

KENNEDY ENDOWED PROGRAM

WATERFOWL & WETLANDS CONSERVATION

2020-2021

Annual Report



MISSISSIPPI STATE UNIVERSITY FOREST AND WILDLIFE RESEARCH CENTER

2020 - 2021

Kennedy Endowed Program in WATERFOWL & WETLANDS CONSERVATION ANNUAL REPORT

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Dr. J. Brian Davis James C. Kennedy Endowed

Associate Professor in Waterfowl and Wetlands Conservation

> Forest & Wildlife Research Center



MISSISSIPPI STATE UNIVERSITY_{TM} FOREST AND WILDLIFE RESEARCH CENTER **ON THE COVER:** *The next generation of duck hunters pose with their harvest. (Photo by Rance Moring)*



From the Director

S BIOLOGISTS, WE FREQUENTLY ACKNOWLEDGE the adaptability of mallards and other waterfowl. During the global pandemic we have learned some of the lessons of waterfowl, including the need to be smart, adaptable, and resilient for our own welfare and survival. Thanks to safety precautions put in place at Mississippi State University, our students enjoyed safe and successful in-person instruction throughout the pandemic and we were able to continue to offer local field trips in the Kennedy Waterfowl and Wetlands program. However, some aspects of our programs were impacted, especially limits to our outdoor adventures and conference opportunities. Moreover, the pandemic impacted our research, resulting in a yearlong suspension of our marsh terrace project in coastal Louisiana. While the pandemic delayed work during the spring, Hurricanes Laura and Delta destroyed our research quarters at Rockefeller Refuge in the fall, leading to additional delays. But like waterfowl, Madie McFarland, the master's student on the marsh terrace project, persevered and was back in the field in spring-summer 2021.

Despite these challenges, we remained active, publishing peer-reviewed articles, conducting research, presenting at many virtual scientific conferences, writing grants and strengthening partnerships. It's an honor to collaborate with several colleagues around the country including on the wood duck recruitment study, which operates in eight states, from Delaware to Mississippi. I am also part of a newly secured National Science Foundation funded project that will examine dynamics of wild and feral mallards, collaborating with scientists in California, Texas, Illinois, the Smithsonian Institute (Washington D.C.), and New York. More recently, one of our new project endeavors is a study of waterfowl diets and winter foraging habitat in coastal and inland wetlands of the South Atlantic, in the Atlantic Flyway. Updates on these and other ongoing projects are shared in this report.

Despite pandemic-related challenges impacting our partners hiring practices, we successfully placed several undergraduate students in internships, summer jobs, or graduate positions. These students and their work experiences are highlighted in this report. We look forward to getting back to normal operations and program growth in 2022, including reinstating the Delta Waterfowl University Hunting Program, wetland field trips, and other activities related to waterfowl conservation and management.

In closing, we thank Mr. Jim Kennedy and all the waterfowl program supporters, including many state, federal, and non-governmental organizations that make our work possible. We are indebted to all of you and grateful for the time/ resources you invest in our students and projects. I especially want to thank Mr. Rance Moring, manager at Mr. Kennedy's York Woods property in the Mississippi Delta. Rance, along with other York Woods personnel Carly Cofield and WFA alumnus Andy Wright, have been instrumental colleagues in the field, providing our team housing, logistics, tours and giving of their time. We really appreciate you and couldn't do our work without you!

Sincerely, **Dr. Brian Davis** Director



New Members

Welcome To The Waterfowl Team

DR. MELANIE BOUDREAU is a postdoctoral research associate in the Department of Wildlife, Fisheries and Aquaculture. A New Brunswick, Canada native, Boudreau has had a passion for wildlife since a young age thanks to her dad, who frequently took her camping, fishing, and hunting; activities she still enjoys. She earned her bachelor's from the University of New Brunswick and went on to study community interactions in Atlantic intertidal systems, with a particular focus on Common Eiders, as part of her master's work at Mount Allison University. Boudreau then earned a doctoral degree at Trent University studying indirect predation effects on hare-lynx cycles in the Canadian boreal forest. At MSU, she creates readily applicable conservation products for various stakeholders. Her current research focuses on animal movement and distributions, invasive species mitigation, and understanding human-wildlife conflicts. Boudreau also assists with analyses of large datasets involving aerial surveys of duck abundance and mallard ecology in the waterfowl program.





