

THE NEW OUTFIT OF *NEUSTICEMYS NEUQUINA*: HOW RECENT FINDINGS AND TECHNIQUES HELPED CLARIFYING ITS PHYLOGENETIC AFFINITIES

PABLO GONZÁLEZ-RUIZ^{1,2,3}, MARCELO S. DE LA FUENTE^{1,2,3}, and MARTA S. FERNÁNDEZ^{1,4}

¹Consejo Nacional De Investigaciones Científicas Y Técnicas (CONICET), Argentina.

²Instituto De Evolución, Ecología Histórica Y Ambiente (CONICET-IDEVEA-UTN FRSR), Laboratorio de Paleontología. Calle Urquiza, Mendoza, San Rafael, Argentina. pgonzalez@mendoza-conicet.gob.ar; mdelafuente1910@gmail.com

³Museo De Historia Natural De San Rafael, Departamento de Paleontología. San Rafael, Mendoza, Argentina.

⁴División Paleontología Vertebrados, Facultad De Ciencias Naturales Y Museo, Universidad Nacional de La Plata. Paseo Del Bosque S/n, Argentina. martafer@fcnym.unlp.edu.ar

Neusticemys neuquina is one of the two known turtles from the Upper Jurassic of the Vaca Muerta Formation. Since its initial description in 1988 its taxonomic affinities have been unstable because all known specimens are postcranial elements, which seem to lack phylogenetic relevance. Initially referred, putatively, to the genus *Eurysternum*, it has also been considered a protostegid or a basal cryptodire. Recently, the discovery and descriptions of three skulls (MOZ 064, MACN-PV 105, MHNSR-PV-1195) and their study using computed tomography helped establish it as a member of Thalassocheilydia. The new skulls have in common with Thalassocheilydia: the articular process of the quadrate posteriorly oriented; the presence of a prominent, ventrally infolding ridge of the posterior surface of the processus articularis of the quadrate; a long interpterygoid contact; the presence of a pterygoid contact with the articular surfaces of the quadrate; an anterolateral recess of the anterior surface of the quadrate lateral to the processus trochlearis oticum; the presence of a fossa on the supraoccipital-opisthotic-exoccipital contact area; the foramina anterius caroticus cerebralis close together but as independent foramina in the basisphenoid; and the presence of a splenial bone in the mandible. Some of the features that distinguish it from other Thalassocheilydia are the presence of a depression on the ventral surface of the basisphenoid, a relatively larger foramen nervi trigemini and reduced and steepened triturating surfaces in both the mandible and maxilla. The mandibular morphology resembles that of *Dermochelys coriacea* rather than that of other thalassocheilydians and panchelonioids, which might indicate similarities in the feeding preferences between these species. New research has shown that thalassocheilydians might have been better adapted to marine environments than previously thought and *Neusticemys neuquina* is not the exception.