

ATBI Quarterly
Discover Life in America
1316 Cherokee Orchard Road
Gatlinburg, TN 37738
865-430-4756
www.dlia.org



Non-Profit Org.
 US POSTAGE
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WISH LIST:

- *Microwave oven for office
- *Refrigerator for office
- *Silent and Live auction items
- *Newer computers for the office
- *A projector for Power-Point presentations
- *Camera lens- Canon Digital model EOS40D

CALENDAR OF EVENTS 2009

Mark these events on your calendar and stay tuned for more details and other programs. Check out our website's events listing at <http://www.dlia.org/dlia/calendars/events.shtml> for updates and changes.

- Thursday, April 30:** DLIA Open House at Twin Creeks from 10 a.m.—2 p.m. 75th Anniversary Event.
- Friday, May 1:** DLIA Biodiversity Field Day at Twin Creeks from 10 a.m.—Noon. 75th Anniversary Event.
- Saturday, May 16:** Springtail Saturday at Purchase Knob from 10 a.m.—4:30 p.m. Registration required.
- Friday, May 22:** International Biodiversity Day at Twin Creeks. Invasive Species 1 p.m.—3 p.m. Call to register.
- Saturday, May 23:** Fern Foray meet at Metcalf Bottoms at 9:30 a.m. Call to register.
- Monday, June 1:** Documenting Life exhibit opens at Sevier County Bank in Sevierville.
- Saturday June 6:** "DLIA Day" all day at Mast General Store in Knoxville.
- Friday June 12:** DLIA Firefly Festival at the Happy Hiker from 10 a.m.—6 p.m. See website or call for details.
- Saturday June 13 through Monday June 15:** GSMNP 75th Anniversary Celebration Event.
- Wednesday June 17:** Biodiversity Days in the Smokies, Hooray for Herps from 1 p.m.—4 p.m. at Twin Creeks. Call for details.
- Thursday, June 18:** Biodiversity Days in the Smokies, Symbiosis-Birds, Bees and Pollen from 1 p.m.—4 p.m. at Twin Creeks. Call for details.
- Friday, June 19:** Biodiversity Days in the Smokies, Xeric Cliff Bioblitz. Call for more information and to register.
- Saturday June 20:** Biodiversity Days in the Smokies, Fern Foray meet at NewFound Gap at 9:30. Call to register
- Thursday July 9, 2009:** Teacher Workshop on Biodiversity at Ijams Nature Center in Knoxville.
- Saturday July 18, 2009:** Teacher Workshop on Biodiversity at Western North Carolina Nature Center in Asheville.
- Saturday and Sunday August 15 and 16, 2009:** DLIA Mt. LeConte Excursion and Overnight. Call for more info.
- Wednesday September 2, 2009:** GSMNP 75th Anniversary Re-Dedication event at Newfound Gap. Invitation only.
- Saturday September 5, 2009:** Fern Foray at Purchase Knob, meet at Big Creek at 9:30. Call to register.
- Saturday October 17, 2009:** DLIA Volunteer Appreciation Potluck at Cosby Pavilion, Noon - 3 p.m. Call to register.
- Thursday December 10 through Saturday December 12, 2009:** DLIA/ATBI Conference. Call for more information.

To learn about DLIA's volunteer opportunities and to sign up for activities, contact Heather at 865-430-4756 or Heather@dlia.org.

DISCOVER LIFE IN AMERICA

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ATBI Quarterly

In partnership with Great Smoky Mountains National Park-Great Smoky Mountains Association-Friends of the Smokies

NOTES FROM THE DIRECTOR

In Trying Economic Times

During this downturn in the economy, nonprofits, even more than other businesses, have to tighten belts. Although Discover Life in America has always managed to accomplish a lot with little, we continue to look for ways to save money, make changes that make us more efficient, and allow us to continue to fulfill the mission of our organization. Here are some of the things we will do differently this year:

*Appealing for more volunteer help, which can help us save time and staff costs. We need volunteers in every aspect of this project- not just the science. We need volunteers to help us run the "every day business" of DLIA.

