Late-glacial and Early Holocene stratigraphy and Palaeoecology of Taylor Lake, Nova Scotia, Canada

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Lake sediment, diatom, sponge spicule and pollen stratigraphy of sediments from Taylor Lake, eastern Nova Scotia reveal changes in vegetation, ecology and climate during the Late Glacial and Early Holocene. Though the Taylor Lake site was deglaciated in advance of Younger Dryas (YD) cooling the diatom and sponge spicule data indicate that a pre-YD warming trend was absent. The Younger Dryas inorganic marker horizon (YDimh, 10090 B.P.) is coarse-grained, exhibits reduced pollen concentrations and contains no diatoms or sponge spicules. Complete ice-cover was thought to prevail during the YD and the development of aufeis and perennial snow cover was likely at this time. The YDimh was formed as a consequence of both increased sedimentation rates associated with landscape instability and reduced productivity.

Post YD aquatic conditions were acidic and possibly turbulent. Pollen and sedimentological data indicate the rapid establishment of a stable and productive landscape. An upper oscillation (UO, 7720 – 7660 B.P.) is the result of a cooling event indicated by both a decrease in LOI and a resurgence of alkaliphilic, benthic diatoms and cold-water-tolerant sponges. Image and grain size analysis of the bounding gyttja and the UO indicate that the these sediments differ primarily in their respective volumes of fine silt and clay; the maximum grain size of each unit remained unchanged. This would indicate that changes in sediment transfer mechanisms in response to cooling were subtle. The UO correlates with a regional cooling event that has been recognised in northwestern Europe.

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