



**Bridging the latitudes:  
White-tailed Deer Disease  
Research & Management**

February 16 - 18, 2025

Hyatt Regency Chesapeake | Cambridge, MD

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# **Bridging the latitudes: White-tailed Deer Disease Research & Management**

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# Welcome / Acknowledgments

The Delaware Division of Fish and Wildlife and the Maryland Department of Natural Resources would like to welcome you to the **48th Annual Southeast Deer Study Group Meeting** here in beautiful Cambridge, Maryland! We are also delighted to extend a warm welcome to our colleagues from the Northeast region of wildlife biologists, whose presence enriches our discussions and broadens our perspectives. This gathering brings together white-tailed deer professionals, researchers, stakeholders, and enthusiasts dedicated to advancing the study and management of white-tailed deer across the Southeast and beyond.

We would also like to take a moment to recognize and thank our colleagues from West Virginia for hosting last year's meeting. Their exceptional hospitality and insightful program provided a strong foundation for the continued success of this annual gathering. The knowledge shared and connections fostered during last year's event have helped pave the way for the discussions and collaborations we will engage in over the next few days.

This year's meeting would not have been possible without the tremendous efforts of the Maryland Department of Natural Resources staff, the Delaware Division of Fish and Wildlife, and Delaney Event Management. Their dedication, planning, and hard work have ensured this event will be productive and enjoyable. From organizing the agenda to coordinating the logistics, their contributions have been invaluable, and we extend our heartfelt gratitude for their commitment to making this meeting a success.

As we embark on this year's meeting, we encourage you to take full advantage of the opportunities to exchange ideas, share your research, and explore new strategies for the conservation and management of our deer populations. We hope the sessions and informal conversations inspire innovative solutions and foster partnerships to benefit deer management and conservation efforts throughout the Southeast.

Thank you for joining us. We look forward to a productive and memorable meeting. Enjoy your time in Cambridge, MD!

Sincerely,

**Sam Millman**

DNREC, Div. Fish & Wildlife

**Jonathan Trudeau**

Maryland Department of Natural Resources

# Agenda

Time		Location
<b>SUNDAY, FEBRUARY 16</b>		
12:00 pm - 6:00 pm	Conference Registration Desk Opens	Prefunction
12:00 pm - 6:00 pm	Exhibitor Set-up	Chesapeake EFG
12:00 pm - 6:00 pm	Poster Set-up	Chesapeake EFG
2:00 pm - 3:00 pm	Southeast Deer Partnership Steering Committee Meeting (Invite Only)	Choptank
3:00 pm - 5:00 pm	Southeast Deer Study Groupe Steering Committee Meeting (Invite Only)	Choptank
5:00 pm - 6:30 pm	Dinner on Your Own	
6:00 pm - 9:00 pm	Welcome Reception	Chesapeake ABCD
<b>MONDAY, FEBRUARY 17</b>		
7:00 am - 8:00 am	Continental Breakfast	Chesapeake EFG
7:00 am - 10:30 am	Conference Registration Desk Open	Prefunction
8:00 am - 8:30 am	Welcome and Introduction	Chesapeake ABCD
8:30 am - 10:00 am	Plenary Session	Chesapeake ABCD
10:00 am - 10:20 am	Break	
10:20 am - 11:20 am	Technical Session 1	Chesapeake ABCD
11:20 am - 1:20 pm	Lunch on Your Own	
1:20 pm - 2:40 pm	Technical Session 2	Chesapeake ABCD
2:40 pm - 3:00 pm	Break	
3:00 pm - 5:00 pm	Technical Session 3	Chesapeake ABCD
5:00 pm - 6:30 pm	Dinner on Your Own	
6:30 pm - 7:30 pm	Poster and Sponsor Social	Chesapeake EFG
7:30 pm - 9:00 pm	Shoot from the Hip: CWD Management Philosophies: Are We on the Same Page? <i>Sponsored by: Vale, Inc.</i>	Chesapeake ABCD
<b>TUESDAY, FEBRUARY 18</b>		
7:00 am - 8:00 am	Continental Breakfast	Chesapeake EFG
8:00 am - 9:40 am	Technical Session 4	Chesapeake ABCD
9:40 am - 10:00 am	Break	
10:00 am - 11:20 am	Technical Session 5	Chesapeake ABCD
11:20 am - 1:20 pm	Lunch on Your Own	
1:20 pm - 3:00 pm	Technical Session 6	Chesapeake ABCD
3:00 pm - 3:20 pm	Break	
3:20 pm - 5:00 pm	Technical Session 7	Chesapeake ABCD
5:00 pm - 6:00 pm	SEDSG Technical Committee Business Meeting (Invite Only)	Chesapeake ABCD
6:00 pm - 6:30 pm	Pre-Awards Dinner Social	Chesapeake EFG
6:30 pm - 8:30 pm	SEDSG Awards Dinner	Chesapeake ABCD
<b>WEDNESDAY, FEBRUARY 19</b>		
8:00 am - 12:00 pm	SEDSG & NEDTC Meeting (Invite Only)	Chesapeake EFG



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](http://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 committee 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.

### **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](http://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
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 Importance of Deer and Deer Hunters to the American Public
2023	Baton Rouge, LA	Managing Deer When Normal Isn't Normal Anymore
2024	Shepherdstown, WV	In Our Pursuit of Management, Let's Not Forget Our Foundation
2025	Cambridge, MD	Bridging the Latitudes: White-tailed Deer Disease Research & Management
2026	Roanoke, VA	TBD

