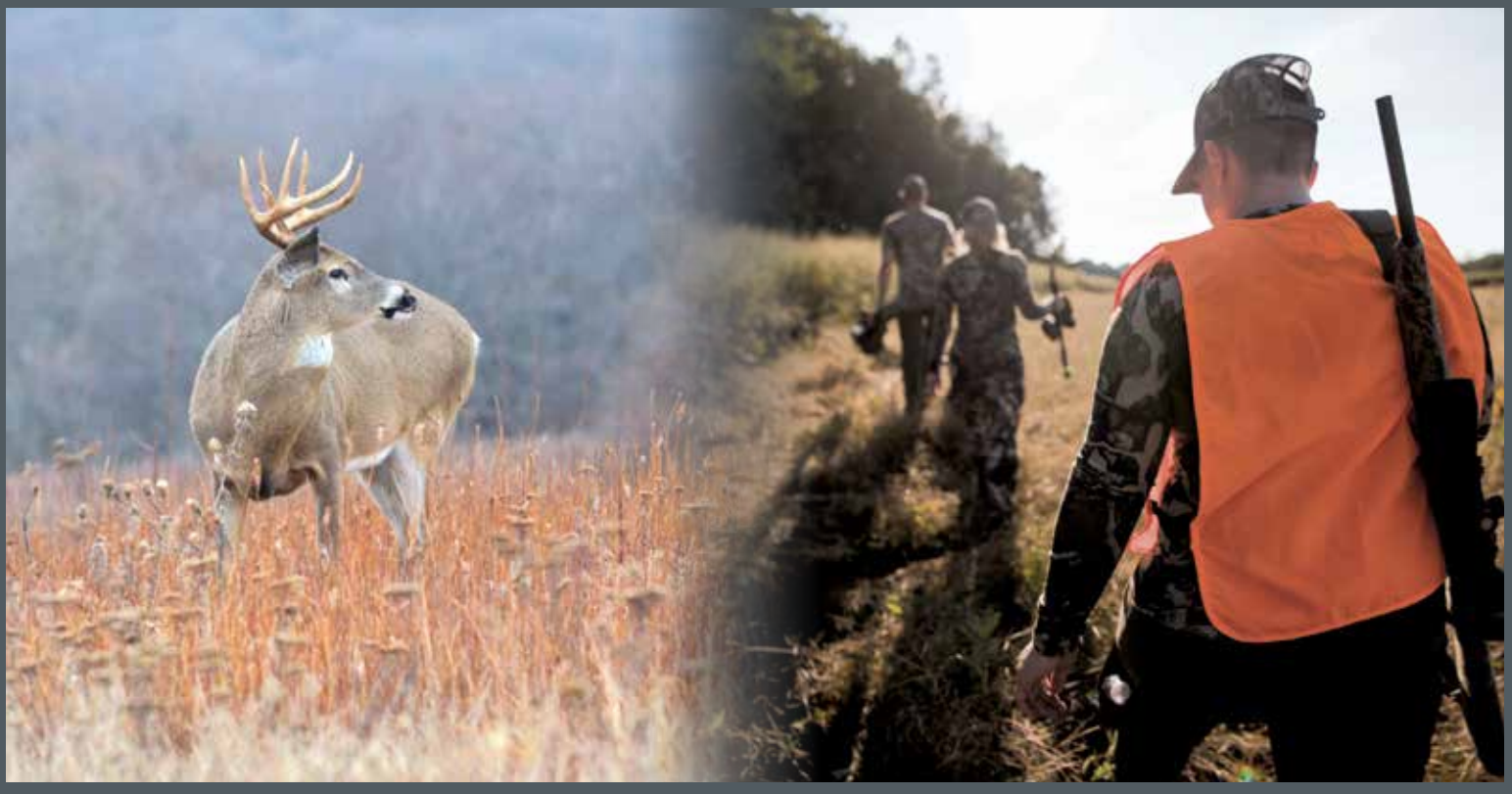
SOUTHEA T DEER TUDY GROUP

45th
ANNUAL MEETING

FEBRUARY 21 23
2022

Hosted virtually by
NATIONAL DEER ASSOCIATION

The Value of Deer and Deer Hunting to the American Public



THANK YOU TO OUR CONFERENCE CONTRIBUTORS AND DONORS

GOLD LEVEL

U.S. FISH & WILDLIFE SERVICE

Bass Pro Shops

Cabela's

SILVER LEVEL

Outdoor Underwriters, Inc
Insuring the Outdoors

RMS
Creating Forest Value Since 1950

BRONZE LEVEL

Caesar Kleberg Wildlife Research Institute
Texas A&M University-Kingsville

Lotek
advancing wildlife science

PNEU-DART INC

45TH ANNUAL MEETING
SOUTHEAST DEER STUDY GROUP
FEBRUARY 21-23, 2022

The Value of Deer and Deer Hunting to the American Public

#SEDSG2022

WELCOME / ACKNOWLEDGMENTS

The National Deer Association welcomes you to the 45th Annual Meeting of the Southeast Deer Study Group.

We thank the Deer Committee for the opportunity to host last year's meeting, Toni Brannon for updating the data in Tables 1 & 2, and all of the sponsors for their generous contribution to this years' meeting. We also thank Delaney Meeting & Event Management staff for assisting with the virtual elements to this years' meeting as well. A complete list of sponsors is listed inside the front cover.

COMMITTEES

MEETING ORGANIZERS
Matt Ross (Chair)
Kip Adams
Cheyne Matzenbacher
Torin Miller

PAPER / POSTER SELECTION
Kip Adams (Chair)
Matt Ross
Lindsay Thomas Jr.
Ben Westfall

SPONSOR / EXHIBITOR / DOOR PRIZES
Hank Forester (Chair)
Lauren Varner
Mike Edwards
Matt Ross

REGISTRATION
Ben Westfall (Chair)
Linda Walls

MEDIA / TECHNOLOGY
Ben Westfall (Chair)
Karlin Gill
Brian Grossman

ENTERTAINMENT / GENERAL SESSIONS
Matt Ross (Chair)
Lindsay Thomas Jr.
Brian Grossman
Mike Edwards

PROMOTIONS
Brian Grossman (Chair)
Lindsay Thomas Jr.
Laura Colquitt
Cindy Compton

THE SOUTHEAST DEER STUDY GROUP

The Southeast Deer Study Group meets annually for researchers and managers to share the latest information on the most important wildlife species in North America. These meetings provide an important forum for the sharing of research results, management strategies, and discussions that can facilitate the timely identification of, and solutions to, problems relative to the management of white-tailed deer.

The Annual Southeast Deer Study Group Meeting is hosted with the support of the directors of the Southeastern Association of Fish and Wildlife Agencies and also the directors of Delaware, Maryland, Missouri, and Texas. The first meeting was held as a joint Northeast – Southeast Meeting in Virginia in 1977. Appreciating the economic, aesthetic, and biological value of the white-tailed deer in the southeastern United States, the desirability of conducting an annual Southeast Deer Study Group Meeting was recognized and urged by the participants. Since February 1979, these meetings have been held annually for the purpose of bringing together managers, researchers, administrators, and users of this vitally important renewable natural resource. A searchable list of all presentation abstracts from 1977 to present is available at SEDSG.com, as well as a list of the meetings, their locations, and themes.

The Southeast Deer Study Group was formed as a subcommittee of the Forest Game Committee of the Southeastern Section of The Wildlife Society. The Deer Subcommittee was given full commit- tee status in November 1985 at the Southeastern Section of The Wildlife Society's annual business meeting. States participating regularly in the Southeast Deer Study Group include Alabama, Arkansas, Delaware, Florida, Georgia, Kentucky, Louisiana, Maryland, Mississippi, Missouri, North Carolina, Oklahoma, South Carolina, Tennessee, Texas, Virginia, and West Virginia.

Professional Development
The Wildlife Society (TWS) will allow a maximum of 11.5 Continuing Education Units (CEUs) in Category I of the Certified Wildlife Biologist® Renewal/Professional Development Certificate Program and the Society of American Foresters (SAF) will allow a maximum of 9.5 Continuing Forestry Education (CFEs) credits in Category I for participation in the 45th Annual Southeast Deer Study Group meeting. Participants will need to list these CEUs and/or CFEs on their Renewal or Professional Development Certificate application to either organization. For more information about professional development, visit TWS's website, www.wildlife.org, or SAFs website, www.eforester.org.

Qualifying Statement
Abstracts in the proceedings and presentations at the Southeast Deer Study Group meeting often contain preliminary data and conclusions that have not undergone the peer-review process. This information is provided to foster communication and interaction among researchers, biologists, and deer managers. Commercial use of any of the information presented in conjunction with the Annual Meeting of the Southeast Deer Study Group is prohibited without written consent of the author(s). Electronic versions of this and previous proceedings are available at SEDSG.com. Participation of any vendor/ donor/ exhibitor with the Annual Meeting of the Southeast Deer Study Group does not constitute nor imply any endorsement by the Southeast Deer Study Group, the Southeast Section of The Wildlife Society Deer Committee, the host state, or meeting participants.

SOUTHEAST DEER STUDY GROUP MEETINGS

YEAR	LOCATION	MEETING THEME
1977	Fort Picket, VA	None
1979	Mississippi State, MS	None
1980	Nacogdoches, TX	None
1981	Panama City, FL	Antlerless Deer Harvest Strategies
1982	Charleston, SC	None
1983	Athens, GA	Deer Damage Control
1984	Little Rock, AR	Dog-Deer Relationships in the Southeast
1985	Wilmington, NC	Socio-Economic Considerations in Managing White-tailed Deer
1986	Gatlinburg, TN	Harvest Strategies in Managing White-tailed Deer
1987	Gulf Shores, AL	Management: Past, Present, and Future
1988	Paducah, KY	Now That We Got Em, What Are We Going To Do With Em?
1989	Oklahoma City, OK	Management of Deer on Private Lands
1990	Pipestem, WV	Addressing the Impact of Increasing Deer Populations
1991	Baton Rouge, LA	Antlerless Deer Harvest Strategies: How Well Are They Working?
1992	Annapolis, MD	Deer Versus People
1993	Jackson, MS	Deer Management: How We Affect Public Perception and Reception
1994	Charlottesville, VA	Deer Management in the Year 2004
1995	San Antonio, TX	The Art and Science of Deer Management: Putting the Pieces Together
1996	Orlando, FL	Deer Management Philosophies: Bridging the Gap Between the Public and Biologists
1997	Charleston, SC	Obstacles to Sound Deer Management
1998	Jekyll Island, GA	Factors Affecting the Future of Deer Hunting
1999	Fayetteville, AR	QDM: What, How, Why, and Where?
2000	Wilmington, NC	Managing Deer in Tomorrow's Forests: Reality vs. Illusion
2001	St. Louis, MO	From Lewis and Clark to the New Millennium: The Changing Face of Deer Management
2002	Mobile, AL	Modern Deer Management: Balancing Biology, Politics, and Tradition
2003	Chattanooga, TN	Into the Future of Deer Management: Where Are We Heading?
2004	Lexington, KY	Today's Deer Hunting Culture: Asset or Liability?
2005	Shepherdstown, WV	The Impact of Today's Choices on Tomorrow's Deer Hunters

SOUTHEAST DEER STUDY GROUP MEETINGS

YEAR	LOCATION	MEETING THEME
2006	Baton Rouge, LA	Managing Habitats, Herds, Harvest, and Hunters in the 21st Century Landscape. Will 20th Century Tools Work?
2007	Ocean City, MD	Deer and Their Influence on Ecosystems
2008	Tunica, MS	Recruitment of Deer Biologists and Hunters: Are Hook and Bullet Professionals Vanishing?
2009	Roanoke, VA	Herds Without Hunters: The Future of Deer Management?
2010	San Antonio, TX	QDM to IDM: The Next Step or the Last Straw?
2011	Oklahoma City, OK	All Dressed Up With No Place To Go: The Issue of Access
2012	Sandestin, FL	Shifting Paradigms: Are Predators Changing the Dynamics of Managing Deer in the Southeast?
2013	Greenville, SC	Challenges in Deer Research and Management in 2013
2014	Athens, GA	The Politics of Deer Management: Balancing Public Interest and Science
2015	Little Rock, AR	Integrating the North American Model of Wildlife Conservation into Deer Management
2016	Concord, NC	The Challenges of Meeting Hunter Expectations
2017	St. Louis, MO	Disease: Science, Politics, and Management
2018	Nashville, TN	Stakeholder-focused, Science-based, and Data-driven: The Gold Standard for the State Deer Management System?
2019	Louisville, KY	Deer, It's What's for Dinner
2020	Auburn, AL	Deer Management in a Rapidly Changing World: Bridging a Generational Disconnect
2021	Virtual	Pandemic or Prospect: Managing Deer and Recruiting Hunters in 2021
2022	Virtual	The Value of Deer and Deer Hunters to the American Public

