



ATBI Quarterly

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



Discover Life in America- "10 years and 5,000 species"

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TAXA TALLY

**New to Science =
877**

**New to the Park =
5,251**

Becky Nichols
Park Entomologist

When answering questions about Discover Life and the ATBI, folks are always interested in the numbers and amazed by the answer (877 **news** species to science and 5,251 new species in the Smokies to date), but the follow up question is usually what do you do with that information and how does that help the National Park? Here are some of the **answer**:

Over the 10 years that the Smokies' ATBI has been underway, Discover Life in America has:

- Leveraged support for research in the park on average of about \$600,000 per year.
- Recruited, trained and coordinated over 4,000 volunteers to the tune of approximately 7,000 volunteer hours per year.
- Created and continues to maintain a digital image

2008 Research Projects

This year we will have another skilled group of scientists, coordinated by DLIA, working to discover new life forms, as well as cataloging known species captured in the Park. In addition, concerted effort will be applied to identifying organisms captured in past collections that have been stockpiling at the Twin Creeks Research Area.

New field collections for this

database of over 9,000 entries.

- Created and continues to add to and maintain a taxa database with over 250,000 records.
- Created and maintains a beautiful website that has more than 2 million visitors per year, and helps educate and inform the public about our species rich National **park**.
- Discover Life and the ATBI have received publication in numerous magazines including National Geographic, George Wright Society Forum, Newsweek, Southeastern Biologists, and many others.

Finally, and maybe the most exciting part of this fantastic project is the opportunity to be the model for all other ATBI's that follow. There are ATBI's beginning all over the

country including Tennessee State Parks, South Carolina State Parks, Yellowstone National Park, Big Thicket in Texas and many, many others. There are numerous challenges ahead in completing this ATBI, but the significance of what **we** document here in the Smokies will go way beyond sheer numbers.

Todd P. Witcher
Executive Director
Discover Life in America

DLIA INTERNS

Here at DLIA we are so lucky to have three fantastic interns this summer thanks to a grant from the Alcoa Foundation and our wonderful Board member, Kevin Fitzpatrick. Please help us welcome Gabby Salazar, Elliot Krasnopoler, and Moria Robinson.

ays"), flatworms, water bugs, and a miniature form of fungus that infects insects termed "microsporidia".

Other related projects will include ecological analysis of ants and associated species data, and sorting and identifying microhymenopterans (small solitary parasitic wasps) caught in the past few years and stored at the Park.

year, supported by DLIA, will allow us to gather data on such critters as water bears (tardigrades), various fly species (fly blitz event coming in June), ants, water mites (water mite workshop coming in August – also see http://www3.uark.edu/BISC/water_mite_expedGSMNP2005.html for info on past work), fungi, algae, ferns (on-going "fern for-

Spring 2008

DISCOVER LIFE IN AMERICA

UPDATE FROM THE BOARD CHAIR- “Smokies Passion”

Having been involved with DLIA since its inception (and before that, five years of inventory in the Smokies), I am continually struck by the complex nature of this giant project. It is very difficult to define its scientific boundaries or limits, due to the nature of its components – National Park Service, universities, scientists, volunteers, staff, other supporters, sponsors, and so on. But to me the most distinctive aspect is Volunteerism, with a capital V – not a representation of the University of Tennessee, but rather the “giving” thread that runs through everyone who is committed to learning more about the biodiversity of the Smokies. In slightly more hard-headed terms, this refers to “in-kind” contributions that every one of the thousands of DLIA participants has given to the project. We cannot calculate this number perfectly, but surely it dwarfs even the vital cash contributions made to support DLIA through the generosity of the Friends of the Smokies, the Great Smoky Mountains Association, the National Park Service, and other supporters.

A case in point is the cost of scientists performing the actual surveys, processing samples,

identifying specimens, and entering data into a database. Travel costs are high with the rapid increase in fuel prices. The time a scientist and his support people are in the field must also be included in the total. Then comes the laborious process of separating specimens with lab equipment and identifying them with microscopes and identification tools such as manuals and on-line keys. Almost all of the scientists who travel willingly, even happily to the Smokies come from much greater distances than I do and have to factor in lodging and even more fuel costs, and must make similar decisions on how to pay for everything. Consider the expenditures of scientists from Europe and Asia who have worked in the Park, and you can begin to get a feeling for the purity of the scientific endeavor at the heart of the ATBI.

