

# *SOUTHEASTERN BIOLOGY*



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*ASB* **THE 80<sup>th</sup> ANNUAL MEETING OF THE** *ASB*  
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**THE UNIVERSITY OF TENNESSEE, MARTIN, TN**

*ASB* **APRIL 3-6, 2019** *ASB*

*ASB* **MEETING SITE: MEMPHIS COOK CONVENTION CENTER AT THE** *ASB*  
**SHERATON MEMPHIS DOWNTOWN HOTEL**  
**MEMPHIS, TENNESSEE**



Ellington Hall which houses the Department of Biological Sciences on the campus of The University of Memphis, Memphis, Tennessee.

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### **PURPOSE**

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

### **TIME AND PLACE OF FUTURE MEETINGS**

2019 April 3-6: Featured Institutions – The University of Memphis, Memphis, TN, and The University of Tennessee, Martin, TN. Meeting site is the Memphis Cook Convention Center at the Sheraton Memphis Downtown Hotel, Memphis, TN.

## 163 - A New Rush Species Endemic to the Altamaha Grit of Georgia

Richard Carter<sup>1</sup>, Wesley Knapp<sup>2</sup><sup>1</sup>Valdosta State University, Valdosta, GA, <sup>2</sup>North Carolina Natural Heritage Program, Asheville, NC

A new *Juncus* species (Juncaceae) is described from a two county area of the Altamaha grit, a sandstone formation in the Coastal Plain physiographic province of Georgia, U.S.A. This new species resembles other members of section *Ozophyllum*, but is readily distinguished by its annual life history, diminutive habit, and smaller capsules and tepals. The type locality is an area of geologic interest that supports a unique assemblage of rare and endemic to near-endemic plant species.

164 - Phylogeography and population genetics of Sandmyrtle (*Kalmia buxifolia*, Ericaceae)Emily Gillespie<sup>1</sup>, Tesa Madsen-McQueen<sup>2</sup>, Zack Murrell<sup>3</sup><sup>1</sup>Butler University, Indianapolis, IN, <sup>2</sup>University of California, Riverside, Riverside, CA, <sup>3</sup>Appalachian State University, Boone, NC

Sandmyrtle, *Kalmia buxifolia* (Bergius) Gift & Kron, exhibits a disjunct distribution in eastern North America. Extant populations occur in the New Jersey Pinelands (NJP), the Southern Appalachian Mountains (SAM), and the Sandhills/Cape Fear Arch (SCFA) region of the Carolinas. There is no present-day geographic connection between NJP and SCFA populations, and very little between the SAM and SCFA populations. Despite relatively close geographic proximity, the SAM and SCFA populations are dissimilar in terms of habitat; SAM populations typically occur on rock outcrops and SCFA populations occur in wet pinelands that are ecologically similar to the northern NJP populations. Individual plants also vary morphologically, with SAM and NJP plants tending to be somewhat mat-forming and SCFA plants tending to be taller and spindly. Over the last 150 years, experts have recognized between one (current consensus) and three species based on a combination of morphology and habitat. We developed microsatellite DNA markers for Sandmyrtle using an Illumina sequencing dataset, sampling from three populations representing the three main parts of the Sandmyrtle distribution. We then applied these markers to an additional eight populations in order to gain landscape-level insights into Sandmyrtle's genetic variability and structure, deviation from Hardy-Weinberg assumptions, and phylogeographic history. Our current dataset indicates that some populations differ significantly from others with regard to these characteristics. Additionally, SCFA and NJP populations are more genetically similar to each other overall, somewhat aligning with the taxonomic boundaries indicated by JK Small in the 1930s.

165 - A determination of berberine concentrations in commercially available *Hydrastis canadensis* herbal supplements using HPLC.

Claire Brewer, Timothy Trott

Southern Adventist University, Collegedale, TN

Berberine, the active alkaloid present in *Hydrastis canadensis* (commonly known as Goldenseal), has historically been used to treat a range of infections and ailments, including colds, influenza, vaginitis and diabetes. Berberine is naturally produced by plants for defense against bacterial and fungal invasion. Goldenseal extracts containing berberine are sold commercially as herbal supplements, and can be found at nearly any drugstore and pharmacy in capsule, tea, and other forms. The Food and Drug Administration does not actively regulate the herbal supplement industry, intervening only when products are deemed as unsafe. There is no standard of chemical composition among herbal supplement manufacturers of similar products. This preliminary proof of concepts study developed HPLC methods to quantitate the amount of berberine in various brands of Goldenseal herbal supplement capsules. Three different commercially available brands of Goldenseal extract were tested using quantitative HPLC. Brands tested included Nature's Way®, NOW®, and Pure Mountain Botanicals®, none of which stated the concentration of berberine on their packaging. A standard curve of the HPLC profile of pure berberine was used to determine the concentration of berberine in each of the Goldenseal brands. The berberine concentrations were then compared among the three brands with the use of a one-way ANOVA test. The results of this study demonstrate that there is a statistically significant difference in the concentration of berberine among the three brands tested. NOW® had the greatest concentration of berberine, and Nature's Way® the least. These measured inconsistencies highlight the need of increased consumer awareness when selecting unregulated