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OUTHEASTERN IOLOGY



Volume 53

January, 2006

Number 1

ASB **ASB 67TH ANNUAL MEETING**

ASB **MARCH 29-APRIL 1, 2006**

ASB **The University of Tennessee
Knoxville, Tennessee**

ASB **See Page 1 and Consult Website
<http://www.asb.appstate.edu/>**



Entrance to the Knoxville Main Campus.

ASB

ASB

*The Official Publication of
The Association of Southeastern Biologists*
<http://www.asb.appstate.edu/>

SOUTHEASTERN BIOLOGY (ISSN 1533-8436)

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PURPOSE

The purpose of this association shall be to promote the advancement of biology as a science by encouraging research, the imparting of knowledge, the application of knowledge to the solution of biological problems, and the preservation of biological resources. The ASB has representation in Section G Committee of the AAAS. Varying types of membership are available to individuals and institutions. See inside back cover.

TIME AND PLACE OF FUTURE MEETINGS

2006 March 29-31, April 1: Hosted by the University of Tennessee, Knoxville, Tennessee.
2007 April 18-21: Hosted by the University of South Carolina, Columbia, South Carolina.
2008 April 16-19: Hosted by Furman University, Greenville, South Carolina.

The University of Tennessee

is proud to host the



67th Annual Meeting **2006 Association of Southeastern Biologists** **March 29-April 1, 2006, Gatlinburg, Tennessee** **Gatlinburg Convention Center & Glenstone Lodge**

The University of Tennessee

The University of Tennessee, on the banks of the Tennessee River, began as Blount College, chartered on September 10, 1794. Following the Civil War, the State of Tennessee made the University the beneficiary of the Morrill Act of 1862, which allocated federal land or its monetary value to the various states for the teaching of "agricultural and mechanical" subjects and to provide military training to students. Thus, the University of Tennessee (its designation after 1879) became a land-grant institution. Today, the population on the Knoxville campus consists of approximately 25,000 students and 8,160 faculty and staff. While the University has acquired a national reputation in both men's and women's athletics, the UT Knoxville campus during its history has also produced some distinguished academics and statesmen, including one Nobel laureate, six Rhodes Scholars, five Pulitzer Prize winners, two National Book Award winners, nine U.S. Senators, and one U.S. Supreme Court justice. These alumni and an infinite number of others of less prominence bear witness to the University's success in fulfilling its mission of preparing citizens of Tennessee and the nation for their role in a democracy, helping individuals to realize their own potential, and training them to perform service for the state and the nation.

67th Annual Meeting

This four-day event brings together approximately 800 biologists from across the southeastern United States. The meeting features a distinguished plenary speaker, special symposia, field trips, oral and poster presentations, workshops, networking and social events, and more.

The Annual Meeting provides you with the exclusive opportunity to showcase your products and/or services to this large and important audience of faculty, students, researchers, conservation workers, military and government personnel, and business professionals with a common interest in biological issues. Interests are diverse, but range from genetics and molecular biology, to physiology and population biology, to community and ecosystem ecology.

About ASB

The Association of Southeastern Biologists (ASB) was established in 1937 by biologists concerned with the quality of biological research in the southeastern United States. Today, ASB is the largest regional biology association in the country, and is committed to the advancement of biology as a science by the promotion of science education, research, and the application of scientific knowledge to human problems.

Getting to Gatlinburg Is Easy

From Virginia:

Take I-81 South to I-40 East to Exit 435 (Newport) and follow Hwy 321 South all the way into Gatlinburg. Approximate drive time from interstate: 45 minutes

From Lexington:

Take I-75 South to I-640 East, then I-40 East to exit 435 (Newport) and follow Highway 321 South to Gatlinburg. Approximate drive time from interstate: 45 minutes.

From Chattanooga:

Take Exit 81 on I-75 North and follow Highway 321 North through Maryville and Townsend and Highway 73 to Gatlinburg. Approximate driving time from interstate: 70 minutes.

From Nashville:

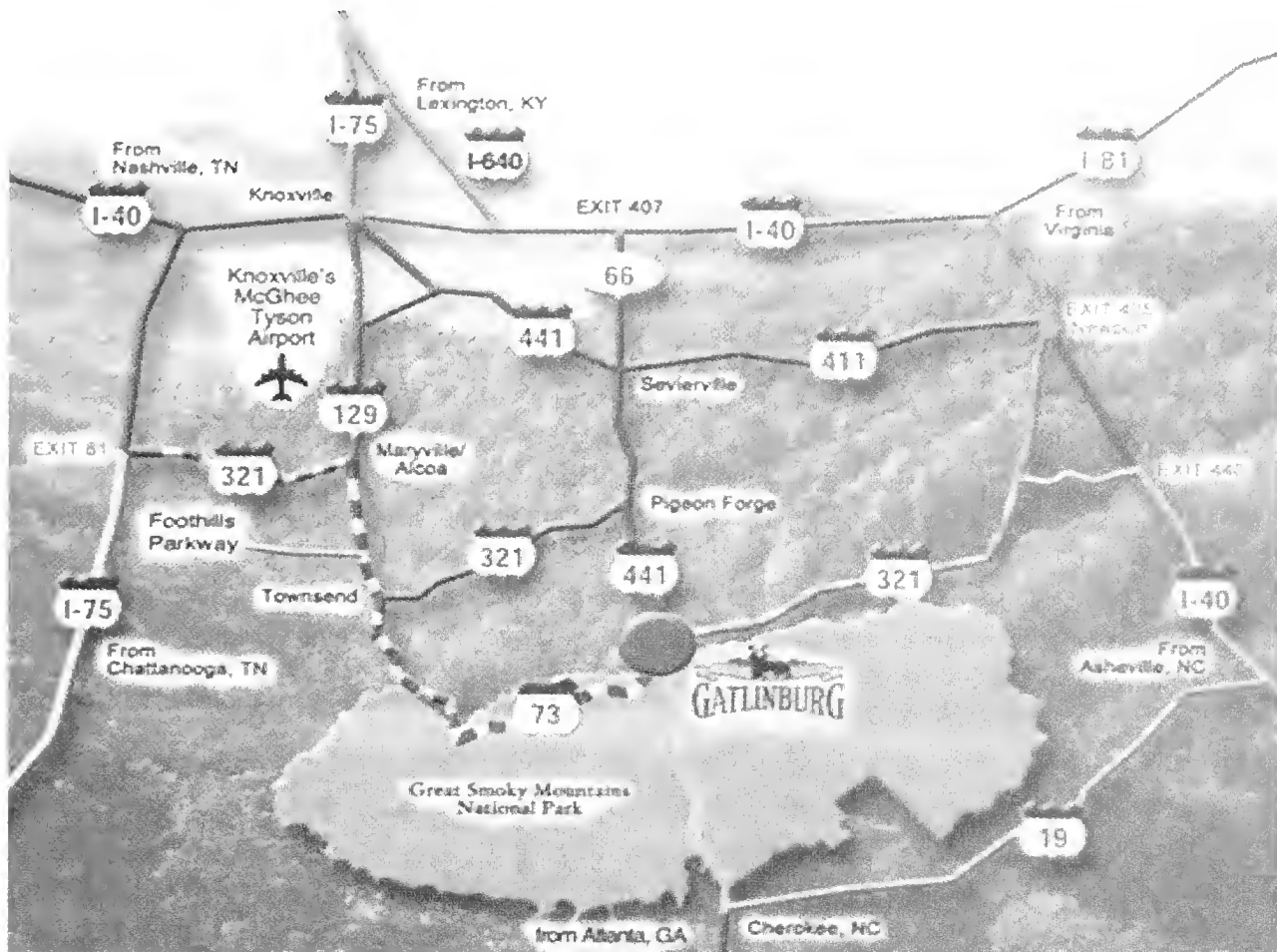
From I-40 take I-75 South to Exit 81 and follow Highway 321 North through Maryville and Townsend and Highway 73 to Gatlinburg. Approximate driving time from interstate: 70 minutes.

From Asheville:

Take I-40 West to Exit 443 and follow Foothills Parkway to Highway 321 South to Gatlinburg. Approximate drive time from interstate: 45 minutes.

From Atlanta:

Take I-85 North to I-985 North to US 23. Take US 23 to Highway 23/441 to Highway 74/441 through Cherokee, NC to Gatlinburg. Approximate drive time from Atlanta: 4 hours 10 minutes.



Things To Do

Attractions:

Gatlinburg offers exciting adventures at every turn; the mountain village has a special attraction for everyone. Smoky Mountains National Park, Cades Cove, Christus Gardens, Ober Gatlinburg, Rafting in the Smokies, Gatlinburg Sky Lift, Ripley's Aquarium of the Smokies are just a few of the exciting activities for you to enjoy during your visit to the area.

Dining:

If you love good food, you're going to love Gatlinburg. Over 100 great restaurants offer everything from good old down-home Southern cookin' to Park Avenue gourmet. From authentic regional cuisine in rustic settings to popular theme restaurants.

Shopping:

Gatlinburg has more than 400 quaint shops and five malls. Many shops are filled with handmade arts & crafts, unique to the area and apparel and special keepsakes that you just can't find anywhere else.

Golf:

The Gatlinburg Golf Course offers a year-round modern facility with a full service pro shop and food services area. From challenging layouts and emerald fairways to beautifully wooded landscapes and well-manicured greens, you'll think you've died and gone to golfer's heaven.

ASB Field Trips

The Great Smoky Mountains National Park (GSMNP) is a national treasure whose biological richness is unsurpassed any where in the Eastern United States. Yet, even after 75 years of biological studies in the park a complete assessment of the species richness of all groups of organisms is still unknown. The All Taxa Biological Inventory (ATBI) was created to stimulate new efforts on inventorying the biological taxa of all the living organisms in the park. As the known number of species in the park increases there is greater interest in preservation of this diversity from some of the environmental periled which threaten the health of all the flora and fauna within. With the 2006 annual SABS meeting in Gatlinburg, TN, this affords participants a great opportunity to experience one of the United Nations designated International Biosphere Reserve first hand. Therefore, we have proposed six trips focusing on major groups of organism, biological inventories and environmental issues facing the preservation of the biota.

Trips are half day in length and will caravan (car pooling will be encouraged) from Sugarlands Visitor Center in the Great Smoky Mountains National Park to their destination. Participants will need to be prepared for wet and or cool weather and possible wet environments. Bring water and food as needed. Cost: \$10.00. For information, contact field trip coordinators Ken McFarland (kdmcfarl@utk.edu) or Edward Clebsch (eclebsch@utk.edu) by e-mail for phone (865-974-6841).

1) **Birding in the Smokies** – a firsthand view of the great diversity of birds in the Smokies. A number of bird habitats will be explored from Sugarlands to Cades Cove. Meet at 7:00 AM and depart promptly. Limit 15 Participants-5 cars. Bring Binoculars. Contact/ leader: Jason Mitchell, TVA Biologist jmmitchell@tva.gov).

2) **Aquatic Insects in the Smokies** – With the advent of the ATBI, studies on the insect diversity of the park have increased the known number of species. Come and join one of the ATBI entomologists and learn about the insect's role in the environment. Meet at 8:00 AM. Limit 20 participants. Contact/leaders: Dr. Jim Lowe, Entomologist, professor emeritus University of Montana (jhlowejr@hotmail.com) and TVA Aquatic Biologist, Bo Baxter (jtbaxter@tva.gov).

3) **Plant Communities of the Smokies** – No other place in the eastern US can you see the diversity of plant communities as those found in The Great Smoky Mountains National Park. Take a biome journey from secondary mesic forest of Sugarlands to the Spruce-Fir forest on Clingman's Dome. Meet at 8:00 AM. Limit 20 participants—7cars. Contact/leaders: Dr. Ed Clebsch, Botanist, professor emeritus University of Tennessee (eclebsch@utk.edu), Dr. Ken McFarland, Botanist, University of Tennessee (kdmcfarl@utk.edu), and Dr. William H. Martin, Ecologist, Eastern Kentucky University (bill.martin@eku.edu).

4) **Salamanders of the Smokies** – The Park is considered to be the salamander capital of the world. The diverse habitats provide environments for 30 taxa,

including an endemic species, ranging in size from less than 5 cm to almost 1 meter. View first hand some of this diversity and learn about their biology. Brings boots and hand lens. Meet 8:00 AM. Limit 20 participants. Contacts/leaders: Dr. Floyd Scott, Herpetologist, Austin Peay University (scott@apsu.edu) and John Byrd, Herpetologist and biologist extraordinaire (cresosnake@aol.com)

5) **Black Bears and Wild Boars in the Smokies** – Human interactions with the black bear in and around the borders of the park is an ongoing problem for both organisms. Learn about bear habitat and the threats tourist and urbanization have on their environments. Similarly, the introduced wild boar has had a major impact on the native herbaceous plants in the park. Learn about their impacts on the park and the parks efforts to manage their populations. Meet at 8:00 AM. Limit 15 participants. Contact/leader: NPS Ranger, Carey Jones (carey_jones@nps.gov).

NEW Commercial Workshops

All commercial workshops will be presented on Wed 3/29/06 by exhibitors at no additional charge to ASB participants. This is a new and exciting dimension of the Annual ASB Meeting. Topics range from the non-formaldehyde preservative used in dissection to the latest electron microscopy instruments. Plan to attend this year's event a day early and learn about the latest tips from the experts.

Social Events

Wednesday Night Mixer will be in the exhibitor area of the Tennessee Ball room immediately following the Plenary Session. A local bluegrass group, the "Woodpickers", will provide background music. Heavy Hors d'oeuvres and cash bar will be available.

Thursday Night Social: Beer and Bandana Bash at Mills Auditorium. "A Celebration of the Smokies". Food will be picnic style with hamburgers and hot dogs; beer will be furnished by Smoky Mt. Brewery (microbrew). The "Kings", a popular group from Roanoke, Virginia, will entertain us with their large repertoire which allows them the freedom to play whatever we would like to hear and dance to.

