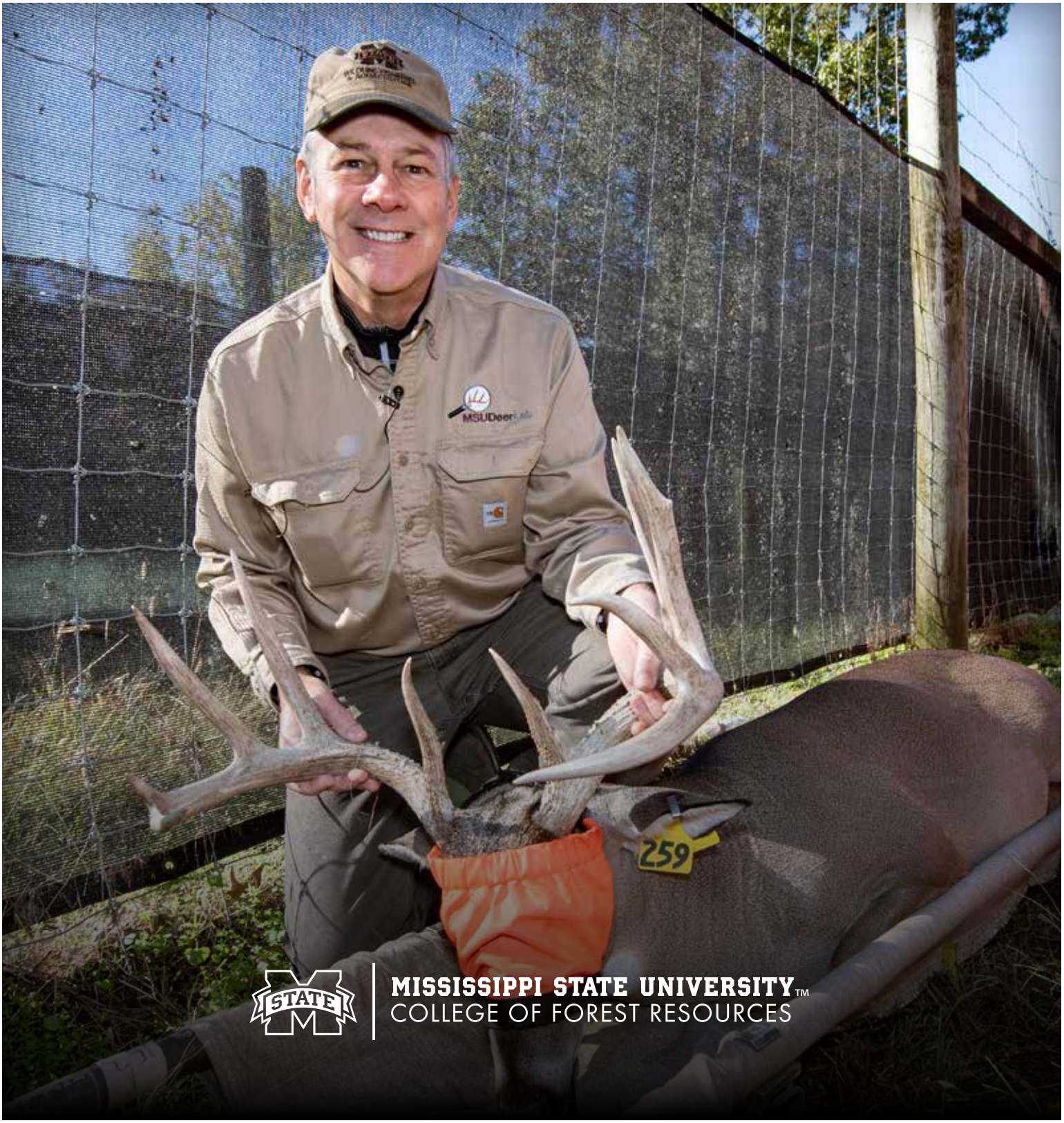
TAYLOR CHAIR

2020 Report Highlights



TAYLOR CHAIR

2020 Report Highlights

As a leader of the Mississippi State University Deer Ecology and Management Laboratory, the Taylor Chair provides oversight and direction to the lab's efforts to solve contemporary problems facing natural resource agencies, managers, and private landowners.

Importantly, MSU Deer Lab members present quality research results in a variety of forms and outlets that ensure managers will be able to avail themselves of the new information and implement the most effective management actions.

The following is a summary of activities by Steve Demarais, Taylor Chair in Applied Big Game Research and Instruction, in cooperation with faculty and graduate students within the MSU Deer Lab. Other MSU Deer Lab faculty include Bronson Strickland, Ray Iglay, and Garrett Street. Phil Jones is a research associate funded by a grant obtained by the Chair. Graduate student research highlighted in this report includes Rainer Nichols, Colby Henderson, Miranda Huang, Beau Navarre, and Luke Resop.

