THE WILDLIFE SOCIETY

Leaders in Wildlife Science, Management, and Conservation

9th Annual Meeting of the Arkansas Chapter of The Wildlife Society

March 14-15th, 2024
Mount Magazine State Park, Paris, AR

FULL PROGRAM

Chapter Officers

Clint Johnson
President

Levi Horrell
President-Elect

Matt Anderson
Treasurer

Idun Guenther
Secretary

Bubba Groves
Member-at-large

Keynote Speaker

Luke Lewis is the Assistant Chief of Wildlife with the Arkansas Game and Fish Commission in Little Rock, AR. He supervises feral hog, deer, elk and bear programs in the state as well as regional staff in regions 1, 5, and 6 for all AGFC Wildlife Management Areas. Luke graduated from Louisiana Tech University with a bachelor's degree in wildlife conservation. He worked for 20 years as a Forestry and Wildlife Biologist with Willamette Industries. In 1999, he became the National Wild Turkey Federation's first regional biologist. In the 2000s, Luke has worked with non-profit organizations, agencies, such as the Natural Resources Conservation Service, and companies across several states in the southeast. He hosted multiple field days for over 1000 landowners and professionals and conducted over a hundred site visits to promote the Long-leaf Pine Restoration and management through USDA NRCS. Luke is married and has three children and four grandchildren. He enjoys hunting, fishing, team sports.

AGENDA

Thursday, March 14th

8:30	Registration & Silent Auction opens
9:15	Welcome/Logistics and Meeting Overview - Clint Johnson, AR-TWS President
9:30-10:00	Keynote address: Luke Lewis, Assistant Chief of Wildlife, AGFC
	Arkansas The Beautiful Glade Restoration
10:00-10:30	Break
10:30-11:45	Session 1 Student Oral Presentations Moderator: 1 Title, *Presenter*
10:30	Using Family Forest Landowner Perspectives to Improve Natural Resource Conservation Service Habitat Management Program Recruitment *Priest*
10:45	Diet Analysis of Wintering Mallards in the Lower Mississippi Alluvial Valley Using Metabarcoding *Scott Herman*
11:00	Effects of Relative Hog Abundance on the Occupancy and Community Composition of Birds *Kenneth Wilson*
11:15	Breeding and Migration Ecology of Arkansas King Rails *Jessica Schmit*
11:30	Grassland Bird Occupancy Responses to Tree-Grass Boundaries *Lauren Berry*
11:45-1:00	Lunch (on your own)
1:00-2:15 PM	Session 2 Student & Professional Oral Presentations Moderator: 2
1:00	Interior Least Tern (*Sternula antillarum athalassos*) Colony Productivity and Fish Community Analyses on the Arkansas River in Arkansas *Nathan Mansor*
1:15	Vegetation and Waterbird Response to a Drawdown on a Semi-permanent Wetland *Katherina Schroyer*
Professional Presentations Start	
1:30	Individual Tree Health of Red Oaks (*Quercus spp.*) within Greentree Reservoirs and Implications for Mallard (*Anas platyrhynchos*) Use *Cassandra Hug*
1:45	Timing and Flight Behavior of Golden Eagles in the Ozark Highlands *Rebecca Peak*
2:15	Break
2:30-4:00	Mock Interviews
	Opportunity for students and early career professionals to practice their interview skills. *Sign Up Link:* https://forms.gle/rTtChCE5ByqwxFEe6

Thursday, March 14th (cont.)

4:00-5:50	Session 3 Professional Oral Presentations Moderator 3
4:00	Patterns of Feeder Use by Wild Birds and Associated Effects on Mosquito-borne Pathogens *Dr. Doug Barron*
4:30	From Caves to Prairies: An Overview of the Partners For Fish and Wildlife Program in Arkansas *Jonathan Baxter*
4:50	The Power of Partnerships – Arkansas Style *Roger Mangham*
5:10	Pheasants Forever, Inc. and Quail Forever *Ryan Parker*
5:30	Migratory Bird Joint Ventures: Where Science Meets Management A Case Study from the Lower Mississippi Valley Joint Venture *Austin Klais*
6:00-7:30	Dinner (on your own)
7:30-8:00	Social Networking & Poster Presentations
8:00	Student Quiz Bowl Competition and Silent Auction

Friday, March 15th

7:30-8:30	Breakfast (on your own)
8:30	Registration & Silent Auction contd.
9:00	Arkansas Chapter of TWS Business Meeting
	• Treasurer's Report • Committee Reports • Elections: Member-at-large, Secretary • Updates: Student chapters
10:00	Student Awards
10:30	Round Tables • Myth-busting the Wildlife Field • Presentation Tips and Tricks
11:30	Nature Walk / Career Booths (Open Jobs/ Resumé Review)
	Use this time to take a self-guided walk around Mount Magazine, join the botany or birding walks starting at Brown Springs Picnic Area or check out the Career Tables to learn about job opportunities and get your résumé reviewed.
12:00	Lunch (on your own)
1:00	Silent Auction Closes
1:30	Wrap-up/Adjourn

