THE GENUS RHYNCHOTHERIUM (MAMMALIA-PROBOSCIDEA) in the Hemphillian - Blancan (NALMA) of central Mexico

Dr. Oscar Carranza y Castañeda
Centro de Geociencias, Universidad Nacional Autónoma de México
carranza@geociencias.unam.mx

ABSTRACT

In research in Neogene deposits from central Mexico, have collected abundant fossil materials, that have been referred to *Rhynchotherium*, based in not diagnostic materials and inaccurate age and locality, that not adequately differentiate between the genus *Rhynchotherium*, Cuvieronius and *Gomphotherium* (Lucas y Morgan 2008).

Research in basins of central Mexico, have collected most complete fossil material with stratigraphic level, isotopic ages done in the strata where collected. In the state of Michoacán, in La Goleta Fauna, a complete skull and jaw of adult individual were collected in early Blancan deposit (3.6Ma), was refer to *Rhynchotherium falconeri*, because the features of jaw, symphysis downturned in 60°, the anterior border of the ascendant ramus in 90° in relation the occlusal surface, m2-3 complete, the alveolar ridge is wider transversely in m3, the incisors with wide enamel band outside; the skull is complete only the tusk are missing. Another complete jaws of juvenile individual from early Blancan of Miraflores, Baja California Sur, were collected. The jaw presents the symphysis downturned in 60°, the anterior border of ascendant ramus is in 90° and the complete tusks present enamel outside. The similarity between juvenile and adult jaw, demonstrates the constancy of ontogenetic characters.

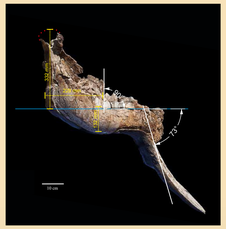
In San Miguel Allende basin, in early Blancan deposits (3.6 Ma) of Arroyo Belén, collect another skull and jaw. The symphysis is oriented downward, the anterior border of the ramus is in 110° is wider; the main difference is the presence of m1, m2 complete and m3, enamel outside the tusk. The features correspond tentatively to *Rhynchotherium browni*, although the associated fauna is unknown and the age is not substantiated.

In the White layer of Rancho El Ocote (Hh4), further adult jaw with m2-3, were collected. The symphysis is incomplete, is less downward, and the anterior border of the ramus is more open, no tusk are present.

In the Tecolotlán basin, state of Jalisco, other jaw was finding associated in late Hemphillian. In the jaw the tooth is missing, tusk are present with enamel band, the horizontal ramus is slender slightly long, the symphysis oriented downwards in angle of 45°, and the anterior border of the ascending ramus is 110°.

The jaws from San Miguel de Allende and Tecolotlán, with associated fauna and isotopic ages tentatively are assigned to *Rhynchotherium browni*, although share some features with *Rhynchotherium tlascalae*, however, more comparisons will be necessary to determine their taxonomic position. Proyecto PAPIIT IN109814

Rhynchotherium Browni , Osborn, 1936



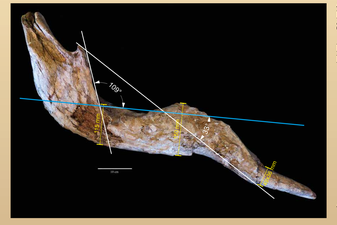
Age: Early Blancan.
Radiometric age: 3.6 Ma. **Locality:** IGM 3654, Arroyo Belén, San Miguel de Allende basin, state of Guanajuato.
Catalogue number 4862: Almost complete skull with entire right M3 and M2 in very good condition, the left side M3 complete, m2, only the third lopho is preserved. I2 are not present (the skull is not illustrated in the poster).
Housed in: Colección Nacional de Paleontología, Instituto de Geología, Universidad Nacional Autónoma de México, Ciudad Universitaria, México City.

Mandible nearly complete, the right side with m3 not complete erupted, m2 almost complete and the alveolus of m1.is evident. Left side with m3 partially erupted, m2 almost destroy only the third lophid is complete; kept part of the alveolus of m1. The tusk is complete in the right side, without evidences of enamel band, possibly destroyed by erosion.

Description. Mandible with well-preserved right side, the horizontal rami is complete moderately inflated in the labial side, with m3 erupted partially only four lophids are in use; m2 in good condition, part of the alveolus of m1 is present. Symphysis partially broken deflected in an angle of 60°. The i2, only preserved in the right side, not enamel band outward, in the left side i2 alveolus is present. The ascending ramus is almost complete, in the left side the anterior border in an angle of 90°, the coronoid process is missing. The posterior border is complete, the angular process is pronounced, the condyle is thick and massive.