COMMITTEE MEMBERS

SOUTHEAST DEER STUDY GROUP, THE WILDLIFE SOCIETY, SOUTHEAST SECTION

STATE	NAME	AFFILIATION
Alabama	Chris Cook	Alabama Division of Wildlife and Freshwater Fisheries
	Kevin McKinstry	The Westervelt Company
Arkansas	Ralph Meeker	Arkansas Game and Fish Commission
	Jeremy Brown	Arkansas Game and Fish Commission
Delaware	Sam Millman	Delaware Division of Fish and Wildlife
Florida	Cory R. Morea	Florida Fish and Wildlife Conservation Commission
	Becky Peters	Florida Fish and Wildlife Conservation Commission
	Steve Shea (Chair)	Shea Wildlife & Environmental Services, Inc.
Georgia	Charlie Killmaster	Georgia Department of Natural Resources
	Tina Johannsen	Georgia Department of Natural Resources
	Gino D'Angelo	University of Georgia
Kentucky	Gabe Jenkins	Kentucky Department of Fish and Wildlife Resources
	Kyle Sams	Kentucky Department of Fish and Wildlife Resources
Louisiana	Jonathan Bordelon	Louisiana Department of Wildlife and Fisheries
	Jimmy Ernst	Louisiana Department of Wildlife and Fisheries
Maryland	Brian Eyler	Maryland Department of Natural Resources
	George Timko	Maryland Department of Natural Resources
Mississippi	William McKinley	Mississippi Wildlife, Fisheries, and Parks
	Steve Demarais	Mississippi State University
Missouri	Jason Isabelle	Missouri Department of Conservation
	Kevyn Wiskirchen	Missouri Department of Conservation
North Carolina	Moriah Boggess	North Carolina Wildlife Resources Commission
	Ryan Meyers	North Carolina Wildlife Resources Commission
Oklahoma	Jerry Shaw	Oklahoma Department of Wildlife Conservation
	Dallas Barber	Oklahoma Department of Wildlife Conservation
South Carolina	Charles Ruth	South Carolina Department of Natural Resources
	Jay Cantrell	South Carolina Department of Natural Resources
Tennessee	James D. Kelly	Tennessee Wildlife Resources Agency
	Garrett Clevinger	Tennessee Wildlife Resources Agency
	Craig Harper	University of Tennessee
Texas	Alan Cain	Texas Parks and Wildlife Department
	Bob Zaiglin	Southwest Texas Junior College
Virginia	Matt Knox	Virginia Department of Game and Inland Fisheries
	Katie Martin	Virginia Department of Game and Inland Fisheries
West Virginia	Jim Crum	West Virginia Division of Natural Resources
	Brett Skelly	West Virginia Division of Natural Resources
NDA	Kip Adams	National Deer Association
USFWS	Larry Williams	United States Fish & Wildlife Service

SOUTHEAST DEER STUDY GROUP AWARDS

CAREER ACHIEVEMENT AWARD

1996	Richard F. Harlow	2006	William E. "Bill" Armstrong	2016	J. Scott Osborne
1997	Larry Marchinton	2007	Jack Gwynn	2017	Karl V. Miller
1998	Harry Jacobson	2009	David E. Samuel	2018	Steve Demarais
1999	David C. Guynn, Jr.	2010	Bob K. Carroll	2019	W. Matt Knox
2000	Joe Hamilton	2011	QDMA	2020	Charles Ruth
2002	Robert L. Downing	2012	Robert E. Zaiglin	2021	N/A
2004	Charles DeYoung	2014	Mark O. Bara		
2005	Kent E. Kammermeyer	2015	Larry E. Castle		

OUTSTANDING STUDENT POSTER PRESENTATION AWARD

2010	Emily Flinn	Mississippi State
2011	Melissa Miller	University of Delaware
2012	Brandi Crider	Texas A&M
2013	Jacob Haus	University of Delaware
2014	Blaise Korzekwa	Texas A&M University - Kingsville
2015	Lindsay D. Roberts	Texas A&M University - Kingsville
2016	Lindsey Phillips	Texas A&M University - Kingsville
2017	Daniel Morina	Mississippi State University
2018	Onalise R. Hill	Texas A&M University - Kingsville
2019	Adam C. Edge Zachary Wesner	University of Georgia University of Georgia
2020	Lindsey M. Phillips	University of Tennessee
2021	Michael Muthersbaugh	Clemson University

OUTSTANDING STUDENT ORAL PRESENTATION AWARD

1996	Billy C. Lambert, Jr.	Texas Tech University
1997	Jennifer A. Schwartz	University of Georgia
1998	Karen Dasher	University of Georgia
1999	Roel R. Lopez	Texas A&M University
2000	Karen Dasher	University of Georgia
2001	Roel R. Lopez	Texas A&M University
2002	Randy DeYoung	Mississippi State University
2003	Bronson Strickland	Mississippi State University
2004	Randy DeYoung	Mississippi State University
2005	Eric Long	Penn State University
2006	Gino D'Angelo	University of Georgia
2007	Sharon A. Valitzski	University of Georgia
2008	Cory L. Van Gilder	University of Georgia
2009	Michelle Rosen	University of Tennessee
2010	Jeremy Flinn	Mississippi State University
2011	Kamen Campbell	Mississippi State University
2012	Brad Cohen	University of Georgia
2013	Michael Cherry	University of Georgia
2014	Brad Cohen	University of Georgia
2015	Eric Michel	Mississippi State University
2016	Rebecca Shuman	University of Georgia
2017	Jared Beaver	Texas A&M University
2018	Dan Morina	Mississippi State University
2019	C. Moriah Boggess	Mississippi State University
2020	Jordan R. Dyal	University of Georgia
2021	Seth T. Rankins	Texas A&M University

MONDAY, FEBRUARY 21, 2022

4:00 PM – 4:45 PM | OPEN HOUSE

Moderator: Leslie Pelch - Delaney Meeting and Event Management

Brought to you by:

RMS
Creating Forest Value Since 1950

ORAL PRESENTATION SCHEDULE

All times
Eastern Standard Time

TUESDAY, FEBRUARY 22, 2022

9:00 AM – 10:50 AM | PLENARY SESSION

Moderator: Kip Adams – National Deer Association

Brought to you by:

9:00-9:10 AM	**Welcome**	*Matt Ross*
9:10-9:25 AM	**Introduction**	*Nick Pinizzotto*
9:30-9:50 AM	**Boone: The Original Woodsman**	*Robert Morgan*
9:50-10:10 AM	**The Ojibwe Treaty with Deer Nation and Its Ongoing Significance Within the Ceded Territories**	*Philomena Kebec*
10:10-10:30 AM	**We are Dealing with Something That Lies Pretty Deep: The Value of White-tailed Deer to Americans**	*Mark Damian Duda*
10:30-10:50 AM	**Connection with Hunting - Connection to Conservation**	*Leopoldo Miranda-Castro*

11:10 AM – 11:55 AM | TECHNICAL SESSION I

VALUE OF DEER AND ENGAGEMENT

Moderator: Ben Westfall – National Deer Association

Economic, Social, and Conservation Benefits of Deer Hunting in the Southeastern United States 11:10-11:30 AM
Kip Adams 18

What Drives Citizen Science in State Wildlife Agencies? 11:30-11:50 AM
**Amanda Van Buskirk* 19

[POSTER] **Like Father, Like Son? Estimating Breeding Values for Antler Size in Male White-tailed Deer** 11:50-11:55 AM
**Cole Anderson* 20

*Student Presentation

1:00 PM – 2:05 PM | TECHNICAL SESSION II

DEER MOVEMENT

Moderator: Torin Miller – National Deer Association

2:20 PM – 4:10 PM | TECHNICAL SESSION III

DISEASE, TICKS, AND PARASITES

Moderator: Hank Forester – National Deer Association

4:25 PM – 5:10 PM | TECHNICAL SESSION IV

DEER PHYSIOLOGY

Moderator: Cheyne Matzenbacher – National Deer Association

Influence of Visual Perception on Deer Movements 4:25-4:45 PM
**Blaise Newman* 32

Comparison of Immobilization Efficacy of Nalbuphine-Medetomidine-Azaperone and Butorphanol-Azaperone-Medetomidine in Captive White-tailed Deer 4:45-5:05 PM
**Patrick Grunwald* 33

[POSTER] **Overlap Between White-tailed Deer and Wild Pigs on Private Land in South Carolina** 5:05-5:10 PM
**Elizabeth Saldo* 34

6:00 PM – 7:00 PM | USING SOCIAL MEDIA TO ENGAGE DEER HUNTERS – THE GOOD, THE BAD AND THE UGLY

Moderator: Lindsay Thomas Jr. – National Deer Association
Panelists: Dan Johnson, Luke Resop, Aaron Warbritton and Jenifer Wisniewski

Brought to you by:

WEDNESDAY, FEBRUARY 23, 2022

9:00 AM – 10:35 AM | TECHNICAL SESSION V

HABITAT – PART I

Moderator: Matt Ross– National Deer Association

Timing of Fire Influences Deer Use of Pine Stands 9:10-9:30 AM
**Spencer Marshall* 35

Effects of Prescribed Fire and Herbicide on White-tailed Deer Forage in Thinned Loblolly Pine Stands ..... 9:30-9:50 AM 36
**Dylan Stewart*

Evaluation of Pine Stands for Deer Forage Quality 9:50-10:10 AM
** Jake Bones* 37

Quality or Quantity? Ambient Temperature Influences Selection for Shade Quality in a Large Herbivore 10:10-10:30 AM
**Jacob Dykes* 38

[POSTER] **Effects of Herbicide Applications on White-tailed Deer Use of Food Plots** 10:30-10:35 AM
**Lindsey Phillips* 39

10:50 AM – 11:55 AM | TECHNICAL SESSION V

HABITAT – PART II

Moderator: Mike Edwards – National Deer Association

1:00 PM – 2:20 PM | TECHNICAL SESSION VI

FAWN RECRUITMENT

Moderator: Karlin Gill– National Deer Association

*Student Presentation

2:35 PM – 3:55 PM | TECHNICAL SESSION VII

COMPETITORS AND PREDATORS

Moderator: Ben Westfall – National Deer Association

4:10 PM – 4:50 PM | TECHNICAL SESSION VIII

POPULATION ESTIMATION

Moderator: Cheyne Matzenbacher – National Deer Association

6:00 PM – 7:00 PM | AWARDS CEREMONY

Moderator: Kip Adams – National Deer Association

Deer Committee Recognitions, Student Award, Retirement Certificates, ScoreThis!" and General Door Prizes, 2023 SEDSG Meeting Plans

Brought to you by:

Bass Pro Shops Cabela's

SOUTHEAST DEER STUDY GROUP 45th ANNUAL MEETING FEBRUARY 21-23 2022

#SEDSG2022

POSTER PRESENTATION LIST

(List and Abstracts follow in Order of Appearance)

Like Father, Like Son? Estimating Breeding Values for Antler Size in Male White-tailed Deer
**Cole Anderson*

Impacts on Chronic Wasting Disease on Arkansas's White-tailed Deer Population
**Marcelo Jorge*

Experimentally Infesting White-tailed Deer with Ticks to Study Tick-host Interaction
**Alec Baker*

Using Ungulates as Sentinels to Predict Distribution of Cattle Fever Ticks in Texas
**Ashley Hodge*

Overlap Between White-tailed Deer and Wild Pigs on Private Land in South Carolina
**Elizabeth Saldo*

Effects of Herbicide Applications on White-tailed Deer Use of Food Plots
**Lindsey Phillips*

Species-specific Oak Masting Phenology and Subsequent Behavioral Responses by Deer
**Kelsey Demeny*

*Denotes abstracts given by students.

Notes:

PLENARY SESSION

Brought to you by:

BOONE: THE ORIGINAL WOODSMAN

Author: Robert Morgan

Cornell University

THE OJIBWE TREATY WITH DEER NATION AND ITS ONGOING SIGNIFICANCE WITHIN THE CEDED TERRITORIES

Author: Philomena Kebec

Bad River Band of Lake Superior Chippewa

WE ARE DEALING WITH SOMETHING THAT LIES PRETTY DEEP: THE VALUE OF WHITE-TAILED DEER TO AMERICANS

Author: Mark Damian Duda

Responsive Management

CONNECTION WITH HUNTING - CONNECTION TO CONSERVATION

Author: Leopoldo Miranda-Castro

U.S. Fish and Wildlife Service

Notes:

ECONOMIC, SOCIAL AND CONSERVATION BENEFITS OF DEER HUNTING IN THE SOUTHEASTERN UNITED STATES

Authors: Kip Adams, Matt Ross, Nick Pinizzotto

National Deer Association

Abstract:
Hunters are our nation's original conservationists, and they continue to fund the lion's share of wildlife conservation today. To highlight the benefits of hunting and the importance of deer hunters to our wildlife programs the Southeast Deer Partnership contracted Responsive Management to review previous research, mine primary data sources, conduct new research, and analyze data on the economic, social and conservation benefits of deer hunting in the Southeastern United States. In addition, we provide state-specific data on habitat management activities by deer hunters on private lands and show their potential impacts (positive or negative) on at-risk species. We delineated our study area to include the 15 states in the Southeastern Association of Fish and Wildlife Agencies (SEAFWA) region. Initial findings revealed greater than 6.7 million paid hunting license holders purchase over 12 million licenses, tags, permits and stamps annually, and hunting license sales exceed $251 million in the SEAFWA region. Deer hunting in this region supports approximately 209,000 jobs and $2.1 billion in local, state and federal taxes. Deer hunters spend about $183 million on wildlife plantings and over $1 billion on land leashed primarily for deer hunting. The research phase is now complete. Phase two includes developing and implementing fact-based communications plans, and phase three will be implementation of those plans via numerous formats including public service announcements, print, digital, social, radio and television outlets on the benefits of deer hunting.

