

2019

Keynote Address and Meeting Program

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KEYNOTE ADDRESS

The Emerging Science of Complex Systems: From Physics to Cities and Back Again.

By Professor Luis M. Bettencourt, Pritzker Director of the Mansueto Institute for Urban Innovation, Professor of Ecology and Evolution, and Associate Faculty and Special Friend of Sociology at the University of Chicago. He is also External Professor of Complex Systems at the Santa Fe Institute



Prof. Bettencourt received a doctorate in theoretical physics from Imperial College (University of London) and held postdoctoral positions at Los Alamos National Laboratory, the Massachusetts Institute of Technology, and the University of Heidelberg. His recent accolades include an invitation to the White House Frontiers Conference (2016), service on the President's Council of Advisors on Science and Technology working group on "Technology and the Future of Cities" (2015) and the World Cities Summit Young Leaders network (2015), and induction as Kavli Fellow of the National Academy of Sciences at the Frontiers of Science Japanese-American Symposium (2014).

Prof. Bettencourt will deliver our Keynote Address, "The Emerging Science of Complex Systems: From Physics to Cities and Back Again."

Abstract: Many of the most important and difficult challenges to science and policy today ask that we conceive of phenomena in nature and in human societies as complex systems.

This approach emphasizes processes and interconnections in the way phenomena in living systems take place, using quantitative methods from physics, population biology and economics to make sense of new big data.

I will discuss my own path as a physicist, faculty of ecology and evolution and scientific director of an institute for urban research to illustrate how connections between these disciplines can be a particularly fertile ground for education and research, and how a synthesis of ideas is emerging around processes in nature that create and sustain complexity and adaptation. I will make a case for a set of wonderful new opportunities ahead for those pursuing a broad and rigorous scientific culture that is able to transcend traditional silos and engage with big questions in research and in practice.

SECTION PROGRAMS ORAL PRESENTATIONS

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

ORAL SESSIONS: FRIDAY 1:00-4:45

GEOSCIENCE

ROOM: DW Reynolds 8

1:00

EVALUATION OF A MICRO SPECTROMETER FOR SATELLITE MISSIONS

Michael Cruz*, Harding University

Co-Authors: E. W. Wilson, Jr. (Harding University); Y. X. Chan, (University of Arkansas Little Rock); Adam Po-Hao Huang (University of Arkansas Fayetteville)

1:15

WATER ADSORPTION ON ATMOSPHERIC CLAY MINERALS: EXPERIMENTAL AND THEORETICAL STUDIES OF INDIRECT EFFECTS ON CLIMATE

Courtney Hatch, Hendrix College

Co-Author: Paul R. Tumminello; Megan A. Cassingham; Annie L. Greenaway; Kenneth J. Harris; Matthew Christie; Rebecca Parham; and Karen Morris

1:30

GEOTHERMAL ENERGY USE AND POTENTIAL FOR THE CARIBBEAN NATION OF GRENADA

Khalil Buckmire*, University of Arkansas

Co-Authors: Christopher L. Liner

1:45

POINTING ISN'T RUDE: A PROOF-OF-CONCEPT HAB STABILIZER

Russell Jeffery*, University of Central Arkansas

ECOLOGY AND ORGANISMAL BIOLOGY I

ROOM DW Reynolds 10

1:00

THE REPRODUCTIVE SEASON OF THE HIGHLAND STONEROLLER, CAMPOSTOMA SPADICEUM, EVIDENCED BY MUSEUM SPECIMENS

Grace Wills*, Henderson State University

Co-Authors: Renn Tumblison, Henderson State University; Henry Robison (Arkansas State University, retired)

1:15

ENERGY ALLOCATION PATTERNS IN A GIRDLING AND A NON-GIRDLING CATERPILLAR

Brianna Trejo**, University of Central Arkansas

Co-Authors: David Dussourd; Matthew Gifford (University of Central Arkansas)

1:30

THE SYNERGISTIC RELATIONSHIP OF BISON GRAZING AND ARTHROPOD HERBIVORY IN STRUCTURING A TALLGRASS PRAIRIE PLANT COMMUNITY

Sofie Varriano*, Hendrix College

Co-Authors: Luke H. Lefler; Krishna Patel; Carolina Kirksey; Adam Turner; Matthew D. Moran (Hendrix College)

1:45

NEW STATE RECORDS FOR THE TEXAS FROSTED ELFIN (*CALLOPHRYS IRUS HADROS*) AND ITS HOST PLANTS (*BAPTISIA* SPP.)

