

Appendix: British Columbia Geological Survey publications and peer-reviewed journal papers authored by BCGS staff and released in 2020

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Papers

Paper 2020-01

Geological fieldwork 2019, a summary of field activities and current research, 205 p.

Ferri, F., Jones, L.D., Clarke, G., and Hickin, A.S., 2020. British Columbia Geological Survey annual program review 2019-2020. In: Geological Fieldwork 2019, Ministry of Energy, Mines and Petroleum Resources, British Columbia Geological Survey Paper 2020-01, pp. 1-12.

Schiarizza, P., Monger, J.W.H., Friedman, R.M., and Northcote, B., 2020. Detrital zircons from the Gun Lake unit, Gold Bridge area, southwestern British Columbia. In: Geological Fieldwork 2019, British Columbia Ministry of Energy, Mines and Petroleum Resources, British Columbia Geological Survey Paper 2020-01, pp. 13-24.

Ootes, L., Bergen, A.L., Milidragovic, D., Jones, G.O., Camacho, A., and Friedman, R., 2020. An update on the geology of northern Hogem batholith and its surroundings, north-central British Columbia. In: Geological Fieldwork 2019, British Columbia Ministry of Energy, Mines and Petroleum Resources, British Columbia Geological Survey Paper 2020-01, pp. 25-47.

Steinthorsdottir, K., Cutts, J., Dipple, G., Milidragovic, D., and Jones, F., 2020. Origin and serpentinization of ultramafic rocks in dismembered ophiolite north of Trembleur Lake, central British Columbia. In: Geological Fieldwork 2019, British Columbia Ministry of Energy, Mines and Petroleum Resources, British Columbia Geological Survey Paper 2020-01, pp. 49-58.

Nott, J., Milidragovic, D., Nixon, G.T., and Scoates, J.S., 2020. New geological investigations of the Early Jurassic Polaris ultramafic-mafic Alaskan-type intrusion, north-central British Columbia. In: Geological Fieldwork 2019, British Columbia Ministry of Energy, Mines and Petroleum Resources, British Columbia Geological Survey Paper 2020-01, pp. 59-76.

Miller, E.A., Kennedy, L.A., and van Straaten, B.I., 2020. Geology of the Kinskuch Lake area and Big Bulk porphyry prospect, northwestern British Columbia: Syndepositional faulting and basin formation during the Rhaetian (latest Triassic) transition from the Stuhini to the Hazelton Group. In: Geological Fieldwork 2019, British Columbia Ministry of Energy, Mines and Petroleum Resources, British Columbia Geological Survey Paper 2020-01, pp. 77-99.

Hunter, R.C., and van Straaten, B.I., 2020. Preliminary stratigraphy and geochronology of the Hazelton Group, Kitsault River area, Stikine terrane, northwest British Columbia. In: Geological Fieldwork 2019, British Columbia Ministry of Energy, Mines and Petroleum Resources, British Columbia Geological Survey Paper 2020-01, pp. 101-118.

Nixon, G.T., Friedman, R.M., and Creaser, R.A., 2020. Late Neogene porphyry Cu-Mo($\pm$ Au-Ag) mineralization in British Columbia: the Klaskish Plutonic Suite, northern Vancouver Island. In: Geological Fieldwork 2019, British Columbia Ministry of Energy, Mines and Petroleum Resources, British Columbia Geological Survey Paper 2020-01, pp. 119-132.

Rukhlov, A.S., Fortin, G., Kaplenkov, G.N., Lett, R.E., Lai, V.W.-M., and Weis, D., 2020. Multi-media geochemical and Pb isotopic evaluation of modern drainages on Vancouver Island. In: Geological Fieldwork 2019, British Columbia Ministry of Energy, Mines and Petroleum Resources, British Columbia Geological Survey Paper 2020-01, pp. 133-167.

Shewchuk, C., Ferbey, T., and Lian, O.B., 2020. Detecting porphyry Cu-Mo mineralization using major oxides and pathfinder elements in subglacial till, Highland Valley mine area, south-central British Columbia. In: Geological Fieldwork 2019, British Columbia Ministry of Energy, Mines and Petroleum Resources, British Columbia Geological Survey Paper 2020-01, pp. 169-187.