Even given the financial sacrifices on the part of scientists, their involvement pales with that of the thousands of volunteers who have contributed the precious commodity of time to the ATBI. Scientists can sometimes get reimbursed through university-controlled funds for their travel; volunteers cannot. If we were to

calculate the cost of travel and the value of all the hours put into the ATBI over the past 10 years, the number would be enormous. All of this donated time has been for the benefit of Great Smoky Mountains National Park, and the Park and DLIA are incomparably richer because of it.

Finally, I need to write that I have yet to meet any individual associated with the ATBI and DLIA who has not given far more to the effort than what she or he has received in terms of financial compensation. To me, this is the core of DLIA’s strength – the spirit of unselfish contribution toward a great goal that will benefit our region, nation, and world.

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

**Database and Technology Update**

During the first part of 2008, the technology staff person was moved up to a work schedule of 5 days per week from 2007’s 4-day routine. The long-time, and amazingly productive web master, Charles Wilder, resigned at the end of 2007 and left a gaping hole in our staff compliment and output. Therefore, the remaining technical employee (yours truly) added a day of web updating to his germinating workload. In addition, a park-supported, ambitious plan to capture backlog ATBI data stored at DLIA, as well as in park staff offices was initiated. And, as you might

guess, this Data Technician was also appointed to cleaning and appending this data to the Park’s ATBI database. And then there is the “regular” work of checking and preparing the more recent ATBI data for inputting into the Park ATBI database... Whew!

Then ... the rest of the story ... DLIA technical staff was invited to Ft Collins, CO in May of this year to help the National Park Service to begin a database and data entry system for other Parks across the country that are now interested in conducting an All

Taxa Biodiversity Inventory. This has become one of the Park Service’s most popular centennial celebration projects (garnering special funding). DLIA’s part in this major national initiative was that of an experienced advisor. Keep your eyes and ears open as this nationally-based movement gains momentum!

Chuck Cooper,
Data Technician

**DLIA Volunteers**

In an effort to be “more green”, I would like to encourage those of you receiving the newsletter to receive it electronically. We would like to reduce the amount of paper that we are printing. If you would prefer to receive the ATBI Quarterly electronically, please send me an e-mail to heather@dlia.org with the subject heading “Electronic ATBI Newsletter”. If I receive an e-mail from you with that subject heading, you will only receive the Quarterly via e-mail.

I am also strongly encouraging each of our volunteers to sign up for our DLIA Volunteer List Serve. It is truly the best way to stay connected and apprised of forthcoming events and activities. You will not receive unnecessary e-mails. I am the only one that will send out messages. The added bonus of being on the list serve is that you will be the first to know the up-to-date Taxa Tally. To join our group visit www.yahoo.com, then click on groups in the left margin. You can search DLIA Volunteers Group, then click join this group. It’s that simple!

I would also like to thank all of the volunteers that have attended events thus far. Please check the calendar of events on our website, www.dlia.org. I look forward to seeing you in the Smokies!

Heather MacCulloch-Volunteer Coordinator



UCM Biologists Participate in First National Geographic Society and National Park Service BioBlitz

Harold Keller

University of Central Missouri



WARRENSBURG, MO – Working in the treetops offers a unique perspective on life above the forest floor. For a group of University of Central Missouri biology students, making scientific discoveries that will receive worldwide recognition make it even more unique, adding a new level of excitement to already thrilling adventures.

A team of UCM students, faculty and alumni, recently received the honor of being invited to participate in the first NGS-NPS BioBlitz in Rock Creek Park, (May 18 and 19, 2007) Washington, D.C. Making the trip were Harold W. Keller, visiting professor of biology, principal investigator and myxomycologist; Angela Scarborough, an undergraduate biology student from Higginsville, Mo.; Sydney Everhart, a recent UCM master's degree recipient in biology from Atlantic, Iowa; Courtney Kilgore, a graduate student from Fayetteville, N.C.; Kenneth Snell, a UCM alumnus and instructor in biology at Maple Woods Community College who was the group's climbing instructor; Joseph Ely, assistant professor of biology and plant ecologist and biostatistician; and Robert Breshears, a recent UCM photography graduate and graduate student in the Department of Communications.

The BioBlitz, a 24-hour marathon of intensive nature study, is not a new concept. In fact, the UCM Wildlife Society has held its own BioBlitz in the past at Pertle Springs. However, the opportunity to collect and catalog as many species as possible within the limits of a 24 hour time period and the boundaries of a specified area is always exciting and a challenge.

