



EXPLANATION OF UNITS

INTRUSIVE ROCKS

Silurian [S]

Diabase dike or sill. Dark gray to greenish gray, fine-grained to medium-grained diabase with ophitic texture, commonly with secondary chlorite and epidote. Line dashed where continuity is uncertain.

Granite dike. Reddish to pinkish gray, medium-grained to coarse-grained hornblende granite or hornblende-biotite granite.

Sog **Cadillac Granite.** Reddish to greenish gray, homogeneous, massive, medium-grained to coarse-grained granite (Photo 2). Quartz and mesoperthitic alkali feldspar (65% albite, 35% orthoclase (Ab₆₅Or₃₅)) are equant and range from 2 to 7 millimeters (mm) in diameter. Hornblende is the dominant mafic mineral; scarce biotite occurs locally. Both minerals are typically interstitial. Opaque minerals, zircon, and apatite are ubiquitous accessory phases; allanite, titanite, and fluorite are common. Epidote, chlorite, stilpnomelane, carbonate, and sericite occur sparsely as alteration products and as fillings of primary interstitial cavities. In the northwestern and southwestern parts of the granite mass, feldspar typically contains white cores of ternary feldspar (~An₁₀Ab₈₀Or₁₀). Mafic enclaves and irregular concentrations of hornblende and plagioclase 1 to 10 centimeters (cm) across are sparsely but widely distributed throughout the granite. Near the shatter zone the granite is more mafic and varied in mineralogy and texture; some exposures show cumulate textures. Fluorite, zircon, and allanite are more abundant in this marginal zone. The granite on the west proximal to the layered gabbro-diorite unit (**Sig**, see Braun, 2018) commonly has two feldspars, normally zoned plagioclase (An₃₀₋₃₅), and potassium-rich feldspar. Although hornblende is the dominant mafic mineral, biotite is common, and both minerals are commonly subhedral. Informally known as the Cadillac Mountain Granite.

Sgd **Gabbro.** Dark gray, medium-grained to coarse-grained gabbro. In places, there is a subtle mingling of darker gray, more mafic and lighter gray, less mafic (more plagioclase-rich) rounded masses of gabbro at a scale of tens of centimeters to several meters. Blocks of medium gray quartzite (Bar Harbor Formation) tens of centimeters to tens of meters across occur in patches within the gabbro. In the interior of thicker sill masses is medium gray to pinkish gray, medium-grained diorite. The thicker sills appear to have formed from multiple injection events. This unit represents the initial sills and dikes of the Cadillac Mountain Plutonic-Volcanic Complex.

STRATIFIED ROCKS

Silurian-Ordovician [SO]

SObh **Bar Harbor Formation.** Dark to light gray to lavender, 0.05- to 0.3-meter-wide layers of quartzite and argillite with grain size ranging from sand to silt, intercalated with 0.1- to 10.0-meter-wide layers of very light gray metarhyolite tuff (Photo 3). Along some bedding planes are a series of elliptical nodules of quartz.

COMPLEX CONTACT-ZONE ROCKS

Silurian [S]

Ssz **Shatter zone.** Angular blocks from a few centimeters to hundreds of meters across of reddish gray to gray quartzite and medium to dark gray, fine-grained to medium-grained gabbro surrounded by light gray, fine-grained to medium-grained hornblende-biotite granite (Photo 4). The zone forms a belt around the eastern and southern margins of the Cadillac Granite. Most of the shatter zone can be divided into three zones: (A) An outer zone against the country rock which consists of extensively broken up, tightly packed (no more than about 20% matrix), deformed, layered Bar Harbor Formation (**SObh**) with or without angular blocks of diabase invaded by thin, irregular veins of felsite. Where not aphanitic, the matrix has very fine-grained quartz and biotite as well as small feldspar. (B) A central zone comprised predominantly of smaller blocks of Bar Harbor Formation (typically <1 m) and diabase blocks from less than one meter to tens of meters across. The matrix of this zone (20 to 40% of the rock) is composed of quartz, two feldspars, biotite, and minor hornblende. It is fine-grained to medium-grained and commonly has a strong flow fabric around blocks of country rock. (C) An inner zone of mainly larger blocks from 10 to 80 m across, commonly separated by large areas of homogeneous granite. The granitic matrix (>50%) is medium-grained and has blocky feldspars with white cores of ternary feldspar (~An₁₀Ab₈₀Or₁₀) and broad rims of mesoperthite, interstitial to equant quartz, iron-rich clinopyroxene, iron-rich hornblende, two oxides, and scarce fayalite. A unique character of the feldspar is a sequence of strong oscillatory zoning (albite-orthoclase) between the core of ternary feldspar and rim of alkali feldspar (Ab₆₀Or₄₀). This matrix grades to typical Cadillac Granite that lacks country rock inclusions and ternary feldspar cores.

GEOLOGIC TIME SCALE		
Geologic Age	Absolute Age*	
Cenozoic Era (Cz)	0-66	
Mesozoic Era (Me)		
Cretaceous Period (K)	66-145	
Jurassic Period (J)	145-201	
Triassic Period (T)	201-252	
Paleozoic Era (Pz)		
Permian Period (P)	252-299	
Carboniferous Period (C)	299-359	
Devonian Period (D)	359-419	
Silurian Period (S)	419-444	
Ordovician Period (O)	444-485	
Cambrian Period (C)	485-541	
Precambrian time (pC)	Older than 541	

* In millions of years before present. (Walker, J.D., Geissman, J.W., Bowring, S.A., and Babcock, L.E., compilers, 2012. Geologic Time Scale v. 4.0. Geological Society of America, doi:10.1130/2012.CTS004R3C.)

REFERENCES

Braun, Duane D., 2018, Bedrock geology of Mount Desert Island: Maine Geological Survey, Geologic Map 18-16, map, scale 1:30,000.

Gilman, Richard A., and Chapman, Carleton A., 1988, Mount Desert Bedrock Geology Map: Maine Geological Survey, Bulletin 38.

Bedrock Geology of the Southwestern Portion of the Bar Harbor Quadrangle, Maine

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Partial funding for the preparation of this map was provided by the Maine Geological Survey.

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Open-File No. 19-13 2019

This map supersedes a portion of the B-36 Bedrock Geology map.

EXPLANATION OF LINES

Contact between rock units, of stratigraphic or intrusive origin (well located, approximately located, poorly located).

D
U

High-angle fault, interpreted from truncation of units on the map or from disruption of stratigraphic sequence. D (down) and U (up) indicate sense of dip-slip motion (well located, approximately located, poorly located).

EXPLANATION OF SYMBOLS

Note: Structural symbols are drawn parallel to strike or trend of measured structural feature. Barb or tick indicates direction of dip, if known. Annotation gives dip or plunge angle, if known. For most planar features, symbol is centered at observation point; for joints, observation point is at end of strike line opposite dip tick. For linear features, tail of symbol is at observation point. Multiple measurements at a site are represented by combined symbols. Symbols on the map are graphical representations of information stored in a bedrock database at the Maine Geological Survey. The database contains additional information that is not displayed on this map.

- Outcrop of mapped unit.
- Outcrop of non-foliated plutonic rock.
- Dike, mafic (occurrence, strike only, inclined, vertical).
- Bedding in sedimentary or volcanic rocks, tops unknown (inclined, vertical).
- Axis of minor fold (plunging).
- Joint (inclined).
- Quarry, inactive.
- Photo location.

