

Volume 15

Issue 3

Fall 2011

SHOOTING THE BREEZE

A Publication of Bull Run Mountains Conservancy, Inc.

HALLOWEEN SAFARI: October 15, 21, & 22



Clipart courtesy FCIT (<http://etc.usf.edu/clipart/>).

BRMC wants to take you on a night-time hike through the Bull Run Mountains! A guide will lead you along the trail where you will meet native "wildlife" that perform natural history skits. Join us for face painting, Halloween snacks, hot cider, a bonfire, and live music. Bring a flashlight and wear good hiking shoes.

Non-scary night hike!

All ages welcome!

Music, snacks, and drinks included!

In order to make everyone's experience of Halloween Safari as pleasant as possible, we ask attendees to pre-register for certain time-slots. Please pre-register your family and friends for the event and save money!

\$7 in advance/\$10 at the door

Pre-registration required for 7:00-8:00 p.m. time slots.

First-come, first-served from 8:00-8:30 p.m.

Volunteers needed, and donations and sponsors welcome.

Contact us at (703) 753-2631, or info@brmconservancy.org.

Pre-Register for Halloween Safari by filling out and returning this form to BRMC. We will contact you by email to confirm your pre-registration after we receive your information.

HALLOWEEN SAFARI

Pre-Registration

Name/Group: _____

Phone: _____

Email: _____

Circle One:

Saturday, Oct 15 Friday, Oct 21 Saturday, Oct 22

Preferred Start Time of Hike. Circle One:

7:00-7:15 7:15-7:30 7:30-7:45 7:45-8:00 8:00-8:15

Number of People: _____

Total Amount Enclosed? (\$7/person in advance) _____

Make check payable to BRMC.

*Halloween Safari is a rain or shine event, Pre-registrations are non-refundable/non-exchangeable

*Pre-registrations are on a first-come, first-served basis



Mail to:

BRMC, P.O. Box 210, Broad Run, Virginia 20137



**Congratulations to
Mason Joiner,
Summer Photo Contest
Winner!**

Mason took this photo of the Ebony Jewelwing damselfly (*Calopteryx maculata*) during an outing with BRMC Nature Camp this summer.

Research Square

By Michele Thieme

How many species are there on earth? The answer to this question is, “we don’t know.” Estimates of the total number of species across the globe vary from 3 to 100 million species (May 2011).

A recent study, however, has used an innovative method to provide an updated global estimate (Mora et al. 2011). Using data from well-known taxonomic groups, the authors determined that the number of higher taxa within a group is highly correlated with the total number of species within that group. Mora et al., thus, were able to extrapolate the total number of species from the number of higher taxa across different levels of taxonomic grouping. Based on this analysis they estimate there to be about 8.7 million species on earth.



Omethes marginatus
Photos by A. Evans

There are currently 1.2 million species that have been scientifically documented and named. So, using the 8.7 million estimate, after 250 years of taxonomic classification only about 14% of all species have been described. We have a long way to go before the catalogue of life on earth is complete.

In the Bull Run Mountains, most macro-species are already described although there are likely

undescribed species from groups such as the yeasts, molds, and parasites. However, even among larger species, there are many species that live here but have never been documented as being on the mountains. For example, Art Evans, an entomologist who is conducting a survey of beetles for BRMC, was recently sorting some of his samples and discovered a rare soldier beetle (*Omethes marginatus*) (Evans 2011). This is the first time that this rare species and family have ever been documented in Virginia.

Conservation of rare community types and species is the primary reason that the state has set aside the natural area preserve system, including the Bull Run Mountains Natural Area Preserve. As with elsewhere on earth, we don’t yet know what other treasures remain to be discovered in the mountains.

Literature Cited

Evans, A. 2011. Another Rare Beetle Added to the Virginia Fauna. Published online at: <http://arthurevans.wordpress.com/2011/08/11/another-rare-beetle-added-to-the-virginia-fauna/>.

Mora, C., D.P. Tittensor, S. Adl, A.G.B. Simpson, and B. Worm. 2011. How Many Species Are There on Earth and in the Ocean? PLoS Biol 9(8): e1001127. doi:10.1371/journal.pbio.1001127.

