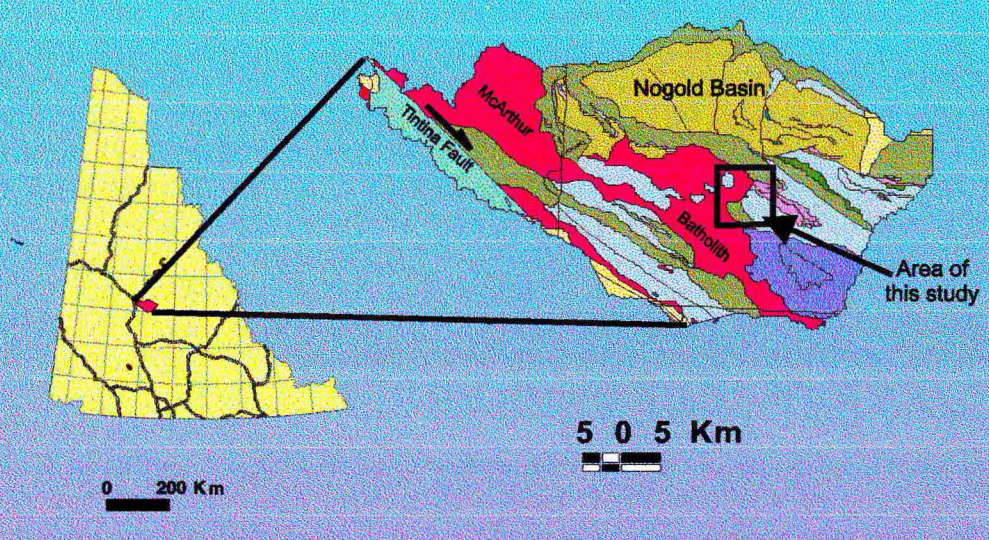
Preliminary Geology of southeastern Dhaw Ghro Special Management Area

Introduction

In 1972, an Ecological Reserve map notation was applied to designate McArthur Wildlife Preserve. Regulations at the time limited hunting activity only. The McArthur Wildlife Preserve was selected as Ddhaw Ghro Habitat Protection Area through finalization of the Land Claim agreements with Na'Cho N'Y'Ak Dun and Selkirk First Nations. The Special Management Area (SMA) has been withdrawn from disposition since summer 1997. Interim protection is effective through 2005, or through the completion of a management plan.

Regional Geology
(modified from Roots, 1997)



Legend:

Quaternary
Unconsolidated sediments

Mid-Cretaceous Anvil plutonic suite
Granite

Middle Devonian to Early Mississippian Earn Group
Portrait Lake Formation
black shale

Middle Paleozoic Nogold unit
marroon and green shale, grit, limestone

Ordovician to Silurian Road River Group (undivided)
black chert and shale

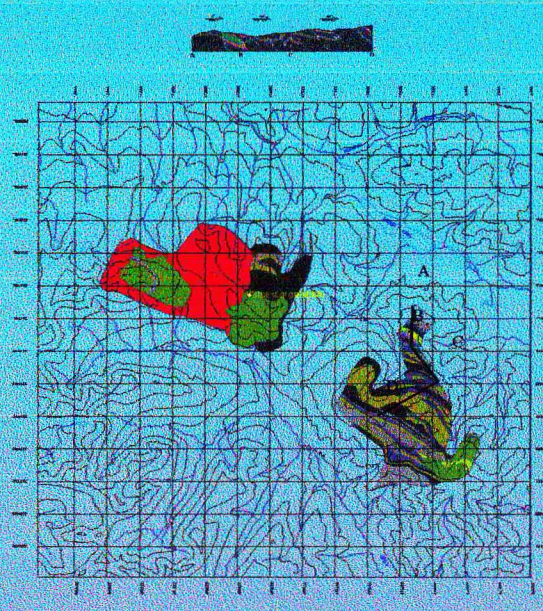
Cambrian Gull Lake Formation
khaki shale

Late Proterozoic to Early Cambrian Hyland Group
Narchilla Formation
maroon and green shale
Yusezyu Formation
grit, shale, limestone

Devonian to Mississipian Nasina Series (Yukon-Tanana Terrane)
metavolcanic, metaplutonic and metasedimentary rocks

Ddhaw Ghro SMA is located in western Selwyn Basin, near the Tintina Fault. From Late Proterozoic through Siluro-Devonian time, easterly-derived sediments were deposited in Selwyn Basin. In mid-Paloezoic time, Nogold Basin formed along a NW-SE-trending axis, on what became the northern part of Ddhaw Ghro SMA. Hyland Group and younger rocks were reworked and their sediments re-deposited mainly as grits and maroon and green shales in Nogold basin (Roots, 1997). Visually, Nogold Unit and Hyland Group are identical, and the distinction is made based on fossil ages. Nogold unit is overlain by Earn Group turbidites. Mid-Cretaceous plutonism resulted in the emplacement of the McArthur Batholith.

1:10 000 scale geology of southeastern Ddhaw Ghro SMA



A southerly extension of Nogold unit, characterized by marroon and green shale and grits, and the existence of limesone in Duo Lake Formation suggest that there is a significant facies change in upper Road River Group in southwestern Mayo map sheet. It is uncertain whether the facies change results from Silurian rifting, or if it represents a transition into shallower, platformal sedimentation to the southwest, such as a northwestern extension of McEvoy platform. New conodont ages and further 1:20 000 scale mapping to the northwest of McArthur Batholith is necessary to shed light on the age and depositional environment of sedimentary rocks in the various thrust sheets, and to better characterize the deformation style and mineral deposit models applicable to rocks of Ddhaw Ghro SMA.

The mid-Cretaceous McArthur Batholith is the most important component of the geology, hydrothermal alteration, and mineralization in southeastern Ddhaw Ghro SMA.

oxidized rocks in the contact metamorphic aureole of McArthur Batholith.

Sedimentary rocks in the contact metamorphic aureole are rusty, pervasively altered to biotite-hornfels or calc-silicate minerals, and consist of subarkosic to arkosic wacke, shale, siltstone, and minor calcareous siltstone. Primary features are often obliterated.

Oxidized skarn and black limestone interbedded with shale in the area of the Sideslip (105M 039) mineral

Sedimentary rocks east of Grey Hunter Creek consist of a folded and thrust-imbricated sequence of Road River Group (shale, chert, and limestone of Duo Lake Formation), rocks interpreted as Nogold Unit (tan wacke and maroon and green shale), and Earn Group (grey to black wacke and shale).
Two phases of deformation produced two penetrative foliations, EW-(1st phase) and NW-(2nd phase) trending folds, boudinaged competent beds and veins, and NNE-directed thrusting. Cross-section ABCD shows the interpreted structural style of the ridge northeast of Grey Hunter Creek.

Black limestone interpreted as Duo Lake Formation, folded along a NW-trending axis

Two well developed foliations in cherty shale of Duo Lake Formation (looking northwest).