Contact:
kip@deerassociation.com

Notes:

WHAT DRIVES CITIZEN SCIENCE IN STATE WILDLIFE AGENCIES?

Authors: Amanda Van Buskirk[1], Bynum Boley[2], Charlie Killmaster[2], Kristina Johannsen[2], Gino D'Angelo[1]

[1]University of Georgia
[2]Georgia Department of Natural Resources, Wildlife Resources Division

Abstract:
Citizen science (CS) has seen substantial growth over the past decade and is gaining recognition as a valuable way to meet data needs for wildlife management projects while fostering public engagement and collaboration between scientists and participants. For example, multiple states use hunter observation surveys to monitor trends in wildlife populations. Despite the growing number of CS projects being administered, little research has examined motivations for organizations to engage in CS. Our objective was to explore the utility of using the Theory of Planned Behavior (TPB) and Social Exchange Theory (SET) to identify factors influencing support of CS from state wildlife agency staff. To administer the TPB and SET constructs, we conducted a survey of wildlife professionals employed at state agencies, yielding 627 responses across 44 states. We divided questions that measured TPB items into two components: personal and agency, to address the influence of organization-level decision-making on staff perceptions. Structural equation modeling showed that both TPB and SET items were accurate predictors of staff support, however, measures from SET (e.g., public engagement benefits and costs of CS to scientific credibility) were most influential. These findings indicate that support for CS by agency staff are influenced by assessing costs and benefits, but that indicators of support can be further elucidated by including measures from the TPB model. Natural resource managers can use our results to implement and modify CS projects that offer positive public engagement opportunities and maximize data reliability, resulting in outcomes that better achieve desired objectives.

Contact:
av94646@uga.edu

Notes:

*Student Presentation

[POSTER] LIKE FATHER, LIKE SON? ESTIMATING BREEDING VALUES FOR ANTLER SIZE IN MALE WHITE-TAILED DEER

Authors: Cole Anderson[1], Randy DeYoung[1], Michael Cherry[1], Charles DeYoung[1], David Hewitt[1], Matthew Moore[2], Stuart Stedman[2]

[1]Caesar Kleberg Wildlife Research Institute, Texas A&M University-Kingsville
[2]Faith Ranch

Abstract:
Selective harvest has the potential to affect population genetics in species with luxury phenotypic traits (e.g., antlers). Some managers actively practice culling, or selective harvest of individuals with low-quality phenotypes, in an attempt to improve population genetic potential for luxury traits. Others have voiced concern about high-grading, where harvesting the very best animals allows low-quality individuals to breed, which may lead to a decrease in trait values. The management of white-tailed deer is tightly intertwined within this debate. The potential for selective harvest to affect population genetic potential for a trait depends on the correlation between phenotypes and genotypes. Our goal was to investigate the relationship between a sire's antler phenotype and that of his male offspring. We analyzed a long-term data set from an ongoing research project that has followed several generations of wild deer and their sons. Eighteen bucks sired 329 buck fawns during temporary confinement in deer management permit (DMP) experimental pens during 2007-2020. Fawns were captured and ear-tagged, then released into a 400-ha game-fenced enclosure. Each autumn, we captured tagged bucks using helicopter net-gunning and recorded antler scores according to the Boone & Crockett system. We calculated the breeding value for each sire as the difference between the average antler score of his sons at 5.5 years old relative to the population average for that age class. We found a weak relationship (R2 = 0.26) between the antler scores of sires and their breeding value. Our results have important implications for selective harvest plans.

Contact:
cole.anderson@students.tamuk.edu

Notes:

*Student Presentation

INDIVIDUAL-LEVEL MOVEMENT CHARACTERISTICS REVEAL "PERSONALITIES" IN ADULT MALE WHITE-TAILED DEER

Authors: Luke Resop, Steve Demarais, Bronson Strickland, Garrett Street

Mississippi State University

Abstract:
White-tailed deer are generally considered a home-ranging species although northern populations may migrate between summer and winter ranges to balance resource requirements with environmental stressors. We evaluated home range characteristics for adult bucks (n = 29) fitted with GPS collars from 2017-2019 in central Mississippi with time series segmentation and KDE estimation. 69% of bucks had a "sedentary" personality characterized by a single KDE home range segment (mean = 639 acres) and 31% of bucks had a "mobile" personality characterized by multiple home range segments (mean = 2,063 acres). Of mobile bucks, 56% had a "bouncer" sub-personality characterized by multiple but partially overlapping home range segments (mean = 2,936 acres). For mobile bucks, mean duration in a home range segment before traveling to another was 85 days. Factors such as food plot coverage and number of feeders within home segments appear to be similar among personalities. These results help to shed light on why some bucks seem to disappear from an area for months at a time before returning at a later date. Results also demonstrate that adult bucks in central Mississippi display alternative home-ranging behaviors that likely have fitness-level implications.

Contact:
lr1177@msstate.edu

Notes:

*Student Presentation

NAVIGATING A MANIPULATED RISK LANDSCAPE: PREDATION RISK CHANGES UNGULATE MOVEMENT, SPACE USE, AND RESOURCE SELECTION

Authors: Daniel A. Crawford[1], Mike Conner[2], Michael Cherry[1]

[1]Caesar Kleberg Wildlife Research Institute, Texas A&M University-Kingsville
[2]The Jones Center at Ichauway

Abstract:
Predation risk is a fundamental factor influencing the spatial ecology of prey species as the consequences of movement and space use decisions can directly affect lifetime reproductive output, or individual fitness. A multitude of field studies describe the effects of predation risk on the spatial ecology of large, terrestrial herbivores; however, lack of experimental control weakens inference regarding linkages between spatial variation in risk and prey behavior. Accordingly, we manipulated true risk of predation to test important ecological hypotheses related to spatial behaviors of prey. Using GPS-telemetry data collected on 18 female white-tailed deer during fawn-rearing, we evaluated the effects of predation risk on prey spatial behaviors including home range size, movement rates, and resource selection. By isolating risk as a treatment with prey-permeable predator exclusion fencing, we provide the first experimental test of the risky places hypothesis in a free-ranging ungulate population. Predation risk increased home range size, decreased movement rates, and altered selection of pine and hardwood forests. Our results provide the first experimental linkage between ungulate spatial ecology and spatial variation in predation risk and demonstrate that predation risk induces substantial shifts in prey spatial behaviors. Furthermore, observed shifts in resource selection across spatially variable risk indicate that, while bottom-up factors propagate variability in structure and forage quality across habitat types, top-down forces alter habitat quality within habitat types.

Contact:
daniel.crawford@jonesctr.org

Notes:

*Student Presentation

UNDERSTANDING DEER MOVEMENT TO INFORM CHRONIC WASTING DISEASE MANAGEMENT

Authors: Calvin Ellis[1], Levi Heffelfinger[1], Shawn Gray[2], David Hewitt[1], Michael Cherry[1]

[1]Cesar Kleberg Wildlife Research Institute, Texas A&M University Kingsville
[2]Texas Parks and Wildlife

Abstract:
In 2021, the distribution of Chronic Wasting Disease (CWD) dramatically increased in Texas highlighting a need for a deeper understanding of factors that influence the disease spread. Juvenile dispersal is considered an important parameter in CWD epidemiology, but juvenile movement and drivers of dispersal are poorly understood. The Canadian River corridor is adjacent to a recently identified CWD cluster and may facilitate movement connecting regions of New Mexico with unknown CWD prevalence with the Texas Panhandle. We GPS-collared 30 nine-month-old mule deer, located within a newly established CWD containment zone, to study movement and dispersal patterns. To identify movements that may have enhanced disease risk, we first calculated net squared displacement across individuals to assign resident or non-resident status. We then used velocity, duration, distance, and fidelity, to categorize non-residential movements as either exploratory or dispersal. Currently, 23% of our individuals have exhibited non-residential movement including two dispersals and five exploratory movements. Mean dispersal and exploratory movement length were 20.90 ± 16.31 miles ($\bar{x}$ ± SE) and 52.12 ± 25.35 miles respectively. Resident velocity averaged 264.00 ± 0.16 feet/hr compared to non-residential individuals at 289.73 ± 6.04 feet/hr overall but 387.89 ± 141.40 feet/hr during non-residential movements. These results demonstrate potential for large-scale movements by juvenile deer facilitating disease spread throughout the region. With CWD becoming an increasing issue across Texas, evident by recently updated management strategies, understanding movement ecology of susceptible species should be of primary concern.

Contact:
calvin.ellis@students.tamuk.edu

Notes:

*Student Presentation

[POSTER] IMPACTS OF CHRONIC WASTING DISEASE ON ARKANSAS'S WHITE-TAILED DEER POPULATION

Authors: Marcelo Jorge[1], Dana Jarosinski[1], Mark Ruder[2], Gino D'Angelo[1], Richard Chandler[1], Michael Chamberlain[1]

[1]University of Georgia
[2]Southeastern Cooperative Wildlife Disease Study

Abstract:
Chronic wasting disease (CWD) is a fatal neurological disease of cervids that was first discovered in 1967 in Colorado and is a growing concern to natural resource managers across North America and internationally. CWD was first detected in Arkansas in elk (*Cervus canadensis*) during 2015 and later in white-tailed deer during 2016. Testing indicated that CWD was in the state for decades and at high disease prevalence (>20%) in deer within a 10-county region. Current research has provided valuable information on transmission of CWD, environmental persistence and biological sampling to test for the disease. However, important knowledge gaps still exist that hinder management decisions. The objectives of our research include understanding the effects of CWD on deer survival, recruitment, and behavior in Arkansas. We are using an epidemiological case-control study design involving the capture an approximately equal number of positive and presumed negative individuals. We will also recapture as many individuals as possible over the 5-yr study. We are using active and passive sampling techniques including GPS/radio telemetry, CWD testing, and trail camera grids to provide rigorous estimates of white-tailed deer demographic parameters and CWD infection rates. Ultimately, we will develop a spatially-explicit population model that will forecast the effects of agency management actions on the spread of CWD and the consequences to the white-tailed deer herd.

Contact:
marcelo.jorge@uga.edu

Notes:

*Student Presentation

THE KNOWN UNKNOWNS: HOW DATA SCIENCE IS CHANGING CWD FOR DEER MANAGERS

Authors: Krysten Schuler, Brenda Hanley, Nick Hollingshead, Rachel Abbott, Cara Them, Corey Mitchell, and Sohel Ahmed

Cornell Wildlife Health Lab, Cornell University

Abstract:
Given an ever-changing landscape of disease, wildlife managers could benefit from tools to aid in decision making processes. Through the Surveillance Optimization Project for Chronic Wasting Disease (SOP4CWD), we are combining disease ecology with data science to tackle surveillance challenges states and provinces experience. We present examples of interactive software applications that can be used to answer specific managerial questions. The *Positives* app can identify locations where over or under sampling occurs within and across state boundaries. The *Hazard* app can show counties where anthropogenic activities might increase risk of novel prion introduction into free-ranging deer or to pinpoint locations where an introduction is likely to spread. The *HabitatRisk* app can be used to identify areas where targeted removals have better potential to lower CWD prevalence in wild herds. The *Optimization* app can be used to allocate budgets to specific sampling strategies given a dynamic disease landscape. Adapting new tools to be widely available interactive apps, such as a response toolkit to respond to initial infection discoveries, are long-term goals of the project.

Contact:
ks833@cornell.edu

Notes:

MODELING ANNUAL HEMORRHAGIC DISEASE OF DEER IN THE GREAT PLAINS REGION OF THE UNITED STATES

Authors: Emma Kring[1], Michael T. Kohl[1], Gino D'Angelo[1], David E. Stallknecht[2], Liliana C.M. Salvador[3], Christopher A. Cleveland[2], Mark Ruder[4]

[1]Warnell School of Forestry & Natural Resources, University of Georgia
[2]University of Georgia, College of Veterinary Medicine, Southeastern Cooperative Wildlife Disease Study
[3]College of Veterinary Medicine, Institute of Bioinformatics, University of Georgia
[4]Southeastern Cooperative Wildlife Disease Study

Abstract:
Hemorrhagic disease (HD) of deer is caused by either epizootic hemorrhagic disease virus (EHDV) or bluetongue virus (BTV) from the *Orbivirus* genus in the *Reoviridae* family. Hemorrhagic disease is one of the most important diseases of white-tailed deer, and is transmitted by *Culicoides* biting midges. Recent changes in the spatial and temporal distribution of HD in the eastern United States have been reported and may be linked to changes in environmental conditions that may increase vector populations and/or virus transmission. However, both historic and recent patterns of HD in the Great Plains remain poorly described. Our objective was to assess the relationship between climatic and environmental conditions on the probability of HD reporting within 5 states (NE, SD, ND…) of the Great Plains region. To achieve this, we fit generalized linear mixed models to annual county-level HD survey data collected from 1982-2020 as a function of seasonal weather conditions (temperature, precipitation) and ecoregions. Preliminary results suggest that climate and ecoregion characteristics may both be contributing to the increase in HD reporting frequency over the last few decades. Across all states, increasing mean temperature, decreasing average precipitation, and the timing of the precipitation increased the frequency of HD reports in the Great Plains. Overall, this model will help explain the changing HD patterns in the Great Plains and determine climate factors that may serve as predictors for increased HD risk across North America.

