histology examined. Tissue types and degrees of remodeling are discussed, and growth lines are used to determine ages at time of death of the individuals.

The rate of growth for *Einiosaurus* peaks at about 3-5 years of age, at which time growth slows, suggesting that this may be the age that reproductive maturity is reached. The nature of the bone tissue suggests that growth in *Einiosaurus* is still relatively rapid in even the largest specimens, indicating that a fully adult tibia has not been recovered from the studied bonebed, and this bonebed is biased toward juveniles and subadults. Since the bonebed is a snapshot of a standing herd, population dynamics of *Einiosaurus,* such as survivorship and behavior, are assessed. This information on growth dynamics and life histories of a species has implications for future taxonomic resolution and morphometric studies of ceratopsid dinosaurs, and marks the first study on population histology of a large-bodied herbivorous dinosaur.

Poster Session I (Wednesday, October 17, 4:15 - 6:15 pm)

USING SCANNING ELECTRON MICROSCOPY TO RECONSTRUCT FEEDING ECOLOGY IN GROUND SLOTHS

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Understanding the paleoecology of extinct xenarthrans, such as ground sloths, is complicated because they lack modern ecological analogues. Previous studies have applied functional morphology and biomechanical analyses to reconstruct the diet and lifestyle of ground sloths, yet the application of dental microwear as a proxy for feeding ecology in extinct xenarthrans remains understudied. Here, we hypothesize that dental microwear patterns can be used to reconstruct dietary niche partitioning among extinct ground sloths, thereby providing new evidence of feeding ecology in these animals. In this study, 17 second molariforms from 5 taxa [*Megalonyx*, *Acratocnus*, *Thinobadistes*, *Octodontotherium*, *Hapalops*] were molded and cast for dental microwear analysis. Using scanning electron microscopy, two non-overlapping digital images of microwear on the occlusal surface of each tooth were captured at 500x magnification. In a blind study, each image was independently analyzed using the semi-automated software package, Microwear 4.02, which allows microwear features to be digitally counted and measured. To examine the reproducibility of results, both intra- and interobserver error in microwear feature recognition was statistically assessed for two independent observers. As a baseline for reconstructing paleodiet, ground sloth microwear patterns were directly compared to microwear from living tree sloths and armadillos, which were analyzed in a separate study using the same experimental design. Results suggest that ground sloths can be statistically differentiated based on a combination of the number of scratches and width of features. Number of scratches and feature width suggest that *Megalonyx* and *Thinobadistes* form the ends of the browser-grazer spectrum, respectively. Additionally, *Acratocnus* and *Octodontotherium* are here predicted to be mixed feeders, while *Hapalops* appears to be a grazer. These results support scanning electron microscopic analysis of dental microwear as a tool for reconstructing paleodiet in ground sloths. Further investigation should focus on South American ground sloths to allow direct comparison with other methods of dietary reconstruction.

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

CHRONOLOGY OF THE LATE JURASSIC DINOSAUR FAUNAS, AND OTHER REPTILIAN FAUNAS, FROM PORTUGAL

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The chronostratigraphy of Late Jurassic vertebrates from Portugal, including those from the Lourinhã Formation, which is known for its rich vertebrate fauna, is poorly understood due to the continental nature of the sediments and the diachrony of the lithostratigraphic units. Recent results using $Sr^{87/86}$ isotopes confirmed the position of the Kimmeridgian-Tithonian boundary (150.8 Ma) in the Lusitanian Basin central sector. This boundary, within a marly layer representative of the more southernly limestone Farta Pão Formation, lies within the siliciclastic Lourinhã Formation and is assumed to be the transgressive upper Kimmeridgian -lower Tithonian event. The most productive vertebrate-bearing Upper Jurassic formations in Portugal are: the Alcobaça Formation, Lourinhã Formation (divided into the Amoreira-Porto Novo, Sobral, Bombarral, and Freixial (pars) members), and the Porto da Calada Formation.

The chronological range (given by biostratigraphy, eustatic curves, general regional context, and calibrated by strontium isotope curves) for important Portuguese specimens of chelonians, pterosaurs, dinosaurs, crocodylomorphs, and other reptilians is as follows:

Early (to late?) Kimmeridgian (Alcobaça Beds Formation): *Theriosuchus guimarotae*, *Machimosaurus hugii*, *Goniopholis baryglyphaeus*, *Lusitanisuchus mitrocostatus*, *Phyllodon henkeli*, *Parviraptor estesi*, *Marmoretta* sp., *Aviatyrannis jurassica.*

Late Kimmeridgian (Lourinhã Formation, Amoreira-Porto Novo Member): *Selenemys lusitanica*, *Plesiochelys* sp., *Cteniogenys reedi*, *Lusitanisuchus mitrocostatus*, *Rhamphorhynchus* sp., *Dracopelta zbyszewskii*, *Miragaia longicollum*, *Trimucrodon cuneatus*, *Camptosaurus aphanoecetes*, *Dinheirosaurus lourinhanensis*, *Turiasaurus* sp., *Ceratosaurus nasicornis*, *Torvosaurus* aff. *tanneri.*

Around the Kimmeridgian/Tithonian boundary (Sobral Member): *Selenemys lusitanica*, *Plesiochelys* sp., *Machimosaurus hugii*, *Rhamphorhynchus* sp., *Lourinhanosaurus antunesi*, *Lusotitan atalaiensis*, *Lourinhasaurus alenquerensis*, *Dryosaurus* sp., cryptoclidid plesiosaur.

