The Bulletin of the Museum of Natural History of the University of Oregon is published to increase the knowledge and understanding of the natural history of Oregon. Original articles in the fields of Archaeology, Botany, Ethnology, Geology, Paleontology, and Zoology appear irregularly in consecutively numbered issues. Contributions arise primarily from the research programs and collections of the University of Oregon Museum of Natural and Cultural History. However, in keeping with the basic purpose of the publication, contributions are not restricted to these sources and are both technical and popular in character.

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Volume editor—Edward B. Davis
Technical editor—Amanda W. Peng
Hemphillian Dalles Group of northeast Oregon has yielded a spectacular skull of \textit{Barbourofelis oregonensis} and potentially diagnostic dental fragments of \textit{Machairodus}, as well as a wealth of impressive but uninformative postcrania. A previously unreported specimen from the Clarendonian Chalk Hills Formation of Idaho represents the first known occurrence of \textit{Nimravides} in the region. The specimen (IMNH 38696) consists of an associated maxillary fragment, left dentary, and distal humerus. The dentary allows the specimen to be diagnosed as \textit{Nimravides} due to the conical shape of the canine and the lack of a mandibular flange. Not only does this indicate a greater diversity of "big cats" in the region than had previously been recognized, but the rare association of dental material and a humerus may make it possible to more accurately identify feliforms from localities dominated by postcranial material.

A NEW \textit{ENALIARCTOS} (MAMMALIA, CARNIVORA, PINNIPEDIMORPHA) RECORD FROM THE ASTORIA FORMATION OF OREGON

PENG, Amanda W., University of Oregon, Eugene, OR, United States of America; TATE-JONES, Kellum, Eugene, OR, United States of America; HOPKINS, Samantha S. B. Eugene, OR, United States of America;

\textit{Enaliarctos} is a genus of stem pinniped that is often recovered as the most basal member of the pinnipedinorphs. This genus has previously been diagnosed as a metataxon, as there are no synapomorphies which unite all 5 species within it. This has historically been a point of interest among workers. Here, we consider a new specimen: a nearly complete and edentulous skull infilled significantly with a well-indurated and muddy sandstone from the Astoria Formation of Moolack Beach, Oregon. Given several characteristics of the visible morphology, including the termination of the jugal anterior to the M1, a “splint”-like squamosal-jugal contact, and a homodont postcanine dentition, we tentatively assign this specimen to \textit{Enaliarctos emlongi}, a derived member of the \textit{Enaliarctos}.

RANCHO CÓRDova: A LATE PLEISTOCENE-HOLOCENE SITE FROM THE STATE OF SAN LUIS POTOSI, MÉXICO

PEREZ-ROLDAN, Gilberto, Universidad Autónoma de San Luis Potosí, México; MILLER, Wade E., Brigham Young University, Provo, UT, United States of America; GOMEZ-NUNEZ, Rosario, Museo del Desierto, Saltillo, Coahuila, México; TORRES-ROLDAN, Victor, Independent Researcher, Cuernavaca, Morelos, México and MADRAZO-FANTI, Jorge, Universidad Autónoma de Nuevo León, Monterrey, Nuevo León, México.

It is not common to have an archaeological site superimposed on a Late Pleistocene one, especially where several C-14 ages have been determined for both. However, this condition occurs near the city of Cedral in the state of San Luis Potosí, México. Discovery of the Rancho Córdova site came about in December of 2016. At that time Juan Rojas, an amateur collector from the city of Matehuala, discovered a mammoth rib and vertebra. Later this find came to the attention of archaeologists at the Universidad Autónoma de San Luis Potosí. Subsequent field work at Rancho Córdova revealed archeological as well as additional fossil materials. To date more than 120 days of fieldwork have been spent collecting both Holocene artifacts and Late Pleistocene fossils by professional archaeologists and paleontologists. The above site lies primarily in a roughly circular depression about 25m across and 5m deep. It exists on a regional plateau known as the “Zona del Altiplano Potosino.” This plateau measures approximately 1,700m in elevation. The site location is about 2km east, southeast of the city of Cedral. A preliminary geological study of this site and its surrounding area showed a series of ancient spring deposits. Wells were dug in modern times at or near old spring sites for water to cultivate the land. With a lowering of the water table the earlier springs no longer exist. The ancient spring deposits are those that contain the discovered fossils and artifacts. While some mudstone units make up part of the exposed beds, the major ones are forms of tufa. All the exposed strata to a depth of 5m exhibit a very high calcareous content. The strata in evidence here apparently extend unbroken for at least 2km beyond Rancho Córdova in all directions, implying a probable shallow lake in the area at times. At other times the water receded and a vegetated land surface developed. The lowest exposed stratum at Rancho Córdova is a calcareous mudstone. Its surface, directly underlying a thick tufa deposit, shows signs of a paleosol. Mudstone stringers, some with very thin carbon seams, exist within this tufa. These possibly represent burned zones and would have developed with vegetation covering the land surface. Small pieces of carbon and carbonized wood fragments occur throughout all the strata from Holocene through exposed Pleistocene deposits. Several samples of these have been dated using a C-14 AMS method. While results have not yet been obtained for all samples submitted, dates have come back for five. From oldest to youngest the determined ages run from 41,000+/- 1,300 ybp to 1,647+/- 57 ybp. Archaeological items so far viewed or recovered to date include projectile points made of various rock materials with abundant flakes present, tools also of various materials, carved and polished limestones as well as ceramics and matates. Some few pieces of ivory appear to have been worked by man which presumably came from mammoth tusks. Portions of some animal bone show indications of working by man, too. Also occurring with the artifacts are pieces of burned and unburned wood. Additionally, seeds of various types seem to be associated with the group of primitive hunter-gatherers responsible for the artifacts listed. Various animals are represented by their bones and teeth in the Holocene deposits along with the artifacts. Preliminary studies show the following
types: an anuran, mud turtle, lizard, two kinds of ducks, quail, hawk, three kinds of rabbit, eight types of rodents, wolf and coyote, mountain lion, peccary, deer, and sheep. Other animals, those associated with modern man and found in surficial deposits, include domestic pig, cattle, sheep and goat. A piece of bone from a domestic goat jaw was dated at 210+/− 30 ybp. Pleistocene fossils found at the Rancho Córdova site to date consist of dog, bear, very large felid, mammoth, rabbit, rodents, probably more than one species of horse, tayassuid, two kinds of camels, possibly more than one type of bison and a goat. Dry screening produced many of the Holocene materials and some of the Pleistocene fossils. This work will be continued as deposits at Rancho Córdova likely will produce many more artifacts as well as more fossils. Although the sample size is still relatively small regarding Pleistocene fossils, present counts show that mammoth and horse provide the majority of large mammals present. According to the literature this apparently holds true for the majority of Pleistocene sites throughout Mexico. Sediments at Rancho Córdova indicate a wetter environment for this area than exits at present. The fauna, too, implies more moisture. Probably the surrounding terrain was composed of grasslands with scattered woods.