MISSISSIPPI STATE UNIVERSITY™

Big Game Research & Instruction
All During a Pandemic

The old saying about challenges creating opportunities has been right on target during the 2020 pandemic. Our inability to conduct face-to-face educational outreach led us to further expand social media efforts to transfer knowledge to our stakeholders. Our Deer University podcast ranked #2 all time in the Science and Nature category after being downloaded over 87,000 times across all U.S. states and 38 countries during 2020. Our Facebook efforts reached 2.1 million and had over 130,000 engaged users.

We continued the important goal of producing well-trained graduates. **Colby Henderson** graduated and is employed **as a** Private Lands Biologist with the Mississippi Department of Wildlife, Fisheries, and Parks with responsibilities over the East-Central region. Rainer Nichols also graduated and is now the Prescribed Fire and NEPA Program Manager for the Mississippi National Guard, with land management responsibilities on thousands of federal acres. Throughout 2020, our students adjusted well to restricted travel and special health protection while fulfilling their field-work expectations. The students' inability to attend face-to-face meetings temporarily limited development of professional contacts but our faculty will help those students make connections.

In this report, we highlight our continuing research efforts related to deer and habitat management. **Colby Henderson** summarizes how hunting pressure affects deer movement and habitat selection. **Rainer Nichols** summarizes small- and large-scale management actions to improve deer habitat quality in forested areas. **Miranda Huang** and **Beau Navarre** finished their field seasons and summarize how supplemental feeding affects potential disease exposure and habitat conditions. Our newest student, **Luke Resop**, describes his plans to evaluate the effects of fire season and burning conditions on woody plant survival.

Chronic Wasting Disease continues to expand within the state and region, so we began a review of monitoring and management action effectiveness by governmental agencies across North America, in cooperation with Michigan State University.

Our long-term commitment to generate and disseminate accurate knowledge to landowners, agencies, and hunters began under the leadership of Dr. Harry Jacobson and is a hallmark of the MSU Deer Lab. Our efforts were highlighted by our receipt of the 2020 Boone and Crockett Club's Conservation and Stewardship Award. The establishment of the Taylor Chair in Applied Big Game Research and Instruction helps insure the continuation of these and similar activities.

Dr. Steve Demarais

Patrick and Phyllis Taylor
Chair in Applied Big Game
Research and Instruction

SOCIAL MEDIA OUTREACH AT A GLANCE

#2
Deer University podcast all time ranking in the science and nature category

87,000
Total downloads of Deer University podcasts from 39 countries including the U.S.

2.1 Million
Users reached on Facebook

130,000 +
Engaged users reached on Facebook

COLBY HENDERSON

Buck Movement Response to Variation in Human Activity

GROWING UP HUNTING AND FISHING WITH HIS family in Mississippi gave Colby Henderson a passion for wildlife that has grown throughout his academic career. He joined the Deer Lab for graduate training after completing his undergraduate degree at Mississippi State. Upon graduation, he accepted a position as Private Lands Biologist with MS Department of Wildlife, Fisheries, and Parks.

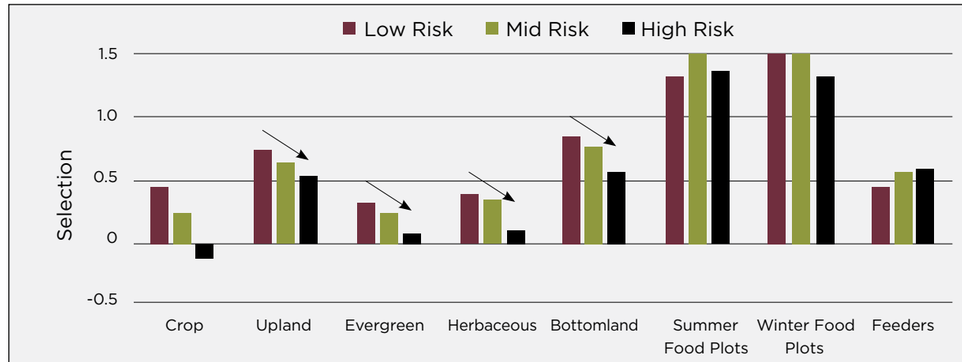
Colby's research answered questions hunters and managers have about white-tailed deer. The GPS collar locations quantified how deer respond to hunting pressure and identified habitats that are attractive to deer. Hunters participated in the research by recording where and when they hunted.