HUNTER MENTGES is a Kennedy Undergraduate Scholar assisting Taylor Gibson on the wood duck project. The Trappe, Maryland native is a junior pursuing his bachelor's degree in the Department of Wildlife, Fisheries and Aquaculture. **TAYLOR GIBSON** is a Master of Science student working on a regional wood duck nest box project. The Kosciusko, Mississippi native completed his bachelor's degree in the Department of Wildlife, Fisheries and Aquaculture in 2017. His primary interests and career goals are waterfowl ecology and wetlands management. Gibson held former positions in waterfowl research and management in Mississippi, North Dakota, Florida, and Louisiana, which included working for Ducks Unlimited; Mississippi State University; Mississippi Department of Wildlife, Fisheries and Parks; Florida Fish and Wildlife Conservation Commission; and the Louisiana Department of Wildlife and Fisheries. His hobbies include inshore fishing and waterfowl hunting.





My study, Regional Examination of the Contribution of Nest Boxes to Wood Duck Recruitment in the Southeast and Mid-Atlantic United States, is a collaborative effort across eight states to investigate the contribution of nest boxes to wood duck recruitment at a regional scale. Study sites extend from the mid to southern Atlantic Flyway and southern Mississippi Flyway. including Delaware, Maryland, North Carolina, South Carolina, Georgia, Florida, Mississippi, and Louisiana. Study sites were selected by partner state and federal agencies and university faculty to represent wood duck habitats of interest and diversify habitat types. Materials and methodology were evaluated during a pilot study conducted on Lake Moultrie, South Carolina in 2019 and have been adapted and adopted by project collaborators. Additional metrics on habitat and nest box characteristics. predation, and conspecific nest parasitism were collected to evaluate these potential effects on nest box selection, nest success, and recruitment for an extended period, perhaps up to five years (2020-2024). I partnered with other graduate students to incorporate breeding season, predators, and egg strength to address objectives unique to my specific research.

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Projects



Genomic and Morphological Consequences of Landscape-level Hybridization between Wild and Domesticated Congeners

J. B. Davis, P. Lavretsky, M. Schummer, A. Fournier

A team of scientists from Mississippi State University; the University of Texas-El Paso; State University of New York, College of Environmental Science and Forestry; the Forbes Biological Station, Illinois Natural History Survey, Prairie Research Institute; and the Smithsonian Institute is formulating objectives and strategies for this project. A portion of the project will be conducted in Mississippi State's new Avian Science Center, scheduled to be completed in 2022.

ABSTRACT: Across the globe, wild mallards sometimes have contact with various domesticated forms of ducks (e.g., Pekin duck). The release of game-farm mallards for hunting has been intensively practiced since the turn of the twentieth century in North America and across Eurasia. Over the past century alone, an estimated 250,000-500,000 game-farm mallards have been released in North America, primarily in the eastern United States. The overall goal of this project is to understand the genetic and phenotypic consequences of wide-spread gene flow between domestic and wild mallards. We will use a comprehensive set of molecular techniques to study species-wide aspects of contemporary populations, and incorporate museum-based approaches for historical (100-200 years old) mallard specimens. We will also examine how bill morphology affects feeding efficacy and its potential impact on the adaptability of wild populations. Our objective is to understand how gene flow events between domesticated and wild mallards influence molecular variation and morphology. We will examine the molecular changes in wild mallards over the last century; determine how the combination of gene flow with varying selective regimes (i.e., natural versus artificial selection) and demographic histories impact estimates of molecular diversity and divergence by comparing the genomes of domestic and wild variants of the mallard; and understand the importance of morphology and how increasing prevalence of domestic characters may be maladaptive in wild settings by assessing morphological differences between domestic and wild variants of the mallard.

