

Volume 20

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Summer 2018

SHOOTING THE BREEZE

A Publication of Bull Run Mountains Conservancy, Inc.

Habitat & Diversity

by Michael Kieffer

Species, within a habitat, require nutrients, water, shelter, and space to survive, all of which comprise their niche. An *idealized niche* is defined as the limits, for all of the important environmental features, within which individuals of a species can survive, grow, and reproduce, but is often reduced to a *realized niche* by competition between species. Over time some species' niches become more specialized as these species evolve reproductive advantages through more efficient and unique energy cycling. As habitats naturally develop, less energy in the system is left dormant and energy cycling is intensified.

Specialization enables a wide diversity of life forms to live with a limited supply of nutrients and energy. Older, more diverse ecosystems have the greatest species specialization. Without disturbance and given enough time, species richness and complexity peak. Conversely, natural or unnatural disturbances cause an ecosystem to revert to an earlier successional state. The ecosystem will then begin a series of seres (successional stages), the number of which depends on the disturbance and climate. The seres naturally mature towards increased complexity and energy conservation.

As species become increasingly specialized, they become increasingly bound to more specific niches. A specialist's niche may only be found in rare habitats or habitats that are naturally far apart. Some species are mobile enough to reach suitable habitats if a disturbance leaves its present space uninhabitable, but some species do not possess such mobility or have no habitat corridors in which to travel. This is a reason that large, intact preserves contain many more species than smaller, fragmented preserves. This is also the concept behind ecologists and land conservationists' drive to connect all preserves, thus increasing their overall effectiveness.

In an intact ecosystem, specialists have an advantage, keeping the number of generalists in check. In a disturbed ecosystem, generalists have the advantage, and their increased population size may slow or arrest specialists from re-inhabiting a community. Under constant disturbance, generalists start replacing specialists on regional scales.

An ecosystem dominated by generalists can comprise many individuals, but has few species using the limited resources. As more diverse habitats continually become disturbed, the probability that specialists will become extinct increases. The more chaotic or diverse a system, the more stable or the closer a system is to equilibrium. Everyone might remember from high school science experiments that the more data one obtained, the more accurate one's results. This concept of complexity equating to greater balance pervades everything in nature, of which we are only a trace element. Continually fragmenting our landscape will only lead to less diversity and decreased stability.

Based on the simple premise that complexity in living systems increases with time, we should prioritize the conservation of the earth's oldest communities that are still intact. To learn the most about how living systems work, you need to study the most complex systems. Once a diverse ecosystem is destroyed it is lost, in human terms, forever.

BRMC works to enhance our audiences' understanding of the natural world. BRMC is offering a summer long Youth Outdoors Program where children will visit 11 different ecological communities and see the great diversity of flora and fauna on the Bull Run Mountains. They will learn why this mountain range is such an important biodiversity corridor and why we all should endeavor to protect as much of the Piedmont landscape as possible, including reaching farther and thinking more creatively about how the next generation can bring conservation beyond what past and current generations thought possible.



A basic mesic forest, one community found on the mountains.

Summer Fireflies

by Anna Ritter

SHOOTING THE BREEZE
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Driving home from the Mountain House last week, I noticed that the mountains were a haze of blue after the steady rain and heat of the past few weeks. Every year, as May turns to June and the Virginia summertime humidity takes hold, around the approach of dusk I eagerly look out for the first fireflies of the season. It is a magical time, with the dark leafy silhouettes of trees sparkling with tiny yellow lights from twilight until far into the night.

Fireflies, lightning bugs, and glowworms (the larva stage) are all part of the Lampyridae family, which includes 126 species of both bioluminescent and non-luminescent beetles. Adult Lampyridae beetles have an oblong oval shape, usually with black or dull black elytra (which covers the back of the thorax) and small yellow vertical markings.