AR-TWS Board Nominees

Board Member-at-large

Dr. Doug Barron

Doug Barron is an Associate Professor of Wildlife Science at Arkansas Tech University. He obtained a B.S. in Biological Sciences from Louisiana State University (2005), a M.S. in Ecology, Evolution, and Conservation Biology from the University of Illinois (2009), and a Ph.D. in Zoology from Washington State University (2013). He conducted post-doctoral research at the University of South Florida before joining Arkansas Tech University in 2015. His faculty position was initially restricted to undergraduate students, and although he has enjoyed supervising >45 undergraduate researchers across the past eight years, he is excited to expand to advising graduate students in 2024. His research aims to understand how wildlife behavior shapes survival and reproduction, particularly in human-modified landscapes. This work has ranged widely, from characterizing responses to military disturbance (MS Thesis) to documenting physiological and morphological changes following wildfires (PhD Dissertation). Recent projects focus heavily on patterns of disease transmission arising from human-wildlife interactions, including those observed for avian malaria, avian influenza, Zika virus, and West Nile virus. Doug combines field and lab techniques to answer complex ecological questions in diverse organisms such as birds, bats, snakes, and even mosquitoes. Field ornithology remains his primary passion though, and he is most at home chasing songbirds through the forests of Arkansas with his students.

Kevin Wood

Kevin Wood has been a wildlife biologist with the Arkansas Game and Fish Commission for the last 9 years. He manages approximately 100,000 acres of public land across 5 wildlife management areas, including one of the state's quail focal areas. Kevin serves as a regional burn boss, nuisance bear coordinator, and member of AGFC's quail team. Kevin also served for 20 years in the Arkansas Air National Guard. He retired at the rank of Master Sergeant, and is a veteran of the war in Iraq. Kevin holds an Associate of Applied Science in Avionics Systems Technology from the Community College of the Air Force, an Associate of Arts in General Studies, a Bachelor of Science in Wildlife Management, and a Master of Science in Forest Resources, all from the University of Arkansas Monticello. Kevin is an avid hunter and outdoorsman, and resides with his wife in rural Clark County near Arkadelphia.

AR-TWS Board Nominees

Secretary

Robert Byrd

Robert Byrd is currently the State Director for USDA – Wildlife Services in Sherwood, AR. He received a B.S. degree in Fisheries and Wildlife from the University of Missouri and a M.S. from Southeast Missouri State University where he studied blackbird repellents for agricultural crops. Robert has worked all over the country in a variety of positions ranging from park ranger with the NPS at Mount Rushmore to wildland firefighter in Colorado. He began his career with USDA – Wildlife Services as a wildlife specialist in 2001 and has been with USDA ever since. He moved to Arkansas in 2019 where his primary duties include working with beaver, feral swine, migratory birds, wildlife diseases, other wildlife damage issues. Robert is a member of the Arkansas, Southeastern Section, and National Chapters of The Wildlife Society and a Certified Wildlife Biologist. He has been a member of TWS dating back to when he was the student chapter president while in college. He served on several committees with the Missouri chapter including a term as president. Robert is also a 2011 graduate of the TWS Leadership Institute and currently serves on the Leadership Institute committee. He has held a variety of positions at TWS national level having served most recently as a Board Member on the Wildlife Damage Management Working Group Executive Board (2018-2020).

