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EEB Newsletter

Ecology and Evolutionary Biology

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Fall 2010

## Explorations Volume 1 Fall 2010

Department of Ecology & Evolutionary Biology

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Department of Ecology and Evolutionary Biology

# EEB Newsletter

## Letter From the Head of Department

By Gary McCracken



Prof. Gary F. McCracken  
EEB Head of Department  
2008 to present

I'm delighted to share with you some of the remarkable accomplishments of the faculty, staff, and students of the Department of Ecology and Evolutionary Biology at UTK.

As this inaugural edition of the EEB Newsletter chronicles, cutting-edge research takes place daily at the laboratories and field sites of our faculty, graduate students, and undergraduates.

Our Graduate Program has never been stronger and is growing and getting even stronger. Our undergraduate students are among the best in the University, and the number of EEB majors has increased by over 40% in the last two years. This growth has been spurred by the energy and enthusiasm of a dynamic young faculty, a cadre of internationally recognized senior faculty, a host of new course offerings, and a totally engaged Graduate Student Organization.

This newsletter highlights only a few of EEB's amazing community outreach activities: the Annual Spring Wildflower Pilgrimage (now, approaching its 61st year), and the Biology in a Box and Vols Teach initia-

tives, both directed toward enhancing K-12 education throughout Tennessee.

We've gained national and international recognition by becoming the site of the National Center for Mathematical and Biological Synthesis (NIMBioS), and by nominating Vice President Al Gore to receive an Honorary Degree in Ecology and Evolutionary Biology. Gore received the degree and gave the commencement address at UTK's Spring 2010 graduation ceremony.

This, and much more is occurring in a Department that is dedicated to the "naturalist tradition" in biology as illustrated by our commitments to biological collections and field experiences for students.

In 2009, when the department went through its 10-year program review, a review team of five distinguished scientists from inside and outside of UTK cited EEB as "... an excellent department in all aspects of its mission – research, undergraduate education, graduate training, and outreach to the broader public". As I hope this newsletter attests, we in EEB are working to be even stronger in the service of our students, our community, and our profession.

## National Institute for Mathematical and Biological Synthesis

The National Institute for Mathematical and Biological Synthesis, also known as NIMBioS, is focused on finding novel ways of applying mathematical models, computational methods, and interdisciplinary approaches to basic and applied problems in the life sciences. Nearly 1,000 researchers and students from around the world have participated in NIMBioS since the first activity in April 2009.

NIMBioS Director Louis Gross is a professor of both EEB and mathematics at UTK. Lou was instrumental in orchestrating the \$16-million cooperative agreement to establish NIMBioS in September 2008. Currently, NIMBioS provides partial support to twelve EEB faculty and two EEB graduate students. Seven postdocs funded through NIMBioS have EEB mentors.

Examples of biological problems that have been addressed at NIMBioS are spatio-temporal management

of invasive species and linking models to data to predict and control animal diseases such as bovine tuberculosis, pseudorabies in feral hogs, and white-nose syndrome in bats. Recent research, originating from a NIMBioS workshop, predicts regional extinctions of the most common bat species, the little brown bat, within two decades due to white nose syndrome.

Unlike some NSF-supported mathematics institutes, NIMBioS activities are not based upon an annual theme. Rather, research directions and activities are community-driven, derived from requests for support from the research community and collaborative efforts with industry and government agency partners. For more information about research and educational opportunities at NIMBioS, please visit the web site at <http://www.nimbios.org>.



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## UT Awards Gore an Honorary Degree in Ecology and Evolutionary Biology

The University of Tennessee, Knoxville, honored former Vice President and Nobel Peace Prize winner Al Gore with an honorary degree on Friday, May 14 at the College of Arts and Sciences commencement exercises. The degree, an Honorary Doctor of Laws and Humane Letters in Ecology and Evolutionary Biology, is just the third to be granted by UT Knoxville.

The honoree shared his thoughts and advice with the 1,030 graduates and their families and guests, estimated to be well over 13,000 people. Gore acknowledged the economy's improvement but focused more on another important issue — the climate crisis — and how the 2010 graduating class can be part of the solution.

