

E-SCAPE

Edmonton component of the SCAPE project

**Annotated Bibliography of
Palaeoenvironmental Studies
Within the E-SCAPE Study Area**

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Introduction

Established in March 2000, the SCAPE (Study of Cultural Adaptations in the Canadian Prairie Ecozone) project has endeavored to create a greater understanding of human history in western Canada through the examination of human interaction with the natural environment over the past 9,000 years. While focussing on such fields as archaeology, history and ethnohistory, the project also relies heavily on palaeoenvironmental studies to provide an accurate reconstruction of the world that Aboriginal peoples inhabited in southern Alberta, Saskatchewan, and Manitoba. Work has been undertaken to create this palaeoenvironmental portrait at the E-SCAPE node (Edmonton component of the SCAPE project). One of the main goals is to examine pollen records from dated lake cores within the study area to create ecological reconstructions for time slices at 10,000 yr BP, 9,000 yr BP, 6,000 yr BP, 3,000 yr BP, 1,500 yr BP and 500 yr BP. (For a more complete description of the methodology involved in this work, see Beaudoin and Panas, 2002). As part of this research, a large bibliography of palaeoenvironmental and lake core references has been amassed from government reports, theses, unpublished sources, journal articles, and books. This brief report describes how these source materials were collected. It also provides an appendix, comprising an annotated listing all of the sources gathered as of May 2004.

Methodology

At the outset, careful consideration was given to the definition of geographic boundaries for the E-SCAPE study area. Because ecozones and environmental influences are not constrained by political borders, the boundaries for the palaeoenvironmental study were necessarily wider than those of the SCAPE study area. However, the E-SCAPE study area does not extend into terrain (and thus vegetation) so radically different from the plains study area that the analyses would be

misleading. The study area is centred on the Canadian Plains. For these reasons, the ESCAPE boundaries were set as follows: North, roughly 54°N; South, roughly 45°N; West, roughly 114°W; and East, roughly 93°W. Therefore, the study area encompasses the southern portions of Alberta, Saskatchewan, and Manitoba, and extends into western Ontario, Montana, North Dakota, South Dakota, and much of Minnesota.

Once defined, a search for sites falling into these boundaries was undertaken. While traditional paper journals and books were consulted for references, on-line data sources were also utilized. Of great assistance in establishing the bibliography was the National Geophysical Data Center Paleoclimatology search page (<http://www.ngdc.noaa.gov/paleo/ftp-pollen.html>), administered by Eric Grimm (Illinois State Museum). This search engine allows the user to search a voluntary database of fossil pollen data and radiocarbon dates using latitude and longitude ranges as search parameters. Although not cited in the bibliography, we acknowledge it as being a vital resource used in the completion of this bibliography. Other sources were obtained through the first hand knowledge of work done by the authors and others consulted, as well as by reviewing the bibliographies of other lake core studies.

Results

As of May 2004, 281 references have been found for the 257 sites currently listed within the ESCAPE study boundaries. The majority of these reflect work published since 1990. Two major projects - work at Elk Lake, Clearwater County, Minnesota, and the Geological Survey of Canada's Palliser Triangle project - account for the bulk of these publications. By decade, the number of references breaks down as follows:

	Journal article	Thesis	Abstract	Unpublished report/ grey literature	On-line source	Chapter in book or monograph	Field guide item	Monograph	Newsletter item	Totals
1940 - 49	5									5
1950 - 59	4	1								5
1960 - 69	20	2				6				28
1970 - 79	9	4	1			1	1	2		18
1980 - 89	24	5		16		5			2	52
1990 - 99	66	7	8			49	6		2	138
2000 - present	21	1	2	1		1	2	3		31
nd					4					4
Totals	149	20	11	17	4	62	9	5	4	281

It should be noted that, with regards to paleoenvironmental fieldwork done under the auspices of the SCAPE project, final publications on current research are not yet completed. As such, the totals given for both SCAPE sites and references in this report are expected to increase.