Caralee Shepard*, Hendrix College

Co-Author: Leah C. Crenshaw (Hendrix College); Natalie E. Phelan (Hendrix College); Melissa Lombardi (US Fish & Wildlife Service); William H. Baltosser (University of Arkansas at Little Rock); Maureen R. McClung (Hendrix College); Matthew D. Moran (Hendrix College)

2:00

BIODIVERSITY OF HYMENOPTERA ACROSS SKY ISLANDS OF ARKANSAS

Allison Monroe*, Hendrix College

Co-Authors: Oliver J. Kuhns (Hendrix College); Sierra C. Hubbard (Hendrix College); Reynol Rodriguez (Hendrix College); Maureen R. McClung (Hendrix College); Matthew D. Moran (Hendrix College); Michael W. Gates (Smithsonian National Museum of Natural History)

2:15

EXPLAINING THE DIVERSITY AND EVOLUTION OF COLOR IN ANTS USING THE ANTWEB IMAGE DATABASE

Jacob Idec*, Hendrix College

Co-Author: Brian Fisher (California Academy of Sciences)

CHEMISTRY AND PHYSICS

ROOM DW Reynolds 11

1:00

LASER TRAPPING OF POLYSTYRENE BEADS USING OPTICAL TWEEZERS

Ashley Cotnam**, University of Central Arkansas

1:15

A COMPACT RAMAN SPECTROMETER USING COMMERCIAL OFF THE SHELF (COTS) COMPONENTS

Drake Jackson*, Harding University

Co-Authors: Brandun Barnett (Harding University); Edmond W. Wilson, Jr. (Harding University)

1:30

IMPLICIT AND EXPLICIT SOLVATION STUDIES OF SMALL MOLECULES AND IONS IN WATER

Eliza Hanson*, John Brown University

Co-Author: Jill Ellenbarger (John Brown University)

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1:45
BOND VALENCE / BOND LENGTH CORRELATIONS FOR PHOSPHORUS-OXYGEN AND URANIUM-OXYGEN BONDS

Blake Ludwig**, Arkansas Tech University
Co-Authors: Kallie Mendenhall (Arkansas Tech University); Franklin D. Hardcastle (Arkansas Tech University)

2:00
INVESTIGATION ANION INTERACTIONS WITH TRIPODAL UREA-BASED ANION TRANSPORTERS

Natalie Lowry**, John Brown University

2:15
EXPLORING THE POTENTIAL OF PHENOL DERIVATIVES: CHARGE TRANSFER FLUOROPHORES AND DETECTION OF PROTEIN IN SOLUTION

Rajib Choudhury, Arkansas Tech University
Co-Authors: Siddhi Patel (Arkansas Tech University); Kallie Mendenhall (Arkansas Tech University)

MATHEMATICS
ROOM DW Reynolds 13

1:00
THE EFFECTS OF SELECTION HISTORY ON PERCEPTUAL AND SEMANTIC INTERACTIONS IN VISUAL SEARCH

Taylor Dague**, University of Central Arkansas
Co-Authors: Caroline Dacus (University of Central Arkansas); Ken Sobel (University of Central Arkansas); Amrita Puri (University of Central Arkansas)

1:15
INITIAL CONDITIONS FOR NUMERICAL SIMULATIONS OF RICHTMYER-MESHKOV INSTABILITY

Logan Sublett**, University of Arkansas
Co-Authors: Tulin Kaman; Alaina Edwards; John McGarigal