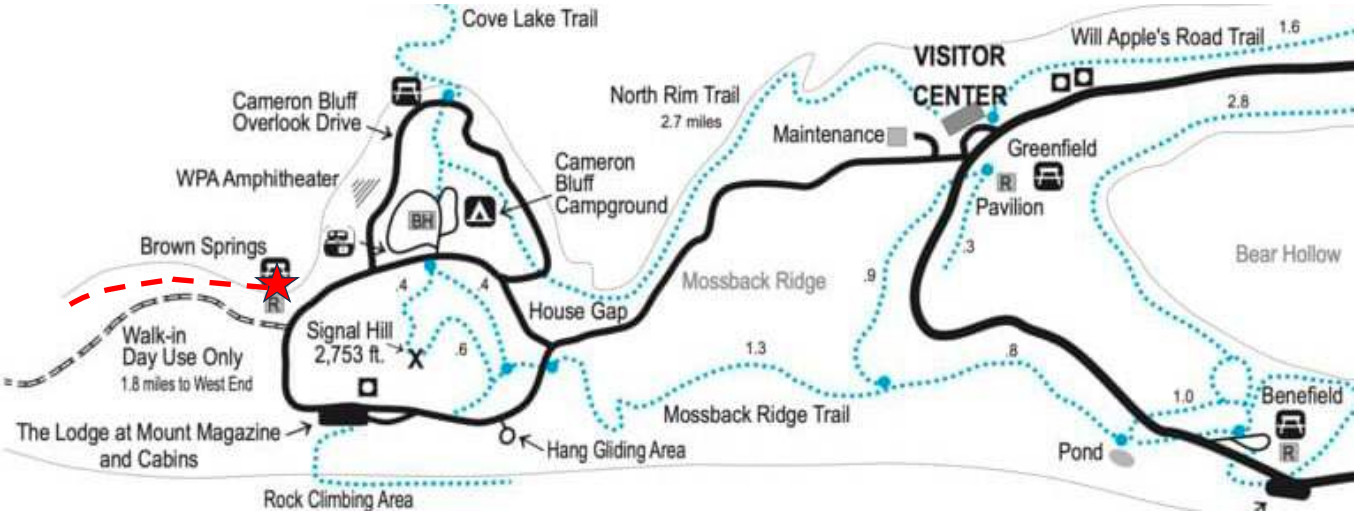
Jessica Homan

Jessica Homan is a 2005 graduate of Arkansas Tech University with a BS in Fisheries and Wildlife Science. She started her career with the North Carolina Wildlife Resources Commission in New Bern, NC. Jessica was a Wildlife Resources Technician there for five years before returning to Arkansas in 2013. Her career started with AGFC in 2016 as a part-time extra labor in Region 2. She assisted with maintenance work around different WMA's in the region but primarily trapped feral hogs on the Saint Francis National Forest and U of A Pine Tree WDA. Jessica was hired full time as a biologist in Region 1 on Sunken Lands WMA in 2017. She later transferred to Region 2 as a biologist for Henry Gray Hurricane Lake, Rex Hancock Black Swamp and Sheffield Nelson Dagmar WMA's. She truly loves moist soil habitat work and is grateful to be in the delta working on primarily waterfowl areas. Even though she works outdoors every day, Jessica still spends her free time outside hunting, fishing and camping.

Ava Smith

Ava Smith works as the Social Science Research Specialist for the Arkansas Game and Fish Commission out of Little Rock. In her role, she advocates for the integration of social science into fisheries and wildlife management, primarily through the facilitation of public input processes. She obtained both her Bachelor’s and Master’s degrees from the University of Connecticut in Natural Resources. Her graduate thesis focused on understanding private forest landowner engagement in management planning. Between obtaining her degrees, she worked for the U.S. Fish and Wildlife Service for several years, supporting the Wildlife and Sport Fish Restoration Program as an Assistant Grant Specialist, and the National Wildlife Refuge System as a Conservation Planner. She’s been a member of The Wildlife Society since 2014, and is active within the Human Dimensions Working Group of TWS.

Nature Walk
Friday 11:30 – 12:00



The Nature Walk will begin at Brown Springs picnic area and follow the north bluff. The walk will include botany interpretation and birding.

Brown Springs is about 0.5 miles from the Lodge. Plan accordingly for your time to and from the trail and you may also want to pack a lunch with you.

ABSTRACTS

Student Oral Presentations

USING FAMILY FOREST LANDOWNER PERSPECTIVES TO IMPROVE NATURAL RESOURCE CONSERVATION SERVICE HABITAT MANAGEMENT PROGRAM RECRUITMENT

A. Priest, Elena Rubino, Jerrod Penn, Anne Mini, Bill Bartush, Austin Klais, S. Keith McKnight, Shannon Westlake, Ashley Gramza
College of Forestry, Agriculture and Natural Resources, University of Arkansas at Monticello, 346 University Dr., Monticello, AR 71656, AP047625@uamont.edu

A significant portion of forested land in the United States is privately owned, thus efforts to protect or improve wildlife habitat on forested land must involve engaging private landowners. Federal agencies, such as the Natural Resource Conservation Service (NRCS), offer assistance programs to aid landowners in achieving habitat conservation and management goals. However, there is a recognition that traditional approaches used in program recruitment have limited the expanse and diversity of program participants. This study used focus groups and interviews with 55 family forest landowners in southern Arkansas and northern Louisiana to explore their current land management practices, concerns about program enrollment, and preferred communication methods in an effort to improve forest management program recruitment. We found that landowners typically engaged in replanting, thinning (i.e., reducing basal area), and clear cutting on their land, with secondary management actions including burning and mowing. Concern about program enrollment consisted of land-related concerns (e.g., best management practices, management implementation) and program-related concerns (e.g., contracts, information, enrollment processes). Landowners indicated outreach that focused on hard copy, mailed pamphlets from reputable sources (e.g., government agencies, universities) would be most effective, as well as educational programs and the opportunity to directly connect with program delivery team members (e.g., private lands biologists). Based on our results, we recommend consolidating up-to-date program information online (e.g., contact information for partner organizations, NRCS office locations) and mailing program advertisements (using agency/university logos) that include information on each step of the application process and "myth busts" misconceptions about landowner assistance programs.

DIET ANALYSIS OF WINTERING MALLARDS IN THE LOWER MISSISSIPPI ALLUVIAL VALLEY USING METABARCODING

Scott Herman, Coleman Nadeau, Blake Bartles, Ryan Askren and Douglas Osborne
College of Forestry, Agriculture, and Natural Resources, University of Arkansas Monticello, Monticello, AR 71655; SH049438@uamont.edu

For wintering waterfowl in the Lower Mississippi Alluvial Valley (LMAV) food resources are a limiting factor for survival. Current diet analyses include observing individuals and then collecting them to sort, count, and measure food items within their digestive tract. However, limitations of this method include temporal constraints, vital rates, and organic matter composition of food items. To improve our knowledge of foraging ecology and reduce biases of current methods, we used metabarcoding to examine 120 female mallard's (*Anas platyrhynchos*) fecal samples from Five Oaks Hunting Lodge in Humphrey, Arkansas between November 2021 – January 2022. We sent samples to Foster Bat Ecology and Genetics Lab at Northern Arizona University to perform metabarcoding analysis, which amplified DNA within samples and compared them against a global database with species specific genetic information. Our results indicate that waterfowl consumed a diversity of vegetation and invertebrate genera, with

smartweed (*Persicaria*), oaks (*Quercus*), panicum (*Panicum*), and millet (*Echinochloa*) among the most consumed genera of vegetation. We also observed that there is an absence of commonly cultivated vegetative species, notably rice (*Oryza*). The implementation of metabarcoding for diet analysis of waterfowl reduces temporal biases, allows us to identify the proportion of sampled individuals that have eaten a specific food item, and what proportion of their diet consists of that respective item. As habitat changes occur at the landscape level on the wintering grounds, an improved methodology for understanding dietary selections can inform management decisions at the state and federal level.