An on-line compilation of palaeoenvironmental sites in the E-SCAPE study area with associated references, called *The Lake File*, can be found at <http://www.scirpus.ca/lakes/lakes.shtml>

Reference

Beaudoin, A. B., and T. Panas

- 2002 Methodology and Preliminary Results for the Palaeoenvironmental Database Component, SCAPE (Study of Cultural Adaptations in the Canadian Prairie Ecozone) Project. E-SCAPE Manuscript 9. 513 pp.

Appendix

Annotated list of references for palaeoenvironmental sites in the E-SCAPE study area

- Aitken, A. E., W. M. Last, and A. K. Burt
1999 The Lithostratigraphic Record of Late Pleistocene-Holocene Environmental Changes at the Andrews Site Near Moose Jaw, Saskatchewan. In *Holocene Climate and Environmental Change in the Palliser Triangle: A Geoscientific Context for Evaluating the Impacts of Climate Change in the Southern Canadian Prairies*, edited by D. S. Lemmen and R. E. Vance, pp. 173-181. Geological Survey of Canada Bulletin 534. Geological Survey of Canada, Ottawa, Ontario, Canada.
Site discussed: Andrews.
- Aitken, A., and B. Last
2002 Stop 7: Little Manitou Lake - Last Mountain Spillway. In *Trip A4: Holocene Geomorphology, Archaeology, and Environmental Change in South-Central Saskatchewan: Field Trip Guide*, edited by S. A. Wolfe, A. E. Aitken, I. Dyck and E. G. Walker, pp. 48-53. GAC-MAC Saskatoon Organizing Committee, Saskatoon, Saskatchewan, Canada.
Site discussed: Little Manitou Lake. Includes information on the lake's present water chemistry, and on its palaeolimnology. Notes that the oldest record so far recovered extends to around 2000 yr BP.
- Almendinger, J. C.
1985 *The Late Holocene Development of Jack Pine Forests on Outwash Plains, North Central Minnesota*. Unpublished Ph.D. dissertation. University of Minnesota, Minneapolis, Minnesota, USA.
Sites discussed: Peterson Slough, Big John Pond, Lake Minnie, Mud Lake, Wentzel's Lake.
- 1992 The Late Holocene History of Prairie, Brush-prairie and Jack Pine (*Pinus banksiana*) Forest on Outwash Plains, North Central Minnesota, USA. The Holocene 2:37-50.
Sites discussed: Peterson Slough Big John Pond, Lake Minnie, Mud Lake, Wentzel's Lake.
- Almendinger, J. E.
1988 *Lake and Groundwater Paleohydrology: A Groundwater Model to Explain Past Lake Levels in West Central Minnesota*. Unpublished Ph.D. dissertation. University of Minnesota, Minneapolis, Minnesota, USA.
Site discussed: Upper Graven Lake.
- Almquist-Jacobson, H., J. E. Almendinger, and S. E. Hobbel
1992 Influence of Terrestrial Vegetation on Sediment Forming Processes in Kettle Lakes of West Central Minnesota. Quaternary Research 38:103-116.

Site discussed: Upper Graven Lake.

Anderson, R. Y.

- 1993 The Varve Chronometer in Elk Lake: Record of Climatic Variability and Evidence. In *Elk Lake, Minnesota: Evidence for Rapid Climate Change in the North-Central United States*, edited by J. P. Bradbury and W. E. Dean, pp. 45-67. Special Paper 276. Geological Society of America, Boulder, Colorado, USA.
Site discussed: Elk Lake (Clearwater County).

Anderson, R. Y., J. P. Bradbury, W. E. Dean, and M. Stuiver

- 1993 Chronology of Elk Lake Sediments: Coring, Sampling, and Time-Series Construction. In *Elk Lake, Minnesota: Evidence for Rapid Climate Change in the North-Central United States*, edited by J. P. Bradbury and W. E. Dean, pp. 37-43. Special Paper 276. Geological Society of America, Boulder, Colorado, USA.
Site discussed: Elk Lake (Clearwater County).

