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consistent across both monophyodont and diphyodont taxa, thus falsifying the hypothesis. Therefore the relative size of the developing dentition does not influence the size of the mandible, and its utility in dietary reconstruction, in the taxa studied here. This finding has important implications for our understanding of the coordinated development and evolution of the dentition and skeletal masticatory system.

Poster Session IV, Saturday

A PARTIAL SKELETON OF BEHEMOTOPS (DESMOSTYLLA, MAMMALIA) FROM VANCOUVER ISLAND, BRITISH COLUMBIA
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In July of 2007, a partial articulated skeleton of a desmostylian was found in place in siltstone in the streambed at mouth of Sooke River in Juan De Fuca Provincial Park, Vancouver Island, British Columbia, Canada. The fossils were found in association with late Oligocene Sooke Formation mollusks and an odontocaud vertebral vertebra. Sooke Beach is part of the Sooke Formation siltstone “Facies F” and represents a backbench ponded area. Nearby portions of the formation are dated to Chron C2r.c, 24.1-24.8 Ma. The material preserved includes the left side of the entire skull, including two molars and a premolar and canines, as well as a partial scapula, a nearly complete humerus, and numerous vertebral ribs. Molar characteristics and size appear to be the same as material of Behemotops proteus, from the late Oligocene Pysh Formation of Washington State (LACM 124 006), near the type locality of Behemotops proteus also from the Pysh. Previous specimens of Behemotops proteus were limited to lower jaws and portions of the upper and lower postcanine dentition. The smaller Behemotops known from Japan is known from more material, yet its cranial material is limited to the posterior cranium and a small portion of the zygomatic arch. This new material allows us to see that Behemotops cf. proteus had cranial features much like those seen in Cornavis dossakensis of North America. These include a postorbital process of the jugal, with no dorsally expanded zygomatic process of the squamosal, a deeply concave hand plate, enlarged canine tusks that point sharply ventrally, and a narrow, curved incisor arcade. Behemotops may be more closely related to desmostylians, making the divergence of the Desmostylia and Paleoparadoxidae further back among fossil taxa yet unknown. Interestingly, the unfused epiphyses of this specimen’s limb and vertebral elements appears to indicate that it is a subadult, even though all but it’s M3 have erupted. This suggests that Behemotops, unlike Desmostyly and other Afirotheria, did not delay the eruption of its adult dentition, indicating that the most likely primitive state for the Desmostylia is not delayed dental eruption.

Technical Session VII, Thursday 2:30

ONTOGENETIC SEQUENCE ANALYSIS (OSA) OF TOOTH ERUPTION AND SUTURE CLOSURE IN TAPIRUS (MAMMALIA: PERISSODACTYLA): IMPLICATIONS FOR ASSESSING SEQUENCES IN FOSSIL SAMPLES
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Deducing sequence heterochrony involves comparison of the relative order of ontogenetic events between species in a phylogenetic context. Such analyses obviously require both a phylogenetic framework, as well as ontogenetic sequences for the considered species. While the difficulties of phylogenetic analysis are well known, the process of determining ontogenetic sequences within species is not trivial. The primary difficulty in establishing ontogenetic sequences relates to inadequate sample sizes that often show biased demographics. These sampling artifacts are further complicated by the widespread occurrence of intraspecific sequence polymorphism, an underreported phenomenon that should be expected as a transitional condition between fixed-event-orders during ontogeny between taxa. In this study, Ontogenetic Sequence Analysis (OSA) is used to establish all most-paramonolimous sequences of tooth eruption and suture closure, which are important indicators of mammalian maturiry, for the four extant species of Tapirus. Results document considerable sequence polymorphism within each tapir species, and also underscore the relationship between sample size and resolution. The implications are obvious for sequence deduction in fossil species that, compared to extant species, are generally represented by smaller samples of individuals that are often fragmentary. Although it is not surprising that small sample sizes yield less-resolved sequences, an interesting finding is that the differences between the poorly resolved sequences of Tapirus are consistent with current phylogenetic estimates based on both morphology and molecules. These differences were analyzed by treating all event-pair comparisons in each species as phylogenetic characters. It is hypothesized that the phylogenetic signal within these data sequences is largely epigenetic, with inferred instances of heterochrony reflecting dramatic changes in cranial morphology. These results encourage the analysis of even limited samples to find sequences not only with inferred instances of heterochrony reflecting dramatic changes in cranial morphology.