Waterfowl Diets and Winter Foraging Habitat in South Atlantic Coastal and Inland Wetlands: Improving Inputs for Bioenergetics Modeling for Regional Conservation Planning

S. Clements, J. B. Davis

This multi-faceted research project assesses bioenergetics and foraging-habitat capacity for waterfowl and other waterbirds in south Atlantic coastal wetlands. The project is in collaboration with partners at Clemson University: the Nemours Wildlife Foundation: Ducks Unlimited, Inc.; the U.S. Fish and Wildlife Service; the Atlantic Flyway Joint Venture; and private landowners and state wildlife agencies in North Carolina and South Carolina. We will integrate traditional and state-of-theart techniques to examine food use and availability in managed and non-managed tidal coastal wetlands. We will collect hunter-harvested ducks at state, federal, and private waterfowl hunting areas during legal waterfowl hunting seasons in South Carolina and other local states. From these birds, we will collect excreta, blood, liver, and feathers.

Duck excreta will be used for DNA analyses to identify food items consumed by ducks and help establish a baseline of birds' diets in this important region. We will also use pieces of Mitochondrial DNA, or barcoding genes, to identify specific plant species consumed by ducks. Combining fecal samples with metabarcoding of various invertebrates and plants will reveal diet composition of different duck species, including gadwall, American green-winged teal, northern pintail, blue-winged teal, and ring-necked ducks. Several other methods will be pursued including time-activity observations of ducks and collection of foraging ducks and plant and invertebrate foods in wetlands. We will also use stable isotopes to better understand the geographic origins of wintering ducks. This project ranked second among all research priorities of the waterfowl working group of the Atlantic Coast Joint Venture. Stephen Clements, a doctoral student and alumnus of Mississippi State wildlife, fisheries and aquaculture, committed to leading this project in his home state of South Carolina.

Nonbreeding Distribution Dynamics of Waterflow: Are patterns changing in the 21st Century?

T. Moorman , M. G. Brasher, M. E. Heitmeyer, H. M. Hagy, D. D. Humburg, A. H. Raedeke, J. B. Davis, J. C. Fedderson, D. A. Graber, L. W. Naylor, D. C. Osborne, L. A. Reynolds, L. B. Webb

At the 2019 North American Duck Symposium, a committee of waterfowl experts convened to address issues of migration and wintering distributions of North American waterfowl. The consortium represented universities, and state and federal agencies, and conservation organizations. This committee seeks to investigate, understand, and communicate recent and historical changes in the timing and distribution of waterfowl during migration and winter, distribution of harvest, and to evaluate factors causing potential perceived changes in bird behavior. Several members are drafting a manuscript based on committee goals and findings. The abstract is below.

ABSTRACT: Most waterfowl species in North America are highly migratory, an adaption arising ultimately from pressures exerted by a seasonal climate. Migration enables waterfowl to exploit spatially and temporally variable and highly heterogenous landscapes at large geographic scales. While migratory behavior in birds is stimulated by annual changes in photoperiod, on an annual or seasonal basis, proximate factors interact to influence the timing, duration, and distance of migratory movements that ultimately shape the nonbreeding distribution of birds across the continent. Paramount among these proximate influences is weather, habitat quantity and quality, and disturbance.

Enduring shifts or expansions in winter distribution are well documented for some species of waterfowl (e.g., Canada geese, greater white-fronted geese, snow geese), likely driven by the interacting effects of a warming climate, landscape-scale changes in habitat resources, and changing anthropogenic pressures (e.g., harvest). Evidence for long-term distributional shifts of other species is emerging at multiple scales and across continents, further exemplifying the remarkable adaptability of waterfowl to an ever-changing environment, but potentially also influenced by poorly understood differential demographics among populations or subpopulations. Long-term changes and inter-annual dynamics of nonbreeding waterfowl, with causes over which we have limited to no management control, have important consequences for the North American Waterfowl Management Plan habitat, harvest, and human objectives. Hence, a thorough understanding of long-term change and inter-annual variability in nonbreeding waterfowl distribution is central to the waterfowl conservation enterprise in North America. We examine known and probable changes in distribution of nonbreeding waterfowl, potential implications for the waterfowl conservation enterprise, and call for increased collaboration to address key uncertainties around these issues.

