

2026

ANNUAL REPORT

Waterfowl Research, Education, and Outreach

UofA
DIVISION OF AGRICULTURE
RESEARCH & EXTENSION
University of Arkansas System

COLLEGE OF FORESTRY, AGRICULTURE & NATURAL RESOURCES

SNOWDEN WATERFOWL CENTER of Excellence

OSBORNE LAB







ANNUAL REPORT
2026







04
ABOUT THE LAB

08
RESEARCH STAFF PROFILES

10
UAM ALUMNI PROFILE

11
PROJECT ABSTRACTS

24
CURRENT COURSES

26
UNIVERSITY HUNT PROGRAM

28
PROGRAM OUTREACH

32
PROFESSIONAL DEVELOPMENT

34
PEER-REVIEWED PUBLICATIONS

36
AWARDS & HONORS

38
DONORS

40
JOIN US

ABOUT

THE LAB

Dear Friends, Partners, and Colleagues,

The past year has been a period of remarkable growth, significant milestones, exceptional productivity, and expanding horizons for waterfowl research, education, and outreach at the University of Arkansas at Monticello. It has been a year of transforming ambitious visions into meaningful accomplishments and laying the foundation for an even more impactful future.

A New Chapter: The Snowden Waterfowl Center of Excellence

On October 13, 2025, we celebrated the formal inauguration of the *Snowden Waterfowl Center of Excellence* and the *Dyke-Snowden Endowed Chair in Wetlands and Waterfowl* within the University of Arkansas System Division of Agriculture on the campus of the University of Arkansas at Monticello. More than 100 supporters attended this historic event, including Arkansas Governor Sarah Huckabee Sanders.

The enthusiasm and support surrounding these initiatives have been extraordinary. Within weeks of launching the campaign, pledged commitments from inaugural donors exceeded our initial expectations, demonstrating the tremendous confidence and shared vision of our supporters. The spendable earnings from these endowments will provide critical support for graduate stipends, undergraduate scholarships, innovative applied research, equipment, field research, and professional development opportunities.

Celebrating Academic and Collaborative Success

Our mission is strengthened by the success of our students who are deeply committed to pursuing careers in waterfowl ecology and conservation. This year, we proudly celebrated the graduation of four exceptional master's students: Maddison from Michigan, Alyssa from Pennsylvania, Pasquale from New York, and MacKenzie from Florida. Their commitment, dedication, and academic accomplishments at UAM have inspired us all. We look forward to following their continued professional growth and are confident that their future contributions will have a lasting impact on waterfowl conservation and management.

Our students' success has been matched by an equally productive year of research. Collectively, the lab published five research articles, submitted four additional manuscripts for review, contributed two book chapters, and supported eight student presentations at regional and national conferences. We also secured external funding for four new projects totaling $1.76 million, with an additional $1.47 million wind turbine–waterfowl research proposal currently under review.

To support this growing research portfolio, we have expanded our capacity by adding three full-time research staff and developing new partnerships throughout the Mississippi Flyway, across North America, and internationally. These collaborations are broadening the scope of our research and creating new opportunities to address complex challenges facing waterfowl and wetland conservation.

Expanding Our Global Footprint

The growing impact of our research has also opened doors to new international collaborations. In recognition of the program's research contributions, Dr. Osborne was formally invited by the Government of the Province of Buenos Aires, Argentina, to visit in May 2026 and explore collaborative waterfowl and wetland research initiatives with local scientists and university partners.

This international recognition is a meaningful affirmation of the work being conducted by our students, staff, faculty, and partners. More importantly, it creates opportunities to develop lasting collaborations and apply shared knowledge across geographic and cultural boundaries in support of waterfowl and wetland conservation.

Strategic Vision and Future Growth

The foundational success of the Snowden Waterfowl Center of Excellence reflects the visionary leadership and deep commitment of David Snowden. His support extends far beyond financial generosity; it provides the resources, direction, and momentum necessary to advance both our immediate priorities and our long-term vision.

Moving forward, the Snowden Waterfowl Center of Excellence will continue to build upon its inaugural successes through high-impact research, actionable management and policy guidance, and the professional excellence of our graduates as they enter the conservation workforce.

As threats to global waterfowl populations and wetland ecosystems continue to intensify, our ambitions must grow accordingly. We envision a state-of-the-art research facility supported by highly productive research and teaching faculty, collaborative spaces for research and instruction, and advanced computing and data-management laboratories. Ultimately, we aspire to create a centralized hub that dramatically expands our capacity to conduct innovative research, train the next generation of conservation professionals, and lead the field of waterfowl and wetland conservation in entirely new directions.

The past year has demonstrated what is possible when vision, scientific excellence, student achievement, and committed partnerships come together. **We are grateful to everyone who has helped make this progress possible, and we look forward to building on this momentum in the years ahead.**

— Dr. Douglas Osborne







SNOWDEN GRADUATES

MASTER'S PROGRAM



Congratulations to the 2026 Snowden Waterfowl Center graduates for their accomplishments.

MASTER'S DEGREES

Pasquale Palumbo III, M.S., June 2026. Farm Hand, Chillicothe, MO
Thesis Title: Spring Migratory Stopover Habitat Suitability Model for Midcontinent Female Mallards

Maddison Allen-DeVries, M.S., May 2026. Waterfowl Science Coordinator, Gulf Coast Joint Venture, Lafayette, LA
Thesis Title: Survival and Population Dynamics of Mallards Wintering in Arkansas: A Post-Season Banding Approach.

MacKenzie Wirick, M.S., August 2026. Forester, Ducks Unlimited, Chillicothe, MO
Thesis Title: Fine-Scale Bottomland Hardwood Forest Characteristics at Mallard Use Areas.

Alyssa Tomb, M.S., August 2026. MAV Partnership Coordinator, Lower Mississippi Valley Joint Venture, Little Rock, AR
Thesis Title: Winter Habitat Suitability and Bottomland Hardwood Forest Use by Midcontinent Mallards in Arkansas.

FIVE OAKS GRADUATE PROGRAM



Congratulations to the fifth class of Five Oaks waterfowl certificate graduates for their accomplishments.

GRADUATE CERTIFICATE DEGREES
Sam Mills, Graduate Certificate in Waterfowl Management, May 2026. Forester, Cache River NWR, AR
Noah Widick, Graduate Certificate in Waterfowl Management, May 2026. Crew Lead, Barker Ranch, WA
Cooper Williams, Graduate Certificate in Waterfowl Management, May 2026. Quail Forever, Gray Summit, MO
Seth Howard, Graduate Certificate in Waterfowl Management, May 2026. Biologist, Grove Hunting Club, AR

STAFF PROFILES



Dr. Douglas Osborne
Snowden Waterfowl Center Director

Dr. Douglas Osborne earned his B.S. in Zoology and Statistics (2003) and M.S. in Zoology (2005) at Western Illinois University. His career path was greatly influenced by his fieldwork experience in New Hampshire (2002), Maine (2003), and Minnesota (2004) while working with the Biodiversity Research Institute. Dr. Osborne earned a Ph.D. in Wildlife Ecology and Management from Southern Illinois University Carbondale (2010). He was a postdoctoral research associate for 18 months at the University of Tennessee-Knoxville before joining the faculty at the University of Arkansas at Monticello (2012). Since his arrival in Arkansas, 20 graduate students have earned their M.S. degrees under his mentorship and guidance.



Dr. Andrea Kathryn Santariello
Postdoctoral Research Associate

Dr. Andrea Kathryn Santariello earned her B.S. in Marine Science and Zoology at the University of Maine (2015). She worked on numerous field-based seabird and marshbird projects focused on breeding and foraging ecology and conservation. She received a Ph.D. in Environmental and Evolutionary Biology from the University of Louisiana at Lafayette (2025). Her dissertation involved the breeding and foraging ecology of Louisiana's coastal island seabirds. She began her position as a postdoctoral research associate for the Snowden Waterfowl Center of Excellence in January 2026. This research was funded by the Snowden Waterfowl Center of Excellence in partnership with the Pinola Aviary.



Drew Berdo
Waterfowl Program Assistant

Drew Berdo is a Program Assistant in The Osborne Lab. A freshly minted Arkansan by way of Texas, he recently completed his master's in Wildlife Ecology at Texas State University, where he examined the potential impact of wind turbines on abundance and richness of grassland birds for his thesis. He brings to the table experience in avian field surveys, geographic information systems, and statistical analysis. Prior to his master's, he spent three summers conducting backcountry avian point-count surveys across the state of Montana and has gained recent waterfowl experience as an intern with the Texas Parks and Wildlife Department along the state's Gulf Coast. He originally hails from the Washington, DC suburbs of Northern Virginia and received his B.S. in Geographic Science from James Madison University in Virginia's beautiful Shenandoah Valley. He is excited to learn about the ecological processes present in Arkansas and immerse himself in the state's varied geography. He likes music, birds, hiking, riding bikes, paddling, and exploring public lands.



Katie Schroyer
Waterfowl Program Assistant

Originally from Elk Grove, CA, Katherina (Katie) Schroyer earned her B.S. in Wildlife Biology from the University of Montana (2020). She began her career as a Biological Technician with the USFWS at Bear Lake NWR in Idaho before coming to UAM as a waterfowl banding technician (2022). She earned her M.S. in Forest Resources, with emphases in Wildlife Ecology and Management and Geospatial Sciences (2024). Her graduate research explored remote monitoring of wetland vegetation communities and waterbird responses to managed wetland drawdowns at Big Lake NWR. Katie is now a Waterfowl Program Assistant charged with coordinating field operations in the Snowden Waterfowl Center. She received the Robert Burch Waterfowl Research Award (2023) and published her M.S. research as a book chapter in Geospatial Artificial Intelligence in Environmental and Natural Resources Management (Schroyer et al. 2026a) and as a research paper in the Journal of Wetlands (Schroyer et al. 2026b).



UAM ALUMNI

PROFILE

CODY MARTIN & CLAYTON WHITAKER

Cody Martin is a native of Lonoke, Arkansas, and came to UAM as a wildlife management major in 2017. Cody volunteered in the waterfowl lab, assisting with graduate research data collection and the winter mallard banding project. He worked for Delta Waterfowl in 2017, assisting with over-water nest searching in the Prairie Parkland region of Manitoba, Canada. Cody was offered a Pathways Biotech position at Overflow and Felsenthal NWRs, where he worked catching feral hogs, managing moist-soil impoundments, and blowing beaver dams (2018–2021). He earned his B.S. degree in 2021 and continued as a Pathways student while pursuing his M.S. His thesis work helped develop a rapid monitoring protocol for the USFWS that is still used today. Cody later worked as a Refuge Operations Specialist at Noxubee NWR, assisting with moist-soil management, red-cockaded woodpecker monitoring, prescribed fire, and administrative duties. In 2023, Cody returned to Arkansas to work for USDA-NRCS, helping private landowners enroll in Farm Bill Conservation Programs.