If you've taken a walk or enjoyed the porch in the evening as the sun sets and the first fireflies begin to appear, you'll have noticed that, as night advances, the light show begins to change. At dusk as dark sets in, the first flickering lights begin flashing in the tall grass and hollows where the shade makes it just so much darker. Big Dipper beetles (*Photinus pyralis*) start emitting long J-shaped flashes, and females respond from nearby vegetation (Evans 2014). Each species of firefly has its own distinctive pattern and recognizes its kind accordingly. Females sitting in vegetation may take advantage of that fact, blinking out a different species' pattern and attracting males that they then prey upon.

If you have wetlands near your woods, you may also see the Pennsylvania Firefly beetles (*Photuris pennsylvania*) start to flash a "morse-code" pattern: one quick flash, followed by a longer flash (Faust 2017). Females hiding in the vegetation begin to respond with generic bursts of light (Faust 2017). These will continue enthusiastically from full dark until around midnight, sprinkling the understory with tiny lights.



The Pennsylvania firefly flashes a "morse code" pattern.

As night sets in and the darkness deepens, the shrubs begin to light up, and once night has fully fallen, the tree tops come alive with twinkling lights as other species join the display. Near mature forests and wood edges throughout the east coast and Appalachia, the Carolina firefly (*Photinus carolinus*) will begin displaying around sunset and continue for an hour or so. Distinctive hook-shaped flashes reveal the males, but females are so well hidden in vegetation that their displays are hard to catch (Faust 2017). Famous for their synchronous displays, these fireflies attract thousands of people to the Great Smoky Mountains every June and are a stunning sight to see during their peak.

While many firefly displays fade as midnight approaches, one species known as the Christmas Lights beetles (*Photuris tremulans*) will continue on in sporadic displays until just before dawn. Out checking on what your dog was barking at so raucously at 2 AM You'll at least get to enjoy your very own Christmas in July. The flash patterns of the Christmas Lights beetles often vary greatly and so are hard to distinguish from other species, but few other species continue so late into the night.

The firefly season is waning now as we head into July. You can still catch the populations of Ignited fireflies (*Photinus ignites*) that have been reported in Virginia from time to time, although their main populations are in the northeastern U.S. and eastern Canada (Faust 2017). Just last night, as I drove a backcountry road, the displays along the wood edges were beautiful. Throughout June and into July, they'll begin with periodic flashes just before dusk, reaching peak just as darkness sets in and then tapering off after a little while (Faust 2017). The summer solstice is just behind us, and the hazy summer days that give the Blue Ridge Mountains their iconic color have taken hold. As we head into the "dog days" of summer, the twinkling lights of night will transition to the pulsing hum of cicadas in the full green canopies and a thick humidity will lay over the land.

Each time of the year has its own unique life and story to listen to and enjoy. It's the joy of the naturalist to delve deeper into each and share their wonders with others.

Mike Belknap



Fireflies begin displaying at sunset.

Public Programs Summer 2018

HIKE WITH A NATURALIST

Monthly naturalist hikes will resume in September.

SUMMER NATURALIST CAMP

Session I: July 16th-20th, 9a.m.—4p.m.

Session II: July 23rd—27th, 9a.m.—4p.m.

BRMC invites your child to spend an adventurous week interacting with the natural world. Each day we will focus on different groups of plants and animals on the Bull Run Mountains. Campers will add to their understanding of natural systems through hikes, stream walks, snake handling (only if desired!), frog and salamander catching, bird watching, butterfly and insect collecting, crafts, and games. Ages 7-12.

Pre-registration required.

Members: \$250/Non-members: \$300.

BUDDING NATURALIST CAMP

July 23rd—27th, 9 a.m.—12 p.m.

At this week-long camp, young children will be exposed to the outdoors and wildlife, as they explore life on the Bull Run Mountains through a series of discovery hikes, frog and salamander searches, snake viewing, stream exploration, nature crafts. Ages 4-6.

Pre-registration required.

Members: \$125/Non-members: \$175.

NABA BUTTERFLY COUNTS

Saturday, July 28th, 2018

BRMC is partnering with two butterfly count circles happening in our area! Please contact the appropriate person below to receive info about meeting locations and start times. Experts & novices welcome, binoculars are suggested!

Airlie Circle: Bert Harris, bharris@cliftoninstitute.org.