Long-term Influences of Winter Abundance and Distribution of Mallards and Other Ducks in the Mississippi Delta

J. B. Davis and M. Boudreau

Davis and Boudreau are co-leading a project, part of which includes analyzing approximately 20 years of winter waterfowl aerial survey data for Mississippi and Arkansas. The team is studying possible changes in abundance and distributions of ducks in these important and traditional wintering landscapes. The project is supported by the Mississippi Department of Wildlife, Fisheries, and Parks.

Native Bee Use of Wetlands and Associated Habitats of the Mississippi Delta

S. J. Taylor, J. B. Davis, K. Parys, M. Lashley

Sharilyn James Taylor, wildlife, fisheries and aquaculture master's student, continues to identify and analyze 25,000 native bee specimens collected from seasonal wetland habitat of the Mississippi Delta. The extraordinary effort represents novel research regarding understanding of native bee use of various wetlands. Taylor is culminating this project at the USDA/Agricultural Research Service Pollinator Health in Southern Crop Ecosystems Research lab in Stoneville, Mississippi. She is working closely with Dr. Katherine Parys, a research entomologist at the center.



Student Abstracts

STUDENT ACCOMPLISHMENTS - SCIENTIFIC ABSTRACTS

While 2020 saw many professional conferences and events switch to a virtual platform, WFA students provided numerous informative presentations and posters.

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Madelyn McFarland



The Efficacy of Marsh Terraces for Enhancing and Restoring Gulf Coastal Wetlands

M. McFarland, J. B. Davis, M. Brasher, M. Woodrey, L. Reynolds, F. Vizcarra

ABSTRACT: Louisiana's coastal wetlands support millions of migratory birds annually. However, Louisiana has experienced 90% of the total decline of coastal wetlands within the continental United States, accounting for most of the loss of Gulf Coastal wetlands. Marsh terracing is one method used to combat coastal wetland loss. The restoration technique uses in situ sediment to construct segmented ridges in open water areas of coastal wetlands. An objective of marsh terracing is to improve marsh conditions and habitat for a diversity of species. Despite terraces being an increasingly useful component of coastal restoration efforts, previous research on their value as waterbird habitat is limited in spatial and temporal scale. Using both ground and aerial surveys, this study evaluates avian use of marsh terraces across multiple paired sites (terraced and non-terraced) in coastal Louisiana. Avian monitoring efforts focus on two primary guilds of birds, breeding secretive marsh birds and wintering waterfowl.

Results from the first field season indicate that: 1) terraced sites were used predominately by non-focal species such as red-winged blackbirds, 2) there was low use of terraced sites by focal species such as rails, 3) and there was generally low use of both terraced and nonterraced sites by wintering waterfowl, although species abundance varied in space and time. Field efforts are ongoing, and data collection will be completed by late summer 2021. Future analysis will examine relationship between avian use and habitat characteristics including submerged aquatic vegetation and diversity and structure of emergent vegetation of study sites.

Oral presentation at the North American Ornithological Conference, San Juan, Puerto Rico, August 12, 2020

Sharilyn Taylor



Assessing Native Bee (Hymenoptera: Apoidea) Diversity in Natural Wetland Plant Communities of the Mississippi Delta

S. Taylor, J. B. Davis, K. Parys, and M. Lashley

ABSTRACT: The Mississippi Alluvial Valley (MAV) once contained nearly 9.7 million hectares of bottomland hardwood forest and associated habitats, including herbaceous and scrub-shrub wetlands. Over eighty percent of the MAV forest was eliminated or modified for agriculture, flood control, and urban expansion. Fragmentation/loss of herbaceous and riparian-forested plant communities of the region could negatively impact native bee populations. Wetland plant communities adjacent to agricultural croplands likely provide vital nesting and foraging resources for native bees, but virtually no historical documentation exists for bees in these MAV landscapes. This study measures native bee species abundance and richness in wetlands enrolled in the Wetlands Reserve Program (n=14, WRP) and on National Wildlife Refuges (n=4, NWR) of the Mississippi Delta, June-November 2017. Three standardized collection methods were used at each site that included bee bowls, malaise traps, and vane traps. Traps were placed along a line transect, located within 1,200 meters from designated wetland types. Approximately 25,000 specimens were collected across 18 research sites; an estimated 3,500 specimens were captured in bee bowls. On average, bee bowls at WRP sites captured a greater number of native bees than those on NWRs. Halictidae represent most of the native bees captured with bee bowls. Specimen and data processing are ongoing but indicate that the number of native bees captured in traps located within wetlands increases with habitat complexity and floral availability.