May, R.M. 2011. Why Worry about How Many Species and Their Loss? PLoS Biol 9(8): e1001130. doi:10.1371/journal.pbio.1001130.

Bull Run Mountains Conservancy Public Programs 2011

TRAIL WORK SATURDAYS

**New! 1st Saturday of Every Month
9 a.m.-1 p.m.**

Join us in our efforts to improve the trail system on the Mountain. We'll be continuing our work on Ridge Trail and beyond.

Dates in 2011: October 1st, November 5th, December 3rd

**HIKE WITH A NATURALIST
1st Wednesday of Every Month
9—11 a.m.**

Our first Wednesday of the month hike for those members and nonmembers who prefer to hike in a group. Come and discover some of the flora and fauna of the Bull Run Mountains.

This program is free; all are welcome.

HALLOWEEN SAFARI

October 15th—Saturday, 7—8:30 p.m.

October 21st—Friday, 7—8:30 p.m.

October 22nd—Saturday, 7—8:30 p.m.

BRMC wants to take you on a night-time hike through the Bull Run Mountains! Join us for face painting, Halloween snacks, hot cider, a bonfire, and live music. All participants should bring a flashlight and wear good walking shoes.

**Pre-registration required for
7:00-8:00 p.m. time slots.**

First-come, first-served from 8:00-8:30 p.m.
\$7 in advance/\$10 at the door

TODDLIN' ALONG THE BULL RUN MOUNTAINS

November 1st—Tuesday

10:00—noon

This is a chance for toddlers and pre-school aged children to enjoy the beautiful fall colors of the mountain. We'll start with a few hands-on activities at the Mountain House and then we'll head out in the field to discover nature using all five senses.

Appropriate for ages 3-6.

Pre-registration required.

Members: \$10/non: \$15.

BRUSH UP WITH NATURE

November 6th—Sunday

2—5 p.m.

Enjoy a guided hike to the White Rocks,

capture the view of the changing leaves, then paint! We provide a canvas, acrylics and a lite snack, you bring your imagination. Artistic or not, this autumn overlook will inspire you to try something new or brush up on your creative skills.

Pre-Registration required.

Members: \$25/non: \$30

OLD HOME SITES

November 19th—Saturday

8:30—11a.m.

BRMC is thrilled to continue our exploration of old home sites with an extra treat. Go beyond the trails as we explore cemeteries, foundations, and clearings that mark past residences. Then sit back and enjoy a hot breakfast in the woods as local historian Marcia Markey performs a historical reenactment based on diaries, letters, and other primary sources. Space is limited and spots fill early.

Pre-registration required.

Members: \$25/non: \$30.

A FUNGUS AMONG US

December 3rd—Saturday

9:30—11:30 a.m.

Come learn how to grow oyster mushrooms on a roll of toilet paper! Participants will leave with their own self-contained mushroom growing medium, from which they should be able to harvest mushrooms within a month. Learn about the biology of mushrooms and the role that they play in the ecosystems of the Bull Run Mountains.

Members: \$20/non: \$25

WINTER NATURE CAMP

**December 27-28—Tuesday and
Wednesday**

9 a.m.—4 p.m.

Join BRMC for a winter adventure and learn more about the winter woods. Birds are more easily seen in leafless trees and sounds are magnified in the winter stillness. Dress for the weather—snow makes these camps all the more fun. Appropriate for children ages 7-12.

Pre-registration required.

Members: \$100/non: \$150.

Keepers of the Earth's History

By Michael Kieffer

If you ever looked at a plant or animal and wondered how it ended up here then you have already begun your journey into the science of **biogeography**. Plants and animals indeed are the most conspicuous and reliable keepers of earth's history. Physicists have been theorizing since Einstein in an attempt to unify general relativity with quantum mechanics. Scores of books, newspaper articles, and media attention have followed and charted their efforts. All while biogeography, the unifying theory of life and earth, has been known and advanced for over 150 years by some of the greatest scientists in history. Yet, it has remained obscure if not completely unknown to most people.