Clayton Whitaker, a native of south Arkansas, was a valued member of the waterfowl lab from 2018–2021. He earned his B.S. degree in Wildlife Management from UAM in 2021 and obtained his Arkansas Registered Forester License. Clayton began his career with the U.S. Fish & Wildlife Service at Felsenthal NWR before moving to USDA-APHIS in 2023. In 2024, Clayton was offered the Manager position at Freddie Black Choctaw Island WMA with the AGFC, where he practiced prescribed fire, moist-soil and emergent marsh management, forest management, and quality deer management. His experience managing diverse habitats has provided him with a broad understanding of the tools and techniques needed to improve wildlife habitat across the landscape. Clayton now serves as a Private Lands Biologist for AGFC in Southeast Arkansas, where he assists landowners and stakeholders in achieving their habitat management goals by planning and implementing strategies to maximize their land's potential.



PROJECT

ABSTRACTS

Waterfowl conservation depends on a continuous cycle of scientific research to effectively protect wetlands and migratory bird populations. Research provides the foundation for addressing knowledge gaps, informing management decisions, and guiding policy development. This work also plays a critical role in training the next generation of conservation professionals by developing technical field skills, strengthening quantitative proficiency, and fostering collaborative problem-solving. The active research projects that follow apply the best available science to address real-world conservation challenges and advance effective waterfowl and wetland management.

Divergent Paths in Waterfowl Management:
A Comparative Case Study of Institutional Frameworks and Conservation Incentives in the United States and Argentina

Author: Douglas Osborne

Co-authors: Bruno N. Carpinetti, Tiffany L. Osborne, and Lucía Bernad

Globalized agricultural intensification, climate-induced wetland loss, and changing socio-political landscapes present unprecedented challenges to migratory waterfowl conservation across the Western Hemisphere. While related migratory waterfowl species in North and South America face similar ecological pressures, waterfowl management approaches are fundamentally different due to regional human dimensions and administrative frameworks. This research delivers a comparative review and case study for the vastly divergent trajectories of waterfowl policy, governance, and hunter heritage between the United States and Argentina.

In the United States, waterfowl management is deeply rooted in a centralized Public Trust Doctrine, formalized by the Migratory Bird Treaty Act, and funded by a self-taxing structure of waterfowl hunters through policies such as the Pittman-Robertson and Federal Duck Stamp Acts. The North American framework for waterfowl conservation supports the need for long-term empirical monitoring and science-based regulatory decisions through adaptive harvest management. Conversely, wildlife governance in Argentina is decentralized at the provincial level and operates within a land tenure system dominated by expansive private land ownership. Due to constraints in institutional capacity, Argentina relies on outfitter-led ecotourism to incentivize wetland habitat retention on private agricultural lands, where waterfowl are managed interchangeably as recreational economic assets and agricultural pests.

By analyzing these vastly opposing models, we demonstrate that meaningful, bidirectional lessons exist: the U.S. framework offers a blueprint for structured population monitoring and hunter-supported funding, while Argentina provides insights into maintaining healthy waterfowl habitat on working private agricultural lands without an extensive public land safety net. Finally, we propose a strategic plan for collaboration, detailing the current and future need for outfitter-assisted citizen science surveys, educational outreach through field-based workshops, cross-pollination of private land incentives, advanced telemetry research for data gathering, and coordinated logistics to transition toward non-toxic ammunition.



Figure 1. Douglas Osborne, Bruno Carpinetti, Ramsey Russell, Cano Saint Antonin, Lucía Bernad, and Diego Munoz.



Figure 2. Family-style dinner to celebrate our international research endeavors.

Describing Spring Migration Characteristics for Female Green-winged Teal Wintering in Northwestern Louisiana Using Sutured GPS Transmitters

Author: Andrea Kathryn Santariello

Co-authors: Paul Dickson (Pinola Aviary), Jacob Kraemer (Pinola Aviary), Leigh Ann LaFrance (Pinola Aviary), Douglas C. Osborne (UAM)

Spring migration is an energetically demanding period of the annual cycle for waterfowl and can have carry-over effects on the subsequent nesting season. Green-winged teal (Anas carolinensis) rarely tolerated the traditional backpack harness attachment of GPS transmitters; thus, little is known about their spring migration initiation and behavior from GPS data. Using a novel suture method, developed alongside wildlife veterinarians at the Pinola Conservancy, we deployed GPS transmitters on 108 female green-winged teal in northwestern Louisiana in Feb–Mar 2026. We wanted to establish their behavior during spring migration immediately following suture attachment to see if we could detect any correlations with individual or capture-related metrics recorded at the time of attachment in addition to describing previously unknown migration metrics of green-winged teal.

We calculated spring migration initiation and behavior metrics for 79 teal and used Bayesian generalized non-linear multivariate multilevel models to investigate possible effects of body condition, age, and capture location. We also modeled how migration initiation differences may influence other migration behaviors. Older birds migrated for more days (5.38, CI: 0.19–10.46), while birds captured at the Cason site had shorter lag time between suture attachment and migration initiation (6.39, CI: 0.19–12.58), migrated for more days (6.06, CI: 0.87–11.38), and finished migration at higher latitudes (1.79, CI: 0.13–3.47°) than those captured at the Pinola site. Earlier migration initiation corresponded to finishing migration earlier (0.49, CI: 0.31–0.66) and spending more days migrating (0.51, CI: 0.35–0.68). Shorter lag time between suturing and migration was associated with more migrating days (6.31, CI: 4.19–8.41), more distance traveled per day (0.09, CI: 0.02–0.16 km), and ending farther north (0.83, CI: 0.09–1.58°).

Overall, individual characteristics and capture context explained different components of migration timing and behavior. These relationships can inform future transmitter deployment strategies and provide evidence of the level of variation in migration strategy within this wintering site. Further studies can use this information to investigate possible site-specific characteristics that may be driving these differences in spring migration strategy, allowing for the development of more targeted management.



Figure 1. Spring migration routes of green-winged teal.

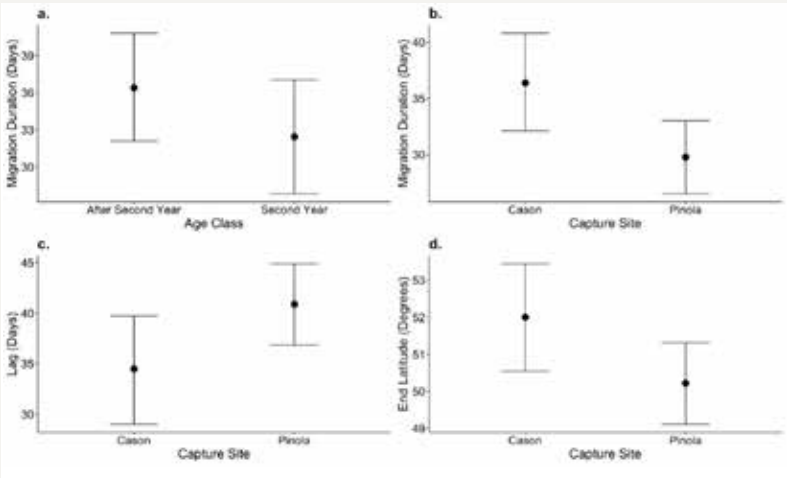


Figure 2. Comparison of migration metrics by age class and capture site.

Wind Turbines Impact Habitat Use and Energetics of Spring Migrating Female Mallards

Author: Drew Berdo

Co-authors: Andrea Santariello, Douglas Osborne

The North American Great Plains and Prairie Pothole Region are the continent's primary geographies for breeding and migratory waterfowl, and the majority of installed wind energy capacity in the U.S. Given this geographic overlap and the lack of previous research on the effects of wind energy on waterfowl, we sought to explore the potential for displacement of mallards (Anas platyrhynchos) as a function of wind turbine density in critical spring migratory corridors.

Female mallards were captured and fitted with GPS-GSM transmitters in Arkansas and Missouri during February–March 2023–2025. We calculated utilization distributions (UDs; 1.5 km resolution) for 158 female mallards using Dynamic Brownian Bridge Movement Models (dBBMM) to create heat-map distributions of predicted space use by female mallards across a multi-state prairie landscape during March–June.

We tested the hypothesis that the presence of wind turbines affects mallard habitat use during the energetically demanding spring migration event by coding the UD as a response variable in a generalized additive modeling framework. We used the number of wind turbines within 20 km of a UD grid cell, and the percentage of wetland/water, rangeland, and corn/soybean crop per grid cell as predictor variables.

We found evidence that an increasing density of wind turbines significantly increases the amount of total area used (UD) by female mallards during spring migration. Smaller areas of use equate to greater efficiency in acquiring the nutrients needed for egg development and nesting, whereas use of larger areas results in increased energetic demands on female mallards during an already costly migratory event. We hope that this can provide baseline decision support information in the future placement of wind farms in the Great Plains and Prairie Pothole Region.

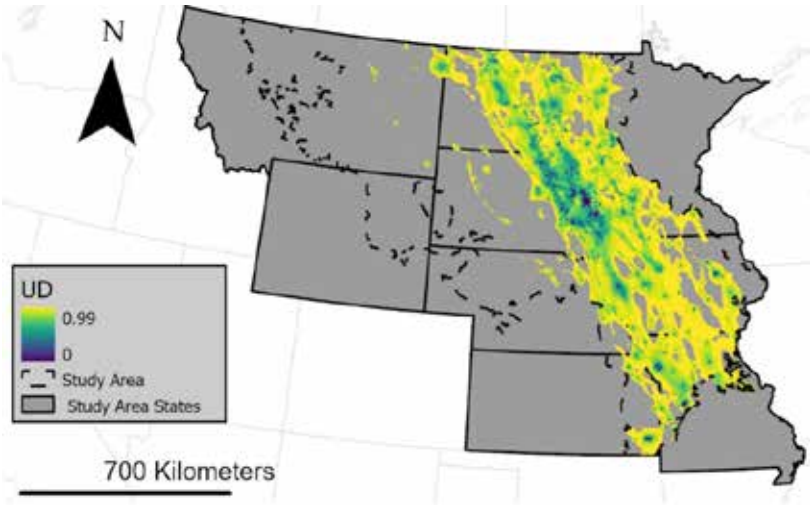


Figure 1. Utilization distribution of spring migrating female mallards.

