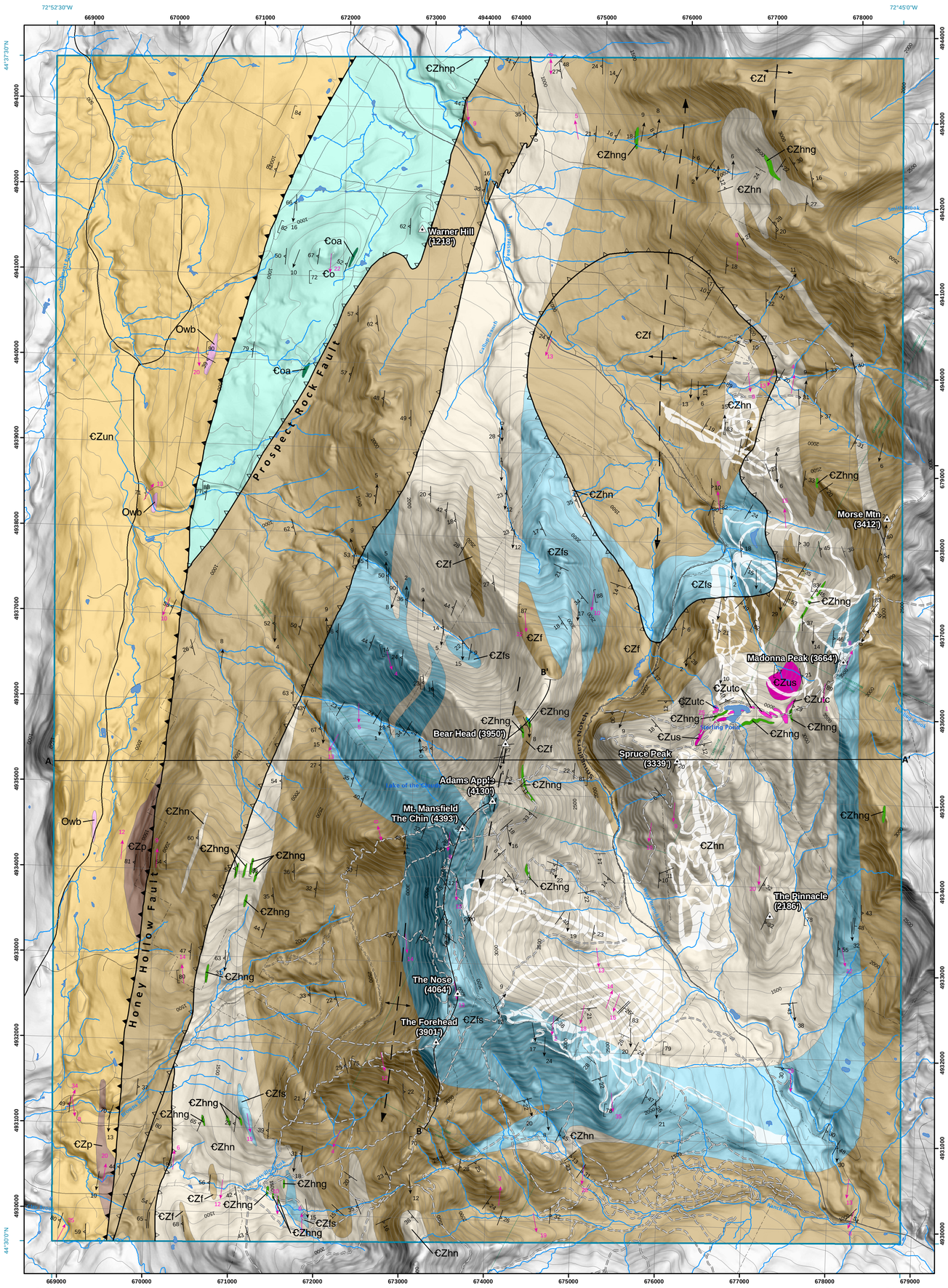
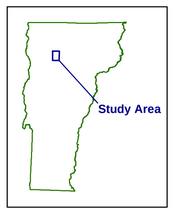


BEDROCK GEOLOGIC MAP OF THE MOUNT MANSFIELD 7.5 MINUTE QUADRANGLE, VERMONT



by
Peter J. Thompson and Thelma B. Thompson

Vermont Geological Survey Open File Report VG2017-2 (supersedes VG99-3)