Poster Session IV, Saturday

THEROPOD TEETH FROM THE LATE CRETACEOUS OF CIERA (VALENCIA, EASTERN SPAIN)
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Several exposures of the Late Campanian-Early Maestrichtian palustrine deposits of the Sierra Perenchiza Formation at Chera Basin (Valencia province, Eastern Spain) have provided abundant micro- and macrovertebrate fossil remains. The vertebrate assemblage recovered includes remains of actinopterygians, amphibians, squamates, chelonians, crocodyliforms, pterosaurs and dinosaurs. Among the last ones, there are representatives of sauropods (Lirainosaurus cf. astiae), ornithopods (Rhabdodon priscus), thyreophores (Struthiosaurus sp.) and theropods, which are presented in this work. Only two of the above mentioned localities, named Chera-0 and Chera-2, have provided theropod remains, which consist of scarce isolated teeth. Three different morphotypes have been identified in the Chera material. The first one (? Neocrocodauria indet., Chera 0 and Chera 2), corresponds to the largest teeth of the sample (TCH up to 50 mm); these teeth are moderately compressed laterally, and distally recurved, their crowns bear denticles on both mesial and distal margins, and the mesial carina is laterally displaced; the denticles are chisel-shaped, wider labiolingually than they are long mediolaterally; the mesial denticles are slightly smaller than those of the posterior carina (about 3 denticles per mm); the crown enamel is slightly stretch-marked. The second type (Dromaesauridae: cf. Pteranodon sp., Chera 0 and Chera 2) includes two isolated teeth of much smaller size (TCH of about 10 mm); these teeth are strongly compressed, slightly recurved distally, and both mesial and distal carinae have minute denticles (about 7 denticles per mm). The third morphotype (Coelurosauria indet., Chera 0) corresponds to the smallest teeth of the sample (TCH of about 6 mm); they are distally recurved, strongly compressed laterally, and lack denticles. The association of neocrocodaurians and coelurosaurians, including dromaenosaurs, seems typical of the Campanian-Maastrichtian of the Bero-Armoican Realm.

Technical Session III, Wednesday 3:45

MIocene ASIAN INVASION OF EUROPE BY VARANUS (VARANIDAE)
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Varanus possess a frustratingly incomplete fossil record. The crown radiation of Varanus had begun diversifying by the Early Mioeocene (~18 million years ago; Ma) as evidenced by relatively complete remains of Varanus rusingenisi from Kenya. Other varanid fossils from the Miocene and later include primarily isolated vertebrate or other non-diagnostic material. We report on the first diagnostic fossil species of Varanus from Europe. The specimen (AMNH FR 30630) comes from the Mytilini Formation (Late Miocene, approximately 8.33 Ma) and consists of most of the right side of a braincase, a partial right squamosal, a right quadrate, the right mandibular gelenoid and surrounding areas, three cervical vertebrae, and three dorsal vertebrae. The specimen was originally collected with and identified as part of a partial mammal skull. We performed a cladistic analysis of 53 extant and fossil varaniforms, including 23 extant Varanus, to test the position of the Samos lizard. Our analysis finds the Samos Varanus to be nested within an Australasian clade of Varanus. Absence of a crista proctica, size and shape of the tympanic crest of the quadrat, presence of a dorsolateral surangular ridge, and relative degree of precondylar vertebral constriction unite the Samos Varanus with the Asian Varanus salvator-group. The Varanus salvator-group, from the tip of the basipterygoid process to the tip of the paracochlear process is 41 mm, the quadrate is 25 mm tall, the mandibular gelenoid is 12 mm wide across its anterior margin, cervical vertebrae 4 is 26 mm long along its ventral midline. Based on comparisons with 16 extant species, this suggests a snout-vent length (SVL) of 620-700 mm; thus, the Samos Varanus was comparable in size to modern Varanus niloticus and Varanus marmoratus. Presence of a relatively large Varanus in the Mytilini increases our understanding of that Formation’s fauna, which is dominated by a variety of mammals. The Samos Varanus also suggests a Miocene origin for some Australasian Varanus clades and an Asian rather than an African Varanus invasion of Europe.