

gold deposits are yet known in the province, but it is increasingly recognized as a favourable and underexplored environment, because it hosts several diverse environments of Precambrian and Paleozoic gold mineralization.

Auriferous VMS deposits are associated with Cambro-Ordovician arc volcanic sequences, and the most gold-rich are typically in calcalkaline sequences including felsic rocks, such as Rambler, Buchans and Duck Pond. Epithermal-type mineralization is dominantly of late Proterozoic age, within the Avalon Zone of eastern and southern Newfoundland, and includes both high- and low-sulphidation subtypes. The Hope Brook deposit of southern Newfoundland is considered to be a metamorphosed high-sulphidation epithermal deposit. Epithermal-type gold mineralization of Paleozoic age is now also recognized in central Newfoundland, notably within the “Botwood basin” area. Lode gold mineralization of mesothermal type dominates the Dunnage Zone of central Newfoundland, and displays the typical features of “orogenic” gold deposits, i.e., it is late-orogenic (Silurian ?) in timing, and associated with major faults and shear zones. Most of this mineralization is associated with discrete quartz and quartz-carbonate vein systems, although there are examples of manto-type replacements of iron-rich sedimentary rocks, such as the Nugget Pond deposit. This locality, as its name suggests, was renowned for many spectacular examples of native gold. The most significant new gold discoveries in central Newfoundland are Golden Promise, hosted by multiple quartz vein systems in deformed turbidites, and Valentine Lake, hosted by quartz-tourmaline veins in a Neoproterozoic granite. Both examples open up new areas for gold exploration. Possible intrusion-related gold mineralization occurs in southern Newfoundland, associated with Cu, Mo and W mineralization, but its characteristics are not well established. Unusual disseminated gold mineralization in the Humber Zone of western Newfoundland is hosted by Precambrian granitoid rocks, Precambrian dykes and Cambrian sedimentary rocks, including carbonates. Some geochemical features of this mineralization suggest possible affinities with Carlin-type systems, and current exploration activity is based on such models.

Although gold production in Newfoundland now dates back 100 years, systematic exploration for gold-only deposits has a much shorter history. In the last 25 years, a wide range of gold-bearing geological environments have been revealed, which augers well for exploration and production in years to come.

Gold mineralization in Newfoundland: an overview of established and potential environments

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Over the last century, gold production in Newfoundland amounts to some 64 tonnes, of which about half represents byproducts from polymetallic VMS deposits. Three gold-only deposits (Hope Brook, Nugget Pond and Hammerdown) have operated in the last 25 years. The Pine Cove deposit is anticipated to be the next such producer, and the Duck Pond Zn-Cu deposit will also yield significant gold. No world-class