

SOUTHEASTERN BIOLOGY



Volume 63

April, 2016

Number 2

ASB

ASB

ASB 77TH ANNUAL MEETING

ASB

MARCH 31 – APRIL 3, 2016

ASB

ASB

Davidson College, Davidson, North Carolina

ASB

ASB

Queens University of Charlotte

ASB

Charlotte Teachers Institute

University of North Carolina at Charlotte

ASB

Meeting Site: Convention Center at the

ASB

Embassy Suites, Concord, North Carolina

ASB

ASB

See Page 125 and Consult Website

<http://www.sebiologists.org>

ASB

ASB



Entrance to the University

*The Official Publication of
The Association of Southeastern Biologists, Inc.
<http://www.sebiologists.org>*

SOUTHEASTERN BIOLOGY
(ISSN 1533-8436)

SOUTHEASTERN BIOLOGY (ISSN 1533-8436) is published online quarterly in January, April, July, and October by the Association of Southeastern Biologists, Inc., Department of Biology, Bridgewater College, Bridgewater, VA 22812. Please send address changes to the Treasurer, Edgar Lickey.

All contributions, inquiries about missing back numbers and other matters should be addressed to the Journal Editor. Send books to be reviewed to the Book Review Editor.

Journal Editor.....James D. Caponetti, Division of Biology, University of Tennessee, Knoxville, TN 37996-0830; (865) 974-6841; Fax (865) 974-4057; jcaponet@utk.edu.
Associate Editor.....Sarah Noble, PO Box 640, Mobile, Alabama 36601; (251) 295-4267; noble.sarahal@gmail.com.
Web EditorAshley B. Morris, Department of Biology, Middle Tennessee State University, Murfreesboro, TN 37132; (615) 494-7621; amorris.mtsu@gmail.com; ashley.morris@mtsu.edu.
Web AdministratorChris Fleming, BDY Environmental, LLC, 2607 Westwood Drive, Nashville, TN 37204; (615) 460-9797; cfleming@bdy-inc.com.
Book Review Co-Eds.....Christopher G. Brown, School of Science and Technology, Georgia Gwinnett College, 1000 University Center Lane, Lawrenceville, GA 30043; (678) 713-1483; cbrown37@ggc.edu.
Jennifer Mandel, Dept. of Biological Sciences, University of Memphis, Memphis, TN 38152; (901) 678-5130; jmandel@memphis.edu.

ASB OFFICERS

President.....Joey Shaw, Department of Biological and Environmental Sciences, University of Tennessee, Chattanooga, TN 37403; (423) 425-4341; Fax (423) 425-2285; Joey-Shaw@utc.edu.
President-Elect Position currently vacant.
Vice President.....Judy Awong-Taylor, School of Science and Technology, Georgia Gwinnett College, 1000 University Center Lane, Lawrenceville, GA 30043; (912) 441-4610; jawongta@ggc.edu.
Past PresidentZack Murrell, Dept. of Biology, Appalachian State University, Boone, NC 28608; 828-262-2674; murrellze@appstate.edu.
SecretarySarah Noble, PO Box 640, Mobile, Alabama 36601; (251) 295-4267; noble.sarahal@gmail.com.
TreasurerEdgar B. Lickey, Department of Biology, Bridgewater College, Bridgewater, VA 22812; (540) 828-5426; elickey@bridgewater.edu.
Associate Treasurer.....Tracy L. Deem, Department of Biology, Bridgewater College, Bridgewater, VA 22812; (540) 515-3745; tdeem@bridgewater.edu.
Membership OfficerSarah Noble, PO Box 640, Mobile, Alabama 36601; (251) 295-4267; noble.sarahal@gmail.com.
ArchivistJ. Kenneth Shull, Jr., Department of Biology, Appalachian State University, Boone, NC 28608; (828) 264-2027; shulljk@appstate.edu.
Associate Archivist.....Jennifer Davis, Department of Biology and Physics, Kennesaw State University, Kennesaw, GA 30144; jdavi361@kennesaw.edu.
Meetings Planner.....Shannon Oliphant-Gordon, Experient, (912) 604-4847; Shannon.oliphant-gordon@experientselect.com.

Executive Committee Members-at-Large

2016: J. Christopher Havran, Department of Biological Sciences, Campbell University, Buies Creek, NC 27506; (910) 893-1732; fax (910) 893-1887; havran@campbell.edu.
Conley K. McMullen, Dept. of Biology, James Madison University, Harrisonburg, VA 22807; (540) 568-3805; Fax (540) 568-3333; mcmullck@jmu.edu.
2017: Riccardo Fiorillo, School of Science and Technology, Georgia Gwinnett College, 1000 University Center Lane, Lawrenceville, GA 30043; (678) 464-9918; rfiorill@ggc.edu.
Margaret J. Kovach, Department of Biological and Environmental Sciences, University of Tennessee, Chattanooga, TN 37403; (423) 425-4397; Fax (423) 425-2285; Margaret-Kovach@utc.edu.
2018: Emily L. Gillespie, Department of Biological Sciences, Marshall University, Huntington, WV 25755-2510; (304) 696-6467; Gillespie@marshall.edu.
Heather Dawn Wilkins, Department of Biological Sciences, University of Tennessee, Martin, TN 38238; (731) 881-7188; hwilkins@utm.edu

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

2016 March 31-April 3: Featured Institutions – Davidson College, Davidson, NC; Queens University of Charlotte; The Charlotte Teachers Institute; and The University of North Carolina at Charlotte. Meeting site is the Embassy Suites, Charlotte-Concord, NC.

THE VIEW FROM HERE

A MESSAGE FROM THE PRESIDENT

JOEY SHAW

Dear ASB Members and Associates,

Please skim the **11 bullet points in bold** as they contain new or important information for ASB 2016 in Concord, NC.

Much more information is available on the Concord [meeting page](#). We will be posting all relevant information for the 2016 meeting there. Also, if you are not currently following us on Facebook, please do, as we post news and updates frequently during meeting season.

We need your help to make ASB successful. Please take a minute now to mark your calendars for the important dates and take another minute to invite friends and colleagues. Now is the time to send friendly invitations, so your friends and colleagues can make plans. Please give a few minutes of your time right now to ASB and send a couple of emails. The more people who attend the meeting, the better the pricing is for all in the future and the more impact our society has in our discipline.

Important points from the last email:

- (1) **2016 meeting days are shifted to a Thursday – Sunday meeting.** The Welcome Social will be held on Thursday evening, March 31st. Oral and poster presentations will begin on Friday morning and we will have the Social Event on Friday evening. Oral and poster presentations will also occur on Saturday and our meeting will come to a close on Saturday night at the Awards Banquet. Field trips will occur on Sunday, but we are also working on a few potential field trips for the Thursday (day) before the Mixer kicks off that evening.
- (2) **Absolute deadline for abstract submission on Sunday, February 7, 2016.** Abstracts will be accepted from Wednesday December 16th – Sunday, February 7. In years past we have commonly extended the deadline for abstract submission. **We will not provide an extension this year.** If your abstract is submitted late, it will not be in the printed program and it will be up to the discretion of the Program Committee as to whether or not they can accept it.

New information:

- (3) **Abstract submission opens today and runs through Feb 7.** Please get your abstracts and those of your students in order. One change from previous years is that we will require students to check a box that states his/her advisor approved the abstract. Please work with us on this as improperly formatted abstracts, or submitting them twice,

creates a lot of work on the volunteers who work hard to create the program. Also, please try not to submit multiple times as this too places burden on the program committee. More details about oral and poster presentations are available on the website.

- (3) **New travel fund to defray the expenses of first generation undergraduate college students.** The awards are to defray the cost of student registration, student membership, travel and lodging costs associated with the 2016 ASB Meeting. [2016 Application Guidelines](#).
- (5) **Updated exhibitor prospectus and application form.** We need your assistance to continue to grow our exhibit hall. Please forward these links to the vendors that you would like to see or know would like the opportunity to showcase/network with this unique, scholarly, forward-thinking audience. We need to fill the exhibit hall so that it benefits our Association, so please help us to get the word out.
- (6) **Updated award structure to offer more awards.** Please see our [website](#) for details and rules of application. We are probably most excited about the creation of several new student awards, including student poster and presentation awards in the categories of: Cell and Molecular Biology, Aquatic Biology, Animal Biology, and Microbiology. These eight new student awards are in addition to the longstanding affiliate awards in the fields of botany and ecology that are sponsored by the Southern Appalachian Botanical Society (SABS), Southeastern Section of Ecological Society of America (ESA), and the Southeastern Section of the Botanical Society of America (BSA). In total, this means that at our 2016 meeting we will have 12 student research awards spread across all major biological disciplines.
- (7) **Make hotel reservations now!** Hotel information is available on our [website](#). We have negotiated two rates, one for students and one for professionals. Please be very honest here as we have made very close estimations on percentages, the contract holds ASB to guarantees on numbers of rooms, and “cheating” to save yourself a few dollars might really hurt our Association as we could be held to make up differences. There are two separate links: Standard reservation (\$142/night for 1 king or two double beds) and Student reservation (\$122/night for 1 king or 2 double beds). While these rates are higher than last year, please keep in mind that the Embassy Suites offers two free drinks (beer, wine, soda) per night for each reported guest. Also, included in this price is an excellent, free, cooked-to-order breakfast including fruit, oatmeal, eggs, sausage, bacon, pastries, and an omelet bar (If you haven't stayed at an Embassy Suites, I encourage you to look at the [breakfast menu](#). Again, this price includes cocktail hour and free breakfast.)
- (8) **No special breakfasts at this year's meeting** because Embassy Suites offers an extensive “free” breakfast. That is, there will not be an SABS Breakfast, Past Presidents Breakfast, or an Exhibitors

Breakfast. For us to offer this would mean attendees of these breakfasts would be foregoing their “free” breakfast and paying for an additional breakfast. Participants of these groups will instead meet for coffee and pastries in the meeting, which will follow breakfast on your own in the lobby/breakfast area.

- (9) Registration will open January 11, 2016 and early registration will close at 5PM on March 14th.** Costs for this year’s meeting are now on the ASB website and pasted below. Please note, and remember to remind your students, that it is cheaper to become a member and then register than to register as a non-member.

ASB Student Member (early/on site)	\$136/\$186
ASB Student Non-Member (early/on site)	\$186/\$236
ASB Student Non-Member + \$20 dues (= \$30 savings)	\$156/\$206
ASB Professional Member (early/on site)	\$265/\$330
ASB Professional Non-Member (early/on site)	\$330/\$395
ASB Professional Non-Member + \$50 dues (= \$15 savings)	\$315/\$380
ASB Emeritus Member	\$136/\$186
ASB Patron (Included with Patron Membership)	--
ASB Exhibitor (Included with Exhibitor Fees)	--

- (10) Plenary Speaker this year is Reed Noss.** Dr. Noss is a Provost’s Distinguished Research Professor, Pegasus Professor, and Davis-Shine Professor of Conservation Biology at the University of Central Florida and President of the Florida Institute for Conservation Science. More information on Dr. Noss and his research can be found on his laboratory [website](#).

- (11) Four symposia and two workshops planned for ASB 2016.**

Symposia

1. Southeastern Symposium on Zebrafish Development and Genetics
2. Ecology and Evolution of Quillworts (Isoetes) in the American South - Quillcon II
3. Connecting university scholars and classroom teachers for innovative STEM education
4. Collaborations, information technologies and educational tools to build a regional research engine: an update on the SERNEC Herbarium effort

Workshops

1. Creating a visual key - a case study in visual learning
2. Georeferencing of biological collections data

I look forward to seeing you in Concord, but first let’s all enjoy the Holiday.

Sincerely,

Joey Shaw, *President, Association of Southeastern Biologists*

ASB CANDIDATES FOR OFFICE – 2016

The Nominations Committee comprised of Zack Murrell, Pat Parr and Ray Williams has developed a slate of candidates for our 2016 election. Offices we need to fill in April include President-Elect, Vice President, Secretary and two Executive Committee Members-at-large. The slate of nominees is below. As you will remember, we voted last April to allow single candidate elections, but we also wanted to allow adequate time for nominations from the floor. Please send any nominations to Zack Murrell before the ASB business meeting so they can be added to the slate.

<i>President-Elect</i>	Ashley Morris	Middle Tennessee State University Murfreesboro, Tennessee
<i>Vice President</i>	William Ensign	Kennesaw State University Kennesaw, Georgia
<i>Secretary</i>	Judy Awong-Taylor	Georgia Gwinnett College Lawrenceville, Georgia
<i>Executive Committee</i>		
<i>Members-at-Large</i>		
	J. Christopher Havran	Campbell University Buies Creek, North Carolina
	Christopher Gissendanner	University of Louisiana at Monroe School of Pharmacy Monroe, Louisiana

President-Elect Ashley Morris



Dr. Ashley Morris is in her fifth year as a faculty member in the Department of Biology at Middle Tennessee State University in Murfreesboro. She is currently in review to be promoted and tenured as an Associate Professor. Prior to MTSU, Ashley was a faculty member in Biology at the University of South Alabama in Mobile, for four and a half years. She holds a B.S. in Natural Resources from the University of the South – Sewanee (1997), a M.S. in Botany from the University of Tennessee, Knoxville (2001), and a Ph.D. in Botany from the University of Florida (2006). Her research focus is primarily on plant conservation

genetics, phylogeography, and systematics, and on the importance of biological collections in research. She has active research funding from the US Fish and Wildlife Service and the National Science Foundation, as well as internal funding from the MTSU Foundation. She has mentored or co-mentored more than 30 graduate and undergraduate research students between USA and MTSU. In her nine and a half years as a faculty member, she has taught undergraduate genetics almost every semester. She has invested a significant amount of time into curriculum redesign in this area, which led to an NSF-funded project at USA. She co-wrote the current Genetics lab manual used at MTSU. Other courses she has taught in recent years include Dendrology and Flowering Plants. Ashley attended her first ASB meeting in Wilmington, North Carolina in 1999. At the 2010 meeting in Asheville, she was elected to the Executive Committee as a Member-at-Large. She volunteered to serve as Web Editor, and worked to revitalize the ASB web presence. At the 2014 meeting in Spartanburg, South Carolina, she was elected Vice President. For the past two years, Ashley served as Chair of the Exhibitor Committee. Today, she continues to work closely with our Web Administrator, Chris Fleming, to maintain an online presence through the web and social media.

Vice President William Ensign



Dr. Ensign is a professor in the Department of Ecology, Evolution and Organismal Biology at Kennesaw State University, Kennesaw, Georgia. He received his B.A. in Zoology from the George Washington University (before most of the students attending the 2016 meeting were born), an M.S. in Ecology from the University of Tennessee (1988) and a Ph.D. in Fisheries Science from Virginia Tech (1995). His expertise is in aquatic ecology with a particular emphasis on fish diversity, distribution and abundance in freshwater streams and rivers. His research has included investigations of Brook and Rainbow Trout abundance in the southern

Appalachians, the impact of stream channel modifications on the federally endangered Roanoke Logperch, recolonization success of stream fish following fish kills, use of underwater observation for monitoring fish populations, documentation of the distribution and abundance of both fish and freshwater mussels in a variety of flowing water systems, the use of fish community structure in bioassessment, investigations of the effects of human barriers to stream fish movement and dispersal, and his current research on urban and non-urban populations of the charismatic Central Stoneroller. He has ongoing contracts with local water authorities to assist with bioassessments in Paulding and Cobb Counties, Georgia. As a result, he samples fishes in 12 to 20 streams each summer and has a squadron of willing and malleable undergraduates

trailing behind his every-ready backpack electrofisher. Many of the students have gone beyond the role of field assistant and developed undergraduate research projects based on the summer sampling and most of these have presented their results at ASB meetings. He has twice received the Kennesaw State University College of Science and Mathematics award for Excellence in Research and Creative Activity. He has been a member of ASB since 1999 and has been active in service to the Society since 2007, including serving as an at-large member of the Executive Committee (2012-2015), chair and member of the Student Awards Committee (almost continuously), and as co-organizer of a symposium on research at undergraduate institutions. The proudest moment of his professional life came when he was honored with the ASB Meritorious Teaching Award in 2015.

Secretary Judy Awong-Taylor



Dr. Judy Awong-Taylor is a Professor of Biology at Georgia Gwinnett College, Lawrenceville, Georgia. She received her bachelor's degree in Zoology and Botany from the University of the West Indies, Trinidad, and her master's and doctoral degrees from the University of Florida in the area of Environmental Microbiology. Prior to joining GGC, Dr. Awong was a Professor of Biology and Interim Department Head at Armstrong Atlantic State University and also served as Director of the University System of Georgia's STEM Initiative. She is also a PULSE Leadership Fellow. During her tenure at AASU, she was actively involved in undergraduate research, student-centered learning, and K-16 collaborative activities. Her current interests center on STEM Education and as a PULSE Leadership Fellow she is actively involved in efforts focused on departmental and institutional change. She is passionate about teaching and is the recipient of AASU's Kristina Brockmeier Faculty Teaching and Service Award, the H. Dean Propst Teaching Excellence Award, and the University System of Georgia-Board of Regent's Teaching Excellence Award. She has authored and co-authored several lab manuals, is the recipient of multiple grants, and has presented with her students at numerous professional conferences including ASB. Dr. Awong also served as a *Beta Beta Beta* Biological Honor Society advisor for fourteen years and has actively participated in numerous regional TriBeta Meetings. She has been an active member of ASB and TriBeta for over 15 years, has served on the Microbiology Awards Committee as both a member and Chair, and is currently serving as Vice-President of ASB.

Executive Committee Members-at-Large

J. Christopher Havran



Dr. Havran is an Associate Professor in the Department of Biological Sciences at Campbell University in Buies Creek, North Carolina. Chris received a B.S. in Biology with a focus in Botany from Lebanon Valley College (Annville, PA) in 2002, a M.S. in Biology from The University of Louisiana at Monroe in 2004, and a Ph.D. in Environmental and Plant Biology from Ohio University in 2008. Chris has taught courses in Introductory Biology, Botany, Plant Physiology, Tree and Shrub Identification, and Hawaiian Natural History and Culture. The latter is a program taught for three weeks across Hawaii. Students in his Hawaiian field program have the

opportunity to collaborate on original research. His research efforts focus on southeastern floristics and the evolutionary history of endemic Hawaiian flowering plants. Since joining the faculty of Campbell University in 2008 Chris has mentored 14 undergraduate students. His students have presented their research at the ASB annual meeting since 2011 and three of his students have been recognized with the Young Botanist Award from the Botanical Society of America. He has received the Dean's Excellence in Research Award (2012) and the Walter S. Jones Sr. Alumni Award for Research Excellence (2013) from Campbell University. Chris is the founder and current curator of the Campbell University Herbarium (CAU). Chris has served on the ASB Education Committee for four years. In 2013 he became co-chair of the Committee with Kirk Stowe. He worked with Kirk to organize a symposium entitled: "Educational Opportunities at Biological Field Stations in the Southeastern United States" held at the 2014 annual meeting of the ASB in Spartanburg, SC. In 2015 he served on the ASB's Executive Committee as a Member at Large for a one-year term. He thoroughly enjoys the annual ASB meetings and has fond memories of presenting his first research presentation at the 2004 meeting of the ASB in Memphis.

Christopher Gissendanner



Dr. Gissendanner is an Associate Professor in the Pharmacology group at the University of Louisiana at Monroe School of Pharmacy. He earned his B.S. in Biological Sciences from Florida State University (1993) and his M.S. (1999) and Ph.D. (2001) in Cellular Biology from the University of Georgia. He worked four years in the biotechnology industry before joining the ULM Department of Biology in 2004. He moved to the School of Pharmacy in 2011. His research interests are in developmental genetics, specifically the genetic regulation of organogenesis using the *C. elegans* model system. His research has been supported by multiple state and federal grants. Dr. Gissendanner

has also been heavily involved in promoting undergraduate research experiences and has participated in the HHMI SEA-PHAGES program at ULM since 2008. This program uses bacteriophage discovery to introduce freshman biology majors to scientific research. He has been a member of ASB since 2008 and served on the Microbiology and Student Research Award committees and is a former faculty advisor for Beta Beta Beta. Dr. Gissendanner also serves as an associate editor for *Eastern Biologist* and as a member of the External Advisory Committee for the Arkansas IDeA Networks of Biomedical Research Excellence.

77th Annual Meeting Program
Association of Southeastern Biologists



Hosted by



Embassy Suites by Hilton

Charlotte Concord Gold Resort & Spa

March 31 – April 3, 2016

Celebrating 78 Years of Serving the Southeast!



Live Animals Ready To Roll

Talk about convenience. At Carolina, we ship our living materials 5 days a week - to make sure they arrive alive on the day you need them.

The Carolina Experience

CAROLINA[®]
www.carolina.com

Affiliate Organizations Meeting With ASB in 2016

**Beta Beta Beta
Southeastern District I**

Dr. Lee Sutton
Department of Biology
S119 Howell Science Complex
East Carolina University
Greenville, North Carolina 27858
Phone: 252-328-5745; Fax: 252-328-4178
Email: suttonle@ecu.edu

**Beta Beta Beta
Southeastern District II**

Dr. Christi Magrath
Dept. of Biological & Environmental
Sci.
Troy University Troy, AL 36082
Phone: 334-670-3622
Email: cmagrath@troy.edu

**Botanical Society of America
Southeastern Section**

Dr. Emily Gillespie
Department of Biological Sciences
Marshall University Huntington, WV
25755
Phone: 304-696-6467
Email: gillespiee@marshall.edu

**National Association of Biology
Teachers**

Ms. Brenda Royal
Academy of Health Sciences
Faculty
John Overton High School
Nashville, Tennessee 37220
Phone: 615-333-5135
Email: brenda.royal@mnps.org
Dr. Kim Sadler

Department of Biology
Middle Tennessee State University
Murfreesboro, Tennessee 37132
Phone: 615-908-8283
Email: kim.sadler@mtsu.edu

**Ecological Society of America
Southeastern Chapter**

Dr. David Vandermast
Department of Biology
Elon University Elon, NC 27244
Phone: 336-278-6171
Email: dvandermast@elon.edu

Society of Herbarium Curators

Andrea Weeks, President
Associate Professor and Director
Ted R. Bradley Herbarium
George Mason University
Department of Biology Fairfax, VA
22030
Phone: 703-993-3488; Fax: 703-993-1046
Email: aweeks3@gmu.edu

**Southern Appalachian Botanical
Society**

Dr. Katherine Mathews
Associate Professor Director of
WCU Herbarium
Department of Biology
Western Carolina University
Cullowhee, NC 28723
Phone: 828-227-3659
Email: kmathews@email.wcu.edu

Martin
Microscope
.com

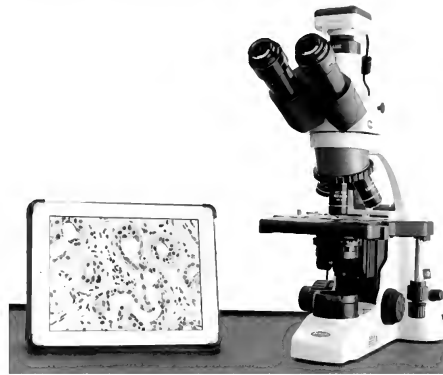


ASB PATRON

**Serving the Southeast
since 1946**



**21st Century Technology
for Classroom Microscopy™**



207 South Pendleton Street / Easley, SC 29640 / 864-242-3424
sales@martinmicroscope.com

Patrons of ASB

BDY Environmental

(615-460-9797) Nashville, TN

www.bdy-inc.com

Breedlove, Dennis & Associates, Inc.

(407-677-1882) Winter Park, FL

www.bda-inc.com

Carolina Biological Supply Company

(800-334-5551) Burlington, NC

www.carolina.com

Dwayne Wise, PhD

(662-325-7579) Starkville, MS

daw1@ra.msstate.edu

Martin Microscope Company

(864-242-3424) Easley, SC

www.martinmicroscope.com

Program Committee for 2016 ASB Meetings

Co-Chairs

Christopher Brown
Georgia Gwinnett College

Riccardo Fiorillo
Georgia Gwinnett College

Howard S. Neufeld
Appalachian State University

The program committee wishes to thank Mark Suggs, **abi**GRAPHICS, for his help in creating the abstract submission form and for formatting the program and list of abstracts. We also thank Chris Fleming for creating the Mobile App that enables you to search the program on your mobile device. Finally, we express our sincere appreciation to Ashley Morris, Middle Tennessee State University, for her excellent maintenance of the ASB webpage.





World Leader

in Controlled Environments
for Plant Science Research

A1000

One Chamber. Four Applications.

Plant Growth · Arabidopsis · Tissue Culture · Incubation

Uniform light, temperature
and humidity

Quick to install

Space efficient design

Easy-to-use control system

Multiple options including
Additive CO₂, LEDs, Low
Temperature and more...

For more information, go to www.conviron.com

CONVIRON®

Welcome from the ASB President

Dear ASB Members and Associates,

It is my pleasure to welcome you to the 77th annual meeting of the Association of Southeastern Biologists in Concord, North Carolina. We are coming off an energy-charged and nearly record-breaking meeting in Chattanooga, Tennessee, where we had 974 attendees and a great party at the Tennessee Aquarium. We hope to maintain this momentum into Concord and beyond.

As you already know, we are experimenting this year with shifting the days to a Thursday-Sunday meeting, rather than our traditional Wednesday-Saturday. After this meeting, we will send out a questionnaire for you to give us your thoughts on this shift. The shift in days has also allowed us to experiment with having field trips on both sides of our conference (the Thursday before



and the Sunday after). We are excited to have four symposia planned (Quillcon II: Ecology and Evolution of Quillworts, Zebrafish development and genetics, Information technologies to build a regional research engine, and CTI: Connecting University Scholars and Classroom Teachers) and three workshops (Georeferencing biological collections, Creating a Visual Key: A Case Study in Visual Learning, ASB Education Committee Lunch/Workshop). Thanks to the great work of Past President Zack Murrell, our awards were restructured and we are offering more awards in different disciplines. Please see our website (www.sebiologists.org) to learn more about the workshops, symposia, field trips, and award restructure.

In Concord 2016, Dr. Reed Noss will kick off our meeting with his plenary address on Thursday evening. Our Friday Night Social event will be at Discovery Place among the Body Worlds exhibit. Transportation will be provided to and from the venue where we will have live music and an awesome dinner with the usual beverage selections. Our meeting will conclude on Saturday evening at the Awards Banquet.

ASB is a volunteer organization and we need you to volunteer your time to continue ASB's success. Please take the time to volunteer and carry some of the weight of our Association. You can stop by the ASB booth in the exhibit hall, send an email to a member of the Executive Committee, or click the "Get Involved" button on our home page to ask how you might become involved.

We know that you will enjoy Concord 2016 as you renew acquaintances and friendships, forge new relationships, and learn about the wonderful research going on in and around the Southeast.

I'll see you soon,

Joey Shaw, President, Association of Southeastern Biologists. 

Associated Microscope Inc.

- ▶ Quality workmanship for service and repair of ALL type of Microscopes, Spectrophotometers and Balances!
- ▶ BEST pricing on New Accu-Scope, Leica, Swift and Unitron microscopes!
- ▶ We will meet your highest expectations for customer service!!
- ▶ Must see our NEW Wireless Digital Products!!



Leica

UNITRON
EXCELLENCE BY DESIGN
SINCE 1952

**FOR SALES & SERVICE CALL OUR
TOLL-FREE NUMBER TODAY!**

800-476-3893

...THE EXPERTS IN MICROSCOPES



**ASSOCIATED
MICROSCOPE**

Quality
Service is
Priority
1!

P.O. Box 1076 Elon, NC 27244

Email: info@associatedmicroscope.com

Exhibitors at ASB 2016


*Please be sure to thank our exhibitors
for their continuing support!*


- **Electron Microscopy Sciences** – Electron microscopy sciences will have on display their complete line of accessories, chemicals, equipment for all fields of microscopy, biological research and general laboratory requirements. **(Booth 1)**
- **Discover Life in America** – Discover Life in America’s mission is to discover and understand America’s species through science and education for conservation. **(Booth 2)**
- **Highlands Bio Med, LLC** – Highlands Bio Med, LLC specializes in sanitation and disinfection equipment for vivaria, laboratories and hospitals. Our product lines include lab washers, autoclaves and bedding management systems. **(Booth 3)**
- **Associated Microscope** – Sales & service of microscopes—service all brands—sell Leica Microsystems, National & Swift Optical, Accu-Scope, Unitron, Labo Med & Meiji Microscopes as well as Ohaus Balances. We are also school trained to service Spectrophotometers. **(Booths 4 & 5)**
- **Medical Equipment Services** – Bio-Medical equipment service & repair in labs & research facilities, installation, certification, removal/disposal, preventative maintenance, calibration, and asset management. **(Booth 6)**
- **eScience Labs** – eScience Labs collaborates with hundreds of higher education institutions to provide hands-on laboratory kits to students engaged in online and blended learning. **(Booth 7)**
- **Southern Appalachian Botanical Society** –Our mission is to promote the study of botany in eastern North America. **(Booth 8)**
- **iDigBio** – iDigBio is the national resource for digitized information about vouchered natural history collections and promotes the uses of biodiversity collections data for research and education. **(Booth 10)**
- **Conviron** – Conviron is a global supplier of controlled environment systems offering an extensive product portfolio including single and multi-tier chambers and rooms, research greenhouses, and related services. **(Booth 11)**
- **Martin Microscope Company** – Celebrating 70 years of serving the Southeastern US! Microscopes and digital imaging systems for education, laboratory, and research. **(Booth 12)**


- **ASB 2017** – Montgomery, Alabama. **(Booth 13)**
- **Carolina Biological Supply** – Carolina is a worldwide leader in providing K–16 educators with top-quality, innovative science and math materials, including our newest e-learning tools available at Carolina science online.com. **(Booth 14)**
- **Vashaw Scientific, Inc.** – Vashaw Scientific, Inc. is a full service microscopy, imaging, and material sample preparation provider servicing the Southeast since 1978. We offer a broad portfolio of manufacturers, which uniquely qualifies Vashaw to solve your requirements with the appropriate solutions. **(Booth 15)**
- **National Association of Biology Teachers** – As the “leader in life science education” NABT is dedicated to empowering educators to provide the best biology and life science education for all students. **(Booth 16)**
- **Association of Southeastern Biologists** – Promoting biology through research and education for more than 75 years. **(Booths 20 & 21)**

Academic Programs

- University of North Carolina Greensboro, Biology Department – MS and PhD programs in the UNCG Department of Biology. **(Booth 9)**

 **VASHAW**
SCIENTIFIC, INC.

Regional ZEISS Distributor 





MICROSCOPES FOR EDUCATION AND LABORATORY

800-241-5939
www.vashaw.com

We See The Details

PROVIDING MICROSCOPY AND IMAGING SOLUTIONS FOR OVER 35 YEARS




Highlands BioMed, LLC
Integrated Life Science Solutions

WWW.HIGHLANDBIOMED.COM

Proudly representing *Lynx* washers
and *Tuttnauer* scientific sterilizers.

*Sanitation and Disinfection Equipment for
Laboratories and Vivaria*

Steve Blevins
423-677-8624
info@highlandsbiomed.com



Glassware Washers *Autoclaves* *Cage and Bottle Washers*

Registration Hours

Thursday, March 31, 2016

11 am – 9 pm



Friday, April 1, 2016

7 am – 7 pm





Saturday, April 2, 2016


7 am – noon

Exhibit Hall Hours



Thursday, March 31, 2016

9 am – 4 pm		Exhibitor Move-In
12 noon – 2 pm		Exhibitor Pizza Party (<i>Exhibitors Only</i>)

Friday, April 1, 2016

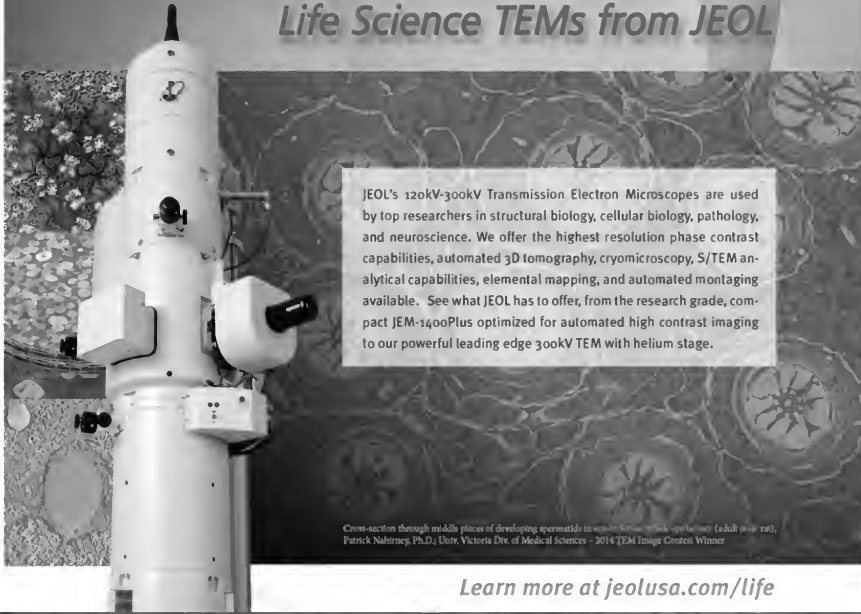
8 am – 5 pm		Exhibits and Posters on Display
-------------	---	------------------------------------

Saturday, April 2, 2016

8 am – 5 pm		Exhibits and Posters on Display
5 pm		Exhibitors Move-Out

HOW DO YOU LOOK AT LIFE?