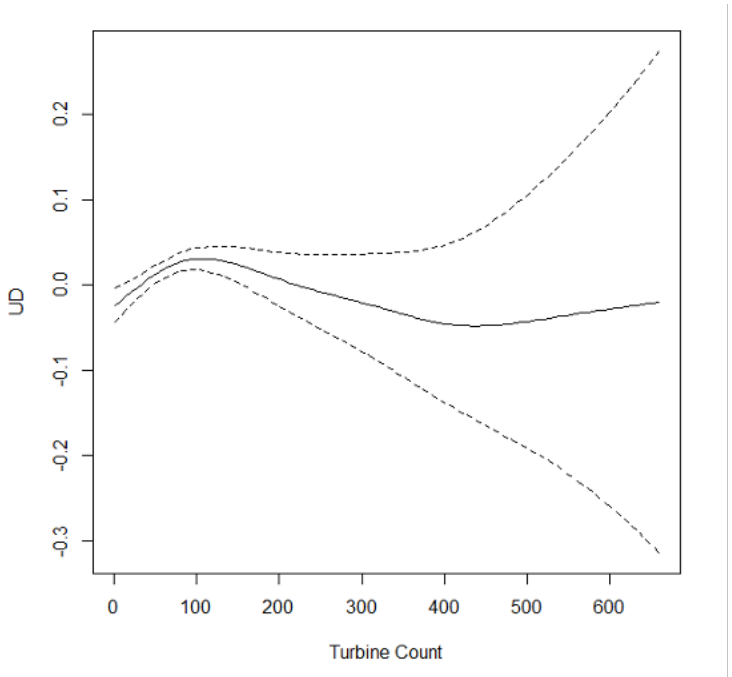


Figure 2. Impact of turbine count on utilization distribution.

Drawn Back to Safety: Predictors of Sanctuary Use by Wintering Mallards on the Central Arkansas National Wildlife Refuge Complex

Author: Katherina A. Schroyer

Co-authors: Elliotte H. Stinson (USFWS), Nicholas M. Masto (Clemson Univ.), Heath M. Hagy (USFWS), and Douglas C. Osborne

National Wildlife Refuges (NWRs) manage closed-access sanctuaries to provide refugia for migratory and wintering waterfowl. Evaluating frequency of use and movement patterns of waterfowl among sanctuaries can aid in balancing waterfowl conservation needs and public hunting opportunities. We investigated the effects of age, sex, and perceived hunting pressure on daytime and nighttime movement patterns of mallards (Anas platyrhynchos) among sanctuaries in the Central Arkansas NWR Complex.

We deployed 138 transmitters on NWRs in Arkansas including Bald Knob (n = 33), Big Lake (n = 14), Cache River (n = 55), Holla Bend (n = 25), and Wapanocca (n = 11) during Nov–Dec 2023–2025. We used generalized linear mixed models to assess the effects of age, sex, and hunting pressure on flight distance across diel periods.

Across all marked mallards, mean daily flight distance from the NWR was 2.3 km (SE = 0.02). These flight distances were greatest at Big Lake (3.12 km; SE = 0.08) and shortest at Bald Knob (1.94 km; SE = 0.03). During the day, males exhibited greater flight distances than females (Δ = 0.16 km; P = 0.03), whereas no sex differences occurred at night. During day and night, flight distances were greater during hunting season than during the non-hunting season (day: Δ = 0.15 km; night: Δ = 0.11 km; P < 0.001). Flight distance did not vary by age. Models explained only 7.9% and 6.5% of the variation in daytime and nighttime flight distances, suggesting environmental factors also influence local movements. A forthcoming analysis will aim to evaluate sanctuary size, landcover composition, and refuge-level variation in residence time and recursive movement patterns to help inform juxtaposition of sanctuaries to maximize waterfowl conservation and hunter opportunity.

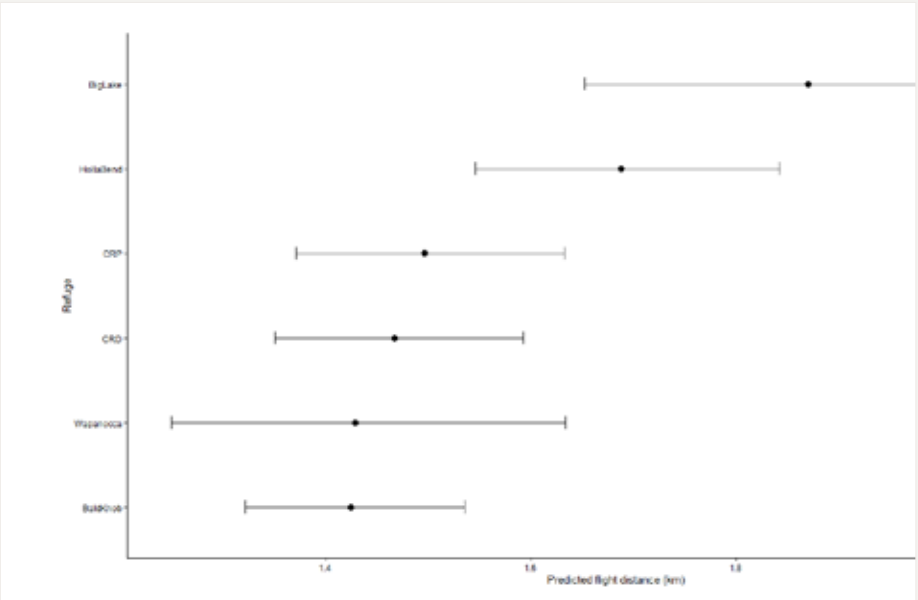


Figure 1. Variation in predicted flight distances of mallards across National Wildlife Refuges in Arkansas.

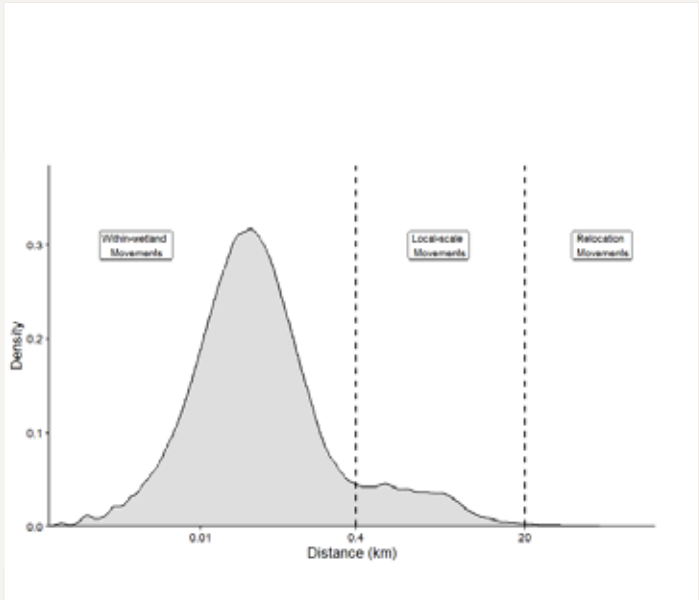


Figure 2. Proportion of locations at distance intervals from sanctuary.

Survival and Harvest Dynamics of Mallards Wintering in Arkansas: A Post-Season Banding Approach



Graduate Student Research: Maddison Allen-DeVries

Student Bio: *Maddison Allen-DeVries earned her B.S. in Wildlife Ecology and Conservation from Michigan Technological University (2023). She received the Outstanding Student Oral Presentation Award at the Lower Mississippi Joint Venture's Waterfowl Symposium and 2nd place at the University of Arkansas at Monticello's Student Research Symposium. Maddison is now a research scientist for Ducks Unlimited and serves as the Gulf Coast Joint Venture's Waterfowl Research Coordinator.* *This research was funded by the University of Arkansas's Division of Agriculture's Endowment for Waterfowl and Wetland Conservation Research.*

Co-Authors: Douglas C. Osborne (UAM), Ryan J. Askren (FoAgREC), Don D. White Jr. (UAM)

Bird banding has long been utilized to understand survival, migration, and harvest dynamics of waterfowl populations across North America. While pre-season (July–Sept) banding has traditionally guided adaptive harvest management, post-season (Feb–April) banding remains comparatively underutilized despite its unrealized potential for informing survival outside of the hunting season. As mallard (Anas platyrhynchos) populations have continued to decline despite long-term reductions in harvest mortality, non-breeding season processes may play an increasingly important role in shaping survival and population dynamics.

The study aimed to 1) estimate long-term trends in annual direct harvest rates of mallards wintering in Arkansas from 1960 to 2024, 2) evaluate temporal variation in direct harvest rates across major management periods, and 3) estimate sex-specific survival and recovery rates for post-season banded mallards in Arkansas. We estimated sex-specific direct harvest rates with reporting-rate adjustments and estimated annual survival and harvest rates using Brownie dead-recovery models.

Annual direct harvest rates significantly declined for both males (0.101% ± 0.029%) and females (0.117% ± 0.028%), although rates have remained relatively stable over the past eight years. Males (0.76 ± 0.03) exhibited higher annual mean survival than females (0.67 ± 0.04), despite males having a recovery probability twice that of females. Combined with lower female harvest rates, these results suggest that female mortality is driven primarily by non-harvest sources.

Overall, these results demonstrate that post-season banding provides valuable complementary insight into harvest vulnerability and recovery processes but has limited capacity to support survival estimation without sustained, long-term banding effort. Expanded winter banding programs would improve our understanding of demographic processes outside the hunting season and strengthen adaptive harvest management of the midcontinent mallard population.

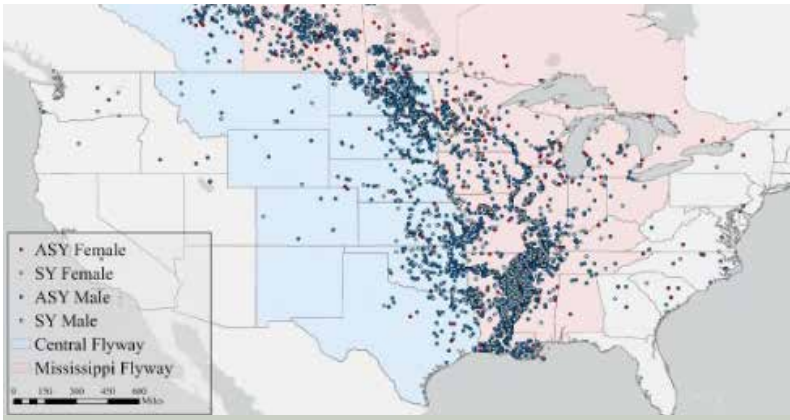


Figure 1. Direct harvest locations of Arkansas winter-banded mallards.

