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Enoploclytia tepeyacensis n. sp. (Crustacea, Decapoda, Erymidae) from the Cretaceous (Campanian) of Coahuila, NE Mexico

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Abstract

The erymid lobster *Enoploclytia tepeyacensis* n. sp., is reported for the first time in the early Campanian beds of the Austin Group (Dessau Chalk) near Jiménez, Coahuila, NE Mexico. The new species represents the most complete record of *Enoploclytia* in North and Central America. The third report of *Enoploclytia* in Mexico is documented.

Keywords: Crustacea, Decapoda, Erymidae, Campanian, Cretaceous, Mexico.

Resumen

La langosta erímida Enoploclytia tepeyacensis n. sp. se reporta por vez primera en las capas del Campaniano inferior del Grupo Austin (Dessau Chalk) en las inmediaciones de Jiménez, Coahuila, NE de México. La nueva especie representa el registro más completo de Enoploclytia en América del Norte y América Central. Se documenta el tercer reporte de especies del género Enoploclytia en México.

Palabras Clave: Crustacea, Decapoda, Erymidae, Campaniano, Cretácico, México.

1. Introduction and geological setting

Rocks of the Dessau Formation (Campanian, Austin Group) crop out near Jiménez, Coahuila, NE Mexico (Figure 1). The Dessau Formation has an approximate thickness of 30 m in the study area, where invertebrate fossils including ammonoids and echinoids are found in association with the arthropod described here. Several reports deal with the stratigraphy of the Dessau Formation (Stephenson, 1936; Young and Marks, 1952; Young, 1963; Young and Woodruff, 1985; Lundquist, 2000; Cobban *et al*., 2008; among others). Housh (2007) wrote, "The Dessau Chalk is a white chalk characterized by a *Phrygia aucella* (Roemer, 1849) biostrome. The lower portion, up to the *Phrygia aucella* layer comprises the "*Gryphaea*" *aucella* zone of Young and Marks (1952); the overlying *Exogyra leviuscula* zone comprises the upper portion. The Dessau Chalk has a thickness of approximately 29 m in the Austin area. The Dessau Chalk is discomformably overlain by the Burditt Marl Formation. Carrasco (1969) reported the large ammonoid *Parapuzosia bosei* Scott and Moore, 1928, from a locality nearby where the specimens here reported were found, along with *Menavites* (*Menavites*) *internodosus* (Renz, 1936) and *M*. (*M*.) *desinodosus* (Renz, 1936), and suggested an early Campanian age for the Dessau beds on this region.