It is the double rope climbing technique used to ascend into the treetops that has brought the UCM team recognition, as well as prior grant funding from the National Science Foundation, National Geographic Committee for Research and Exploration, and Discover Life in America to explore the tree canopy in the Great Smoky Mountains National Park. The double rope technique is commonly used by foresters and arborists. A climbing saddle, system of

knots, and a climbing rope installed over a tree crotch, enables the climber to advance and reach heights over 40 meters to collect bark samples with mosses, liverworts, lichens, fungi, and myxomycetes. This climbing technique requires special instruction, and the safety of the climber and ground crew is always a priority. The UCM team attracted a crowd while working in the tall tree canopy near the entrance to Rock Creek Park. Choosing the location was no accident, according to Keller, who saw the opportunity to educate the public about the double rope climbing technique as he entered the park.

"It was a perfect location for us to demonstrate our climbing techniques," Keller said. "People were curious as they entered the park, and we met and had great conversations with some very interesting people." The event drew media coverage, and interest in the UCM team's research and activities that resulted in a photo of Everhart on the front page of the Metro section of the May 19th issue of the *Washington Post*. Perched in her harness in the treetops, Everhart collected tree bark samples that would be transported to the laboratory at UCM where moist chamber cultures provide conditions that encourage the growth of myxomycetes and other organisms.

The National Geographic team also shot video footage, which will be included in an August Public Broadcasting Service broadcast, Episode 236 of National Geographic's *Wild Chronicles*. The invitation to participate in the first national BioBlitz came as a result of coverage of Keller and his student's research during past summers in the Great Smoky Mountains National Park. Keller has introduced a number of UCM students to tree canopy research and the double rope technique, resulting in front-page coverage in the Knoxville, Tenn., *News-Sentinel*.

Keller has conducted field research on myxomycetes for more than 35 years, and he and his student Snell pioneered research on tree canopy myxomycetes in the Great Smoky Mountains National Park in 2003. Keller does research with students in Ha Ha Tonka State Park and Big Oak Tree State Park in Missouri, the Daniel Boone National Forest in Kentucky, and the Great Smoky Mountains

National Park in Tennessee and North Carolina. Students also participate in special activities such as the BioBlitz, the first lichen Bio-Quest in the Great Smoky Mountains National Park, and tree canopy research projects with 7th grade life science students, and their teacher Patricia Smith at Warrensburg Middle School.

UCM students who participate in the tree canopy research are well-trained in a tree climbing school held at the university's Pertle Springs natural outdoor laboratory area. The training sessions were conducted by Charley Potorff, a professional arborist who also conducted the final skills test that allowed each student to participate. Students demonstrate physical conditioning by running the stadium steps in the university's Audrey J. Walton football stadium.

"Tree canopy research is one of the last frontiers of research on the planet earth," Keller said. "No one is searching for this group of organisms using the double rope climbing technique to access the tree canopy." The Rock Creek Park BioBlitz participants returned to their home venues with samples to analyze. To date, nearly 700 species have been tallied, with more to come as they work in their laboratories.

"This is an opportunity for students to understand scientific methodology by conducting original research," Keller said. "They are able to participate in an 'adventure phase,' a 'laboratory phase,' and a 'publication phase,' leading the way for successful completion of future studies and doctoral degrees. Our UCM students represent role models and inspiration for the next generation of tree canopy biologists."



CALENDAR OF EVENTS 2008

Mark these events on your calendar and stay tuned for more details and other programs. See the website at www.dlia.org for more detailed information, to learn about DLIA's volunteer opportunities and to sign up for activities, contact Heather MacCulloch, 865-430-4756 or Heather@dlia.org.

Monday, June 9- Saturday, June 14, 2008: Diptera Week with "Blitz". See website for details.

Saturday, June 28, 2008: Fern Foray #2. This foray will be in the Abrams Creek area of the park. Please call Heather at 865-430-4756 for more information or contact Pat Cox, pbcox@tva.gov.

Saturday July 19, 2008: Citizen Science Workday at theTwin Creeks DLIA office. Call Heather for more information.

Friday and Saturday, August 1 and 2, 2008, Water Mite Workshop: TBA. See website for details.

Saturday, August 30, 2008: Fern Foray #3. This foray will be on the North Carolina side with the base camp at Purchase Knob. Please call Heather at 865-430-4756 for more information or contact Pat Cox, pbcox@tva.gov.

Wednesday, December 3- Friday, -December 5, 2008: 12th Annual DLIA/ATBI Conference. Please mark your calendars for this most important event. This gathering of scientists, volunteers, teachers, students, and park managers will celebrate twelve years of accomplishments in biodiversity research and education. This year's event will be held at Mill's Auditorium in Gatlinburg, and promises to be bigger and better than ever. Please call 865-430-4756 for more information.

WISH LIST:

Microwave oven

Digital Camera

Silent Auction items for the conference

Upgrade in computers for the office

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Discover Life in America

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