# Committee Members

## SOUTHEAST DEER STUDY GROUP, THE WILDLIFE SOCIETY, SOUTHEAST SECTION

STATE	NAME	AFFILIATION
Alabama	Vacant	Alabama Division of Wildlife & Freshwater Fisheries
	Kevin McKinstry	The Westervelt Company
Arkansas	Ralph Meeker	Arkansas Game and Fish Commission
	Jeremy Brown	Alabama Div. of Wildlife & Freshwater Fisheries
Delaware	Sam Millman	Delaware Division of Fish & Wildlife
Florida	Cory Morea	Florida Fish & Wildlife Conservation Commission
	Becky Peters	Florida Fish & Wildlife Conservation Commission
	Steve Shea (Chairman)	Shea Wildlife & Environmental Services, Inc.
Georgia	Charlie Killmaster	Georgia Department of Natural Resources
	Gino D'Angelo	Warnell School of Forestry and Natural Resources
Kentucky	Joe McDermott	Kentucky Department of Fish & Wildlife Resources
Louisiana	Johnathan Bordelon	Louisiana Department of Wildlife and Fisheries
	Robert Kennon	Louisiana Department of Wildlife and Fisheries
Maryland	Jonathan Trudeau	Maryland Department of Natural Resources
	Vacant	Maryland Department of Natural Resources
Mississippi	William McKinley	Mississippi Wildlife, Fisheries, & Parks
	Stan Priest	Mississippi Wildlife, Fisheries, & Parks
	Vacant	Mississippi State University
Missouri	Jason Isabelle	Missouri Department of Conservation
	Kevyn Wiskirchen	Missouri Department of Conservation
North Carolina	April Pope	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	Adam Edge	Tennessee Wildlife Resource Agency
	Craig Harper	University of Tennessee
Texas	Blaise Korzekwa	Texas Parks & Wildlife Department
	Bob Zaiglin	Southwest Junior College
Virginia	Justin Folks	Virginia Department of Wildlife Resources
	Katie Martin	Virginia Department of Wildlife Resources
West Virginia	Brett Skelly	West Virginia Division of Natural Resources
National Deer Association	Kip Adams	
U.S. Fish & Wildlife Services	Larry Williams	
At Large Member	James Kelly	

# Southeast Deer Study Group Awards

## CAREER ACHIEVEMENT AWARD

1996	Richard F. Harlow	2006	William E. "Bill" Armstrong	2016	J. Scott Osborne
1997	Larry Marchington	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	2024	Craig Harper
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 University
2011	Melissa Miller	University of Delaware
2012	Brandi Crider	Texas A&M University
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 Texas
2018	Onalise R. Hill	Texas A&M University - Kingsville
2019	Zachary Wesner	University of Georgia
2020	Lindsey M. Phillips	University of Tennessee
2021	Michael Muthersbaugh	Clemson University
2022	Lindsey Phillips	University of Tennessee
2023	Breanna R. Green	Texas A&M University - Kingsville
2024	Luke Resop	Mississippi State University

## OUTSTANDING STUDENT ORAL PRESENTATION AWARD

1996	Billy C. Lambert, Jr.	Texas Tech University	2011	Kamen Campbell	Mississippi State University
1997	Jennifer A. Schwartz	University of Georgia	2012	Brad Cohen	University of Georgia
1998	Karen Dasher	University of Georgia	2013	Michael Cherry	University of Georgia
1999	Roel R. Lopez	Texas A&M University	2014	Brad Cohen	University of Georgia
2000	Karen Dasher	University of Georgia	2015	Eric Michel	Mississippi State University
2001	Roel R. Lopez	Texas A&M University	2016	Rebecca Shuman	University of Georgia
2002	Randy DeYoung	Mississippi State University	2017	Jared Beaver	Texas A&M University
2003	Bronson Strickland	Mississippi State University	2018	Dan Morina	Mississippi State University
2004	Randy DeYoung	Mississippi State University	2019	C. Moriah Boggess	Mississippi State University
2005	Eric Long	Penn State University	2020	Jordan R. Dyal	University of Georgia
2006	Gino D'Angelo	University of Georgia	2021	Seth T. Rankins	Texas A&M University
2007	Sharon A. Valitzski	University of Georgia	2022	Blaise Newman	University of Georgia
2008	Cory L. Van Gilder	University of Georgia	2023	Luke Resop	Mississippi State University
2009	Michelle Rosen	University of Tennessee	2024	Luke Resop	Mississippi State University
2010	Jeremy Flinn	Mississippi State University			

# Oral Presentation Schedule

Time		Speaker
<b>MONDAY, FEBRUARY 17</b>		
8:00 am - 10:00 am	<b>WELCOME &amp; PLENARY SESSION</b> <i>Moderator: Brian Eyler - MD DNR</i>	
8:00 am - 8:10 am	Welcome	Jonathan Trudeau
8:10 am - 8:15 am	SEDSG Chair Address	Dr. Gino D'Angelo
8:15 am - 8:30 am	Welcome to DE and MD	Pat Emory & Brian Eyler
8:30 am - 9:00 am	Plenary 1: Deer Health and Disease: Tales from the Southeast	Dr. Mark Ruder
9:00 am - 9:30 am	Plenary 2: Tackling New Health Challenges Deer Managers Face in the Northeast	Dr. Krysten Schuler
9:30 am - 10:00 am	Panel Discussion with Plenary Speakers	
10:30 am - 11:20 am	<b>TECHNICAL SESSION 1: URBANIZATION</b> <i>Moderator: Chris Markin - MD DNR</i>	
10:20 am - 10:40 am	Navigating Urbanisation: Effects on Anthropogenic Features on White-tailed Deer Movement	*Mikiah Carver-McGinn
10:40 am - 11:00 am	The biomechanical processes of deer jumping: a quantitative approach to deer crossing vertical barriers	*George Goto
11:00 am - 11:20 am	Deer, Disease, and Urban Landscaping: SARS-CoV-2 Surveillance and Findings	Carson Coriell
1:20 pm - 2:40 pm	<b>TECHNICAL SESSION 2: ABUNDANCE AND DEMOGRAPHICS</b> <i>Moderator: Josh Tabora - MD DNR</i>	
1:20 pm - 1:40 pm	Harvest susceptibility of white-tailed deer across an urbanization gradient	*Jared Lamb
1:40 pm - 2:00 pm	Fecal DNA reveals declining deer density as urbanization increases	Ashley Lynn
2:00 pm - 2:20 pm	Understanding drivers of recruitment of white-tailed deer in South Texas	*Kevin Lovasik
2:20 pm - 2:40 pm	Thermal Drones for White-tailed Deer Management	*Kevin Gerena
3:00 pm - 5:00 pm	<b>TECHNICAL SESSION 3: CHRONIC WASTING DISEASE</b> <i>Moderator: Kevin Lamp - MD DNR</i>	
3:00 pm - 3:20 pm	National Trends in Chronic Wasting Disease (CWD) Budgets, Surveillance, Results Wait Time, and Replacement Tags	Ben Westfall
3:20 pm - 3:40 pm	Creating a Common Language for Chronic Wasting Disease	Sonja Christensen
3:40 pm - 4:00 pm	White-tailed Deer Scavenging Community in a CWD-Endemic Region and Considerations for Prion Movement	*Marcelo Jorge
4:00 pm - 4:20 pm	Novel Approaches to CWD Surveillance and Management: The Intersection of RT-QuIC Diagnostics and Epidemiological Modeling	Peter Larsen
4:20 pm - 4:40 pm	Optimizing Chronic Wasting Disease Surveillance: An agent-based modeling approach for captive deer facilities	*Lauren Wakefield
4:40 pm - 5:00 pm	Population Dynamics of White-Tailed Deer in a Chronic Wasting Disease Endemic Area in Arkansas	*Heather Gaya

