



Mario Coiro is currently a research scholar at the Ronin Institute for Independent Scholarship. He is interested in the evolution of form and function in plant lineages through macroevolutionary time.

Email: mar.coiro@gmail.com

Personal website: <https://mariocoiro.blog>

6 May 2021
11h00 – 12h30

Webinaire :

<https://umontpellier-fr.zoom.us/j/83246368233>

The importance of fossil data in plant macroevolution

presented by

Dr. Mario COIRO

Ronin Institute for Independent Scholarship

ABSTRACT

Modern evolutionary theory finds its very foundations in the differential survival of individuals. One of the implications of differential survival on geological timescales, the extinction of species, is however often overlooked. The reality of extinction implies that the comparative study of living organisms offers only a small window on Macroevolutionary patterns and processes. Many aspects of the biology of extant clades, such as trait evolution, diversity dynamics, and biogeographical history, are only accessible by looking at the fossil record while understanding the taphonomic and geological processes governing its formation. Even thus, the palaeobiological research program in macroevolution has been dwarfed by the expansion of the comparative phylogenetic program, especially after the increased ease of collection of molecular data and the extensive statistical toolbox developed to infer processes from molecular phylogenies.

Plants, due to their continuous development and differential senescence of different organs, seldom fossilize as whole organisms. Moreover, different taphonomic filters act on different plant organs, so that fossiliferous beds preserving a good pollen record might be completely devoid of leaves and other macrofossils and vice versa. Here I will show that a careful evaluation of the fossil record, and the integration of fossil evidence in a phylogenetic framework including extant diversity, can lead us to reject deep-held beliefs and hypotheses on the evolution of a charismatic plant groups, such as Cycadales, Gnetales, and Angiosperms.

KEY WORDS: cycads, angiosperms, leaf anatomy, phylogenetics

Invited and animated by: Dr. Anne-Laure DECOMBEIX (UMR AMAP)

Type: Research results

Oral language: English

Language of PPT: English