Digitization and digital cartography: Colin Dowey, Laura Cadmus, David Dreher, and Thomas Merryfield. 1:24,000 Contour Interval = 100 ft

Kilometers 0 0.25 0.5 1

Miles 0 0.25 0.5 1

14.5° Magnetic North — True North

DESCRIPTION OF MAP UNITS

West Bridgewater Formation (Middle Ordovician)

Owb — Black to dark gray, sulfidic to nonsulfidic, carbonaceous, fine grained, well foliated biotite-muscovite-quartz-phyllite; contains pods and thin beds of medium dark gray and gray-and-white-mottled dolostone, thin beds of ankeritic quartzite, and, in upper part, rhythmically layered gray quartzite, limestone breccia and laminated silicic phyllite.

Ottauquechee Formation (Cambrian)

€o — Predominantly dark gray to black, carbonaceous to highly graphitic, fine-grained sulfidic biotite-muscovite-quartz phyllite having silicic laminae. Includes black quartzites not mapped separately.

€oa — Dark green plagioclase-hornblende (± quartz) amphibolite and rusty pale green, punky weathering ankeritic, chloritic greenstone.

Underhill Formation (Cambrian and Neoproterozoic)

€Zun — Silvery green quartz-muscovite-chlorite schist and phyllite, commonly with albite and magnetite; locally contains dolomite. Local lenses of white to pale gray quartzite, quartz-albite granofels, quartz-granule chlorite (±biotite) metawacke, and garnet schist.

Hazens Notch Formation (Cambrian and Neoproterozoic)

€Zhn — Schist, gneiss, and quartzite; dark rusty brown graphitic biotite-muscovite-chlorite-quartz (± garnet) schist and gneiss; black albite porphyroblasts, large euhedral pyrite, and beds of dark gray foliated quartzite are common. Unit includes rusty-weathering schist without graphite and rocks identical to Fayston Formation.

€Zhng — Dark green, pitted weathering, foliated mafic schist to massive greenstone containing varying amounts of chlorite, albite, carbonate, epidote, amphibole, and sphene; and amphibolite containing varying amounts of hornblende, actinolite, albite, chlorite, epidote, biotite, magnetite, and sphene.

€Zhnp — Chlorite-albite-epidote-carbonate greenstone, ± magnetite ± amphibole.

Fayston Formation (Lower Cambrian and Neoproterozoic)

€Zf — Silvery green to grayish green, medium-grained albite-chlorite-muscovite-quartz (± garnet ± magnetite) schist with white albite porphyroblasts. Locally contains light gray, thin quartzites; salt-and-pepper-colored, medium to coarse grained pyrite-magnetite-biotite-albite-quartz schist and gneiss; and silvery dark gray to rusty weathering, medium grained chlorite-tourmaline albite-muscovite-quartz schist.

€Zfs — Silvery green to rusty tan, fine-grained chlorite-quartz-sericite (± garnet ± chloritoid ± allanite) schist and phyllite.

Pinnacle Formation (Cambrian and Neoproterozoic)

€Zp — Gray quartz-feldspar-biotite-chlorite-muscovite ± magnetite metawacke, schist and phyllite.

Ultramafic rocks (Cambrian and Neoproterozoic)

€Zutc — Cream colored to light bluish gray, brown weathering, talc-carbonate schist and talc-cabonate-rich rocks.

€Zus — Brown weathering, dark green serpentinite.

DESCRIPTION OF MAP SYMBOLS

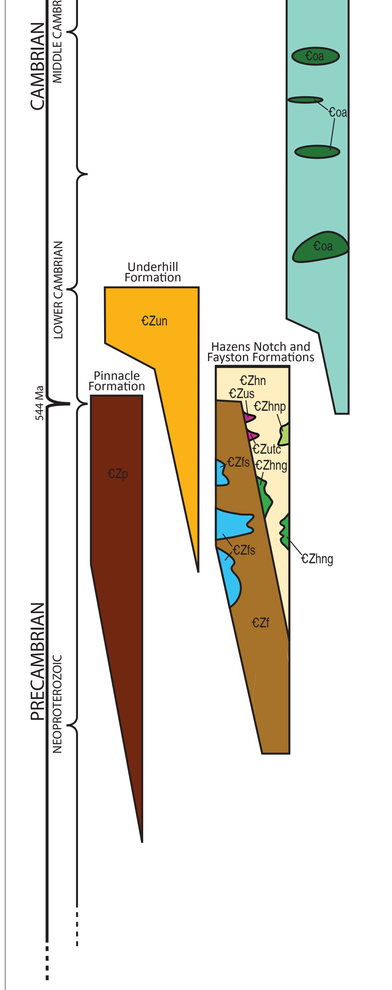
Linear Features
- F3 (Fn+1): fold axis
- L3 (intersection of Sn and S3)