# Oral Presentation Schedule

Time		Speaker
<b>TUESDAY, FEBRUARY 18</b>		
<b>TECHNICAL SESSION 4: STATE REPORTS</b> <i>Moderator: Jonathan Trudeau - MD DNR</i>		
8:00 am - 9:40 am		
8:00 am - 8:20 am	DMAP Revitalization in Arkansas: Helping Put the Hunt Back in Hunters!	Jeremy Brown
8:20 am - 8:40 am	The Deer Management Assistance Program (DMAP) in Mississippi Works	Pierce Young
8:40 am - 9:00 am	From Both Sides of the Fence: Kentucky's CWD Response Plan Implementation	Joseph McDermott
9:00 am - 9:20 am	Huntable Lands: What Drives Landowner Decisions on Hunting Access	April Boggs Pope
9:20 am - 9:40 am	Identifying the Motivations and Barriers of Landowners to Participating in Targeted Removal to Manage Chronic Wasting Disease (CWD) in MO	Jason Isabelle
<b>TECHNICAL SESSION 5: DEER AND HABITAT MANAGEMENT</b> <i>Moderator: Dr. Jake Bowman - University of Delaware</i>		
10:00 am - 11:20 am		
10:00 am - 10:20 am	Is Deer Hunting Over Bait Fair Chase? A Commentary.	Matt Knox
10:20 am - 10:40 am	Banning Baiting and Supplemental Feed by an Industrial Timberland Owner to Reduce Chronic Wasting Disease Risk Factors	Jeremy Meares
10:40 am - 11:00 am	Can Hinge-Cutting Create the Dream Bedding Area for Deer?	*Thomas Roverly
11:00 am - 11:20 am	Landowners' Willingness to Accept Targeted Removals and Financial Incentives: Implications for Chronic Wasting Disease Spread	*Rachel Correia
<b>TECHNICAL SESSION 6: HEALTH AND BEHAVIOR</b> <i>Moderator: Carson Coriell - MD DNR</i>		
1:20 pm - 3:00 pm		
1:20 pm - 1:40 pm	White-tailed deer are unlikely a reservoir for SARS-CoV-2 in west Tennessee, despite multiple exposure events	Mark Wilber
1:40 pm - 2:00 pm	Current Biosecurity Practices in the Handling and Sampling of Cervids: A Cross-Sectional Study	Tiffany Wolf
2:00 pm - 2:20 pm	T. gondii prevalence and impact on survival in white-tailed deer in southern Texas	*Kendall Bancroft
2:20 pm - 2:40 pm	The photoluminescence of white-tailed deer signposts	*Daniel DeRose-Broeckert
2:40 pm - 3:00 pm	May the force (of infection) be with you: Model-based assessments of Chronic Wasting Disease management strategies	Aniruddha Belsare
<b>TECHNICAL SESSION 7: MODELING, STRESSORS, AND HUMAN DIMENSIONS</b> <i>Moderator: Sam Millman - DNREC</i>		
3:20 pm - 5:00 pm		
3:20 pm - 3:40 pm	Automation of Distance Measurement and Enhanced Detection, Classification, Recognition, and Identification (DCRI) for Wildlife Monitoring Using Depth	Joseph Porter
3:40 pm - 4:00 pm	Stress Indicators with Deer Capture in a High Prevalence CWD Area	Lisa Muller
4:00 pm - 4:20 pm	Influence of climate, landscape, and forage availability on deer morphology across the eastern US	Mark Turner
4:20 pm - 4:40 pm	Doe Better: Addressing the National Decline in Antlerless Harvest	Matthew Ross
4:40 pm - 5:00 pm	Increasing Awareness of the Benefits of Deer Hunters and Hunting in the Southeast	Kip Adams

# PAPER ABSTRACTS

\*DENOTES STUDENT PRESENTATION

## PLENARY 1: DEER HEALTH AND DISEASE: TALES FROM THE SOUTHEAST

Dr. Mark Ruder, University of Georgia - Southeastern Cooperative Wildlife Disease Study

### ABSTRACT:

Regional efforts to understand the causes of disease in white-tailed deer and the impact of those diseases on populations have a long history in the Southeast. The deer health/disease challenges faced by state wildlife management agencies over the last 50+ years have varied. Once upon a time, a primary challenge was the lack of a basic understanding of deer health and disease in recovering populations. Today, managers often face challenging aspects of deer diseases that go beyond biology and are instead rooted in a variety of social, political, and economic factors. Appropriately interpreting and communicating complex disease topics is of increasing importance. Further, strong partnerships and interdisciplinary collaborations are critical as deer managers navigate the abundance of differing perspectives, opinions, and motivations related to deer health and disease.

### CONTACT:

mgruder@uga.edu

### NOTES:

## **PLENARY 2: TACKLING NEW HEALTH CHALLENGES DEER MANAGERS FACE IN THE NORTHEAST**

Dr. Krysten Schuler, Cornell University - Cornell Wildlife Health Lab

### **ABSTRACT:**

Historically, deer managers had a full plate with responsibilities related to hunting, seasons, and stakeholders. In recent decades, looming disease issues have stretched responsibilities further. How can “we” tackle these challenges together? Solutions may include minimizing risks, data coordination, decision-support tools, and communication strategies, but require a forward-looking perspective on time investment and agency administration priorities.