Friday Night Awards Banquet: Tennessee Ballroom: the menu for the banquet will be Chicken en Croute (Boneless breast of chicken stuffed with mushrooms, backed and served with a mushroom demi-glace); chef's choice of vegetables, spinach-orange salad, assorted desserts, and chocolate fountain with strawberries, pineapple, pound cake and sugar cookies. Vegetarian meals will be available upon request. Following dinner award presentations will be made and Past President, Claudia Jolls, will present the banquet address. **(A reminder: those competing for awards must be present at the banquet in order to receive the award).**





The 67th Annual Meeting

**The Association of
Southeastern Biologists
29 March-1 April, 2006
Gatlinburg, Tennessee**

Attendee Registration (Pre-Registration Deadline is 2/01/06)

Last Name _____ First Name _____
 Institution/Organization _____
 Address _____
 City _____ State _____ Postal Code _____
 Phone _____ Fax _____ Country _____

- Faculty
 Graduate
 Undergraduate
 Other

Affiliate: __ASB __ESA __BBB __SEMS __SSP __SABS __SWS __BSA

	Pre-Registration	Late Registration
<input type="radio"/> ASB Regular Member	\$135.00	\$175.00
<input type="radio"/> ASB Student Member	\$65.00	\$85.00
<input type="radio"/> ASB Non-Member*	\$155.00	\$190.00
<input type="radio"/> ASB Non-Member Student*	\$90.00	\$120.00
<input type="radio"/> Exhibitor with no booth	\$130.00	\$195.00

* _____ Check here if you wish this to include one-year membership to ASB at no additional charge.

Social Events (Please check all events you plan to attend)

- Wednesday evening Wine and Cheese, Post-plenary Session
 cash bar social with live entertainment _____ tickets x \$00.00 = \$ _____
- Regular Thursday night **"A Celebration of the Smokies"- Beer & Bandanas**
 _____ tickets x \$35.00 = \$ _____
- Student Thursday night **"A Celebration of the Smokies"- Beer & Bandanas**
 _____ tickets x \$25.00 = \$ _____
- Regular Friday evening ASB Banquet _____ tickets x \$35.00 = \$ _____

- Student Friday evening ASB Banquet _____ tickets x \$20.00 = \$ _____
- Thursday morning Past President's Breakfast _____ tickets x \$15.00 = \$ _____
- SEMS Wednesday Luncheon _____ tickets x \$15.00 = \$ _____
- SWS Thursday Luncheon _____ tickets x \$15.00 = \$ _____
- ESA/SE Friday Chapter Luncheon _____ tickets x \$16.00 = \$ _____
- SSP Friday Chapter Luncheon _____ tickets x \$16.00 = \$ _____
- SABS/BSA Friday Breakfast _____ tickets x \$13.50 = \$ _____
- SEMS Friday Breakfast _____ tickets x \$13.50 = \$ _____

Additional Events (Please check *all* events you plan to attend)

- Women & Minorities & People with Disabilities-Thursday Workshop
(Workshop Limited to 25 participants) _____ tickets x \$00.00 = \$ _____

Field Trips (Please check *all* events you plan to attend)

- Birding in the Smokies _____ tickets x \$10.00 = \$ _____
- Aquatic Insects in the Smokies _____ tickets x \$10.00 = \$ _____
- Plant Communities of the Smokies _____ tickets x \$10.00 = \$ _____
- Salamanders of the Smokies _____ tickets x \$10.00 = \$ _____
- Black Bears and Boars in the Smokies _____ tickets x \$10.00 = \$ _____
- Tri- Beta Field Trip (Limited to 50 Participants) _____ tickets x \$10.00 = \$ _____

Note: All field trips will depart from the Sugarlands Visitor Center.
To view/print a Park Map, go to the following web site:
(http://www.sunnydayguide.com/smoky_mountains/pdfs/maps/HikingMap.pdf)

NEW Commercial Workshops

All commercial workshops will be presented on Wed 3/29/06 by exhibitors at no additional charge to ASB participants. This is a new and exciting dimension of the Annual ASB Meeting. Plan to attend this year's event early and learn about the latest tips from the experts. All workshops will be posted by 15 Dec 05.

___ Yes, I plan to attend a workshop on Wednesday _____ tickets x \$(free)

TOTAL \$ _____

Payment Information:

On Line Payment Information: ___ Visa ___ MasterCard ___ Discover

CC# _____ Exp ___/___

Name As It Appears On Card _____

OR

**You May Mail Your Registration With Full Payment To:
(Make Checks Payable to Assn of Southeastern Biologists)**

**ASB Registration
C/o Leads, Etc, Inc
Building Box 79
Boston Providence Hwy
Walpole, MA 02081**

OR

You may fill in credit card information and Fax completed form to:

Fax: 508/668-2669

Cancellation policy: A full refund will be issued (less a \$30 handling fee) if ASB is notified in writing at the above address on/or before Feb. 28, 2006. After Feb. 28, 2006, no refund will be honored.

Notifications must be postmarked by Feb. 28, 2006, in order to receive a refund.

Office Use Only
Paid with check # _____ on Date _____ Rec'd by: _____
Paid with credit card # _____ on Date: _____ Rec'd by _____

Hotel Information

ASB has secured the following hotels at a discounted rate for exhibitors and attendees. Please remember to ask for the special ASB discounted rate when making reservations. The following hotels are providing additional services to accommodate ASB. Please make your reservations soon. The Glenstone Lodge with the Gazebo Inn is our Headquarters Hotel has been secured for Exhibitors and Regular Members. The Microtel Inn is directly across the street from the entrance to the Gatlinburg Convention Center and has been designated for student housing. Please make your reservations as soon as possible. Please visit their web sites for directions to their property. **THE LAST DAY TO RESERVE A ROOM AT THE DISCOUNTED RATE IS 2/01/06.**

Headquarters Hotel

Exhibitors & Regular Members

Glenstone Lodge & Gazebo Inn
504 Historic Nature Trail
Gatlinburg, TN 37738
800/362-9522
<http://www.glenstonelodge.com/>

Student Housing

Microtel Inn
211 Historic Nature Trail
Gatlinburg, TN 37738
865/436-0107
<http://www.microtelinn.com/>

Rates:

Single: \$75.00 Double: \$75.00
 Triple: \$75.00 Quad: \$75.00

Overflow Hotel

The Holiday Inn Sunspree
 520 Historic Nature Trail

Gatlinburg, TN 37738

865-436-9201

www.holiday-inn.com/

Rates:

Single: \$59.95 Double: \$69.95
 Triple: \$69.95 Quad: \$69.95

Rates:

Single: \$75.99 Double: \$75.99
 Triple: \$75.99 Quad: \$75.99

TENTATIVE PROGRAM**TUESDAY, MARCH 28TH**

12:00 pm-4:00 pm
 Exhibitor Move in

WEDNESDAY, MARCH 29TH

8:00 am-8:00 pm	Registration
8:00 am-6:00 pm	Commercial Workshops
9:00 am-4:00 pm	Exhibitor Move In
12:00 pm-2:00 pm	Exhibitor's Pizza Party
12:00 pm- 2:00 pm	SEMS Executive Council Meeting and Lunch
1:00 pm-6:00 pm	ASB Executive Council Meeting
2:00 pm-6:00 pm	SABS Executive Council Meeting
2:00 pm-6:00 pm	SSP Executive Council Meeting
6:00 pm-7:30 pm	SSP Lecture
6:00 pm-7:30 pm	ASB Plenary Session (Dr. Peter White-NC Botanical Garden)
7:30 pm-9:00 pm	ASB/University of Tennessee, Division of Biology Welcome Reception-Exhibit Hall Opened

THURSDAY, MARCH 30TH

7:00 am-8:30 am	Past-President Breakfast
8:00 am-4:30 pm	Registration
8:00 am-4:30 pm	Exhibit Area Opened
8:00 am-9:00 am	Poster Set-up
8:00 am-4:30 pm	PowerPoint/Reviewing
8:30 am-12:00 pm	Morning Paper Sessions
9:00 am-12:00 pm	Symposium: ATBI: "A search for species in our own backyard" Part 1
12:00 pm-1:30 pm	LUNCH

12:00 pm-1:30 pm	SWS Luncheon
12:00 pm-2:00 pm	Women, minorities, and people with disabilities: Workshop/Lunch
12:00 pm-4:30 pm	Tri-Beta Lunch and Field Trip
1:30 pm- 5:00 pm	Afternoon Paper Sessions
1:30 pm-5:00 pm	Symposium: ATBI: "A search for species in our own backyard" Part 2
6:00 pm-11:00pm	Thursday Night Social: Beer and Bandana Bash. Mills Auditorium

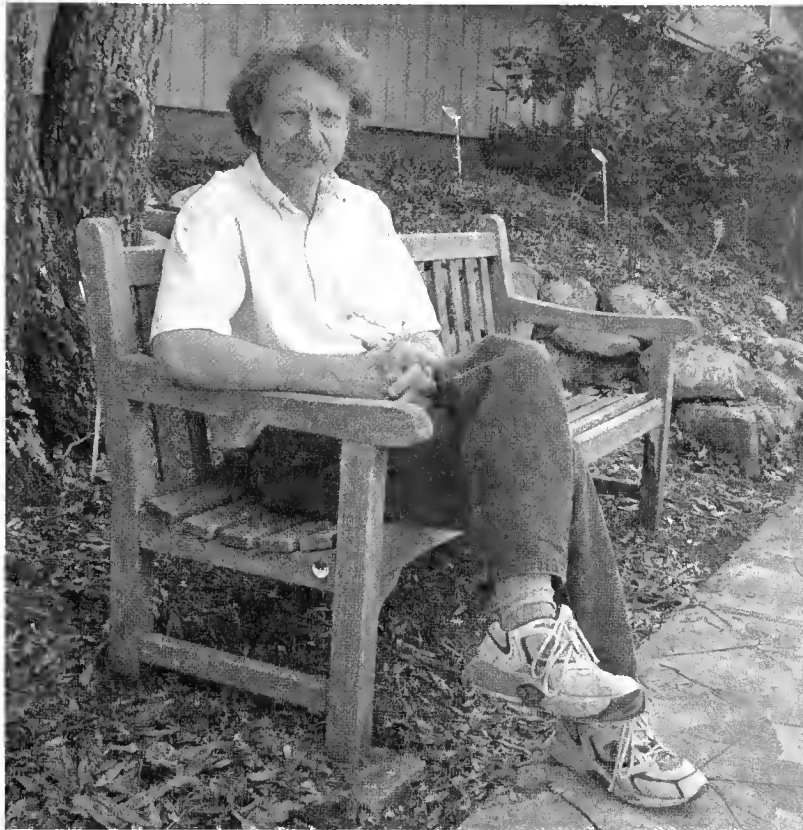
FRIDAY, MARCH 31ST

7:00 am-8:30 am	SABS/BSA Breakfast/ Business meeting
7:00 am-8:30 am	SEMS Breakfast
8:00 am-12:00 pm	Registration
8:00 am-4:30 pm	PowerPoint/slide previewing
10:00 am-1:00 pm	Exhibit Area Opened
8:30 am- 12:00 am	Morning Paper Sessions
8:30 am-12:00 pm	Symposium: Cave, Karst and Cliff-face Ecosystems
8:30 am- 12:00 am	Tri-Beta Activities
11:15 am-12:00 pm	ASB Business Meeting
12:00 pm- 1:30 pm	LUNCH
12:00 pm-1:30 pm	ESA/SE Luncheon
12:00 pm-1:30 pm	SSP Luncheon
1:30 pm-5:00 pm	Afternoon Paper Sessions
1:30 pm-5:00 pm	Tri-Beta activities
1:30 pm-5:00 pm	Symposium: Herbarium Informatics: Community Standards and Research Questions.
6:00pm-7:00 pm	Social Hour/ CASH BAR
7:00 pm-10:00 pm	Friday Night Awards Banquet

SATURDAY, APRIL 1ST

7:00 am-8:00 am	ASB Executive Committee Breakfast
8:00 am-11:00 am	ASB Executive Committee Meeting
7:00 am-12:00 pm	Field trip 1: Birding in the Smokies
8:00 am-12:00 pm	Field trip 2: Aquatic Insects in the Smokies
8:00 am-12:00 pm	Field trip 3: Plant Communities of the Smokies
8:00 am-12:00 pm	Field trip 4: Salamanders of the Smokies
8:00 am-12:00 pm	Field trip 5: Black bears and wild boars in the Smokies

Plenary Speaker—Dr. Peter White



Dr. Peter White is the director of the North Carolina Botanical Garden, a garden which is helping to define the *Conservation Garden*. The Garden became one of the first gardens to enact policies aimed at diminishing the risk of release of exotic pest organisms in 1998 and was presented with a Program Excellence Award in 2004 by the American Association of Botanical Gardens and Arboreta. Dr. White is a plant ecologist with interests in communities, floristics, biogeography, species richness, conservation biology and disturbance and patch dynamics, received his B.A from Bennington College (1971) and Ph.D. from Dartmouth College (1976). In vegetation science he is interested in the composition and dynamics of plant communities, the relationship between vegetation and landscape, and role of disturbance, and the ecology of individual species in a dynamic setting. In conservation biology he is interested in the distribution and biology of rare species, the design and management of nature reserves and alien species invasions. Peter is an active member of many professional societies and his many duties include: an Editor of the *Journal of Vegetation Science* and *Applied Vegetation Science*, a board member for the North Carolina Plant Conservation Board, the Center for Plant Conservation, The North Carolina Nature Conservancy, and the Highlands Biological Station. He is Chair of Discover Life in America Board of Directors and co-chair of the Science Committee for the All Taxa Biodiversity Inventory in Great Smoky Mountains National Park.

Selected Recent Publications by subject (for a complete listing see <http://www.bio.unc.edu/faculty/white/references.htm>).

Disturbance, patch dynamics, scale

- White, P. S., and A. Jentsch (in press). Developing multipatch environmental ethics: the paradigm of flux and the challenge of a patch dynamic world. *Silva Carelica*. [Preprint]
- White, P. S. (in press). Disturbance, the flux of nature, and environmental ethics at the multipatch scale. In D. Lodge and C. Hamlin (eds.), *Religion and the New Ecology: Environmental Prudence in a World in Flux*. University of Notre Dame Press.
- White, P. S., and A. Jentsch. 2004. Disturbance, succession, and community assembly in terrestrial plant communities. Pages 342-366 in V. Temperton, R. Hobbs, T. Nuttle, and S. Halle (eds.), *Assembly Rules and Restoration Ecology*. Island Press, California.
- Jentsch, A., C. Beierkuhnlein, and P. S. White. 2002. Scale, the dynamic stability of forest ecosystems, and the persistence of biodiversity *Silva Fennica* 36:1-8.
- White, P. S., and A. Jentsch. 2001. The search for generality in studies of disturbance and ecosystem dynamics. *Progress in Botany* 62:399-450.
- Wilds, S. P., and P.S. White. 2001. Dynamic terrestrial ecosystem patterns and processes. Pages 338-351 in: M. E. Jensen and P. S. Bourgeron (eds.), *A guidebook for integrated ecological assessment*. New York: Springer-Verlag.
- White, P. S., J. Harrod J, J. L. Walker, and A. Jentsch. 2000. Disturbance, scale, and boundary in wilderness management. *USDA Forest Service Proceedings RMRS-P-15* 2:27-42.

