

Diversity of late cretaceous dinosaurs from Mexico

A. A. Ramírez-Velasco⁽¹⁾ and R. Hernández-Rivera⁽²⁾

(1) Posgrado Facultad de Medicina Veterinaria y Zootecnia, Universidad Nacional Autónoma de México, Circuito de Investigación Científica, Ciudad Universitaria. Delegación Coyoacán, México Distrito Federal, 04510.

(2) Departamento de Paleontología, Instituto de Geología, Universidad Nacional Autónoma de México, Circuito Exterior, Ciudad Universitaria. Delegación Coyoacán, México Distrito Federal, 04510.
angelalegandro@gmail.com

ABSTRACT

For many years the diversity of dinosaurs of Mexico during the Late Cretaceous has been poorly understood. This is due to the limited taxonomical determinations and the abundant undescribed material. This paper presents a new review of the up-to-date osteological record of Late Cretaceous dinosaurs from Mexico, based on published papers, unpublished data and direct observation of the material housed in Mexican paleontological collections and in the field. Some diagnostic dinosaur bones were taxonomically reassigned and others reported in the literature were located in collections. We document new localities with dinosaur remains in Fronteras Sonora, Manuel Benavides and Jiménez Chihuahua, General Cepeda and Saltillo Coahuila. Additionally we report new material relating to tyrannosaurids, ornithomimids, ankylosaurs, ceratopsids and hadrosaurids which extends their geographic and temporal distribution in Mexico. This investigation has revealed a dinosaur faunal assemblage consistent with others studies of North American Late Cretaceous faunas, abundant large bodied dinosaurs and poorly represented small dinosaurs. The lack of oviraptorosaurs, lepoceratopsids and thescelosaurids suggests the need to develop new method in the search for small-dinosaurs in order to gain a more complete picture of dinosaur communities in Mexico and North America during the Late Cretaceous.

Keywords: dinosauria, Mesozoic, osteology, taxonomy.

Diversidad de dinosaurios del Cretácico Tardío de México

RESUMEN

Desde hace años, la diversidad de dinosaurios de México durante el Cretácico Tardío ha sido poco conocida. Esto se debe a la escasez de determinaciones taxonómicas y al abundante material no descrito. En este trabajo se presenta una nueva revisión actualizada del registro osteológico de los dinosaurios del Cretácico Tardío de México, con base en los trabajos publicados, datos no publicados y la observación directa del material que se encuentra en colecciones paleontológicas mexicanas y en campo. Algunos huesos diagnósticos fueron reasignados taxonómicamente y el material reportado en la literatura fue localizado en las colecciones paleontológicas respectivamente. Se documentan nuevas localidades con restos de dinosaurios en Fronteras, Sonora, Manuel Benavides y Jiménez, Chihuahua, General Cepeda y Saltillo, Coahuila. Además se informa de nuevo material de tiranosáuridos, ornitomímidos, anquilosaurios, ceratópsidos y hadrosáuridos, aumentando su distribución geográfica y temporal en México. Esta investigación ha puesto de manifiesto un conjunto faunístico de dinosaurios mexicanos en concordancia con otros estudios sobre las faunas de dinosaurios en América del Norte, durante el Cretácico tardío, caracterizados por abundantes dinosaurios grandes (hadrosáuridos, tyrannosáuridos, ornithomímidos y ceratópsidos) y pobremente representados dinosaurios pequeños. La falta de oviraptorosaurios, lepoceratópsidos y thescelosáuridos sugiere la necesidad de desarrollar nuevas metodologías en la búsqueda de dinosaurios pequeños con el fin de obtener una visión más completa de las comunidades de dinosaurios de México y de toda América del Norte durante el Cretácico Tardío.

Palabras clave: dinosauria, Mesozoico, osteología, taxonomía.

VERSIÓN ABREVIADA EN CASTELLANO

Introducción

Actualmente existe un gran interés por conocer la diversidad de dinosaurios de México, para el entendimiento de los patrones paleobiogeográficos del oeste de Norteamérica durante el Cretácico Tardío. Los restos óseos de dinosaurios han sido colectados en varias localidades, documentados en artículos, resúmenes y tesis. Sin embargo, las pocas determinaciones taxonómicas y el abundante material sin describir, obscurecen la diversidad de dinosaurios mexicanos.

Weishampel, (1990), Rodríguez-de la Rosa y Cevallos-Ferriz (1998), Weishampel et al. (2004), así como Rivera-Sylva et al. (2006) presentaron las primeras listas de los dinosaurios de México, sin mencionar a detalle el material existente. Ellos reconocieron a los tyrannosáuridos, ornitomímidos, dromaeosáuridos, troodontidos, titanosaurios, ankylosaurios, ceratópsidos y hadrosáuridos. Recientemente Rivera-Sylva y Carpenter (2014a, 2014b) presentaron una nueva revisión agregando a los paquicefalosáuridos, los maniraptorina y los hadrosauroides. Desafortunadamente no se menciona gran parte del material alojado en las colecciones nacionales, privadas e internacionales.

El propósito de este estudio es actualizar el registro osteológico de los dinosaurios del Cretácico de México, utilizando los artículos publicados, resúmenes, tesis y observaciones directas del material alojado en las colecciones y en campo.

Revisión sistemática de los dinosaurios del Cretácico mexicano

Theropoda

Los restos de terópodos sin determinar se conocen de Baja California, Chihuahua, Coahuila y Michoacán. Hilton (2003) reporta varios dientes asignados a Carnosauria y Ramírez-Velasco (2009) asigna material poscraneal a Tetanurae y Ceratosauria. Este material requiere de una descripción formal.

Coelurosauria

Los coelurosaurios provienen de Baja California, Coahuila y Chiapas. Dientes aislados han sido asignados a cf. Chirostenotes (Hilton, 2003), Ricardoestesia isosceles (Carbot-Chanona and Rivera-Sylva, 2011; Romo de Vivar, 2011) y R. gilmorei (Aguillón-Martínez, 2010; Romo de Vivar, 2011). A partir del estudio de Larson y Currie (2013), se sugiere que los dientes asignados a Ricardoestesia representen distintos taxa con afinidad filogenética a este género.

Tyrannosauridae

Los tiranosáuridos provienen de Baja California, Sonora, Chihuahua, Coahuila y probablemente de Michoacán. Usualmente representados por dientes aislados, solo Labocania anomala (Molnar, 1974) se conoce por material craneal y poscraneal asociado. Algunos dientes se han asignado a cf. Albertosaurus (Lucas et al., 1995) y Aublysodon (Ford and Chure, 2001), sin embargo su asignación se considera inválida por los nuevos descubrimientos al sur de Norteamérica (Loewen et al., 2013).

Ornithomimidae

Los ornitomímidos se conocen de Baja California, Sonora y Coahuila. El material poscraneal aislado ha sido asignado a Struthiomimus altus (Torres-Rodríguez, 2006) y cf. Ornithomimus (Aguillón-Martínez, 2010), los cuales representan géneros del norte de Norteamérica, poniendo en duda su asignación. Aguillón-Martínez (2010) asigna el material CPC 16/237 a una nueva especie "Saltillomimus altus", la cual requiere de una descripción formal para su validez como nuevo taxón.

Dromaeosauridae

Los dromaeosáuridos provienen de Baja California y Coahuila. Los dientes aislados han sido asignados a

Dromaeosaurus sp. (Aguillón-Martínez, 2010), *Saurornitholestes langstoni* (Monroy-Mújica, 2009; Torres-Rodríguez et al., 2010), *S. sp.* (Aguillón-Martínez, 2010; Torres-Rodríguez et al., 2010; Romo de Vivar, 2011), *S. sp?* A (Torres-Rodríguez et al., 2010), *S. sp?* C (Monroy-Mújica, 2009; Torres-Rodríguez et al., 2010) y cf. *Saurornitholestes* (Hilton, 2003). De acuerdo a Larson y Currie (2013) es muy arriesgada la asignación de especies a partir de dientes sin la asociación de material óseo, por lo cual podrían representar distintos taxa.

Troodontidae

Los troodontidos provienen de Baja California y Coahuila. Sus dientes aislados han sido asignados a *Troodon sp.* (Torres-Rodríguez et al., 2010; Aguillón-Martínez, 2010) y cf. *Troodon formosus* (Romo de Vivar, 2011). Los nuevos descubrimientos de troodontidos sureños (Zanno et al., 2011) y la posibilidad de que *Troodon formosus* represente en realidad dos taxa distintos (Paul, 2010), sugieren que el material mexicano pertenezca a distintas especies.

Avialae

Los Avialae provienen de Baja California y Coahuila, representados por material poscraneal. El más completo nombrado como *Alexornis antecedens*.

Titanosauria

Los titanosauria están representados por material poscraneal incompleto y muy desgastado, colectados en Chihuahua. De acuerdo a D Emic et al., (2010), las vértebras referidas a titanosauria por Montellano-Ballesteros (2003), no presentan rasgos diagnósticos diferenciales de un saurópodo o un hadrosaurio. De acuerdo a ello, sugiere que el material referido a Titanosauria del Campaniense de norteamérica, probablemente esté mal identificado.

Ankylosauria

Los anquilosaurios provienen de Baja California, Chihuahua y Coahuila. Se conocen a partir de osteodermos aislados y un diente. Solo el nodosaúrido CPC 272 y 273 se conocen por osteodermos asociados a elementos poscraneales (Rivera-Sylva et al., 2011). Martínez-Díaz (2011) asignó un osteoderma a cf. *Panoplosaurus* y Rivera-Sylva y Carpenter (2014b) sugirieron tentativamente a *Edmontonia* el ejemplar CPC 273. Arbour y Currie (2013) al separar a *Euoplocephalus tutus* en cuatro taxa distintos, pone en tela de juicio la asignación de taxa a partir de material asociado y fragmentario.

Pachycephalosauridae

Rivera-Sylva et al., 2010 menciona un diente aislado proveniente de Coahuila. La corona dental al presentar rasgos inusuales en los pachycephalosauridae (Brown y Schlaikjer, 1943; Bakker et al., 2006), apunta a que podría pertenecer a una nueva especie o algún *Ornithischia* indeterminado.

Ceratopsidae

Los ceratópsidos provienen de Baja California, Sonora, Chihuahua y Coahuila. El material asociado se conoce de *Coahuilaceratops magnacuerna* (Loewen et al., 2010), cf. *Chasmosaurus* (Ojeda-Rivera et al., 1968), del chasmosaurino CPC 278 (Loewen et al., 2010) y los centrosaurinos de Ocampo (Rivera-Sylva et al., 2011) y *Aldama* (Rivera-Sylva and Carpenter, 2014b).

Rivera-Sylva y Carpenter (2014b) reasignan el material MB.R 1926 a un hadrosaurio, sin embargo, los rasgos que se mencionan presentan mayor semejanza con los huesos pélvicos de un ceratópsido. Rivera-Sylva y Carpenter (2014b) mencionan dos esqueletos de chasmosaurinos exhibidos en el Museo del Mamut de Chihuahua. Uno de ellos presenta rasgos craneales semejantes a *Nasutoceratops* (Sampson et al., 2014), por lo que se le considera como probable centrosaurino. Murray et al., (1960) identifican a *Monoclonius*, sin embargo la falta de ilustraciones no permite hacer comparaciones. El material asignado a *Agujaceratops*

mariscalensis (Andrade-Ramos et al., 2002; Andrade-Ramos, 2003; Rivera-Sylva and Carpenter, 2014b), al colectarse dentro de la misma formación que el holotipo, presenta mayor seguridad en su asignación. Los restos asignado como cf. *Chasmosaurus* (Ojeda-Rivera et al., 1968) podría representar un taxa distinto, a partir de la separación de *Chasmosaurus* en distintos géneros (Sampson et al., 2010).

Hadrosauroidea

Los hadrosauroideos basales provienen de Michoacán. Se conocen a partir de material asociado craneal y poscraneal descritos como *Huehuecanauhtlus tiquichensis* (Ramírez-Velasco et al., 2012). Mariscal-Ramos (2003) y Ramírez-Velasco (2009) mencionan otros restos poscraneales aislados de la misma área que podría representar otros individuos de *H. tiquichensis* o a otro taxa.

Hadrosauridae

Los hadrosáuridos provienen de Baja California, Sonora, Chihuahua y Coahuila. Los esqueletos más completos se han descrito como *Magnapaulia laticaudus* (Morris, 1981; Prieto-Márquez et al., 2012), *Velafrons coahuilensis* (Gates et al., 2007), *Latirhinus uitstlani* (Prieto-Márquez and Serrano-Brañas, 2012) y a un saurolophinae no nombrado de Sabinas (Kirkland et al., 2006; Prieto-Márquez, 2013). Ramírez Velasco y colaboradores (2014) propone la reasignación de *L. uitstlandi* como lambeosaurino, a partir de rasgos morfológicos y de su asociación con material de lambeosaurinos en la misma cantera. Los saurolofinos asignados como *Kritosaurus navajovius* (Serrano-Brañas, 2006; Kirkland et al., 2006; Prieto-Márquez, 2013), *Kritosaurus* sp. (Westgate et al., 2002b) y cf. *Kritosaurus* (Rivera-Sylva et al., 2009b) podrían representar taxa distintos, ya que *Kritosaurus* solo se conoce de formaciones de Nuevo México (Paul, 2010).

Discusión y conclusiones

En general, el registro fósil de dinosaurios mexicanos coincide con las faunas de dinosaurios de Norteamérica, con abundantes taxa de gran tamaño como tiranosáuridos, hadrosáuridos y ceratópsidos y en menor abundancia los pequeños dromeosáuridos, troodontidos y pachycephalosáuridos. Destaca la presencia de abundantes ornitomímidos en México.

Según Holtz Jr. et al. (2004), Zanno y Sampson (2005), Ryan et al. (2012), Brown et al. (2013) y Evans et al. (2013), las faunas norteamericanas estaban representadas por una diversidad subestimada de pequeños dinosaurios pertenecientes a los Oviraptorosauria, Thescelosauridae, Pachycephalosauridae y Leptoceratopsidae. Su rareza en el registro fósil de toda Norteamérica se debe a la mayor susceptibilidad de los pequeños huesos a la destrucción por los carnívoros, la fragmentación a través de la bioturbación y a procesos erosivos (Evans et al., 2013). Esto pone de manifiesto la necesidad de desarrollar nuevas metodologías para la búsqueda de dinosaurios pequeños con el fin de obtener una visión más completa de las comunidades de dinosaurios en México y Norteamérica.

Introduction

There is a considerable interest in the diversity of dinosaurs from Mexico for the better understanding of the paleobiogeographic patterns of western North America during the Late Cretaceous. Since 1926, their remains have been well known from several localities in Mexico, documented in published papers and unpublished data. However, the few taxonomical determinations and the abundant undescribed material in Paleontological collections obscure the Mexican dinosaur diversity.

Janensch (1926) reported the first dinosaur bone from Upper Cretaceous strata in Mexico and assigned

it to *Monoclonius* or *Triceratops*, a ceratopsids dinosaur from the north of North America. As a result the fragmentary diagnostic material from Mexico in recent years has referred to northern North American dinosaurs as *Chirostenotes*, *Saurornitholestes*, *Troodon*, *Ricardoestesia*, *Albertosaurus*, *Aublysodon*, *Monoclonius*, *Chasmosaurus*, *Agujaceratops*, *Lambeosaurus*, *Kritosaurus* and *Euoplocephalus* (Hernández-Rivera, 1997; Hilton, 2003; Kirkland et al., 2006; Rivera-Sylva et al., 2006; Rivera and Carpenter, 2014a, 2014b). On the other hand, the most complete skeletons are named as a new genus and species such as *Labocania anomala* (Molnar, 1974), *Alexornis antecedens* (Brodkorb, 1976), *Magnapaulia laticaudus*

(Morris, 1981; Prieto-Márquez *et al.*, 2012), *Coahuilaceratops magnacuerna* (Loewen *et al.*, 2010), *Latirhinus uitstlani* (Prieto-Márquez and Serrano-Brañas, 2012) and *Huehucanauhtlus tiquichensis* (Ramírez-Velasco *et al.*, 2010) have been recorded.

The discovery of new species from southern North America (Gates *et al.*, 2007; Sampson *et al.*, 2010; Loewen *et al.*, 2010; Zanno *et al.*, 2011; Prieto-Márquez and Serrano-Brañas, 2012; Ramírez-Velasco *et al.*, 2012; Loewen *et al.*, 2013) and the review of genera with a wide geographical and temporal distribution such as *Chasmosaurus* (Sampson *et al.*, 2010), *Alamosaurus* (D' Emeric *et al.*, 2010), *Lambeosaurus* (Prieto-Márquez *et al.*, 2012), *Euoplocephalus* (Arbour and Currie, 2013) and *Richardoestesia* (Larson and Currie, 2013), questions the validity of the identifications of taxa with fragmentary and isolated materials.

Preview of summaries of Mexican dinosaur faunas

Weishampel (1990) presented the first taxonomic list of Mexican dinosaurs in geographic and lithostratigraphic units, mentioning the Jurassic and Cretaceous dinosaurs. Later Rodríguez-de la Rosa and Cevallos-Ferriz (1998), Weishampel *et al.*, (2004), Rivera-Sylva *et al.*, (2006b) presented a new list of Mexican dinosaurs, recognized the Tyrannosauridae, Ornithomimidae, Dromaeosauridae, Troodontidae, Titanosauria, Ankylosauria, Ceratopsidae and Hadrosauridae as components of Cretaceous faunas. However the reviews do not mention the existing material of each group of dinosaurs and the paleontological collection in which they are housed. Recently Rivera-Sylva and Carpenter (2014a, 2014b) have presented a new review of Mexican dinosaurs from Jurassic to Cretaceous deposits, mentioning three new components for the Cretaceous faunas: Maniraptora, Pachycephalosauridae and Hadrosauoidea. They include new material and describe some of the recognized groups. Unfortunately they do not mention the material from unpublished work by Sonora and Coahuila and the undescribed and forgotten material housed in the Mexican collections such as CPC, UNAM, ERNO, INEGI and INAH.

The purpose of this study is to up date the osteological record of Cretaceous dinosaurs of Mexico, based on published papers and unpublished data and direct observation of the Mexican paleontological collections and in the field. We use reports where osteological evidence in the bibliography (books, papers, abstracts of symposiums and theses) are mentioned, listed and described. Additionally, we have reviewed

some Mexican paleontological collections to search for the taxa reported in the literature and located in collections. Some of the diagnostic dinosaur bones have been taxonomically reassigned and very fragmentary remains that could not be identified beyond the level of Dinosauria have not been included. Finally, we comment on the possibility that the dinosaurs from Mexico represent new genera or species with close relationships to southern North American taxa.

Institutional abbreviations

BENC, Benemérita Escuela Normal de Coahuila; CIC/P/, Colección Paleontológica del Centro del Instituto Nacional de Antropología e Historia en Coahuila; CPC, Colección Paleontológica de Coahuila; DP, Colección Paleontológica del Laboratorio de Arqueozoología, Subdirección de Laboratorios y Apoyo Académico del Instituto Nacional de Antropología e Historia, DP-INEGI informal abbreviation, Departamento de Petrografía del Instituto Nacional de Estadística Geografía e Informática; ERNO, Estación Regional del Noroeste de Sonora de la Universidad Nacional Autónoma de México (previously known as IRGNM); FCM, Facultad de Ciencias Marinas de la Universidad Autónoma de Baja California; IGM, Colección Nacional de Paleontología del Instituto de Geología de la Universidad Nacional Autónoma de México; IGM-MG informal abbreviation, Museo del Instituto de Geología de la Universidad Nacional Autónoma de México; IHNFG, Instituto de Historia Natural, Colección Geográfica de Chiapas; INEGI, Instituto Nacional de Estadística Geográfica e Informática; LACM, Los Angeles County Museum of Natural History, California; MB.R, Janensch Collection in Naturkunde Museum in Berlin, Germany; MM informal abbreviation Museo del Mammut, Chihuahua; MPD informal abbreviation, Museo de Paleontología de Delicias, Chihuahua; MPF informal abbreviation, Museo Paleontológico de Fronteras, Sonora; MPRC informal abbreviation, Museo Paleontológico Rincón Colorado; PASAC, Asociación Paleontológica de Sabinas Coahuila; REG615PF, Colección privada de Claudio de León Dávila; ROM, Royal Ontario Museum, Toronto Canada; SEP/CP, Coordinación Paleontológica de la Secretaría de Educación Pública de Coahuila; UABC, Colección paleontológica de la Universidad Autónoma de Baja California; UCMP, University of California Museum of Paleontology Berkeley; UNAM, Universidad Nacional Autónoma de México.

Brief review of dinosaur localities in time

The aim of this section is to provide a chronostratigraphy setting to view the distribution of the dinosaur remains in Mexico from the Santonian to the Maastrichtian age (Late Cretaceous).

Early Santonian - The unique Santonian deposits with dinosaur remains are found in an unnamed formation of Tuzantla Michoacán in the southwest of Mexico (Mariscal-Ramos, 2006; Ramírez-Velasco, 2009; Ramírez-Velasco *et al.*, 2012, 2014).

Early to Late Campanian - The Campanian deposits with dinosaur remains can be found in abundant localities in the north of Mexico. These deposits make up the El Gallo Formation of El Rosario and Eréndira (Langstone and Oakes, 1954; Morris, 1967, 1976; Hernández-Rivera *et al.*, 1997; Rodríguez-de la Rosa and Aranda-Manteca, 1999; 2000; Ford and Chure, 2001; Hilton, 2003; Johnson *et al.*, 2006; Romo de Vivar, 2011; Prieto-Márquez *et al.*, 2012; Pecos, *et al.*, 2014), La Bocana Roja Formation of El Rosario (Molnar, 1974; Morris, 1981; Brodkorb, 1976; Prieto-Márquez *et al.*, 2012), Corral de Enmedio Formation, Camas Formation and Packard Formation of Naco-Cananea area (Taliaferro, 1933; Lull and Wright, 1942; Lucas *et al.*, 1995; Lucas and González-León, 1996; Contreras-Medina, 1997; Duarte-Bigurra, 2013), San Carlos Formation of Aldama and Ojinaga (Westgate *et al.*, 2002a, 2002b; Rivera-Sylva *et al.*, 2011a), Pen Formation and Austin Group of Ocampo (Rivera-Sylva *et al.*, 2011a; Porrás-Múzquiz *et al.*, 2014), Aguja Formation of Ojinaga, Manuel Benavides and Ocampo (Westgate *et al.*, 2002b; Andrade-Ramos *et al.*, 2002; Andrade-Ramos, 2003; Montellano-Ballesteros, 2003; Torres-Rodríguez, 2006; Rivera-Sylva *et al.*, 2006a, 2008, 2009a, 2009b, 2010, 2011a, 2011c, 2012; Monroy-Mújica, 2009; Torres-Rodríguez *et al.*, 2010; Martínez-Díaz, 2011; Martínez-Díaz and Montellano-Ballesteros, 2011; Rivera-Sylva and Carpenter, 2014a, 2014b; Ramírez-Velasco *et al.*, in press), San Miguel Formation of Saltillo (in this paper) and Cerro del Pueblo Formation of Ramos Arizpe, Saltillo, General Cepeda and Parras de la Fuente (Espinosa-Arrubarrena *et al.*, 1989; Hernández-Rivera *et al.*, 1995; Hernández-Rivera, 1997; Rodríguez-de la Rosa and Cevallos-Ferriz, 1998; Hernández-Rivera and Delgado de Jesús, 1999; Kirkland *et al.*, 2000; Eberth *et al.*, 2003; Serrano-Brañas, 2006; Torres-Rodríguez, 2006; Rivera-Sylva and Espinoza-Chávez, 2006; Lund *et al.*, 2007; Aguillón-Martínez, 2010; Loewen *et al.*, 2010; Rivera-Sylva *et al.*, 2011a, 2011b; Prieto-Márquez and Serrano-Brañas, 2012; Aguilar *et al.*, 2013, 2014; Prieto-Márquez, 2013; Vivas-González, 2013; Rivera-

Sylva and Carpenter, 2014a; Ramírez-Velasco *et al.*, 2014).

Late Campanian-Early Maastrichtian- For the Campanian-Maastrichtian boundary, The Olmos Formation of Sabinas and Saltillo (Ojeda-Rivera *et al.*, 1968; Silva-Bárceñas, 1969; Meyer *et al.*, 2005; Porrás-Múzquiz and Lehman, 2011; Rodríguez-de la Rosa, 2011; Ramírez-Velasco *et al.*, 2014), and Huerta Formation of Monclova (Aguillón *et al.*, 1998; Kirkland *et al.*, 2000) are a few known localities with good preservation of dinosaur remains.

Early-Late Maastrichtian - The Maastrichtian deposits with dinosaur remains are less abundant than the Campanian deposits. These deposits correspond to the El Rosario Formation of Eréndira and El Rosario (Hilton, 2003; Johnson *et al.*, 2006), Lomas Coloradas Formation of Naco-Cananea (Lucas *et al.*, 1995; Lucas and González-León, 1996; Serrano-Brañas *et al.*, 2014), the unnamed formation of Sierra Mojada (Janensch, 1926; Rivera-Sylva and Carpenter, 2014b; Ramírez-Velasco *et al.*, 2014) and the Ocozocoautla Formation of Ocozocoautla (Carbot-Chanona and Avedaño-Gil, 2002; Carbot-Chanona and Rivera-Sylva, 2011).

Systematic review of late cretaceous dinosaurs

In this section we present a brief summary of the groups represented by the Mexican dinosaurs, the geographic area they are found in, the most common skeletal elements representing each clade and briefly discuss the taxonomy assignment of some dinosaurs. The names of the localities of each area are available in their respective tables.

Indeterminate Theropoda

The Theropods are one of the major dinosaur subgroups, characterized by retained blade-like serrated teeth, short arms, grasping hands with trenchant claws and a rigid distal portion of the tail. The theropod clade includes ceratosaurs, carnosuars and coelurosaurs. For the purposes of this paper we mention in this section the material that has not been identified as Coelurosauria or a higher-level.

Several indeterminate theropods remains have been reported from El Rosario Baja California (Rodríguez-de la Rosa and Aranda-Manteca, 2000; Hilton, 2003; Romo de Vivar, 2011), Ocampo, Ramos Arizpe and General Cepeda Coahuila (Rodríguez-de la Rosa and Cevallos-Ferriz, 1998; Torres-Rodríguez, 2006; Monroy-Mújica, 2009; Torres-Rodríguez *et al.*,

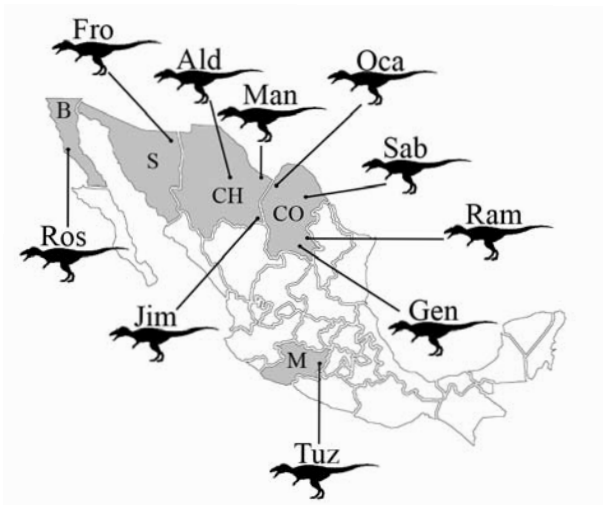


Figure 1. Map of Mexico indicating areas with indeterminate Theropoda remains (see Table 1). Abbreviations: Ald, Aldama; B, Baja California; CH, Chihuahua; CO, Coahuila; Fro, Fronteras; Gen, General Cepeda; Jim, Jimenez; M, Michoacán; Man, Manuel Benavides; Oca, Ocampo; Ram, Ramos Arizpe; Ros, Rosario; S, Sonora; Sab, Sabinas; Tuz, Tuzantla-Tiquicheo.

Figura 1. Mapa de México indicando las áreas con restos de Theropoda indeterminados (ver Tabla 1). Abreviaturas: Ald, Aldama; B, Baja California; CH, Chihuahua; CO, Coahuila; Fro, Fronteras; Gen, General Cepeda; Jim, Jiménez; M, Michoacán; Man, Manuel Benavides; Oca, Ocampo; Ram, Ramos Arizpe; Ros, Rosario; S, Sonora; Sab, Sabinas; Tuz, Tuzantla-Tiquicheo.

2010), and from Barranca Los Bonetes Michoacán (Ramírez-Velasco *et al.*, 2012; Fig. 1). They are identified by isolated material-like teeth and some postcra-

nial bones such as manual and pedal phalanges, metatarsals, caudal vertebrae, chevrons and fragments of tibiae, fibulae and femora (Table 1).

Hilton (2003) mentioned several teeth and phalanges referring to cf. Carnosauria (probably identified by the large size of the tooth), Ramírez-Velasco *et al.*, (2012) mentioned a chevron referring to Tetanurae and Ramírez-Velasco (2009) in an unpublished work described hind limb bones from a small theropod tentatively referred to as Ceratosauria. These materials require a more detailed study to confirm their assignment, so they are referred to as indeterminate Theropoda in this work.

New material found in the collections and not previously mentioned in papers are the metatarsal and phalanx from Fronteras Sonora; phalanges, caudal vertebra and a tooth from Chihuahua; tooth fragments and one tooth from Sabinas Coahuila; and long bone fragments and vertebrae from General Cepeda Coahuila.

