



Low-Impact Exploration for Gold in the Scottish Caledonides.

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The Caledonian orogenic belt of the northern British Isles hosts some significant gold deposits. However, gold mineralization in the region is underexplored. Some of the most prospective areas identified by rich alluvial gold anomalies are environmentally and culturally sensitive. Traditional mineral exploration methods can have a range of negative environmental, social and economic impacts. The regional tourism economy is dependent on outdoor activities, landscape quality, wildlife and industrial heritage and has the potential to be disrupted by mineral resource developments. Low-cost, low-impact exploration strategies are therefore, key to sustainably developing the mineral resource potential. Research currently in progress in part of the Scottish Caledonides aims to develop protocols for more sustainable exploration. We are using a range of geoscience techniques to characterize the mineral system, improve exploration targeting and reduce negative impacts. To do this we targeted an area with a large preexisting dataset (e.g. stream sediment geochemistry, geomorphology, structural geology, petrology, geophysics, mine data) that can be synthesized and analyzed in a GIS. Part of the work aims to develop and test a model for gold dispersion in the surface environment that accounts for climatic and anthropogenic influences in order to locate bedrock sources. This multidisciplinary approach aims to reduce the target areas for subsequent exploration activities such as soil sampling, excavation and drilling.