1:30
PERFORMANCE OPTIMIZATION OF THE CFD CODE FOR FLOW SIMULATIONS

Alaina Edwards*, University of Arkansas - Fayetteville
Co-Authors: John McGarigal, Tulin Kaman (University of Arkansas)

BIOLOGICAL AND MEDICINAL CHEMISTRY
ROOM DW Reynolds 8

3:00
COMPARATIVE LIPIDOMICS OF PHOSPHOLIPIDS IN GROUND BEEF EXTRACTS BY GC-MS AND MALDI-TOF MS

Frank Hahn, Hampton University

3:15
PROTEOMICS OF CARBON FIXATION IN HALOTHIOBACILLUS NEAPOLITANUS

Newton Hilliard, Arkansas Tech University

3:30
SCORPION TOXIN PROTEOMICS: SODIUM TOXIN GENE IDENTIFICATION, ISOLATION, AND PROTEIN OVEREXPRESSION

T Yamashita, Arkansas Tech University

3:45
ROLE OF THE DJ-1 PROTEIN IN MITOCHONDRIAL DYSFUNCTION AND PARKINSON'S DISEASE

Courtney Holloway*, University of Central Arkansas
Co-Author: Kari Naylor, Ph.D. (University of Central Arkansas)

4:00
GENE EXPRESSION STUDY OF SODIUM 13 TOXINS ON CENTRUROIDES VITTATUS

John Sisco*, Arkansas Tech University
Co-Authors: Chloe Fitzgerald; Grace Rice (Arkansas Tech University)

4:15
MELANIN CONCENTRATING HORMONE RECEPTOR 1 (MCH1R) ANTAGONISTS FOR TREATING ADDICTION

Britny Kirkpatrick*, Harding University
Co-Authors: Jim Tarrant, Jacob Hatvany, Thomas Pencarinha

4:30
THE ESSENTIALITY OF THE VINYL PROTON IN ANTICONVULSANT ENAMINONES

Henry North, Harding University
Co-Authors: Mariano S. Alexander (Howard University), Kenneth R. Scott (Howard University)

ECOLOGY AND ORGANISMAL BIOLOGY II
ROOM: DW Reynolds 10

3:00
OBSERVATIONS OF AN ALLIGATOR (*ALLIGATOR MISSISSIPPIENSIS*) NEST AND HATCHLINGS IN CLARK, COUNTY, WITH ANECDOTAL OBSERVATIONS OF OTHER ALLIGATOR NESTS IN ARKANSAS

Kevin Nordengren, Henderson State University
Co-Authors: Allison Surf (Henderson State University, Arkadelphia); Renn Tumblison (Henderson State University, Arkadelphia); Kelly Irwin (Arkansas Game and Fish Commission)

3:15
BILATERAL DIAPHYSEAL CHONDRODYSPLASIA AND POLYMORPHIC OSTEODYSPLASIA OF THE TIBIOFIBULAS IN A SOUTHERN LEOPARD FROG, LITHOBATES SPHENOCEPHALUS (AMPHIBIA: ANURA: RANIDAE)

Stan Trauth, Arkansas State University (Emeritus)
Co-Author: M.L. McCallum (Langston University)

3:30
RESPONSE TO RAPID HABITAT PERTURBATION IN THE SLIDER TURTLE (*TRACHEMYS SCRIPTA*): BEHAVIORAL AND HORMONAL EFFECTS.