Basal Coelurosauria

Coelurosaurs differ from other theropods with a larger brain cavity, more slender hands, a tarsal bone fused to the tibia, and for the presence of filamentous integumentary elements. This group contains the ornithomimids and tyrannosaurids considered as basal coelurosauria, and the derived maniraptorans. The Maniraptora are characterized by long arms, a semilunar wrist and enlarged sterna. This clade

Taxa (Previous identification)	Locality, Area, State	Stratigraphic unit	Age	Accession number (Previously number): Material (Collection)	References
Theropoda	Not mentioned, El Rosario, BajaCalifornia.	El Gallo Formation	Late Campanian	FCM 06/053: tooth with a groove	Rodríguez-de la Rosa and Aranda-Manteca, 1999; 2000; Hilton, 2003.
Theropoda	Not mentioned, El Rosario, BajaCalifornia.	El Gallo Formation	Late Campanian	LACM 17704: tooth. LACM 42565: manus phalanx ungal. LACM 42571: manus phalanx, distal end. LACM 42703: phalanx ungal. LACM 57871: tooth fragment. LACM 101163: teeth. LACM 101164: manus phalanx. LACM 101173: tooth. LACM 101182: vertebra caudal. LACM 101183: tooth. LACM 101184: teeth.	Hilton, 2003.

Table 1. List of bones of indeterminate Theropoda.
Tabla 1. Lista de restos óseos de Theropoda indeterminados.

Taxa (Previous identification)	Locality, Area, State	Stratigraphic unit	Age	Accession number (Previously number): Material (Collection)	References
Theropoda	Not mentioned, El Rosario, BajaCalifornia.	El Gallo Formation	Late Campanian	Not given: vertebrae and ribs (UCMP). Not given: tooth (UCMP).	Hilton, 2003.
Theropoda	ROS 51, El Rosario, BajaCalifornia.	El Gallo Formation	Late Campanian	Not given: tooth with occlusal plane (IGM). Not given: tooth (IGM). Not given: tooth (IGM).	Romo de Vivar, 2011.
Theropoda	El Alamito, Fronteras, Sonora.	Cabullona Group	Late Campanian-Late Maastrichtian	Not given: metatarsal fragment (MPF).	Ramírez-Velasco, pers. obs., 2012.
Theropoda	Puerto Viejo, Fronteras, Sonora.	Cabullona Group	Late Campanian-Late Maastrichtian	Not given: phalanx fragment (MPF).	Ramírez-Velasco, pers. obs., 2012.
Theropoda	Not named, Aldama, Chihuahua.	San Carlos Formation	Campanian	Not given: phalanx (IGM).	Ramírez-Velasco, pers. obs., 2012.
Theropoda	El Rebaje, Manuel Benavides, Chihuahua.	Aguja Formation	Late Campanian	Not given: tooth (IGM).	Ramírez-Velasco, pers. obs., 2012.
Theropoda	Icoteas, Manuel Benavides, Chihuahua.	Aguja Formation	Late Campanian	Not given: phalanx (IGM).	Ramírez-Velasco, pers. obs., 2012.
Theropoda	Arenales, Jiménez, Chihuahua.	Unknown	Late Cretaceous	Not given: vertebrae (<i>in situ</i>).	Hernández-Rivera, pers. obs., 2011.
Theropoda	Arenales, Jiménez, Chihuahua.	Unknown	Late Cretaceous	Not given: caudal vertebra (<i>in situ</i>).	Hernández-Rivera, pers. obs., 2011.
Theropoda	Las Garzas, Ocampo, Coahuila.	Aguja Formation	Late Campanian	Not given: tooth fragment (IGM). Not given: tooth (IGM).	Monroy-Mújica, 2009.
Theropoda	Las Garzas, Ocampo, Coahuila.	Aguja Formation	Late Campanian	IGM 6213: tooth.	Torres-Rodríguez, 2006; Torres-Rodríguez <i>et al.</i> , 2010.
Theropoda	Las Garzas, Ocampo, Coahuila.	Aguja Formation	Late Campanian	Not given: tooth (IGM).	Monroy-Mújica, 2009.
Theropoda	Palaú, Sabinas, Coahuila.	Unknown	Late Cretaceous	Not given: tooth (IGM).	Ramírez-Velasco, pers. obs., 2012.
Theropoda	Polvorin, Sabinas, Coahuila.	Olmos Formation	Late Campanian-Early Maastrichtian	Not given: teeth fragments (IGM).	Ramírez-Velasco, pers. obs., 2012.
Theropoda	El Pelillal, Ramos Arizpe, Coahuila.	Cerro del Pueblo Formation	Late Campanian	IGM 7711: pedal phalanx. IGM 7712: pedal phalanx. IGM 7713: manual phalanx fragment. IGM 7714: caudal vertebrae. IGM 7715: pedal phalanx fragment.	Rodríguez-de la Rosa and Cevallos-Ferri, 1998.
Theropoda	Agua de Mula, General Cepeda, Coahuila.	Cerro del Pueblo Formation	Late Campanian	BENC 21/2-0001: phalanx fragment. BENC 21/2-0002: phalanx fragment. BENC 21/2-0003: phalanx fragment. BENC 21/2-0004: phalanx fragment. BENC 21/2-0005: phalanx fragment. BENC 21/2-0007: manual ungual. BENC 21/2-0009: manual ungual. BENC 21/2-0012: caudal vertebrae fragment. BENC 21/2-0013: caudal vertebrae fragment. BENC 21/2-0014: caudal vertebrae fragment. BENC 21/2-0015: caudal vertebrae fragment.	Torres-Rodríguez, 2006.
Theropoda	Cerro de los Dinosaurios quarry 3, General Cepeda, Coahuila.	Cerro del Pueblo Formation	Late Campanian	Not given: proximal end femur (SEPCP).	Ramírez-Velasco, pers. obs., 2012.
Theropoda	Rincón Colorado, General Cepeda, Coahuila.	Cerro del Pueblo Formation	Late Campanian	Not given: caudal vertebrae (IGM).	Ramírez-Velasco, pers. obs., 2009.
Theropoda	Rincón Colorado, General Cepeda, Coahuila.	Cerro del Pueblo Formation	Late Campanian	Not given: caudal vertebra and chevron (SEPCP). Not given: neural arch (SEPCP).	Ramírez-Velasco, pers. obs., 2012.

Table 1. Continuation.
Tabla 1. Continuación.

Taxa (Previous identification)	Locality, Area, State	Stratigraphic unit	Age	Accession number (Previously number): Material (Collection)	References
Theropoda	Rincón Colorado site 008, General Cepeda, Coahuila.	Cerro del Pueblo Formation	Late Campanian	Not given: vertebra (SEPCP).	Ramírez-Velasco, pers. obs., 2012.
Theropoda	Rojas I, General Cepeda, Coahuila.	Cerro del Pueblo Formation	Late Campanian	Not given: pedal and manual phalanx (IGM).	Ramírez-Velasco, pers. obs., 2009.
Theropoda	Rojas II, General Cepeda Coahuila.	Cerro del Pueblo Formation	Late Campanian	Not given: long bone fragments (IGM).	Ramírez-Velasco, pers. obs., 2009.
Theropoda (Ceratosauria)	Barranca de los Bonetes point 3, Tuzantla, Michoacán.	Unnamed formation	Early Santonian	Not given: tibia, fibulae and metatarsal IV (IGM). Not given: tibia (IGM).	Ramírez-Velasco, pers. obs., 2009.
Theropoda	Barranca de los Bonetes point 6, Tuzantla, Michoacán.	Unnamed formation	Early Santonian	Not given: tooth (IGM). Not given: tooth (IGM).	Ramírez-Velasco, 2009; Ramírez-Velasco <i>et al.</i> 2012.
Tetanurae	Barranca de los Bonetes point 6, Tuzantla, Michoacán.	Unnamed formation	Early Santonian	Not given: chevron (IGM).	Ramírez-Velasco, 2009; Ramírez-Velasco <i>et al.</i> 2012.
cf. Carnosauria	Rosario area, Baja California.	El Gallo Formation	Late Campanian	LACM 17701: tooth.	Hilton, 2003.
				LACM 17714: teeth.	
				LACM 17696: tooth.	
				LACM 17697: tooth.	
				LACM 20879: tooth.	
				LACM 20889: phalanx and distal end.	
				LACM 28993: teeth.	
				LACM 28997: teeth.	
				LACM 42563: tooth.	
				LACM 42564: tooth.	
				LACM 42574: tooth.	
				LACM 42631: tooth.	
				LACM 42638: manus phalanx.	
				LACM 42669: tooth.	
				LACM 42685: tooth.	
				LACM 42687: tooth.	
LACM 42704: tooth.					
LACM 42705: tooth.					
LACM 52458: teeth.					

Table 1. Continuation.
Tabla 1. Continuación.

includes oviraptorosaurs, troodontids, dromaeosaurids and birds.

The indeterminate Coelurosauria come from the El Rosario Baja California (Hilton, 2003; Romo de Vivar, 2011), Ojinaga Chihuahua (Westgate *et al.*, 2002b), Ramos Arizpe Coahuila (Aguillón-Martínez, 2010) and Ocozacoautla Chiapas (Carbot-Chanona and Avedaño-Gil, 2002; Carbot-Chanona and Rivera-Sylva, 2011; Rivera-Sylva and Carpenter, 2014a; Fig. 2). They are known by small isolated teeth and one manual and pedal ungual (Table 2).

Hilton (2003) reported a “tooth” to cf. *Chirostenotes* (the first Oviraptorosauria of Mexico?)

from El Rosario Baja California. However, its presence is questionable, since, so far, there have been no diagnostic postcranial remains of Oviraptorosauria in Mexico. This does not rule out the possibility of their presence in Mexico, due to the discovery of *Hagryphus* in Utah in rocks of Campanian age (Zanno and Sampson, 2005) confirming their presence in southern North America.

Romo de Vivar (2011) and Westgate *et al.*, (2002b) reported some types of unknown Maniraptora, however the material is very fragmentary and not diagnostic to a higher level.

Additionally, Carbot-Chanona and Rivera-Sylva

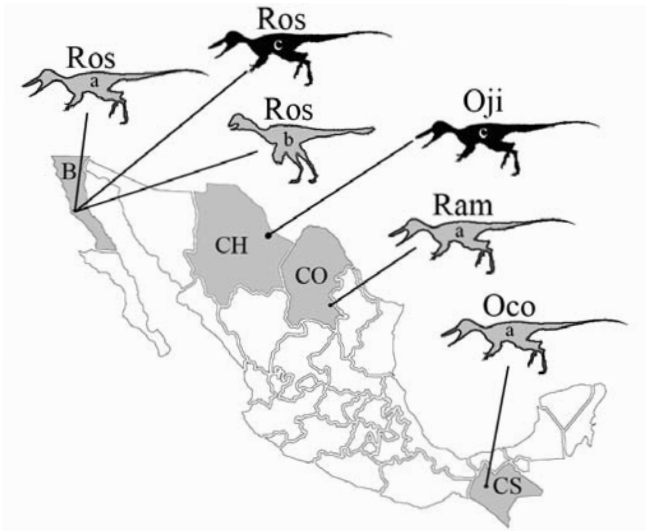


Figure 2. Map of Mexico indicating areas with basal Coelurosauria remains (see Table 2). a. Ricardoestesia spp. b. Oviraptorosauria. c. Maniraptora indetermined. Abbreviations: B, Baja California; CH, Chihuahua; CO, Coahuila; CS, Chiapas; Oco, Ocozocoautla; Oji, Ojinaga; Ram, Ramos Arizpe; Ros, Rosario.

Figura 2. Mapa de México indicando las áreas con restos de Coelurosauria basales (ver Tabla 2). a. Ricardoestesia spp. b. cf. Chirostenotes sp. c. indeterminate Maniraptora. Abreviaturas: B, Baja California; CH, Chihuahua; CO, Coahuila; CS, Chiapas; Oco, Ocozocoautla; Oji, Ojinaga; Ram, Ramos Arizpe; Ros, Rosario.

(2011) and Romo de Vivar (2011) identified the presence of *Richardoestesia isosceles* (Fig. 3) and Aguillón-Martínez (2010) and Romo de Vivar (2011) reported the presence of *R. gilmorei*. Larson and Currie (2013) proposed that the teeth referred to *R. gilmorei* and *R. isosceles* with a similar morphology from different formations and localities from the holotype are not referable to these species according to their research. Based on these findings, we propose that the teeth referred to as *Richardoestesia* from Mexico probably represent a distinct taxa. Company *et al.*, (2005) suggested the possibility that *R. isosceles* represents a crocodyliform teeth related to the Sebecosuchian group such as *Doratodon*.

Tyrannosauridae

The tyrannosaurids are derived coelurosaurs characterized by incisor-like teeth in premaxilla, a fused nasal bone, and extremely reduced forelimbs with only two claws. They are found in the Northern hemisphere.

Tyrannosaurids are found in El Rosario Baja California (Morris, 1967, 1976; Molnar, 1974;

Taxa (Previous identification)	Locality, Area, State	Stratigraphic unit	Age	Accession number (Previously number): Material (Collection)	References
cf. <i>Richardoestesia</i> sp. Currie <i>et al.</i> , 1990 (<i>Richardoestesia isosceles</i> Sankey, 2001)	ROS 51, El Rosario, Baja California.	El Gallo Fm.	Late Campanian	Not given: teeth (IGM).	Romo de Vivar, 2011.
cf. <i>Richardoestesia</i> sp. Currie <i>et al.</i> , 1990 (<i>Richardoestesia gilmorei</i> Currie <i>et al.</i> , 1990)	ROS 51, El Rosario, Baja California.	El Gallo Fm.	Late Campanian	Not given: tooth (IGM).	Romo de Vivar, 2011.
cf. <i>Richardoestesia</i> sp. Currie <i>et al.</i> , 1990 (<i>Richardoestesia gilmorei</i> Currie <i>et al.</i> , 1990)	El Pantano, Ramos Arizpe, Coahuila.	Cerro del Pueblo Fm.	Late Campanian	SEPCP 47/777: tooth	Aguillón-Martínez, 2010; Rivera-Sylva and Carpenter, 2014a.
cf. <i>Richardoestesia</i> sp. Currie <i>et al.</i> , 1990 (<i>Richardoestesia isosceles</i> Sankey, 2001)	Near Jaltenango river, Ocozocoautla, Chiapas.	Ocozocoautla Fm.	Maastrichtian	IHNFG-0537: maxilar tooth	Carbot-Chanona and Avedaño-Gil, 2002; Carbot-Chanona and Rivera-Sylva, 2011; Rivera-Sylva and Carpenter, 2014a.
cf. <i>Chirostenotes</i> sp. Gilmore, 1924	Not mentioned, El Rosario, Baja California.	El Gallo Fm.	Late Campanian	LACM 42586: "tooth" LACM 58009: "tooth"	Hilton, 2003.
cf. Coelurosauria	Not mentioned, El Rosario area, Baja California.	El Gallo Fm.	Late Campanian	LACM 42636: tooth.	Hilton, 2003.
Maniraptora	ROS 51, El Rosario area, Baja California.	El Gallo Fm.	Late Campanian	Not given: manual ungual and pedal ungual (IGM).	Romo de Vivar, 2011.
Maniraptora	Parque Nacional Cañon de Santa Elena, Ojinaga, Chihuahua.	Aguja Fm.	Late Campanian	Not given: not mentioned (?).	Westgate <i>et al.</i> , 2002b.

Table 2. List of bones of basal Coelurosauria.

Tabla 2. Lista de restos óseos de Coelurosauria basales.

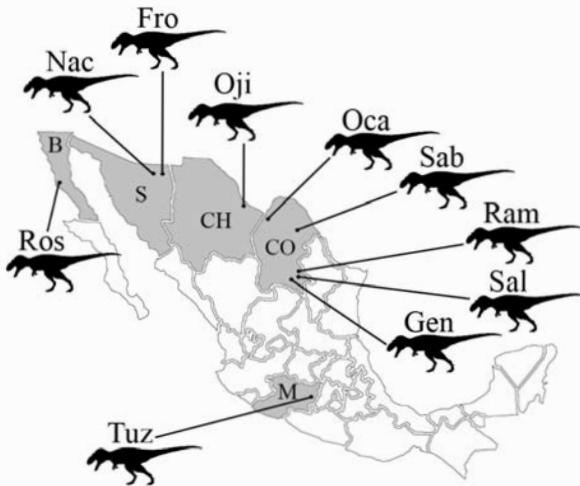


Figure 3. Map of Mexico indicating areas with Tyrannosauridae remains (see Table 3). Abbreviations: B, Baja California; CH, Chihuahua; CO, Coahuila; Fro, Fronteras; Gen, General Cepeda; M, Michoacán; Nac, Naco-Cananea; Oca, Ocampo; Oji, Ojinaga; Ram, Ramos Arizpe; Ros, Rosario; S, Sonora; Sab, Sabinas; Sal, Saltillo; Tuz, Tuzantla-Tiquicheo.

Figura 3. Mapa de México indicando las áreas con restos de Tyrannosauridae (ver Tabla 3). Abreviaturas: B, Baja California; CH, Chihuahua; CO, Coahuila; Fro, Fronteras; Gen, General Cepeda; M, Michoacán; Nac, Naco-Cananea; Oca, Ocampo; Oji, Ojinaga; Ram, Ramos Arizpe; Ros, Rosario; S, Sonora; Sab, Sabinas; Sal, Saltillo; Tuz, Tuzantla-Tiquicheo.

Rodríguez de la Rosa and Aranda-Manteca, 1999; Ford and Chure, 2001; Hilton, 2003; Peacock *et al.*, 2014), Naco-Cananea and Fronteras Sonora (Lucas *et al.*, 1995; Lucas and González-León, 1996; Duarte-Bigurra, 2013; Serrano-Brañas *et al.*, 2014), Ojinaga Chihuahua (Westgate *et al.*, 2002a, 2002b); and Ocampo, Sabinas, Ramos Arizpe, Saltillo, and General Cepeda Coahuila (Torres-Rodríguez, 2006; Monroy-Mújica, 2009; Rivera-Sylva, 2009; Aguillón-Martínez, 2010; Torres-Rodríguez *et al.*, 2010; Rivera-Sylva *et al.*, 2011b, 2011c; Vivas-González, 2013; Rivera-Sylva and Carpenter, 2014a) and probably from Barranca Los Bonetes Michoacán (Ramírez-Velasco, 2009; Fig. 3). This family is currently known from isolated teeth and hind limb bones (Table 3). Only *Labocania anomala* is represented by associated cranial and postcranial material (Fig. 4).

Ramírez-Velasco (2009) in an unpublished work, described a tooth from Michoacán that represents the most southern report of a tyrannosaurid from North America, however a more detailed analysis is needed to confirm its identification.

Ford and Chure (2001) described four teeth from Baja California and referred them to *Aublysodon*. The validity of this identification is questionable because

the genus *Aublysodon* is now considered invalid by Carr and Williamson (2004) and Larson (2013). These “Aublysodon” teeth characterized by the small size and the serrated edges lingually, may represent isolated premaxillary teeth of an unknown young tyrannosaurid from Campanian age. (pers. obs. Ramírez-Velasco, 2012).

Lucas *et al.*, (1995) and Lucas and González-León (1996) referred all the material from Naco-Cananea, Sonora to cf. *Albertosaurus*, however, according to Loewen *et al.*, (2013), there is strong evidence of regionalism on Tyrannosaurids from Laramidia during the Campanian age. The evidence suggests that the remains from Naco-Cananea may be referred to different genera with a close relationship with southern tyrannosaurids.

Recently Serrano-Brañas *et al.*, (2014) referred four teeth to *Tyrannosaurus rex* from a statistical analysis. This finding is important because it increases the geographic distribution of *Tyrannosaurus*. However, according to Larson (2013) there is a possibility that teeth pertaining to another pigmy tyrannosaurid like *Nannotyrannus* or a young *Tyrannosaurus rex*.

Molnar (1974) reported the first theropod named in Mexico, *Labocania anomala* from the Arroyo El Rosario Baja California. The specimen requires a new description and taxonomic review. Its current identification is questionable, since it presents features of both Carnosauria and Tyrannosauridae (Molnar, 1974). Some remains, such as the metatarsals, indicate a robust theropod compared to other tyrannosaurids such as *Albertosaurus* (Ramírez-Velasco, 2013 pers obs; Peacock *et al.*, 2014; Fig. 4).

Ornithomimidae

The ornithomimids show some convergences with the modern ostrich. They had a small toothless skull, a long neck, compact body and extremely long legs and arms. They are found in the northern hemisphere.

The ornithomimids came from an unknown locality in northern Baja California (Hernández-Rivera, 1997; Hilton, 2003), Naco-Cananea and Fronteras Sonora (pers. obs. Ramírez-Velasco, 2012) Ramos Arizpe, General Cepeda and Saltillo Coahuila (Torres-Rodríguez, 2006; Aguillón-Martínez, 2010; Rivera-Sylva *et al.*, 2011b; pers. obs. Ramírez-Velasco, 2012; Vivas-González, 2013; Rivera-Sylva and Carpenter, 2014a; Figure 5). These are known by better remains in terms of quality preservation compared to other coelurosaurian. They are represented by caudal and dorsal vertebrae, pedal and manual phalanges and long bone fragments (Table 4). The most complete

Taxa (Previous identification)	Locality, Area, State	Stratigraphic unit	Age	Accession number (Previously number): Material (Collection)	References
<i>Labocania anomala</i> Molnar, 1974	Arroyo del Rosario, El Rosario, Baja California	La Bocana Roja Formation	Early Campanian	IGM 5307 (LACM 20877): left frontal and maxilla, both ischia, right dentary and quadrate, ilium fragment, metatarsal, pedal phalanx, pubis fragment and long bones fragments.	Molnar, 1974; Morris, 1976; Hilton, 2003; Rivera-Sylva and Carpenter, 2014a; pers. obs. Ramírez-Velasco, 2012.
<i>Tyrannosaurus rex</i> Osborn, 1905.	Not mentioned, Naco-Cananea, Sonora.	Lomas Coloradas Formation	Maastrichtian	ERNO 8549: tooth.	Serrano-Brañas <i>et al.</i> , 2014.
				ERNO 8550: tooth.	
				ERNO 8551: tooth.	
				ERNO 8552: tooth.	
Tyrannosauridae	Arroyo del Rosario, El Rosario, Baja California.	El Gallo Formation	Late Campanian	IGM 6130: left metatarsal IV.	Peacock, <i>et al.</i> , 2014.
Tyrannosauridae (<i>Aublysodon</i> sp. Leidy, 1868)	Not mentioned, El Rosario, Baja California.	El Gallo Formation	Late Campanian	IGM 4301(LACM 20886): tooth.	Ford and Chure, 2001; Hilton, 2003; Rivera-Sylva and Carpenter, 2014a.
				IGM 4302(LACM 20886): tooth.	
				IGM 4303 (LACM 28998): tooth.	
				IGM 4304 (LACM 42570): tooth.	
Tyrannosauridae	Not mentioned, El Rosario, Baja California	Not mentioned	Late Cretaceous	LACM 20886 (IGM 76625?): tooth.	Morris, 1967; Hilton, 2003.
Tyrannosauridae	Not mentioned, El Rosario, Baja California	El Gallo Formation	Late Campanian	Not given: tooth (UABC FCM)	Rodríguez-de la Rosa and Aranda-Manteca, 1999.
Tyrannosauridae	Not mentioned, El Rosario, Baja California.	El Gallo Formation	Late Campanian	IGM 6260 (LACM 28237): metatarsal II.	Hilton, 2003; Peacock, <i>et al.</i> , 2014.
Tyrannosauridae (cf. <i>Albertosaurus</i> sp. Osborn, 1905)	Locality 1, Naco-Cananea, Sonora.	Corral de Enmedio Formation	Late Campanian	Not given: vertebra (ERNO).	Lucas <i>et al.</i> 1995.
Tyrannosauridae (cf. <i>Albertosaurus</i> sp. Osborn, 1905)	Locality 2, Naco-Cananea, Sonora.	Corral de Enmedio Formation	Late Campanian	Not given: vertebra (ERNO).	Lucas <i>et al.</i> 1995.
Tyrannosauridae (cf. <i>Albertosaurus</i> sp. Osborn, 1905)	Locality 25, Naco-Cananea, Sonora.	Lomas Coloradas Formation	Maastrichtian	Not given: vertebra (ERNO).	Lucas <i>et al.</i> 1995.
Tyrannosauridae (cf. <i>Albertosaurus</i> sp. Osborn, 1905)	Locality 13, Naco-Cananea area, Sonora.	Corral de Enmedio Formation	Late Campanian	ERNO (IRGNM) 211: tibia, fibula and phalanges.	Lucas <i>et al.</i> 1995; Lucas and González-León, 1996.
Tyrannosauridae (cf. <i>Albertosaurus</i> sp. Osborn, 1905)	Locality 18, Naco-Cananea, Sonora.	Corral de Enmedio Formation	Late Campanian	Not given: tooth (ERNO).	Lucas <i>et al.</i> 1995.
Tyrannosauridae (cf. <i>Albertosaurus</i> sp. Osborn, 1905)	Locality 5, Naco-Cananea, Sonora.	Corral de Enmedio Formation	Late Campanian	Not given: tooth (ERNO).	Lucas <i>et al.</i> 1995.
Tyrannosauridae (cf. <i>Albertosaurus</i> sp. Osborn, 1905)	Locality 24, Naco-Cananea, Sonora.	Lomas Coloradas Formation	Maastrichtian	Not given: tooth (ERNO).	Lucas <i>et al.</i> 1995.
Tyrannosauridae (cf. <i>Albertosaurus</i> sp. Osborn, 1905)	Locality 27, Naco-Cananea area, Sonora.	Lomas Coloradas Formation	Maastrichtian	ERNO (IRGNM) 210: tooth	Lucas <i>et al.</i> 1995; Lucas and González-León, 1996.
Tyrannosauridae (cf. <i>Albertosaurus</i> sp. Osborn, 1905)	Not mentioned, Naco-Cananea area, Sonora.	Lutita Packard Formation	Late Campanian	ERNO (IRGNM) 356: tooth	Lucas and González-León, 1996.
Tyrannosauridae (cf. <i>Albertosaurus</i> sp. Osborn, 1905)	Not mentioned, Naco-Cananea, Sonora.	Lutita Packard Formation	Late Campanian	ERNO (IRGNM) 359: metatarsals fragments and pedal ungual.	Lucas and González-León, 1996.
Tyrannosauridae	Not mentioned, Naco-Cananea, Sonora.	Lomas Coloradas Formation	Maastrichtian	ERNO 005: tooth.	Serrano-Brañas <i>et al.</i> , 2014.
				ERNO 006: tooth.	
Tyrannosauridae	SON-11, Naco-Cananea, Sonora.	Cabullona Group.	Late Campanian-Late Maastrichtian	Not given: 12 partial teeth (ERNO).	Ramírez-Velasco, pers. obs., 2012.
Tyrannosauridae	Not named, Fronteras, Sonora.	Corral de Enmedio Formation	Late Campanian	ERNO 8027: tooth.	Duarte-Bigurra, 2013.
Tyrannosauridae	Outcrops near Ojinaga, Ojinaga, Chihuahua.	San Carlos Formation	Campanian	Not given: not mentioned (?).	Westgate <i>et al.</i> , 2002a.

Table 3. List of bones of Tyrannosauridae.

Tabla 3. Lista de restos óseos de Tyrannosauridae.

Taxa (Previous identification)	Locality, Area, State	Stratigraphic unit	Age	Accession number (Previously number): Material (Collection)	References
Tyrannosauridae	Parque Nacional Cañon de Santa Elena, Ojinaga, Chihuahua.	Aguja Formation	Late Campanian	Not given: not mentioned (?).	Westgate <i>et al.</i> , 2002b.
Tyrannosauridae	Anizul, Ocampo, Coahuila.	Aguja Formation	Late Campanian	Not given: tooth (IGM).	Monroy-Mújica, 2009.
Tyrannosauridae	Las Garzas, Ocampo, Coahuila.	Aguja Formation	Late Campanian	Not given: tooth (IGM). Not given: tooth (IGM).	Monroy-Mújica, 2009.
Tyrannosauridae	Las Garzas, Ocampo, Coahuila.	Aguja Formation	Late Campanian	IGM 6206: tooth. IGM 6207: tooth. IGM 6208: tooth. IGM 6209: tooth.	Torres-Rodríguez, 2006; Torres-Rodríguez <i>et al.</i> , 2010.
Tyrannosauridae	Not mentioned, Ocampo, Coahuila.	Aguja Formation	Late Campanian	Not given: tooth (CPC).	Rivera-Sylva <i>et al.</i> , 2011c.
Tyrannosauridae	West of El Carricito (same as Jicotecas), Ocampo, Coahuila.	Aguja Formation	Late Campanian	CPC 320: tooth.	Rivera-Sylva <i>et al.</i> , 2009b.
Tyrannosauridae	El Mezquite, Sabinas, Coahuila.	Olmos Formation	Late Campanian- Early Maastrichtian	IGM 6205: tooth. IGM 6210: tooth. IGM 6211: tooth. IGM 6212: tooth.	Torres-Rodríguez, 2006; Torres-Rodríguez <i>et al.</i> , 2010.
Tyrannosauridae	El Pantano, Ramos Arizpe, Coahuila.	Cerro del Pueblo Formation	Late Campanian	SEPCP 47/742: tooth.	Aguillón-Martínez, 2010.
Tyrannosauridae	Rancho Quintanilla, Ramos Arizpe, Coahuila.	Cerro del Pueblo Formation	Late Campanian	Not given: not mentioned (CPC).	Rivera-Sylva <i>et al.</i> , 2011b.
Tyrannosauridae	North of Saltillo, Saltillo, Coahuila.	Cerro del Pueblo Formation	Late Campanian	CPC 912: tooth and two hollow bones.	Rivera-Sylva and Carpenter, 2014a.
Tyrannosauridae	El Palmar, General Cepeda, Coahuila	Cerro del Pueblo Formation	Late Campanian	Not given: caudal vertebra, fragments of the ungual phalanges and tooth fragments (CPC).	Rivera-Sylva and Carpenter, 2014a.
Tyrannosauridae	La Parrita, General Cepeda, Coahuila.	Cerro del Pueblo	Late Campanian	Not given: six teeth (CPC).	Vivas-González, 2013.
Tyrannosauridae	La Parrita, General Cepeda, Coahuila.	Cerro del Pueblo Formation	Late Campanian	SEPCP 9/702: tooth. SEPCP 9/728: tooth.	Aguillón-Martínez, 2010.
Tyrannosauridae	Barranca de los Bonetes point 4, Tuzantla, Michoacán.	Unnamed formation	Early Santonian	Not given: tooth (IGM).	Mariscal-Ramos, 2006; Ramírez-Velasco, 2009.