Biogeography unites the theory of life and the geosciences. While the trend in science has been toward specialization, biogeographers swim upstream as they combine many disciplines to explain the distribution of life on earth. The geosciences, including plate tectonics, climatology, oceanography, explain the physical pressures and limitations to both survival and movement of life on earth, whereas evolution explains how these pressures resulted in the present plant and animal distributions we see today.



Fundulopanchax gardineri, a killifish from West Africa. Photo from: <http://nr2009.edublogs.org/petcam/>

In a paper written by Alfred Russel Wallace in 1858, he postulated the **Sarawak Law**: "Every species has come into existence coincident in both space and time with pre-existing closely allied species." This paper was truly the beginning of modern biogeography (McCarthy, 2009). The question then became what is the driving force behind this law. The answer had come to Charles Darwin in 1838 and to Alfred Wallace by 1859 after each read Thomas Malthus's "An Essay on the Principles of Population". In a world of limited resources and constant environmental pressures, those traits that allowed for greater reproductive success would be passed on and those that were deleterious would be pruned. It took until the 1950's and the discovery of DNA to understand how the traits were passed or pruned.

We all have heard of the tree of life, but a better analogy may be looking at life and earth entwined together like a system of roots that in space and time could be followed from any root tip (analogous species) backwards through every junction until you ultimately ended up at the first growth. Within the root mat, each species is most closely related to those directly along their own rootlet. This creeping root mass of gene flow passes over the continents, oceans, and islands. Over time and with careful analysis, this root mat begins to be understood. With genetic analysis, some persistent puzzles start to be solved and an ever-deeper understanding of life on our planet comes together.

To continue the analogy, at times due to plate movements, the root mat would be torn apart, but continue to grow on separate continents. Effectively isolated from each other, the original ancestors would face different selective pressures leading to speciation. This can be seen looking at the Aplocheiloid or killifish of India, Madagascar, Africa, and South America that were all part of the Gondwana continent 130 million years ago (mya). A volcanic ring began breaking up Gondwana 125 mya creating the southern ocean ring and marooning Antarctica at the southern pole. As Gondwana separated, the Gondwanan killifish ancestor speciated into the Indo-Malaysian-Madagascar ancestor and the African/South American ancestor. The African/South American ancestor split into South American ancestor that led to the 7 current species of killifish on South America and the African killifish ancestor. The African killifish ancestor was then split by the Dahomey Gap that separates Africa from east to west leading to 6 current West African species and 6 current East African species. More recently, the Indo-Malaysian-Madagascar ancestor was split into 2 Indo-Malaysian species and 2 Madagascar/Seychelles species. It is interesting to note that genetic analysis of species such as the killifish confirms that even though Madagascar is just off the coast of Africa, its species are more closely related to India. This matches with seafloor analyses that show that the seafloor between Africa and Madagascar is dramatically older than the seafloor of the Indian Ocean.

To illustrate the effect geologic processes have on life, one only needs to look at Antarctica. Antarctica was once full of life, but then the volcanic ring created the southern oceans and changed climate patterns leading to the endless march of cold and ice that brutally drove all but the most basic life forms to extinction. As all native mammals, birds, reptiles, and fish went extinct, only the ancestors of the tenacious Emperor Penguin survived, completely alone throughout the dark winter months.

McCarthy, Dennis, *Here Be Dragons: How The Study of Animal and Plant Distributions Revolutionized Our Views of Life and Earth* (New York: Oxford University Press, 2009).

Driving up Interstate 495 it hit me, I was about to have over 60,000 Carniolan honey bees in the back of the car. About a month before, the idea to keep bees at BRMC was discussed and we decided it would be a great learning tool and potential program for the Conservancy. I set out on a quest to ingest every bit of bee knowledge I could get my hands on. This is the diary of a very amateur beekeeper.

June 8th- Spent the morning at the Overlook Community Farm Apiary with bee mentor, Jay Everett. Given the time of year, there is a good portion of eggs, larvae, capped brood (pupae) and adult bees. Complete metamorphosis takes place in a honey-comb cell and lasts about twenty-one days. A single egg is placed in the center of the cell. It looks like a white dot in the middle of the cell comb, about the size of a sugar crystal.

