A NEW PARTIAL SKELETON OF *LEPTOCERATOPS GRACILIS* FROM THE LANCE FORMATION OF WYOMING, U.S.A.

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**ABSTRACT**

Leptoceratops is a primitive ceratopsian dinosaur known only from the latest Cretaceous units of Montana, Wyoming, and Alberta, Canada. This genus includes only one species, *L. gracilis*, and is characterized by its small stature, diminutive frill, and lack of horns. *Leptoceratops* remains rare, as only eight confirmed specimens are currently reported, three of which lack postcranial material.

Here we describe NJSM 24228, a new partial skeleton of *L. gracilis* discovered within the Lance Formation in the northern Bighorn Basin in Park County, Wyoming. All recovered elements were closely associated and include facial and cranial material, the occipital condyle with a basipterygoid process, a partial predentary, fragmented rostrum, and costal elements. Additionally, a humerus, radius, and partially articulated manual and pedal elements are particularly complete and well-preserved. The specimen is identified as *L. gracilis* based on a diagnostic series of teeth with unfurcated roots, as well as a deep, truncated rostrum and elongate predentary.

These well-preserved remains provide an important opportunity for insight into this rare neoceratopsian. In addition to helping us answer crucial questions regarding the anatomy and phylogenetic position of *L. gracilis* within the Ceratopsidae, NJSM 24228 has much more to tell us about the paleogeography and paleoecology of the genus. This is only the second specimen of *L. gracilis* reported from the Lance Formation and the first to be recovered from silty shale matrix indicative of overbank deposits.

**Discover & Locality**

In 2014, NJSM 24228 was found in Liancan, Late Cretaceous deposits of the Northern region of the Bighorn Basin in Park County, Wyoming. The skeletal components were closely associated upon discovery. This matrix composition is representative of overbank deposits, suggesting the occurrence of a perimortem flood. There is currently a total of 8 confirmed *L. gracilis* specimens and NJSM 24228 is the first and only individual that has been discovered within a silty shale matrix.

Known *L. gracilis* specimens and their lithologies:

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<thead>
<tr>
<th>Specimen</th>
<th>Formation</th>
<th>Locality</th>
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<tr>
<td>UWGM 500</td>
<td>Hell Creek Formation</td>
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<td>ANM 2525</td>
<td>Scollard Formation</td>
<td>Edmonton Group, Alberta, Canada</td>
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<tr>
<td>AMNH 2071</td>
<td>Powder Conglomerate</td>
<td>western Wyoming</td>
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**Post-Cranial Elements**

- Humerus (L)
- Radius (R)
- Costal Elements
- Manual & Pedal Elements

**Conclusion**

A new *L. gracilis* specimen, NJSM 24228, collected in 2013 and 2014 by the Bighorn Basin Dinosaur Project, is one of only six specimens containing postcranial skeletal elements, and the first specimen to be collected from a matrix composed of silty shale. The specimen was identified as *L. gracilis* based on unfurcated roots, truncated rostrum, and a partial elongate predentary. Additional skeletal material includes both complete and partial elements from the skull, thorax, and extremities.

NISM 24228 is composed of both cranial and post-cranial elements, closely associated and partially articulated, and lacking indications of predation. In addition, the matrix in which the remains were found is highly suggestive of an overbank deposit. Therefore, a perimortem flood cannot be ruled out as a possible event that caused rapid burial or even the death of the animal.

**References**


**Acknowledgements**

The authors would like to thank Dr. Ted Gilmore of the Academy of Natural Sciences in Philadelphia for his assistance. The discovery of the specimen by Linda Fitzgerald in 2013 deserves recognition as well, as do the 2013 & 2014 Bighorn Basin Dinosaur Project field teams for the excavation of NJSM 24228.