Life Science TEMs from JEOL



JEOL's 120kV-300kV Transmission Electron Microscopes are used by top researchers in structural biology, cellular biology, pathology, and neuroscience. We offer the highest resolution phase contrast capabilities, automated 3D tomography, cryomicroscopy, S/TEM analytical capabilities, elemental mapping, and automated montage available. See what JEOL has to offer, from the research grade, compact JEM-1400Plus optimized for automated high contrast imaging to our powerful leading edge 300kV TEM with helium stage.

Cross-section through middle pieces of developing spermatids in seminiferous tubule (epididymus) (adult male rat), Patrick Nahrney, Ph.D., Univ. Victoria Div. of Medical Sciences - 2014 TEM Image Contest Winner

Learn more at jeolusa.com/life

Ba. teresophage Epithelium IS, Weik Chiu, Ph.D.,
Harvard College of Medicine (top image)
Rabbit Retinal Connective tissue, Robert Man, Ph.D.,
Man. Lab. Moran Eye Center, Univ. of Utah (middle image)
Neuron, 2dium, tomography, Greg Ning, Ph.D.,
Penn State University College of Agricultural Sciences
(bottom image)



JEOL
Solutions for Innovation

www.jeolusa.com
salesinfo@jeol.com • 978-535-5900

Symposia

(S1) Collaborations, Information Technologies, and Educational Tools to Build a Regional Research Engine: An Update on the SERNEC Herbarium Effort

8:15 AM – 12:00 PM • Friday, April 1 • Kannapolis A

Organizer: Zack Murrell, Appalachian State University murrellze@appstate.edu

The SouthEast Regional Network of Expertise and Collections (SERNEC) grew out of annual gatherings of regional curators at the Association of Southeastern Biologists meetings. The SERNEC NSF-supported Research Coordination Network (RCN) provided support from 2005-2011 for training and idea exchange among the curators in the Southeast. Our more recent NSF-supported Thematic Collection Network (TCN), with funding from 2014-2018 for 94 herbaria and six Information technology entities, provides us with a technical infrastructure to capture herbarium images and transfer them to various portals, where they can be transcribed and georeferenced. This effort includes Symbiota, GEOLocate, Notes from Nature, Specify and iPlant as web and software based entities that provide our “data pipeline”. This symposium will highlight our efforts to link the human infrastructure with the technical infrastructure to build a specimen-based research engine that can generate regional scale research capabilities.

(S2) Southeastern Symposium on Zebrafish Development and Genetics*

1:30 PM – 4:30 PM • Friday, April 1 • Kannapolis A

Organizer: Ted Zerucha, Appalachian State University zeruchat@appstate.edu

In the last 20–25 years, the zebrafish has emerged as a major model system to address questions related to Developmental, Cell, and Molecular Biology. Opportunities for zebrafish researchers to meet regionally have become few and far between, however. This symposium is an opportunity for zebrafish scientists from the southeast to meet, share ideas, and form potential collaborations. The symposium will have opportunities for PIs and advanced graduate students to give oral presentations and will also feature a poster session.

*Sponsored by North Carolina Biotechnology Center



(S3) Ecology and Evolution of Quillworts (Isoetes) in the American South – Quillcon II

8:30 AM – Noon • Saturday, April 2 • Kannapolis A

Organizers: Jay F. Bolin, Catawba College jfbolin@catawba.edu. Lytton J. Musselman, Old Dominion University lmusselm@odu.edu

The Southeastern United States is a center of quillwort diversity with the number of recorded species doubling in the past decade or so—and new taxa being found each year. So it is appropriate that the Second Quillwort Conference should be held in conjunction with the annual meeting of the Association of Southeastern Biologists and the Southern Appalachian Botanical Society at the 2016 meeting 31 March–3 April in Concord, North Carolina.

The first conference, dubbed QuillCon I, was held in Douglas, Georgia in 2000 and since that time research has expanded in terms of extensive molecular studies and field collections and also by an increase in the number of researchers, both in the lab and in the field. QuillCon II will consist of invited papers on 1 April with a keynote talk by W Carl Taylor, senior author of the treatment of Isoetes for Flora North America. Other speakers include researchers from the Smithsonian Institution, Italy, Canada, and Southeastern institutions. Ample time is allocated for discussions.

Major fieldwork in the American South the past three decades has revealed surprising diversity within this poorly studied genus. New species and hybrids have been described, other taxa have been recently discovered but not named, and numerous other collections are being studied to determine their taxonomic status. Concurrent with fieldwork have been phylogenetic studies suggesting that the genus is more diverse than expected and that resolution of polyphyly is sorely needed. While quillworts appear to have a classic pattern of reticulate evolution, we have little idea what selective factors might drive their evolution. The purpose of the symposium, therefore, is to bring together quillwort researchers to discuss lab and field findings and to collaborate on further research.

All day Saturday 2 April will be devoted to presentations and discussions with a field trip on Sunday 3 April to some of the fascinating granite outcrops in the region lead by regional isoetologist Jay Bolin of Catawba College. Warning! There is a likelihood of new species on these rocks.

**(S4) Connecting university scholars and classroom teachers
for innovative STEM education – CTI Symposium**

1:30 PM – 2:45 PM • Saturday, April 2 • Kannapolis B

Organizer: Scott Gartlan, University of North Carolina at Charlotte
scott.gartlan@uncc.edu.

Charlotte Teachers Institute (CTI) is an innovative partnership between CMS (Charlotte Mecklenburg Schools), Davidson College, and the University of North Carolina at Charlotte (UNC Charlotte). CMS teachers (e.g. CTI Fellows) are engaged in intensive content-rich seminars led by faculty (e.g. Seminar Leaders) to learn new information, work collaboratively with other district teachers, and develop original curriculum units for their classrooms. In this symposium, Teacher Fellows will discuss their experiences, present examples from their units, and provide insights regarding classroom implementation. Fellows from a range of disciplines (biology, earth science, and math) from seminars focused on Metamorphosis and the Intersection of Science, Technology, and Culture will present their work. The success of this program is facilitated by the emphasis on Teacher Leadership and engagement in collaborative and creative venues.

Workshops

(W1) Georeferencing of Biological Collections Data

8:00 AM – 5:00 PM • Thursday, March 31 • Fairway A/B

Organizer: Zack Murrell, Appalachian State University murrellze@appstate.edu.

This workshop will provide an overview of georeferencing concepts, best practices and workflows using the GEOLocate platform in relation to the SERNEC herbarium digitization and georeferencing effort. Specific topics covered will include a brief overview of georeferencing, using the GEOLocate platform for single record, batch processing and collaborative georeferencing, Symbiota integration, upcoming developments, and logistics and workflows specific to georeferencing SERNEC data. The GEOLocate software platform is being used by zoologists and botanists and this workshop will be open to anyone interested in biodiversity informatics.

(W2) Creating a Visual Key – A Case Study in Visual Learning**8:00 AM – Noon • Saturday, April 2 • Concord J****Organizer: Bruce Kirchoff, Univ. of NC at Greensboro kirchoff@uncg.edu.**

Although illustrations have played an important role in identification keys and guides since the 18th century, their use has varied widely. Some keys lack all illustrations, while others are heavily illustrated. Even within illustrated keys the way in which images are used varies considerably. During this workshop we will review some best practices for image use in keys, and create a completely visual key. By a visual key I mean a key based almost exclusively on images, and that contains a minimal amount of text. These types of keys have been made possible by advances in digital imaging, which has allowed the rapid collection of standardized photographs of plants. Characters in visual keys are visually, not verbally defined. During the workshop participants will learn how to create visual keys, and will create a visual key to a group of taxa. Participants will receive the full set of images from the workshop so that they can recreate the exercise in their class. The exercise is suitable for use, with modification, from introductory biology to graduate level classes in plant taxonomy. This will be a hands-on workshop in which everyone can participate. This event will be capped at 24 attendees.

(W3) ASB Education Committee Lunch Workshop**Noon – 1:30 PM • Saturday, April 2 Blue Ridge****Organizer: ASB Education Committee, Erika Niland – Chair e.scocco@wingate.edu.**

The Education Committee luncheon will focus on a collaborative effort between ASB scientists and high school teachers to deliver specific curriculum topics to high school students. Scientists trained in a specific discipline can use video conferencing equipment to speak to the high school student when a particular topic is covered. The luncheon will cover what equipment will be needed and how to use it. We will also cover how to volunteer as a scientist, and how high school teachers can contact those scientists. Anyone interested in this program or to be a part of the Education Committee may attend. ☺



Association of Southeastern Biologists 2016

Meeting-At-A-Glance

Thursday, March 31st – Sunday, April 3rd
Concord Convention Center at Embassy Suites Hotel Concord, NC

Wednesday, March 30th

Time	Event	Location
8:00 AM – 5:00 PM	Exhibit Hall - Move in and set up	Concord EF
8:00 AM–5:00 PM	Registration Set Up	Registration South Rotunda
10:00 AM–12:00 PM	ASB EC VIPs Pre-Convention Mtgs.	Blue Ridge
12:00 PM–1:00 PM	ASB EC - Exhibit Hall lay out	Concord EF

Thursday, March 31st

Time	Event	Location
8:00 AM–5:00 AM	ASB Logistics Room	Harrisburg B
8:00 AM - 5 PM	Workshop: Georeferencing of biological collections data	Fairway A/B
9:00 AM–4:00 PM	Exhibitor Set-up	Concord EF
11:00 AM–9:00 PM	Registration Open	Registration South Rotunda
11:00 AM–2:00 PM	Exhibitor Pizza Lunch (exhibitors only)	Concord EF
NOON–10:00 PM	PowerPoint Preview Check	Harrisburg A
NOON—5:00 PM	Field Trip 1: Redlair Preserve, NC Plant Conservation Program.	Depart from Convention Center
1:00 PM–6:00 PM	ASB Executive Committee Meeting	Concord G
1:00 PM–6:00 PM	SABS Executive Council Meeting	Concord H
2:00 PM–4:00PM	Field Trip 2: Tour of NC Research Campus	Consult Trip Information for specific Departure Times and Locations
5:30 PM—7:30 PM	Happy Hour-Complimentary Manager's Reception	Embassy Suites Lobby
7:30 PM–9:00 PM	<p style="text-align: center;">Welcome and Plenary Speaker Welcome: Joan Lorden, Provost University of NC Charlotte</p> <p style="text-align: center;">Plenary Speaker: Reed F. Noss Provost's Distinguished Research Professor, Davis-Shine Professor of Conservation Biology, and Pegasus Professor University of Central Florida</p> <p style="text-align: center;">'Fire in the Evolutionary Environment of the Coastal Plain'</p>	Concord ABCD

Time	Event	Location
9:00 PM–10:30 PM	Plenary Welcoming Social Reed F. Noss Book Signing	Concord EF <i>Ticket required to attend</i>

Friday, April 1st

Time	Event	Location
6:00 AM–9:00 AM	Complimentary Cooked-To-Order Breakfast for Hotel Guests	Embassy Suite Lobby
7:00 AM–7:00 PM	Registration Open	South Rotunda
7:00 AM–5:00 PM	PowerPoint Preview Check ASB Logistics Room	Harrisburg A Harrisburg B
7:15 AM–8:15 AM	ASB Past President's Post Breakfast Meeting Patrons/Exhibitors Post Breakfast Meeting	Blue ridge Kitty Hawk
7:00 AM–5:00 PM	ASB POSTER SESSIONS ASB Posters (#1-157, Sessions 1 & 2) set up 7:00–8:00 AM Presenters of odd-numbered posters (Poster Session 1) must be present 9:45–10:45 am. Presenters of even-numbered posters (Poster Session 2) must be present 2:45–3:45 pm	Concord EF
8:00 AM–5:00 PM	Exhibits Open	Concord EF
8:15 AM–9:45 AM	ASB Paper Presentations Ecology: Community 1 Ecology: Physiological Invertebrate Biology Cell and Molecular Biology 1 Systematics 1 Symposium: Collaborations, information technologies and educational tools to build a regional research engine: an update on the SERNEC Herbarium effort	Concord A Concord B Concord CD Concord I Concord J Kannapolis A
9:45 AM–10:45 AM	Break for Poster Session 1 and Coffee • No talks at this time Presenters of odd-numbered posters (1-157) must be present at this time	Concord EF
10:45 AM–NOON	ASB Paper Presentations Ecology: Community 1 Ecology: Physiological Invertebrate Biology Cell and Molecular Biology 1 Systematics 1 Symposium: Collaborations, information technologies and educational tools to build a regional research engine: an update on the SERNEC Herbarium effort	Concord A Concord B Concord CD Concord I Concord J Kannapolis A

Time	Event	Location
NOON–1:30 PM	Lunch (Individuals and Organizations) (Concessions available throughout Hotel) ASB Diversity Committee Lunch (BYOL) SHC SE Chapter Luncheon/Business Meeting (BYOL)	Blue Ridge Fairway A
12:00 PM–5:00 PM	βββ Field Trip to SeaLife Aquarium (βββ members only)	Departs from Hotel Lobby
1:30 PM–2:45 PM	ASB Paper Presentations Ecology: Communities 2 Ecology: Ecosystems Herpetology Cell and Molecular Biology 2 Systematics 2 Symposium: Southeastern Symposium on Zebrafish Development and Genetics Sponsored by North Carolina Biotechnology Center	Concord A Concord B Concord CD Concord I Concord J Kannapolis A
2:45 PM–3:45 PM	Break for Poster Session 2 and Coffee • No talks at this time Presenters of even-numbered posters (1-157) must be present at this time.	Concord EF
3:45 PM–5:00 PM	ASB Paper Presentations Ecology: Communities 2 Ecology: Ecosystems Herpetology Cell and Molecular Biology 2 Systematics 2 Symposium: Southeastern Symposium on Zebrafish Development and Genetics Symposium ends at 4:30 PM	Concord A Concord B Concord CD Concord I Concord J Kannapolis A
5:00 PM	Poster Removal	Concord EF
5:30 PM–7:30 PM	Happy Hour-Complimentary Manager's Reception	Embassy Suites Lobby
6:00 PM— 11:00 PM	Friday Night ASB Social: Discovery Place, Charlotte, NC Live Music, Food, Drinks Gunther Von Haggens's 'Body Worlds and the Cycle of Life Exhibit'! Shuttle service from Convention Center to Discovery Place provided.	Departure from Convention Center begins at 6:00 PM Event begins at 6:30 Return transportation at 10:30 PM

Saturday, April 2nd

Time	Event	Location
6:00 AM - 9:00 AM	Complimentary Cooked-To-Order Breakfast for Hotel Guests	Embassy Suite Lobby
7:00 AM–12:00 PM	Registration Open	Registration South Rotunda
7:00 AM–8:15 AM	SABS/BSA Post-Breakfast Meeting	Kannapolis B
7:00 AM–5:00 PM	PowerPoint Preview Check ASB Logistics Room	Harrisburg A Harrisburg B
7:00 AM–5:00 PM	ASB POSTER SESSIONS ASB Posters (#158-274, Sessions 3 & 4) set up 7:00–8:00 AM Presenters of odd-numbered posters (Poster Session 3) must be present 9:45–10:45 am. Presenters of even-numbered posters (Poster Session 4) must be present 2:45–3:45 pm	Concord EF
8:00 AM–NOON	Workshop: Creating a Visual Key–A Case Study in Visual Learning. Bruce Kirchoff, Dept. of Biology, UNC Greensboro (<i>registration required-24 max cap</i>)	Piedmont
8:00 AM–NOON	βββ POSTER SESSIONS β β β Poster set up 8:00 AM–9:00 AM Presenters must be present 9:30 AM–NOON	Concord EF
8:00 AM–6:00 PM	β β β Officers & Judges Room	JHQ Boardroom
9:00 AM–9:30 AM	β β β Joint Business Meeting (all delegates MUST attend)	Fairway AB
8:15 AM–9:45 AM	ASB Paper Presentations Ecology: Populations 1 Ecology: Conservation 1 Ecology: Aquatic Biology 1 Microbiology 1 Teaching and Learning 1 Quillcon II Symposium: Ecology and Evolution of Quillworts (<i>Isoetes</i>) in the American South - Quillcon II	Concord A Concord B Concord CD Concord I Concord GH Kannapolis A
9:45 AM–10:45 AM	Break for Poster Session 3 and Coffee • No talks at this time ASB presenters of odd-numbered posters (158-274) must be present at this time.	Concord EF

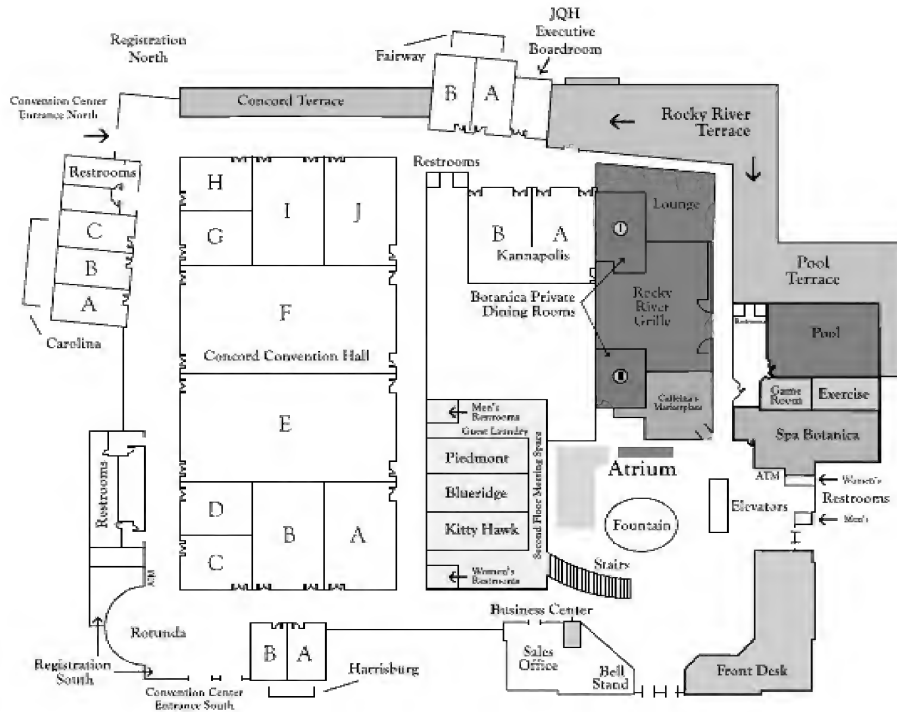
Time	Event	Location
10:45 AM–NOON	ASB Paper Presentations Ecology: Populations 1 Ecology: Conservation 1 Ecology: Aquatic Biology 1 Microbiology 1 Teaching and Learning 1 Quillcon II Symposium: Ecology and Evolution of Quillworts (<i>Isoetes</i>) in the American South - Quillcon II	Concord A Concord B Concord CD Concord I Concord GH Kannapolis A
NOON–1:30 PM	Lunch (Individuals and Organizations) (Concessions available throughout Hotel) Education Committee Luncheon Workshop (BYOL) ESA Luncheon and Business Mtg. (BYOL) Quillcon II Symposium: - <i>Isoetes</i> lunch workshop (BYOL)	Blue Ridge Kitty Hawk Kannapolis A
1:30 PM–4:00 PM	βββ Paper Presentations District I — District II — District I/II combined	Carolina A Carolina B Carolina C
1:30 PM–2:45 PM	ASB Paper Presentations Ecology: Populations 2 Ecology: Conservation 2 Ecology: Aquatic 2 Floristics Microbiology 2 Teaching and Learning 2 CTI Symposium: Connecting university scholars and classroom teachers for innovative STEM education Symposium ends at 2:45 PM	Concord A Concord B Concord CD Concord J Concord I Concord GH Kannapolis B
2:45 PM–3:45 PM	Break for Poster Session 4 and Coffee • No talks at this time ASB Presenters of even-numbered posters (158-274) must be present at this time.	Concord EF
3:45 PM–5:00 PM	ASB Paper Presentations Ecology: Populations 2 Ecology: Conservation 2 Ecology: Aquatic 2 Floristics Microbiology 2 Teaching and Learning 2	Concord A Concord B Concord CD Concord J Concord I Concord GH
4:00 PM–5:30 PM	SABS/BSA Students' Reception	Rocky River Grille Patio

Time	Event	Location
4:30 PM–5:00 PM	β β β District Session Meetings District I– District II–	Carolina A Carolina B
5:00 PM	Poster Removal	Concord EF
5:00 PM–6:00 PM	β β β Joint Session and Awards	Fairway A/B
5:00 PM–6:00 PM	ASB Business Meeting (<i>All members are invited to attend</i>)	Concord GH
5:30 PM–6:30 PM	SABS Past-Presidents Happy Hour	Embassy Suite Lobby
5:30 PM —7:30 PM	Happy Hour-Complimentary Manager's <u>Reception</u>	Embassy Suites Lobby
7:00 PM–9:30 PM	ASB Awards Banquet: Dinner and Presentation of Awards	Concord ABCD

Sunday, April 3rd

Time	Event	Location
7:30 AM–8:30 AM	ASB Executive Committee Breakfast	Embassy Suite Lobby
8:30 AM–NOON	ASB Executive Committee Meeting	Fairway A
8:00 AM–5:00 PM	ASB Field Trips 3: Pee Dee National Wildlife Refuge. ASB Field Trips 4: Worting on the Rocks: Quillworts of the NC Piedmont.	Consult Trip Information for specific Departure Times and Locations

Concord Convention Center at Embassy Suites Hotel



ASB 2016 Internet Access

Free internet access is available in the hotel to Embassy Suite guests who register with the Hilton Honors Member Program. Registering for this program is free, easy, and only takes a minute. Once registered, you can use your new Hilton Honors Member Code and room number to access the internet. Please take advantage of this opportunity so you can have free internet access for the duration of our conference. Note: internet access may be weak in the meeting space and if this is the case, relocate to the lobby for stronger signal.

ASB 2016 Event Guide

ASB POSTER SESSIONS Concord EF	
FRIDAY	SESSIONS 1 AND 2 Poster numbers 1-157
SATURDAY	SESSIONS 3 AND 4 Poster numbers 158-274
7:00 AM	Set up posters
8:00 AM-5:00 PM	Posters are displayed
9:45 AM-10:45 AM	Presenters of odd-numbered posters must be present at this time.
2:45 AM-3:45 PM	Presenters of even-numbered posters must be present at this time.
5:00 PM	Remove posters

ASB PAPER PRESENTATIONS		
FRIDAY 8:15 AM-Noon	Ecology: Community 1 Ecology: Physiological Invertebrate Biology Cell and Molecular Biology 1 Systematics 1	Concord A Concord B Concord CD Concord I Concord J
FRIDAY 1:30 PM - 5:00 PM	Ecology: Communities 2 Ecology: Ecosystems Herpetology Cell and Molecular Biology 2 Systematics 2	Concord A Concord B Concord CD Concord I Concord J
SATURDAY 8:15 AM-Noon	Ecology: Populations 1 Ecology: Conservation 1 Ecology: Aquatic Biology 1 Microbiology 1 Teaching and Learning 1	Concord A Concord B Concord CD Concord I Concord GH
SATURDAY 1:30 PM-5:00 PM	Ecology: Populations 2 Ecology: Conservation 2 Ecology: Aquatic 2 Floristics Microbiology 2 Teaching and Learning 2	Concord A Concord B Concord CD Concord J Concord I Concord GH

WORKSHOPS & SYMPOSIA		
THURSDAY 8:00 AM–5 PM	Workshop: Georeferencing of biological collections data	Fairway A/B
FRIDAY 8:15 AM–NOON	Symposium: Collaborations, information technologies and educational tools to build a regional research engine: an update on the SERNEC Herbarium effort	Kannapolis A
1:30 AM -4:30 PM	Symposium: Southeastern Symposium on Zebrafish Development and Genetics	Kannapolis A
SATURDAY 8:00 AM–NOON	Workshop: Creating a Visual Key–A Case Study in Visual Learning. Bruce Kirchoff, Dept. of Biology, UNC Greensboro (<i>registration required-24 max cap</i>)	Piedmont
8:20 AM–NOON	Quillcon II Symposium: Ecology and Evolution of Quillworts (<i>Isoetes</i>) in the American South–Quillcon II	Kannapolis A
NOON–1:30 PM		Blue Ridge
1:30 PM–2:45 PM	Workshop: Education Committee Luncheon CTI Symposium: Connecting university scholars and classroom teachers for innovative STEM education	Kannapolis B

βββ EVENTS		
FRIDAY Noon–5:00 PM	Field Trip to SeaLife Aquarium (β β β members only)	Departs from Hotel Lobby
SATURDAY 8:00 AM–NOON	POSTER SESSIONS Set up 8:00 AM–9:00 AM Presenters must be present 9:30 AM–NOON	Concord EF
8:00 AM–6:00 PM	Officers & Judges Room	JHQ Boardroom
9:00 AM–9:30 AM	Joint Business Meeting (all delegates MUST attend)	Fairway AB
1:30 PM–4:00 PM	PAPER PRESENTATIONS District I — District II — District I/II combined	Carolina A Carolina B Carolina C
4:30 PM–5:00 PM	District Session Meetings District I– District II–	Carolina A Carolina B
5:00 PM–6:00 PM	Joint Session and Awards	Fairway A/B

ASB 2016 Field Trips		
THURSDAY March 31 st	Redlair Preserve , NC Plant Conservation Program. Leader: Robert Peet (peet@unc.edu, UNC-CH)	Noon–5:00 PM Depart from Convention Center
THURSDAY March 31 st	Tour of NC Research Campus Leader: TBA	2:00–4:00 PM
SUNDAY April 3 rd	Pee Dee National Wildlife Refuge Leader: Bruce A. Sorrie, Research Associate UNC-Chapel Hill herbarium (basorrie@gmail.com)	9:00 AM–4:00 PM Depart from Convention Center
SUNDAY April 3 rd	Worting on the Rocks Quillworts of the NC Piedmont Leaders: Jay Bolin (jfbolin@catawba.edu) and Lytton Musselman (lmusselm@odu.edu)	8:30 AM —2:30 PM Depart From Convention Center



**BRINGING AUTHENTIC
INQUIRY TO SCIENCE
INSTRUCTION**

Thought-provoking educational modules and professional development on:

- Biotechnology
- Image Analysis
- Environmental Science
- Environmental Health Science
- GIS and GPS
- Neuroscience
- Ocean Science
- Volumetric Image Analysis



(520) 322-0118

www.science-approach.com

Plenary Speaker

Dr. Reed Noss

**Provost's Distinguished Research Professor
Pegasus Professor
Davis-Shine Professor of Conservation Biology
University of Central Florida, Orlando, FL**

Fire in the Evolutionary Environment of the Coastal Plain

Thursday, March 31 • 7:30 PM–9:00 PM • Concord ABCD

Reed Noss is Provost's Distinguished Research Professor, Pegasus Professor, and Davis-Shine Professor of Conservation Biology at the University of Central Florida and President of the Florida Institute for Conservation Science. He has a B.S. in Education from the University of Dayton, an M.S. in Ecology from the University of Tennessee, and a Ph.D. in Wildlife Ecology from the University of Florida. He has served as Editor-in-Chief of Conservation Biology (1993–1997), President of the Society for Conservation Biology (1999–2001), and President of the North American Section of the Society (2006–2008). He is an elected Fellow of the American Association for the Advancement



of Science and has served on many boards and advisory panels, including the Board of Governors of the Society for Conservation Biology, the Board of Trustees of the Florida Chapter of The Nature Conservancy, and Florida's Acquisition and Restoration Council. He recently served as Vice-Chair of a Federal Advisory Committee for the U.S. Climate Change Science Program.

Professor Noss has more than 300 publications and is recognized as one of the 500 most highly cited authors in all fields worldwide. He has published seven books, the most recent being *Forgotten Grasslands of the South: Natural History and Conservation* (2013, Island Press). He is currently writing books on the fire ecology of Florida and the lower Southeastern Coastal Plain (University Press of Florida) and on natural disturbance as a primary factor that structures ecosystems (Island Press). We are delighted to welcome Reed as our Plenary Speaker for ASB 2016. ^{CS}

Transportation and Parking at the Embassy Suites Hotel

5400 John Q. Hammons Drive NW, Concord, NC, 28027,
USATEL: +1-704-455-8200 • FAX: +1-704-455-8201

HOTEL PARKING

Parking is available on-site for attendees and guests. There is no
valet parking.

Handicap parking is available on site.

Friday Night Social

6:00 PM to 11:00 PM

Discovery Place, Charlotte, NC

Our Social event this year will be held at the Discovery Place in Charlotte. There will be live music, drinks and an exhibition of Gunther von Hagen's "*Body Worlds and the Cycle of Life.*"

Because this venue is 15 miles (20 minutes) from the Embassy Suites Conference Center and Hotel and parking is limited at the museum, we are providing transportation in the form of motor coaches.

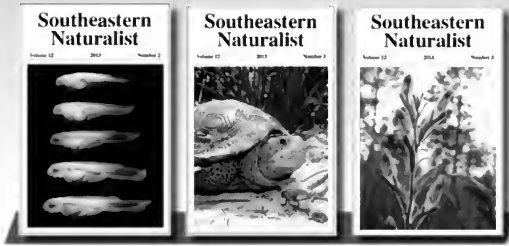
The main group of buses will leave from the Embassy Suites at 6:00 PM.

Attendees who stay at the Marriott Courtyard overflow hotel, which is 0.2 miles from the Embassy Suites will also need to leave from the Embassy Suites. There will, however, be opportunities to come to the social late and leave early. For the duration of the event, a mini bus will be on constant rotation with no set schedule—as the mini bus fills it will leave accordingly and come right back.

Your safety is our concern so we strongly encourage anyone who might drink alcoholic beverages to use the transportation we are providing. We will not be responsible for impaired drivers who attempt to use their own vehicles.☺

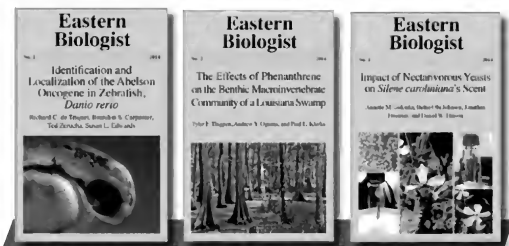
Eagle Hill Institute Journals

The two official journals of ASB . . .
 The Southeast Naturalist covers aspects of the biology and ecology of terrestrial, freshwater, and marine organisms and the environments of the southeast United States.




www.sebiologists.org/publications ... www.eaglehill.us/sena

The Eastern Biologist covers laboratory-based biological research including but not limited to biochemistry, biotechnology, cell biology, developmental biology, evolution, genetics and genomics, immunology, microbiology, neurobiology, parasitology, physiology, and toxicology.

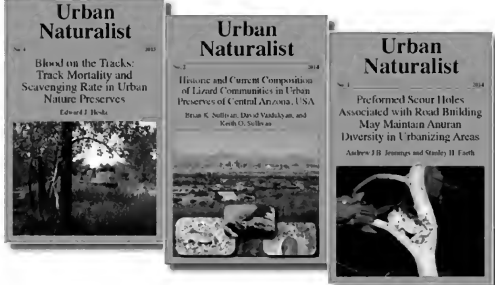


www.sebiologists.org/publications ... www.eaglehill.us/ebio

For ASB members with Caribbean research interests ... www.eaglehill.us/cana



For ASB members with urban research interests ... www.eaglehill.us/urna



Silent Auction

The silent auction was established in 2006 to raise money to help defer travel costs for graduate student members presenting papers or posters at the ASB Annual Meeting. Since 2006, ASB has granted more than \$35,000 to qualifying students. Of that, the silent auction has added over \$11,000 (36%) to the graduate student travel fund. Donated items include books, handcrafts, memorabilia, nature photography, t-shirts, gift baskets, gift cards, jewelry, wine, fishing tackle, insect nets, and much more.

For those that have items to donate to the silent auction, please bring your donation to the Silent Auction Area in the Exhibit Hall before 10:00 am on Friday, April 1, and one of the committee members will be available to receive it.

We want to thank you for participating in this worthwhile event. If you have any questions, please feel free to contact one of the Committee Members below.



Patricia Cox

and the Fabulous Silent Auction Sisters

Kim Marie Tolson

Pat Parr

Eloise Carter

Bonnie Kelley

Diane Nelson

Field Trips

βββ Field Trip • Trip to Sealife Aquarium 12:00 Noon–5:00 PM • Friday, April 1

Open only to Tri-Beta Members

Trip leader: **Lee Sutton** (SUTTONLE@ecu.edu)

Departs: from lobby of Embassy Suites

ASB Field Trips

Redlair Preserve, North Carolina Plant Conservation Program

Leader: Robert Peet (peet@unc.edu, UNC-CH)

[Possible assistant leaders: Rob Evans (VA Heritage), Jessica Richmond (PCP), Haywood Rankin]

Maximum Participants: 30

Fee: \$10

Date: Thursday, March 31

Travel: Car pool. Alternatively, participants coming to ASB from west of Charlotte could meet at the preserve (contact the trip leader).

