Geologic Map of Great Smoky Mountains National Park

North Carolina and Tennessee

National Park Service
U.S. Department of the Interior

Geologic Resources Inventory
Natural Resource Stewardship and Science

East Layout

NPS Boundary

Point Geologic Units

- PZp - Pegmatite (Paleozoic)
- PZZd - Metadiorite, metadiabase, and altered rocks (dikes and sills) (Paleozoic and Neoproterozoic)
- Zwl - Wilhite Formation, limestone and shale (Neoproterozoic)
- Zal - Anakeesta Formation, metadolomite (Neoproterozoic)
- Ya - Amphibolite (Mesoproterozoic)
- Yu - Ultramafic rocks (Mesoproterozoic)

Infrastructure

- point of interest
- trails
- roads

Geologic Cross Section Lines

Faults

- thrust fault, known or certain
- thrust fault, concealed
- normal fault, known or certain
- normal fault, concealed
- right-lateral strike-slip fault, known or certain
- left-lateral strike-slip fault, concealed
- normal left-lateral strike-slip fault, known or certain
- normal left-lateral strike-slip fault, concealed
- unknown offset/displacement, known or certain
- unknown offset/displacement, concealed
- thrust right-lateral strike-slip fault, known or certain
- thrust right-lateral strike-slip fault, concealed

Linear Geologic Units

- MDc - Chattanooga Shale (Lower Mississippian? and Upper Devonian), known or certain
- MDc - Chattanooga Shale (Lower Mississippian? and Upper Devonian), concealed