"Just as this occasion offers an opportunity to make an assessment of how those who came before you have done, the day will come, not too many years from now, when a future generation will assess what you and those of us who are still around have done over these next few years and decades.

"I want them to look back at this day in time and ask of us 'how did you find the moral courage to rise up and solve a crisis that somebody said was impossible to solve?' I believe in my heart that we are going to solve this crisis. I believe that this is the greatest opportunity that our society has ever had. And I'm excited about the fact that from this day forward you're going to be a part of all of the great work our society is doing."



Former Vice President Al Gore addresses graduates at the College of Arts and Sciences commencement ceremony.

Gore received a standing ovation following the address.

Gore was co-winner, with the Intergovernmental Panel on Climate Change, of the 2007 Nobel Peace Prize for informing the world of the dangers posed by climate change. He is the author of the best-selling books "Earth in the Balance" and "An Inconvenient Truth" and also is the subject of an Oscar-winning documentary.

A native of Carthage, Tenn., he was inaugurated as our nation's 45th vice president on Jan. 20, 1993, and served eight years. In that role, he served as president of the Senate, as a member of the National Security Council and led a wide range of administration initiatives. Prior to serving as vice president, Gore was twice elected to the U.S. Senate from Tennessee, in 1984 and 1990. He represented Tennessee's 4th Congressional District — the seat also was held by his father, Al Gore, Sr. — in the U.S. House of Representatives from 1976 to 1982.

Previous honorary degree recipients have been Dolly Parton and Sen. Howard H. Baker Jr.

Photos and an archived version of the webcast can be found online at <http://www.utk.edu/commencement/spring10/>. A complete UT press release can be found at <http://www.utk.edu/tntoday/2010/05/14/gore-awarded-honorary-doctorate/>.

## The D. K. Smith I Know

By Ken McFarland

David K. Smith retired from the EEB faculty in August 2010, after 37 years in the department. He is still actively involved in UT's Herbarium collections.

I met David Smith a few weeks after I arrived at UT's Botany Department in 1975. Over the past 35 years, I have worked with David on many projects. The most rewarding project was working with David, Paul Davison, and Karen Renzaglia in resolving the classification of the most perplexing bryophyte (a division of plants which includes mosses, hornworts, and liverworts) ever discovered — *Takakia*.

Until 1988, it was unclear if *Takakia* was a moss, liverwort, alga, or fungus. It lacks both gametangia and sporophytes, and these features are essential in the classification of bryophytes. For 40 years after the discovery of *Takakia*, its mystique stirred much research and debate. Classifying *Takakia* became the "Holy Grail" of the international bryological community.

In 1988 David and Paul Davison returned from the Aleutian Islands with a bounty of bryophyte collections, including several samples of



David Smith, Paul Davison and Ken McFarland collecting data on threatened moss and liverwort species growing at Roan Mt., VA, 1999.

*Takakia*. Nicholas McLetchie, a graduate student in David's bryophyte class at that time, looked at these *Takakia* plants through a microscope and commented on the unusual orange structure nestled among the leaves of the plants. These were the first antheridia ever seen on *Takakia* plants. Their form was like the typical moss antheridia. This discovery started to crack the secrets of the mystery plant.

Around 1 am one July morning in 1990, I received a phone call from David, who was back in the Aleutian Islands with graduate student Paul Davison, his voice tremulous with excitement. David confided, "I found something, and I couldn't wait to tell you. Paul and I found *Takakia* plants with sporophytes, and you won't believe this, but the sporophytes show that *Takakia* is really a moss." When this information was presented at the national bryological meeting, Lewis Anderson, a world-renowned bryologist at Duke University, stood to face the audience and proclaimed, "This has been the most important bryological discovery of the 20<sup>th</sup> Century."

Field trips with David have always been eventful. I have always enjoyed these adventures and am looking forward to the next one.

