

LATE-QUATERNARY PALAEOECOLOGY OF CHIRONOMIDAE
(DIPTERA: INSECTA) FROM LAKE SEDIMENTS
IN BRITISH COLUMBIA

by

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APPROVAL


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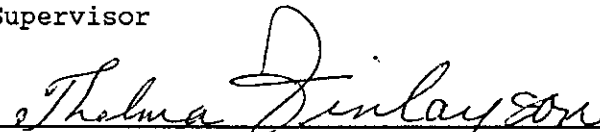
LATE-QUATERNARY PALAEOECOLOGY OF CHIRONOMIDAE (DIPTERA:INSECTA) FROM
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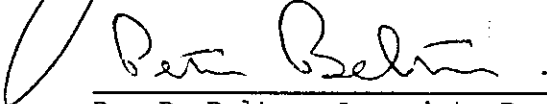
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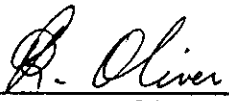
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ABSTRACT

Chironomid (midge) fossils were analyzed from sediments of three small lakes of moderate depth (5 to 6.5 m) in southwestern British Columbia. Fossil stratigraphy reveals a similar postglacial succession among lakes. Cold-stenothermous taxa, requiring well-oxygenated, oligotrophic habitats, were common in the late-Pleistocene (ca. 12,000 to 10,000 yr B.P.), but were mostly rare or absent during Holocene time (10,000 yr B.P. to present). The similar timing of these changes among lakes, and correlation with independent palynological evidence for climatic change, suggests that climate was the ultimate cause. Similar late-glacial/early Holocene faunal changes are evident across North America and Europe. Subsequent Holocene changes are less consistent among lakes, and are time-transgressive. These changes are not clearly climatically related, and may be attributed to gradual shallowing of each lake, or other local factors.

A core analyzed from a much shallower lake, on the Queen Charlotte Islands, includes a eurytopic fauna throughout. Little evidence of climatic change or trophic succession is apparent in this maritime environment. Although the successional pattern is unlike that documented in southern British Columbia, it resembles an arctic Alaskan sequence.

Surficial sediment samples were analyzed from 30 lakes distributed across an altitudinal gradient in western Canada. The cold-stenothermous taxa recorded from late-glacial southwestern British Columbia lakes are common at high elevations, particularly in the Rocky Mountains, and in deep profundal waters of low-elevation oligotrophic lakes. Many taxa presently common at low elevations do not occur above timberline. These low-elevation taxa are also very rare, or absent, in arctic regions.

Although the climatic effects upon chironomid faunas may be mostly indirect, chironomid succession is, in part, climatically related, especially around the late-glacial/Holocene transition.

DEDICATION

To Ma and Pa

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