Geologic Contacts

- known or certain
- concealed
- map boundary
- water or shoreline

Geologic Units

- Qa - Alluvium (Holocene)
- Qdf - Debris flows (Holocene)
- Qc - Colluvium (Holocene and Pleistocene)
- QTt - Terrace deposits (Tertiary to Holocene)
- QTs - Sinkholes (Tertiary to Holocene)
- QTr - Residuum overlying carbonate rock (Tertiary to Holocene)
- Qd - Debris fans (Pleistocene)
- Mgg - Greasy Cove and Grainger Formations, undifferentiated (Upper and Lower Mississippian)
- Mgc - Greasy Cove Formation (Upper and Lower Mississippian)
- Mg - Grainger Formation (Lower Mississippian)
- PZp - Pegmatite (Paleozoic)
- Ob - Bays Formation (Middle Ordovician)
- Os - Sevier Formation (Middle Ordovician)
- Oc - Chota Formation (Middle Ordovician)
- Oo - Ottosee Shale (Middle Ordovician)
- Ot - Tellico Formation (Middle Ordovician)
- Ocm - Chapman Ridge Marble (Middle Ordovician)
- Ocr - Chapman Ridge Sandstone (Middle Ordovician)
- Obl - Blockhouse Shale (Middle Ordovician)
- Olh - Lenoir Limestone (Middle Ordovician)
- Oj - Jonesboro Limestone (Lower Ordovician)
- OCk - Knox Group (Lower Ordovician and Upper Cambrian)
- Cno - Nolichucky Shale (Upper and Middle Cambrian)
- Cml - Maryville Limestone (Upper and Middle Cambrian)
- Crg - Rogersville Shale (Upper and Middle Cambrian)
- Crt - Rutledge Limestone (Upper and Middle Cambrian)
- Cpr - Pumpkin Valley Shale and Rome Formation (Upper and Middle Cambrian)
- Cr - Rome Formation (Middle Cambrian)
- Cs - Shady Dolomite (Lower Cambrian)
- Css - Shady Dolomite, shaly dolomite and dolomitic shale (Lower Cambrian)
- Ccu - Upper part of Chilhowee Group, undifferentiated (Lower Cambrian)
- Chm - Helenmode Formation (Lower Cambrian)
- Ch - Hesse Quartzite (Lower Cambrian)
- Cm - Murray Shale (Lower Cambrian)
- Cnb - Nebo Quartzite (Lower Cambrian)
- Cn - Nichols Shale (Lower Cambrian)
- Cc - Cochran Formation (Lower Cambrian)
- PZZd - Metadiorite, metadiabase, and altered rocks (dikes and sills) (Paleozoic and Neoproterozoic)
- PZZud - Metamorphosed dunite and peridotite (early Paleozoic and Neoproterozoic)
- PZZa - Amphibolite (early Paleozoic and Neoproterozoic)
- CZct - Cartoogechaye terrane (Cambrian and Neoproterozoic)
- CZo - Otto Formation of the Dahlonega gold belt (Cambrian and Neoproterozoic)
- Zss - Sandsuck Formation (Neoproterozoic)
- Zssc - Sandsuck Formation, conglomerate (Neoproterozoic)
- Zw - Wilhite Formation (Neoproterozoic)
- Zwq - Wilhite Formation, quartzite and conglomerate (Neoproterozoic)
- Zwl - Wilhite Formation, limestone and shale (Neoproterozoic)
- Zwlc - Wilhite Formation, carbonate rocks and clastic rocks (Neoproterozoic)
- Zs - Shields Formation (Neoproterozoic)
- Zsl - Shields Formation, limestone and siltstone (Neoproterozoic)
- Zsc - Shields Formation, conglomerate (Neoproterozoic)
- Zll - Licklog Formation (Neoproterozoic)
- Zlls - Licklog Formation, conglomeritic sandstone (Neoproterozoic)
- Znt - Tusquitee Quartzite and Nantahala Formation (Neoproterozoic)
- Zd - Dean Formation (Neoproterozoic)
- Zam - Ammons Formation (Neoproterozoic)
- Zgb - Grassy Branch Formation (Neoproterozoic)
- Zwe - Wehutty Formation (Neoproterozoic)
- Zch - Copperhill Formation (Neoproterozoic)
- Zchs - Copperhill Formation, quartz-muscovite schist and phyllite (Neoproterozoic)
- Zchsl - Copperhill Formation, slaty metasiltstone (Neoproterozoic)
- Za - Anakeesta Formation (Neoproterozoic)
- Zag - Anakeesta Formation, metagraywacke and metasiltstone (Neoproterozoic)
- Zas - Anakeesta Formation, metasandstone and siliceous metasiltstone (Neoproterozoic)
- Zac - Anakeesta Formation, chloritoid slate (Neoproterozoic)
- Zc - Cades Sandstone (Neoproterozoic)
- Zcs - Cades Sandstone, dark metasiltstone (Neoproterozoic)
- Zcc - Cades Sandstone, boulder conglomerate (Neoproterozoic)
- Zt - Thunderhead Sandstone (Neoproterozoic)
- Zts - Thunderhead Sandstone, dark metasiltstone and slate (Neoproterozoic)
- Ztb - Thunderhead Sandstone, boulder conglomerate (Neoproterozoic)
- Ze - Elkmont Sandstone (Neoproterozoic)
- Zes - Elkmont Sandstone, coarse metasandstone and metaconglomerate (Neoproterozoic)
- Zsb - Snowbird Group, undivided (Neoproterozoic)
- Zr - Rich Butt Sandstone (Neoproterozoic)
- Zrs - Rich Butt Sandstone, slate and metasiltstone (Neoproterozoic)
- Zm - Metcalf Phyllite (Neoproterozoic)
- Zp - Pigeon Siltstone (Neoproterozoic)
- Zps - Pigeon Siltstone, metasandstone (Neoproterozoic)
- Zrf - Roaring Fork Sandstone (Neoproterozoic)
- Zrfs - Roaring Fork Sandstone, metasandstone (Neoproterozoic)
- Zl - Longarm Quartzite (Neoproterozoic)
- Zwb - Wading Branch Formation (Neoproterozoic)
- Ybg - Biotitic porphyritic metagranitoid (Mesoproterozoic)
- Ygd - Metagranodiorite (Mesoproterozoic)
- Ypg - Megacrystic metagranite (Mesoproterozoic)
- Ymp - Mylonitic monzogranite (Mesoproterozoic)
- Yg - Metamonzogranite (Mesoproterozoic)
- Ysg - Spring Creek Metagranitoid (Mesoproterozoic)
- Ym - Migmatitic biotite gneiss (Mesoproterozoic)
- Yh - Hornblende-biotite gneiss (Mesoproterozoic)
- Ya - Amphibolite (Mesoproterozoic)
- Yu - Ultramafic rocks (Mesoproterozoic)



This map displays geologic map data compiled by the National Park Service Geologic Resources Inventory. It is not a substitute for site-specific investigations.

Source Map
Southworth, Scott, Art, Schultz, J.N. Aleinikoff, and A.J. Merschat. 2012. Geologic map of the Great Smoky Mountains National Park Region, Tennessee and North Carolina (scale 1:100,000). Scientific Investigations Map SIM-2997. U.S. Geological Survey, Reston, Virginia.

Source Scale 1:100,000
According to US National Map accuracy standards, features are within 50 m (166 ft) of their true location.

Poster Layout
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All Geologic Resources Inventory geologic map data and publications are available at http://go.nps.gov/gripubs