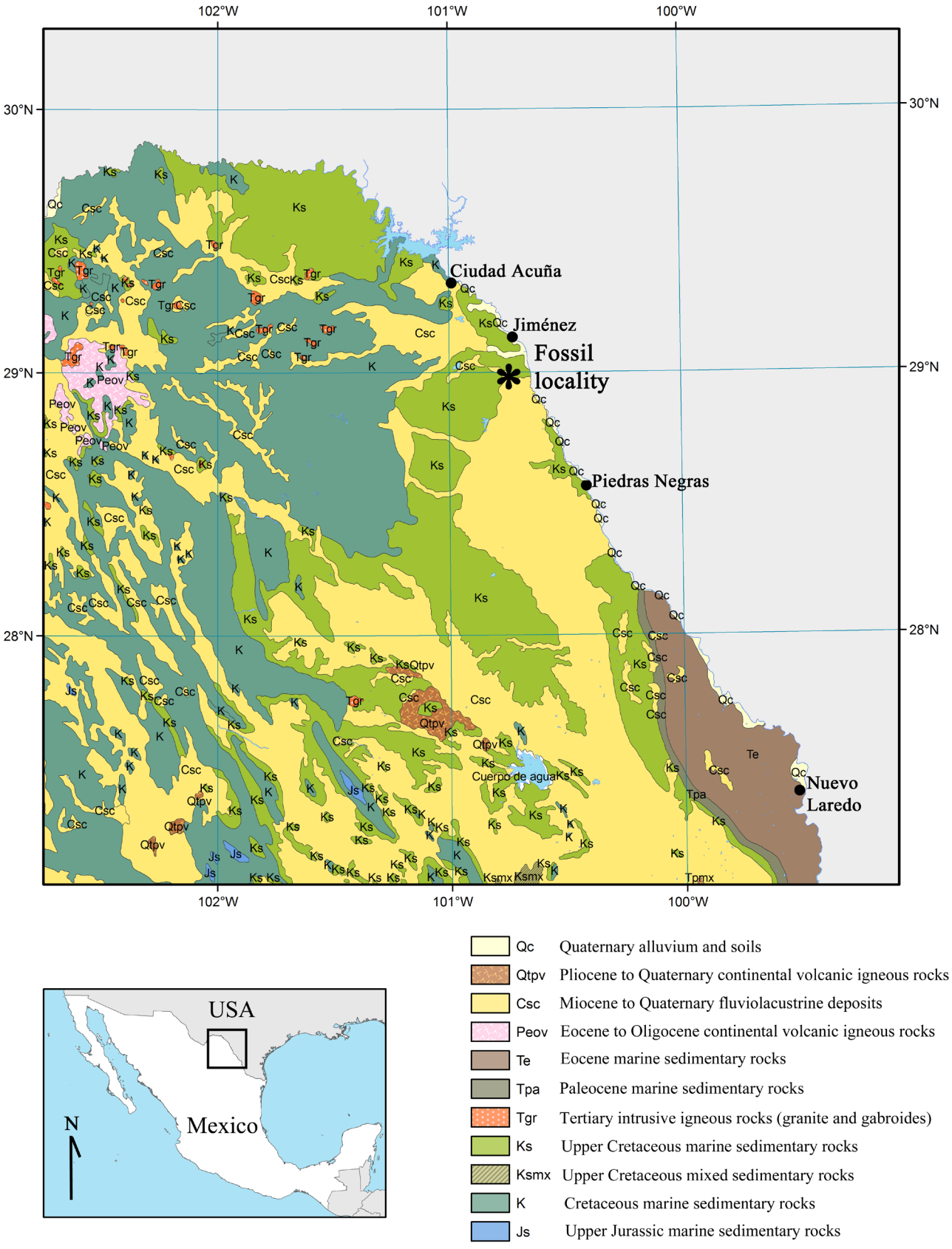

Figure 1. Geologic map of the fossil locality near Ejido El Tepeyac, Jiménez County, Coahuila. Modified from Servicio Geológico Mexicano.

2. Material

Two specimens, three-dimensionally preserved, assigned to *Enoploclytia tepeyacensis* n. sp. (Erymidae Van Straelen, 1925), are deposited at the Museo de Múzquiz, Coahuila (MUZ).

The systematic arrangement used in this paper follows the recent classification proposed by Schweitzer *et al*. (2010), using the following abbreviations: hcxp: height of carapace; lcxp: length of carapace; wcxp: width of carapace.

3. Systematic palaeontology

Superfamily Erymoidea Van Straelen, 1925
Family Erymidae Van Straelen, 1925
Genus *Enoploclytia* McCoy, 1849
Type species *Astacus leachii* Mantell, 1822, by monotypy
Fossil species see Schweitzer *et al*. (2010)
Enoploclytia tepeyacensis n. sp.
Figure 2

3.1. Diagnosis

Carapace elongate and cylindrical; deep cervical groove, gently inclined, intercepting dorsal margin at an angle of *ca*. 60°; dorsal midline of the carapace without intercalated plate; deep, very reduced gastro-orbital groove; deep, sinuous postcervical groove, intercepting dorsal margin at an angle of *ca*. 50°; deep, very short branchiocardiac groove, not joining postcervical groove, not extending ventrally below mid-height, intercepting dorsal margin at an angle of *ca*. 60°; deep hepatic groove, strongly convex ventrally at intersection with postcervical groove and strongly concave dorsally at intersection with cervical groove; deep inferior groove strongly convex posteriorly; all regions of the carapace covered dorsally with strong tubercles, becoming reduced in size ventrally.

3.2. Etymology

The trivial name alludes to El Tepeyac area, where the Mexican specimens were discovered.

Holotype. MUZ-824.

Paratype. MUZ-825.

Type locality. Jiménez (Coahuila, NE Mexico).

Geological age. Campanian (Late Cretaceous).

3.3. Material and measurements

Two specimens from NE Mexico (Holotype MUZ-824 - lcxp: 96.8 mm; wcxp: 53.2 mm; hcxp: 44.2 mm; Paratype MUZ-825 - lcxp: 65.9 mm; hcxp: 32.1 mm).