*Diversifying our funding base. The Park asked us to find other funding sources and we are working very hard to do just that by writing more grants, appealing to more donors, and looking for new corporate sponsors.

*Limiting our mailing costs. We have our newsletter available on-line. After this issue we will mail the newsletter only once per year, rather than four times per year. Please let us know if you would like to be added to the email newsletter list.

*Have more events to raise our profile and money while spending less on these events through donations and in-kind help.

If you have ideas or suggestions for belt tightening in lean times please send them to us. As always, your volunteer help is so important to the success of DLIA and the ATBI of the Great Smoky Mountains National Park.

Todd P. Witcher
 Executive Director



Science Advisory Panel

- Dr. Dan Janzen, University of Pennsylvania
- Dr. Tom Lovejoy, The Heinz Center
- Dr. Ron Pulliam, University of Georgia
- Dr. Peter Raven, Missouri Botanical Garden
- Dr. Edward O. Wilson, Harvard University
- Dr. Sylvia Earle, National Geographic Society

Board of Directors

Officers

- Ernest C. Bernard: Chairman, UT at Knoxville
- Robb Turner: Vice-Chair, ORAU, Oak Ridge, TN
- Patricia Cox: Secretary, TVA
- David Scanlon: Treasurer, Knoxville, TN

Staff

- Todd P. Witcher, Executive Director
- Chuck Cooper, Database Technician
- Heather MacCulloch, Administrative Assistant/ Volunteer Coordinator

Taxa Tally

New to Science= 890

New to the Park= 6,339

Becky Nichols
 Park Entomologist

MARK YOUR CALENDARS FOR DLIA'S GREAT UPCOMING EVENTS!

SAVE THE DATE! 2009 DLIA/ATBI CONFERENCE

Please mark your calendars for the next big DLIA/ATBI Conference this December 10, 11 and 12 at the River Terrace in Gatlinburg. We will have our biggest conference ever with a variety of events and workshops. AND, a very, very special keynote address!

BIODIVERSITY DAYS IN THE SMOKIES!

Wednesday, June 17, 1 – 4 p.m.

Hooray for Herps: Reptiles and Amphibians in the Smokies at Twin Creeks Thursday June 18, 1 – 4 p.m.

Symbiosis: Birds, Bees and Pollen at Twin Creeks Friday June 19, All Day

Xeric Cliff Bioblitz (call for more info)

Saturday June 20, All Day (meet at 9:30)

Fern Foray at New Found Gap

FIREFLY FESTIVAL at the Happy Hiker!

Please join us for one of our new events celebrating the wondrous diversity of synchronous fireflies in the Park.

JUNE 12, 2009 10 a.m.—6 p.m.

There will be lots to do at this Firefly Extravaganza including: music, food, games, a firefly expert, an insect zoo and much more!

INTERNATIONAL BIODIVERSITY DAY

AT TWIN CREEKS

MAY 22, 2009 1—3 p.m.

Please join us for this special program on invasive species with Kris Johnson (NPS) and author Margie Hunter (Landscaping with the Native Plants of TN)

DISCOVER LIFE IN AMERICA

SPRING 2009

UPDATE FROM THE BOARD CHAIR

Onward, upward, outward...we need you!

Not having been on boards of directors before, when I joined the DLIA Board a long time ago I thought, OK, this is like a committee meeting except they all are people with the same skill sets I have. It did not take me long to tumble from my ivory tower and break my naiveté into a thousand pieces! A private, nonprofit organization running such a complicated set of projects (the largest biodiversity project of its kind in the world) needs a range of skills as wide as you can imagine. I have found that while scientists are necessary for this board to succeed, so are the bankers, businessmen, retailers, educators, public employees, photographers, students, and all kinds of interested people. If you have a love of nature, and if it's combined with business skills, nonprofit experience, retailing,

writing skills, or any of the other careers, professions, and passions that make our world go 'round, DLIA needs you. You don't need a degree in botany, nor be able to grow bacteria, nor even like insects; you can help DLIA develop. Please contact Todd, or Heather, or Chuck, or me, or any of the other directors to find out more.

