Report on samples collected for radiolarian identification, Atlin area, northwest British Columbia

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BRITISH COLUMBIA
Ministry of Mining and Critical Minerals

GeoFile 2025-17

Ministry of Mining and Critical Minerals
Responsible Mining and Competitiveness Division
British Columbia Geological Survey

Recommended citation: Cordey, F., Zagorevski, A., and Mihalynuk, M.G., 2025. Report on samples collected for radiolaria identification, Atlin area, northwest British Columbia. British Columbia Ministry of Mining and Critical Minerals, British Columbia Geological Survey GeoFile 2025-17, 3p.

Front cover:
View to the north of ribbon chert in Lincoln Creek area; Gladys Lake in the background. **Photo by Mitch Mihalynuk.**

Back cover:
Sentinel Mountain looms over a chert-rich section on its spur, southeast of Atlin. Mary Anne Bloodgood (left) and Kim Bellefontaine (right) searching for radiolaria. **Photo by Fabrice Cordey, 1989.**

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Keywords: radiolaria, fossil age, geochronology, ribbon chert, Kedahda Formation, Atlin terrane, Cache Creek terrane, Permian, ophiolite, tectonic accretion, Cordilleran geoscience

Summary

Geofile 2025-17 reports on 18 samples collected in 2024 as part of the joint Federal-Provincial GEM-GeoNorth project. This report builds on results presented in Cordey et al. (2024) from 35 samples that were collected during mapping of the Gladys Lake area in 2023 (Figs. 1, 2; Mihalynuk et al., 2024a) as part of an ongoing topical study in south-central Yukon (Zagorevski et al., 2021). Standard radiolaria extraction and identification were performed at the Université Claude Bernard. Ages could be successfully determined from radiolaria extracted from seven of the 18 samples.

Radiolaria identified from six of the samples are Permian, one is Pennsylvanian. These ages contrast with those reported in Cordey et al. (2024), which are Triassic and Jurassic, and date the Kedahda Formation (as defined in Zagorevski et al., 2021), extending from south of Atlin (Mihalynuk et al., 2003) along strike into southern Yukon (Cordey et al., 1991). The Kedahda Formation comprises a deformed overlap succession on Cache Creek and Atlin terranes, with wacke components containing volcanic fragments apparently derived from adjacent Stikine and/or Quesnel terranes (cf. Zagorevski et al., 2021, Mihalynuk et al., 2024a) and, if so, help to demonstrate proximity of Atlin, Cache Creek, and Quesnel-Stikine terranes by Late Triassic.

Radiolaria were extracted from chert successions that cap voluminous basalt, locally pillowed and intercalated with crinoidal and fusulinid-bearing limestone (Mississippian to Middle Permian; Fig. 2). Basalts range from BAB and MORB, to OIB upsection. These late Paleozoic, predominantly basalt sections are bounded by highly disrupted and locally mylonitic domains.

In this release (BCGS_GF2025-17.zip): Appendix 1 contains fossil identification data in Excel format, including from samples that did not yield results; Appendix 2 contains the same data in a tab-delimited format; Appendix 3 contains a Manifold® v9 project file with georeferenced fossil locations reported here and in Cordey et al (2024); Appendix 4 contains Google Earth kml format files; Appendix 5 contains a geodatabase suitable for import into spatial SQL; and Appendix 6 contains a shp file package.