Contact:
emma.kring@uga.edu

Notes:

*Student Presentation

ASSESSING CANDIDATE TICK-SALIVARY ANTIGENS TO DEVELOP AN ANTI-TICK VACCINE FOR WHITE-TAILED DEER

Authors: Alec Baker[1], Tammi Johnson[2], Albert Mulenga[1], Pia Olafson[3]

[1]Texas A&M University
[2]Texas A&M AgriLife Research
[3]United States Department of Agriculture

Abstract:
White-tailed deer are a main host for blacklegged (*Ixodes scapularis*) and Lone Star ticks (*Amblyomma americanum*). The population increase of white-tailed deer in the twentieth century has correlated with the rise of various tick-borne pathogens that are known to be spread by blacklegged, Lone Star, and other species of ticks. To determine tick feeding and reproductive parameters when fed on white-tailed deer, we experimentally infested white-tailed deer (N = 6) with blacklegged ticks (N = 50 adult tick pairs per deer). Prior to tick infestations, a selected area on the animal was shaved and a six-inch cotton stockinette was adhered using TORBOT bonding cement. Tick feeding was restricted to the area at the base of the neck and between the shoulders to reduce the probability of the stockinette/ticks being groomed off by the deer. Once infested with ticks, we monitored tick feeding daily and ticks had completed feeding and detached from the deer were removed from the patch. Each fed tick was weighed and transferred to a dram vial for incubation in a humidity-controlled chamber, and vials were monitored daily to collect data related to feeding and reproductive parameters. The results of this research will help inform future research targeting white-tailed deer for tick control. The methods from this research can also be used to study the interaction of other tick and arthropod species that utilize white-tailed deer as a bloodmeal source. We will define biological parameters of adult blacklegged and Lone Star ticks feeding on white-tailed deer.

Contact:
abaker5569@tamu.edu

Notes:

*Student Presentation

[POSTER] EXPERIMENTALLY INFESTING WHITE-TAILED DEER WITH TICKS TO STUDY TICK-HOST INTERACTIONS

Authors: Alec Baker[1], Tammi Johnson[2], Albert Mulenga[1], Pia Olafson[3]

[1]Texas A&M University
[2]Texas A&M AgriLife Research
[3]United States Department of Agriculture

Abstract:
White-tailed deer are a main host for blacklegged (*Ixodes scapularis*) and Lone Star ticks (*Amblyomma americanum*). The population increase of white-tailed deer in the twentieth century has correlated with the rise of various tick-borne pathogens that are known to be spread by blacklegged, Lone Star, and other species of ticks. To determine tick feeding and reproductive parameters when fed on white-tailed deer, we experimentally infested white-tailed deer (N = 6) with blacklegged ticks (N = 50 adult tick pairs per deer). Prior to tick infestations, a selected area on the animal was shaved and a six-inch cotton stockinette was adhered using TORBOT bonding cement. Tick feeding was restricted to the area at the base of the neck and between the shoulders to reduce the probability of the stockinette/ticks being groomed off by the deer. Once infested with ticks, we monitored tick feeding daily and ticks had completed feeding and detached from the deer were removed from the patch. Each fed tick was weighed and transferred to a dram vial for incubation in a humidity-controlled chamber, and vials were monitored daily to collect data related to feeding and reproductive parameters. The results of this research will help inform future research targeting white-tailed deer for tick control. The methods from this research can also be used to study the interaction of other tick and arthropod species that utilize white-tailed deer as a bloodmeal source. We will define biological parameters of adult blacklegged and Lone Star ticks feeding on white-tailed deer.

Contact:
abaker5569@tamu.edu

Notes:

*Student Presentation

DETECTION OF THE PROTOZOAN *TRITRICHOMONAS FOETUS* IN THE REPRODUCTIVE TRACT OF WHITE-TAILED DEER IN LOUISIANA

Authors: Hope Hebert[1], Kim Tolson[1], James LaCour[2]

[1]University of Louisiana, Monroe
[2]Louisiana Department of Wildlife and Fisheries

Abstract:
During the 2013-2014 deer season, hunter harvest data from Sherburne WMA in south-central Louisiana indicated a decrease in fawn production and lowered lactation rates of adult does. The serendipitous testing of five adult bucks for the presence of *Tritrichomonas foetus* in the following season resulted in a positive PCR (polymerase chain reaction) test from one of the samples. *Tritrichomonas foetus,* a protozoan often found in cattle herds, is responsible for trichomoniasis, a sexually transmitted infection that results in spontaneous miscarriage and infertility in cows after copulation with an infected bull. In cattle, bulls are often asymptomatic and lifelong carriers, and common practice is to cull infected males to prevent further infection within the herd. *Tritrichomonas foetus* is found in a variety of animals hosts, but there has never been a study documenting its presence in white-tailed deer. This research aims to determine the presence and distribution of *T. foetus* in Louisiana white-tailed deer herds. Samples collected from two locations during the 2020-2021 hunting season have revealed PCR positive results for *T. foetus* in hunter-harvested bucks from both locations. Bucks who tested positive ranged from ages 2½ to 4½ years. The largest age class sampled to date is the 2½-year-old cohort. Testing is continuing during the 2021-2022 deer season from additional locations within the state.

Contact:
heberth@warhawks.ulm.edu

Notes:

*Student Presentation

MONITORING DEER BORDER CROSSINGS RELATIVE TO MANAGEMENT FOR CATTLE FEVER TICKS ALONG THE US-MEXICO BORDER

Authors: Ashley Hodge[1], Jeremy Baumgardt[1], Randy DeYoung[1], Michael Cherry[1], Aaron Foley[1], David Hewitt[1], John Goolsby[2], Kim Lohmeyer[2]

[1]Caesar Kleberg Wildlife Research Institute, Texas A&M University-Kingsville
[2]USDA-ARS

Abstract:
Ungulates are capable of long-distance movements, a management concern due to the potential to spread disease to livestock and humans. In South Texas, there is growing concern about the increasing presence of the cattle fever tick. This one-host tick can carry a *Babesia* parasite that is fatal to naïve cattle. The tick and *Babesia* are endemic in Mexico, and the USDA and TAHC maintain a permanent quarantine zone to prevent re-infestation of the US. Deer serve as alternative hosts, and may act as capable and long-distance dispersers across the border or the quarantine zone. We studied movements of white-tailed deer in a high-density population surrounding Falcon Lake, near Zapata, Texas. We captured 100 deer via net gun and helicopter, and deployed GPS collars that collected hourly locations during February 2020–2021. We identified border crossings using time-based GPS tracks and estimated monthly home ranges using local convex hull estimators. Several individuals made long-distance exploratory movements but all remained within the quarantine zone. We observed 98 crossings from 41 deer from Texas to Mexico throughout the year. We are currently analyzing the placement of crossings and surrounding land metrics that may influence where and when deer cross. Monthly home ranges averaged with standard error 156±101 ha for females and 195±146 ha for males. Individual deer in this area had small home ranges, but collectively crossed at multiple different locations along the lake shore. Targeting fever tick treatment or other management actions at crossing sites may help decrease the abundance of ticks.

Contact:
ashley.hodge@students.tamuk.edu

Notes:

*Student Presentation

[POSTER] USING UNGULATES AS SENTINELS TO PREDICT DISTRIBUTION OF CATTLE FEVER TICKS IN TEXAS

Authors: Ashley Hodge[1], Jeremy Baumgardt[1], Randy DeYoung[1], Michael Cherry[1], Aaron Foley[1], David Hewitt[1], John Goolsby[2], Kim Lohmeyer[2]

[1]Caesar Kleberg Wildlife Research Institute, Texas A&M University-Kingsville
[2]USDA-ARS

Abstract:
Cattle fever ticks were introduced into the Americas in the early 1500's by Spanish settlers. The ticks quickly spread throughout both North and South America. These one-host ticks can carry a deadly *Babesia* parasite that can be fatal in up to 90% of naïve adult cattle. It can also cause a reduction in meat and milk production, weight loss, and abortion. Cattle fever ticks were eradicated from the US in the 1940's, but remain endemic in Mexico. Although the fever tick prefers a bovid host, they can use several alternative wildlife hosts, including white-tailed deer. We captured deer in a high-density population surrounding Falcon Lake near Zapata, Texas. The site is located along the US-Mexico border, inside a permanent quarantine zone established to prevent re-emergence of the tick in the US. We fitted 100 deer with GPS collars that collected hourly fixes and removed 298 females from the area to reduce density of host animals; we recorded capture locations and tick loads from all deer. We are using ecological niche models to understand how local site characteristics are associated with abundance of cattle fever ticks. Home ranges of infested deer will serve as occurrence data, and covariates will include landscape metrics such as ecological site description, land cover, precipitation, distance to Ivermectin feeders maintained to treat ticks on deer, temperature, and pasture treatments for cattle. The outputs will further inform us on environmental variables important to ticks at a macro scale, and highlight areas that may be impacted by future northward range expansions of the fever tick.

Contact:
ashley.hodge@students.tamuk.edu

Notes:

*Student Presentation

INFLUENCE OF VISUAL PERCEPTION ON DEER MOVEMENTS

Authors: Blaise Newman[1], Gino D'Angelo[1], Jordan R. Dyal[1], Karl V. Miller[1], Michael Cherry[2]

[1]University of Georgia
[2]Caesar Kleberg Wildlife Research Institute-Texas A&M University-Kingsville

Abstract:
Visual perception is dynamic and depends on physiological properties of a species' visual system and physical characteristics of the environment. White-tailed deer are most sensitive to short- and mid-wavelength light (e.g., blue and green). Wavelength enrichment varies spatially and temporally across the landscape. We assessed how the visual perception of deer influences their movement patterns. From August-September 2019, we recorded 10-min locations from 15 GPS collared adult male deer in Central Florida. We used Hidden-Markov models to identify periods of movement by deer and subset these data into three photoperiods based on temporal changes in light environments. We used path-selection functions to model deer resource selection during movement and simulated 10 available paths for every one used path. We developed five a priori models and used 10-fold cross validation to assess our top model's performance for each photoperiod. During the day, deer selected to move through woodland shade, avoided forest shade, and neither selected nor avoided small gaps. At dawn/dusk, deer avoided wetlands as cloud cover increased but neither selected nor avoided other cover types. Predators, conspecifics, and plants might be more conspicuous to deer in short-wavelength-enriched woodland shade during the day, while at dawn/dusk predators in long-wavelength-enriched wetlands during cloud cover might be less conspicuous. Our top model for night failed to predict path selection >50% of the time. The nocturnal light environment is relatively homogenous and likely has little effect on deer movements. Light environments appear to influence deer movements during the day and at dawn/dusk.

Contact:
blaise.newman@uga.edu

Notes:

*Student Presentation

COMPARISON OF IMMOBILIZATON EFFICACY OF NALBUPHINE-MEDETOMIDINE-AZAPERONE AND BUTORPHANOL-AZAPERONE-MEDETOMIDINE IN CAPTIVE WHITE-TAILED DEER

Authors: Patrick Grunwald[1], Mark Ruder[2], Lisa Muller[3], David Osborn[1], Kaitlin Goode[4], Gino D'Angelo[1]

[1]University of Georgia, School of Forestry and Natural Resources
[2]Southeastern Cooperative Wildlife Disease Study
[3]University of Tennessee, Department of Forestry
[4]Georgia Department of Natural Resources, Wildlife Resources Division

Abstract:
Current combinations of butorphanol-azaperone-medetomidine (BAM) are known to produce complete and long-lasting immobilization in white-tailed deer (*Odocoileus virginianus*), but current research has not focused on post-immobilization physiological effects. Nalbuphine-medetomidine-azaperone (NalMed-A) is an alternative to BAM, which has less stringent regulatory requirements for transport, storage, and use versus BAM. Currently, there are no published studies on the use of NalMed-A in white-tailed deer. To compare immobilization efficacy, quality, and residual effects of BAM and NalMed-A, our research focused on potential physiological and behavioral changes produced by respective chemical immobilizations in captive white-tailed deer. We administered a dose of either 1.5 mL of BAM, 1.5 mL, or 2.0 mL of NalMed-A to deer in 3 treatment groups of 10 deer each. Before, during, and after immobilization treatments, we collected biological samples to measure glucocorticoid stress hormones and we conducted behavioral observations to determine treatment-related variation in stress levels and behavioral patterns. We measured vital signs and hemoglobin oxygen saturation during immobilization to determine immediate physiological effects. Blood gas values, vital signs, and immobilization times were similar among all treatments. However, one deer did not reach complete immobilization with a dose of 1.5 ml NalMed-A. Behavioral observations indicated that stress levels did not change from before treatment to after treatment in both NalMed-A treatments, but behavioral observations indicated stress levels decreased for the BAM treatment. Our results show that BAM and NalMed-A can be regarded as equally effective chemical immobilization agents and use can be determined by factors such as cost and availability.

