


2018

## Keynote Address and Meeting Program Report

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### Recommended Citation

Editors, Academy (2018) "Keynote Address and Meeting Program Report," *Journal of the Arkansas Academy of Science*: Vol. 72 , Article 39.

Available at: <https://scholarworks.uark.edu/jaas/vol72/iss1/39>

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## KEYNOTE ADDRESS

### Natural History Collections and their Role in Arkansas Science and Education

By Dr. Travis Marsico  
Department of Biological Sciences, Arkansas State University



Dr. Marsico's research focuses on biogeography, biodiversity conservation, natural history and species invasions. He currently researches risk associated with hitchhiking plant propagules at U.S. shipping ports, invasion of herbivorous insect pests, plant diversity patterns in fragmented landscapes of the Upper Mississippi River Alluvial Plain, and plant diversity patterns along elevation gradients in the Neotropics. His work emphasizes making and utilizing natural history collections in research. He also studies biology education and improvements to university-level education, utilizing specimen-based projects in coursework. Marsico has been a faculty member at Arkansas State University for eight years, where he teaches Curation of Collections, Dendrology, Global Change Biology, Mechanisms of Speciation, Natural History Collections Research Design, and Plant Systematics. At A-State, Marsico curates the herbarium and manages the Laboratory Sciences Greenhouse

For the plenary session on Friday evening, Dr. Marsico will discuss the important role that natural history collections have played in shaping scientific knowledge in Arkansas. In his talk, he will also address current biodiversity research being conducted by students and faculty members associated with the newly formed Arkansas Center for Biodiversity Collections (ACBC) at Arkansas State University. He will highlight expanded opportunities for educating students in basic and applied biodiversity science through the ACBC. Finally, Marsico will share his vision for how research utilizing natural history collections is as relevant as it has ever been on a planet with natural ecosystems threatened by anthropogenic pressures.

Arkansas Academy of Science Meeting Program

SECTION PROGRAMS  
ORAL PRESENTATIONS

(Presenter is underlined; \* - Undergraduate \*\* - Graduate)

**ORAL SESSIONS: FRIDAY 1:00-5:30**

**AQUATIC BIOLOGY,  
WHITE RIVER ROOM**

**1:00**

**EFFECTS OF RECREATIONAL BOAT NOISE ON  
AVOIDANCE AND FEEDING BEHAVIORS IN AN  
IMPORTANT FRESHWATER STREAM FISH**

Claire Turkal\*, Hendrix College

Co-Authors: *Trystin F. Anderson, Maureen R. McClung*

**1:15**

**CULTURE-INDEPENDENT ANALYSIS OF HOT SPRINGS  
NATIONAL PARK THERMOPHILES**

Taylor Stone\*, Hendrix College

Co-Author: *Matthew Moran*

**1:30**

**STOCKING ASSESSMENT AND LONG-TERM IMPACTS  
OF NON-NATIVE WALLEYE ON THE NATIVE  
POPULATION IN THE ELEVEN POINT RIVER,  
ARKANSAS**

Dustin Thomas\*\* , Arkansas State University

Co-Authors: *Brook Fluker, Brett Timmons*

**1:45**

**DISTRIBUTION RECORDS OF THE CHESTNUT  
LAMPREY IN ARKANSAS**

Jeremiah Salinger\*\* , University of Arkansas at Pine Bluff

Co-Author: *Ron Johnson*

**2:00**

**AQUATIC INVERTEBRATE COMMUNITY  
ASSESSMENTS AT OZARK NATIONAL SCENIC  
RIVERWAYS, MISSOURI, 2005-2014**

David Bowles, U.S. National Park Service

Co-Authors: *Lloyd W. Morrison, Janice A. Hinsey, J. Tyler Cribbs*

**2:15**

**NEW APPLICATIONS OF RADIO FREQUENCY  
IDENTIFICATION STATIONS FOR MONITORING FISH  
MOVEMENT THROUGH HEADWATER ROAD  
CROSSINGS AND NATURAL REACHES**

