

NTS 13L/15 MAP AREA

Areas of the map symbolized as 'unconsolidated sand and gravel deposits' display underlying rock type(s) to portray the interpreted continuity of units, based on structural, aeromagnetic and topographic signatures. Rock types other than those shown may be present in these areas.

All data stations collected by the authors are plotted using GPS-based coordinates. This map also incorporates pre-GPS field data collected by Ross and Ensie (1973) and Ensie (1980). The distribution of rocks of the Seal Lake Complex is based primarily on the mapping of Ensie (1980). Only the uniformity of these rocks and sedimentary rocks of the Maguash-Bass Lake Formation were mapped during this study. The accuracy of field data stations that were imported from maps or field notes of these sources is dependent on the original plotting accuracy.

The map is interpreted by following examination of detailed rock data, topographic thin sections and whole rock geochemical analyses. In many areas, geological boundaries are poorly constrained, approximated and extrapolated on the basis of outcrop topography, topographic features, structural observations and aeromagnetic data. Individual outcrops typically consist of several different rock types. The unit polygons depicted is based on what was interpreted to be the dominant rock type present. All rock types recorded from an individual outcrop may be determined by consulting the 'Unit description' entry to that locality given in the digital database. Discrepancies in rock names applied to field outcrops versus those interpreted from aerial data or this sections have not been recorded in the digital database. Differences may be due to more refined classifications of the sample and/or this section may not be representative of the source material.

Field work in 2012 by T. van Nostrand

Recommended citation

2023. Geology of the NTS 13L/15 map area, central Labrador. Scale 1:50 000. Geological Survey, Department of Industry, Energy and Technology, Government of Newfoundland and Labrador. Map 2023-32. Open File 13L/15/0162.

Geology compiled by T. van Nostrand
Geological cartography by S. McNamara, K. Morgan and T. Sears

The digital topographic database map NTS 13L/15 used here is available from the Surveyor General Branch, Natural Resources, Canada. Magnetic declination at centre of the map is 32°40' West (March 31, 2023).

Universal Transverse Mercator (UTM) Grid Zone 20, North American Datum (NAD) 27.

Elevations are in metres above sea level. Contour interval is 20 m.

Open File 13L/15/0162

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Preliminary versions of parts of this map published in Current Research articles have evolved so there are some differences between the current and preliminary versions of the map, unit designators and the legends (see van Nostrand and Corcoran, 2013).

Map 2023-32 is nineteen of twenty (20) maps on the geology of the Seal Lake Group, including adjacent rocks of older tectonic provinces in central Labrador.

Department website: <https://gov.nl.ca/geology>
Geological Survey website: <https://www.gov.nl.ca/earthnews/geoscience>
Email: pub@gov.nl.ca

References

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1980. Geology and petrology of the Harp Lake Complex, central Labrador: An example of Esonian magmatism. Geological Survey of Canada, Bulletin 293, 138 pages.

KIRK, G.
2023. Compilation of colour-shaded relief images generated from airborne magnetic data from by the Geological Survey of Canada from 1969 through 1972. Government of Newfoundland and Labrador, Department of Natural Resources, Geological Survey, unpublished map, scale 1:250 000.