Depart: Depart Concord Convention Center at 12:00. Assemble at Redlair and start hike at 1:00. Depart Redlair at 4:00. Arrive back at Convention Center by 5:00. [Note that if there is an important ASB event that starts prior to 5:30, we could shift all times back 30 minutes.]

Information: maps, plant list, etc.: <http://redlair.org>

Description: The Redlair Plant Conservation Preserve is an area of approximately 750 acres and is part of a larger 1200-acre protected area. The primary reason for creation of the preserve is that it contains the largest population of the regionally rare *Magnolia macrophylla* on the Atlantic slope. In addition, it contains one of the very few healthy populations of the federally endangered *Helianthus schweinitzii* in a natural habitat. The preserve borders a four-mile stretch of the free-flowing South Fork of the Catawba River and has complex topography, many different natural communities in excellent condition and over 450 species of vascular plants.

Tour of NC Research Campus

Date: Thursday, March 31, 2-4pm

Participant Cap: 15

Fee: \$10

Travel: Ample free parking is provided at the research campus and this is just a short drive north of the convention center.

Description: Travel 20 minutes from Embassy Suites for an overview of the NC Research Campus, a public-private research center focused on human health,

nutrition and agriculture. Tour the facilities, learn about the research programs and find opportunities to collaborate with scientists from UNC Chapel Hill, NC State, UNC Charlotte, Appalachian State, NC A&T, NC Central, UNC Greensboro and Duke University. You can learn more about the NC Research Campus by visiting www.ncresearchcampus.net.

Conservation Committee Service Field Trip at Carolina Raptor Center

Date: Thursday, March 31, 8:30am-2pm

Participant Cap: 20

Fee: None

Travel: A van will be departing from the Concord Convention Center at 8:30am.

Description: The Conservation Committee is hosting a service field trip for ASB 2016 in Concord, NC. Our idea is to work with the Carolina Raptor Center (<http://www.carolinaraptorcenter.org/>) for a half day and a field trip half day. The field trip attendees would provide volunteer effort to do some basic upkeep around the CRC (fence repair, weeding, removal of invasives, planting natives, etc...), which is critical to their ongoing conservation efforts, as well as be shown the Center behind-the-scenes by CRC staff.

Pee Dee National Wildlife Refuge

Leader: Bruce A. Sorrie, Research Associate UNC-Chapel Hill herbarium (basorrie@gmail.com); Assistant leader J.D. Bricken, Refuge Manager

Maximum Participants: 25

Fee: \$10

Date: April 3, 2016 Sunday

Travel: Car pool. We will make several stops by vehicle on the refuge, walking out from each. So, the fewer cars we have the better for all.

Time: Depart Concord Convention Center at 9:00 am. Assemble at PDNWR headquarters on rte. 52 S of Ansonville, Anson County, at 10:15. After restroom stop, begin driving on refuge at 10:30. Lunch onsite; provide your own food & drink to eat in field. Depart refuge at 2:30; arrive back at Convention Center at 3:45.

Information: maps, etc.: http://www.fws.gov/refuge/pee_dee/

Description: Pee Dee National Wildlife Refuge straddles the Pee Dee River in Anson and Richmond Counties in the lower piedmont of NC. Originally created to protect wintering waterfowl, the refuge has also become noted for its high quality and/or rare plant communities. We will visit the broad floodplain of Brown Creek, a nationally significant example of a bottomland forest. Adjacent to an ancient oxbow, we will search for spring wildflowers on mesic slopes. After lunch, we will spend time in a G1 wet pine flatwoods community that harbors dozens of species of coastal plain origin. It is being restored with periodic controlled burns.

Worting on the Rocks: Quillworts of the North Carolina Piedmont

Trip Leaders: Jay Bolin (jfbolin@catawba.edu) and Lytton Musselman (lmusselm@odu.edu)

Participant Cap: 14

Fee: \$5

Date: Sunday, April 3

Departure: Sunday April 3, 8:30am from the Concord NC Convention Center return by 2:30pm (van provided).

Description: This field trip is affiliated with the Quillcon II Symposium but all field biologists are welcome. We will explore the quillwort and plant diversity of the central piedmont of NC, including granite rock outcrop plant communities, forested wetlands, and the Uwharrie mountains. The field trip concludes with a Lexington-Salisbury style Carolina barbecue lunch on the peak of Morrow Mountain (chicken and pork; please bring \$10 cash for the cost of lunch).

Uwharrie National Forest

Leader: Alan S. Weakley, Director, UNC Herbarium (NCU), NC Botanical Garden, UNC-Chapel Hill (weakley@unc.edu)

Maximum Participants: 30

Fee: \$10

Date: Sunday, April 3, 2016

Travel: Car pool. We will make several stops by vehicle on the Forest, walking out from each. So, the fewer cars we have the better for all.

Time: Depart Concord Convention Center at 9:00 am. Lunch onsite; provide your own food & drink to eat in field. Arrive back at Convention Center at 5:30.

Description: Uwharrie National Forest contains some of the best remnants of well-managed Piedmont biodiversity between New Jersey and Alabama. The Uwharrie Mountains geologically represent an island arc and African terranes welded onto the North American Plate in continental collisions, and encompass a microcosm of modern Piedmont communities, with areas of rugged and subtle topography, a diversity of rock types varying from mafic to felsic, fire-maintained xeric slopes and ridges, mesic slopes, bogs, depression swamps, river corridors, and an admixture of Coastal Plain, montane, and piedmontane floristic elements. We will aim (in a long and busy day) to see Piedmont longleaf pine savannas, steep-slope shortleaf pine and oak woodlands on contrasting felsic and mafic substrates, "Piedmont prairie" endemics, depression swamps with breeding amphibians, rich slopes with spring ephemerals, and scour glades with rare endemic species.

Oral Presentations

See the Presentation Abstracts published separately for complete authors listing with affiliations.

Friday AM, April 1st

Time	Ecology: Communities 1 Concord A	Ecology: Physiological Concord B	Invertebrate Biology Concord CD	Cell and Molecular Biology 1 Concord I	Systematics 1 Concord J	SERNEC Herbarium Symposium Kannapolis A
8:15 AM						[47] Zack E. Murrell • Update on SERNEC: Key to the Cabinets, History, Progress and Challenges
8:30 AM	[1] Emily Ann Galloway, David B. Vandermast • Setting Ecological Parameters for Defining a Forest of Continuity	[10] Zachary B. Griffin et al. • Accumulation of Cobalt in <i>Nyssa sylvatica</i> From the Buck Creek Serpentine Barren (Clay County, NC)	[19] Olivia A. Howell et al. • Stable Isotope Analysis Reveals Differences in Trophic Niche of Arachnids in Field and Forest Sites	[28] Mary K. Murray et al. • Cytotoxic Effects of <i>Amorpha fruticosa</i> Leaf, Stem, and Root Extractions on PC-12 Adrenal Neural Cells From Male <i>Rattus norvegicus</i>	[37] Whitaker M. Hoskins et al. • A Study in Cinnabarina-Scarlet: Novel Collection of <i>Trametes</i> fungus from Tennessee	[48] Emily L. Gillespie • The Marshall University Herbarium: A Model for Engaging Student Curators in Small Herbarium Digitization Efforts
8:45 AM	[2] Dennis D. Tarasi • Biotic and Abiotic Community Changes With Species Invasions	[11] Mary Jane Carmichael, William K. Smith • Growing Season Ecophysiology of <i>Taxodium distichum</i> (L.) Rich. (Bald Cypress) Saplings in a Restored Wetland: A Baseline for Restoration Practice	[20] Juan P. Aristizabal et al. • Experimental Biology in Vietnam: A Survey of Pollinating Flies and Bees around Flower Resources Using Multiple Trap Methods	[29] J. Logan Bowling et al. • Filtering of Transient and Low-Level Mitochondrial Damage Signals by the PINK1:Parkin Mitophagy Pathway	[38] Andrew P. Hart et al. • Molecular phylogenetic analysis of the north-temperate Labrador teas (<i>Rhododendron</i> Subsection <i>Ledum</i>) reveals a likely East Asian biogeographic origin and North American taxa of hybrid origin	[49] Carol Ann McCormick • DWG's, Poor Penmanship, and Posthumous Slaps: Georeferencing Herbarium Specimens With Cryptic Labels
9:00 AM	[3] Thomas G. Green, Laura E. DeWald • Relationships Between Woody Species Functional Traits and Structure With Distance Into Harvested Openings	[12] J. Melissa Hernandez-Moreno et al. • Clouds Increase Within-Crown Light Penetration and Homogenize Shoot Temperatures, Evapotranspiration, and Photosynthesis in <i>Abies fraseri</i>	[21] Josiah S. Williams et al. • Female Sexual Function Among Parthenogenesis-Inducing <i>Wolbachia</i> -Infected <i>Trichogramma</i> Wasps	[30] Nelly Grigorian, Christopher D. Barton • A Study of the Role of P53 in the Regulation of MARCKS Expression	[39] Lane D. Gibbons, Conley K. McMullen • A Morphometric Analysis Offers Additional Insights on Intraspecific Variation in <i>Eleocharis tenuis</i> (Cyperaceae)	[50] Jason H. Best • Digitization Workflow Automation at BRIT

Time	Ecology: Communities 1 Concord A	Ecology: Physiological Concord B	Invertebrate Biology Concord CD	Cell and Molecular Biology 1 Concord I	Systematics 1 Concord J	SERNEC Herbarium Symposium Kannapolis A
9:15 AM	[4] Michael S. Hooker • The Effect of Road on Community Structure by Changing Seed Dispersal Patterns	[13] Tyler J. Pyle et al. • Similarity of Pair Behavior Influences Reproductive Success in Wild Breeding Tree Swallows	[22] Peter M. Schlueter, Mark A. Schlueter • An Assessment of Apple (<i>Malus domestica</i>) Pollination by Native Bees	[31] Jeff King, Christopher D. Barton • Effect of p53 Status on S100A13 Expression in Response to Oxidative Stress	[40] Samantha J. Worthy et al. • Phylogenetic Analysis of Andean Tree Communities Along an Elevational Gradient in Ecuador	[51] Brad R. Ruhfel • The "Key to the Cabinets" Opens Many Doors
9:30 AM	[5] Nicholas P. Flanders et al. • The Role of Generalist Avian Frugivores in Determining the Distribution of the Mistletoe <i>Phoradendron leucarpum</i>	[14] Kristen R. Content et al. • Repeatability of Stress Physiology and Nest Defense Behavior in Tree Swallows (<i>Tachycineta bicolor</i>)	[23] Edward B. Mondor • Insects and Death: Forensic Entomology in Georgia	[32] Jasmin Mohn, Christopher D. Barton • Investigation Into the Regulation of CST6 by P53 Following Cellular Stress	[41] M. Taylor Perkins, Joey Shaw, J. Hill Craddock • Phylogeographic Examination of <i>Castanea</i> Morphotypes in the Eastern United States	[52] Andrea Weeks • Data Redaction for Virginia-Collected Herbarium Specimens on Symbiota: Developing a Consensus Among Stakeholders
9:45–10:45	BREAK for Posters, Exhibitors, and Coffee ASB Poster Session 1 (# 1-157, odd numbered posters presented) - Concord EF					
10:45 AM	[6] Christopher J. Payne, Robert K. Peet • Analyzing Long-Term Forest Dynamics in a North Carolina Piedmont Forest Using Permanent-Sample Plots	[15] Amanda S. Williard et al. • Effects of Temperature on Metabolism and Osmotic Balance in the Estuarine Diamondback Terrapin	[24] Victor R. Townsend, Jr. et al. • Leg Injuries and Wound Healing in the Arboreal Neotropical Harvestman <i>Cynorta marginalis</i> (Opiliones, Cosmetidae)	[33] Taeler Dahm, Christopher D. Barton • p53 Mediated Regulation of CCNH in Response to Paclitaxel-Induced Mitotic Stress	[42] Kylie Bucalo et al. • Evaluating the Evolutionary and Genetic Relationships of the Andean Orchids of Northwestern Ecuador	[54] Nelson E. Rios, Henry L. Bart • Engaging the Group in Georeferencing Using GEOLocate
11:00 AM	[7] Jaclyn N. Inkster, Claudia L. Jolls • A Federally Threatened Great Lakes Dune Endemic Thistle Is an Important Floral Resource for Insect Visitors	[16] open	[25] Lori Tolley-Jordan et al. • A Survey of Freshwater Snails and Their Trematode Parasites in the Wheeler National Wildlife Refuge, AL	[34] Vian Pulous, Christopher D. Barton • Transcriptional Regulation of RGS2 by P53 in Colorectal Cancer Cells	[43] Cassandra H. Karlsson et al. • Taxonomic Re-Evaluation of <i>Eryngium yuccifolium</i> (Rattlesnake-Master; Apiaceae)	[55] Michael W. Denslow et al. • Notes From Nature and SERNEC: Leveraging a Citizen Science Tool for Large-Scale Digitization of Herbarium Labels

Time	Ecology: Communities 1 Concord A	Ecology: Physiological Concord B	Invertebrate Biology Concord CD	Cell and Molecular Biology 1 Concord I	Systematics 1 Concord J	SERNEC Herbarium Symposium Kannapolis A
11:15 AM	[8] Mary Ann McBrayer, Kimberly A. Hays • Effects of Anthropogenic Habitat Disturbance on Small Mammal Community Diversity	[17] Craig M. Lind, Terence Farrell • Hormonal Regulation of Maternal Care Behaviors in a Viviparous Pitviper	[26] Tatyana Zvonareva et al. • Natural History of the Arboreal Cosmetid Harvestmen <i>Cynorta marginalis</i> (Arachnida, Opiliones) in a Neotropical Forest	[35] Kenya M. Joseph • Interactions of siRNA Functionalized Therapeutic RNA Nanoparticles with Whole Blood and Isolated Lymphocytes	[44] Derick B. Poindexter, Alan S. Weakley • Understanding <i>Carex</i> sect. <i>Acrocystis</i> : The use of Traditional and Contemporary Systematic Methods to Disentangle a Taxonomically Complex Group	[56] Ashley B. Morris, James B. Beck • Expanding the Role of SERNEC: Opportunities to Address Old Taxonomic Problems With New Collaborative Approaches
11:30 AM	[9] Melissa D. Caspary • Plant Pollinator Networks of the Coosa Valley Prairies	[18] Glenn A. Marvin et al. • Effect of Acute Low Body Temperature on Predatory Behavior and Prey-Capture Efficiency in a Plethodontid Salamander	[27] Suzanne E. Allison et al. • Variation in Female Mating Success and Behavior of the Ebony Jewelwing Damselfly, <i>Calopteryx maculata</i>	[36] Emily F. Campbell et al. • Cytotoxic Effects of <i>Phytolacca americana</i> Berry, Root, Leaf, and Stem Extractions on PC-12 Adrenal Neural Cells From Male <i>Rattus norvegicus</i>	[45] Rebecca Dellinger-Johnston, Bruce K. Kirchoff • Experimental Test of a New Visual Plant Identification Key to the Genus <i>Quercus</i> in the Southeastern US	[57] Austin R. Mast • Crowdsourcing 10 Million Transcriptions—Multiple Strategies for Success With Digitization While Increasing STEM Literacy
11:45 AM					[46] Adam J. Ramsey, Jennifer R. Mandel • Patterns of Cyto-Nuclear Disequilibrium and the Influence of Heteroplasmy in Wild Carrot, <i>Daucus carota</i> (Apiaceae)	[58] Roland P. Roberts • National Science Foundation Funding Opportunities for Improved Collections Security and Digitization
Lunch (Concessions available throughout Hotel)						

Friday PM, April 1

Time	Ecology: Communities 2 Concord A	Ecology: Ecosystems Concord B	Herpetology Concord CD	Cell and Molecular Biology 2 Concord I	Systematics 2 Concord J	Zebrafish Symposium Kannapolis A
1:30 PM	[59] Matthew J. Heard • Examining How Multiple Types of Disturbance Interact to Influence Native and Exotic Plant Coexistence	[69] Margaret A. Small, David B. Vandermast • Environmental and Soil Characteristics of Elon University Forest	[76] Steven Gardner et al. • Assessing Differences in Toxicity and Teratogenicity of Three Phthalates, Diethyl phthalate, Di-n-propyl phthalate, and Di-n-butyl phthalate, Using <i>Xenopus laevis</i> Embryos	[86] Gabrielle A. Hayes et al. • Methylglyoxal Potentiates the Effect of Linezolid Against <i>Staphylococcus aureus</i>	[95] Charles L. Kimmel et al. • Guide to the Vascular Flora of William B. Umstead State Park (North Carolina)	[105] Tessa Shupe, Lori L McGrew • The Effects of Bupropion on the Working Memory of Anxious <i>Danio Rerio</i>
1:45 PM	[60] Laura Horton, A. Darlene Panvini • Abundance of Earthworms Relative to Leaf Litter Mass and Exotic Plant Coverage	[70] Katelyn Walters, Heather P. Griscom • Prioritizing Eastern Hemlock Trees for Secondary Imidacloprid Treatment in Shenandoah National Park	[77] Annalee M. Tutterow et al. • Landscape-Level Factors Affecting Bog Turtle Populations in North Carolina	[87] Andrew C. Bellemer • Cellular and Molecular Mechanisms of Sensory Neuron Function in <i>Drosophila melanogaster</i>	[96] Amanda L. Faucette et al. • Guide to the Vascular Flora of Buxton Woods (Dare County, North Carolina)	[106] Ted Zerucha • Characterization of the <i>Meis2</i> Locus
2:00 PM	[61] Ayda Porkar-Rezaeieh, A. Darlene Panvini • Biomass and Diversity of Earthworms is Affected by Presence of Exotic Shrubs	[71] James A. Vance et al. • The Use of Google Maps and Street View to Facilitate Analysis in a Wildlife Vehicle Collision Study	[78] Kathryn M. Greene et al. • The Effects of Conspecifics on Burrow Selection in Juvenile Spotted Salamanders (<i>Ambystoma maculatum</i>)	[88] Chase Mackey, Nick Ragsdale • Circadian Rhythm Dependence of Habituation in <i>C. elegans</i>	[97] Thomas S. McFadden, Brad R. Ruhfel • Documenting the Flora of Eastern Kentucky University's Natural Areas Using the SERNEC Symbiota Portal	[107] Mary Kinkel • The Role of Wnt/Beta-Catenin Signaling for Pancreatic Endoderm Development
2:15 PM	[62] Katlin Stodard, A. Darlene Panvini • Decomposition of <i>Acer saccharum</i> and <i>Lonicera maackii</i> Leaf Litter in a First Order Stream	[72] Adrienne F. Boucher et al. • Effects of the Urban Heat Island on Anurans in Remnant and Stormwater Control Ponds in the Charlotte Metropolitan Region	[79] Heather L. Maher, David S. McLeod • Using Geomorphometrics to Understand the <i>Limnodynastes kuhlii</i> Complex	[89] Dora Geving, Nick Ragsdale • Implications of Parkinson's Disease in Nematodes Treated With the Insecticide Permethrin	[98] Raymond O. Flagg, Gerald L. Smith • Clarifying Taxonomic Confusion in Some Mexican <i>Zephyranthes</i> (Amaryllidaceae)	[108] Linda M. Niedziela • Oil Dispersant Alters Atpase Activity and Gene Expression in Gills and Skin of Zebrafish (<i>Danio rerio</i>)
2:30 PM	[63] Sara Haney, A. Darlene Panvini • The Effects of Exotic Earthworms and Exotic Plants on Soil Invertebrate Abundance and Diversity	[73] Anna J. Markey et al. • The Effect of Human-Made Ambient Noise on the Pitch of Bird Vocalizations	[80] Thomas K. Moore et al. • From Microscale to Macroscale: Field and GIS analysis of gopher tortoise (<i>Gopherus polyphemus</i>) burrows on Cumberland Island National Seashore	[90] Miranda West, Nick Ragsdale • Potential Protective Effects of Nicotine in <i>C. elegans</i> Treated with 6-OHDA	[99] Raymond O. Flagg et al. • Sister Relationships Among the US Southeastern <i>Zephyranthes</i> species (Amaryllidaceae)	[109] Bonny B. Millimaki et al. • Inhibition of Top2 in Zebrafish Results in Axon Guidance Defects by Modifying Expression of Chemotactic Genes

Time	Ecology: Communities 2 Concord A	Ecology: Ecosystems Concord B	Herpetology Concord CD	Cell and Molecular Biology 2 Concord I	Systematics 2 Concord J	Zebrafish Symposium Kannapolis A
2:45–3:45	BREAK for Posters, Exhibitors, and Coffee ASB Poster Session 2 (# 1-157, even numbered posters presented) Concord EF					
3:45 PM	[64] G. Neil Douglas et al. • Prey Remains in Barn Owl (<i>Tyto alba</i>) Pellets Collected in 1997 From a Silo Roost in Harrogate, Tennessee	[74] Sara A. Gagné et al. • The Effects of Road and Landscape Characteristics on the Likelihood of a Barred Owl (<i>Strix varia</i>)-Vehicle Collision	[81] Thomas K. Moore et al. • Population Dynamics of Gopher Tortoises (<i>Gopherus polyphemus</i>) on Cumberland Island National Seashore on the most Southern Barrier Island of Georgia	[91] Zara Latif, Nick Ragsdale • The Utilization of Obese Worms to Investigate the Link between Parkinson's Disease and Obesity	[100] Open	[110] Courtney M Bouldin • Quiescence is a Critical Feature of the Multipotent Cells That Form the Zebrafish Body
4:00 PM	[65] Chris J. Peterson • Intermediate Disturbance Severity Yields Maximal Structural Complexity: An Alternative Mechanism for the Intermediate Disturbance Hypothesis?	[75] Alexandra V. Shoffner et al. • The Relative Impacts of Habitat Amount, Habitat Configuration, and Urbanization on Forest Breeding Birds	[82] Carlos D. Camp, Jessica A. Wooten • Genetic Interaction between two Cryptic, Parapatric Species of Two-lined Salamander (<i>Eurycea bislineata</i> complex) along their Zone of Contact	[92] Danielle Aument, Nick Ragsdale • Utilization of Alpha-Lipoic Acid as an Antioxidant in the Presence of 6-OHDA	[101] Ramhari Thapa et al. • Reconstruction of Phylogenetic Relationship in <i>Antennaria</i> (Asteraceae) Using Data From Hundreds of Loci	[111] Cindy Achat-Mendes • Examining zebrafish behaviors to investigate the polydrug effects of nicotine and alcohol
4:15 PM	[66] Joe E. Winstead, Michael E. Held • Exceeding 100 Years in Age an Oak–Hickory Forest in East Central Mississippi Challenges Contemporary Basal Area Concepts	[234] Jessica L. Allen, James C. Lendemer • The Impacts of sea-level rise on coastal biodiversity: A case study in the Mid-Atlantic Coast Plain	[83] Scott P. Jones, David R. Chalcraft • Fear, Competition, and Time: The Interaction of Predation, Competition, and Phenology on Treefrog Morphology and Life-History	[93] Elizabeth Quamme, Eric E. Johnson • Expression Analysis of Centrioles During Spermatogenesis in the Model Moss <i>Physcomitrella patens</i>	[102] Charles N. Horn • A Review of the Morphological Distinction Between Two Azalea Species: <i>Rhododendron calendulaceum</i> and <i>R. cumberlandense</i> (Ericaceae)	[112] V. McNeil Coffield • Exposure to estrogenic compounds alters the rate of calcium incorporation during early bone development in <i>Danio rerio</i> .
4:30 PM	[67] Timothy O. Menzel • Providing a Complete Picture of Competition Between Two Ant Species, <i>Aphaenogaster carolinensis</i> and <i>Nylanderia faisonensis</i>		[84] Walter H. Smith et al. • Are Green Salamanders as Rare as We Assume? Adapting Citizen Science to Address Data Deficiency in <i>Aneides aeneus</i> Across the Cumberland Mountains of Virginia	[94] Sunada Khadka, Holly B Tong • The Effect of All Trans Retinoic Acid on Collagen Production by Uterine Smooth Muscle Cells	[103] Christopher P. Randle et al. • Diversity and Subspecific Taxonomy of <i>Phoradendron leucarpum</i> (Raf.) Reveal & M. C. Johnston. (Leafy Mistletoe)	

Time	Ecology: Communities 2 Concord A	Ecology: Ecosystems Concord B	Herpetology Concord CD	Cell and Molecular Biology 2 Concord I	Systematics 2 Concord J	Zebrafish Symposium Kannapolis A
4:45 PM	[68] Dwayne Estes • A revolutionary new hypothesis to explain biogeographic disjunctions in the unglaciated eastern United States		[85] Shem D. Unger, Rod Williams • Filial Cannibalism and Body Condition of the Eastern Hellbender <i>Cryptobranchus alleganiensis alleganiensis</i>		[104] Harvey E. Ballard, Jr. et al. • Reinventing Taxonomy for the Acaulescent Blue Violets (<i>Viola</i> subsect. <i>Boreali-Americanae</i>), or, There are a Lot More Species Out There Than We Thought	

Saturday AM, April 2

Time	Ecology: Populations 1 Concord A	Ecology: Conservation 1 Concord B	Ecology: Aquatic Biology 1 Concord CD	Microbiology 1 Concord I	Teaching and Learning 1 Concord GH	Quillcon II Kannapolis A
8:20 AM						[159] Lytton J. Musselman, Jay Bolin • Greeting and Welcome
8:30 AM	[113] Lauren E. Whitehurst • Determining the Effects of Herbivory on an Herbaceous Plant, American Bellflower (<i>Campanulastrum americanum</i> L.)	[123] Jamie M. Herold • Native Landscaping at Oak Ridge National Laboratory	[133] Marina N. Osier, Risa A. Cohen • Combined Effects of a Flame Retardant and Ammonium on Plankton Community Structure in Blackwater Pond Mesocosms	[141] Michael A. Schoonover et al. • A Survey of Bacterial Biodiversity and Lipid Content within Raccoon Mountain Caverns	[149] Christopher D. Barton • A Model for Interprofessional Collaboration That Promotes Student Learning and Faculty Development in Undergraduate Anatomy and Physiology Courses	[160] W. Carl Taylor • Species Evolution and Phylogeny of <i>Isoetes</i>
9:00 AM	[115] Alexandria N. Albers et al. • Differences in Intra- Versus Inter-Specific Competition May Drive Behavioral Differences in Bluebird Populations	[125] Sean K. Binninger, Laura E. DeWald • Herb Abundance and Diversity among Fire Severities in Pine-Oak Forests of Great Smoky Mountains National Park	[135] Aaron Q. Hite, Tom A. Blanchard • The Initial Response of a Benthic Macroinvertebrate Assemblage to a Stream Re-Channelization Project in Northwest TN	[143] Abigail V. Nails, Jennifer D. Hayden • Cellular Processes in <i>Mycobacterium smegmatis</i> Are Regulated by Lysine Acetylation	[151] Christopher D. Barton, A. Darlene Panvini • Promoting Student Well-Being in STEM Through Community and Civic Engagement	[161] Lytton J. Musselman et al. • Rhizomorphs, Scales, and Sporelings of <i>Isoetes</i>

Time	Ecology: Populations 1 Concord A	Ecology: Conservation 1 Concord B	Ecology: Aquatic Biology 1 Concord CD	Microbiology 1 Concord I	Teaching and Learning 1 Concord GH	Quillcon II Kannapolis A
9:00 AM	[115] Alexandria N. Albers et al. • Differences in Intra- Versus Inter-Specific Competition May Drive Behavioral Differences in Bluebird Populations	[125] Sean K. Binninger, Laura E. DeWald • Herb Abundance and Diversity among Fire Severities in Pine-Oak Forests of Great Smoky Mountains National Park	[135] Aaron Q. Hite, Tom A. Blanchard • The Initial Response of a Benthic Macroinvertebrate Assemblage to a Stream Re-Channelization Project in Northwest TN	[143] Abigail V. Nails, Jennifer D. Hayden • Cellular Processes in <i>Mycobacterium smegmatis</i> Are Regulated by Lysine Acetylation	[151] Christopher D. Barton, A. Darlene Panvini • Promoting Student Well-Being in STEM Through Community and Civic Engagement	[161] Lytton J. Musselman et al. • Rhizomorphs, Scales, and Sporelings of Isoetes
9:15 AM	[116] Ray S. Williams, Megan Avakian • Terpenes and Genotype Choice by a Specialist Aphid in the Old-Field Plant Species <i>Solidago altissima</i>	[126] Erika M. Dietrick, Claudia L. Jolls • How Does Temperature Affect Germination and the Seed Bank Potential of <i>Thalictrum cooley?</i>	[136] Ted F. West III, Matthew N. Waters • Spatial and Temporal Phytoplankton Dynamics in Response to Environmental and Anthropogenic Stressors in Lake Seminole, GA	[144] Phoebe Parrish et al. • The Multifactorial Role of the Phytotoxin Coronatine in Plant Disease in <i>Nicotiana benthamiana</i>	[152] John H. Niedzwiecki • Teaching the Value of Sustained Observation: A Multiweek Research Experience in Animal Behavior at the Zoo	[162] Jay F. Bolin, Carmony L. Hartwig • Using flow Cytometry to Aid Species Delimitation in <i>Isoetes</i>
9:30 AM	[117] José Garrido, Ray S. Williams • Terpene Production in <i>Solidago altissima</i> in Response to Aphid Herbivory	[127] Erin E. Fegley, Claudia L. Jolls • Modeling Herbivory to Predict Population Viability of a Rare, Monocarpic Perennial (Pitcher's Thistle)	[137] Devin N. Kinney, Amber A. Burgett • Effects of Roundup and Reduced Hydroperiod on the Behavioral Response of <i>Hyla versicolor</i> Tadpoles to Predator	[145] Regina A. Bledsoe et al. • Response of the Soil and Rhizosphere Microbiome to Long-Term Fertilization	[153] Nicole T. Welch • Pulling Out All of the Stops to Teach the Basics of General Ecology to a Changing Student Population	[163] Elizabeth A. Zimmer et al. • DNA Sequences Identify Cryptic Species of Quillworts (<i>Isoetes</i> L.)
9:45–10:45	BREAK for Posters, Exhibitors, and Coffee ASB Poster Session 3 (# 158-274, odd numbered posters presented) βββ Posters (#275-313) Concord EF					
10:45 AM	[118] Ashley M. Hawk, Laura E. DeWald • Comparing Maxent and DOMAIN Habitat Suitability Modeling for a Rare Plant Species	[128] Angela Monetta et al. • Bird Diversity in Two Habitats at Georgia Gwinnett College	[138] Thomas A. Hess, Lori Tolley-Jordan • Do Fish Elicit Behavioral Responses of Macroinvertebrates in Small Streams of the Bankhead National Forest, Alabama?	[146] Tyler Wilson, Patrick A. Vigueira • Synergistic Effect of Amoxapine and β-Lactam Antibiotics Against MRSA	[154] Oluwaseun O. Agboola, Anna C. Hiatt • Improving Student Success in Introductory Biology: The Use of Summative Assessment as an Inclusive Practice	10:40 AM [164] Felix Grewe et al. • The Molecular Evolution of the Organellar Genomes of <i>Isoetes</i> : A Phylogenetic Perspective

Time	Ecology: Populations 1 Concord A	Ecology: Conservation 1 Concord B	Ecology: Aquatic Biology 1 Concord CD	Microbiology 1 Concord I	Teaching and Learning 1 Concord GH	Quillcon II Kannapolis A
11:00 AM	[119] Phoebe Cook et al. • No Evidence for Sexual Selection on Color Dimorphism in <i>Megalagrion calliphya</i> Damselflies	[129] Kathleen A. K. Gabler, Brian C. McCarthy • Restoration of American Chestnut (<i>Castanea Dentata</i>): Changing Fuels Will Facilitate Fire	[139] Anna S. Sarkisova et al. • The Effect of Urban Fragmentation on Genetic Structure of Redbreast Sunfish (<i>Lepomis aurtus</i>) and Green Sunfish (<i>L. cyanellus</i>) Populations	[147] Stephanie S. Momeni et al. • Tracking Transmission of <i>Streptococcus mutans</i> using rep-PCR and MLST	[155] Anna C. Hiatt • NABT Presents... A Framework for Improving Science Practice Skills in Undergraduate Introductory Biology	[165] Daniel F. Brunton • A New <i>Isoetes</i> Species From Granitic Flat Rocks in Alabama
11:15 AM	[120] Jonathan D. Moore III et al. • Does Selection for Gamete Dispersal and Capture Lead to Lead to Sex Differences in Clump Water Retention?	[130] Steven J. Price et al. • Effects of Mountaintop Removal Mining and Valley Filling on the Occupancy and Abundance of Stream Salamanders	[140] A. Ashlea McCann, Jennifer L. Greenwood • Effects of Turtle Size and Microhabitat Preference on Patterns of Carapace Algal Growth and Community Structure at Reelfoot Lake	[148] Andre L. Lorenz et al. • Linkage Between the Honey Bee Colony and Growth Characteristics of a Bee Fungal Pathogen	[156] Jane P. Ellis • NABT Presents Does the Use of Active Learning Strategies in STEM Courses Actually Improve Student Retention and Learning? If So, What Are the Best Practices?	11:20 AM [166] Angelo Troia et al. • A Contribution to the Phylogeny and Biogeography of the Genus <i>Isoetes</i> (Isoetaceae) in the Mediterranean Region
11:30 AM	[121] Kathleen A. Carroll et al. • Harsh and Unpredictable Ecological Conditions Modulate the Relationship Between Social Structure and Direct Fitness in a Plurally Breeding Small Mammal	[131] Jacob W. Malcom et al. • The Endangered Species Act in the Southeast			[157] Ellen S. Goldey • NABT Presents... Moving Mountains: Inspiring Department-Wide Reform of Undergraduate STEM Education	11:40 AM [167] Peter W. Schafran et al. • Towards a Phylogeny of <i>Isoetes</i> in the Southeastern United States
11:45 AM		[132] Claudia L. Jolls et al. • Analyzing the rewards and risks of biological control			[158] Thomas M. Dodson • Critical Thinking and Art in the Big Picture of Biology	
Lunch (Concessions available throughout Hotel)						