## Undergraduate News

### New Undergraduate Course Offerings

Undergraduates seeking a degree from any of the four concentration areas within the Division of Biology (EEB, Biochemistry and Cellular and Molecular Biology; Microbiology; and Plant Biology ) must complete a set of “core” Biology courses consisting of Biodiversity, Cell Biology, Genetics, and Ecology. In recent years, the Biology departments have seen an explosion of highly-qualified, biologically-oriented students in their programs. This demand has put pressures on several of the core courses, including those traditionally taught by EEB faculty, such as Biodiversity and Ecology. These “bottlenecks” to student progression are of great concern to the University, and EEB has been proactive in helping meet student demand.

In August 2009, EEB Assistant Professor Dr. Elisabeth Schussler was hired as the new Director of Biology Teaching and Learning to transform this core curriculum. The Biodiversity course is the first Biology course many students take at UTK. To add course capacity, and to serve the increasing numbers of honors students at the University, Dr. Susan Riechert created a new Honors Biodiversity course in Fall 2010. The traditional Biodiversity course is being expanded to add 100 seats to the course’s capacity. Similarly, the Ecology course has also expanded its capacity and EEB will soon be offering two Ecology courses per semester instead of one.

Although the focus last year was on capacity and demand, the focus for the upcoming year will be course quality and student learning. Educational research shows that students learn better when they are active participants in their education, compared to sitting passively in a traditional university lecture. Cultural changes in education also allow more student engagement and active learning.

EEB faculty are increasingly using more active learning methods and technologies, such as clickers, in their classes. (Clickers transmit student responses to the instructor’s computer, providing students and instructors with instantaneous feedback. See <http://itc.utk.edu/classrooms/clickers/> for more information). However, large-scale reform will require professional development of the faculty and reconsideration of the traditional curriculum. Dr. Schussler has begun an informal professional development program by hosting relevant seminars and speakers, and forming reading groups on teaching. In addition, she has formed a faculty task force which is working to create a new curriculum for the Biology core. Dr. Stan Guffey is leading a similar task force to redevelop the non-major Biology curriculum.

It is an exciting time for Biology at UTK, and EEB faculty are heavily involved in shaping the future of the core Biology courses that students will take in upcoming years at the University.

### Vols Teach

The University of Tennessee has been chosen by the UTeach Institute to replicate The University of Texas’ highly successful teaching licensure program for the short-age areas of math and science. Without any additional credit hours, students can graduate in four years with a content area degree in math or science and attain licensure as qualified teachers in their respective content areas. Vols-Teach involves cooperation between UT’s College of Arts and Sciences and College of Education, Health, and Human Sciences. EEB’s Professor Susan Riechert is the program Co-Director representing Arts & Sciences.



VolsTeach students receive personal guidance by Master Teachers and



Program Advisors, tuition rebates for the first two 1 credit courses offered by the program, paid internships, and career development travel funds. While any professional would benefit from the experiences this program offers, graduates choosing to teach in Tennessee schools will further receive 5 years of career development support from VolsTeach. This streamlined program is available to incoming freshmen, sophomores and juniors.

For more information, contact VolsTeach Advisor/ Recruiter, Jada Johnson at [volsteach@utk.edu](mailto:volsteach@utk.edu), visit the program’s website at <http://volsteach.utk.edu/>, or follow the program on Facebook (VolsTeach).

### Undergraduate Students

The Division of Biology has seen a dramatic increase in the number of undergraduate students concentrating in Ecology and Evolutionary Biology in recent years. In 2007-08, only 11 undergraduate students graduated with a concentration in EEB. In 2008-09, there were 21 EEB graduates, and in 2009-10, there were 43!

The quality of undergraduate students in EEB is evident when one looks at student destinations after graduation. Recent graduates have progressed to graduate programs (at Arizona, Rice, UC-Davis, and Yale, amongst others), to research positions in exotic places (e.g. King Abdullah University of Science and Technology in Saudi Arabia), and other prestigious jobs.