Charles Gagen, Arkansas Tech University

**GENERAL BIOLOGY & ECOLOGY,  
MOCKINGBIRD ROOM**

**1:00**

**IMPACT OF LESPEDEZA CUNEATA INVASION ON  
ARTHROPOD ABUNDANCE IN A TALLGRASS PRAIRIE**

Adam Turner\*, Hendrix College Co-Author: *Caroline Kirksey*

**1:15**

**PATTERNS OF LESPEDEZA CUNEATA INVASION IN  
TALLGRASS PRAIRIES AND ARTHROPOD COMMUNITY  
STRUCTURE**

Carolina Kirksey\*, Hendrix College

Co-Author: *Adam Turner*

**1:30**

**UNCONVENTIONAL GAS DEVELOPMENT EFFECTS ON  
ECOSYSTEM SERVICES IN THE FAYETTEVILLE SHALE  
OF ARKANSAS**

Varenya Nallur, Hendrix College

**1:45**

**AEROBIC PUSHUPS: CUTANEOUS VENTILATION IN  
OVERWINTERING SMOOTH SOFTSHELL TURTLES,  
APALONE MUTICA**

Caleb O'Neal\*, Harding University

Co-Author: *Michael V. Plummer*

**2:00**

**GERMINAL EPITHELIUM CYTOLOGY DURING  
SPERMATOGENESIS IN THE ALLIGATOR SNAPPING  
TURTLE, *MACROCHELYS TEMMINCKII* (REPTILIA:  
CHELYDRIDAE)**

Stan Trauth, Arkansas State University

**2:15**

**SOIL CRUST ALGAL COMMUNITIES OF WARREN  
PRAIRIE NATURAL AREA**

Karen Fawley, University of Arkansas at Monticello

Co-Authors: *Rachel Knight, Caleb Lamb, Brent Baker, Marvin Fawley*

**MEDICINE, MOLECULAR & CELLULAR  
BIOLOGY, BLACK RIVER ROOM**

**1:00**

**THE MECHANISM OF THYMOQUINONE-INDUCED  
APOPTOSIS IN ORAL CANCER CELLS**

Malcolm Anderson\* University of Arkansas at Pine Bluff

Co-Author: *Selma Dagtas*

**1:15**

**TERBINAFINE BIOACTIVATION: DETERMINING  
PATHWAY TO REACTIVE METABOLITE  
ACCUMULATION USING COMPUTATIONAL MODELING  
AND EXPERIMENTAL APPROACHES**

Dustyn Barnette\*\* , University of Arkansas for Medical Sciences Co-

Authors: *Mary Davis, Lena Dang, Tyler Hughes, S. Joshua Swamidass, Grover P. Miller*

**1:30**

**COUMADIN (WARFARIN) PHARMACOKINETICS  
CHANGE FOR PEDIATRIC PATIENTS WITH SINGLE**

**Arkansas Academy of Science Meeting Program**

**VENTRICLE PHYSIOLOGY DURING INITIATION OF ANTICOAGULANT THERAPY**

Dakota Pouncey, University of Arkansas for Medical Sciences

1:45

**DAPHNIA MAGNA AS A MODEL ORGANISM FOR SCREENING THE EFFECTS OF DIETARY SUPPLEMENTS**

Antoinette Odendaal, Southern Arkansas University

2:00

**CYP3A7 METABOLIZES DEXTROMETHORPHAN LESS EFFICIENTLY THAN CYP3A4.**

Dhaval Shah, University of Arkansas for Medical Sciences

*Co-Author: Grover Miller*

2:15

**GEOHELMINTH INFECTION, ANEMIA, AND MALNOURISHMENT IN BAWA, CAMEROON AFTER TEN YEARS OF INTERVENTION BY THE BAWA HEALTH INITIATIVE**