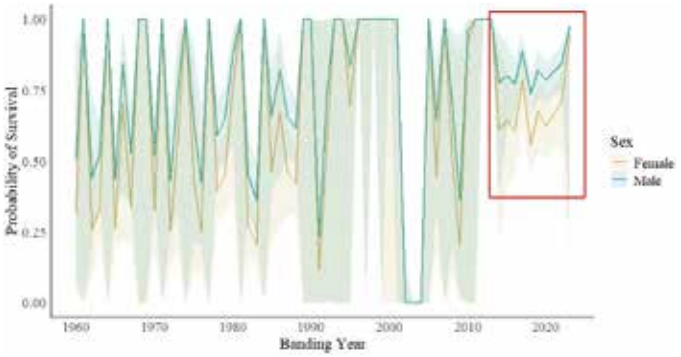


Figure 2. Survival rates, with the red box indicating the period when the Osborne Lab began banding efforts.

Spring Migration Habitat Suitability for Female Mallards in the Mississippi Flyway



Graduate Student Research: Pasquale Palumbo III

Student Bio: *Pasquale Palumbo earned his B.S. in wildlife at Hobart College (2023) in upstate New York. He worked on a ranch in Texas before coming to UAM in Jan 2024. He gave three professional presentations at conferences and was awarded the Robert Burch Waterfowl and Wetlands graduate research award (2026). Pasquale is working at a duck club in Missouri. This research was funded by the Osage Basin, Bass Pro Shop Conservation Funds, Missouri Department of Conservation, Arkansas Game and Fish Commission, and Ducks Unlimited.*

Co-Authors: Chris L. Watt (UAM), Ryan J. Askren (FoAgREC), Heath M. Hagy (USFWS), Douglas C. Osborne (UAM)

Spring migration is an energetically demanding time in the annual lifecycle for female mallards (Anas platyrhynchos) as they explore wetlands for protein-rich diets in preparation for nesting. Consequently, wetlands across mid-latitude and northern prairie states are under increasing threat from drainage for agricultural production as growing seasons lengthen. This research aimed to map habitat suitability for spring migrating female mallards in the Mississippi Flyway to shed light on critical regions for targeted conservation planning and management.

We deployed transmitters on 265 female mallards in Arkansas (n = 132) and Missouri (n = 133) during February 2023–2025, acquiring 687,182 use locations. We overlaid these GPS locations on spatially explicit landcover maps to model monthly probability of occurrence using Maximum entropy (MaxEnt) species distribution modeling. We used area-under-the-curve (AUC > 0.60) estimates and Pearson correlation coefficients (r < 0.70) to simplify the model complexity by identifying the most informative landcover covariates to retain in the full analysis.

The highest probability of occurrence during the peak months of spring migration (Mar and Apr) was at mid-latitudes between 37°–44° where landscapes were composed of 20–40% agriculture and >46% forestland. The mean stopover duration at mid-latitude wetlands during spring was 9.2 days (± 0.3 = SE).

Overall, suitable habitat appeared relatively scarce across the prairie pothole region of the study area and varied monthly, suggesting female mallards must rely on uncommon resources to maintain body condition and build protein reserves needed for egg laying. Suitable areas were characterized by the presence of surface water, emergent wetlands, and woody wetlands interspersed among agricultural landscapes and protected areas at latitudes ranging between Kansas and northern Missouri (37°N) and South Dakota and northwest Iowa (44°N). The connectivity of these wetland complexes in this mid-latitudinal region of the flyway is critical for the overall nutritional health of female mallards that subsequently impacts production and fall flight. The results of this work highlight areas of critical spring migration corridors and stopover habitats that should be prioritized in wetland habitat planning and conservation efforts for migratory waterfowl.

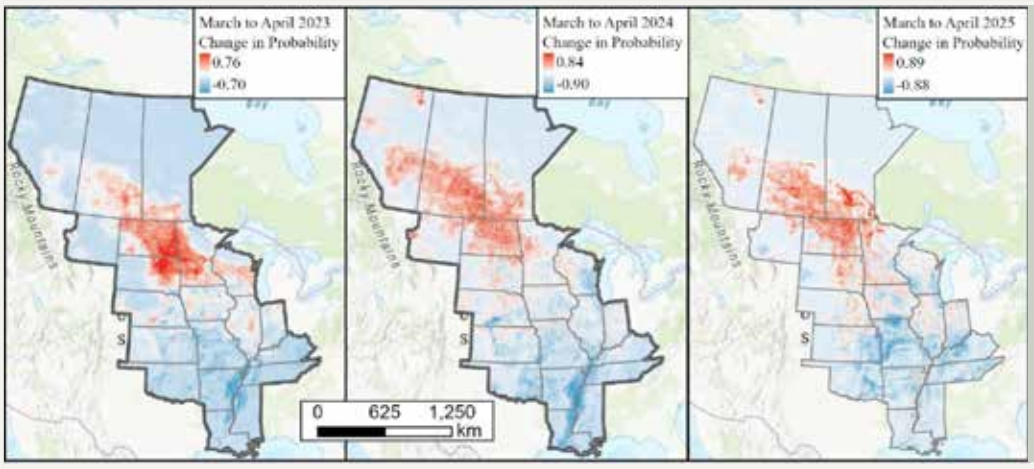


Figure 1. Change in habitat suitability of female mallards between March and April 2023–2025.

Influence of Bottomland Hardwood Forest Reforestation on Winter Habitat Suitability for Mallards in Arkansas



Graduate Student Research: Alyssa J. Tomb

Student Bio: *Alyssa Tomb earned her B.S. in Biology at Shippensburg University of Pennsylvania in May 2024, before coming to UAM in August 2024. She gave three professional presentations at conferences, an invited presentation at the Arkansas Game and Fish Commission's Monthly Commissioner Meeting, and was a 2025–2026 Global Change Research Fellow for the Southeast Climate Adaptation Science Center.* *This research was funded by the Southeast Climate Adaptation Science Center and the University of Arkansas Division of Agriculture.*

Co-Authors: Donnell D. White Jr. (UAM), Marco A. Yáñez (UAM), Douglas C. Osborne (UAM)

North American wetlands are under severe threat from anthropogenic and environmental stressors, consequently impacting waterfowl population dynamics. The Lower Mississippi Alluvial Valley (LMAV) overwinters 40% of the Mississippi Flyway's waterfowl. Given the historical decline and degradation of bottomland hardwood forest (BHF) health in the southern region, restoration of wetland habitats for mallards (Anas platyrhynchos) is of concern. Reforestation of BHF is a high priority in the LMAV but impacts of reforestation on habitat suitability for mallards are not well understood. We used Maximum Entropy (MaxEnt) distribution modeling to develop monthly habitat suitability models for mallards wintering in the LMAV. We identified 20% of the highest priority areas for reforestation defined by the Forest Breeding Bird Decision Support Tool (FBBDSM).

We used approximately 110,000 known mallard presence locations acquired from 373 GPS-GSM marked mallards from 2019–2026, and 13 environmental covariates derived from known mallard habitat use characteristics. MaxEnt generated models from November–February representing relative habitat suitability for mallards and models under the FBBDSM-informed reforestation scenario. The most important covariates for all four months were the proximity to flooded BHFs, the proportion of flooded BHFs in a 5 km and 30 km radius, the proximity to flooded agriculture, and the proximity to sanctuary. On average, there were > 400,000 hectares of moderately suitable and > 300,000 hectares of highly suitable habitat available within the study area.

The simulated reforestation scenario predicted a nearly 50,000 ha increase in moderately and highly suitable habitat, with statistically significant predicted increases present in all four months. The placement of the reforested patches impacted the increases in moderately and highly suitable habitat for mallards, with patches placed further from existing BHF patches having higher suitability values than those placed adjacent to existing patches. The results of the current models suggest that 20–60% flooded BHFs, 20–50% flooded agriculture, and available sanctuary areas in a 5 km radius produce the most suitable habitat for mallards. The simulated reforestation models suggest that reforesting BHFs further from existing BHF patches will increase the amounts of moderately and highly suitable habitat for mallards in the LMAV region of eastern Arkansas. Overall, these results indicate that the conservation of wetlands in the LMAV should extend to entire wetland complexes, and the reforestation of BHFs in the region needs to be strategically placed on the landscape in order to increase habitat suitability for mallards.

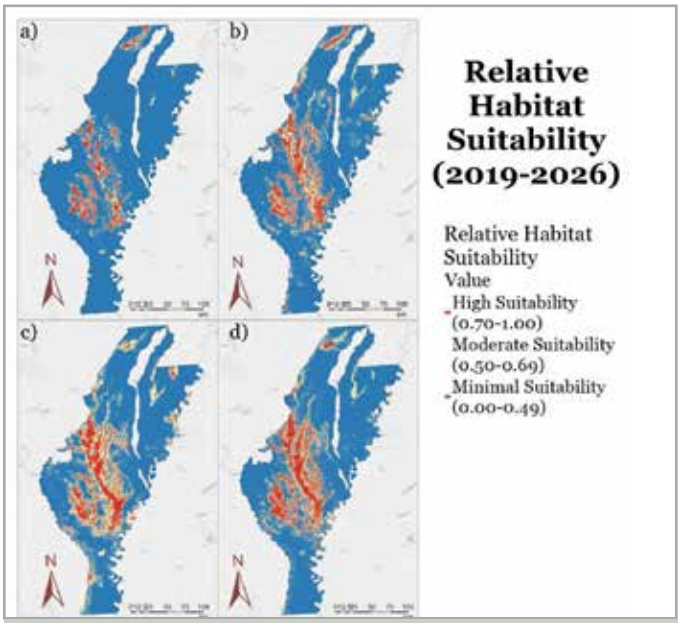


Figure 1. Habitat suitability for wintering mallards.

LiDAR-derived Bottomland Hardwood Forest Structure and Habitat Use of Mallards in the White River and Bayou Meto Watersheds



Graduate Student Research: MacKenzie Wirick

Student Bio: *MacKenzie earned her B.S. in wildlife sciences at the University of Florida (2023). She was a member of the third graduating class of the Graduate Certificate in Waterfowl Habitat and Recreation Management with Five Oaks Ag Research and Education Center and UAM (2024). She was awarded the Robert Burch Waterfowl and Wetlands Graduate Research Award (2025). MacKenzie is now a forester for Ducks Unlimited and a member of the Wetland Emphasis Team in Missouri. Her M.S. research was funded through the Wetland and Waterfowl Endowment at the University of Arkansas at Monticello.*

Co-Authors: Ryan J. Askren (FoAgREC), Hamdi Zuqani (UAM), Douglas C. Osborne (UAM)

Bottomland hardwood forests are under increasing threat from anthropogenic and environmental stressors including hydrological disruption, land conversion, fragmentation that isolates wildlife populations, and climate shifts that disrupt natural ecological cycles—pushing this vital ecosystem toward severe degradation. These forests are experiencing declining overall health, individual tree vigor, and shifting species composition from increased hydrological stress, lack of sunlight to the forest floor, and overcrowded stem densities.