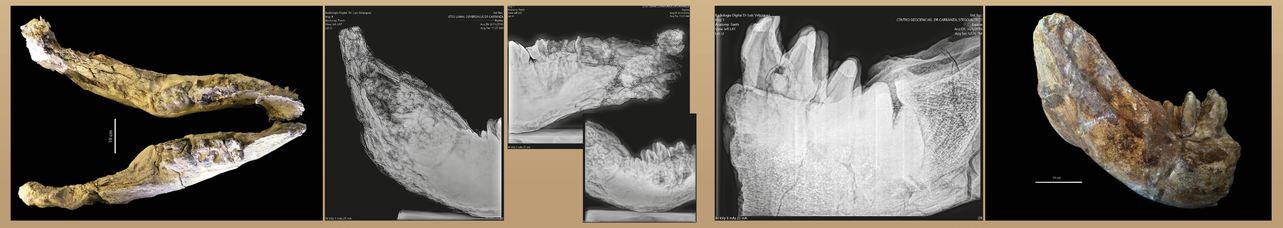
Associated fauna: *Nannippus peninsulatus*, *Equus simplicidens*, *Glyptotherium texanum*, *Neochoerus cordobae*, *Paramylodon garbani*.

Gomphotherium sp., Burmeister,1837



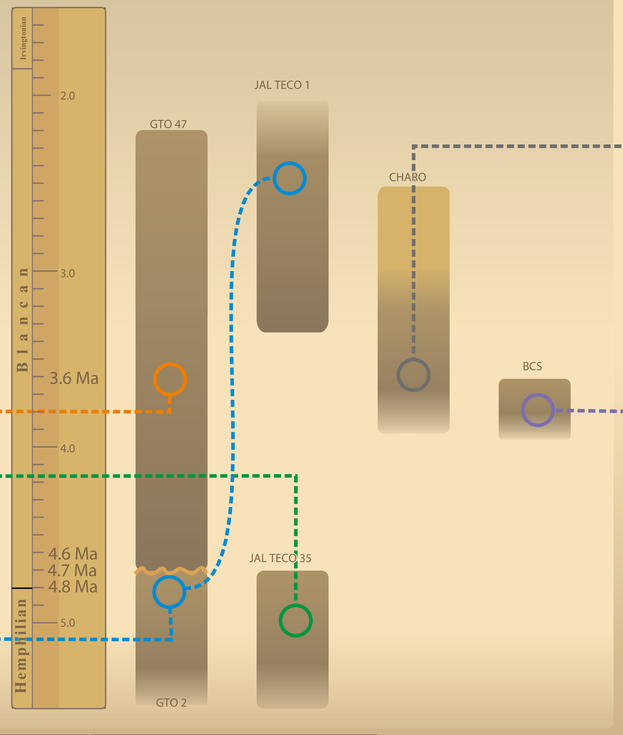
Age: Late Hemphillian
Radiometric age: 4.89 Ma
Specimen number: MPGJ 3530. **Locality:** Jal Teco 35 Rinconadita, Cuenca de Tecolotlán, Jalisco México.
Housed in: Colección de Paleontología, Centro de Geociencias, UNAM, Juriquilla, Querétaro.
Description. Complete right side of well-preserved mandible, slender horizontal ramus, almost straight; from the lingual to labial side across the alveolus of m3 is narrow than *Rhynchotherium*. Only preserves the alveolus of m3. The i2 are present without enamel band outside, the symphysial region is narrow than *Rhynchotherium,* the tusk are oval in cross section. Symphysis straight and the symphysial region is slightly deflected downward.
The specimen differentiates itself from other jaws referring to Rhynchotherium because the maximum thickness of the horizontal ramus is from the alveolus of the first lophid of m3 to the bottom of the horizontal ramus it is less than Rhynchotherium falconeri. The angle of the symphysis is 30°, the ascending ramus is complete but narrow, the anterior edge respect to the occlusal surface form an angle of 115°.
The ascending ramus at the base of condyle is wider than Rhynchotherium, the mandibular notch is extremely inclined, at the front is raised slightly and join with the coronoid process that is incomplete.
Associated Fauna: *Dinohippus mexicanus, Neohipparion eurystyle, Teleoceras fossiger, Machairodus coloradensis, Hemiauchenia vera, Hexobelomeryx frickii.*

Stegomastodon



GTO 2 JAL-TECO 01

BIOESTRATIPGRAPHY

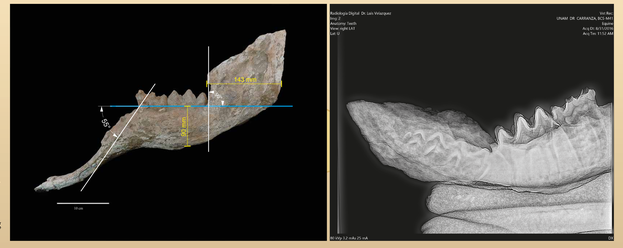


Rhynchotherium Falconeri , Osborn, 1923

Age: early Blancan
Radiometric age: 3.6 Ma
Locality: 1469, Rancho La Goleta, Michoacán, Mexico.
Catalogue number: IGM 874, complete skull well preserved and jaw of the same individual.
Housed in: Colección Nacional de Paleontología, Instituto de Geología, Universidad Nacional Autónoma de México (UNAM), México City.

