

DESCRIPTION OF MAP UNITS

QUATERNARY

- Q COLLUVIUM AND ALLUVIUM—unconsolidated, poorly sorted gravel, sand, and clay in surficial deposits

PRECAMBRIAN

Great Smoky Group of Ocoee Supergroup
Units southeast of fault through Nichols Cove

- 15 Light-olive-gray to medium-dark arkosic metasandstone as in Unit 13, but includes more abundant medium- to dark-gray phyllite and metasiltstone layers. Pyrite or pyrrhotite generally common in both metasandstone and phyllite layers. Well exposed near the southeast end of the map area along road to Joyce Kilmer parking lot and toward Horse Cove along unfinished Robbinsville-Tellico Plains highway. Upper limit not exposed in the wilderness area; minimum thickness 300 m
- 14 Greenish- to olive-gray and medium- to dark-gray muscovite phyllite and mica schist and minor beds of arkosic metasandstone. Both phyllite and metasandstone contain 1-mm wide euhedral porphyroblasts of biotite and garnet. Pyrite abundant locally. Exposures of phyllite are poor, and outcrop pattern shown is based mainly on chips in soil. Unit underlain by Unit 13 and overlain by Unit 15. Thickness about 150 m
- 13 Light- to medium-dark-gray grading to light-olive or olive-gray arkosic metasandstone and fine roundstone metaconglomerate forming subvertical crags in upper part of drainage basin of Little Santeetlah Creek. Minor interbeds of dark-gray metagraywacke and medium- to dark-gray phyllite. Bedding in arkose rarely apparent. Calcareous spheruloids locally abundant. Forms a long narrow ridge which includes Stratton Bald, highest point in the wilderness area. An outlier also forms the high knob on Hooe Lead. Streambeds in outcrop area choked with sandstone blocks and have few exposures. Unit is underlain by Unit 12 and overlain by Unit 14. Thickness roughly 800 m
- 12 Medium-dark-gray to olive-gray metagraywacke and interbedded dark-gray to grayish-black and medium-gray to brownish-gray arkosic metasandstone, slate and phyllite. Toward top of unit, as at Bob Bald, graywacke contains boulders of sandstone and slate. Unit underlies a meadow on ridge at Bob Bald and possible former meadows at Naked Ground and Jenkins Meadow. In headwaters of Slickrock Creek it forms north-facing slopes which have heavy growth of rhododendron. Unit is underlain by Unit 11 and overlain by Unit 13; it is roughly 300 m thick
- 11 Light- to medium-gray, grading into light-olive to olive-gray, massive, fine- to coarse-grained arkosic metasandstone and fine-grained roundstone arkosic metaconglomerate with minor medium-gray- to medium-dark-gray metasilstone and slate partings and interbeds. Sandstone in beds 1 to 5 m thick; slate units 1/2 to 1 m thick. Locally contains disseminated pyrite and rare graphite. Spheroidal calcareous cemented areas or concretions, 10-30 cm in diameter, weather as depressions. Sandstone forms massive cliffs 20-30 m high and bold outcrops on north-facing slopes overgrown with rhododendron at head of Slickrock Creek. Underlain by Unit 10 and overlain by Unit 12. Thickness ranges from at least 200 m between Glen Gap and Chestnut Knob to as much as 1600 m along Hangover Lead
- 10 Interbedded light- to medium-gray, olive-gray or brownish-gray arkosic metasandstone and light- to dark-gray slate, having relatively minor metagraywacke and fine roundstone metaconglomerate. Sandstone beds 1-10 m thick; slates as thin partings in sandstone and as bedded units up to 10 m thick. Deformation intense, folds having wavelengths in tens of metres overturned towards the northwest. Cleavage apparent in many outcrops of metasandstone. Exposure best in an old railroad-cut along slopes on the right bank of Slickrock Creek, upstream from Hangover Creek. Boundary of Unit 10 with Unit 9 is probably a gradational one; intensity of shearing increases into Unit 9. The unit is overlain by Unit 11. Because of complex folding, only a minimum structural thickness of 800 m can be given
- 9 Medium- to dark-gray or black graphitic metagraywacke and graywacke metaconglomerate, commonly sheared. Slaty laminations and slate fragments abundant. Veins weathered and fresh specimens common. Minor amounts of pyrite locally. Well exposed on ridges and in crags southeast of Nichols Cove. Unit probably at least 300-400 m thick but in fault contact with Unit 7 to northwest and apparently cut off by that fault to the northeast. Overlain by Unit 10