Ernest C. Bernard
Chairman
Board of Directors
Discover Life in America



DATABASE AND TECHNOLOGY UPDATE

Any good business strategist will tell you that location is an important, if not the most important, consideration for establishing any new and profitable business. Also, it matters a lot, in keeping track of inventory in-stock. It is equally important in the world of ATBI data and specimen collections.

Let's use a grocery store as an example. Any grocery store manager could tell you any day what and where he has of any item and brand of item in the store. To not know this would be unthinkable... perhaps even ridiculous? Can you imagine inquiring where the whole wheat bread is and a grocery store employee saying, "I believe that we have historic documents stating that this type of bread was found 20 years ago somewhere in the right back quadrant of the store. If you would like to search our paper files, you may be able to find what you are looking for." ...? So, how does a retail grocer keep track of his product? He inventories continuously,

recording what is stocked, and where it is stocked. This way he knows how to manage his diversity and quantity of items, not allowing anything to disappear without his knowledge and timely action.

For similar reasons Discover Life in America is firmly resolved to assist the Park in accurately locating and inventorying its living resources. We encourage scientists and citizen volunteers alike to be sure to precisely record location data. We remind them to check their GPS units' batteries (take spares), to record a description of the location (in case GPS reception is lacking), and to check their data over carefully during computer entry. In fact, half of the funds of a DLIA mini-grant project will not be made available until the data is complete and of acceptable quality.

The Great Smoky Mountains National Park's Cartographic Technician, Ben Zank, has developed, and graciously

made available, a powerful tool for researchers and amateur ATBI naturalists alike, to precisely pinpoint locations where they make interesting life discoveries in the Park. Along with a good hand-held GPS unit, this (free) mapping tool will equip you to document your Park wonderings and memorable finds. You can download it and the accompanying help files from the DLIA website page at www.dlia.org/atbi/science/index.shtml. It is located in the center of the science page under the title "Park Maps", and link for GeoPDF map. Listed help files are also downloadable from this page.

**DLIA VOLUNTEERS**
Heather MacCulloch

DLIA friends and supporters, I would like to thank those of you who took the time to respond to the mass e-mail that went out in early March. For those of you that did not receive the e-mail; we are creating a list-serve for those that wish to

receive the ATBI Quarterly electronically, and are also creating a list of folks that would like to be on a list to receive information about forthcoming events that are not listed on our DLIA Calendar of Events. If you did not receive the "mass" e-mail about this move; we do not have a current email address for you. If you would like to be on either or both of these lists, please send an e-mail to heather@dlia.org. Also, to help us check our records, please send us your most current email address.

We have several fun and exciting events planned that are rapidly approaching. The first one is happening May 16 at the Purchase Knob. DLIA will be hosting "Springtail Saturday" from 10 am-4:30 pm. It will include a brief presentation about springtails, and their ecology; followed by hiking, collecting, and sorting back at the science facility. Please contact me for more information and/or to register for the event. We are also hosting a Firefly Festival at the Happy Hiker in Gatlinburg, TN on Friday, June 12. So bring everyone by to eat, drink, and learn about the synchronous fireflies in the Smokies, and then head in to the Park for the spectacular viewing!

SPRINGTAILS IN THE SMOKIES

Springtails (Collembola) form the largest of the three lineages of modern **hexapods** that are no longer considered **insects** (the other two are the **Protura** and **Diplura**). The three orders are sometimes grouped together in a class called Entognatha because they have internal mouthparts, but they do not appear to be more closely related to one another than to insects, which have external mouthparts.

