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New records of fossil coniferous wood from the Early Cretaceous Jehol Biota in western Liaoning, NE China and palaeoclimate implications

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The Early Cretaceous Jehol Biota is one of the most important Mesozoic lagerstätten in East Asia, and is especially well-known for occurrences of fossil feathered dinosaurs and early angiosperms. However, the terrestrial biodiversity, especially fossil wood record, is poorly known. In this study, several structurally preserved coniferous wood from the Lower Cretaceous Yixian Formation is investigated, based on collections from the Heichengzi Basin in Beipiao of western Liaoning, Northeast China. Four species referred to four genera of fossil wood are described, including *Taxodioxylon heichengziense* sp. nov., *Thujoxylon beipiaoense* sp. nov., *Sciadopityoxylon liaoningense* Ding and *Protocedroxylon shengjinbeigouense* sp. nov. These new records enlarge the fossil wood diversity of the Yixian Formation up to 10 species of 9 genera, and provide further insights into the forest vegetation compositions of the Early Cretaceous Jehol Biota.

Systematic analysis on the floral constitution indicates that the petrified forests of the Yixian Formation are dominated by conifers, represented by Podocarpaceae, Sciadopityaceae, Pinaceae, Cupressaceae and Taxodiaceae in western Liaoning region. Palaeoclimatical analysis on the fossil wood assemblage implies that the Yixian Formation was dominated by a cool, wet and seasonal climate in western Liaoning region. This provides new clues for finally shedding light on the palaeoclimate variations and potential links to the occurrences of feathered dinosaurs of the Jehol Biota.

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