

Palaeoecological and palaeoclimatic conditions on the Karelian Isthmus (northwestern Russia) during the Holocene

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Abstract

© 2020 University of Washington. Published by Cambridge University Press. The Holocene evolution of climate in easternmost Fennoscandia and adjoining regions is poorly known, compared with regions to the west. To address this, a 224-cm-long sediment core from Lake Medvedevskoe, situated on the Central Upland of the Karelian Isthmus, northwestern Russia, was examined to investigate variations in the Holocene climate. Analyses indicate that the dry and cold late Pleistocene climate was replaced by the warmer and more humid early Holocene climate after ca. 10.5 cal ka BP. During the early Holocene, the lake transitioned from an oligotrophic to a mesotrophic state, characterized by a *Corynocera ambigua*/*Microtendipes pedellus*-type phase, which has been found in other lakes across Fennoscandia. Taxonomic shifts in the chironomid and cladoceran communities associated with climatic amelioration were identified at ca. 10.6 and 9.17 cal ka BP using breakpoint analysis. Reconstructed July temperatures indicate climatic patterns comparable to those seen in eastern Fennoscandia. The warm period between ca. 9.5 and 5.5 cal ka BP (T July 14.5-15°C) was interrupted by a slight cooling between ca. 8.5 and 8.1 cal ka BP, possibly relating to the 8.2 event, with peak temperature reached at ca. 7.8 cal ka BP. Neoglacial cooling started after ca. 5.5 cal ka BP, the median reconstructed July temperature dropped to 2-3°C cooler than present (mean T July 13.5°C) before recovering in recent time.

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Keywords

Chironomids, Cladoceran, Compositional disorder, Ecosystem change, Holocene, Karelian Isthmus, LOI, Mean July air temperature, Northwestern Russia

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