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A New Plesiosaurian from the Slottsmøya Member (Volgian) of Central Spitsbergen and Its Implications for Cryptoclidid Phylogenetic Relationships

Oral Presentation, Student Contribution

The Slottsmøya Member from central Spitsbergen is a rich marine reptile Lagerstätte, spanning the Jurassic – Cretaceous boundary and is abundant in ophthalmosaurid ichthyosaur, pliosaurid and cryptoclidid plesiosaur specimens. Here we present the osteology and phylogenetic placement of a new taxon of plesiosaur, representing the fifth and youngest cryptoclidid taxon described from the member. This specimen (PMO 224.248) derives from a section encompassing the latest Tithonian – earliest Berriasian (late Volgian) and is likely Early Cretaceous in age. PMO 224.248 is unique from the Slottsmøya Member in preserving a cranium, partial mandible, complete and articulated cervical, pectoral and anterior-dorsal vertebral series, pectoral girdle and forelimb material. For the first time, detailed cranial anatomy of a cryptoclidid plesiosaur is described using computed tomography. New external and internal cranial features include an interfrontal vacuity, parietal fossae and the configuration of the palate. These features are also confirmed in some cryptoclidid taxa and may represent unique cryptoclidid characteristics. The cervical series (50 vertebrae) of PMO 224.248, displays conspicuous disparity in the proportions of the centra and morphology of the neural arches throughout the series. This variation is compared with other penecontemperanous taxa and may have implications for inferring neck-flexibility in cryptoclidid plesiosaurs. Using phylogenetic characters from original and published work, phylogenetic analysis including PMO 224.248 presented a new tree topology for the intrarelationships of Cryptoclididae. These results show that at least two cryptoclidid lineages were present in the Boreal Realm during the Late Jurassic – Early Cretaceous interval.

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Variability and Potential Shifts in Body Masses of Small Cervids and Bovids From the Pleistocene of Java

Poster Presentation

Evolutionary shifts in body size exhibited by island biotas result from the synergetic influences of selective biotic and abiotic forces. Inquiring into the nature and rate of these trends in the light of the island rule is helpful to better understand changes in the structure of insular communities over time. Java, one of Greater Sunda Islands, is characterised by a complex palaeogeographic history and fossil record and deciphering the structure of its mammalian palaeocommunities during the Pleistocene is a difficult task. The aim of this study is to investigate the potential shifts in body masses of *Duboisia santeng* - a boselaphine bovid - and two cervid species - *Axis lydekkeri* and *Cervus kendengensis* - from the Early and Middle Pleistocene of Java.

We reconstructed body masses of the focal species and we investigated the spatial and temporal variability of our dataset between different local faunal assemblages and faunal units (Trinil HK and Kedung Brubus). Moreover, we discussed the role of sexual dimorphism, inter- and intraguild dynamics, and taphonomic and taxonomic biases in driving the observed body mass shifts. All in all, results obtained proved to be useful in supporting the ecological hypothesis for body size evolution on islands, which predicts that the magnitude and direction of body size evolution and the underlying selection forces should be contextual to the size and trophic strategies of both the focal species and those species with which they interact.

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Pliosauromorph Plesiosaurian Remains from the Late Cretaceous of Northwestern Germany

Poster Presentation

Plesiosaurian skeletal remains are rare in Late Cretaceous strata of Europe. During several years in the 1950`s, various cranial and postcranial elements of a pliosauromorph plesiosaurian had been collected by amateurs at Anröchte, North Rhine-Westphalia, northwestern Germany. They were donated to the Geomuseum of the WWU, Münster, but remained unstudied over decades: their softness combined with the embedment in a hard siliceous rock precluded preparation until suitable techniques were developed. These remains represent the most complete plesiosaurian reptile find from Turonian strata in Europe, but they have only been studied provisionally as yet. The material comes from the Soest Greensand Member (Salder Formation) of Late Turonian age. Included are elements of the skull and lower jaw, isolated teeth, vertebrae, a scapula, an ilium and limb elements. The teeth are robust and conical, bearing prominent enamel ridges on the surface of the crown. The cervicals are amphicoelous. Characteristics at the propodials include a facet for a supernumerary epipodial at the humerus and femur as well as a massive, dome-shaped capitulum at the femur. The robust, conical teeth and the massive rostrum demonstrate that the Anröchte plesiosaurian was a pliosauromorph and an apex predator in its environment.