Ben Cash, University of Central Arkansas

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3:45
AGE ESTIMATION USING PHALANXIAL SKELETOCHRONOLOGY IN NORTHERN CRAWFISH FROGS, *LITHOBATES AREOLATUS CIRCULOSUS* (AMPHIBIA: ANURA: RANIDAE), FROM ARKANSAS
Stan Trauth, Arkansas State University (Emeritus)
Co-Author: Christopher S. Thigpen (ASU)

4:00
PHYLOGENY AND CHARACTERIZATION OF *PARAEUSTIGMATOS COLUMELLIFERUM*, AN ARKANSAS ALGA THAT REPRESENTS A NEW LINAGE OF THE EUSTIGMATALES (EUSTIGMATOPHYCEAE)
Karen Fawley, University of the Ozarks
Co-Authors: Yvonne Nemcova (Charles University, Prague, Czech Republic); Marvin Fawley (University of the Ozarks)

4:15
BLACKROLL CREEK RUNS NORTH: A FAMILY FARM HISTORY AND ITS CHANGES FROM THE 1800S TO THE PRESENT
Anthony Holt**, University of Arkansas Community College, Morrilton

ENGINEERING
ROOM: DW Reynolds 11

3:00
FLOW DEPENDENCY UPON THE CONVECTION REGION HEIGHT OF A CFD TORNADO SIMULATOR
Sumit Verma**, University of Arkansas, Fayetteville
Co-Author: R. Panneer Selvam (University of Arkansas)

3:15
EXAMINING MOLECULAR LEVEL OF PROPERTIES OF ASPHALT BINDERS TO PREDICT THEIR MOISTURE-INDUCED DAMAGE
Sumon Roy**, Arkansas State University
Co-Author: Zahid Hossain (Arkansas State University)

3:30
EVALUATION OF RICE HUSK ASH (RHA) AS AN ASPHALT MODIFIER
Kazi Islam**, Arkansas State University
Co-Author: Zahid Hossain (Arkansas State University)

3:45
ANALYSIS OF ASPHALT BINDERS FROM CHEMICAL PROSPECTIVE
Mohammad Nazmul Hassan**, Arkansas State University
Co-Author: Zahid Hossain (Arkansas State University)

4:00
EXPLORATION OF ALTERNATIVE(S) OF THE EMPIRICAL AND EXPENSIVE TESTS TO CHARACTERIZE BITUMEN
MM Tariq Morshed**, Arkansas State University
Co-Author: Zahid Hossain (Arkansas State University)

4:15
CORROSION RISKS OF METAL CULVERT PIPES IN NORTHEAST ARKANSAS
Md Ariful Hasan**, Arkansas State University
Co-Author: Zahid Hossain (Arkansas State University)

ECOLOGY AND ORGANISMAL BIOLOGY III
ROOM: DW Reynolds 13

3:00
DEVIATION OF ANTIOXIDANT CAPABILITY OF COLORED SWEETPOTATOES AND ITS UPPERS IN RELATION TO POLYPHENOLIC CONTENTS
Mosammat Briti Rabbani**, University of Arkansas at Pine Bluff
Co-Author: Shahidul Islam

3:15
WILD GAME CONSUMPTION AND GREENHOUSE GAS EMISSION SAVINGS IN THE U.S.
Jamie Johnson, Hendrix College
Co-Authors: Nathan Taylor; Benjamin Zamzow; Matthew Moran

3:30
DETERMINATION OF BAT SPECIES' USE OF ARTIFICIAL BARK ENHANCED HABITAT IN NORTHERN ARKANSAS
Sarah Martin**, University of Central Arkansas

3:45
SPATIAL ECOLOGY OF MUD SNAKES (*FARANCIA ABACURA*) IN A SMALL ISOLATED POND WITHIN A BOTTOMLAND HARDWOOD FOREST
Caleb O'Neal*, Harding University
Co-Authors: Michael V. Plummer; Ryan Stork; Steven M. Cooper

4:00
EFFECT OF SELECTION AND GENETIC DRIFT ON PHENOTYPIC DIVERSIFICATION IN THE EASTERN COLLARED LIZARD.
Andrew Feltmann**, University of Central Arkansas
Co-Authors: Matthew Gifford (University of Central Arkansas); Emily Field (University of Central Arkansas)

4:15
INTEGRATION OF MIXED METHODS INTO COMMUNITY-BASED PARTICIPATORY RESEARCH (CBPR): A METHODOLOGICAL APPROACH AND HEALTH-CENTERED CASE STUDY
Mason Rostollan**, University of Central Arkansas
Co-Authors Leah Horton (University of Central Arkansas)

