

# From the Mineral Inventory Files

## Paleoplacer Gold Deposits in Nova Scotia: Pipe-dream or Reality?

Placer deposits are formed by mechanical concentration of heavy minerals from rock debris. Placer gold deposits are a major contributor to the world's total gold production. In this issue I would like to add to the debate on whether or not Nova Scotia has the potential for paleoplacer gold deposits (ancient, preserved placer deposits) of mineable size.

The map below shows the locations of paleoplacer gold occurrences in Carboniferous sedimentary rocks of the Horton Group. Three of these occurrences were sites of small-scale mining operations during the 19th century. This combination of documented occurrences and mining history goes well beyond what could be considered 'smoke' or 'promotional hype'. One can only imagine what might have happened if these sites had been the subject of modern exploration and mining techniques.

Perhaps the best way to examine this topic is by first setting out the necessary features for a paleoplacer gold deposit. The two prime ingredients are simple but elusive: (1) the presence of a suitable host rock deposited by sedimentary processes conducive to concentration of gold placers, and (2) a source of the gold to be concentrated.

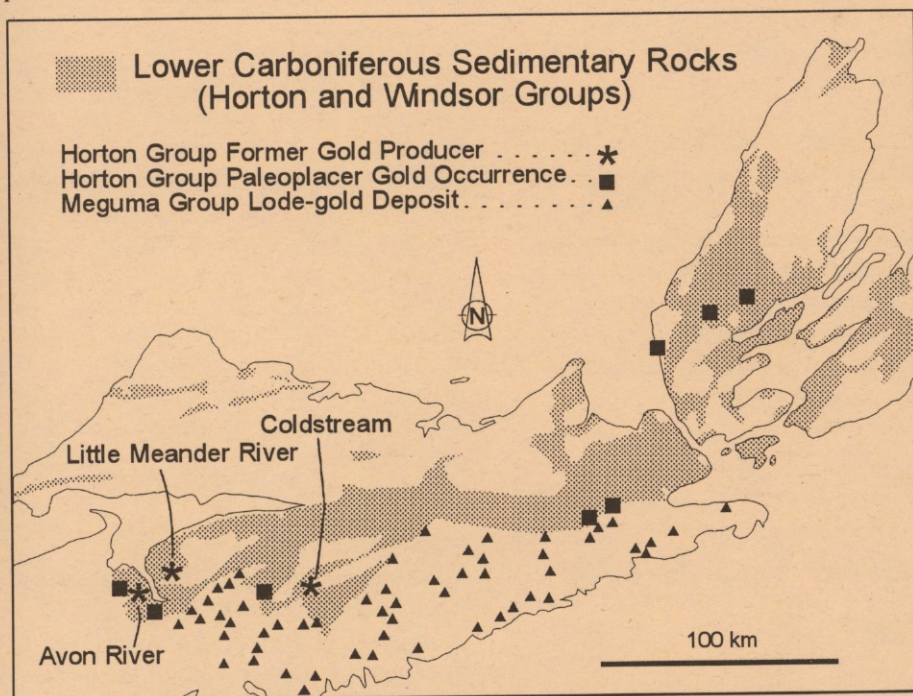
Nova Scotia has an abundance of potential host rock. Much of central and northern Nova Scotia is underlain by the Early Carboniferous Horton Group, which consists of thick sequences of terrestrial conglomerate, sandstone, siltstone and wacke. Portions of the Horton Group qualify as excellent host rocks for placers. Its sediments are predominantly subaqueous in origin, deposited by ancient rivers and streams that drained the surrounding crystalline basement highlands. Particularly noteworthy are quartz-

pebble conglomerate units that are up to 6 m thick. These conglomerates are not restricted to the base of the Horton Group, in fact several of the known paleoplacers occur in conglomerates well above the Carboniferous unconformity at the base of the Horton. At our Review of Activities in November 1995, Ron Mills compared a quartz-pebble conglomerate from the Horton Group with the famous gold-bearing quartz reefs of the Witwatersrand Basin in South Africa. Ron's comparison showed that the Horton Group unit was deposited under similar sedimentary processes to the South African counterparts and that both units have an impressive proportion of clasts derived from quartz veins.

Does Nova Scotia have a source of gold to be concentrated as paleoplacers? Literally dozens of lode-gold deposits in the Cambro-Ordovician metasedimentary rocks of the Meguma Group throughout eastern Nova Scotia provide the answer. Paleocurrent indicators show that much of the Horton Group sediment was derived from these Meguma Group rocks. It is interesting to compare our situation to the Klondike placer deposits in the Yukon, probably the richest placer field in the world. The >11 million ounces of gold extracted from the Klondike gravels originated from numerous, but small, quartz vein deposits hosted in the nearby Klondike schist. The key word here is small, as vein deposits in the Klondike schist do not compare in size or in abundance to the lode-gold deposits of the Meguma Group. In short, our gold source is superior to the Klondike's.

It seems that we have all the necessary ingredients for paleoplacer gold deposits in the Horton Group of Nova Scotia. All we need now is for someone to find them.

George O'Reilly



*Distribution of Early Carboniferous Horton and Windsor group sediments, and the locations of paleoplacer gold deposits. Also shown are numerous metasediment-hosted, lode-gold deposits of the Cambro-Ordovician Meguma Group.*