Conservation, restoration

- Collins, B., P. S. White, and D. W. Imm. 2001. Introduction to ecology and management of rare plants of the Southeast. *Natural Areas Journal* 21:4-11.
- White, P. S., S. P. Wilds, and G. A. Thunhorst. 1998. Southeast. Pages 255-314 in M. J. Mac, P. A. Opler, C. E. Puckett Haecker, and P. D. Doran (eds.), *Status and trends of the national's biological resources*. 2 vols. U.S. Dept. of the Interior, U.S. Geological Survey, Reston, VA.
- White, P. S., and J. L. Walker. 1997. Approximating nature's variation: selecting and using reference sites and reference information in restoration ecology. *Restoration Ecology* 5:338-249.

Species richness, biogeography, scale

- Fridley, J. D., R. K. Peet, T. R. Wentworth, and P. S. White (in press). Connecting fine- and broad-scale species-area relationships of Southeastern US flora. *Ecology*.
- Qian, H. R. E. Ricklefs, and P. S. White. 2005. Beta diversity of angiosperms in temperate floras of eastern Asia and eastern North America. *Ecology Letters* 8:15-22.
- Ricklefs, R. E., H. Qian, and P. S. White. 2004. The region effect on mesoscale plant species richness between eastern Asia and eastern North America. *Ecography* 27:1-8.
- Nekola, J. C., and P. S. White. 2002. Conservation: the two pillars of

ecological explanation and the paradigm of distance. *Natural Areas Journal* 22: 305-310.

Palmer, M. W., Peter G. Earls, Bruce W. Hoagland, Peter S. White, Thomas Wohlgemuth. 2002. Quantitative tools for perfecting species lists. *Environmetrics* 13:121-137.

Nekola, J. C., and P. S. White. 1999. The distance decay of similarity in biogeography and ecology. *Journal of Biogeography* 26:867-878.

Withers, M.A., M. W. Palmer, G. L. Wade, P. S. White, and P. R. Neal. 1998. Changing patterns in the number of species in North American floras. Ch.4, pages 23-31 in T.D. Sisk (ed.), *Perspectives on the land use history of North America: a context for understanding our changing environment*. Biological Science Report USGS/BRD/BSR-1998-0003.

Qian, H., P. S. White, K. Klinka, and C. Chourmouzis. 1999. Phytogeographical and community similarities of alpine tundras of Changbaishan Summit, China, and Indian Peaks, USA. *Journal of Vegetation Science* 10:869-882.

Wiser, S. K., R. K. Peet, and P. S. White. 1998. Prediction of rare plant occurrence: a southern Appalachian example. *Ecological Applications* 8:909-920.

Exotic species, native species and gardens

Reichard, S. H., and P. S. White. 2003. Invasion biology: a major field of study. *Annals of the Missouri Botanical Garden* 90: 64-66.

White, P. S., and J. Randall. 2002. Carrying out a self-assessment on the invasive plant issue. *The Public Garden* 12 (4): 18-20.

White, P. S. 2002. Developing a code of conduct: the North Carolina Botanical Garden experience. Pages 22-24 in K. Fay (ed.), *Proceedings of the workshop, "Linking ecology and horticulture to prevent plant invasions"*, Missouri Botanical Garden, St. Louis.

White, P. S. 2002. Linking ecology and horticulture to prevent plant invasions: An introduction to the St. Louis Declaration and the Codes of Conduct. *Wildland Weeds*. Winter 2002, 6(1):4-6.

Reichard, S. H., and P. S. White. 2001. Horticulture as a pathway of invasive plant introductions in the United States. *BioScience* 51:103-113.

The Smokies

Jenkins, M. and P. S. White. 2002. *Cornus florida* L. mortality and understory composition changes in western Great Smoky Mountains National Park. *J. Torrey Bot. Soc.* 129:194-206.

White P.S., S. Wilds & D.A. Stratton. 2001. The distribution of heath balds in the Great Smoky Mountains. *Journal of Vegetation Science* 12:453-466.

White, P. S. 2000. The Science Plan for the All Taxa Biodiversity Inventory in Great Smoky Mountains National Park, North Carolina and Tennessee. *Discover Life in America*, Gatlinburg, TN. 15 pp.

- Wiser, S. K. and P. S. White 1999. High elevation outcrops and barrens of the southern Appalachian mountains. Pages 119-132 in: *Savannas, barrens, and rock outcrop plant communities of North America* (Anderson, R. C., J. S. Fralish, and J. M. Baskin, eds.). Cambridge: Cambridge University Press.
- Harrod, Jonathan C., M. E. Harmon, and P. S. White. 2000. Post-fire succession and twentieth century reduction in fire frequency on xeric southern Appalachian sites. *Journal of Vegetation Science*. 11:465-472.
- Harrod, J., M. E. Harmon, and P. S. White. 1998. Changes in xeric forests in western Great Smoky Mountains National Park, 1936-1995. *Castanea* 63:346-360.
- MacKenzie, M. D. and P. S. White 1998. The vegetation of Great Smoky Mountains National Park: 1935-1938. *Castanea* 63:323-336.
- White, P. S., and C. V. Cogbill. 1992. Spruce-fir forests of eastern North America. Pages 3-39 in C. Eagar and M. B. Adams (eds.), *The ecology and decline of red spruce in the eastern United States*. Springer-Verlag.

Vegetation, communities

- Graves, J. H., R. K. Peet and P. S. White (in press). The influence of carbon - nutrient balance on herb and woody plant abundance in temperate forest understories. *Journal of Vegetation Science*.
- White, P. S. and R. White, Jr. 1996. Old-growth oak and oak-hickory forests. Pages 178-198 In "Eastern old-growth forests: prospects for rediscovery and recovery" (M. B. Davis, ed.). New York: Island Press.
- Palmer, M. W. and P. S. White. 1994. On the existence of ecological communities. *Journal of Vegetation Science* 5:279-282.
- Reed, R. A., R. K. Peet, M. W. Palmer and P. S. White. 1993. Scale dependence of vegetation-environment correlations: a case study of a North Carolina piedmont woodland. *J. Veg. Sci.* 4:329-340.

☞



Fern class in the Hiwassee River looking at quillworts.

SYMPOSIA AND WORKSHOP AT ANNUAL MEETING

Symposium I:

All Taxa Biodiversity Inventory: A Search for Species in Our Own "Backyard"

Sponsored by Discover Life in America and Association of Southeastern Biologist

ATBI: What it is... There has been much written about the accelerating crisis in protecting global biodiversity. This is not just a tropical issue, but also in the U.S. But how are we to make critical decisions about protection, when we do not even know what species exist, or what their relative abundance and distribution are? An All Taxa Biodiversity Inventory (ATBI) is a concentrated effort to determine all species within a given area within a short time frame. The ATBI at Great Smoky Mountains National Park was conceived in late 1997, in part as a proto-type for other reserves.

The All Taxa Biodiversity Inventory (ATBI), a project of Discover Life in America (DLIA), seeks to inventory the estimated 100,000 species of living organisms in Great Smoky Mountains National Park. The project will develop checklists, reports, maps, databases, and natural history profiles that describe the biology of this rich landscape to a wide audience. The species level of biological diversity is central to the ATBI, but the project is developed within an ecological and conservation context and encourages understanding at other levels of organization, including genetic variation within species and ecosystem descriptions. As of September 17th 2005, ATBI has identified **569** species new to science and **3,358** species previously not known to inhabit the Great Smoky Mountains National Park.

This symposium will be a compilation of some of the research that has taken place in the GSMNP since the conception of the ATBI eight years ago.

Presentations

Morning Session:

LANGDON, KEITH and BECKY NICHOLS. Great Smoky Mt. National Park--History and Introduction of ATBI

O'CONNELL, SEAN. Western Carolina University—A Extensive bacterial diversity in soils and waters of Great Smoky Mountains National Park: How many species are out there?

LICKEY, ED, KAREN HUGHES, and RON PETERSEN. University of Tennessee, Knoxville—Distribution of Fungi in the Great Smoky Mt. National Park.

KELLER, HAROLD. Central Missouri State University—Tree Canopy biota in the Great Smoky Mountains National Park.

LOWE, REX, AND JEFF JOHANSEN. Bowling Green University and John Carroll University—A survey of algae in the GSMNP.

COX, PATRICIA and RICHARD SCHULZ. Tennessee Valley Authority and GSMNP— Pteridophyte distribution in the GSMNP.

WETZEL, MARK¹ and PEGGY MORGAN². Illinois Natural History Survey Center for Biodiversity and Florida Department of Environmental Protection— Aquatic Oligochaeta (Annelida) in the Great Smoky Mountains National Park, North Carolina and Tennessee, USA.

BERNARD, ERNEST. University of Tennessee, Knoxville—Biodiversity explosion: Collembola of Great Smoky Mountains National Park (GRSM)

MORSE, JOHN and CHUCK PARKER. Clemson University and USGS— Aquatic insect fauna of GSMNP.

PARKER, CHUCK and JOHN MORSE. USGS and Clemson University— Aquatic insect fauna of GSMNP (Part 2)

CARLTON, CHRIS and VICTORIA BAYLESS. Louisiana State University— Documenting beetle diversity in the Smokies: past the half-way point.

Afternoon Session

SCHOLTENS, BRIAN and DAVID WAGNER. University of Charleston and University of Connecticut—Lepidopteran Fauna of the GSMNP.

SANDERS, NATHAN¹, ROBERT DUNN², JEAN-PHILIPPE LESSARD¹, MELISSA GERAGHTY¹. University of Tennessee, Knoxville¹ and North Carolina State University²—Ant Communities through time and space in the GSMNP.

MAYOR, ADRIEAN. GSMNP—Native bees (Hymenoptera: Apoidea) of the GSMNP.

LANGDON, KEITH. GSMNP—Dragon and Damsel Flies of the Smokies.

CLEBSCH, EDWARD and JAMES COKENDOLPHER. University of Tennessee and Lubbock, TX—"Pseudoscorpions of the Smokies--a preliminary report."

WATTERS, G. THOMAS. Ohio State University—Mollusca found in the GSMNP

PETERSEN, MATTHEW J. and JESSICA D. DAVIS. Iowa State University—,Influence of Abiotic Factors on a Southern Appalachian Crane fly (Diptera; Tipulomorpha)

NELSON, DIANE and PAUL BARTLES. East Tennessee State University and Warren Wilson College—New species of Tardigrades found in the GSMNP.

CASH, BEN. Maryville College—Survey of the Reptiles in the Smokies.

SIMONS, TED. North Carolina State University—Breeding bird inventories in Great Smoky Mountains National Park - links to research and monitoring.

POVORIN, ED. Clemson University—Small mammal population dynamics within the ATBI sites of the Great Smoky Mountains National Park.

LANDOLT, JOHN C¹. and **STEVE STEPHENSON².** Shephert University and University of Arkansas—Mycetozoans of the Great Smoky Mountains National Park.

Closing remarks by **PETER WHITE**, Chairman of the Board of DLIA followed by a Discussion.

Symposium II:

Herbarium Informatics: Community Standards and Research Questions

Sponsored by The Society of Herbarium Curators and the Southern Appalachian Botanical Society.

This symposium and workshop will provide an update on ongoing efforts to database the herbarium collections in the Southeast and a workshop to help curators get hands on experience with some of the available databasing programs. We will begin our discussion on the development of community standards to help with data management and data analysis. This process involves making information available in an information commons where it can be synthesized and used in an integrated fashion. The 150 herbaria in the Southeast offer a great opportunity to synthesize biological information from the past two centuries at a scale that can be used in ecological, systematic, biodiversity and conservation studies at a global level. This symposium/workshop is the first in a series of events to help implement SERNEC: SouthEast Regional Network of Expertise and Collections.

Presentations:

MURRELL, ZACK. Appalachian State University—Summary of SERNEC and Community Standards

Moritz, Tom ??? Conservation commons.

PEET, ROBERT. North Carolina State University—Concept based taxonomy

WEAKLEY, ALAN. University of North Carolina—Application of concept based taxonomy.

HODGE, CHRIS. University of Tennessee—Databasing and community standards.

RABELER, RICH. University of Michigan—SPNAC (Society for the preservation of Natural History Collections).

SAIN representative: Franciel Azpurua-Linares—National Biological Information Infrastructure and the Southern Appalachian Information Node: Getting biological data on the information highway.

Discussion with break-out groups will follow the symposium

Workshop: We will conduct a workshop throughout the symposium and discussion period with computers available to use and explore database

capabilities of several database programs and to examine the use of National Biological Information Infrastructure (NBII) portals to provide virtual workbenches for collaborative projects.



WORKSHOP/LUNCHEON: "Identifying Career Opportunities in Biology"

Sponsored by the ASB committee on Women, Minority, and People with Disabilities

The ASB Committee on Women, Minorities, and People with Disabilities invites you to a special workshop on "Identifying Career Opportunities in Biology." The workshop will be Thursday, March 30, 2006 from 12:00pm to 2:00 pm (location TBA). Lunch will be provided at no cost to the first 25 workshop registrants (please indicate your intention to attend on the ASB registration form).



Black bear in the Great Smokies.

**LOCAL COMMITTEE ASSIGNMENTS
FOR THE 67th ANNUAL MEETING
UNIVERSITY OF TENNESSEE
KNOXVILLE, TENNESSEE**

MEETING SITE: GATLINBURG, TENNESSEE

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	Edward Clebsch eclebsch@utk.edu	865-974-6841
<i>Social Events:</i>	Scott Jewell Patricia B. Cox Randall Small	
<i>Transportation/Parking/ Tourism:</i>	Scott Jewell	336-421-0034
<i>Workshops:</i>	Scott Jewell	
<i>On-Site Registration:</i>	James Caponetti jcaponet@utk.edu	865-974-6841
<i>Tri-Beta:</i>	Edgar Lickey elickey@utk.edu	865-974-3065

**AFFILIATE SOCIETIES MEETING WITH ASB
IN MARCH-APRIL 2006
HOST: THE UNIVERSITY OF TENNESSEE, KNOXVILLE**

The following affiliate societies, **except the SE Division of ASIH and the Southeastern Fishes Council**, will be in attendance at the 2006 Annual Meeting. We anticipate an excellent diversity of paper and poster presentations. The societies and their contacts are listed below.