Elia, E.A., and Ferbey, T., 2020. Generating photogrammetric DEMs in the field from remotely piloted aircraft systems. In: Geological Fieldwork 2019, British Columbia Ministry of Energy, Mines and Petroleum Resources, British Columbia Geological Survey Paper 2020-01, pp. 189-200.

Appendix: British Columbia Geological Survey publications and peer-reviewed journal papers authored by BCGS staff and released in 2019, pp. 201-205.

Geoscience Map

GM 2020-01

Mihalynuk, M.G., and Diakow, L.J., 2020. Southern Nicola arc geology. British Columbia Ministry of Energy, Mines and Low Carbon Innovation, British Columbia Geological Survey Geoscience Map 2020-01, 1:50,000 scale, two sheets.

Open Files

OF 2020-01

Clarke, G., Northcote, B., Katay, F., and Tombe, S.P., 2020. Mines, mine development, selected proposed mines, and selected exploration projects in British Columbia, 2019. British Columbia Ministry of Energy, Mines and Petroleum Resources, British Columbia Geological Survey Open File 2020-01.

OF 2020-02

Ootes, L., Bergen, A.L., Milidragovic, D., and Jones, G.O., 2020. Preliminary geology of the northern Hogem batholith and its surroundings, north-central British Columbia. British Columbia Ministry of Energy, Mines and Petroleum Resources, British Columbia Geological Survey Open File 2020-02, 1:50,000 scale.

OF 2020-03

Arnold, H., and Ferbey, T., 2020. Ice-flow indicator database, British Columbia and Yukon. British Columbia Ministry of Energy, Mines and Petroleum Resources, British Columbia Geological Survey Open File 2020-03, 1 p.

OF 2020-04

Nott, J., Milidragovic, D., Nixon, G.T., and Scoates, J.S., 2020. Geology of the Polaris ultramafic-mafic Alaskan-type intrusion, north-central British Columbia. British Columbia Ministry of Energy, Mines and Petroleum Resources, British Columbia Geological Survey Open File 2020-04, 1:15,000 scale.

GeoFiles

GF 2020-01

Ootes, L., Jones, G.O., Schiarizza, P., Milidragovic, D., Friedman, R., Camacho, A., Luo, Y., Vezinet, A., Pearson, D.G., and Zhang, S., 2020. Geochronologic and geochemical data from northern Hogem batholith and its surroundings, north-central British Columbia. British Columbia Ministry of Energy, Mines and Low Carbon Innovation, British Columbia Geological Survey GeoFile 2020-01, 21 p.

GF 2020-02

Han, T., and Rukhlov, A.S., 2020. Update of rock geochemical database at the British Columbia Geological Survey. British Columbia Ministry of Energy, Mines and Petroleum Resources, British Columbia Geological Survey GeoFile 2020-02, 4 p.

GF 2020-03

Nixon, G.T., Friedman, R.M., and Creaser, R.A., 2020. A new metalotect: Late Neogene porphyry Cu-Mo mineralization in British Columbia. British Columbia Ministry of Energy, Mines and Petroleum Resources, British Columbia Geological Survey GeoFile 2020-03 (poster).

GF 2020-04

Rukhlov, A.S., Fortin, G., Kaplenkov, G.N., Lett, R.E., Lai, V.W.-M., and Weis, D., 2020. Catching the tail of a golden dragon plus 60 elements in British Columbia. British Columbia Ministry of Energy, Mines and Petroleum Resources, British Columbia Geological Survey GeoFile 2020-04 (poster).

GF 2020-05

Simandl, G.J., D'Souza, R.J., Paradis, S., Spence, J., and Fitz-Gerald, W., 2020. REE in carbonates from sediment-hosted Pb-Zn deposits, southern Rocky Mountains, BC. British Columbia Ministry of Energy, Mines and Petroleum Resources, British Columbia Geological Survey GeoFile 2020-05 (poster).

GF 2020-06

Riddell, J., 2020. Evaluation of coal ash chemistry indices for predicting CSR (coke strength after reaction with CO₂) for coking coals of the Rocky Mountains, British Columbia. British Columbia Ministry of Energy, Mines and Petroleum Resources, British Columbia Geological Survey GeoFile 2020-06, 18 p.