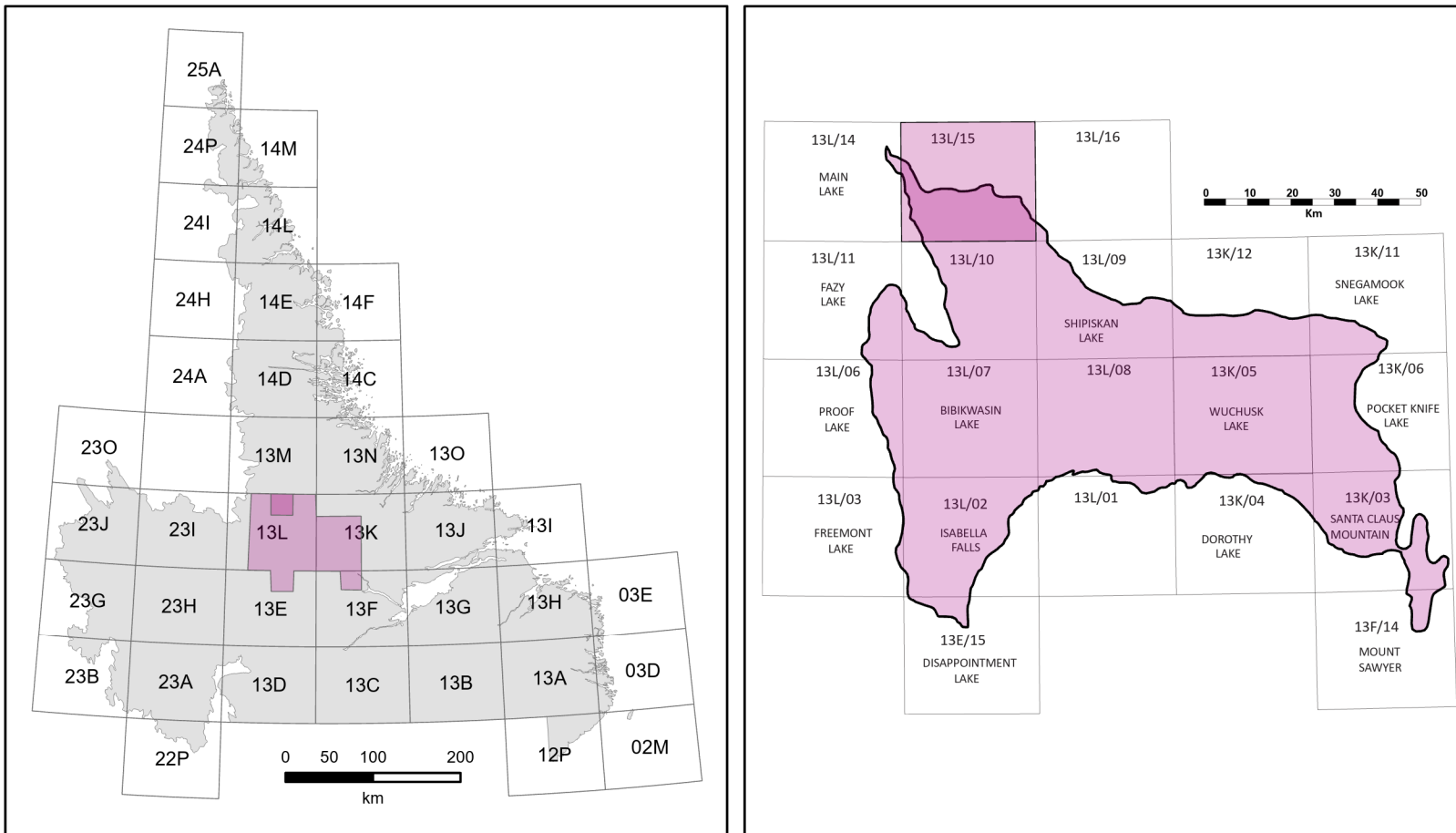
Rossow, S.M. and Ensie, R.F.
1977. Kaneeshobaw Lake (East Harp), Newfoundland – Quebec. Geological Survey of Canada, "A" Series Map 1424A, 1:250 000 scale.

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2013. Geology of the western Mesoproterozoic Seal Lake Group, central Labrador (including all of NTS map areas 13L/2 and 7 and parts of 13L/3, 3, 1 and 15). In: 19 and 18/14 and 15). Current Research, Government of Newfoundland and Labrador, Department of Natural Resources, Geological Survey, Report 13-1, pages 301-336.

