U.S. Department of the Interior
National Park Service
Natural Resource Stewardship and Science Directorate
Geologic Resources Division

Horseshoe Bend National Military Park

GRI Ancillary Map Information Document

Produced to accompany the Geologic Resources Inventory (GRI) Digital Geologic Data for Horseshoe Bend National Military Park

hobe_geology.pdf

Version: 5/7/2013

Geologic Resources Inventory Map Document for Horseshoe Bend National Military Park

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Geologic Resources Inventory Map Document

Horseshoe Bend National Military Park, Alabama

Document to Accompany Digital Geologic-GIS Data

hobe_geology.pdf

Version: 5/7/2013

This document has been developed to accompany the digital geologic-GIS data developed by the Geologic Resources Inventory (GRI) program for Horseshoe Bend National Military Park, Alabama (HOBE).

Attempts have been made to reproduce all aspects of the original source products, including the geologic units and their descriptions, geologic cross sections, the geologic report, references and all other pertinent images and information contained in the original publication.

National Park Service (NPS) Geologic Resources Inventory (GRI) Program staff have assembled the digital geologic-GIS data that accompanies this document.

For information about the status of GRI digital geologic-GIS data for a park contact:

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For information about using GRI digital geologic-GIS data contact:

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About the NPS Geologic Resources Inventory Program

Background

Recognizing the interrelationships between the physical (geology, air, and water) and biological (plants and animals) components of the Earth is vital to understanding, managing, and protecting natural resources. The Geologic Resources Inventory (GRI) helps make this connection by providing information on the role of geology and geologic resource management in parks.

Geologic resources for management consideration include both the processes that act upon the Earth and the features formed as a result of these processes. Geologic processes include: erosion and sedimentation; seismic, volcanic, and geothermal activity; glaciation, rockfalls, landslides, and shoreline change. Geologic features include mountains, canyons, natural arches and bridges, minerals, rocks, fossils, cave and karst systems, beaches, dunes, glaciers, volcanoes, and faults.

The Geologic Resources Inventory aims to raise awareness of geology and the role it plays in the environment, and to provide natural resource managers and staff, park planners, interpreters, researchers, and other NPS personnel with information that can help them make informed management decisions.

The GRI team, working closely with the Colorado State University (CSU) Department of Geosciences and a variety of other partners, provides more than 270 parks with a geologic scoping meeting, digital geologic-GIS map data, and a park-specific geologic report.

Products

Scoping Meetings: These park-specific meetings bring together local geologic experts and park staff to inventory and review available geologic data and discuss geologic resource management issues. A summary document is prepared for each meeting that identifies a plan to provide digital map data for the park.

Digital Geologic Maps: Digital geologic maps reproduce all aspects of traditional paper maps, including notes, legend, and cross sections. Bedrock, surficial, and special purpose maps such as coastal or geologic hazard maps may be used by the GRI to create digital Geographic Information Systems (GIS) data and meet park needs. These digital GIS data allow geologic information to be easily viewed and analyzed in conjunction with a wide range of other resource management information data.

For detailed information regarding GIS parameters such as data attribute field definitions, attribute field codes, value definitions, and rules that govern relationships found in the data, refer to the NPS Geology-GIS Data Model document available at: http://science.nature.nps.gov/im/inventory/geology/GeologyGISDataModel.cfm

Geologic Reports: Park-specific geologic reports identify geologic resource management issues as well as features and processes that are important to park ecosystems. In addition, these reports present a brief geologic history of the park and address specific properties of geologic units present in the park.

For a complete listing of Geologic Resource Inventory products and direct links to the download site visit the GRI publications webpage http://www.nature.nps.gov/geology/inventory/gre_publications.cfm

GRI geologic-GIS data is also available online at the NPS Data Store Search Application: http://irma.nps.gov/App/Reference/Search. To find GRI data for a specific park or parks select the appropriate park

(s), enter “GRI” as a Search Text term, and then select the Search Button.

For more information about the Geologic Resources Inventory Program visit the GRI webpage: http://www.nature.nps.gov/geology/inventory, or contact:

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The Geologic Resources Inventory (GRI) program is funded by the National Park Service (NPS) Inventory and Monitoring (I&M) Division.