GF 2020-07

Paradis, S., Simandl, G.J., Drage, N., D'Souza, R.J., Kontak, D.J., and Waller, Z., 2020. Paleozoic carbonate-hosted deposits of the southern Rocky Mountains: A comparison. British Columbia Ministry of Energy, Mines and Petroleum Resources, British Columbia Geological Survey GeoFile 2020-07 (poster).

GF 2020-08

Han, T., and Rukhlov, A.S., 2020. Update of the provincial Regional Geochemical Survey (RGS) database at the British Columbia Geological Survey. British Columbia Ministry of Energy, Mines and Petroleum Resources, British Columbia Geological Survey GeoFile 2020-08, 3 p.

GF 2020-09

Riddell, J., and Northcote, B., 2020. Table of British Columbia coal resources, 2020. British Columbia Ministry of Energy, Mines and Petroleum Resources, British Columbia Geological Survey GeoFile 2020-09, 1 p.

GF 2020-10

Han, T., Ootes, L., and Yun, K., 2020. The British Columbia Geological Survey geochronologic database: Preliminary release of ages. British Columbia Ministry of Energy, Mines and Low Carbon Innovation, British Columbia Geological Survey GeoFile 2020-10, 4 p.

GF 2020-11

Lefebvre, D.V., and Jones, L.D., (compilers) 2020. British Columbia Geological Survey mineral deposit profiles, 1995 to 2012. British Columbia Ministry of Energy, Mines and Low Carbon Innovation, British Columbia Geological Survey GeoFile 2020-11, 580 p.

GF 2020-12

Friedman, R.M., Mihalynuk, M.G., and Diakow, L.J., 2020. Geochronologic data from samples collected near Pothole Lake and Pennask Mountain (NTS 92H/15, 16) as part of the Southern Nicola Arc Project. British Columbia Ministry of Energy, Mines and Low Carbon Innovation, British Columbia Geological Survey GeoFile 2020-12, 6 p.

GF 2020-13

Rukhlov, A.S., Ootes, L., Hickin, A.S., and Mashyanov, N.R., 2020. Supplementary data for near-surface mercury vapour haloes in air above ore deposits and faults on Vancouver Island: Insights into buried materials in real-time? British Columbia Ministry of Energy, Mines and Low Carbon Innovation, British Columbia Geological Survey GeoFile 2020-13, 1 p.

Information Circulars

IC 2020-01

Provincial Overview of Exploration and Mining in British Columbia, 2019. British Columbia Ministry of Energy, Mines and Petroleum Resources, British Columbia Geological Survey, Information Circular 2020-01, 132 p.

Clarke, G., Northcote, B., Katay, F., and Tombe, S.P., 2020. Exploration and Mining in British Columbia, 2019: A summary. In: Provincial Overview of Exploration and Mining in British Columbia, 2019. British Columbia Ministry of Energy, Mines and Petroleum Resources, British Columbia Geological Survey, Information Circular 2020-01, pp. 1-40.

Tombe, S.P., 2020. Exploration and mining in the Northwest Region, British Columbia. In: Provincial Overview of Exploration and Mining in British Columbia, 2019. British Columbia Ministry of Energy, Mines and Petroleum Resources, British Columbia Geological Survey, Information Circular 2020-01, pp. 41-58.

Northcote, B., 2020. Exploration and mining in the South Central Region, British Columbia. In: Provincial Overview of Exploration and Mining in British Columbia, 2019. British Columbia Ministry of Energy, Mines and Petroleum Resources, British Columbia Geological Survey, Information Circular 2020-01, pp. 75-94.

Katay, F., 2020. Exploration and mining in the Southeast Region, British Columbia. In: Provincial Overview of Exploration and Mining in British Columbia, 2019. British Columbia Ministry of Energy, Mines and Petroleum Resources, British Columbia Geological Survey, Information Circular 2020-01, pp. 95-112.

Northcote, B., 2020. Exploration and mining in the Southwest Region, British Columbia. In: Provincial Overview of Exploration and Mining in British Columbia, 2019. British Columbia Ministry of Energy, Mines and Petroleum Resources, British Columbia Geological Survey, Information Circular 2020-01, pp. 113-126.

