

# A new jaw of *Mosasaurus hoffmanni* Mantell 1829 from Chambers Creek in Navarro County, Texas

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## Introduction

The Gulf coastal plain of Texas preserves a nearly uninterrupted Cretaceous marine record from Aptian to Maastrichtian (Stephenson 1914, 1941). Deposits are often rich in vertebrate remains, particularly actinopterygian fish, selachians, and mosasaurid reptiles (Case and Cappetta 1997; Thurmond 1969). Herein, we describe a jaw section from a large mosasaurid collected from Chambers Creek in Navarro County, Texas, USA.

*Stratigraphy* – Cretaceous exposures in Chambers Creek comprise outcrops of the Neylandville Marl Formation, the Nacatoch Sand Formation, and undivided outcrops of the Corsicana Marl and Kemp Clay Formations (Fig. 1) (Geologic Database of Texas 2014). These are part of the Navarro Group and represent the youngest Cretaceous sediments of the East Texas Basin (Kumar 2019) and the uppermost component of the Gulfian Series (Stehli *et al.* 1972). These strata were laid down in intertidal to outer shelf marine environments and are of Maastrichtian age. The

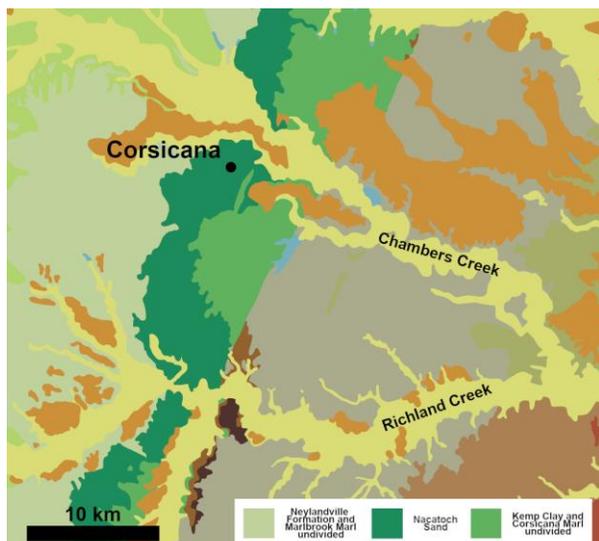
Navarro Group is underlied by Campanian strata of the Taylor Group.

*Location* – Chambers Creek is located primarily in Navarro County with headwaters in the Bardwell Reservoir of Ellis County, south of Waxahachie. It is a popular fishing site for blue catfish, white bass, and alligator gar. Late Cretaceous strata expose along the stream's western extent, approximately 10 miles south of Corsicana, Texas.

## Paleontology

**Order Squamata**  
**Family Mosasauridae**  
**Subfamily Mosasaurinae**  
**Genus Mosasaurus**  
*Mosasaurus hoffmanni*  
 Fig. 2

*Description* – REMPC M0250, a partial left dentary bearing two and a half tooth alveoli. The section originates from the median of the dentary,



SYSTEM	STAGE	GROUP	FORMATION
Cretaceous	Maastrichtian	Navarro	Kemp Clay
			Corsicana Marl
			Nacatoch Sand
			Neylandville Marl
	Campanian	Taylor	Upper Taylor Marl

**Figure 1.** Stratigraphic map and column of the Corsicana area (Modified from Geologic Database of Texas).



**Figure 2.** *Mosasaurus hoffmanni* dentary (REMP M0250) in: A. labial view, B. lingual view.

with breaks evident by exposed trabecular bone both anteriorly and posteriorly.

No developed tooth crowns are preserved, however, tooth roots remain within their alveoli. Empty pulp cavities have been filled with calcite. Detailed observation of the tooth crown basal cross-sections is prevented because the superiormost sections of the tooth roots have been worn away. Despite this, what remains of the roots makes it apparent the tooth crowns had at least slight labiolingual compression. Posteromedial to tooth alveoli are replacement tooth pits. One of these pits preserves a developing tooth crown. This crown is of *Mosasaurus* morphology with a large, pointed apex that bears defined anterior and posterior carinae.

The outer cortical surface is largely smooth with the exception of a stripped patch on the lateral surface under the posterior tooth alveolus. Two horizontal rows of neurovascular foramina penetrate the cortical surface along the inferior third of the bone. Medially, the Meckelian canal is deep and increases in height posteriorly.

*Discussion* – *M. hoffmanni* was a large macrophagous marine reptile with an extensive paleobiographic range. Remains of this species have been found in Maastrichtian strata in Europe, North America, and Africa (Rempert *et al.*, 2022).

Within Texas, a partial skeleton of *M. hoffmanni* was previously recovered from the bank of Onion Creek in Travis County, Texas, about four miles from Austin (Langston 1966). This specimen was

discovered by University of Texas at Austin geology students, W. Clyde Ikins and John Peter Smith, and is also thought to have originated from the Navarro Group. It is currently on display at the Texas Science and Natural History Museum (formerly Texas Memorial Museum) in Austin, TX.

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