Poster presentation at the 2020 Mississippi Academy of Sciences 84th Annual Meeting, Biloxi, Mississippi, February 20-21, 2020.

Taylor Gibson



Regional Examination of the Contribution of Nest Boxes to Wood Duck Recruitment in the Southeast and Mid-Atlantic United States: 2020 Summary

B. Bauer, E. Miller, J. Shurba, D. Bakner, **T. Gibson**, T. Mezebish, N. Simmons, R. Kaminski, E. Wiggers, K. Ringelman, **B. Davis**, and C. Williams

ABSTRACT: Although wood duck populations within the Atlantic and Mississippi Flyways appear to be stable, if not increasing, recent studies suggest recruitment from nest boxes alone does not sustain box-nesting populations without immigration of hens from other boxes and natural cavities. This study is a collaborative effort to investigate the contribution of nest boxes to wood duck recruitment at a regional scale. Study sites extend from the mid to southern Atlantic Flyway and southern Mississippi Flyway, including Delaware, Maryland, North Carolina, South Carolina, Georgia, Florida, Mississippi, and Louisiana. Materials and methodology were evaluated during a pilot study conducted on Lake Moultrie, South Carolina in 2019 and have been adapted and adopted by project collaborators. Field work was initiated between January-March 2020 across all states with data collection completed by mid-July 2020. Across all states, 1,272 nest boxes were sampled. Box use was 86.6 percent with 1,902 unique nesting attempts. Cumulative nest fates within and among boxes included 883 successful (46.4%), 383 abandoned (20.1%), and 489 depredated (25.7%). Inter- and intraspecific nest parasitism (> 12 eggs) was observed for 1,141 nests (60.0%). The team captured 1,259 box-nesting adult females across three species (wood duck [Aix sponsa], hooded merganser [Lophodytes cucullatus], and black-bellied whistling duck [Dendrocygna autumnalis]) and 6,015 ducklings across these species. This coordinated model should continue for the duration of the study to best assess the contribution of nest boxes to wood duck recruitment in the Southeastern and mid-Atlantic United States and serve as an example for conducting future landscape-scale waterfowl research. The research team hopes to continue this study 'longterm' (2020-2024), contingent on available funding.

Poster presentation at the Southeastern Association of Fish and Wildlife Agencies 74th Annual Conference, October 27, 2020.

Alexander Firth



Effects of Low External Input and Conventional Rice Cultivation on Indicator and Pathogenic Bacteria Presence

A. Firth, B. Baker, J. Brooks, J. B. Davis, R. Iglay, R. Smith

ABSTRACT: Over 800,000 ha of rice is planted in the Mississippi Alluvial Valley (MAV), making it a significant economic crop of the region. Additionally, recognized under the North American Waterfowl Management Plan and the Lower Mississippi Valley Joint Venture, winterflooded rice fields provide critical habitat for migratory waterbirds. However, wintering waterbird use of flooded rice fields could facilitate pathogen transport in a lowexternal-input-sustainable-agriculture (LEISA) rice system in the MAV. This study compared two rice farms with different management histories during the winter (conventional and LEISA). Each farm selected for study received two treatments: 1) unflooded or 2) winterflooded fields. Fecal indicator bacteria (Enterococci, Clostridium perfringens, Salmonella, Campylobacter and Escherichia coli.) were quantified in soil before and after winter flooding and bird fecal matter estimated. Water samples collected from winter-flooded fields were tested for Enterococci, C. perfringens and E.coli before fields were drained. Soil analysis results indicated LEISA flooded fields had significantly greater detections of C. perfringens than non-flooded fields. No significant differences were detected between fields in water samples. All observed pathogen rates among treatments were also less than U.S. EPA standards. Results suggest that long-term waterbird stopovers can influence pathogen indicators in soil, however, not at a significant level to pose threat to human and environmental health standards. Nevertheless, because the study was only conducted over one season. it limits the conclusions drawn about wintering bird's potential to contaminate rice fields. Future studies should focus on long-term monitoring of rice fields that harbor wintering birds.