Table 3. Continuation.
Tabla 3. Continuación.

ornithomimid is CPC 16/237 which preserves caudal vertebrae, a nearly complete hind limb, and articulated pubes (Fig. 6).

González de León recently collected two dorsal vertebrae from the Naco-Cananea area Sonora, interpreted as dorsal vertebrae near the sacrum and identified by the authors based on the presence of long transverse process angled caudally and the lack of pleurocels (Makovicky *et al.*, 2004). One of us (Hernández-Rivera) collected a weathered pedal phalanx from Fronteras Sonora, identified as ornithomimid based on the triangular lateral shape, the deep lateral tip, and the triangular aspect in anterior view (Ramírez-Velasco, 2012 pers. obs.).

In an unpublished thesis Aguillón-Martínez (2010) described the specimen CPC 16/237 and named it as *Saltillomimus rapidus* (*nomen ex dissertatione*); Fig.

6a) *This species is still not formally described, and according to the International Commission on Zoological Nomenclature the new name of the species is considered invalid. This new dinosaur need a new name and new description in a scientific paper.* (Fig. 6a).

Other ornithomimids described in an unpublished thesis are cf. *Ornithomimus* (Aguillón-Martínez, 2010) and *Struthiomimus altus* (Torres-Rodríguez, 2006; Fig. 6b), however, its identification is questionable because these are genera from northern North America. Based on the evidence of strong regionalism in other dinosaurs groups (Zanno and Sampson, 2005; Zanno *et al.*, 2011; Sampson *et al.*, 2010; Loewen *et al.*, 2013) it is highly probable that the southern ornithomimids represent a different species than those of northern of North America.

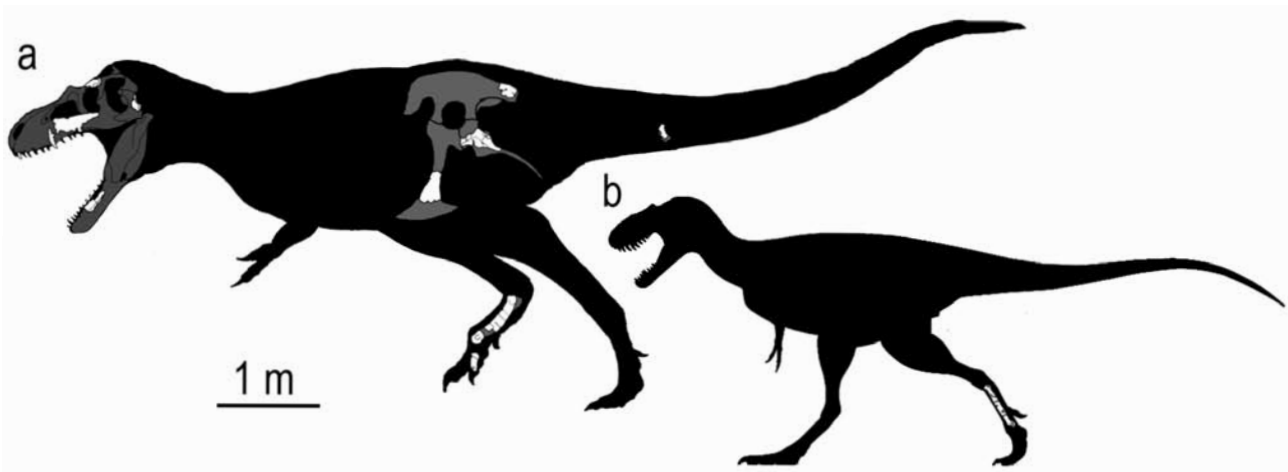


Figure 4. Skeletal drawings of Tyrannosaurids from Baja California, showing the elements found. a. *Labocania anomala* IGM 5307. b. Indeterminate tyrannosauridae IGM 6130 (silhouette modified from *Teratophoneus* courtesy of Scott Haartman).

Figura 4. Dibujos de esqueletos de Tyrannosáuridos de Baja California, mostrando los elementos hallados. a. *Labocania anomala* IGM 5307. b. Tyrannosáurido indeterminado IGM 6130 (silueta modificada de *Teratophoneus* cortesía de Scott Haartman).

Torres-Rodríguez (2006) informally described several phalanges and a manual ungual assigned to indeterminate Theropoda from the El Palmar locality. This material may belong to the Family Ornithomimidae because the manual ungual BENC 1/2-0066 with a reconstructed tip shows flat ventral surfaces, deep grooves laterally, and is triangular shaped in cross-section as in other ornithomimids (pers. obs. Ramírez-Velasco, 2012). Torres-Rodríguez

(2006) noted the presence of a robust proximal flexor tubercle with a marked transverse groove in the ungual BENC 1/2-0066, which differs from other ornithomimids (Fig. 6c).

Dromaeosauridae

The dromaeosaurids are characterized by long grasping hands, tails stiffened by long bony rods, and the enormous retractable sickle-claw on the second toe of the foot. They are found in the northern and southern hemisphere, except India and Australia.

Fossils from this family have been found in El Rosario Baja California (Hilton, 2003; Romo de Vivar, 2011), Ocampo, Ramos Arizpe and General Cepeda Coahuila (Torres-Rodríguez, 2006; Monroy-Mujica, 2009; Aguillón-Martínez, 2010; Torres-Rodríguez *et al.*, 2010; Vivas-González, 2013; Fig. 7). The dromaeosaurids are represented by several isolated teeth and some manual and pedal phalanges (Table 5).

Some described dromaeosaurids are referred to *Dromaeosaurus* sp. (Aguillón-Martínez, 2010), *Saurornitholestes langstoni* (Torres-Rodríguez, 2006; Monroy-Mujica, 2009; Torres-Rodríguez *et al.*, 2010), *Saurornitholestes* sp. (Torres-Rodríguez, 2006; Aguillón-Martínez, 2010; Torres-Rodríguez *et al.*, 2010; Romo de Vivar, 2011), *S. sp?* A (Torres-Rodríguez, 2006; Torres-Rodríguez *et al.*, 2010), *S. sp?* C (Torres-Rodríguez, 2006; Monroy-Mujica, 2009; Torres-Rodríguez *et al.*, 2010), and cf. *Saurornitholestes* (Hilton, 2003). These dromaeosaurids are identified only by teeth, and accord-

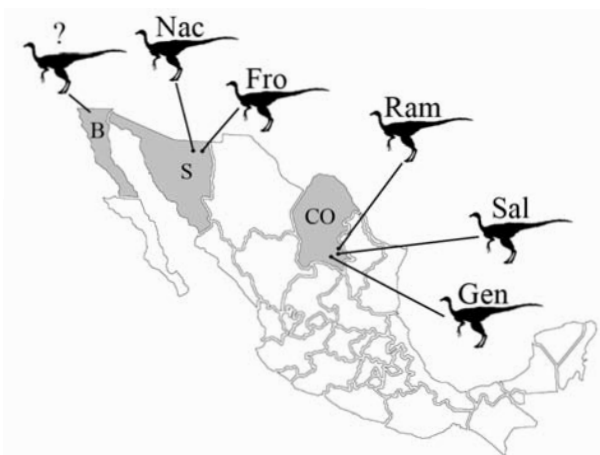


Figure 5. Map of Mexico indicating areas with Ornithomimidae remains (see Table 4) Abbreviations: B, Baja California; CO, Coahuila; Fro, Fronteras; Gen, General Cepeda; Nac, Naco-Cananea; Oca, Ocampo; Ram, Ramos Arizpe; S, Sonora; Sal, Saltillo.

Figura 5. Mapa de México indicando las áreas con restos de Ornithomimidae (ver Tabla 4). Abreviaturas: B, Baja California; CO, Coahuila; Fro, Fronteras; Gen, General Cepeda; Nac, Naco-Cananea; Oca, Ocampo; Ram, Ramos Arizpe; S, Sonora; Sal, Saltillo.

Taxa (Previous identification)	Locality, Area, State	Stratigraphic unit	Age	Accession number (Previously number): Material (Collection)	References
Unnamed ornithomimid (<i>Saltillomimus rapidus</i> Aguillón-Martínez, 2010; <i>nomen ex dissertatione</i>)	La Majada, Saltillo, Coahuila.	Cerro del Pueblo Formation	Late Campanian	CPC 16/237 (SEPCP): anterior and posterior caudal vertebrae, both pubes, right femur, right tibia, proximal end right fibula, distal end left fibula, metatarsal II, III and IV, phalanx of the digit II, III and IV, and pedal ungual.	Aguillón-Martínez, 2010; Rivera-Sylva and Carpenter, 2014a.
				SEPCP 16/219: metatarsal IV, phalanx of digit II, III and IV.	
				SEPCP 16/221: manual ungual.	
Unnamed ornithomimid (<i>Saltillomimus rapidus</i> Aguillón-Martínez, 2010; <i>nomen ex dissertatione</i>)	La Parrita, General Cepeda, Coahuila.	Cerro del Pueblo Formation	Late Campanian	SEPCP 9/770: distal end femur.	Aguillón-Martínez, 2010; Rivera-Sylva and Carpenter, 2014a.
Ornithomimidae	South of San Diego, Baja California.	Unknown	Late Cretaceous	Not given: not mentioned.	Hernández-Rivera, 1997; Hilton, 2003.
Ornithomimidae	SON-30, Naco-Cananea, Sonora	Cabullona Group.	Late Campanian-Late Maastrichtian	Not given: two dorsal vertebrae (ERNO).	Ramírez-Velasco, pers. obs., 2012.
Ornithomimidae	El Alamito, Fronteras, Sonora.	Cabullona Group.	Late Campanian-Late Maastrichtian	Not given: pedal phalanx (MPF).	Ramírez-Velasco, pers. obs., 2012.
Ornithomimidae (cf. <i>Ornithomimus</i> sp. Marsh 1890)	El Pantano, Ramos Arizpe, Coahuila.	Cerro del Pueblo Formation	Late Campanian	SEPCP 47/771: righth tibia.	Aguillón-Martínez, 2010.
				SEPCP 47/772: left tibia.	
				SEPCP 47/773: proximal end femur.	
				SEPCP 47/774: two pedal phalanges.	
				SEPCP 47/775: two terminal manual phalanges.	
SEPCP 47/776: tarsal.					
Ornithomimidae	Rancho Quintanilla, Ramos Arizpe, Coahuila.	Cerro del Pueblo Formation	Late Campanian	Not given: not mentioned (CPC).	
Ornithomimidae	Agua de Mula, General Cepeda, Coahuila.	Cerro del Pueblo Formation	Late Campanian	BENC 21/2-0006: pedal phalanx.	Rivera-Sylva <i>et al.</i> , 2011b.
				BENC 21/2-0010: ungual pedal.	
				BENC 21/2-0011: ungual pedal fragment.	Torres-Rodríguez, 2006.
Ornithomimidae (<i>Struthiomimus altus</i> Lambe, 1902)	El Palmar, General Cepeda, Coahuila.	Cerro del Pueblo Formation	Late Campanian	BENC 1/2-0081: distal end femur.	Torres-Rodríguez, 2006.
Ornithomimidae	El Palmar, General Cepeda, Coahuila.	Cerro del Pueblo Formation	Late Campanian	BENC 1/2-0068: ungual pedal.	Torres-Rodríguez, 2006.
Ornithomimidae (Theropoda)	El Palmar, General Cepeda, Coahuila.	Cerro del Pueblo Formation	Late Campanian	BENC 1/2-0042: caudal vertebra fragment.	Torres-Rodríguez, 2006; Ramírez-Velasco, pers. obs., 2012.
				BENC 1/2-0045: caudal vertebra fragment.	
				BENC 1/2-0053: caudal vertebra fragment.	
				BENC 1/2-0066: ungual manual fragment.	
				BENC 1/2-0069: phalanx fragment.	
				BENC 1/2-0070: manual phalanx.	
				BENC 1/2-0071: manual phalanx fragment.	
				BENC 1/2-0072: manual phalanx fragment.	
				BENC 1/2-0073: manual phalanx fragment.	
BENC 1/2-0077: manual phalanx fragment.					
Ornithomimidae	La Parrita, General Cepeda, Coahuila.	Cerro del Pueblo	Late Campanian	Not given: ungual pedal and two caudal vertebrae (CPC).	Vivas-González, 2013

Table 4. List of bones of Ornithomimidae.

Tabla 4. Lista de restos óseos de Ornithomimidae.

Taxa (Previous identification)	Locality, Area, State	Stratigraphic unit	Age	Accession number (Previously number): Material (Collection)	References
Ornithomimidae	Porvenir de Jalpa, General Cepeda, Coahuila.	Cerro del Pueblo Formation	Late Campanian	Not given: dorsal and caudal vertebrae, distal and proximal end metatarsals, distal end femur, pedal phalanges (REG615PF).	Ramírez-Velasco, pers. obs., 2012.
Ornithomimidae	Rincón Colorado site 029, General Cepeda, Coahuila.	Cerro del Pueblo Formation	Late Campanian	Not given: caudal vertebra (SEPCP).	Ramírez-Velasco, pers. obs., 2012.
Ornithomimidae	Rincón Colorado site 044, General Cepeda, Coahuila.	Cerro del Pueblo Formation	Late Campanian	Not given: caudal vertebrae (two articulated and one insolated) and long bone fragment (SEPCP).	Ramírez-Velasco, pers. obs., 2012.
Ornithomimidae	Not mentioned, Coahuila	Cerro del Pueblo Formation	Late Campanian	CPC 907: manual ungual.	Rivera-Sylva and Carpenter, 2014a.
				CPC 908: pedal ungual.	
				CPC 909: third phalanx of digit IV	

Table 4. Continuation.
Tabla 4. Continuación.

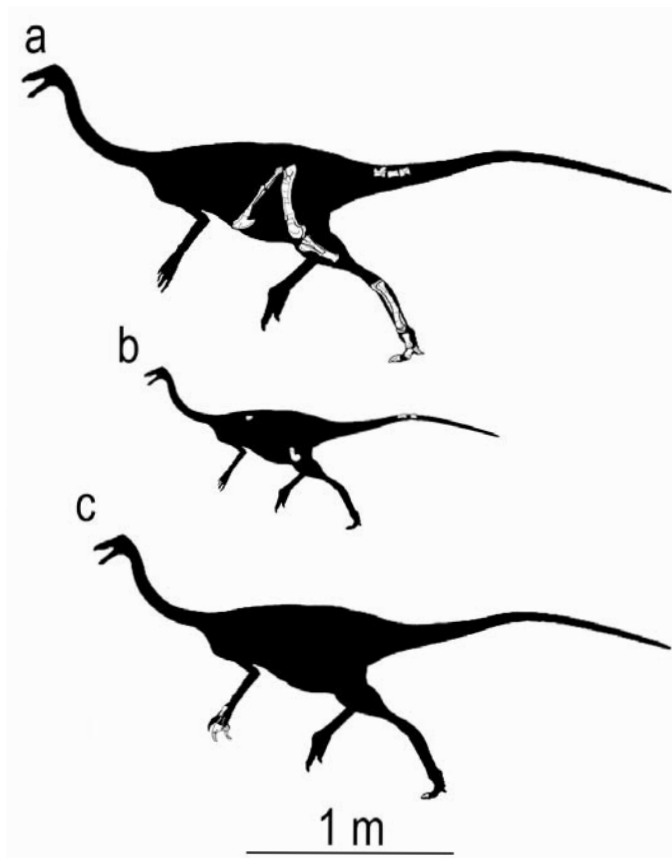


Figure 6. Skeletal drawings of Ornithomimids from Coahuila, showing the elements found. a. *Saltillomimus rapidus* (nomen ex dissertatione) CPC 16/237. b. Composition of ornithomimids from La Parrita: BENC 1/2-0042, 1/2-0081, 1/2-0045 and 1/2-0053. c. Composition of ornithomimids from La Parrita and Agua de Mula: BENC 1/2-0066, 1/2-0070 and 21/2-0010 (all silhouettes modified from *Ornithomimus* Paul, 2010).

Figura 6. Dibujos de esqueletos de Ornithomímidos de Coahuila, mostrando los elementos hallados. a. *Saltillomimus rapidus* (nomen ex dissertatione) CPC 16/237. b. Composición de ornithomímidos de la Parrita: BENC 1/2-0042, 1/2-0081, 1/2-0045 y 1/2-0053. c. Composición de ornithomímidos de la Parrita y Agua de Mula: BENC 1/2-0066, 1/2-0070 y 21/2-0010 (todas las siluetas modificadas de *Ornithomimus* Paul, 2010).

ing to Sullivan and Lucas (2006), and Larson and Currie (2013), the insolated teeth are not reliable indicators of species level without the associated skeletal diagnostic material. We suggest that the teeth referred to as *Dromaesaurus* and *Saurornitholestes* may represent another taxa with a phylogenetically relationship close to these taxa.

Troodontidae

The troodontids are maniraptorans with similarities to the dromaesaurids, also having a sickle claw and stiffened tail, and are phylogenetically related, forming the clade Deinonychosauria. They differ from the dromaesaurids due to the presence of short arms and small teeth with large denticles. They are found in the northern hemisphere.

Troodontid fossils are found in the same areas as the dromaesaurids (Fig. 7). They are identified by isolated teeth and one pedal phalanx (Table 6).

Some teeth have been assigned to *Troodon* sp. (Torres-Rodríguez, 2006; Torres-Rodríguez *et al.*, 2010; Aguillón-Martínez, 2010) and cf. *Troodon formosus* (Romo de Vivar, 2011), however, the discovery of *Talos sampsoni* in southern North America (Zanno *et al.*, 2011), as well as the possibility that the material assigned to *Troodon formosus* from Montana and Alberta may belong to two different species (Paul, 2010), support the idea that the teeth of Mexican troodontids belong to a distinct genus with phylogenetic affinity with *Talos sampsoni* or another unknown taxa.

Avialae

The Avialae are the mesozoic birds closer to the true

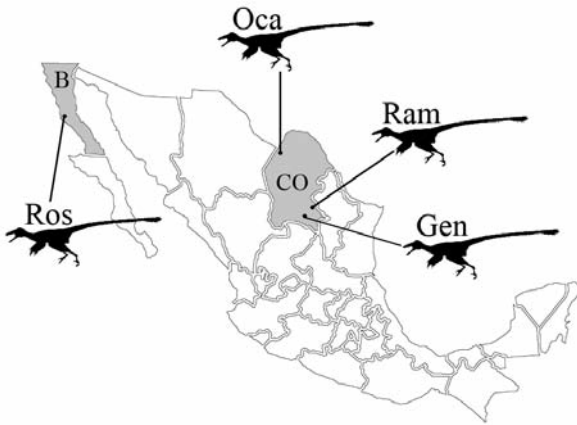


Figure 7. Map of Mexico indicating areas with Deinonychosauria remains (pertain to Dromaeosauridae and Troodontidae) (see Tables 5 and 6). Abbreviations: B, Baja California; CO, Coahuila; Gen, General Cepeda; Oca, Ocampo; Ram, Ramos Arizpe; Ros, Rosario.

Figura 7. Mapa de México indicando las áreas con restos de Deinonychosauria (dromaeosauridae y troodontidae) (ver Tablas 5 y 6). Abreviaturas: B, Baja California; CO, Coahuila; Gen, General Cepeda; Oca, Ocampo; Ram, Ramos Arizpe; Ros, Rosario.

birds. They are characterized by a large anterior portion of the ilium and teeth without serrations.

The avialans has only been found in El Rosario Baja California (Brodkorb, 1976; Hilton, 2003; Rivera-Sylva and Carpenter, 2014a) and recently in Ocampo Coahuila (Porrás-Múzquiz et al., 2014; Fig. 8). They are identified by fragmentary postcranial material (Table 7).

Alexornis antecedens was identified by one specimen with sparrow size, and represent the first and the only known enantiornithine found in North America (Fig. 9).

Porrás-Múzquiz et al., (2014) described a humerus and assigned to *Ichthyornis dispar*. This specimens represent the first ornithurae reported to Mexico.

Titanosauria

The titanosaurs are derived group of sauropods (long necked dinosaurs) represented by a major radiation

Taxa (Previous identification)	Locality, Area, State	Stratigraphic unit	Age	Accession number (Previously number): Material (Collection)	References
Dromaeosaurinae (<i>Dromaeosaurus</i> sp. Matthew and Brown, 1922)	El Pantano, Ramos Arizpe, Coahuila.	Cerro del Pueblo Formation	Late Campanian	SEPCP 47/745: dentary tooth.	Aguillón-Martínez, 2010.
Dromaeosaurinae (<i>Dromaeosaurus</i> sp. Matthew and Brown, 1922)	La Parrita, General Cepeda, Coahuila.	Cerro del Pueblo Formation	Late Campanian	SEPCP 9/644: dentary tooth.	Aguillón-Martínez, 2010.
Dromaeosaurinae (<i>Dromaeosaurus</i> sp. Matthew and Brown, 1922)	Las Águilas, General Cepeda, Coahuila.	Cerro del Pueblo Formation	Late Campanian	SEPCP 61/729: pedal unguis.	Aguillón-Martínez, 2010.
Saurornitholestinae (cf. <i>Saurornitholestes</i> sp. Sues, 1978)	Not mentioned, El Rosario, Baja California.	El Gallo Formation	Late Campanian	LACM 42637: tooth. LACM 42675: tooth. LACM 42585: tooth.	Hilton, 2003.
Saurornitholestinae (<i>Saurornitholestes</i> sp. Sues, 1978)	Ros 51, El Rosario area, Baja California.	El Gallo Formation	Late Campanian	Not given: tooth (IGM).	Romo de Vivar, 2011.
Saurornitholestinae (<i>Saurornitholestes langstoni</i> Sues, 1978)	Anizul, Ocampo, Coahuila.	Aguja Formation	Late Campanian	Not given: tooth (IGM).	Monroy-Mújica, 2009.
Saurornitholestinae (<i>Saurornitholestes langstoni</i> Sues, 1978)	Las Garzas, Ocampo, Coahuila.	Aguja Formation	Late Campanian	IGM 6201: tooth.	Torres-Rodríguez, 2006; Torres-Rodríguez et al., 2010.
Saurornitholestinae (<i>Saurornitholestes langstoni</i> Sues, 1978)	Las Garzas, Ocampo, Coahuila.	Aguja Formation	Late Campanian	Not given: tooth (IGM).	Monroy-Mújica, 2009.
Saurornitholestinae (<i>Saurornitholestes</i> n. sp? A. Sankey et al., 2005)	Las Garzas, Ocampo, Coahuila.	Aguja Formation	Late Campanian	IGM 6202: tooth.	Torres-Rodríguez, 2006; Torres-Rodríguez et al., 2010.
Saurornitholestinae (<i>Saurornitholestes</i> n. sp? C. Sankey et al., 2005)	Las Garzas, Ocampo, Coahuila.	Aguja Formation	Late Campanian	IGM 6203: tooth. Not given: tooth.	Torres-Rodríguez, 2006; Torres-Rodríguez et al., 2010.

Table 5. List of bones of Dromaeosauridae.

Tabla 5. Lista de restos óseos de Dromaeosauridae.

Taxa (Previous identification)	Locality, Area, State	Stratigraphic unit	Age	Accession number (Previously number): Material (Collection)	References
Sauornitholestinae (<i>Sauornitholestes</i> n. sp? C. Sankey <i>et al.</i> , 2005)	Las Garzas, Ocampo, Coahuila.	Aguja Formation	Late Campanian	Not given: tooth.	Monroy-Mújica, 2009.
Sauornitholestinae (<i>Sauornitholestes</i> sp. Sues, 1978)	Las Garzas, Ocampo, Coahuila.	Aguja Formation	Late Campanian	IGM 6199: tooth fragment. IGM 6200: tooth fragment.	Torres-Rodríguez, 2006; Torres-Rodríguez <i>et al.</i> , 2010.
Sauornitholestinae (<i>Sauornitholestes</i> sp. Sues, 1978)	La Parrita, General Cepeda, Coahuila.	Cerro del Pueblo Formation	Late Campanian	SEPCP 9/624: tooth. SEPCP 9/626: manual ungual. SEPCP 9/700: tooth. SEPCP 9/725: pedal ungual. SEPCP 9/726: manual ungual. SEPCP 9/731: manual ungual.	Aguillón-Martínez, 2010.
Dromaeosauridae	El Rosario area, Baja California.	El Gallo Formation	Late Campanian	LACM 58010: tooth.	Hilton, 2003.
Dromaeosauridae	Not mentioned, Ocampo, Coahuila.	Aguja Formation	Late Campanian	CPC 911: pedal phalanx.	Rivera-Sylva and Carpenter, 2014a.
Dromaeosauridae	La Parrita, General Cepeda, Coahuila.	Cerro del Pueblo	Late Campanian	Not given: tooth (CPC).	Vivas-González, 2013

Table 5. Continuation.
Tabla 5. Continuación.

Taxa (Previous identification)	Locality, Area, State	Stratigraphic unit	Age	Accession number (Previously number): Material (Collection)	References
Troodontidae (cf. <i>Troodon formosus</i> Leidy, 1856)	Ros 51, El Rosario, Baja California.	El Gallo Formation	Late Campanian	Not given: tooth (IGM). Not given: tooth (IGM).	Romo de Vivar, 2011.
Troodontidae	El Pelillal, Ramos Arizpe, Coahuila.	Cerro del Pueblo Formation	Late Campanian	IGM 7710: pedal phalanx	Rodríguez-de la Rosa and Cevallos-Ferriz, 1998.
Troodontidae (<i>Troodon</i> sp. Leidy, 1856)	Las Garzas, Ocampo, Coahuila.	Aguja Formation	Late Campanian	IGM 6204: tooth.	Torres-Rodríguez, 2006; Torres-Rodríguez <i>et al.</i> , 2010.
Troodontidae (<i>Troodon</i> sp. Leidy, 1856)	La Parrita, General Cepeda, Coahuila.	Cerro del Pueblo Formation	Late Campanian	SEPCP 9/778: tooth.	Aguillón-Martínez, 2010.

Table 6. List of bones of Troodontidae.
Tabla 6. Lista de restos óseos de Troodontidae.

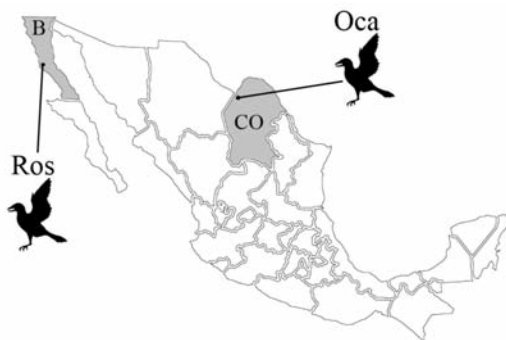


Figure 8. Map of Mexico indicating area with Avialae remains (see Table 7). Abbreviations: B, Baja California; CO, Coahuila; Oca, Ocampo; Ros, El Rosario.

Figura 8. Mapa de México indicando el área con restos de Avialae (ver Tabla 7). Abreviaturas: B, Baja California; CO, Coahuila; Oca, Ocampo; Ros, El Rosario.

of Cretaceous taxa found worldwide. In North America, the titanosaurs persisted in lesser numbers into the Early Cretaceous, disappearing from the fossil record in the Cenomanian and reappearing at the end of the Cretaceous (Maastrichtian age; D Emic *et al.*, 2010). They are characterized by their wide stance, flared hips, the phalanges lost on their hands, and in some of them, the presence of osteoderms.

The titanosaur material comes from Manuel Benavides (Montellano-Ballesteros, 2003; Rivera-Sylva *et al.*, 2006a; Montañó *et al.*, 2009) and an unknown region of Chihuahua (Rivera-Sylva and Carpenter, 2014a; Fig. 10). Their fossil record consists of weathered vertebrae and hind limbs (Table 8). Rivera-Sylva and Carpenter (2014a) mention vertebrae, femur, fragmentary tibia and ulna from an unde-



Figure 9. Skeletal drawing of *Alexornis antecedens* IGM 2900 from Baja California, showing the elements found (the grey elements represent the missing parts of bones).

Figura 9. Dibujo del esqueleto de *Alexornis antecedens* IGM 2900 de Baja California, mostrando los elementos hallados (los elementos de color gris representan las secciones perdidas de los huesos).

scribed titanosaur on display in the Museo de Paleontología de Delicias, in Chihuahua. They referred the material tentatively to *Alamosaurus sanjuanensis* based on the similarity of their dorsal vertebrae. However, *A. sanjuanensis* is only known for maastrichtian deposits (Paul, 2010), making the identification questionable.

D’Emic *et al.*, (2010) challenged the assignment of the titanosaur vertebrae described by Montellano-Ballesteros (2003), as the material cannot be reliably identified and differentiated as Titanosauria or hadrosaur. According to the evidence provided by D’Emic *et al.*, (2010), it seems that the Mexican material assigned to Titanosauria from Campanian age may be wrongly dated or identified. All the Mexican Titanosauria requires more detailed description and comparison with other sauropods to confirm its presence in the Campanian age of southern North America.

Taxa (Previous identification)	Locality, Area, State	Stratigraphic unit	Age	Accession number (Previously number): Material (Collection)	References
<i>Alexornis antecedens</i> Brodkorb, 1976	Southwest of El Rosario, El Rosario, Baja California.	La Bocana Roja Formation	Early Campanian	IGM 2900 (LACM 33212): Fragments of left scapula and coracoid, right ulna, left femur and right tibiotarsus.	Brodkorb, 1976; Hilton, 2003; Ramírez-Velasco, pers. obs., 2012; Rivera-Sylvia and Carpenter, 2014a.
<i>Ichthyornis dispar</i> Marsh, 1872	Piedritas, Ocampo, Coahuila	Austin Group	Late Coniacian-Early Campanian	MUZ 689: right humerus in a slab and counter slab.	Porras-Múzquiz et al., 2014.