Dennis Richardson, Quinnipiac University

*Co-Author: Sara Karr*

**CHEMISTRY & GEOSCIENCES  
ARKANSAS RIVER ROOM**

1:00

**A BOND VALENCE / BOND LENGTH CORRELATION FOR TANTALUM-OXYGEN BONDS**

Blake Ludwig\*, Arkansas Tech University

1:15

**QUANTIFICATION OF BROMINATED VEGETABLE OIL IN BEVERAGES BY LCMS**

Katie Farmer\*, Harding University

1:30

**DEVELOPMENT OF A NOVEL METHOD FOR PURIFICATION OF RECOMBINANT PROTEINS**

Amberly Vaughan\*, University of Arkansas

*Co-Authors: Musaab Al-Ameer, T.K.S. Kumar*

1:45

**TREE RING DATING OF THE FICKLIN-IMBODEN LOG STRUCTURES, POWHATAN STATE PARK, ARKANSAS**

Kaylee McAdoo\*, University of Arkansas

*Co-Author: David Stahle*

2:00

**PHENOMICS APPROACHES TO ELUCIDATE THE CONTRIBUTION OF THE FOUR ASCORBATE PATHWAYS TO ABIOTIC STRESS TOLERANCE IN ARABIDOPSIS**

Lucia Acosta-Gamboa\*\*\*, Arkansas State University

*Co-Authors: Nirmal Nepal, Zachary C. Campbell, Shannon Cunningham, Karina Medina-Jimenez, Argelia Lorence*

2:15

**CYP2C19 AND 3A4 GENERATE A POTENTIALLY TOXIC, REACTIVE TERBINAFINE METABOLITE AS REVEALED THROUGH MODELING AND EXPERIMENTAL METHODS**

Mary Davis\*\*\*, University of Arkansas for Medical Sciences *Co-*

*Authors: Anirudh Pidugu, Dustyn Barnette, S. Joshua Swamidass, Grover P. Miller*

**ENGINEERING  
PINE TREE ROOM**

1:00

**DESIGN AND DEVELOPMENT OF A SELF-DRIVING RC CAR**

Andrew Lea\*, Arkansas Tech University

1:15

**A STEP BY STEP DESIGN PROCEDURE FOR CURRENT CONTROL OF A 5 MWTHREE-PHASE GRID-CONNECTED INVERTER**

Hamdi Albusnashee\*\*, University of Arkansas

*Co-Authors: Manar Alzahlol, Roy McCann*

1:30

**PROSPECTS OF NANACLAY AS A PAVEMENT CONSTRUCTION MATERIAL**

MM Tariq Morshed\*\*\*, Arkansas State University

*Co-Author: Zahid Hossain*

1:45

**EFFECTS OF ZEOLLITE ON CHEMICAL ELEMENTALS AND GLASS TRANSITION TEMPERATURE OF ASPHALTS**

Mohammad Nazmul Hassan\*\*\*, Arkansas State University

*Co-Author: Zahid Hossain*

2:00

**VARIABLE FREQUENCY DRIVES, PROVIDING ENERGY EFFICIENCY AND ENHANCED CROP PRODUCTION IN AGRICULTURE WHILE IMPROVING WATER MANAGEMENT PROCESSES**

Robert Straitt\*\*\*, Arkansas State University.

*Co-Authors: Rajesh Sharma, Paul Mixon, Dr. Steve Green, Dr. Andrzej Rucinski, Dr. Nadya Reingand, Dr. Christophe Paoli, and Mr. Dwight Ellis*