EFFECTS OF RELATIVE HOG ABUNDANCE ON THE OCCUPANCY AND COMMUNITY COMPOSITION OF BIRDS

Kenneth Wilson, Brett DeGregorio, Caleb Roberts and Scott Chiavacci
Department of Biological Sciences, University of Arkansas, Fayetteville, 850 W Dickson St. Fayetteville AR 72701; kw101@uark.edu; U.S. Geological Survey, Arkansas Fish and Wildlife Cooperative Research Unit

Feral Hogs (Sus scrofa) are well documented as a highly invasive and destructive species whose range continues to expand across North America. While there is ample documentation into the effects of feral hogs on plants and wildlife, there is very little research on their effects on avian species, specifically on breeding birds. To address this gap in knowledge and to better understand the effects of this invasive species on vulnerable avian communities, we present a modelling approach correlating hog relative abundance and disturbance to the community composition and abundance of the bird community on a Southern Arkansas National Wildlife Refuge Complex. To identify the effects of hogs on avian occupancy and abundance we conducted point count surveys at 100 points throughout bottomland hardwood forests with variable levels of hog abundance from May 15th to June 15th; at each of these points we set motion-triggered game cameras to determine relative hog abundance. Vegetation ground cover, tree density, and vegetative biomass were collected at each point to estimate hog damage and long-term changes to the plant community. We predict that the relative abundance of feral hogs will be correlated with disturbance to the ground cover and reduced shrub layer of vegetation which will in turn be related to reduced occupancy and abundance of shrub-nesting, ground-nesting, and ground-foraging bird species in areas with high hog abundance and activity.

BREEDING AND MIGRATION ECOLOGY OF ARKANSAS KING RAILS

Jessica Schmit[1], Auriel M.V. Fournier[2], Caleb P. Roberts.[3], Karen Rowe[4]
[1]University of Arkansas, Department of Biological Sciences, Fayetteville, Arkansas USA, [2]Forbes Biological Station-Bellrose Waterfowl Research Center, Havana, IL USA, [3]U.S. Geological Survey, Arkansas Fish and Wildlife Cooperative Research Unit, University of Arkansas, Fayetteville, AR, USA, [4]Arkansas Game and Fish Commission, Little Rock, AR, [1]jmschmit@uark.edu

King Rails (*Rallus elegans*) are a secretive marsh bird species of conservation concern in Arkansas. Freddie Black Choctaw West WMA in southeast Arkansas has multiple pairs of breeding King Rails and offered an opportunity to investigate King Rail migration ecology, as well as nesting ecology and nest site selection. We captured and outfitted 23 birds with Argos GPS tags to track migration patterns throughout the season. Since most of the birds didn't make long distance migrations, we examined monthly movements on the landscape to determine how their movement changed seasonally. To investigate nest site selection, we performed 679 habitat surveys to assess what characteristics are significant to King Rails at confirmed nest sites and random points throughout the WMA. King Rails selected nest sites based on similar criteria at both the nest site and landscape scales. As a vulnerable and threatened species both in Arkansas and the US, understanding their habitat needs during the breeding season could have implications for biologists and land managers to provide more suitable habitat during this critical part of their life cycle.

GRASSLAND BIRD OCCUPANCY RESPONSES TO TREE-GRASS BOUNDARIES

Lauren L. Berry[1], Brett A. DeGregorio[2], Daniel R. Uden[3], Caleb P. Roberts[4]
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[2]US Geological Survey, Fish and Wildlife Cooperative Research Unit, Michigan State University, East Lansing, MI, USA
[3]Center for Resilience in Agricultural Working Landscapes, School of Natural Resources, University of Nebraska-Lincoln, Lincoln, Nebraska, USA, Department of Agronomy and Horticulture, University of Nebraska-Lincoln, Lincoln, Nebraska, USA
[4]US Geological Survey, Fish and Wildlife Cooperative Research Unit, University of Arkansas, Fayetteville, AR, USA

Grassland birds in North America face severe population declines, with over 70% of species seeing reduced numbers due to grassland habitat loss, as grasslands are succumbing to large-scale state transitions. For land managers to make informed decisions about the restoration of grasslands, it's crucial to develop tools to map and predict drivers of state transitions. Here, our objectives are to test grassland bird occupancy responses to a known spatial early warning signal: spatial covariance. We used the known spatial early warning signal of spatial covariance of tree and grass cover derived from the Rangeland Analysis Platform (RAP; 30m^2 resolution). For the second objective, we gathered data from 424 point count surveys across the Mississippi Alluvial Valley and Arkansas Valley ecoregions to model bird occupancy responses to both signals. We used multi-species spatial occupancy models to predict occupancy probability of key grassland birds in response to changing spatial covariance across a restored grassland landscape. Preliminary results indicate grassland birds are responding as expected to spatial covariance: Northern Bobwhite occupancy increased as spatial covariance increased, meaning Northern Bobwhites appear to avoid spatial early warning signals of state transitions. Our results show spatial early warning signals can be used even in the highly fragmented and seasonally-flooded grasslands of the Southeastern US. Additionally, we show that the spatial covariance method provides high resolution signals for predicting state transitions in space and time, aiding in proactive management decisions and enacting the "defend the core" rangeland conservation strategy.