Description. Complete mandible in remarkable preservation, with m2-m3 in the left and right sides. Symphysis in straight and the symphysial region is sharply downturned an angle of 65°. Whole i2 right and left, are oval shaped, with enamel band on the outer side, the ends are directed outwards The ascending ramus are robust, the anterior border is straight, and forma an angle of 90° respect to the occlusal surface, ends in the coronoid process. The posterior border has a pronounced curvature, is reduce just before the condyle forming an elongated structure that supports the massive and elongated condyle. The mandibular notch is inclined, straight, ends in the coronoid process.

Rhynchotherium Falconeri , Osborn, 1923 (Juvenil)



Age: Early Blancan
Locality: BCS M 43 Rhynchos. Miraflores Baja California Sur.
Catalogue number: MPJG 3532, Mandible of young individual.

Housed in: Colección de Paleontología, Centro de Geociencias, Universidad Nacional Autónoma de México, Campus, Juriquilla, Querétaro, Mexico.
Description. Complete mandible of Juvenile individual with dm2 left and right and entire i2s, with enamel band outside, the ends are oriented outward. The symphysis area is sharply downturned in an angle of 58°, similar to the specimen IGM 874, from Michoacán. The horizontal ramus is robust but slightly convex in the middle of the ventral border, the ascending ramus is wider and the anterior border is an angle of 90° respect the oclusal surface.
In the radiograph of X RAY, the dm2, is complete it is observed that the m2, is well formed with tree lophids and the roots of each one. The m3 remains within the ascending ramus, the four lophids are shaped but the roots of each one are still unformed.
Associated fauna: *Hypolagus vetus*, *Equus simplicidens*, *Borophagus* Cf., *B. diversidens*, *Felis lacustris*, *Buisnictis metabatos*, previous report from Miller, 1980.

Stegomastodon, Pohling, 1912 *Stegomastodon, primitivus* Osborn, 1936

Age: latest Hemphillian Hh4, 4.8 Ma. Locality GTO 2b Blanco layer of Rancho El Ocote, (Carranza et al 2013).
Catalogue number: MPGJ 3525
Housed in: Colección de Paleontología, Centro de Geociencias, Universidad Nacional Autónoma de México, Campus, Juriquilla, Querétaro, México.
Description. Two rami of the same juvenile individual, without evidences of tusk, symphysis is straight and short very slightly deflected. Only present the dm2 right side almost complete, left only preserve the talonid and the third petrite. The horizontal ramus are stout, the maximum thickness is below the m2.
Symphysis is straight and short, as is observed in the radiograph, is no evidence of tusk, dm2 trilophid with, strong cingulum and talonid in the middle posterior part. As can see observed in the radiograph the lophids of m3 are forming.
Associated fauna: Is remarkable the co-ocurrence of *Rhynchotherium falconeri* in this locality, associated to *Dinohippus mexicanus*, *Hexobelomeryx fricki*, *Hemiauchenia vera*, *Alforjas* sp., *Megatylopus matthewi*, *Desmathyus brachydontus*.

Another reports of Stegomastodon primitivus are from the Lake Chapala in state of Jalisco (Lucas *et al.* 2011), the Blancan fauna of Miñaca in Chihuahua and this report from the latest Hemphillian of Rancho El Ocote locality, dated y 4.89 Ma and another ash dated in 4.6 Ma.

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All the radiographs were taken by:
Radiologist MVZ M en C Cert. José Luis Velázquez R.
Department of Medicine Zootechnics and Surgery for Equids
Hospital of Equinos FMVZ-UNAM
Universidad Nacional Autónoma de México
Professor at Facultad de Medicine Veterinary and Zootechnics
Universidad Nacional Autónoma de México
jlvr@unam.mx
+ 52 55 26902643 + 52 55 56225863

GTO 2b: Kv 80 mAs 30, Distance70 cm
BCS M 43: 70 Kv, 10 mAs, Distance, 70 cm
JAL TECO 1: 50Kv, 10 mAs, Distance 70 cm,
Generator Mini X Ray 90/20 HF
Equipo de Radiología Digital Directa Cuattro, Chasis de Cesio

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Universidad Nacional Autónoma de México,
Centro de Geociencias.