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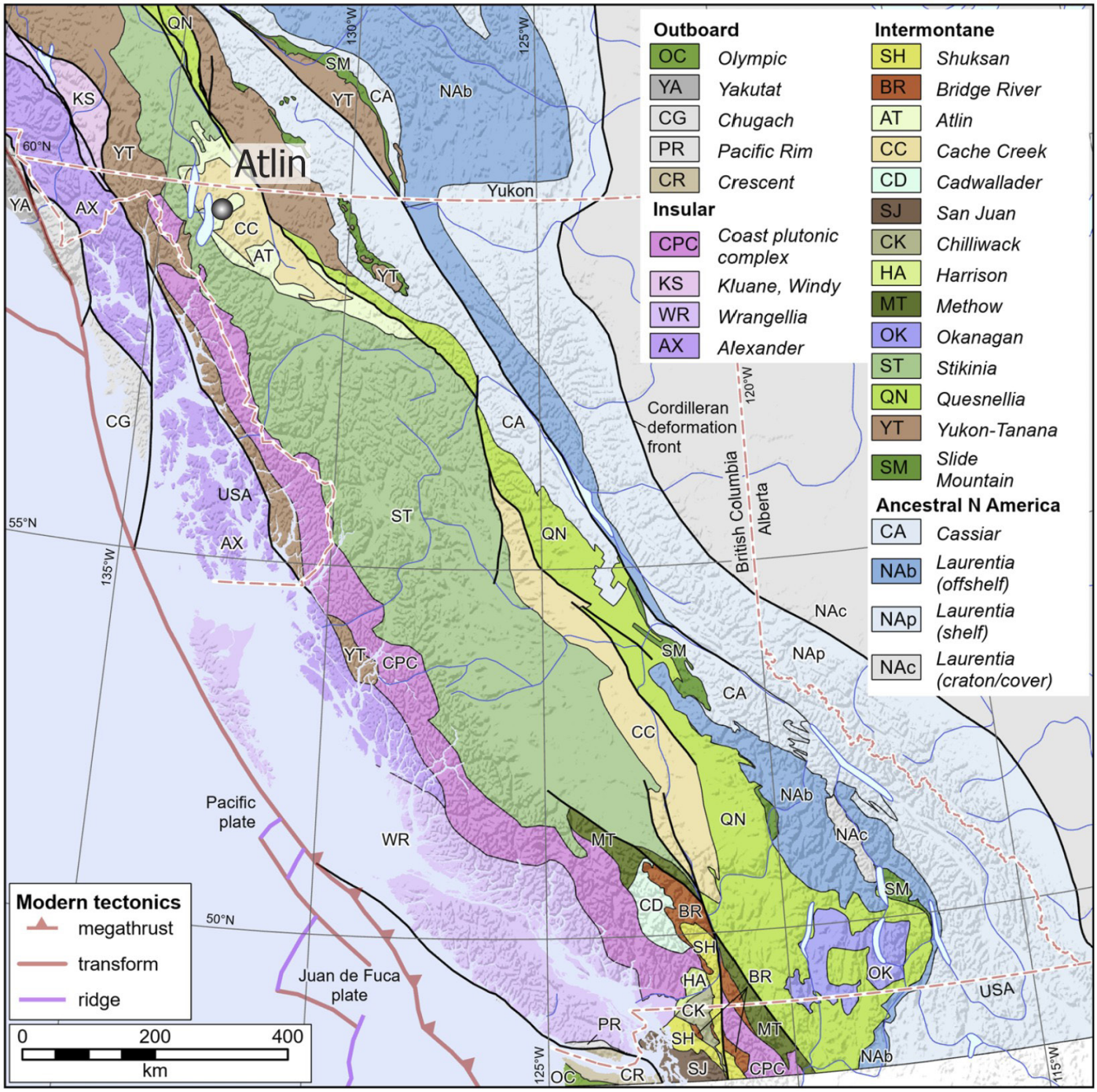

Fig. 1. Location of study area. Terranes after Wheeler et al. (1991), Colpron and Nelson (2011), Zagorevski et al. (2021). Modified from Colpron (2020).