Springtails are **cryptozoa** frequently found in **leaf litter** and other decaying material, where they are primarily **detritivores** and **microbivores**, and one of the main biological agents responsible for the control and the dissemination of soil **microorganisms**.

In sheer numbers, they are reputed to be one of the most abundant of all macroscopic animals, with estimates of 100,000 individuals per cubic meter of topsoil, essentially everywhere on Earth where soil and related habitats (**moss** cushions, fallen **wood**, **grass** tufts, **ant** nests) occur; only **nematodes**, **crustaceans**, and **mites** are likely to have global populations of similar magnitude.

Springtails are currently used in laboratory tests for the early detection of **soil pollution**. Unlike earthworms, and like many insects and mollusks, Collembola are

very sensitive to herbicides and thus are threatened in no-tillage agriculture, which makes a more intense use of herbicides than conventional agriculture.

Springtails are distributed worldwide. They live on every continent and have been found at the most southerly location in Antarctica at 84° 47' S, *Hypogastruridae-Biscoia sudpolaris* and *Isotomidae-Antarctophorus subpolaris*, of any arthropod. Species richness and diversity are higher in humid and mesic environments (Rusek 1989); however, they can live in deserts in Australia, *Isotomidae-Folsomides arnoldi* as well as on the snow in the Himalayas, *Isotomidae-Aackia karakoramensis*.

About 6,500 species have been described and there might be close to 50,000 species of Collembola on earth.

Dr. Ernest Bernard is leading Springtail research in the Smokies (see scientist spotlight below). There are 215 total species of springtails documented in the Park. Since the ATBI began in 1998 there have been 100 new records for the park and 60 new species to science documented.

Source: DLIA website, Wikipedia



SPRINGTAIL FACTS:

- * Collembola are often called springtails due to the presence of a furcula, which they use for jumping.
- * Every springtail has a ventral tube or colophore.
- * Most species feed on leaf detritus and fungal hyphae; however, some are carnivorous and consume nematodes, rotifers, and other Collembola.
- * Very few adults survive for more than 1-2 years. However, life history differs with each species, some having a life cycle of 23 - 27 days, other of 5 -10 months.
- * Collembola do not go through metamorphosis.
- * They molt throughout their entire lives, with some molting up to 50 times. Long classified together in the Myxomycophyta as part of the Fungi, slime "molds" are now known to be quite unrelated to the fungi. There are three main groups of slime molds.

PLEASE JOIN US FOR
SPRINGTAIL SATURDAY
MAY 16 @ PURCHASE KNOB

10:00 -Introduction-Natural History of
Colembolla (Dr. Ernest Bernard)

11:30 - Lunch (Bring your own)

12:30 - 3:00 -Hike and collection

3:00 - 4:30 -Identification

REGISTRATION REQUIRED call 865-430-4757

SCIENTIST SPOTLIGHT

Discover Life in America would like to sincerely thank all of the tremendous scientists and volunteers who help make this fabulous project what it is today. DLIA's Scientist Spotlight profiles dedicated individuals who have made a difference.

Dr. Ernest Bernard, professor of entomology at the University of Tennessee, Knoxville, has been Chairman of the Board of Discover Life in America since 2007. Dr. Bernard has been involved in the Smokies' ATBI and Discover Life in America as a researcher from the very beginning. He has served on the DLIA board for the last 6 years. Dr. Bernard received his bachelors and masters in entomology at the University of Michigan and obtained his Ph.D. in Plant Pathology/Nematology at the University of Georgia.

Dr. Bernard has been teaching at University of Tennessee, Knoxville for 31 years and has played major roles in many other organizations such as president for the Society of Nematologists, Editor-in-Chief for the Journal of Nematology, and member of the Ecology Committee.

Ernie has donated countless hours as a board member and scientist to this great project. His dedication to DLIA has been invaluable, and his work on Springtails in the Park has added numerous new species to the park and to science. Thank you Ernie for all your hard work for DLIA and the Smokies' ATBI. **By Charli Kerns**