INTERIOR LEAST TERN (*STERNULA ANTILLARUM ATHALASSOS*) COLONY PRODUCTIVITY AND FISH COMMUNITY ANALYSES ON THE ARKANSAS RIVER IN ARKANSAS

Nathan Mansor and Tom Nupp, Ph.D.
Fisheries and Wildlife Science Program, Arkansas Tech University, Russellville, AR 72801;nmansor@atu.edu

The Interior Least Tern (*Sternula antillarum athalassos*, hereafter ILT) is a previously federally listed, piscivorous bird that breeds on sandbars in large river systems. While much is known about the physical habitat requirements of those sandbars, little research has looked at connections between ILTs and their prey, nor between ILTs and fish communities. This study aimed to look at potential connections between ILT breeding productivity and fish communities surrounding ILT colonies. To assess ILT breeding success, we monitored 26 active ILT colonies along more than 400 km of the McClellan-Kerr Arkansas River Navigation System (MKARNS) and the lower section of the Arkansas River, as well as four rooftop colonies. Of these colonies, 77% were successful in raising at least one fledgling (n=203). To assess fish communities, we used beach seine netting and boat electrofishing to sample fish populations at nine of the successful islands and captured a total of 39 fish species (n=5227) across 12 families, with a mean of 581 individual fish per island sampled. Gizzard Shad (*Dorosoma cepedianum*) and Threadfin Shad (*Dorosoma petenense*) were most prevalent. ILT productivity had a statistically significant (p=0.007) negative relationship to predatory fish species richness, but not to predatory fish abundance. Spatial trends of fish communities and ILT productivity were analyzed along the river as well. Not only

does researching connections between ILT and fish heighten knowledge of ILT ecology, but knowledge of bird-fish interactions can serve to further management for both taxa.

VEGETATION AND WATERBIRD RESPONSE TO A DRAWDOWN ON A SEMI-PERMANENT WETLAND

Katherina A. Schroyer[1], Heath Hagy[2], Ryan Askren[3], Steven Rimer[4], Hamdi Zurqani[5], and Douglas Osborne[6]
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[2]U.S. Fish and Wildlife Service HAPET, Bismarck, ND 58501; Email: heath_hagy@fws.gov
[3]Five Oaks Ag Research and Education Center, Humphrey, AR 72073; Email: askren@uamont.edu
[4]U.S. Fish and Wildlife Service Big Lake NWR, Manila, AR 72442; Email: steven_rimer@fws.gov
[5]University of Arkansas at Monticello, Monticello, AR 71655; Email: zurqani@uamont.edu
[6]University of Arkansas at Monticello, Monticello, AR 71655; Email: osborne@uamont.edu

Big Lake National Wildlife Refuge (NWR) is a wetland complex in northeast Arkansas composed of seasonally and semi-permanently flooded areas with floating-leaf aquatic vegetation, scrub-shrub and floodplain forest, open water, and emergent vegetation. Big Lake NWR has open water areas that are currently dominated by American Lotus (*Nelumbo lutea*). Therefore, Big Lake NWR requires periodic drawdowns to consolidate sediments, control invasive species, and allow active management activities. We monitored the response of waterbirds, vegetation communities, and soil compaction to the drawdown of Big Lake NWR during 2022–2024. We created a land cover classification model using 3x3 meter resolution PlanetScope imagery to monitor monthly and yearly changes in the observed vegetation communities from Jun-Nov 2021–2023. We estimated the coverage of forest, open water, bare ground, floating leaf aquatic, non-persistent emergent, and persistent emergent vegetation before and following the drawdown. Estimates of coverage by each vegetation community type were used to predict energetic carrying capacity (i.e., waterfowl energy days) pre- and post-drawdown to evaluate performance relative to objectives for the refuge and the region. Aerial surveys for waterbirds were conducted from November – February, and migration curves were developed to compare estimated waterfowl abundance in 2022 and 2023 to a standardized eBird migration curve. We developed a depletion model for food energy to predict the relationship between supply and demand. Collectively, these tools will help refuge staff in other areas with similar vegetation communities better understand the effects of management practices across the landscape on meeting habitat objectives for waterbirds.

Professional Presentations

INDIVIDUAL TREE HEALTH OF RED OAKS (*QUERCUS SPP.*) WITHIN GREENTREE RESERVOIRS AND IMPLICATIONS FOR MALLARD (*ANAS PLATYRHYNCHOS*) USE

Cassandra Hug[1], Pradip Saud[1], Ryan Askren[2], and Douglas C. Osborne[1]
[1]College of Forestry, Agricultural, and Natural Resources, University of Arkansas at Monticello, Monticello, AR 71656, USA; [2]Five Oaks Ag Research and Education Center, Humphrey, AR 72073, USA