Restoration of existing forests to improve ecological integrity and to meet Desired Forest Conditions for Wildlife (DFCW) is of the utmost importance in the southeast region. We aimed to estimate the parameters of DFCWs including canopy openness, stem density, and tree height using LiDAR data to assess the effects of stand structure on habitat selection by mallards in the White River and Bayou Meto Watersheds (2020–2025).

Our research demonstrated that mallards in Arkansas select a mosaic of forested habitats at a 100-meter scale, favoring open canopies (~29% cover) that provide structural heterogeneity rather than a single forest condition. Preference shifts from avoidance in November to strong selection for both scrub-shrub and mature forest types by February. These findings underscore the importance of forested wetlands, whose structural characteristics provide mallards with cover from aerial predators, thermal refugia, and isolation for pair formation.

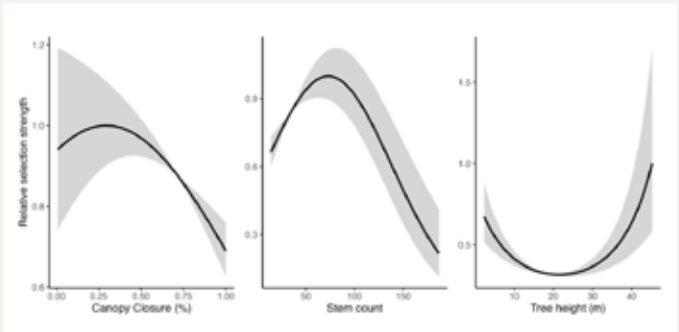


Figure 1. Relationship of canopy openness, stem density, and tree height on mallard habitat use.

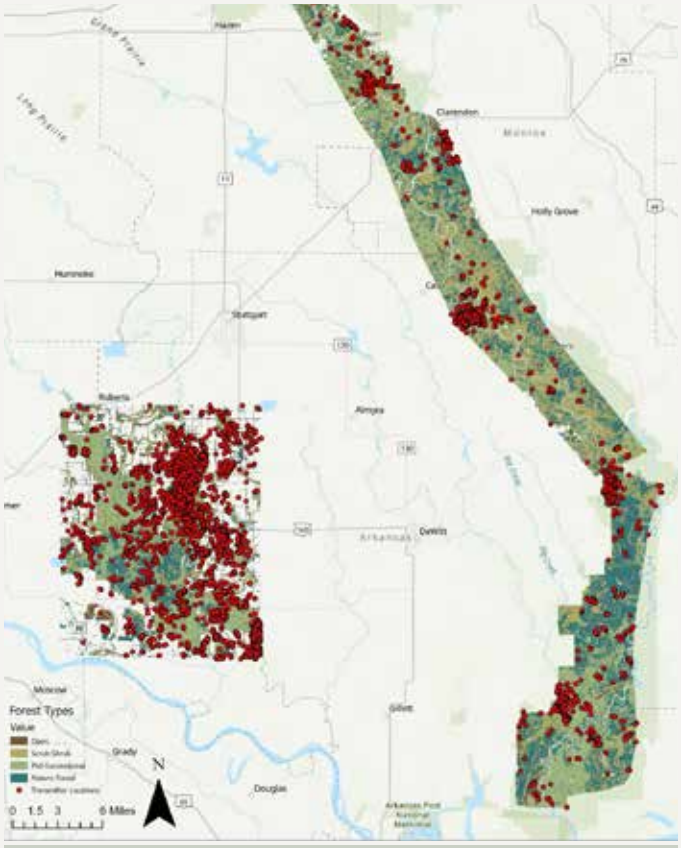


Figure 2. Mallard locations in mature, mid-successional, scrub-shrub, and open forest.

An Extension Perspective on Moist-Soil Management and Seed Production for Wintering Waterfowl



Graduate Student Research: Daniel Livingston

Student Bio: *Daniel Livingston earned his B.S. in Biology from the University of Arkansas at Monticello (2023). He works for the University of Arkansas Division of Agriculture as an Agricultural and Natural Resources Agent and is concurrently working on his M.S. degree. He is in the second year of his research program and plans to complete the degree requirements in Fall 2027.*

Co-Authors: Lilia Stemet (UAM), Tiffany Osborne (UAM), Douglas C. Osborne (UAM)

Moist soil management requires land managers to manipulate water levels to promote the germination of beneficial annual seed-producing plants that serve as key food sources for wintering waterfowl. Two important factors for landowners to consider when managing moist-soil wetlands are drawdown timing (early-, mid-, and late-season) and drawdown rate (rapid and slow). These factors influence soil moisture regimes, seed germination rates, and plant community composition. In general, a combination of mid- to late-season timing and slow drawdown rates maintains the soil moisture conditions into the growing season that are conducive to germinating the desired annual species. Drawdown conditions that result in rapid drying and warming of the soil temperature generally result in undesirable plant communities.

The purpose of this study is to update and refine the current, long-standing guidance on moist-soil management for south Arkansas that reflects the current climatic and hydrologic conditions. We are testing the effects of early-, mid-, and late-season drawdowns with both rapid and slow drawdown rates on plant community composition and seed yield estimates for waterfowl-friendly annual plants including smartweed and barnyard grasses.

This research is being conducted in collaboration with Overflow National Wildlife Refuge in southeast Arkansas. We have designed an experiment to test six different treatment combinations. Dewatering schedules will occur in spring 2026 and 2027. Plant surveys and seed yield estimates will be measured during fall 2026 and 2027. We will use the results of this experimental research, along with previous contemporary research from our lab, to develop a series of four Landowner Fact Sheets that will be published through the University of Arkansas Division of Agriculture Extension Agency to provide landowner guidance in support of moist-soil management in the Arkansas Delta.



Figure 1. Tools of the trade when removing boards from water control structures.



Figure 2. Moist soil wetlands.

Winter Site Fidelity of Green-Winged Teal in Northwestern Louisiana: Insights from Four Decades of Banding Data



Graduate Student Research: Jaden Casas

Student Bio: *Jaden Casas earned his B.S. in Wildlife Biology from Texas Tech University in Lubbock, Texas (2025). He worked as a seasonal duck banding technician with the Nevada Department of Wildlife (2025) and UAM (2026). Jaden started as a graduate student at UAM in August 2026. Jaden's research focuses on wintering site fidelity of green-winged teal where he will analyze historical banding data to estimate annual survival and hunter-harvest recovery probability to provide a foundation for future waterfowl research, monitoring, and conservation initiatives.*

Co-Authors: Ellen Payne (UAM), Andrea Santariello (UAM), Paul Dickson (Pinola), Jacob Kraemer (Pinola), Leigh Ann LaFrance (Pinola), Douglas C. Osborne (UAM)

This study evaluates winter site fidelity of green-winged teal (Anas crecca) at Pinola Conservancy's long-term winter banding station in northwestern Louisiana. Utilizing a robust 40-year dataset of leg-bands and band recovery data from 1986 to the present (43,907 banded; 3,935 encountered), we aim to quantify inter-annual returns, assess regional variation in fidelity between sites, and identify environmental or demographic drivers influencing fidelity patterns.

We will use Seber parameterization joint live-dead mark-recapture models to estimate annual survival, hunter-harvest recovery probability, capture probability of live birds at Pinola, and fidelity probability at Pinola. We will map spatial and temporal encounter patterns to calculate distance intervals between initial capture and subsequent recaptures and hunter recoveries during subsequent wintering seasons (Nov–Feb). Multi-state mark-recapture models will estimate site fidelity probabilities while accounting for decadal variations in detection and recovery rates.

We expect to see measurable winter site fidelity, hypothesizing higher multi-year fidelity among adults than juveniles due to established migratory routes. We also anticipate identifying localized spatial clusters where high return rates correlate with persistent wetland availability along the migratory corridor and wintering region.

Results will provide public and private managers with spatially explicit estimates of winter site fidelity that can guide vegetation management, seasonal flooding strategies, and prioritization of conservation investments in Northwest Louisiana and across the Mississippi Flyway. Ultimately, these insights will optimize resource allocation for the Mississippi Flyway, ensuring that targeted habitat conservation aligns precisely with the historical and projected spatial distribution of this popular waterfowl species.

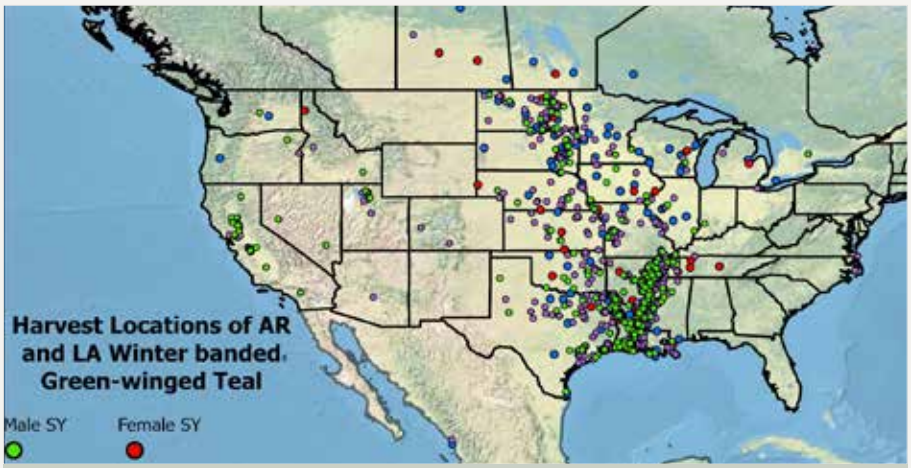


Figure 1. Direct harvest locations of Arkansas and Louisiana winter-banded green-winged Teal.



Figure 2. Post-transmitter attachment on a female green-winged teal at Pinola.

Cross-Seasonal Connectivity Linking Spring Migration and Winter Site Fidelity in Female Green-Winged Teal



Graduate Student Research: Ellen Payne

Student Bio: *Ellen Payne earned her B.S. in Natural Resource Management from the University of Minnesota Crookston (2025). She has experience working for Ducks Unlimited as a waterfowl breeding ecology technician, banding technician for the University of Arkansas Division of Agriculture, and a seed production technician for Minnesota Native Landscape. Ellen began at UAM in August 2026 working on this collaborative project with Pinola.*

Co-Authors: Jaden Casas (UAM), Andrea Santariello (UAM), Paul Dickson (Pinola), Jacob Kraemer (Pinola), Leigh Ann LaFrance (Pinola), Douglas C. Osborne (UAM)

Waterfowl exhibit site fidelity at both ends of their migration, including breeding and wintering locations. However, the linkages between individual spring migration routes, stopover ecology, and subsequent winter site fidelity remain poorly understood. This study evaluates how spring migration corridors influence wintering site choices for female green-winged teal (Anas crecca) marked with transmitters at Pinola Conservancy's long-term banding site in northwestern Louisiana.

