

Life Depends on What's Beneath

by Michael Kieffer

The most diverse and most numerous life forms on land happen to live underneath our feet. As the great entomologist E.O. Wilson has written and spoken, "*If I were to begin my life's work again, I would study the life in the soil around the base of one tree.*" This from a man who spent much of his career studying ants, probably the most familiar soil critter to us all and the smallest of creatures in most people's minds.

Soil and its erosion were recognized as one of the first signs of land degradation by one of the founders of conservation, Aldo Leopold. In fact, it was his work in the Southwest and the serious erosion issues occurring there in the early 1900's that began to influence his thoughts and was an essential component to developing his "Land Ethic" based on the lands "integrity".

Soil is the upper layer of earth where the mineral world and the organic world become intertwined in a matrix of plant roots and fungal mycelium. In an average cubic meter of ground, there are 10 trillion bacteria; 10 billion protozoa; 5 million nematodes; 100,000 mites; 50,000 springtails; 10,000 rotifers and tardigrades; 5,000 insects, myriapods, spiders, and diplurans; 3,000 potworms and earthworms; 100 snails and slugs; and one vertebrate. All kingdoms of life are well represented in this hidden world.

Soil formation begins with the breakdown of rock. All rock, no matter how hard, will succumb to the relentless forces of wind, water, topography, climate, and time. These forces break rock into smaller and smaller sizes eventually creating sand, silt, and clay sized particles. These particles make up the mineral components of all soil types and, depending on the percentage of each of these particles, a soil's texture is named. Equal contributions of sand, silt, and clay form a *loam soil, optimal for life*. A *sandy loam*, which is characteristic of the Bull Run Mountains, has less nutrients, moisture, and humus than a loam soil.

Lichens are the first visible signs of life on the earth's barren surfaces. These organisms begin a cascade of events that add to the connection between the mineral world and the organic world by combining and recycling both inorganic and organic components. Lichens, half algae and half fungus, have many

advantages to begin life on rock, such as abundance and longevity (an individual lichen may live hundreds if not thousands of years). They can also produce acids unique to the kingdoms of life that aid the breakdown of rock. These pioneers pave the way for mosses, ferns, herbs, shrubs, and trees that take advantage of each other, as well as each bringing a myriad of life into the fold, including animal decomposers, detritivores, scavengers, herbivores, and predators. It seems that life has evolved to trap energy on land before its eventual loss to the sea. The more time nutrients from the soil cycle through living things the more time the natural processes that



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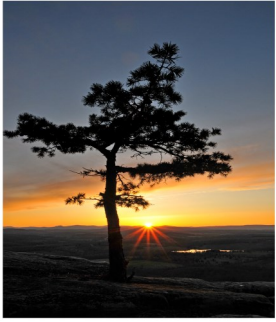


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create new soil have to replace the eventual loss. (continue on page 3)

BRMC Public Programs

Winter 2020



HIKE WITH A NATURALIST*

Thursday, February 6, 10 am (& every first Thursday)

Join a professional naturalist to discover some of the flora and fauna of the local region. This program is free, meets at the Mountain House and all are welcome.

MONTHLY SPEAKER SERIES

BRMC partners with local organizations to provide educational opportunities to our community. The series is free, meets at the Mountain House and all are welcome! Please RSVP to:

info@brmconservancy.org

Saturday, January 25, 2-4 pm

Michele Karnbach, with Arlington Outdoor Lab, will present the lab and its long history of teaching environmental education to Arlington County students on the Bull Run Mountains.

Saturday, February 15, 2-4 pm

Bert Harris, Clifton Institutes Executive Director, will present the Institutes' education and research programs. Clifton Institute is just west of the Bull Run Mountains.

WINTER WATERFOWL WORKSHOP

Saturday, February 15, 9am-12pm

George Wallace, Ph.D., biologist and world-class birder, joins BRMC as we spend the morning birding. George has spent his entire career focusing on the conservation and study of birds and will share this knowledge in this informative workshop. Meets at the Mountain House.

Pre-registration is required.

Members: \$15/non: \$20

ANNUAL FUNDRAISING EVENT—SAVE THE DATE!

Tuesday, March 10, 6:30 pm

Join us at Grace Episcopal Church in the Plains for drinks, hors d'oeuvres and lively conversation as we celebrate another year as educators, researchers, and stewards of the Bull Run Mountains.

LEOPOLD'S PRESERVE

Monthly Naturalist Walks



BRMC is proud to partner with

The White House Farm Foundation and its mission to enrich individuals with knowledge of and involvement with our natural ecological systems for monthly naturalist walks on Leopold's Preserve: 16290 Thoroughfare Road, Broad Run.

Winter Schedule:

Saturday, January 25, 10am-12pm ... Winter Birds

Sunday, February 16, 10am-12pm ... Winter Waterfowl

Thursday, March 5, 6-7:30pm ... Woodcock Watch

HOMESCHOOL PROGRAMS*

All programs are 10am-12pm. \$5 pp, including adults.

BRMC invites you and your child to spend an adventurous outing interacting with and learning about nature!

Orienteering—February 20 Join us as we learn to use a compass and the lay of the land when orienting our location in the wilderness.

Amphibians of Spring — March 19 We will explore the habitats and life cycles of amphibians.

**Our host property for this event is the Bull Run Mountains Natural Area Preserve, owned and operated by the Virginia Outdoors Foundation, a public organization dedicated to the preservation of our state's open-space lands.*

Let's Get Social!



