beast very similar to *Bakalovia orientalis* was unearthed in present-day Bulgaria.

Professor Böhme and her team have been studying the prehistoric ecosystem and the fossils of Na Duong since 2008. Coal is still being mined at Na Duong, often quite close to where the scientists are conducting their excavations. This research revealed that the lignite seams contained a globally important fossil deposit from the Paleogene interval. Originally, scientists had expected to find fossils from the younger Cenozoic (up to 23 million years ago) at the site.

This ecosystem, which the team of scientists from Vietnam, France and Germany are exploring and reconstructing in increasing detail from one excavation season to the next, is a 37 million year-old swamp forest in a tropical to subtropical climate. Up to 600 trees grew there per hectare, and their crowns reached heights of up to 35 meters.

Publication:

Böhme, M. et al.; Na Duong (northern Vietnam) – an exceptional window into Eocene ecosystems from Southeast Asia, *Zitteliana* A 53, 120 A 5 (2014).

Online:

http://www.palmuc.de/bspg/images/pdf/10_boehme.pdf

Contact:

Prof. Dr. Madeleine Böhme

Department of Geosciences

Senckenberg Center for Human Evolution and Palaeoenvironment

(currently away on expedition)

madelaine.boehme@senckenberg.de

Press Office

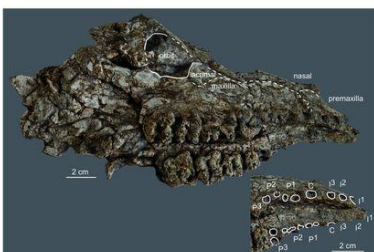
Senckenberg Gesellschaft für Naturforschung

Regina Bartel

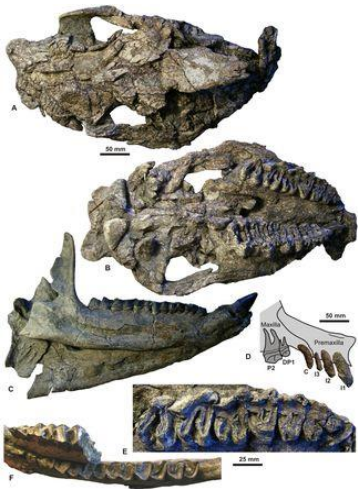
Phone 069- 7542 1434

pressestelle@senckenberg.de

Press Images



Partial cranium of *Bakalovia orientalis* © Senckenberg



Cranium and mandible of *Epiaceratherium naduongense*

© Senckenberg