Table 7. List of bones of Enanthiornithe.

Tabla 7. Lista de restos óseos de Enanthiornithe.



Figure 10. Map of Mexico indicating areas with Titanosauria remains (see Table 8). Abbreviations: CH, Chihuahua; Man, Manuel Benavides.

Figura 10. Mapa de México indicando el área con restos de Titanosauria (ver Tabla 8). Abreviaturas: CH, Chihuahua; Man, Manuel Benavides.

Ankylosauria

The ankylosaurs are a group characterized by armour fused to the skull roof, the rings of fused armour or osteoderms in the neck, smaller scuted osteoderms over the back and a broad hip region. The Ankylosauria are divided into two or three families depending on the author, the ankylosaurids, the nodosaurids and the enigmatic polacanthids, which are distinguished by the form of their armour. The Ankylosauridae possess a band of cone-like osteoderms arranged in transverse rows with a globular tail club, The Nodosauridae show low-keeled neck plates and spikes along the side of the body. The Polacanthidae have triangular spiny plates along the side of the body and armour plate over the pelvis.

Ankylosaurs are found in El Rosario Baja California (Morris, 1967, Hilton, 2003; Martínez-Díaz, 2011;

Taxa (Previous identification)	Locality, Area, State	Stratigraphic unit	Age	Accession number (Previously number): Material (Collection)	References
Titanosauria	Altaires, Manuel Benavides, Chihuahua.	Aguja Formation	Late Campanian	Not given: right tibia (INEGI).	Rivera-Sylva <i>et al.</i> , 2006a; Ramírez-Velasco, pers. obs., 2012.
Titanosauria	Cri-cri, Manuel Benavides, Chihuahua.	Aguja Formation	Late Campanian	IGM 6080: caudal vertebrae.	Montellano-Ballesteros, 2003.
Titanosauria	Pico de Pato, Manuel Benavides, Chihuahua.	Aguja Formation	Late Campanian	Not given: distal end tibia and femur fragments (IGM-MG).	Montaño <i>et al.</i> , 2009.
Titanosauria	Not mentioned, Chihuahua.	Javelina Formation	Maastrichtian	Not given: vertebrae, right femur, proximal fragment of a tibia and one ulna (MPD)	Rivera-Sylva and Carpenter, 2014a.

Table 8. List of bones of Titanosauria.

Tabla 8. Lista de restos óseos de Titanosauria.

Rivera-Sylva *et al.*, 2011), Manuel Benavides and Aldama Chihuahua (Martínez-Díaz, 2011; Rivera-Sylva *et al.*, 2011a), Ocampo, Sabinas, General Cepeda and Saltillo Coahuila (Meyer *et al.*, 2005; Rivera-Sylva and Espinoza-Chávez, 2006; Martínez-Díaz, 2011; Martínez-Díaz and Montellano-Ballesteros, 2011; Rivera-Sylva *et al.*, 2008, 2009b, 2011a; pers. obs. Ramírez-Velasco, 2012; Rivera-Sylva and Carpenter 2014b; Figure 11). They are identified mainly by osteoderms and one tooth. Only the nodosaurids CPC 272 and CPC 273 are represented by associated osteoderms with fragments of postcranial material (Fig. 12; Table 9).

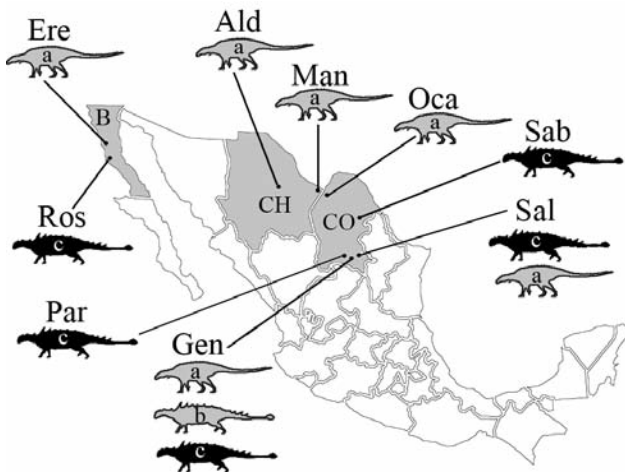


Figure 11. Map of Mexico indicating areas with Ankylosauria remains (see Table 9). a. Nodosauridae, b. Ankylosauridae, c. indeterminate Ankylosauria. Abbreviations: Ald, Aldama; B, Baja California; CH, Chihuahua; CO, Coahuila; Ere, Eréndira; Gen, General Cepeda; Man, Manuel Benavides; Oca, Ocampo; Par, Parras de la Fuente; Ros, Rosario; Sab, Sabinas; Sal, Saltillo.

Figura 11. Mapa de México indicando las áreas con restos de Ankylosauria (ver Tabla 9). a. Nodosauridae, b. Ankylosauridae, c. Ankylosauria indeterminados. Abreviaturas: Ald, Aldama; B, Baja California; CH, Chihuahua; CO, Coahuila; Ere, Eréndira; Gen, General Cepeda; Man, Manuel Benavides; Oca, Ocampo; Par, Parras de la Fuente; Ros, Rosario; Sab, Sabinas, Sal, Saltillo.

One of us (Ramírez-Velasco) found new material probably belonging to ankylosaurids, including a robust phalanx with latero-ventrally rounded process from General Cepeda (like the phalanx illustrated by Johnson, 2009), a metatarsal with the same process from Saltillo, and a weathered conical osteoderm with concave ventral surfaces associated with a femur fragment from Parras de la Fuente Coahuila (Ramírez-Velasco, 2011 pers. obs.)

The Mexican ankylosaurids have been identified as Ankylosauridae (Rivera-Sylva and Espinoza-Chávez, 2006) and mostly Nodosauridae (Martínez-Díaz, 2011; Rivera-Sylva *et al.*, 2011a; Fig. 10). Some nodosaurid material has been referred to as *Edmontonia* sp. (Rivera-Sylva *et al.*, 2008, 2009) and later reassigned to Nodosauridae indet (Rivera-Sylva *et al.*, 2011a) and one osteoderm to cf. *Panoplosaurus* (Martínez-Díaz, 2011; Martínez-Díaz and Montellano-Ballesteros, 2011). The identification of *Edmontonia* and *Panoplosaurus* only from osteoderms is quite risky, as it has currently been observed that in the specimens considered as *Euoplocephalus*. According to Arbour and Currie (2013) the *Euoplocephalus* specimens belong to four genera, differing in their arrangement of the skull armour, the shape of the medial osteodermal ring and the tail club knob shape, indicating that the assignment of only isolated osteoderms to a taxon may be problematic, making the identification for the Mexican material questionable.

Pachycephalosauridae

The pachycephalosaurs are a family characterized by bipedal dinosaurs with a thickened skull roof, forming in some cases a dome, the stiffening of the tail by interlocking tendons, and the spinal column with distinctive tongue-and-groove articulation for rigidity their backs. They are found in the northern North America and Asia.

Recently Rivera-Sylva *et al.*, (2010) mentioned and

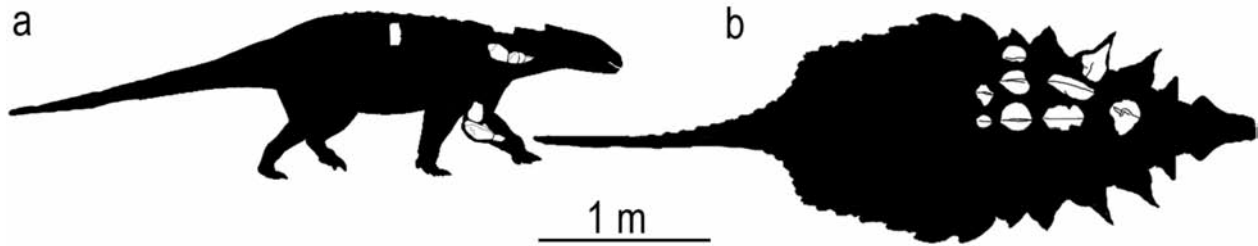


Figure 12. Skeletal drawings of Nodosaurids from Coahuila, showing the diagnostic elements. a. Indetermined nodosaurid CPC 272. b. Indetermined nodosaurid CPC 273, in dorsal view (all silhouettes modified from *Edmontonia* Paul, 2010).

Figura 12. Dibujos de esqueletos de Nodosáuridos de Coahuila, mostrando los elementos diagnósticos. a. Nodosáurido indeterminado CPC 272. b. Nodosáurido indeterminado CPC 273 en vista dorsal (todas las siluetas modificadas de *Edmontonia* Paul, 2010).

Taxa (Previous identification)	Locality, Area, State	Stratigraphic unit	Age	Accession number (Previously number): Material (Collection)	References
Nodosauridae	El Jabón creek, Eréndira, Baja California.	El Gallo Formation	Late Campanian	UABC FCM 2625: tooth.	Rivera-Sylva <i>et al.</i> , 2011a; Martínez-Díaz, 2011.
Ankylosauria	Not mentioned, Aldama, Chihuahua.	San Carlos Formation	Early Campanian	Not given: two vertebrae and metatarsal (CPC).	Rivera-Sylva <i>et al.</i> , 2011a.
Nodosauridae	Altares, Manuel Benavides, Chihuahua.	Aguja Formation	Late Campanian	Not given: osteoderm (IGM).	Martínez-Díaz, 2011.
Nodosauridae	Icoteas, Manuel Benavides, Chihuahua.	Aguja Formation	Late Campanian	Not given: osteoderm (IGM).	Martínez-Díaz, 2011.
Nodosauridae (cf. <i>Panoplosaurus</i> sp. Lambe, 1919)	El Rebaje, Ocampo, Coahuila.	Aguja Formation	Late Campanian	Not given: osteoderms (IGM).	Martínez-Díaz, 2011; Martínez-Díaz and Montellano-Ballesteros, 2011.
Nodosauridae	El Rebaje, Ocampo, Coahuila.	Aguja Formation	Late Campanian	Not given: three osteoderms (IGM).	Martínez-Díaz, 2011.
Nodosauridae	South of San Miguel, Ocampo, Coahuila.	Pen Formation	Campanian	CPC 272: dorsal and caudal vertebra, distal end humerus, partial ulna, distal end femur, rib fragment and osteodermal spine.	Rivera-Sylva <i>et al.</i> , 2011a.
Nodosauridae	West of El Carricito (previously Las Jicoteas), Ocampo, Coahuila.	Aguja Formation	Late Campanian	CPC 273: two caudal vertebrae, cervical rib, ribs fragments, ilium fragment, proximal end tibia and femur, 13 osteoderms, proximal end scapula and bones fragments.	Rivera-Sylva <i>et al.</i> , 2008, 2009b, 2011a; Rivera-Sylva and Carpenter, 2014b.
Nodosauridae	El Pelillal, Saltillo, Coahuila.	Cerro del Pueblo Formation	Late Campanian	CPC 275: caudal vertebra.	Rivera-Sylva <i>et al.</i> , 2011a.
Nodosauridae	La Parrita, General Cepeda, Coahuila.	Cerro del Pueblo Formation	Late Campanian	Not given: two osteoderms (IGM).	Martínez-Díaz, 2011.
Nodosauridae	La Parrita, General Cepeda, Coahuila.	Cerro del Pueblo Formation	Late Campanian	BENC 3/4-0001: tooth.	Martínez-Díaz, 2011.
Ankylosauridae	La Rosa, General Cepeda, Coahuila.	Cerro del Pueblo Formation	Late Campanian	BENC 1/4-0001: osteoderm.	Rivera-Sylva and Espinoza-Chávez, 2006.
				BENC 1/4-0002: osteoderm.	
				BENC 1/4-0003: osteoderm.	
				BENC 1/4-0004: osteoderm.	
Ankylosauria	Not mentioned, El Rosario, Baja California	El Gallo Formation	Late Campanian	IGM (LACM 29000): osteoderm.	Morris, 1967; Hilton, 2003.
Ankylosauria	Not mentioned, Sabinas, Coahuila.	Olmos Formation	Late Campanian-Early Maastrichtian	Not given: femur (PASAC?).	Meyer <i>et al.</i> , 2005.
Ankylosauria	Cañon del Oso, Saltillo, Coahuila.	Olmos Formation	Late Campanian-Early Maastrichtian	Not given: metatarsal fragment (IGM).	Ramírez-Velasco, pers. obs., 2012.
Ankylosauria	Rojas I, General Cepeda, Coahuila.	Cerro del Pueblo Formation	Late Campanian-	Not given: phalanx (IGM).	Ramírez-Velasco, pers. obs., 2012.
Ankylosauria	Dinosaurio Armado, Parras de la Fuente, Coahuila.	Cerro del Pueblo Formation	Late Campanian	Not given: osteoderm? (IGM).	Ramírez-Velasco, pers. obs., 2012.
				Not given: femur fragment (IGM).	

Table 9. List of bones of Ankylosauria.

Tabla 9. Lista de restos óseos de Ankylosauria.

later illustrated and described (Rivera-Sylva and Carpenter, 2014b) a tooth crown from Ocampo Coahuila (Fig. 13; Table 10). This tooth crown probably represents the first pachycephalosauria material from Mexico, but the marked central ridges in labial view, the presence of central ridge in ligual view, and the marked cingulum differ from the descriptions of other pachycephalosaurid teeth (Brown and Schlaikjer, 1943; Bakker *et al.*, 2006). These findings suggest that this may represent a new pachycephalosaurid with unusual characters or an undescribed ornithischian.

Ceratopsidae

The ceratopsids family are a subgroup found in Upper Cretaceous strata in North America. They are characterized by densely packed rows of teeth, a large supraorbital horn core, and an elongated frill with marginal little horns called epoccipitals. The ceratopsids are divided into two subgroups, the centrosaurines and chasmosaurines. The Centrosaurinae are characterized by a greatly enlarged nose and robust epoccipitals horns over the tip of the frill. The Chasmosaurinae differed from the centrosaurines by

an enlarged front tip of the upper snout and small triangular epoccipitals along the side of the frill.

The ceratopsid come from El Rosario Baja California (Hernández-Rivera, 1997), Naco-Cananea and Fronteras Sonora (Lucas and González-León, 1996; pers. obs. Ramírez-Velasco, 2012), Aldama, Ojinaga and Manuel Benavides Chihuahua (Andrade-Ramos *et al.*, 2002; Andrade-Ramos, 2003; Westgate *et al.*, 2002a, 2002b; pers. obs. Ramírez-Velasco, 2012; Rivera-Sylva and Carpenter, 2014b), Ocampo, Sabinas, Hipólito, Saltillo, General Cepeda, Parras de la Fuente and Sierra Mojada Coahuila (Janensch, 1926; Murray *et al.*, 1960; Ojeda-Rivera *et al.*, 1968; Silva-Bárceñas, 1969; Hernández-Rivera *et al.*, 1995; Hernández-Rivera and Delgado-de Jesús, 1999; Hernández-Rivera, 2007; Lund *et al.*, 2007; Rivera-Sylva *et al.*, 2007, 2011b; Aguillón-Martínez, 2010; Loewen *et al.*, 2010; Porrás-Múzquiz and Lehman, 2011; Rodríguez-de la Rosa, 2011; pers. obs. Ramírez-Velasco, 2012; Rivera-Sylva and Carpenter, 2014b; Fig. 14). They are identified by isolated postcranial elements, such as caudal, sacral and some dorsal vertebrae, scapula, femur, tibia fragment, humerus fragment, ulna fragment, pelvic fragments, metatarsals, phalanges, and cranial elements such as squamosal and supraorbital horncore (Tables 11-13). The *Coahuilaceratops magnacuerna*, cf. *Chasmosaurus*, the chasmosaurinae CPC 278 and centrosaurinae from Ocampo and Aldama are represented by associated cranial and poscranial material (Fig. 15; Tables 12-13).

We have identified some ceratopsian bones in the paleontological collections, from Fronteras Sonora, Manuel Benavides and Aldama from Chihuahua, Ocampo, Sabinas, General Cepeda, Saltillo and Parras de la Fuente of Coahuila (Ramírez-Velasco, 2012 pers obs.). The ceratopsid caudal vertebrae found in the collections were identified by the presence of cylindrical transverse processes, rounded centra in anterior view and the present of parapophyses under the transverse processes (Johnson, 2009). Some appendicular bones were identified by the antero-posteriorly compressed shaft and the rugose articular surface (Ramírez-Velasco, 2012 pers obs.).

Jannesch (1926) described a squamosal, vertebra, femur and other bones with catalogue number MB.R.

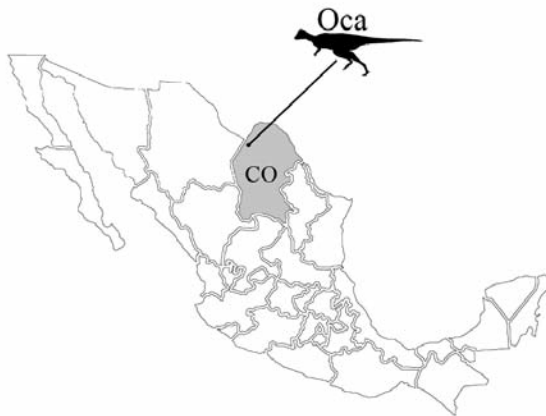


Figure 13. Map of Mexico indicating areas with Pachycephalosauridae remains (see Table 10). Abbreviations: CO, Coahuila; Oca, Ocampo.

Figura 13. Mapa de México indicando el área con restos de Pachycephalosauridae (ver Tabla 10). Abreviaturas: CO, Coahuila; Oca, Ocampo.

Taxa (Previous identification)	Locality, Area, State	Stratigraphic unit	Age	Accession number (Previously number): Material (Collection)	References
Pachycephalosauridae	Near La Salada, Ocampo, Coahuila.	Aguja Formation	Late Campanian	CPC 538: tooth.	Rivera-Sylva <i>et al.</i> , 2010; Rivera-Sylva and Carpenter, 2014b.

Table 10. List of bones of Pachycephalosauridae.

Tabla 10. Lista de restos óseos de Pachycephalosauridae.

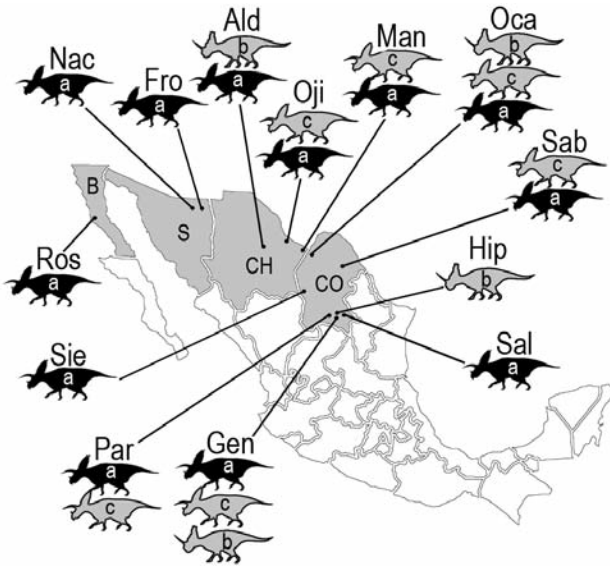


Figure 14. Map of Mexico indicating areas with Ceratopsidae remains (see Tables 11-13). a. indeterminate Ceratopsidae. b. Centrosaurinae. c. Chasmosaurinae. Abbreviations: Ald, Aldama; B, Baja California; CH, Chihuahua; CO, Coahuila; Fro, Fronteras; Gen, General Cepeda; Hip, Hipólito; Man, Manuel Benavides; Nac, Naco-Cananea; Oca, Ocampo; Oji, Ojinaga; Par, Parras de la Fuente; Ros, Rosarío; S, Sonora; Sab, Sabinas; Sal, Saltillo; Sie, Sierra Mojada.

Figura 14. Mapa de México indicando las áreas con restos de Ceratopsidae (ver Tablas 11-13). a. Ceratopsidae indeterminados. b. Centrosaurinae. c. Chasmosaurinae. Abreviaturas: Ald, Aldama; B, Baja California; CH, Chihuahua; CO, Coahuila; Fro, Fronteras; Gen, General Cepeda; Hip, Hipólito; Man, Manuel Benavides; Nac, Naco-Cananea; Oca, Ocampo; Oji, Ojinaga; Par, Parras de la Fuente; Ros, Rosarío; S, Sonora; Sab, Sabinas; Sal, Saltillo; Sie, Sierra Mojada.

1926, identified as ceratopsid. Rivera-Sylva and Carpenter (2014b) recently re-examined a cast of the squamosal fragment MB.R. 1926 and reinterpreted as a left ilium fragment from hadrosaur due to the presence of the sacral facets and the lower surface of the preacetabular process. However, the interpretation of the “squamosal” MB.R. 1926 as a hadrosaurid does not match the morphology of the ilium of other hadrosaurs (pers. obs. Ramírez-Velasco, 2014). The facets of the sacral vertebrae in other hadrosauridae are placed under the dorsal border near the central area of the ilium body and not in the dorsal border (Rivera-Sylva and Carpenter, 2014b, Figure 10.8). Furthermore, MB.R. 1926 in lateral view shows a supraacetabular process robust, long and straight, similar to some basal hadrosauroids and ceratopsids. The supraacetabular process in hadrosaurids is placed in the middle section of the ilium body, with borders decreasing anteriorly and posteriorly. On the basis of these arguments we agree with the interpretation of the squamosal bone by the ilium fragment by Rivera-Sylva and Carpenter (2014b), but suggest keeping its identification as a ceratopsid.

Some of the Mexican ceratopsids are identified as centrosaurines and chasmosaurines. The Centrosaurines are found in Chihuahua (Rivera-Sylva and Carpenter, 2014b) and Coahuila (Murray *et al.*, 1960; Loewen *et al.*, 2010; Rivera-Sylva *et al.*, 2011; pers. obs. Hernández-Rivera, 2012; Table 12). Rivera-Sylva and Carpenter (2014b) mentioned two skeletons of undescribed chasmosaurines from a private

Taxa (Previous identification)	Locality, Area, State	Stratigraphic unit	Age	Accession number (Previously number): Material (Collection)	References
Ceratopsidae	Near Village La Bocana, El Rosarío, Baja California.	Gallo Formation	Late Campanian	Not given: fragments of frill (?).	Hernández-Rivera <i>et al.</i> , 1997.
Ceratopsidae	"El Álamo", Fronteras, Sonora	Cabullona Group.	Late Campanian-Late Maastrichtian	Not given: caudal vertebra (MPF).	Ramírez-Velasco, pers. obs., 2012.
				Not given: caudal vertebrae and fragments (MPF).	
				Not given: caudal vertebra (MPF).	
Ceratopsidae	El Alamito, Fronteras, Sonora	Cabullona Group.	Late Campanian-Late Maastrichtian	Not given: proximal end femur (MPF).	Ramírez-Velasco, pers. obs., 2012.
Ceratopsidae	Locality 30, Naco-Cananea, Sonora.	Lomas Coloradas Formation	Maastrichtian	ERNO 314: vertebra.	Lucas and González-León, 1996.
Ceratopsidae	Locality 6, Naco-Cananea, Sonora.	Corral de Enmedio Formation	Late Campanian	Not given: vertebra (ERNO).	Lucas and González-León, 1996.
Ceratopsidae	SON-14, Naco-Cananea, Sonora	Cabullona Group.	Late Campanian-Late Maastrichtian	Not given: vertebra and phalanx (ERNO).	Ramírez-Velasco, pers. obs., 2012.
Ceratopsidae	Not named, Aldama, Chihuahua.	San Carlos Formation / Ojinaga Formation	Campanian	Not given: scapula, dorsal vertebrae, metatarsal and other unprepared bones (IGM).	Ramírez-Velasco, pers. obs., 2013.

Table 11. List of bones of Ceratopsidae.

Tabla 11. Lista de restos óseos de Ceratopsidae.

Taxa (Previous identification)	Locality, Area, State	Stratigraphic unit	Age	Accession number (Previously number): Material (Collection)	References
Ceratopsidae	Not mentioned, Ojinaga, Chihuahua	San Carlos Formation	Campanian	Not given: not mentioned (?).	Westgate <i>et al.</i> , 2002a.
Ceratopsidae	Outcrops near Ojinaga, Ojinaga, Chihuahua.	San Carlos Formation	Campanian	Not given: not mentioned (?).	Westgate <i>et al.</i> , 2002a.
Ceratopsidae	Altare, Manuel Benavides, Chihuahua.	Aguja Formation	Late Campanian	Not given: dorsal vertebra (IGM). Not given: caudal vertebra (IGM).	Ramírez-Velasco, pers. obs., 2012.
Ceratopsidae (Nodosauridae)	Altare, Manuel Benavides, Chihuahua.	Aguja Formation	Late Campanian	Not given: caudal vertebra (IGM).	Martínez-Díaz, 2011; Ramírez-Velasco, pers. obs., 2012.
Ceratopsidae	Ícoteas, Manuel Benavides, Chihuahua.	Aguja Formation	Late Campanian	Not given: two phalanx and vertebra (IGM).	Ramírez-Velasco, pers. obs., 2012.
Ceratopsidae	Álamos de Márquez, Ocampo, Coahuila.	Aguja Formation	Late Campanian	Not given: distal end tibia (IGM).	Ramírez-Velasco, pers. obs., 2012.
Ceratopsidae	Dueto Miseria, Ocampo, Coahuila.	Aguja Formation	Late Campanian	Not given: caudal vertebra (IGM).	Ramírez-Velasco, pers. obs., 2012.
Ceratopsidae	Las Garzas, Ocampo, Coahuila.	Aguja Formation	Late Campanian	Not given: right femur (IGM).	Ramírez-Velasco, pers. obs., 2012.
Ceratopsidae	La Salada, Ocampo, Coahuila.	Aguja Formation	Late Campanian	Not given: not mentioned (CPC).	Rivera-Sylva <i>et al.</i> , 2007.
Ceratopsidae	Near Múzquiz, Sabinas, Coahuila.	Olmos Formation	Late Campanian- Early Maastrichtian	MUZ 310: distal end humerus.	Porras-Múzquiz and Lehman, 2011.
Ceratopsidae	Nueva Rosita, Sabinas, Coahuila.	Olmos Formation	Late Campanian- Early Maastrichtian	Not given: vertebrae fragment (IGM).	Ramírez-Velasco, pers. obs., 2012.
Ceratopsidae	Ejido Puebla, Saltillo, Coahuila.	Cerro del Pueblo Formation	Late Campanian	Not given: metatarsal (SEPCP).	Ramírez-Velasco, pers. obs., 2012.
Ceratopsidae	Loma del Aire, Saltillo, Coahuila.	San Miguel Formation	Late Campanian	Not given: caudal vertebra (IGM).	Ramírez-Velasco, pers. obs., 2012.
Ceratopsidae	Cerro de los Dinosaurios M6, General Cepeda, Coahuila.	Cerro del Pueblo Formation	Late Campanian	Not given: femur (IGM-MG).	Hernández-Rivera, 1997; Ramírez-Velasco, pers. obs., 2012.
Ceratopsidae	La Parrita, General Cepeda, Coahuila.	Cerro del Pueblo Formation	Late Campanian	SEPCP 9/699: tooth. SEPCP 9/785: tooth.	Aguillón-Martínez, 2010.
Ceratopsidae	Rincón Colorado HB quarry, General Cepeda, Coahuila.	Cerro del Pueblo Formation	Late Campanian	Not given: squamosal fragment (IGM-MG).	Ramírez-Velasco, pers. obs., 2012.
Ceratopsidae	Rojas II, General Cepeda, Coahuila.	Cerro del Pueblo Formation	Late Campanian- Late Maastrichtian	Not given: metacarpal (IGM).	Ramírez-Velasco, pers. obs., 2012.
Ceratopsidae	Presa San Antonio, Parras de la Fuente, Coahuila.	Cerro del Pueblo Formation	Late Campanian	Not given: serie sacral vertebrae, two proximal end femora and proximal end ulna (IGM-MG).	Ramírez-Velasco, pers. obs., 2012.
Ceratopsidae (Hadrosauridae)	Hacienda de Movano, Sierra Mojada, Coahuila.	Unknown	Early Maastrichtian	MB.R.1929: right squamosal fragment (or ilium fragment), caudal vertebra, large section of femur and two undetermined fragments.	Janensch, 1926; Rivera-Sylva and Carpenter, 2014b; Ramírez-Velasco, pers. obs., 2012.
Ceratopsidae	Southeastern part of Coahuila, Unknown.	Cerro del Pueblo Formation	Late Campanian	Not given: fragments of frill (?).	Hernández-Rivera <i>et al.</i> , 1995.
Ceratopsidae	Southwest of La Esmeralda, Sierra Mojada, Coahuila.	Unknown	Early Maastrichtian	CPC 906: three fused sacral vertebrae, two caudal vertebrae and distal end of right femur.	Rivera-Sylva and Carpenter, 2014b; Ramírez-Velasco, pers. obs., 2013.

Table 11. Continuation.**Tabla 11.** Continuación.

collection (on display in the Museo del Mamut, Chihuahua). We observed one of them and represents a chimeric skeleton composed of hadrosaurid and ceratopsid material (pers. obs. Hernández-Rivera, 2012). However, the cranial material of them formed by a subrectangular complete frill with large and oval parietal fenestrae and the robust supraorbital horn-core resembles like as the cranial material of

Nasutoceratops (Sampson *et al.*, 2014). This *Nasutoceratops*-like centrosaurine from the private collection of Chihuahua requires a detailed study to confirm these observations or to discover another skeleton of the same indeterminate taxa. Other centrosaurine material was collected in Hipólito and identified by Wilson and Colbert (Murray *et al.*, 1960) as *Monoclonius*. This genus is now considered

Taxa (Previous identification)	Locality, Area, State	Stratigraphic unit	Age	Accession number (Previously number): Material (Collection)	References
Centrosaurinae (Chasmosaurinae)	Racho Don Chuy, Aldama, Chihuahua.	Unknown	Unknown	Not given: one complete frill and postorbital horns, cranial elements and some postcranial elements (MM)	pers. obs. Hernández-Rivera, 2012; Rivera-Sylva and Carpenter, 2014b.
Centrosaurinae	Not mentioned, Ocampo, Coahuila.	Aguja Formation	Late Campanian	Not given: squamosal, premaxilla fragment and other cranial and postcranial elements (CPC).	Rivera-Sylva <i>et al.</i> , 2011b; Rivera-Sylva and Carpenter, 2014b.
Centrosaurinae (<i>Monoclonius</i> sp. Cope, 1876)	Cuesta "A", Hipólito, Coahuila.	Difunta Group	Late Campanian-Late Maastrichtian	Not given: not mentioned (?).	Murray <i>et al.</i> , 1960.
Centrosaurinae	Near Town Rincón Colorado, General Cepeda, Coahuila.	Cerro del Pueblo Formation	Late Campanian	CPC 279: partial right squamosal.	Loewen <i>et al.</i> , 2010.

