

Preface

Understanding of the patterns and processes of the evolution of the South American fauna during the Cenozoic presents an exciting challenge. South America hosted an extraordinary biota during the last 65 million years, including entire clades that radiated and then vanished, leaving no counterparts in recent times. Any analysis of this history is reliant on the fossil record, with its inherent limitations and biases, and as the record improves over time, any interpretation will be subject to review. New scientific techniques and statistical analysis throw also fresh light onto existing ideas.

In this work, we examined the relationship between two interesting groups of South American mammalian predators. The now extinct clade of the native Sparassodonta (distant relatives to current marsupials) found themselves confronted with the incoming Carnivora in relation to the establishment of the Panama Bridge linking both Americas. We look at their possible paleobiological interactions and examine some possible hypothesis of competitive displacement.

Proposed in the second half of the eighteenth century, the theory of dispersalism—the definition of a center of origin, usually a small area, and consequent dispersal to other areas of colonization—historically prevailed as an explanation of the geographic distribution of organisms. Initially, the center of origin was considered to be a tropical island (the “Garden of Eden”), but later migrated in idea to a location in the Northern Hemisphere. The role of the Southern Hemisphere was seen as a home of preserved relics of “ancient biota” and the receptor of the “more competitive” biota coming from the north (the “Sherwin Williams” effect). Although a great deal of work has refuted several concepts and hypotheses, our understandings still have some affection for them.

Dispersalism provided the commonly held view that the mammalian predator immigrants to South America from the Northern Hemisphere (the placental Carnivora) were “better adapted” than the native Sparassodonta. This was a convenient explanation for the replacement by the Carnivora of the Sparassodonta and subsequent extinction of the latter group. With better data, new scientific methods, and fresh ideas, this simplistic view has been challenged.

In this contribution, we present a review of the information available from the fossil record and examine the possible interactions and outcomes of the meeting of members of the two groups. We are privileged to be able to call upon more than 20 years of scientific research made by the authors on South American mammalian predators. Older works were highly influential and were integrated in the discussion, as well as the researches made by other workers from the last decades on connected subjects, such as systematic, biogeography, paleoecology, geology, and biostratigraphy. Much of the work is of a technical nature, but hopefully we have succeeded in our wish to make the contribution accessible to the non-specialist reader.

Anillaco, La Rioja, Argentina
Mendoza, Argentina

Francisco J. Prevosti
Analía M. Forasiepi

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Prevosti, F.J.; Forasiepi, A.M.

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