

nature of the Winton Formation vertebrate fauna, the relationship between sites and details of related depositional settings.

Technical Session XVI (Saturday, October 20, 11:45 am)

SYNERGISM IN DENSER FOSSIL RECORDS: ECOLOGICAL COMPLEXITY EMERGES FOR MIDDLE MIOCENE SIWALIK RHIZOMYINE RODENTS
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The beauty of a dense fossil record, one with many superposed fossil samples, is that successive samples may be compared, and differences evaluated for passage of time or change in paleoecology. Increase in sampling density results in larger aggregate collections, records of more taxa, and finer scale metrical comparisons. For the Miocene Siwaliks of the Indian subcontinent, a multinational team has built a composite sequence on the Potwar Plateau, Pakistan. The sequence is well dated and spans 12 million years (18 to 6 Ma) and thousands of meters of sediment. Particularly densely sampled is the Middle Miocene Chinji Formation, with 29 small mammal levels distributed over a 3 million year interval (14.3 to 11.3 Ma). Although not evenly distributed, data are available for most 100,000 year subintervals. Previously, with very few of these sites studied, a simplistic view of faunal succession was developed under a model in which one or two small rhizomyines characterized Chinji faunas. Given sets of samples widely spaced in time, small mammals appeared formerly to show evolutionary stasis. The paradigm of a Chinji mammal community with characteristic rodents including a single (or two) small rhizomyines underestimates true diversity and fails to distinguish subtle biotic trends. The greatly expanded fossil record presently available shows more small rhizomyines contributing to the Chinji community, with up to four species present at a single locality. These rhizomyines were early root rats adapted to burrowing and above-ground foraging; a new paradigm must make room for multiple lineages in close proximity. In addition, the greatly expanded data set indicates change in size in some lineages, which can be evaluated with global trends of isotopic change, such as that associated with the end of the mid-Miocene climatic optimum. One may begin to pose paleoecological questions about body size correlated to paleohabitat. The present denser fossil record allows exploration of more complex paleobiological questions than could be approached constructively with limited data.

Poster Session IV (Saturday, October 20, 4:15 - 6:15 pm)

THE OLDEST SCOLECOPHIDIAN SNAKE

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Scolecophidians are primitive, tiny snakes represented by two extant families (Typhlopidae and Leptotyphlopidae) that live mainly in tropical areas. The only European representative of this group is *Typhlops vermicularis* that lives around the Mediterranean Basin. Here we describe two isolated procoelous trunk vertebrae from the early Paleocene locality of Hainin (MP1-5, Belgium). These vertebrae are clearly referable to a scolecophidian because of the following characters: they are 1.5 mm long and 1 mm high and wide; the centrum is narrow and does not bear a central carina; the orientation of the prezygapophyseal facets differs from the orientation of the prezygapophyseal processes; the neural arch is low and does not present a medial notch on its posterior border nor a neural spine.

Fossil scolecophidians can be identified based on their vertebrae but they are not generally considered to be diagnostic to a familial, generic or specific level. However, some characters have recently been proposed to differentiate families according to the shape and placement of the synapophyses, shape of the cotyle, size of the zygosphen, and shape of the prezygapophyseal facets. We thus also discuss these characters in the Belgian Paleocene taxon.

Fossil scolecophidians are known from North America, Europe, Africa and Australia. The oldest representative of this group is known from North Africa in the late Paleocene of Adrar Mgorn (Ouarzazate Basin, Morocco). In Europe, the oldest scolecophidian was identified from the earliest Eocene of the Dormaal locality (MP7, Belgium). The scolecophidian from the early Paleocene of Hainin thus represents the oldest occurrence of this group.

Technical Session V (Wednesday, October 17, 3:15 pm)

LONG-TUSKED ARCHAIC OLIGOCENE ODONTOCETES FROM OREGON AND BAJA CALIFORNIA SUR, EASTERN PACIFIC MARGIN

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Two new species of archaic dolphin from the eastern Pacific represent a new genus of putative basal odontocetes. One is USNM (US National Museum) 205491, of late early Oligocene age (~30 Ma; Alsea Formation, Yaquina River, Oregon), comprising skull, mandibles, teeth, tympanoperiotics and fragmentary postcrania. USNM 205491 has been mentioned in print as a “non-squalodontid”, or an Eocene Eurhinodelphinidae, or an Agorophiidae. The second species is known from a partial skull with one cheektooth and a bulla (Universidad Autónoma de Baja California Sur-UABCS collections) of middle late Oligocene age (~25 Ma; El Cien Formation, La Paz, Baja California Sur). In both, the skull has a prominent narial “snout” separating bilateral facial fossae for nasofacial muscles implicated in high-frequency sound production. Archaic features include parietals exposed