IC 2020-02

British Columbia Geological Survey, 2020. British Columbia coal industry overview 2019. British Columbia Ministry of Energy, Mines and Petroleum Resources, British Columbia Geological Survey Information Circular 2020-02, 13 p.

IC 2020-03

British Columbia Geological Survey, 2020. British Columbia Geological Survey. British Columbia Ministry of Energy, Mines and Petroleum Resources, British Columbia Geological Survey Information Circular 2020-03, 14 p. (brochure)

IC 2020-04

British Columbia Geological Survey, 2020. Mineral Development Office. British Columbia Ministry of Energy, Mines and Petroleum Resources, British Columbia Geological Survey Information Circular 2020-04, 4 p. (brochure)

IC 2020-05

British Columbia Geological Survey, 2020. Online databases at the British Columbia Geological Survey. British Columbia Ministry of Energy, Mines and Petroleum Resources, British Columbia Geological Survey Information Circular 2020-05, 14 p. (brochure)

IC 2020-06

British Columbia Geological Survey, 2020. The Golden Triangle of northwestern British Columbia. British Columbia Ministry of Energy, Mines and Petroleum Resources, British Columbia Geological Survey Information Circular 2020-06, 6 p.

Peer-reviewed journal and volume publications

Clennett, E.J., Sigloch, K., Mihalynuk, M.G., Seton, M., Henderson, M.A., Hosseini, K., Mohammadzahari, A., Johnston, S.T., and Müller, R.D., 2020. A quantitative tomotectonic plate reconstruction of western North America and the eastern Pacific basin. *Geochemistry, Geophysics, Geosystems*, 20, e2020GC009117. <https://doi.org/10.1029/2020GC009117>.

Lang, J.R., Roberts, K., Galicki, M., van Straaten, B.I., and Bui, P.V., 2020. Magmatic, hydrothermal, and structural features of the Gnat Pass porphyry copper deposit, British Columbia. In: Sharman, E.R., Lang, J.R., and Chapman, J.B., (Eds.), *Porphyry Deposits of the Northwestern Cordillera of North America: A 25-Year Update*. Canadian Institute of Mining and Metallurgy Special Volume 57, pp. 324-340.

Logan, J.M., Schiarizza, P., and Devine, F., 2020. Geology, structural setting, and porphyry deposits of the Hogem batholith, northeast British Columbia. In: Sharman, E.R., Lang, J.R., and Chapman, J.B., (Eds.), *Porphyry Deposits of the Northwestern Cordillera of North America: A 25-Year Update*. Canadian Institute of Mining and Metallurgy Special Volume 57, pp. 212-227.

Nelson, J.L., and van Straaten, B., 2020. Recurrent syn- to post-subduction mineralization along deep crustal corridors in the Iskut-Stewart-Kitsault region of western Stikinia, northwestern British Columbia. In: Sharman, E.R., Lang, J.R., and Chapman, J.B., (Eds.), *Porphyry Deposits of the Northwestern Cordillera of North America: A 25-Year Update*. Canadian Institute of Mining and Metallurgy Special Volume 57, pp. 194-211.

Nixon, G.T., Scheel, J.E., Scoates, J.S., Friedman, R.M., Wall, C.J., Gabites, J., and Jackson-Brown, S., 2020. Syn-accretionary multistage assembly of an Early Jurassic Alaskan-type intrusion in the Canadian Cordillera: U-Pb and $^{40}\text{Ar}/^{39}\text{Ar}$ geochronology of the Turnagain ultramafic-mafic intrusive complex, Yukon-Tanana terrane. *Canadian Journal of Earth Sciences*, 57, 575-600. <https://doi.org/10.1139/cjes-2019-0121>.

Ootes, L., Sandeman, H., Cousens, B.L., Luo, Y., Pearson, D.G., and Jackson, V.A., 2020. Pyroxenitic magma conduits (ca. 1.86 Ga) in Wopmay orogen and Slave craton: Petrogenetic constraints from whole rock and mineral chemistry. *Lithos*, article 105220. <https://doi.org/10.1016/j.lithos.2019.105220>.

