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**Provenance of pre- and post-contact copper artifacts used by aboriginal people in Atlantic Canada: implications for understanding historical metal trades and usage**

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Native copper had in many cultural applications by both pre-and post-contact Mi'Kmaq peoples throughout the Maritimes, including the fabrication of tools, jewellery, gifts, and ceremonial wares. The central role of native copper in the Mi'Kmaq culture is better understood than the provenance of this metal, which this research seeks to address. Archaeological excavations within Nova Scotia have uncovered a large collection of native copper artifacts ranging from the Early Woodland Period (2500–2400 BP) to the Protohistoric Period (450–350 BP) to Post-European Contact (1500+BP). Specifically, this innovative study will build upon past archaeology research by applying laser ablation inductively-coupled plasma mass spectrometry (LA-ICPMS) to characterize trace element compositional signatures that can identify different native copper compositions derived from natural occurrences of the metal and synthetic (refined) sources. The methodology used in this study and the interpretation of results improve on previous bulk analytical methods that suffer inherently from the presence of contaminating grains of other accessory minerals within the native copper, and most importantly, is a comparatively non-destructive technique.

Evaluation of LA-ICPMS data (i.e., trace element compositions) collected from 15 artifacts reveals four distinct native copper compositions. Each group is characterized by specific elemental enrichment/depletions, and for single artifacts, little compositional variation was observed (i.e., samples are homogeneous). Group 1 is distinguished by significant enrichment in Zn, Sn, Pb, and Au and is consistent with the composition of refined Cu originating from Europe. Group 2 (enrichment in Hg and depletion in Au), Group 3 (Mo-enrichment), and Group 4 (enrichment in Ag and Cd, and depletion in Hg) are suspected to be objects derived from native copper sources. Native copper from many known sources of the metal along the Bay of Fundy, Nova Scotia and New Brunswick, as well as other documented localities outside of the Maritimes will be analyzed in order to assign provenance to the three groups of suspect non-European-source artifacts. A variable trace element composition within the collection of artifacts provides evidence that supports a multiple-provenance theory for the origin of native copper within the collection. The application of these results may have a great significance in our understanding of Maritime cultural history.