Anderson, R. Y., W. E. Dean, and J. P. Bradbury

- 1993 Elk Lake in Perspective. In *Elk Lake, Minnesota: Evidence for Rapid Climate Change in the North-Central United States*, edited by J. P. Bradbury and W. E. Dean, pp. 1-6. Special Paper 276. Geological Society of America, Boulder, Colorado, USA.
Site discussed: Elk Lake (Clearwater County).

Aravena, R., B. G. Warner, G. M. MacDonald, and K. I. Hanf

- 1992 Carbon Isotope Composition of Lake Sediments in Relation to Lake Productivity and Radiocarbon Dating. *Quaternary Research* 37:333-345.
Deals with Toboggan Lake (Alberta) and Chesney Bog (Ontario).

Ashworth, A.

- 1999 Climate Change in North Dakota Since the Last Glaciation. *North Dakota Academy of Science* 53:171-176.
Reviews a number of pollen records from across North Dakota (including Moon Lake). Mentions bison remains found in Spiritwood Lake basin by divers. Based on horn core dimensions, Ashworth suggests that these may be from an extinct form (*Bison bison occidentalis*) and hence may be associated with a mid-Holocene lower lake level. On-line version of paper available at <http://www.ndsu.nodak.edu/instruct/ashworth/webpages/g440/ndas.html>.

Ashworth, A. C., and A. M. Cvancara

- 1983 Paleocology of the Southern Part of the Lake Agassiz Basin. In *Glacial Lake Agassiz*, edited by J. T. Teller and L. Clayton. Geological Association of Canada Special Paper 26. Geological Association of Canada, Ottawa, Ontario, Canada.
Sites discussed: Bog D Pond, Terhell Pond, Moorhead, Red Lake Peatland, Lake Bronson, Pickerel Lake, Mirror Pool, Seminary Site, Thompson Pond, Martin Pond.

- Ashworth, A. C., D. P. Schwert, W. A. Watts, and H. E. Wright Jr
 1981 Plant and Insect Fossils at Norwood in South-Central Minnesota: A Record of Late-Glacial Succession. Quaternary Research 16:66-79.
 Site discussed: Norwood.
- Ashworth, A. C., and D. P. Schwert
 1992 The Johns Lake Site: A Late Quaternary Fossil Beetle (Coleoptera) Assemblage from the Missouri Coteau of North Dakota. In *Proceedings of the F. D. Holland, Jr., Geological Symposium*, edited by J. M. Erickson and J. W. Hoganson, pp. 257-265. North Dakota Geological Survey Miscellaneous Series No. 76. North Dakota Geological Survey, Fargo, North Dakota, USA.
 Site discussed: Johns Lake. Reports on beetle remains from a peat bed radiocarbon dated around 10,000 yr BP. Assemblage resembles those from the southern boreal forest margin.
- Bajc, A. F., D. P. Schwert, B. G. Warner, and N. E. Williams
 2000 A Reconstruction of Moorhead and Emerson Phase Environments Along the Eastern Margin of Glacial Lake Agassiz, Rainy River Basin, Northwestern Ontario. Canadian Journal of Earth Sciences 37:1335-1353.
 Sites discussed: R87, RR223, RR49, RR54, F87, E13, E1, E165, ML.
- Barnosky, C. W.
 1989 Postglacial Vegetation and Climate in the Northwestern Great Plains of Montana. Quaternary Research 31:57-73.
 Sites discussed: Guardipee Lake, Lost Lake.
- Barnosky, C. W., E. C. Grimm, and H. E. Wright Jr
 1987 Towards a Postglacial History of the Northern Great Plains: A Review of the Paleocologic Problems. Annals of Carnegie Museum 56:259-273.
 Sites discussed: Pickerel Lake, Medicine Lake, Cottonwood Lake.
- Bartlein, P. J., and C. Whitlock
 1993 Paleoclimatic Interpretation of the Elk Lake Pollen Record. In *Elk Lake, Minnesota: Evidence for Rapid Climate Change in the North-Central United States*, edited by J. P. Bradbury and W. E. Dean, pp. 275-293. Special Paper 276. Geological Society of America, Boulder, Colorado, USA.
 Site discussed: Elk Lake (Clearwater County).
- Beaudoin, A. B.
 1992 Early Holocene Palaeoenvironmental Data Preserved in "Non-Traditional" Sites. The 2nd Palliser Triangle Global Change Conference, Regina, Saskatchewan, Program with Abstracts.
 Sites discussed: Fletcher (DjOw-1), Jenner Dugout, Webb Dugout, Kirrimuir Dugout.