Paradis, S., Hnatyshin, D., Simandl, G.J., and Creaser, R.A., 2020. Re-Os pyrite geochronology of the Yellowhead-type mineralization, Pend Oreille mine, Kootenay arc, Metaline district, Washington. *Economic Geology*, 115, 1373-1384. <https://doi.org/10.5382/econgeo.4720>.

van Straaten, B.I., Mostaghimi, N., Kennedy, L., Gallagher, C., Schiarizza, P., and Smith, S., 2020. The deformed Gibraltar porphyry copper-molybdenum deposit, south-central British Columbia, Canada. In: Sharman, E.R., Lang, J.R., and Chapman, J.B., (Eds.), *Porphyry Deposits of the Northwestern Cordillera of North America: A 25-Year Update*. Canadian Institute of Mining and Metallurgy Special Volume 57, pp. 547-567.

Contributions to partner publications

Bouzari, F., Lee, R.G., Hart, C.J.R., and van Straaten, B.I., 2020. Porphyry vectoring within advanced argillic-altered rocks of British Columbia. In: *Geoscience BC Summary of Activities 2019: Minerals*. Geoscience BC Report 2020-01, pp. 115-130.

Castonguay, S., Ootes, L., Devine, F., and Friedman, R., 2020. Superimposed Late Cretaceous and earliest Eocene gold mineralization and deformation events along the Llewellyn-Tally Ho deformation corridor in northwest British Columbia and southern Yukon. In: Mercier-Langevin, P., Lawley, C.J.M., and Castonguay, S., (Eds.), *Targeted Geoscience Initiative 5: Contributions to the Understanding of Canadian Gold Systems*. Geological Survey of Canada Open File 8712, pp. 223-236. <https://doi.org/10.4095/326039>.

Cutts, J.A., Dipple, G.M., Hart, C.J.R., and Milidragovic, D., 2020. Assessment of the carbon mineralization potential of British Columbia by quantifying the response of physical properties to the alteration of ultramafic rocks (NTS 092H/08, 10, 093K/13, 14, 094C/05, 104I/01-16, 104N/01-16). In: *Geoscience BC Summary of Activities 2019: Minerals*. Geoscience BC Report 2020-01, pp. 137-144.

Lett, R.E., Sacco, D.A., Elder, B., and Jackaman, W., 2020. Real-time detection of bedrock mineralization and geological faults beneath glacial deposits in central British Columbia using onsite soil gas carbon dioxide and oxygen analysis by electronic gas sensors (NTS 093A/58, 093G/03). In: *Geoscience BC Summary of Activities 2019: Minerals*. Geoscience BC, Report 2020-01, pp. 93-100.

Nixon, G.T., Scoates, J.S., Milidragovic, D., Nott, J., Moerhuis, N., Ver Hoeve, T.J., Manor, M.J., and Kjarsgaard, I.M., 2020. Convergent margin Ni-Cu-PGE-Cr ore systems: U-Pb petrochronology and environments of Cu-PGE vs. Cr-PGE mineralization in Alaskan-type intrusions. In: Bleeker, W., Houlé, M.G., (Eds.), *Targeted Geoscience Initiative 5: Advances in the understanding of Canadian Ni-Cu-PGE and Cr ore systems-Examples from the Midcontinent Rift, the Circum-Superior Belt, the Archean Superior Province, and Cordilleran Alaskan-type intrusions*. Geological Survey of Canada Open File 8722, pp. 197-218.

Zagorevski, A., van Staal, C.R., Bédard, J.H., Bogatu, A., Canil, D., Coleman, M., Golding, M., Joyce, N., Lawley, C., McGoldrick, S., Mihalynuk, M., Milidragovic, D., Parsons, A., and Schiarizza, P., 2020. Paper 1: Overview of Cordilleran oceanic terranes and their significance for the tectonic evolution of the northern Cordillera. *Geological Survey of Canada Bulletin* 610, in press.

Database updates

Cui, Y., Miller, D., Schiarizza, P., and Diakow, L.J., 2017. British Columbia digital geology. British Columbia Ministry of Energy, Mines and Petroleum Resources, British Columbia Geological Survey Open File 2017-8, 9 p. Current version 2019-12-19. <https://www2.gov.bc.ca/gov/content/industry/mineral-exploration-mining/british-columbia-geological-survey/geology/bcdigitalgeology>.