Contact:
patrick.grunwald@uga.edu

Notes:

*Student Presentation

[POSTER] OVERLAP BETWEEN WHITE-TAILED DEER AND WILD PIGS ON PRIVATE LAND IN SOUTH CAROLINA

Authors: Elizabeth Saldo[1], Alex Jensen[1], Mike Muthersbaugh[1], Jay Butfiloski[2], Jay Cantrell[2], John Kilgo[3], Charles Ruth[2], David Jachowski[1]

[1]Department of Forestry and Environmental Conservation, Clemson University
[2]South Carolina Department of Natural Resources
[3]U.S. Forest Service Southern Research Station

Abstract:
Biological invasions are a growing concern due to the impacts they have on ecosystems, communities, and species. The wild pig (*Sus scrofa*) is one such invader, having considerably expanded its range to a global distribution. By consuming shared foods or rooting vegetation, wild pigs compete with other species through resource exploitation, while interference competition, such as wild pig aggression, might further reduce the ability of other species to obtain resources. Supplemental feeding of deer for hunting, which is prevalent on private lands in South Carolina, could exacerbate such competitive interactions while expediting the spread of wild pigs, increasing deer exposure to predators, facilitating disease transmission, and affecting hunting success. Our objectives were to examine patterns of overlap between wild pigs and white-tailed deer and use a field experiment to investigate wild pig, deer, and coyote (*Canis latrans*) responses to supplemental feeding. We deployed 93 unbaited cameras (spring 2019-summer 2021) in a grid and 15 baited cameras (spring-summer 2021) in a stratified random design. Unbaited cameras captured 3,059,519 photographs and baited cameras captured 98,671. Preliminary analyses of temporal overlap between wild pigs and deer showed lower overlap in fall than spring. Future analyses will compare activity at unbaited and baited cameras, providing further insight into competition between these species. We also GPS-collared 24 coyotes and 23 does in winter 2021, implanting does with birthing transmitters to aid fawn GPS-collaring. Collar data will be used to examine deer and coyote space use in relation to feeders and wild pigs.

Contact:
ereghis@clemson.edu

Notes:

*Student Presentation

TIMING OF FIRE INFLUENCES DEER USE OF PINE STANDS

Authors: Spencer Marshall, Jake Bones, Craig Harper

University of Tennessee Forestry, Wildlife, and Fisheries

Abstract:
Pine forests in the southeastern United States are commonly managed for white-tailed deer and other wildlife. Thinning and prescribed fire are used to increase available sunlight and stimulate additional forage production. The timing or season of burning may influence plant composition and structure as well as forage availability and quality. Thus, the timing of fire may influence deer use during different seasons. We implemented a field experiment at 8 sites dominated by loblolly (*Pinus taeda*) or shortleaf (*P. echinata*) pine across Tennessee, South Carolina, Alabama, and Mississippi to document how timing of fire influences deer use. We divided each site into 4 treatments (dormant-season fire, early growing-season fire, mid-growing-season fire, and late growing-season fire) and control (each approximately 5 acres). Basal area ranged from 32 – 51 sq ft/ac. We placed three trail cameras in each treatment/control unit 33 feet from a tree marker and collected 10-second video clips of wildlife from 1 June – 27 October 2021. We collected 7,910 video clips containing 8,905 deer. Weekly detections of deer increased from 2.82 ± 1.04 detections/week to 6.14 ± 1.60 detections/week (r = 0.87) approximately 4 weeks following fire in the mid-growing-season fire treatment. Prior to the mid-growing-season fire treatment, detections in the early growing-season fire treatment were 43% greater than in control (p=0.07). Deer visitation increased following the mid-growing season fire treatment, indicating timing of fire influences deer use. Burning during the mid-growing-season can increase deer use of the area by increasing forage quality during the late summer/early fall.

Contact:
smarsh23@vols.utk.edu

Notes:

*Student Presentation

EFFECTS OF PRESCRIBED FIRE AND HERBICIDE ON WHITE-TAILED DEER FORAGE IN THINNED LOBLOLLY PINE STANDS

Authors: Dylan Stewart[1], William Gulsby[1], James Martin[2], Kristina Johannsen[3], Daniel Greene[4]

[1]Auburn University, School of Forestry and Wildlife Sciences
[2]University of Georgia, Warnell School of Forestry and Natural Resources
[3]Georgia Department of Natural Resources
[4]Weyerhaeuser Company

Abstract:
Prescribed fire and herbicide can improve forage availability for white-tailed deer in thinned loblolly pine (*Pinus taeda*) stands, but interactions among different levels of thinning, fire, and herbicide have not been adequately quantified. Thus, we performed an experiment within five loblolly pine stands in central Georgia during 2017–2021. Each stand was divided into three plots, and we randomly thinned each plot to a residual basal area of 40, 60, or 80 ft^2/ac during 2017, applied fire to half of each plot during 2018 and 2020, and applied herbicide (imazapyr + metsulfuron methyl) to half of each subplot during fall 2019. We measured percent coverage of deer forage and visual obstruction during July 2017–2021 and estimated nutritional carrying capacity (NCC) within each treatment unit in June 2020 and 2021. Total forage coverage and concealment cover were generally greater in the 60 and 40 ft^2/ac units compared to the 80 ft^2/ac units, but did not differ between the 60 and 40 ft^2/ac units. Fire and mix (fire + herbicide) treatments tended to decrease total forage and concealment cover but increased coverage of preferred forbs compared to controls, likely translating to increased NCC at the levels required to support lactation and maximal antler growth. Forb coverage was greater, and the duration of the effect lasted longer, following the second application of fire. We will also present data on forage biomass and NCC by treatment.

Contact:
dgs0026@auburn.edu

Notes:

*Student Presentation

EVALUATION OF PINE STANDS FOR DEER FORAGE QUALITY

Authors: Jake Bones, Mark Turner, Craig Harper

Department of Forestry, Wildlife and Fisheries, University of Tennessee

Abstract:
Pine forests throughout the southeastern US are managed primarily for wood products, but deer hunting and management are common secondary objectives. Pine stands are thinned to provide space for tree growth as well as sufficient sunlight to promote deer forage. Research has examined effects of canopy closure on deer forage quantity, but few studies have considered the effects of understory composition on deer forage quality. We compared deer forage availability at eight sites dominated by loblolly or shortleaf pine across TN, SC, AL, and MS. Basal area ranged from 31-51 ft^2/acre with 16-66% sunlight reaching the understory. Average biomass of deer forage plants was 395 lbs./ac (±38.7). Nutritional carrying capacity with a 6% crude protein (CP) constraint averaged 41.2 (±7.7) deer days/acre, whereas a 14% CP constraint averaged 4.1 deer days/acre (±1.5). Despite variation in canopy closure among sites, we did not detect an effect of sunlight on forage biomass (p=0.64) or nutritional carrying capacity at a 14% crude protein constraint (p=0.49). Forb coverage averaged 14% (±1.2) providing only 24.5 lbs./ac (±4.6), which limited nutritional carrying capacity. Availability of forbs commonly limits nutrition for deer in pine forests, because forbs generally provide greater nutritional quality than woody or semi-woody plants. Although our sites provided moderate levels of low-quality (6% CP) forage to meet maintenance requirements for deer, nutritional carrying capacity estimates for lactating females was low. Managers can implement treatments such as late growing-season prescribed fire and selective herbicide applications to increase forb coverage and nutritional carrying capacity for deer.

Contact:
jbones@vols.utk.edu

Notes:

*Student Presentation

QUALITY OR QUANTITY? AMBIENT TEMPERATURE INFLUENCES SELECTION FOR SHADE QUALITY IN A LARGE HERBIVORE

Authors: Jacob Dykes, Austin Killam, Breanna Green, Clayton Hilton, Evan Tanner, Michael Cherry, Randy DeYoung
Caesar Kleberg Wildlife Research Institute

Abstract:
Heat stress is common in mammals, and behavioral changes to mitigate heat stress are energetically cheaper than physiological responses. Seeking shade can decrease radiant heat gain by 30%. However, all shade is not equal. We designed a manipulative experiment assessing shade quality's influence on white-tailed deer space use. Our objectives were: 1) quantify deer shade preferences and 2) define temperature thresholds at which shade quality was important. We offered captive deer varying qualities of shade in South Texas during summers 2020 and 2021. Two deer were placed in an 82ft^2, open-air research pen with 4 treatment areas: 1) 0% shade, 2) 30% shade, 3) 60% shade, and 4) 90% shade created with commercial shade cloth. Trials consisted of a 3-day acclimation period followed by 3 days of data collection during 14 trials. We recorded ambient temperature and quantified deer space use during solar noon ± 1 hr with time-lapse cameras. Average ambient temperature during trials was 96°F. Generalized linear mixed models indicated preference for greater shade quality as ambient temperature increased. However, predicted deer use was similar for all shade qualities until ambient temperature reached 85°F at which point 90% shade was preferred. Proportional use of shade treatments: 1) 0% shade, 2) 30% shade, 3) 60% shade, and 4) 90% shade was 7%, 6%, 17%, and 70%, respectively. Understanding animal needs is crucial to manage for beneficial resources. Our results indicate shade quality is important to deer. Thus, land managers should consider thermal cover when designing management plans.

Contact:
jacob.dykes@students.tamuk.edu

Notes:

*Student Presentation

[POSTER] EFFECTS OF HERBICIDE APPLICATIONS ON WHITE-TAILED DEER USE OF FOOD PLOTS

Authors: Lindsey Phillips, Bonner Powell, Mark Turner, Craig Harper

Department of Forestry, Wildlife, and Fisheries, University of Tennessee

Abstract:
Herbicide applications are one of the most effective and commonly used weed control methods in food plots managed for white-tailed deer. Previous research has reported deer typically respond positively to plant community changes following herbicide applications, but no data have been published that document how herbicide applications influence deer use of food plots immediately following application. We used trail cameras to document deer use of four food plots (average size of 2.6 ac) planted to alfalfa (*Medicago sativa*), white clover (*Trifolium repens*), and red clover (*Trifolium pratense*) before and after herbicide application in Tennessee and North Carolina, 2021. We divided each food plot in half and randomly assigned one half to receive herbicide treatment while maintaining the other half without treatment (control). We placed three trail cameras (Reconyx HyperFire 2 and Browning Strike Force) in each food plot half to monitor deer use beginning September 13, 2021. We applied clethodim (12 oz/ac) and imazethapyr (4 oz/ac) with 0.5% nonionic surfactant on October 13-14, 2021 and continued to collect images of deer use through November 15, 2021. Deer use of food plots one month post herbicide application did not vary between treated and control units (P=0.34). Our data suggest application of imazethapyr and clethodim does not alter use of food plots by deer soon after application. However, deer use of the food plot may change over time if undesirable plants out-compete the food plot planting and make it less desirable to deer.

Contact:
lphill46@vols.utk.edu

Notes:

*Student Presentation

DEER FORAGE NUTRIENTS: WHAT'S THE LOWEST HOLE IN THE BUCKET?

Authors: Mark Turner, Bonner Powell, Craig Harper

Department of Forestry, Wildlife and Fisheries, University of Tennessee

Abstract:
Nutritional carrying capacity (NCC) estimates are used widely to compare differences in forage availability among regions, vegetation types, and habitat management treatments. Crude protein commonly is used as a nutritional constraint in growing-season forage models as it may be limiting to lactating females. Although NCC models with constraints other than crude protein may be used, relationships among deer forage nutrients that may be limiting to lactating females have not been documented in the southeastern US. We evaluated nutritional data from 74 forb, semi-woody, and woody plant species collected at 20 sites across four southeastern states. We compared crude protein, phosphorus, and calcium levels that would meet nutritional demands of a lactating doe. Although 99% of forages met calcium requirements of a lactating doe, crude protein and phosphorus demands were provided in only 27% and 3% of sampled forages, respectively. Crude protein and phosphorus concentrations were greatest in young forbs with an average of 14.5% crude protein and 0.28% phosphorus. Although there was a positive correlation between crude protein and phosphorus in both semi-woody and woody plants, we did not find a relationship with forbs. Moreover, 56% of forbs that met a 14% crude protein constraint did not meet a 0.25% phosphorus constraint. Thus, we recommend considering multiple nutritional constraints in forage availability models if forbs comprise a significant percentage of samples. Additionally, our results suggest phosphorus may be at least as limiting as crude protein to lactating females in the Southeast.

Contact:
mturne69@vols.utk.edu

Notes:

*Student Presentation

IMPACTS OF WHITE-TAILED DEER EXCLUSION ON PLANT COMMUNITIES AFTER 20 YEARS

Authors: Gabrielle Ripa[1], Steve Demarais[1], Joshua J. Granger[1], Richard G. Hamrick[2], Raymond B. Iglay[1]

[1]Mississippi State University
[2]Mississippi Department of Wildlife, Fisheries, and Parks

Abstract:
White-tailed deer (hereafter deer) are a dominant herbivore throughout much of the southeastern U.S. and can impact vegetation communities through selective browsing pressure. However, most previous studies regarding deer herbivory impacts have occurred outside of the Southeast region during relatively short temporal windows (i.e., 8-year average study length). Our objectives were to determine the effects of deer on vegetation structure and composition, and nutritional carrying capacity among 0, 5, and ~20 years after exclusion. Paired control and exclosure plots, averaging 6.7 acres, were constructed in 2000 among Upper Coastal Plain, Lower Coastal Plain, and Mississippi Alluvial Valley ecoregions in Mississippi. Vegetation structure and composition were measured May-June each year among 10 systematic sampling points per plot, and biomass samples collected July-August among 15, 10.8 ft circles per plot to determine plant quantity for nutritional carrying capacity estimates. Representative plant species samples per region were assessed for nutritional quality and nutritional carrying capacities will be based on lactation protein requirements of 14% crude protein. Preliminary analyses indicated no differences in vegetation structure and composition between exclosures and controls. However, biomass and nutritional carrying capacities are still being assessed and may better differentiate plant communities between treatments or across years than line intercept data if differences occur. Among our study sites, disturbances, such as prescribed fire or flooding regimes, may be of greater importance in determining vegetation dynamics than deer herbivory. A summary of all analyses will be presented during the meeting.

