


Bedrock Geology, Devil Track Capstone Project

EXPLANATORY TEXT

This map represents a compilation of data taken in the southern half of the lines and Pine Mountain Quadrangles between August 4 and 9, 2014 by a PRC field camp student under the direction of Terrence Boerboom. It is part of a broad scale geologic Survey maps that delineate the geology of Minnesota’s north shore. While the shoreline quadrats are mostly completed, this is one of the first inland sections to be mapped at a detailed scale.

The 247 outcrops were accessed by either using an all terrain vehicle on the trails or trecking areas in the bush by foot. Standardizer center to center azimuth maps were used as a tool to search for outcrops within the bush.

DESCRIPTION OF MAP UNITS

Beaver Bay Complex

Mafic-ultramafic intrusions
- Opalinus shale- Gray, fine to medium-grained, micaceous, platy, principal constituent mica,  with minor calcite, dolomite, quartz, and rare feldspar and pyrite. This unit is generally incongruent with field boundaries and in most cases has a well-defined upper contact, conformable with felsic and mafic volcanic rocks, and is interpreted to be a shallow subsurface body that can be mapped along strike as a mafic-ultramafic unit. The unit is in places intruded by granodiorite dykes and sills.

Duluth Complex

Pine Mountain Granite

a large body of monzonite, mapped by Davidson (1977), and here unit boundaries are refined using aeromagnetic, gravity, landform, and field observations. This unit can be divided into two members: a more massive, elongate pluton divided by a schistose zone, and a more massive, elongate pluton that is divided by a schistose zone.

North Shore Volcanic Group

After talus areas and associated surficial rocks:
- Sandstone-
- Ophitic diabase-
- Ophitic basalt-
- Rhyolite-
- Andesite-
- Pink-altered, rectangular plagioclase phenocrysts. Included within this unit is monomictic, pink-altered, rectangular plagioclase phenocrysts. Amygdules contain quartz, chlorite, actinolite and smectite, and epidote has locally replaced chlorite-altered crystals less than one mm in length. Some of the rhyolite flows also contain variable accessory and alteration minerals, including hornblende, augite, Fe-Ti oxides, and Fe-Mg chlorite.
- Angular-Granite- Gray, fine- to medium-grained, porphyritic, with large proportions of the granite, locally contains sparse, plagioclase phenocrysts, and mafic minerals are variably porphyritic. These rocks have not been mapped locally, but it is probable that a small, narrow, low-lying topographic ridge. This unit closely resembles ophitic diabase sills mapped in the adjacent Grand Marais Quadrangle (Boerboom and Green, 2010).

Bedrock Geology Map of the Granophyre Transition Zone into the North Shore Volcanic Group, Cook County, Minnesota

BEDROCK GEOLOGY MAP OF THE GRANOPHYRE TRANSITION ZONE INTO THE NORTH SHORE VOLCANIC GROUP, COOK COUNTY, MINNESOTA

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Magnetic field changing

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