Early Tithonian (Sobral Member): *Plesiochelys* sp., *Miragaia longicollum*.

Upper early Tithonian (Bombarral Member): *Plesiochelys* sp., *Allosaurus europaeus*, *Draconyx loureiroi*, *Stegosaurus* sp.

Late Tithonian (Freixial Member): *Plesiochelys* sp., *Theriosuchus* sp. B, Ornithopoda sp. B.

Around the Tithonian/Berriasian boundary (Porto da Calada Formation): *Stegosaurus* sp.

Despite the fragmentary occurrences of certain taxa, the chronology of some vertebrates seem to be age-restricted, and can thus be used for biostratigraphy. There is a peak of vertebrate fossil diversity and abundance near the Kimmeridgian/Tithonian boundary and a decline towards the end of the Tithonian. Is not yet understood if such trend represents true diversity/abundance in the Jurassic or if it is caused by any geologic and taphonomic bias.

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

CHONDRICHTHYANS IN THE CARBONIFEROUS OF THE BRITISH DERBYSHIRE PEAK DISTRICT

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Productive Carboniferous marine deposits are found worldwide, including sites in North America, Poland, Russia, Belgium, Iran and Britain. Recent work in the Derbyshire Peak District of Britain has established a diverse chondrichthyan fauna, comparable with the rich diversity already well documented in North American sites. Derbyshire is already known for a typical and varied invertebrate fauna. Additionally, the vertebrae and scales of palaeoniscid actinopterygians have been recorded and previous reports of the Derbyshire chondrichthyans documented twenty five species, with recent publications adding a further seven species.

In this study, limestone material representing four localities was collected. Two of these have been documented to contain chondrichthyan remains and two are unreported localities, all localities are within ten km of each other. The material was acid digested and mechanically prepared and the micro and macro fossils were recorded. The microfossils typically consist of teeth, scales and dermal denticles, the macrofossils include teeth, a large fin spine and also, in the two new localities, a variety of skeletal material ranging from partially articulated to fragmented. The skeletal material includes several jaws, endocranial material, a scapulacoracoid and a probable pelvic fin arrangement including a clasper attributed to *Akmonistion zangerli*. The microfossils recovered and identified increase the known diversity of the Derbyshire palaeoenvironment by at least 9 taxa, including several taxa unknown from Derbyshire, such as *Akmonistion zangerli*, *Harpacodus dentatus*, *Heslerodus divergens* and *Mesodmodus*, or Europe, such as *Belantsea montana*, *Bransonella nebraskensis* and *'Denea wangi'*. Our data show that chondrichthyan microremains dominated three of the four near-shore sites- chondrichthyans represent two thirds of all microremains in the combined localities- and that the Derbyshire localities share many taxa with the localities in North America, such as *Bransonella nebraskensis*, *Heslerodus*, *Fissodus*, *Leiodus* and *Squatinactis*; and with localities across Europe, such as *Akmonistion zangerli*, *Denea*, *Thrinacodus*, *Petrodus* and *Orodus*. The data collected from a short sequence of cyclical beds within one of the localities expose faunal change on a shorter timescale. The persistent occurrence of particular taxa such as *Denea*, *Squatinactis*, *Harpacodus*, *Petrodus* and *Bransonella nebraskensis*, through the different localities reflects a close palaeoecological relationship between the study sites. We use data from existing boreholes in order to assess the relative importance of the temporal and spatial relationship between the localities.

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

LATE PLEISTOCENE GIANT BEAVERS: THE PARALLEL EVOLUTION OF GIANT SIZE AND RIDGED ENAMEL IN TWO SPECIES

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Skulls of two similar, but morphologically distinct, giant beavers from the late Pleistocene were studied using high resolution cone-beam computed tomography (CT). One specimen is from eastern Kansas and is assigned to *Castoroides ohioensis.* The other specimen is from the Cooper River of South Carolina and is currently assigned to *Castoroides leiseyorum.* The basicranium of *C. ohioensis* is characterized by a unique ladle-shaped depression in the basisphenoid bone called the mesopterygoid fossa. This unusual morphology is similar to that of the Pliocene beaver, *Procastoroides sweeti,* from the Broadwater Formation of Nebraska; however, the skull of *P. sweeti* is much smaller and the enamel of its incisor teeth do not have the ridges characteristic of late Pleistocene species. The late Pleistocene specimen referred to *C. leiseyorum* lacks a mesopterygoid fossa as does the early Pleistocene material from the type locality (Leisey Shell Bed), although the holotype is much smaller. Despite their differences, both late Pleistocene beavers are characterized by a choana that is divided into dorsal and ventral passages, a feature unique among mammals. In both