- 1996 An Early Holocene Macrofossil Record from the Fletcher Site (DjOw-1) in Southern Alberta. C.A.G. (Canadian Association of Geographers) Annual Meeting, Saskatoon, Saskatchewan, 11-16 May, Program and Abstracts. Site discussed: Fletcher (DjOw-1).
- 1998 Macroremains from the Fletcher Site (DjOw-1), southern Alberta, and implications for early postglacial landscapes on the Canadian plains. CAA (Canadian Archaeological Association) 31st Annual Conference, May 6-10 1998, Victoria, British Columbia. Final Programme and Registration Package. Invited presentation in *Beyond the Concept of Cultural Areas: Paleoindian Adaptations on the Edges of the Great Plains and Adjacent Areas, A Cross-Continental Perspective*. Site discussed: Fletcher (DjOw-1).
- 2000 Stop 4: The Fletcher Site (DjOw-1). In *Late Quaternary History and Geoarchaeology of Southeastern Alberta and Southwestern Saskatchewan*, edited by A. B. Beaudoin and D. S. Lemmen, pp. 21-23. Field Trip Guidebook No. 3. GeoCanada 2000, Calgary, Alberta, Canada. Site discussed: Fletcher (DjOw-1).
- Beierle, B. D.
 1997 *Early Holocene Climate of Southwestern Alberta, Canada, Reconstructed from Lake Sediment Cores*. Unpublished Masters thesis. Department of Geography, University of Calgary, Calgary, Alberta, Canada. Sites discussed: Upper Kananaskis Lake, lower Burstall Lake, Lake Louise, Copper Lake, Johnson Lake, Summit Lake, Frederick Lake, Cartwright Lake, Sibbald Lake, Beauvais Lake, Beaver Mines Lake, Sibbald Pass (Bog), Pilot Lake, Herbert Lake, Altrude Lake.
- Birks, H. H., M. C. Whiteside, D. M. Stark, and R. C. Bright
 1976 Recent Paleolimnology of Three Lakes in Northwest Minnesota. Quaternary Research 6:249-272. Sites discussed: Lake Sallie, St Clair Lake.
- Birks, H. J. B.
 1976 Late Wisconsinan Vegetational History at Wolf Creek, Central Minnesota. Ecological Monographs 46:395-429. Site discussed: Wolf Creek.
- 1981 Late Wisconsin Vegetation and Climatic History at Kylan Lake, Northeastern Minnesota. Quaternary Research 16:322-355. Site discussed: Kylan Lake.

- Birks, S. J., and V. H. Remenda
- 1999 Hydrogeological Investigation of Chappice Lake, Southeastern Alberta: Groundwater Inputs to a Saline Basin. Journal of Paleolimnology 21:235-255. Site discussed: Chappice Lake.
- 1999b Groundwater Inputs to a Closed-Basin Saline Lake, Chappice Lake, Alberta. In *Holocene Climate and Environmental Change in the Palliser Triangle: A Geoscientific Context for Evaluating the Impacts of Climate Change in the Southern Canadian Prairies*, edited by D. S. Lemmen and R. E. Vance, pp. 81-93. Geological Survey of Canada Bulletin 534. Geological Survey of Canada, Ottawa, Ontario, Canada. Site discussed: Chappice Lake.
- Bjorck, S.
- 1985 Deglaciation Chronology and Revegetation in Northwestern Ontario. Canadian Journal of Earth Sciences 22:850-871. Site discussed: Rattle Lake.
- Boyd, M., G. L. Running IV, and K. Havholm
- 2003 Paleocology and Geochronology of Glacial Lake Hind During the Pleistocene-Holocene Transition: A Context for Folsom Surface Finds on the Canadian Prairies. Geoarchaeology 18(6):583-607. Site discussed: Flintstone Hill. Deals mainly with stratigraphy, macroremains, and pollen analysis of organic materials towards the base of the Flintstone Hill cutbank.
- Boyd, M. J.
- 2000 *Late Quaternary Geoarchaeology of the Lauder Sandhills, Southwestern Manitoba*. Unpublished Ph.D. dissertation. Department of Archaeology, University of Calgary, Calgary, Alberta, Canada. xvi + 300 pp. Site discussed: Flintstone Hill.
- Boyd, M.
- 2000 Changing Physical and Ecological Landscapes in Southwestern Manitoba in Relation to Folsom (11,000 - 10,000 BP) and McKean (4,000 - 3,000 BP) Site Distributions. Prairie Forum 25(1):23-43. Site discussed: Flintstone Hill.
- 2002 Identification of Anthropogenic Burning in the Paleoecological Record of the Northern Prairies: A New Approach. Annals of the Association of American Geographers 92(3):471-482. Site discussed: Flintstone Hill.