GRI Digital Map and Source Map Citation

The GRI digital geologic-GIS map for Horseshoe Bend National Military Park, Alabama (HOBE):

Digital Geologic Map of Horseshoe Bend National Military Park and Vicinity, Alabama (*GRI MapCode HOBE*)

Jones, Kevin, 2012, Preliminary Geologic Map of the Horseshoe Bend National Military Park, Alabama, Auburn University, M.S. Thesis, 1:24,000 scale (Jones, M.S. Thesis). (*GRI Source Map ID 75650*).

Additional information pertaining to each source map is also presented in the GRI Source Map Information (HOBEMAP) table included with the GRI geology-GIS data.

Map Unit List

The bedrock geologic units present in the digital geologic-GIS data produced for Horseshoe Bend National Military Park, Alabama (HOBE) are listed below. Units are listed with their assigned unit symbol and unit name (e.g., PCPZeg - Emuckfaw Group). Units are listed from youngest to oldest. Information about each geologic unit is also presented in the GRI Geologic Unit Information (HOBEUNIT) table included with the GRI geology-GIS data.

Precambrian to Paleozoic

Eastern Blue Ridge
PCPZeg - Emuckfaw Group
PCPZkg - Kowaliga Gneiss

Brevard fault zone
PCPZjg - Jacksons Gap Group
PCPZjgq - Jacksons Gap Group, quartzite

Inner Piedmont; Dadeville Complex
PCPZws - Waresville Schist

Map Unit Descriptions

Descriptions of all geologic map units, generally listed from youngest to oldest, are presented below.

PCPZeg - Emuckfaw Group (Precambrian to Paleozoic)

Eastern Blue Ridge

The upper-most unit of the eastern Blue Ridge terrane is the Emuckfaw Group. The Emuckfaw Group is comprised mainly of interbedded muscovite ± garnet-biotite schist and metagraywacke. The Emuckfaw was intruded by the Kowaliga Gneiss, and zones of quartzite and calc-silicate rock occur along this meta-granite—meta-sedimentary contact. (*GRI Source Map ID 75650)* (Jones, M.S. Thesis)

PCPZkg - Kowaliga Gneiss (Precambrian to Paleozoic)

Eastern Blue Ridge

The Kowaliga Gneiss is a coarse-grained granodiorite to quartz monzonite. It is easily distinguished by large plagioclase augens and shows signs of shearing along the margins. The unit is strongly foliated and exhibits mineral elongation lineations. Age: Precambrian to Paleozoic. (*GRI Source Map ID 75650)* (Jones, M.S. Thesis)

PCPZjg - Jacksons Gap Group (Precambrian to Paleozoic)

Brevard Zone

The Brevard fault zone, framed by the Katy Creek fault to the southeast and the Abanda fault to the northwest, is made up of units within the Jacksons Gap Group, a sequence of thinly bedded meta-sediments. Principally graphitic, garnetiferous sericite-quartz schist, the Jacksons Gap Group is also composed of hard phyllite layers and has a prominent quartzite (PCPZjgq) base that helps control the path of the Tallapoosa River. The topography of the Jacksons Gap Group lithology has relatively sharp relief with distinct, linear ridges of quartzite and harder phyllitic lithologies. Age: Precambrian to Paleozoic. (*GRI Source Map ID 75650)* (Jones, M.S. Thesis)

PCPZjgq - Jacksons Gap Group, quartzite (Precambrian to Paleozoic)

Brevard Zone

The Brevard fault zone, framed by the Katy Creek fault to the southeast and the Abanda fault to the northwest, is made up of units within the Jacksons Gap Group, a sequence of thinly bedded meta-sediments. Principally graphitic, garnetiferous sericite-quartz schist, the Jacksons Gap Group is also composed of hard phyllite layers and has a prominent quartzite (PCPZjgq) base that helps control the

path of the Tallapoosa River. The topography of the Jacksons Gap Group lithology has relatively sharp relief with distinct, linear ridges of quartzite and harder phyllitic lithologies. Age: Precambrian to Paleozoic. (*GRI Source Map ID 75650)* (Jones, M.S. Thesis)