## Graduate News

### Graduate Researchers in Ecology, Behavior and Evolution

Graduate students are the lifeblood of EEB. At any one time, the grad students outnumber the faculty by a ratio of about two to one. A big reason that EEB is so widely respected is that our students represent us so well, both within the University and outside the University. Graduate students represent us at regional, national, and international meetings. They teach lab sections and are heavily involved in directing undergraduate research. And graduate students publish papers in the very best journals in Ecology and Evolutionary Biology. Simply put, our graduate students are among the best instructors on campus and they are widely recognized as being some of the very best graduate students in the country.



(our zip code) to see just a fraction of the impressive number of high quality papers that our students turn out. Jonathan Pruitt's (PhD 2010) publications alone provide enough reading material for a long weekend.

Not only are our students turning out high impact papers in the peer-reviewed literature, they are also publishing important works for the general public. Matt Niemiller and Graham Reynolds,

for example, are putting the finishing touches on "The Reptiles and Amphibians of Tennessee," which should be published later this year. This field guide fills a big hole and deserves to be in the backpack or glove box of any would-be naturalist taking a trip across the state.

One reason our students are so good is that EEB has an incredibly selective admissions process. Over the last 5 years, the admission rate has hovered around 15% or so. That is, out of around 75 applicants in a year, EEB offers admission to fewer than 12 students. And these 12 students could go to almost any graduate program in the country. In fact, we compete with places like Dartmouth, Berkeley, Washington University, and Texas for students. More often than not, we win. Since 2004, More than 80% of the prospective students we have offered a spot to have taken us up on the offer; very few students turn down a spot in EEB.

Once those select students are here, they thrive in the program. EEB's graduate students have nationally competitive prestigious fellowships. Amy Turmelle (PhD 2009), Greg Crutsinger (PhD 2009), Katie Stuble, Melissa Cregger, Sara Kuebbing, and Emily Austin are just a few examples of recent recipients. And our students publish in the very best journals, including *Science*, *Evolution*, *American Naturalist*, and *Ecology Letters*, just to name a few examples. Just for fun, visit Google Scholar and search on "Ecology and Evolutionary Biology" and 37996

Finally, our students over the past several years have gone on to take prestigious positions in academia and elsewhere. Most recently, Greg Crutsinger has been a Miller Fellow at the University of California in Berkeley since receiving his PhD in Spring 2009, and he is starting a faculty position at the University of British Columbia next summer. Tad Fukami (PhD 2003) is now an Assistant Professor at Stanford, and Marc Cadotte (PhD 2005) is an Assistant Professor at the University of Toronto. Jonathan Pruitt landed one of the most sought after postdocs in the country as the Population Biology postdoc at UC-Davis, and JP Lessard (PhD 2010) is now a postdoc at the University of Copenhagen.

By almost any metric, our graduate student program is thriving. It is also growing, thanks in large part to several new lines of support that have recently been secured and several recent fellowships awarded to our students.

For more information about Graduate Researchers in Ecology, Behavior and Evolution check out the GREBE website at <http://web.utk.edu/~rreyno16/grebe.html>.

### Congratulations, Finishing Graduate Students!

Congratulations to our finishing graduate students of 2009 and 2010!

Drs. **Gregory Crutsinger**, **Benjamin Keck**, **Xuehua Cui**, **Rachel Goodman**, **Kerry Hansknecht**, and **Amy Turmelle** received their doctorate degrees in 2009. Drs. **Robert Lawton**, **Stesha Pasachnik**, **Johnathan Pruitt**, and **Jean-Phillippe Lessard** received their doctorate degrees in 2010.

**Noa Davidai**, **Sarah Duncan**, and **Jason Jones** received their master's degrees in 2009. **Veronica Brown**, **Patrick Hudson**, **Clara Pregitzer**, **Megan Todd-Thompson**, and **Jarrod Blue** received their master's degrees in 2010.

Please read the previous article to see just some of the exciting places our graduate students go after graduating!