Our objective is to delineate individual spring migration pathways and quantify their influence on inter-annual return rates to specific wintering grounds. To do so, we will capture ducks and deploy transmitters on 100 female green-winged teal per year during 2026–2027 at Pinola Conservancy's long-term banding site in northwest Louisiana. Transmitters will record high-resolution locations, tracking individuals through their northward spring migration, breeding periods, and autumn return. We will integrate telemetry tracks with historical leg-band encounter data to model movement corridors. We will use Dynamic Brownian Bridge Movement models to delineate migration paths and stopover durations and incorporate multi-state mark-recapture models to estimate winter site fidelity probabilities based on the spring migratory routes used.

We expect to identify distinct spring migration corridors linked to varying degrees of winter site fidelity. We hypothesize that females utilizing stable, resource-rich stopover networks during spring migration will exhibit higher multi-year fidelity to northwestern Louisiana wintering sites compared to those using transient corridors. Delineating these migratory-wintering linkages will allow managers to integrate the knowledge of cross-seasonal effects in their conservation planning and management efforts. Results from this research will inform multi-regional step-down conservation plans for the individual Habitat Joint Ventures contained within the Central and Mississippi Flyways.

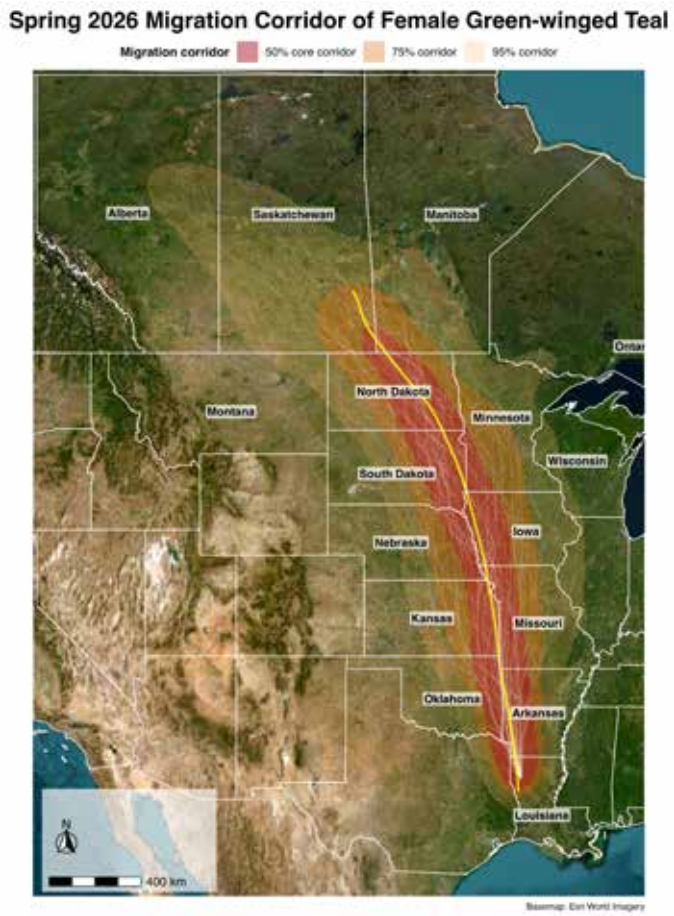
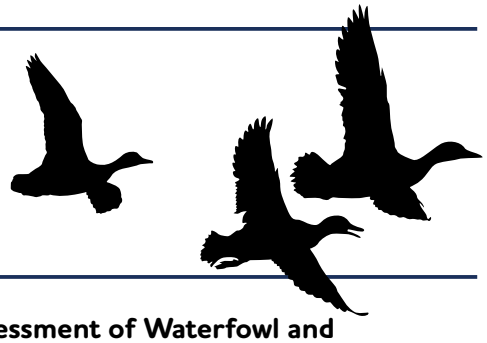


Figure 1. Migration tracks of green-winged teal during spring 2026 from Louisiana to the breeding grounds.

Upcoming Funded and Partially Funded Projects



Understanding How Drought and Flood Extremes Reshape Wetland Habitat and Waterfowl Distributions in the Southeast

Dr. Zurqani and Dr. Osborne will lead a team of researchers on this high-caliber project to quantify and forecast the effects of major flood and drought events on waterfowl redistribution. The project integrates aerial surveys and GPS telemetry with advanced remote sensing via a 10-meter Google Earth Engine data-fusion pipeline.

- Postdoctoral Research Associate Currently recruiting—Zurqani
- Graduate Research Assistant (Ph.D.) Currently recruiting—Zurqani
- Graduate Research Assistant (Ph.D.) Currently recruiting—Osborne

Technical Assessment of Waterfowl and Wetland Dynamics in relation to Wind Energy Development in Arkansas

Dr. Osborne and Dr. Zurqani have developed a project designed to assess the effects of wind energy infrastructure on flight characteristics, migration corridors, and habitat selection of mallards in Arkansas. We have secured external funding for Phase I of this work. However, a Phase II that will support a new field experiment to assess direct effects on mallards is critical. If funded, this five-year project will support two Ph.D. students and a drone survey technician. This project will support graduate students and researchers.

- Postdoctoral Research Associate Currently recruiting—Osborne
- Drone technician—pending funding—Osborne
- Ph.D. student—pending funding—Osborne
- Ph.D. student—pending funding—Zurqani

Roots and Wings: Aligning carbon-based reforestation & environmental co-benefits for waterfowl

Dr. Osborne, Dr. Yáñez, and Dr. Zurqani have developed a pair of research projects, the first of which is a simulation-based ecological modeling study to forecast the benefits of scaled-up bottomland hardwood reforestation on the distribution of mallards in the Mississippi Alluvial Valley. The second project is an applied reforestation study that will allow us to provide science-based guidelines for replanting tracts of bottomland hardwoods in the Mississippi Alluvial Valley. This project will support two new graduate students.

- Graduate Research Assistant (M.S.) Currently recruiting—Osborne
- Graduate Research Assistant (M.S.) Currently recruiting—Yáñez

Spatial Representation and Seasonal Survival Estimates from Pre- and Post-Season Waterfowl Banding

Dr. Osborne has developed a project that will facilitate and justify the implementation of a region-wide winter banding program. Dr. Osborne will recruit a Ph.D. student to evaluate the spatial representation of pre-season and post-season banding, expand banding to underrepresented regions of the Central and Mississippi Flyway, and conduct a two-season survival analysis to assess factors influencing non-hunting season survival of female mallards. This project will support one new graduate student.

- Graduate Research Assistant (Ph.D.) Currently recruiting—Osborne



CURRENT

COURSES

We are proud to announce that in 2026, the College of Forestry, Agriculture, and Natural Resources was approved to offer the first Ph.D. program in UAM's history. This opportunity exists because of the continued dedication and hard work of our research faculty to successfully secure grant funding and conduct industry-leading research that benefits our students and natural resources. The forestry and waterfowl programs collectively anticipate enrolling 6–8 Ph.D. students by January 2027.

Dr. Douglas Osborne currently offers the following courses at the University of Arkansas at Monticello:

Wetland Ecology & Management	Fall, annually
Waterfowl Ecology & Management	Spring, annually
Science Writing	Spring, when requested
Senior Undergraduate Research	When requested

Snowden Waterfowl Center of Excellence







Our outdoor classrooms with a purpose:

The wilderness holds answers to more questions than we have yet learned to ask.



DELTA WATERFOWL

UNIVERSITY HUNT PROGRAM

University of Arkansas at Monticello Wildlife Students Bridge Conservation and Hunting Heritage Through Delta Waterfowl Program

Six students from UAM participated in the 2026 Delta Waterfowl University Hunting Program. The initiative addresses a critical gap in modern wildlife management education by introducing future conservation leaders to their first waterfowl hunting experience. A looming crisis facing the wildlife management profession is that many students pursuing careers as wildlife decision-makers have never experienced duck hunting firsthand. Delta Waterfowl launched the University Hunting Program to reverse this trend. The program ensures that future agency professionals understand the vital ecological, economic, and recreational roles hunters play in North American wetland conservation.

To ensure maximum safety and proficiency, UAM students completed hunter safety

training, clay target practice, and mentored fieldwork before entering the duck blind. The curriculum integrated seamlessly into their regular wildlife coursework. Most importantly, all six students harvested their first ducks through the program. The excitement of hearing the first shots, listening to hunt mentors call to the ducks, watching ducks work into the decoys, and congratulating one another as each participant harvested their first duck created a memorable shared experience. Sharing that moment with fellow students and mentors also provided a firsthand understanding of the traditions, camaraderie, and personal connection that draw people to waterfowl hunting.



As state and federal agencies face increasingly complex threats to wildlife and habitat management, programs like the UHP and UAM's hands-on, field-based training help ensure future professionals remain connected to the hunters and hunter-backed funding models that support North American wetland conservation. By experiencing the responsibility, excitement, and rewards of a successful hunt firsthand, these students are now better equipped to understand and support policies that benefit both waterfowl and the habitats upon which they depend.



"The North American Model of Wildlife Conservation will only persist if the next generation of hunters is involved. The UHP walks new hunters through the process from start to finish."

— Trent Scogin,
Delta Waterfowl Regional Director, Arkansas



PROGRAM OUTREACH

WONDERS OF WATERFOWL

The purpose of this program's outreach is to foster meaningful connections among students, wildlife and natural resource professionals, land managers, scientists, and biologists across the nation and around the world. Through these relationships, we strive to expand knowledge, encourage collaboration, and inspire a deeper appreciation and passion for the environment and the natural resources we all share.

"Wonders of Waterfowl" celebrated its fifth annual event on February 21, 2026, bringing nearly 50 Arkansas 4-H members from 18 counties to Cypress Bayou Hunting Club in southwest Arkansas for an immersive day of waterfowl education and outdoor learning.

Founded and organized by Tiffany Osborne, a wildlife and outdoor educator with the University of Arkansas System Division of Agriculture and the University of Arkansas at Monticello, Wonders of Waterfowl moves learning beyond the traditional classroom and into the field. The hands-on program gives young people an opportunity to explore, engage, and learn about waterfowl and wetland ecosystems in an outdoor setting.

Participants rotated through four educational stations focused on waterfowl biology, migration, and wetland habitat management. They waded through shallow-water impoundments in search of aquatic insects and plant seeds, explored the challenges and hazards faced by migrating waterfowl, learned how scientists track migration, and practiced identifying and aging ducks using wing-feather characteristics.

The day concluded with a live duck-banding demonstration coordinated by UAM wildlife students and field technicians. After learning how banding and tracking provide scientists with valuable information about continental migration patterns and population demographics, participants had the opportunity to hold and release mallards, wood ducks, and green-winged teal back into the wetlands where they were captured.