Check in begins 8am, meet at Clifton Farm

Nokesville Circle: Kim Hosen, alliance@pwconserve.org.

Meet at your assigned sectors, 9am.

CHESAPEAKE WATERSHED WORKSHOP

July 30th—August 2nd, 9 a.m.—4 p.m.

Thanks to support from the Chesapeake Bay Restoration Fund, six scholarships are available for this workshop.

Please contact us at info@brmconservancy.org to request an application. This workshop will focus on conserving the rivers and streams that flow into the Chesapeake Bay. We will explore headwater streams on the Bull Run Mountains, go downstream on Little Bull Run, and visit Turkey Run National Park. At each location students will perform stream monitoring, vegetation analyses, and stream habitat and riparian buffer evaluations.

Ages 13-18.

Pre-registration required.

Members: \$200/Non-members: \$250

PLEIN AIR ART DAY

August 10th, 2018—Friday, 9a.m.-1p.m.

BRMC is excited to have the Artists in Middleburg out for a *plein air* art day on the mountains. Artists can join us and set up a spot along the trails to study and work. Novices are welcome! Artists are happy to talk about their work, so bring a nature journal and enjoy a morning studying and appreciating the beauty of the natural world. We will meet at the trailhead at 9am, 17405 Beverley Mill Drive, Broad Run, VA 20137.

RSVPs appreciated, info@brmconservancy.org.

Leopold's Preserve Monthly Naturalist Walks

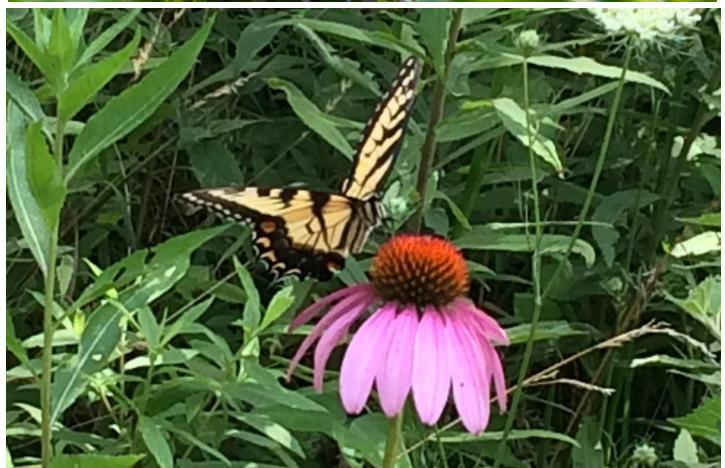
BRMC & the White House Farm Foundation are partnering to provide monthly naturalist walks on Leopold's Preserve.

Walks are free & open to the community.

Summer Schedule

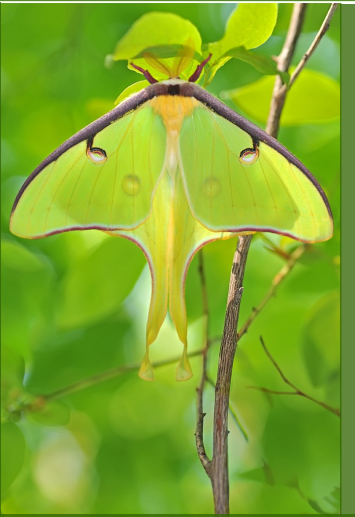
July 21, 1-3pm... Butterflies, Dragonflies, & Damselflies

August 11, 10am-12pm... Cicadas & Katydid



Top: Great Spangled Fritillary, *Speyeria cybele*. By S. Berman
Bottom: Tiger Swallowtail, *Papilio glaucus*, By A. Ritter

Donor Opportunities to Support *BRMC's Core Education Programs*



Halloween Safari

BRMC creates three magical nights of hikes, stories, and music around a bonfire with popcorn roasted over the fire, along with marshmallows and sinfully delicious hot chocolate.

1 Conservation Patron, \$5,000

Dominion Energy, Benefactors



Youth Outdoors Program

BRMC's Youth Outdoors Program engages children to show them the outdoors is fun and exciting and teach them that we all have a responsibility to protect and enhance our landscape. Equal opportunity scholarships provided.