**GENERAL BIOLOGY & ECOLOGY  
BLACK RIVER ROOM**

3:00

**CURRENT AND FUTURE THREATS TO THE CHIHUAHUAN DESERT BIOREGION: A LANDSCAPE-LEVEL ANALYSIS**

Helena Abad\*, Hendrix College. *Co-Author: Nathan Taylor*

3:15

**VALUATION OF ECOSYSTEM SERVICES OF THE ARCTIC NATIONAL WILDLIFE REFUGE**

Margaret Young\*, Hendrix College

*Co-Author: Matthew Moran*

3:30

**A PROPOSAL FOR PRACTICAL AND EFFECTIVE BIOLOGICAL CORRIDORS IN NORTHWEST COSTA RICA**

Allison Monroe\*, Hendrix

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3:45

**TERRESTRIAL MAMMAL AND BIRD COMMUNITIES IN PROTECTED AND UNPROTECTED LANDS IN COSTA RICA**

Benjamin Zamzow\*, Hendrix College  
Co-Author: Lindsay Stallcup

4:00

**TERRESTRIAL MAMMAL AND BIRD SURVEY RESULTS IN THE ARENAL – TILARÁN CONSERVATION AREA OF COSTA**

Sarah Nieman\*, Hendrix College. Co-Author: Lindsay Stallcup

4:15

**MIGRATORY BIRDS AND NUTRIENT TRANSFER ACROSS CONTINENTS**

Sofia Varriano\*, Hendrix College  
Co-Author: Maureen McClung

**MOLECULAR & CELLULAR BIOLOGY  
MOCKINGBIRD ROOM**

3:00

**RELATIVE GENE EXPRESSION STUDY ON *CENTRUROIDES VITTATUS*: INVESTIGATING SODIUM TOXIN GENE ACTIVITY**

Chloe Fitzgerald\* and Ashlyn Tedder\* Arkansas Tech University  
Co-Authors: Alyssa Kool, Aimee Bowman, Taylor Bishop, Cody Chivers, Tsunemi Yamashita

3:15

**COMPARISON BETWEEN ENVIRONMENTAL BACTERIA FOUND IN THE SOIL AND THE WOLF SPIDER, *RABIDOSA RABIDA* MICROBIOME USING 16S rRNA SEQUENCING ANALYSIS**

Brandon Hogland\*, Harding University. Co-Author: Ryan Stork

3:30

**PRODUCTION OF A PRENYLATED STILBENOID IN MUSCADINE GRAPE HAIRY ROOTS EXPRESSING A PRENYLTRANSFERASE GENE FROM PEANUT**

Mohammad Fazle Azim\*\*, Arkansas State University

3:45

**GENETIC MODIFICATION OF SWITCHGRASS CELL WALL FOR IMPROVED BIOMASS PROCESSABILITY**

Neha Verma\*\*, Arkansas State University  
Co-Author: Jianfeng Xu

4:00

**USING PROTEOMICS TO INVESTIGATE MICROBIAL ACID TOLERANCE RESPONSE**

Newton Hilliard, Arkansas Tech University  
Co-Authors: Alan J. Tackett, Kirk L. West