Contact:
gnr41@msstate.edu

Notes:

*Student Presentation

EVALUATING DEER PREFERENCES FOR SOYBEAN VARIETIES AND SOYBEAN RESPONSE TO DEER HERBIVORY

Authors: Luke Macaulay[1], James Lewis[1], Nicole Fiorellino[2]

[1]University of Maryland Extension
[2]University of Maryland, Plant Science & Landscape Architecture

Abstract:
Soybean plants contain high protein levels and are highly palatable forage for deer and are often a component of food plots for deer. Deer also account for approximately 75% of wildlife-caused damage to agricultural crops in Maryland. We sought to build knowledge about using soybean varieties developed for livestock forage as food plot attractants to divert deer away from prime agricultural production areas. We evaluate seven conventional and forage soybean varieties to assess 1) deer preferences for different soybean varieties, and 2) how soybean plants respond to deer herbivory in both biomass and yield. We implemented a randomized complete block design and measured soybean plant biomass within and outside of exclosures, monitored varieties with drone imagery, estimated yield of different varieties inside and outside exclosures, performed forage analysis, and monitored plots with trail cameras for deer presence and herbivory. Initial results revealed that biomass of soybean plants increases under mild to moderate deer grazing, but drastically declines under intense deer grazing. We found small differences in soybean forage analysis between varieties, but early observational data suggests those differences correlate with preferential grazing. Soybean yield results and deer activity data are currently being analyzed and will be presented at the conference. We anticipate results to inform further research on the efficacy of using soybeans to divert deer from quality agricultural areas and to inform soybean variety selection for food plots.

Contact:
lukemac@umd.edu

Notes:

[POSTER] SPECIES-SPECIFIC OAK MASTING PHENOLOY AND SUBSEQUENT BEHAVIORAL RESPONSES BY DEER

Authors: Kelsey Demeny[1], Marcus Lashley[1], E. Hance Ellington[1], Kellie Kuhn[2], Craig Harper[3], Breanne Ward[1]

[1]Department of Wildlife Ecology and Conservation, University of Florida
[2]Department of Biology, United States Air Force Academy
[3]Department of Forestry, Wildlife and Fisheries, University of Tennessee

Abstract:
Our research project examines the mast production phenology of different oak species and the behavioral responses to them by white-tailed deer. Seed traps were used to monitor masting phenology, while camera traps were monitoring deer use in seven oak stands. Four oak species were identified and found to have differing phenological patterns in mast production based on preliminary data. In this poster, we will present species-specific patterns in oak masting phenology and the corresponding deer use from the initial year of this study.

Contact:
kelsey.demeny@ufl.edu

Notes:

*Student Presentation

INFLUENCE OF MATERNAL CHARACTERISTICS AND REPRODUCTIVE HISTORY ON FAWN RECRUITMENT IN WHITE-TAILED DEER

Authors: Tristan Swartout, Stephen Ditchkoff, Chad Newbolt, William Gulsby

Auburn University

Abstract:
Fawn recruitment in white-tailed deer is crucial for population growth, and physical characteristics of a female influence her ability to recruit offspring. Some data also suggest that successful recruitment of offspring may negatively affect future reproduction. While multiple studies with white-tailed deer have examined breeding success and neonate survival, few have examined factors that influence fawn recruitment. Thus, our objective was to determine how female age, body size, and reproductive history influence fawn recruitment. We collected genetic samples from 474 deer at the 430-acre Auburn Captive Facility from 2007-2019, and examined reproductive history of 156 females relative to age, skeletal body size, and fawn recruitment during the prior season. We found that the ability to recruit increased with age, peaking at 9.5 years, where it then began to decrease with advanced age ($P = < 0.001$). Body size was not associated with recruitment ($P = 0.98$). Females that recruited a fawn the previous year recruited 1.45 times as many fawns the subsequent year compared to females who did not recruit a fawn ($P = 0.038$). Within the population, 47% of females were consecutive breeders at some time in their life, and these females recruited 75% of fawns and 77% of twin and triplet litters. One doe recruited fawns for 7 consecutive seasons. Our results highlight the importance of older females in population growth and suggest that a small percentage of high-quality females are responsible for the majority of fawn recruitment. These findings have implications for herd management.

Contact:
tjs0085@auburn.edu

Notes:

*Student Presentation

THE IMPACTS OF MATERNAL BEHAVIOR AND NEONATE ACTIVITY ON NEONATE SURVIVAL IN WHITE-TAILED DEER

Authors: Mike Muthersbaugh[1], Alex Jensen[1], Elizabeth Saldo[1], David Jachowski[1], Jay Cantrell[2], Charles Ruth[2], John Kilgo[3]

[1]Clemson University
[2]South Carolina Department of Natural Resources
[3]U.S. Forest Service Southern Research Station

Abstract:
White-tailed deer populations in South Carolina have declined since the late 1990's, and most populations are likely impacted by low neonate survival, with some or much of the mortality attributable to coyote predation which has previously been documented. Maternal behavior can influence neonate survival in ungulate species, yet maternal behaviors in free-ranging white-tailed deer have rarely been studied due to observation challenges. Thus, the potential relationship between doe-neonate interactions and neonate survival remains speculative. Recent advances in GPS collar technology can help describe the potential relationship between behavior and neonate survival in white-tailed deer. Our ultimate research objective is to determine factors influencing neonate mortality and test how doe-neonate interactions, neonate behavior, and doe behavior influence neonate survivorship in the Piedmont region of South Carolina. We fitted 29, 27 and 23 does and their fawns (n = 37, 26, and 21) with GPS/VHF collars in 2019, 2020, and 2021, respectively. Using GPS collar data, we characterized doe, neonate, and paired doe-neonate behavior within the first 21 days of neonate life, assessing daily distance between a doe-neonate pair, number of doe-neonate visits per day, and neonate daily activity (movement). We characterized those patterns for fawns that survived and those that died, along with other commonly tested factors such as sex, birth weight, and birth date. We report the influence of these various factors on neonate survival. Results from our study will inform the understanding of factors impacting neonate survival, and ultimately could help establish methods to mitigate fawn mortality where desired.

Contact:
mmuther@clemson.edu

Notes:

*Student Presentation

POPULATION DYNAMICS OF A DECLINING WHITE-TAILED DEER POPULATION IN NORTH GEORGIA

Authors: Adam Edge[1], Jacalyn P. Rosenberger[2], Charlie H. Killmaster[3], Kristina L. Johannsen[3], David A. Osborn[1], Karl V. Miller[1], Gino J. D'Angelo[1]

[1]Daniel B. Warnell School of Forestry and Natural Resources, University of Georgia
[2]Virginia Department of Wildlife Resources
[3]Game Management Section, Wildlife Resources Division, Georgia Department of Natural Resources

Abstract:
Throughout the Chattahoochee National Forest (CNF) in the Southern Appalachian region of North Georgia, white-tailed deer populations have declined over the past few decades based on harvest data from 8 wildlife management areas (WMAs). As a result, Georgia Department of Natural Resources restricted all antlerless harvest on WMAs within CNF starting fall 2020. Our objectives were to monitor deer vital rates (e.g., survival and fecundity) to determine causes of decline and assess effectiveness of management strategies for recovering populations. During 2018–2020, we collared 45 adult females, 14 yearling females, and 70 neonates on Blue Ridge and Coopers Creek WMAs. We estimated 16% fawn survival with predation accounting for 81% of mortalities. Thus, decreased fawn recruitment is likely a cause of population decline. We used estimated vital rates to parameterize stage-structured population models comparing annual population growth rates (λ) of 5 scenarios projected 10 years into the future: 1) observed survival rates, 2) no antlerless harvest, 3) 5% antlerless harvest, 4) observed survival rates + moderate fawn survival (0.270), and 5) observed survival rates + high fawn survival (0.430). Results suggest recently enacted restrictions on antlerless harvest alone are insufficient to recover populations (λ = 0.965–0.982). Scenarios including antlerless harvest restrictions in addition to moderate–high fawn survival were the only scenarios resulting in positive population growth (λ = 1.017–1.084). Therefore, management strategies to improve fawn survival in coordination with antlerless harvest restrictions are necessary for deer population recovery and sustainability in the Southern Appalachian region.

Contact:
adam.edge@uga.edu

Notes:

*Student Presentation

SOME MOTHERS ARE JUST BETTER THAN OTHER: MATERNAL VARIATION IN FAWN-REARING SUCCESS

Authors: John Kilgo[1], James Garabedian[1], Charles Ruth[2]

[1]U.S. Forest Service Southern Research Station
[2]South Carolina Department of Natural Resources

Abstract:
The establishment of coyotes in eastern North America has presented white-tailed deer there with a predator not faced in millennia. Whether individual does learn from experience maternal behaviors that minimize the likelihood of losing their fawns in the future is unknown. We used data from a 7-year radio-telemetry study of does and their fawns on the Savannah River Site, South Carolina to examine how past success or failure at rearing at least one fawn affected future success. Nineteen individual does were monitored during multiple fawning seasons (n = 44 parturition events), with most (13) either being successful in multiple years or failing each year. We used logistic regression to estimate odds of future success or failure as a function of past success or failure and maternal age. Although maternal age had a slightly positive effect on future success regardless of past success or failure, odds of future success or failure depended more on initial success or failure. Does that failed during the first year of monitoring were 40% more likely to fail in the future, whereas those that were successful in the first year of monitoring were 22% more likely to be successful in the future. This finding suggests the existence in some individuals of innately successful behaviors, and that individuals without these behaviors may not learn them through experience. Where concerns exist over depressed recruitment, advising hunters to harvest antlerless deer only when a smaller deer is present for size comparison may remove successful mothers and favor unsuccessful females.

Contact:
john.kilgo@usda.gov

Notes:

RECURSIVE FORAGING BEHAVIOR OF COYOTES IN THE SOUTHEASTERN UNITED STATES

Authors: Jordan Youngmann[1], Joseph Hinton[2], Nicholas Bakner[1], Michael Chamberlain[1], Gino D'Angelo[1]

[1]Daniel B. Warnell School of Forestry and Natural Resources, University of Georgia
[2]Wolf Conservation Center

Abstract:
As a generalist carnivore, coyotes (*Canis latrans*) prey on white-tailed deer and various small mammals, birds, and vegetation. While resource selection by coyotes has been well documented at the home-range scale (3rd-order selection), little is known about their foraging behavior, which is an important factor in understanding influences of coyotes on prey and sympatric carnivores. We assessed 4th-order resource selection, the use of areas for food resources, of coyotes at sites across Alabama, Georgia, and South Carolina during 2015–2016. Using GPS collars, we tracked 41 resident coyotes across 4 calendar seasons and identified suspected foraging areas using recursive analysis where individuals repeatedly returned to locations. We found that resident coyotes selected for open landcover throughout the year, while avoiding primary and secondary roads. Additionally, resident coyotes avoided forest cover while selecting for forest edges except from April–June when they foraged within interior forest away from edges. Previous studies have documented substantive predation rates on white-tailed deer fawns by coyotes, and that fawn mortality may increase in forests away from forest edges. Our findings indicate that foraging coyotes may select forest cover during spring where fawns are more vulnerable to predation. Additionally, it has been debated how coyotes obtain consistent levels of deer in their diets outside of fawning and hunting seasons. Our study indicates that scavenging of road-kill carcasses by coyotes was an unlikely explanation for presence of deer in coyote diets throughout the year, as we did not observe coyotes using roads during foraging excursions.

Contact:
jordan.youngmann@uga.edu

Notes:

*Student Presentation

DISENTANGLING THE COMPETITIVE INTERACTIONS OF CATTLE AND WHITE-TAILED DEER

Authors: Bryan Spencer[1], Randy DeYoung[1], Aaron Foley[1], David Hewitt[1], J. Alfonso Ortega-S.[1], Landon Schofield[2], Tyler Campbell[2], Michael Cherry[1]

[1]Caesar Kleberg Wildlife Research Institute, Texas A&M University-Kingsville
[2]East Foundation

Abstract:
Evaluating competition among species is important to understanding food web dynamics, but it is difficult when niche partitioning has already occurred. We used white-tailed deer movement data associated with experimental cattle stocking to disentangle scrabble competition from interference competition among white-tailed deer and cattle. We assumed scramble competition would result from reduced forage quality, and interference competition would occur if antagonistic interactions alter deer behavior. We used home range area as a proxy for habitat quality, assuming deer maintain the smallest home range required for their dietary needs, and velocity and habitat selection as indicators of deer behavior. We predicted habitat quality would not be affected, and home range area would vary with cattle stocking rates. We predicted velocity would decrease with stocking rates, and deer would select areas of denser brush. We deployed GPS-collars on 19 female white-tailed deer across 10 pastures of the San Antonio Viejo Ranch in South Texas and experimentally stocked cattle at rates ranging from 0-40.66 AU/mi2 to previously destocked pastures. Using data collected 30 days before and after the stocking event, we estimated home ranges using dynamic Brownian bridge movement models, calculated velocities, and fit step-selection functions. Stocking rates did not influence home range size, however, deer decreased movement velocity ($\beta = -3.517$, $P = 0.006$) and increased selection for brush ($\beta = 0.048$, $P<0.001$) with increasing stocking rates. This indicates cattle may not immediately influence white-tailed deer forage quality but suggest interference competition between cattle and deer occurred rapidly.