Table 12. List of bones of Centrosaurinae.

Tabla 12. Lista de restos óseos de Centrosaurinae.

invalid by Sampson *et al.*, (1997) and Frederickson and Tumarkin-Deratzian, (2014) and reassigned to *Centrosaurus*. The Hipólito specimen probably represents a distinct taxa, because *Centrosaurus* has only been collected in Alberta Canada (Paul, 2010).

The Chasmosaurinae from Chihuahua are referred to *Agujaceratops mariscalensis* (Andrade-Ramos *et al.*, 2002; Andrade-Ramos, 2003), cf. *A. mariscalensis* (Westgate *et al.*, 2002b) and indeterminate chasmosaurines (Table 13). Some chas-

mosaurines from Coahuila are referred to *A. mariscalensis* (Rivera-Sylva and Carpenter, 2014b) and cf. *Chasmosaurus* sp. (Ojeda-Rivera *et al.*, 1968) and one was named as *Coahuilaceratops magnacuerna* (Loewen *et al.*, 2010).

The material referred to as *A. mariscalensis* probably belongs to these taxa because the Mexican remains are from the same formation as the holotype (Lehman, 1989), however the fragmentary nature for the cranial material is not sufficient to accept or refuse this assignment. Ojeda-Rivera *et al.*, (1968) referred the cranial and postcranial material to cf. *Chasmosaurus*, but it may represent a distinct taxa, because *Chasmosaurus* has only been collected in Alberta (Paul, 2012) and the North American taxa show marked endemism (Sampson *et al.*, 2010; 2014).

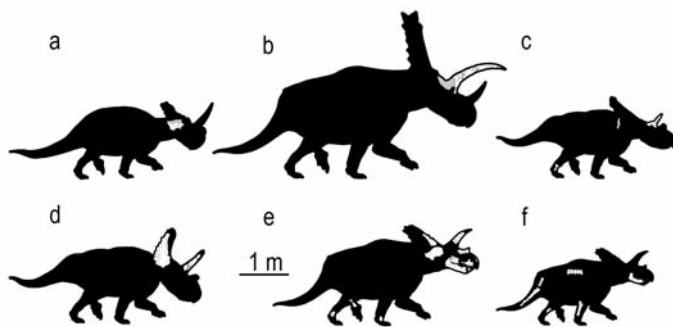


Figure 15. Skeletal drawings of Ceratopsids from Coahuila (a-c, e-f) and Chihuahua (d), showing the elements found. a. Indetermined Centrosaurinae CPC 279. b. Indetermined Chasmosaurinae MUZ 309. c. Indetermined Chasmosaurinae CPC 278. d. *Agujaceratops mariscalensis* (with no catalogue number from IGM). e. *Coahuilaceratops magnacuerna* CPC 276. f. *C. magnacuerna* CPC 277 (silhouettes modified from *Centrosaurus*, *Chasmosaurus* and *Pentaceratops* from Paul, 2010 and *Agujaceratops* from Sampson *et al.*, 2010).

Figura 15. Dibujos de esqueletos de Ceratópsidos de Coahuila (a-c, e-f) y Chihuahua (d), mostrando los elementos hallados. a. Centrosaurinae indeterminado CPC 279. b. Chasmosaurinae indeterminado MUZ 309. c. Chasmosaurinae indeterminado CPC 278. d. *Agujaceratops mariscalensis* (sin número de catálogo de IGM). e. *Coahuilaceratops magnacuerna* CPC 276. f. *C. magnacuerna* CPC 277 (siluetas modificadas de *Centrosaurus*, *Pentaceratops* y *Chasmosaurus* de Paul, 2010 y *Agujaceratops* de Sampson *et al.*, 2010).

Basal Hadrosauroidea

The hadrosauroids represent the most advanced ornithomorphs. This clade includes the derived iguanodontians with a mosaic characters and the true duck-billed hadrosaurs. They are characterized by numerous, more densely packed teeth and the reduction or loss of the thumb on their hand. The basal forms are found in the northern hemisphere and some from South America.

The hadrosauroids come from Barranca Los Bonetes, Michoacán (Ramírez-Velasco *et al.*, 2012; Figure 16). They are represented by caudal, sacral, dorsal and cervical vertebrae, some long bones and little cranial material. The best material, with associated cranial and postcranial material was named as *Huehucanauhtlus tiquichensis* (Ramírez-Velasco *et al.*, 2012; Table 14). Bennammi *et al.*, (2005) mentioned a tibia referred to hadrosauridae, but Ramírez-Velasco *et al.*, (2014) suggest that it probably represents a hadrosauroid. Mariscal-Ramos (2006) and

Taxa (Previous identification)	Locality, Area, State	Stratigraphic unit	Age	Accession number (Previously number): Material (Collection)	References
<i>Coahuilaceratops magnacuerna</i> Loewen <i>et al.</i> , 2010	Porvenir de Jalpa, General Cepeda, Coahuila.	Cerro del Pueblo Fm.	Late Campanian	CPC 276: rostral, left premaxilla, right maxilla, nasals, left and right supraorbital horncores, parietosquamosal fragment, predentary and both dentaries.	Loewen <i>et al.</i> , 2010; Claudio de León, pers. com., 2012.
				CPC 277: predentary, dentary.	
				Not given: metacarpals and metatarsals fragments (REG615PF).	
				Not given: cervical and dorsal vertebrae (REG615PF).	
<i>Agujaceratops mariscalensis</i> Lucas <i>et al.</i> , 2006 (<i>Chasmosaurus mariscalensis</i> Lehman, 1989)	Altares, Manuel Benavides, Chihuahua.	Aguja Fm.	Late Campanian	Not given: left squamosal, epoccipitals and supraorbital horncore (IGM).	Andrade-Ramos <i>et al.</i> , 2002; Andrade-Ramos, 2003.
<i>Agujaceratops mariscalensis</i> Lucas <i>et al.</i> , 2006 (<i>Chasmosaurus mariscalensis</i> Lehman, 1989)	Near town of San Miguel, Ocampo, Coahuila.	Aguja Fm	Late Campanian	Not given: left squamosal (CPC).	Rivera-Sylva and Carpenter, 2014b.
<i>cf. Agujaceratops mariscalensis</i> Lucas <i>et al.</i> , 2006 (<i>Chasmosaurus mariscalensis</i> Lehman, 1989)	Parque Nacional Cañon de Santa Elena, Ojinaga, Chihuahua.	Aguja Fm.	Late Campanian	Not given: not mentioned (?).	Westgate <i>et al.</i> , 2002b.
<i>Chasmosaurinae</i> (<i>cf. Chasmosaurus</i> sp. Lambe, 1914)	Cuchilla, Sabinas, Coahuila.	Olmos Fm.	Late Campanian-Early Maastrichtian	Not given: dorsal vertebrae, ilium and ischium fragment, femur, tibia, fibula, humerus, radius and ulna (?).	Ojeda-Rivera <i>et al.</i> , 1968; Silva-Bárceñas, 1969; Rodríguez-de la Rosa, 2011.
<i>Chasmosaurinae</i>	Near Múzquiz, Sabinas, Coahuila.	Olmos Fm.	Late Campanian-Early Maastrichtian	MUZ 309: left supraorbital horncore.	Porras-Múzquiz and Lehman, 2011.
<i>Chasmosaurinae</i>	Not mentioned, Ocampo, Coahuila.	Aguja Fm.	Late Campanian	Not given: squamosal, premaxilla fragment and other cranial and postcranial elements (CPC).	Rivera-Sylva and Carpenter, 2014b.
<i>Chasmosaurinae</i>	Near <i>Coahuilaceratops</i> site, General Cepeda, Coahuila.	Cerro del Pueblo Fm.	Late Campanian	Not given: both supraorbital horncore (REG615PF).	Ramírez-Velasco, pers. obs., 2012.
				Not given: both supraorbital horncore (REG615PF).	
<i>Chasmosaurinae</i>	Rincón Colorado, General Cepeda, Coahuila.	Cerro del Pueblo Fm.	Late Campanian	Not given: fragments of the skull, vertebrae and limb bones (?).	Hernández-Rivera and Delgado-de Jesús, 1999.
				Not given: postcranial elements of juvenile (?).	
<i>Chasmosaurinae</i>	Near town Presa San Antonio, Parras de la Fuente, Coahuila.	Cerro del Pueblo Fm.	Late Campanian	CPC 278: left orbit with supraorbital horncore, dorsal vertebra.	Lund <i>et al.</i> , 2007; Loewen <i>et al.</i> , 2010; Ramírez-Velasco, pers. obs., 2012.

Table 13. List of bones of *Chasmosaurinae*.

Tabla 13. Lista de restos óseos de *Chasmosaurinae*.

Ramírez-Velasco (2009) in an unpublished paper describe other isolated postcranial material, such as vertebrae and femur fragments referred to dinosaurian or iguanodontoid and a complete femur assigned to dinosaurian or sauropod. This material probably belongs to the same taxa because the caudal vertebrae have a hexagonal shaped centrum and the weathered femur has a cylindrical shaped shaft with a incomplete four trochanter in the middle section. four incomplete trochanters in the middle section (pers. obs. Ramírez-Velasco, 2012; Table 14).

Hadrosauridae

The hadrosaurids are the true duck-bill dinosaurs derived from basal hadrosaurids. They are characterized by an extremely broad snout and three or more replaced teeth per alveolus. They are divided into two major clades: the saurolophines and the lambeosaurines. The Saurolophinae are characterized by nostrils with quite large openings and the Lambeosaurinae by the presence of hollow elaborated crests with a complex nasal passages. The

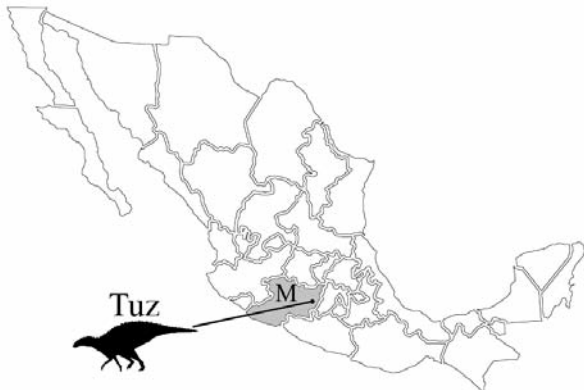


Figure 16. Map of Mexico indicating areas with basal Hadrosauroida remains (see Table 14). Abbreviations: M, Michoacán; Tuz, Tuzantla-Tiquicheo.

Figura 16. Mapa de México indicando el área con restos de Hadrosauroida basal (ver Tabla 14). Abreviaturas: M, Michoacán; Tuz, Tuzantla-Tiquicheo.

hadrosaurids are found in the northern hemisphere and South America.

The duck-bill dinosaurs comes from Eréndira and El Rosario Baja California (Langstone and Oakes, 1954; Morris, 1972, 1976, 1981; Hilton, 2003, Johnson *et al.*, 2006; Prieto-Márquez *et al.*, 2012; Ramírez-Velasco *et al.*, 2014), Naco-Cananea and Fronteras Sonora (Taliaferro, 1933; Lull and Wright, 1942; Lucas

et al., 1995; Lucas and González-León, 1996; Contreras-Medina, 1997; Duarte-Bigurra, 2013; Ramírez-Velasco *et al.*, 2014), Ojinaga, Manuel Benavides and Jiménez Chihuahua (Monroy-Mújica, 2009; Montaña *et al.*, 2009; Westgate *et al.*, 2002b; per. obs. Hernández-Rivera, 2012; per. obs. Ramírez-Velasco, 2013; Ramírez-Velasco *et al.*, 2014), Ocampo, Sabinas, Progreso, Monclova, Hipólito, Ramos Arizpe, Saltillo, General Cepeda, Parras de la Fuente and Sierra Mojada Coahuila (Murray *et al.*, 1960; Espinosa-Arrubarrena *et al.*, 1989; Aguillón-Martínez *et al.*, 1998; Rodríguez-de Rosa and Cevallos-Ferriz, 1998; Hernández-Rivera and Delgado de Jesús, 2000; Kirkland *et al.*, 2000; Eberth *et al.*, 2003; Meyer *et al.*, 2005; Kirkland *et al.*, 2006; Serrano-Brañas *et al.*, 2006; Gates *et al.*, 2007; Monroy-Mújica, 2009; Rivera-Sylva *et al.*, 2009a, 2009b, 2011c, 2012; Prieto-Márquez and Serrano-Brañas, 2012; Aguilar *et al.*, 2013, 2014; Prieto-Márquez, 2013; Vivas-González, 2013; Rivera-Sylva and Carpenter, 2014b; Ramírez-Velasco *et al.*, 2014; Fig. 17). They are represented by isolated teeth and bones and associated cranial and postcranial material, and some of them with integumentary impressions (Tables 15-17). The hadrosaurids with almost complete skeletons are *Magnapaulia laticaudus*, *Velafrons coahuilensis*, the unnamed saurolophine from Sabinas and *Latirhinus uitstlani* (Fig. 18).

Taxa (Previous identification)	Locality, Area, State	Stratigraphic unit	Age	Accession number (Previously number): Material (Collection)	References
<i>Huehewanauhtlus tiquichensis</i> Ramírez-Velasco <i>et al.</i> , 2012	Barranca de los Bonetes site 6, Tuzantla, Michoacán.	Unnamed formation	Early Santonian	IGM 6253: left maxilla, cervical, dorsal and caudal vertebrae, dorsal, sacral and caudal neural spines, dorsal and cervical ribs, both ilia, both pubes and ossified tendons.	Ramírez-Velasco, 2009; Ramírez-Velasco <i>et al.</i> 2012, 2014; Rivera-Sylva and Carpenter, 2014b.
<i>Huehewanauhtlus tiquichensis</i> Ramírez-Velasco <i>et al.</i> , 2012	Barranca de los Bonetes site 3, Tuzantla, Michoacán.	Unnamed formation	Early Santonian	IGM 6254: dentary fragment and cervical vertebra fragment.	Ramírez-Velasco, 2009; Ramírez-Velasco <i>et al.</i> , 2012, 2014.
Hadrosauroida (Hadrosauridae)	Barranca de los Bonetes site 1, Tuzantla, Michoacán.	Unnamed formation	Early Santonian	IGM 8824: tibia.	Bennami <i>et al.</i> 2005; Mariscal-Ramos, 2003; Ramírez-Velasco <i>et al.</i> , 2014.
Hadrosauroida (Iguanodontoidea)	Barranca de los Bonetes site 2, Tuzantla, Michoacán.	Unnamed formation	Early Santonian	Not given: ossified tendons (IGM). Not given: femur fragment (IGM). Not given: two dorsal vertebrae (IGM). Not given: caudal vertebra (IGM). Not given: distal end femur (IGM). Not given: proximal end fibula (IGM).	Mariscal-Ramos, 2003; Ramírez-Velasco, 2009; Ramírez-Velasco <i>et al.</i> , 2014.
Hadrosauroida (Sauropoda)	Barranca de los Bonetes site 3, Tuzantla, Michoacán.	Unnamed formation	Early Santonian	Not given: femur (IGM).	Mariscal-Ramos, 2003; Ramírez-Velasco, 2009.
Hadrosauroida (Iguanodontoidea)	Barranca de los Bonetes site 5, Tuzantla, Michoacán.	Unnamed formation	Early Santonian	Not given: two dorsal vertebrae (IGM). Not given: caudal vertebra (IGM).	Mariscal-Ramos, 2003; Ramírez-Velasco, 2009.

Table 14. List of bones of basal Hadrosauroida.

Tabla 14. Lista de restos óseos de Hadrosauroida basales.

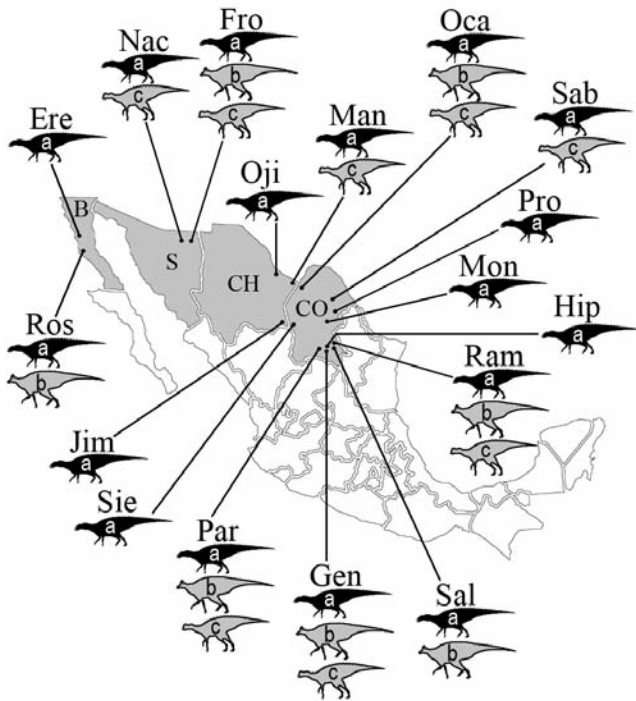


Figure 17. Map of Mexico indicating areas with Hadrosauridae remains (see Tables 15-17). a. indeterminate Hadrosauridae. b. Lambeosaurinae. c. Saurolophinae. Abbreviations: B, Baja California; CH, Chihuahua; CO, Coahuila; Ere, Eréndira; Fro, Fronteras; Gen, General Cepeda; Jim, Jiménez; Hip, Hipólito; Man, Manuel Benavides; Mon, Monclova; Nac, Naco-Cananea; Oca, Ocampo; Oji, Ojinaga; Par, Parras de la Fuente; Pro, Progreso; Ram, Ramos Arizpe; Ros, Rosario; S, Sonora; Sab, Sabinas; Sal, Saltillo; Sie, Sierra Mojada.

Figura 17. Mapa de México indicando las áreas con restos de Hadrosauridae (ver Tablas 15-17). a. Hadrosauridae indeterminados. b. Lambeosaurinae. c. Saurolophinae. Abreviaturas: B, Baja California; CH, Chihuahua; CO, Coahuila; Ere, Eréndira; Fro, Fronteras; Gen, General Cepeda; Jim, Jiménez; Hip, Hipólito; Man, Manuel Benavides; Mon, Monclova; Nac, Naco-Cananea; Oca, Ocampo; Oji, Ojinaga; Par, Parras de la Fuente; Pro, Progreso; Ram, Ramos Arizpe; Ros, Rosario; S, Sonora; Sab, Sabinas; Sal, Saltillo; Sie, Sierra Mojada.

In addition to published information, one of the authors saw an undescribed hadrosaurid in the Petrology Department of INEGI (in Aguascalientes) collected from Altares Chihuahua, (pers. com. V.M. Romero-Benítez, R. Rodríguez-Rubio and J.R. Guzmán-Gutiérrez in 2013).

Some of the Mexican hadrosaurids with diagnostic bones are identified as lambeosaurines and saurolophines. The Lambeosaurinae are represented by many specimens of *Magnapaulia laticaudus* (Prieto-Márquez *et al.*, 2012), *Velafrons coahuilensis* (Gates *et al.*, 2007), probably *Latirhinus uitstlani* (Prieto-Márquez and Serrano-Brañas, 2012; Ramírez-Velasco *et al.*, 2014) and the undescribed lambeosaurin BENC 18/1-0901 from La Rosa (incorrectly located in La Parrita, Ramírez-Velasco *et al.*, in press; Espinoza-Chávez pers. com. 2014) the lambeosaurine skull material from Las Águilas track site (Eberth *et al.*, 2003) and the lambeosaurines from La Bocana Roja Formation (Prieto-Márquez *et al.*, 2012; Table 16).

Ramírez-Velasco *et al.*, (2014) questioned the taxonomic assignment of *Latirhinus uitstlani* as saurolophinae by Prieto-Márquez and Serrano-Brañas (2012). They assigned it as a probable lambeosaurine based on morphological characters and by the association with lambeosaurine material, however a new descriptive and comparative study is required to confirm or refute the assignment. Because of these arguments we consider it as lambeosaurine in this work.

Duarte-Bigurra (2013) in his unpublished thesis illustrates a hadrosaur humerus with lambeosaurinae characters. Serrano-Brañas (2006) in her unpublished work identified a humerus to saurolophinae, but it probably belongs to a lambeosaurinae based on the present of the great delto-pectoral crest and the short humerus neck. Among the paleontological collec-

Taxa (Previous identification)	Locality, Area, State	Stratigraphic unit	Age	Accession number (Previously number): Material (Collection)	References
Hadrosauridae	El Destiladero, Eréndira, Baja California.	El Rosario Formation	Early-Late Maastrichtian	UABC 2612a: tibia.	Johnson <i>et al.</i> , 2006; Ramírez-Velasco <i>et al.</i> , 2014.
				UABC 2612b: tibia.	
Hadrosauridae	Punta San Isidro, Eréndira, Baja California.	El Gallo Formation	Late Campanian	UCMP 43251: two metatarsal bones and terminal phalanx.	Langstone and Oakes, 1954; Hilton, 2003; Johnson <i>et al.</i> , 2006; Ramírez-Velasco <i>et al.</i> , 2014.
Hadrosauridae	Bird locality, El Rosario, Baja California.	El Gallo Formation	Late Campanian	LACM 42716: fragment of mandible.	Prieto-Márquez <i>et al.</i> , 2012.
Hadrosauridae	El Campo de la Fortuna, El Rosario, Baja California.	El Gallo Formation	Late Campanian	LACM 57872: pelvic fragments.	Prieto-Márquez <i>et al.</i> , 2012.
Hadrosauridae	El Rosario, El Rosario, Baja California.	El Gallo Formation	Late Campanian	LACM 42584: pedal phalanx.	Prieto-Márquez <i>et al.</i> , 2012.
Hadrosauridae	El Rosario, El Rosario, Baja California.	El Gallo Formation	Late Campanian	LACM 42639: tooth.	Prieto-Márquez <i>et al.</i> , 2012.
				LACM 42640: tooth.	

Table 15. List of bones of Hadrosauridae.

Tabla 15. Lista de restos óseos de Hadrosauridae.

Taxa (Previous identification)	Locality, Area, State	Stratigraphic unit	Age	Accession number (Previously number): Material (Collection)	References
Hadrosauridae	El Rosario, El Rosario, Baja California.	El Gallo Formation	Late Campanian	LACM 42667: tooth.	Prieto-Márquez <i>et al.</i> , 2012.
Hadrosauridae	El Rosario, El Rosario, Baja California.	El Gallo Formation	Late Campanian	LACM 42684: tooth.	Prieto-Márquez <i>et al.</i> , 2012.
Hadrosauridae	El Rosario, El Rosario, Baja California.	El Gallo Formation	Late Campanian	LACM 42706: tooth. LACM 42707: tooth.	Prieto-Márquez <i>et al.</i> , 2012.
Hadrosauridae	El Rosario, El Rosario, Baja California.	El Gallo Formation	Late Campanian	LACM 52460: vertebra. LACM 52461: fragment of vertebra and limb bones. LACM 52462: atlas and manual phalanx. LACM 52463: tooth.	Prieto-Márquez <i>et al.</i> , 2012.
Hadrosauridae	El Rosario, El Rosario, Baja California.	El Gallo Formation	Late Campanian	LACM 28991: tooth. LACM 28996: limb bones fragments and cervical vertebra. LACM 29002: tooth. LACM 52460: vertebra. LACM 52461: limb bones and vertebra fragments. LACM 52462: atlas fragment and manual phalanx. LACM 52463: tooth. LACM 57872: pelvic fragments. LACM 101170: tooth. LACM 101171: tooth. LACM 101172: ungual phalanx. LACM 101174: tooth.	Prieto-Márquez <i>et al.</i> , 2012.
Hadrosauridae	El Rosario, El Rosario, Baja California.	La Bocana Roja Formation	Early Campanian	LACM 29003: bones fragments. LACM 29004: humerus.	Prieto-Márquez <i>et al.</i> , 2012.
Hadrosauridae	El Rosario, El Rosario, Baja California.	El Rosario Formation	Early-Late Maastrichtian	UCMP 43251: phalanges.	Hilton, 2003; Ramírez-Velasco <i>et al.</i> , 2014.
Hadrosauridae	Lost Pick, El Rosario, Baja California.	El Gallo Formation	Late Campanian	LACM 42587: tooth.	Prieto-Márquez <i>et al.</i> , 2012.
Hadrosauridae	Misty Hill, El Rosario, Baja California.	El Gallo Formation	Late Campanian	LACM 42632: tooth.	Prieto-Márquez <i>et al.</i> , 2012.
Hadrosauridae	Misty Hill 2, El Rosario, Baja California.	El Gallo Formation	Late Campanian	LACM 42644: tooth.	Prieto-Márquez <i>et al.</i> , 2012.
Hadrosauridae	Not mentioned, El Rosario, Baja California.	El Gallo Formation	Late Campanian	LACM 28234: humerus. LACM 28235: humerus. LACM 28236: humerus.	Hilton, 2003.
Hadrosauridae	Not mentioned, El Rosario, Baja California.	El Gallo Formation	Late Campanian	Not given: vertebra centrum, distal end femur and jaw fragment with teeth (UCMP).	Hilton, 2003; Ramírez-Velasco <i>et al.</i> , 2014.
Hadrosauridae	Alamitos site 2, Fronteras, Sonora.	Cabullona Group	Late Campanian-Late Maastrichtian	Not given: dorsal vertebra, neural spines, rib and indeterminate material (MPF).	Duarte-Bigurra, 2013.
Hadrosauridae	"El Álamo", Fronteras, Sonora	Cabullona Group	Late Campanian-Late Maastrichtian	Not given: metatarsal distal end (MPF). Not given: distal end humerus (MPF). Not given: caudal vertebra and distal end femur (MPF). Not given: cervical vertebra (MPF).	Ramírez-Velasco <i>et al.</i> , 2014.

Table 15. Continuation.

Tabla 15. Continuación.

Taxa (Previous identification)	Locality, Area, State	Stratigraphic unit	Age	Accession number (Previously number): Material (Collection)	References
Hadrosauridae	El Alamito, Fronteras, Sonora	Cabullona Group	Late Campanian-Late Maastrichtian	Not given: caudal vertebra (MPF).	Ramírez-Velasco <i>et al.</i> , 2014.
				Not given: neural arch (MPF).	
				Not given: transver process (MPF).	
				Not given: metatarsal (MPF).	
Hadrosauridae	Puerto Viejo, Fronteras, Sonora	Cabullona Group	Late Campanian-Late Maastrichtian	Not given: bones fragments (MPF).	Ramírez-Velasco <i>et al.</i> , 2014.
Hadrosauridae	Tascalara, Fronteras, Sonora	Cabullona Group	Late Campanian-Late Maastrichtian	Not given: humerus and vertebra fragment (MPF).	Ramírez-Velasco <i>et al.</i> , 2014.
Hadrosauridae	Locality 1, Naco-Cananea, Sonora.	Corral de Enmedio Formation	Late Campanian	Not given: vertebra (ERNO).	Lucas <i>et al.</i> 1995; Ramírez-Velasco <i>et al.</i> , 2014.
Hadrosauridae	Locality 2, Naco-Cananea, Sonora.	Corral de Enmedio Formation	Late Campanian	Not given: vertebra (ERNO).	Lucas <i>et al.</i> 1995; Ramírez-Velasco <i>et al.</i> , 2014.
Hadrosauridae	Locality 4, Naco-Cananea, Sonora.	Corral de Enmedio Formation	Late Campanian	Not given: vertebra (ERNO).	Lucas <i>et al.</i> 1995; Ramírez-Velasco <i>et al.</i> , 2014.
Hadrosauridae	Locality 29, Naco-Cananea, Sonora.	Corral de Enmedio Formation	Late Campanian	ERNO (IRGNM) 216: phalanx.	Lucas <i>et al.</i> 1995; Lucas and González-León, 1996; Ramírez-Velasco <i>et al.</i> , 2014.
Hadrosauridae	Locality 32, Naco-Cananea, Sonora.	Lomas Coloradas Formation	Maastrichtian	ERNO (IRGNM) 215: vertebra.	Lucas <i>et al.</i> 1995; Lucas and González-León, 1996; Ramírez-Velasco <i>et al.</i> , 2014.
Hadrosauridae	Locality 49, Naco-Cananea, Sonora.	Corral de Enmedio Formation	Late Campanian	Not given: bones fragments and teeth (UCMP).	Taliaferro, 1933; Lull and Wright, 1942; Ramírez-Velasco <i>et al.</i> , 2014.
Hadrosauridae	Not mentioned, Naco-Cananea, Sonora.	Corral de Enmedio Formation	Late Campanian	ERNO (IRGNM) 360: left femur.	Lucas and González-León, 1996.
Hadrosauridae	SON-27, Naco-Cananea, Sonora	Cabullona Group	Late Campanian-Late Maastrichtian	Not given: caudal vertebrae and neural spine (ERNO).	Ramírez-Velasco <i>et al.</i> , 2014.
Hadrosauridae	SON-30, Naco-Cananea, Sonora	Cabullona Group	Late Campanian-Late Maastrichtian	Not given: caudal vertebrae fragment (ERNO).	Ramírez-Velasco <i>et al.</i> , 2014.
				Not given: chevron fragment (ERNO).	
				Not given: vertebrae (ERNO).	
Hadrosauridae	Not named, Ojinaga, Chihuahua.	Aguja Formation	Late Campanian	Not given: postcranial material (DP).	Ramírez-Velasco <i>et al.</i> , 2014.
Hadrosauridae	Outcrops near Ojinaga, Ojinaga, Chihuahua.	San Carlos Formation	Campanian	Not given: not mentioned (?).	Westgate <i>et al.</i> , 2002b.
Hadrosauridae	Altares, Manuel Benavides, Chihuahua.	Aguja Formation	Late Campanian	Not given: dorsal, sacrum and caudal vertebrae, neural archs, proximal end tibia and humerus, and right fibula (INEGI).	Ramírez-Velasco, pers. obs., 2013.
Hadrosauridae	Bengis Bar, Manuel Benavides, Chihuahua.	Aguja Formation	Late Campanian	Not given: caudal and sacral vertebrae (IGM).	Ramírez-Velasco <i>et al.</i> , 2014.
Hadrosauridae	Cri-Cri, Manuel Benavides, Chihuahua.	Aguja Formation	Late Campanian	Not given: caudal vertebra (IGM).	Ramírez-Velasco, pers. obs., 2012; Ramírez-Velasco <i>et al.</i> , 2014.
Hadrosauridae	Dueto Miseria, Manuel Benavides, Chihuahua.	Aguja Formation	Late Campanian	Not given: proximal end tibia (IGM).	Ramírez-Velasco <i>et al.</i> , 2014.
Hadrosauridae	Icoteas, Manuel Benavides, Chihuahua.	Aguja Formation	Late Campanian	Not given: vertebrae and long bones fragments (IGM).	Ramírez-Velasco <i>et al.</i> , 2014.
				Not given: caudal vertebra (IGM).	
				Not given: caudal vertebra (IGM).	
Hadrosauridae	Arenales, Jiménez, Chihuahua.	Unknown.	Late Cretaceous	Not given: cervical, caudal vertebrae, femur fragments and metatarsal (<i>in situ</i>).	Hernández-Rivera, pers. obs., 2012; Ramírez-Velasco <i>et al.</i> , 2014.
Hadrosauridae	Chamel, Jiménez, Chihuahua.	Unknown.	Late Cretaceous	Not given: femur, tibia, vertebrae (<i>in situ</i>).	Hernández-Rivera, pers. obs., 2012; Ramírez-Velasco <i>et al.</i> , 2014.
Hadrosauridae	Doctor, Jiménez, Chihuahua.	Unknown.	Late Cretaceous	Not given: tibia fragments (<i>in situ</i>).	Hernández-Rivera, pers. obs., 2012; Ramírez-Velasco <i>et al.</i> , 2014.
Hadrosauridae	Álamos de Márquez, Ocampo, Coahuila.	Aguja Formation	Late Campanian	Not given: caudal vertebra (IGM).	Ramírez-Velasco <i>et al.</i> , 2014.
Hadrosauridae	El Rebaje, Ocampo, Coahuila.	Aguja Formation	Late Campanian	Not given: caudal vertebra (IGM).	Ramírez-Velasco <i>et al.</i> , 2014.

