



## **Cretaceous seeds from the Austral Basin, Argentina, their context in the angiosperm dispersal and evolution**

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With angiosperm radiation and diversification during the Upper Cretaceous, deep floristic changes occurred that drove into modern ecosystems. Little is known about plant ecology and seed dispersal during the Cretaceous. Rich compression floras found in Piedra Clavada (Albian), Mata Amarilla (Cenomanian), and La Anita (Campanian?) formations in the northern Austral Basin, Santa Cruz province, allow the recognition of diverse angiosperm floras of leaves, flowers, fruits, and seeds. Up to now there were identified seven new seed types, all of them very small in size (0.4-5mm maximum length), coinciding with global Cretaceous records. Some seeds preserve woody envelope with rugulate ornamentation and two lateral wings, similar to Albian records from North America. Spherical seeds with pedunculate hilum show in some cases a pair of wings meanwhile in others three longitudinal keels. Some of them, exceptionally preserved, have endosperm cells. The biggest seeds were found inside small dry fruits. Presence of winged seeds and general small seed size in these floras seem to indicate both fast growing seedling and anemochory as the most common seed dispersal mechanism. The Cretaceous is critical in the evolution of seed disperser as mammals and birds; several dispersal theories have been proposed based on Cretaceous seeds shape and size for the North Hemisphere. The Austral Basin fossil records plus several other Patagonian macrofloras under study could give light in the understanding of the plant-disperser evolution in southern South America based on a fairly continuous fossil record from middle Cretaceous to Paleogene.

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