Eastern Shore Compilation Project

L. J. Ham

Work continued in 2002 on the Eastern Shore gold compilation project (Fig. 1). The first documented discovery of gold in the Eastern Shore area of Nova Scotia was made in 1858 at Mooseland. By the end of the 18th Century, gold had been discovered in many other places along the Eastern Shore, and numerous areas had been declared gold districts. Geological maps were produced early in the 19th Century by Fletcher and Faribault (e.g. 1886), and in 1929, Malcolm compiled known information on the gold districts into a classic memoir. Since the time of the first discoveries of gold, and particularly in the recent past, there has been considerable work undertaken by mineral exploration companies, prospectors, and geoscientists in universities and governments, including both the Nova Scotia Department of Natural Resources (NSDNR) and Geological Survey of Canada (GSC). There is a wealth of information dealing with various aspects of the gold districts on file with NSDNR, and also in private research files and internal company reports.

The original goals of this project were: (1) to compile existing information on the gold districts and surrounding areas of the Eastern Shore, (2) to incorporate relevant information onto a digital geological base map, (3) to produce databases and relevant cross-referencing links attached to the geological map, and (4) to write reports on selected

Figure 1. NTS index map of Nova Scotia showing the two areas, Phase 1 and Phase 2, which have been the focus of recent project activity.
gold districts. Information available in assessment files, archived both as hard copy and microfiche, in the NSDNR library has been indexed over the years, and this information will also be incorporated through databases designed for this project.

As the project has progressed, and the information worked through, it became apparent that the original goals of the project were ambitious. Challenges associated with the capture and transfer of digital geological information have proven to be time-consuming. The project has been scaled back to reflect a more realistic goal: to capture and assure integrity of the geological information from original sources, most importantly the information of Faribault and Fletcher.

To this end, the most eastern portion of the map area (Phase 1; Fig. 1) will be released as an Open File Map in 2003 and work will continue on the second area (Phase 2; Fig. 1) for release by the end of 2004.

The initial work on the project, Phase 1, started in the easternmost portion of the project area, NTS map sheets 11F/03, 04, 05 and 06 (Fig. 1). The second area of the work, Phase 2, has involved gold districts closer to Halifax, NTS map sheets 11E/02, 03, 11D/10, 11, 14 and 15 (Fig. 1). Work on these areas has included site visits to former gold-producing districts, in addition to visiting numerous smaller showings and occurrences of various commodities on all NTS map sheets. Most of the former gold-producing sites were easily located and marked by abandoned mine shafts, old workings, adits or piles of waste rock and rubble.

Initial work from the mapping component of the project involved compiling base maps of the NTS map sheets using ArcView®. Geological information (outcrop locations, strike and dip information), particularly from Fletcher and Faribault’s work, was digitized from available reference maps after a reference search. Work has involved using both the NSDNR Mineral Occurrence and Drillhole databases, and incorporating the location of all the mineral occurrences and drillholes within these databases on to digital bases. Using the newly compiled geological map of Nova Scotia (Keppie, 2000), the locations of mineral occurrence and drillholes were individually verified, and many subsequently re-located, by researching the assessment files where the original locations are reported. The corrected locations of drillholes have been entered into a database and are to be corrected at a later time in the master drillhole database files. The four NTS map areas of Phase 1 were displayed at a scale of 1:100 000 at the NSDNR Mining Matters conferences.

The next part of this project, Phase 2 (Fig. 1), involves the gold districts closer to Halifax; this “jump” over NTS map area 11D/16 and surrounding maps from Phase 1 will allow for digital bases to be constructed for this middle area. A major part of this project involves digitizing and using the geological information of Fletcher and Faribault and their original map series. This information is in progress for 11D/16, but is not available as yet.

Phase 2 involves twenty gold districts in the central portion of the Eastern Shore, some of which were former gold producers on a large scale, and includes the gold districts of Beaver Dam, Caribou, Chezzetcook, Clam Harbour, Cow Bay, Elmsdale, Fifteen Mile Stream, Gays River, Gold Lake, Killag, Lake Catcha, Lake Charlotte, Lawrencetown, Mooseland, Moose River, Oldham, Ragged Falls, Sheet Harbour, Tangier, and Upper Stewiacke. The project results will follow the same format as for Phase 1 (Ham, 2001). Digital maps will be produced, incorporating all the known and available geology, and databases will be constructed and linked to the maps. Individual deposit reports will also be written.