4:30
ESTIMATING CULTURAL ECOSYSTEM SERVICES PROVIDED BY THE BUFFALO NATIONAL RIVER USING A CONTINGENT VALUATION METHOD
Margaret Young*, Hendrix College
(Co-Authors: Maureen R. McClung (Hendrix College); Matthew D. Moran (Hendrix College); William Haden Chomphosy (Hendrix College))

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ORAL SESSIONS: SATURDAY 8:00-10:15

KIM SMITH MEMORIAL SESSION

ROOM: DW Reynolds 8

8:30

INTRODUCTION TO THE SESSION: DR KIMBERLY G. SMITH'S LEGACY OF SCIENCE AND CONSERVATION

Maureen McClung, Hendrix College

8:45

WINTER OCCURRENCE AND HABITAT USE OF NORTHERN SAW-WHET OWLS (*AEGOLIUS ACADICUS*) IN NORTHWESTERN ARKANSAS

Mitchell Pruitt**, University of Arkansas

Co-Author: Kimberly G. Smith (University of Arkansas)

9:00

HISTORY AND CURRENT STATUS OF THE INCA DOVE (*COLUMBINA INCA*) IN ARKANSAS

Ragupathy Kannan, University of Arkansas--Fort Smith

9:15

THERMAL ECOLOGY OF PRAIRIE LIZARDS IN THE ARKANSAS RIVER VALLEY

Chris Kellner, Arkansas Tech University

9:30

DRIVERS OF GLOBAL FOREST LOSS AND WHAT IT MEANS FOR ARKANSAS

Christy Slay, The Sustainability Consortium

Co-Author: F.E. Follett

9:45

RECENT STUDIES ON THE BEHAVIORAL RESPONSES OF ARKANSAS WILDLIFE TO ANTHROPOGENIC NOISE

Maureen McClung, Hendrix College

10:00

VERTEBRATE NATURAL HISTORY NOTES FROM ARKANSAS, 2018

Renn Tumblison, Henderson State University

Co-Authors: Blake Sasse; Henry Robison; Matt Connior; Chris McAllister; Kelly Job; 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 Tumblison

ECOLOGY AND ORGANISMAL BIOLOGY IV

ROOM: DW Reynolds 10

8:30

LONG-TAILED WEASEL (*MUSTELA FRENATA*) STATUS AND DISTRIBUTION SURVEY IN ARKANSAS

Blake Sasse, Arkansas Game and Fish Commission

Co-Authors: SD Johnson (Tennessee Tech University), and RE Kissell Jr. (Tennessee Tech University)

8:45

NEW HOST AND DISTRIBUTIONAL RECORDS FOR HELMINTH PARASITES (TREMATODA, CESTODA, NEMATODA) OF ARKANSAS REPTILES (TESTUDINES, OPHIDIA)

Chris McAllister, Eastern OK St. College

Co-Authors: C.R. Bursley (Pennsylvania State University, Shenango Campus, Sharon); T.J. Fayton (Lamar Fish Health Center, U.S. Fish and Wildlife Service, Lamar, PA); H.W. Robison (Arkansas State University, retired); V. V. Tkach (University of North Dakota)

9:00

PARASITES (APICOMPLEXA, TREMATODA, NEMATODA, PHTHIRAPTERA) OF TWO ARKANSAS RAPTORS (FALCONIFORMES, STRIGIFORMES: STRIGIDAE)

Chris McAllister, Eastern OK St. College

Co-Authors: L.A. Durden (Georgia Southern University, Statesboro, GA); C.R. Bursley (Pennsylvania State University, Shenango Campus, Sharon, PA); J.A. Hnida (Midwestern University, Glendale, AZ); V.V. Tkach and T.J. Ackatz (University of North Dakota)