Units northwest of fault through Nichols Cove

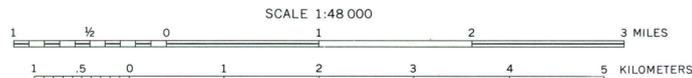
- 8 Weathered gray slate poorly exposed in core of overturned asymmetric syncline in the first gap north of Big Stack Gap. Thickness not known because upper boundary of unit is not within study area and was not observed
- 7 Thin beds of light-greenish-gray to medium-gray arkosic metasandstone and fine roundstone metaconglomerate interbedded with minor amounts of light- to medium-gray slate. Poorly exposed along ridge north of Big Stack Gap. Underlain by slate of Unit 4, and overlain by slate of Unit 8. Thickness about 60-120 m. Similar light- to medium-gray arkosic metasandstone and metaconglomerate poorly exposed along southeast-facing slope on the east spur of Big Fodderstack just northwest of the fault through Nichols Cove may be same unit and is so mapped. Generally overgrown with laurel. Thickness may be as much as 120 m
- 6 Two lenses of light-olive-gray, dusky-yellow or medium-gray arkosic metasandstone having intervening unit of thin-bedded alternating metasandstone and metasiltstone skirting Little Fodderstack. Completely enclosed in slates of Unit 4. Thickness roughly 150 m
- 5 Fine to medium roundstone metaconglomerate and coarse-grained metasandstone having distinctive greenish-gray matrix and abundant blue quartz grains. Contains minor amounts of pyrite. Forms Wildcat Falls in Slickrock Creek. Completely enclosed in slates of Unit 4. Thickness roughly 50-70 m
- 4 Interlayered light- to greenish-gray and moderate- to dark-gray and grayish-black slate and minor thin beds of arkosic metasandstone; gray slate predominates over black slate. Intensely folded and commonly shows two cleavages. Cubic porphyroblasts of pyrite common in some darker layers. Locally forms ridges, as at Little Fodderstack, and crops out relatively well, especially in beds of small streams. Encloses coarser Units 5 and 6, and overlies Unit 3. Overlain by Unit 7. Structural thickness roughly 800 m, but in a given section intense folding may have repeated beds. In spite of folding, more competent included units relatively little deformed
- 3 Olive and brownish-gray arkosic metasandstone and roundstone metaconglomerate in massive lenticular beds, 1-10 m thick, interbedded with light-olive to dark-gray pyritic slate and metasilstone. At least three sandstone-conglomerate lenticular bodies 20-50 m thick are separated by similar thicknesses of slate and may pinch out into slate toward the northwest. Unit forms steep slopes along southwest side of Little Slickrock Valley. Upper arkose well exposed along west bank of Slickrock Creek upstream and downstream from Wildcat Branch, and upper slate well exposed at mouth of Wildcat Branch. Unit may be 250-300 m thick
- 2 Medium- to dark-gray or black pyritic slate, commonly interlayered with light- to yellowish-gray sandy laminations. A few thin beds of medium-gray arkosic metasandstone and metaconglomerate exposed locally. Pyrite porphyroblasts 1 to 10 mm common in some areas. Abundant white quartz veins 1 to several meters thick. Unit crops out in bed of Slickrock Creek and forms a steep west-facing slope near its mouth. Unit overlies Unit 1 in these exposures. Elsewhere to the west it may also underlie Unit 1. Thickness of the part above Unit 1 is roughly 150 m
- 1 Light- to medium-gray boulder and cobble arkosic metaconglomerate apparently grading northeastward into granular arkosic metasandstone. Clasts include granite, gneiss, blue and white quartz, feldspar, and slate. Minor pyrite or pyrrhotite in most fresh samples. Unit crops out on a south-facing dip slope west of mouth of Slickrock Creek, and in bed of the creek, forming Lower Falls. Probably the oldest unit on the map, but Unit 2 may locally underlie as well as overlie it. Thickness of unit unknown but probably greater than 200 m

- Contact
- - - - -? Inferred fault; Queried where doubtful
- Major fold
- - - - - Anticline
- - - - - Overturned anticline
- - - - - Syncline
- Strike and dip of beds
- ⊕ Horizontal
- ⊖ Inclined
- ⊕ Vertical
- ⊖ Overturned
- - - - - Biotite
- - - - - Garnet
- Metamorphic isograd—Dashed where inferred

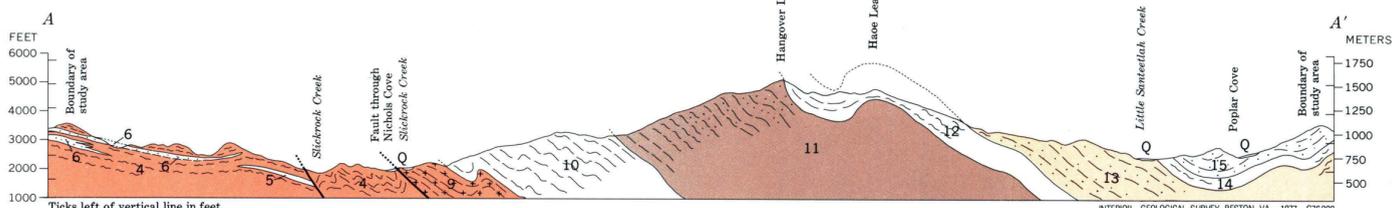
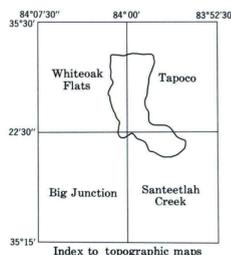


Base from Tennessee Valley Authority and U.S. Geological Survey, 1:24,000, Santeetlah Creek, N. C., Tapoco, N. C.—Tenn., 1940, Big Junction and Whiteoak Flats, Tenn.—N. C., 1957

Geology by F. G. Lesure, E. R. Force, and J. F. Windolph, 1973



CONTOUR INTERVAL 40 FEET
DATUM IS MEAN SEA LEVEL



GEOLOGIC MAP AND SECTION OF THE JOYCE KILMER MEMORIAL FOREST AND THE SLICKROCK CREEK DRAINAGE BASIN, GRAHAM COUNTY, NORTH CAROLINA, AND MONROE COUNTY, TENNESSEE