### **CONTACT:**

ks833@cornell.edu

### **NOTES:**

# NAVIGATING URBANIZATION: EFFECTS OF ANTHROPOGENIC FEATURES ON WHITE-TAILED DEER MOVEMENT

\*Mikiah Carver-McGinn<sup>1</sup>, Christopher Moorman<sup>2</sup>, John Kilgo<sup>3</sup>, Elizabeth Kierepka<sup>4</sup>, Jared Lamb<sup>1</sup>, April Boggs Pope<sup>5</sup>, Heather Evans<sup>5</sup>, Jonathan Shaw<sup>5</sup>, Nathan Hostetter<sup>6</sup>

1: North Carolina Cooperative Fish and Wildlife Research Unit, Department of Applied Ecology, NC State

2: Fisheries, Wildlife, and Conservation Biology Program, NC State

3: USDA Forest Service Southern Research Station Nils Peterson, Fisheries, Wildlife, and Conservation Biology Program, NC State

4: NC Museum of Natural Sciences, Department of Forestry and Environmental Resources, NC State

5: North Carolina Wildlife Resources Commission

6: USGS, North Carolina Cooperative Fish and Wildlife Research Unit, Applied Ecology, NC State

## ABSTRACT:

Animal movement is shaped by the environment and the necessity to engage in essential activities. Animals must use urban and rural environments in different ways to meet food, cover, and reproduction needs. Urban deer present management challenges, and understanding deer movement with respect to developing landscapes is critical to inform effective deer management decisions that promote sustainable city planning. We analyzed the impact of urbanization on white-tailed deer (*Odocoileus virginianus*) movement by studying 107 female deer that were captured and GPS-collared along an urbanization gradient in Durham and Orange Counties, North Carolina, from 2022 to 2024. We analyzed GPS collar data recorded at 2-hour intervals during the parturition season to assess the effects of land cover, proximity to anthropogenic features (e.g., roads), and time of day on white-tailed deer movement. We used hidden Markov movement models to classify deer into latent behavioral states and applied step selection functions to evaluate how deer navigate the landscape. This approach enabled us to quantify the proportion of time deer spent in each state across the urbanization gradient and understand how anthropogenic features affect deer movement. We determined that urbanization influenced deer movement and landscape use, with differing habitat selection across the gradient. Understanding the multifaceted effects of urbanization on deer movement, habitat selection, and behavior is important to inform management actions and predict responses of deer in urbanizing landscapes.

## CONTACT:

mcarver@ncsu.edu

## NOTES:

# THE BIOMECHANICAL PROCESSES OF DEER JUMPING: A QUANTITATIVE APPROACH TO DEER CROSSING VERTICAL BARRIERS

\*George Goto<sup>1</sup>, Bynum Boley<sup>2</sup>, Kylee Duberstein<sup>3</sup>, Gino D'Angelo<sup>4</sup>

1: UGA Deer Research Lab

2: Warnell School of Forestry and Natural Resources – University of Georgia

3: College of Agricultural & Environmental Sciences – University of Georgia

4: University of Georgia

## ABSTRACT:

As urban sprawl increases, white-tailed deer have become more abundant across urban landscapes leading to increased deer encounters with residential fences. Deer-fence interactions can create dangerous situations for deer, first responders, and the public if a deer fails to jump over the fence effectively and becomes entangled in or on the fence. In order to reduce deer-fence conflicts, it is necessary to first understand the biomechanical processes deer use to cross vertical barriers. We conducted deer jumping trials in which captive deer crossed over vertical barriers (i.e., welded-wire fence panels) of varying heights while being recorded by high-speed cameras. We compared biomechanical measurements between successful and unsuccessful crossing attempts including joint angles, flight arc, and deer velocity through four phases of the jump: approach, take-off, suspension, and landing. We quantified biomechanical measurements among age, sex, and weight of deer relative to barrier heights. Our first sampling group consisted of 5 adult male deer (110 – 190 lb) and 30 total crossing attempts. Among all 30 attempts, 7 were successful, 9 were failures, and 14 did not attempt to cross. Across all biomechanical measures, it appears that the angle of the deer's back at take-off, which affects the deer's trajectory, most influences crossing success. We are conducting similar trials with 22 adult female deer. Altering the height and visual attributes of fencing (e.g., spacing and thickness of rails) will enable us to improve deer jumping success or entirely discourage deer from jumping barriers in order to reduce deer-fence conflicts.

## CONTACT:

george.goto@uga.edu

## NOTES:

# DEER, DISEASE, AND URBAN LANDSCAPES: SARS-COV-2 SURVEILLANCE AND FINDINGS

Carson Coriell<sup>1</sup>, Jennifer Mullinax<sup>1</sup>, Travis Gallo<sup>1</sup>

<sup>1</sup>: University of Maryland

## ABSTRACT:

White-tailed deer (*Odocoileus virginianus*) are key hosts for zoonotic diseases due to their susceptibility to pathogens such as SARS-CoV-2 (SCV2), Lyme Disease (*Borrelia burgdorferi*), and highly pathogenic avian influenza. Urban environments, with their high densities of both deer and humans, amplify the potential for disease spillover. In collaboration with USDA-WS, NPS, Washington D.C. Department of Energy and Environment, Fairfax County Park Authority (VA), and Montgomery Parks (MD), the University of Maryland's URBANxNATURE and Applied Spatial Wildlife Ecology Lab are investigating human-deer disease transmission in urban settings. Deer are being captured using drop nets and anesthetized with BAM, 2024-2026. Nasal and oral swabs, blood samples, and ticks are being collected for testing. Out of 140 deer sampled in the winter of 2023-2024, 27 individuals tested positive for SCV2. Positive samples included ten nasal and six oral PCR positives from sharpshooting events, and eight sVNT seropositive results (five wildtype, three Omicron) from live trapping. Additionally, we confirmed the first longhorned ticks (*Haemaphysalis longicornis*) in Washington, D.C. These findings will inform an agent-based modeling framework to predict human-deer interaction hotspots, the context of such encounters, and the associated risk of airborne zoonotic disease transmission, contributing to urban wildlife management and public health strategies.