**American Society of Ichthyologists
and Herpetologists
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**Ecological Society of America
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**Botanical Society of America
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Southeastern Society of Parasitologists

Dr. Charles Faulkner
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 College of Veterinary Medicine

Southern Appalachian Botanical Society

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**NEW ASB AFFILIATE****SOUTHEASTERN MICROSCOPY SOCIETY**

<http://www.semicroscopy.org>

Organized in 1964, the Southeastern Microscopy Society (SEMS) is a scientific organization comprised of professional microscopists working in the life, medical, and physical sciences. SEMS is dedicated to the advancement of scientific research and discovery through the use of microscopy and its associated methodologies. SEMS also promotes microscopic imaging as an integral tool for life and physical sciences education at all levels.

The Ruska Award is SEMS' annual student research award. It is named after Ernst and Helmut Ruska, the former an inventor of the electron microscope, and the latter an eminent biologist. Ernst Ruska was awarded the Nobel Prize in 1986 for his work. We encourage students to present and compete for the award. Students must have a sponsor who is a member of SEMS.

SEMS holds an annual scientific meeting in the southeastern region of the United States each spring. Scientific presentations and the business of the organization are conducted at this meeting. We plan on having our annual meeting with ASB in Gatlinburg, Tennessee, March 29-April 1, 2006.

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SOUTHEASTERN MICROSCOPY SOCIETY AWARDS

Ruska Award – The purpose of the Ruska Award is to recognize and reward student excellence in research in which microscopy is used as a research tool in biological and/or physical sciences. The Ruska Award is given to the best student presentation at the annual meeting. Ruska participants are required to send a written abstract with illustrations prior to the annual meeting and give an oral presentation at the meeting.

Distinguished Scientist Award – The Distinguished Scientist Award is given to members of long standing who exemplify personal and intellectual integrity, perennial scholarship, contributions to the field of microscopy, excellence in teaching and service to the society above and beyond the call of duty. The award is not given on a regular basis, but only at such times as individuals are identified by nomination.

Distinguished Corporate Member Award – The purpose of the Distinguished Corporate Member Award is to recognize and show appreciation to corporate members of long standing. The award is not given on a regular basis, but only at such times that corporate members are nominated.

Roth-Michaels Teaching Award – The purpose of the Roth-Michaels Teaching Award is to honor the contributions and commitment of two of our members, Dr. Ivan Roth and Dr. Gene Michaels, to microscopy education. Candidates for the Roth-Michaels award should have exemplified excellence in the teaching of microscopy at the primary and/or secondary levels of education. The award will be given only at such times as individuals are identified by nomination.

Jerry Paulin Lectureship Award – The purpose of the Jerry Paulin Lectureship Award is to provide funding for an outstanding lecturer in any area of microscopy to attend and present a one-hour presentation at the annual meeting. These presentations should be held only when a candidate has been identified and funding is available to support a candidate.

For more information about SEMS awards please check the website at <http://www.semicroscopy.org>.

SPECIAL REMINDERS FROM THE PRINT EDITOR

ASB BANQUET ATTENDANCE

Please keep in mind that recipients of ASB awards must be present at the annual ASB banquet to receive the award. Therefore, all applicants for ASB awards must attend the banquet to insure the presence of the winners.

EXTRA ABSTRACT SUBMISSION

Besides sending abstracts of papers and posters to the Program Committee by November 18, 2005, anyone wishing to be considered for an award must send an abstract to the respective award committee chairperson in order to be considered. Checking the box on the registration form for the award is not enough. An abstract must be sent to the chairperson by January 7, 2006.

INSTRUCTIONS FOR SUBMITTING ORAL PRESENTATIONS

All oral presentations will be done using Microsoft PowerPoint only. Presenters should bring a backup copy as well as a backup consisting of overheads.

FINAL SUBMISSION OF CD

We are requesting that final presentations be submitted on CD to the program committee by March 24, 2006. The first author's name and truncated title should be written on the upper surface of the CD using an indelible marker.

Submit the CD by the March 24th deadline to: ATTN: ASB 2006 Annual Meeting, c/o Dr. Joseph H. Williams, Department of Ecology and Evolutionary Biology, University of Tennessee, Knoxville, TN 37996-1610.

The *Southeastern Naturalist* . . .

- ◆ A quarterly peer-reviewed and edited interdisciplinary scientific journal with a regional focus on the southeastern United States (ISSN #1528-7092).
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- ◆ Focusing on field ecology, biology, behavior, biogeography, taxonomy, evolution, anatomy, physiology, geology, and related fields. Manuscripts on genetics, molecular biology, archaeology, anthropology, etc., are welcome, especially if they provide natural history insights that are of interest to field scientists. Symposium proceedings are occasionally published.
- ◆ Indexed in Biological Abstracts (BIOSIS), BIOSIS Previews, CAB Abstracts, Cambridge Scientific Abstracts, EBSCO-host, Environmental Knowledge-base (formerly Environmental Periodicals Bibliography), FISHLIT (Fish and Fisheries Worldwide; Aquatic Biology, Aquaculture, and Fisheries Resources), Wildlife Review Abstracts, and Zoological Record (BIOSIS UK). Arrangements for indexing in Elsevier BIOBASE (Current Awareness in Biological Sciences), and ISI Services (Science Citation Index-Expanded, ISI Alerting Service, and Current Contents/Agriculture, Biology, and Environmental Sciences) are pending.
- ◆ A sister journal of the *Northeastern Naturalist* (ISSN #1092-6194), published since 1997. Both journals are identical in focus, format, quality, and features. The journals together serve as a matched-pair of regional journals that provide an integrated publishing and research resource for the eastern part of North America.
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- ◆ For information, instructions for authors, and subscriptions: *Southeastern Naturalist*, PO Box 9, 59 Eagle Hill Road, Steuben, ME 04680-0009; 207-546-2821, FAX: 207-546-3042; <mailto:office@eaglehill.us>; <http://www.eaglehill.us/jsgeninf.html>. Online secure ordering of subscriptions is available!

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Classified Ads for Northeastern and Southeastern Naturalist

Classified ads offering opportunities for people with career interests in the natural history sciences may now be placed in the *Southeastern* and/or *Northeastern Naturalists*, within the following categories.

- Faculty positions at colleges and universities
- Graduate student fellowships and assistantships
- Postdoctoral research opportunities
- Field biologist positions
- Requests for funding proposals
- Announcements of scientific meetings and conferences

Ads need to be received by February 20, May 20, August 20, and November 20, and must be placed over the web at <http://eaglehill.us/Merchant2/merchant.mv>. Journal issues mail about one month later. Rates are a modest \$.03/character, with a \$5 minimum. Space allocated to classified ads within the journal is limited. Ads will be reviewed prior to acceptance.



The Woodpickers who will play Wednesday night.

ALL TAXA BIODIVERSITY INVENTORY (ATBI) GATLINBURG, TENNESSEE

More information about the ATBI and Discovery Life in America (DLIA) may be obtained from the Administrative Officer, Jeanie Hilten, by e-mail jeanie@dlia.org. The website is <http://www.discoverlifeinamerica.org> or at <http://www.dlia.org>. The mailing address is Discover Life in America, 1314 Cherokee Orchard Road, Gatlinburg, TN 37738. The telephone number is (865) 430-4752.

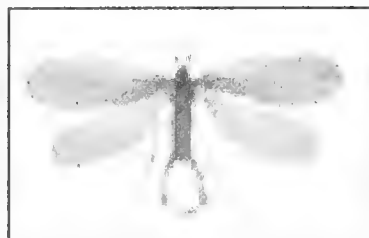
The following six articles were reprinted with permission from the Vol. 6, No. 2, Spring Newsletter, 2005 issue of the "ATBI Quarterly," Ruthanne Mitchell, Editor.

Earwigflies in the Great Smokies

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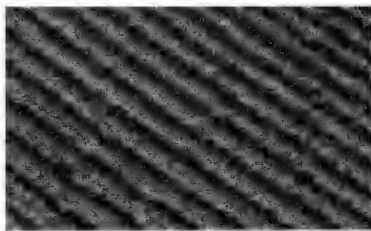
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Since first being described by Edward Newman in 1838, the earwigfly, *Merope tuber*, has been somewhat of an enigma to American entomologists. It was rarely collected for some time since its discovery, and only single specimen records existed when serendipity would allow for one to be observed at a glowing lantern or under an overturned stone. Early accounts of this peculiar insect would often liken its appearance and behavior to a scuttling roach, transparent moth, or winged earwig. It is actually a member of the ancient insect order Mecoptera; its more common relatives known as the scorpionflies. The Smokies are home to numerous mecopteran species, and these mountainous habitats could be the epicenter of origin for the uniquely North American earwigfly. *Merope tuber* (family Meropeidae) occurs throughout much of eastern North America, where it is largely restricted to eastern deciduous forests with an intermittent stream or water source nearby. There is only one other known member of the family Meropeidae, and to find it, one must travel to western portions of Australia.

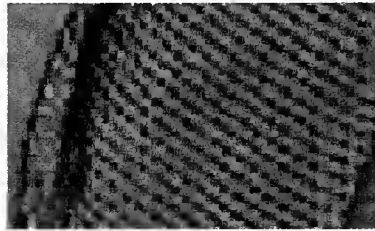


Left: *Merope tuber*, female.
Right: *Merope tuber*, male.
(Photos by D. Serrano and
J. Dunford.)

The name “tuber” is derived from the distinct lobe, or jugum, located at the base of the forewings along the hind margin. The undersides of the juga are serrated and rubbed against a serrated thorax to allow the earwigfly to stridulate, or produce sound. Stridulation typically occurs as a defense behavior when disturbed, but also could be used to communicate with the opposite sex or in the spacing of individuals occurring in aggregations. Male earwigflies are known for having large clasper-like genitalia, resembling the cerci of an earwig. The earwigfly’s overall flattened appearance suggests that they are geophilic (earth-loving), and probably spend much of their time close to the ground hiding in various cracks and crevices.



L. SOMMER



L. SOMMER

Left: Scarring Electron Micrograph (SEM) of serrations on thorax. Right: SEM of serrations on jugum.

Collection samples taken by Gary Steck and Bruce Sutton (Florida State Collection of Arthropods) for the ATBI have generated several new GSMNP insect records, but it was the discovery of a single male earwigfly that caught our attention.



Nearly 20 individuals have since been pulled from summer (June-September) Malaise trap samples from sites at Twin Creeks, Cades Cove, and Purchase Knob, in 2003 and 2004. Charles Parker (United States Geological Survey) provided several additional earwigfly records associated with specimens collected between 1999-2002 from GSMNP, many of which were taken at Twin Creeks. There have been only a few sites reported in the literature where individuals have been taken in high numbers, however *M. tuber* is no longer

considered as rare as it was in the past, due in large part to on-going biodiversity surveys and better insect trapping/collecting methods (i.e., light, pitfall, Malaise traps). GSMNP records have generated interest for compiling a more complete distribution of *M. tuber* in North America; thus we are preparing a review paper which will include literature records as well as numerous unrecorded museum and personal records.

We have found that earwigflies taken at GSMNP are on the average larger in size and darker in color than the typically smaller and paler forms found in other parts of eastern North America. The earwigfly’s presence in the Park is not a mystery; however, its life history is. While other related mecopteran larvae are caterpillar-like in appearance, the earwigfly larva is entirely unknown. Considered by some the “holy grail” of immature insect forms, many entomologists believe it could provide significant insight into the evolutionary relationships of advanced holometabolous insects (those with complete metamorphosis). Other mecopteran relatives are known to occur on the surface of the soil in leaf litter as larvae; perhaps the earwigfly larva exists somewhere in between that niche and the

water sources that are often associated with adult collection records---just waiting to be discovered this year at GSMNP.

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Snorkel Surveys of Great Smoky Mountains National Park Fish

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Historical fish collection records from Great Smoky Mountains National Park (GSMNP) were first summarized in 1990 by Damien Simbeck, then a graduate student at the University of Tennessee (UT). This summary, which included a series of 1988- 1990 UT Zoology Department collections, totaled more than 220 collections. Simbeck's list of fishes known from the Park, comparing currently known occurrences and distributions with those from the past, produced a total of 79 species. Virtually all of these collections were doubtless made with a seine and/or a backpack electroshocker. These longstanding collection tools of fisheries biologists have notable limitations, and, in the case of shockers, potentially significant impacts on aquatic communities or sensitive species. Direct visual surveys of fish populations and communities are far less intrusive, with a number of efficiency advantages. (Picture at right: Smoky madtom, *Noturus baileyi*; a species being returned to Abrams Creek.)



In order to fill geographic data gaps from past samples, snorkel surveys were conducted in selected waters of the Park in 2002-2003 by Conservation Fisheries, Inc. (CFI). Snorkeling was employed at all but a few sites to maximize sampling efficiency and minimize impacts.

Sixty-seven surveys were devoted to fish community assays in 26 streams in GSMNP between 30 April 2002 and 25 October 2003. Anywhere from one to six sites were sampled in each stream. Fifty-one fish species were observed out of 665 total species records. Many of the observations represented new stream reach or upstream species records. Significant finds included previously unknown populations of the fantail darter, *Etheostoma flabellare*, and Tennessee

dace, *Phoxinus tennesseensis*, in Hesse Creek and Cane Creek. A rare sicklefin redhorse, *Moxostoma* sp., was observed in Deep Creek.



Patrick Rakes snorkeling in Hazel Creek.



Duskytail darter, *Etheostoma percnurum*, in Abrams Creek.

Allowing for taxonomic changes, the snorkel surveys and concurrent collections by UT have now increased the number of fish species known from GSMNP to a total of 88. Of these, more than 20 were considered extirpated from the Park in 1990, primarily due to the embayment of the lower portion of Abrams Creek by Chilhowee Lake, and the 1957 Abrams Creek “reclamation”, which was an attempt to create a premier trout fishing stream by removing all other fish species and stocking the non-native rainbow trout.

The habitat of many of these species is now inundated; however, CFI has been actively working with state and federal agencies since 1986 to reintroduce and restore several rare fish species to Abrams Creek. There are now reproducing and expanding populations of the federally listed smoky madtom, *Noturus baileyi*, yellowfin madtom, *N. flavipinnis*, and duskytail darter, *Etheostoma percnurum*, in Abrams Creek, with habitat potentially available for the restoration of several more species. With these efforts it is hoped that Park streams can once again support a full complement of aquatic life.

