

# PALEOENVIRONMENTS OF THE WESTERN KAWAS SEA (LATE CRETACEOUS-PALEOCENE) OF PATAGONIA, ARGENTINA

M.B. AGUIRRE-URRETA<sup>1</sup>; M.A. TUNIK<sup>2</sup>; P. J. PAZOS<sup>1</sup>; C. S. CATALDO<sup>1</sup>; A. P. CARIGNANO<sup>3</sup>; S. BALLENT<sup>1</sup>; E. G. OTTONE<sup>1</sup>

(1) Instituto de Estudios Andinos (IDEAN, UBA-CONICET); (2) Instituto de Investigación en Paleobiología y Geología, General Roca, UNRN-CONICET; (3) Departamento de Paleontología de Invertebrados, Museo de La Plata-CONICET

Email: aguirre@gl.fcen.uba.ar

The discovery of carbonates in Pichaihue, northwestern Patagonia, Argentina, improved our understanding of the first Atlantic transgression that reached the Andean foothills. This late Cretaceous-Paleocene transgression was termed Kawas Sea by Casamiquela (1978), a name taken from a myth of the Tehuelche indigenous inhabitants. Near to the locality of Pichaihue, situated in the retro-arc Neuquén Basin (36°40' SL), there are isolated outcrops of late Cretaceous pyroclastic flows covered by ash-fall distal tuffs interbedded with carbonates assigned to the Malargüe Group. A SHRIMP U-Pb dating of volcanic zircons of the tuffs yielded an age of  $64.3 \pm 0.9$  Ma (Early Danian) (Aguirre-Urreta *et alii* 2011). The Pichaihue Limestones include massive bioclastic mudstones, stromatolites, and oncolites. The oncolites are isolated subspherical bodies up to 10 cm; their nuclei of silt is probably caused by the disintegration and subsequent infilling of plant stems, and some oncoids have gastropods as nuclei as well. The stromatolites consist of domes and spherical forms of up to 1 meter high; and many of them preserve a nuclei composed by masses of thin serpulid tubes. Microbial activity was suspected from outcrops and through thin sections, and SEM analysis confirmed undoubtedly the presence of bacterial filaments, other bacteria and coccoid microbes that clearly support the microbial origin of the carbonates. *Physa wichmanni* is the gastropod preserved as nuclei of the oncolites. This species is known from several Campanian-Maastrichtian localities in northern Patagonia. All fossil species of *Physa* have been registered in facies indicative of fluvial and shallow lacustrine environments. The microfossils comprise ostracods as *Candona huantraicoensis* and *Ilyocypris triebeli* preserved as internal molds in the tuffs layers. Charophyte gyrogonites are preliminary identified as *Peckichara* sp. and *Pseudoharrisichara* sp. and they are especially abundant in a thin calcareous level. The plant fossil assemblage recovered from the pyroclasts is dominated by large logs of pycnoxylic wood, palm and cycad trunks. This vegetation grew under a warm (tropical to subtropical) climate and in a relatively humid environment. Casamiquela (1978) characterized the paleoenvironment of the Kawas Sea as a low gradient coast composed of lagoons with alternating marine and freshwater (or brackish) condition surrounded by an exuberant forest of ferns and palms.

## REFERENCES

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