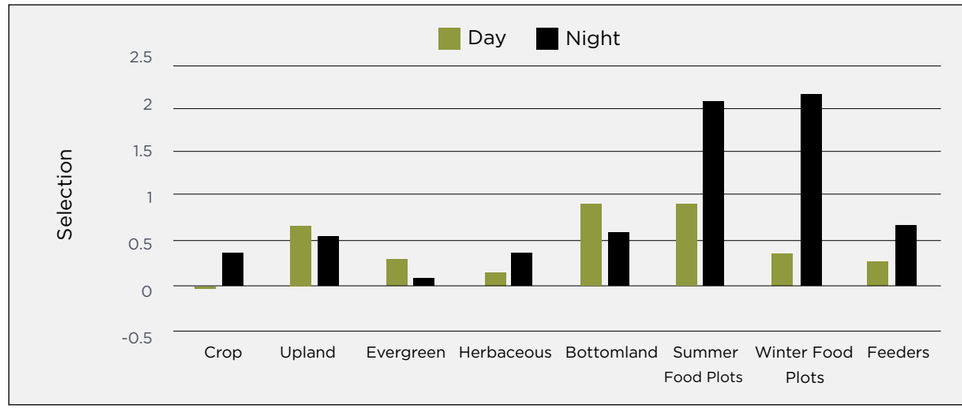
Deer significantly decreased their use of natural habitats with increasing hunting effort, indicating that deer recognize and avoid hunting pressure. However, selection of food plots and feeders did not show this effect until data on locations were separated by day and night. Deer selection of food plots and feeders was five times greater during night when hunters were not present. Generally speaking, deer actively avoided habitat types used most by hunters. The moral to the story: hunters hope to pattern the big deer, but in actuality the deer pattern the hunter.

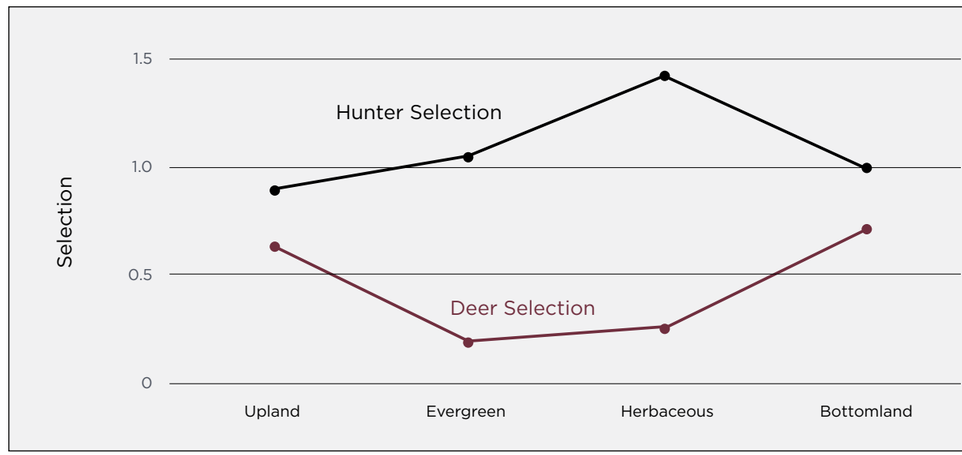
Presentations:
Henderson, C. B., S. Demarais, G. M. Street, B. K. Strickland. 2020. Understanding adult male white-tailed deer habitat selection during the Mississippi hunting season. 43rd Annual Southeast Deer Study Group, Auburn, Alabama. February 23-25, 2020.

Publications:
Henderson, C. B., S. Demarais, G. M. Street, B. K. Strickland, W. T. Kinley. 2020. Fine-scale vegetation use by white-tailed deer in a forested landscape during hunting season. Journal of Forest Research 25:439-443.

DEER AVOIDANCE WITH INCREASED HUNTER PRESSURE







RAINER NICHOLS

Effect of Prescribed Fire Timing on Habitat Quality and Use by Deer

HUNTING WITH FAMILY AND FRIENDS IN NORTH Mississippi shaped Nichols' life and ingrained in him a respect for wildlife. After completing his bachelor's degree at Mississippi State, he began pursuing a Master of Science degree with the Deer Lab. Upon graduation, his experiences prepared him for a new career as Prescribed Fire and NEPA Program Manager for the Mississippi National Guard.