Inspiring Future Conservationists

At its core, Wonders of Waterfowl is designed to inspire the next generation of environmental stewards and conservation professionals. For participants like Eli Freppon, the experience helped transform a lifelong passion for wildlife into a potential career path. Following his participation in the program, Eli enrolled in the wildlife management program at UAM with the goal of becoming a waterfowl biologist.

Stories like Eli's demonstrate the lasting impact that meaningful outdoor experiences can have on young people. Participants leave the event with a deeper understanding of waterfowl conservation, a stronger connection to wetland ecosystems, and a greater appreciation for how their interests can translate into future careers in wildlife management. Each participant also received a custom Chaos duck call from Legendary Gear as a lasting memento of the experience.

Program Opportunities

Registration for the annual Wonders of Waterfowl event opens each December. Because participation is limited and the event fills quickly, families are encouraged to register early.

Scholarships are also available to Wonders of Waterfowl participants who are interested in pursuing a bachelor's degree in wildlife management at UAM. These opportunities extend the program's impact beyond a single day in the field, helping interested students take the next step toward an education and career in wildlife conservation.

For information about Wonders of Waterfowl or scholarship opportunities, please contact Tiffany Osborne at osbornet@uamont.edu.



Figure 1. Tiffany Osborne, 4-H Wonders of Waterfowl Coordinator.



Figure 2. Brent Haden, Snowden Waterfowl Center undergraduate student.



Figure 3. Daniel Livingston, Snowden Waterfowl Center graduate student.



PROGRAM OUTREACH

LANDOWNER CONSERVATIONISTS

Providing Science-Based Guidance to Land Management Decisions

This year provided many rewarding opportunities to engage landowners in the field; this is where the rubber meets the road. It is these interactions with landowners dedicated to delivering conservation actions on the ground that make our research come full circle. Among the highlights from this past year were the many on-site meetings with hunt club members to discuss waterfowl management strategies. The meetings ranged from one-on-one site visits to meetings with multiple club members or even multiple clubs that work together as a cooperative for the greater good of the resource. In addition, organized field-based educational workshops such as the Osage Basin Wetland Workshop aimed to bring together a suite of biologists and researchers to empower landowners to assimilate research findings into best management practices for waterfowl and wetland conservation.

We are grateful for the strong partnerships we have with landowners who are committed to improving habitat and ensuring a thriving future for waterfowl. These collaborations allow us to take research from the field and put it into practice, creating meaningful conservation outcomes across the landscape. As we look ahead, the Snowden Waterfowl Center remains committed to expanding these partnerships, sharing knowledge, and working together to advance waterfowl conservation for generations to come.

"Osborne's research helped provide scientific evidence to guide the club's management decisions and later confirmed that those practices were effective in their region."

— Brandon Wren

Member of Cypress Bayou Hunting Club







"When you get a flight of ducks, that's our tribe. We want to grow that tribe. If we understand our resources better, we can manage them better."

— Gary Dan Furtell

Member of Po-Boy and Yellow Creek Clubs



STUDENT

PROFESSIONAL DEVELOPMENT

Participation in national conferences and regional meetings serves as an important opportunity for students to showcase their research. These conferences are extremely important opportunities for networking with peers and professionals within the scientific community.

Over the past year, our lab presented research findings at the Southern Association of Fish and Wildlife Agencies Conference in Biloxi, Mississippi and at the Lower Mississippi Valley Joint Venture Duck Symposium in Little Rock, Arkansas, in which Dr. Osborne served on the conference planning committee. Additionally, Alyssa Tomb was invited by the Arkansas Game and Fish Commission to present her research at an AGFC meeting in April 2026 held on the University of Arkansas at Monticello campus.

INVITED PRESENTATIONS

Tomb, A.J., D.C. Osborne. Habitat Suitability for Midcontinent Mallards Wintering in the Lower Mississippi Alluvial Valley of Arkansas. April Meeting of the Arkansas Game & Fish Commission, hosted by University of Arkansas at Monticello, Arkansas, 16 April 2026

CONTRIBUTED PRESENTATIONS

Allen-DeVries, M.K., and D.C. Osborne. Abundance and direct harvest rates of mallards wintering in Arkansas: a post-season banding approach. Lower Mississippi Valley Duck Symposium, Little Rock, AR, 2–3 March 2026

Berdo, D., G. Hargrove, A. Mini, R. Askren, and D.C. Osborne. Estimating occurrence and habitat associations of King Rails through autonomous recording units in the Arkansas Delta and Implications for Waterfowl Management. Lower Mississippi Valley Duck Symposium, Little Rock, AR, 2–3 March 2026

Ogwo, O.C., H.A. Zurqani, D.C. Osborne, and A. Mini. High-resolution emergent marsh mapping to support marsh bird conservation in the Mississippi Alluvial Valley. Lower Mississippi Valley Duck Symposium, Little Rock, AR, 2–3 March 2026

Palumbo, P. III, C.L. Watt, R.J. Askren, H.M. Hagy, and D.C. Osborne. Habitat suitability for key stopover locations during spring migration for female mallards wintering in the Southern Mississippi Flyway. Lower Mississippi Valley Duck Symposium, Little Rock, AR, 2–3 March 2026

Schroyer, K.A., D. Berdo, R. Askren, E.H. Stinson, J. Marty, and D.C. Osborne. Drawn back to safety: Recursive movements by wintering mallards to waterfowl sanctuaries on the Central Arkansas National Wildlife Refuge Complex. Lower Mississippi Valley Duck Symposium, Little Rock, AR, 2–3 March 2026

Tomb, A., and D.C. Osborne. Winter Habitat Suitability and Bottomland Hardwood Forest Use by Midcontinent Mallards in Arkansas. Lower Mississippi Valley Duck Symposium, Little Rock, AR, 2–3 March 2026

Neupane, A., Yáñez, M., Babst, B.A., Zurqani, H. A., Osborne, D. C., & Phuyal, R. Vulnerability of Bottomland Red Oaks to Climate Variation in the Lower Mississippi Alluvial Valley. Western Gulf States Society of American Foresters Meeting, Shreveport, LA, 3–5 September 2025. Poster presentation; https://doi.org/10.13140/RG.2.2.14707.18729

Allen-DeVries, M.K., and D.C. Osborne. Abundance and direct harvest rates of mallards wintering in Arkansas: A post-season banding approach. Southeastern Association of Fish & Wildlife Agencies, Biloxi, MS, 26–29 October 2025

Askren, R.J., and D.C. Osborne. Comparison of transmitter attachments on movement behavior of spring migrating mallards. Southeastern Association of Fish & Wildlife Agencies, Biloxi, MS, 26–29 October 2025

Berdo, D., D.C. Osborne, A. Mini, and G. Hargrove. Estimating occurrence and habitat associations of King Rails through autonomous recording units in the Arkansas delta. Southeastern Association of Fish & Wildlife Agencies, Biloxi, MS, 26–29 October 2025

Palumbo, P. III, D.C. Osborne, and R.J. Askren. Key stopover locations during spring migration of female mallards wintering in the southern Mississippi Flyway. Southeastern Association of Fish & Wildlife Agencies, Biloxi, MS, 26–29 October 2025

Schroyer, K.A., H.M. Hagy, R.J. Askren, S. Rimer, H.A. Zurqani, and D.C. Osborne. Remote Monitoring of Vegetation Communities and Waterfowl Responses to a Drawdown. Southeastern Association of Fish and Wildlife Agencies, Biloxi, MS, 26–29 October 2025

Tomb, A.J., and D.C. Osborne. Winter Habitat Suitability and Bottomland Hardwood Forest Use by Midcontinent Mallards in Arkansas. Southeastern Association of Fish and Wildlife Agencies, Biloxi, MS, 26–29 October 2025



2026

PEER-REVIEWED PUBLICATIONS

PEER-REVIEWED PUBLICATIONS FROM 2025–2026

Schroyer, K.A., D.C. Osborne, H.M. Hagy, R.J. Askren, H.A. Zurqani, and S. Rimer. 2026. Vegetation and waterfowl response to a drawdown on a semi-permanent emergent wetland. Wetlands in press.

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Vanausdall, R.A., D.P. Collins, O. Guimaraes, H.Y. Loh, J.W. Moore, D.C. Osborne, and J.H. Gammonley. 2026. Trends in the body condition of Rocky Mountain Population sandhill cranes during spring and winter. Journal of Wildlife Management. http://doi.org/10.1002/jwmg.70222

Beach, C.R., A.M.V. Fournier, J.D. Lancaster, D.C. Osborne, A.P. Yetter, R.A. Cole, H.M. Hagy, and C.N. Jacques. 2026. Physiological impacts of sublethal cyathocotyle bushiensis and sphaeridiotrema spp. infections in captive lesser scaup. The Wilson Journal of Ornithology. https://doi.org/10.1080/15594491.2025.2597098

Ogwa, O.C., H. Zurqani, D.C. Osborne, A. Mini, and R.J. Askren. 2025. The roles of spectral and spatial features in enhancing wetland classification using deep learning. IEEE Conference on Technologies for Sustainability (Sustech) 20–23 April 2025. https://doi.org/10.1109/SusTech63138.2025.11025639

Yáñez, M.A., P. Garrido, J. Blanco, J. Garjardo, D.C. Osborne, and T.L. Osborne. 2025. Effects of burn severity on the diversity and abundance of birds 3 years post-fire in a coastal forest of Nothofagus glauca (Phil.) Krasser in central Chile. Journal of Nature Conservation 86. https://doi.org/10.1016/j.jnc.2025.126965

Hug, C., P. Saud, K. McKnight, R.J. Askren, and D.C. Osborne. 2025. Comparing tree stress rank and tree condition to determine red oak (Quercus spp.) health in Greentree Reservoirs in the Lower Mississippi Alluvial Valley. Journal of Forestry Research 36, 33. https://doi.org/10.1007/s11676-025-01826-x

Bakner, N.W., N.M. Masto, P. Lavretsky, C.J. Highway, A.C. Keever, A.G. Blake-Bradshaw, R.J. Askren, H.M. Hagy, J.C. Feddersen, D.C. Osborne, and B.S. Cohen. 2025. Mallard hybridization with domesticated lineages alters spring migration behavior and timing. Accepted on 26 November 2024 in Ecology and Evolution 15 e70706. https://doi.org/10.1002/ece3.70706