Contact:
bryan.spencer@students.tamuk.edu

Notes:

*Student Presentation

DNA METABARCODING TO ASSESS PREDATOR DIETS DURING FAWNING SEASON IN SOUTH CAROLINA, USA

Authors: Jordan Youngmann[1], Stacey Lance[2], John Kilgo[3], Charles Ruth[4], Jay Cantrell[4], Gino D'Angelo[1]

[1]Daniel B. Warnell School of Forestry and Natural Resources, University of Georgia
[2]Savannah River Ecology Laboratory, University of Georgia
[3]U.S. Forest Service Southern Research Station
[4]South Carolina Department of Natural Resources

Abstract:
Coyotes (*Canis latrans*) colonized the eastern United States over the last century and formed a 3-species predator guild with bobcat (*Lynx rufus*) and gray fox (*Urocyon cinereoargenteus*) across much of the southeastern United States. Diets among the three species vary along with respective impacts on game species such as white-tailed deer and wild turkeys (*Meleagris gallopavo*). We assessed diets of these predators during spring, coinciding with white-tailed deer fawning and wild turkey nesting/brood rearing. We sampled across three sites along the Savannah River in South Carolina from mid-May through mid-June of 2020. We collected 125 scat samples along 184 miles (44.2 – 76.1 miles/site) of unpaved secondary roads and used DNA metabarcoding to determine diet items. We found coyote and bobcat scat at all sites and gray fox scat at two of the three sites. Overall, we found evidence that two species, coyote and bobcat, consumed deer while all three consumed turkeys. Frequency of deer in the diet varied across sites from 22 – 43% and 0 – 20% for coyotes and bobcat respectively. All three predators consumed wild turkeys at one site with a frequency of occurrence of 17% for bobcats, 12% for coyotes, and 8% for gray fox. Otherwise, turkeys did not appear in bobcat or gray fox scat and only appeared in coyote scat at 1 other site with a frequency of occurrence of 4%. Use of DNA metabarcoding may augment our understanding of dietary preferences within this predator guild and provide clarity on impacts on game species.

Contact:
jordan.youngmann@uga.edu

Notes:

*Student Presentation

CO-OCCURRENCE OF WHITE-TAILED DEER AND INVASIVE WILD PIGS

Authors: James Garabedian[1], Kyle Cox[2], Mark Vukovich[3], John Kilgo[1]

[1]U.S. Forest Service Southern Research Station
[2]USDA Forest Service-Savannah River
[3]USDA Forest Service-Shawnee National Forest

Abstract:
Understanding co-occurrence of invasive and native species that share resources is essential for mitigating negative impacts of invasive species on native ecosystems. We used data from unbaited camera surveys (117 cameras) and multispecies occupancy models to examine how presence and density of an invasive species, wild pigs (*Sus scrofa*; hereafter, pig), affects white-tailed deer (hereafter, deer) on the Savannah River Site, SC, USA between Mar 2018 and Aug 2019. Overall, our results demonstrate deer and pigs co-occur throughout the year on Savannah River Site, however, co-occurrence was affected by pig density. Deer occupancy and detection probability declined in response to increased pig density in May and Oct but increased with pig density during other months. Positive associations between pig density and deer occupancy likely reflects use of hardwood areas by both species for cover and thermoregulation. Deer occupancy declined sharply in response to increased pig density during Oct and May when deer physiological demands are high due to shifts in deer behavior during rut and parturition. Our study reinforces the importance of ongoing pig control efforts for mitigating negative impacts of pigs on deer. In particular, sharp declines in deer occupancy in response to increased pig density in May and Oct suggest pigs may exclude deer from broad areas during critical periods of deer reproduction if pig control efforts are reduced. Our study provides novel insight on the complex interactions between deer and invasive pigs, and how density of an invasive species can affect co-occurrence with native species.

Contact:
james.garabedian@usda.gov

Notes:

TRAINING AND EXPERIENCE INCREASE CLASSIFICATION ACCURACY IN WHITE-TAILED DEER CAMERA TRAPS

Author: Jace Elliott, Stephen Ditchkoff, Chad Newbolt, Kelly Dunning, William Gulsby

Auburn University

Abstract:
Use of camera trap data in wildlife research is reliant on accurate classification of animals at the species, sex-age category, or individual level. One such example is white-tailed deer camera surveys, which are often conducted to produce demographic estimates used by managers to establish harvest goals for a population. Previous research suggests that misclassification of deer by sex-age category (e.g., adult male, adult female, fawn) is common in these surveys, and represents a source of bias that could misinform important management decisions. We developed and tested the efficacy of species-specific training material designed to reduce sex-age misclassifications associated with white-tailed deer images. Exposure to training material resulted in the greatest improvement in classification accuracy of deer images compared to any other respondent-based factors we investigated. Other factors, such as professional experience as a wildlife biologist, field experience viewing white-tailed deer, and experience viewing deer images from camera traps, were positively associated with classification accuracy of deer images. Our findings suggest that use of training material can reduce misclassifications, leading to more accurate demographic estimates for white-tailed deer populations.

Contact:
jacerelliott@gmail.com

Notes:

*Student Presentation

ESTIMATING ABUNDANCE OF WHITE-TAILED DEER USING HARVEST DATA AND INTEGRATED POPULATION MODELS

Authors: Allison Keever[1], James Kelly[2], Bradley Cohen[1]

[1]Tennessee Technological Institute
[2]Tennessee Wildlife Resources Agency

Abstract:
Precise estimates of abundance that allow quick detection of population trends and facilitate effective responses to emerging issues are critical for managing white-tailed deer populations. Several statistical approaches use readily available age-at-harvest data to estimate abundance, but these often rely on auxiliary data which can be costly to collect and may not provide reliable estimates at the management unit scale. Integrated population models (IPMs) may provide accurate estimates of abundance with little to no auxiliary demographic data. We developed a Bayesian integrated population model (IPM) using available harvest data to estimate abundance in deer management units. We simulated virtual populations and harvest datasets to test the robustness of the IPM to the scale of inference (statewide vs. management units) and amount of age-at-harvest data. We illustrate our approach by fitting the IPM to reported harvest and field check data from 2005-2019 in Tennessee to estimate abundance of deer within deer management units and statewide. The IPM provided precise estimates of abundance for the state (CE = 12.3%) and individual deer management units (CE = 14.4%) based on readily available harvest data. This method can improve monitoring of harvested populations and provide precise estimates of abundance at relevant spatial scales to help inform management decisions. Additionally, our approach can be tailored to include available auxiliary data and further improve estimates of abundance and demographic rates.

Contact:
akeever@tntech.edu

Notes:

Table 1. Southeastern state deer harvest summaries for the 2020-2021 FY or most recent available season.

State	Land Area (sq. mi)	Deer Habitat		Percent Forested	% Land Area Public Hunting	Harvest		
		(sq. mile)	(% Total)			Male	Female	Total
AL	51,628	46,981	91	69	5	123,547	149,184	272,731
AR	52,068	38.607	74	56	12	117,457	99,378	216,835
DE	1,954	1,592	81	15	10	7,546	9,423	16,969
FL	53,632	27,573	51	48	17	43,643	21,933	65,707
GA	57,800	38,674	67	67	6	126,247	144,025	270,272
KY	40,406	39,092	97	59	9	77,031	64,602	141,633
LA	41,406	26,562	64	52	9.5	105,600	86,400	192,00
MD	9,837	8,766	89	39	6	29,242	49,033	78,275
MO	69,561	63,910	92	31	4	169,507	127,707	297,214
MS	47,296	31,250	66	66	6	124,702	131,969	256,671
NC	52,660	36,154	67	57	6	111,348	98,959	210,307
OK	69,919	37,425	54	19	3	72,874	53,416	126,290
SC	30,207	21,920	73	63	7.5	107,212	90,681	197,893
TN	42,246	25,770	61	49	9	95,246	65,008	160,277
TX	261,914	177,272	58	40	<2	449,993	402,515	852,448
VA	39,589	37,939	96	61	11	116,351	93,005	209,356
WV	24,064	22,972	95	79	11	65,341	41,497	106,861
Avg or Total	946,187	682,459	75.06	51.18	7.88	1,824,460	1,585,502	3,410,236

Table 1. Continued. Page 2

State	Harvest/sq. mi. Deer Habitat	Method of Data Collection[2]	Estimated Pre-season Population	Length of Season (Days)[3] Archery	Black Powder	Firearms	Method of Setting Seasons[4]	% Land Area Open to Dog Hunting
AL	5.8	A,B,C,E,F	1,250,000	133 (C)	5 (A)	97 (A,C)	A,B	67
AR	4.9	A,C, F, G	1,000,000	160 (C)	12 (C)	50 (C)	A,B	70
DE	10.7	B, F, G	46,000	155 (C)	17 (A,B)	43 (A,B)	A,B,C	0
FL	3.1	E, F		35-38	14	74-79	A,B	20
GA	7.2	A,C,D,E, F, G	1,000,000	128-145 (C)	92 (A,C)	85 (C)	A,B,C	23
KY	3.6	D,F,G	933,089	136 (C)	2(A), 9(B)	16 (C) + 4 Jr	A,B,C	0
LA		A,B,C	500,000	119-138 (C)	14(A,B)	64-79	A,B,C	80
MD	8.9	B,C,D,F,G	232,000	3(B) 114 (C)	3+9 (A), 16 (B)	13 (A), 2 (B),+ 2 Jr day	A,B,C	0
MO	4.7	B,C,D,F,G	1,500,000	112	11	11-20 + 5 Jr	A,B	0
MS	8.2	C, E	1,475,000	123 (C)	12 (A)	70	B,C	90
NC	5.8	A,B,C,D,F,G	1,100,000	21-116	14	20-77	A,B,C	50
OK	2.4	A,C, E, online	750,000	107 (C)	9	16	A,B	0
SC	9.3	A,B,C	730,000	16 (A)	10 (A)	70-140	C	60
TN	5.7	A, B, C, G, I		40 (C)	14 (C)	60 (C)	A,B	0
TX	4.8	B	5.4 million [5]	35	14	72-86 (B, C)	A,B	0
VA	5.5	A,B,C,D,F	1.27 million	42-77	14-36	15-50	A,B	55
WV	4.7	F	410,000	98 (C)	11 (C)	26 (C)	A,B,C	0
	5.6		17,146,089					30.29

Table 1. Continued, Page 3

State	No. of Hunters	5-Year Trend	Hunting License Fees (Full Season)		Tagging System		
			Resident	Non-Resident	Physical Tag? License Tag? None?	Mandatory? Volunteer? None?	Bonus Tags Available?
AL	228,015	Stable	$28.20	$143.65-$329.70	Hunter Log	Mandatory	DMAP
AR	248,333	Down	$10.50 – 25	$55 – 350	License Tag	Mandatory if not checked immediately upon harvest	DMAP & CWD Private Lands Program
DE	20,498	Stable	$22	$199.50	Physical Tag	Mandatory	2 Antlered, Unlimited Antlerless
FL	106,926	Stable	$22	$156.50	Electronic Reporting	Mandatory	Private Lands Programs
GA	209,124	Stable	$40	$325	License Tag	Mandatory	DMAP, WMAs
KY	350,000	Up	$62	$335	License Tag/ Hunter Log/Carcass Tag	Mandatory	Yes
LA	171,800	Down	$29	$300	Physical or Electronic Tag	Mandatory	DMAP
MD	56,000	Down	$36.50	$130	Physical Tag or Electronic Proof of Registration	Mandatory	Antlered only
MO	476,030	Down	$17	$265	License Tag	Mandatory	DMAP
MS	186,009	Up	$25-$45	$300-$375	None	None	DMAP & FMAP
NC	241,166	Down	$39	$200	License Tag	Mandatory	DMAP & CDMAP
OK	203,245	Stable	$25	$280	License Tag	Mandatory	DMAP
SC	150,163	Stable	$25	$235-375	Physical Tag	Mandatory	Yes & DMAP
TN	205,474	Stable	$68-166	$306	Electronic Proof of Registration	Mandatory	Select WMAs and Unit CWD
TX	770,717	Stable	$25	$315	License Tag	Mandatory	MLDP tags
VA	197,500	Down	$46-82	$197-259	License Tag	Mandatory	Unlimited on private lands, antlerless only
WV	200,876	Down	$35	$196	Physical Tag	Mandatory	Yes
Total	4,021,876						