Table 15. Continuation.
Tabla 15. Continuación.

Taxa (Previous identification)	Locality, Area, State	Stratigraphic unit	Age	Accession number (Previously number): Material (Collection)	References
Hadrosauridae	La Esperanza, Ocampo, Coahuila.	Aguja Formation	Late Campanian	Not given: caudal vertebra (IGM).	Ramírez-Velasco <i>et al.</i> , 2014.
Hadrosauridae	Las Garzas, Ocampo, Coahuila.	Aguja Formation	Late Campanian	Not given: dorsal vertebra (IGM).	Ramírez-Velasco <i>et al.</i> , 2014.
				Not given: dorsal vertebrae, distal end metatarsal and long bone fragment (IGM).	
				Not given: vertebrae (IGM).	
				Not given: phalanx, caudal vertebra (IGM).	
				Not given: vertebrae and dentary fragment. (IGM)	
Hadrosauridae	La Salada, Ocampo, Coahuila.	Aguja Formation	Late Campanian	CPC 308: caudal vertebrae, distal end humerus and metatarsus	Rivera-Sylva <i>et al.</i> , 2009a, 2012.
				CPC 309: caudal vertebra with bite mark.	
				CPC 789: tibia with bites marks.	
Hadrosauridae	Mina la Mimosa, Sabinas, Coahuila.	Not mentioned	Late Cretaceous	Not given: caudal vertebra, José Delgado (IGM).	Ramírez-Velasco <i>et al.</i> , 2014.
Hadrosauridae	Palaú, Sabinas, Coahuila.	Not mentioned	Late Cretaceous	Not given: vertebra (IGM).	Ramírez-Velasco <i>et al.</i> , 2014.
				Not given: long bones fragments (IGM).	
Hadrosauridae	Polvorín, Sabinas, Coahuila.	Olmos Formation	Late Campanian-Early Maastrichtian	Not given: distal end femur (IGM).	Ramírez-Velasco <i>et al.</i> , 2014.
				Not given: bones fragments (IGM).	
Hadrosauridae	Santa Helena, Sabinas, Coahuila	Olmos Formation	Late Campanian-Early Maastrichtian	Not given: indetermined bone fragments	Meyer <i>et al.</i> , 2005.
Hadrosauridae	Phelan, Progreso, Coahuila.	Not mentioned	Late Cretaceous	Not given: long bone fragments (IGM).	Ramírez-Velasco <i>et al.</i> , 2014.
Hadrosauridae	Altamira, Monclova, Coahuila.	Cerro Huerta Formation	Late Campanian-Early Maastrichtian	Not given: metatarsus (<i>in situ</i>).	Aguillón <i>et al.</i> , 1998; Kirkland <i>et al.</i> , 2000.
Hadrosauridae	Cuesta "A", Hipólito, Coahuila.	Difunta Group	Late Campanian-Late Maastrichtian	Not given: not mentioned (?).	Murray <i>et al.</i> , 1960.
Hadrosauridae	Cañada Ancha, Ramos Arizpe, Coahuila.	Cerro del Pueblo Formation	Late Campanian	Not given: femur, fibulae, tibia, and metatarsals fragments (CPC).	Vivas-González, 2013
Hadrosauridae	El Barril, Ramos Arizpe, Coahuila.	Cerro del Pueblo Formation	Late Campanian	Not given: pedal phalanx (SEPCP).	Ramírez-Velasco <i>et al.</i> , 2014.
Hadrosauridae	El Pelillal, Ramos Arizpe, Coahuila.	Cerro del Pueblo Formation	Late Campanian	IGM 7709: tooth.	Rodríguez-de la Rosa and Cevallos-Ferriz, 1998; Ramírez-Velasco <i>et al.</i> , 2014.
Hadrosauridae	Los Pinos, Ramos Arizpe, Coahuila.	Cerro del Pueblo Formation	Late Campanian	Not given: two phalanges (SEPCP).	Ramírez-Velasco <i>et al.</i> , 2014.
				Not given: astragalus (SEPCP).	
Hadrosauridae	Cañon del Oso, Saltillo, Coahuila.	Olmos Formation	Late Campanian-Early Maastrichtian	Not given: caudal vertebrae (IGM).	Ramírez-Velasco <i>et al.</i> , 2014.
				Not given: caudal vertebra (IGM).	
				Not given: long bones fragments (IGM).	
				Not given: ulna (IGM).	
				Not given: long bones fragments (IGM).	
				Not given: cervical vertebra and long bones fragments (IGM).	
Hadrosauridae	Ejido Puebla, Saltillo, Coahuila.	Cerro del Pueblo Formation	Late Campanian	Not given: dorsal, sacrum and caudal vertebrae (SEPCP).	Ramírez-Velasco <i>et al.</i> , 2014.
Hadrosauridae	Ejido Puebla, Saltillo, Coahuila.	Cerro del Pueblo Formation	Late Campanian	Not given: caudal vertebrae and sacrum (REG615PF).	Ramírez-Velasco <i>et al.</i> , 2014.
Hadrosauridae	Estación Buñuelos, Saltillo, Coahuila.	Olmos Formation	Late Campanian-Early Maastrichtian	Not given: caudal vertebra G. P. Salas (IGM).	Ramírez-Velasco <i>et al.</i> , 2014.

Table 15. Continuation.
Tabla 15. Continuación.

Taxa (Previous identification)	Locality, Area, State	Stratigraphic unit	Age	Accession number (Previously number): Material (Collection)	References
Hadrosauridae	Hedionda, Saltillo, Coahuila.	Difunta Group	Late Campanian-Late Maastrichtian	Not given: bones fragments (IGM).	Ramírez-Velasco <i>et al.</i> , 2014.
Hadrosauridae	Ceratopsian site, General Cepeda, Coahuila.	Cerro del Pueblo Formation	Late Campanian	Not given: cervical and dorsal vertebra, coracoid, long bones fragments and metatarsal (SEPCP).	Ramírez-Velasco <i>et al.</i> , 2014.
Hadrosauridae	Cerro de los Dinosaurios M6, General Cepeda, Coahuila.	Cerro del Pueblo Formation	Late Campanian	Not given: tibia (IGM-MG).	Ramírez-Velasco <i>et al.</i> , 2014.
				Not given: caudal vertebra (IGM-MG).	
				Not given: caudal vertebra (IGM-MG).	
Hadrosauridae	Cerro de los Dinosaurios quarry 1, General Cepeda, Coahuila.	Cerro del Pueblo Formation	Late Campanian	Not given: dentary fragment and right tibia (IGM-MG).	Serrano-Brañas, 2006; Ramírez-Velasco <i>et al.</i> , 2014.
				Not given: humerus fragment (IGM-MG).	
				Not given: metatarsals (SEPCP).	
				Not given: caudal vertebrae (SEPCP).	
				Not given: caudal vertebra, ribs, metatarsal, two phalanges, radius and distal end femur (SEPCP).	
Not given: dentary fragment in matrix (SEPCP).					
Hadrosauridae	Cerro de los Dinosaurios quarry 3, General Cepeda, Coahuila.	Cerro del Pueblo Formation	Late Campanian	Not given: integumentary impression (SEPCP).	Ramírez-Velasco <i>et al.</i> , 2014.
				Not given: ribs fragments and caudal vertebra (SEPCP).	
				Not given: pedal phalanx (SEPCP).	
Hadrosauridae	Cerro de los Dinosaurios near quarry 4, General Cepeda, Coahuila.	Cerro del Pueblo Formation	Late Campanian	Not given: cranial bones fragments and dentary fragment (SEPCP).	Ramírez-Velasco <i>et al.</i> , 2014.
Hadrosauridae	Cerro de los Dinosaurios quarry 5, General Cepeda, Coahuila.	Cerro del Pueblo Formation	Late Campanian	Not given: dorsal, sacrum and caudal vertebra, and pedal phalanges (SEPCP).	Ramírez-Velasco <i>et al.</i> , 2014.
				Not given: dorsal vertebra and caudal vertebrae (SEPCP).	
				Not given: humerus fragment (SEPCP).	
				Not given: integumentary impression (SEPCP).	
				Not given: dorsal vertebra and distal end femur (SEPCP).	
				Not given: femur shaft (SEPCP).	
Not given: two caudal vertebrae, partial sacrum, long bone with integumentary impression and two phalanges in matrix (SEPCP).					
Hadrosauridae	Cerro de los Dinosaurios quarry 8, General Cepeda, Coahuila	Cerro del Pueblo Formation	Late Campanian	Not given: skin impressions from hip, tail and limbs bones associated with two complete skeletal remains (?)	Hernández-Rivera and Delgado-de Jesús, 2000.
Hadrosauridae	Cruce de los Caminos, General Cepeda, Coahuila.	Cerro del Pueblo Formation	Late Campanian	Not given: fragments of pelvic bones (IGM).	Ramírez-Velasco <i>et al.</i> , 2014.
Hadrosauridae	El Carmen Coah 18, General Cepeda, Coahuila.	Cerro del Pueblo Formation	Late Campanian	Not given: vertebrae fragments, metatarsal and mandible fragments (SEPCP).	Ramírez-Velasco <i>et al.</i> , 2014.
				Not given: caudal vertebra fragment (SEPCP).	
				Not given: metatarsal and caudal vertebra (SEPCP).	
				Not given: mandible fragment, neural spine and vertebra fragment (SEPCP).	
				Not given: dorsal and caudal vertebra, vertebrae fragments and phalanx (SEPCP).	
				Not given: astragalus (SEPCP).	
				Not given: dentary fragment (SEPCP).	
				Not given: pedal phalanx (SEPCP).	
Not given: caudal vertebrae, pedal phalanx and bone fragments (SEPCP).					

Table 15. Continuation.
Tabla 15. Continuación.

Taxa (Previous identification)	Locality, Area, State	Stratigraphic unit	Age	Accession number (Previously number): Material (Collection)	References
Hadrosauridae	El Palmar, General Cepeda, Coahuila.	Cerro del Pueblo Formation	Late Campanian	BENC 1/1-0001: left fibula and left partial tibia.	Ramírez-Velasco <i>et al.</i> , 2014.
Hadrosauridae	El Palmar, General Cepeda, Coahuila.	Cerro del Pueblo Formation	Late Campanian	BENC 1/1-0006: three caudal vertebrae.	Ramírez-Velasco <i>et al.</i> , 2014.
Hadrosauridae	El Palmar, General Cepeda, Coahuila.	Cerro del Pueblo Formation	Late Campanian	BENC 1/1-0011: distal en right tibia.	Ramírez-Velasco <i>et al.</i> , 2014.
Hadrosauridae	La Hedionda Chica, General Cepeda, Coahuila.	Cerro del Pueblo Formation	Late Campanian	CIC/P/82: cervical and caudal vertebrae, distal and proximal end tibia, ulna and left femur.	Ramírez-Velasco <i>et al.</i> , 2014.
Hadrosauridae	La Parrita, General Cepeda, Coahuila.	Cerro del Pueblo Formation	Late Campanian	Not given: cervicals and caudals vertebrae, pedal phalanges, ulna fragment, tibia and fibula (CPC).	Vivas-González, 2013
Hadrosauridae	La Parrita, General Cepeda, Coahuila.	Cerro del Pueblo Formation	Late Campanian	Not given: humerus distal end, metatarsals fragments and two caudal vertebrae (CPC).	Vivas-González, 2013
Hadrosauridae	La Parrita, General Cepeda, Coahuila.	Cerro del Pueblo Formation	Late Campanian	Not given: sacral vertebra (CPC).	Vivas-González, 2013
Hadrosauridae	La Parrita, General Cepeda, Coahuila.	Cerro del Pueblo Formation	Late Campanian	Not given: cervical vertebra (CPC).	Vivas-González, 2013
Hadrosauridae	La Parrita, General Cepeda, Coahuila.	Cerro del Pueblo Formation	Late Campanian	Not given: caudal vertebra (CPC).	Vivas-González, 2013
Hadrosauridae	La Parrita, General Cepeda, Coahuila.	Cerro del Pueblo Formation	Late Campanian	Not given: manual ungual (CPC).	Vivas-González, 2013
Hadrosauridae	La Rosa, General Cepeda, Coahuila	Difunta Group	Late Campanian-Late Maastrichtian	Not given: two caudal vertebrae (IGM).	Ramírez-Velasco <i>et al.</i> , 2014.
Hadrosauridae	Pisicola, General Cepeda, Coahuila.	Cerro del Pueblo Formation	Late Campanian	BENC 3/1-0001: neural spine.	Ramírez-Velasco, pers. obs., 2012.
Hadrosauridae	Porvenir de Jalpa, General Cepeda, Coahuila.	Cerro del Pueblo Formation	Late Campanian	Not given: integumentary impressions and bones fragments (SEPCP).	Ramírez-Velasco <i>et al.</i> , 2014.
Hadrosauridae	Porvenir de Jalpa, General Cepeda, Coahuila.	Cerro del Pueblo Formation	Late Campanian	BENC 19/1-0001: distal end humerus, pedal phalanges, pedal ungula and rib.	Ramírez-Velasco <i>et al.</i> , 2014.
Hadrosauridae	René 1, General Cepeda, Coahuila.	Cerro del Pueblo Formation	Late Campanian	Not given: vertebrae fragments and bone fragments (SEPCP).	Ramírez-Velasco <i>et al.</i> , 2014.
Hadrosauridae	Rincón Colorado, General Cepeda, Coahuila.	Cerro del Pueblo Formation	Late Campanian	Not given: sacrum vertebrae and neural spines (SEPCP).	Ramírez-Velasco <i>et al.</i> , 2014.
				Not given: ribs (SEPCP).	
				Not given: pedal phalanx and neural spine (SEPCP).	
				Not given: ossified tendons and two phalanges (SEPCP).	
				Not given: dentary fragment and pedal phalanx (SEPCP).	
				Not given: rib and pedal phalanx (SEPCP).	
Hadrosauridae	Rincón Colorado Coah 20, General Cepeda, Coahuila.	Cerro del Pueblo Formation	Late Campanian	Not given: two dorsal vertebrae, distal end humerus, two metatarsals, phalanx (IGM-MG).	Ramírez-Velasco <i>et al.</i> , 2014.
				Not given: proximal end and distal end humeri, distal end and shaft fibulae (IGM-MG).	
				Not given: rib fragment, long bones fragments and proximal end fibula (IGM-MG).	
Hadrosauridae	Rincón Colorado FA, General Cepeda, Coahuila.	Cerro del Pueblo Formation	Late Campanian	Not given: one femur, metatarsal and bone fragments (SEPCP).	Ramírez-Velasco <i>et al.</i> , 2014.
Hadrosauridae	Rincón Colorado site 006, General Cepeda, Coahuila.	Cerro del Pueblo Formation	Late Campanian	Not given: metacarpals and phalanx (SEPCP).	Ramírez-Velasco <i>et al.</i> , 2014.
Hadrosauridae	Rincón Colorado site 008, General Cepeda, Coahuila.	Cerro del Pueblo Formation	Late Campanian	Not given: dentary fragment, caudal vertebra, phalanx and distal end humerus (SEPCP).	Ramírez-Velasco <i>et al.</i> , 2014.
Hadrosauridae	Rincón Colorado site 018, General Cepeda, Coahuila.	Cerro del Pueblo Formation	Late Campanian	Not given: dentary fragment and pedal phalanx (SEPCP).	Ramírez-Velasco <i>et al.</i> , 2014.
Hadrosauridae	Rincón Colorado site 020, General Cepeda, Coahuila.	Cerro del Pueblo Formation	Late Campanian	Not given: distal end metacarpals or metatarsals (SEPCP).	Ramírez-Velasco <i>et al.</i> , 2014.
Hadrosauridae	Rincón Colorado site 035, General Cepeda, Coahuila.	Cerro del Pueblo Formation	Late Campanian	Not given: mandible fragment (SEPCP).	Ramírez-Velasco <i>et al.</i> , 2014.

Table 15. Continuation.
 Tabla 15. Continuación.

Taxa (Previous identification)	Locality, Area, State	Stratigraphic unit	Age	Accession number (Previously number): Material (Collection)	References
Hadrosauridae	Rincón Colorado site 037, General Cepeda, Coahuila.	Cerro del Pueblo Formation	Late Campanian	Not given: mandible fragment (SEPCP).	Ramírez-Velasco <i>et al.</i> , 2014.
Hadrosauridae	Rincón Colorado site 040, General Cepeda, Coahuila.	Cerro del Pueblo Formation	Late Campanian	Not given: pedal phalanx (SEPCP).	Ramírez-Velasco <i>et al.</i> , 2014.
Hadrosauridae	Rojas I, General Cepeda, Coahuila.	Cerro del Pueblo Formation	Late Campanian	Not given: ribs fragments (IGM).	Ramírez-Velasco <i>et al.</i> , 2014.
				Not given: ribs fragments (IGM).	
				Not given: distal end humerus (IGM).	
				Not given: dentary fragment (IGM).	
				Not given: metatarsal fragment (IGM).	
				Not given: distal end humerus (IGM).	
				Not given: phalanges (IGM).	
				Not given: scapula (IGM).	
				Not given: vertebrae (IGM).	
				Not given: fibula (IGM).	
Hadrosauridae	Rojas II, General Cepeda, Coahuila.	Cerro del Pueblo Formation	Late Campanian	Not given: integumentary impressions (IGM).	Ramírez-Velasco <i>et al.</i> , 2014.
				Not give: caudal vertebra (IGM).	
				Not give: integumentary impressions and caudal vertebrae (IGM).	
				Not give: integumentary impression (IGM).	
				Not give: integumentary impressions (IGM).	
				Not give: integumentary impression (IGM).	
				Not give: integumentary impression and bones fragments (IGM).	
				Not give: integumentary impression and bones fragments (IGM).	
				Not give: caudal and cervical vertebrae fragments and distal and humerus (IGM).	
				Not give: integumentary impression and bones fragments (IGM).	
				Not given: neural spine fragment (IGM).	
				Not give: proximal end humerus (IGM).	
				Not give: ribs fragments (IGM).	
				Not give: distal end radius (IGM).	
				Not give: integumentary impression and long bones fragments (IGM).	
				Not given: long bones fragments (IGM).	
				Not given: two pedal unguals (IGM).	
				Not given: metatarsal and long bone fragments (IGM).	
				Not given: proximal end radius (IGM).	
				Not given: integumentary impressions and ribs fragments (IGM).	
Not given: distal end humerus (IGM).					
Not given: proximal end ulna (IGM).					
Not given: distal end tibia (IGM).					
Not given: caudal vertebra (IGM).					
Not given: caudal vertebra (IGM).					

Table 15. Continuation.
Tabla 15. Continuación.

Taxa (Previous identification)	Locality, Area, State	Stratigraphic unit	Age	Accession number (Previously number): Material (Collection)	References
				Not given: radio with integumentary impression (IGM).	
				Not given: caudal vertebra and two fragmentary radii (IGM).	
				Not given: caudal and cervical vertebra (IGM).	
				Not given: caudal and cervical vertebra (IGM).	
				Not given: mandible fragment (IGM).	
				Not given: cervical vertebrae (IGM).	
				Not given: caudal vertebrae (IGM).	
				Not given: ribs fragments (IGM).	
				Not given: coracoids (IGM).	
				Not given: integumentary impressions and bones fragments (IGM).	
				Not given: proximal end left humerus (IGM).	
				Not given: shaft right humerus (IGM).	
				Not given: fibula shaft (IGM).	
				Not given: proximal end fibula (IGM).	
				Not given: distal end tibia (IGM).	
				Not given: distal end tibia (IGM).	
				Not given: serie of 18 caudal vertebrae (IGM).	
				Not given: bones fragments and integumentary impressions (IGM).	
Hadrosauridae	Valles de los Tirannos, General Cepeda, Coahuila.	Cerro del Pueblo Formation	Late Campanian	Not given: vertebrae and long bones fragments and dentary fragment (SEPCP).	Ramírez-Velasco <i>et al.</i> , 2014.
Hadrosauridae	Dinosaurio Armado, Parras de la Fuente, Coahuila.	Cerro del Pueblo Formation	Late Campanian.	Not given: dorsal and caudal vertebra (IGM).	Ramírez-Velasco <i>et al.</i> , 2014.
Hadrosauridae	Las Pedreras, Parras de la Fuente, Coahuila	Cerro del Pueblo Formation	Late Campanian	Not given: ilium, ulna, proximal end femur and metatarsal (CPC).	Ramírez-Velasco <i>et al.</i> , 2014.
Hadrosauridae	Presa San Antonio, Parras de la Fuente, Coahuila	Cerro del Pueblo Formation	Late Campanian	Not given: left maxilla (IGM-MG).	Serrano-Brañas, 2006; Ramírez-Velasco <i>et al.</i> , 2014.
				Not given: dentary fragment (IGM-MG).	
Hadrosauridae	Presa San Antonio quarry B1, Parras de la Fuente, Coahuila.	Cerro del Pueblo Formation	Late Campanian	Not given: not mentioned (ROM)	Kirkland <i>et al.</i> , 2000.
Hadrosauridae	Presa San Antonio quarry B2, Parras de la Fuente, Coahuila.	Cerro del Pueblo Formation	Late Campanian	Not given: hind limbs bones (ROM)	Kirkland <i>et al.</i> , 2000.
Hadrosauridae	Snak y las Torres, Parras de la Fuente, Coahuila.	Cerro del Pueblo Formation	Late Campanian	Not given: two caudal vertebrae and dorsal vertebra and pedal ungual (IGM-MG).	Ramírez-Velasco <i>et al.</i> , 2014.
Hadrosauridae	Tanque, Parras de la Fuente, Coahuila.	Difunta Group	Late Campanian-Late Maastrichtian	Not given: bones fragments (IGM).	Ramírez-Velasco <i>et al.</i> , 2014.
Hadrosauridae	Southwest of La Esmeralda, Sierra Mojada, Coahuila.	Unknown.	Late Maastrichtian	CPC 272: sacrum?	
				CPC 273: caudal vertebra.	Ramírez-Velasco <i>et al.</i> , 2014.
				CPC 275: distal end tibia.	

Table 15. Continuation.

Tabla 15. Continuación.

tions, one of the authors identified a lambeosaurinae from Cerro de los Dinosaurios quarry 7 and quarry 1, General Cepeda Coahuila (Ramírez-Velasco, 2012 pers. obs). Recently Aguilar *et al.*, (2013, 2014) reported the finding of a new large lambeosaurine founded by J. López-Espinoza in Guadalupe, General Cepeda

Coahuila. It represents the first articulated bones (from the last four sacral to nearly the end of the tail) discovered in Mexico.

The subfamily Saurolophinae has been referred to *Kritosaurus navajovius* (Serrano-Brañas, 2006; Kirkland *et al.*, 2006; Prieto-Márquez, 2013),

Taxa (Previous identification)	Locality, Area, State	Stratigraphic unit	Age	Accession number (Previously number): Material (Collection)	References
<i>Magnapaulia laticaudus</i> Prieto-Márquez <i>et al.</i> , 2012 (<i>Lambeosaurus laticaudus</i> Morris, 1981)	Arroyo del Rosario North, El Rosario, Baja California.	El Gallo Formation	Late Campanian	LACM 17698: cervical vertebra.	Hilton, 2003; Prieto-Márquez <i>et al.</i> 2012; Ramírez-Velasco <i>et al.</i> , 2014.
				LACM 17699: tooth.	
				LACM 17700: tooth.	
				LACM 17702: cervical and caudal vertebrae, neural caudal spines and dorsal ribs.	
				LACM 17703: ischium.	
				LACM 17704: tibia and femoral fragment.	
LACM 20883: associated vertebrae fragments.					
<i>Magnapaulia laticaudus</i> Prieto-Márquez <i>et al.</i> , 2012 (<i>Lambeosaurus laticaudus</i> Morris, 1981)	Arroyo del Rosario West, El Rosario, Baja California.	El Gallo Formation	Late Campanian	LACM 17705: articulated series of 11caudal vertebrae.	Hilton, 2003; Prieto-Márquez <i>et al.</i> 2012; Ramírez-Velasco <i>et al.</i> , 2014.
				LACM 20885: left fibula fragment.	
<i>Magnapaulia laticaudus</i> Prieto-Márquez <i>et al.</i> , 2012 (<i>Lambeosaurus laticaudus</i> Morris, 1981)	Arroyo del Rosario, El Rosario, Baja California.	El Gallo Formation	Late Campanian	IGM 5845 (LACM 26757): incomplete righthumerus and fibula.	Morris, 1972, 1976; Hilton, 2003; Ramírez-Velasco <i>et al.</i> , 2014.
<i>Magnapaulia laticaudus</i> Prieto-Márquez <i>et al.</i> , 2012 (<i>Lambeosaurus laticaudus</i> Morris, 1981)	El Rosario, El Rosario, Baja California.	El Gallo Formation	Late Campanian	LACM 17706: left tibia.	Morris, 1976; Morris, 1981; Prieto-Márquez <i>et al.</i> 2012; Rivera-Sylva and Carpenter, 2014b; Ramírez-Velasco <i>et al.</i> , 2014.
				LACM 17707: humerus.	
				IGM 5846 (LACM 17708): ischium.	
				LACM 17709: dorsal vertebra.	
				LACM 17710: dorsal rib fragment.	
				LACM 17711: left tibia.	
				IGM 5844 (LACM 17712): integumentary impressions and dorsal vertebra.	
				LACM 17713: dentary fragment.	
				IGM 5845 (LACM 17715): femur, left premaxilla, maxilla and jugal, atlas, cervical vertebrae, dorsal neural spines and vertebrae, partial sacrum, two caudal neural archs, right sterna, left coracoids, right scapula and humerus, left ischium, femoral fragment, proximal end tibia, metatarsal III	
				LACM 17716: humeral fragment and fibula.	
				LACM 17717: dentary fragment.	
LACM 20884: pubic fragment.					
<i>Magnapaulia laticaudus</i> Prieto-Márquez <i>et al.</i> , 2012 (<i>Lambeosaurus laticaudus</i> Morris, 1981)	El Rosario, El Rosario, Baja California.	El Gallo Formation	Late Campanian	LACM 20873: articulated serie of 21 caudal vertebrae.	Prieto-Márquez <i>et al.</i> , 2012.
<i>Magnapaulia laticaudus</i> Prieto-Márquez <i>et al.</i> , 2012 (<i>Lambeosaurus laticaudus</i> Morris, 1981)	El Rosario Arriba, El Rosario, Baja California.	El Gallo Formation	Late Campanian	LACM 20874: left tibia, dentary, dorsal and caudal vertebrae, dorsal to sacral neural archs, both partial ischia and left pubes.	Hilton, 2003; Prieto-Márquez <i>et al.</i> 2012; Ramírez-Velasco <i>et al.</i> , 2014.
				LACM 20875: left tibia.	
				LACM 20876: vertebra.	
<i>Velafrons coahuilensis</i> Gates <i>et al.</i> , 2007	Cerro de los Dinosaurios quarry 7A, Rincón Colorado, General Cepeda, Coahuila.	Cerro del Pueblo Formation	Late Campanian	CPC 59: righth dentary, ceratobranchial, both premaxillae and maxillae, right jugal, quadrate and nasal, skull roof, cervical, dorsal, sacrum and caudal vertebrae, neural archs, cervical ribs, ribs, chevrons, right scapula, both coracoids, humeri, ulnae and radii, metacarpals, manual phalanges, right ilium, both ischia, pubes, femora and tibiae, left astragalus, metatarsals and pedal phalanges.	Serrano-Brañas, 2006; Gates, 2007; Gates <i>et al.</i> , 2007; Rivera-Sylva and Carpenter, 2014b; Ramírez-Velasco <i>et al.</i> , 2014.
				Not given: both premaxillae, maxillae, dentaries and predentaries (CPC).	

