

WESTERN GONDWANA ARTHROPOD-PLANT INTERACTION – A PERSPECTIVE FROM A HIGH PRODUCTIVITY EARLY PERMIAN ASSEMBLAGE OF BRAZIL

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The Cisuralian Rio Bonito Formation (Paraná Basin, Brazil) is known for its mineable coal seams, which originate during transgressions/regressions related to climate ameliorations after the finish of Late Palaeozoic Ice Age (LPIA) and the transition into the Early Permian Greenhouse in Western Gondwana. Its uppermost unit, the Siderópolis Member, contains the Barro Branco coal seam. Above this coal seam follow 0.5 m of fossil-rich mudstones in which the Early Permian Artinskian Itanema II outcrop is situated (Urussanga Municipality, Santa Catarina State). The outcrop is famous for well-preserved kerogenized plant remains. The plant assemblage consists of several glossopteridalean elements, but also cordaitalean leaves, pecopteridean fronds, sphenophylalean and phyllotheceacean leaf whorls and is inferred as transitional from the wet Glossopteris flora to the impoverished semi-arid Glossopteris flora. The analysis of the common Glossopteris spp. leaves, larger than 1 cm², yielded an almost 30% arthropod-plant interaction rate and 24 different damage types. A larger variability, with 36 damage types, is only known for the Cisuralian La Golondrina Formation (Argentina), however, with only 14.8% interaction rate on Glossopteris spp. The analysis of the Carboniferous/Permian Rio Genoa Formation flora brings a 27% interaction rate, though, with 12 damage types. Despite those high rates, other Western Gondwana assemblages of similar age demonstrate generally a 5.8% to 9.8% rate and 3 to 14 damage types only. Larger rates and a higher diversity of damage types are more often found in palaeoequatorial belt plant assemblages. The high rates and diversities at the Itanema II site are directly related to the shift of elevated bioproductivity to higher palaeolatitudes with the end of LPIA. However, its unusual numbers may also denote singularities of the transitional flora.