The project areas are underlain by metasedimentary rocks of the Goldenville and Halifax formations, with Goldenville Formation rocks deformed into east-west, doubly plunging anticlines and synclines, with strata of the Halifax Formation resting primarily in synclinal troughs. Observation at most gold districts shows that most veins are either interbedded and occur mainly in beds of slate interstratified within Goldenville Formation quartzite, or are discordant and crosscut
both slate and meta-greywacke. These veins occur at various depths throughout the formation and have been drilled to depths >700 m. Primary folds and secondary structures, particularly in the gold districts, are complex. The more important geological features include domed anticlines and numerous local and regional faults, generally trending northwest. The location of veins and associated gold deposits associated with these anticlinal structures has been the focus of numerous researchers ever since these deposits were first discovered nearly 150 years ago. Local faults, found in all districts, are related mainly to late-stage, brittle deformation throughout the region. 

As was done for Phase 1, individual gold deposits of Phase 2 are discussed below. The individual gold districts that have been the current focus of research, in order of production, are: Caribou, Oldham, Tangier, Moose River, Fifteen Mile Stream, Lake Catcha (Chezzetcook), Mooseland, Killag, Gays River, Cow Bay, Beaver Dam, Lawrencetown, Lake Charlotte, Clam Harbour, Upper Stewiacke, Gold Lake, Sheet Harbour, Elmsdale, and Ragged Falls. Brief descriptions of each of these districts are included below, and many of these descriptions have been simplified from Malcolm (1929) and other information available in NSDNR assessment files. All production figures are taken from Bates (1987). Locations for the individual districts are found on Figure 2.

**Caribou:** The Caribou gold district lies on a dome formed by the plunging of an anticline to the east and west; this same anticline occurs at Cochrane Hill. Folding and subsequent erosion have exposed the upper parts of the Goldenville Formation in the form of an elongated ellipse. Localized faulting is common. Both interbedded and cross-cutting veins are found in this district; interbedded veins are found in the Goldenville Formation interstratified with meta-greywacke. The cross-cutting veins transect stratigraphy at a small angle and are found in the lower beds of the Halifax Formation, near the Halifax-Goldenville contact. Veins most extensively worked are the Caffre, Lake, Dixon, Burner and McDonald. Rich ore occurs in many veins, and the Lake vein proved one of the richest in the Nova Scotia gold fields. Work on this district began in 1867 and by 1869 two crushers and numerous stamp mills were in operation. Extensive underground work was undertaken well into the 1900s, and total production was 91,335.8 troy ounces, making Caribou one of the larger producing gold districts in Nova Scotia.

**Oldham:** Oldham, one of the oldest and deepest gold districts in the province, has been worked extensively over the years since the discovery of gold-bearing quartz boulders in 1861. This district produced 85,177.5 troy ounces. A domed, tightly folded and extensively faulted, easterly-plunging anticline hosts interbedded gold-bearing veins and few cross veins. The most productive part of district is the eastern end, which has undergone the most faulting. A fault follows the axis of the anticline and radiating from the dome to the southeast are a series of right-hand faults with displacements of over 30 m. Most of this faulting is speculated to post-date vein development. The more important interbedded veins from this district are the Dunbrack, Sterling, Boston-Oldham, North and South Wallace and Donaldson, others worked profitably are the Barrel, Blue, Frankfort, Ohio, Ritchie, and Wallace; important cross veins are the Baker, which occupies a fault plane, and the Britannia. In the early days of Oldham’s development, most work was open-cut and included extensive trenching.

**Tangier:** Gold was discovered at Tangier in 1860 and total historic production for the Tangier area was 26,286.5 troy ounces. The Goldenville Formation is exposed in the east-west Tangier-Harrigan Cove anticline, the most southerly anticline exposed on the eastern mainland. The fold plunges in both directions at a slight angle, forming a long, narrow dome. The rocks have been disturbed by two important series of faults striking northwest and southeast. Tangier is unique to all the gold districts in hosting a lamprophyre dyke (~12 m wide) in the gold district, perpendicular to strata and oriented north-south. Gold-bearing veins are interbedded and most historical work has been limited to those found on the south limb of the fold. Some of the more important leads are Big South, Little South, Kent or Nugget, Lear, Lake, Forrest, Dunbrack or Twin, and Wallace. Recent
exploration and development work was undertaken at Tangier (Atkinson, 1997) by Tangier Limited Partnership and Tangier Mining Incorporated. A mining permit was applied for, but the work did not continue. When the mine closed down, NSDNR acquired much of the original information from this work. Another aspect of this compilation project will catalogue this original mine information.