PCPZws - Waresville Schist (Precambrian to Paleozoic)

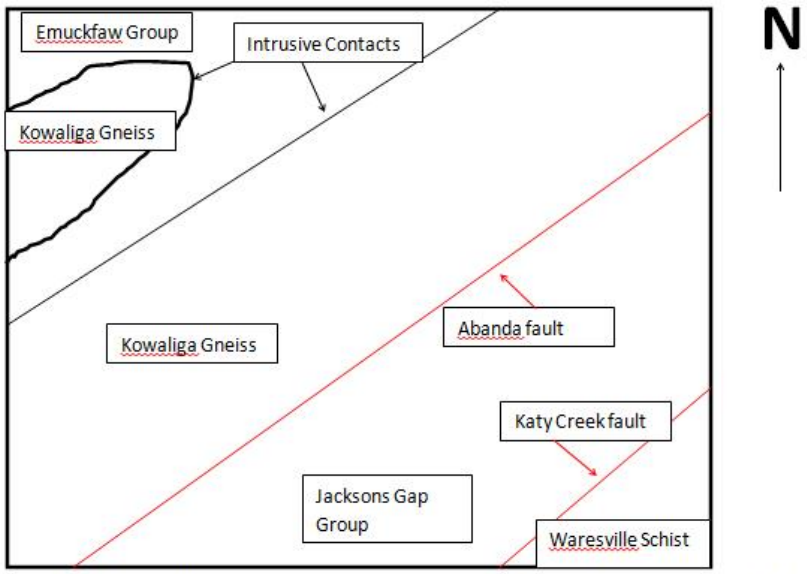
Inner Piedmont; Dadeville Complex

The Waresville Schist is the lower-most unit of the Dadeville Complex and is considered part of the Inner Piedmont terrane of Alabama. It is primarily composed of banded amphibolite, interlayered with chlorite schist, chlorite amphibolite, chlorite-actinolite schist, chlorite ± actinolite quartzite. Age: Precambrian to Paleozoic. (*GRI Source Map ID 75650)* (Jones, M.S. Thesis)

Jones, Kevin (M.S. Thesis)

Jones, Kevin, 2012, Preliminary Geologic Map of the Horseshoe Bend National Military Park, Alabama, Auburn University, M.S. Thesis, 1:24,000 scale. (*GRI Source Map ID 75650*).

Fault-Contact Graphic



Both the Abanda fault to the northwest and the Katy Creek fault to the southeast are dextral strike-slip faults. These faults constrain the Brevard fault zone.

Extracted from: (Jones, M.S. Thesis)

Cited References

Bentley, R.D., and Neathery, T.L., 1970, Geology of the Brevard fault zone and related rocks of the Inner Piedmont of Alabama: University of Alabama Geological Society Guidebook, 8th Annual Field Trip, p. 1-80.

Bieler, D.B, and Deininger, R.W., 1987, Geologic setting of the Kowaliga augen gneiss and the Zana Granite, northern Alabama Piedmont *in* Drummond, M.S. and Green, N.L., eds., Granites of Alabama: Geological Survey of Alabama, p. 57-72.

Steltenpohl, M.G., 2005, A primer on terranes of the southernmost Appalachians of Alabama and Georgia

Extracted from: (Jones, M.S. Thesis)

GRI Digital Data Credits

This document was developed and completed by Georgia Hybels (NPS GRD) for the NPS Geologic Resources Division (GRD) Geologic Resources Inventory(GRI) Program. Quality control of this document by Stephanie O'Meara (Colorado State University).

The information in this document was compiled from the GRI source map, and intended to accompany the digital geologic-GIS map(s) and other digital data for Horseshoe Bend National Military Park, Alabama (HOBE) developed by Georgia Hybels (NPS GRD) (see the GRI Digital Map and Source Map Citation section of this document for all sources used by the GRI in the completion of this document and related GRI digital geologic-GIS map. Quality control of geologic-GIS data by Stephanie O'Meara.

GRI finalization by Stephanie O'Meara.

GRI program coordination and scoping provided by Bruce Heise and Tim Connors (NPS GRD, Lakewood, Colorado).