Saturday PM, April 2

Time	Ecology: Populations 2 Concord A	Ecology: Conservation 2 Concord B	Ecology: Aquatic Biology 2 Concord CD	Floristics Concord J	Microbiology 2 Concord I	Teaching and Learning 2 Concord GH	CTI STEM Education Symposium Kannapolis B
1:30 PM	[168] Madison A. Williams et al. • Variation in Carotenoid Concentrations of House Sparrow (<i>Passer domesticus</i>) Eggs Across the Laying Sequence	[173] Clifton B. Ruehl, Troy Keller • Introduced Island Apple Snails (<i>Pomacea maculata</i>) in Western Georgia	[183] Alexandria Jeffers, A. Darlene Panvini • Water Quality and Macroinvertebrate Diversity in Closed-Canopied and Open-Canopied Sections of an Urban Stream in Nashville, TN	[191] Jennifer R. Mandel et al. • Using Phylogenomics to Resolve Mega-Families: An Example From Compositae	[201] Henry G. Spratt, Jr. et al. • Incidence of Bacterial Contamination in a Hospital's Neonatal Intensive Care Unit	[209] Jennell M. Talley, Rebekah Ward • Use of Creative Writing to Encourage Students to Address Their Misconceptions in Genetics	[219] Jennifer Thompson • From the Merman to the Weatherman: The Evolution of Weather Prediction [220] Connie Wood • Metamorphosis—Triggers of Transformation
1:45 PM	[169] Austin W. Brenek, Christopher P. Randle • Assessment of Reproductive Health in Marginal Populations of Buffalnut (<i>Pyrularia pubera</i>), a Dioecious Parasitic Shrub	[174] Ben F. Chappell, Kevin G. Smith • Selective Predation of Native Reef Fish by Lionfish (<i>Pterois volitans/miles</i>) Along the North Carolina Coast	[184] Walter Burn, A. Darlene Panvini • Biodiversity of Macroinvertebrates in A First Order Spring-Fed Stream on the Belle Forest Cave Property, Bellevue Tennessee	[192] Katherine G. Mathews, Danielle Richardson • Cross-Species Microsatellite Amplification in the <i>Trillium erectum</i> Complex	[202] A. Grace Collier et al. • Potential Bacterial Contamination From Lotions and Creams Used for Soft Tissue Mobilization and Massage in Outpatient Rehabilitation Clinics	[210] Victoria A. Burgess et al. • Using Peer Supplemental Instruction in an Introductory Biology Course to Cultivate STEM Competencies	[221] Cindy Woolery • Life Cycles of Animals—Constant Change! [222] Janet Raybon • The Rest of the Story: A Study of Death, Decomposition and Metamorphosis
2:00 PM	[170] Justin Hendy • Changes in Biogeography of Rare Plant Species Endemic to the Southeastern United States from 2001 to 2015	[175] Patricia D. Parr • Promoting Pollinator Friendly Management on Federal Lands: The Oak Ridge Reservation Example	[185] Sandra L. Cooke • A Comparison of Zooplankton Diel Vertical Distribution During Transparent and Turbid Conditions in a Natural Southern Appalachian Montane Lake	[193] Alexander Krings et al. • Image Sort Creator: A New Web Service for Developing Visual Learning Exercises for Field Courses	[203] Bryan R. Eoff, Nick Ragsdale • <i>Caenorhabditis elegans</i> Response to Hyperglycemic and Hypoxic Conditions Post Infection with <i>Staphylococcus aureus</i>	[211] Candace Timpler et al. • Analysis of Reading Speed and Comprehension in Biology Majors	[223] Rima Solh • Metamorphosis in Mathematical Models [224] Amy H. Ringwood • [session chair]
2:15 PM	[171] Howard S. Neufeld • The Paris Climate Talks and the 800 lb (363 Kg) Gorilla in the Room: Population Growth as the Root Cause of Global Climate Change	[176] James A. Vance et al. • Species Composition and Temporal Patterns of Road-kills Along Physiographically Distinct Routes in Southwest Virginia	[186] Logan Perkins et al. • The Effect of Stream Restoration on Fish Species Richness and Diversity in the Coastal Plains of West Tennessee	[194] Abigail C. Burrus, Dane Kuppinger • Exploring the Historical and Modern Collections of the Salem College Herbarium	[204] Austin T. Leavell et al. • Microbial Community Dynamics Related to the Function of an Artificial Wetland	[212] Mark A. Schlueter, Boyko Gyurov • Teaching Biology and Mathematics During Field Experiences in a Month-Long Study Abroad Program in Vietnam	

Time	Ecology: Populations 2 Concord A	Ecology: Conservation 2 Concord B	Ecology: Aquatic Biology 2 Concord CD	Floristics Concord J	Microbiology 2 Concord I	Teaching and Learning 2 Concord GH	CTI STEM Education Symposium Kannapolis B
2:30 PM	[172] Christopher Adams et al. • Variation in Dormancy States for Seeds of <i>Calycanthus floridus</i> L.: Does Indefinite Retention in the Fruit Affect Germination Patterns of Seeds?	[177] Nicholas Adams Johnny Randall • Informing the Restoration of Piedmont Savanna Using High Quality Rights-of-Way as Reference	[187] James T. Ragan, Matthew N. Waters • The Environmental and Ecological Change of Cherry Lake, FL, USA, From the Mid-Holocene to Modern Day: Placing Human Impacts in the Context of Natural History	[195] John M. Herr, Jr. • A Comparison of Anatomical Features in Fresh Sections of <i>Coleus blumei</i> Benth. With Sections Fixed in Carnoy's Fixative and Stored in 70% Ethanol and Sections Dehydrated, Paraffin Infiltrated and Embedded with Application of the Tertiary Butyl Alcohol Technique or with the Xylene Technique	[205] Dane M. Kuppinger et al. • Assessing the Impact of Coal Ash Exposure on Soil Microbes in the Dan River	[213] Valarie A. Burnett • Incorporating Student-Centered Learning Strategies, Including Flipped Classroom Activities and Course-Embedded Research, Into the Classroom Environment	
2:45-3:45	BREAK for Posters, Exhibitors, and Coffee ASB Poster Session 4 (# 158-274, even numbered posters presented) Concord EF						
Time	Ecology: Conservation Concord B	Ecology: Aquatic Biology Concord CD	Floristics Concord J	Microbiology Concord I	Teaching and Learning Concord GH		
3:45 PM	[178] Michael Kunz et al. • Germination Ecology of the Rare Southeastern Endemic, <i>Amorpha georgiana</i> (Georgia indigobush, Wilber [Fabaceae])	[188] Neil Billington, P. Taylor Ezell • A Comparison of Two Indices of Nitrogen Deficiency in Ponds in Pike County, Southeastern Alabama	[196] Catherine E. Garner et al. • A Comparison of Stem Anatomy in <i>Stachys caroliniana</i> and <i>Stachys floridana</i> Shutlw. and Stem and Leaf Anatomy in <i>S. caroliniana</i> and Four Previously Investigated <i>Stachys</i> species	[206] Chasity Lawless et al. • Nitrogen Fixation Dynamics in <i>Pueraria montana</i>	[214] Roger A Sauterer • Using Ecosystem Jars to Support Inquiry-Based Student Experiments		
4:00 PM	[179] John L. Randall et al. • Propagation and Reintroduction of the Sandhills Lily, <i>Lilium pyrophilum</i> (Liliaceae)	[189] Gary D. Grossman • Long-Term Persistence, Density-Dependence and Effects of Climate Change on Rosyside Dace (Cyprinidae)	[197] Charlie Williams • Retracing André Michaux's Botanical Explorations in the Carolinas and East Tennessee With a Michaux Family Member	[207] Marlan E. Hare, Philip Rock • A Comparison of the Cultivable Bacteria From <i>Wolbachia</i> -Free and <i>Wolbachia</i> -Infected Strains of <i>Drosophila melanogaster</i>	[215] Michael K. Moore, Virginia A. Young • A Redesign of Introductory Biology for Majors: Experimental Implementation of the Supplemental Model of Instruction		

Time	Ecology: Conservation Concord B	Ecology: Aquatic Biology Concord CD	Floristics Concord J	Microbiology Concord I	Teaching and Learning Concord GH
4:15 PM	[180] Sunny A. Fleming et al. • The Use of Species Distribution Models (SDMs) to Guide Surveys for and to Evaluate the Distribution of the Streamside Salamander (<i>Ambystoma barbouri</i>) in the Central Basin of Tennessee	[190] Karl H Joplin • Description of the Microbiome of a Model Appalachian Stream	[198] Zach Irick, Joey Shaw • Preliminary Vascular Plant Flora of the Big Soddy Creek Gorge	[208] Jay A. Yoder, Andrew J. Jajack • Preventive Steps for Minimizing Effects of Fungicides (and Pesticides) on Honey Bee Colonies	[216] James R. Rayburn • The Use of Student Response Systems to Increase Student Engagement in Human Anatomy and Physiology Courses at Jacksonville State University
4:30 PM	[181] Kim Marie Tolson et al. • American Alligator Nest Depredation by Feral Hogs		[199] Alan S. Weakley • An Example of What We Still Don't Know About the Southeastern Flora: What Would Sherlock Think About the Confuscated and Combinatorial Case of the Alder on the Mountain?		[217] Melissa M. Fox, Erika S. Niland • Biology Intensive Orientation Seminar (BIOS) Enhances Student Performance in Introductory Biology Courses
4:45 PM	[182] Alvaro Pérez et al. • Diversity and Conservation Assessment for Ecuadorian species of <i>Magnolia</i> L. (Magnoliaceae)		[200] Alan S. Weakley • John and Amos's Excellent Adventure: What Can We Learn 125 Years Later From Their Account About Taxonomic Exploration and Changes in the North Carolina Landscape?		[218] Gary D. Grossman • Innovative Approaches to Fisheries Education

βββ Paper Presentations • Saturday PM, April 2

Time	District I Carolina A	District II Carolina B
1:30 PM	[225] Maria Marlin et al. • The Role of Heterotrimeric G-protein signaling in <i>Camelina sativa</i> Growth and Development	[230] Lindsay Millward, A. Darline Parvini • Differences in leaf decomposition rates between invasive exotic <i>Lonicera maackii</i> and native <i>Acer saccharum</i> in a temperate deciduous forest
1:45 PM	[226] Kristy Williams, Costance Rogers-Lowery • Effects of Ocean Acidification on Motility of Coral Larvae	[231] Rachel Pearson, Lauren King • Characterization of neutrophil cell death in response to nontypeable <i>Haemophilus influenzae</i>
2:00 PM	[227] Kyle Macke • Efficacy of alternative contrast agent in anemonefish culture	[232] Jacob Dirkman et al. • Estrogens Effects on the Viability of Astrocyte Cells Exposed to Oxidative Stress
2:15 PM	[228] Louis Penrod • Thermally induced shift in biomechanical performance of the invasive lionfish, <i>Pterois volitans</i>	[233] Tara Burke, Lori Tolley-Jordan • Does a large trematode parasite, <i>Proterometra epholkus</i> , induce mortality on its freshwater snail host, <i>Elimia modesta</i> ?
2:30 PM	[229] Sebastian Martinez • Impacts of urbanization on Anuran species richness	



Comprehensive Lab Kits for Online Learners

eScience Labs LLC provides complete and comprehensive hands-on science kits to support online and traditional courses in need of a laboratory solution. These are the same experiments you would find in a traditional academic lab, but designed and scaled to be performed by students anytime, anywhere. Written by PhD level educators and scientists, our labs compliment any teaching style or curriculum.

eScience Labs kits include:

- Hands-on Materials
- Full Color Lab Manual
- Safety equipment
- Learning Management System Integration
- Virtual Learning Activities

Offering solutions for:

Biology
 Chemistry
 Anatomy & Physiology
 Microbiology
 Physics
 Physical Science
 Environmental Science
 Custom Kits



888-ESL-KITS
 info@esciencelabs.com
 www.esciencelabs.com

Posters--Concord EF

Friday, Apr 1st (ASB Posters 1-157)

TITLE	AUTHORS
ZEBRAFISH SYMPOSIUM	
P1 Identification of Genes Involved in <i>Vibrio cholera</i> Colonization of the Zebrafish (<i>Danio rerio</i>)	Elizabeth A. Villa, Ted Zerucha, Ece Karatan Biology, Appalachian State U, Boone, NC
P2 A Simplified Method to Create Transgenic Zebrafish and Drosophila Using Electroporation	Autumn Bass, David Guzman, Karen Guzman Biology, Campbell U, Buies Creek, NC
P3 The Role of N-Nitroso-N-ethylurea (ENU) in the Induction of Chromosomal Abnormalities in Zebrafish (<i>Danio rerio</i>)	Megan M. Sibree, Linda M. Niedziela Biology, Elon U, NC
P4 17 β -Estradiol Increases the Rate of Calcium Incorporation During Early Development in <i>Danio rerio</i>	Jimmy Rager, Cailyn Scanlan, Matt Slitzky, Angela Bauer, V. McNeil Coffield Biology, High Point U, NC
P5 Resveratrol Alters the Rate of Calcium Incorporation During Early Bone Development in <i>Danio rerio</i>	Matt Slitzky, Cailyn Scanlan, Jimmy Rager, Angela Bauer, V. McNeil Coffield Biology, High Point U, NC
P6 Characterization of a <i>Meis2</i> -Linked Gene in Zebrafish	Riley Parr, Tray Neilson, Zach Williams, Caroline Cochrane, Brandon Carpenter, Brantley Graham, Ted Zerucha Biology, Appalachian State U, Boone, NC
P7 Characterization of a Highly Conserved Tetrapod Regulatory Element Associated With the <i>Meis2</i> Gene in Zebrafish	Mackenzie Trapp, Hannah Freundlich, Kyle Nelson, Ted Zerucha Biology, Appalachian State U, Boone, NC
P8 Characterization of the <i>Meis2</i> Associated Highly Conserved M2de3 Noncoding Element	Laiton Steele, Alicia Ramsaran, Kyle Nelson, Ted Zerucha Biology, Appalachian State U, Boone, NC
P9 Characterization of the <i>Meis2</i> Associated Highly Conserved Vertebrate Noncoding Element m2de1	Megan Tennant, Tyler Ferrara, Cody Barrett, Kyle Nelson, Ted Zerucha Biology, Appalachian State U, Boone, NC
P10 Human Gut Motility Disorders: Can Larval Zebrafish Provide a Live Animal Model?	Rachel Krizek, Mary Kinkel Biology, Appalachian State U, Boone, NC
P11 Onset of Metamorphosis Depends on Body Length, Not Age, for Larval Zebrafish	Kitt Franse, Mary Kinkel Biology, Appalachian State U, Boone, NC
P12 The effect of topoisomerase II inhibition on expression of axon pathfinding genes in zebrafish	Mary E. Skrabut, Amanda D. Williams, Bonny B. Millimaki Biology, Lipscomb U, Nashville, TN

P13	Topoisomerase2Inhibition Specifically Effects Axonal Guidance in Zebrafish	Sara M. Stevers, Bonny B. Millimaki Biology, Lipscomb U, Nashville, TN
------------	--	--

Friday, Apr 1st (ASB Posters 1-157)

P14	Comparison of the Anxiolytic Effects of Nicotine and Ethanol on Novelty-Elicited Responses in Zebrafish (<i>Danio rerio</i>)	Michelle L. Hall, Cindy Achat-Mendes Science & Technology, Georgia Gwinnett College, Lawrenceville
------------	--	--

P15	Measuring the Rewarding Effects of Nicotine and Ethanol Polydrug Use in Zebrafish (<i>Danio rerio</i>)	Maria C. Granada, Cindy Achat-Mendes Science & Technology, Georgia Gwinnett College, Lawrenceville
------------	--	--

P16	The Effect of Aspartame and Sugar on the Behavior of Adult and Juvenile Zebrafish	Lenka N. Malec, Linda M. Niedziela Biology, Elon U, NC
------------	---	--

P17	The Effect of Top2 Inhibition, With Dexrazoxane, on Zebrafish Neural Development	Abigail Poff, Donnie Pickel, Bonny B. Millimaki Biology, Lipscomb U, Nashville, TN
------------	--	--

DEVELOPMENTAL BIOLOGY and MICROBIOLOGY 1

P18	Temporal, Spatial, and Age Distributions of White-Tailed Deer, <i>Odocoileus virginianus</i> , Killed on Bulloch County Roadways	Mackenzie P. Payne, Edward B. Mondor Biology, Georgia Southern U, Statesboro
------------	--	--

P19	The Identification of Environmental Microorganisms that Utilize Bifenthrin	Jaylin Grant, Michelle Thomas, Jamie Garner Biology, Campbell U, Buies Creek, NC
------------	--	--

P20	An Examination of Bacteria and Fungi Diversity and Abundance in Different Size Bowling Balls and Shoes	Cathy Huynh, Mark A. Schlueter Science & Technology, Georgia Gwinnett College, Lawrenceville
------------	--	--

P21	Bacterial Diversity from Soil of Varying Land Management at Furman University	Neely M. Wood, Min-Ken Liao Biology, Furman U, Greenville, SC
------------	---	---

P22	Application of a Multi-Disciplinary One Health Approach to Understanding Environmental Drivers of the Spatial Distribution of Rocky Mountain Spotted Fever	Jingtian Wang¹, Thomas Hart¹, Leigh Robertson², Jessie Barnett², John E. Quinn¹, Min-Ken Liao¹ ¹ Biology, Furman U, Greenville, SC; ² Earth & Environmental Science, Furman, Greenville, SC
------------	--	---

P23	Isolation and Genomic Annotation of the Novel <i>Bacillus thuringiensis</i> Bacteriophage, Rex16	Sydney Dishman¹, Suzanne Henderson¹, Jennifer Easterwood¹, Kent Rhodes¹, Michael Wolyniak², Joanna Katsanos¹ ¹ Queens U of Charlotte, NC; ² Hampden–Sydney College, VA
------------	--	--

P24	Synergistic Effects of Antibiotics, Antimicrobial Peptides, and Neutrophil Phagocytosis Upon <i>Acinetobacter Baumannii</i>	Rowan E. Pitts Biology, College of Letters and Sciences, Columbus State U, GA
------------	---	---

P25	Combinatorial Effects of Manuka Honey and Fosfomycin on <i>Escherichia coli</i> , <i>Staphylococcus aureus</i> and Methicillin-Resistant <i>Staphylococcus aureus</i>	Nicole M. Wright, Gabrielle A. Hayes, Patrick A. Vigueira Biology, High Point U, NC
------------	---	---

P26	Methylglyoxal Sensitizes <i>Bacillus oleronius</i> to Topical Antibiotics	Sarah L. Edmark, Patrick A. Vigueira Biology, High Point U, NC
------------	---	--

P27	The Interaction of Antimicrobial Therapeutics with Amoxapine, a Commonly Prescribed Medication	Norbeth E. Dzotefe Biology, High Point U, NC
P28	Resistance to Beta Lactam Antibiotics: Development of a Rapid, Paper-based Detection Test	Allison Shelton, Lisa Ann Blankinship Biology, U North Alabama, Florence
Friday, Apr 1st (ASB Posters 1-157)		
P29	Investigating the Function of <i>pufQ</i> in <i>Rhodobacter capsulatus</i>	Hannah Mordy, James L. Smart Biology, U of Tennessee at Martin
P30	Manipulating the Cellular Genome of a <i>Francisella tularensis</i> -Infected Cell	Janay F. Franklin, Sharon Taft- Benz, Shaun Steele, Lauren Radlinski, Tom Kawula Microbiology and Immunology, UNC Chapel Hill
P31	Cape Fear River Sediment Reveals Antibiotic-Producing Bacteria	Yancey T. McCoury, Elizabeth A. Brady, Weston R. Walker, Jessica S. Jones, Lauren M. Warzecho, Kevin B. Kiser Biology and Marine Biology, UNC Wilmington
P32	Bacterial Contamination of Commercially Dispensed Iced Tea: A Preliminary Study	Hannah M. White, Lea A. Cename, C. Brian Odom Biology, Wingate U, NC
P33	Antibiotic Resistance Profiles of <i>S. aureus</i> Isolates Collected From the Noses and Throats of Nursing Students	Zachary P. Johannesson, Ashton L. Honeycutt, Matthew C. Mason, Caroline L. Jones, Aaron T. Kesinger, Nicholas C. Loekman, Kevin B. Kiser Biology and Marine Biology, UNC Wilmington
P34	Evaluating Growth Phases and Virulence Factors Associated with <i>Shigella flexneri</i> 2a Propagation <i>in vitro</i>	Stephanie M. Unkles¹, Kingsley D. Dunkley¹, Karen Harris-Shultz² ¹ Biology, Abraham Baldwin Agricultural College, Tifton, GA; ² USDA, ARS-USDA, Tifton, GA
P35	Evaluation of Sulfate Reducing Bacteria for Salt Tolerance	Patrick Thomase, Kelsey Rodgers, Christiane Ingram, Benedict Okeke Biology, Auburn U at Montgomery, AL
P36	DNA Hybridization Studies and Phenotypic Characterizations of Carbon Source Usage of the <i>Kistimonas</i> Species	Emily A. Linton, Michelle L. Suhan-Thomas Biological Sciences, Campbell U, Buies Creek, NC
CELL and MOLECULAR BIOLOGY 1		
P37	Comparison of Genistein-Induced Apoptosis in T-Cell Leukemia Jurkat and Nonmalignant Lung Fibroblast MRC-5 Cells	Shelby R. Curren¹, Rosyln Crowder² Biology, Stetson U, DeLand, FL
P38	Mapping the Sorting Signals of the Cytoplasmic Domain of Atg27	María A. Trujillo, Veronica A. Segarra Biology, High Point U, NC
P39	Mitochondrial Identification and Barcoding of <i>Sabal</i> Palms	Natalie Telfeja, Arlety Mendez, Alfredo Leon, Steven Ritter Biology, Miami Dade College, FL
P40	Ki-67 Expression in Canine and Feline Squamous Cell Carcinomas	Russell P. Webb¹, Moges W. Woldemariam² ¹ Biology, Abraham Baldwin Agricultural College, Tifton, GA; ² Veterinary Pathology, U of Georgia, Tifton, GA

P41	An Investigation into the Effects of Genestein on Human Breast Cancer Cells	Hannah M. Tardif, Mackenzie Jarvis, Michael Gladhill, Angela Bauer, Kristen Bowey Biology, High Point U, NC
P42	The Cytotoxic Effect of <i>Annona muricata</i> (Soursop) Fruit Pulp Extract on Hep-G2 Cells	Ashley D Fox, Scott Weir, Patricia Koplas Biology, Queens U of Charlotte, NC
Friday, Apr 1st (ASB Posters 1-157)		
P43	Characterization of the Venom Proteome for the Wandering Spider, <i>Ctenus hibernalis</i> (Aranea:Ctenidae)	T. Jeffrey Cole ¹ , Patrick A. Buszka ¹ , James A. Mobley ² , Robert A. Hataway ¹ ¹ Biological & Environmental Science, Samford U, Birmingham, AL; ² Surgery, U of Alabama at Birmingham
P44	The Metabolic Regulator AMPK Alpha-2 Promotes Breast Cancer Cell Adhesion Properties	Gabrielle J. Valles, Elliott T. Draughn, Melissa M. Fox Biology, Wingate U, NC
P45	Genetic Screen for G Protein Signaling Components Involved in Nociception in <i>Drosophila melanogaster</i> Identifies Genes in the GAQ Pathway as Important for Nociception	Michael Mutchler Biology, Appalachian State U, Boone, NC
P46	Effects of Potential Neuroprotective Compounds on PC12 Cells	Regan Cheuning, Alison Woods, Mary A. Sahawneh Biological & Environmental Science, Samford U, Birmingham, AL
P47	A Genetic Screen for Wnt Signaling Factors in <i>Drosophila melanogaster</i> nociception	Paul R. Freeman, Andrew C. Bellemer Biology, Appalachian State U, Boone, NC
GENETICS		
P48	Population Genetics of Seep Endemic <i>Xyris tennesseensis</i>	Nickolaus Willis, Kala Downey, Carol Baskauf Biology, Austin Peay State U, Clarksville, TN
P49	Introgression of a Root-Knot Nematode Resistance Gene from 'Honey Drip' into Susceptible Sorghum Lines	Lolita L. Muñoz ² , Karen Harris-Shultz ² , Hongliang Wang ¹ , Richard Davis ² , Joseph Knoll ¹ , Jason Peake ¹ ¹ College of Agriculture and Environmental Sciences, U of Georgia, Tifton; ² Crop Genetics and Breeding Research Unit, USDA-ARS, Tifton, Georgia; ³ Crop Protection and Management Research, USDA-ARS, Tifton, GA
P50	Developing Microsatellite Markers to Distinguish Between Varieties of Vetiver (<i>Chrysopogon zizanioides</i>)	Christine A. Bowen, Matt C. Estep Biology, Appalachian State U, Boone, NC
P51	Modeling the Mixed-Lineage Leukemia (<i>MLL1</i>) Multi-Protein Complex in <i>Saccharomyces cerevisiae</i>	David Klein, Marian Baker, Renee J. Chosed Biology, Furman U, Greenville, SC
P52	A Genetic-Sexing Study of Raptor Species Native to the South-Eastern United States	Harley Williams, Jeffrey Thomas, Jennifer Easterwood Biology, Queens U of Charlotte, NC
P53	The Effects of Caffeine and Alcohol on Development in <i>Drosophila melanogaster</i>	Jordin Ellingson, Emily Bewick, Robert H. Wainberg Biology, Piedmont College, Demorest, GA
P54	Comparison of <i>Ambystoma maculatum</i> and <i>Ambystoma opacum</i> population genetics in the Uwharrie Mountains of North Carolina	Halley G. Watson, Chuck Smith, Patrick A. Vigueira, Cindy C. Vigueira Biology, High Point U, NC

P55	Genetic Identification and Phylogeny of Parasitoid Wasps (Family <i>Ichneumonidae</i>) from North Carolina	Joshua Baulch, Patrick A. Vigueira, Cindy C. Vigueira Biology, High Point U, NC
------------	---	--

ANATOMY & PHYSIOLOGY

P56	The Influence of Seasonal Fluctuations in Temperature on Feeding Kinematics of Juvenile <i>Alligator mississippiensis</i>	Carl A. Chmielewski, James R. Kerfoot, Jr. Biology, Union U, Jackson, TN
------------	---	---

Friday, Apr 1st (ASB Posters 1-157)

P57	How Doth the Little Crocodile: Analyzing the Effects of Environmental Viscosity on Feeding Performance of <i>Alligator mississippiensis</i> Juveniles	Emily E. Easter, James R. Kerfoot, Jr. Biology, Union U, Jackson, TN
------------	---	---

P58	The Effects of Pruning Manipulation and Early-Spring Hoop House Use on Hop Production in Southwest Virginia	Justen Dick ¹ , Emily Belanger ² , Gerald Bresowar ⁴ ¹ Kelly Ridge Farms, Meadowview, VA; ² Biology, Emory and Henry College, Emory, VA
------------	---	---

P59	Impact of Serious Games on Learning and Teaching in Undergraduate Anatomy and Physiology Classes	Donald Shaw ¹ , Laina L. Roberson ⁴ ¹ Biology, U of Tennessee at Martin; ² Psychology, U of Tennessee at Martin
------------	--	--

P60	A Long-Term Study of Cortisol as a Biomarker for Chronic and Acute Stressors	Eric M. Benfield, Barrett W. Bradham, Ivan P.M. Dingle, Zachary S. Ford, Charles P. Fyfe II, Fernando U. Gonzalez, Danny J. Gustafson, Kristy Y. Johnson Biology, The Citadel, Charleston, SC
------------	--	--

P61	Effect of CrossFit on Academic Performance and Examination Stress in Preprofessional Undergraduate Students—A Preliminary Analysis	Joshua T. Clontz, Erika S. Niland, J. Alison Brown Biology, Wingate U, NC
------------	--	--

EVOLUTION

P62	Preliminary Analysis of Genetic Diversity in <i>Geum radiatum</i> Suggests Inter-Population Diversity	Nikolai M. Hay ¹ , Chris Ulrey ⁴ , Gary Kauffman ⁴ , Zack E. Murrell ¹ , Matt C. Estep ¹ ¹ Biology, Appalachian State U, Boone, NC; ² Blue Ridge Parkway, NPS, Asheville, NC; ³ National Forest Service, Asheville, NC
------------	---	---

P63	Assessing Viability and Development of Hybrid Offspring From Two Closely Related Insect Species	Paige L. Stover, Jennifer A. Hamel Biology, Elon U, NC
------------	---	---

P64	Examining the Effects of Parasitism on Female Mate Choice and Copulation Duration	Dawson W. Nance, Jennifer A. Hamel Biology, Elon U, NC
------------	---	---

P65	Costs of Between-Species Mating for Secondary Sympatric and Allopatric Populations	Tyler K. Lehmann ¹ , Jennifer A. Hamel ⁴ ¹ Environmental Studies, Elon U, NC; ² Biology, Elon U, NC
------------	--	--

P66	Quantification of Male White-Crowned Manakin (<i>Dixiphia pipra</i>) Displays Using Object-Recognition Software	Lauren Woods ¹ , Casey Murakami ¹ , Paul Zwiers ¹ , Philip Fulmer ⁴ ¹ Biology, Francis Marion U, Florence, SC; ² Physics & Astronomy, Francis Marion U, Florence, SC
------------	---	---

P67	Whispered Communication: The Structure of a Low-Amplitude Signal Produced by Hatching Chinese Blue-breasted Quail (<i>Coturnix chinensis</i>)	Edward D. Mills Biology, Wingate U, NC
------------	---	---

P68	Identifying Transposable Elements Using a Comparative Approach to Understand Grass Genome Evolution	Andrew Murray, James Wise, Lindsay Shields, Alyssa Phillips, William Fenner, Matt C. Estep Biology, Appalachian State U, Boone, NC
P69	Amplification and Sequence Verification of Gene Regions to Be Used in a Phylogeographic Study of the Pine Barrens Treefrog (<i>Hyla andersonii</i>)	Sarah Rawlins ¹ , Ashley Watford ² , Autumn Lupotsky ² , Mya Praileau ² , Timothy Tedder ² , Paul Zwiers ² , Jeff Camper ² ¹ Clemson Pee Dee Research and Education Center, Florence, SC; ² Biology, Francis Marion U, Florence, SC
Friday, Apr 1st (ASB Posters 1-157)		
SYSTEMATICS, COLLECTIONS & HERBARIA		
P70	Dentition and radula morphology in an undescribed <i>Ercolania</i> species (Mollusca: Opisthobranchia: Ascoglossa)	Ashley Sibley, Deirdre Gonsalves-Jackson Biology, Virginia Wesleyan College, Norfolk
P71	Spiculation in <i>Doriopsilla pharpa</i> (Mollusca: Gastropoda: Opisthobranchia: Nudibranchia) and Its Sponge Prey	Ashley Byers, Deirdre Gonsalves-Jackson Biology, Virginia Wesleyan College, Norfolk
P72	Taxonomy and Phylogeny of the Genus <i>Diervilla</i> (Diervillaceae)	Hannah Meeler ² , Katherine G. Mathews ² ¹ Biology, Western Carolina U, Cullowhee, NC; ² Biology, Western Carolina U, Cullowhee, NC
P73	Comparison and Phylogenetic Classification of <i>Quercus margaretta</i> Populations by DNA Barcode Analysis	Heather J. Vidal, Michael H. Schiebout Biology, Union U, Jackson, TN
P74	A Morphometric Study of the <i>Cyperus granitophilous</i> – <i>Cyperus squarrosus</i> Complex in Georgia	Phillip D. Lowe, Richard Carter Biology, Valdosta State U, GA
P75	Identification of Mycorrhizae Associated With the Aquatic Plant <i>Isoetes</i> (Isoeteaceae)	Viridiana Mandujano, Karina Noyola-Alonso, Morgan E. Elder, Jay F. Bolin Biology, Catawba College, Salisbury, NC
P76	Molecular Identification of Quillworts (<i>Isoetes</i>) in the Aquarium Trade	Morgan E. Elder, Joel D. Schlaudt, Douglas B. Taylor, Jay F. Bolin Biology, Catawba College, Salisbury, NC
P77	Genetic Sequencing and Barcoding of <i>Sabal</i> Palms	Elizabeth Castiglione, Bryan Gonzalez, Steven Ritter, Alfredo Leon North Campus, Miami Dade College, FL
P78	Comparison and Phylogenetic Classification of <i>Quercus margaretta</i> Populations by DNA Barcode Analysis	Heather J. Vidal, Michael H. Schiebout Biology, Union U, Jackson, TN
P79	The Vascular Flora of the University of the South, Sewanee, Tennessee	Jonathan P. Evans ¹ , Callie A. Oldfield ¹ , Mary P. Priestley ¹ , Yolande M. Gottfried ¹ , L. Dwayne Estes ² , Alfie Sidik ³ , George S. Ramseur ¹ ¹ Biology, Sewanee: The U of the South, TN; ² Biology, Austin Peay State U, Clarksville, TN; ³ Cellular and Molecular Biology, U of Texas at Austin
P80	The Gift of Natural History: The Annie M. Smith Collection at Dalton State College	Cristina Pena, Linda Braun, Kimberly A. Hays Natural Science, Dalton State College, GA