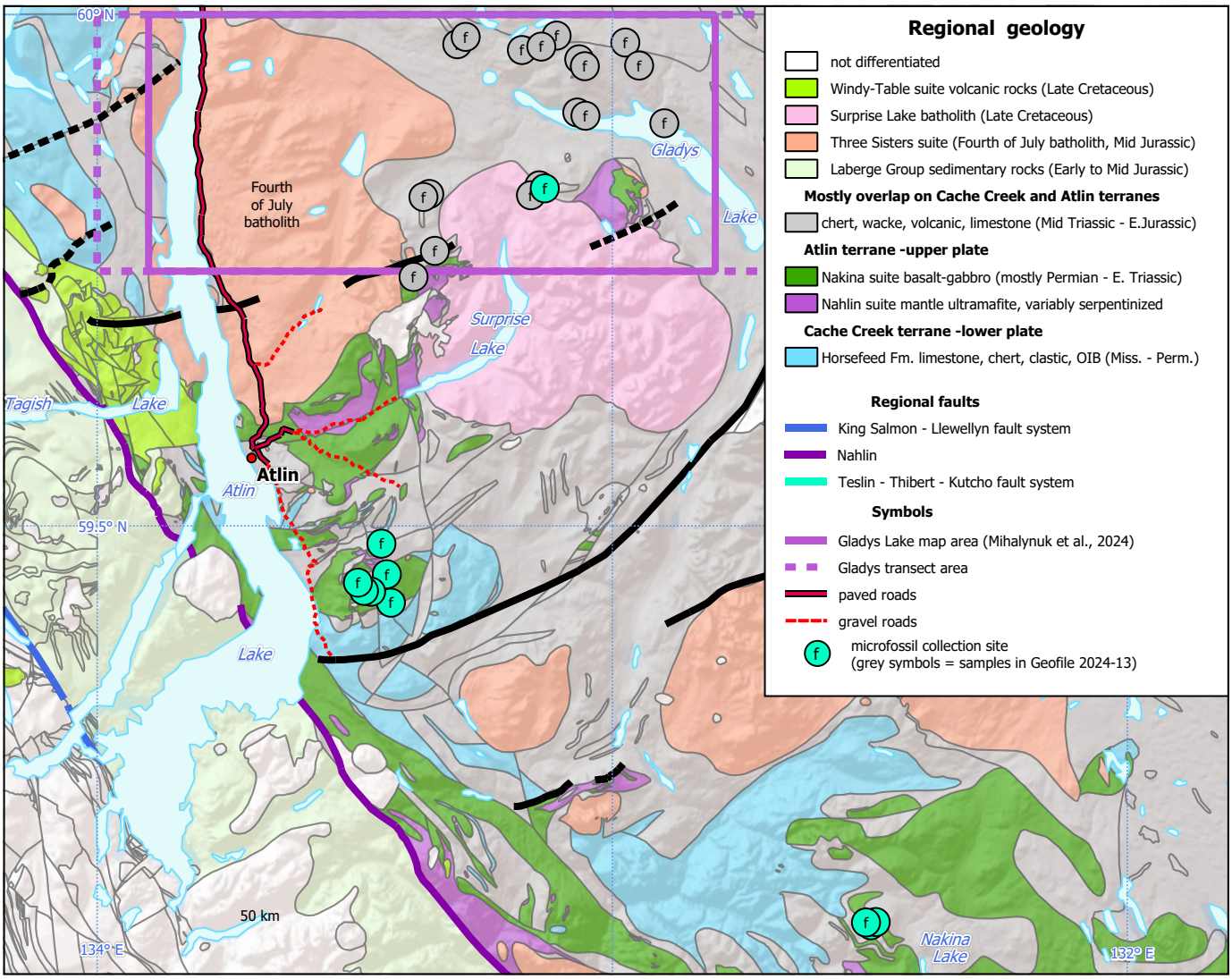

Fig. 2. Regional geological setting (modified after Cui et al., 2017; Mihalynuk et al., 2017 and Cordey et al., 2024) of the radiolaria sample sites reported here (green symbols) and in Cordey et al. (2024, grey symbols). GEM GeoNorth Gladys mapping project area is shown for reference (see Mihalynuk et al., 2024a, b, for a geological overview).

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