4:15

**MOLECULAR ADAPTATION OF MYOGLOBIN PROTEINS IN DEEP-DIVING CETACEANS**

David McClellan, University of Arkansas - Fort Smith

**TERRESTRIAL & WILDLIFE BIOLOGY  
WHITE RIVER ROOM**

3:00

**DISTURBANCE OF WINTERING WATERFOWL BY TRAFFIC NOISE**

John Veon\*, Hendrix College

3:15

**NEW RECORDS OF DISTRIBUTION OF *DRACUNCULUS SP.* INFECTING RIVER OTTERS (*LONTRA CANADENSIS*) IN ARKANSAS**

Heather May, Henderson State University  
Co-Author: Renn Tumilson

3:30

**WILD GAME HARVEST AND EFFECTS ON DIET-RELATED CO2 EMISSIONS IN THE U.S.**

Nathan Taylor\*, Hendrix College. Co-Author: Jamie Johnson

3:45

**INDIANA BAT OCCUPANCY ESTIMATES OF BUFFALO NATIONAL RIVER USING A MULTI-STATE OCCUPANCY MODEL**

James Gore\*\*, Arkansas State University

4:00

**NEW RECORDS OF THE AMERICAN BADGER (*TAXIDEA TAXUS*) IN ARKANSAS, WITH AN UPDATED DISTRIBUTION MAP**

Renn Tumilson, Henderson State University  
Co-Author: Blake Sasse

4:15

**INCIDENTAL CAPTURES OF PLAINS SPOTTED SKUNKS (*SPILOGALE PUTORIUS INTERRUPTA*) BY ARKANSAS TRAPPERS, 2012-2017**

David Sasse, Arkansas Game & Fish Commission

**MATH, PHYSICS & COMPUTER SCIENCE  
ARKANSAS RIVER ROOM**

3:00

**MATHEMATICAL MODELING OF A ROD-BEAM SYSTEM**

Zach Rail\*, Arkansas State University  
Co-Author: Jeongho Ahn

3:15

**WAVE PROFILE FOR CURRENT BEARING LIGHTNING RETURN STROKES**

Baylee Landers\*, Arkansas Tech University  
Co-Author: Ali Alzhrani

3:30

**AN INTERACTING MODEL BETWEEN DARK ENERGY AND DARK MATTER**

Yosuke Kitakaze\*, Arkansas Tech University  
Co-Author: Jesse Griffiths

3:45

**VERIFICATION AND VALIDATION FOR TURBULENT MIXING SIMULATIONS**

**Arkansas Academy of Science Meeting Program**

Tulin Kaman, University of Arkansas

**4:00  
NUTRIENT CONCENTRATIONS IN BIG CREEK  
CORRELATE TO CAFO PRESENCE**

David Peterson, University of Central Arkansas

**4:15  
EFFICACY OF SUPPLEMENTAL INSTRUCTION ON  
ALGEBRA AND CALCULUS-BASED PHYSICS TEACHING-  
LEARNING PROCESSES**

Puskar Chapagain, Southern Arkansas University

*Co-Authors: Lavana J. Kindle, Dipak Rimal*

**ORAL SESSIONS: SATURDAY 8:00-10:15**

**GENERAL BIOLOGY  
MOCKINGBIRD ROOM**

**8:30  
GENE FLOW AND GENETIC STRUCTURE OF TWO OF  
ARKANSAS'S RAREST DARTER SPECIES (*TELEOSTEI-  
PERCIDAE*), THE ARKANSAS DARTER, *ETHEOSTOMA  
CRAGINI*, AND THE LEAST DARTER, *E. MICROPERCA***

Brian Wagner, Arkansas Game & Fish Commission

*Co-Authors: Robert Wood, Justin Baker*

**8:45  
DISTRIBUTION OF *CAMPOSTOMA SPADICEUM* IN  
SOUTHERN ARKANSAS**

Renn Tummlison, Henderson State University

*Co-Author: Henry Robison*

**9:00  
NOTES ON TARANTULA (*APHONOPELMA HENTZI*)  
REPRODUCTION IN MISSOURI**

David Jamieson, Crowder College

*Co-Author: Austin Jones*

**9:15  
DISTAL UROGENITAL ANATOMY IN MALE SOUTHERN  
COAL SKINKS, *PLESTIODON ANTHRACINUS PLUVIALIS*  
(REPTILIA: SCINCIDAE)**

Stan Trauth, Arkansas State University

*Co-Author: Kevin Gribbin*

**9:30  
EARLY SEASONS PRIMENESS IN ARKANSAS RACCOON  
PELTS**

David Sasse, Arkansas Game & Fish Commission

**9:45  
AVIAN FRUGIVORY IN A FRUITING MULBERRY TREE  
(*MORUS* SPP.) IN ARKANSAS**

Jack Jackson, University of Arkansas - Fort Smith

*Co-Author: Ragupathy Kannan*

**10:00  
VERTEBRATE NATURAL HISTORY NOTES FROM  
ARKANSAS, 2018**

Renn Tummlison, Henderson State University

*Co-Authors: Blake Sasse, Henry Robison, Matt Connior, Chris McAllister, Kelly Jobe, Matthew Anderson*

**10:15  
NEW RECORDS OF DISTRIBUTION OF *DRACUNCULUS  
SP.* INFECTING RIVER OTTERS (*LONTRA CANADENSIS*)  
IN ARKANSAS**