Individual tree health plays a vital role in maintaining a forest's ecological functions including resources for waterfowl and other wildlife. Seasonal flooding due to altered hydrology is a major stressor on individual tree health in Greentree reservoirs (GTR), especially less water tolerant species like red oaks (*Quercus spp.).* We evaluated the health of individual red oak species (n = 6,432) in 662 plots across elevation gradients in 12 GTRs within the lower Mississippi Alluvial Valley. The results indicated that red oak species with the greatest mean stress rank and greatest proportion of stressed tree condition are;

nuttall oak (*Quercus texana*; 18.59, 0.44), willow oak (*Quercus phellos*; 18.66, 0.38) and cherrybark oak (*Quercus pagoda*; 18.90, 0.37). Additionally, red oak stress is positively correlated to elevation across the landscape ($\tau = 0.10$, p-value < 0.001), but is negatively correlated to relative elevation within each GTR ($\tau = -0.11$, p-value < 0.001), potentially highlighting the adverse effect of prolonged flooding within each impoundment. The implications of declining red oak health on wintering waterfowl are rarely studied, and it may potentially affect mallard (*Anas platyrhynchos*) use through changes in food availability (acorn) and habitat structure. We have used GPS transmitters on mallards (n = 95) to relate use of GTRs in relation to overstory tree health. These results will improve understanding mallard space use relative to tree health, particularly high red oak stress. A clear understanding of this relationship can improve more effective management for red oak health and in turn, mallard abundances and recreational opportunities.

TIMING AND FLIGHT BEHAVIOR OF GOLDEN EAGLES IN THE OZARK HIGHLANDS

Rebecca Peak, Arkansas Ecological Services Field Office, U. S. Fish and Wildlife Service, Rebecca_peak@fws.gov
Tricia Miller, Executive Director, Research Wildlife Biologist, Conservation Science Global, Inc. trish.miller@consciglobal.org

The eastern North American population of Golden Eagles (*Aquila chrysaetos)* is a genetically distinct population that spends the summer in Canada from Manitoba east to Labrador and the winter in both the Atlantic and Mississippi Flyways and most eastern Canadian provinces. During winter they most frequently occur in forested habitat with topographic features such as ridges and cliffs. These topographic features are a focus area for wind development because they provide access to wind speeds that optimize energy production. This puts large soaring birds at risk from the turbine's rotating blades. Golden Eagles are particularly vulnerable because they soar along ridges often at the same altitude as the rotating blades, especially when they are hunting. The U. S. Fish and Wildlife Service-Arkansas Ecological Services Field Office in cooperation with partners is conducting a study to capture and fit global positioning system transmitters to Golden Eagles in the Ozarks. The purpose of the study is to learn about their timing and flight behavior to assess risk of conflict with wind turbines proposed in the region. We are providing the information to wind energy companies. Additionally, these data are part of larger studies to spatially map migration routes, distribution, and habitat use of the eastern North American population between summer and winter sites, analyze acute levels of heavy metals, and estimate abundance.

PATTERNS OF FEEDER USE BY WILD BIRDS AND ASSOCIATED EFFECTS ON MOSQUITO-BORNE PATHOGENS

Douglas G Barron[1] and J. Dylan Maddox[2]
[1]Department of Biological Sciences, Arkansas Tech University, Russellville, AR 72801; dbarron@atu.edu
[2]Pritzker Laboratory for Molecular Systematics and Evolution, Field Museum of Natural History, 1400 S. Lake Shore Drive, Chicago, IL 60605; dmaddox@fieldmuseum.org

Bird feeders are ubiquitous in suburban landscapes, and are one of the most popular ways citizens interact with local wildlife. This vast quantity of supplemental feeding is known to impact songbird populations in both positive (higher survival) and negative (increased disease) ways. The degree to which individual birds experience these effects depends upon their use of the feeders. However, we lack a predictive framework for which birds use feeders most and at which times. This study tracks feeder use of individual songbirds with a network of bird feeders equipped with radio-frequency identification (RFID) dataloggers that automatically record every visit by tagged birds. Here I analyze over 130,000 feeding visits from 120 individual birds of eight species to address the following questions: 1) how does feeder use change daily and seasonally? 2) do bird traits predict feeder use? 3) does human disturbance impact feeder use? 4) could bird feeders influence transmission of mosquito-borne pathogens? Cumulatively, this research

elucidates individual patterns of feeder use and helps predict which birds will most experience the associated costs and benefits of bird feeders.

FROM CAVES TO PRAIRIES: AN OVERVIEW OF THE PARTNERS FOR FISH AND WILDLIFE PROGRAM *IN ARKANSAS*

Jonathan Baxter, Partners for Fish and Wildlife State Coordinator, US Fish and Wildlife Service, Arkansas Field Office, 110 South Amity Rd., Conway, AR 72032, jonathan_baxter@fws.gov

An overview of a voluntary habitat restoration program through success stories and wins for Federal trust species.

THE POWER OF PARTNERSHIPS – ARKANSAS STYLE

Roger Mangham, Arkansas State Director of The Nature Conservancy, rmangham@tnc.org

Since the late 1990s, the overall operational costs to manage wildlife habitat has sky rocketed. Many factors have fueled this evolution. Including the transition of family owned timber companies to TIMO's and REIT's, increasing land prices, less hunters & anglers per capita, and economic pressures in rural America. Landscape scale and state-based partnerships have been a powerful mix - combining forces, developing operational efficiencies, and uniting state/federal/academic/NGO forces to tackle big conservation challenges. Work is done through partnerships these days. This work is highly rewarding but to be a good partner takes skill, dedication and sacrifice. But in turn – it's the most fun you will have in your professional career. Arkansas is a place that partners well! This presentation will highlight a few partnerships that have developed organically and completed very complex projects - yielding some of the best wildlife and conservation outcomes here in the Natural State. To be a great wildlife biologist, you must be a superb partner – and serve others. To go fast, you go alone. To go far, you go together.