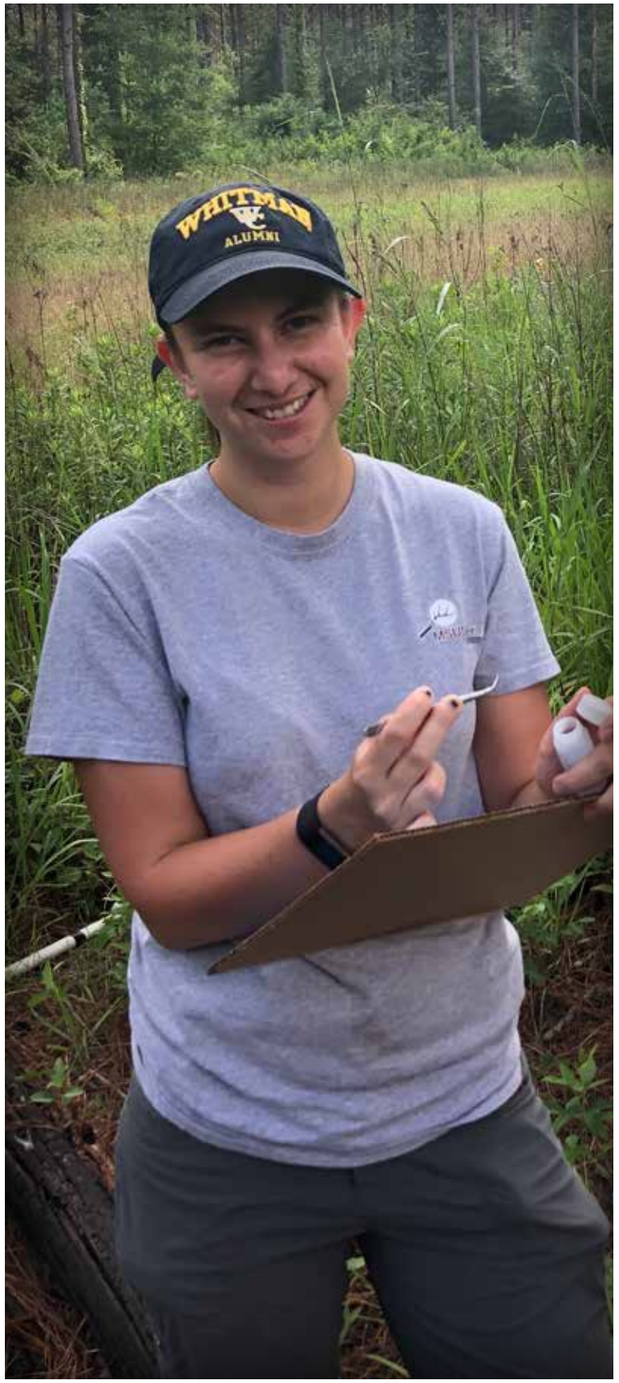
Nichols' graduate research focused on improving habitat management for white-tailed deer at large- and small-scales and at different times of the year. Dormant-season prescribed fire in February-March produced high-quality forage during spring-early summer, which supports early antler growth and late gestation. Growing-season prescribed fire in June produced high-quality forage to support the late-summer nutritional stress when females are lactating. Trail camera photos proved that deer "followed the protein" and not the biomass of vegetation, indicating growing season fire addresses important nutritional needs. Small-scale forage production can be improved significantly by stumping mid-story hardwoods with limited commercial value. Knowledge gained during this research allows land managers to optimize management efforts by diversifying the timing of prescribed fire. Hunters and landowners without the ability to burn land can improve forage abundance and quality and attract deer to harvest zones by creating stump sprouts.

Presentations

Nichols, R., S. Demarais, B. K. Strickland, R. Hamrick, and M. Lashley. 2020. Stump sprouts, The closed canopy food plot. Southeastern Deer Study Group, Auburn, Alabama.