Norris, J., and Fortin, G., 2019. Assessment report-sourced surface sediment geochemical database: Development and initial data release from the Interior Plateau. British Columbia Ministry of Energy, Mines and Petroleum Resources, British Columbia Geological Survey GeoFile 2019-04, 9 p., current version 2020-05-15.
<https://www2.gov.bc.ca/gov/content/industry/mineral-exploration-mining/british-columbia-geological-survey/geology/assessment-report-surface-sediment-geochemistry>.

Arnold, H., and Ferbey, T., 2019. British Columbia surficial geology map index. British Columbia Ministry of Energy, Mines and Petroleum Resources, British Columbia Geological Survey Open File 2019-03, current version 2020-01.
<https://www2.gov.bc.ca/gov/content?id=9C6C634A04184AEFA75EC2816764EF9D#OF2019-03>.

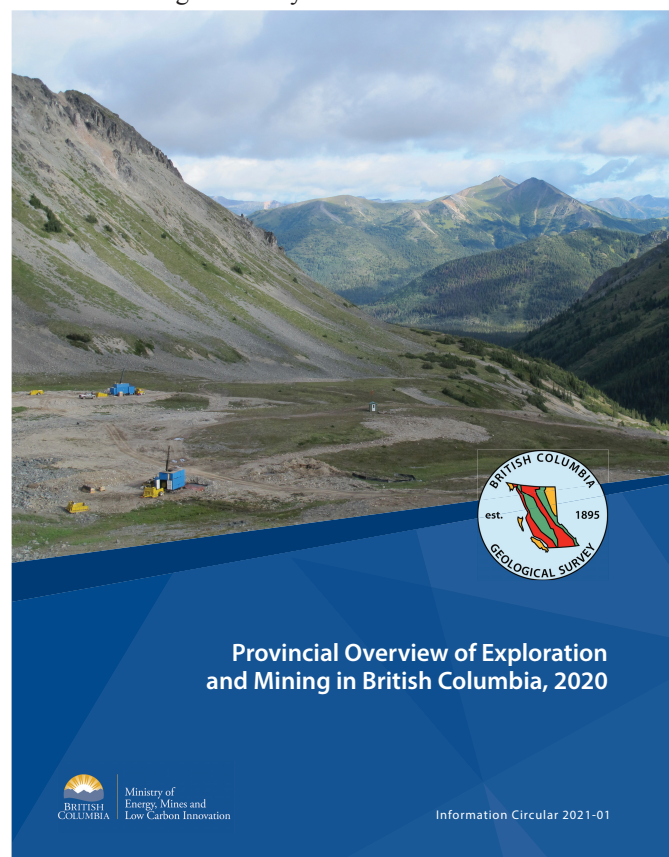
Bustard, A.L., Ferbey, T., and Arnold, H., 2019. Regional- to property-scale till geochemical and mineralogical surveys in British Columbia for base and precious metals. British Columbia Ministry of Energy, Mines and Petroleum Resources, British Columbia Geological Survey Open File 2019-04, current version 2020-01.
<https://www2.gov.bc.ca/gov/content?id=9C6C634A04184AEFA75EC2816764EF9D#OF2019-04>.

Lithochem database, version 2020-01-20.
<https://www2.gov.bc.ca/gov/content/industry/mineral-exploration-mining/british-columbia-geological-survey/publications/digital-geoscience-data#Litho>.

Assessment Report Indexing System (ARIS) database, updated regularly.
<https://www2.gov.bc.ca/gov/content/industry/mineral-exploration-mining/british-columbia-geological-survey/assessmentreports>.

MINFILE, updated regularly.
<https://www2.gov.bc.ca/gov/content/industry/mineral-exploration-mining/british-columbia-geological-survey/mineralinventory>.

Each year, the British Columbia Geological Survey publishes Geological Fieldwork, a Summary of Fieldwork and Current Research (this volume), the Provincial Overview of Mining and Exploration in British Columbia, and the British Columbia Coal Industry Overview. All British Columbia Geological Survey publications can be downloaded, at no cost, from www.BCGeologicalSurvey.ca



Provincial Overview of Mining and Exploration in British Columbia volume, Information Circular 2021-01.



British Columbia Coal Industry Overview volume, Information Circular 2021-02.