9:15

OCCURRENCE OF THE SINUS NEMATODE *SKRJABINGYLUS* SP. (NEMATODA: METASTRONGYLOIDEA) INFERRED FROM NASAL LESIONS IN ARKANSAS MUSTELIDAE AND MEPHITIDAE

Renn Tumblison, Henderson State University

Co-Author: T. L. Tumblison (Arkadelphia, AR)

9:30

VERTEBRATE NATURAL HISTORY NOTES FROM ARKANSAS, 2019

Renn Tumblison, Henderson State University

Co-Authors: C.T. McAllister (Eastern Oklahoma State College, Idabel, OK); H.W. Robison (Arkansas State University, retired); M.B. Connior (Northwest Arkansas Community College, Bentonville, AR); D.B. Sasse (Arkansas Game and Fish Commission, Mayflower, AR); P.R. Port (Arkansas Game and Fish Commission, Mountain Home, AR)

9:45

NEW ANGIOSPERM RECORDS FROM ARKANSAS

Jonathan Hardage*, Henderson State University

Co-Authors: Keenan Serviss (Arkadelphia, AR); Brook Olsen (Henderson State University); Brett Serviss (Henderson State University); and James Peck (Cedar Key, FL)

COMPUTER SCIENCE

ROOM: DW Reynolds 11

8:30

ANALYZING THE ADOPTION RATE OF LOCAL VARIABLE TYPE INFERENCE IN OPEN SOURCE JAVA 10 PROJECTS

Clayton Liddell*, Arkansas State University

Co-Author: Donghoon Kim (Arkansas State University)

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8:45

HOW CAN YOU BECOME A SOFTWARE ENGINEER IN PRESTIGIOUS COMPANIES?

Donghoon Kim, Arkansas State University

9:00

AUTOMATIC CUSTOMIZATION OF WEB PAGES TO ENHANCE USER EXPERIENCE

Ze Zhang Lin*, UALR

Co-Author: Dr. Chia-Chu Chiang (UALR)

9:15

CYBER SECURITY AWARENESS TRAINING PROGRAM FOR UNIVERSITY STUDENTS

Tanim Sardar**, Luay A. Wahsheh, Arkansas Tech University

9:30

EMPLOYING ENSEMBLE LEARNING FOR THE CATEGORIZATION OF ANDROID MALWARE TYPES

Brett Baker*, Southern Arkansas University

Co-Author: Rami Alroobi (Southern Arkansas University)

**ENGINEERING
ROOM: DW Reynolds 13**

9:30

CADMIUM SULFIDE-BUFFERED PV SYSTEMS: ASSESSING THE ENVIRONMENTAL, HEALTH, AND ECONOMIC IMPACTS

Rajesh Sharma, Arkansas State University

Co-Author: Maqsood Ali Mughal (Worcester Polytechnic Institute, Worcester, MA)

9:45

ELECTROMAGNETIC TUNABILITY OF CHARGED PARTICLES IN ALTERED DIELECTRIC SYSTEMS

Tamal Sarkar**, Arkansas State University

Co-Author: Brandon A. Kemp (Arkansas State University)

10:00

EXPERIMENTAL INVESTIGATION OF COUNTER-FLOW HEAT EXCHANGERS EXPOSED TO AMBIENT HEAT LEAKS

Lionel Hewavitharana, Southern Arkansas University

Co-Author: Kenneth Escudero (Southern Arkansas University)

10:15

DESIGN AND DEVELOPMENT OF A VISION BASED LANE KEEPING SYSTEM

Kaiman Zeng, Arkansas Tech University

Co-Authors: Michael Langley; Nasser Alshahrani

10:30

MOORE'S LAW AND SPACE EXPLORATION: NEW INSIGHTS AND NEXT STEPS

Michael Howell**, University of Arkansas at Little Rock

Co-Authors: Venkat Kodali (CARTI); Richard Segall (Arkansas State University); Hyacinthe Aboudja (Oklahoma City University); Daniel Berleant (University of Arkansas at Little Rock)