Table 16. List of bones of Lambeosaurinae.

Tabla 16. Lista de restos óseos de Lambeosaurinae.

Taxa (Previous identification)	Locality, Area, State	Stratigraphic unit	Age	Accession number (Previously number): Material (Collection)	References
<i>Latirhinus uitstani</i> Prieto-Márquez and Serrano-Brañas, 2012 (Saurolophinae)	Presa San Antonio quarry SPA 88-9, Parras de la Fuente, Coahuila.	Cerro del Pueblo Formation	Late Campanian	IGM 6583: righth nasal?, cervical, dorsal and caudal vertebrae, righth coracoid, distal end scapula, both humeri and ulnae, metacarpals, right ilium fragmentary, proximal end ischium, both femorae, tibiae and fibulae, left astragalus, metatarsals and pedal phalanges.	Espinosa-Arrubarrena <i>et al.</i> , 1989; Serrano-Brañas 2006; Prieto-Márquez and Serrano-Brañas, 2012; Rivera-Sylva and Carpenter, 2014b; Ramírez-Velasco <i>et al.</i> , 2014.
				Not given: dentary fragment (IGM-MG).	
				Not given: both ilia fragment and righth ischium (IGM-MG).	
				Not given: distal end ischia (IGM-MG).	
				Not given: undetermined fragments (IGM-MG).	
				Not given: proximal end femur (IGM-MG).	
				Not given: tibia shaft (IGM-MG).	
				Not given: vertebrae fragments (IGM-MG).	
				Not given: metatarsus fragment, neural spines and vertebrae and tibia fragments (IGM-MG).	
				Not given: both fibulae, femur fragments and vertebrae fragments (IGM-MG).	
				Not given: humerus fragments, ribs, neural arch and many neural spines (IGM-MG).	
Not given: long bones and vertebrae fragments (IGM-MG).					
Not given: partial dentary (IGM-MG).					
Lambeosaurinae	El Rosario, El Rosario, Baja California.	La Bocana Roja Formation	Early Campanian	LACM 28990: left ischium and fragment of left ilium.	Morris, 1981; Prieto-Márquez <i>et al.</i> , 2012; Ramírez-Velasco <i>et al.</i> , 2014.
Lambeosaurinae	El Rosario, El Rosario, Baja California.	La Bocana Roja Formation	Early Campanian	LACM 23625: right yugal, dentary, radial fragment, scapula, ulna and fibula fragment, humerus, pedal ungual phalanx.	Prieto-Márquez <i>et al.</i> , 2012; Ramírez-Velasco <i>et al.</i> , 2014.
Lambeosaurinae	Not mentioned, El Rosario, Baja California.	El Gallo Formation	Late Campanian	UCMP 137303: integumentary impressions.	Hilton, 2003.
Lambeosaurinae (Hadrosauridae)	Not mentioned, Fronteras, Sonora.	Cabullona Group	Late Campanian-Late Maastrichtian	Not given: humerus (MPF).	Duarte-Bigurra, 2013; Ramírez-Velasco, pers. obs., 2013.
Lambeosaurinae	Las Garzas, Ocampo, Coahuila.	Aguja Formation	Late Campanian	Not given: right humerus (IGM).	Ramírez-Velasco <i>et al.</i> , 2014.
Lambeosaurinae	Cañada ancha, Ramos Arizpe, Coahuila.	Cerro del Pueblo Formation	Late Campanian	Not given: caudals and dorsal vertebrae, both tibiae and one with tooth marks, fibula proximal end, humerus and maxilla (CPC).	Vivas-González, 2013
Lambeosaurinae	North of Saltillo, Saltillo, Coahuila.	Cerro del Pueblo Formation	Late Campanian	CPC 904: caudal vertebrae, cervical vertebra, humerus, femur and other postcranial material. CPC 905: femur, both fibulae and two metatarsal fragments.	Rivera-Sylva and Carpenter, 2014b.
Lambeosaurinae (Hadrosauridae)	Cerro de los Dinosaurios quarry 1, General Cepeda, Coahuila.	Cerro del Pueblo Formation	Late Campanian	Not given: dentary fragments, caudal vertebra, ribs, distal end ischium, metatarsals and pedal phalanges (SEPCP).	Serrano-Brañas, 2006;
Lambeosaurinae	Cerro de los Dinosaurios quarry 7, General Cepeda, Coahuila.	Cerro del Pueblo Formation	Late Campanian	Not given: cervical and caudal vertebrae, neural spines, two left distal end scapulae, both humeri fragments, distal end radius, ribs, left ilium fragment, both pubes fragments, both femura, tibiae, fibulae and astragali, metacarpals, metatarsals and phalanges (SEPCP). Not given: rib (SEPCP).	Serrano-Brañas, 2006; Ramírez-Velasco <i>et al.</i> , 2014.
Lambeosaurinae	El Palmar, General Cepeda, Coahuila.	Cerro del Pueblo Formation	Late Campanian	BENC 1/1-0009: right scapula, astragalus and pedal ungual.	Espinosa-Chávez pers. com., 2014; Ramírez-Velasco <i>et al.</i> , 2014.
Lambeosaurinae	Guadalupe, General Cepeda, Coahuila.	Cerro del Pueblo Formation	Late Campanian	Not given: some sacral vertebrae, serie of caudal vertebrae and other unprepared elements (CIC/P).	Aguilar <i>et al.</i> , 2013, 2014.
Lambeosaurinae	La Rosa, General Cepeda, Coahuila.	Cerro del Pueblo Formation	Late Campanian	BENC 18/1-0901: both partial maxillae, quadrate, partial braincase, cervical, dorsal and caudal vertebrae, neural spines, ribs, right scapula, both humeri and ulnae, metacarpal, both partial pubes, left femur, left distal and proximal end tibia, right fibula, astragalus and metatarsals.	Espinosa-Chávez pers. com., 2014; Ramírez-Velasco <i>et al.</i> , 2014.
Lambeosaurinae	Las Águilas track site, General Cepeda, Coahuila	Cerro del Pueblo Formation	Late Campanian	Not given: righth articulated maxilla and dentary, anterior end of both premaxillae and postcranial material (CPC).	Eberth <i>et al.</i> , 2003; Espinoza-López, pers. com., 2014; Ramírez-Velasco <i>et al.</i> , 2014.
Lambeosaurinae (Saurolophinae)	Presa San Antonio area, Parras de la Fuente, Coahuila.	Cerro del Pueblo Formation	Late Campanian	Not given: sacrum and caudal vertebrae, both incomplete humerus, both ulnae, left radius, metacarpal, ilium fragment, right astragalus and metatarsals (IGM-MG).	Serrano-Brañas, 2006; Ramírez-Velasco <i>et al.</i> , 2014.

Table 16. Continuation.
Tabla 16. Continuación.

Taxa (Previous identification)	Locality, Area, State	Stratigraphic unit	Age	Accession number (Previously number): Material (Collection)	References
Saurolophinae	Locality 16, Naco-Cananea, Sonora.	Arenisca Camas Formation	Late Campanian	ERNO 302: left humerus.	Lucas <i>et al.</i> , 1995; Lucas and González-León, 1996; Contreras-Medina, 1997; Ramírez-Velasco <i>et al.</i> , 2014.
Saurolophinae	Locality 17, Naco-Cananea, Sonora.	Corral de Enmedio Formation	Late Campanian	ERNO: left humerus.	Lucas <i>et al.</i> , 1995; Ramírez-Velasco <i>et al.</i> , 2014.
Saurolophinae	Agua de los Conejos, Fronteras, Sonora	Cabullona Group.	Late Campanian-Late Maastrichtian	Not given: proximal end tibia (MPF). Not given: left humerus (MPF).	Ramírez-Velasco <i>et al.</i> , 2014.
Saurolophinae	Alamitos site 1, Fronteras, Sonora.	Cabullona Group	Late Campanian-Late Maastrichtian	Not given: cervical, dorsal and caudal vertebrae, neural spines, distal end tibia, ribs, left ilium, both pubes and both Ischia (MPF).	Duarte-Bigurra, 2013; Ramírez-Velasco <i>et al.</i> , 2014.
Saurolophinae (<i>Kritosaurus</i> sp. Brown, 1910)	Parque Nacional Cañon de Santa Elena, Ojinaga, Chihuahua.	Aguja Formation	Late Campanian	Not given: limbs elements, portions of the skull and vertebral column (?).	Westgate <i>et al.</i> , 2002b.
Saurolophinae	Icoteas, Manuel Benavides, Chihuahua.	Aguja Formation	Late Campanian	Not given: cervical, dorsal and caudal vertebrae, proximal end humerus and metatarsal (IGM).	Ramírez-Velasco <i>et al.</i> , 2014.
Saurolophinae	Pico de Pato, Manuel Benavides, Chihuahua.	Aguja Formation	Late Campanian	Not given: right maxilla (IGM).	Montaño <i>et al.</i> , 2009; Ramírez-Velasco <i>et al.</i> , 2014.
Saurolophinae	Anizul, Ocampo, Coahuila.	Aguja Formation	Late Campanian	Not given: metatarsal (IGM). Not given: distal end scapula (IGM). Not given: cranial elements, pelvic girdle, forelimb and vertebrae (IGM).	Montaño <i>et al.</i> 2009; Ramírez-Velasco <i>et al.</i> , 2014.
Saurolophinae	Bell Brown, Ocampo, Coahuila.	Aguja Formation	Late Campanian	Not given: tooth (IGM).	Monroy-Mújica, 2009; Ramírez-Velasco <i>et al.</i> , 2014.
Saurolophinae	Las Garzas, Ocampo, Coahuila.	Aguja Formation	Late Campanian	Not given: tooth (IGM).	Monroy-Mújica, 2009; Ramírez-Velasco <i>et al.</i> , 2014.
Saurolophinae	Not mentioned, Ocampo, Coahuila.	Aguja Formation	Late Campanian	Not given: disarticulated skeleton with complete long bones (CPC).	Rivera-Sylva <i>et al.</i> , 2011c.
Saurolophinae (cf. <i>Kritosaurus</i> sp. Brown, 1910)	West of El Carricito (previously known Las Jicoteas), Ocampo, Coahuila.	Aguja Formation	Late Campanian	Not given: vertebrae and scapula (CPC).	Rivera-Sylva <i>et al.</i> , 2009b.
Unnamed saurolophinae (<i>Kritosaurus</i> sp. Brown, 1910)	El Mezquite, Sabinas, Coahuila.	Olmos Formation	Late Campanian-Early Maastrichtian	PASAC-1: both dentaries, left maxilla, both quadrates, left quadratojugal, right postorbital, braincase, left pterygoid, partial ectopterygoid, atlas, cervical, dorsal, sacrum and caudal vertebrae, neural spines, chevrons, ribs fragments, left scapula and coracoid, distal end radius, left ilium fragments, right pubis and ischium, both femur, left tibia, distal end fibula, proximal and distal end metatarsals.	Serrano-Brañas, 2006; Kirkland <i>et al.</i> , 2006; Prieto-Márquez, 2013; Rivera-Sylva and Carpenter, 2014b; Ramírez-Velasco <i>et al.</i> , 2014.
Saurolophinae	Fraustro, Ramos Arizpe, Coahuila.	Cerro del Pueblo Formation	Late Campanian	BENC 4/1 0001: braincase and natural brain endocast.	Serrano-Brañas <i>et al.</i> 2006; Ramírez-Velasco <i>et al.</i> , 2014.
Saurolophinae	Cerro de los Dinosaurios quarry 2, General Cepeda, Coahuila.	Cerro del Pueblo Formation	Late Campanian	Not given: left dentary, dorsal vertebrae, neural spines, metatarsals, right humerus, left ulna, femur and fibula (IGM-MG). Not given: dorsal, sacrum and caudal vertebrae and neural spines (IGM-MG). Not given: caudal vertebra fragments (IGM-MG). Not given: ossified tendons (IGM-MG). Not given: ribs fragments (IGM-MG). Not given: metatarsals fragments, scapula fragment, ribs fragments, vertebrae and dentary fragments (IGM-MG). Not given: ribs and metatarsals fragments, ulna and phalanges (IGM-MG). Not given: ribs fragments (IGM-MG). Not given: ribs fragments, phalanx and distal end of both tibiae (IGM-MG). Not given: ribs fragments and caudal vertebra (IGM-MG). Not given: tibia shaft, distal end radius, caudal vertebra (IGM-MG). Not given: proximal end humerus fragments, phalanx and long bones (IGM-MG).	Serrano-Brañas, 2006; Ramírez-Velasco <i>et al.</i> , 2014.

Table 17. List of bones of Saurolophinae.
Tabla 17. Lista de restos óseos de Saurolophinae.

Taxa (Previous identification)	Locality, Area, State	Stratigraphic unit	Age	Accession number (Previously number): Material (Collection)	References
Saurolophinae	Cerro de los Dinosaurios quarry 3, General Cepeda, Coahuila.	Cerro del Pueblo Formation	Late Campanian	Not given: left scapula, ulna, fibula (?). Not given: vertebra fragment, rib and bone fragments (SEPCP).	Serrano-Brañas, 2006; Ramírez-Velasco <i>et al.</i> , 2014.
Saurolophinae	El Palmar, General Cepeda, Coahuila.	Cerro del Pueblo Formation	Late Campanian	BENC 1/1-007: left maxilla and partial dentary.	Espinoza-Chávez <i>et al.</i> , 2014; Ramírez-Velasco <i>et al.</i> , 2014.
Saurolophinae (Lambeosaurinae)	La Parrita, General Cepeda, Coahuila.	Cerro del Pueblo Formation	Late Campanian	Not given: two ulnae (SEPCP). Not given: right ribs (SEPCP). Not given: coracoid? (SEPCP). Not given: dorsal and caudal vertebrae (SEPCP). Not given: left humerus (SEPCP). Not given: phalanx, ribs and distal end radius (SEPCP). Not given: left scapula (SEPCP).	Vivas-González, 2013; Ramírez-Velasco <i>et al.</i> , 2014.
Saurolophinae	Rincón Colorado Coah 20, General Cepeda, Coahuila	Cerro del Pueblo Formation	Late Campanian	Not given: both femur and left tibia (MPRC).	Serrano-Brañas, 2006; Ramírez-Velasco <i>et al.</i> , 2014.
Saurolophinae	Rincón Colorado quarry HB, General Cepeda, Coahuila.	Cerro del Pueblo Formation	Late Campanian	Not given: dorsal and caudal vertebrae, neural spines, chevrons, maxilla, metatarsals, phalanges, astragalus and ilium fragment (IGM-MG). Not given: cervical, dorsal and caudal vertebrae, chevrons, left rib, both humerus fragments, left radius, left ulna, right femur, both tibia, both fibula, metatarsals and phalanges (IGM-MG). Not given: dentary fragment (IGM-MG). Not given: ribs fragments (IGM-MG). Not given: left tibia, right rib and fibula fragment (SEPCP). Not given: fibula and radius (SEPCP). Not given: ribs fragments and ossified tendons (SEPCP). Not given: both fibulae and ulnae, and right radius (SEPCP). Not given: right scapula, both humeri and caudal vertebrae (SEPCP). Not given: caudal vertebra, metatarsal and bone fragments (SEPCP). Not given: cervical and dorsal vertebra, metatarsals and coracoid (SEPCP). Not given: cervical vertebrae, caudal vertebra and two pedal phalanges (SEPCP). Not given: dorsal vertebra (SEPCP).	Ramírez-Velasco <i>et al.</i> , 2014.
Saurolophinae (<i>Kritosaurus navajovius</i> Brown, 1910)	Presa San Antonio, Parras de la Fuente, Coahuila.	Cerro del Pueblo Formation	Late Campanian	IGM 6685: both premaxilla, dentaries and prementaries	Serrano-Brañas, 2006; Kirkland <i>et al.</i> , 2006; Prieto-Márquez, 2013; Ramírez-Velasco <i>et al.</i> , 2014.

Table 17. Continuation.

Tabla 17. Continuación.

Kritosaurus sp. (Westgate *et al.*, 2002b) and cf. *Kritosaurus* (Rivera-Sylva *et al.*, 2009b). Other saurolophine are considered new species not yet named as the Mezquite hadrosaur PASAC-1 (identified by its informal name “Sabinasauria”; Serrano-Brañas, 2006; Kirkland *et al.*, 2006; Prieto-Márquez, 2013), the “Alamitos specimen” from Fronteras Sonora, the hadrosaurid from the HB quarry (in honour of Harold Boland) and the hadrosaurid from Cerro

de los Dinosaurios quarry 2 (Ramírez-Velasco *et al.*, in press; Table 17).

The identification of *K. navajovius* in Mexico, probably represents a new species of *Kritosaurus* or another taxa, because it has been proposed by Prieto-Márquez (2013) that *Kritosaurus* diagnostic material is only found in the Kaiparowits Formation in southern Utah. More material is needed to assess this identification.

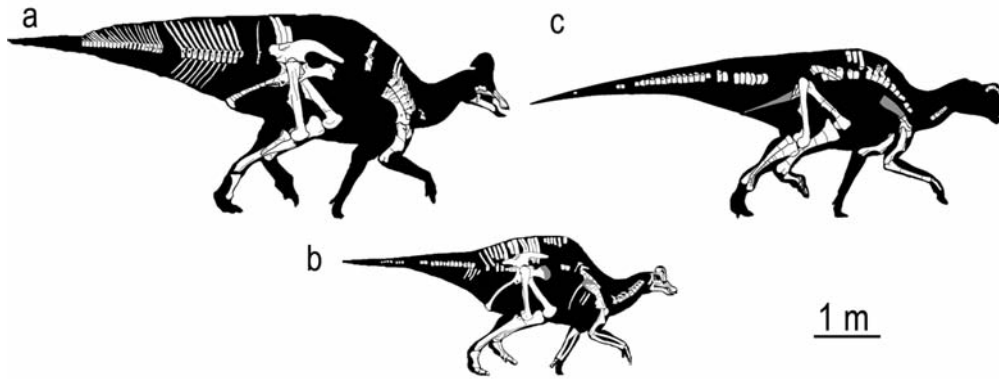


Figure 18. Skeletal drawings of Hadrosaurids from Baja California (a) and Coahuila (b-c), showing the elements found. a. *Magnapaulia laticaudus* skeletal composition: LACM 17702, 17705, 17707, 17711, 17715, 17716, 20873 and 20874. b. *Velafrons coahuilensis* CPC 59. c. *Latirhinus uitstlani* IGM 6583. (Silhouettes modified from *Hypacrosaurus altispinus* and *Gryposaurus incurvimanus* Paul, 2010).

Figura 18. Dibujos de esqueletos de Hadrosáuridos de Baja California (a) y Coahuila (b-c), mostrando los elementos hallados. a. Composición del esqueleto de *Magnapaulia laticaudus*: LACM 17702, 17705, 17707, 17711, 17715, 17716, 20873 y 20874. b. *Velafrons coahuilensis* CPC 59. c. *Latirhinus uitstlani* IGM 6583 cantera SPA 88-9 (siluetas modificadas de *Hypacrosaurus altispinus* y *Gryposaurus incurvimanus* Paul, 2010).

Discussion

Generally speaking, the diversity of the dinosaur bone record in Mexico during the Late Cretaceous is represented by indeterminate theropods, coelurosaurids, tyrannosaurids, ornithomimids, troodontids, dromaeosaurids, avialans, titanosaurs, ankylosaurids (divided in nodosaurids and ankylosaurids), pachycephalosaurids, ceratopsids (divided in chasmosaurines and centrosaurines), basal hadrosauroids and hadrosaurids (divided into saurolophines and lambeosaurines). In general, the relative abundance of each dinosaur group is similar in all three ages of the Late Cretaceous (divided into four intervals in the text). This suggests a similar basic structure for the dinosaur faunas in North America during the Santonian-Maastrichtian age (Lehman, 1987, 1997; 2001; Holtz *et al.*, 2004; Weishampel *et al.*, 2004; Holtz Jr. *et al.*, 2004; Larson *et al.*, 2014). In each age, ornithischians are more abundant than the saurischian dinosaurs. This distinction is more marked in the Campanian faunas, and is probably as a result of larger areas of good exposure rocks and more fieldwork do.

In all the four intervals, the hadrosaurids dominate the dinosaur assemblage, with ceratopsids, tyrannosaurids and ornithomimids being relatively abundant. Each of the remaining dinosaur groups represents only a small fraction of the dinosaur assemblage (Fig.19).

The Mexican bone record matches the North American dinosaur faunas with abundant large bodied taxa such as tyrannosaurids, hadrosaurids and ceratopsids and rarerly small theropods (dro-

maeosaurids, and troodontids) and small ornithischian such as pachycephalosaurids. Intriguingly, the presence of abundant ornithomimids in Mexico is a

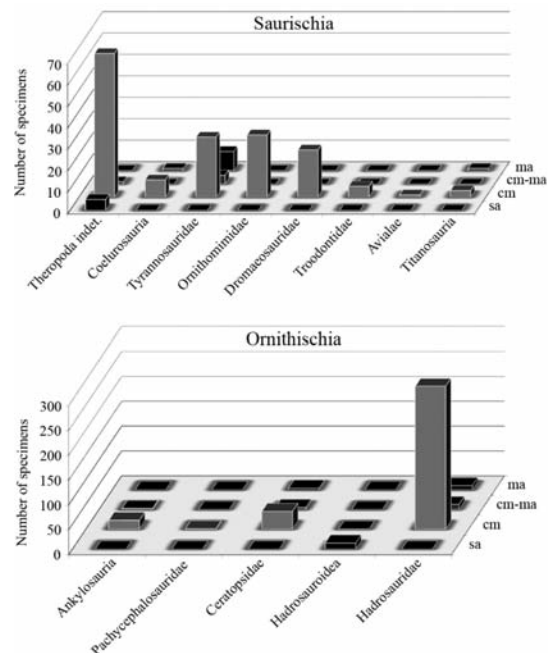


Figure 19. Number of specimens of dinosaur groups represented in Mexico in the Santonian, Campanian, Campanian-Maastrichtian and Maastrichtian age, based on information from all tables. Abbreviations: cm, Campanian; ma, Maastrichtian; sa, Santonian.

Figura 19. Número de ejemplares de los grupos de dinosaurios mexicanos del Santoniano, Campaniano, Campaniano-Maastrichtiano y Maastrichtiano, basado en la información de todas las tablas. Abreviaturas: cm, Campaniano; ma, Maastrichtiano; sa, Santoniano.

novel finding and may be the result of taphonomic biases not studied in Mexico.

According to Holtz *et al.* (2004), Zanno and Sampson (2005), Ryan *et al.* (2012), Brown *et al.* (2013) and Evans *et al.* (2013) in addition to the large bodied taxa of the North American dinosaurs, they are also represented by underestimated diversity of small dinosaurs belonging to the Oviraptorosauria, Thescelosauridae, Pachycephalosauridae and Leptoceratopsidae. Their rarity in the fossil record of all North America is due by the greater susceptibility of small bones to destruction by carnivores, breakage through bioturbation and weathering (Evans *et al.*, 2013). According to Evans *et al.*, (2013) their rarity in the Cretaceous rocks is probably due to the low diversity of small-bodied taxa clades compared with those clades dominated by large bodied taxa such as hadrosaurids and ceratopsids. Further work is needed to develop new methods to search for complete skeletons of small-dinosaurs in order to gain a more complete picture of dinosaur communities in Mexico and North America. In the future, more complete skeletons may eventually lead to the identification of new species and a better understanding of the biogeographic patterns during the Late Cretaceous.

Conclusions

The diversity of Late Cretaceous dinosaurs from Mexico is consistent with other Late Cretaceous North American dinosaur faunas. We have highlighted the enormous amount of undescribed material housed in paleontological collections and private collections. Further work is clearly needed to understand the diversity and the biogeographic patterns in the Late Cretaceous strata in North America.

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References

- Aguilar, F. J., Hernández Rivera, R., López Espinoza, J., Lara Rodríguez, M., Ramírez Velasco, A. A. and Gudiño Maussán, J. L. 2013. *Rescate paleontológico de un esqueleto semiarticulado de Hadrosáurido (Ornithischia: Hadrosauridae) en el ejido Guadalupe, municipio General Cepeda, Coahuila*. Informe inédito. Consejo de Arqueología, INAH. México.
- Aguilar, F. J., Hernández-Rivera, R., López-Espinoza, J., Lara-Rodríguez, M., Ramírez Velasco, A. A. and Gudiño-Maussán, J. L. 2014. *Informe Rescate paleontológico de un esqueleto semiarticulado de Hadrosáurido (Ornithischia: Hadrosauridae) en el ejido Guadalupe, municipio General Cepeda, Coahuila*. Informe inédito. Consejo de Arqueología, INAH. México.
- Aguillón-Martínez, M.C. 2010. *Fossil vertebrates from the Cerro del Pueblo Formation, Coahuila, Mexico, and the distribution of Late Campanian (Cretaceous) terrestrial vertebrate faunas*. Tesis de Maestría, Faculty of Dedman College, Southern Methodist University, Texas, 135 pp.
- Aguillón-Martínez, M.C., Vallejo-González I., Hernández-Rivera, R. and Kirkland, J.I. 1998. Dinosaur trackway from the Cerro del Pueblo Formation, Difunta Group (Latest Campanian, Cretaceous), Coahuila, Mexico. *Journal of Vertebrate Paleontology*, 18, 23A.
- Andrade-Ramos, M.P. 2003. *Paleontología de una localidad del Cretácico Tardío de Altares-Chihuahua*. Tesis de Licenciatura, Facultad de Ciencias, Universidad Nacional Autónoma de México, México D.F., 60 pp.
- Andrade-Ramos, M.P., Montellano-Ballesteros, M.,

- Cevallos-Ferriz, S. and Lozano-García, S. 2002. A Late Cretaceous association from Altares, Chihuahua, Mexico. *Journal of Vertebrate Paleontology*, 22, 32A.
- Arbour, V.M. and Currie, P.J. 2013. *Euoplocephalus tutus* and the diversity of ankylosaurid dinosaurs in the Late Cretaceous of Alberta, Canada, and Montana, USA. *PLoS ONE*, 8, e62421. doi:10.1371/journal.pone.0062421.
- Bakker, R.T., Sullivan, R.M., Porter, V., Larson, P. and Saultsbury, S.J. 2006. *Dracorex hogwartsia*, n. gen., n. sp., a spiked, flat headed pachycephalosaurid dinosaur from the Upper Cretaceous Hell Creek Formation of South Dakota. *Late Cretaceous Vertebrates from Western Interior New Mexico. Museum of Natural History and Sciences Bulletin*, 35, 331-345.
- Benammi, M., Centeno-García, E., Martínez-Hernández, E., Morales-Gámez, M., Tolson, G. and Urrutia-Fucugauchi, J. 2005. Presencia de dinosaurios en la barranca Los Bonetes en el sur de México (Región de Tiquicheo, Estado de Michoacán) y sus implicaciones cronoestratigráficas. *Revista Mexicana de Ciencias Geológicas*, 23, 401-418.
- Brodkorb, P. 1976. Discovery of a Cretaceous bird, apparently ancestral to the Orders Coraciiformes and Piciformes (Aves: Carinatae). *Smithsonian Contribution to Paleobiology*, 27, 67-73.
- Brown, B. 1910. The Cretaceous Ojo Alamo beds of New Mexico with description of the new dinosaur genus *Kritosaurus*. *Bulletin of the American Museum of Natural History*, 28, 267-274.
- Brown, B. and Schlaikjer, E.M. 1943. A study of the troodont dinosaurs with the description of a new genus and four new species. *Bulletin of the American Museum of Natural History*, 82, 121-149.
- Brown, C.M., Evans D.C., Ryan, M.J. and Russell, A.P. 2013. New data of the diversity and abundance of small-bodied ornithomimids (Dinosauria, Ornithischia) from the Belly River Group (Campanian) of Alberta. *Journal of Vertebrate Paleontology*, 33, 495-520.
- Carbot-Chanona, G.F. and Avedaño-Gil, M.J. 2002. Dinosaurios en Chiapas. *Revista de la Universidad Autónoma de Chiapas*, 1, 99-107.
- Carbot-Chanona, G. and Rivera-Sylva, H.E. 2011. Presence of a maniraptoriform dinosaur in the Late Cretaceous (Maastrichtian) of Chiapas, southern Mexico. *Boletín de la Sociedad Geológica Mexicana*, 63, 393-398.
- Carr, T.D. and Williamson, T.E. 2004. Diversity of late Maastrichtian Tyrannosauridae (Dinosauria: Theropoda) from Western North America. *Zoological Journal of the Linnean Society*, 142, 479-523.
- Company, J. Suberbiola, X.P., Ruiz-Omeñaca, J.I. and Buscalioni, A.D. 2005. A new species of *Doratodon* (Crocodyliformes: Ziphosuchia) from the Late Cretaceous of Spain. *Journal of Vertebrate Paleontology*, 25, 343-353.
- Contreras-Medina, R. 1997. *Origen, taxonomía y paleogeografía de hadrosauridae (Ornithischia: Ornithopoda) una familia de dinosaurios del Cretácico*. Tesis de Licenciatura, Facultad de Ciencias, Universidad Nacional Autónoma de México, México D.F., 63 pp.
- Cope, E.D. 1876. Description of some vertebrate remains from the Fort Union Beds of Montana. *Proceedings of the Academy of Natural Sciences of Philadelphia*, 28, 248-261.
- Currie, P.J., Rigby, J.K., Jr. and Sloan, R.E. 1990. Theropod teeth from the Judith River Formation of southern Alberta, Canada. In: Currie, P.J., and Carpenter, K. (eds.), *Dinosaur systematic: approaches and perspectives*. Cambridge University Press, Cambridge, 107-125.
- D Emic, M.D., Wilson, J.A. and Thompson, R. 2010. The end of sauropod dinosaur hiatus in North America. *Palaeogeography, Palaeoclimatology, Palaeoecology*, 297, 485-490.
- Duarte-Bigurra, R. 2013. *Descripción de dos esqueletos parciales de hadrosauridae (Dinosauria: Ornithischia) del Cretácico Superior de la región de Fronteras, Sonora, México*. Tesis de Licenciatura, División de Ciencias Biológicas y de la Salud, Universidad de Sonora, México, 81 pp.
- Eberth, D.A., Sampson, S.D., Rodríguez-de la Rosa, R.A., Aguillón-Martínez, M.C., Brinkman, D.B. and López-Espinoza, J. 2003. Las Águilas: an unusually rich Campanian-age vertebrate locality in southern Coahuila, Mexico. *Journal of Vertebrate Paleontology*, 23, 47A.
- Evans, D.C., Schott, R.K., Larson, D.W., Brown, C.M. and Ryan, M.J. 2013. The oldest North American pachycephalosaurid and the hidden diversity of small-bodied ornithischian dinosaurs. *Nature communications*, 4:1828, doi: 10.1038/ncomms2749.
- Espinosa-Arrubarrena L., Applegate, S.P., and Hernández-Rivera, R. 1989. Crónicas de una gran expedición paleontológica. *Ciencia y Desarrollo*, 15, 23-32.
- Ford, T.L. and Chure, D.J. 2001. "Aublysodon" teeth from the El Gallo Formation (Late Campanian) of Baja California: the southernmost record of tyrannosaurid theropods. In: McCord, R.D. and Boaz, D. (eds.), *Western association of vertebrate paleontologists and southwest paleontological symposium proceedings 2001*, Mesa Southwest Museum Bulletin 8, 75-89.
- Frederickson, J.A. and Tumarkin-Deratzian, A.R. 2014. Craniofacial ontogeny in *Centrosaurus apertus*. *PeerJ*, 2:e252, doi: 10.7717/peerj.252.
- Gates T.A. 2007. *Taxonomy, biogeography, and paleoecology of North American hadrosaurid (Ornithopoda) dinosaurs*. Tesis doctoral, University of Utah, Utah, 290 pp.
- Gates, T.A., Sampson, S., Delgado de Jesús, C.R., Zanno, L.E., Eberth, D.A., Hernández-Rivera, R., Aguillón-Martínez, M.C. and Kirkland, J.I. 2007. *Velafrons coahuilensis*, a new lambeosaurine hadrosaurid (Dinosauria: Ornithopoda) from the Late Campanian Cerro del Pueblo Formation, Coahuila, Mexico. *Journal of Vertebrate Paleontology*, 27, 917-930.
- Gilmore, C.W. 1924. A new coelurid dinosaur from the Belly River Cretaceous of Alberta. *Bulletin of the Canada Department of Mines Geological Survey*, 38, 1-12.
- Hernández-Rivera, R., Aguillón, M.C., Delgado, C.R. and Gómez, N.R. 1995. The Mexican Dinosaur National Monument. *Journal of Vertebrate Paleontology*, 15, 34A.
- Hernández-Rivera, R. 1997. Mexican dinosaurs. In: Currie, P.J. and Padian K. (eds.), *Encyclopedia of Dinosaurs*. Academic Press, San Diego, California, 433-437.