3.4. Description

Carapace elongate, cylindrical, slightly inflated between grooves; front not visible; straight dorsal margin, with a row of small, anteriorly directed spines; dorsal midline of carapace without intercalated plate; rimmed posterior margin, strongly convex medially and ventrally; ventral margin strongly curved; deep cervical groove, gently inclined, intercepting dorsal margin at an angle of *ca*. 60°; deep, subtle gastro-orbital groove, intercepting cervical groove medially; weak, short, shallow antennal groove approaches but does not intercept anterior margin; deep, sinuous postcervical groove, intercepting dorsal margin at an angle of *ca*. 50°, strongly inclined, concave forward medially, intercepting inferior groove ventrally; deep, very short branchiocardiac groove, not joining postcervical groove, not extending ventrally below mid-height, intercepting dorsal margin at an angle of *ca*. 60°; deep hepatic groove, strongly convex ventrally in intersection with postcervical groove and strongly concave dorsally in intersection with cervical groove; slightly inflated adductor muscle insertion area; deep inferior groove strongly convex posteriorly; all regions of carapace covered dorsally with strong tubercles, reducing in size ventrally; some larger tubercles arranged randomly in antennal region.

4. Discussion and Conclusions

As reported by Förster (1966) and Schweitzer and Feldmann (2001), representatives of *Enoploclytia* McCoy, 1849 are usually confused with those of *Palaeastacus* Bell, 1850, and *Eryma* Von Meyer, 1840. However, there are some morphological distinctions among these genera in order to justify their systematic validity within the family, as pointed out by Förster (1966). Indeed, the postcervical and brachiocardiac grooves are closely spaced and do not extend to the dorsum in *Eryma*; postcervical and branchiocardiac grooves are closely spaced and the branchiocardiac groove does not extend ventrally below mid-height of the carapace in *Enoploclytia*; postcervical and branchiocardiac grooves are longer and typically extend below the midline of the carapace in *Palaeastacus*.

According to features described by Förster (1966), the Mexican specimens are assigned to *Enoploclytia* because the short branchiocardiac groove does not extend ventrally below mid-height of the carapace. As reported by Schweitzer *et al*. (2010), five species from the Early to Late Cretaceous are known to date from the United States: *E. sculpta* Rathbun, 1926, *E. triglypta* Stenzel, 1945, *E. tumimanus* Rathbun, 1935, *E. wenoensis* Rathbun, 1935, and *E. wintoni* Stenzel, 1945. *Enoploclytia sculpta* from the Maastrichtian (Late Cretaceous) of the Ripley Fm. (Tennessee, USA), known by only pleonal somites, probably does not belong to *Enoploclytia* because it lacks

Figure 2. *Enoploclytia tepeyacensis* n. sp., early Campanian, upper Dessau Formation, Coahuila, Mexico (MUZ 825, 824). 1) Dorsal view of holotype MUZ-824; 2) Right lateral view of holotype MUZ-824; 3) Left lateral view of holotype MUZ-824; Left lateral view of paratype MUZ-825. Scale bar = 10 mm.

strong spines on the pleon (Stenzel, 1945). *Enoploclytia triglypta* from the Late Cretaceous (Coniacian) of Fannin County (Texas, USA) should be assigned to *Palaeastacus*, according to Förster (1966), because the postcervical and branchiocardiac grooves are long and typically extend below the midline of the carapace. The holotype of *Enoploclytia tumimanus* (USNM 73799) from the Paleocene of the Sucarnnoochee Shale, Midway Group (Alabama, USA) (not the Selma Chalk, Late Cretaceous, according to Rathbun, 1935) is an incomplete carapace, partially preserving the grooves, which do not allow comparison with the Mexican specimens. *Enoploclytia wenoensis* from the Early Cretaceous (Albian) of Cooke County (Texas, USA), exhibit smooth, spineless abdominal somites, and probably does not belong to *Enoploclytia*, according to Stenzel (1945). *Enoploclytia wintoni* from the Early Cretaceous (Albian) of Tarrant County (Texas, USA) is known only from right and left chelipeds, which do not allow comparison with the Mexican specimens.

Based upon the above-mentioned observations, we can attest that *Enoploclytia tepeyacensis* n. sp. is the most complete record of *Enoploclytia* known to date in North and Central America. *Enoploclytia tumimanus* Rathbun (1935) was reported for the Maastrichtian Escondido Formation of Coahuila, Mexico. Based on a pair of long chelipeds, Vega *et al*. (2007) reported *Enoploclytia gardnerae* (Rathbun, 1935) from the Paleocene Rancho Nuevo Formation, Coahuila, Mexico. They also reported *Enoploclytia* sp. for a single, poorly preserved carapace from the same unit.

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References

Bell, T., 1850, Notes on the Crustacea of the Chalk Formation, in Dixon, F. (ed.), The geology and fossils of the Tertiary and Cretaceous formations of Sussex: London, Brown, Green & Longmans, 344-345.