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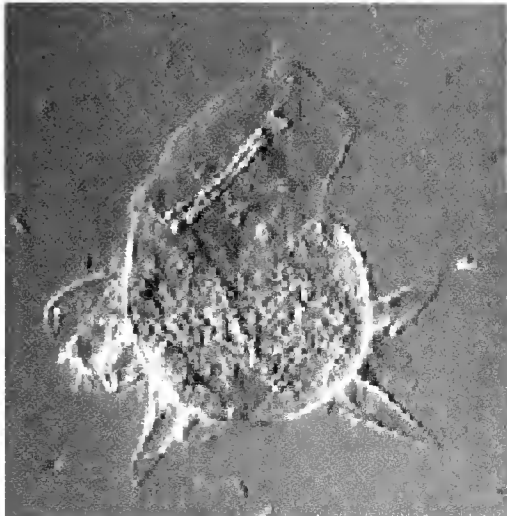


“Little Known” Water Bears?

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Water bears (Phylum Tardigrada) are microscopic invertebrates often considered among the least known animal groups. But, that’s no longer true for the water bears of the GSMNP! A group of dedicated undergraduate students at Warren Wilson College, together with Diane Nelson from East Tennessee State University, have opened a pretty good size window of understanding on these pint size animals.

Water bears are known for their ability to withstand environmental extremes by under-going cryptobiosis, a kind of suspended animation. This ability allows them to occupy a wide variety of habitats, including stream sediments as well as moss and lichens that are periodically wet and dry. Water bears are important



Martin, M. & S. B. Bernard, E. Bernard, P. B. B. B.

members of these under-studied “meiofaunal” communities. Some species are herbivorous and some are carnivorous, but the natural history and ecology of most species are unknown. (The photo at left of the hatching *Macrobiotus tonollii* is an automontage of six different images taken at different focal points. Created in the lab of Ernie Bernard at the University of Tennessee.)

Early estimates suggested that about 70 species of water bears may be pawing around the Park’s aquatic and semi-aquatic habitats, although only three species were reported before the ATBI began. After four years of work on water bears for the ATBI, partially funded by Discover Life in America, the current species list for the Park is 65 and growing, and at least 12 of these species are new to science. Based on these findings, a more realistic estimate of the total number of water bear species in the Park is probably closer to 100.

Some of the new species were found by the intrepid tardigrade trio from Warren Wilson College - Kristal McKelvey, Saba Alemayehu, and Suzy Dobbartin. These three students presented preliminary results of their work at the most recent ATBI meeting, and their research is now complete. Kristal’s work focused on aquatic samples from the geologically unique Cades Cove region (Abrams Creek), while Suzy analyzed tardigrade communities in lichens on rocks and compared them to previously studied communities in lichens on trees, and Saba conducted a lab study on tardigrade response to acidification.



Paul B. B. B.

Kristal McKelvey, Saba Alemayehu, and Suzy Dobbartin

Kristal and Suzy’s work added 10 species to Park records, including 5 that may be new to science. One species of special interest is *Bryodelphax* sp. This species is only the second from this genus to be reported in North America and is likely new to science (the first species was found in western Canada and Wyoming). So far, this species has only been found on lichens outside the caves of the Cades Cove area, and it is possible that it may be limestone dependent.

Some interesting phenomena were observed during the course of these studies. For example, Suzy found a specimen of an immature water bear (*Macrobiotus tonollii*) hatching from its egg. From previous collections we know that *M. tonollii* is a predator on other invertebrates, including other species of tardigrades, such as *Minibiotus intermedius*. Also, Kristal found a diatom in the stomach of *Murrayon cf. hastatus* suggesting that this species may be herbivorous.

Kristal and Suzy both found an increase in the diversity of tardigrades in limestone habitats. Thus, Saba's lab study on the ubiquitous aquatic tardigrade, *Hypsibius dujardini*, was to investigate its response to acidification. A 5-minute exposure to pH 3 reduced its activity, whereas a 5-minute exposure to pH 2.8 caused mortality. Also, over a 30-hour period, a pH of 4 caused reduced activity. Detrimental effects may be seen at even higher pH levels if exposures occur for longer periods. Since pH levels between 4 and 5 have been reported in Park streams, these results suggest that current stream acidification levels could be detrimental to Park meiofaunal communities.

What's next? We're interested in looking at other unusual wet and oozy habitats in the Park, and we'd like to focus more study on the rich limestone areas of Cades Cove. Also, water bears are featured in an NSF proposal for a multi-kingdom study of soil organisms, together with ATBI researchers Ernie Bernard, Sean O'Connell, and Rich Baird. Finally, stay tuned for the "E-Guide to Water Bears." Thanks to the generosity of Martin Microscopes and the use of their photomicroscopy equipment at their headquarters in South Carolina, we are developing a computer-based interactive key to the Park's tardigrades, with a photo gallery and range maps. (If anyone out there would like to donate a research microscope with digital photography capabilities so we can do this work on WWC's campus, we're all ears!). Soon, you too will be able to identify some of the Park's tiny, but "better known" denizens.

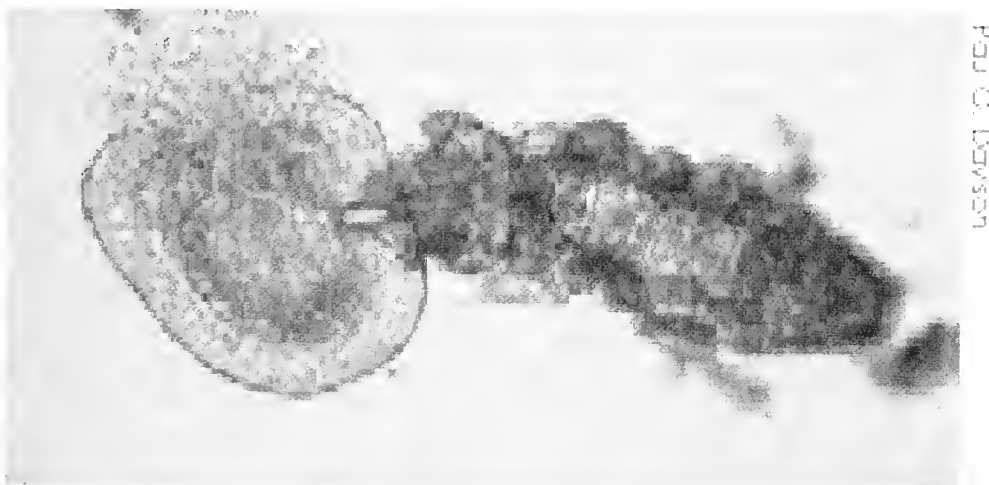
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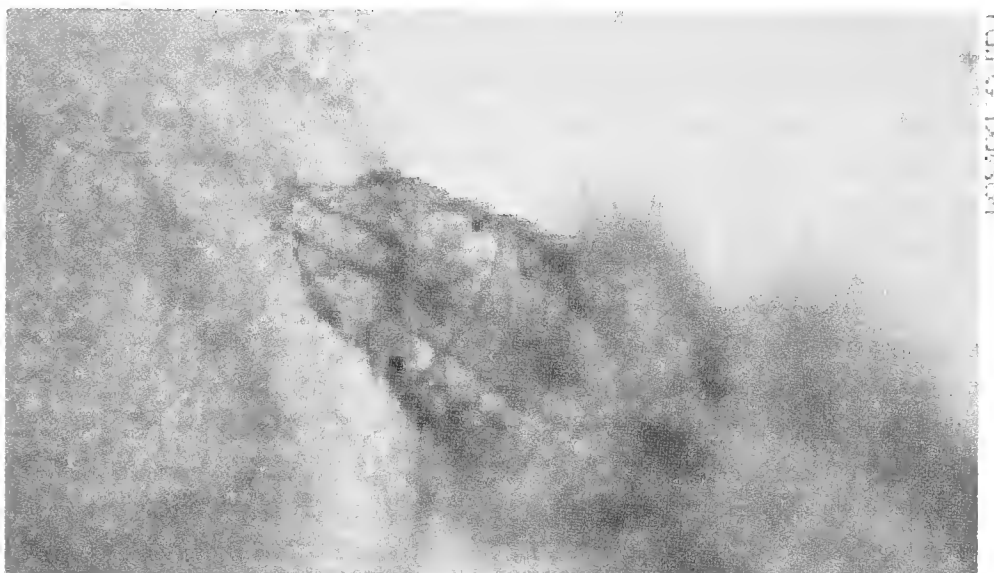
Feeding Water Bears: A Simple Activity to Connect the Public with Microorganisms

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There are countless tiny organisms whose behaviors and interactions are rarely seen. With a microscope and a few simple techniques, all of us, and especially the general public, can see, experience, and enjoy living organisms that are microscopic or nearly so. Small organisms are representative of the vast species richness yet to be accounted for anywhere and are in part the focus of the ATBI in Great Smoky Mountains National Park. These organisms too often go unseen and, regrettably, are little appreciated by the public.



A water bear with its head under a fragment of *Lumbriculus* sp.



Water bears sucking tissues from a segment of *Lumbriculus* sp.

Getting acquainted with common yet esoteric organisms can be easy, fun, and help foster an emotional connection to biodiversity. In a democratic society where emotional concerns influence votes, the success of conservation biology may depend upon such an approach. In a letter to *Science* entitled “Why conservationists should heed Pokémon” (2002, v. 295:2367), Balmford et al. addresses this issue. They report findings of a study where children were much better at identifying “species” of Pokémon than native species in their own surroundings. It seems that the Pokémon industry has succeeded where biologists/teachers have failed. The following quote, taken from a report entitled “Teenagers and biodiversity—Worlds apart?” is relevant: “I don’t think that knowledge about nature leads to a greater concern and willingness to act. It’s not what you know, but what you experience” (Verboom et al. 2004, available online at www.alterra.wur.nl).

One technique recently developed for experiential learning and of possible use in ATBI education outreach is the maintenance and demonstration of those delightful and frequently mentioned miniatures, the water bears. The common water bear, *Milnesium tardigradum*, is easy to maintain for several weeks in an active state and will readily take appropriate food when offered. Using the method described below, I decided to see if water bears would eat rotifers and

nematodes as reported in the literature. Try as I may, the water bears had no interest in the nematodes and rotifers offered to them. On a whim, I offered fresh segments cut from the aquatic oligochaete *Lumbriculus* sp. obtained from Carolina Biological Supply Company, and immediately to my surprise and delight a bear began to feed. To feed upon a worm segment much larger than itself, the water bear, with concentrated effort, began by pushing its mouth through the worm's cuticle and external body wall. It then sucked down coelomic fluid and soft tissues from inside the worm. The ingestion of food and its accumulation in the gut was easy to see through the transparent body wall of the water bear. Using a simple procedure I have since witnessed this feeding behavior many times.

The procedure, in brief, is as follows: Water bears, with bits of moss, lichen and other organisms are extracted with a pipette from collected material and transferred to a Petri dish containing non-sterile agar. Water bears and other organisms should remain active for weeks provided small amounts of distilled water are added occasionally to prevent desiccation and to maintain a shallow film of water over the agar. Water bears walk about atop the agar but are restricted to, and enveloped by, a thin film of water over the agar's surface. The agar surface provides good traction for the bears. As they tramp the agar and swing their heads in a searching motion, they are reminiscent of large beasts in search of feeding grounds.

Feeding water bears is easy and a lot of fun. Simply transfer fresh cut segments of *Lumbriculus* sp. to the vicinity of a water bear and observe under a microscope. The tools of basic light microscopy, plates of agar, and the organisms are all that is needed. Presumably the agar plates with bears inside can be allowed to dry out slowly and stored until needed at which time water is added and the agar re-hydrates along with the water bears.

These studies were conducted in my laboratory in Alabama and no Park animals were used; Park policy is "do not feed the bears", even the smaller versions. However, specimens for these types of experiments can be easily obtained elsewhere. Observing the feeding behavior of live animals, such as tardigrades, may help students and the general public learn to appreciate even the diminutive life forms.

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Butterfly Attack!

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Fortunately, I had slipped off my T-shirt after a jog up to Cosby Creek Campground and slung it over the railing on the back porch at the Cosby House before they attacked. A squadron of six red-spotted purples (*Limenitis arthemis*

astyanax) spear-headed the sortie. After all was said and done, much of the sodium in my T-shirt had been sucked from the fabric. (Picture below: Red-spotted purples on sweaty SLIA T-shirt. Cosby House May 2004.)

Many species of Lepidoptera (butterflies and moths) “puddle”; a behavior where adults congregate on moist soil to collect sodium which is an essential element in metabolism, but one that is in short supply in plants (the larval diet). To circumvent their metabolic deficiency, many Lepidoptera gather sodium as adults. Most get this element through puddling, but others visit carrion, or in the extreme, soil wetted with urine, dung, eye secretions, and sweaty DLIA T-shirts.



David L. Wagner

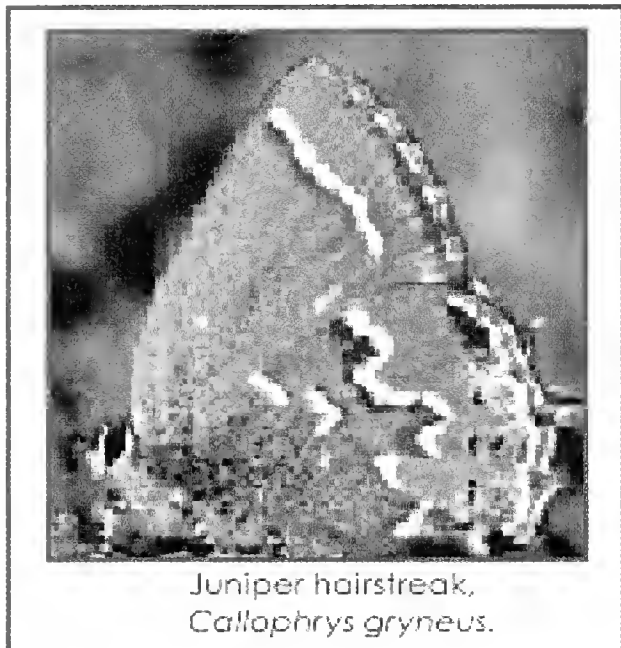
Interestingly such indelicate behaviors are practiced principally by males (is anyone surprised?). Females of most puddling species get their sodium principally during copulation. In addition to sperm, male Lepidoptera transfer amino acids, minerals, carbohydrates, and nutrients, as well as defensive chemicals, during the process of mating. The transferred substances, which may be more than 10% of the entire mass of the male, are frequently bundled into a spermatophore. For example, in xylenine winter moths that fly in the Park, the spermatophore is so substantial that one can often feel which females have mated simply by squeezing down gently on the abdomen, and in some cases it can be detected if a female has mated more than once. Interestingly, many of the minerals and nutrients in the spermatophore ultimately end up in the eggs...the male's parental investment.