MIRANDA HUANG

Supplemental Feeding Effects on Potential Disease Exposure by Animals and People

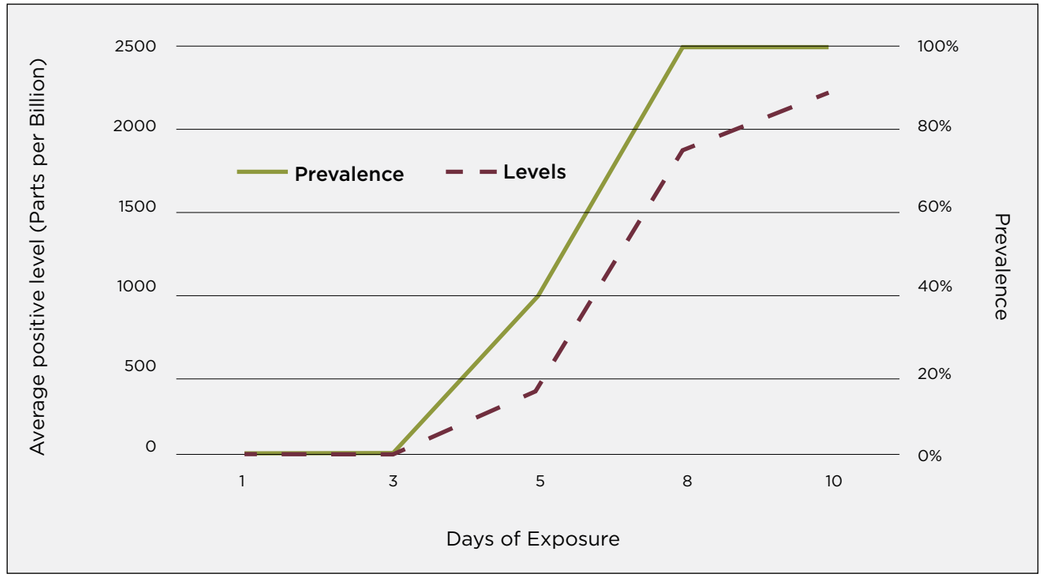


MIRANDA HUANG, IS ORIGINALLY FROM THE Midwest, but received her undergraduate training at Whitman College in Washington state. During two years of post-graduation work and travel, her work with the USGS studying plague in prairie dogs led her to pursue a career in wildlife disease.

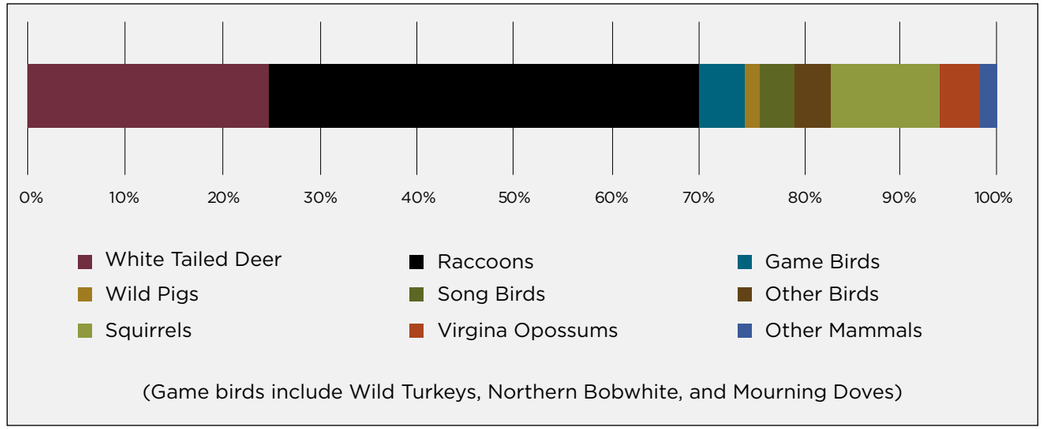
Huang's project examines effects of supplemental feeding of white-tailed deer on potential disease exposure. Her project evaluates the effects of feeding on several disease sources including ticks, gastrointestinal parasites, and aflatoxins. Many tick-borne diseases and gastrointestinal parasites are transmissible to humans in addition to wildlife. Her goal is to develop best management practices to minimize the implications of supplemental feeding for diseases in wildlife.

Feeders used for deer may damage wildlife health through exposure to aflatoxins, a toxic chemical produced by fungi. Deer made up only 25 percent of wildlife visits to feeders, so the danger is not inconsequential. Prevalence and levels of aflatoxin are less now than found during the 1990s, however, aflatoxin reached toxic levels for fawns and turkey poults within three days in the summer after corn was left on the ground.

AFLATOXIN PRODUCTION TOXIC AFTER 3 DAYS ON GROUND DURING SUMMER



DEER VISITATION TO FEEDERS REPRESENTS ONLY ONE QUARTER OF ALL WILDLIFE VISITS



(Game birds include Wild Turkeys, Northern Bobwhite, and Mourning Doves)

Presentations

Huang, M. H., S. Demarais, B. K. Strickland, C. Brookshire. 2021. What are we feeding wildlife: Aflatoxin prevalence in supplemental feeding. Southeast Deer Study Group, Auburn, Alabama.

Thompson, N. E., M. H. Huang, S. A. Christensen, S. Demarais. 2020. Managing the fire: A review of wildlife agency response to chronic wasting disease in free-ranging cervids. The Wildlife Society Annual Conference.

Awards

Gluesing Outstanding Graduate Student Award, Master's Level, Department of Wildlife, Fisheries and Aquaculture, Mississippi State University.

2nd Place Student Oral Presentation, Southeast Deer Study Group Annual Meeting.

2nd Place Poster Presentation, Mississippi State Graduate Student Research Symposium.