P81	Modernizing the MTSU Herbarium to Reflect 21st Century Approaches to Collections Curation	Nickolaus A. Gonder, Ashley B. Morris Biology, Middle Tennessee State U, Murfreesboro
P82	Advances in Wiregrass Georgia: Infrastructural Improvements to Sustain another Half-Century of Herbarium-Based Research and Teaching at Valdosta State University	Richard Carter, Ashlee D. Robinson, Phillip D. Lowe Biology, Valdosta State U, GA

HERPETOLOGY 1

P83	Assessment of the Distribution of Snake Fungal Disease in Kentucky	Jennifer M. McKenzie¹, Steven J. Price¹, Leo J. Fleckenstein¹, Andrea N. Drayer¹, Jeffrey M. Lorch⁴ ¹ Forestry, U of Kentucky, Lexington; ² US Geological Survey, National Wildlife Health Center, Madison, WI
------------	--	---

Friday, Apr 1st (ASB Posters 1-157)

P84	Developing Length Estimates for Incomplete Rattlesnake Skeletons Through Vertebral Measurements and X-Ray Technology	Alanna R. Horton, Meagan A. Thomas, Michael E. Dorcas Biology, Davidson College, NC
P85	Factors Affecting Aquatic Activity in Red-Spotted Newts (<i>Notophthalmus viridescens</i>)	Brielle L. Boweman¹, Emma R. Johnson¹, Meagan A. Thomas¹, Kristine L. Grayson², Michael E. Dorcas¹ ¹ Biology, Davidson College, NC; ² Biology, U Richmond, VA
P86	Evaluating the Potential for Unmanned Aerial Vehicles (UAVs) to be Used as a Tool to Study Freshwater Turtle Populations	YangYu Zhou¹, Meagan A. Thomas¹, Michael E. Dorcas¹ Biology, Davidson College, NC
P87	Feeding Frequency Affects Growth Rates and Assimilation Efficiency in Juvenile Burmese Pythons	Aren J. Carpenter¹, Paige A. Farrar¹, Jason Ortega², John D. Willson², Michael E. Dorcas¹ ¹ Biology, Davidson College, NC; ² Biological Sciences, U Arkansas, Fayetteville
P88	The Relationship Between Population Structure and Density in Pond Turtles	Anna Marie Scoccimaro, Michael E. Dorcas Biology, Davidson College, NC
P89	Impacts of Airplane Noise on Winter-Breeding Anuran Populations	Alanna R. Horton¹, Kathryn M. Greene¹, Meagan A. Thomas¹, Aaron N. Rice², Michael E. Dorcas¹ ¹ Biology, Davidson College, NC; ² Bioacoustics, Cornell U, Ithaca, NY
P90	Occupancy Dynamics of Stream Salamanders in Degraded and Reference Headwater Streams	Sara B. Freytag¹, Steven J. Price¹, Simon J. Bonner², Breneé L. Muncy¹, Andrea N. Drayer¹, Christopher D. Barton¹ ¹ Forestry, U Kentucky, Lexington; ² Statistical and Actuarial Sciences, U of Western Ontario, London
P91	Movement of Hatchery-reared Alligator Snapping Turtles at Two Lentic Sites in Northern Louisiana	Cody L. Townsend, John L. Carr Biology and Museum of Natural History, U of Louisiana at Monroe
P92	Predicted Impact of Climate Change on the Geographic Range of the Eastern Coral Snake (<i>Micrurus fulvius</i>)	Jennifer N. Archis, Amanda J. Chunco Environmental Studies, Elon U, NC
P93	Nocturnal Tracking of Genus <i>Hyla</i> with Fluorescent Pigments on Anderson University Wetlands (Anderson, SC).	Alexis Moorhouse, Joni M. Criswell Biology, Anderson U, Anderson, SC

ENTOMOLOGY/INVERTEBRATES/PARASITOLOGY 1

P94	The Impact of Diet on Pupation Site Choice in the Caterpillar <i>Trichoplusia ni</i>	William C. Best, David M. Donnell Biology, The Citadel, Charleston, SC
P95	Non-Preference of the Catalpa Sphinx, <i>Ceratomia catalpae</i> (Lepidoptera: Sphingidae) to Invertebrate Predators	Stephanie Brandys, Leah Orange, Diana Porras, Evan Lampert Biology, U of North Georgia, Oakwood
P96	<i>Callosobruchus maculatus</i> Oviposition Preference Influenced by Chemical Cues on Bean Surfaces	Jenna I. Hojnacki, Rachel C. Fenner, Sarah B. Spiro, Tin B. Tran, Matthew M. Howell, John F. Moeller Biology, Wofford College, Spartanburg, SC
P97	A Survey of Pollinating Flies and Bees around Yellow and Blue Flower Resources in Vietnam using Multiple Trap Methods.	Manuela Gallego Builes, Gina V. Amariles, Alicia M. Flood, Juan P. Aristizabal, Ivan Magana, Kerami D. Moss, Stefano R. Rosillo, Catherine G. Schlueter, Mark A. Schlueter Science & Technology, Georgia Gwinnett College, Lawrenceville
Friday, Apr 1st (ASB Posters 1-157)		
P98	Molecular Evidence of Undescribed <i>Ceratonova</i> sp. (Cnidaria: Myxosporea) Infecting Freshwater Polychaete, <i>Manayunkia speciosa</i> , in Western Lake Erie	R. Benjamin Snipes¹, David M. Malakauskas¹, Ann M. Thompson¹, Donald W. Schloesser² ¹ Biology, Francis Marion U, Florence, SC; ² US Geological Survey, Great Lakes Science Center, Ann Arbor, MI
P99	Characterization of <i>Wolbachia</i> Endosymbionts From Two Species of Widow Spiders and a Widow Spider Egg Parasitoid	Bryant Brumbill, J. Scott Harrison Biology, Georgia Southern U, Statesboro
P100	Color Change in Larval Antlions in Response to Background	Jennifer Zettler, Bil Leidersdorf, Abigail Johnson Biology, Armstrong State U, Savannah, GA
P101	Life History of a Facultative Precocious Trematode, <i>Alloglossidium progeneticum</i> , in the White Tubercle Crayfish, <i>Procambarus spiculifer</i> , in the Yellow River, GA	Riccardo Fiorillo, Daniel De La Hoz Science & Technology, Georgia Gwinnett College, Lawrenceville
P102	Effect of Botanical Components and Essential Oils of 21 Plant Species on the Yellow Fever Mosquito, <i>Aedes aegypti</i>	William H. Dees¹, Caleb M. Ardizzone¹, Jill Hightower², Omar E. Christian³, Janet R. Woolman⁴ ¹ Biology & Health Sciences, McNeese State U, Lake Charles, LA; ² Calcasieu Parish Mosquito & Rodent Control, Lake Charles, LA; ³ Chemistry & Physics, McNeese State U, Lake Charles, LA; ⁴ Economic Development, McNeese State U, Lake Charles, LA
P103	Investigations of Potential Insecticidal Compounds From <i>Monarda fistulosa</i> and <i>Solidago gigantea</i>	Caleb M. Ardizzone¹, Nick DeVito¹, Jill Hightower², William H. Dees¹, Omar E. Christian³, Janet R. Woolman⁴ ¹ Biology and Health Sciences, McNeese State U, Lake Charles, LA; ² Calcasieu Parish Mosquito and Rodent Control, Lake Charles, LA; ³ Chemistry & Physics, McNeese State U, Lake Charles, LA; ⁴ Economic Development, McNeese State U, Lake Charles, LA
P104	Seasonal Survey of Adult Mosquitoes in an Urban Park	Caleb M. Ardizzone¹, Dakota L. Johnson¹, William H. Dees¹, Jill Hightower² ¹ Biology & Health Sciences, McNeese State U, Lake Charles, LA; ² Calcasieu Parish Mosquito & Rodent Control, Lake Charles, LA

P105 Harvestman Size Impacts the Realized Trophic Level in a Rain Forest Food Web
Maynard H. Schaus, Victor R. Townsend, Jr.
 Biology, Virginia Wesleyan College, Norfolk

P106 Responses of the Harvestman *Cynorta marginalis* to Olfactory Cues and Conspecifics
Maynard H. Schaus, Victor R. Townsend, Jr., Ashley N. Shrives, Cynthia L. Richardson
 Biology, Virginia Wesleyan College, Norfolk

AQUATIC ECOLOGY 1

P107 Cellular Responses of the Eastern Oyster, *Crassostrea virginica*, to PolyDOTs
Daniel J. Smith¹, Nicole H. Levi-Polyachenko⁴, Amy H. Ringwood¹
¹ Biological Sciences, UNC Charlotte; ² Plastic and Reconstructive Surgery, Wake Forest School of Medicine, Winston-Salem, NC

P108 Spatial Patterns in Herbivory Within Belizean Seagrass Beds as Estimated by Blade Injury, Length and Width
Adrianna L. Parson, Joseph M. Dirnberger
 Ecology, Evolution & Organismal Biology, Kennesaw State U, GA

P109 Resolving a Florida Spring Food Web Through Diet Analysis of Fish
Genevieve Patrick, Kirsten Work
 Biology, Stetson U, DeLand, FL

P110 Ammonium Retention Analysis at Mill Creek Restoration Site
Annalise M. Reagan, Courtney T. Dobash, Elizabeth B. Sudduth
 Science & Technology, Georgia Gwinnett College, Lawrenceville

Friday, Apr 1st (ASB Posters 1-157)

P111 Sediment Transport at Mill Creek Restoration Site
Courtney T. Dobash, Annalise M. Reagan, Elizabeth B. Sudduth
 Science & Technology, Georgia Gwinnett College, Lawrenceville

P112 Investigation of the UV Sensitivity and Photoenzymatic Repair Capabilities of *Daphnia magna* and *Daphnia lumholtzi*
Mary Clare A. McGinn
 Biology, High Point U, NC

P113 Habitat Contamination and Antipredator Behaviors in Longnose Dace (*Rhinichthys cataractae*)
Haley K. Lloyd, Kimberly J. Bolyard
 Biology, Bridgewater College, Bridgewater, VA

P114 Identifying *Daphnia* Species by Morphological Traits and DNA Barcoding
Cara Vielhauer¹, Melissa Pompilius⁴, Robert U. Fischer⁴
¹ Biology, Middle Tennessee State U, Murfreesboro; ² Biology, Middle Tennessee State U, Murfreesboro; ³ College of Basic and Applied Sciences, Middle Tennessee State U, Murfreesboro

P115 The Effect of Female Egg Production on Male Mating Behavior in the Copepod *Tigriopus californicus*
Anna Lee Whitaker, Alex Dye, J. Scott Harrison
 Biology, Georgia Southern U, Statesboro

P116 Effects of Light Cycling and Wavelength on the Molecular Components and Circadian Clock of *Nematostella vectensis*
Whitney B. Leach¹, Adam M. Reitzel¹
 Biological Sciences, UNC Charlotte

P117 An Historical Analysis of Legacy Agricultural Land Use and its Effects on Present Day Fish Abundance and Diversity in Streams of the South Carolina Piedmont
Mark Frederick, Carolyn Day, Dennis C. Haney
 History and Biology, Furman U, Greenville, SC

P118 Survivability of *Daphnia magna* in Aqueous Hexavalent Chromium
Elaine Rossignol, Debra Dooley
 Natural Sciences, Piedmont College, Demorest, GA

P119	Organic Carbon Burial in Subtropical, Shallow Lakes in Florida, USA: Investigating the Impacts of Warming and Humans	Benjamin C. Webster, Matthew N. Waters¹ Biology, Valdosta State U, GA
P120	An Analysis of the Effectiveness of Underwater Video Analysis as a Survey Technique for Fish Communities in Mountain Streams	Lacy J. Clark, Timothy A Kreps Biology, Bridgewater College, Bridgewater, VA

POPULATION ECOLOGY 1

P121	Retrospective Study of Birds of Prey Treated at the Southeastern Raptor Center in Auburn, Alabama	Cecilia L. Hernandez¹, Seth Oster², Jennifer L. Newbrey¹ ¹ Biology, Columbus State U, GA; ² Southeastern Raptor Center, Auburn U, AL
P122	Parameter Sensitivity Analysis for Pesticide Impacts on Honeybee Colonies	Carmen Kuan¹, Bob Curry⁴, Gloria DeGrandi-Hoffman¹, Kris Garber⁴, Andrew Kanarek⁴, Tom Purucker⁵ ¹ Oak Ridge Institute of Science and Engineering, Athens, GA; ² Crystal River Consulting, Tucson, AZ; ³ USDA Agricultural Research Service, Tucson, AZ; ⁴ EPA, Arlington, VA; ⁵ EPA, Athens, GA
P123	Genetic Structure of Feral Pig Populations in Tennessee	Rebecca L. Sale, Chloe E. Wilson, Mary K. Sledge, John S. Lewis Biology, Lipscomb U, Nashville, TN
P124	Tomorrowland: Elevated CO ₂ Alters Broad Bean, <i>Vicia Faba</i> L., Growth/Defense Tradeoffs	Harley B. Kitching, Edward B. Mondor Biology, Georgia Southern U, Statesboro

Friday, Apr 1st (ASB Posters 1-157)

P125	Dendrochronology of <i>Juniperus virginiana</i> on Mississippi Black Belt Prairie	William G. Mitchell¹, John A. Barone¹, JoVonn G. Hill⁴ ¹ Biology, Columbus State U, GA; ² Mississippi Entomological Museum, Mississippi State U, Starkville
P126	Comparing Reproductive Success in Allopatric and Sympatric Species of <i>Anasa trists</i> and <i>A. andresii</i>	Tyler K. Lehmann¹, Jennifer A. Hamel² ¹ Environmental & Ecological Science, Elon U, NC; ² Biology, Elon U, NC
P127	Effects of Genotype, Environment and Their Interaction on Leaf Terpenes and the Abundance of a Specialist Aphid in <i>Solidago altissima</i>	Brian K. Bonville¹, Ray S. Williams Biology, Appalachian State U, Boone, NC
P128	Effects of Genotype and Site on Flower Terpenes and the Pollinator Community of the Old-Field Plant <i>Solidago altissima</i>	Julie A. Ragsdale, Ray S. Williams Biology, Appalachian State U, Boone, NC
P129	Effects of Human Disturbance on Hatching Failure Rates of Eastern Bluebirds (<i>Sialia sialis</i>) in West-Central Georgia	Marie J. Singletary, Jennifer L. Newbrey, Michael G. Newbrey Biology, Columbus State U, GA

ECOSYSTEM and LANDSCAPE ECOLOGY

P130	Arthropod Phenology as a Component of Birds' Reproductive Success	Tracie E Hayes¹, Allen H Hurlbert¹ Biology, UNC Chapel Hill
P131	Visualizing Forest Characteristics of Elon University Forest in ArcMap	Brittany R. DiRienzo¹, David B. Vandermast² ¹ Environmental & Ecological Science, Elon U, NC; ² Biology, Elon U, NC

P132	Carbon Sequestration and Changes in Aboveground Tree Biomass on Elon University Forest	Sarah A. Gilley, David B. Vandermast Environmental & Ecological Science, Elon U, NC
P133	Quantifying Private Lands Contributions to Waterfowl Habitat Management Objectives in the Lower Mississippi Alluvial Valley	Garrett L. Wilkerson, Kim M. Tolson, J. Dale James ¹ Biology, U of Louisiana at Monroe; ² Biology, U of Louisiana at Monroe; ³ Conservation Planning, Ducks Unlimited, Ridgeland, MS
P134	Invertebrate Diversity on Urban Green Roofs in Charlotte, NC	Danielle K. M. Merritt, Sara A. Gagné Geography & Earth Sciences, UNC Charlotte
P135	The Effect of Bird Diversity on Human Psychological Wellbeing on the Neighborhoods of Charlotte Metropolitan Area	Abel Ayon¹, Sara A. Gagné
P136	Monitoring the Effectiveness of Storm Water Bioretention Areas on the Abraham Baldwin Agricultural College Campus	Lori M. Sherling, Carrie R. Crabtree Science, Abraham Baldwin Agricultural College, Tifton, GA

PHYSIOLOGICAL ECOLOGY

P137	Interactions of the Manganese Hyperaccumulator <i>Phytolacca americana</i> with Soil pH and Phosphate	Kara V. DeGroot, Grace L. McCartha, A. Joseph Pollard Biology, Furman U, Greenville, SC
P138	Morphological and Ecological Study of the Crane-Fly Orchid (<i>Tipularia discolor</i>)	Margaret Essepian¹, Allyson Kane¹, Nicole Hughes¹ Biology, High Point U, NC

Friday, Apr 1st (ASB Posters 1-157)

P139	Testing Potential Allelopathic Mechanisms of Chinese Privet (<i>Ligustrum sinense</i>) for Herbicidal Purposes	Jessica L B Hunnicutt¹, Kunsiri C. Grubbs¹ Biology, Winthrop U, Rock Hill, SC
P140	Effects of 1-Alkyl-3-Methylimidazolium Chloride Ionic Liquids on the Growth of Agricultural and Native Wetland Plants	Morgan E. Kennedy, John T. Emery, Abidemi T. Adamson, Jingjing Sun, Jessica L. Ertel, Adedolapo A. Odutola, Heather D. Sutton Ecology, Evolution & Organismal Biology, Kennesaw State U, GA
P141	Seasonal Variation in Immune Function, Energetic Status, and Infection with Snake Fungal Disease in Free-Ranging Pigmy Rattlesnakes (<i>Sistrurus miliaris</i>) in Central Florida	McCoy, Ciera, Craig Lind, Terence Farrell Biology, Stetson U, DeLand, FL
P142	The Influence of Light and Soil Moisture Availability on the Rare Terrestrial Orchid <i>Platanthera integrilabia</i>	Sarah Parker, Gregory Raymond, Jennifer Boyd Biology, Geology, and Environmental Science, U of Tennessee at Chattanooga
P143	Optimization of Chloroplast Isolation from the Sabal Genus	Arleeya S. Alexander, Kathlyn Alexis, Steven Ritter, Alfredo León Biology, Health & Wellness, Miami Dade College, FL
P144	Winter Photosynthesis of Chinese Privet (<i>Ligustrum sinense</i>)	Catherine Cooke, David B. Vandermast Biology, Elon U, NC

CONSERVATION ECOLOGY 1

P145	Community Effects and Genetic Diversity of Post-Fire <i>Paulownia tomentosa</i> Invasions in the Linville Gorge Wilderness Area, Burke County, NC	Joseph B. Lovenshimer, Michael D. Madritch Biology, Appalachian State U, Boone, NC
P146	Exploring Trapping Methodology in Species Richness Estimation of Rodents and Insectivores at Oak Mountain State Park	Victoria P. Van de Vuurst¹, David M. Frings² ¹ Biological & Environmental Science, Samford U, Birmingham, AL; ² Oak Mountain Interpretive Center, Samford U, Birmingham, AL
P147	Effects of drying and storage method on nutritional content of acorn masts for wildlife rehabilitation patients: a pilot study	Malia D. Berg¹, Tamara L. Johnstone-Yellin¹, Kate Guenther², David McRuer² ¹ Biology, Bridgewater College, Bridgewater, VA; ² Wildlife Center of Virginia, Walterboro, VA
P148	A Long-Term Experimental Study With American Chestnut Hybrids in a 100-Year-Old Forest Within the Ridge and Valley province of Virginia	Christopher P. Coggin, Matthew Morrissey, Guy Stewart, Heather P. Griscom Biology, James Madison U, Harrisonburg, VA
P149	Searching for the Ghost of the Appalachians: The American Chestnut	Christopher P. Coggin, Brittany O. Culp, Abigail R. Goszka, Bruce A. Wiggins, Heather P. Griscom Biology, James Madison U, Harrisonburg, VA
P150	Where does the elusive American Ginseng grow best? Experimental Field Trials	Abigail R. Goszka, Ashley M. Warrington, Emily C. Thyroff, Heather P. Griscom Biology, James Madison U, Harrisonburg, VA
P151	A Preliminary Investigation of the Ages of <i>Juniperus virginiana</i> L. in the Cedar Glades and Barrens of Tennessee	Thomas C. Byrd, Rebecca A. Cook Biological Sciences, U of Memphis Lambuth Campus, TN
P152	A Multi-Year Study Examining the Effect of Human Settlements on Carnivore Abundance and Diversity	Sarah G. MacDonald, Mark A. Schlueter Science & Technology, Georgia Gwinnett College, Lawrenceville

Friday, Apr 1st (ASB Posters 1-157)

P153	The Distribution, Reproductive Viability and Nutrient Status of an Endemic Population of Large-Flowered Skullcap Mint [<i>Scutellaria montana</i> L.] in Marshall Forest, Rome, GA	Susan Monteleone¹, Jesse Purser², Hannah Turner³, Shea Spicher⁴, Boyd Butler¹, Chris Elsey¹, Jonathan Paul¹ ¹ Natural Science, Shorter U, Rome, GA; ² Georgia Power, Rome, GA; ³ Medicine, U of Alabama; ⁴ Occupational Therapy, U of Alabama, Birmingham
P154	Restoration of Sandhill Ecosystems: The Importance of Soil Fungi on the Growth of a Native Perennial, <i>Liatris tenuifolia</i> Nutt	Tabitha A. Petri, Cynthia C Bennington Biology, Stetson U, DeLand, FL
P155	Hybridization in the <i>Hexastylis heterophylla</i> Species Complex, With a Focus on the Conservation of <i>Hexastylis naniflora</i>	Joseph T. McKenna, Zack E. Murrell, Matt C. Estep, Nikolai M. Hay Biology, Appalachian State U, Boone, NC
P156	Hellbender Citizen Science: A Survey Focusing on the Distribution of the Eastern Hellbender (<i>Cryptobranchus alleganiensis alleganiensis</i>) in Southwest Virginia	Ashlee S. Taylor, Walter H. Smith Natural Science, The U of Virginia's College at Wise
P157	An Evaluation of Visible Implant Elastomer Tags in The Northern Slimy Salamander, <i>Plethodon glutinosus</i>	Andrew M. Dawdy¹, Kate C. Donlon¹, John B. Jensen², Thomas C. McElroy¹ ¹ Ecology, Evolution & Organismal Biology, Kennesaw State U, GA; ² Wildlife Resources Division, Georgia Natural Resources, Forsyth

Saturday, Apr 2nd (ASB Posters # 158-274)
PULSE

- | | | |
|-------------|---|---|
| P158 | The Appalachian Arkcode: A Vision & Change Inspired Model for an Authentic Research Lab Series Aimed at Freshman | Sarah Marshburn, Zack E. Murrell
Biology, Appalachian State U, Boone, NC |
| P159 | SERP Update: Departmental Transformation at East Tennessee State University | Joseph Bidwell, Cerrone Foster, Anna C. Hiatt, Cecilia McIntosh, Rebecca Pyles
Biological Sciences, East Tennessee State U, Johnson City |
| P160 | Moving Mountains: The Impact of the Southeastern Regional PULSE Initiative on Twenty Diverse Institutions Engaged in Department-Wide Undergraduate Biology Reform | Ellen S. Goldey¹, Judy Awong-Taylor², Mary P. Smith³
¹ Biology, Wofford College, Spartanburg, SC;
² School of Science and Technology, Georgia Gwinnett College, Lawrenceville, GA;
³ NC A&T, Greensboro, NC |
| P161 | Evolution of the Biology Major Curriculum at James Madison University: It Starts with the Freshman | Kyle Seifert, Tim Bloss, Joanna Moat
Biology, James Madison U, Harrisonburg, VA |
| P162 | Transforming a Department Using Strategic Planning, Assessment Data, and Department Inclusion: A Progress Report at Lander University | Lisa McDonald, Mark J. Pilgrim, Emily Prince, TD Maze
Biology, Lander U, Greenwood, SC |
| P163 | Save the Bears: An Update on the Action Plan of Mercer University's Biology Department | Katharine V. Northcutt, Virginia A. Young, Linda L. Hensel, Kevin M. Drace
Biology, Mercer U, Macon, GA |
| P164 | A student-centered learning focus: strategies to strengthen the P.U.L.S.E. of the Newberry College Biology Program | Valarie A. Burnett, Charles N. Horn
Science & Mathematics–Biology, Newberry College, SC |

Saturday, Apr 2nd (ASB Posters # 158-274)

- | | | |
|-------------|---|---|
| P165 | Integrating Discovery-Based Research Into the Undergraduate Curriculum: A Report of a National Academies of Sciences, Engineering, and Medicine Convocation | Mary A. Smith
Biology, North Carolina A & T State U, Greensboro, NC |
| P166 | Active Learning Strategies Program Implementation Through Project-Based Learning as Part of a Biotechnology Curriculum | Alfredo Leon
Miami Dade College, North Campus, Miami, FL |
| P167 | Course-based Undergraduate Research Experience in an Introductory Biology Course: Assessing the PULSE of our Majors | Mabel O. Royal, Wendy H. Grillo, Amal M. Abu-Shakra, Gail P. Hallowell
Dept of Biological and Biomedical Sciences, North Carolina Central U, Durham, NC |
| P168 | Using Course-Embedded Undergraduate Research Experiences (CUREs) to Build and Sustain High Student Engagement in STEM Fields at Georgia Gwinnett College | Judy Awong-Taylor¹, Clay Runck¹, David Pursell¹, Tirza Leader², Allison R. D'Costa¹, Patrick Smallwood¹, Thomas Mundie¹
¹ Science & Technology, Georgia Gwinnett College, Lawrenceville; ² School of Liberal Arts, Georgia Gwinnett College, Lawrenceville, GA |

SCHOLARSHIP OF TEACHING & LEARNING

P169	Using Service Learning Internships to Build and Sustain High Student Engagement in STEM Fields at Georgia Gwinnett College	Clay Runck¹, Allison R. D'Costa¹, Bernadette Peiffer⁴, Judy Awong-Taylor¹, Melissa Kinard⁴, Thomas Mundie¹ ¹ Science & Technology, Georgia Gwinnett College, Lawrenceville; ² Education, Georgia Gwinnett College, Lawrenceville
P170	Using Learning Styles to Predict Instructional Preferences	Mary E. Lehman Biological and Environmental Sciences, Longwood U, Farmville, VA
P171	Engaging Undergraduate Science Students at Risk of Leaving Science	William H. Dees¹, Christopher G. Struchtemeyer¹, Caroline E. Hennigan¹, Caleb M. Ardizzone¹, Janet R. Woolman² ¹ Biology and Health Sciences, McNeese State U, Lake Charles, LA; ² Economic Development, McNeese State U, Lake Charles, LA
P172	Practical Guidelines for Health Education and Training for Emerging Diseases in Overseas Communities	William H. Dees¹, Jonathan R. Davis² ¹ Biology and Health Sciences, McNeese State U, Lake Charles, LA; ² Infectious Disease Consultant, Alexandria, VA
P173	The Nightmare Buffet: An Introduction to Epidemiological Practices for General Biology Students	Elizabeth S. Bradshaw¹, Justin M. Bradshaw⁴ ¹ USDA-NIFA Food Virology Collaborative (NoroCORE), North Carolina State U, Raleigh; ² Math, Social, & Natural Sciences, Johnston Community College, Smithfield, NC
P174	Maggots 101: A Lesson in Entomology for Law Enforcement	Michelle N. Tremblay, Edward B. Mondor Biology, Georgia Southern U, Statesboro

Saturday, Apr 2nd (ASB Posters # 158-274)

P175	The Development and Implementation of a Natural Science Living and Learning Community Utilizing the Biological Field Station at the University of Tennessee at Chattanooga	Erin Schrenker, Margaret Dempsey, Alexandra Korshun, Ashton Mitchell, Richard Schwartz, Bradley Reynolds, Thomas P. Wilson Innovation in Honors Program c/o Biology, Geology, and Environmental Science, U of Tennessee at Chattanooga
P176	Evidence for Cognitive Bias in Undergraduate Biology Students	Elizabeth Harrison¹, Joel K Abraham⁴, Virginia M Card³ ¹ Science & Technology, Georgia Gwinnett College, Lawrenceville; ² Biological Science, California State U, Fullerton; ³ Biology, Metropolitan State U, Saint Paul, MN
P177	Nuts and Bolts of a Curriculum Revision	Heather P. Griscom, Patrice M Ludwig, Kyle N Seifert Biology, James Madison U, Harrisonburg, VA
P178	Synthesis and Efficacy Testing of Novel Anti-biofilm Lead Compounds—Authentic Research in an Undergraduate Classroom	David Goode¹, Christina Bure⁴, Shawn Canavan⁴, Linda L. Hensel⁴ ¹ Chemistry, Mercer U, Macon, GA; ² Biology, Mercer U, Macon, GA
P179	UV-induced DNA Topology Affects Transformation Frequency in <i>E. coli recA⁻</i> and <i>recA⁺</i> strains: Authentic Research in a Junior-level Genetics Course	Priyanka Naik¹, Kaitlyn McBride¹, Linda L. Hensel¹ Biology, Mercer U, Macon, GA

P180 Cancellation

MICROBIOLOGY 2

P181	Microbial Diversity in Student Athletes: Implications for Human Health	Nadine Brockmann, Virginia Merida, Carmony L. Hartwig Biology, Catawba College, Salisbury, NC
P182	Analysis of the DNA Binding Characteristics of GerE From <i>Geobacillus Stearothermophilus</i>	Rodrigo Catalan-Hurtado, Dinene L. Crater Biology, High Point U, NC
P183	The Impact Of Viral Load on Mite Parasitism In Harvestmen (Opiliones)	Devanshi D. Patel, Robert M. Roach, Michael K. Moore, Virginia A. Young Biology, Mercer U, Macon, GA
P184	Polyunsaturated Fatty Acids (PUFAs) Impact Antimicrobial Peptide Resistance in <i>Pseudomonas aeruginosa</i> and <i>Klebsiella pneumoniae</i> and Cause Reduced Motility in <i>P. aeruginosa</i>	Lyssa Y. Baker, David K. Giles Biological and Environmental Sciences, U of Tennessee at Chattanooga
P185	Isolation and Characterization of Wild Yeasts from Fruit Samples	Mikaela M. Hardy, Kevin M. Pitz Biological Sciences, U of Tennessee at Martin
P186	Development of a Test to Measure Possible Correlation between Stress and Increased <i>Streptococcus mutans</i> in College Students	Kaitlyn G. Jackson, Kevin B. Kiser Biology and Marine Biology, UNC Wilmington
P187	Isolation, Characterization and Antibiotic Susceptibility of <i>Staphylococcus</i> Species on Surfaces in a University Weightlifting Facility	Danielle M. D'Angelo, Camry L. Wagner, Kristen T. Jemigan, Kevin B. Kiser Biology and Marine Biology, UNC Wilmington
P188	The Effect of 17 α -Ethinyl Estradiol on the Growth of Uropathogenic <i>Escherichia coli</i>	Zahna Bigham, Monica Mohanty, Wanda T. Schroeder Biology, Wesleyan College, Macon, GA
Saturday, Apr 2nd (ASB Posters # 158-274)		
P189	Rainfall Influence on <i>Escherichia coli</i> for the Anderson University Cox Creek Monitoring Site	Thomas H. Hogan, Carrie Koenigstein Biology, Anderson U, Anderson, SC
P190	Development of Continuous Cultures for the Purification and Repurposing of Chitin	Jamal H. Hunter, Carrie R. Crabtree Science, Abraham Baldwin Agricultural College, Tifton, GA
P191	Isolating Fungal and Bacterial Growth on Agar Mediums	Joshua Doughty, Jeffrey Thomas Biology, Queens U of Charlotte, NC
P192	Specificity of bacteriophage when infected into <i>Bacillus thuringiensis kurstaki</i> and <i>Bacillus thuringiensis israelensis</i>	Olivia R. Brown, April Sipprell Biology, Queens U of Charlotte, NC
P193	Isolation and Characterization of Kudzu Nodule Bacterial Growth in Nitrogen-Free Media	Chasity Lawless, Debbie Curtis, Mishal Jamil, Michelle Zedonek, Amelia Abdullah, Robert Haining, Lee Kurtz, Rebekah Ward Science & Technology, Georgia Gwinnett College, Lawrenceville

P194 Investigations into putative Kudzu nodule "cheaters" **Chasity Lawless, Debbie Curtis, Mishal Jamil, Michelle Zedonek, Amelia Abdullah, Robert Haining, Lee Kurtz, Rebekah Ward**
Science & Technology, Georgia Gwinnett College, Lawrenceville

P195 Manipulating the cellular genome of a *Francisella tularensis*-infected cell **Janay Franklin, Sharon Taft-Benz, Shaun Steele, Lauren Radlinski, Tom Kawula**
Microbiology and Immunology, UNC Chapel Hill, Chapel Hill, NC

