**A Deep Dive into the Rocks of the Park**

Sky Meadows State Park straddles the boundary between two distinct landscapes. To the west is the Blue Ridge, with its high ridge running from northeast to southwest. To the east are the low rolling hills of the Virginia Piedmont. The shape of this land is defined by the rocks that underlie it and the long geologic history of this dynamic and ever-changing planet. They tell the turbulent history of this land.

The Park lies on the eastern flank of one of the most prominent ridges within the Appalachian Mountains. The ridge extends from Pennsylvania south to Alabama. In Virginia it is named the Blue Ridge. Within the area of Sky Meadows State Park, the Blue Ridge is composed of three important groups of rocks that range in age from 1.2 billion years old to 570 million years old.

The oldest of these rocks are the ancient granites that crop out along the eastern base of the Blue Ridge. Granitic rocks are exposed all around the park’s picnic area and along the road to Mt. Bleak House. These coarse-grained rocks include the minerals quartz, feldspar, and some darker fine-grained minerals. They have a complicated history: they have been deformed and crushed and subjected to high heat and pressure, then uplifted and exposed at the Earth's surface. These ancient granites go by different names in Virginia – some you might recognize, like the Old Rag Granite or the Pedlar Formation on top of Skyline Drive. In general, all of these granitic rocks are referred to as basement rocks, because no other rocks have been found below them in the subsurface.

Toward the base of the mountain, these granitic rocks are overlain by metamorphosed sedimentary rocks. Those rocks were originally deposits of mud and sand left by rivers and streams that flowed over the eroded surface of the granites. In some areas, the deposits were over 200 feet thick, while in other areas, no deposition took place. The deposits were eventually compressed and heated into rocks named the Swift Run Formation.

The youngest rocks in the park—at 570 million years old—are the Catoctin Volcanic rocks.

They can be seen along the summit of the Blue Ridge and down the North Ridge Trail to the base of the mountain, where the trail meets the Old Boston Road. The sequence includes volcanic flows of basaltic lava that spilled out onto the surface over a broad area stretching from central Pennsylvania to southern Virginia. As much as 2000 feet of lava poured out onto the surface. The volcanic lavas derived from deep in the earth's mantle and flowed up to the surface through cracks in the granitic basement rocks. If you take a drive to Shenandoah National Park, you can find one of the dikes, or channels, that transported the lava to the surface through the older granites just to the south of Mary’s Tunnel. Over the eons, these lava flows were buried, and most of the original minerals were altered by heat and pressure. Today they have a greenish color, which gives rise to their name – the Catoctin Greenstones.

Following the deposition of the Catoctin Volcanic rocks, all of the rocks in the Appalachians were deformed by at least three cataclysmic events. These were the result of continental collisions between eastern North America and land masses to the east, the last of which was the western edge of Africa. These collisions caused huge continental plates to fold and large sections of rocks to ride up, one over the other, forming towering mountains. Scientist believe that the rocks we see here were shoved 40-60 miles from the east. Some of the rocks of the Blue Ridge were folded like wrinkles in a throw rug. For millions of years, North America and much of Africa were welded together in a supercontinent that geologists call Pangaea.

By 200 million years ago, Pangaea began to fracture, as continental plates began to move apart. Uplifted land once again eroded and modified the landscape in an unending cycle of change. Erosion by water, wind, and ice modified the landscape, leaving the hard, resistant Catoctin greenstones along ridge tops of the Blue Ridge and more easily eroded rocks forming valleys and lowlands to reveal the Blue Ridge as we know it.

Today, the soils produced from those old granites are a favorite of local vintners and the rich soils of those ancient lava flows help to produce spectacular displays of Trilliums along the ridge in early Spring. But do not be fooled by this serene and beautiful mountain landscape. These mountains are still undergoing change – a slow and relentless weathering away. Someday this will be flat ground, awaiting the next continental collision that will send its rocks reaching once more for the sky.

Submitted by Laure Wallace