## Faculty News

Three new faculty members joined EEB in 2009. **Paul Armsworth** (PhD, Math, James Cook 2000, and PhD, Biological Sciences, Stanford 2003) is featured on page 6 of this newsletter. **Brian O'Meara** (PhD, UC Davis 2008) is an evolutionary biologist with expertise in phylogenetics (the relationships of life forms and how we can best know these relationships) and is a NIMBioS (page 1) faculty. **Beth Schussler** (PhD, LSU 1997) is a plant ecologist and physiologist who is an expert on best practices in science teaching. A few of Beth's initiatives as the new Director of Biology Teaching and Learning are featured on page 3.

These new hires join EEB's great young faculty. **Jim Fordyce** received the Chancellor's Award for Professional Promise in Research and Creative Achievement in 2007. **Nate Sanders** received the same award in 2008 as well as the College of Arts and Sciences (CAS) Junior Faculty Teaching Award in 2009. **Taylor Feild** received the CAS Junior Faculty Research and Creative Activity Award in 2008 and became a Fulbright Fellow in 2010. **Ben Fitzpatrick** received the Hallam Award for Research and Scholarly Achievement in 2010.

EEB's recently tenured faculty include **Nate Sanders** (2008), **Jim Fordyce** (2009), **Joe Williams** (2009), **Taylor Feild** (2010), and **Mike Gilchrist** (2010).

Turning attention to more senior faculty, **Sergey Gavrilets** was named the CAS Excellence Professor in 2011. **Dan Simberloff** received the Eminent Ecologist Award (the highest award of the Ecological Society of America) in 2006 and was elected Fellow of the American Association for the Advancement of Science (AAAS) in 2009. **Sue Reichert** and **Lou Gross** were also elected AAAS fellows in 2009, as was **Gary McCracken** in 2010. **Sue** also became a National Academies Education Fellow in the Natural Sciences in 2009, was awarded Tennessee State Teachers Association Higher Education Science Educator of the Year in 2010, and was the CAS College Marshall in 2010. **Lou** also was named James R. Cox Professor in 2008, Distinguished Professor in the CAS in 2008, and Alvin and Sally Beaman Professor in 2010.

Since the first recognition of Quest Scholars of the Week, eight EEB faculty have received this honor. These include **Sue Reichert**, **Karen Hughes**, **Ron Petersen**, **Francisco Úbeda de Torres**, **Taylor Feild**, **Ben Fitzpatrick**, **Sergey Gavrilets**, and **Darrin Hulsey**.

Please check out the EEB website (<http://eeb.bio.utk.edu/>) for more information on EEB faculty, many of whom are mentioned above.

## Recent Research

### Ecosystem-Level Consequences of Climate Change

In 2002, researchers at the University of Tennessee and Oak Ridge National Laboratory, led by EEB's Dr. Aimée Classen, initiated a 6-year large-scale field manipulation to investigate how changes in multiple climate variables interact to alter ecosystem dynamics. Prior to this study, most climatic change research focused on the response of a single species to a single factor, such as elevated temperature. However, climatic changes interact. For instance, warming increases nutrient availability to plants, but this response may be dampened if soil moisture is reduced.

In a Tennessee old-field (abandoned farmland), twelve four-meter open top chambers housed a variety of grasses, wildflowers, and tree species. Each chamber received a combination of high or ambient carbon dioxide and high or ambient temperature. Chambers were divided into halves with one half receiving high amounts of precipitation and the other half receiving low amounts of precipitation. Over 6 years, abiotic factors such as air and soil temperature were monitored as well as biotic factors such as shifts in plant and soil communities.

Researchers found that the influences of climate, particularly soil moisture, lead to the development of unique plant communities. Each of these plant communities altered the development of soil communities



One of twelve open top chambers used in the studies.

including the bacteria and fungi that process soil nutrients. Interactions among the plant species and their individual and combined response to the climatic change treatments were larger than the direct effects of the climate change treatments. These results indicate that altered plant dominance patterns will be an important part of whole plant community responses to climate change.

"The complexities of this experiment highlight the importance of ecological interactions in shaping the function of grassland ecosystems" says Classen. "Experiments such as this are needed to help shed light on a large and complex problem".