CELL & MOLECULAR BIOLOGY 2

P196 RNA-Processing Genes Control Sensory Neuron Function in *Drosophila melanogaster* **Amber D. Dyson, Morgan R. Gaglianese-Woody, Carolyn K. Kawada, Rebekkah K. Stewart, Andrew C. Bellemer**
Biology, Appalachian State U, Boone, NC

P197 Role of IL-3 in Immune Responses to *Plasmodium berghei* in a Murine Model of Malaria **Samantha Saylor¹, Malia D. Berg¹, Chris S. Lantz², Tracy L. Deem¹**
¹ Biology, Bridgewater College, Bridgewater, VA; ² Biology, James Madison U, Harrisonburg, VA

P198 p65^{fl/fl}/LysMCre Transgenic Mouse Model Shows Altered NF- κ B Signaling in Macrophages **Shelby Howard, Aditi Talkad, Eesha Oza, Jennifer Bradford**
Biological Sciences, Augusta U, GA

P199 Measuring UV Sensitivity in New Zealand Vineyard Yeast Species **Emery Longan, Melissa Knutsen, Renee J. Chosed**
Biology, Furman U, Greenville, SC

P200 Identification of a Mammalian Equivalent for the Autophagy-Related Yeast Protein Atg27 **Thomas S. Moss, Veronica A. Segarra**
Biology, High Point U, NC

P201 Cell Viability and Gene Regulation Following Exposure to Contents of E-Cigarette Refill Solutions **Maxwell Marlowe¹, Gretchen E Potts², Margaret Kovach¹, Ethan Carver¹**
¹ Biological and Environmental Sciences, U of Tennessee at Chattanooga; ² Chemistry, U of Tennessee at Chattanooga

P202 The Effects of Glucose, Saccharine, Aspartame, and Sucralose on Longevity in *Caenorhabditis elegans*. **Emily K. Deas, Robert T. Grammer**
Biology, Belmont U, Nashville, TN

Saturday, Apr 2nd (ASB Posters # 158-274)

P203 *In Vitro* Analysis of Transcription Repression by GerE during Sporulation in *Bacillus subtilis* **Maria Valverde, Dinene L. Crater**
Biology, High Point U, NC

P204 Effects of stress on hormonal protection in neuronal-like cells **Bridget Smith, Kathleen Hughes, Glenn Stokes, Kevin Burgess**
Biology, Columbus State U, Columbus, GA

P205 Total Synthesis of the Far-red Fluorescent Protein mNeptune2 **Kenyon D. Jones, Robert H. Newman**
Biology, North Carolina A & T State U, Greensboro

HERPETOLOGY 2

P206 Substrate Avoidance Behavior in Green Salamanders, *Aneides aeneus* **Paul V. Cupp, Jr.**
Biological Sciences, Eastern Kentucky U, Richmond

P207	Effect of Predation Risk on the Substrate Choice of Two-Line Salamander, <i>Eurycea cirrigera</i> , Larvae	Miranda Gulsby, Riccardo Fiorillo Science & Technology, Georgia Gwinnett College, Lawrenceville
P208	A Test of Ecological Character Displacement between the Larvae of Two Species of Cryptic, Sympatric Species of Two-lined Salamander (<i>Eurycea wilderae</i> and <i>E. cirrigera</i>)	Kristina Coggins, Stephen Owensby, Carlos D. Camp Biology, Piedmont College, Demorest, GA
P209	Acute Toxicity of Copper to the Larval Stage of Three Species of Ambystomatid Salamanders	Scott M. Weir¹, Shuangying Yu⁴, David E. Scott², Stacey L. Lance³ ¹ Biology, Queens U of Charlotte, NC; ² Environmental Science and Chemistry, Queens U of Charlotte, NC; ³ Savannah River Ecology Laboratory, U of Georgia, Aiken, SC
P210	Geospatial Analysis of Introduced Python in Florida	Rob Hopkins, Jacob Manning Wildlife Conservation Program, U of Rio Grande, OH
P211	The Importance of Gas Line Right-of-Ways as Breeding Habitat for the Pine Barrens Treefrog (<i>Hyla andersonii</i>) at Carolina Sandhills National Wildlife Refuge	Eran S. Kilpatrick¹, Nancy Jordan⁴, Gregory T. Joye³, Will Dillman[*] ¹ Mathematics and Science, U of South Carolina, Salkehatchie, Walterboro; ² Carolina Sandhills National Wildlife Refuge, McBee, SC; ³ Civil and Environmental Engineering, U of South Carolina, Columbia; ⁴ South Carolina Dept of Natural Resources, Columbia
P212	The Spatial Ecology of the Eastern Box Turtle in an Urban and Fragmented Landscape of Southeast Tennessee	Mark J. Dillard, Jeremy Hooper, Team Salamander, Thomas P. Wilson Biology, Geology & Environmental Sciences, U of Tennessee at Chattanooga
P213	Ultraviolet Predicts Body Size in Adult Eastern Fence Lizards (<i>Sceloporus undulatus</i>)	Cambre L. Goodlett, Barry P. Stephenson Biology, Mercer U, Macon, GA
P214	The Effect of Acclimation Temperature on Anaerobic Metabolism in Exercising Yellowbellied Sliders (<i>Trachemys scripta scripta</i>)	Bethany L. Williams¹, Amanda S. Williard¹ Biology and Marine Biology, U of NC Wilmington
P215	The Population Dynamics of the Gopher Tortoises on Cumberland Island, Georgia	Alexandria A. Gagne¹, Thomas K. Moore⁴, John J. Enz¹, David E. Unger⁴ ¹ Biology & Marine Science, Jacksonville State U, AL; ² Biology, Maryville College, Maryville, TN
P216	Phylogeographic Patterns Among Eastern Newts (<i>Notophthalmus viridescens</i>) in the Southeastern United States	Gavin R. Lawson¹, Eran S. Kilpatrick² ¹ Biology, Bridgewater College, Bridgewater, VA; ² Biology, USC Salkehatchie, Walterboro
Saturday, Apr 2nd (ASB Posters # 158-274)		
P217	Testing the Effect of Albinism on Avian Attack Rates in Eastern Garter Snakes (<i>Thamnophis s. sirtalis</i>).	Zeshan S. Velani¹, Nikolett Ihász², Barry P. Stephenson¹ ¹ Biology, Mercer U, Macon, GA; ² Psychology, Mercer U, Macon, GA
ENTOMOLOGY/INVERTEBRATES/PARASITOLOGY 2		
P218	The Effect of Background and Illumination on the Visual Cues Used by Foraging <i>Manduca sexta</i> Hawkmoths	William L. Kuenzinger, Jonathan M. Travis, Jordan Weesner, Joaquín Goyret Biological Sciences, U of Tennessee at Martin
P219	The Effects of the Neonicotinoid Imidacloprid on the Electroretinogram (ERG) of the parasitoid wasp <i>Nasonia vitripennis</i>	Amanda L. Perez, Shihui Liang, Barry K. Rhoades Biology, Wesleyan College, Macon, GA

P220	Foraging Behaviors of the Fungus-growing Ant, <i>Cyphomyrmex rimosus</i>	Julia de Amorim, Athena Downes, Kelsea Young, John David Riechert, Forrest Collins, Jennifer Zettler, Bil Leidersdorf Biology, Armstrong State U, Savannah, GA
P221	Does Color Matter? Function of Color Polymorphism in <i>Gasteracantha cancriformis</i> in Northeast Florida	Sean M. Zwegardt, E. Natasha Vanderhoff Biology & Marine Science, Jacksonville State U, AL
P222	A Six-Year Survey of Flower Fly (Family <i>Syrphidae</i>) Diversity and Abundance Found in Georgia Apple Orchards (2010-2015) Over Significantly Different Growing Seasons	Peter M. Schlueter¹, Mark A. Schlueter⁴ ¹ U of North Georgia, Oakwood; ² Georgia Gwinnett College, Lawrenceville
P223	Excess Power Index: A Sexually Dimorphic Trait in Bees	Samia Ladner, Gabrielle A. Hayes, Kristen Korankyi, Josh Campbell, Cindy C. Vigueira, Patrick A. Vigueira Biology, High Point U, NC
P224	Delimiting Cryptic Species of the <i>Anopheles crucians</i> Complex in the Fred Stanback Jr. Ecological Preserve at Catawba College, Salisbury, North Carolina	Matthew Jordan-Steele, Joshua York, Elizabeth Brown, Ashley Wagoner, Bruce Harrison, Carmony L. Hartwig Biology, Catawba College, Salisbury, NC
P225	Investigation of Cysteine-Rich Peptides in the Parasitoid Wasp <i>Copidosoma floridanum</i>	Richard W. Zealy, David M. Donnell Biology, The Citadel, Charleston, SC
P226	A Sequence Comparison of Cytochrome Oxidase I in <i>Hadenoeacus cumberlandicus</i> Populations Found in the Sloans Valley Cave System, Pulaski County, Kentucky	Rebecca Holmes, Brandon Miner Molecular Biology/Biochemistry, Wittenberg U, Springfield, OH
P227	Using Fluorescence Microscopy to View Real Time Hemocyte Aggregation in Response to Acute Bacterial Exposure in the American Lobster	Sara J. Farthing, Darwin D. Jorgensen Biology, Roanoke College, Salem, VA
P228	The Role of Tissues and Organs in the Immune Response to Acute Bacterial Infection in the American Lobster: Characterization by Confocal Microscopy	Elaina K. Furr, Angela M. Montalvo, Darwin D. Jorgensen Biology, Roanoke College, Salem, VA
P229	Survey of Microorganisms Associated With Male and Female Genitalia of Harvestmen	Areli Ibarra, Renee M. Wiggs, Victor R. Townsend, Jr. Biology, Virginia Wesleyan College, Norfolk
P230	Lethal Concentration Rates of Eight Potential Entomopathogens	Juan Morales, Erika S. Niland Biology, Wingate U, NC

Saturday, Apr 2nd (ASB Posters # 158-274)

AQUATIC ECOLOGY 2

P231	Pre-Restoration Survey of Fish Diversity in a NW Georgia Lake and Wetland	J. Aaron Burnette, Mary Ann McBrayer, G. John Lugthart Natural Sciences, Dalton State College, GA
P232	Sedimentation in Headwater Streams in a State Park	Danielle Williams¹, Elizabeth G. Dobbins⁴ ¹ Chemistry, NC Agricultural & Technical State U, Greensboro; ² Biological & Environmental Sciences, Samford U, Birmingham, AL

P233	Cancellation	
P234	Do Stream Restoration Projects Get Better With Age?	Elizabeth B Sudduth Science & Technology, Georgia Gwinnett College, Lawrenceville
P235	Cumulative Impacts of Coal Mining on the Chemistry of the Black Warrior River	Tao Li, Elizabeth G. Dobbins Biological & Environmental Science, Samford U, Birmingham, AL
P236	Sediments Alter the Decomposition of Leaf Litter in Small Man-Made Ponds in Central Virginia	Julia Marcellus¹, Jen Andrews¹, Kenneth Fortino¹, Matthew N. Waters⁴ ¹ Biological and Environmental Sciences, Longwood U, Farmville, VA; ² Biology, Valdosta State U, GA
P237	Effects of an Industrial Basin Overflow on Trace Element Accumulation in Sediment and Biota of a Coastal Plain Stream	Paul T. Stankus, Angela H. Lindell, John C. Seaman, J Vaun McArthur, Dean E. Fletcher Savannah River Ecology Laboratory, U Georgia, Athens
P238	Observations on the Fecundity of <i>Bellamya japonica</i> , a New Invasive Species in the Savannah River Basin	Josephine B Anthony, Lauren E Turbyfill, Richard L Mahon, Ashley Gaynor, John Hains Biological Sciences, Clemson U, Clemson, SC
P239	Determining the Molecular Weight of the Alarm Cue in the Crayfish <i>Cambarus acuminatus</i> Using a Behavioral Assay	Andrea Sanchez, Abbie Tomba Biology, U of Mary Washington, Fredericksburg, VA
P240	Observations on the Metabolism of <i>Bellamya japonica</i> , a New Invasive Species in the Savannah River Basin	Sarah Fishburne, Jacob Bartell, John Hains Biological Sciences, Clemson U, Clemson, SC
P241	Population Dynamics of <i>Bellamya japonica</i> : An Experimental Investigation of Sources of Mortality	John Hutson, Kyle Kilpatrick, Nike Pappas, Jake Laird, John Hains Biological Sciences, Clemson U, Clemson, SC
P242	The Effects of Temperature on the Exotic Zooplankton [<i>Daphnia lumholtzi</i>]	Melissa Pompilius, Robert U. Fischer Biology, Middle Tennessee State U, Murfreesboro
P243	Variation in Parrotfish Species Abundance and Sex Ratios among Multiple Reefs of Calabash Caye, Belize	Donna K. McCullough, Ellen C. Tomlin, Kimberly T. Wright, Jill G. Schulze, Nancy E. Dalman Biology, U North Georgia, Dahlonega
P244	Influence of Perched Road Culverts on the Abundance of Blacknose Dace (<i>Rhinichthys atratulus</i>) in Blue Ridge Streams in Cherokee National Forest, Tennessee	Mark S. Schorr¹, Dan Huser⁴, Josuha B. Smith⁴ ¹ Biology, Geology & Environmental Sciences, U of Tennessee at Chattanooga; ² Limestone Valley Resource Conservation and Development Council, Fort Oglethorpe, GA
Saturday, Apr 2nd (ASB Posters # 158-274)		
P245	Digenetic Trematodes of Eastern Virginia: an Ode to DNA Barcoding	Teresa Nguyen, Abbie Tomba Biology, U of Mary Washington, Fredericksburg, VA
P246	Cancellation	

CONSERVATION ECOLOGY 2

P247	A Comparative Study of Disturbed and Undisturbed Forest Patches: Variation in Bird Communities Within a <i>Brachysetegia</i> Woodland	Joseph Oyugi Natural Sciences, Gardner–Webb U, Boiling Springs, NC; Zoology–Ornithology Section, National Museums of Kenya, Nairobi
P248	Anthropogenic Sound Pollution and Northern Cardinal Calls	Johanna P. Cotter, E. Natasha Vanderhoff Biology and Marine Science, Jacksonville State U, AL
P249	Does Sustainable Pasture Management Increase Soil Carbon? Implications for Climate Change	Kelly M Livernoche, Heather P. Griscom Biology, James Madison U, Harrisonburg, VA
P250	Effects of Leguminous and Timber Shade Trees on Coffee (<i>Coffea arabica</i>): Exploring Plantation Diversification	Anna E. Nordseth Biology, James Madison U, Leesburg, VA
P251	Experimental Trials with American Chestnut Hybrid Seedlings in an Appalachian Cove Forest	Megan Budnik, Andrew Sharp, Heather P. Griscom Biology, James Madison U, Harrisonburg, VA
P252	Effect of Topography on White-Tailed Deer (<i>Odocoileus virginianus</i>) Herbivory Across a Plateau Landscape	Jonathan P. Evans¹, Callie A. Oldfield¹, Kristen K. Cecala¹, J. Kevin Hiers⁴, Christopher Van De Ven⁵, Meg M. Armistead¹ ¹ Biology, Sewanee: The U of the South, TN; ² Environmental Stewardship and Sustainability, Sewanee: The U of the South, TN; ³ Earth and Environmental Systems, Sewanee: The U of the South, TN
P253	Comparison of the Application of Two Herbicides as a Management Strategy for Running Buffalo Clover (<i>Trifolium stoloniferum</i>)	Lauren Childress, Jennifer Koslow, David Brown Biological Sciences, Eastern Kentucky U, Richmond
P254	Ambient Detectable Mercury Within the Habitat of “Uncontaminated” Terrestrial Forest Ecosystems in Rockingham Co., VA	Melissa E. Encinias, Gregory M. Mansour, Matthew W. Riordan, Walker S. Webster, Dean Cocking Biology, James Madison U, Harrisonburg, VA
P255	Ambient Detectable Mercury Within the Invertebrate Biota of “Uncontaminated” Terrestrial Forest Ecosystems in Rockingham Co., VA	Gregory M. Mansour, Melissa E. Encinias, Matthew W. Riordan, Walker S. Webster, Dean Cocking Biology, James Madison U, Harrisonburg, VA
P256	Assessing Genetic Diversity in <i>Spiraea virginiana</i>	Logan Clark¹, Marietta Shattelroe⁴, Kristin Barton⁴, Zack E. Murrell¹, Jennifer Rhode Ward⁴, Matt C. Estep¹ ¹ Biology, Appalachian State U, Boone, NC; ² Biology, UNC at Asheville

COMMUNITY ECOLOGY

P257	Flower Power: Does Methyl Jasmonate Induce Extrafloral Nectar?	Erin R. Smarr, Edward B. Mondor Biology, Georgia Southern U, Statesboro
P258	Evaluating Bird and Plant Communities of a Degraded, Urban Wetland	Susan H. Tinch, David W. DesRochers Natural Sciences, Dalton State College, GA

Saturday, Apr 2nd (ASB Posters # 158-274)

P259	Investigating Spatial and Diurnal Patterns for the Sand Dune Shrub <i>Croton punctatus</i> in Georgia	Esther Medrano, Savannah Chiarello, Heather Joesting Biology, Armstrong State U, Savannah, GA
P260	Goldenrod Stem Gall Fly Induction of Terpenes and the Colonization Preference of <i>Solidago</i> Specialist Aphids in the Genus <i>Uroleucon</i>	Austin M. Thomas, Michael D. Madritch, Ray S. Williams Biology, Appalachian State U, Boone, NC
P261	Influence of Disturbance on Plant Community Structure and Biological Invasion in the Riparian Zone of the Mobile-Tensaw Delta	Brian L. McPherson, Clinton S. Major, Joel Borden, Kelly Major Biology, U of South Alabama, Mobile
P262	The Relationship of Salamander Size Structure and Bat Activity in the Land Between the Lakes Watershed in Western Kentucky	Russell Milam¹, Adrienne Smith¹, Nancy Buschhaus¹, Cy Mott², Robin Baker³, Howard Whiteman³ ¹ Biological Sciences, U of Tennessee at Martin; ² Biology, Valdosta State U, GA; ³ Biological Science, Murray State U, KY
P263	Does the Spatial Pattern of Tree Recruitment in Temperate Forests Reflect a Species' Successional Status?	Alissa J. Brown, Robert K. Peet, Peter S. White Biology, UNC Chapel Hill
P264	A Size-Dependent Competitive Hierarchy Drives Perch Selection Among Three Species of <i>Celithemis</i> Dragonflies	Parker H. Morrow, Wade B. Worthen Biology, Furman U, Greenville, SC

POPULATION ECOLOGY 2

P265	Seed predation changes reproductive investment in <i>Cirsium pitcheri</i>	Minh Chau N. Ho^{1,2}, Claudia L. Jolls^{2,3} ¹ Ecology and Evolutionary Biology Frontiers, U of Michigan, Ann Arbor; ² U of Michigan Biological Station, Pellston, MI; ³ Biology, East Carolina U, Greenville, NC
P266	Genetic Variability of Three Annual Halophyte Species in an Inland Salt Marsh Through Time	Christy T. Carter¹, Harvey E. Ballard, Jr.², Irwin A. Ungar² ¹ Biology, Wingate U, NC; ² Environmental & Plant Biology, Ohio U, Athens
P267	MacGillivray's Seaside Sparrow Demographics and Incubation Behavior at the Tom Yawkey Wildlife Center	Yianni P. Laskaris, Christopher E. Hill Coastal & Marine Systems Science, and Biology, Coastal Carolina U, Conway, SC
P268	Acoustic Monitoring of Bat Populations in Florence, SC	Aaron S. Robinson, Ebony Brown, Jeff Steinmetz, Travis Knowles Biology, Francis Marion U, Florence, SC
P269	Development of Population Genetics Markers for the Rare Parasitic Plant <i>Cuscuta harperi</i>	Brandy R. Riekert, Guissela Arita-Fajardo, Joel R. McNeal Ecology, Evolution & Organismal Biology, Kennesaw State U, GA
P270	Effects of Female Condition and Human Disturbance on the Allocation of Biliverdin to Eggshells of Eastern Bluebirds (<i>Sialia sialis</i>) Breeding in West-Central Georgia	Caitlin M. Gallagher, Jennifer L. Newbrey Biology, Columbus State U, GA
P271	Hypoxic Coma as a Strategy to Survive Inundation Across Ground Hunting Arachnid Taxa	Fhallon C. Ware-Gilmore¹, Robert A. Hataway² ¹ Natural Sciences & Mathematics, U of West Alabama, Livingston; ² Biological & Environmental Sciences, Samford U, Birmingham, AL

P272	Urban Heat Islands Have an Effect on Moth Phenology, But Not Always the Way You'd Expect	Peter A. Van Zandt¹, Grant Gentry⁴, Brittany Harry³, Will Hemminger², Benjamin Hunt¹, Sarah Martin⁹, Caroline Rowan¹ ¹ Biology, Birmingham–Southern College, AL; ² Biology, Samford U, Birmingham, AL; ³ Entomology, Auburn U, AL; ⁴ Biology, Elon U, NC; ⁵ UNC Chapel Hill
-------------	--	---

Saturday, Apr 2nd (ASB Posters # 158-274)

GENETICS

P273	Genetic and Transcriptional Variation in Venom Genes Expressed by an Estuarine Cnidarian	Adam M. Reitzel¹, Vanna Sombatsaphay¹, Yehu Moran⁴ ¹ Biological Sciences, UNC Charlotte; ² Ecology, Evolution & Behavior, Hebrew U of Jerusalem, Israel
P274	Examining the Genetic Relatedness of <i>Rosa setigera</i> Varieties by DNA Barcoding	Amanda Long¹, Taylor Faas¹, Nancy Morvillo¹, Malcolm Manners⁴, Brittany J. Gasper¹ ¹ Biology, Florida Southern College, Lakeland; ² Citrus Science, Florida Southern College, Lakeland

βββ POSTERS (SATURDAY APRIL 2nd, 9:30 am - noon)

P275	Suwannee bass (<i>Micropterus notius</i>) population decline in the Ochlockonee River in Georgia	Kaitlin Dykes, Gary Burtle Tau Delta Kappa, Abraham Baldwin Agricultural College
P276	Testing the Propagative Quality of <i>Tomato yellow leaf curl virus</i> in Its Whitefly Vector	Cassidy Callaway, Wendy Marchant, Rajagopalbabu Srinivasan Tau Delta Kappa, Abraham Baldwin Agricultural College
P277	An Investigation into the Allelopathic Effects of the Invasive Alligator Weed, <i>Alternanthera philoxeroides</i>	Amy Klass, Christopher Beals Tau Delta Kappa, Abraham Baldwin Agricultural College
P278	Neurons and Nematodes: the Use of <i>Ginkgo biloba</i> Extract to Rescue Neurologically Derived Defects in <i>Caenorhabditis elegans</i>	Maegan Thomas, Ariel Battle, Carrie Thurber, Heather Cathcart Tau Delta Kappa, Abraham Baldwin Agricultural College
P279	A Needle in the Transcriptomic Haystack: Using RNA-Seq to Identify Differential Expression in GBE Treated <i>C. elegans</i>	Ariel Battle, Maegan Thomas, Heather Cathcart, Carrie Thurber Tau Delta Kappa, Abraham Baldwin Agricultural College
P280	Mammographic Breast Density Disparities Among African-American and European-American Women	Dementris Williams, Melissa Davis Tau Delta Kappa, Abraham Baldwin Agricultural College
P281	Expression of the Polyhydroxybutyrate Depolymerase Gene of <i>Streptomyces</i> sp. 5A in <i>Streptomyces lividans</i> TK24	CJ Booth, Stephen Baron Nu Upsilon, Bridgewater College
P282	Purification and Genomic Sequencing of Bacteriophages from <i>Streptomyces</i> sp. 5A	Ashley Crossman, Stephen Baron Nu Upsilon, Bridgewater College
P283	Evaluation of Habitat Use by Longnose Dace (<i>Rhinichthys cataractae</i>) in Mercury-Contaminated and Non-Contaminated Rivers	Alys Harshbarger, Kimberly Bolyard Nu Upsilon, Bridgewater College

P284	Changes in Tannin Content Found in Vegetation Inside vs. Outside Deer Enclosures of the Allegheny National Forest	Amelia Johnston, Tamara Johnstone-Yellin Nu Upsilon, Bridgewater College
P285	An Alluring Ascomycete: A Taxonomic Study of <i>Chlorosplenium chlora</i>	Maria Marlin, Ed Lickey Nu Upsilon, Bridgewater College
P286	Genetic and Biochemical Characterization of Mutants of Yeast That Grow Brown in the Presence of Copper	Christopher Resch, Brian Schwartz Mu Omicron, Columbus State U
βββ POSTERS (SATURDAY APRIL 2nd, 9:30 am - noon)		
P287	Genetic analysis of North American red mulberry populations using SS-PCR and DNA barcoding	Tabitha Clevenger Mu Omicron, Columbus State U
P288	Effects of acute copper and lead toxicity on the behavior of <i>Pimephales promelas</i> (fathead minnow)	John D. Gary, Jeffrey Zuiderveen Mu Omicron, Columbus State U
P289	Screening for pathogenic <i>Escherichia coli</i> in the Chattahoochee River, Columbus, GA	Micah Staples, Lauren King Mu Omicron, Columbus State U
P290	Diversity of Lichens in Temperate Forest and Sandhills Scrub in West-Central Georgia	Priyanka Moody Mu Omicron, Columbus State U
P291	Epithelial Body Swabbing as a Non-Invasive Method for DNA Sampling of Salamanders	Erin Kirk, George Angyros Eta Jota, Emory & Henry College
P292	Prevalence of Antibiotic Resistance in the Gut Flora (Enterobacteriaceae) in a Community of Stabled Horses (<i>Equus caballus</i>): Implications for Community Acquired Drug Resistance	Anna Green, George Angyros Eta Jota, Emory & Henry College
P293	Determining Different Alternative Male Phenotypes and Reproductive Structure in <i>Lythrypnus dalli</i>	Jacob Hess, Melissa Taverner, Matthews Grober Eta Jota, Emory & Henry College
P294	Effects of Vitamin D Receptor Downregulation via Lentivirus Silencing on Human Glioblastoma Cells	James Wilmouth Eta Jota, Emory & Henry College
P295	The Effect of Increased Creatine Levels on Developmental Processes	Kenneth Sterne, Melissa Taverner Eta Jota, Emory & Henry College
P296	Examination of the Possible Correlation Between Microbial Communities and the Diversity of Nitrogen Species	Maria Byrd, Gerald Bresowar, Laura Hainsworth, Melissa Taverner Eta Jota, Emory & Henry College
P297	Computational Modeling of Missense Mutations in the Human Smoothed (SMO) Receptor Implicated in Basal Cell Carcinoma	Sarah McDonald, Neal Stanley, Michonova Ekaterina Sigma Gamma, Erskine College
P298	Phase-Sensitive Thermal Response of Feeding Kinematics in the invasive Lionfish, <i>Pterois volitans</i>	Kristina Treat Sigma Psi, Florida Institute of Technology

P299	Thermally induced phenotypic variation in the invasive fish, <i>Cichlasoma urophthalmus</i>	Molly Wightman, Taylor Jones Sigma Psi, Florida Institute of Technology
P300	Ontogeny of ecomorphological divergence in sympatric North American fishes	Nathaniel Zbasnik Sigma Psi, Florida Institute of Technology
P301	The Effects of Severe Drought on Dispersion Patterns of Local Salamander Populations in Streams near Boiling Springs, NC	Wendy A. Harmon, Joseph Oyugi Tau Sigma, Gardner-Webb U.
P302	An unbiased approach to discovering peptide inhibitors of Sialic acid binding CD33 receptor	Sarah Bailey Beta Upsilon, Georgetown College
βββ POSTERS (SATURDAY APRIL 2nd, 9:30 am - noon)		
P303	Exploring Methods in Art-Driven Science Outreach	Casey H Wilson, Casey Garr, Christina Budzinski, Tawannah Allen, Theresa Hegedus, Veronica A. Segarra Phi Zeta, High Point University
P304	Mutagenic characterization of a newly-recognized mannose-6-phosphate receptor domain in Atg27 and its role in autophagy	Taylor B. Cunningham, Veronica A. Segarra Phi Zeta, High Point University
P305	DNA Sequence is the Key to Understanding Meiosis	Kayla DeOca Sigma Alpha, Jacksonville U
P306	Variations in Juvenile Rat Play Behavior Among Three Rat Strains	Vesta Nwankwo, Katharine V. Northcutt Beta Omega, Mercer University
P307	Bacterial Response to the Elk River Chemical Spill in West Virginia	Elena Brown, Joong-Wook Park Mu Epsilon, Troy U
P308	Analysis of Bacterial Community along a Depth Gradient in Marine Tar Balls	Madison A. Cooper, Katrina Bokenfohr, Callie Bennett, Joong-Wook Park Mu Epsilon, Troy U
P309	Microarchitecture of the Hair Shaft	Mona Patel, Abena Adaboh, Cathy Huang, Glenn Cohen Mu Epsilon, Troy U
P310	Regulation of BMP-dependent angiogenesis via the SMAD7 and PMEPA1 inhibitors	Kathryn Citrin Tau Iota, U of NC Chapel Hill
P311	Detection of Tetracycline and Penicillin Resistance by PCR	Tesha Vickery, Alexis Melton, Lisa Ann Blankinship Beta Zeta, U of North Alabama
P312	Antibiotic Resistance Profiles of Bacteria Found on Cell Phones and the Hands of their Owners	Breanna A. Littrell, Lisa Ann Blankinship Beta Zeta, U of North Alabama
P313	Effect of All Trans Retinoic Acid on Collagen Production by Uterine Smooth Muscle Cells	Sunada Khadka, Yuting Bai, Holly Boettger-Tong Sigma Lambda, Wesleyan College

Index of Presenters

- Abades, Sebastian • 121, 122
 Abdullah, Amelia • 206, P193, P194
 Abraham, Joel K. • P176
 Abramovitch, Dorota • 28, 36
 Abu-Shakra, Amal M. • P167
 Achat-Mendes, Cindy • 111, 210, P14, P15, P180
 Adaboh, Abena • P309
 Adams, Christopher • 172
 Adams, Kadilee • 109
 Adamson, Abidemi T. • P140
 Adejumo, Olamide • 172
 Agarwal, Piyush • 193
 Agboola, Oluwaseun O. • 154
 Albers, Alexandria N. • 115
 Aleman, Laura • 205
 Alexander, Arleeya S. • P143
 Alexis, Kathlyn • P143
 Allen, Jessica • 234
 Allen, Tawannah • P303
 Allison, Suzanne E. • 27
 Amariles, Gina V. • 20, P97
 Anderson, Derek • 141
 Andrews, Jen • P236
 Angyros, George • P291, P292
 Anthony, Josephine B • P238
 Archis, Jennifer N. • P92
 Ardizzone, Caleb M. • P102, P103, P104, P171
 Aristizabal, Juan P. • 20, P97
 Arita-Fajardo, Guissela • P269
 Armistead, Meg M. • P252
 Arroyo, Frank • 182
 Asemota, Sarah T. • 141
 Askey, Jessica • 205
 Aument, Danielle • 92
 Avakian, Megan • 116
 Avello, Zechariah • 141
 Awong-Taylor, Judy • P160, P168, P169
 Ayon, Abel • P135
 Bage, Julie • 202
 Bai, Yuting • P313
 Bailey, Sarah • P302
 Baker, Lyssa Y. • P184
 Baker, Marian • P51
 Baker, Robin • P262
 Ballard, Jr., Harvey E. • 104, P266
 Banks, Catherine • 134
 Barnes, Danielle • 114
 Barnett, Jessie • P22
 Baron, Stephen • P281, P282
 Barone, John A. • 40, P125
 Barrett, Cody • P9
 Bart, Henry L. • 54
 Bartell, Jacob • P240
 Barton, Christopher D. • 30, 31, 32, 33, 34, 130, 149, 151, P90
 Barton, Kristin • P256
 Baskauf, Carol • P48
 Bass, Autumn • P2
 Bates, Jennifer L. • 74
 Battle, Ariel • P278, P279
 Bauer, Angela • P4, P41, P5
 Baulch, Joshua • P55
 Bayer, Randall J. • 101
 Bayeur, Nicole • 12
 Beals, Christopher • P277
 Beck, James B. • 56
 Belanger, Emily • P58
 Bellemer, Andrew C. • 87, P196, P47
 Benfield, Eric M. • P60
 Bennett, Callie • P308
 Bennington, Cynthia C • P154
 Berg, Malia D. • P147, P197
 Bergstrom, Caroline • 134
 Best, Jason H. • 50
 Best, William C. • P94
 Bewick, Emily • P53
 Bidwell, Joseph • P159
 Bierregaard, Richard O. • 74
 Bigham, Zahna • P188
 Billington, Neil • 188
 Binninger, Sean K. • 125
 Blackburn, Melissa N. • 84
 Blackwell, Austin • 16
 Blanchard, Tom A. • 135, 186
 Blankinship, Lisa Ann • P28, P311, P312
 Bledsoe, Regina A. • 145
 Bloss, Tim • P161
 Boettger-Tong, Holly • P313
 Bokenfohr, Katrina • P308
 Bolin, Jay • 159
 Bolin, Jay F. • 162, P75, P76
 Bollavaram, Keval • 21
 Bolyard, Kimberly • P283
 Bolyard, Kimberly J. • P113
 Bonner, Lisa A. • 134
 Bonner, Simon J. • 130, P90
 Bonville, Brian K. • P127
 Booth, CJ • P281
 Borden, Joel • P261
 Boucher, Adrienne F. • 72
 Bouldin, Cortney M. • 110
 Bowen, Christine A. • P50
 Bowerman, Brielle L. • P85
 Bowey, Kristen • P41
 Bowling, J. Logan • 29
 Boyd, Jennifer • P142
 Bradford, Jennifer • P198
 Bradham, Barrett W. • P60
 Bradshaw, Elizabeth S. • P173
 Bradshaw, Justin M. • P173
 Brady, Elizabeth A. • P31
 Brandys, Stephanie • P95
 Braun, Linda • P80
 Bray, Rebecca D. • 161
 Brenek, Austin W. • 169
 Bresowar, Gerald • P296, P58
 Brockmann, Nadine • P181
 Brown, Alissa J. • P263
 Brown, David • P253
 Brown, Ebony • P268
 Brown, Elena • P307
 Brown, Elizabeth • P224
 Brown, J. Alison • P61
 Brown, Jonathan M. • 119
 Brown, Olivia R. • P192
 Brumbill, Bryant • P99
 Brunton, Daniel F. • 165
 Bucalo, Kylie • 42
 Budnik, Megan • P251
 Budzinski, Christina • P303
 Bure, Christina • P178
 Burgess, Kevin • P204
 Burgess, Kevin S. • 40, 42
 Burgess, Victoria A. • 210
 Burgett, Amber A. • 137
 Burke, Tara • 233
 Burn, Walter • 184
 Burnett, Valarie A. • 213, P164
 Burnette, J. Aaron • P231
 Burrus, Abigail C. • 194
 Burtle, Gary • P275
 Buschhaus, Nancy • P262
 Buszka, Patrick A. • P43
 Butler, Boyd • P153
 Byers, Ashley • P71
 Byrd, Maria • P296
 Byrd, Thomas C. • P151
 Cadena, Crithian • 103
 Callaway, Cassidy • P276
 Camp, Carlos D. • 82, P208
 Campbell, Emily F. • 36
 Campbell, Josh • P223
 Camper, Jeff • P69
 Canavan, Shawn • P178
 Card, Virginia M • P176