OREGON HAS TWO DINOSAURS

RETALLACK, Gregory J., University of Oregon, Eugene, OR, United States of America

Before October 2018, there were no confirmed dinosaurs from the state of Oregon, but by the end of that month there were two. One of these is a toe bone of a large (5.1 m long and 678 kg live weight) ornithopod from near Mitchell, Oregon, found by Greg Retallack. Associated ammonites give a very precise age of 103 Ma (early Albian, Early Cretaceous), and also indicate that it was from a disintegrating carcass that drifted out into the ocean. The Mitchell ornithopod is a pedal phalanx lacking collateral pits and girdling sulcus of most dinosaur toe bones, but has lateral lappet basins like large ornithopod dinosaurs. The age of the Oregon toe bone is between that of well-known Tenontosaurus and Eolambia from Utah and Wyoming. Associated fossil plants in the same marine shales are evidence of a coastal redwood forest like that of modern Redwoods National Park. A further similarity with Northern California today, are the gravelly sediments of shingle beaches and alluvial fans from nearby sea cliffs. A second report in October was a sacrum of an equally large ornithopod from marine sandstone of Cape Sebastian, found along with ammonites and inoceramids dated to about 74 Ma (late Campanian, Late Cretaceous). This specimen was first discovered in 1969 by Don Savage of Berkeley, and collected in 1994 by David Taylor, but preparation from its very hard matrix was completed recently. It has eight co-ossified vertebrae, an undulose iliac bar, and tall strut-like sacral ribs fused centrally to the centra. The most similar known sacra are those of hadrosaurine duckbills of the genus Kritosaurus. Associated fossil leaves are evidence of broadleaf forest flanking shallow marine or shore-face sandstones of a low gradient coastal plain.

UPDATING THE LATEST CRETACEOUS VERTEBRATE DIVERSITY RECORDS AND PALEOENVIRONMENTAL INTERPRETATIONS PRIOR TO THE K/Pg BOUNDARY, HELL CREEK FORMATION, NORTH DAKOTA

SANKEY, Julia, California State University Stanislaus, Turlock, CA, United States of America

Much of our understanding about latest Cretaceous paleocommunities from just prior to the K/Pg mass extinction come from the Hell Creek and Lance formations of Montana, Wyoming, and North and South Dakota. One important study documented the numbers of vertebrate species leading up to the K/Pg boundary based on numerous sites from the Hell Creek Formation of southwestern North Dakota. Although insightful, this work was based solely on specimens that were surface collected or excavated, and not from screen-washing microvertebrate sites. Were small specimens missed, such as shark teeth? Do these smaller specimens change the pre-K/Pg diversity patterns and the paleoenvironmental interpretations? To address these questions a selection of 12 microvertebrate sites were screen-washed from the same stratigraphic section. We used fine-mesh screens, and sorted the resulting matrix with a microscope. This work produced thousands of small specimens (teeth and bones) from numerous and diverse vertebrates, many of which had been missed by surface collecting. For example, screen-washing two sites (PTRM 86002 and 89003) produced sharks and rays (79%), amphibians (5%), lizards (2%), snakes (0.2%), crocodilians/champosaurs (7%), hadrosaurs/ceratopsians (2%), theropods/birds (2%), and mammals (3%). Sharks and rays were the most common specimens recovered from screen-washing these two sites, yet they were missed during surface collection. Our screen-washing effort has changed the vertebrate diversity record leading up to the K/Pg and also has changed the paleoenvironmental interpretations for the upper Hell Creek Formation, indicating the proximity a seaway in this area.

IMPLIED VOCALIZATION BASED ON THE MORPHOLOGY OF THE HYOID APPARATUS IN THE SABERTOOTHED CAT, SMILODON FATALIS (MAMMALIA; FELIDAE; MACHERODONTINAE) FROM RANCHO LA BREA, LOS ANGELES, CALIFORNIA

SHAW, Christopher A., Idaho Museum of Natural History, Pocatello, ID, United States of America, La Brea Tar Pits and Museum, Los Angeles, CA, United States of America; Natural History Museum of Los Angeles County, Los Angeles, CA, United States of America