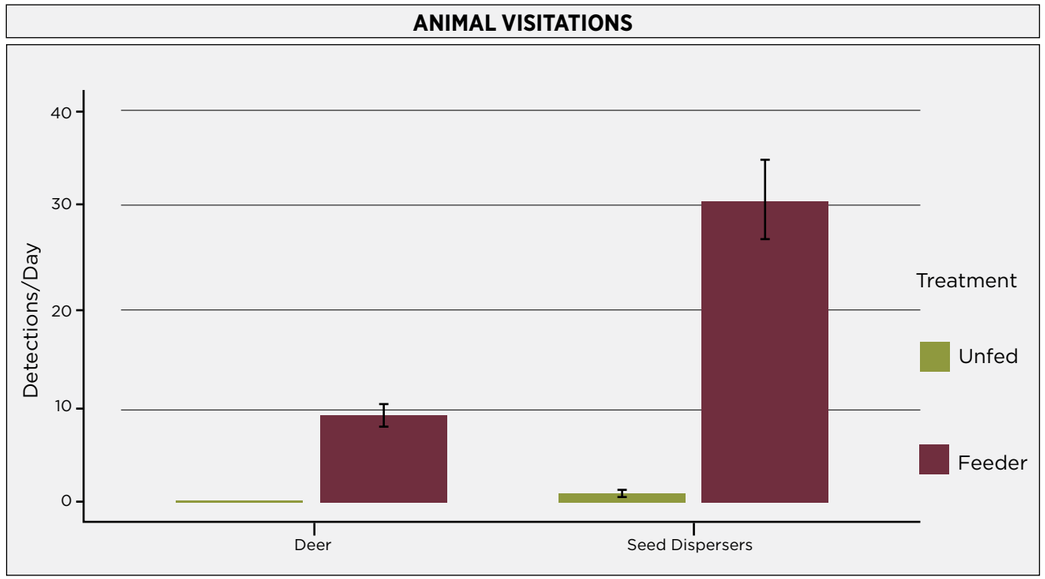
BEAU NAVARRE

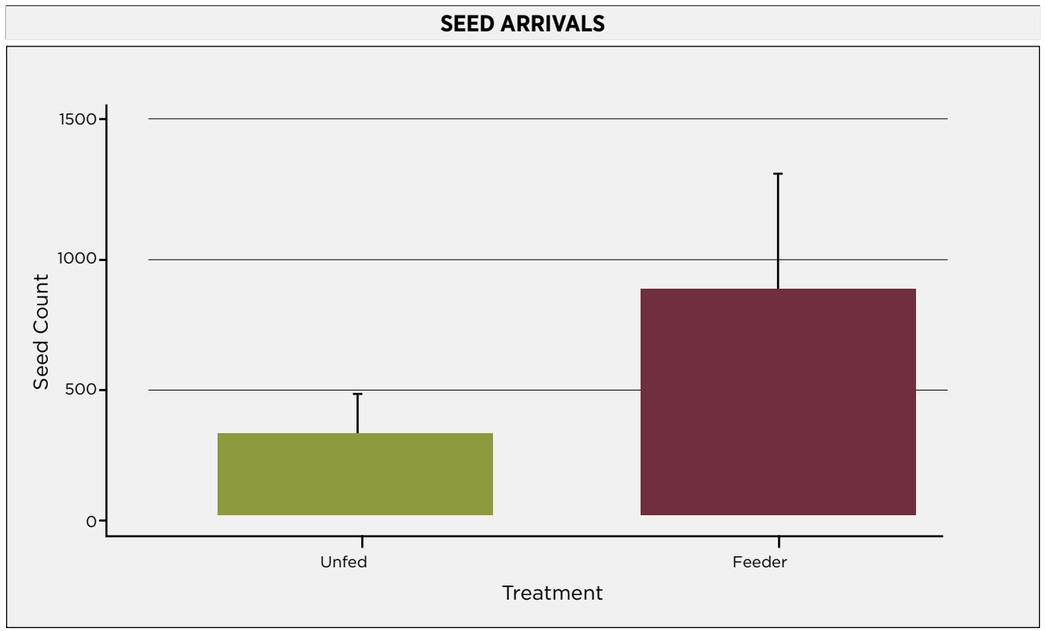
Localized Habitat Effects of Supplemental Feeding of Deer

BEAU NAVARRE GREW UP IN BATON ROUGE, Louisiana with a passion for wildlife and land stewardship. He earned his Bachelor of Science at Louisiana State University. After graduation, his search for opportunities to learn more about wildlife habitat management led him to the Mississippi State University Deer Lab.

His research is focused on the habitat effects of supplemental feeding. Specifically, he is examining how supplemental feeding affects vegetative communities through increased prevalence of browsers as well as changes in seed dispersal patterns in relation to the concentration of birds. This is important, as supplemental feeding is widely practiced for white-tailed deer. Results from this study will be used to create a set of best management practices for deer managers.

The nine-fold increase in deer concentration roughly doubled the number of plants browsed in the vicinity of the feeders. The physical concentration of deer increased the amount of bare ground three-fold within two years. Potential seed dispersers increased by 30-fold, which more than doubled the delivery of seeds to the area. The increased bare ground and greater numbers of seeds dispersed to the sites could promote colonization by invasive plant species.





