



AMEGHINIANA

A GONDWANAN PALEONTOLOGICAL JOURNAL



GONDWANAN PERSPECTIVES: FOSSIL WOOD ANATOMY

DANIELA P. RUIZ¹
MARIANA BREA^{2,3,4}

¹Museo Argentino de Ciencias Naturales - CONICET, Av. Ángel Gallardo 470, C1405DJR Ciudad Autónoma de Buenos Aires, Argentina.

²Laboratorio de Paleobotánica, Centro de Investigación Científica y de Transferencia Tecnológica a la Producción (CONICET-Prov. ER-UADER), España 149, E3105BWA Diamante, Entre Ríos, Argentina.

³Universidad Autónoma de Entre Ríos, Facultad de Ciencia y Tecnología, Sede Diamante, Tratado del Pilar 314, E3105AUD, Diamante, Entre Ríos, Argentina.

⁴Cátedra de Paleobotánica, Facultad de Ciencias Naturales y Museo, Universidad Nacional de La Plata (FCNyM-UNLP), Av. 122 y 60 s/n, B1904AFV, La Plata, Buenos Aires, Argentina.

Submitted: 24 January 2023 - **Accepted:** 24 January 2023 - **Published:** 27 February 2023

To cite this article: Daniela P. Ruiz and Mariana Brea (2023). Gondwanan perspectives: Fossil wood anatomy. *Ameghiniana* 60(1), 1–2.

PLEASE SCROLL DOWN FOR ARTICLE

TRIASSIC CONIFER-LIKE WOODS FROM ARGENTINA

The anatomy and affinity of conifer-like woods are reassessed, to provide information on the origin of derived conifers.

AFRICAN AFFINITIES OF CENOZOIC LEGUMES FROM SOUTH AMERICA

The South America-Africa link is reconsidered based on fossil wood anatomy.

SOLANACEAE WOOD FROM THE PARANÁ FORMATION OF ARGENTINA

Diagnostic anatomical features of *Solanumxylon paranensis* were restudied using light and scanning electron microscopy.



GONDWANAN PERSPECTIVES: FOSSIL WOOD ANATOMY

DANIELA P. RUIZ¹ AND MARIANA BREA^{2,3,4}

¹Museo Argentino de Ciencias Naturales - CONICET, Av. Ángel Gallardo 470, C1405DJR Ciudad Autónoma de Buenos Aires, Argentina. ruizdaniela8@gmail.com

²Laboratorio de Paleobotánica, Centro de Investigación Científica y de Transferencia Tecnológica a la Producción (CONICET-Prov. ER-UADER), España 149, E3105BWA Diamante, Entre Ríos, Argentina. cidmbrea@gmail.com

³Universidad Autónoma de Entre Ríos, Facultad de Ciencia y Tecnología, Sede Diamante, Tratado del Pilar 314, E3105AUD, Diamante, Entre Ríos, Argentina.

⁴Cátedra de Paleobotánica, Facultad de Ciencias Naturales y Museo, Universidad Nacional de La Plata (FCNyM-UNLP), Av. 122 y 60 s/n, B1904AFV, La Plata, Buenos Aires, Argentina.

Fossil woods are commonly preserved as permineralizations and usually studied under an optical microscope using petrographic slides or in the scanning electron microscope (SEM). The anatomical studies of wood are then used as a basis for broader studies, for example, in systematics and taxonomy, biogeography, evolution, paleoecology, and paleoclimatology.

Argentina has an abundant record of fossil woods with around 325 taxa, including gymnosperms (conifer, cycads, pteridosperms, corystosperms/umkomasialeans, equisetaleans, and indeterminate gymnosperms) and eudicots (Pujana, 2022). They encompass a long interval of time, from the Carboniferous (Pujana & Césari, 2008) to the Pleistocene (*i.e.*, Ramos *et al.*, 2017) and covering almost all the regions of the country, especially Patagonia (Pujana, 2022).

The study of fossil woods (or paleoxylology) is one of paleobotanists' most widely developed lines of research. In Argentina, the first detailed description of fossil woods is from Conwentz (1884). Then, there were sporadic publications in the country until 2000, when works related to fossil wood began to be frequent (Pujana, 2022), and relatively many professionals are specialized in this subject now.