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## NOTES:

# HARVEST SUSCEPTIBILITY OF WHITE-TAILED DEER ACROSS AN URBANIZATION GRADIENT

\*Jared Lamb<sup>1</sup>, Christopher Moorman<sup>2</sup>, Hannah Desroschers<sup>2</sup>, Mikiah Carver-McGinn<sup>1</sup>, Elizabeth Kierepka<sup>3</sup>, John Kilgo<sup>4</sup>, Nils Peterson<sup>2</sup>, April Boggs Pope<sup>5</sup>, Nathan Hostetter<sup>6</sup>

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2: Fisheries, Wildlife, and Conservation Biology Program, NC State

3: NC Museum of Natural Sciences, Department of Forestry and Environmental Resources, NC State

4: USDA Forest Service Southern Research Station

5: North Carolina Wildlife Resources Commission

6: USGS, North Carolina Cooperative Fish and Wildlife Research Unit, Applied Ecology, NC State

## ABSTRACT:

Urbanization presents a challenge for managing white-tailed deer (*Odocoileus virginianus*) due to the constraints it imposes on traditional methods of deer population management. Specifically, hunting effectiveness can be diminished due to decreasing parcel size, loss of huntable land, shifting landowner values, and restrictive local policies. Given the potential negative outcomes of unmanaged deer populations as landscapes urbanize, our objective was to describe how deer harvest susceptibility varied along an urban to rural gradient. Specifically, we: 1) quantified harvest probabilities for deer, 2) evaluated how these probabilities varied along an urbanization gradient based on percent impervious surface, percent huntable lands, sex, and age of deer, and 3) identified how harvest susceptibility varied throughout the hunting season. From 2022-2024, we tracked 72 male and 95 female white-tailed deer in Durham County, North Carolina, along an urban-rural gradient. Using GPS data, we quantified percent impervious surface and huntable lands within each individual's calculated home range. Results indicate that males were harvested more frequently than females across the gradient, with adults ( $\geq 2.5$  years) being more susceptible than yearlings (1.5 years). The majority of harvest occurred after the peak conception date in the study area. Additionally, harvest probability declined as urbanness increased, regardless of sex or age. These results provide insight for wildlife managers in determining when and where harvest occurs along an urban-rural gradient, and whether to adjust strategies to meet management goals in increasingly urbanized landscapes.

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## NOTES:

# FECAL DNA REVEALS DECLINING DEER DENSITY AS URBANIZATION INCREASES

Nathan Hostetter<sup>1</sup>, Ashley Lynn<sup>2</sup>, Heather Evans<sup>3</sup>, Christopher Moorman<sup>4</sup>, Nils Peterson<sup>4</sup>, John Kilgo<sup>5</sup>, Elizabeth Kierepka<sup>6</sup>

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6: NC Museum of Natural Sciences, Department of Forestry and Environmental Resources, NC State

## ABSTRACT:

Urbanization is expanding throughout the globe, creating urban-rural gradients and altering wildlife communities. While some wildlife populations decline as human presence increases, others such as white-tailed deer persist in areas with transitional habitats and increased urbanization. However, densities of white-tailed deer along urban-rural gradients are poorly understood leading to gaps in population information and management despite continued deer use. We used a spatially explicit capture-recapture framework (SCR) with fecal DNA to estimate deer densities along an urban-rural gradient in Durham County, North Carolina. Sampling occurred at 356 plots across 7 sites with percent impervious surface ranging from 1% (rural) to 60% (urban), and included public and private lands with 120 participating landowners. Field collection took place in February and March 2023 over 3 weeks using a cluster sampling design. We collected 642 fecal samples resulting in 491 genotypes ( $\geq 8$  microsatellite markers, 1 sex-determining marker) of 380 unique deer (252M:127F). Based on SCR estimates, sampling site densities ranged from  $<1$  deer/mi<sup>2</sup> to 22 deer/mi<sup>2</sup> with a negative relationship between density and percent impervious surface. Deer abundance in Durham County (286 mi<sup>2</sup>) was 23,748 with an average density of 12 deer/mi<sup>2</sup>. Deer in suburban and urban areas are increasingly of management concern, leading to the need for non-invasive frameworks for population estimation applicable across an urbanization gradient. Our research can be expanded to other species utilizing urban-rural gradients given the appropriate spatial data.

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## NOTES:

# UNDERSTANDING DRIVERS OF RECRUITMENT OF WHITE-TAILED DEER IN SOUTH TEXAS

\*Kevin Lovasik<sup>1</sup>, Miranda Hopper<sup>2</sup>, Bryan Spencer<sup>2</sup>, Randy DeYoung<sup>2</sup>, Aaron Foley<sup>2</sup>, Alfonso Ortega-Santos<sup>2</sup>, David Hewitt<sup>2</sup>, Landon Schofield<sup>3</sup>, Tyler Campbell<sup>3</sup>, Michael Cherry<sup>2</sup>

1: TAMUK – CKWRI

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3: East Foundation

## ABSTRACT:

Rangelands are often managed for cattle production and wildlife. Understanding the effects of cattle on wildlife relative to other factors, such as precipitation, is key to effective multiuse management. We experimentally manipulated cattle management on East Foundation's San Antonio Veijo Ranch in South Texas where white-tailed deer are not exposed to harvest or supplemental feed. We measured recruitment indices using evidence of lactation in autumn from 284 adult female deer captured from 2011-2023 and known fate survival to 12-weeks of 90 neonates monitored during 2020-2023. We characterized capture locations of adult females and birth sites of neonates based on landscape attributes, precipitation, and cattle management. We fit generalized linear mixed models predicting the lactation status (yes or no) as a function of these covariates. We fit Cox-proportional hazards models to predict mortality hazard of neonates as a function of the same predictors. We found the presence of cattle during the fawning season (June-August) reduced the probability of lactation in adult females and increased the odds of neonate mortality. We also found both recruitment indices increased strongly with spring rain and moderately with brush density. Our results demonstrate a benefit of the rotational grazing treatment, such that deer recruitment improved where cattle were absent during the fawning season. While rainfall patterns strongly influenced recruitment, manageable factors including cattle grazing and brush density offer potential approaches to manipulate deer recruitment. Our results highlight the utility of managing these factors to achieve deer recruitment objectives.

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## NOTES:

# THERMAL DRONES FOR WHITE-TAILED DEER MANAGEMENT

\*Kevin Gerena<sup>1</sup>, Chad Newbolt<sup>1</sup>, Stephen Ditchkoff<sup>1</sup>

1: Auburn University

## **ABSTRACT:**

Unmanned aerial vehicles, or drones, have become increasingly important in the monitoring and management of white-tailed deer (*Odocoileus virginianus*) particularly when used alongside thermal imaging sensors. Thermal drones have successfully been used for fawn capture, deer density estimation, harvested deer recovery, and other management practices, and thermal drones have been found to be both accurate and precise for deer density estimation given proper flight planning. Drones as a tool for deer monitoring and management improve upon manned aircraft in terms of costs and associated risks, but thermal drones nonetheless suffer from limitations related to battery life, signal range, line of sight requirements, and sensitivity to environmental conditions among other factors. Building on our previous work evaluating the precision and accuracy of deer density estimates gathered via drones, this presentation will discuss the current state of commercially available thermal drone technology, costs and considerations associated with implementing this technology, and lessons learned from our work. We will detail recommended flight parameters, drone models, and sensors as well as the future of this technology and its integration into deer monitoring and management. This discussion provides fundamental information for wildlife managers and researchers seeking to implement this rapidly evolving technology into their own work.