Planar Features
- S0 (bedding)
- Sn (pervasive foliation)
- Sn+1 (spaced cleavage)
- fault-zone schistosity

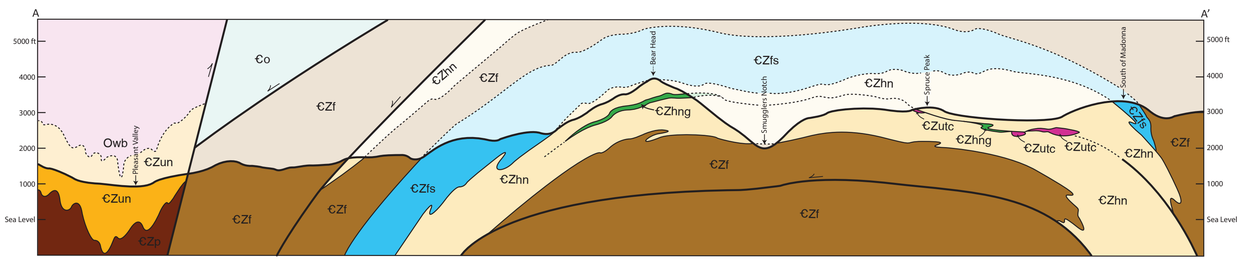
Faults
- Post Sn fault
- Pre Sn fault

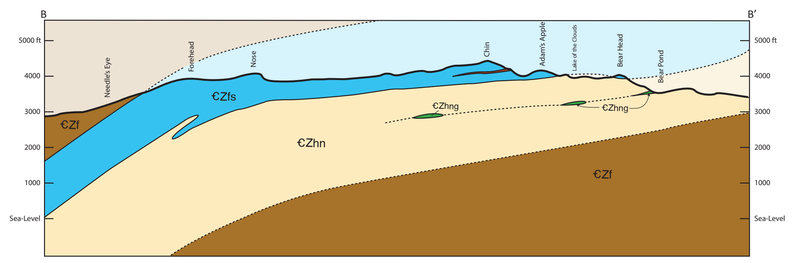
Other Map Symbols
- Quadrangle Boundary
- Rivers
- Lakes/Ponds
- State/Town/Forest Road
- Trails
- Mount Mansfield State Forest Boundary
- Town Boundary
- Green Mountain Anticlinorium Fold Axes

CORRELATION OF MAP UNITS

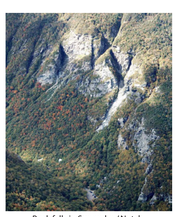


CROSS SECTIONS



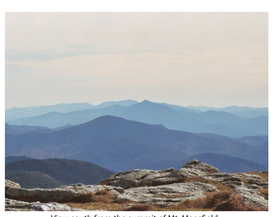


Northern end of the cliffs on the east side of Smugglers' Notch
Photo: George Sprinston, 2007.


Rock falls in Smugglers' Notch
Photo: Tom Eliassen, 2006.

View south from "The Chin"
Photo: Colin Dowey, 2016.

Fractures in Smugglers' Notch
Photo: Tom Eliassen, 2007.


View south from the summit of Mt. Mansfield
Photo: David Gale, 2012.

VERMONT
AGENCY OF NATURAL RESOURCES
Vermont Geological Survey

Published by:
Vermont Geological Survey
Marjorie H. Gale, State Geologist
Department of Environmental Conservation
Agency of Natural Resources
1 National Life Drive, Main 2
Montpelier, VT 05620-3902
http://dec.vermont.gov/geological-survey

Research supported by the Vermont Geological Survey, Dept. of Environmental Conservation, VT ANR. This geologic map was funded in part by the USGS National Cooperative Mapping Program.
The views and conclusions contained in this document are those of the authors and should not be interpreted as necessarily representing the official policies, either expressed or implied, of the U.S. Government.
Digitization and digital cartography: Colin Dowey, Laura Cadmus, David Dreher, and Thomas Merryfield.