- Carmichael, Mary Jane • 11
 Carpenter, Aren J. • P87
 Carpenter, Brandon • P6
 Carr, John L. • P91
 Carroll, Kathleen A. • 121, 122
 Carter, Christy T. • P266
 Carter, Richard • P74, P82
 Carver, Ethan • P201
 Caspary, Melissa D. • 9
 Castiglione, Elizabeth • P77
 Catalan-Hurtado, Rodrigo • P182
 Cathcart, Heather • P278, P279
 Cecala, Kristen K. • P252
 Cenname, Lea A. • P32
 Cevallos-Garzin, Daniela • 182
 Chakravarthy, Suma • 144
 Chalcraft, David R. • 83
 Chappell, Ben F. • 174
 Chewning, Regan • P46
 Chiarello, Savannah • P259
 Childers, Noel K. • 147
 Childress, Lauren • P253
 Chmielewski, Carl A. • P56
 Chosed, Renee J. • P199, P51
 Choudhury, Swarup Roy • 225
 Christian, Omar E. • P102, P103
 Chunco, Amanda J. • P92
 Citrin, Kathryn • P310
 Clark, Lacy J. • P120
 Clark, Logan • P256
 Clevenger, Tabitha • P287
 Clontz, Joshua T. • P61
 Cochrane, Caroline • P6
 Cocking, Dean • P254, P255
 Coffield, V. McNeil • P4, P5
 Coffield, V. McNeil • 112
 Coggin, Christopher P. • P148, P149
 Coggins, Kristina • P208
 Cohen, Glenn • P309
 Cohen, Risa A. • 133
 Cole, T. Jeffrey • P43
 Coley, Harold • 12
 Collier, A. Grace • 201, 202
 Colligan, Benjamin • 27
 Collins, Forrest • P220
 Collmer, Alan • 144
 Conner, David • P246
 Content, Kristen R. • 13, 14
 Cook, Phoebe • 119
 Cook, Rebecca A. • P151
 Cooke, Catherine • P144
 Cooke, Sandra L. • 185
 Cooper, Idelle A. • 27, 119
 Cooper, Madison A. • P308
 Cotter, Johanna P. • P248
 Crabtree, Carrie R. • P136, P190
 Craddock, J. Hill • 41
 Crater, Dinene L. • P182, P203
 Criswell, Joni M. • P93
 Crossman, Ashley • P282
 Crouse, David A. • 95
 Crowder, Roslyn • P37
 Cruse-Sanders, Jennifer M. • 40, 42
 Culp, Brittany O. • P149
 Cunningham, Fred L. • 181
 Cunningham, Taylor B. • P304
 Cupp, Jr., Paul V. • P206
 Curren, Shelby R. • P37
 Curry, Bob • P122
 Curtis, Debbie • 206, P193, P194
 Dahm, Taeler • 33
 Dalman, Nancy E. • P243
 D'Angelo, Danielle M. • P187
 Davis, Jonathan R. • P172
 Davis, Kayla • 18
 Davis, Melissa • P280
 Davis, Richard • P49
 Dawdy, Andrew M. • P157
 Dawson, Jacob • 18
 Day, Carolyn • P117
 D'Costa, Allison R. • 210, P168, P169
 de Amorim, Julia • P220
 De La Hoz, Daniel • P101
 Deas, Emily K. • P202
 Deem, Tracy L. • P197
 Dees, William H. • P102, P103, P104, P171, P172
 DeFord-Watts, Laura • 205
 DeGrandi-Hoffman, Gloria • P122
 DeGroote, Kara V. • P137
 deHart, Pieter A. P. • 19
 Dellinger-Johnston, Rebecca • 45
 Dempsey, Margaret • P175
 Denslow, Michael W. • 55
 DeOca, Kayla • P305
 DesRochers, David W. • P258
 DeVito, Nick • P103
 DeWald, Laura E. • 3, 118, 125
 Dick, Justen • P58
 Diersen, Katherine • 131
 Dietrick, Erika M. • 126
 Dikow, Rebecca B. • 191
 Dillard, Mark J. • P212
 Dillman, Will • P211
 Dingle, Ivan P.M. • P60
 DiRienzo, Brittany R. • P131
 Dirkman, Jacob • 232
 Dirnberger, Joseph M. • P108
 Dishman, Sydney • P23
 Dobash, Courtney T. • P110, P111
 Dobbins, Elizabeth G. • P232, P233, P235
 Dodson, Thomas M. • 158
 Donlon, Kate C. • P157
 Donnell, David M. • P225, P94
 Dooley, Debra • P118
 Doran, Justin M. • 19
 Dorcas, Michael E. • 77, 78, P84, P85, P86, P87, P88, P89
 Doughty, Joshua • P191
 Douglas, G. Neil • 64
 Downes, Athena • P220
 Downey, Kala • P48
 Drace, Kevin M. • P163
 Draughn, Elliott T. • P44
 Drayer, Andrea N. • 130, P83, P90
 Dunkley, Kingsley D. • P34
 Dyar, Brianna H. • 36
 Dye, Alex • P115
 Dykes, Kaitlin • P275
 Dyson, Amber D. • P196
 Dzotefe, Norbeth E. • P27
 Easter, Emily E. • P57
 Easterwood, Jennifer • P23, P52
 Eastin, Matthew D. • 72
 Ebensperger, Luis A. • 121, 122
 Edmark, Sarah L. • P26
 Ekaterina, Michonova • P297
 Elder, Morgan E. • P75, P76
 Ellingson, Jordin • P53
 Ellis, Jane P. • 156
 Elsey, Chris • P153
 Emery, John T. • P140
 Encinias, Melissa E. • P254, P255
 Enz, John J. • 80, 81, P215
 Eoff, Bryan R. • 203
 Ertel, Jessica L. • P140
 Erwin, Michael • 139
 Essepian, Margaret • P138
 Estep, Matt C. • P155, P256, P50, P62, P68
 Estes, Dwayne • 68
 Estes, L. Dwayne • P79
 Evans, Jonathan P. • P252, P79
 Ezell, P. Taylor • 188
 Faas, Taylor • P274
 Farrar, Paige A. • P87
 Farrell, Terence • 17, P141
 Farthing, Sara J. • P227
 Faucette, Amanda L. • 96
 Fegley, Erin E. • 127
 Fenner, Rachel C. • P96
 Fenner, William • P68
 Fernandez, Maribel • 128

- Ferrara, Tyler • P9
 Fiorillo, Riccardo • P101, P207
 Fischer, Robert U. • P114, P242
 Fishburne, Sarah • P240
 Flagg, Raymond O. • 98, 99
 Flanders, Nicholas P. • 5
 Fleckenstein, Leo J. • P83
 Fleming, Sunny A. • 180
 Fletcher, Dean E. • P237
 Flood, Alicia M. • 20, P97
 Ford, Zachary S. • P60
 Fore, Jeffrey • 186
 Fortino, Kenneth • P236
 Foster, Cerrone • P159
 Fox, Ashley D • P42
 Fox, Melissa M. • 217, P44
 Franklin, Janay • P195
 Franklin, Janay F. • P30
 Franse, Kitt • P11
 Frederick, Mark • P117
 Freeman, Paul R. • P47
 Freundlich, Hannah • P7
 Freytag, Sara B. • P90
 Frings, David M. • P146
 Fulmer, Philip • P66
 Funk, Vicki A. • 191
 Furr, Elaina K. • P228
 Fyfe II, Charles P. • P60
 Gabler, Kathleen A. K. • 129
 Gaglianese-Woody, Morgan R. • P196
 Gagné, Sara A. • 72, 74, 75, P134, P135
 Gagne, Alexandria A. • 80, 81, P215
 Gallagher, Caitlin M. • P270
 Gallego Builes, Manuela • 20, P97
 Galloway, Emily Ann • 1
 Gao, Cuihan • 121, 122
 Garber, Kris • P122
 Gardner, Steven • 76
 Garner, Catherine E. • 196
 Garner, Jamie • P19
 Garr, Casey • P303
 Garrido, José • 117
 Gary, John D. • P288
 Gasper, Brittany J. • P274
 Gatt, Kyle P. • 104
 Gaynor, Ashley • P238
 Gentry, Grant • P272
 Geving, Dora • 89
 Gibbons, Lane D. • 39
 Giles, David K. • 141, P184
 Gillespie, Emily • 38
 Gillespie, Emily L. • 48
 Gilley, Sarah A. • P132
 Gladhill, Michael • P41
 Goldey, Ellen S. • 157, P160
 Golonka, Annette M. • 16
 Gonder, Nickolaus A. • P81
 Gonsalves-Jackson, Deirdre • P70, P71
 Gonzalez, Bryan • P77
 Gonzalez, Fernando U. • P60
 Goode, David • P178
 Goodlett, Cambre L. • P213
 Goodwillie, Carol • 145
 Goszka, Abigail R. • P149, P150
 Gottfried, Yolande M. • P79
 Goyret, Joaquín • P218
 Graeter, Gabrielle J. • 77
 Graham, Brantley • P6
 Grammer, Robert T. • P202
 Granada, Maria C. • P15
 Grant, Jaylin • P19
 Gray, Janet B. • 178, 179
 Grayson, Kristine L. • P85
 Green, Anna • P292
 Green, Thomas G. • 3
 Greene, Kathryn M. • 78, P89
 Greenwood, Jennifer L. • 140
 Grewe, Felix • 164
 Griffin, Zachary B. • 10
 Grigorian, Nelly • 30
 Grillo, Wendy H. • P167
 Griscom, Heather P. • 70, P148, P149, P150, P177, P249, P251
 Grober, Matthews • P293
 Grossman, Gary D. • 189, 218
 Grubbs, Kunsiri C. • P139
 Guenther, Kate • P147
 Gulsby, Miranda • P207
 Guralnick, Robert • 55
 Gustafson, Danny J. • P60
 Guzman, David • P2
 Guzman, Karen • P2
 Gyurov, Boyko • 212
 Haining, Robert • 206, P180, P193, P194
 Hains, John • P238, P240, P241
 Hainsworth, Laura • P296
 Hale, Patricia • P246
 Hall, Michelle L. • P14
 Hallowell, Gail P. • P167
 Hamel, Jennifer A. • P126, P63, P64, P65
 Hammonds-Odie, Latanya • 210, 211
 Haney, Dennis C. • P117
 Haney, Sara • 63
 Harden, Leigh Anne • 15
 Hardy, Mikaela M. • P185
 Hare, Marlan E. • 207
 Harmon, Wendy A. • P301
 Harris, Jesse C. • 100
 Harris, Morgan R. • 115
 Harrison, Bruce • P224
 Harrison, Elizabeth • P176
 Harrison, J. Scott • P115, P99
 Harris-Shultz, Karen • P34, P49
 Harry, Brittany • P272
 Harshbarger, Alys • P283
 Hart, Andrew P. • 38
 Hart, Thomas • P22
 Hartwig, Carmony L. • 162, P181, P224
 Hataway, Robert A. • P271, P43
 Havens, Kayri • 132
 Hawk, Ashley M. • 118
 Hawkins, Angela K. • 103
 Hay, Nikolai M. • P155, P62
 Hayden, Jennifer D. • 143
 Hayes, Gabrielle A. • 86, P223, P25
 Hayes, Loren D. • 121, 122
 Hayes, Tracie E. • P130
 Hays, Kimberly A. • 8, P80
 Heard, Matthew J. • 59
 Hegedus, Theresa • P303
 Held, Michael E. • 66
 Hemminger, Will • P272
 Henderson, Suzanne • P23
 Hendy, Justin • 170
 Henkanaththegedara, Sujana • P246
 Hennigan, Caroline E. • P171
 Hensel, Linda L. • P163, P178, P179
 Hernandez, Cecilia L. • P121
 Hernandez-Moreno, J. Melissa • 12
 Herold, Jamie M. • 123
 Herr, Jr., John M. • 195, 196
 Hess, Jacob • P293
 Hess, Thomas A. • 25, 138
 Hiatt, Anna C. • 154, 155, P159
 Hiers, J. Kevin • P252
 Hightower, Jill • P102, P103, P104
 Hill, Christopher E. • P267
 Hill, JoVonn G. • P125
 Hite, Aaron Q. • 135
 Ho, Minh Chau N. • P265
 Hoffman, Doug M. • 80, 81
 Hoffmann, William • 96
 Hogan, Thomas H. • P189
 Hohmann, Matthew G. • 178, 179
 Hojnacki, Jenna I. • P96
 Holmes, Rebecca • P226
 Holt, Roger • 25
 Honeycutt, Ashton L. • P33
 Hooker, Michael S. • 4

- Hooper, Jeremy • P212
 Hopkins, Rob • P210
 Horn, Charles N. • 102, P164
 Horton, Alanna R. • P84, P89
 Horton, Laura • 60
 Hoskins, Whitaker M. • 37
 Howard, Shelby • P198
 Howell, Matthew M. • P96
 Howell, Olivia A. • 19
 Hsieh, Edward • 119
 Huang, Cathy • P309
 Hughes, Karen W. • 37
 Hughes, Kathleen • 232, P204
 Hughes, Nicole • 12, P138
 Hunnicutt, Jessica L B • P139
 Hunt, Benjamin • P272
 Hunter, Jamal H. • P190
 Hurd, Lawrence E. • 19
 Hurlbert, Allen H • P130
 Hurst-Kennedy, Jennifer • 210, P180
 Huser, Dan • P244
 Hutson, John • P241
 Huynh, Cathy • P20
 Ibarra, Areli • P229
 Ihász, Nikolett • P217
 Ingram, Christiane • P35
 Inkster, Jaclyn N. • 7
 Irick, Zach • 198
 Ivankovic, Diana S. • 28, 36
 Jackson, Kaitlyn G. • P186
 Jahan, Moondil • 172
 Jajack, Andrew J. • 208
 James, J. Dale • P133
 Jamil, Mishal • 206, P193, P194
 Jarvis, Mackenzie • P41
 Javazon, Elizabeth • 210
 Jeffers, Alexandria • 183
 Jensen, John B. • P157
 Jernigan, Kristen T. • P187
 Jett, John • 114
 Joesting, Heather • P259
 Johannesson, Zachary P. • P33
 Johnny Randall, Nicholas Adams • 177
 Johnson, Abigail • P100
 Johnson, Dakota L. • P104
 Johnson, Emma R. • P85
 Johnson, Eric E. • 93
 Johnson, Gabriel • 163, 166
 Johnson, Kristy Y. • P60
 Johnston, Amelia • P284
 Johnstone-Yellin, Tamara • P284
 Johnstone-Yellin, Tamara L. • P147
 Jolls, Claudia L. • 7, 126, 127, 132, P265
 Jones, Caroline L. • P33
 Jones, Jessica S. • P31
 Jones, John Anthony • 115
 Jones, Kenyon D. • P205
 Jones, Scott P. • 83
 Jones, Taylor • P299
 Joplin, Karl H • 190
 Jordan, Nancy • P211
 Jordan-Steele, Matthew • P224
 Jorgensen, Darwin D. • P227, P228
 Joseph, Kenya M. • 35
 Joye, Gregory T. • P211
 Kanarek, Andrew • P122
 Kane, Allyson • P138
 Karatan, Ece • P1
 Karlsson, Cassandra H. • 43
 Katsanos, Joanna • P23
 Kauffman, Gary • P62
 Kawada, Carolyn K. • P196
 Kawula, Tom • P195, P30
 Keller, Troy • 124, 173
 Kennedy, Morgan E. • P140
 Kerfoot, Jr., James R. • P56, P57
 Kesinger, Aaron T. • P33
 Keskin, Mustafa • 161
 Khadka, Sunada • 94, P313
 Kilpatrick, Eran S. • P211, P216
 Kilpatrick, Kyle • P241
 Kimmel, Charles L. • 95
 Kinard, Melissa • P169
 King, Jeff • 31
 King, Lauren • 231, P289
 Kinkel, Mary • 107, P10, P11
 Kinney, Devin N. • 137
 Kirchoff, Bruce K. • 45, 193
 Kirk, Erin • P291
 Kiser, Kevin B. • P186, P187, P31, P33
 Kitching, Harley B. • P124
 Klass, Amy • P277
 Klein, David • P51
 Knight, Tiffany M. • 132
 Knoll, Joseph • P49
 Knoop, Volker • 164
 Knowles, Travis • P268
 Knutsen, Melissa • P199
 Koenigstein, Carrie • P189
 Kollar, Leslie M. • 120
 Koplas, Patricia • P42
 Korankyi, Kristen • P223
 Korshun, Alexandra • P175
 Koslow, Jennifer • P253
 Kovach, Margaret • P201
 Kreps, Timothy A • P120
 Krings, Alexander • 53, 95, 96, 193
 Krizek, Rachel • P10
 Kron, Kathleen • 38
 Kropp, Robert • 201
 Kuan, Carmen • P122
 Kuenzinger, William L. • P218
 Kunz, Michael • 178, 179
 Kuppinger, Dane • 194
 Kuppinger, Dane M. • 205
 Kurtz, Alexandra • 211
 Kurtz, Lee • 206, P193, P194
 Léon, Alfredo • P143
 LaCour, James M. • 181
 Ladner, Samia • P223
 Laird, Jake • P241
 Lampert, Evan • P95
 Lance, Stacey L. • P209
 Lantz, Chris S. • P197
 Laskaris, Yianni P. • P267
 Latif, Zara • 91
 Lawless, Chasity • 206, P193, P194
 Lawson, Gavin R. • P216
 Leach, Whitney B. • P116
 Leader, Tirza • P168
 Leavell, Austin T. • 204
 Ledford, Taylor • 124
 Lehman, Mary E. • P170
 Lehmann, Tyler K. • P126, P65
 Leidersdorf, Bill • P100, P220
 Lendemmer, James • 234
 Leon, Alfredo • P166, P39, P77
 Levine, David • 201, 202
 Levi-Polyachenko, Nicole H. • P107
 Lewis, John S. • P123
 Li, Tao • P235
 Li, Ya-Wei • 131
 Liang, Shihui • P219
 Liao, Min-Ken • P21, P22
 Lickey, Ed • P285
 Lind, Craig • P141
 Lind, Craig M. • 17
 Lindbo, David • 96
 Lindell, Angela H. • P237
 Linton, Emily A. • P36
 Littrell, Breanna A. • P312
 Livernoche, Kelly M • P249
 Lloyd, Haley K. • P113
 Locke, Sarah • 26
 Loekman, Nicholas C. • P33
 Long, Amanda • P274
 Longan, Emery • P199
 Lorch, Jeffrey M. • P83
 Lorenz, Andre L. • 148
 Lovenshimer, Joseph B. • P145
 Lowe, Phillip D. • P74, P82
 Ludwig, Patrice M • P177

- Lugthart, G. John • P231
 Lupotsky, Autumn • P69
 MacDonald, Sarah G. • P152
 Macke, Kyle • 227
 Mackey, Chase • 88
 Madritch, Michael D. • P145, P260
 Magana, Ivan • 20, P97
 Maher, Heather L. • 79
 Mahon, Richard L. • P238
 Major, Clinton S. • P261
 Major, Kelly • P261
 Malakauskas, David M. • P98
 Malcom, Jacob W. • 131
 Malec, Lenka N. • P16
 Malloy, Mia • 128
 Mandel, Jennifer R. • 46, 101, 191
 Mandujano, Viridiana • P75
 Manners, Malcolm • P274
 Manning, Jacob • P210
 Mansour, Gregory M. • P254, P255
 Marcellus, Julia • P236
 Marchant, Wendy • P276
 Markey, Anna J. • 73
 Marlin, Maria • 225, P285
 Marlowe, Maxwell • P201
 Marshburn, Sarah • P158
 Martin, Sarah • P272
 Martinez, Sebastian • 229
 Marvin, Glenn A. • 18
 Mason, Matthew C. • P33
 Mast, Austin R. • 55, 57
 Mata, Joshua • 27
 Matheny, Patrick B. • 37
 Mathews, Katherine G. • 192, P72
 Maze, TD • P162
 McAlister, Rachel L. • 10
 McArthur, J Vaun • P237
 McBrayer, Mary Ann • 8, P231
 McBride, Kaitlyn • P179
 McCann, A. Ashlea • 140
 McCartha, Grace L. • P137
 McCarthy, Brian C. • 129
 McCormick, Carol Ann • 49
 McCoury, Yancey T. • P31
 McCullough, Donna K. • P243
 McDonald, Lisa • P162
 McDonald, Sarah • P297
 McElroy, Thomas C. • P157
 McFadden, Thomas S. • 97
 Mcgee, Katelyn E. • 204
 McGinn, Mary Clare A. • P112
 McGrew, Lori L. • 105
 McIntosh, Cecilia • P159
 McKenna, Joseph T. • P155
 McKenzie, Jennifer M. • P83
 McLeod, David S. • 79
 McLetchie, D. Nicholas • 120
 McMullen, Conley K. • 39
 McNeal, Joel R. • P269
 McPherson, Brian L. • P261
 McRuer, David • P147
 Medrano, Esther • P259
 Meeler, Hannah • P72
 Melchert, Sydney • 134
 Melton, Alexis • P311
 Mendez, Arlety • P39
 Menzel, Timothy O. • 67
 Merida, Virginia • P181
 Merritt, Danielle K. M. • P134
 Milam, Russell • P262
 Millimaki, Bonny B. • P12, P13, P17
 Millimaki, Bonny B. • 109
 Mills, Edward D. • P67
 Millward, Lindsay • 230
 Miner, Brandon • P226
 Mitchell, Ashton • P175
 Mitchell, Geri L. • 64
 Mitchell, William G. • P125
 Moat, Joanna • P161
 Mobley, James A. • P43
 Moeller, John F. • P96
 Mohanty, Monica • P188
 Mohn, Jasmin • 32
 Momeni, Stephanie S. • 147
 Mondor, Edward B. • 23, P124, P174, P18, P257
 Monetta, Angela • 128
 Montalvo, Angela M. • P228
 Monteleone, Susan • P153
 Montgomery, Kevin • 172
 Moody, Priyanka • P290
 Moore III, Jonathan D. • 120
 Moore, Michael K. • 215, P183
 Moore, Thomas K. • 80, 81, P215
 Moorhouse, Alexis • P93
 Morales, Juan • P230
 Moran, Yehu • P273
 Mordy, Hannah • P29
 Morris, Ashley B. • 56, P81
 Morrissey, Matthew • P148
 Morrow, Parker H. • P264
 Morvillo, Nancy • P274
 Moser, Stephen A. • 147
 Moss, Kerami D. • 20, P97
 Moss, Thomas S. • P200
 Mott, Cy • P262
 Muñoz, Lolita L. • P49
 Muegge, Christopher E. • 204
 Muncy, Breneé L. • 130, P90
 Mundie, Thomas • P168, P169
 Murakami, Casey • P66
 Murray, Andrew • P68
 Murray, Mary K. • 28
 Murrell, Zack E. • 47, P155, P158, P256, P62
 Musselman, Lytton J. • 5, 159, 161, 167
 Musso, Janyne • 210
 Mutchler, Michael • P45
 Myer, Patrick A. • 134
 Nadeau, Stephanie C. • 15
 Naik, Priyanka • P179
 Nails, Abigail V. • 143
 Nance, Dawson W. • P64
 Natanson, Alanna • 205
 Neil, David • 182
 Neilson, Tray • P6
 Nelson, Blake W. • 148
 Nelson, David E. • 29
 Nelson, John B. • 196
 Nelson, Kyle • P7, P8, P9
 Neufeld, Howard S. • 171
 Newbrey, Jennifer L. • 168, P121, P129, P270
 Newbrey, Michael G. • 168, P129
 Newman, Robert H. • P205
 Nguyen, Teresa • P245
 Niedziela, Linda M. • 108, P16, P3
 Niedzwiecki, John H. • 152
 Nilan, Sean M. • 64
 Niland, Erika S. • 217, P230, P61
 Nolan, James M. • 211
 Nolin, Andrew • 29
 Nordseth, Anna E. • P250
 Northcutt, Katharine V. • P163, P306
 Noyola-Alonso, Karina • P75
 Nwankwo, Vesta • P306
 Obi Johnson, Bettie • 16
 Odom, C. Brian • P32
 Odutola, Adedolapo A. • P140
 Okeke, Benedict • P35
 Oldfield, Callie A. • P252, P79
 Orange, Leah • P95
 Ortega, Jason • P87
 Osier, Marina N. • 133
 Oster, Seth • P121
 Owensby, Stephen • P208
 Oyugi, Joseph • P247, P301
 Oza, Eesha • P198
 Pérez, Alvaro • 40, 42
 Pèrez, Alvaro • 182
 Pandey, Sona • 225
 Panvini, A. Darlene • 60, 61, 62, 63, 151, 183, 184
 Pappas, Nike • P241

- Park, Joong-Wook • P307, P308
 Parker, Sarah • P142
 Parr, Patricia D. • 175
 Parr, Riley • P6
 Parrish, Phoebe • 144
 Parson, Adrianna L. • P108
 Parvini, A. Darline • 230
 Patel, Devanshi D. • P183
 Patel, Mona • P309
 Patrick, Genevieve • P109
 Paul, Jonathan • P153
 Payne, Christopher J. • 6
 Payne, Mackenzie P. • P18
 Peake, Jason • P49
 Pearson, Rachel • 231
 Peet, Robert K. • 6, P263
 Peiffer, Bernadette • P169
 Pena, Cristina • P80
 Penn, Jill • 128, 211
 Penrod, Louis • 228
 Peralta, Ariane L. • 145
 Perez, Amanda L. • P219
 Perkins, Logan • 186
 Perkins, M. Taylor • 41
 Perry, Connor • P246
 Perygin, Donna • 76
 Peterson, Chris J. • 65
 Petri, Tabitha A. • P154
 Phillips, Alyssa • P68
 Pickel, Donnie • P17
 Pilgrim, Mark J. • P162
 Pittman, Shannon E. • 77, 78
 Pitts, Rowan E. • P24
 Pitz, Kevin M. • P185
 Poff, Abigail • P17
 Poindexter, Derick B. • 43, 44
 Pollard, A. Joseph • 10, P137
 Pompilius, Melissa • P114, P242
 Porkar-Rezaeieh, Ayda • 61
 Porras, Diana • P95
 Potts, Gretchen E • P201
 Praileau, Mya • P69
 Price, Steven J. • 130, P83, P90
 Priestley, Mary P. • P79
 Prince, Emily • P162
 Pulous, Vian • 34
 Pursell, David • P168
 Purser, Jesse • P153
 Purucker, Tom • P122
 Pyle, Tyler J. • 13, 14
 Pyles, Rebecca • P159
 Quamme, Elizabeth • 93
 Quinn, John E. • 73, P22
 Radlinski, Lauren • P195, P30
 Ragan, James T. • 187
 Rager, Jimmy • P4, P5
 Ragsdale, Julie A. • P128
 Ragsdale, Nick • 88, 89, 90, 91, 92, 203
 Ramsaran, Alicia • P8
 Ramseur, George S. • P79
 Ramsey, Adam J. • 46
 Randall, John L. • 178, 179
 Randle, Christopher P. • 5, 103, 169
 Rasmussen, Rebecca • 119
 Rawlins, Sarah • P69
 Raybon, Janet • 222
 Rayburn, James R. • 76, 216
 Raymond, Gregory • P142
 Reagan, Annalise M. • P110, P111
 Reitzel, Adam M. • P116, P273
 Resch, Christopher • P286
 Reynolds, Alex • 40, 42
 Reynolds, Bradley • P175
 Rhoades, Barry K. • P219
 Rhode Ward, Jennifer • P256
 Rhodes, Kent • P23
 Rice, Aaron N. • P89
 Richardson, Cynthia L. • 26, P106
 Richardson, Danielle • 192
 Riechert, John David • P220
 Riekert, Brandy R. • P269
 Ringwood, Amy H. • 224, P107
 Riordan, Matthew W. • P254, P255
 Rios, Nelson E. • 54
 Ritter, Steven • P143, P39, P77
 Roach, Robert M. • P183
 Roberson, Laina L. • P59
 Roberts, Roland P. • 58
 Robertson, Leigh • P22
 Robinson, Aaron S. • P268
 Robinson, Ashlee D. • P82
 Rock, Philip • 207
 Rodgers, Kelsey • P35
 Rogers-Lowery, Costance • 226
 Rosillo, Stefano R. • 20, P97
 Rossignol, Elaine • P118
 Rowan, Caroline • P272
 Royal, Mabel O. • P167
 Ruehl, Clifton B. • 124, 173
 Ruhfel, Brad R. • 51, 97
 Runck, Clay • P168, P169
 Russell, James E. • 21
 Sahawneh, Mary A. • P46
 Sakaris, Peter C. • 139, 211
 Salamander, Team • P212
 Sale, Rebecca L. • P123
 Sanchez, Andrea • P239
 Sarkisova, Anna S. • 139
 Sauterer, Roger A • 214
 Saylor, Samantha • P197
 Scanlan, Cailyn • P4, P5
 Schafran, Peter W. • 161, 163, 167
 Schaus, Maynard H. • 24, 26, P105, P106
 Schaus, Nathaniel J. • 26
 Schiebout, Michael H. • P73, P78
 Schlaudt, Joel D. • P76
 Schloesser, Donald W. • P98
 Schlueter, Catherine G. • 20, P97
 Schlueter, Mark A. • 20, 22, 211, 212, P152, P20, P222, P97
 Schlueter, Peter M. • 22, P222
 Schoonover, Michael A. • 141
 Schorr, Mark S. • P244
 Schrenker, Erin • P175
 Schroeder, Wanda T. • P188
 Schulze, Jill G. • P243
 Schwartz, Brian • P286
 Schwartz, Richard • P175
 Scoccimaro, Anna Marie • P88
 Scott, David E. • P209
 Seabrook-Sturgis, Samantha • 164
 Seaman, John C. • P237
 Segarra, Veronica A. • P200, P303, P304, P38
 Seifert, Kyle • P161
 Seifert, Kyle N • P177
 Sharp, Andrew • P251
 Shattelroe, Marietta • P256
 Shaw, Donald • P59
 Shaw, Joey • 100, 198
 Shelton, Allison • P28
 Sheppard, Sarah B. • 73
 Sherling, Lori M. • P136
 Shields, Lindsay • P68
 Shin, Juyong • 205
 Shoffner, Alexandra V. • 75
 Shrives, Ashley N. • 26, P106
 Shupe, Tessa • 105
 Sibley, Ashley • P70
 Sibree, Megan M. • P3
 Sidik, Alfire • P79
 Siefferman, Lynn M. • 13, 14, 115
 Simmons, Sarah • 109
 Singletary, Marie J. • P129
 Sipprell, April • P192
 Skrabut, Mary E. • 109, P12
 Sledge, Mary K. • P123
 Slemp, Skyla L. • 84
 Slitzky, Matt • P4, P5
 Small, Margaret A. • 69
 Smallwood, Patrick • P168
 Smarr, Erin R. • P257
 Smart, James L. • P29