**Moose River:** Gold was discovered in Moose River in 1866 and the district produced 25,917.2 troy ounces. This gold district is located in a wide zone of interbedded slate, meta-siltstone and meta-greywacke of the Goldenville Formation. The Moose River district has the greatest thickness of Goldenville exposed (Faribault estimated the thickness to be ~5 km) in the province. Another unique feature of this district is that the ore-bearing veins are confined to a belt (~500 m wide) of schistose slate with little meta-greywacke, different from the typical Halifax Formation slate, which is exposed to the north of the mine workings. The structure of the rocks suggests two anticlines converging in a westerly direction, and the development of subordinate folds with subsequent east-west faulting. With minor exception, all veins worked in this district are the interbedded type with connected angular veins. The most important veins are northerly dipping and occur on the crown of the northern anticline. Some of the more important leads in this district are Copper, Little North, Little South, Big North, Serpent, Kaulback, and Comstock. historical work was done on what was called the Touquoy mine which is host to disseminated gold in artillite/meta-siltstone.

**Fifteen Mile Stream:** This gold district, one of the oldest in the province, occurs on a branch of the East River, Sheet Harbour area (see Sheet Harbour and Ragged Falls districts also). Interbedded veins lie within intercalated slate and meta-quartzite layers, and the most auriferous veins occur on an anticline in the north of the district (Moose River-Fifteen Mile Stream Anticline), the same northern anticline that passes through the Moose River gold district. At Fifteen Mile Stream, this anticline is domed and consists of three minor anticlinal folds. Leads worked on the northerly anticlines include the Old Egerton, McPhee, McGilligan, Island, Serpent, McLean, Walton-Doran and Jackson. In the southern part of the district, leads worked are the Orient, Nonpareil, Mother Seigel and Harvey.
These leads exhibit high-grade rolls and swells produced by zones of crumpling and numerous angulars within the gold-bearing quartz veins. Production from this district was 21,291.6 troy ounces.

**Lake Catcha:** This deposit was commonly also referred to as Chezzetcook. Gold was discovered in this area in 1865 but not developed until 1881. Production at Lake Catcha extracted a total of 17,961 troy ounces of gold, and Chezzetcook produced 5,528.1 troy ounces. Goldenville Formation rocks are exposed in an easterly-trending, domed anticline with variable, but steeply dipping limbs. Numerous faults cross the gold district. Most of the veins lie in bedding planes; however, two cross-cutting veins (the Copper and Cogswell) are auriferous, and both lie on the northern limb of the anticline. The cross-cutting veins follow bedding planes in slate, cross-over quartzite at a steep angle, then resume along a slate bedding plane; this type of veining is also found in other districts. Gold is generally concentrated in shoots; in the Coleman vein, gold is found in three shoots lying in undulations below one another and dipping at low angles. High concentrations of gold and iron sulphides are found in certain slate beds.

**Mooseland:** The first discovery of auriferous quartz in Nova Scotia was in the Mooseland gold district in 1858. This original gold district produced 3,865.1 troy ounces of gold, although additional production may also be included with reported production for the Tangier district. The Goldenville Formation is exposed in a closely folded anticline, which plunges gently to the east and west, forming an elongate dome. The main axis of the fold curves and numerous veins are found on the convex side of the axis. Several lines of faults occur in the eastern end of the district, with displacement along the faults. Granite of the Musquodoboit Batholith lies directly to the southwest of this district, and a few veins have been traced to the granite. Veins are stratified and most of the veins worked are confined to the southern limb of the anticline, with the zone of enrichment lying close to the axis. Among the most important veins are the Bismarck, Irving, Little North, Specimen, Cummings and Furnace.

