

Stimulating Exploration by Government-Sponsored Regional Geoscience Surveys

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ABSTRACT

The island of Ireland is one of the most attractive places for mineral exploration and development, according to a recent global review. The Republic of Ireland is a major European producer of lead-zinc and historically of copper, lead-silver and alluvial gold. Northern Ireland has one gold mine in production, a second gold prospect at an advanced stage of exploration and one salt mine. In the past lead, iron and coal mining have all been prominent. Other minerals that are, or have in the past been, mined in the island include bauxite, barite, gypsum, coal and high-grade aggregates.

In Northern Ireland, prospecting in recent years has been stimulated by the Tellus Project, managed by the Geological Survey of Northern Ireland (GSNI). Between 2004 and 2007 this government-funded initiative completed soil and stream geochemical samples surveys and a low-level airborne geophysical survey of Northern Ireland, an area of 13 800 km². Within 12 months of the data launch in 2007 the area of Northern Ireland licensed for exploration increased from 15 per cent to 70 per cent and the subsequent private sector investment in exploration now exceeds £32 M. Targets include gold, platinum group elements and base metals. The project is a good example of how regional geoscience surveys can stimulate exploration activity and inward investment.

Historically the principal focus of prospecting in Northern Ireland has been the area of vein gold deposits in Neoproterozoic rocks of County Tyrone, centred on the deposits at Curraghinalt and Cavanacaw. Here, the airborne magnetic and electromagnetic results delineate significant associated structures. Arsenic in soils and stream sediments has been the principal geochemical pathfinder historically and the new sampling and analyses for multiple trace elements provide improved coverage at a better detection limit. Cross-border soil geochemical anomalies also characterise the area around the vein deposits in South Armagh and County Monaghan, in Ordovician/Silurian rocks. The geochemistry survey has revealed more widely distributed gold anomalies in stream sediments in other areas and mapped significant anomalies in platinum group elements over the Antrim basalts. Here again, the airborne magnetic and electromagnetic imagery reveal new structural information, particularly in those areas obscured by glacial deposits and peat.

Following this success, the airborne geophysics and geochemistry surveys have been extended over 12 300 km² of the six border counties of the Republic of Ireland (Donegal, Sligo, Leitrim, Cavan, Monaghan and Louth) under the cross-border 'Tellus Border' project, financed by the INTERREG IVA program of the European Regional Development Fund. This new survey work is jointly managed by the GSNI and the Geological Survey of Ireland (GSI). The

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integrated geophysical and geochemical results of Tellus and Tellus Border surveys are being released throughout 2013 and have prompted further interest in mineral prospectivity as well as environmental research into soils, surface and groundwater, radioactivity and ecology.

The project has stimulated joint data collection with the private sector. In 2012 the airborne survey was extended in eastern County Mayo and north County Roscommon in collaboration with a mining company, which has made the data publicly available. Another company has already taken out four licences on the basis of Tellus Border geochemical results, released in February 2013. These data reveal the continuation of a trend established on adjoining licenses held in Northern Ireland. New fire-assay gold analyses of the Tellus Border stream sediment samples will be released in 2013. Together the merged Tellus and Tellus Border geochemical and geophysical data are expected to promote further investment in this cross-border region.