- Bradbury, J. P.
 1975 *Diatom Stratigraphy and Human Settlement in Minnesota*. Special Paper 171. Geological Society of America, Boulder, Colorado, USA. 74 pp.
 Sites discussed: Pickerel Lake, Lake Sallie, St Clair Lake, Elk Lake (Clearwater County), Shagawa Lake, Tanager Lake, Lake Minnetonka (Browns Bay), Lake Minnetonka (Carman Bay).
- Bradbury, J. P., W. E. Dean, and R. Y. Anderson
 1993 Holocene Climatic and Limnologic History of the North-Central United States as Recorded in the Varved Sediments of Elk Lake, Minnesota: A Synthesis. In *Elk Lake, Minnesota: Evidence for Rapid Climate Change in the North-Central United States*, edited by J. P. Bradbury and W. E. Dean, pp. 309-328. Special Paper 276. Geological Society of America, Boulder, Colorado, USA.
 Site discussed: Elk Lake (Clearwater County).
- Bradbury, J. P., and K. V. Dieterich-Rurup
 1993 Holocene Diatom Paleoclimatology of Elk Lake, Minnesota. In *Elk Lake, Minnesota: Evidence for Rapid Climate Change in the North-Central United States*, edited by J. P. Bradbury and W. E. Dean, pp. 215-237. Special Paper 276. Geological Society of America, Boulder, Colorado, USA.
 Site discussed: Elk Lake (Clearwater County).
- Bradford, M. E.
 1990 Elkwater Lake. In *Atlas of Alberta Lakes*, edited by P. Mitchell and E. Prepas, pp. 628-632. University of Alberta Press, Edmonton, Alberta, Canada.
 Information on current limnological conditions. Includes a bathymetric map.
- 1990 Cooking Lake. In *Atlas of Alberta Lakes*, edited by P. Mitchell and E. Prepas, pp. 357-362. University of Alberta Press, Edmonton, Alberta, Canada.
 Information on current limnological conditions. Includes a bathymetric map.
- 1990 Hastings Lake. In *Atlas of Alberta Lakes*, edited by P. Mitchell and E. Prepas, pp. 382-388. University of Alberta Press, Edmonton, Alberta, Canada.
 Information on current limnological conditions. Includes a bathymetric map.
 Note: location is given incorrectly in the Atlas (113°55', when it should be 112°55').
- Brooks, G. R., and A. Grenier
 2001 *Late Holocene Pollen Stratigraphy of Lake Louise, Manitoba*. Current Research 2001-B1. Geological Survey of Canada, Ottawa, Ontario, Canada. 14 pp.
 Site discussed: Lake Louise. Part of a project to investigate the history of flooding of the Red River, by looking at sediments in oxbows or channel scars close to river. Site is shallow perennial lake, eutrophic for part of year, Receives floodwaters periodically. Base of record dates to around 1600 yr BP. Zone 1 (lower) dominated by NAP, with some oak and pine pollen. Rather than oak

savannah, this may represent more wooded vegetation in moister habitats near river and lake. Represents vegetation prior to EuroCanadian incursion. Zone 2 (30 cm to surface) shows increase in NAP, especially grass and *Ambrosia* pollen. Probably represents land clearance and disturbance. Dates back to 19th century, though greater precision is not possible. Zone exhibits a greatly increased sedimentation rate. Some sediment may be from agricultural disturbance, some may be from Red River high flows. Report is available only on-line as a PDF file. .

