

Did you know....



Block Diagrams Showing the Deposition of the Three Main Geologic Units

A. Creation of the Catoctin Formation.

About 600 million years ago, fracturing and faulting of the crust occurs and large fault-formed valleys, called rift valleys, form. The bottoms of the rift valleys are covered by lava extruded along fracture surfaces.

B. Deposition of the Loudoun Formation

Volcanic ash and conglomerates from adjacent uplands cover Catoctin lavas.

C. Deposition of the Weverton Formation

Over millions of years, rivers carrying sand and mud bury the rift valleys and deposit a blanket of sediments, mainly sandstones.

After deposition, these units were folded, faulted, and partially eroded into the arrangement seen today.

Welcome to Gambrill State Park! Geologic Features

Prepared by the Maryland Geological Survey in cooperation with the Maryland Park Service

• The rocks exposed in Gambrill State Park are about 550 million years old. • The Middletown Valley was once a mountain underlain by rocks over a billion years old (see Middletown Valley overlook diagram below). • High Knob exists because the hard sandstone of the Weverton Formation (stop 1) is much more difficult to erode than the underlying Loudoun and Catoctin Formations. • The greenish rocks along Route 40 between Gambrill Park Road and Ridge Road were originally lava flows (Catoctin Formation).



Stop 1					Stop 3
			GPS cod	ordinates	
	Stop #	Geologic Feature	Degrees, dec.	min. (NAD 83)	
	1	Weverton (Buzzard Knob)			
	2	l outcrop	39 27.70059	77 29.73260	Stop 4
Stop 2	3	Middletown Valley	39 27 71560	77 29 78080	
	4	Weverton-Loudoun	20 27 74600	77 20 76409	
	5	South Frederick Valley	39 27.74690	// 29.76408	
	6	overlook North Frederick Valley	39 27.82807	77 29.67772	
		overlook	39 28.18785	77 29.65761	
	- /	Weverton-Loudoun	39 28.37850	77 29.46606	Contraction of the second
	• 	contact	39 28.25407	77 29.52286	
	9	(Buzzard Knob) cliff	39 29.02927	77 30.08253	
	10	Weverton (Buzzard Knob) outcrop	39 29.14803	77 29.97088	
	11	Loudoun outcrop	39 29.08658	77 29.75662	
	12	Loudoun-Weverton	39 29.07696	77 29.81639	
	13	contact	39 27.73073	77 29.43834	
Stop 15	14	Buzzard Knob- Maryland Heights contact	39 27.82149	77 29.28180	Stop 7 Bootjack Spring sluice shown
	15	quartzite subunit contact	39 27.81866	77 29.17985	
	16	Maryland Heights- Buzzard Knob contact	39 27.94981	77 29.18700	
	17	Loudoun-Weverton contact	39 28.01713	77 29.33200	
	18	Loudoun-Weverton contact	39 27.93573	77 29.38417	
					Stop 9 Weverton Fm close up view







Geology of the Middletown Overlook (Stop 3) (view looking southwest of the park) with reconstruction of what it might have looked like prior to erosion.

Catoctin Mountain to the east and South Mountain to the west were once formed by a continuous rock layer, the Weverton Formation. (Gambrill State Park is located on the ridge of Catoctin Mountain)

The Middletown Valley is underlain by older rocks of the Catoctin Formation, which is in turn underlain by the 1.1 billion year old Middletown granite.

> Additional information on the geologic history of Gambrill State Park is available in a free downloadable pamphlet from the Maryland Geological Survey at www.mgs.md.gov

To purchase a park trail guide, contact a park employee. Park Office: (301) 293 - 4170 Or visit the DNR website at www.dnr.maryland.gov

Please report any problems to a park employee or call Park Watch 1-800-825-7275.

Maryland Park Service General Information: 1-800-830 3974 www.dnr.maryland.gov TTY users call via MD relay



580 Taylor Avenue Annapolis, MD 21401 Published 12/2011