LUKE RESOP

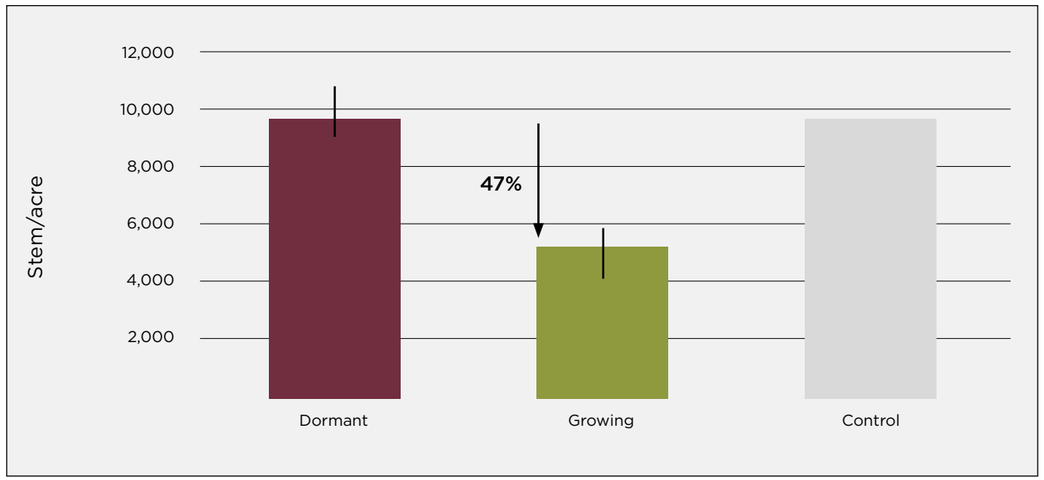
Effects of Prescribed Fire Season and Firing Technique on Sapling Survival and Deer Forage Production

AS A YOUNG BOY **LUKE RESOP** WOULD FIND A COOL shady spot along the creek behind his home and immerse himself into the view of the mountainside. His admiration for wild places turned into his passion, and his interests focused on deer ecology and habitat management. After earning a bachelor's degree from Virginia Tech, he knew he wanted to pursue graduate training in the MSU Deer Lab.

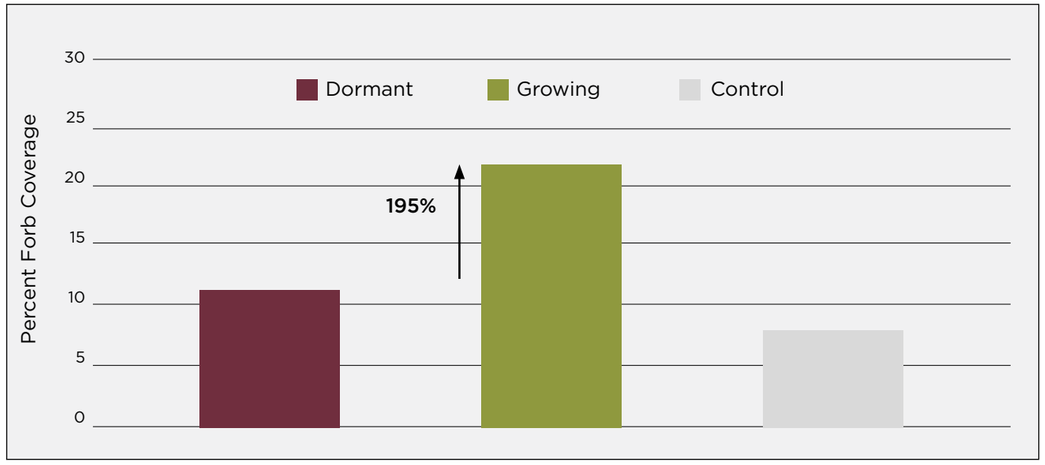
Resop's research focuses on habitat management, specifically how prescribed fire impacts plant communities. By adjusting the season that fire is applied to the landscape, managers can directly manipulate the plant communities on which deer so heavily rely. Deer forage and cover in the southeast is limited by unwanted hardwood saplings. Following up on Rainer Nichols' study sites in 2020, Resop demonstrated how growing season fires reduce hardwood coverage by 47 percent compared to conventional dormant season fire and increased forb coverage by 195 percent. His Summer 2021 work will expand this knowledge and describe how fire season and burning conditions affect woody plant survival and forb production.

Resop also manages the Deer Lab's social media platform, where his objective is to communicate deer research results into information that hunters and land managers can implement. For Resop, this is an excellent opportunity to engage with the public and further the reach of the MSU Deer Lab.