- Hernández-Rivera, R., and Delgado-de Jesús, D.R. 1999. An endocast of a ceratopsian brain cavity from the Cerro del Pueblo Formation (Latest Campanian, Upper Cretaceous), Coahuila, Mexico. *Journal of Vertebrate Paleontology*, 19, 50A-51A.
- Hernández-Rivera, R., and Delgado-de Jesús, D.R. 2000. Hadrosaur skin impressions and associated skeletal remains from Cerro del Pueblo Fm (Uppermost Campanian) southeastern Coahuila, México. *Journal of Vertebrate Paleontology*, 20, 48A.
- Hilton, R.P. 2003. *Dinosaurs and other Mesozoic Reptiles of California*. University of California Press, Berkeley, California, 356 pp.
- Holtz Jr., T.R., Chapman, R.E. and Lamanna, M.C. 2004. Mesozoic biogeography of dinosauria. In: Weishampel, D.B., Dodson, P. and Osmólska, H. (eds.), *The Dinosauria*. University of California Press, Berkeley, 627-642.
- Janensch, V.W. 1926. Dinosaurier-Reste aus Mexiko. Centralblatt für Mineralogie. *Geologie und Paläontologie*, 192-197.
- Johnson, M.E., Ledesma-Vázquez, J. and Baarli, B.G. 2006. Vertebrate remains on ancient rocky shores: a review with report on hadrosaur bones from the Upper Cretaceous of Baja California (México). *Journal of Coastal Research*, 22, 574-580.
- Johnson, H.L. 2009. *Guide to common vertebrate fossils from the Cretaceous of Alberta*. Alberta Paleontological Society, Alberta, Canada, 234 pp.
- Kirkland, J.L., Hernández-Rivera, R., Aguillón-Martínez, M.C., Delgado-de Jesús, C.R., Gómez-Nuñez, R. and Vallejo-González, I. 2000. The Late Cretaceous Difunta Group of the Parras Basin, Coahuila, Mexico, and its vertebrate fauna. *Society of Vertebrate Paleontology Annual Meeting Field Trip Guide Book*. Universidad Nacional Autónoma de México, México D.F., 133-172.
- Kirkland, J.L., Hernández-Rivera, R., Gates, T., Paul, G.S. Nesbitt, S., Serrano-Brañas, C.I. and J. García-de la Garza, P. 2006. Large hadrosaurine dinosaurs from the Latest Campanian of Coahuila, Mexico. *Late Cretaceous Vertebrates from Western Interior New Mexico. Museum of Natural History and Sciences Bulletin*, 35, 299-315.
- Lambe, L.M. 1902. New genera and species from the Belly River Series (mid-Cretaceous). *Geological Survey of Canada Contributions to Canadian Palaeontology*, 3, 25-81.
- Lambe, L.M. 1914. On *Gryposaurus notabilis*, a new genus and species of trachodont dinosaur from the Belly River Formation of Alberta, with a description of the skull of *Chasmosaurus belli*. *The Ottawa Naturalist*, 27, 145-155.
- Lambe, L.M. 1919. Description of a new genus and species (*Panoplosaurus mirus*) of an armoured dinosaur from the Belly River Beds of Alberta. *Transactions of the Royal Society of Canada, series 3*, 13, 39-50.
- Langston, W.Jr., and Oakes, M.H. 1954. Hadrosaurs in Baja California. *Bulletin of the Geological Society of America*, 65, 1344.
- Larson, D.W. 2013. The case for *Nanotyrannus*. In: Parrish, J.M., Molnar, R.E., Currie, P.J. and Koppelhus E.B. (eds.), *Tyrannosaurid paleobiology*. Indiana University Press, Bloomington, Indiana, 14-53.
- Larson, D.W. and Currie, P.J. 2013. Multivariate analyses of small theropod dinosaur teeth and implications for paleoecological turnover through time. *PLoS ONE*, 8, e54329. doi:10.1371/journal.pone.0054329.
- Larson, D., Campione, N.E. Brown, C.M., Evans, D.C. and Ryan, M.J. 2014. Hadrosauroid material from the Santonian Milk River Formation of southern Alberta, Canada. In: Eberth, D.A. and Evans, D.C. (eds.), *Hadrosaurs*. Indiana University Press, Bloomington, Indiana, 136-155..
- Lehman, T.M. 1987. Late Maastrichtian paleoenvironments and dinosaur biogeography in the western interior of North America. *Paleobiogeography, Paleoclimatology, Paleoecology*, 60, 189-217.
- Lehman, T.M. 1989. *Chasmosaurus mariscalensis*, sp. nov., a new ceratopsian dinosaur from Texas. *Journal of Vertebrate Paleontology*, 9, 137-162.
- Lehman, T.M. 1997. Late Campanian dinosaur biogeography in the Western Interior of North America. In: Wolberg, D.L., Stump, E. and Rosenberg, G.D. (eds.), *Dinofest International. Proceedings of a symposium sponsored by Arizona State University*. Academy of Natural Sciences, 223-240.
- Lehman, T.M. 2001. Late Cretaceous dinosaur provinciality. In: Tanke, D. and Carpenter, K. (eds.), *Mesozoic vertebrate life*. Indiana University Press, 310-328.
- Leidy, J. 1856. Notices of remains of extinct reptiles and fishes, discovered by Dr. F.V. Hayden in the bad lands of Judith River, Nebraska Territory. *Proceedings of the Academy of Natural Sciences of Philadelphia*, 8, 72-73.
- Leidy, J. 1868. Remarks on a jaw fragment of *Megalosaurus*. *Proceedings of Academic Natural Science*, 20, 197-200.
- Loewen, M.A., Irmis, R.B., Sertich, J.J.W., Currie, P.J. and Sampson, S.D. 2013. Tyrant dinosaur evolution tracks the rise and fall of Late Cretaceous oceans. *PLoS ONE*, 8, e79420. doi:10.1371/journal.pone.0079420.
- Loewen, M.A., Sampson, S.D., Lund, E.K., Farke, A.A., Aguillón-Martínez, M.C., de Leon, C.A., Rodríguez-de la Rosa, R.A., Getty, M.A. and Eberth, D.A. 2010. Horned Dinosaurs (Ornithischia: Ceratopsidae) from the Upper Cretaceous (Campanian) Cerro del Pueblo Formation, Coahuila, Mexico. In: Ryan, M.J., Chinnery-Allgeier, B.J. and Eberth, D.A. (eds.), *New Perspectives on Horned Dinosaurs: The Royal Tyrrell Museum Ceratopsian Symposium*. Indiana University Press, Bloomington, Indiana, 99-114.
- Lucas, S.G. and González-León, C.M. 1996. Dinosaurios del Cretácico Tardío del Grupo Cabullona, Sonora. *Geología del Noroeste*, 1, 20-25.
- Lucas, S.G., Sullivan, R.M. and Hunt, A.P. 2006. Re-evaluation of *Pentaceratops* and *Chasmosaurus* (Ornithischia: Ceratopsidae) in the Upper Cretaceous of the Western Interior. *Late Cretaceous Vertebrates from the Western Interior. New Mexico Museum of Natural History and Science Bulletin*, 35, 367-370.
- Lucas, S.G., Kues, B.S., and González-León, C.M. 1995. Paleontology of the Upper Cretaceous Cabullona Group,

- northeastern Sonora. In: Jacques-Ayala, C., González-León, C.M. and Roldán-Quintana, J. (eds.), *Studies on the Mesozoic of Sonora and adjacent areas*. Geological Society of America, Special Paper, 301, 143–165.
- Lund, E.K., Loewen, M.A., Sampson, S.D., Getty M.A., Aguillón-Martínez, M.C., Rodríguez-de la Rosa, R.A., and Eberth, D.A. 2007. Ceratopsian remains from the Late Cretaceous Cerro del Pueblo Formation, Coahuila, Mexico. *Ceratopsian Symposium: Short Papers, Abstracts and Programs*. Royal Tyrrell Museum of Paleontology, Drumheller, Alberta, Canada, 108-113.
- Lull, R.S. and Wright, N.E. 1942. *Hadrosaurian dinosaurs of North America*. Geological Society of America, Special Paper, 40. 1-242.
- Makovicky, P.J., Kobayashi, Y., and Currie, P.J. 2004. Ornithomimosauria. In: Weishampel, D.B., Dodson, P. and Osmólska, H. (eds.), *The Dinosauria, second edition*. University of California Press, Berkeley, 137-150.
- Martínez-Díaz, J.L. 2011. *El registro fósil de anquilosaurios (Thyreophora-Ankylosauria) de Cretácico Superior de México*. Tesis de Licenciatura, Facultad de Ciencias, Universidad Nacional Autónoma de México, México D.F., 49 pp.
- Martínez-Díaz, J.L. and Montellano-Ballesteros, M. 2011. Anquilosaurios (Thyreophora-Ankylosauria) del Cretácico Superior de México. *XII Congreso Nacional de Paleontología*. Benemérita Universidad Autónoma de Puebla, Puebla de los Ángeles, México, 93.
- Mariscal-Ramos, C. 2006. *Estudio paleontológico y magnetoestratigráfico de la localidad "Barranca los Bonetes" (Tuzantla, Michoacán)*. Tesis de Licenciatura, Facultad de Ciencias, Universidad Nacional Autónoma de México, México D.F., 61 pp.
- Marsh, O.C. 1872. Notice of a new and remarkable fossil bird. *The American Journal of Science, series 3*, 6, 344.
- Marsh, O.C. 1890. Description of new dinosaurian reptiles. *The American Journal of Science, series 3*, 39, 81-86.
- Matthew, W.D. and Brown, B. 1922. The family Deinodontidae, with notice of a new genus from the Cretaceous of Alberta. *Bulletin of the American Museum of Natural History*, 46, 367-385.
- Meyer, C.A., Frey, E.D., Thüring, B., Etter, W., and Stinnesbeck, W. 2005. Dinosaur tracks from the Late Cretaceous Sabinas basin (Mexico). *Kaupia. Darmstädter Beiträge zur Naturgeschichte*, 14, 41–45.
- Molnar, R.E. 1974. A distinctive theropod dinosaur from the Upper Cretaceous of Baja California (Mexico). *Journal of Paleontology*, 48, 1009–1017.
- Monroy-Mújica, I.H. 2009. *Microvertebrados fósiles cretácicos tardíos (Campaniano Tardío) de la Formación Aguja en el Noroeste de Coahuila, México*. Tesis Licenciatura, Facultad de Estudios Superiores de Iztacala, Universidad Nacional Autónoma de México, México, 111 pp.
- Montaño, M.I., Hernández-Rivera, R. and Montellano-Ballesteros, M. 2009. Hadrosaurios kritosaurinos del Cretácico Tardío de Coahuila y Chihuahua, México. *XI Congreso Nacional de Paleontología*, Centro de Geociencias, Campus Universidad Nacional Autónoma de México, Juriquilla, Querétaro, 47.
- Montellano-Ballesteros, M. 2003. A titanosaurid sauropod from the Upper Cretaceous of Chihuahua, Mexico. *Revista Mexicana de Ciencias Geológicas*, 20, 160-164.
- Morris, W.J. 1967. Baja California: Late Cretaceous dinosaurs. *Science*, 155, 1539–1541.
- Morris, W.J. 1976. Mesozoic and Tertiary vertebrates of Baja California, 1968-1971. *National Geographic Society Research Reports*, 305-316.
- Morris, W. J. 1972. A giant hadrosaurian dinosaur from Baja California. *Journal of Paleontology*, 46, 777–779.
- Morris, W. J. 1981. A new species of Hadrosaurian dinosaur from The Upper Cretaceous of Baja California ?*Lambeosaurus laticaudus*. *Journal of Paleontology*, 55, 453–462.
- Murray, G.E., Boyd, D.R., Wolleben, J.A. and Wilson, J.A. 1960. Late Cretaceous fossil locality, Eastern Parras Basin, Coahuila, Mexico. *Journal of Paleontology*, 34, 368–373.
- Ojeda-Rivera, J., Delgado-Hernández, J. and Villamar, S., 1968, Coal geology of the Sabinas Basin, Coahuila. *Geological Society of America, Fieldtrip Guidebook Series 1 1*, 72 pp.
- Osborn, H.F. 1905. *Tyrannosaurus* and other Cretaceous carnivorous dinosaurs. *Bulletin of the American Museum of Natural History*, 21, 259-265.
- Paul, G.S. 2010. *The Princeton field guide to dinosaurs*. Princeton University Press, New Jersey, 320 pp.
- Peacock, B.R., Wilson, J.A., Hernández-Rivera, R., Montellano-Ballesteros, M. and Wilson, G.P. 2014. First tyrannosaurid remains from the Upper Cretaceous "El Gallo" Formation of Baja California, México. *Acta Paleontologica Polonica*, 59, 71-80.
- Porrás-Múzquiz, H.G. and Lehman, T.M. 2011. A ceratopsian horncore from the Olmos Formation (early Maastrichtian) near Múzquiz, Mexico. *Revista Mexicana de Ciencias Geológicas*, 28, 262-266.
- Porrás-Múzquiz, H.G., Chatterjee, S. and Lehman, T.M. 2014. The carinate bird *Ichthyornis* from the Upper Cretaceous of Mexico. *Cretaceous Research*, 51, 148-152.
- Prieto-Márquez, A. 2013. Skeletal morphology of *Kritosaurus navajovius* (Dinosauria: Hadrosauridae) from the Late Cretaceous of the North America southwest, with an evaluation of the phylogenetic systematic and biogeography of Kritosaurini. *Journal of Systematic Paleontology*, DOI: 10.1080/14772019.2013.770417.
- Prieto-Márquez, A. and C.I. Serrano-Brañas. 2012. *Latirhinus uitstlani*, a "broad-nosed" saurolophine hadrosaurid (Dinosauria, Ornithopoda) from the Late Campanian (Cretaceous) of northern Mexico. *Historical Biology*, 24, 607-619.
- Prieto-Márquez, A., Chiappe, L.M. and Joshi, S.H. 2012. The lambeosaurine dinosaur *Magnapaulia laticaudus* from the Late Cretaceous of Baja California, Northwestern México. *PLoS ONE*, 7 (6), e38207. Doi:10.1371/journal.pone.0038207.
- Ramírez-Velasco, A.A. 2009. *Descripción de los dinosaurios de la Barranca de los Bonetes (Tuzantla, Michoacán) Cretácico Tardío (Coniaciano-Santoniano) y reporte de paleopatologías*. Tesis de Licenciatura, Facultad de

- Ciencias, Universidad Nacional Autónoma de México, México D.F., 174 pp.
- Ramírez-Velasco, A.A., Hernández-Rivera, R. and Servín-Pichardo, R. 2014. The hadrosaurian record from Mexico. In: Eberth, D.A. and Evans, D.C. (eds.), *Hadrosaurs*. Indiana University Press, Bloomington, Indiana, 340-360.
- Ramírez-Velasco, A.A., Benammi, M., Prieto-Márquez, A., Alvarado-Ortega, J. and Hernández-Rivera, R. 2012. *Huehucanauhtlus tiquichensis*, a new hadrosauroid dinosaur (Ornithischia: Ornithopoda) from the Santonian (Late Cretaceous) of Michoacán, Mexico. *Canadian Journal of Earth Sciences*, 49, 1–18.
- Rivera-Sylva, H.E. and Carpenter, K. 2014a. Mexican saurischian dinosaurs. In: Rivera-Sylva, H.E., Carpenter, K., and Frey, E. (eds.), *Dinosaurs and other reptiles from the Mesozoic of Mexico*. Indiana University Press, Bloomington, Indiana, 143-155.
- Rivera-Sylva, H.E. and Carpenter, K. 2014b. The ornithischian dinosaurs of Mexico. In: Rivera-Sylva, H.E., Carpenter, K., and Frey, E. (eds.), *Dinosaurs and other reptiles from the Mesozoic of Mexico*. Indiana University Press, Bloomington, Indiana, 156-180.
- Rivera-Sylva, H.E. and Espinoza-Chávez, B. 2006. Ankylosaurid (dinosauria: thyreophora) osteoderms from the upper Cretaceous Cerro del Pueblo Formation of Coahuila, Mexico. *Carnets de Géologie/Notebook of Geology Letter*, 1-5.
- Rivera-Sylva, H.E., Carpenter, K. and Aranda-Manteca, F.J. 2011a. Late Cretaceous nodosaurids (Ankylosauria: Ornithischia) from Mexico. *Revista Mexicana de Ciencias Geológicas*, 28, 271-278.
- Rivera-Sylva, H.E., Frey, E., and Guzmán-Gutiérrez, J.R. 2009a. Evidence of predation on the vertebrae of a hadrosaurid dinosaur from the Upper Cretaceous (Campanian) of Coahuila, Mexico. *Carnets de Géologie, Notebook on Geology, Brest, Letter*, 2009/02 (CG2009_L02).
- Rivera-Sylva, H.E., Guzmán-Gutiérrez, J.R. and Palomino-Sánchez, F. 2006a. Preliminary report on a vertebrate fossil assemblage from Late Cretaceous of Chihuahua, Mexico. *Hantkeniana*, 5, 66-68.
- Rivera-Sylva, H.E., Hone, D.W.E. and Dodson, P. 2012. Bite marks of a large theropod on an hadrosaur limb bone from Coahuila, Mexico. *Boletín de la Sociedad Geológica Mexicana*, 64, 155–159.
- Rivera-Sylva, H.E., Ortiz-Mendieta, J.A. and De la Peña-Oviedo, I. 2010. First record of a pachycephalosaurid from Mexico. *Journal of Vertebrate Paleontology*, 152A.
- Rivera-Sylva, H.E., Rodríguez-de la Rosa, R. and Ortiz-Mendieta, J.A. 2006b. A review of the Dinosaurian record from Mexico. In: Vega, F.J., Nyborg, T.G., Perrillat, M. del C., Montellano-Ballesteros, M., Cevallos-Ferriz, S.R.S., and Quiroz-Barroso, S.A. (eds.), *Studies on Mexican paleontology*. Springer, Netherlands, 233-248.
- Rivera-Sylva, H.E., Frey, E., Palomino-Sánchez, F.J., Guzmán-Gutiérrez J.R. and Ortiz-Mendieta, J.A. 2009b. Preliminary report on a Late Cretaceous vertebrate fossil assemblage in northwestern Coahuila, Mexico. *Boletín de la Sociedad Geológica Mexicana*, 61, 239-244.
- Rivera-Sylva, H.E., Guzmán-Gutiérrez, J.R., López-Espinosa, J., De la Peña-Oviedo, I. and Palomino-Sánchez, F. 2008. First report of the genus *Edmontonia* (Thyreophora: Nodosauridae) from Mexico. *Journal of Vertebrate Paleontology*, 28, 132A.
- Rivera-Sylva, H.E., Guzmán-Gutiérrez, J.R., Palomino-Sánchez, F., López-Espinosa, J. and de la Peña-Oviedo, I. 2007. New vertebrate fossil locality from the Late Cretaceous of northern Coahuila, Mexico. *Journal of Vertebrate Paleontology*, 27, 135A.
- Rivera-Sylva, H.E., González-González, A.H., Padilla, G.J.M., De la Peña, O.I. and Oyervidez, S.A.I. 2011b. Nueva localidad de la Formación Cerro del Pueblo (Cretácico Tardío: Campaniano) en Coahuila, México. *XII Congreso Nacional de Paleontología*, Benemérita Universidad Autónoma de Puebla, Puebla de los Ángeles, México, 118–119.
- Rivera-Sylva, H.E., Hedrick, B., Dodson, P., Guzmán-Gutiérrez, J.R. and González-Cervantes, A. 2011c. A new Campanian vertebrate locality from northwestern Coahuila, Mexico. *Journal of Vertebrate Paleontology*, 71, 179A.
- Rodríguez-de la Rosa, R.A. 2011. Algunos aspectos del estudio de los dinosaurios en México. *XII Congreso Nacional de Paleontología*, Benemérita Universidad Autónoma de Puebla, Puebla de los Ángeles, México, 120.
- Rodríguez-de la Rosa, R.A. and Aranda-Manteca F.J. 1999. Theropod teeth from the Late Cretaceous El Gallo Formation, Baja California, Mexico. *VII International Symposium Mesozoic Terrestrial Ecosystem*, Buenos Aires, Argentina, 56.
- Rodríguez-de la Rosa, R.A. and Aranda-Manteca F.J. 2000. Where there venomous theropods? *Journal of Vertebrate Paleontology*, 20, 60A.
- Rodríguez-de la Rosa, R.A., and Cevallos-Ferriz, S. 1998. Vertebrates of Pelillal locality (Campanian, Cerro del Pueblo Formation), southeastern Coahuila, Mexico. *Journal of Vertebrate Paleontology*, 18, 751–764.
- Romo de Vivar, M.P.R. 2011. *Microvertebrados Cretácicos Tardíos del área de El Rosario, Baja California, México*. Tesis de Licenciatura, Facultad de Ciencias, Universidad Nacional Autónoma de México, México D.F., 146 pp.
- Ryan, M.J., Evans, D.C., Currie, P.J., Brown, C.M. and Brinkman D. 2012. New leptoceratopsids from the Upper Cretaceous of Alberta, Canada. *Cretaceous Research*, 35, 69-80.
- Sankey, J.T. 2001. Late Campanian southern dinosaurs, Aguja Formation, Big Bend, Texas. *Journal of Paleontology*, 75, 208-215.
- Sankey, J.T., Standhardt, B.R. and Schiebout, J.A. 2005. Theropod teeth from the Upper Cretaceous (Campanian-Maastrichtian), Big Bend National Park, Texas. In: Carpenter, K. (ed.), *The Carnivorous Dinosaurs*, Bloomington Indiana University Press, 127-152.
- Sampson, S.D. Ryan, M.J. and Tanke, D.H. 1997. Craniofacial ontogeny in centrosaurinae dinosaurs (Ornithischia: Ceratopsidae) taxonomic and behavioral implications. *Zoological Journal of the Linnean Society*, 121, 293-337.

- Sampson, S.D., Lund, E.K., Loewen, M.A., Farke, A.A. and Clayton, K.E. 2014. A remarkable short-snouted horned dinosaur from the Late Cretaceous (Late Campanian) of southern Laramidia. *Proceedings of the Royal Society, Biological Science*, 280, 20131186.
- Sampson, S.D., Loewen, M.A., Farke, A.A., Roberts, E.M., Forster, C.A., Smith, J.A. and Titus, A.L. 2010. New horned dinosaurs from Utah provide evidence for intra-continental dinosaur endemism. *PLoS ONE*, 5, e12292 doi:10.1371/journal.pone.0012292.
- Serrano-Brañas, C.I. 2006. *Descripción de los Dinosaurios pertenecientes a la familia Hadrosauridae del Cretácico Superior de Coahuila, México*. Tesis de maestría, Universidad Nacional Autónoma de México, México D.F., 173 pp.
- Serrano-Brañas, C., Hernández-Rivera, R., Torres, R.E. and Espinosa C.B. 2006. A natural hadrosaurid endocast from the Cerro del Pueblo Formation (Upper Cretaceous) of Coahuila, Mexico. *New Mexico Museum of Natural History and Science Bulletin*, 35, 317-321.
- Serrano-Brañas, C.I., Torres-Rodríguez, E., Luna, P.C.R., González, I. and González-León, C. 2014. Tyrannosaurid teeth from the Lomas Coloradas Formation, Cabullona Group (Upper Cretaceous) Sonora, México. *Cretaceous Research*, 49, 163-171.
- Silva-Bárcenas, A. 1969. Localidades de vertebrados fósiles en la República Mexicana. *Paleontología Mexicana*, 28.
- Sues, H.D. 1978. A new small theropod dinosaur from the Judith River Formation (Campanian) of Alberta Canada. *Zoological Journal of the Linnean Society*, 62, 381-400.
- Taliaferro, N.L. 1933. An occurrence of Upper Cretaceous sediments in northern Sonora, Mexico. *Journal of Geology*, 41, 12-37.
- Torres-Rodríguez, E. 2006. *Terópodos del Cretácico Superior del Estado de Coahuila, México*. Tesis de Licenciatura, Facultad de Ciencias, Universidad Nacional Autónoma de México, México D.F., 91 pp.
- Torres-Rodríguez, E., Montellano-Ballesteros, M., Hernández-Rivera, R. and Benammi, M. 2010. Dientes de terópodos del Cretácico Superior del Estado de Coahuila, México. *Revista Mexicana de Ciencias Geológicas*, 27, 72-83.
- Vivas-González, R. 2013. *Paleoecología de dinosaurios hadrosáuridos (Ornithischia: Ornithopoda) de la Formación Cerro del Pueblo (Cretácico Tardío: Campaniano), Coahuila, México*. Tesis de maestría, Facultad de Ciencias de la Tierra, Universidad Autónoma de Nuevo León, México. 102 pp.
- Weishampel, D.B. 1990. Dinosaurian distribution. In: Weishampel, D.B., Dodson, P. and Osmólska, H. (eds.), *The Dinosauria*, University of California Press, Berkeley, 63-139.
- Weishampel, D.B., Barrett, P.M., Coria, R.A., Loeuff, J.L., Xing, X., Xijin, Z., Sahni, A., Gomani, E.M.P. and Noto, C.R. 2004. Dinosaur distribution. In: Weishampel, D.B., Dodson, P. and Osmólska, H. (eds.), *The Dinosauria, second edition*, University of California Press, Berkeley, 517-606.
- Westgate, J.W., Brown, R.B. Cope, D. and Pittman, J. 2002a. Discovery of dinosaur remains in coastal deposits near Ojinaga, Mexico. *Journal of Vertebrate Paleontology*, 22, 118A-119A.
- Westgate, J.W., Pittman, J., Brown R.B. and Cope, D. 2002b. Continued excavation of the first dinosaur community from Chihuahua, Mexico. *Journal of Vertebrate Paleontology*, 22, 118A.
- Zanno, L.E. and Sampson, S.D. 2005. A new oviraptorosaur (Theropoda, Maniraptora) from the Late Cretaceous (Campanian) of Utah. *Journal of Vertebrate Paleontology*, 25, 897-904.
- Zanno, L.E., Varrichio, D.J., O Connor, P.M., Titus A.L. and Knell, M.J. 2011. A new troodontid theropod, *Talos sampsoni* gen. et. sp. nov., from the Upper Cretaceous Western Interior Basin of North America. *PLoS ONE*, 6: e24487. DOI:10.1371/journal.pone.0024487.

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