

DESCRIPTION OF MAP UNITS

Ocnee Supergroup (Proterozoic Z and Y?)

Great Smoky Group (Proterozoic Z)

Boyd Gap Formation, upper part—Fine- to coarse- grained metasandstone, metagraywacke, meta-arkose, dark metasiltstone, and green, dark-gray, or black (graphitic) metashale grading to phyllite and slate. Disseminated pyrrhotite and pyrite common. Lensoid thickening and thinning of the different lithologies common

Boyd Gap Formation, lower part—Interbedded metasandstone, metagraywacke, meta-arkose, dark metasiltstone, and green, dark-gray, or black (graphitic) metashale grading to phyllite and slate. Disseminated pyrrhotite and pyrite common. Lensoid thickening and thinning of the different lithologies common

Panther Bluff Formation—Fine- to coarse- grained metasandstone, lesser amounts of metasiltstone, and minor interbedded gray metashale and metaconglomerate

Snowbird Group, undivided (Proterozoic Z and (or) Y)—Laminated and massive, poorly bedded, gray, dark-gray, and black (graphitic) metashale and slaty metasiltstone. Pyrite zones common and characteristically contain pyrite cubes or weathered-out pyrite molds, 1/2-1 in. in diameter

Areas of overlapping high-background concentrations of cobalt and nickel in rock, soil, and stream-sediment samples

Stream-sediment and soil samples

Stream-sediment and rock samples

Stream-sediment, rock, and soil samples

Rock and soil samples

Contact

Normal fault

Thrust fault—Sawteeth are on upper plate

Anticline

Syncline

Overturned anticline—Showing generalized trace of axial plane at land surface and inferred plunge direction of fold axis

Overturned syncline—Showing generalized trace of axial plane at land surface and plunge direction of fold axis, where inferred

STUDIES RELATED TO WILDERNESS

The Wilderness Act (Public Law 88-577, September 3, 1964) and related acts require the U.S. Geological Survey and the U.S. Bureau of Mines to survey certain areas on Federal lands to determine their mineral resource potential. Results must be made available to the public and be submitted to the President and the Congress. This report presents the results of a mineral resource potential survey of the Cohutta Wilderness and the Hemp Top Roadless Area in the Chattahoochee National Forest, Fannin, Gilmer, and Murray Counties, Georgia, and the Cherokee National Forest, Polk County, Tennessee. Cohutta Wilderness was established by Public Law 88-577, September 3, 1964. Hemp Top Roadless Area was classified as a further planning area during the Second Roadless Area Review and Evaluation (RARE II) by the U.S. Forest Service, January 1979.

SUMMARY OF MINERAL RESOURCE POTENTIAL

The available data indicate that the Cohutta Wilderness and the Hemp Top Roadless Area have no known resource potential for metallic minerals and only a very minor potential for stone for aggregate, road construction, and similar non-dimension use. Sedimentary rocks underlying the metamorphic rocks of the area have an unknown potential for natural gas.

GEOLOGY

The Cohutta Wilderness and the Hemp Top Roadless Area are underlain by Proterozoic Y(?) and Z metasedimentary rocks of the Ocnee Supergroup, comprising parts of the Great Smoky and Snowbird Groups (Gair and Slack, 1982). The Great Smoky Group is represented by the lower and upper parts of the Boyd Gap Formation and by the Panther Bluff Formation; rocks of the Snowbird Group are not divided into formations in the study area. These rocks are in interbedded sequences of slightly metamorphosed sandstone, graywacke, arkose, siltstone, and argillite (slate). Disseminated pyrite and pyrrhotite are common minor components of some layers. Lensoid thickening and thinning of the different interbedded lithologies is common. The rocks of the area have been folded and faulted and occur in a number of west-directed thrust sheets. Sedimentary rocks underlying the metamorphic rocks exposed at the surface have an unknown potential for hydrocarbons in the form of natural gas. No reasonable estimate of the potential can be made until some test drilling is done in the area.