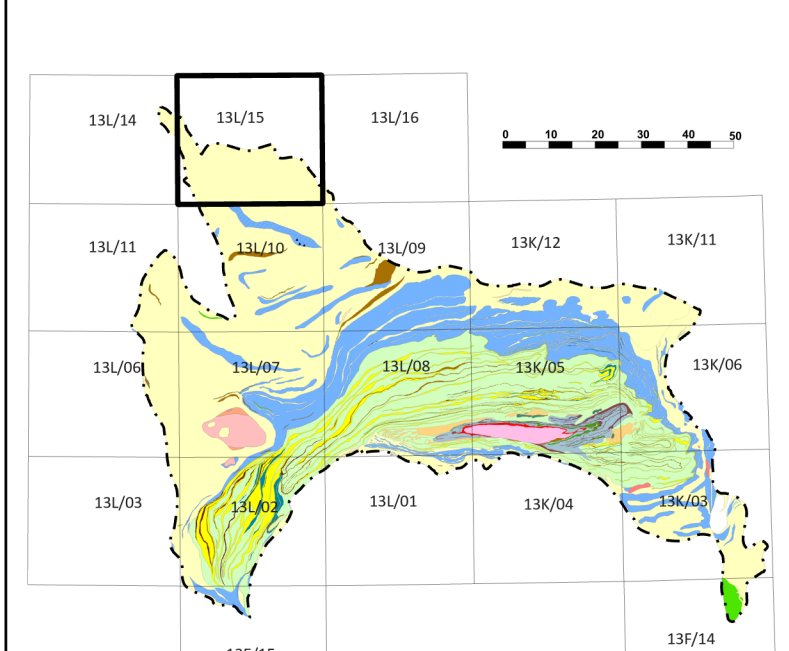
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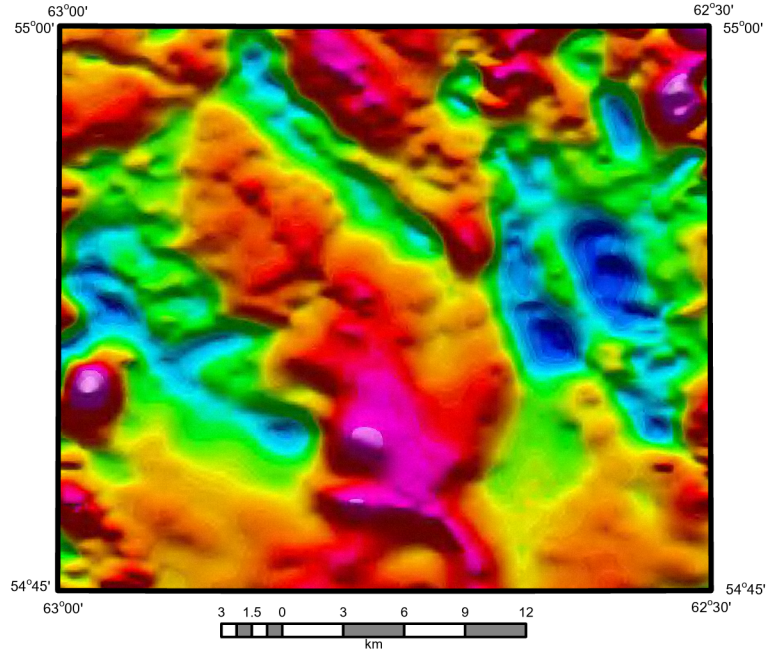
INDEX MAPS



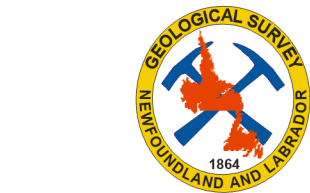
REGIONAL GEOLOGY MAP



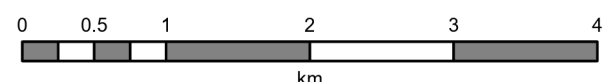
NTS 13L/15 AEROMAGNETIC MAP



NTS 13L/15 Aeromagnetic map, G. Kiril (2008, unpublished map), Geological Survey of Newfoundland and Labrador, using Geological Survey of Canada data.
Red end of spectrum indicate magnetic highs. Blue end of spectrum indicate magnetic lows.



Map 2023-32
GEOLOGY OF THE
NTS 13L/15 MAP AREA
Central Labrador
OPEN FILE 13L/15/0162
Scale 1:50 000



LEGEND

MIDDLE MESOPROTEROZOIC

Seal Lake Group (1270-1225 Ma)

Upper Red Quartzite Formation

Muq

Red- to pink-weathering, fine- to medium-grained, well-sorted quartz arenite, arenite, and felsophic arenite. Contains local, cm- to m-scale lenses, and layers of fine-grained slate and siltstone, particularly in the lower levels of the formation.

Fire-weathered, maroon-weathering slate and siltstone. Occur as cm- to 10s of m-thick layers and lenses interbedded with quartzite and arenite near the base of the formation.

Adeline Island Formation

Upper Member

Maroon- to red-weathering, fine-grained shale, locally gabbro to slate.

Grey- to green-weathering, fine-grained slate.

Grey- to green-weathering, fine-grained slate, locally gradational to phyllite.

Red- to purple-weathering slate.

Grey-weathering, fine-grained sandy shale to slate.

Maroon- to purple-weathering, fine-grained slate.

Grey, shaly- to green-weathering, fine-grained slate, gradational to phyllite. This unit exhibits a distinctive 'valve-grip' shaly' and hosts most of the copper sulfide mineralization within the Seal Lake Group.

Maroon- to purple-weathering, fine-grained slate.

Lower Member

Pink- to red- to locally white-weathering variably recrystallized quartz arenite to arenite. This unit also contains local, thin layers and lenses of slate.

Muq

Maroon- to red-weathering, fine-grained slate. Basal unit of the Adeline Island Formation is locally intercalated with layers and lenses of fine-grained quartz arenite.

