

SEDIMENTARY PROVENANCE AND PALEOFLOOD HISTORY OF THE MOHAWK RIVER AS RECORDED IN COLLINS POND, SCOTIA, NY

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Collin's Pond (42°50'N; 73°57'W; 64 m asl) is a small (0.25 km²), shallow ($z_{\max}=8.5$ m), eutrophic pond on the floodplain of the Mohawk River near Scotia, New York. The small drainage basin of Collin's Pond is similar in size to the lake itself, yet Collin's Pond has accumulated sediment at a high rate (~ 7 mm yr⁻¹ for the last 1000 years). Cores contain discrete laminae 0.1 to 10 cm-thick of normally graded medium sand to silt that are intercalated with massive, organic-rich sediment. Many of these laminae possess erosional basal contacts, and some contain rip-up clasts of fine-grained organic sediment. These characteristics suggest that clastic layers were deposited by density-driven undercurrents during flooding of the Mohawk River.

The bedrock underlying the Mohawk River drainage basin varies considerably: the northern part of the Mohawk River drainage basin is underlain mainly of gneiss, the central part by calcareous shale and dolostone, and the southern part by carbonates and Paleozoic red beds of the Catskill Mountains. Modern Mohawk River alluvium was sampled throughout the drainage basin to elucidate geochemical fingerprints of different sectors of the catchment. Major element geochemistry of the $<63 \mu\text{m}$ fraction indicate that K₂O ranges from 2.79% in the north (the headwaters of East and West Canada Creek) to 2.03% in the southern Schoharie region; likewise, samples from the northern part of the drainage basin have a higher percentage of Nb, $\sim 50.5\%$, whereas the Central Mohawk and Schoharie Valley sectors yield 32% and 36%, respectively. Finally, Al₂O₃ is higher in samples from the southern sector (10.9%) relative to samples from the northern part of the drainage basin (8.8%). Samples from an ~ 7.5 -meter long sediment core from Collins Pond indicate that the majority of clastic sediment that has entered the pond was derived from the central Mohawk and southern Schoharie Valley regions.

The base of the lake core contains wood that is overlain by a layer of coarse sand. The radiocarbon age of the wood suggests that the lake formed ~ 6100 yr BP, however three new radiocarbon dates, all from macro-vegetal material from near the base of the core, are much younger than the 6.1 ka wood age. The anomalously old age from the basal wood may reflect recycling of wood on the landscape for thousands of years prior to deposition in Collins Pond.