GEOCHEMISTRY

Trace-element analyses of many hundreds of samples of rock, soil, and stream sediment do not reveal any significant geochemical concentrations that would indicate the possible existence of mineral resources in the rocks of the study area (Gair, 1982). Virtually all trace-element concentrations are part of the geochemical background. The upper few percent of trace-element concentrations that are in the high part of the background range of values generally are widely scattered in the area and so do not indicate any significant volumes of source rocks. High background concentrations of cobalt and nickel occur in some samples of rock, soil, and stream sediment in the vicinity of one another in the northeast part of the area; the cobalt and nickel most likely are derived from trace amounts of these elements in disseminated pyrite and pyrrhotite in the metasedimentary rocks of the study area and cannot be accorded any significance in terms of mineral resource potential.

REFERENCES CITED

Gair, J. E., 1982, Geochemical survey of the Cohutta Wilderness and the Hemp Top Roadless Area, northern Georgia and southeastern Tennessee: U.S. Geological Survey Miscellaneous Field Studies Map MF-1415-B, scale 1:48,000 [in press].
Gair, J. E., and Slack, J. F., 1982, Geologic maps of the Cohutta Wilderness and the Hemp Top Roadless Area, northern Georgia and southeastern Tennessee: U.S. Geological Survey Miscellaneous Field Studies Map MF-1415-A, scale 1:48,000 [in press].

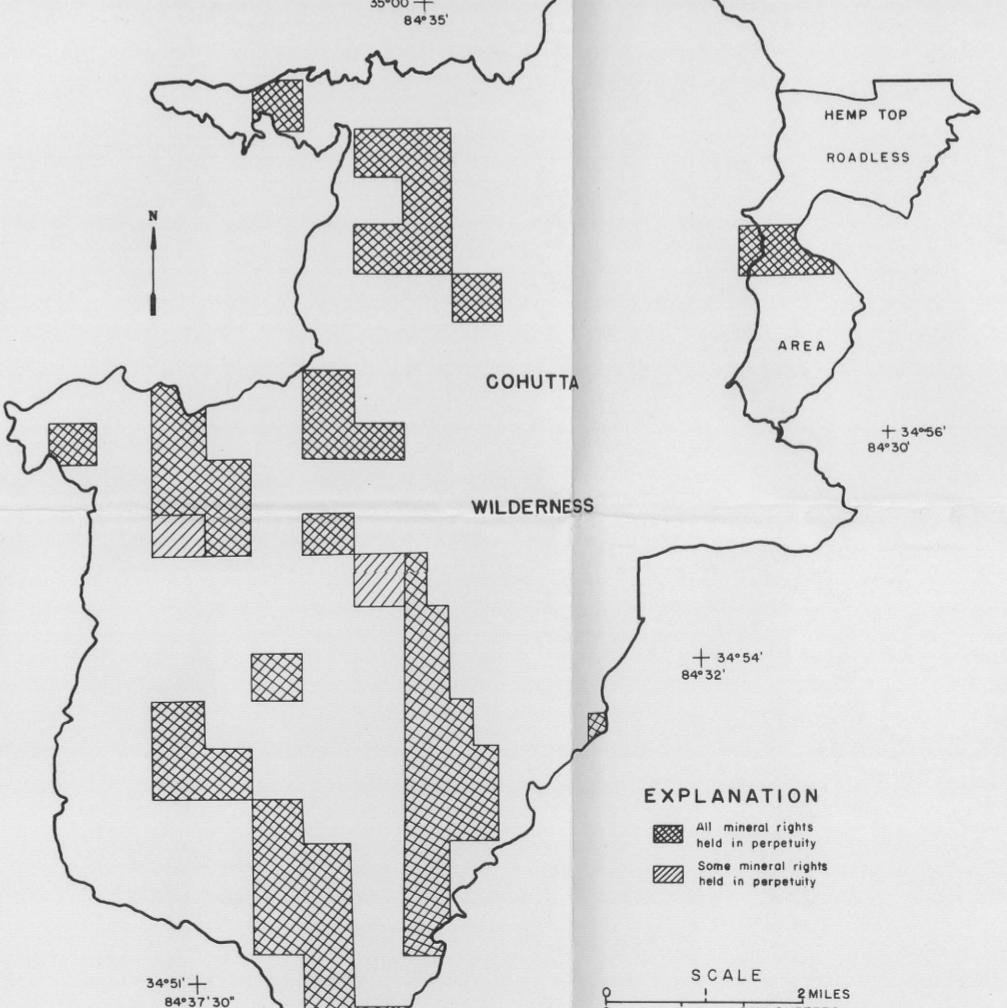


Figure 2.—Map of mineral-rights ownership, Cohutta Wilderness and Hemp Top Roadless Area. Shaded areas have privately owned mineral rights; blank areas have mineral rights held by the U.S. Government. North-south and east-west boundaries of mineral rights areas are based on Georgia land district system.