PHEASANTS FOREVER, INC. AND QUAIL FOREVER

Ryan Parker, Arkansas State Coordinator, Pheasants Forever, Inc. and Quail Forever, 700 W Capitol Ave., Little Rock, AR 72201, rparker@quailforever.org

Pheasants Forever, Inc. and Quail Forever (PF/QF) is a non-profit conservation organization focused on improving habitat for pheasants, quail, and other wildlife on upland, terrestrial habitats and landscapes across private and public lands. PF/QF hires a wide range of conservation professionals to include private lands Farm Bill Biologists, public and private land habitat specialists, grazing management specialists, pollinator specialists, prescribed fire coordinators, education and outreach coordinators, and regional representatives that engage community volunteers who want to be involved in locally-led conservation. In Arkansas, Quail Forever employs 19 staff members who work with a broad range of conservation partners and landowners to improve wildlife habitat on private lands. Opportunities for employment with Quail Forever in Arkansas may include joining the habitat specialist prescribed fire crew, implementing spring and fall quail and songbird monitoring surveys on habitat improvement projects, or working as a Farm Bill Biologist helping landowners enroll in incentive programs designed to improve habitat on working landscapes. Quail Forever in Arkansas works closely with over 40 partnering state, federal, non-profit, and private organizations and agencies to implement mission-driven conservation on the ground. PF/QF provides many opportunities for internships and employment across 40 states for early career professionals and is the leading non-profit employer of wildlife biologists in the nation.

MIGRATORY BIRD JOINT VENTURES: WHERE SCIENCE MEETS MANAGEMENT A CASE STUDY FROM THE LOWER MISSISSIPPI VALLEY JOINT VENTURE

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The Lower Mississippi Valley Joint Venture (LMVJV) is a self-directed non-regulatory private, state, and federal conservation partnership that exists for the purpose of sustaining bird populations and their habitats within the Lower Mississippi Valley and West Gulf Coastal Plain/Ouachitas (WGCP/O) regions through implementing and communicating the goals and objectives of relevant national and international bird conservation plans. The LMVJV functions as the forum in which private, state, and federal conservation community develops a shared vision of bird conservation for the Lower Mississippi Valley and the WGCP/O regions; cooperates in its implementation, and collaborates in its refinement. Recent work in the WGCP has prioritized increased delivery of open pine priority bird habitat through implementation of the AR-LA CDN Open Pine Landscape Restoration Regional Conservation Partnership Program to provide habitat management cost share for landowners implementing open pine priority bird habitat. During this implementation, refinement of communications among the partnership to relate open pine priority bird science to ecologically-sound habitat management has arisen as a converging priority. We'll explore open pine priority bird science, WGCP historical conditions and ecological processes, pathways to management, and the communications tools used to connect it all for the purpose of furthering open pine priority bird management in the WGCP among all the conservation partners.

Student Poster Presentations

GULF COASTAL BLACK BEAR HOME RANGE IN ARKANSAS DIFFERS BY SEASON AND REPRODUCTIVE STATUS

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The Arkansas Game and Fish Commission (AGFC) reintroduced black bears (*Ursus americanus*) to the Felsenthal National Wildlife Refuge from 2000-2002, and the population's success allowed the elevation to game status in 2022. The AGFC began a transmitter study to understand the behaviors and habitat associations of this gulf coastal plain population in July 2022, with 15 Global Positioning System collars that have been deployed on 16 adult females to date. Collars collect 4 locations per day, switching to a schedule of 1 point per day during winter, and observational data, such as reproductive status, health, and den usage are collected opportunistically. In this study, we examined 2023 seasonal (Spring: Apr – June, Summer: July – Sept, Fall: Oct – Dec, Winter: Jan – Mar) home range, only including bears with complete seasonal data (N = 13 bears, n = 40 home ranges). We estimated home range using kernel density estimators in R. We then used an interactive ANOVA to test differences by season and reproductive status. We found that winter home ranges were smallest ($F_{3,27} = 13.104$, $P < 0.001$; winter = 12.8 ± 11.1 km^2, other seasons = 79.7 ± 86.5 km^2), which was unsurprising given denning behaviors, though not all bears denned in this population. And we found there were differences by status ($F_{3,27} = 4.632$, $P = 0.010$; cubs = 32.9 ± 33.7 km^2, yearlings = 49.7 ± 27.9 km^2, solitary bears = 94.9 ± 118.5 km^2). Home range will inform habitat suitability and resource selection investigations to guide game management.