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## **NOTES:**

# NATIONAL TRENDS IN CHRONIC WASTING DISEASE (CWD) BUDGETS, SURVEILLANCE, RESULTS WAIT TIME, AND REPLACEMENT TAGS

Ben Westfall<sup>1</sup>, Kip Adams<sup>1</sup>, Nick Pinizzotto<sup>1</sup>, Matthew Ross<sup>1</sup>

<sup>1</sup>: National Deer Association

## **ABSTRACT:**

Early detection is critical to managing CWD effectively and the average number of national samples needed for adequate testing annually is increasing. We surveyed state wildlife agencies to determine their budget dedicated to CWD surveillance, monitoring and testing, the number of samples tested, average wait time for results, and if sampling goals were met in 2019 and 2024. We also asked where CWD samples are collected from and if replacement tags are offered to hunters who harvest a CWD positive deer. Since 2019, agencies have allocated an additional \$13 million nationally for CWD; a 128% increase. Contributing to this additional cost is a 38% increase in sampling efforts from 2019 to 2023, with 43 states testing nearly 250,000 samples. Despite the increasing cost and manpower required for testing, average wait time for results decreased from 36 to 29 days since 2019, with at least four states offering results in one week. Increased surveillance has forced agencies to diversify how samples are collected and agencies reported nearly ten different sources, with clinically suspect deer the most popular (96%). Forty-two states rely heavily on hunter harvested deer with 18 states offering replacement tags to hunters who take a CWD positive animal. Fortunately, 26 states met their sampling goals in 2023, with at least eight more reaching their goals in individual CWD surveillance zones or counties. Our results shed light on the drain that CWD has on wildlife agency resources and the intensive and opportunistic sampling that is crucial to manage the disease.

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## **NOTES:**

# CREATING A COMMON LANGUAGE FOR CHRONIC WASTING DISEASE

Sonja Christensen<sup>1</sup>, Rachel Abbott<sup>2</sup>, Brenda Hanley<sup>2</sup>, Nicholas Hollingshead<sup>2</sup>, Krysten Schuler<sup>2</sup>

1: Michigan State University

2: Cornell University

## ABSTRACT:

Efforts to standardize terminology are valuable across scientific disciplines for improving clarity, enabling consistent evaluation of research findings, reducing confusion, and improving the accuracy of scientific communication. Chronic wasting disease (CWD) has become a marked and expanding threat to cervid health and North American conservation. The Surveillance Optimization Project for CWD (SOP<sub>4</sub>CWD) was implemented to provide quantitative modeling and data warehousing tools to partnering wildlife agencies to improve surveillance efficiency in free-ranging populations. This interdisciplinary collaboration recognized a need for a standardized glossary of CWD-related epidemiology, disease management, and mathematical modeling terminology to effectively unite monitoring and control efforts across scientific disciplines and managerial jurisdictions. Using an expert elicitation approach, we compiled a comprehensive list of terms relevant to CWD and standardized definitions agreed upon simultaneously by persons with disease, statistical, and deer ecology expertise. We augmented the glossary with terms commonly found in the academic literature surrounding CWD. The final glossary will facilitate consistency in communication and promote coordination of CWD surveillance, research, management, and mitigation across vast jurisdictional boundaries.

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## NOTES:

# WHITE-TAILED DEER SCAVENGING COMMUNITY IN A CWD-ENDEMIC REGION AND CONSIDERATIONS FOR PRION MOVEMENT

\*Marcelo Jorge<sup>1</sup>, Lisa Jorge<sup>2</sup>, Dana Jarosinski<sup>2</sup>, Richard Chandler<sup>2</sup>, Gino D'Angelo<sup>2</sup>, Mark Ruder<sup>3</sup>, Michael Chamberlain<sup>2</sup>

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## ABSTRACT:

Scavengers can impact the geographic spread of pathogens through complex interactions that can either decrease or increase the risk of transmission. Chronic wasting disease (CWD) is a transmissible spongiform encephalopathy fatal to cervids and has been detected throughout much of the United States and internationally. Chronic wasting disease prions have long environmental persistence, and some scavengers have been shown to pass infectious CWD prions through their digestive tracts. We designed a study in a CWD-endemic area of northwestern Arkansas to determine which scavengers routinely feed on white-tailed deer carcasses and may be involved in movement of CWD prions. Using videos from game cameras, we recorded species that visited white-tailed deer carcasses and calculated abundance, presence duration, and feeding rate. American crows had the greatest number of individuals per video (5.33, 95% CI: 3.88 – 7.32), followed by turkey vultures (3.03, 2.21 – 4.16), and black vultures (2.94, 2.14 – 4.04). Black vultures had the longest bout duration in minutes (10.46, 8.01 – 13.67), followed by bald eagles (9.00, 6.88 – 11.77) and turkey vultures (8.45, 6.47 – 11.04). Bald eagles (50%, 38 – 62%), black vultures (49%, 40 – 58%), and American black bears (45%, 33-56%) spent the greatest proportion of time feeding. Species rank varied across metrics but the average of the three behavioral measurements indicated that black vultures, bald eagles, and turkey vultures had the greatest potential to ingest and potentially move CWD prions. Our research highlights the need to experimentally evaluate more avian scavengers for the potential to shed infectious prions.

