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### How wet was it? A 5000 year wetland sediment record of changing moisture regimes in Nova Scotia

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Nova Scotia has one of the densest archives in Canada of regional paleoenvironmental data owing to the excellent preservation of Late Glacial and Early Holocene climate change records in lake sediments. Wetlands have received far less attention, though recent studies indicate that they have the potential to preserve long (9000+yr) and continuous records of past hydrogeological and moisture regimes. At the Pleasant River Fen (southwestern Nova Scotia) and Baltzer Bog (Annapolis Valley, Nova Scotia) excavated sections, gravity cores, and vibracores were used to expose sediment for stratigraphic analyses. Ages were obtained by conventional and AMS radiocarbon dating of terrestrial wood. Core samples were analyzed for lithostratigraphic proxies including loss on ignition (LOI) and magnetic susceptibility (MS).

At Pleasant River Fen a transition in lithostratigraphic (MS and LOI) properties at 126 cm depth (~3000 <sup>14</sup>C yr BP) is a result of a rising water table and is coincident with a regime shift to moister and slightly cooler conditions as recorded in regional palynological records. Baltzer Bog is located in an elevated, closed basin located on an extensive glacial outwash deposit. Excavation and trenching exposed a ~2 m high continuous section of alternating wood and sphagnum dominated sediment. The base of the section is composed of glacial outwash sand that is directly overlain by coarse woody material which, in turn is overlain by a wetland assemblage. A conventional <sup>14</sup>C date obtained on an upright stump at the initial woodland-wetland contact indicates an increase in local water table occurred shortly after 3070 ± 50 yr BP. Another woodland-wetland transition was dated at 1730 ± 40 yr BP. A minimum of 4 transitions are evident, demonstrating that the water table at the site fluctuated substantially during the Late Holocene. Historical records show that over the past 200+ years the site has been in transition from wetland to woodland, an indication of a declining water table.

Taken together these data indicate that rapid and substantial regional fluctuations in water table elevation occurred during the late Holocene. The rapid environmental change accompanying these fluctuations may have had a significant impact on several rare, disjunct species particular to wetlands, most notably the Blanding's Turtle, the survival of which may be dependent on the stability of these environments.