Henry Rust, Conservation Patron

2 Benefactors, \$1,000



School Ground Programs

BRMC offers school site programs integrated into their curriculum & after school programs that increase schools' opportunities to provide students outdoor activities.

Anonymous, Conservation Patron

Cedar Shakes & Shingles, Inc, Benefactor

1 Benefactor, \$1,000



Speaker Series

BRMC's Speaker Series provides opportunities for scientific researchers, local conservation organizations, historians, and archeologists to share their work with the community.

Tim Dunn & Ellen Stofan, Conservation

Patron

Anonymous, Benefactors



Homeschool Programs

BRMC's Homeschool Program focuses on larger concepts, such as evolution, plate tectonics, and how the Bull Run Mountains came to be the home of the plant & animal life that the students explore.

Plein Family Charitable Trust,

Conservation Patron

Sandy & Tim Surabian, Benefactor

1 Benefactor, \$1,000

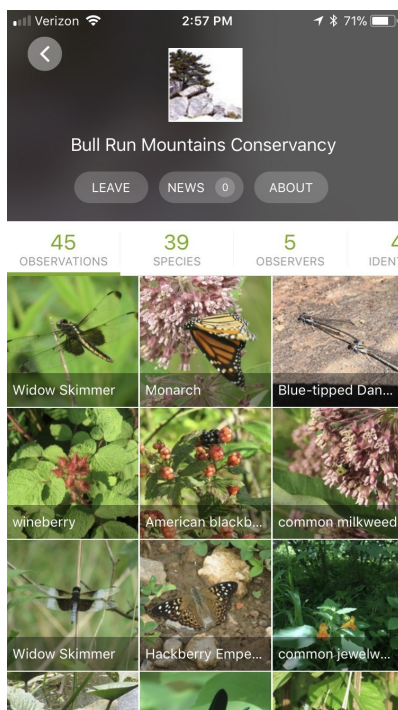
Dragonfly & Damselfly Research—Summer 2018

Bull Run Mountains Conservancy (BRMC) is excited to announce that with generous support from the PATH Foundation, we have begun work for our summer 2018 research project, a Survey of Dragonfly and Damselfly Fauna of the Bull Run Mountains.

BRMC, in partnership with the Virginia Division of Natural Heritage (VDNH), is conducting a rigorous dragonfly and damselfly (members of the order Odonata) survey of this important insect group. This is the first survey of this order done on the Bull Run Mountains, which is an important biodiversity corridor in Virginia.



Blue-faced Meadowhawk,
Sympetrum ambiguum



Join the BRMC Project on
iNaturalist!

This survey has citizen science opportunities for students and adults and will be featured in BRMC's 2018/19 education programs for all ages. While Natural Heritage is conducting formal surveys, we are asking you to upload your photos of dragonflies and damselflies to our Bull Run Mountains Conservancy project page on iNaturalist. (You can get the user friendly iNaturalist app for your smart phone by visiting the app store. Then join our project to upload photos.) Our target area encompasses a 5 mile radius around the Bull Run Mountains that run from Aldie to New Baltimore. At the end of the field season, we will be counting up numbers from the app and using them in our official report for the survey.

We are giving out laminated pocket field guides on dragonflies and damselflies to everyone who wants to join this citizen science project. Come by the Mountain House to pick up a field guide to help with identification of species in your photos!

Virginia supports the "second-most diverse Odonate fauna in the United States, with a total of 196 species recorded, including 140 dragonflies and 56 damselflies" (Steve Roble, Zoologist, VDNH). These species are critical members of local ecosystems, preda-

tors of many smaller insects including mosquitoes, and indicators of water quality and pollutants. Despite their importance, no survey has cataloged the Odonata species on the Bull Run Mountains. This information is necessary to make land management and conservation decisions that protect and conserve the beloved Piedmont feature that the Mountains are in our community.