June 13th- Just 5 days later the eggs had all metamorphosed into larvae which were quickly being capped by nurse bees. When the egg is hatched (about three days), the larva (kind of looks like a mini white grub at the bottom of the cell) becomes an eating machine. Each larva is fed between 150 and 800 times a day, and will grow to 900% of the egg weight by the 5th day. By the end of the 5th day, the larva cells are capped with a wax like covering and left to continue the metamorphosis. They are now referred to as capped brood. Only three more days until we have our own apiary!

June 16th- I picked up our two hives full of bees. I have set them up in the field beside the mountain house and now must leave them alone for a couple days. The bees will need time to orient themselves at their new location. The "Orientation Flight" begins. During the Orientation Flight, the bees will familiarize themselves with landmarks and areas surrounding their new hive location. These flights are short and sweet, but they provide the colony information about what to expect when foraging.

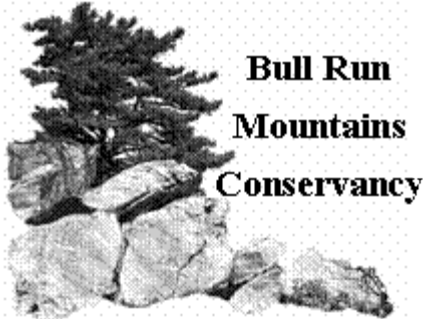
June 26th- As I comb through our new hives, I notice most of the capped brood has been removed and the bees have moved out of the pupal stage. During the pupal stage, the recognizable parts of the bee are formed; legs, wings, abdomen and all the internal organs and muscles have developed. By day twenty one, the bee will chew away at the capping until it can fully emerge. After checking our new colonies, we carefully added a second deep (a hive box) and called it a day. Most beekeepers like to keep all movement in a hive to a minimum and complete the work early in the morning. Greeting the bees early, while it's cool and they are calm, is the best way to maintain happy bees.



Maintaining happy bees is our goal but it's not as easy as it sounds. Picking the right location for the hives, to feed or not to feed, Varroa mites and the 103° temperatures are just the tip of the iceberg as far as obstacles to overcome. My quest for bee knowledge and experience has begun!

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
For more information, call us at (703) 753-2631 or visit our web site at
www.brmconservancy.org.

- | | |
|---|---|
| Name _____ | <input type="checkbox"/> Toddlin' Along the Bull Run Mountains
November 2, Members \$10/Non \$15 |
| Address _____ | |
| City/ZIP _____ | <input type="checkbox"/> Brush Up with Nature
November 6, Members \$25 /Non \$30 |
| Home phone _____ | |
| Work phone _____ | <input type="checkbox"/> Old Home Sites
November 19, Members \$25/Non \$30 |
| E-mail _____ | |
| Are you a BRMC member? _____ | |
| No. of people registering _____ | <input type="checkbox"/> A Fungus Among Us
December 3, Members \$20 /Non \$25 |
| Fee _____ | |
| Amount enclosed _____ | <input type="checkbox"/> Winter Nature Camp
December 27-28, Members \$100/Non \$150 |
| Name of child[ren] if registering for youth
camp _____ | |
-



**Bull Run
Mountains
Conservancy**

Education · Research · Stewardship

P. O. Box 210 · Broad Run · Virginia 20137
(703) 753-2631 · www.brmconservancy.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 trips
- Quarterly newsletter including our program calendar

Join today at www.brmconservancy.org

Bull Run Mountains Conservancy	2011 Calendar of Events	
October 15, 21, and 22	Halloween Safari	
November 2	Toddlin' Along the Bull Run Mountains	
November 6	Brush Up with Nature	
November 19	Old Home Sites	
December 3	A Fungus Among Us	
December 27-28	Winter Nature Camp	
<p>Directions: 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>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. Call (703) 753-2631 for more information or visit our Web site at www.brmconservancy.org</p>		