GROWING SEASON FIRE REDUCES WOODY STEM DENSITY



GROWING SEASON FIRE INCREASES FORB COVERAGE



DR. STEVE DEMARAIS

Co-Director
Deer Ecology and Management

DR. BRONSON STRICKLAND

Co-Director
Deer Population Modeling

DR. STEVE DEMARAIS IS THE TAYLOR CHAIR IN Applied Big Game Research & Instruction and the Dale H. Arner Professor of Wildlife Ecology & Management. Demarais has spent 24 years at Mississippi State University conducting white-tailed deer research. Prior to joining MSU, Demarais spent 15 years as a big game specialist in Texas. His research includes genetics in deer management, harvest strategies with antler restrictions, aging and scoring with technology, recreational hunting, and buck movement behaviors. He is co-director of the MSU Deer Laboratory and a Fellow in The Wildlife Society.

DR. BRONSON STRICKLAND IS THE ST. JOHN Family Professor of Wildlife Management and an extension wildlife specialist. He is a professional member of the Boone and Crockett Club and a Certified Wildlife Biologist. Strickland's research focuses on deer herd management, habitat improvement, deer movements, and nutrition. As co-director of the MSU Deer Lab, Strickland has led communication efforts through podcast, videos, social media, and mobile apps to share the lab's knowledge with deer hunters and other members of the public.

DR. RAY IGLAY

Habitat Management

DR. GARRETT STREET

Movement Ecology

DR. RAY IGLAY SPECIALIZES IN WILDLIFE-HABITAT relationships, human-wildlife conflict mitigation, and improving technology applications to wildlife monitoring. Regarding deer management, these specialties have resulted in applied research on fire and herbicides for improving deer forage in mid-rotation pine stands, impacts of biomass plantings on deer use, and understanding deer reactions to oncoming vehicles. Upcoming research will include assessing long-term herbivory impacts, using thermal technology for mammal surveys, combating invasive species, and supporting the continued use of prescribed fire by landowners and professionals.

DR. GARRETT STREET IS A QUANTITATIVE ECOLOGIST specializing in spatiotemporal dynamics in habitat selection and space use. His research focuses on linking fine-scale behavioral processes at the individual and population levels to broad-scale patterns of species distributions and abundance across broad geographic extents. He has addressed these issues using cutting edge statistical and simulation techniques in numerous deer species including moose (*Alces alces*), Roosevelt elk (*Cervus elaphus roosevelti*), and white-tailed deer (*Odocoileus virginianus*), and is dedicated to developing new ecological knowledge that can be applied to the improvement of wildlife management and conservation through the Southeast.

2020 SOCIAL MEDIA STATISTICS

@msu.deerlab

FACEBOOK

27,232 followers (lifetime)
1.5 M people reached
2.1 M total people reached
227,854 video views
131,827 daily page engaged users

@msudeerlab

INSTAGRAM

4,136 followers (lifetime)
131,134 impression
11,604 video view

@MSUDeerLab

TWITTER

1,279 followers (lifetime)
62,298 impressions
4,766 engagements

MSU Deer Lab TV

YOUTUBE

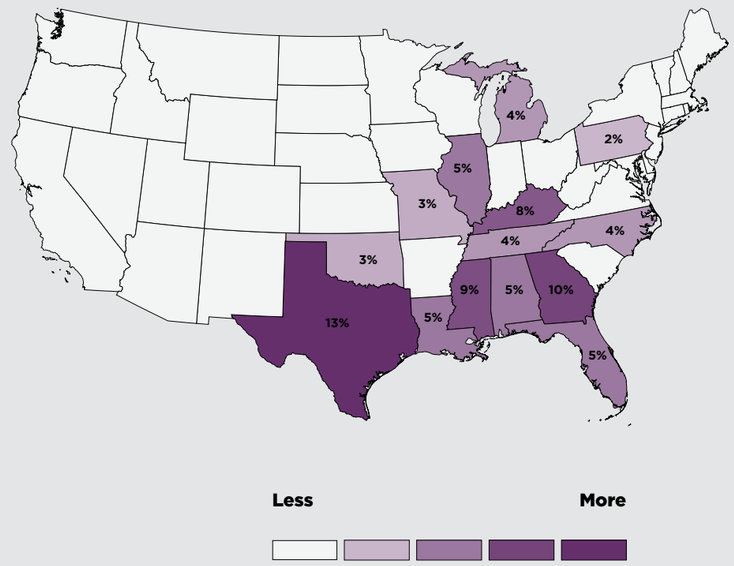
1,491 subscribers (lifetime)
72,400 video views
3,000 video watch hours

DEER UNIVERSITY was downloaded **87,077** times during 2020. Listeners were concentrated in the eastern US, but were in all states. Listeners were also in **38** other countries; mostly Canada, Mexico, Germany, Australia, and United Kingdom, but also in Asia and South America.

87,077
DOWNLOADS

50
STATES

39
COUNTRIES



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