**Killag:** Gold was described from the area in the 1860s, but the source of rich gold-bearing quartz boulders was not found until 1889. Production ultimately yielded 3,583.6 troy ounces of gold. The Goldenville Formation is exposed here in a southeast-trending anticline. In contrast to other gold districts, there has been very little faulting reported. Veins are interbedded, have been worked on both limbs of the anticline, and are found in greatest concentration at the apex of the fold. The leads that have been worked most extensively are the Flat lead and the Stuart lead.

**Gays River:** This district received only minor attention as a gold district, producing a total of 2,268.2 troy ounces, but it received considerable interest from the geological setting. Gold, believed to be derived from metasedimentary Meguma Group rocks, occurs in coarse conglomerate at the base of the Lower Carboniferous Horton Group, and it thus is a good example of a fossil placer deposit. This conglomerate is exposed at the base of the a ridge of slates of the metasedimentary rocks. A series of auriferous quartz veins is found along an anticline at the top of the ridge to the south of the conglomerate.

**Cow Bay:** Gold was discovered in this area in 1895 and total production was 1,483.5 troy ounces. Cross-cutting veins, also referred to as fissures, are important at Cow Bay and form the principal auriferous deposits. The contact between the Halifax and Goldenville formations runs through this district and numerous north-south veins cross the contact. A belt of grey argillaceous metagreywacke, with pockets of extensive pyrrhotite, occurs at the contact, and auriferous veins are richest where they cut the pyrrhotite-bearing quartzite.

**Beaver Dam:** Total production from this gold district was relatively small, being 966.7 troy ounces in total. Although discovered in 1868, work was limited following the discovery, and production is documented from 1889 to 1949. The Goldenville Formation is folded in an overturned anticline running northeast and southwest. Veins are both interbedded and discordant, and all lie on the southern limb of the anticline.
Lawrencetown: Gold was first officially discovered here in 1861, though it had been recognized several years earlier. With the discovery of gold at Tangier, the gold at Lawrencetown was then given credence. By 1862, forty distinct veins were opened, but little work was undertaken until shafts were sunk in 1868. Although a limited amount of gold (866.7 troy ounces) was taken from this property, the auriferous zone is wide (over a mile long and nearly half a mile wide), as two anticlines converge from the east and approach each other in this area. Auriferous veins lie in bedding planes, the most important being Wadlow, Middle, Bennett, Werner, Nickie, Belt and Vance. One main fault trends southeast and other subordinate faults were discovered during mining.

Lake Charlotte: This deposit is the only gold district of southern Nova Scotia that lies totally within a syncline. It is situated near the northern contact of the Musquodoboit Batholith and is overprinted by contact metamorphic minerals. Although only limited gold was recovered (77.5 troy ounces), grades in the several veins worked are high (~1 oz. Au/t).

Clam Harbour: This gold district received little interest; several veins were opened and several shafts were sunk, producing a total of 53.9 troy ounces. Goldenville Formation meta-quartzite is folded and exposed in two east-west anticlines that converge in the west of the district. At the eastern end of the district, strata between the two main anticlines is crumpled into two minor folds and minor faulting occurred. Gold-bearing veins are both interbedded and cross-cutting, with the former the richer veins and confined to slate beds within the meta-quartzite. Cross-cutting veins are thought to be feeders to the interbedded veins, and gold levels are highest at the intersection of the two vein types.

South Branch or Upper Stewiacke: Gold at this district occurs in both interbedded and crossing veins within rocks of the Halifax Formation; the cross veins are the richer veins. The meta-sedimentary rocks have been tightly folded into an anticline. Auriferous boulders found along the anticlineal trace led to the initial discovery in this district. Total production from this district was 43.9 troy ounces.

Gold Lake: This gold district is located 6 km south of Moose River gold district and limited gold was extracted (38.6 troy ounces). It lies on the Killag-Goldenville anticline and gold is confined to interbedded veins.

Sheet Harbour: Several veins were prospected on the East and West Rivers in the Sheet Harbour area, producing 3.9 troy ounces of gold. These auriferous veins occur on the south limb of a subordinate fold on the south limb of the Salmon River anticline.

Elmsdale: Limited work was done in this district, with a production total of 1.4 troy ounces. Auriferous veins are found within the meta-quartzite of the Goldenville Formation.

Ragged Falls: Interbedded veins were prospected close to the Sheet Harbour district, on Twelvemile Stream branching off the East River. These veins occur in meta-quartzite of the Goldenville Formation, on the south limb of the Moose River-Beaver Dam anticline.

References