Presentation prepared for the 2020 Mississippi Water Resources Conference, Jackson, Mississippi. Conference was cancelled, however, abstract was published.

Victoria Starnes



A Prototype Decision Support Tool for Evaluating Water Level Management to Achieve Competing Objectives in a Multiple Use Reservoir

V. Starnes, M. E. Colvin, J. B. Davis, L. E. Miranda

ABSTRACT: Water levels at Bluff Lake in Mississippi are managed to achieve objectives related to waterfowl, waterbirds, fish, anglers, and Paddlefish (Polyodon spathula). The reservoir undergoes a nine-stage seasonal drawdown and re-inundation to improve waterfowl habitat. Weekly discharges are also released from the water control structure to encourage paddlefish spawning and migration in the spring, but additional discharges throughout the year may provide additional passage opportunities. In this study, multiple discharge states were evaluated to identify optimal water releases during each drawdown period given reservoir objectives. First, a hydro-dynamic model was developed to predict daily changes in lake volume. Functional relationships between lake elevation and management objectives were defined. Daily utilities were calculated that scaled management objectives from 0-1. These were equally weighted and summed for each date. Cumulative daily utilities were calculated for each drawdown period. The optimal water level management strategy depended on drawdown period and varied throughout the timeframe. In period one, the lake could sustain 14.125 m³/s weekly in the first week, however, as at low lake elevations a 11.3 m³/s discharge became optimal. This approach can be used to evaluate tradeoffs between management objectives to identify optimal water releases for a multiuse reservoir.

Poster presentation at the virtual Mississippi American Fisheries Society 46th Annual Meeting, March 24-26, 2020.

Poster presentation at the Southern Division of the AFS meeting, Little Rock, Arkansas, February 20-23, 2020.

EXPERIENTIAL LEARNING CHALLENGED

BUT NOT DETERRED.



Student Field Trips

FIELD TRIPS WETLANDS ECOLOGY & MANAGEMENT, FALL 2020

Field trips provide highly valued experiential learning. The global pandemic limited inter-state travel and restricted in-state travel for a few months impacting some of our operations and projects. Although challenged but not deterred, six field experiences were still provided for the Wetlands Ecology and Management class giving students valuable opportunities to learn about waterfowl and wetlands management, wetland delineation, flood control, and other valuable topics.

Four of the field trips were excursions to the Sam D. Hamilton Noxubee National Wildlife Refuge. Numerous outdoor labs were also conducted at various campus locations.

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TEACHING AND MENTORING - COMING FULL CIRCLE William Pigott, WFA alum, provided wetland ecology and management students with a wetland delineation field exercise at Noxubee Refuge. William is an environmental specialist for the U.S. Army Corps of Engineers, Vicksburg district. He completed two courses with Davis in 2018, including the wetlands class. It is quite rewarding to have former students return to help co-teach and share their own life experiences with students.

Student Experiences

Undergraduate Student Internships/ Research Field Experiences.

Seasonal jobs, internships, volunteer positions, or other developmental activities are integral to student growth and success. Spring/Summer 2020 proved difficult in placing students due to the global pandemic. With the help of Dr. Leslie Burger, wildlife, fisheries and aquaculture undergraduate coordinator, and Ms. Lanna Miller, student services coordinator in the College of Forest Resources, we were able to place students into various internship and summer positions working on waterfowl, wetlands, and various related projects in 2020.

Through internships and research field experiences, young students discover their passion for ducks and wetlands conservation and often pursue life-long interests in studying waterfowl.

Pictured below:

From left to right, Chandler Strickland & Corey Bacon working at Robbie Russell property in Tennessee.



More Student Awards!

