Sedimentary ancient DNA retraces plant postglacial immigration along the Atlantic edge of the Fennoscandian Ice Sheet

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During the Lateglacial, the Fennoscandian Ice Sheet began retreating from its maximal extent along the Atlantic coast. This allowed for vegetation to expand northwards and colonise newly deglaciated areas. However, traditional palaeolimnological proxies that are pollen and macrofossil represent a regional signal and lack sufficient taxonomic resolution (Parducci et al. 2019), thus can only provide a limited insight into the timing and diversity of plant postglacial dispersal (Birks 2000). Sedimentary DNA records can help addressing these questions and even provide an accurate picture of past local conditions (Alsos et al. 2022). Here we present the case of Dybingen Lake in southwestern Norway, dating back to 16,5 ka BP. We used a metabarcoding approach targeting the *trn*L P6 loop chloroplast locus on lacustrine sediment cores from coastal sites of Western and southwestern Norway. We put these results in perspective with similar data from northern Fennoscandia (Rijal et al. 2021), in order to infer recolonisation routes of arctic and boreal vegetation into Scandinavia and its timing. We show that stadials and interstadials correlate with heavy shifts in vegetation diversity, with tree establishment during the Early Holocene, and how past plant communities composition can indicate local environmental conditions such as thermal range, soil pH and disturbance, and even lake trophic status (Revéret et al. 2023). We also discuss the putative drivers of plant immigration along the Atlantic coast of Scandinavia, such as reconstructed abiotic factors and the role of propagule dispersion by birds.

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