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No 12905

NEW AMS ¹⁴C AGES AND POLLEN ANALYSES CONSTRAIN TIMING OF DEGLACIATION AND HISTORY OF REVEGETATION IN NORTHERN NEW ENGLAND

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Three cores and five AMS ¹⁴C analyses provide the first direct estimates for the timing of deglaciation and revegetation in the mountains of northwestern New England. We collected our cores from Sterling Pond in the Green Mountains of Vermont (elev., 917m; 44°32'52"; 72° 46'25"). The surrounding vegetation is mainly conifers and northern deciduous trees. One 5.7m sediment core was collected at the deepest point of the pond, which is 8.5m. In this core, pollen was counted every 20cm. AMS radiocarbon dates (LLNL) were obtained on acid-and base-treated gyttja from four levels by J. Southon (260cm, 4,180+/-50 ¹⁴Cyr; 420cm, 8,600+/-60 ¹⁴Cyr; 490cm, 11,180+/-60 ¹⁴Cyr; 521-523cm, 12,760+/-70 ¹⁴Cyr). A twig at 260cm is 280 ¹⁴Cyr younger than adjacent gyttja. The basal date of 12,760 ¹⁴Cyr, the oldest we are aware of from this part of New England, indicates that our core includes sediment deposited during Younger Dryas time, and suggests that ice likely left the mountains of northwestern Vermont before 13,000 ¹⁴C years ago.

Six pollen zones, A, B, C, D, E-1, and E-2 can be distinguished from the percentage pollen diagram. Zone A (12,700-11,750 ¹⁴C yBP) is characterized by increasing spruce and a high percentage of pine. Birch, maple, oak, alder, ash, and hemlock are present at low levels. Zone B (11,750-10,000 ¹⁴C yBP) has the highest abundance of spruce; pine decreases. Alder increases greatly, reaching its peak at about 10,000 ¹⁴Cyr, apparently during Younger Dryas time. Zone C (10,000-8,500 ¹⁴C yBP) features a decrease of fir and an increase of spruce and pine. The first peak of birch and ash, the clear increase of maple, oak and beech, and the decline of alder all happened in zone C. Zone D (8,500-4,500 ¹⁴C yBP) is marked by a decrease of fir, spruce, and pine, the peak of hemlock, oak, and elm, and the increase of beech. Zone E-1 (4,500-1,500 ¹⁴C yBP) is dominated by deciduous trees. Birch, beech, and ash reached their highest percentages. Hemlock gradually increases after reaching its lowest point at the beginning of this zone. Zone E-2 (1,500 ¹⁴C yBP to present) reflects increasing fir, spruce, and pine. Ragweed pollen reached its highest abundance in the past 100 years. Our results generally agree with the only two other sites in Vermont (both low elevation) at which pollen has been counted, Bugbee Bog (L. L. McDowell, et al., 1971) and Shelburne Pond (P. G. Carr, et al., 1977).

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