Heather May, Henderson State University

*Co-Authors: Allison Surf, Renn Tummlison*

**CHEMISTRY & GEOSCIENCES  
WHITE RIVER ROOM**

**8:30  
BOND VALENCE - LENGTH RELATIONSHIPS AND  
ORBITAL EXPONENTS FOR HYDROGEN THROUGH  
FLUORINE**

Franklin Hardcastle, Arkansas Tech University

**8:45  
INHIBITION OF CYSTINE TRANSPORT LEADS TO  
HUMAN GLIOMA GROWTH RETARDATION.**

Mariusz Gajewski, Arkansas Tech University

**9:00  
UNDERSTANDING THE COMPLEXATION OF SMALL  
MOLECULES WITH A MACROMOLECULE**

Rajib Choudhury, Arkansas Tech University

*Co-Author: Vaidhyanathan Ramamurthy*

**9:15  
OPTIMUM MAGNETOMETER TRANSECT SPACING TO  
LOCATE LEGACY OIL AND GAS WELLS**

Michael Davis, Arkansas Tech University

*Co-Authors: Jason Patton, Kenyon Gowing, Hunter Vickers*

**9:30  
COMPARISON OF EFFECTIVE OPTICAL PROPERTIES  
OF TWO-COMPONENT INTERNALLY MIXED  
AEROSOLS USING VARIOUS MIXING RULES**

Kristin Dooley, University of Central Arkansas

*Co-Author: Jessica DeYoung*

**ENGINEERING & COMPUTER SCIENCE  
ARKANSAS RIVER ROOM**

**8:30  
STEPS TOWARD MEASURING WORLD SPACE  
EXPLORATION ACTIVITY**

Richard Segall, Arkansas State University

*Co-Authors: Ronithkumareddy Duggirala, Venkat Kodali, Daniel Berleant, Hyacinthe Aboudja*

**8:45  
DEEP LEARNING-BASED FRAMEWORK FOR FMRI  
AUTISM IMAGE CLASSIFICATION**

Xin Yang, Southern Arkansas University

*Co-Authors: Ning Zhang, Saman Sarraf*

**9:00  
RAM PUMP, AN ENERGY INDEPENDENT SOLUTION TO**

Arkansas Academy of Science Meeting Program

**IMPROVE WATER ACCESSIBILITY TO UNDERDEVELOPED INHABITANTS IN THE WORLD – A PERFORMANCE IMPROVEMENT STUDY**

Ashokkumar Sharma, University of Arkansas at Little Rock Co-Authors: Srikanth Pidugu, Shashank Khaire, Swaminadham Midturi

9:15

**APPLICATIONS OF THEORETICAL ADVANCES IN THE OPTICAL ENERGYMOMENTUM DEBATE: INVISIBILITY CLOAKS, TRACTOR BEAMS, AND REVERSED RADIATION PRESSURE**

Brandon Kemp, Arkansas State University  
Co-Author: *Cheyenne Sheppard*

9:30

**THE ELECTRODYNAMICS OF KINETIC, CANONICAL, AND HIDDEN SYSTEMS UNDER RELATIVISTIC MOTION**

Cheyenne Sheppard, Arkansas State University  
Co-Author: *Brandon Kemp*

9:45

**INVESTIGATION OF ACOUSTIC-BASED CRACK DETECTION IN PVC PIPES**

Muhammad Safeer Khan, Arkansas Tech University

10:00

**A STUDY OF M AND MDYN MASSES AT THE DIFFERENT OF THE DYNAMICAL PARAMETERS OF THE SPIRAL HOST GALAXIES**

Ismaeel Al-Baidhany, Al-Mustansaryah University Co-Authors: *Sami Salman Chiad, Nadir Fadhil Habubi, Khalid Haneen Abass, Ehssan S. Hassan, Mohamed Odda Dawod, Wasmaa Jabbar*

10:15

**OPTICAL PROPERTIES AND DISPERSION PARAMETERS OF PMMA-MnCl<sub>2</sub>**

Sami Chiad, Al-Mustansaryah University  
Co-Authors: *Nadir Fadhil Habubi, Khalid Haneen Abass, Ismaeel Al-Baidhany, Ehssan S. Hassan, Mohamed Odda Dawod, Wasmaa Jabbar*