BEHIND THE MASK: USING CAMERA TRAPS TO UNVEIL THE ROLE OF RACCOONS IN DISEASE TRANSMISSION IN URBAN AREAS

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Urbanization contributes to the loss and fragmentation of habitat for wildlife. Species are relegated to smaller patches of suitable habitat which can lead to increased opportunities for contact, and thus disease transmission. We investigated the potential for disease transmission using camera traps in urban parks around Little Rock, Arkansas. Data were collected via the Central Arkansas Urban Wildlife Project, which sets 30 game cameras along an urban-to-rural gradient during one month of each season (January, April, July, and October) every year. Since raccoons *(Procyon lotor)* act as intermediate hosts for the canine distemper virus (CDV), we studied contact between raccoons, gray foxes *(Urocyon cinereoargenteus)*, domestic dogs *(Canis lupus familiaris),* and coyotes *(Canis latrans)*. Given the cold-resistant properties of CDV, we examined the fall and winter seasons from 2021. We calculated the number of encounters (target species captures occurring within one week of each raccoon capture at a given site). We then ran negative binomial regressions for the encounters at each site against metrics of urbanization including artificial light at night (ALAN), impervious surface, and anthropogenic noise within a 500-meter radius of each site. For the 2021 fall and winter seasons, there were significant relationships between impervious surface and coyote encounters ($R^2 = 0.45$, $p = 0.003$ and $R^2 = 0.34$, $p = 0.03$). These results suggest urbanization decreases the risk of disease transmission from raccoons to coyotes. More research is needed as understanding urban disease transmission could help prepare for the emergence of new pathogens at the human-wildlife interface.

SPRING MIGRATION HABITAT SELECTION OF HEN MALLARDS WINTERING IN THE MISSISSIPPI FLYWAY

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Mallards (*Anus platyrhynchos*) are economically, ecologically, and socially important in North America due to their popularity as a game species. While mallards are the most populous dabbling duck species in North America, recent population declines, and related habitat conditions have led to concerns for waterfowl managers. A clear understanding of the relationship between movement and resources is critical for understanding population level changes. Resource availability during spring migration is crucial to maintain and improve body condition to maximize success upon arrival to the breeding grounds. We aim to investigate resource selection of hen mallards during the spring migration to understand vital landcover types. The objectives of this study are to assess 1) landcover selection of hen mallards during spring migration, and 2) site selection of nesting attempts using accelerometer and location data. Ornitella transmitters (n = 96 annually) were deployed on hen mallards in Arkansas and Missouri during February 2023 and 2024. Habitat selection will be assessed using hourly locations with imagery and land use layers in ArcGIS and R, utilizing Brownian Bridge Movement Models. We aim to assess private and public land usage, selection of landcover types (e.g., agriculture, forested, upland grassland, emergent wetland, woody wetland and open water), and the influence of water availability. The information gained from this study will allow us to make recommendations informing both public and private land managers in supporting the breeding stock of mallards during spring migration.

ECOLOGICAL RESPONSES OF NOCTURNAL MAMMALS TO ARTIFICIAL LIGHT AT NIGHT IN URBAN ECOSYSTEMS

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Over the last six decades, levels of artificial light at night (ALAN) have increased globally. Although studies have found harmful effects of ALAN on the individual level in nocturnal mammals, less is known about population effects. We aimed to better understand how ALAN affects the population parameters of nocturnal mammals in an urban ecosystem using game camera data from 30 urban green spaces around Little Rock, Arkansas, during July 2022. We compared the presence of the following nocturnal mammal species: coyote (*Canis latrans*), cottontail rabbits (*Sylvilagus* spp.), gray fox (*Urocyon cinereoargenteus*), and Virginia opossum (*Didelphis virginiana*) with different levels of ALAN. We controlled for covariates including anthropogenic sound, forest cover, and proportion impervious surface within a 500-meter radius of the cameras. Using the unmarked package for R, we analyzed the single-season occupancy of representative species. We found that ALAN was not important for predicting the presence of any of the study species. Conversely, we found that coyotes were less likely to be present as impervious surface increased ($p = 0.040$) but more likely as anthropogenic noise increased ($p = 0.0496$). Furthermore, we found that as forest increased gray foxes were more likely to be present ($p = 0.038$) While our research suggests that ALAN is not an important factor in determining nocturnal mammal presence in an urban setting, a larger study is needed to assess this supposed lack of relationship more thoroughly. However, our study is a necessary early step to investigate the impacts of ALAN on a population level.

EVIDENCE OF CHANGING DEMOGRAPHIC AND DISTRIBUTION OF POST-SEASON WINTER MALLARD BANDING PROGRAM

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Banding is an important monitoring technique used to understand demographic rates and distributional patterns of migratory waterfowl since the 1920s. Band encounters helped biologists delineate the 4 major flyways. Non-traditional, post-season winter banding first occurred in Arkansas during the 1960s and again in the 1980s. During 2014, the waterfowl program at the University of Arkansas, Monticello reinstated the post-season winter banding program to compare data of current populations with that of the 1960s and 1980s. The winter banding program at UAM serves three major purposes 1) to facilitate the science, 2) training of the next generation of biologists, and 3) connecting the public through outreach and education. Since the start of the program, the Osborne lab has banded 32,461 ducks, of which 87.6% (n=28,439) were mallards. Mallards are showing a high rate of philopatry, with 52% of indirect recoveries of mallard banding being harvest within 50km of the banding location. We are seeing changing sex ratios of mallards. Specifically, the team banded 1.24 male mallards for every female mallard in 2014, whereas the ratio was 4.97 M:F in 2021. Consequently, the ratio of M:F mallards of hunter harvested band encounters was 2.75 during 2014-15 hunting season, and 15.8 during the 2021-22 hunting season. Lastly, our band data suggests a delayed migration during the 2023-24 hunting season; likely due to weather. However, the extreme Arctic weather that swept the country in mid-January 2024 resulted in a high harvest rate of older banded mallards, higher than any other year reported.