POSTER PRESENTATIONS

* Undergraduate student

** Graduate student

GENERAL BIOLOGY AND ECOLOGY

1 **LIKE MOTHS TO A FLAME**

Erin Guerra*

2 **NOTES ON THE NATURAL HISTORY OF SELECTED INVERTEBRATES**

Matt Connior

3 **A DOBSONFLY (MEGALOPTERA: CORYDALIDAE, *CORYDALUS CORNUTUS*) FROM ARKANSAS WITH ABERRANT MANDIBLES**

David Bowles

4 **THE ROLES FOR SPECIFIC CHROMATIN ENVIRONMENTS IN PROMOTING DISSOCIATION OF THE FACT COMPLEX FROM 3' ENDS OF GENES FOLLOWING TRANSCRIPTION.**

JunHyeuk Shin*

5 **HISTORY OF SPRING RIVER CRAYFISH (*FAXONIUS ROBERTI*) COLLECTIONS IN THE STRAWBERRY RIVER, ARKANSAS**

Brian Wagner

6 **DE NOVO DEVELOPMENT OF MICROSATELLITE MARKERS FOR GENETIC CHARACTERIZATION OF HOUSE FINCHES**

Edgar Sanchez*

7 **EFFECT OF SEX ON OSMOREGULATION OF THE OHIO SHRIMP, *MACROBRACHIUM OHIONE***

Drew Castleberry*

8 **A TALE OF TWO SYLAMORES: UNDERSTANDING RELATIONSHIPS AMONG LANDUSE, NUTRIENTS, AND AQUATIC COMMUNITY ASSEMBLAGES ACROSS A SUBSIDY-STRESS GRADIENT**

Brianna Trejo**

9 **EFFECTS OF RECREATIONAL ACTIVITIES ON MUSSELS AND THE ASIATIC CLAM IN THE LOWER SALINE RIVER**

Makayla Nguyen* and Katie Pike*

10 **PLAINS SPOTTED SKUNK PELT PURCHASE TRENDS IN THE OZARKS AND OUACHITAS, 1943-1990**

Blake Sasse

11 **PHOTOGRAPHIC RECORD OF A GREATER ROADRUNNER (*GEOCOCCYX CALIFORNIANUS*) FROM DREW COUNTY, ARKANSAS.**

John Hunt

12 **BEHAVIORAL RESPONSE OF CAROLINA WRENS (*THRYOTHORUS LUDOVICIANUS*) TO SONGS ALTERED TO ESCAPE MASKING EFFECTS OF ANTHROPOGENIC NOISE**