The Park's most conspicuous puddlers are swallowtails. Large aggregations with dozens, and more rarely, hundreds, of tiger swallowtails and smaller numbers of pipevines make for one of the Park's most beautiful biological “phenomena.” Puddling swallowtails are commonly joined by smaller numbers of blues and brush-foots (including the red-spotted purple and anglewing butterflies). Members of the spring azure species complex are the most ubiquitous puddlers—small aggregations of these blues gather on moist soil along roadsides and trails throughout the Park in May and June.

While it's the butterflies that garner all the attention, the champion of puddling is a moth that carries out its feats under cover of darkness: the common *Gluphisia* (*Gluphisia septentrionis*) (Family Notodontidae). Males imbibe and process up to 50 ml of water a night, and then squirt the excess fluids from their abdomens. Great volumes of water are discharged, forcibly—some droplets are propelled up to 20 body lengths from the rear of the body. The volume of water processed is staggering; were you to scale up to the size of an average human, you would need to drink the equivalent of 45,600 liters (2,000 gallons) of water in a single evening.



Common Gluphisia (*Gluphisia septentrionalis*) (Family Notodontidae) ejecting fluid. Courtesy Scott Smedley, Trinity College, Connecticut.



Juniper hairstreak,
Callophrys gryneus.

The Lepidoptera TWIG continues to be active in the Great Smoky Mountains ATBI. Last year's 2004 blitz yielded the 100th Park butterfly—the juniper hairstreak (*Callophrys gryneus*), a gorgeous green butterfly. Its discovery underscores that even relatively well-known groups such as butterflies need additional survey.

Two rare butterflies in the Park database are known only from undocumented sight records: the early hairstreak (*Erora laeta*) and the dusky azure (*Celastrina nigra*). The former is a denizen of beech forests; adults are believed to spend much of their time in the high forest canopy hence accounting in part for its scarcity. The dusky azure is a specialist on goatsbeard (*Aruncus dioicus*), a plant with a limited distribution in the Park. Both butterflies are puddlers—in fact, nearly all eastern records of this canopy insect are of adults taken while puddling. Curiously, the early hairstreak is one of few butterflies where females puddle. The Lep TWIG is offering a bounty for a Park voucher (specimen) or photograph of either species: a hard cover copy of *Caterpillars of Eastern North America: A Guide to Identification and Natural History* (Princeton University Press).

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Grants Awarded for ATBI Research

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Discover Life in America
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Grant money supplied to DLIA by the Great Smoky Mountains Association and Friends of the Smokies is supporting ATBI research for the 2005 season. John Morse, DLIA Board member and Science Committee Co-Chair, administers the grant program, now in its sixth year. The review panel was composed of eight DLIA scientists. Requests totaled \$155,888 for the \$52,500 budgeted for this year, so it was particularly difficult for reviewers to decide among the many fine proposals. Grant summaries may be viewed on the DLIA web site at http://www.dlia.org/dlia/grant_program.shtm.

Eighteen proposals were funded out of a total of 38 submitted. Granted research will delve into a variety of life forms in the Park, including diatoms, ants, aphids, beetles, moths and butterflies, thrips, lichens, flies, pollinators, water mites, and tardigrades. Bio-quests for fungi and beetles also were funded. One of this year's educational projects involves teachers and students designing and conducting scientific research in the Park. Some grants are for continuations of previous and ongoing work, and all are coordinated with the DLIA Science Plan (<http://www.dlia.org/atbi/scienceplan.shtml>). Grant recipients will present their results to-date at the December, 2005 annual meeting of the ATBI, with a final report and georeferenced data due by March 1, 2006. They also will send voucher specimens of any organisms collected to the Park Museum and other authorized collections.

Individuals and organizations interested in assisting with the funding of future ATBI research please contact Steve Bohleber, steve@bohleberlaw.com, DLIA Board member and Development Committee Chair.

Congratulations to these scientists for their selection:

Robert Allen, The Academy of Natural Sciences - "A Survey of the Diplura, Microcoryphia, and Thysanura (Arthropoda: Insecta) in the Great Smoky Mountains National Park"

Richard Baird, Mississippi State University - "Microfungi of the American Beech and Fraser Fir Forests in Great Smoky Mountains National Park (GSMNP): Litter Studies"

Paul Bartels, Warren Wilson College - "Tardigrade Inventory 2005-2006"

Victoria Bayless, Louisiana State University - "Mega Beetle Blitz 2005: Two Week Sampling and Identification of Coleoptera in Great Smoky Mountains National Park"

Christopher Carlton, Louisiana State University - "Longhorned and Leaf Beetles from the ATBI Structured Sampling and Publication of New Taxa for the Great Smoky Mountains National Park"

Colin Favret, University of Illinois - "Completing the Aphid Survey of the Park"

Paula Furey, Bowling Green State University - "Taxonomy, Ecology, and Distribution of the Diatom *Eunotia* Ehrenberg (Bacillariophyta) in the Great Smoky Mountains National Park"

Arturo Goldarazena, Research Institute for Agricultural Development, Basque Country, Spain - "The Biodiversity of Thysanoptera (Insecta) of the Great Smoky Mountains National Park: An Introduction"

Andrew Miller, University of Illinois - "Pyreno Pursuit: A Bioblitz to Discover the Diversity of Pyrenomycetes (Ascomycota, Fungi) in the Great Smoky Mountains National Park"

Matthew Petersen, Iowa State University - "Crane Flies (Diptera: Tipuloidea) of Great Smoky Mountains National Park"

Michelle Prysby, Great Smoky Mountains Institute at Tremont - "ATBI Teacher Interns at Great Smoky Mountains Institute at Tremont"

Nathan Sanders, University of Tennessee - "Ant Diversity in Great Smoky Mountains National Park, Part II" Brian Scholtens, College of Charleston - "Lepidoptera Barcoding 2005"

Ian Smith, Agriculture and Agri-Food Canada - "Biodiversity of Water Mites (Acari: Hydrachnida)" Gary Steck and Bruce Sutton, Florida State Collection of Arthropods - "Tephritid Flies of Great Smoky Mountains National Park"

Gary Steck and Bruce Sutton, Florida State Collection of Arthropods - "Diptera of Great Smoky Mountains National Park"

Paul Super, Appalachian Highlands Science Learning Center "Pollinators of Selected Flowering Plants of Great Smoky Mountains National Park, North Carolina"

Tor Tønsberg, University of Bergen, Norway - "Discover Lichens in the GSMNP in 2005"

The next request for proposals will be issued in January 2006. For more information, contact John Morse, jmorse@clemsun.edu.



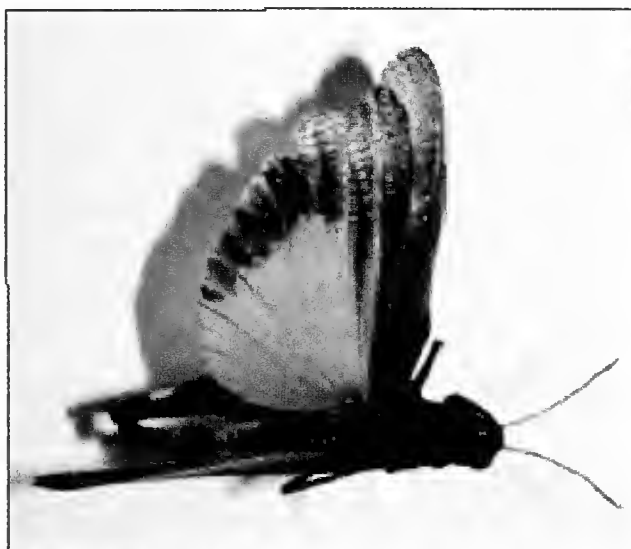
The following four articles were reprinted with permission from the Vol. 6, No. 3, Summer Newsletter, 2005, issue of the "ATBI Quarterly," Ruthanne Mitchell, Editor.

Grasshoppers in the Smokies

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 Opelika, AL 36801

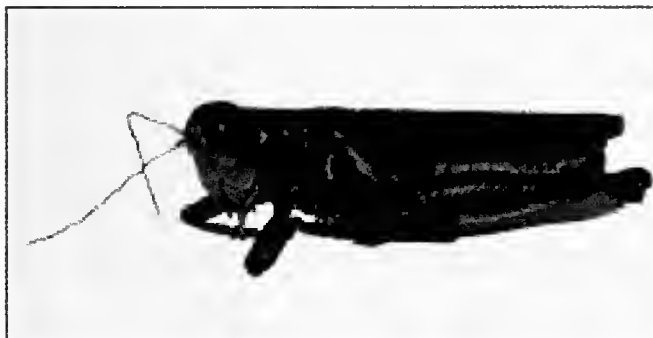
Grasshoppers are insects in the order Orthoptera. This order consists of two major suborders, Caelifera and Ensifera, both of which contain some species commonly referred to as grasshoppers; however, most of the species belong to the Caelifera, which are characterized by relatively short antennae and are most active during the daylight hours. Those species in the suborder Ensifera have long thin antennae and are primarily nocturnal.

Most grasshopper collecting in the Park has concentrated on the Caelifera and currently there are records of 45 species, 8 of which belong to the family Tetrigidae, which are commonly called either grouse locusts or pygmy grasshoppers. The other 37 are members of the family Acrididae, the short horn grasshoppers. The Ensifera will probably have at least as many species once we have made a serious effort to collect them. These two suborders require different collecting techniques and different timing of collecting effort.



Matt Dakin

Arphia sulfurea, a banded wing grasshopper.



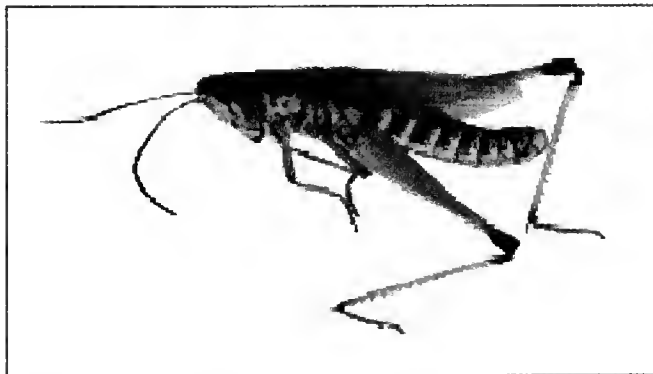
Matt Dakin

Melanoplus keeleri, a short horn grasshopper.



Matt Dakin

Booneacris varigata, a wingless grasshopper.



Matt Dakin

Chorthippus curtipennis, a slant face grasshopper.



Matt Dakin

Tettigidea lateralis, a grouse locust.

Where do you find grasshoppers? "In the grass" is a logical answer but if you confined your collecting to grasslands you would find only about half of the 45 species. The species that have been least often collected prior to the ATBI are found in other habitats; for example, the entirely wingless *Booneacris* is found on rocks at the higher elevations in the Park, and many of the short wing species of the genus *Melanoplus* are found in the leaf litter in or near wooded areas. *Metaleptea* is found on semiaquatic plants. Many banded wings (subfamily Oedipodinae) are found on bare patches of dirt. Some species of *Dendrotettix* and *Melanoplus* live on trees, and the Tetrigidae are found in a variety of habitats but seem to require a fairly high amount of moisture.

The distribution of Park grasshoppers has proven to be very interesting biogeographically. For example, *Dichromorpha viridis* is a common grassland species in the southern states and is common in the lower elevations of the Park; however, above 3,000 feet it appears to be replaced by *Chorthippus curtippennis*, a species common in the states north of the Park. Another "northern" species in the Park is *Chloealtis conspersa* taken at a high elevation at Purchase Knob. Also found in the Park are 11 species, all in the genus *Melanoplus*, that have reduced wings, are incapable of flight, and often have very restricted distributions. Five of these are members of the Viridipes Group which seems to have its center of distribution in the Park.

Adults of various species occur at different times of the year. Early season forms are replaced by related species or species with the same habitat requirements later in the year. For example, the banded wing *Arphia sulphurea* is very common in the spring and early summer in the Park, but is replaced in the late summer by *Arphia xanthoptera*. The Viridipes Group and *Melanoplus decoratus* adults occur as early as May and are replaced in the late summer by other short winged *Melanoplus* species. Some species such as *Schistocerca americana* can be found as adults year round. Most species survive the winter as eggs buried in the soil but some, such as the pygmy grasshoppers and *Chortophaga viridifasciata* (a banded wing), overwinter as nymphs.

Most grasshopper species are primary consumers, feeding on a wide variety of plants, and some, such as the African locust, can cause considerable damage when they swarm. In the Park, grasshoppers usually do not occur in numbers large enough to cause extensive damage, but are important parts of the food chain, serving as food for a wide variety of birds, amphibians, reptiles, mammals, and other insects.

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First Lichen Bio-Quest in Great Smoky Mountains National Park

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The first Lichen Bio-Quest was held in Great Smoky Mountains National Park (GSMNP) at the Great Smoky Mountains Institute at Tremont (GSMIT) in June 2004. More than 30 participants registered, including high school and college students, university teachers, Park volunteers and staff, area residents, and amateur and professional lichenologists. The objective of the Lichen Bio-Quest was to compile an annotated checklist of lichens associated with high altitude and low altitude regions of GSMNP as part of the ATBI and to curate, identify, and characterize the lichen specimens for inclusion in the interim database and the Discover Life in America website hosted by the Southern Appalachi

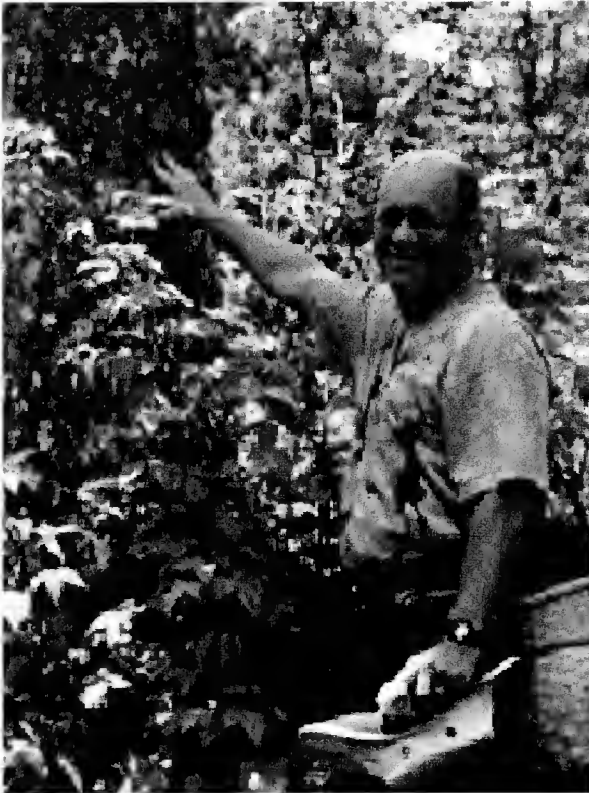
an Information Node (SAIN), which is part of the National Biological Information Infrastructure (NBII). Educational objectives of the Lichen Bio-Quest were to help participants answer the following questions: What is a lichen? Where do lichens grow? How are lichens collected and preserved? What are the growth forms? What is lichen terminology? How does one identify lichens?