This special issue entitled "Fossil wood anatomy" publishes some of the works presented at the symposium "Paleoxilología y anatomía de ejes caulinares" held during the XII Congreso de la Asociación Paleontológica Argentina carried out online in November 2021. In addition, one manuscript sent to Ameghiniana during the elaboration of this special issue and fitting with it was also included. The issue brings together six papers by 23 authors covering diverse

topics, such as new fossil wood records with their anatomical descriptions and some with evolutionary and paleobiogeographic implications.

Greppi *et al.* describe 21 silicified woods from the Kachaike Formation (Albian, mid-Cretaceous) from the Santa Cruz Province, Argentina. This paper provides evidence of conifers' dominance of the tree canopy during the Cretaceous of Patagonia and, specifically in this locality, the dominance of Araucariaceae and Hirmeriellaceae/Cheirolepidiaceae.

Bodnar *et al.* explore the first appearance of Gondwana's main derived conifer families. This paper provides the anatomy and affinity of Triassic Argentinean conifer-like woods. It adds information to resolve the controversy and systematic affinities of Araucariaceae, Cupressaceae, Hirmeriellaceae/Cheirolepidiaceae, and Podocarpaceae woods recovered from Argentina.

Moya *et al.* analyze the affinities of the legume fossil woods from the upper Cenozoic of the lower La Plata Basin (South America) with extant African genera and add information about their implications for paleoecology and paleophytogeography.

Franco and Brea redescribe *Solanumxylon paranensis* from the Late Miocene of the Paraná Formation (Entre Ríos Province, Argentina). In this revision paper the diagnosis is emended and confirms its assignment to Solanaceae and its affinity with extant *Solanum*.

Martínez Martínez reports a new record of Moraceae fossil wood and erects a new genus and species of Moraceae. These specimens were recovered from the

fluvial sediments of the Ituzaingó Formation of Toma Vieja locality, Entre Ríos Province, Argentina.

Martínez *et al.* describe the first record of Mesozoic Araucariaceae fossil wood from the Corrientes Province, Argentina. These fossils assigned to *Agathoxylon* were recovered from Late Jurassic–Early Cretaceous Solari/Batucatú Formation at Paraje Tres Cerros.

The future of paleoecology in Argentina is promising. In the last two decades, the studies of fossil woods of different geological periods and geographic regions have increased significantly (Pujana, 2022), and this trend seems to continue. In recent years, the number of researchers specialized in this discipline has increased considerably, with entire labs dedicated to the subject and including numerous Ph.D. theses. On these grounds, paleoecology in Argentina will continue to develop in the upcoming years.

ACKNOWLEDGMENTS

We thank to Nathan A. Jud, Silvia Gnaedinger, Ezequiel I. Vera, Hugo I. Martínez-Cabrera, Elisabeth A. Wheeler, Tiina Särkinen, and the anonymous colleagues who reviewed the manuscripts included in

this special issue of Ameghiniana. We especially thank Dario G. Lazo, Editor-in-chief, for his assistance and constant support. We are also grateful to the Senior Production, Junior Production, and Artwork Editorial Teams of Ameghiniana.

REFERENCES

- Conwentz, H. (1884). Árboles fósiles del Río Negro. *Boletín de la Academia Nacional de Ciencias (Córdoba)*, 7, 435–456.
- Pujana, R. R. (2022). Fossil Woods from Argentina (1884–2021). *Revista del Museo Argentino de Ciencias Naturales n.s.*, 24,(2) 217–240.
- Pujana, R. R., & Césari, S. N. (2008). Fossil woods in interglacial sediments from the Carboniferous Hoyada Verde Formation, San Juan province, Argentina. *Palaeontology*, 51,(1) 163–171.
- Ramos, R. S., Brea, M., & Kröhling, D. M. (2017). Malvaceous wood from the Late Pleistocene El Palmar Formation of northeastern Argentina. *Review of Palaeobotany and Palynology*, 246, 232–241.

Submitted: 24 January 2023

Accepted: 24 January 2023

Published: 27 February 2023