**PARASITOLOGY  
BLACK RIVER ROOM**

9:30

**PARASITES OF THE SPOTTED SUCKER, *MINYTREMA MELANOPS* (CYPRINIFORMES: CATOSTOMIDAE) FROM ARKANSAS AND OKLAHOMA**

Chris McAllister, Eastern Oklahoma State College-Idabel  
Co-Authors: *D.W. Cloutman, A. Choudhury, T. Scholz, S.E. Trauth, T.J. Fayton, and H.W. Robison*

9:45

**PREVALENCE AS A PREDICTOR OF OTHER HELMINTH POPULATION DESCRIPTORS (MEAN, STANDARD DEVIATION, MAXIMUM NUMBER) IS RELATIVELY INACCURATE AT HIGH PARASITE DENSITIES IN THE HOSTS.**

James Daly Sr., University of Arkansas for Medical Sciences (retired)

10:00

**ADDITIONAL RECORDS OF ACANTHOCEPHALAN PARASITES FROM ARKANSAS FISHES, WITH NEW RECORDS FROM MISSOURI FISHES**

Chris McAllister, Eastern Oklahoma State College-Idabel  
Co-Authors: *M.A. Barger, and H.W. Robison*

10:15

**PROPORTIONALITY OF STATISTICAL PARAMETERS FOR HELMINTH PARASITE POPULATIONS IN SMALLMOUTH BASS (*MICROPTERUS DOLOMEIU*) FROM THE BUFFALO NATIONAL RIVER IN ARKANSAS**

James Daly Sr., University of Arkansas for Medical Sciences (retired)

**POSTER PRESENTATIONS**

**BIOLOGICAL SCIENCES POSTER PRESENTATIONS**

**1 GENERATION AND ANALYSIS OF CHROMOSOMAL GENE DELETION MUTANTS OF TWO PUTATIVE THIOSULFATE SULFURTRANSFERASES IN *MYCOBACTERIUM SMEGMATIS***

Jasleen Saini\*\*, University of Arkansas (Co-Author: *Ravi D. Barabote*)

**2 INVESTIGATION OF THE FUNCTION OF A PUTATIVE CYSTEINE SYNTHASE HOMOLOG IN *MYCOBACTERIUM SMEGMATIS* USING UNMARKED GENE DELETION MUTATION**

Saroj Mahato\*\*, University of Arkansas, (Co-Author: *Ravi D. Barabote*)

**3 THE EFFECT OF SLCO TRANSPORTER POLYMORPHISMS ON PROSTAGLANDIN LEVELS IN HEALTHY POSTMENOPAUSAL VOLUNTEERS**

Kelsey Martin\*\*, Harding University  
Co-Authors: *Nimmy E. Isaac, Landry K. Kamdem*

**4 CHARACTERIZATION OF BIOMASS SMOKE PARTICLES VIA SCANNING ELECTRON MICROSCOPY AND ENERGY-DISPERSIVE X-RAY SPECTROSCOPY**

Mason Rostollan\*\*, University of Central Arkansas

**5 MOLECULAR MECHANISMS UNDERLYING THE HIGHER BIOMASS AND ABIOTIC STRESS TOLERANCE PHENOTYPE OF *ARABIDOPSIS MIOX* OVEREXPRESSERS**

Nirman Nepal\*\*, Arkansas State University  
Co-Authors: *Jessica P. Yactayo Chang, Lucia M. Acosta-Gamboa, Karina Medina-Jimenez, Mario A. Arteaga-Vazquez, Argelia Lorence*

**6 EXPOSURE TO CARBON BLACK NANOPARTICLES DURING LARVAL DEVELOPMENT AFFECTS ADULT PHYSIOLOGICAL STRESS TOLERANCE IN WILD TYPE ISOLATES OF *CAENORHABDITIS ELEGANS***

Brenna Walters\*, Harding University  
Co-Authors: *Gavin Traber, Riley Jones, Kasey Boatwright, Jared Cooper, Emme Copeland, Coleman Dennis, Brandon Gates, Shelby Hamilton, Jon Aaron Howell, Caroline Minton, Joe Tolar, Jo Goy*