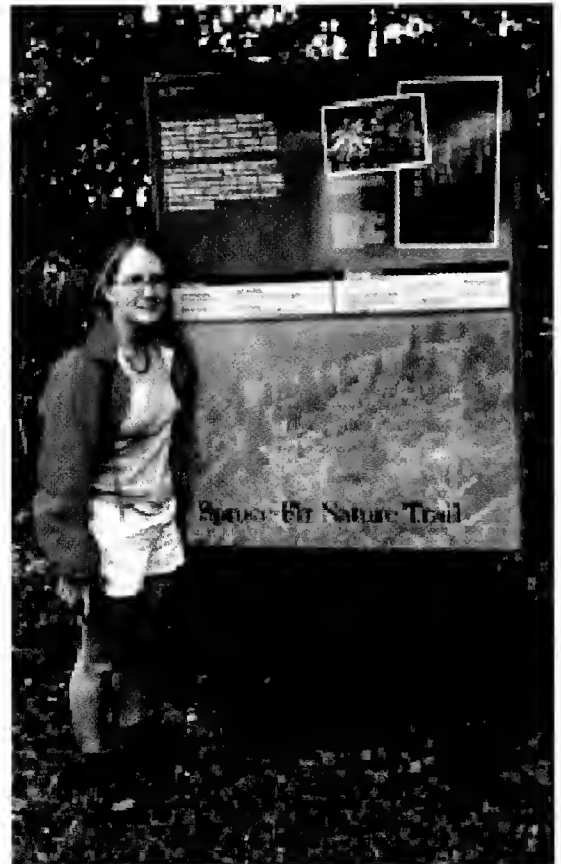
Steve Selva

Phaecalicium polyporaeum, a stubble lichen growing on a polypore bracket fungus. *Trichaptum pergamenum*, which is growing on a standing dead *Liquidamber styraciflua* (sweetgum). The lichen represents a new record for the Park.

Two lichenologists served as experts for identification and as foray captains. H. Thorsten Lumbsch presented a lecture that covered lichen symbiosis, morphology (growth forms and terminology), reproduction, physiology, ecological importance, systematics, and taxonomic characters. Steven B. Selva gave a lecture on the use of calicioid (stubble) lichens as environmental indicators of old-growth forests, and on the morphological characters used to distinguish this group of lichens. Participants viewed lichen specimens using microscope videos to illustrate lichen morphology, terminology, and taxonomic characters.



Harry Hitchcock, Clinton High School teacher, Clinton, Tennessee, along the Spruce-Fir Nature Trail. This tree trunk is covered with all three growth forms of lichens: crustose, foliose, and fruticose.
(Photo by Harold W. Keller)



Jessica Hoffman, a DLIA intern, who assisted with the Lichen Bio-Quest.
(Photo by Harold W. Keller)

Lower elevation collection sites (Lumber Ridge Trail and Spruce Flats Falls Trail, 405-550 meters) were located in the Tremont area on the Tennessee side, and higher elevation sites (Spruce-Fir Nature Trail, lower Beech Gap Trail, and Balsam Mountain Road, 1,094 to 1,728 meters) were all on the North Carolina side of the Park. These forays resulted in the collection of 136 lichen taxa, representing 7 orders, 5 suborders, 29 families, 57 genera, and 88 species. Four stubble lichen species and four crustose lichens were new records for the Park, but are rather common and widely distributed species. Many areas of the Park have not been investigated and are still poorly known. Certain groups of lichens, such as crustose, siliceous, lignicolous, and stubble lichens, have been overlooked or neglected, and our results clearly indicate that continuing intensive studies of lichens are necessary to thoroughly evaluate the species diversity of this group. Many new lichen records and new species await discovery

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Solitary Bees in Great Smoky Mountains National Park

Adrieen Mayor
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The U.S. Department of Agriculture's Agricultural Research Service Bee Biology and Systematics Laboratory in Logan, Utah, recorded 144 species of bees in Great Smoky Mountains National Park in 2002. The Utah bee lab anticipates a Park bee fauna of over 250 species. The inventory was only one of five bee inventories conducted east of the Mississippi River and it resulted in 16 new state records. One of the bees found, *Andrena* sp. 2, may be a new species to science. Since this inventory, an additional 20 species have been discovered in the Park, bringing the total to 164.

Bee lifestyles vary considerably. Honey bees, bumble bees, and some others, are social and live in colonies; however, most bees are solitary, with each female constructing a nest on her own. Very little is known about solitary bees and finding the nests can be a challenge, but many are active very early in the spring even before the major wildflower displays of April. Finding solitary bee nest sites is typically a matter of luck and a great thrill to those of us who look for them. In 2005, nest sites were discovered for two common species, *Andrena (Ptilandrena) erigeniae* and *Andrena distans*.

The first species, *A. erigeniae*, was discovered nesting in early March along the Greenbrier Ridge Trail at an elevation of 4,000 feet. The name of this bee species suggests a relationship with the *Erigenia* (harbinger of spring); however, it actually gathers pollen only from spring beauty (*Claytonia virginica*), a behavior which is termed "oligolectic" (to gather pollen from only one or a few related plant species). In a 1986 publication, *A. erigeniae* was only recorded from Raleigh, North Carolina. Since the start of the ATBI, it has been collected on the North Carolina side of the Park from Balsam Mountain Campground, The Purchase, and Andrews Bald, and on the Tennessee side from Goshen Prong, Albright Grove, Snakeden Ridge, Cades Cove, Indian Gap, Twin Creeks, and Park Headquarters, presumably mirroring the distribution of spring beauty in the Park. The Tennessee findings are new state records.

Andrena distans is less common in the Smokies and is a relative of *A. erigeniae*. It was previously recorded from several localities in North Carolina (including Cherokee) but not from Tennessee. This species is oligolectic on *Geranium maculatum*. It has not yet shown up in the ATBI plot samples; however, the Utah bee survey group recorded the first Park record from Cataloochee Valley in North Carolina. Last spring it turned up in traps at Twin Creeks, which documents a new record for Tennessee. Based on locality data in the herbarium for *G. maculatum*, we might expect to find *A. distans* at Smokemont, Gregory Bald, Cataloochee Divide, Mt. Sterling, Twentymile Ranger Station, Porters Flats, and Bull Head Trail.



Marilyn Lovelass

Andrena miserabilis female entering nest.

Additionally, a very large colony of *Andrena miserabilis* was discovered in April 2005 in the meadow at the Cataloochee Group Camp on the North Carolina side of the Park. This colony is extremely large with thousands of individual nest sites present. Female bees loaded with pollen were observed returning to nest sites; however, there were very few wildflowers in bloom, and surely not enough to sustain thousands of foraging bees. Females were observed dropping down into the meadow, suggesting that they had perhaps been foraging in trees, or another possibility is that they were foraging for long distances to find pollen. Obviously, much is yet to be learned regarding the distributions and unique habits of solitary bees in the Park.

Adrieen Mayor, *Museum Curator*
Great Smoky Mountains National Park



Carnivores: From Smallest to Largest

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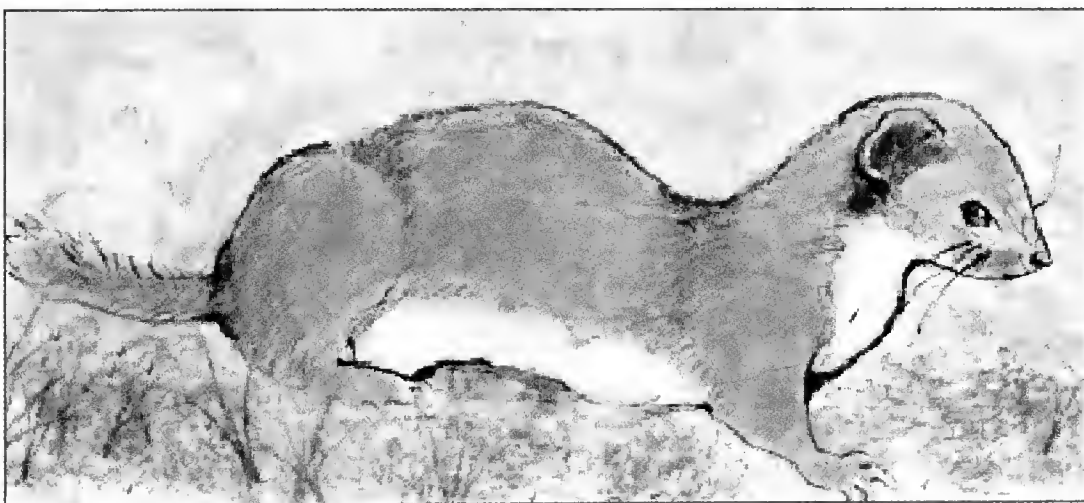
Of all the taxonomic groups being studied during the ATBI, mammals are probably the best known group. In 1995, all known mammal data was compiled in two publications - *Mammals of Great Smoky Mountains National Park and Mammals of the Great Smoky Mountains National Park 1995 Update*, both by D. W. Linzey. Therefore, our team did not anticipate adding many new species records to the known Park fauna. Since 1995, we have been extensively sampling mammal populations throughout the Park and have significantly refined

the distributions of many species. One member of our team, Dr. Michael (Mick) Harvey, has been responsible for discovering our only new record to date - the evening bat (*Nycticeius humeralis*).



Nycticeius humeralis, the evening bat (Source: *Bats of the United States* by Michael J. Harvey and J. Scott Altenbach: 1999. Photo by J. Scott Altenbach.)

Two species of carnivore, the smallest and one of the largest in the United States, have been the specific objects of my attention for the past several years. The least weasel (*Mustela nivalis*) is the smallest carnivore on earth. Adults are only 7-8 inches in length and weigh about 2 ounces, hardly larger than the mice and meadow voles on which they feed. They are primarily a northern species, with the Smokies marking the southern terminus of their range. Extensive live-trapping has proven unsuccessful at documenting the least weasel in the Park. Posters were distributed in 2002 asking residents around the Park to be alert to what their cats may bring in, as least weasels have previously been reported near the Park boundary in this manner. This situation would alert us to the location of a possible population, thus giving us a starting point for looking inside the Park.



Mustela nivalis, the least weasel, is the smallest carnivore on earth. (Drawing by Ruthanne Livaditis.)

At the other end of the size range is the Park's largest carnivore, the panther (*Puma concolor*), also known as cougar, mountain lion, and puma. Many

sightings have been reported but in most cases cannot be verified. A few involve photographs, most of which are either indiscernible or show some animal other than a panther. Until recently, the last verified evidence of a panther in the Park was in 1920.

In 2001, rubbing pads were used as a technique for obtaining hairs for DNA analysis. Sixty-five pads were in operation; however, panther hair was never collected. Also, remote heat-sensing, infra-red cameras have been used and have captured images of various animals, but still no panther. In 2001, a Park visitor observed a panther looking out of a small cave and captured it on video. I later examined the cave but was unable to locate any evidence. In 2004, another visitor took a full broadside photograph of a panther in Cades Cove. At present, these are the only two known distinct photographs from the Park.

Panthers currently in the Park may represent individuals from the Park's original population, or they may be part of the southern Florida population that have moved northward. At present, however, the most plausible explanation seems to be that any animals currently in the Park are the result of captive panthers either escaping or deliberately being released. Evidence of a reproducing population is necessary to establish that panthers are truly members of the Park's fauna, and the best hope of securing this evidence rests in obtaining a photograph of a young animal.

Our efforts are continuing in order to definitively add the least weasel and the panther to the current Park fauna. In 2005, we will continue using some of the methods discussed above, and, in the case of the panther, at least one new technique will be implemented. Please contact me if you have information concerning either of these species; it could be very helpful.

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REVIEW

Debbie Moore, *Review Editor*
Department of Natural Sciences
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Richards, W. J. (2005) 2006. **Early stages of Atlantic fishes, an identification guide for the western central Atlantic**. Taylor and Francis, Boca Raton, Florida. 2640 pages. \$395.00.

Wow, ichthyologists should be so lucky. First, W. Eschmeyer (1998) produced the three-volume **Catalogue of fishes** (2450 pages), then K. Carpenter (2003) compiled **Living resources of the western Central Atlantic** (2 volumes, 2127 pages), now W. Richards' (2006) humongous two volumes (2640 pages) treats **Early stages of Atlantic fishes** (total weight of two volumes 14.5 lbs., 6.5 kg).

Richards compiled the contributions of 71 larval fish experts from around the world—he alone contributed 62 chapters to the treatise. Early life stages include 214 families, 29 orders of the 2300 species of fishes known from the area, the western geographic Atlantic fishing area 31 that covers the area from 35°N to 40°W, the Gulf of Mexico and the Caribbean. One hundred nineteen families are included in Volume 1, families 120-214 in Volume 2. Where known, each species' range, egg, yolk sac, larval transformation and juvenile stages usually occupy one page while a facing page depicts known stages (mostly as line drawings). Each larval stage is defined as are abbreviations, equipment needed for larval study and preservation. Figure 4 contains representative illustrations of each family (p. 56-78). Table 1 (pages 37-47) lists important life stages, table 2 (p. 43-45) vertebrae counts, table 3 (p. 46-50) dorsal fin counts and table 4 (p. 43-45) anal fin counts and ranges.

We are exposed, throughout the two volumes, to the myriad of forms and larval stages one can encounter. Examples are eyes wide apart (black dragonfish, family *Idieacanthidae*, p. 293), elongate ornate fin filaments (oar fishes, *Regalecidae* p. 1011), long filamentous extensions with bulbous ends (gibberfishes, family *Gibberchthyidae*, p. 1087) or heads or bodies with long spines (to help flotation) that later in development shorten or disappear before the larva resembles an adult fish we know (p. 1188, 2117, or the ocean sunfish, family *Molidae* p. 2463). A few original photos are sprinkled throughout the volumes (i.e., scorpaenids, mullids, etc.). A literature cited section, containing over 2000 references (p. 2541-2640, Vol. 2), follows the species accounts.