at a prominent intertemporal constriction, anteriorly-placed narial fossa, and premaxilla without a posterolateral fold but with a narrow elongate premaxillary sac fossa. USNM 205491 has long, tusk-like, procumbent anterior teeth, and cheekteeth with wide diastemata, delicate high triangular crowns, and barely-discernable denticles. The rostrum is long and dorsoventrally compressed, with an open mesorostral groove and gracile mandibles in which the large panbone is ventrally inflated. The incomplete feeding apparatus in the UABCS skull is of similar structure. These dolphins lack the highly disparate derived features of near-contemporaneous Xenorophidae and *Simocetus*, and are not clearly close to other Oligocene families such as Waipatiidae, Squalodelphinidae, and Squalodontidae. The rostral/tooth structure in the Oregon and Baja dolphins closely matches those of putative “dalpiazinid” dolphins from the New Zealand Oligocene. The latter, however, are more derived in many cranial features, raising the possibility of homoplasy in the feeding apparatus. New Zealand assemblages have not yet produced Late Oligocene dolphins of archaic grade comparable to those that dominate assemblages from the northeast Pacific.

Technical Session XV (Saturday, October 20, 10:15 am)

A NEW TAXON OF IGUANODONTOID DINOSAUR FROM THE KIRKWOOD FORMATION (VALANGINIAN) OF SOUTH AFRICA BASED ON AN ASSEMBLAGE OF JUVENILE SPECIMENS

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A new taxon of iguanodontoid dinosaur from the Early Cretaceous (Valanginian) Kirkwood Formation, Eastern Cape Province, South Africa, is represented by the disarticulated remains of numerous immature individuals from a single site. Based on non-overlapping parts of left femora, the most numerous element in our sample, at least 27 individuals are present. Complete femora range in length from 18.4 mm to 54.7 mm (n=12), which histological studies demonstrate to be recent hatchlings to young, rapidly growing juveniles lacking secondary osteons. Despite our scattered and disarticulated sample, nearly every element of the skeleton and skull is represented.

All specimens were recovered from a 30 cm thick zone within an upward-coarsening reddish brown, mottled, clay-rich paleosol in a localized area approximately 14 m². The bone-bearing paleosol is overlain by a sandy crevasse-splay deposit suggesting it developed on a flood plain. There is no preferred orientation of elements and only four instances of articulation between elements were noted during excavation and preparation despite the collection of well over 200 individual elements. Although many elements are complete, others exhibit pre-burial breakage and crushing. Immature iguanodontoid elements comprise 96% of all remains at the site; rare turtle shell fragments, fish bones, a sphenodontian braincase, elements from a sub-adult iguanodontoid, and crocodile, theropod, sauropod, and stegosaur teeth also occur. These factors suggest that the site may represent seasonal attrition at or near a nesting area.

A phylogenetic analysis places the new Kirkwood taxon within the Iguanodontoidae, along with *Iguanodon*, *Mantellisaurus*, *Jinzhousaurus*, and others. Characters supporting its inclusion in this clade are marginal denticles of the teeth with mammillated edges and hatchet shaped sternal plates. Although all confirmed specimens of the Kirkwood iguanodontoid are immature, these characters are not known to change through ontogeny, lending confidence to its placement within Iguanodontoidae. This is the first confirmed, well-represented iguanodontoid from sub-Saharan Africa.

Poster Session II (Thursday, October 18, 4:15 - 6:15 pm)

PLEISTOCENE CROCODYLIANS FROM VENEZUELA, AND THE DESCRIPTION OF A NEW SPECIES OF CAIMAN

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The fossil record of post-Miocene caimans is sparse and fragmentary, but caimans have been recovered in many localities all over South America. Here, we present the first crocodylian remains from the Pleistocene of Venezuela, found in the asphalt deposits of El Breal de Orocuá, which is a high diverse mammalian fossil locality. Most of the fossil crocodylians found in this locality are undiagnostic fragments. However, some of them could be either associated to indeterminate Caimaninae of *Caiman* sp. The most important material represents a new taxon which is described on the basis of fragmentary but diagnostic remains. The species is unique among caiman species by the possession of a premaxilla that is twice as long than it is wide in ventral view, with a long contact between the premaxillae posterior to the incisive foramen. The El Breal de Orocuá is one of the most diverse localities in South America, and is probably the most important crocodylian bearing locality from the continent during the Pleistocene.