Brugam, R. B.

- 1993 Surface Sample Analogues of Elk Lake Fossil Diatom Assemblages. In *Elk Lake, Minnesota: Evidence for Rapid Climate Change in the North-Central United States*, edited by J. P. Bradbury and W. E. Dean, pp. 189-214. Special Paper 276. Geological Society of America, Boulder, Colorado, USA.
Site discussed: Elk Lake (Clearwater County).

Buckland-Nicks, L. H., and P. A. Mitchell

- 1990 Isle Lake. In *Atlas of Alberta Lakes*, edited by P. Mitchell and E. Prepas, pp. 394-400. University of Alberta Press, Edmonton, Alberta, Canada.
Information on current limnological conditions. Includes a bathymetric map.

Campbell, C.

- 1997 *Postglacial Response and Environmental Change in Southeastern Alberta, Canada*. Unpublished Ph.D. dissertation. Earth and Atmospheric Sciences Department, University of Alberta, Edmonton, Alberta, Canada. 187 pp.
Sites discussed: Pine Lake, Klassen Bajada.
- 1998 Late Holocene Lake Sedimentology and Climate Change in Southern Alberta, Canada. Quaternary Research 49:96-101.
Site discussed: Pine Lake.
- 1998 Postglacial Evolution of a Fine-grained Alluvial Fan in the Northern Great Plains, Canada. Palaeogeography, Palaeoclimatology, Palaeoecology 139:233-249.
Site discussed: Klassen Bajada.

Campbell, C., and I. D. Campbell

- 2002 Reply to Letter to the Editor on "Late Holocene Sedimentology and Climate Change in Southern Alberta, Canada" by White. Quaternary Research 58:398-399.
Site discussed: Pine Lake. Notes that original interpretation of Pine Lake record is consistent with regional climate signals.

- Campbell, C., I. D. Campbell, C. B. Blyth, and J. H. McAndrews
 1994 Bison Extirpation May Have Caused Aspen Expansion in Western Canada. Ecography 17:360-362.
 Sites discussed: Pine Lake, Pasqua Lake.
- Campbell, I. D., and C. Campbell
 1994 Pollen Preservation: Experimental Wet-Dry Cycles in Saline and Desalinated Sediments. Palynology 18:5-10.
 Site discussed: Oliva Lake.
- 2000 Late Holocene Vegetation and Fire History at the Southern Boreal Forest Margin in Alberta, Canada. Palaeogeography, Palaeoclimatology, Palaeoecology 164:279-296.
 Sites discussed: South Pond, Pen 5 Pond, Birch Island Pond. All sites are in Elk Island National Park.
- Campbell, I. D., C. Campbell, M. J. Apps, N. W. Rutter, and A. B. G. Bush
 1998 Late Holocene ~1500 yr Climatic Periodicities and their Implications. Geology 26:471-473.
 Site discussed: Pine Lake.
- Campbell, I. D., W. M. Last, C. Campbell, S. Clare, and J. H. McAndrews
 2000 The Late-Holocene Paleohydrology of Pine Lake, Alberta: A Multiproxy Investigation. Journal of Paleolimnology 24:427-441.
 Site discussed: Pine Lake.
- Campbell, I. D., S. C. Zoltai, and D. D. Delorme
 1995 Palynology of the St. Laurent Ferry Fen, in the grassland near Saskatoon, Saskatchewan. In *Abstracts of the Twenty-Eighth Annual Meeting of the American Association of Stratigraphic Palynologists*. Ottawa, Ontario.
 Site discussed: St Laurent Ferry Fen. Site has been re-cored for SCAPE project.
- Clark, J. S.
 1993 Fire, Climate Change, and Forest Processes During the Past 2000 Years. In *Elk Lake, Minnesota: Evidence for Rapid Climate Change in the North-Central United States*, edited by J. P. Bradbury and W. E. Dean, pp. 295-308. Special Paper 276. Geological Society of America, Boulder, Colorado, USA.
 Site discussed: Elk Lake (Clearwater County).
- Clark, J. S., E. C. Grimm, J. J. Donovan, S. C. Fritz, D. R. Engstrom, and J. E. Almendinger
 2002 Drought cycles and landscape responses to past aridity on prairies of the northern Great Plains, USA. Ecology 83(3):595-601.
 Site discussed: Kettle Lake. Site is in mixed prairie ecoregion. Looked at several proxies, including detrital quartz, endogenic aragonite, pollen (Poaceae and *Ambrosia* percentages), and charcoal. Examined a 50 cm core segment from mid-

