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Exploration and Geological Services Division, Yukon Region

BULLETIN 13

Placer gold deposits of the Mayo area, central Yukon

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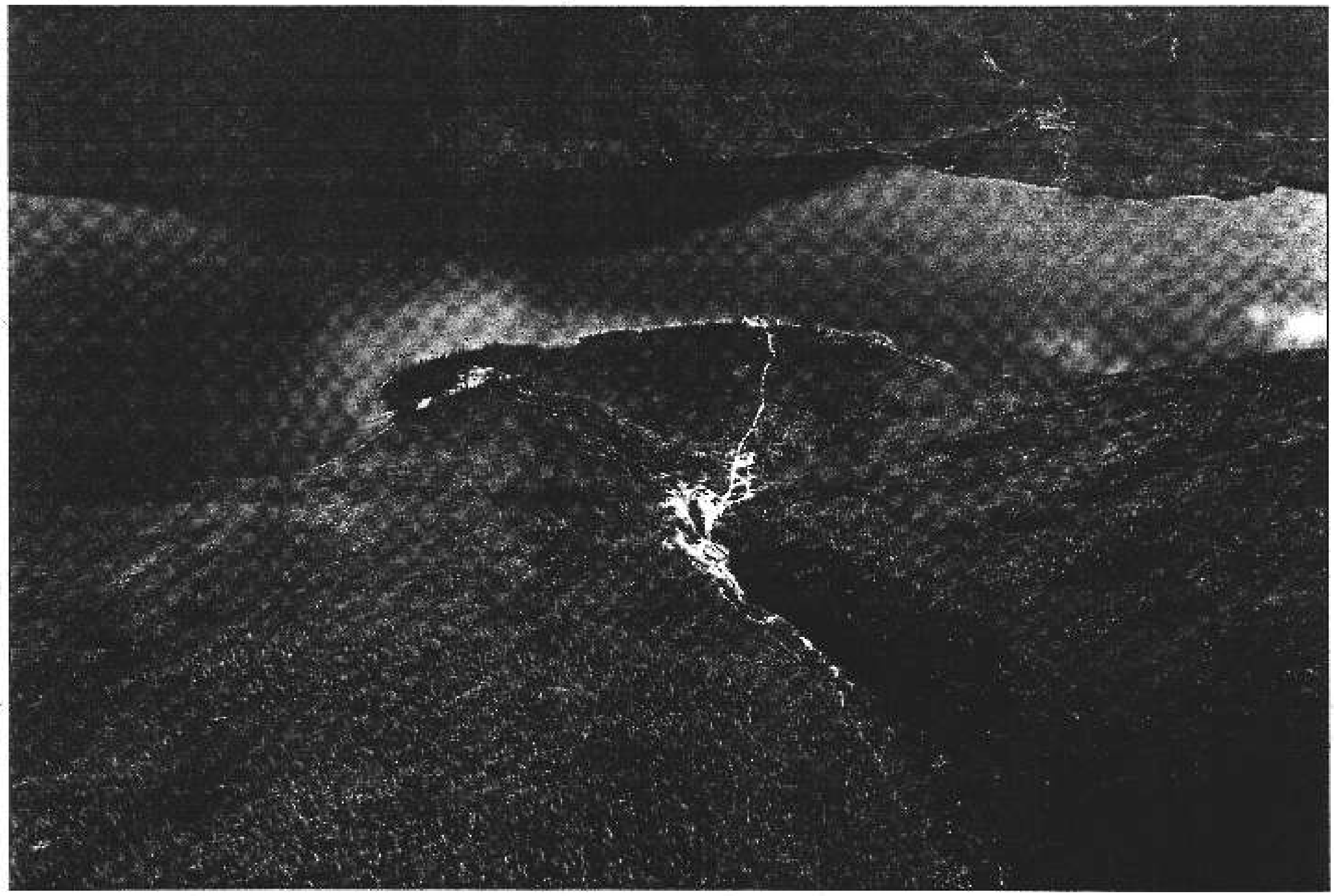