Please visit <http://web.utk.edu/~aclassen/Classen/Home.html> for more information.

References: \* Kardol P, Cregger MA, Campany CE, and Classen AT (2010) Soil ecosystem functioning under climate change: plant species and community effects. *Ecology* 91(3):767-781.

\*Kardol P, Campany CE, Souza L, Norby RJ, Weltzin JF, and Classen AT (2010) Climate change effects on plant biomass alter dominance patterns and community evenness in an experimental old-field ecosystem. *Global Change Biology* 16: 2676–2687.

## Recent Research, Continued

### The Fate of Atlantic Bluefin Tuna in the Gulf of Mexico

Atlantic bluefin tuna, a top predator, is highly prized by the fresh sashimi market. The global demand for bluefin has led to precipitous decline of the populations and there is considerable debate about the policy steps required for rebuilding, as exemplified by recent debates over whether the species should be listed under the CITES convention.

Electronic tags have recently revealed that adult western Atlantic bluefin tuna spawn in the northern Gulf of Mexico in Spring-early Summer. The area of the Gulf of Mexico used for spawning is fished by longline fishermen, who are primarily targeting other species but catch bluefin tuna as bycatch. This observation led conservation groups to suggest the pelagic longline fisheries operating in the Gulf of Mexico be closed for part of the year to protect spawning bluefin to ensure rebuilding of the Western Atlantic bluefin population.

Dr. Paul Armsworth teamed up with colleagues to build a mathematical model integrating the electronic tagging data to examine the ecological and economic impacts of implementing a time-area closure in the Gulf of Mexico prohibiting the use of longlines on the spawning grounds during the spawning season. Armsworth summarizes the model predictions: "The first prediction concerns the depleted state of the bluefin stock. The model suggests the current state of the Western Atlantic bluefin population is little better than it would have been if there had been no management at all. Yet, if countries could commit to rebuilding the bluefin population, the model predicts annual revenues



*"The model suggests the current state of the Western Atlantic bluefin population is little better than it would have been if there had been no management at all."*

from Western Atlantic bluefin fisheries could increase by 460%." Regarding the Gulf management question specifically, Armsworth remarks, "Implementing a closure in the Gulf while changing nothing else in the fisheries would achieve little. However, if the various management agencies take rebuilding seriously, then the model predicts further economic gains from closing an area of the Gulf around bluefin spawning time as part of an integrated package of rebuilding measures."

Understanding the spawning behavior of bluefin in the Gulf and the impact of management measures on nearby fishing communities has taken on a real sense of urgency, because the areas of the ocean and the fishing communities that would be affected are those that bore the brunt of the Deepwater Horizon spill. The long-term impacts of the spill for spawning success of the species or the viability of the fisheries involved are currently unknown.

Reference: Armsworth, P.R., Block, B.A., Eagle, J., Roughgarden, J.E. 2010. The economic efficiency of a time-area closure to protect spawning bluefin tuna. *Journal of Applied Ecology*, 47: 36-46

*Paul Armsworth joined the EEB faculty as an Assistant Professor in August 2009. He is also on the Senior Personnel team at NIMBioS. Paul's research group focus on how ecology and economics can be integrated to inform more effective conservation and natural resource management strategies (<http://web.utk.edu/~parmswor/>).*

### UT Herbarium

Information about the approximately two million named species of organisms that exist on earth today is documented in research collections across the world. These collections have vast potential for documenting environmental change, determining the status of endangered or invasive species and more. However, most of these data are not readily available because the collections are not accessible in electronic format. To address this problem, The National Science Foundation has launched a 10 year effort to digitize all of the biological collections in the U.S. and to create a national network of these databases. EEB collections are involved in two digitization proposals to NSF.

EEB has four excellent biological collections with close to one-million specimens: the fish collection, the vascular plant herbarium, the fungal



One of two previously unknown cryptic species of fungi from the Great Smoky Mountains National Park.

herbarium and the bryophyte collection (mosses and liverworts). The fungal herbarium is in the process of being databased, and 60,000 records are available on line. The fish collection is databased but is not yet on line.