Salmon Lake Formation

Muq

Green- to brown-weathering, fine-grained, massive amygdaloidal basalt flows. Flows are 1- to 5-m thick, and intercalated with sedimentary units.

Whiskey Lake Formation

Muq

Maroon- to red-weathering, fine-grained slate. Locally contains thin, fine-grained interbedded siltstone and quartz arenite.

Grey- to green-weathering, fine-grained phyllite to slate.

Grey- to brown-weathering, fine-grained limestone with rare stromatolite layers. Also occurs as thin lenses and layers interbedded with other sedimentary rock units.

Pink- to grey-weathering, fine- to medium-grained variably recrystallized quartz arenite to arenite.

Green- to brown-weathering, fine- to medium-grained, moderate to strongly foliated, massive and amygdaloidal basalt flows.

Green- to brown- to grey-weathering, fine- to medium-grained ophitic to equigranular gabbro. Occurs as tabular-shaped sills and small, irregular intrusions.

Wachuk Lake Formation

Muq

Brown- to maroon- to red-weathering, thin-bedded to laminated slate, arenite, siltstone and subordinate calcareous rocks and chert.

Maroon-weathering, thin-bedded to laminated slate. Occurs predominantly as thin lenses and layers.

Wachuk Lake Formation

Muq

Profoundly pink- to white, grey- to red-weathering variably recrystallized quartz arenite and arenite occurring as layers of variable thickness interbedded with gabbro sills and basalt flows. Contains cm- and m-scale lenses of siltstone, mudstone and calcareous rocks.

Black- to tan-weathering, fine-grained, thin-bedded to laminated siltstone. Also contains thin quartz arenite, arenite, chert, and calcareous layers.

Black- to grey-weathering, fine-grained shale interbedded with siltstone and quartz arenite units. Exhibits localized and intermittent elevated radioactive signatures (recorded by scintillometer on outcrop surface).

Black- to grey-weathering, fine-grained shale, well-bedded to massive limestone. Occurs as m to 10s of m-scale layers and beds interbedded with other sedimentary rock units.

Green-grey, brown- to red-weathering, fine- to medium-grained calcic-silicic-silicic-magnetite basalt. Textures range from homogeneous, massive, amygdaloidal, vesicular and porphyritic. May contain intercalated layers of volcanic tuffaceous rocks, sedimentary rocks and gabbro.

Brown- to grey-weathering volcaniclastic tuff containing 5-15% felsic clasts. Occurs as less than 25 m-thick layers intercalated with fine-grained basalt sills. Locally records elevated radioactivity signatures.

Green- to grey-brown, to rusty-weathering, fine- to medium-grained, massive to strongly foliated ophitic gabbro. Rocks are disposed as tabular-shaped sills. Contains local scurocristalline and leucocrystine zones. Some sills may consist of composite intrusions.

Maguash and Bessie Lake formations (stratigraphically equivalent formations)

Muq

Brown- to maroon-weathering, fine-grained slate. Locally interbedded with quartz arenite, arenite and siltstone layers.

Brown- to tan-weathering, fine-grained, thin-bedded to laminated siltstone. Unit contains m- and 10s of m-scale, layers of quartz arenite, arenite and minor lime-bearing agglauous rocks.

White, pink- to red-green- to grey-weathering, fine- to coarse-grained variably recrystallized quartz arenite and arenite. Prominent rock within the basal stratigraphic formation containing abundant cm- to 10s of m-scale interbedded layers of siltstone, mudstone, shale and minor calcareous rocks.

White, pink- to red- to grey-weathering, medium- to coarse-grained granule- pebble- and cobble-bearing arenaceous conglomerate.

White- to grey-weathering, fine- to medium-grained, strongly foliated and recrystallized quartz arenite schist, derived from quartz arenite and arenaceous conglomerate. Contains quartz-alkali-feldspar-senecite-muscovite-magnetite.

Green-grey, brown- to red-weathering, fine- to medium-grained gabbro-silicic-silicic-magnetite basalt. May contain intercalated layers of volcanic tuffaceous rocks, sedimentary rocks and gabbro (as thin sills).

Green-grey, to brown-weathering, fine- to medium-grained, calcic-silicic-silicic-magnetite basalt. Locally exhibits a diffuse layering that may include volcaniclastic breccia and intrusive breccia. May also include fire-weathered, homogeneous basalt flows and sedimentary rocks.

Green-grey, to brown-weathering, medium-grained, volcanic and intrusive breccia. Occurs as localized layers within thick sequences of basalt flows. Contains clasts and fragments of basalt, volcaniclastic rocks, gabbro and sedimentary rocks in basaltic and gabbroic matrices.