BRMC is now on Instagram and LinkedIn too! Like, follow us, and share with your friends the latest information on our research and education programs as well as partner updates and donor opportunities.

*SHOOTING THE
BREEZE*
is a publication of
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LEOPOLD'S PRESERVE Weekend Warrior Volunteer Program

We need your help to conserve Leopold's Preserve. Volunteers can go out at their own convenience any day, not just on the weekend. Volunteers will pick up trash and keep track of trail issues (mainly tree fall and where it occurred). The only thing we ask is that you keep track of these issues and your volunteer time on the Weekend Warrior volunteer form and send the form to us at least once a month, if you are a frequent participant or if it is a one time volunteer effort that you report the results.

For more information, visit: hbrmconservancy.org/volunteer or leopoldspreserve.com/weekend-warrior



WHITE HOUSE
FARM FOUNDATION



Welcome our new Communications Manager/Research Director

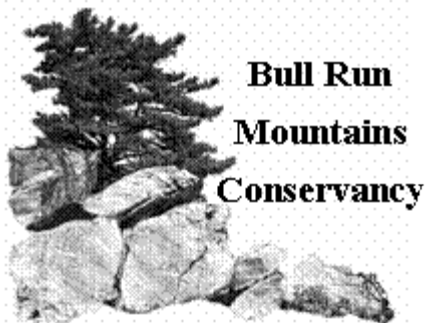
Greetings! I am thrilled to have the opportunity to serve the Bull Run Mountains Conservancy as the communications manager and research director. Having lived in the Haymarket/Gainesville area for 18 years, I've watched it grow and change, including BRMC. My children have enjoyed some programs and my family has enjoyed exploring the BRMNAP. I believe strongly in what BRMC does and am excited to grow our audience, spread awareness of the wonderful research and educational work, increase stewardship, and find new opportunities to partner within our community. My experience as a content writer and small business owner includes writing for local publications, and marketing communications efforts which include enhancing outreach through social media. I look forward to meeting and working with you. - **Frannie Barnes**

Life Depends on What's Beneath (continued from page 1)

Bacteria and fungus do the bulk of the work to provide the minerals and elements that are the building blocks of all life. Solar radiation provides the energy that drives photosynthesis in autotrophic bacteria, lichens, and plants. Energy is stored in sugars that reciprocally feed the bacteria and fungus. The mammals, birds, reptiles, and amphibians, which are composed of the minerals from this matrix, add to the process by keeping the recycling process going. Many bring nutrients "back uphill" and away from the water as they decompose on land. This is a loop that is run over and over again, as players in the circuit evolve and go extinct, in a process that has produced the most fascinating results.

This all assumes the bedrock and mineral soil relationship is still intact—a situation that many who are living in suburban and urban landscapes no longer experience in their daily lives. Many homes are built on and then surrounded by fill dirt brought in from other areas. In addition, our farming practices, especially since mechanization, have led to not only the loss of tremendous amounts of soil, but rely on inputs, such as nitrogen, produced in factories.

To keep soils constant or even building in nutrient capacity takes soil nutrients moving through a diverse food web. Humans have passed on knowledge through language and writing for thousands of years and many have "discovered" the importance of maintaining natural communities that starts with intact soils. However, as Aldo Leopold famously wrote, we continue to "...live on the land, but not by the land." Maybe it is time to heed those words.



Bull Run Mountains Conservancy

Education · Research · Stewardship

P.O. Box 210 · Broad Run · Virginia 20137
(703) 753-2631 · www.brncconservancy.org

Yes, I would like to become a member of Bull Run Mountains Conservancy.

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Organization

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| <input type="checkbox"/> \$35 Family | <input type="checkbox"/> \$75 Group | <input type="checkbox"/> \$100 Sustainer |
| <input type="checkbox"/> \$300+ Leadership | <input type="checkbox"/> \$1,000+ Benefactor | <input type="checkbox"/> \$1,000+ Corporate |
| <input type="checkbox"/> \$5,000+ Conservation Patron | <input type="checkbox"/> Other <input type="text"/> | |

Please make your tax-deductible contribution to:

Bull Run Mountains Conservancy, Inc., P.O. Box 210, Broad Run, VA 20137

Bull Run Mountains Conservancy is a membership driven organization.

Become a member today and support our programs and support the public preserve. Your membership provides BRMC necessary funds to operate and shows our foundation and corporate supporters that the public values and appreciates the resource.

Membership Benefits:

- Support environmental and historical programs for all ages
- Support research and management of the natural area
- Discounts on all public programs and camps
- Quarterly newsletter including our

Bull Run Mountains Conservancy	2020 Calendar of Events
Winter Birds at Leopold's Preserve	January 25
Speaker Series—Arlington Outdoor Lab	January 25
Winter Waterfowl Workshop w/ George Wallace	February 15
Winter Waterfowl at Leopold's Preserve	February 16
Orienteering	February 20 (Homeschool)
Annual Fundraising Event	March 10
Woodcock Watch at Leopold's Preserve	March 5
Amphibians of Spring	March 19 (Homeschool)
<p>Unless otherwise noted, all programs and events will meet at the BRMC Mountain House at 17405 Beverley Mill Drive in Broad Run, VA, across from the Bull Run Mountains State Natural Area Preserve trailhead.</p> <p>Directions: Take I-66 to Haymarket exit. Go south on Rt. 15. Go west on Rt. 55 for 2.7 miles. Turn right on Turner Rd., then left on Beverley Mill Dr. to the Mountain House 3/4 mi. on left.</p>	