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Phylogenetic Position of the Ornithomimosaur *Kinnareemimus khonkaenensis* from the Early Cretaceous of Thailand

Poster Presentation, Student Contribution

In 1995, remains of a few individuals of a small ornithomimosaur were reported from the Early Cretaceous Sao Khua Formation of north-eastern Thailand. The material was named *Kinnareemimus khonkaenensis* in 2009. It remains the only report of this group in Southeast Asia. *Kinnareemimus* was concluded to be a member of *Ornithomimosauria* more derived than *Harpymimus* and *Garudimimus* but more basal than *Archaeornithomimus*. However, *Kinnareemimus* was never included in a cladistic analysis. The preliminary results of a phylogenetic analysis using TNT of the relationships of *Kinnareemimus* (104 taxa, 568 characters) suggest it might be a basal ornithomimosaur. The tree topology agreed with previous analyses, for example, in a clade Deinocheiridae, consisting of *Deinocheirus*, *Garudimimus*, and *Harpymimus* which share some characters such as the rectangular cross section of metatarsal III. *Kinnareemimus* looks similar to *Garudimimus* in the shape of the fibula in proximal view. The *Kinnareemimus* metatarsal III shows a subarctometatarsalian condition which might have evolved independently from other ornithomimids. However, the basal position of *Kinnareemimus* could also be due to immaturity and incompleteness of the material. This study shows that the evolution of the arctometatarsalian condition in ornithomimosaurs was not a simple, linear process. Apparently, the basal ornithomimosaurs were more widespread during the Early Cretaceous than in the Late Cretaceous, when they were restricted to Central Asia and North America. *Kinnareemimus* being one of the oldest and most basal ornithomimosaurs indicates that Southeast Asia played an important role in the early radiation of the Ornithomimosauria.

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Who is Who? Comparative Morphology of the Miocene Eurasian Musk-Deer *Micromeryx* and *Hispanomeryx* (Mammalia, Ruminantia, Moschidae)

Poster Presentation

Moschids (musk-deer) are a group of ruminants defined as the least inclusive clade of crown-pecorans containing *Hispanomeryx* and *Moschus*. The earliest fossil record of musk-deer dates from the middle Miocene (MN4), although they probably appeared earlier. During the middle-late Miocene moschids became an ubiquitous component of Eurasian mammalian continental faunas, with two widely recognized genera that were distributed from the Iberian Peninsula to Mongolia: *Micromeryx* and *Hispanomeryx*. Moschids went extinct in Europe during the Turolian, but continued existing in Asia where they persist today (*Moschus* spp.). In Europe *Micromeryx* is a better-known taxon than *Hispanomeryx*, due to: a) *Micromeryx* was described in 1851, *Hispanomeryx* much more recently in 1981; b) until recently there were no cranial and postcranial fossils of *Hispanomeryx* described for comparison. The bulk of European *Hispanomeryx* fossils (and all described European species) come from Spain, where it appears in several sites ranging from MN6 to MN11. *Micromeryx* on the other hand is widely known across middle-upper Miocene European sites. Clearly, *Hispanomeryx* continues to be misidentified in Europe. We used the exceptional fossil record of Spanish Miocene moschids to map the anatomy of both *Micromeryx* and *Hispanomeryx*. Hence, we provide here a list of anatomical differential traits (cranial, mandibular, dental and postcranial) that can be used to separate apart both genera. We describe these features as a sort of a 'field guide' that can be used on moschid collections with the purpose of