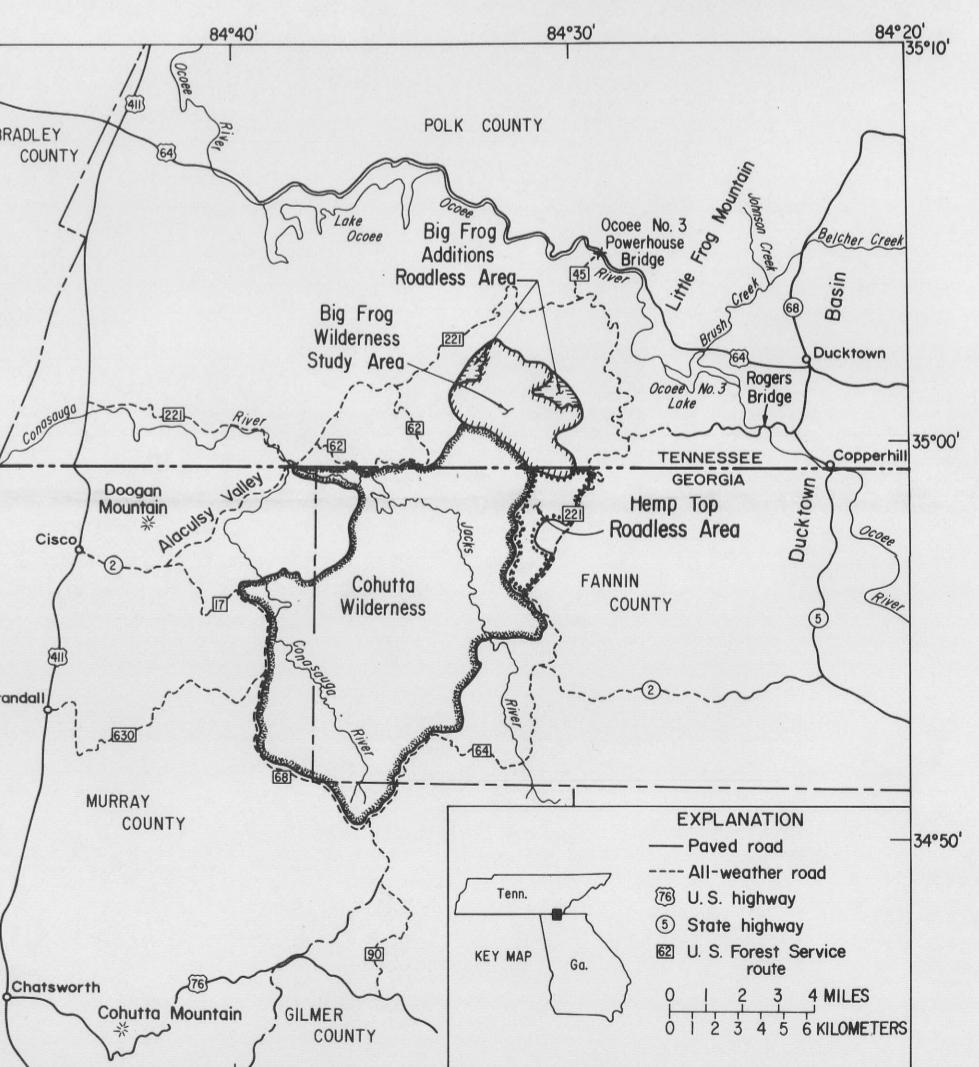


Figure 1.—Index map showing location of Cohutta Wilderness and Hemp Top Roadless Area.

MINERAL RESOURCE POTENTIAL MAP OF THE COHUTTA WILDERNESS AND THE HEMP TOP ROADLESS AREA,
NORTHERN GEORGIA AND SOUTHEASTERN TENNESSEE

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