Table 1. Continued. Page 4

State	Mandatory Orange	Crossbows Permitted	Deer Related Accidents						Highway Kill[7]
			Firearms		Stands		Other		
			Injuries	Fatalities	Inj.	Fat.	Inj.	Fat.	
AL	Yes	Yes	3	1	10	3	0	0	30,000 (C)
AR	Yes	Yes	1	2	9	1	2	0	22,000 (C)
DE	Yes	Yes	0	0	0	0	0	0	5,770 (C)
FL	WMAs only	Season & Handicap	2	0	2	0	0	0	33,801 (C)
GA	Yes	Yes	NA	NA	NA	NA	NA	NA	50,000 (C)
KY	Yes	Season & Handicap	NA	NA	NA	NA	NA	NA	NA (A)
LA	Yes	Yes	0	2	2	1	0	0	11,084 (C)
MD	Yes	Yes	2	0	8	0	1	1	30,715 (C)
MO	Yes	Yes	4	0	9	0	1	0	41,164 (C)
MS	Yes	Yes	12	2	10	2	0	0	24,784 (C)
NC	Yes	Yes	7	1	7	1	0	1	68,722 (C)
OK	Yes	Yes	3	0	3	0	0	0	12,605 (C)
SC	WMAs only	Yes	6	2	6	2	0	0	2,705 (A)
TN	Yes	Yes	5	0	1	1			9,113 (C)
TX	WMAs only	Yes	0	0	1	0	0	0	60,857 (C)
VA	Yes	Yes	10	0	12	1	NA	NA	62,500 (C)
WV	Yes	Yes	3	1	4	0	1	0	24,856 (C)
Total									490,676

Table 1. Continued, Page 5

	Limits [8]			Antler Restrictions [9]	% Hunting Success[10]			Avg. Leasing Fees/Acre
State	Season	Antlerless	Antlered		Archery	Muzzleloader	Firearms	
AL	3/None[8]	1 per day	3	A (one buck must have 4-points on 1 side), B (one county all bucks must have 3-points on 1 side), C (26 WMAs and SOAs)	~15	~20	~45	$6-18+
AR	6	3-6	2	A, B, C No antler restrictions within CWD Management Zone counties	?	?	?	$6-10
DE	None	4+	2	One buck must have a spread ≥15"	?	?	?	?
FL	5	Up to 2	Up to 5	A	----------	35.3% Combined	----------	$10-12
GA	12	10	2	A (One buck must be 4-points on 1 side or 15" outside spread) B (9 counties are more restricted)	12	2	54	$5-25
KY	None	Varies	1	None	----------	41% Combined	----------	$5-40
LA	6 statewide/3 in 2 of 10 deer areas	3, 1 either-sex	2, 1 either-sex	No	21	24	55	$5-40
MD	Varies	2 in Region A, 35 in Region B	2 with 1 bonus in Region B	3-pt restriction on two bucks	38	28	44	$5-35
MO	Varies	Varies	2; only 1 with firearm	B (52 counties)	24	-	41	?
MS	15/5	10/2	5/3	C	39	33	59	?
NC	6[8]	4[8]	2	NA	----------	48% Combined	----------	?

OK	6	Up to 6	2	No	30	31	39	$10-20
SC	8+	3+	5	A (on 2 of buck bag limit) C (16 WMAs)	31	29	66	$8–20
TN	None	Varies	2 statewide	C (on select WMAs)	?	?	?	$10.43
TX	5	Up to 5	Up to 3	Yes, 117 counties	----------	63% Combined	----------	$7-30
VA	6 (east) & 5 (west)	6	3 (east)& 2 (west)	On 1 WMA + 5 counties	~30	~37	~51	UNK
WV	11	Up to 8	Up to 3	5 WMAs & 2 State Forests	36	14	45	$3-10
Avg.					24.36	8.79	42.6	

Table 1. Continued. Page 6

	Private Lands Programs						
State	**Type[11]**	**Min. Acreage Requirements**	**Fee**	**No. of Cooperators**	**Trailing wounded deer with dogs legal?**	**Supplemental feeding legal?**	**Baiting legal?**
AL	A	None	None	140	Yes	Yes	Yes [12]
AR	A	500	None	690	Yes	Yes (except in CWD Zone where bait may only be used from Sept. 1-Dec. 31)	Yes, Private
DE	3 levels DDAP	None	None	129, 339, 9	No	Yes	Yes, Private
FL	A, C	640; 5000	None	885; 34	Yes	Yes	Yes, Private
GA	DMAP	250-1500	$200-1,000	~100	Yes	Yes	Yes
KY	B	None	None	500	Yes	Yes (except March – May)	Yes, Private (No, in CWD SZ)
LA	A	40/500/1,000	$100-$1500	675	Yes	Yes	Yes, Private
MD	None				Yes	Yes	Yes, Private Only.
MO	A, B	20 landowner tags; 500 DMAP (40 municipalities)	None	45 DMAP landowners	Yes	Yes (except CWD zone)	No
MS	A, D	Variable	None	417	Yes	Yes	Private land only
NC	A	Regional; 1,000/500	$50	58	Yes	Yes	Yes, Private
OK	A	1,000	$200-400	150	Yes	Yes	Yes, Private
SC	A	None	$50	1,438- 3.1 mil ac	Yes	Yes, Private	Yes, Private

TN	None				With officer approval	Yes (except in CWD positive or high-risk counties)	No
TX	A	None	None	7,256 properties under a wildlife management plan – 135 wildlife cooperatives (4,500 + members) 32.2 mil ac	Yes	Yes	Yes
VA	DCAP DMAP DPOP	None	None	670 679 13	Yes (weapon allowed)	No (Sept 1 – first Sat in Jan) statewide. Illegal year round in 33 of 95 counties.	No
WV	None				Yes	Yes[13]	Yes[13]

Table 1. Continued; footnotes. Page 7

1 Total harvest includes deer of unknown gender.

2 A−Check Station; B−Mail Survey; C−Jawbone Collection; D−Computer Models; E−Telephone Survey; F− Telecheck; G− Butchers/Processors, H – Harvest card submitted end of season, I – Voluntary Internet Reporting.

3 A−Early Season; B−Late Season; C−Full Season.

4 A−Harvest & Biological; B−Departmental/Commission Regulatory; C−Legislative.

5 Texas population estimates should not be compared to estimates prior to 2005 due to changed methodology.

6 Asterisk if estimate includes landowner exempted hunters.

7 A−Actual number based on reports; B−Estimated road kill; C-State Farm estimate

8 AL – 3 antlered bucks per season. No season limit on antlerless deer.

FL – A total of two deer may be harvested per day. Both may be antlerless deer during archery season and if taken with antlerless deer permits. Only one/day may be antlerless during fire-arms antlerless deer seasons.

MD – In Region B: 10 antlerless deer limit in firearms, 10 antlerless deer limit in muzzleloader, 15 antlerless deer limit in archery.

In Region A: 2 antlerless deer limit, no more than one per weapon season. Statewide Antlered Deer Limit: Two antlered deer, no more than one in a weapon season. One bonus antlered deer may be harvested in Region B during any weapon season.

MO – No daily or annual limit of antlerless deer but number that can be harvested in each county varies.

NC – Unlimited bonus antlerless tags are available during the Urban Archery Season in participating municipalities.

9 A−Statewide Antler Restrictions; B−County Antler Restrictions; C−Region or Area Antler Restrictions.

10 Averages do not include combined reports.

11 A−DMAP; B−Landowner tags; C−Antlered buck tags; D−Fee MAP.

12 Must possess Baiting Privilege License ($15.25 resident, $51.85 non-resident) to hunt deer with bait on private lands; hunting deer with bait illegal on public lands

13 Hunting deer with bait illegal on all public lands and on private and public lands in CWD disease management area.

Note: All states require hunter education, permit handguns for use on deer, and do not permit use of drugged arrows on deer.

Notes:

Table 2: Southeastern state summaries of chronic wasting disease (CWD) surveillance and management information for captive and wild cervids, Southeast Deer Study Group Annual Meeting, 2022.

State	Year of First Detection	Previous Year Cervid Testing Season				Total Cervid Testing (all years)				Number of Positive Counties	Sampling Methods	Surveillance and Management Practices
		Captive		Free Range		Captive		Free Range				
		# S	# P	# S	# P	# S	# P	# S	# P			
AL[1, C]	NA	262*	0	2,142	0	1,485*	0	11,243	0	0	A, B, D	A, B, D, E, F, H, I
AR[1, C]	2016	9	0	7,889	275	464	0	40,317	1,119	14	A, B, C, D	A, B, C, D, E, F, G, H, I
DE[1, A]	NA	0	0	526	0	0	0	9,340	0	0	A, B	A (Draft), B, E, F
FL[1, B]	NA	7	0	1,190	0	97	0	16,434	0	0	A, B	A, B, E, F, I
GA[1, A]	NA	0	0	1,364	0	0	0	10,000	0	0	A, B, D	A, B, C, D, E, F, G, I
KY[2, B]	NA	520	0	2,907	0	1,970	0	35,290	0	0	A, B, D	A, B, C, D, E, F, G, I
LA[1, A]	N/A	UNK	0	826	0	Unk.	0	11,942	0	0	A, B, D	A, B, E, F, H, I
MD[1, C]	2010	0	0	0	0	0	0	10,882	80	2	A, B, D	A, C, D, E, F, I
MS[1, B]	2018	1,254	0	6,033	28	2,526	0	33,925	83	8	A, B, C	A, B, C, D, E, F, G, H, I
MO[1, C]	2010			15,341	44			180,520	206	18	A, B, C, D	A, B, C, D, E, F, G, I
NC[1, A]	N/A	111	0	1,120	0	>2,000	0	15,173	0	0	A, B, D	A, B, D, E, F, I
OK[1, A]	1998	UNK	0	97	0	UNK	3	>12,000	0	2	B, C	A, B, E, I
SC[1, D]	N/A	0	0	10	0	0	0	4,785	0	0	A, B	B, E, F, H, I
TN[1, A]	2018	65	0	14,360	491	286	0	33,773	677	7	A, B, D	A, B, C, F, G, I
TX[3, C]	2012	19,126	49	12,925	7	117,315	193	105,755	68	14	A, B, D	A, B, C, D, E, F, I
VA[1, A]	2009	21	0	5,774	21	618	0	26,962	109	10	A, B	A, B, C, D, E, F, G, H, I
WV[1, A]	2005	A	A	662	31	A	A	>21,000	463	5	A, B, C, D	A, B, C, F, G, I
TOTAL		21,337	49	74,370	897	126,650	196	577,915	2,805	80		

Note: Captive refers to pen facilities or release sites (high-fenced pastures/enclosures). Those states that have not tested captive sites may not have the authority to do so.

LEGEND

S-Number Samples

P-Number Positive

UNK-Unknown

* For Herd Certification Program herds only.

Sampling Period

[1] July 1 – June 30

[2] March 1 – February 28

[3] September 1 – August 31

Sampling Methods Key

A. Hunter Harvested (taxidermist, meat processor, veterinarian, drop-off freezer/container, and/or CWD sampling station)
B. Select Sampling (roadkill, sick deer, and/ or found dead)
C. Targeted Sharpshooting
D. Risk Based

Surveillance and Management Practices Key

A. CWD Surveillance and/or Management Plan
B. Statewide and/or targeted CWD sampling
C. Establish CWD Management Zones
D. Require captive cervid testing
E. Live cervid importation restriction
F. Dead cervid transportation restriction
G. Baiting restriction
H. Lures or other body fluid use restriction
I. Outreach / Education campaigns regarding CWD
J. Targeted removals

Captive Cervid Authority

[A] State Fish and Wildlife Agency does not have captive cervid authority

[B] State Fish and Wildlife Agency has shared captive cervid authority

[C] State Fish and Wildlife Agency has full captive cervid authority

[D] No captive cervid industry

Notes:

THANK YOU TO OUR CONFERENCE CONTRIBUTORS AND DONORS

About the National Deer Association

On July 7, 2020, the Quality Deer Management Association and the National Deer Alliance announced they were embarking on a merger to combine the strengths, resources and core initiatives of their non-profit organizations to better serve deer and hunters more effectively at a time when the need is greatest. Leadership and staff proceeded with strategic planning to unify the two under one organizational structure, and a new Board of Directors was elected that comprises members from both organizations. The National Deer Association (NDA), re-forged on November 10, 2020, is united for deer with a mission of ensuring the future of wild deer, wildlife habitat and hunting. A new, ambitious strategic plan calls for a concentration of effort in four critical areas.

Education and Outreach
The National Deer Association will carry forward the reputation for reliable information for hunters, empowering them to be more informed, successful and engaged stewards of deer and wildlife. Teaching the non-hunting public about the keystone position of deer in the success of all wildlife conservation will be a new goal. Familiar programs, titles and multi-media channels will be strengthened and broadened through key partnerships in the hunting industry.

Recruitment, Retention, Reactivation
The highly successful and tested Field to Fork adult hunter recruitment program will be the cornerstone of the National Deer Association's R3 effort aimed at growing hunter numbers, instilling a desire among experienced hunters to serve as mentors, and increasing acceptance of hunting among the general public.

Policy and Advocacy
Protecting deer and hunting requires skill in the rooms where wildlife policy and legislation are formed. Though both parent organizations spent considerable time in this arena, NDA CEO Nick Pinizzotto in particular brings experience on Capitol Hill to the team. Uniting hunters behind wise deer policy is a primary goal.

Deer Diseases
A number of diseases, most notably the always-fatal chronic wasting disease (CWD), present serious threats to the future of all deer species and deer hunting traditions. The National Deer Association will build a coalition of hunters, wildlife agencies and scientific experts to answer these threats.

The National Deer Association has the resources and vision to ensure the future of wild deer, wildlife habitat and hunting for the next generation. Your membership and support enables our work. Our 4-star rating from Charity Navigator is proof we will spend your dollars wisely to achieve our mission. Become a member today at DeerAssociation.com.

SOUTHEAST DEER STUDY GROUP

45th
ANNUAL MEETING

FEBRUARY 21-23
2022

NATIONAL DEER ASSOCIATION