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## NOTES:

# NOVEL APPROACHES TO CWD SURVEILLANCE AND MANAGEMENT: THE INTERSECTION OF RT-QUIC DIAGNOSTICS AND EPIDEMIOLOGICAL MODELING

Peter Larsen<sup>1</sup>, Aniruddha Belsare<sup>2</sup>, Gage Rowden<sup>1</sup>, Roxanne Larsen<sup>3</sup>, E. Anu Li<sup>4</sup>, Madeline Grunklee<sup>5</sup>, Miranda Huang<sup>6</sup>, Diana Karwan<sup>4</sup>, Stuart Lichtenberg<sup>1</sup>, Marc Schwabenlander<sup>1</sup>

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## ABSTRACT:

Chronic Wasting Disease (CWD) poses a significant challenge to wildlife disease management, driven by the highly infectious nature of prions, the potential for both direct and indirect transmission routes, and the prolonged progression of the disease in infected cervids. These features greatly complicate surveillance and control efforts in both free-ranging and captive cervid populations. Recent advances in Real-Time Quaking-Induced Conversion (RT-QuIC) assays and related technologies are contributing to a paradigm shift in CWD surveillance. Due to its remarkable sensitivity and specificity, RT-QuIC offers the detection of prions in a variety of environmental and biological samples that were previously untestable. Simultaneously, agent-based epidemiological modeling informed by CWD biology and cervid demographics (e.g., OvCWD) offers a valuable framework for designing and optimizing novel RT-QuIC-based surveillance strategies. We present three innovative RT-QuIC testing applications that enhance CWD surveillance: (1) detection of CWD prions in cervid saliva on non-porous surfaces, (2) monitoring prions in environmental matrices such as soil and water near herd congregation sites, and (3) testing of skeletal remains years after deposition. Surveillance data derived from both wild and captive white-tailed deer populations across these three areas are summarized. We show how these three approaches can be used strategically with agent-based epidemiological models to guide efforts to prevent disease spread, identify and remediate environmental prion reservoirs, and ultimately improve the sustainability of cervid populations. Our findings underscore the potential of integrating RT-QuIC surveillance with epidemiological modeling to transform CWD management through proactive, data-driven strategies.

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## NOTES:

# OPTIMIZING CHRONIC WASTING DISEASE SURVEILLANCE: AN AGENT-BASED MODELING APPROACH FOR CAPTIVE DEER FACILITIES

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## ABSTRACT:

Chronic wasting disease (CWD) is a fatal prion disease affecting members of the Cervidae family and is present in both wild and captive cervid populations across the United States. CWD continues to spread among captive facilities, with new positive facilities being detected each year. CWD can quickly become established in these facilities due to the close and prolonged contact among deer and repeated exposure to infected individuals or contaminated environments. Early detection is crucial for managing CWD; however, identifying a rare event like CWD introduction in a large population presents significant challenges.

Furthermore, the number of samples required to achieve a high level of confidence in detecting CWD increases for low prevalence scenarios, making it particularly difficult to detect a single infected deer in a captive facility. Thus, CWD often remains undetected in the early phase of the outbreak, mainly because of the logistical constraints on wildlife agencies' ability to match the sample size targets.

To address these challenges, we developed an agent-based modeling approach that enhances the estimation of CWD detection probability in captive deer facilities. Specifically, we define CWD detection probability as the confidence in identifying the single infected deer within a population, based on a given number of samples tested over the course of a year. Our modeling approach integrates CWD testing records from captive deer facilities, along with herd size, composition, and individual deer transfer histories, to quantify the likelihood of undetected CWD within a facility. These annual detection probability estimates provide a measure of confidence in identifying a single CWD-infected deer within a population, based on the number of deer that tested negative throughout the year. This approach improves the effectiveness of CWD surveillance by enabling the prioritization of surveillance efforts across captive facilities, using the model-derived quantitative metric of detection probability. By refining this estimation process, we provide improved surveillance approach and inform better CWD management strategies in captive cervid populations.

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## NOTES:

# POPULATION DYNAMICS OF WHITE-TAILED DEER IN A CHRONIC WASTING DISEASE ENDEMIC AREA IN ARKANSAS

\*Heather Gaya<sup>1</sup>, Marcelo Jorge<sup>2</sup>, Michael Chamberlain<sup>3</sup>, Lisa Jorge<sup>4</sup>, Mark Ruder<sup>5</sup>, Richard Chandler<sup>4</sup>

1: Warnell School of Forestry and Natural Resources, University of Georgia,

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5: Southeastern Cooperative Wildlife Disease Study

## ABSTRACT:

Chronic wasting disease (CWD) is a fatal prion disease of cervids, considered to be one of the greatest threats to white-tailed deer populations. Effective management for CWD hinges on understanding how abundance, survival and recruitment are affected by the disease. Using 3 years of data from GPS collars, radio telemetry, trail cameras, and CWD testing of both live and deceased deer, we investigated the effects of CWD on population demographics for a white-tailed deer population in Arkansas' CWD management zone. We analyzed our data using an integrated hierarchical model in a Bayesian framework to estimate survival, recruitment, movement and disease transmission across 3 study sites with different levels of CWD prevalence. Sample CWD prevalence from both ante- and postmortem sample testing was >20%. Deer that tested positive for CWD had lower annual survival and reproductive rates than presumed negative deer. Populations with the highest prevalence of CWD had lower densities and higher female to male sex ratios. Our results provide insights into the dynamics of CWD in the Southeastern United States and suggest CWD is working in concert with environmental factors to alter age structure and reduce population abundance.

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## NOTES:

# **DMAP REVITALIZATION IN ARKANSAS: HELPING PUT THE HUNT BACK IN HUNTERS!**

Jeremy Brown<sup>1</sup>, Ralph Meeker<sup>1</sup>

<sup>1</sup>: Arkansas Game and Fish Commission

## **ABSTRACT:**

The Arkansas Game and Fish Commission's Deer Management Assistance Program was initiated in 1999 with the purpose of providing technical assistance to hunting clubs in managing local deer herds and their habitat on private lands of Arkansas. In over 25 years of existence DMAP has seen participation rise but with accumulating workloads of the agency's DMAP biologists, increasing turnover rates of both hunting clubs and staff, and the lack of clear focus; participation in DMAP began to wane. In 2021 the AGFC deemed private lands management a high priority, opening the way for the revitalization of DMAP. The agency streamlined administrative processes through standardization and automation of annual reporting and initiated a partnership with the National Deer Association to create five new cost share positions. Greenway Equipment was brought on as a corporate sponsor to increase technical assistance for the habitat management component of the program. The agency utilized an existing partnership with Arkansas Hunters Feeding the Hungry in a new innovative way through DMAP deer donations. This helped clubs not only reach doe harvest goals but additionally helped address food insecurity issues in Arkansas. DMAP in Arkansas is now experiencing its highest participation and enrolled acreage in the past decade. Importantly, biologists are now spending more quality time with each club, receiving more CWD sample submissions, deer donations, and providing a higher quality annual report than ever before.