CONSERVATION & RESEARCH PARTNERS



HONORS

AND AWARDS

HONORS AND AWARDS–OSBORNE

2026 Hometown Hero Awardee
Monticello Arkansas Advance

HONORS AND AWARDS–CURRENT STUDENTS

2026 Brent Haden, Student Conservationist of the Year
Arkansas Wildlife Federation

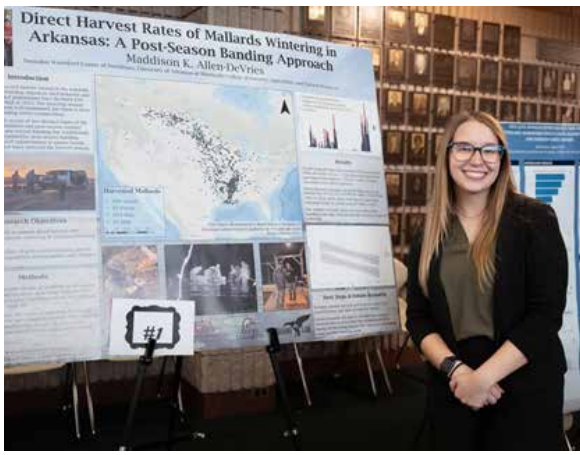
2026 Obioma Ogwo, Best Student Poster Presentation
LMVJV Waterfowl Symposium

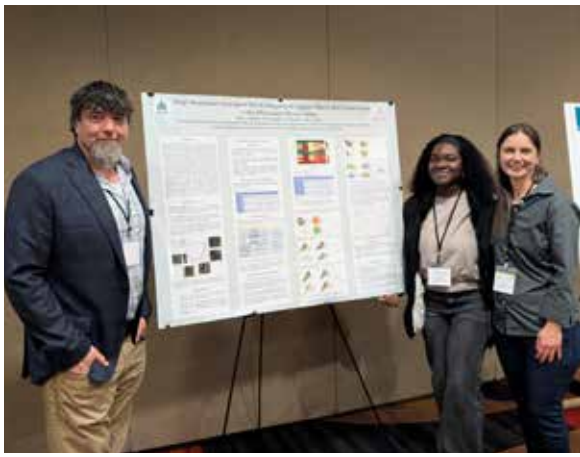
2026 Maddison Allen-DeVries, Best Student Oral Presentation, LMVJV Waterfowl Symposium

2026 Maddison Allen-DeVries, Second Place Poster Presentation, UAM Student Symposium

2025 Pasquale Palumbo III, Dr. Robert Burch Waterfowl Endowment Recipient

2025 Alyssa Tomb, Global Climate Change Fellowship Award, SE CASC





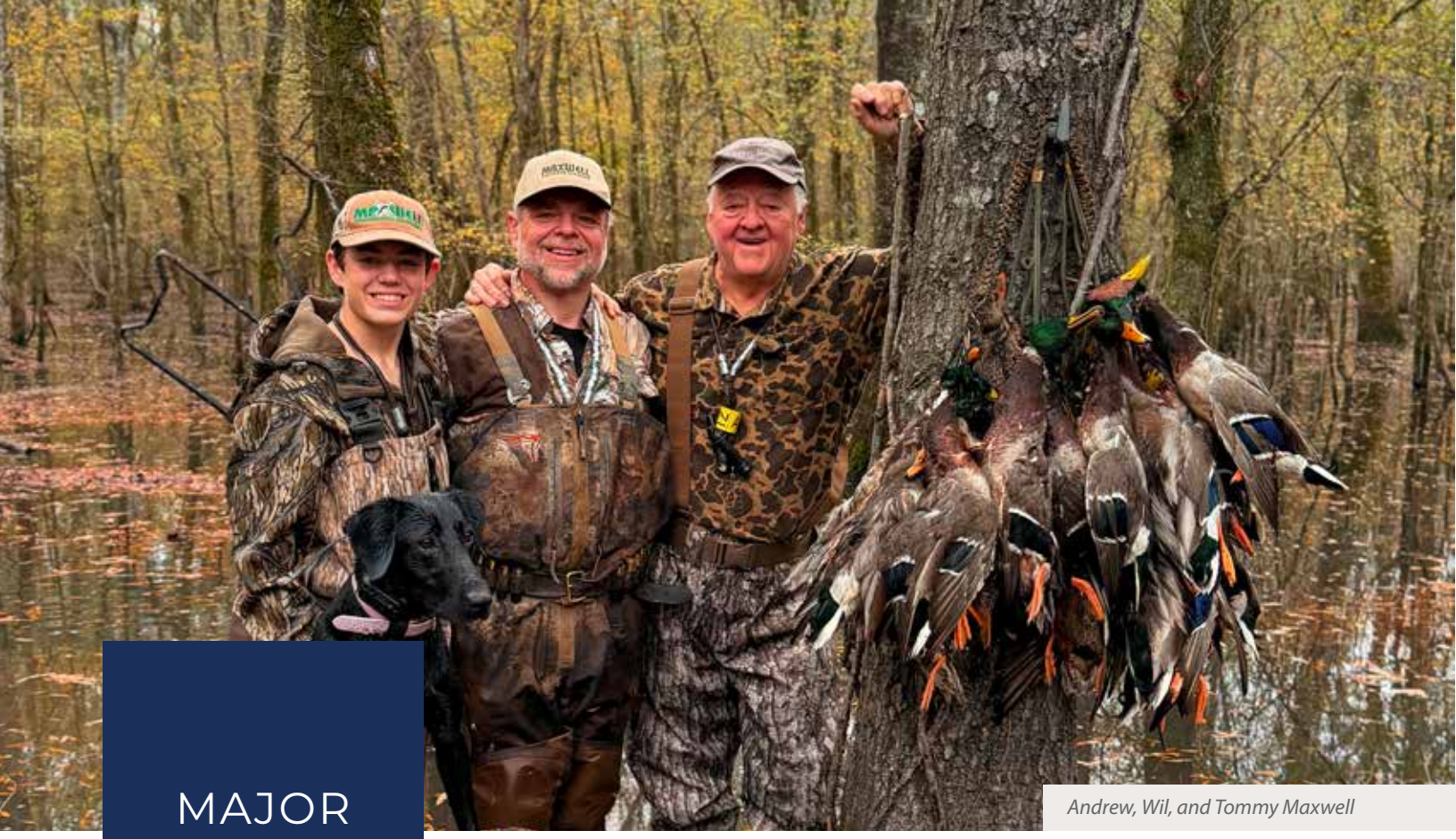
Snowden Waterfowl Center of Excellence




SITKA







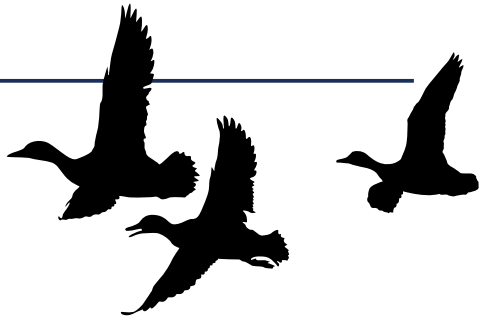
Andrew, Wil, and Tommy Maxwell

MAJOR DONOR

PROFILE

THE MAXWELL FAMILY

We extend our sincere appreciation to the Maxwell family of Monticello, Arkansas, for their long-standing support and their latest transformative investment in student education and pioneering research at the University of Arkansas at Monticello. Their philanthropy reflects a deep passion for waterfowl hunting and conservation, as well as an enduring commitment to their local community and university. Their extraordinary generosity directly supports more than a dozen UAM students each year, helping reduce the cost of higher education while equipping future waterfowl professionals with the tools and experiences they need to succeed. By funding the critical science needed to address major conservation challenges throughout the Mississippi Flyway, the Maxwell family is not only advancing academic excellence today but also helping shape the wildlife leaders and innovators of tomorrow.



"The students coming out of this program are our future leaders—not only in waterfowl, but across wildlife research and decision-making."

— Wil Maxwell

SNOWDEN WATERFOWL CENTER OF EXCELLENCE DONORS

The Snowden Waterfowl Center is grateful for the financial support of these individuals and institutions. Their investment was made in support of a shared vision. Their actions have allowed the vision to become reality and have established the trajectory for the future. The Center's mission—to develop future generations of waterfowl leaders, conduct world-class research, and produce results that can be applied to a changing landscape—is made possible by their leadership.

Special thanks go to Mr. Corey Dunn of Ducks Unlimited for his enthusiasm and early commitment to establishing the Ducks Unlimited Endowed Professorship. Corey is a real asset to Arkansas and the waterfowling community.

DUCKS UNLIMITED ENDOWED PROFESSORSHIP

Big Woods Hunting Club
Brasher, Greg & Tessa
Borchert, John & Sylvia
Brewer, Clete & Tammy
Cypress Bayou Corporation
DeLuca, Matt
Dyke, Merritt
Fleener, Robert
Floyd, Michael
Frey, Doug & Allison
Futrell, Keith & Shelly
Glen Sain Motors
Ginger, Will
Hartz, Greg & Janet
Hempstead County Hunting Club
Jackson, Karolyn Owen
Maxwell, Tommy
Maxwell, Wil
McClendon, John
Metz, John & Shari
Mooney, Keith & Jamie
Morgan, Scott & Tammy
Murphy USA
Owen, Wayne
Po-Boy Duck Club
Snowden, David
Strait Lake Duck Club
Two Rivers Duck Club
West, Mindy & Keith
Wicker Construction
Yellow Creek Hunting Club

DYKE-SNOWDEN ENDOWED CHAIR

Dyke, Merritt
Snowden, David

SNOWDEN WATERFOWL CENTER OF EXCELLENCE

Dyke, Merritt
Lile, Gar and Garner
Lock, Chuck
Mangham, Roger
Maxwell, Tommy
McClendon, John
Monticello Rotary Club
Snowden, Christy
Snowden, David
Snowden, David Sr.
State of Arkansas
Stewart, Marshall
Thompson, Dhu
Scott, Stephen
Simmons Bank Foundation
Sitka Foundation
Union Bank
Zindel, Nick



Figure 1. Erica and Corey Dunn. Corey is Senior Director of Development for Ducks Unlimited, Arkansas.



JOIN OUR MISSION

MISSION

The Snowden Waterfowl Center of Excellence will support waterfowl, their habitats, and the people who manage them by cultivating waterfowl excellence through workforce development, research, outreach, and guidance on management and policy.

VISION

Through the strength of public-private partnerships and philanthropic support, the Snowden Waterfowl Center of Excellence will be among the world leaders in waterfowl research, education, training, and outreach.

MAKE A GIFT

YOUR GIFT SUPPORTS

- Graduate student stipends and tuition
- Undergraduate student scholarships
- Professional development opportunities
- Applied waterfowl research
- Landowner education and outreach

UofA DIVISION OF AGRICULTURE RESEARCH & EXTENSION University of Arkansas System

COLLEGE OF FORESTRY, AGRICULTURE & NATURAL RESOURCES

SNOWDEN WATERFOWL CENTER of Excellence

OSBORNE LAB