## Arkansas Academy of Science Meeting Program

- 7 **A RETROSPECTIVE MULTISTATE ANALYSIS OF INFLUENZA PANDEMIC DEATHS**  
Spencer Long\*, University of Central Arkansas  
*Co-Author: Ashton Purtle*
- 8 **TRANSIENT RECEPTOR POTENTIAL CHANNEL 3 AND ITS EFFECTS ON SYSTEMIC BLOOD PRESSURE REGULATION IN DISEASED VERSUS HEALTHY MESENTERIC ARTERIES**  
Ryan Williams, Arkansas Tech University
- 9 **DETECTION OF TEN ANTINEOPLASTIC DRUGS IN A CLINICAL SETTING BY WIPE TEST AND LC-MS/MS ANALYSIS**  
Spencer Sanson\*\*, University of Arkansas for Medical Sciences. *Co-Author: Howard Hendrickson*
- 10 **A COMPARISON OF JAPANESE AND AMERICAN CHILDREN'S DIETS, AND A LITERATURE REVIEW OF DIET AND DISEASE.**  
Malynn McKay, Arkansas Tech University
- 11 **THE EFFECT OF GREEN TEA EXTRACT ON *DAPHNIA MAGNA***  
Antoinette Davis\*, Southern Arkansas University
- 12 **GENETIC ENGINEERING OF THE Mad LOCUS USING CRISPR/Cas-9 and Phi-C31 RECOMBINATION**  
Jeremy Brown\*, Southern Arkansas University
- 13 **IDENTIFY MICROBES IN DRINKING WATER USING PCR**  
Jeremy Brown\*, Southern Arkansas University
- 14 **HOUSE FINCH (*HAEMORHOUS MEXICANUS*) NESTING IN DECEMBER IN ARKANSAS**  
Kimberly Smith, University of Arkansas
- 15 **OBSERVATIONS OF TOWNSEND'S SOLITAIRES (*MYADESTES TOWNSENDI*) ON MOUNT MAGAZINE IN LOGAN COUNTY, ARKANSAS**  
Kimberly Smith, University of Arkansas
- 16 **SECOND RECORD OF THE GRAY-HEADED JUNCO (*JUNCO HYEMALIS CANICEPS*) IN ARKANSAS**  
Kimberly Smith, University of Arkansas
- 17 **DOES FREQUENTLY VISITING A BLUEBIRD NEST INCREASE PREDATION RISK?**  
Amanda Trusty\*, Arkansas State University  
*Co-Author: Virginie Rolland*
- 18 **DOES AXLE GREASE EFFECTIVELY PROTECT BLUEBIRD NESTS FROM PREDATORS?**  
Michael Trusty\*, Arkansas State University *Co-Author: Virginie Rolland*
- 19 **DEVELOPING MICROSATELLITE MARKERS FOR GENETIC IDENTIFICATION OF SONGBIRDS**  
Edgar Sanchez\*, Arkansas Tech University  
*Co-Author: Douglas Barron*
- 20 **WINTER SURVEYS OF *COTINUS OBOVATUS* (AMERICAN SMOKETREE) IN THE OZARK MOUNTAINS**  
Gary Graves, Smithsonian Institution
- 21 **HIGH-THROUGHPUT PLANT PHENOTYPING AT THE A-STATE PHENOMICS FACILITY**  
Zac Campbell, Arkansas State University  
*Co-Author: Nirmal Nepal*
- 22 **NOVEL NUCLEAR AND PLASTID LOCI AND THEIR UTILITY FOR INFERRING RELATIONSHIPS AMONG SPECIES OF THE GENUS *STREPTANTHUS* (BRASSICACEAE) FOUND IN ARKANSAS AND ADJOINING STATES.**  
Leila Henning, University of Arkansas at Monticello  
*Co-Authors: Freddie Rivera, Brent Baker, Karen Fawley, Marvin Fawley*
- 23 **THE HUNT FOR BIGLEAF**  
Jennifer Bryant\*, Arkansas State University  
*Co-Author: Travis Marsico*
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