- » **Bedwell, Emily**: Admitted to a doctoral program at the University of Georgia, Department of Crop and Soil Sciences, working on sustainable irrigation systems.
- » Brewer, Billy: Wetland technician, Robbie Russell property (2,000 acres), Brownsville, Tennessee, summer 2020.
- » Liner, Skylar: Internship in coastal wetlands in the Louisiana Universities Marine Consortium (LUMCON), ultimately leading to an MS position at LSU in fall 2021.
- » **Reardon, Kiera**: Admitted to the College of Veterinary Medicine, Mississippi State University.
- » **Strickland, Chandler**: Wetland technician, Robbie Russell property (2,000 acres), Brownsville, Tennessee, summer 2020.
- » **Schudel, Tayler**: Admitted to a Masters' project position in conservation biology at Union University.
- » **Stolz, Emily**: Summer internship, Geoscientist-in-theparks Americorp internship at Gulf Islands National Seashore, Ocean Springs, Mississippi.
- » **Watrous, Autumn**: Secured a permanent position with Pheasants Forever as a Farm Bill Biologist in Alabama.
- » **Wilmoth, Bayley**: Admitted to Doctoral program at The University of Toledo (BS to PhD).



In Their Own Words: WFA Alum Skylar Liner | Graduated May 2021

My time as an Extension Apprentice with Mississippi State University's Coastal Research and Extension Center was one of the most pivotal moments in my professional life. This experience allowed me to grow as a scientist, gain a multitude of skills, and align my passions with my research. As a native to coastal marshes and a lifelong recreational boater, I truly enjoyed working on a project researching the impacts that boat wakes can have on coastal erosion. I was lucky enough to work on other projects focused on living shorelines, marine debris, shellfish aquaculture, and more. My faculty mentor, Dr. Eric Sparks, was the most encouraging and helpful adviser. He challenged me to apply my knowledge and personal interests when developing research questions and experimental designs. He was incredibly supportive of my future goals and ambitions. This summer apprenticeship allowed me to find an appreciation for scientific research which helped me develop an interest in attending graduate school. I learned many skills both in the lab and while doing wetland fieldwork that I have now adapted to my new position as a graduate student. Most importantly, I was given the opportunity to do work that means a lot to me, and I think that passion is one of the largest contributors to success.





Technical Assistance

AS A WATERFOWL ECOLOGIST/CONSERVATIONIST, part of our mission is to help private landowners and public entities improve their resources for waterfowl and other wild-life. Below is a brief snapshot of some of these engagements.

- » Assisted wildlife, fisheries and aquaculture alumnus Wil Hyland on management of seasonal wetlands and bottomland hardwood forest.
- » Provided technical assistance to Nathan V. Boddie of Gulfport, Mississippi, about wetland management.
- » Provided technical assistance to Mr. John Wilson of Urich, Missouri, on management of seasonal wetlands.
- » Provided technical assistance on wood duck nest box design and management to Ms. Vicki Ganaan, Leake County Extension Agent, Mississippi State University Extension.
- » Provided technical assistance to Mr. Leland Tollett, twice retired CEO of Tyson Foods. Mr. Tollett owns and manages property for waterfowl and wetlands in proximity to MSU alumnus Mr. Scott Galloway near Stuttgart, Arkansas; ongoing habitat management strategies on these farms, via Jeryl Jones, Stuttgart, AR.
- » Provided extensive information on management of wood duck boxes and wood duck nesting ecology to Ms. Julie Oehl & family, including nest box plans and other "How-to's."
- » Provided information on management of corn and seasonal wetlands for wintering waterfowl to Mr. Steve Brothers, St. Louis, Missouri.
- » Provided technical information on use of monel fish tags (web tags) used to mark one-day old ducklings for Mr. Lucas Savoy of the Biodiversity Research Institute in Maine, as they were considering marking loon chicks with web tags.
- » Provided wetland management advice to MSU baseball player, Hunter Blalock for his family property.
- » Provided technical assistance to private landowner Markham "Skipper" Dickson in central Louisiana on wetland management techniques, specifically management of yellow nutsedge.