Results from this survey will be published as Technical Reports by VDNH (*continued on pg. 6*)

Widow Skimmer, *Libellula luctuosa*



Dragonfly & Damselfly Research, *cont.*

(continued from pg. 5) and shared on the BRMC website (www.brmconservancy.org/research). A teaching collection will be created and used to complement various BRMC public workshops. VDNH scientists will present their results through the BRMC Speaker Series, giving our community a first-hand (and free of charge) look at the methods and results of this work. BRMC's Youth Outdoors Program will also incorporate a dragonfly and damselfly portion into our 2018/19 curriculum, and local children will learn about these critical insects and their role in the landscape.



Eastern Pondhawk, *Erythemis simplicicollis*

Chris Hobson, zoologist with Virginia's Natural Heritage Program, will also be joining us this fall for a Speaker Series discussion, where he will share preliminary results of the survey and methodology. We will be sending out details through the fall newsletter and member email lists once the date is confirmed.

JULY UPDATE:

Since the start of the season in May, approximately 40 species have been recorded, including both dragonflies and damselflies. We expect that number to continue to rise as surveys continue through the summer and early fall. When this data is added to Drs. Flint & Smith's insect collections from the mountains, we will have "a pretty good picture of what occurs on the Bull Run Mountains and surrounding ecosystems" (Chris Hobson, pers. comm.) The iNaturalist Bull Run Mountains Conservancy project is up and active, and recorded observations are now live. Join the project to add your own!

To register for a program, fill out the form below and mail with your payment to:
Bull Run Mountains Conservancy, P.O. Box 210, Broad Run, VA 20137
Program registration is also now available online at www.brmconservancy.org/calendar.html.
For more information, call us at (703) 753-2631 or visit our web site at www.brmconservancy.org.

Name _____

Address _____

City/ZIP _____

Home phone _____

Work phone _____

E-mail _____

Are you a BRMC member? _____

No. of people registering _____

Fee _____

Amount enclosed _____

Name of child[ren] if registering for youth camp _____

Summer Naturalist Camp

July 16-20, 23-27

9am-4pm

Members: \$250, non: \$300

Leopold's Preserve

Butterflies, Dragonflies, & Damselflies

July 21, 1-3pm

Budding Naturalist Camp

July 23-27, 9am-12pm

Members: \$125, non: \$175

NABA Butterfly Counts

July 28

RSVP:

bharris@cliftoninstitute.org

(Airlie),

alliance@pwconserve.org

(Nokesville)

Chesapeake Watershed Workshop

July 30-August 2

Members: \$200, non: \$250

Plein Air Art Day

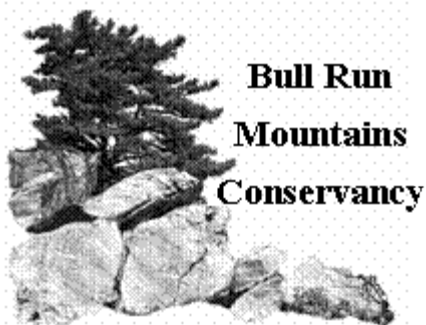
August 10, 9am-1pm

RSVP:

info@brmconservancy.org

Leopold's Preserve Cicadas & Katydid

August 11, 10am-12pm



Bull Run Mountains Conservancy

Education · Research · Stewardship

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

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

Name _____

Organization _____

Address _____

Phone _____ E-mail _____

Referred by _____

- | | | |
|---|--|---|
| <input type="checkbox"/> \$15 Student | <input type="checkbox"/> \$20 Senior | <input type="checkbox"/> \$25 Individual |
| <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 _____ | |

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 program calendar

Bull Run Mountains Conservancy	2018 Calendar of Events	
July 16-20 & 23-27	Summer Naturalist Camp	
July 21	Butterflies, Dragonflies, & Damselflies (Leopold's Preserve)	
July 23-27	Budding Naturalist Camp	
July 28	NABA Butterfly Counts	
July 30- August 2	Chesapeake Watershed Workshop	
August 10	<i>Plein Air Art Day</i>	
August 11	Cicadas & Katydid (Leopold's Preserve)	
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.	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.	