
The macrofloral biostratigraphy of the Nord-Pas-de-Calais Coalfield, France

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Abstract

The Nord-Pas-de-Calais Coalfield is formed by an almost continuous series of Namurian–Westphalian deposits, from which has been historically described an extremely diverse macroflora. Recent evidence has highlighted a clear palaeofloristic pattern for this coalfield that can be compared with evidence from other coeval Variscan environments. For instance, the Nord-Pas-de-Calais vegetation diversified earlier than those in the British coalfields, and declined later than in other basins such the case of Ruhr coal swamp. In this communication, we further study this macrofossil flora focusing on the biostratigraphical changes through a series of multivariate data analyses. Clustering and ordination signals allow major floral discontinuities to be identified, as well as the boundaries of the standard macrofloral biozones of the Nord-Pas-de-Calais coal swamp, notably of the *Pecopteris aspera* Zone (middle Bruille Fm.), *Calymmotheca hoeninghausii* Zone (upper Flines Fm.), *Lonchopteris rugosa* Zone (lowermost Anzin Fm.), *Neuropteris semireticulata* Subzone (middle Anzin Fm.), *Laveineopteris rarinervis* Subzone (lower Bruay Fm.) and *Linopteris obliqua* Zone (upper Bruay Fm.). This new temporal framework allows deeper comparisons with coeval vegetation, and provides new insights into the dynamics of these ecosystems across the Variscan foreland. Results further show how the vegetation of the Nord-Pas-de-Calais coal swamp proliferated considerably at the start of the Westphalian, and continued to diversify as marine influence finally withdrew by the Duckmantian–Bolsovia boundary. But most importantly, evidence suggest this latter change clearly represented a significant reconfiguration of the coal swamps i.e., it was not just a loss of species richness, but a major change in the taxonomic structure of the vegetation.

Keywords: Biostratigraphy, Namurian, palaeobotany, tropical wetlands, Variscan Euramerica, Westphalian

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