- Smith, Adrienne • P262
 Smith, Bridget • P204
 Smith, Chuck • P54
 Smith, Daniel J. • P107
 Smith, Gabrielle L. • 71, 176
 Smith, Gerald L. • 98, 99
 Smith, Josuha B. • P244
 Smith, Kevin G. • 144, 174
 Smith, Mary A. • P165
 Smith, Mary P. • P160
 Smith, Walter H. • 71, 84, 176, P156
 Smith, William K. • 11
 Snipes, R. Benjamin • P98
 Solh, Rima • 223
 Sombatsaphay, Vanna • P273
 Spicher, Shea • P153
 Spiro, Sarah B. • P96
 Spratt, Jr., Henry G. • 201, 202, 204
 Spurrier, M. Ariel • 99
 Srinivasan, Rajagopalbabu • P276
 Stankus, Paul T. • P237
 Stanley, Conner D. • 84
 Stanley, Neal • P297
 Staples, Micaiah • P289
 Steele, Laiton • P8
 Steele, Shaun • P195, P30
 Steinmetz, Jeff • P268
 Stephenson, Barry P. • P213, P217
 Sterne, Kenneth • P295
 Stevers, Sara M. • 109, P13
 Stewart, Guy • P148
 Stewart, Rebeccah K. • P196
 Stodard, Katlin • 62
 Stokes, Glenn • P204
 Stover, Paige L. • P63
 Strein, Jessica • 131
 Struchtemeyer, Christopher G. • P171
 Sudduth, Elizabeth B • P234
 Sudduth, Elizabeth B. • P110, P111
 Suhan-Thomas, Michelle L. • P36
 Sun, Jingjing • P140
 Sutton, Heather D. • P140
 Sutton, William B. • 180
 Symes, Steven J. • 141
 Taft- Benz, Sharon • P30
 Taft-Benz, Sharon • P195
 Talbot, Kacey M. • 142
 Talkad, Aditi • P198
 Talley, Jennell M. • 209
 Tang, Wenwu • 75
 Tarasi, Dennis D. • 2
 Tardif, Hannah M. • P41
 Taverner, Melissa • P293, P295, P296
 Taylor, Ashlee S. • P156
 Taylor, Douglas B. • P76
 Taylor, Joseph • 19
 Taylor, W. Carl • 160, 163, 166, 167
 Tedder, Timothy • P69
 Telfeja, Natalie • P39
 Telzrow, Calla • 86
 Tennant, Megan • P9
 Thapa, Ramhari • 101
 Theqvist, Kristian • 38
 Thomas, Maegan • P278, P279
 Thomas, Austin M. • P260
 Thomas, Jeffrey • P191, P52
 Thomas, Jennifer T. • 150
 Thomas, Meagan A. • P84, P85, P86, P89
 Thomas, Michelle • P19
 Thomase, Patrick • P35
 Thompson, Ann M. • P98
 Thompson, Jennifer • 219
 Thompson, Ralph L. • 64
 Thurber, Carrie • P278, P279
 Thyroff, Emily C. • P150
 Timpte, Candace • 211
 Tinch, Susan H. • P258
 Tolley-Jordan, Lori • 25, 138, 233
 Tolson, Kim M. • P133
 Tolson, Kim Marie • 181
 Tomba, Abbie • P239, P245
 Tomlin, Ellen C. • P243
 Tong, Holly B • 94
 Townsend, Cody L. • P91
 Townsend, Jr., Victor R. • 24, 26, P105, P106, P229
 Tran, Tin B. • P96
 Trapp, Mackenzie • P7
 Travis, Jonathan M. • P218
 Treat, Kristina • P298
 Tremblay, Michelle N. • P174
 Troia, Angelo • 166
 Trujillo, María A. • P38
 Turbyfill, Lauren E • P238
 Turner, Hannah • P153
 Tutterow, Annalee M. • 77
 Ulrey, Chris • P62
 Ungar, Irwin A. • P266
 Unger, David E. • 80, 81, P215
 Unger, Shem D. • 85
 Unkles, Stephanie M. • P34
 Vázquez-García, Antonio • 182
 Valles, Gabrielle J. • P44
 Valverde, María • P203
 Van De Ven, Christopher • P252
 Van de Vuurst, Victoria P. • P146
 Van Zandt, Peter A. • P272
 Vance, James A. • 71, 176
 Vanderhoff, E. Natasha • P221, P248
 Vandermast, David B. • 1, 69, P131, P132, P144
 Velani, Zeshan S. • P217
 Vickery, Tesha • P311
 Vidal, Heather J. • P73, P78
 Vielhauer, Cara • P114
 Vigueira, Cindy C. • P223, P54, P55
 Vigueira, Patrick A. • 86, 146, P223, P25, P26, P54, P55
 Villa, Elizabeth A. • P1
 Vinson, Jessica E. • 64
 Vitt, Pati • 132
 von Konrat, Matt • 164
 Wagner, Camry L. • P187
 Wagoner, Ashley • P224
 Wainberg, Robert H. • P53
 Walker, Weston R. • P31
 Wall, Wade A. • 178, 179
 Walters, Eric L. • 5
 Walters, Katelyn • 70
 Wang, Hongliang • P49
 Wang, Jingtian • P22
 Ward, Rebekah • 206, 209, P193, P194
 Ware-Gilmore, Fhallon C. • P271
 Warrington, Ashley M. • P150
 Warzecho, Lauren M. • P31
 Waters, Matthew N. • 136, 187, P119, P236
 Watford, Ashley • P69
 Watson, Halley G. • P54
 Wayland, Jack • 84
 Weakley, Alan S. • 43, 44, 199, 200
 Webb, Russell P. • P40
 Webster, Benjamin C. • P119
 Webster, Walker S. • P254, P255
 Weeks, Andrea • 52
 Weesner, Jordan • P218
 Weinbrenner, Donna R. • 28, 36
 Weir, Scott • P42
 Weir, Scott M. • P209
 Welch, Nicole T. • 153
 Wentworth, Thomas R. • 95
 West III, Ted F. • 136
 West, Miranda • 90
 Whiddon, Jennifer • 147
 Whisenant, William • 128
 Whitaker, Anna Lee • P115
 White, Hannah M. • P32
 White, Peter S. • P263
 Whitehurst, Lauren E. • 113
 Whiteman, Howard • P262
 Wiggins, Bruce A. • P149

- Wiggs, Renee M. • P229
Wightman, Molly • P299
Wilkerson, Garrett L. • P133
Williams, Amanda D. • 109, P12
Williams, Bethany L. • P214
Williams, Charlie • 197
Williams, Danielle • P232, P233
Williams, Dementris • P280
Williams, Harley • P52
Williams, Josiah S. • 21
Williams, Kristy • 226
Williams, Madison A. • 168
Williams, Ray S. • 116, 117, P127, P128, P260
Williams, Rod • 85
Williams, Zach • P6
Williard, Amanda S. • 15, P214
Willis, Nickolaus • P48
Willson, John D. • P87
Wilmouth, James • P294
Wilson, Andrew M. • 75
Wilson, Casey H • P303
Wilson, Chloe E. • P123
Wilson, James • P246
Wilson, Thomas P. • P175, P212
Wilson, Tyler • 146
Winstead, Joe E. • 66
Wise, James • P68
Withers, David • 180
Woldemariam, Moges W. • P40
Wolfram, Nigel • 16
Wolyniak, Michael • P23
Wommack, Andrew • 86
Wood, Connie • 220
Wood, Neely M. • P21
Woods, Alison • P46
Woods, Lauren • P66
Woolery, Cindy • 221
Woolman, Janet R. • P102, P103, P171
Wooten, Jessica A. • 25, 82
Work, Kirsten • P109
Worthen, Wade B. • P264
Worthy, Samantha J. • 40
Wright, Kimberly T. • P243
Wright, Nicole M. • 86, P25
Yoder, Jay A. • 148, 208
York, Joshua • P224
Young, Kelsea • P220
Young, Virginia A. • 215, P163, P183
Yu, Shuangying • P209
Yuh, Renee • 232
Zaradich, Mary • 186
Zbasnik, Nathaniel • P300
Zealy, Richard W. • P225
Zedonek, Michelle • 206, P193, P194
Zerucha, Ted • 106, P1, P6, P7, P8, P9
Zettler, Jennifer • P100, P220
Zhou, YangYu • P86
Zimmer, Elizabeth A. • 163, 167
Zuiderveen, Jeffrey • P288
Zumwalde, Bethany A. • 104
Zvonareva, Tatyana • 24, 26
Zweygardt, Sean M. • P221
Zwiers, Paul • P66, P69



Thank You for Attending
**the 2016 Annual Meeting of the
Association of Southeastern
Biologists**

See You Next Year!

Wednesday, March 29–
Saturday, April 1, 2017

Renaissance Montgomery Hotel & Spa
at the Convention Center
Montgomery, Alabama

Safe Travels Home!

**BEQUESTS TO THE
ASSOCIATION OF SOUTHEASTERN BIOLOGISTS**

If you would like to help assure ASB's future through a provision in your will, this general form of bequest is suggested:

I give, devise and bequeath to the Association of Southeastern Biologists, business office located in Bridgewater, VA, the sum of \$ _____ and/or (specifically described property).

If property, please describe.

We welcome any inquiries you may have. In cases in which you have specific wishes about the disposition of your bequest, we suggest you discuss such provisions with your attorney.

SPECIAL REMINDERS FROM THE JOURNAL 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.

MEMBERSHIP AND REGISTRATION UPDATE

All applicants for ASB research awards must be ASB members in good standing, and be duly registered for the annual meeting. If necessary, check with the Treasurer for verification before you apply.

Please make sure your membership status is up-to-date amply before the deadline for abstract submission and for annual meeting registration. Please be aware that mailing a check or money order for membership renewal to the treasurer and then trying to register online or by mail for the annual meeting on the same day does not work. Moreover, trying to pay for membership renewal online in tandem with registering for the annual meeting online does not work well either.

EXTRA ABSTRACT SUBMISSION

Besides sending abstracts of papers and posters to the Program Committee by February 7, 2016, anyone wishing to be considered for an award must send an abstract to the respective award committee chairperson in order to be considered. An abstract must be sent to the chairperson by February 7, 2016.

Preliminary Presentation Instructions

- **Oral presentations** are allotted 15 minutes (12 for talk, 3 for questions) and slides must be in PowerPoint format on a USB memory drive.
- **Posters** should fit into a 46" x 46" space and will be displayed for an entire day (Thursday or Friday). Poster presenters should be prepared to stand by their posters for a designated one hour period.

Presenters will be notified of the day and time of their presentation in mid-March and will be scheduled according to topic preferences and date of abstract submission. If you must have a specific time or day for your presentation, please indicate so in the comment section of the abstract submission program.

If you have any questions, please contact the Program Chair, **Dr. Howard Neufeld** at: neufeldhs@appstate.edu; tel: 828-262-2683. ☞



Comprehensive Lab Kits for Online Learners

eScience Labs LLC provides complete and comprehensive hands-on science kits to support online and traditional courses in need of a laboratory solution. These are the same experiments you would find in a traditional academic lab, but designed and scaled to be performed by students anytime, anywhere. Written by PhD level educators and scientists, our labs compliment any teaching style or curriculum.

eScience Labs kits include:

- Hands-on Materials
- Full Color Lab Manual
- Safety equipment
- Learning Management System Integration
- Virtual Learning Activities

Offering solutions for:

Biology
Chemistry
Anatomy & Physiology
Microbiology
Physics
Physical Science
Environmental Science
Custom Kits



888-ESL-KITS
info@esciencelabs.com
www.esciencelabs.com



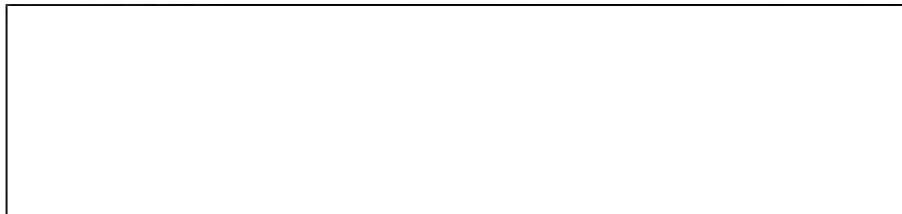
**Request for Advertising
with the
Association of Southeastern Biologists**

Reach Your Target Audience and
Promote Your Products and Services Throughout the Year!!
Advertise in Southeastern Biology.

Advertise in Southeastern Biology and reach about 1,000 members from 42 states and 13 countries. ASB publishes 4 issues of Southeastern Biology per year and an On-Site Program for the Annual Meeting. Choose one or both opportunities to increase your marketing exposure. Promote your products and services throughout the year!



½ Page 4" (↓) x 5"



Full Page 8" (↓) X 5"

Request for Advertising with the Association of Southeastern Biologists (cont.)


_____ Yes, I would like an AD in all 4 (Full Color)
4 issues of Southeastern Biology, (circle choice)

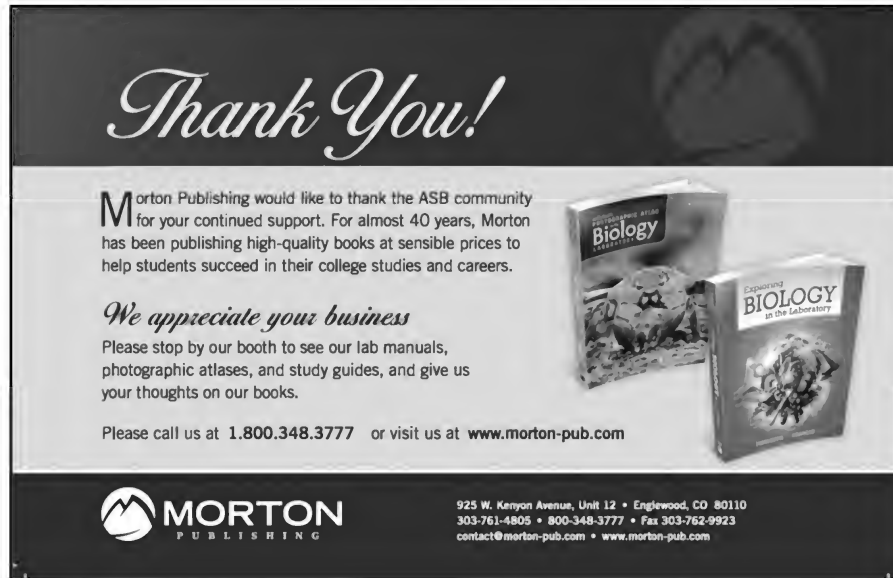
½ page = \$250, full page = \$500

_____ AD in Final On-Site Program (circle choice) (Black & White Only)

½ page = \$250, full page = \$500

*All must be submitted in pdf.

Return Form to Ashley B. Morris, Department of Biology, Middle Tennessee State University, 1301 East Main Street, Murfreesboro, TN 37132, amorris.mtsu@gmail.com. 



Thank You!

Morton Publishing would like to thank the ASB community for your continued support. For almost 40 years, Morton has been publishing high-quality books at sensible prices to help students succeed in their college studies and careers.

We appreciate your business

Please stop by our booth to see our lab manuals, photographic atlases, and study guides, and give us your thoughts on our books.

Please call us at 1.800.348.3777 or visit us at www.morton-pub.com

MORTON
PUBLISHING

925 W. Kenyon Avenue, Unit 12 • Englewood, CO 80110
303-761-4805 • 800-348-3777 • Fax 303-762-9923
contact@morton-pub.com • www.morton-pub.com

ALL TAXA BIODIVERSITY INVENTORY (ATBI)

GATLINBURG, TENNESSEE

ATBI is an organization devoted to surveying all life in the Great Smoky Mountains National Park.

More information about the ATBI and Discovery Life in America (DLIA) may be obtained from the Executive Director, Todd Witcher, by e-mail todd@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 37738-3627. The telephone number is (865) 430-4752. ☞

SOUTHERN APPALACHIAN FOREST COALITION (SAFC)

ASHEVILLE, NORTH CAROLINA

As stated in their newsletter *Across Our Mountains*, SAFC is an organization dedicated to “working together to protect and restore southern Appalachian forests.”

More information about SAFC may be obtained from their web site at <http://www.safc.org>, and by e-mail at safc@safc.org. The mailing address is Southern Appalachian Forest Coalition, 46 Haywood Street, Suite 323, Asheville, North Carolina 28801-2838. The telephone number is (828) 252-9223. ☞

ASB and the *Southeastern Naturalist* ...
 A shared tradition of natural history scholarship and a
 NEW Partnership!



Adopted as
 the Official Journal of the
 Association of Southeastern
 Biologists and offered as a
 special member benefit! See
 ASB membership form or go
 to www.sebiologists.org for
 more details.



- ♦ The latest regional natural history research: more articles and pages of research published in 2015 than ever before.
- ♦ Free online access for SENA subscribers to both *SENA* and its co-published journal *Northeastern Naturalist* at www.eaglehill.us.
- ♦ New streamlined editorial process resulting in quicker publication.
- ♦ Online supplementary files (data tables, audio/video files, etc.) possible!
- ♦ Notes section presenting brief, significant field observations.
- ♦ Concise descriptions of new and notable books.
- ♦ ASB members in good standing who choose to publish in SENA now receive a \$10 per page reduction in page charges if they are the lead and corresponding authors.

For more information about the journal or submissions,
 visit us at: www.eaglehill.us/sena

Southeastern Naturalist

Volume 14

2015

Number 4

RESEARCH ARTICLES

- Association between Roads and the Distribution of *Microstegium vimineum* in Appalachian Forests of North Carolina** 602
Christina Manee, W.T. "Duke" Rankin, Gary Kauffman, and Greg Adkison
- Effectiveness of a Stream-Restoration Effort Using Natural Material Instream Structures** 612
Sean E. Collins, Joseph E. Flotemersch, Casey D. Swecker, and Thomas G. Jones
- Fish and Water Quality in the Forested Wetlands Adjacent to an Oxbow Lake** 623
Caroline S. Andrews, Leandro E. Miranda, and Robert Kroger
- Do Effigies Deter Fish Crows Hunting in a Black Skimmer Colony Mid-season?** 635
Elizabeth A. Forys, David Hopkins, Paul Ingham, Maggie Miller, and Loren Gluckman
- New Host and Geographic-Distribution Records for Helminth and Arthropod Parasites of the Southern Toad *Anaxyrus terrestris* (Anura: Bufonidae) from Florida** 641
Chris T. McAllister, Charles R. Bursey, Matthew B. Conior, Stanley E. Trauth, and Lance A. Durden
- Progression and Impact of Laurel Wilt Disease within Redbay and Sassafras Populations in Southeast Georgia** 650
R. Scott Cameron, James Hanula, Stephen Fraedrich, and Chip Bates
- Testing for Genetic Divergence Within and Among Isolated Populations of a Threatened Species in Georgia and Alabama, *Percina aurolineata* (Percidae: Goldline Darter)** 675
Steven L. Powers, Sarah E. Ahlbrand, Bernard R. Kuhajda, and Kelsey E. West
- Prey Size and Dietary Niche of Rafinesque's Big-Eared Bat (*Corynorhinus rafinesquii*)** 685
Luke E. Dodd, Michael J. Lacki, Joseph S. Johnson, and Lynne K. Rieske
- Response of Water-Quality Indicators to the Implementation of Best-Management Practices in the Upper Strawberry River Watershed, Arkansas** 697
Teresa Ruth Brueggen-Boman, Seo-eun Choi, and Jennifer Louise Bouldin
- Discovery of the Ochlockonee Moccasinshell, *Medionidus simpsonianus*, in the lower Ochlockonee River, Florida** 714
Jordan Holcomb, Matthew Rowe, Jim Williams, and Sandra Pursifull
- Native Bee (Hymenoptera: Apoidea) Abundance and Diversity in North Georgia Apple Orchards throughout the 2010 Growing Season (March to October)** 721
Mark A. Schlueter and Nicholas G. Stewart
- Evaluation of Three Aging Techniques and Back-calculated Growth for Introduced Blue Catfish from Lake Oconee, Georgia** 740
Michael D. Homer Jr., James T. Peterson, and Cecil A. Jennings
- Breeding Distribution and Population Persistence of Loggerhead Shrikes in a Portion of the North Carolina Sandhills** 757
Douglas B. McNair

Continued on inside back cover

Publication Date: December 31, 2015



-
- Detecting Enigmatic Declines of A Once Common Salamander in the Coastal Plain of Georgia** 771
 John C. Maerz, R. Kyle Barrett, Kristen K. Cecala, and Jayna L. Devore

NOTES

- Clarifying Details on a 1930s-era Pine–Hardwood Stand in Arkansas** N50
 DON C. BRAGG
- Age and Reproductive Condition of an Unusually Large Bighead Carp from the Lower Mississippi River Basin** N55
 JAN JEFFREY HOOVER, ALAN W. KATZENMEYER, JAY COLLINS, BRADLEY R. LEWIS, W. TODD SLACK, AND STEVEN G. GEORGE
- Predation on the Toxic Red-Spotted Newt (*Notophthalmus viridescens viridescens*) by *Lepomis macrochirus* (Bluegill) and *L. auritus* (Redbreast Sunfish) within an Urban Watershed** N61
 WILLIAM I. LUTTERSCHMIDT, RICCARDO A. FIORILLO, AND SIDNEY M. ANDERSON
- First Use of an Anthropogenic Nest Site by the Florida Scrub-Jay** N64
 KARL E. MILLER
- New State Record and Southeastern United States Range Extension for *Cyzticus mexicanus* (Claus) (Mexican Clam Shrimp)** N67
 DAVID M. FRINGS AND KEVIN J. MORSE
- GULF OF MEXICO NATURAL HISTORY AND THE DEEPWATER HORIZON OIL SPILL
 SPECIAL SERIES ARTICLES**
- Toxicity of Three Dispersants Alone and in Combination with Crude Oil on Blue Crab *Callinectes sapidus* Megalopae** G82
 Rachel Fern, Kim Withers, Paul Zimba, Tony Wood, and Lee Schoech
- NOTEWORTHY BOOKS** B4
-

Another fine journal from the publishers of *Southeastern Naturalist* ...

Caribbean Naturalist



Publishing
peer-reviewed natural history
science research in the Caribbean and surrounding region.

- a professional staff and over 20 years experience of consistently providing timely high-quality publication services for peer-reviewed natural history research
- article-by-article online publication for prompt distribution to a global audience
- an efficient and responsive review process
- the expertise and attention to detail to efficiently publish special issues based on conference proceedings or a series of invitational articles
- the capability to accommodate publication of a wide range of supplemental files in association with journal articles

Accepting manuscript submissions and proposals for special issues.

Special introductory subscription rate!

www.eaglehill.us/cana

Announcing the *Urban Naturalist*

A new peer-reviewed natural history science journal that carries on *Urban Habitat's* worthy tradition of publishing the finest natural history research in urban areas around the globe.

Aim and Scope:

The journal welcomes manuscripts based on original field research and observation as well as research summaries and general interest articles on topics of significance to field biologists worldwide. Subject areas include, but are not limited to, field ecology, biology, behavior, biogeography, restoration ecology, wildlife and fisheries management, taxonomy, evolution, anatomy, physiology, geology, and related fields as they occur in urban settings. Strictly lab, modeling, and simulation studies on natural history aspects of urban areas, without any field component, will also be considered for publication as long as the research has direct and clear significance to field naturalists and the manuscript discusses these implications.



- a professional staff and over 20 years experience of consistently providing timely high-quality publication services for peer-reviewed natural history research
- article-by-article online publication for prompt distribution to a global audience
- an efficient and responsive review process
- the expertise and attention to detail to efficiently publish special issues based on conference proceedings or a series of invitational articles
- the capability to accommodate publication of a wide range of supplemental files in association with journal articles

Accepting manuscript submissions and proposals for special issues!

www.eaglehill.us/urna

Call for Manuscripts for the *Eastern Biologist*

The *Eastern Biologist* is a peer-reviewed journal that publishes original articles focused on field research of all aspects of the non-natural history biological sciences.

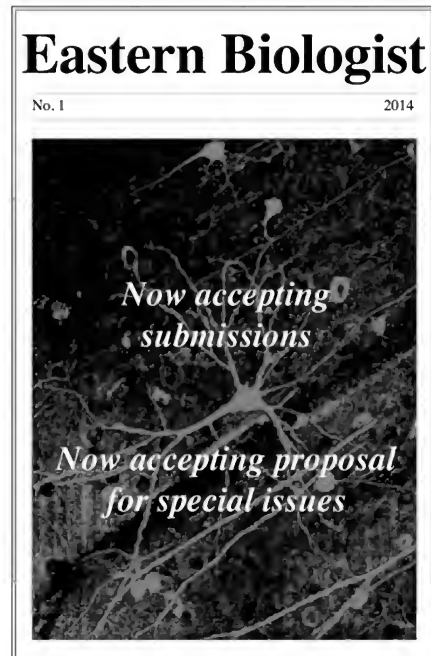
Aim and Scope ...

Manuscript subject matter - The *Eastern Biologist* (ISSN # 2165-6657) is an interdisciplinary online peer-reviewed journal that serves as a forum for researchers in eastern North America who are working in one of the many diverse disciplines of the biological sciences except for natural history science. Subject areas include, but are not limited to, biochemistry, biotechnology, cell biology, developmental biology, genetics and genomics, immunology, microbiology, molecular evolution, neurobiology, parasitology, physiology, toxicology as well as scientific pedagogy.

The *Eastern Biologist* offers:

- over 20 years experience by the publisher of consistently providing timely publication of high-quality peer-reviewed research
- article-by-article online publication for prompt distribution to a global audience
- an efficient and responsive review process
- the expertise and attention to detail to efficiently publish special issues based on conference proceedings or a series of invitational articles
- the capability to accommodate publication of a wide range of supplemental files in association with journal articles

Now accepting manuscript submissions and proposals for special issues.



www.eaglehill.us/ebio

**SCIENCE
EXPERIENCE
TECHNOLOGY
KNOWLEDGE**



BDA
**BREEDLOVE, DENNIS
& ASSOCIATES, INC.**

**Consultants in the Environmental
and Natural Resources Sciences**

Breedlove, Dennis and Associates, Inc. (BDA) is a professional environmental and natural resources consulting firm founded in 1976. Since its inception, BDA has established a reputation for solving the most difficult environmental problems through the application of good science, knowledge of the regulations, and the ability to communicate with regulators and clients. With offices in Winter Park, Tallahassee and Brooksville, Florida BDA services clients throughout the Southeastern United States.

330 West Canton Avenue, Winter Park, FL 32789 • 407.677.1882
www.bda-inc.com

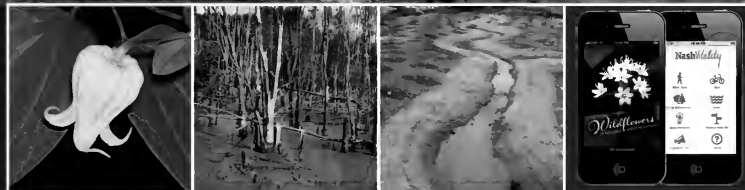
BDY Environmental

Rare & Endangered Species • Environmental Planning & Permitting

Stream Determination & Restoration • Wetland Delineation & Mitigation

GIS & Spatial Analysis • Remedial Site Investigation & Closure

Mobile App Development



Natural Sciences Consultants

2004 21st Avenue South, Nashville, Tennessee 37212

615-460-9797 | www.bdy-inc.com



***Carolina's Perfect Solution*[®] Specimens
Simply the Best—Guaranteed.**

Compare *Carolina's Perfect Solution*[®]
preserved specimens to any others.
If you are not completely satisfied that
our specimens are the best, we will
refund or credit your purchase.

It's that simple.

Carolina Biological Supply Company

2700 York Rd • Burlington NC 27215
866.815.2450 • www.carolina.com

CAROLINA

World-Class Support for Science & Math

Martin Microscope Company

Since 1946



www.martinmicroscope.com



207 South Pendleton Street / Easley, SC 29640 / 864-242-3424 / Fax 864-859-3332 / sales@martinmicroscope.com

Patron Member:
Dwayne A. Wise
Professor of Biology
Department of Biological Sciences
Mississippi State University
Mississippi State, MS

ASB Membership Form

ASB membership includes discounts on annual meeting registration and on subscriptions to Southeastern Naturalist (SENA), the official journal of ASB.

To join or renew and pay by cash, check, or money order, complete contact information below, enclose cash or check/money order payable to Association of Southeastern Biologists, and send by mail. **To pay by credit card**, please log on to our membership management page (<http://www.sebiologists.org/membership/>) and use our secure online payment system. If you would like further information or have questions, contact **Edgar B. Lickey, ASB Treasurer, Department of Biology, Bridgewater College, Bridgewater, VA 22812; (540) 828-5426; elickey@bridgewater.edu**.

Name:

Work E-mail:

Personal E-mail:
(At least one valid e-mail address is required.)

Work Address:

City: State: Zip Code:

Work Telephone: Fax:

Home Address:

City: State: Zip Code:

Cell Phone: Home Telephone:

ASB ENRICHMENT FUND CONTRIBUTION AMOUNT: \$ _____

Contributions to ASB, a not-for-profit organization exempt under Internal Revenue Code Section 501(C)(3), are tax deductible.

ASB MEMBERSHIP

ASB MEMBERSHIP WITH SOUTHEASTERN NATURALIST SUBSCRIPTION

- _____ Regular One-Year Membership -- \$50
- _____ *Regular One Year Membership with Southeastern Naturalist Subscription -- \$70 (SAVE \$30 with this option!)*
- _____ Regular, Non-Member, One-Year Subscription to *Southeastern Naturalist*-- \$55.00.

- _____ Student One-Year Membership -- \$20
- _____ *Student One-Year Membership with Southeastern Naturalist Subscription -- \$40 (SAVE \$18 with this option!)*
- _____ Student, Non-Member, One-Year Subscription to *Southeastern Naturalist*-- \$44.00.

- _____ Emeritus One-Year Membership -- \$20
(Any member who has been a member continuously for 10 or more years, & who has retired from professional duties, may request Emeritus status.)
- _____ *Emeritus One-Year Membership with Southeastern Naturalist Subscription -- \$40 (SAVE \$20 with this option!)*

- _____ Life Membership -- \$500 (Life Membership is a one-time payment. All others are annual.)
(Southeastern Naturalist [SENA] does not offer a Life Subscription option. Life Members who wish to receive SENA must pay \$32 per year for the SENA Subscription, an \$18 per year discount.)

- _____ Patron One-Year Membership -- \$1000
- _____ *Patron One-Year Membership with Southeastern Naturalist Subscription -- \$1020 (SAVE \$20 with this option!)*

- _____ Life & Patron--New, \$1500; Renewal, \$1000
(Requires \$500 initial, one-time Life Membership payment, plus \$1000 each year Patron membership payment.)



In This Issue

A Message from the President.....	117
ASB Candidates for Office--2016.....	120
Program of the 77 th Annual Meeting.....	125
Advertisement for Carolina Biological Supply Company.....	126
Affiliate Organizations Meeting with ASB in 2016.....	127
Advertisement for Martin Microscope.....	128
Patron Members of ASB.....	129
Program Committee for 2016 ASB Meetings.....	130
Advertisement for CONVIROn.....	131
A Welcome Message from the ASB President.....	132
Advertisement for Associated Microscope, Inc.....	133
Exhibitors at 2016 ASB Meetings.....	134
Advertisement for Vashaw Scientific, Inc.....	136
Meeting Registration and Exhibit Hall Hours.....	137
Advertisement for JEOL.....	138
Symposia.....	139
Workshops.....	141
Advertisement for the NABT.....	143
ASB Meeting-At-A-Glance Schedule for 2016.....	144
Concord Convention Center at Embassy Suites Hotel.....	150
ASB 2016 Meeting Event Guide.....	151
Advertisement for Science Approach.....	154
Plenary Speaker.....	155
Transportation and Parking at the Embassy Suites Hotel.....	156
Advertisement for Eagle Hill Institute Journals.....	157
Silent Auction Information.....	158
Field Trips.....	159
Friday Morning ASB Paper Presentations.....	162
Friday Afternoon ASB Paper Presentations.....	165
Saturday Morning ASB Paper Presentations.....	167
Saturday Afternoon ASB Paper Presentations.....	170
Saturday Afternoon Tri Beta Paper Presentations.....	173
Advertisement for eScience Labss.....	174
Friday ASB Poster Presentations - Concord EF.....	175
Saturday ASB Poster Presentations - Concord EF.....	187
Saturday Tri-Beta Poster Presentations - Concord EF.....	197
Index of Paper and Poster Presentations.....	198
ASB 2017 Meeting Information.....	207
Bequests to the ASB.....	208
Special Reminders from the Journal Editor.....	209
Advertisement for eScience Lab.....	210
Advertising in <i>Southeastern Biology</i>	211
Submission Form for Advertising.....	212
Advertisement for Morton Publishing, ATBE, and SAFC.....	213
The <i>Southeastern Naturalist</i> Journal Information.....	214
The <i>Caribbean Naturalist</i> Journal Information.....	217
The <i>Urban Naturalist</i> Journal Information.....	218
The <i>Eastern Biologist</i> Journal Information.....	219
ASB Patron Members.....	220

PATRON MEMBERS

Breedlove, Dennis and Associates, Inc., Winter Park, FL	Carolina Biological Supply Co., Burlington, NC
Breedlove, Dennis & Young, Inc., Nashville, TN	Martin Microscope Company, Easley, SC
	Dwayne A. Wise, Mississippi State, MS