



The biotic recovery of the flora during the Early and Middle Triassic

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Plant communities were considered to recover slowly after the ecological disturbances experienced during the end-Permian mass extinction, taking up to 14 million years for a complete recovery. The Early Triassic coal gap, with unknown Early Triassic and rare, thin Middle Triassic coal beds, supported the theory that the ecosystems remained unbalanced and unstable until the Middle Triassic. The stepwise recovery started with the proliferation of the lycopsid *Pleuromeia* during the Early Triassic, followed by the resurgence of the conifers in the early Middle Triassic (early Anisian), the return of cycadophytes and seed ferns in the late Anisian and the progressive evolutionary modernization of the subsequent plant communities. However, the last decades have seen the discovery and description of several new Early and early Middle Triassic floras in China (e.g., Yunnan province), Russia (e.g., Siberia), Europe (e.g. France, Germany) and Gondwana (e.g., Karoo Basin in South Africa, Bowen and Lorne basins in Australia). Those Early Triassic plant assemblages are often rich in but not dominated by *Pleuromeia*, and found in association with conifer and fern remains. The early Anisian plant assemblages are rich and diverse, with abundant lycophytes, conifers, cycads and seed ferns (some of which present already in the Early Triassic plant communities), whereas the late Anisian floras are very diverse with abundant representatives of all major plant groups. This suggests that the recovery of the plant communities was much quicker than previously considered.