Richards' **Early Stages Guide** is the result of a life's work of peering at plankton that contained early stages of developing fishes. This study encompassed many years where often only one stage had been collected before other stages filled in the picture of egg-larvae-adult.

While expensive, \$395.00, Richards' **Early Stages** two volumes are a must for anyone studying larval or adult fishes of the western Atlantic. Many a day will pass before another such thorough study of fishes is produced.

FRANK J. SCHWARTZ, *Institute of Marine Sciences, University of North Carolina, Morehead City, NC 28557-3209.*✉

OBITUARY

IN REMEMBRANCE – WILLIAM D. BURBANCK

Dr. William D. Burbank, the 26th president of the Association of Southeastern Biologists, passed away peacefully on September 5, 2005, after a brief residence at Hospice Atlanta. He had recently celebrated his 92nd birthday with family and friends on August 20th. Bill had been a long-time faculty member at Emory University throughout much of his distinguished professional career. His passing represents a great loss to ASB, given the extent of his leadership within the society, his active participation at our annual meetings over five decades, and the warm friendships he shared with so many ASB members over this period. He was among a very select number of our members who have served as president of ASB and been the recipient of both the ASB Faculty Research Award (1961) and the Meritorious Teaching Award (1981).

Bill Burbank was born in Indianapolis, Indiana, on August 20, 1913, the son of Reverend G.G. and Flora Burbank. He had twin older sisters. His early life and formal education occurred in Richmond, Indiana, where he began to cultivate a deep interest in the arts and a life-long passion for tennis. Bill graduated from Earlham College in Indiana with an AB in history in 1935. He excelled in intercollegiate tennis while at Earlham and sang in college productions of Gilbert and Sullivan. His participation in a summer biology field program at Lake Winona following graduation provided much of the impetus for his ultimate decision to pursue a career as an aquatic ecologist. However, he never relinquished his keen interest in history. Bill completed his MS degree in biology at Haverford College in 1936 and then returned to Earlham College as an Instructor in Biology from 1936-1938. He spent the summers of 1937 and 1938 studying protozoology at the Marine Biological Laboratory in Woods Hole, Massachusetts. This experience at Woods Hole proved pivotal for Bill in initiating a life-long membership in the Marine Biological Laboratory Corporation. It also instilled a deep appreciation of the rich biological diversity of Cape Cod that subsequently led to the purchase of a second home on Cape Cod in 1949.

Bill's training in protozoology at Woods Hole also facilitated his entering the graduate program in ecology at the University of Chicago. He chose to work under Dr. W.C. Allee, one of the foremost ecologists of the 20th century, on a dissertation project involving the ecology of a ciliate protozoan, *Colpidium colpoda*. The University of Chicago during Bill's graduate tenure (1938-1942) was a favored location where many of the leading ecologists gathered to lay the foundations of their emerging discipline. The intellectual discourse that permeated seminars, courses, field trips, and personal discussions at Chicago enabled Bill to gain considerable scholarly insight as he became personal friends with the members of this elite group. Over the years, I have greatly enjoyed Bill's many engaging stories from this period of his education which meant so much to him. It was during graduate school that Bill was also especially fortunate to marry Madeline Palmer in 1940 while she was a doctoral student in botany at the University of Chicago. Bill and Madeline remained married for 65 years, raised two children, and formed a wonderful partnership that enabled each of them to attain considerable success in their respective research areas. Bill was always

quick to acknowledge the overriding importance of Madeline's assistance throughout his long career. Their synergy in approaching scholarly projects proved highly effective.

Bill Burbank's academic career began in earnest at Drury College in Springfield, Missouri in 1942, after a brief appointment as Instructor of Biology at the City College of New York. He rose quickly through the faculty ranks at Drury, attaining Full Professor and serving as Chair of the Biology Department and the Division of Science and Mathematics between 1942-1949. While at Drury, Bill spent the summers as an Instructor in the Invertebrate Biology course at the Marine Biological Laboratory in Woods Hole. Bill was granted a one-year leave of absence from Drury College in 1949 to fill a Visiting Professorship in Protozoology at Emory University in Atlanta. This move was difficult personally since Madeline remained at Drury teaching Bill's courses and raising their two young children. However, the opportunity to participate in developing a Ph.D. program in biology at Emory proved enticing and Bill subsequently accepted the offer of a Full Professorship in the Biology Department. His family joined him in 1950. Bill's tenure as a faculty member at Emory from 1949-1980 was marked by a major expansion of the university. Bill contributed much to this expansion while serving as Chair of the Biology Department from 1952-1957. He relished the collegiality that was present on Emory's campus and the strong friendships that existed within the Biology Department. Bill and his distinguished colleagues in biology represented the very best of the teacher-scholar tradition that still endures at Emory.

Bill's career as a research scientist was highly successful. His long-term work with protozoans included a series of elegant studies involving collaboration with his graduate students. However, Bill's growing affiliation with Woods Hole led to his decision to initiate a comprehensive analysis of the physiological adaptations and distributional patterns of the isopod *Cyathura polita* in response to limiting factor gradients within the estuarine environment. The Burbanks worked together for many years on this project that centered at Cape Cod, but extended north to Nova Scotia, south to Lake Pontchartrain in Louisiana, and from Baja, California to Vancouver in the west. Bill's overall research efforts received funding (mainly NSF and NIH) of over 1.5 million dollars, resulted in over 70 publications, and led to the completion of 40 graduate degrees (MS and Ph.D.) involving his 28 graduate students. The thoroughness of Bill's work with *Cyathura* led to the naming of a new species (*Cyathura burbancki*) in his honor. The admiration that Bill earned from his colleagues led to his selection as Vice President of the Society of Protozoologists, President of ASB, President of the Southeastern Estuarine Research Society, and membership on the Governing Board of the Estuarine Research Federation, Advisory Committee of the Skidaway Institute of Oceanography, and the Board of Trustees of the Highlands Biological Station. He also served on the Editorial Board of the *Journal of Protozoology* and was Associate Editor for *ESTUARIES*. Bill remained a proud member of Phi Beta Kappa, Sigma Xi, Phi Sigma, and ODK. The combination of Bill's research and societal leadership enabled him to travel widely in presenting papers and to establish strong friendships with colleagues throughout the world. These travels over many years were one of his greatest joys.

What I will remember most strongly from among Bill's many admirable traits was the deep loyalty he extended to all of his students and colleagues while at Emory. Every undergraduate that passed through his courses received a degree of attention and guidance that was genuine and heartfelt. He was never too busy to help with academic or personal problems. This commitment was even stronger in support of his graduate students. Bill earned an especially high degree of admiration from his graduate students in response to the exacting standards he set for their research, the thoughtful advice and guidance he offered throughout their graduate tenure, and especially for the warm friendship he extended at each stage of their progress throughout their careers. This loyalty and guidance was rewarded by Bill's selection to receive ASB's Meritorious Teaching Award. Coinciding with his 90th birthday, his graduate students were instrumental in honoring Bill and Madeline with a commemorative paving stone in the plaza of the new Headquarters Building of Sigma Xi in Research Triangle Park, North Carolina. Bill extended a similar degree of loyalty and commitment to his faculty colleagues at Emory. He worked tirelessly on behalf of the faculty members in biology while as chair and was quite successful in his efforts. The department fared well under his loyal and dedicated guidance!

The 25 years of retirement Bill experienced since leaving Emory in 1980 was filled with many personal and professional activities that greatly enriched his later life. He continued playing skillful tennis with a close group of friends even as he reached 90! He and Madeline maintained social contacts with friends through playing bridge as a favored pastime. Music and art remained an enjoyable means of relaxation as they attended many performances throughout the Atlanta area. Similar activities were enjoyed each summer at Woods Hole where they returned until 2003. Bill also found time to seriously pursue the genealogy of the Burbanck family. He received great pleasure in this pursuit and established new friends and family ties in the process. Bill and Madeline continued attending scientific meetings until their final, memorable ASB meeting at Chattanooga in 2000.

Bill Burbanck's life was especially long, active, and fulfilling in so many respects. He touched many of us through his deep loyalty and friendship as he carved out a distinguished career filled with discovery, the satisfaction of imparting knowledge and growth to several generations of graduate students, and the happiness of maintaining close ties with distinguished colleagues from many countries who admired the quality of his scientific efforts. His life stands as a legacy we should all emulate in hopefully accomplishing similar objectives. Bill's many fine qualities remain in his two children, Melinda and George, his five grandchildren, John Jr., Laura, Alexander, Chelsea, and Graham, and his two great-grandchildren, Megan and Dylan. He will be greatly missed by all of us!

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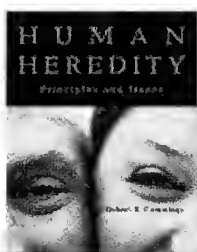
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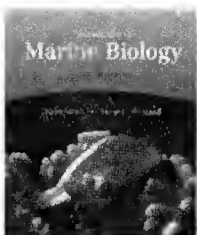
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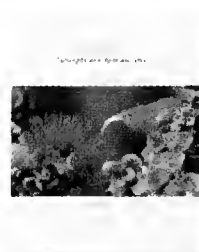
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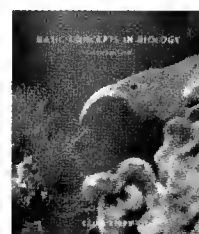
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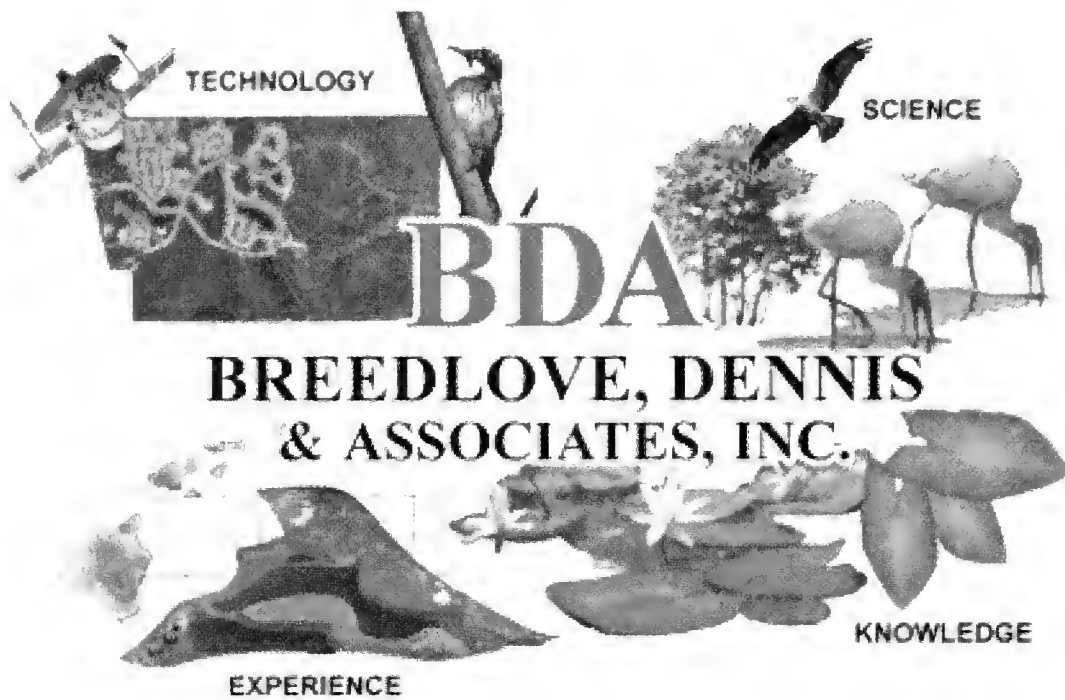
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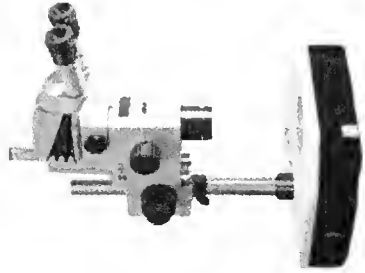
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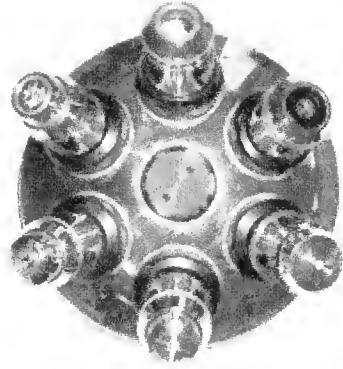
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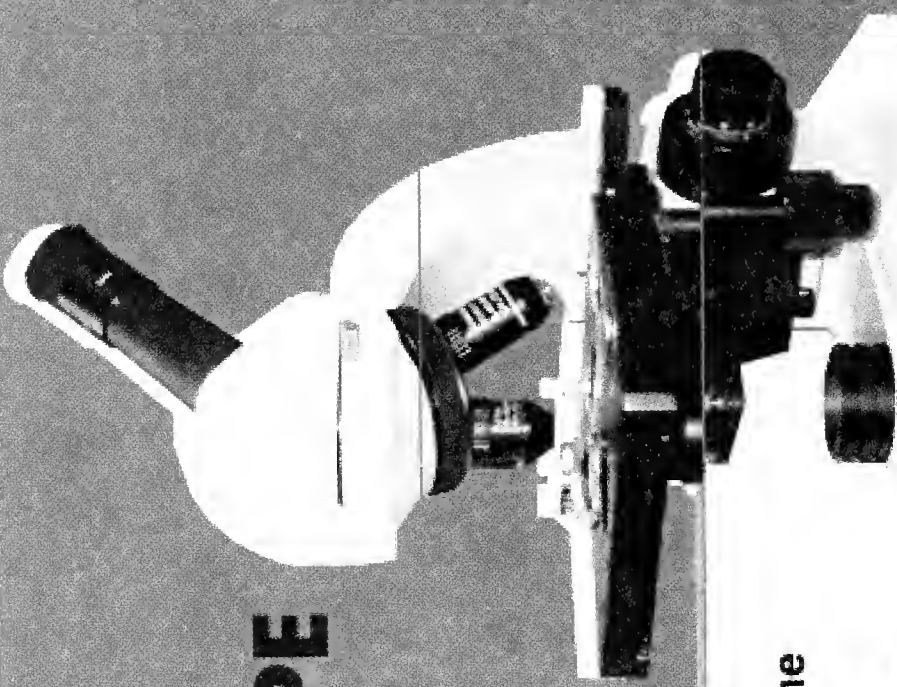
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