Holocene (8500 - 7900 calendar yr BP) and noted marked fluctuations in the proxies, reflecting moister and drier intervals. Detected a periodicity of 100 - 130 yrs in this pattern. A second core segment (2950 - 2700 calendar yr BP) did not show the same patterning.

- Clark, J. S., E. C. Grimm, J. Lynch, and P. G. Mueller
2001 Effects of Holocene Climate Change in the C₄ Grassland/Woodland Boundary in the Northern Plains, USA. *Ecology* 82(3):620-636.
Sites discussed: Deming Lake, Brush Lake, Kettle Lake, Lake Cochrane, Dark Lake, Moon Lake, Fish Lake.
- Covich, A. P., S. C. Fritz, P. J. Lamb, R. D. Marzolf, W. J. Matthews, K. A. Poiani, E. E. Prepas, M. B. Richman, and T. C. Winter
1997 Potential Effects of Climate Change on Aquatic Ecosystems of the Great Plains of North America. *Hydrological Processes* 11:993-1021.
Sites discussed: Devils Lake, Elk Lake (Clearwater County). A useful review article that touches on proxy palaeoenvironmental data and considers impacts of future climate change scenarios. Contains a useful and extensive reference list.
- Crosby, J. M.
1990 Buffalo Lake. In *Atlas of Alberta Lakes*, edited by P. Mitchell and E. Prepas, pp. 506-513. University of Alberta Press, Edmonton, Alberta, Canada.
Information on current limnological conditions. Includes a bathymetric map.
- 1990 Pine Lake. In *Atlas of Alberta Lakes*, edited by P. Mitchell and E. Prepas, pp. 538-542. University of Alberta Press, Edmonton, Alberta, Canada.
Information on current limnological conditions. Includes a bathymetric map.
- 1990 Eagle Lake. In *Atlas of Alberta Lakes*, edited by P. Mitchell and E. Prepas, pp. 554-557. University of Alberta Press, Edmonton, Alberta, Canada.
Information on current limnological conditions. Includes a bathymetric map.
- 1990 Beauvais Lake. In *Atlas of Alberta Lakes*, edited by P. Mitchell and E. Prepas, pp. 589-593. University of Alberta Press, Edmonton, Alberta, Canada.
Information on current limnological conditions. Includes a bathymetric map.
- Crosby, J. M., and E. E. Prepas
1990 Wizard Lake. In *Atlas of Alberta Lakes*, edited by P. Mitchell and E. Prepas, pp. 446-451. University of Alberta Press, Edmonton, Alberta, Canada.
Information on current limnological conditions. Includes a bathymetric map.
- Cummings, L. S.
1996 Palaeoenvironmental Interpretations for the Mill Iron Site: Stratigraphic Pollen and Phytolith Analysis. In *The Mill Iron Site*, edited by G. C. Frison, pp. 177-193. University of New Mexico Press, Albuquerque, New Mexico, USA.

Site discussed: Mill Iron.

Cushing, E. J.

- 1964 Redeposited Pollen in Late-Wisconsin Pollen Spectra from East-Central Minnesota. American Journal of Science 262:1075-1088.
Site discussed: Andree Bog.