Collections are an important resource in the current era of DNA-based studies. DNA studies on UTK specimens from the Smoky Mountains have identified previously unknown cryptic species (species that look alike but are genetically divergent). Another exciting finding is that there are perhaps ancient biogeographical connections between the Smokies and the mountains of Central America and

Mexico and, for plants, even older biological connections between the Smokies and temperate China. Please visit <http://tenn.bio.utk.edu/> to view the collections or for more information.

## Outreach

### Biology in a Box

*Biology in a Box* is an outreach Program developed by EEB's Professor Susan Riechert to offer Tennessee school systems free exercises and permanent materials that actively engage students in hands-on inquiry involving the wonders of the living world.

These exercises also introduce the science methodology and math skills (facilitated by NIMBioS) used in understanding this world. While each of the units explores a particular theme, it additionally presents important conceptual frameworks for understanding biology and meets current curriculum standards for science and mathematics.

Themes include: Fossils, Of Skulls & Teeth, Fur, Feathers, Scales: Insulation, Simple Measures, It's in your Genes, Animal Kingdom, Backyard Naturalist, Everything Varies, Forestry, Animal Behavior, From Climates to Habitats, Of Cells & Cell Processes, Biology & Engineering, and On Growth, Size & Life Cycles.

Students thoroughly enjoy *Biology in a Box*, in part because many of the exercises are presented in game format.



Students enjoy examining Skulls and Teeth, one of the many units available through *Biology in a Box*.

Check out the project's web-site for a complete set of the exercises, materials lists, and suggested readings: <http://eeb.bio.utk.edu/biologyinbox/>.

### Wildflower Pilgrimage

The Annual Wildflower Pilgrimage (AWFP) has been a very successful public outreach program for the former Botany Department and the current Ecology and Evolutionary Biology Department at the University of Tennessee, Knoxville. The focus of the program is to bring the public together with professional biologists in the outdoor environs of the Great Smoky Mountain National Park (GSMNP). In 2010 we celebrated our 60th year offering 152 indoor and outdoor programs over five days. The majority of hikes have always been about wildflowers, but other popular topics include: tree and shrub identification, mosses, ferns, plant ecology, exotic plants, bats, bears and boars, insects, spiders, moths, salamanders, birding, fungi, medicinal plants, night time natural history, photography, sketching, native peoples culinary and medicinal history, and the cultural history of GSMNP.

The event began from an idea that Burt Leiper, the General Manager of the Gatlinburg Chamber of Commerce in 1951, had to promote Gatlinburg tourism. He asked the GSMNP's chief naturalist, Art Stupka, and UTK's Botany Department Head, Sam Myer, if they could put on some type of "Spring flower jubilee among botany



Dr. Zack Murrell (of Appalachian State University; obtained his M.Sc. From UTK in 1985) leads a group on a wildflower walk during the 2001 AWFP.

classes of nearby areas". The first pilgrimage in April 1951 was a three day event with 11 leaders, 10 hikes, and evening movies and talks. There were 150 pilgrims in attendance. The AWFP has had a maximum of 1370 (1977) pilgrims and 187 (2006) programs.

For the first 50 years, the City of Gatlinburg, GSMNP, UTK's Botany Department and Gatlinburg Garden Club managed the AWFP program. In 2001, GSMNP requested that the Great Smoky Mountain Association and the Friends of the Smokies join forces with AWFP to expand the program from three to seven days. With the recent economic downturn, the program retracted to five days.

From the beginning, UTK has developed the hike programs and provided professional biologists as hike leaders and speakers for the evening talks. In the past several years, we have also been involved with registration and promotion. During the past 60 years, 172 of the 431 AWFP leaders have been from the UTK's faculty, students, and alumni. The rite of passage for many UTK botany graduate students has been to be a leader for the WFP before completing their degree. This has established a UTK leader heritage of three generations.



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