On The Lighter Side

Graduate student accolade:

'I had the chance this morning to watch **Madelyn McFarland** speak about her research on Terrace evaluations in Louisiana at the North American Ornithological Conference. I'm delighted to see that these [students] are receiving a substantial and multi-faceted assessment. I'd be grateful if you could pass on my compliments to Madelyn on her talk, and to the team on the research they are tackling." *Dr. Michael G. Anderson, Emeritus Scientist at Ducks Unlimited Canada.*

Undergraduate student accolades:

'I am sending you a recommendation based on this summer internship where we hosted two fine young men, Chandler Strickland and William Brewer, on our hunt club to work as summer 2020 interns. The property is 2,000 acres of hardwood timber and approximately 200 acres of tillable land. I hire two people each summer from MSU that need experience in wildlife, agriculture, and working on the farm. Chandler and William were charged with maintaining the hunt club by planting and maintaining food plots, maintaining roads, keeping equipment in working order, trapping predators, brushing duck blinds, and all other general work associated with the hunt club. The boys were excellent and very efficient. I use the farm for personal and family use and therefore I need to get all these things done before the various hunting seasons begin." Robbie Russell



Awards-Accolades

UNDERGRADUATE STUDENTS

Mark Lance was awarded the Mark A. Schmoll Memorial Endowed Scholarship.

Makenzie Sanabria was awarded the Paul and Susan Meng & Dr. Rick Kaminski Endowed Undergraduate Scholarship.

Hunter Mentges was awarded the 2020 Avery Wood Memorial Scholarship, made possible by the Leflore County Hunting and Fishing Association and Drake Wildlife Systems.

GRADUATE STUDENTS

Madie McFarland was invited by the Mississippi Academy of Sciences to compete in a special symposium sponsored by the Mississippi Idea Network of Biomedical Research Excellence, or INBRE, for top graduate student presentation at the conference.

Madie McFarland was awarded a Thomas Plein Foundation Scholarship, 2020.

Emily Bedwell was awarded a Thomas Plein Foundation Scholarship, 2020.

JAMES C. KENNEDY SCHOLARSHIP IN WATERFOWL AND WETLANDS CONSERVATION

We are proud to have provided these Kennedy program financial scholarships to five undergraduate and two graduate students in 2020. We thank Tuplagum Farms, LLC of Georgia for making these gifts possible!

Undergraduate Students:

- » Jaden Akers
- » Skylar Liner
- » Hunter Mentges
- » Emily Miller
- » Lauren Wright

Graduate Students:

- » Emily Bedwell
- » Madelyn McFarland

Other Accolades

Dr. Brian Davis was selected to serve as a reviewer of Early Career Fellow Awards, National Academy of Science.



Presentations

ORAL PRESENTATIONS

- **Davis, J. B.** 2020. Aspects of waterfowl conservation. Mississippi State University Chapter of The Wildlife Society, Mississippi State University. January 28, 2020.
- Davis, J. B., R. Ogawa. 2020. Aspects of banding non-breeding waterfowl. Mississippi Flyway Council 2020 Winter Meeting, Paducah, Kentucky. February 26, 2020.
- McFarland, M., J. B. Davis, M. G. Brasher, M. Woodrey, L. Reynolds, F. Vizcarra. 2020. Avian use of marsh terraces in Gulf Coastal Wetlands. Mississippi Academy of Sciences 84th Annual Meeting, Biloxi, Mississippi. February 20, 2020.
- McFarland, M., J. B. Davis, M. G. Brasher, M. Woodrey, L. Reynolds, F. Vizcarra. 2020. An evaluation of avian use of marsh terraces in Gulf Coastal Wetlands. North American Ornithological Virtual Conference. August 12, 2020.
- **McFarland, M., J. B. Davis,** M. G. Brasher, **M. Woodrey,** L. Reynolds, F. Vizcarra. 2020. Avian use of marsh terraces in Gulf Coastal Wetlands. Southeastern Association of the Fish and Wildlife Agencies 74th virtual meeting. October 27, 2020.
- McFarland, M., J. B. Davis, M. G. Brasher, M. Woodrey, L. Reynolds, F. Vizcarra. 2020. Avian use of marsh terraces in Gulf Coastal Wetlands. 2020 Bays and Bayous Virtual Symposium, Mississippi-Alabama Sea Grant Consortium. December 2, 2020.
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Agencies/People

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