Cvancara, A. M., L. Clayton, W. B. Bickley Jr, A. F. Jacob, C. T. Shay, L. D. Delorme, and G. E. Lammers

- 1971 Paleolimnology of Late Quaternary Deposits: Siebold Site, North Dakota. Science 171:172-174.
Site discussed: Siebold.

Dean, W. E.

- 1993 Physical Properties, Mineralogy, and Geochemistry of Holocene Varved Sediments from Elk Lake, Minnesota. In *Elk Lake, Minnesota: Evidence for Rapid Climate Change in the North-Central United States*, edited by J. P. Bradbury and W. E. Dean, pp. 135-157. Special Paper 276. Geological Society of America, Boulder, Colorado, USA.
Site discussed: Elk Lake (Clearwater County).

- 1997 Rates, timing, and cyclicity of Holocene eolian activity in north-central United States: Evidence from varved lake sediments. Geology 25(4):331-334.
Site discussed: Elk Lake (Clearwater County). Found that aeolian input to Elk Lake (Clearwater County, MN) was greater in the mid-Holocene. Found distinct patterning (regularity) in the geochemical signature of a eolian activity.

Dean, W. E., E. Gorham, and D. J. Swaine

- 1993 Geochemistry of Surface Sediments of Minnesota Lakes. In *Elk Lake, Minnesota: Evidence for Rapid Climate Change in the North-Central United States*, edited by J. P. Bradbury and W. E. Dean, pp. 115-133. Special Paper 276. Geological Society of America, Boulder, Colorado, USA.
Site discussed: Elk Lake (Clearwater County).

Dean, W. E., and R. O. Megard

- 1993 Environment of Deposition of CaCO₃ in Elk Lake, Minnesota. In *Elk Lake, Minnesota: Evidence for Rapid Climate Change in the North-Central United States*, edited by J. P. Bradbury and W. E. Dean, pp. 97-113. Special Paper 276. Geological Society of America, Boulder, Colorado, USA.
Site discussed: Elk Lake (Clearwater County).

Dean, W. E., and A. Schwalb

- 2000 Holocene environmental and climatic change in the Northern Great Plains as recorded in the geochemistry of sediments in Pickerel Lake, South Dakota. Quaternary International 67:5-20.

Site discussed: Pickerel Lake.

Dean, W. E., and M. Stuiver

- 1993 Stable Carbon and Oxygen Isotope Studies of the Sediments of Elk Lake, Minnesota. In *Elk Lake, Minnesota: Evidence for Rapid Climate Change in the North-Central United States*, edited by J. P. Bradbury and W. E. Dean, pp. 163-180. Special Paper 276. Geological Society of America, Boulder, Colorado, USA.

Site discussed: Elk Lake (Clearwater County).

de Vries, B., and C. D. Bird

- 1965 Bryophyte Subfossils of a Late-Glacial Deposit from the Missouri Coteau, Saskatchewan. *Canadian Journal of Botany* 43:947-953.

Site discussed: Hafichuk.

Dew, J.

- 1959 Post-Glacial Forest at Kayville Uncovered. *The Blue Jay* 17(1):20-21.

Site discussed: Scrimbit.

Digerfeldt, G., J. E. Almendinger, and S. Björck

- 1992 Reconstruction of Past Lake Levels and their Relation to Groundwater in the Parkers Prairie Sandplain, West-central Minnesota. *Palaeogeography, Palaeoclimatology, Palaeoecology* 94:99-118.

Site discussed: Reidel Lake, Almora Lake, Upper Graven Lake.

Donovan, J. J., A. J. Smith, V. A. Panek, D. R. Engstrom, and E. Ito

- 2002 Climate-driven Hydrological Transients in Lake Sediment Records: Calibration of Groundwater Conditions Using 20th Century Drought. *Quaternary Science Reviews* 21:605-624.

Site discussed: Elk Lake (Grant County).

Dove, J. E.

- 1981 *Towards a Holocene Paleoecology of the Ghost River and Water Valley Areas, Southwestern Alberta*. Unpublished Masters dissertation. Department of Geography, University of Calgary, Calgary, Alberta, Canada. 152 pages.

Sites discussed: near Winchell Lake, Unnamed Lake.

Elson, J. A.

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