Carrasco, B., 1969, Amonitas del Campaniano inferior del norte de Coahuila: Boletín de la Sociedad Geológica Mexicana, 30, 139-154.

Cobban, W.A., Hook, S.C., McKinney, K.C., 2008, Upper Cretaceous molluscan record along a transect from Virden, New Mexico, to Del Rio, Texas: New Mexico Geology, 30, 75-92.

Förster, R., 1966, Über die Erymiden, eine alte konservative Familie der mesozoischen Dekapoden: Palaeontographica, 125, 61-175.

Housh, T.B., 2007, Bedrock Geology of Round Rock and Surrounding Areas, Williamson and Travis Counties, Texas: Round Rock, Texas, Institution, PhD thesis, 65 p.

Lundquist, J.J., 2000, Foraminiferal biostratigraphic and paleoceanographic analysis of the Eagle Ford, Austin and Taylor Groups (Middle Cenomanian through lower Campanian) of Central Texas: Austin, Texas, The University of Texas, PhD thesis, 545 p.

Mantell, G.A., 1822, The fossils of the South Downs; or illustrations of the geology of Sussex: London, Lupton Relfe, 327 p.

McCoy, F., 1849, On the classification of some British fossil Crustacea with notices of new forms in the University Collection of Cambridge: Annals and Magazine of Natural History, series 2, 4, 161-179; 330-335.

Rathbun, M.J., 1926, Crustacea, in B. Wade (ed.), The fauna of the Ripley Formation of Coon Creek, Tennessee: United States Geological Survey, Professional Paper, 137, 184-191.

Rathbun, M.J., 1935, Fossil Crustacea of the Atlantic and Gulf Coastal Plain: Geological Society of America, Special Paper, 2, 1-160.

Renz, H.H., 1936, Neue Cephalopoden aus der oberen Kreide von Río Grande del Norte (Mexico und Texas), mit einer Einführung von Walter Staub: Abhandlungen der Schweizerischen Palaeontologischen Gesellschaft, 57, 1-16.

Roemer, F.A., 1849, Texas, mit besonderer Rücksicht auf deutsche Auswanderung und die physischen Verhaltnisse des Landes nach eigener Beobachtung geschildert von Dr. Ferdinand Roemer: A. Marcus, Bonn, 464 p. ?

Schweitzer, C.E., Feldmann R.M., 2001, New Cretaceous and Tertiary decapod crustaceans from western North America: Bulletin of the Mizunami Fossil Museum, 28, 173-210.

Schweitzer, C.E., Feldmann, R.M., Garassino, A., Karasawa, H., Schweigert, G., 2010, Systematic list of fossil decapod crustacean species: Crustaceana Monographs, 10, 1–222.

Scott, G., Moore, M., 1928, Ammonites of enormous size from the Texas Cretaceous: Journal of Paleontology, 2, 273-278.

Stenzel, H.B., 1945, Decapod crustaceans from the Cretaceous of Texas: The University of Texas Publication, 4401, 401-477.

Stephenson, L.W., 1936, Stratigraphic relations of the Austin, Taylor, and equivalent formations in Texas: United States Geological Survey, Professional Paper, 186-G, 133-146.

Van Straelen, V., 1925, Contribution à l'étude des Crustacés décapodes de la periode jurassique: Mémoirs de l'Academie Royale de Belgique, Classe des Sciences, series 2, 7, 1-462.

Vega, F.J., Nyborg, T., Fraaije, R.H.B., Espinosa, B., 2007, Paleocene decapod Crustacea from the Rancho Nuevo Formation (Parras Basin-Difunta Group), Northeastern Mexico: Journal of Paleontology, 81, 6, 1442-1451.

Von Meyer, H., 1840, Briefliche Mittheilungen. Neues Jahrbuch für Mineralogie, Geognosie, Geologie, und Petrefaktenkinde, 1840, 576-587.

Young, K., 1963, Upper Cretaceous Ammonites from the Gulf Coast of the United States: Texas, The University of Texas, Bureau of Economic Geology, Publication 6304, 373 p.

Young, K., Marks, E., 1952, Zonation of Upper Cretaceous Austin Chalk and Burditt Marl, Williamson County, Texas: Bulletin of the American Association of Petroleum Geologists, 36, 477-488.

Young, K., Woodruff, C.M., Jr., 1985, Austin Chalk in its Type Area – Stratigraphy and Structure: Austin, Texas, Austin Geological Society, Guidebook, 7, 88 p.

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