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Post-McConnell downcutting significantly changed the morphology of the Duncan Creek drainage. Downcutting by the Mayo River, following the last glaciation, triggered a base level change in Duncan Creek and increased erosion throughout the main valley of the drainage. Duncan Creek eroded through McConnell glacial sediments in the lower part of the drainage and continued into the placer gold-bearing Reid outwash gravel. The influence of the base level change continued upstream as far as Lightning Creek and McNeill Creek. Upper Duncan Creek was not downcut as quickly as Duncan Creek and consequently was left as a hanging valley. Upper Duncan Creek has since eroded a canyon at the junction of the two valleys, which is where placer gold was first discovered in the Mayo district in 1898. This deposit consisted of sediment reconcentrated from a higher surface that represented the former mouth of Upper Duncan Creek. In Duncan Creek valley, post-glacial fluvial reworking of gold-bearing alluvium and bedrock sources created modern gulch and valley-floor placers on top of McConnell glacial drift and schist bedrock.

The development of local glaciers may have played a significant role in liberating lode gold into the placer environment. Glacial movement at the head wall of the cirque erodes bedrock into the glacial system, which eventually works its way into the fluvial environment following the glaciation. A lengthy post-glacial fluvial reworking period is then critical for placer development. It appears that the north-facing glacial valleys in the Gustavus Range, despite having considerable glacial activity, have not been exposed to sufficient post-glacial reworking to form placers. All north-trending valleys have actually produced fewer placers than valleys that were last glaciated during the pre-Reid and/or Reid glaciations. Viable placers may be found in sections of the recently glaciated valleys, but would largely consist of immature deposits. West-facing valleys like Upper Duncan Creek and Thunder Gulch have experienced long periods of hydrological reworking and subsequently have produced more abundant and coarser gold placers. Some of the placer deposits in Upper Duncan Creek may have actually been reworked to the mouth of the valley during the McConnell glaciation by meltwater from small alpine glaciers. This is discussed further in the section on "Regional Investigations."

MAYO LAKE/DAVIDSON CREEK

Introduction

Many of the streams in the Mayo Lake area including Ledge, Davidson, Cascade, Anderson and Steep creeks have seen historical placer prospecting and mining activity since 1903. In recent years, modern mechanized placer mining has taken place on Davidson, Steep, Ledge, Anderson and Dirksen creeks. Recorded placer gold production for Mayo Lake tributaries from 1903 to 2000 totals 8432 crude ounces (263 819 g), however as this figure is derived only from incomplete placer royalty records, the total gold production is likely much higher.

Location and access

Mayo Lake lies on NTS map sheets 105M/10, 105M/11, 105M/14 and 105M/15. Access from Mayo is via the Silver Trail highway and the Duncan Creek road, a distance of approximately 45 km (Fig. 2). A narrow road intersects Duncan Creek road and winds southeast along the northern shoreline of Mayo Lake as far as Keystone Creek. A four-wheel drive road and a narrow bridge crossing Mayo River join Davidson Creek to the Mayo Lake road. Mayo Lake tributaries Anderson and Ledge creeks are accessed in winter by an ice road while in the summer access is restricted to boats, barges and aircrafts, which can utilize a small airstrip on Ledge Creek.

Physiography

Mayo Lake is the largest water body in central Yukon with a length of over 30 km (Fig. 30), and it consists of the West, Roop (east) and Nelson (south) arms. Several narrow streams occupy canyons above Mayo Lake and form alluvial fan-deltas where they empty into the water body. The main discharge point of Mayo Lake is through Mayo River from the West arm. Davidson Creek empties into Mayo River just west of the outlet from Mayo Lake. The Gustavus Range (including Mt. Albert at 6500 ft, 2000 m a.s.l.) rises steeply to the north while wide, glaciated valleys extend from each of the lake's three arms.

Local geology

The Robert Service Thrust Fault crosses Mayo Lake from northwest to southeast, separating Upper Proterozoic to Lower Cambrian Hyland Group from Mississippian Keno Hill Quartzite and Devono-Mississippian Earn Group (Murphy, 1997). The Roop Lakes stock is Cretaceous hornblende-biotite granite, which subcrops a few kilometres north of the Roop arm (Murphy, 1997). Between the Roop and South arms, the Mayo Lake antiform dominates the Fork Plateau. A small galena vein