Tristian Wiles*

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- 13 **SONGBIRDS ALTER THEIR USE OF BIRD FEEDERS IN RESPONSE TO VOCALIZATION PLAYBACK**
Shelby Sarna*
- 14 **USING RADIO FREQUENCY IDENTIFICATION TO TEST THE ASSUMPTIONS OF OPTIMAL FORAGING THEORY ON WINTERING BIRDS**
Hannah Adams* and Sarah Roddy*
- 15 **DO PHENOTYPIC TRAITS PREDICT FEEDER USE BY WILD BIRDS?**
Colton Barrett*
- 16 **COMPARISON OF SUGAR-BASED CLEARING TECHNIQUES IN AVIAN EMBRYOS**
Kira Gibbs*
- 17 **DISTRIBUTION, HABITAT, AND LIFE HISTORY ASPECTS OF THE DWARF CRAYFISHES OF THE GENUS *CAMBARELLUS* (DECAPODA: CAMBARIDAE) IN ARKANSAS**
Chris McAllister
- 18 **DUMORTIER'S LIVERWORT, *DUMORTIERA HIRSUTA* (SW.) *NEES* (HEPATICOPHYTA: MARCHANTIALES: DUMORTIERACEAE) IN ARKANSAS**
Chris McAllister
- 19 ***COTYLOGASTER OCCIDENTALIS* (ASPIDOGASTREA: ASPIDOGASTRIDAE) FROM FRESHWATER DRUM, *APLODINOTUS GRUNNIENS* (PERCIFORMES: SCIAENIDAE), FROM NORTHEASTERN OKLAHOMA**
Chris McAllister
- 20 **HAEMOGREGARINA SP. (APICOMPLEXA: EUCCOCCIDIORIDA: ADELEORINA) FROM EASTERN SPINY SOFTSHELL, *APALONE SPINIFERA SPINIFERA* (TESTUDINES: TRIONYCHIDAE), FROM ARKANSAS**
Chris McAllister
- 21 **MORE DISTRIBUTIONAL AND HOST RECORDS FOR TWO ACANTHOCEPHALAN PARASITES FROM ARKANSAS FISHES (APHREDODERIDAE, CATOSTOMIDAE, CENTRARCHIDAE, CYPRINIDAE)**
Chris McAllister
- 22 **SURVEY OF *Aedes albopictus* OVIPOSITION IN SOUTHEAST ARKANSAS**
Kameron Skinner*
- 23 **ENERGY CONTENT OF SEEDS OF TEXAS DOVEWEEN (*CROTON TEXENSIS*) FROM THE DIET OF MOURNING DOVES (*ZENaida MACROURA*) FROM SOUTHEASTERN NEW MEXICO**
Emily Neilson*
- 24 **CREATING A NEW MOLECULAR PHYLOGENY OF *ARCEUTHOBIUM***
Kate Sanders*
- 25 **SURVEYING VARIABILITY IN CYANIDE PRODUCTION OF WHITE CLOVER (*TRILLIUM REPENS*) ACROSS AN URBANIZATION GRADIENT IN LITTLE ROCK, AR AND MEMPHIS, TN**
Sierra Hubbard*
- 26 **SOIL ALGAL COMMUNITIES OF WARREN PRAIRIE NATURAL AREA**
Marvin Fawley
- 27 **SOIL CRUST ALGAL COMMUNITIES OF WARREN PRAIRIE NATURAL AREA**
Karen Fawley
- 28 **THE ANTIMICROBIAL ACTIVITY OF *CALLICARPA AMERICANA* BERRY EXTRACTS**
Kara Burchfield* and Elizabeth Wess*
- 29 **THE BACTERIAL MICROBIOME OF THE SOCIAL AMOEBAE**
Eleni Sallinger**
- 30 **THE EFFECTS OF CAFFEINE AND CHLOROGENIC ACID ON *DAPHNIA MAGNA***
Ashley Stewart*
- 31 **EFFECT OF MULTI-COURSE PRENATAL STEROIDS ON FIBER-TYPE PROFILE AND ENZYME ACTIVITY IN THE GUINEA PIG RECTUS THORACIS**
Tel Johnson*
- 32 **BIODIVERSITY AND COMMUNITY STRUCTURE OF AQUATIC INSECTS IN THE LITTLE MISSOURI RIVER**
Dustin Booth* and Logan Pearson*
- 33 **SUPERNUMERARY SOURCES OF HUMAN DIET AND BIOENERGY FOR THE TWENTY-FIRST CENTURY; SOYBEAN (*GLYCINE MAX L.*)**
Ishrar Islam*
- 34 **CHEMICAL ANALYSIS OF POND DEVELOPMENT**
Audrey Lawrence*
- 35 **CHARACTERIZATION OF SMOKE PARTICLE EMISSIONS FROM ROCKET STOVES VERSUS THREE-STONE FIRES**
Mackenzie Hoogshagen* and Elizabeth Versluis*
- 36 **VARIATION IN HABITAT USE AND BODY CONDITION OF *ETHEOSTOMA CAERULEUM* AND *ETHEOSTOMA FRAGI* IN THE STRAWBERRY RIVER, ARKANSAS**
Blake Mitchell*
- MEDICINE, MOLECULAR AND CELLULAR BIOLOGY**
- 37 **ANALYSIS OF DE NOVO PEPTIDES FOR POTENTIAL ANTIMICROBIAL ACTIVITY**
Hannah Smith*

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