

**CLIMATE AND PERMAFROST;  
INFLUENCES ON THE DISTRIBUTION OF PEATLANDS**

**PUBLICATIONS  
NORTHERN FORESTRY CENTRE  
5320 - 122 STREET  
EDMONTON, ALBERTA  
T6H 3S5**

Dale H. Vitt, Department of Biological Sciences, CW405 Biological Science Building, University of Alberta, Edmonton, AB, T6G 2E9; (403)-492-3380; FAX (403)-492-1899;

dvitt@gpu.srv.ualberta.ca

Steve Zoltai, Canadian Forest Service, Northern Forestry Centre, Edmonton, AB, T6H 3S5; (403)-435-7304

and Linda A. Halsey, Department of Biological Sciences, CW405 Bio. Sc. Building, University of Alberta, Edmonton, AB, T6G 2E9; (403)-492-1899

The past development of fens and bogs in the southern and mid Boreal regions of western Canada was largely delayed until 5000-6000 yBP. Development of a Sphagnum layer also was relatively late. Both initiation and Sphagnum development are regionally correlated. Bogs are always forested and occur mostly as islands or peninsulas in large, often complex, fens or confined to small basins. Northward; permafrost may be present in extensive peat plateaus and was preceded by a well developed layer of Sphagnum that served to insulate the peat and lower the pore water temperatures. Southward, discontinuous permafrost is restricted mostly to continental bogs. Air photo interpretation reveals the occurrence of bogs with five types of surface physiography.

Relationships are apparent between the current -1°C isotherm the southern occurrence of peat plateaus and between the 0° C isotherm and the southern edge of bogs and fens with internal lawns. We interpret bogs and fens with internal lawns to represent areas where permafrost degradation is currently occurring at a greater rate than aggradation, seemingly in response to warmer regional climate in the past century.

Evaluation of the distribution of these peat landforms indicates that today 50% of bogs contain permafrost at the -1.0° C isotherm, whereas in the past 50% of bogs contained permafrost at the -1.5° C isotherm.

**Dale H. Vitt**

Professor of Botany and Director of the Devonian Botanic Garden, Dale has developed a major research program in biodiversity and peatland restoration. He and his research team are actively investigating the role that peatlands play in boreal to Arctic ecoregions of western Canada. He is also co-author of the field guide "Mosses, Lichens, Ferns of Northwest North America".

**Stephen C. Zoltai**

Steve is a research scientist in the Canadian Forest Service and is world renown for his work in northern wetlands. He was instrumental in developing a classification system of Canadian wetlands that resulted in the publication of the book "Wetlands of Canada".

**Linda A. Halsey**

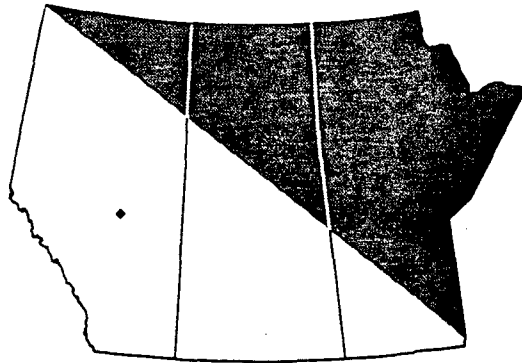
Linda is an environmental geologist who has been a research associate with Dale Vitt for the past six years. In this role she, Dale, and Steve have produced maps of the peatlands of much of western Canada.

# Climate, Landscape and Vegetation Change in the Canadian Prairie Provinces

---

## Program and Abstracts

---



May 8-10 1995  
Edmonton, Alberta

Sponsored by the Canadian Forest Service and the Geography  
Department of the University of Alberta