Green- to grey-weathering, fine-grained, very strongly deformed basalt, metamorphosed to mylonitic-clastic schist. Occurs as thin zones adjacent to north and northeast-sinking thrust fault.

Green- to grey-weathering, fine- to medium-grained, massive, ophitic-textured basalt. Occurs as rare, less than 100 m thick sills intruding quartz arenite and arenite and basalt flows.

Harp Dykes (1271 ± 1 Ma)

Muq

Northeast-sloping, olivine diabase dykes intrude orthogneiss and related rocks of the Harp Lake Intrusive Suite.

Letitia Lake Group (ca. 1327 Ma)

Muq

Fine- to medium-grained, black- to grey-weathering, strongly foliated and lineated hornblende-bearing, mafic-rich schist or volcanic tuff. Interpreted as an uppermost layer of Letitia Lake Group in unconformable contact with quartz-arenite schist at the base of the Seal Lake Group.

Well-banded and complexly foliated felsic volcanic rocks, volcanic derived sedimentary rocks of the Letitia Lake Group may include quartz-feldspar-rich sedimentary rocks of the country rock Seal Lake Group.

White, buff- to grey-weathering, weakly foliated to gneissic, medium-grained, recrystallized phyllite porphyry to trachyte and syenitic tuffs. Locally intercalated with undeformed felsic volcanic rocks.

Red Wine Complex (ca. 1337 Ma)

Muq

Quant calcareous series.

Medium-grained, moderate to strongly foliated mafic to intermediate peralkaline granitoid intrusions. Includes granite, quartz arenite, alkali-feldspar granite and alkali-feldspar quartz arenite.

Quant undeformed series.

Muq

Alkali syenite and melanocratic equivalents.

EARLY MESOPROTEROZOIC

Harp Lake Intrusive Suite (ca. 1490 Ma)

Muq

Grey- to grey-white-weathering, medium- to coarse-grained, massive to layered, orthopyroxene-magnetite-ilmenite-senecite orthogneiss, gabbro and leucocrystalline. The predominant rock type mapped proximal to the unconformity with Seal Lake Group rocks is massive orthogneiss, with zones of weakly foliated.

Light brown- to rusty-weathering, medium- to coarse-grained, massive biotite-hornblende granite, locally gradational to quartz monzonite.

LATE PALEOPROTEROZOIC

LATE LABRADORIAN ROCKS (1600 - 1650 Ma, reworked during Grenvillian Orogeny)

North Pole Brook Intrusive Suite (Trans-Labrador batholith, ca. 1650 Ma)

Muq

White- to pink-weathering, fine- to medium-grained, recrystallized, weakly foliated to mylonitic, K-feldspar porphyry; biotite-hornblende quartz monzonite to granite, locally gradational to granite.

Grey- to green-grey-weathering, medium- to coarse-grained, massive biotite-hornblende quartz diorite to diorite.

Unaugmented intrusions.

Muq

Unaugmented intrusions to gabbro-syenite.

Bruce River Group (ca. 1650 Ma)

Muq

Rhyolite, andesite, trachyandesite and basalt. Occurs as massive to brecciated flows, agglomerate and locally bedded tuffaceous rocks.

Brown Lake Formation

Muq

Volcaniclastic sandstone, tuff, minor conglomerate and arkose.

MIDDLE PALEOPROTEROZOIC

Moran Lake Group (ca. 1800 Ma)

Warren Creek Formation

Grey- to black-weathering mudstone, slate, siltstone and minor limestone, dolomite and chert.

ARCHAEO-PALEOPROTEROZOIC

Southeastern Churchill Province (reworked during Grenvillian Orogeny)

Muq

Undifferentiated foliated gabbro and orthogneiss. May be correlative with rocks of the Seal Lake Intrusive Suite.

Fine- to medium-grained, weak to moderately foliated, biotite-hornblende granite to quartz monzonite.

Medium-grained, weakly foliated, hornblende-biotite quartz diorite to diorite. May be correlative with rocks of the Seal Lake Intrusive Suite.

Medium-grained, weakly to strongly foliated hornblende-biotite monzonite. May be correlative with rocks of the Seal Lake Intrusive Suite.

Seal Lake Intrusive Suite, includes foliated to gneissic quartz, quartz monzonite, granodiorite, quartz diorite and diorite.

Southern Nain and Makkovik provinces

Granodiorite, tonalite orthogneiss and abundant mafic intrusions.

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