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## **NOTES:**

# THE DEER MANAGEMENT ASSISTANCE PROGRAM (DMAP) IN MISSISSIPPI WORKS

Pierce Young, Mississippi Dept of Wildlife, Fisheries, and Parks

## ABSTRACT:

For 47 years, the nation's first Deer Management Assistance Program (DMAP) has been providing cooperative guidance by professional wildlife biologists to hunters in Mississippi in efforts to better manage lands for healthier deer herds. In this study, DMAP deer harvest data was analyzed from the past four decades to describe the different changes in the deer herds over time when participating in the program compared to the first year a property is enrolled. Within the first five years, on average, doe harvest increased 44% and doe lactation went up 8%. Buck harvest also increased on average by 26%. Within the first 10 years, buck antler score potential at maturity increased on average by 14 inches and buck age increased by 40%. There was also variation in these changes over time depending on the decade the properties first enrolled in DMAP, the soil region of the state they were located, and depending on what percentage of the doe harvest recommendations from the biologist were met. Overall, this data shows significant beneficial changes over time in deer herds for properties enrolled in DMAP compared to their first year. This information will support efforts to educate the public on the benefits of DMAP, while helping in marketing for DMAP enrollment.

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## NOTES:

# FROM BOTH SIDES OF THE FENCE: KENTUCKY'S CWD RESPONSE PLAN IMPLEMENTATION

Joseph McDermott<sup>1</sup>, Tommy Apostolopoulos<sup>1</sup>, John T. Hast<sup>1</sup>, Christine Casey<sup>1</sup>, Kathleen Williams<sup>1</sup>

<sup>1</sup>: Kentucky Department of Fish and Wildlife Resources

## **ABSTRACT:**

The Kentucky Department of Fish and Wildlife Resources (KDFWR) has had a CWD Response Plan in place since 2002. Approved by the Commission, the Plan's main objective is to guide KDFWR's initial actions upon a positive CWD detection either inside of the state or near the border. KDFWR first implemented its Response Plan in 2021 following multiple detections <10 miles from the border in Tennessee. Following three years of enhanced CWD surveillance, KDFWR detected its first positive case in a wild deer harvested in Ballard County, KY in late 2023. Less than one year later KDFWR received notification of another positive animal, this time in a captive deer nearly 200 miles east of the original detection. A discussion of the state agency's response to these detections is found herein.

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## **NOTES:**

# HUNTABLE LANDS: WHAT DRIVES LANDOWNER DECISIONS ON HUNTING ACCESS

April Boggs Pope, North Carolina Wildlife Resources Commission

## **ABSTRACT:**

Gaining insights into what drives landowners' decisions to allow hunting on their land is vital for wildlife management, particularly given rapidly expanding suburban and urban environments. Through a cooperative project with the North Carolina Wildlife Resources Commission (NCWRC), researchers at NC State University successfully created a spatial-predictive model to estimate land available for hunting utilizing data from surveys of nonindustrial and industrial private landowners. Increasing property size, male ownership, length of time the property has been owned, property being used to earn income, and landowners with a rural upbringing were all positively related to a property being hunted. Higher housing and road density and older landowners were negatively related to a property being hunted. County estimates of the amount of available hunting land were calculated by running all privately owned parcels in North Carolina through the model. A second cooperative project between NCWRC and NC State is updating and expanding on the model, exploring how political identity predicts landowners' decisions about whether hunting will occur on their properties while accounting for several important socio-demographic and geographic variables and utilizing data from a survey of residents along an urban-to-rural gradient in Durham County, North Carolina. Findings of the most recent study revealed political identity as a significant predictor of hunting permission, with conservative landowners being 6 times more likely to permit hunting than their liberal counterparts. Gender also emerged as a notable factor, as properties owned by men were three times more likely to be hunted than those owned by women. Road density, gender, and political identity were identified as negative predictors of landowner hunting decisions in decreasing order of importance. Conversely, property size was the most important positive predictor for landowners allowing hunting, and the most important predictor of hunter access overall. These results illustrate the necessity of incorporating political, demographic, and geographic elements in discussions about how to effectively communicate with landowners regarding hunting access for wildlife management purposes, and the model can also improve wildlife population estimates by improving huntable land estimates.

## **CONTACT:**

## **NOTES:**

# IDENTIFYING THE MOTIVATIONS AND BARRIERS OF LANDOWNERS TO PARTICIPATING IN TARGETED REMOVAL TO MANAGE CHRONIC WASTING DISEASE (CWD) IN MISSOURI

Jason Isabelle<sup>1</sup>, Jasmine Batten<sup>2</sup>, Phil Seng<sup>3</sup>, Matthew Harlow<sup>3</sup>, Rachel Menale<sup>3</sup>

1: Missouri Department of Conservation

2: Wisconsin Department of Natural Resources

3: DJ Case & Associates

## ABSTRACT:

Since first detecting chronic wasting disease (CWD) in the free-ranging white-tailed deer population in 2012, the Missouri Department of Conservation has implemented targeted removal to slow disease spread. Targeted removal is one of few interventions with evidence of efficacy yet is often met with resistance and lack of stakeholder support. As such, identifying the motivations and barriers of landowners to participating in targeted removal is key to addressing participation deficiencies and fostering landowner engagement in CWD management. We conducted 12 focus group meetings in Missouri during 2022 with landowners who owned property near where CWD has been detected. Motivations for participating in targeted removal included a sense of civic responsibility to people and/or the deer population, additional hunting opportunity, food, convenience of the removal program, and positive feelings about contributing to CWD management. Barriers or deterrents to participation included misunderstanding about CWD and the objectives of targeted removal, perception of low deer density, reluctance to relinquish what landowners felt was management control of their land during targeted removal, distain for targeted removal methods (e.g., night shooting, baiting), and objections about when targeted removal occurred (i.e., winter, after deer season). Landowner participation in targeted removal could likely be increased by communicating more effectively about CWD and the objectives of targeted removal to combat misinformation, providing additional opportunity during the regular deer season enabling hunters to play a more active role in disease management at that time of year, considering changes to targeted removal methodology, and working to align targeted removal goals with landowner deer management goals when possible.

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## NOTES:

# IS DEER HUNTING OVER BAIT FAIR CHASE? A COMMENTARY.

Matt Knox, Retired Deer Project Coordinator, Virginia Department of Wildlife Resources

## ABSTRACT:

In 2019, the Boone and Crockett Club (B&C) issued a position statement on baiting, stating that hunting over bait can be considered fair chase in some circumstances. Fair chase, as defined by B&C, "is the ethical, sportsmanlike, and lawful pursuit and taking of any free-ranging wild game animal in a manner that does not give the hunter an improper or unfair advantage over the game animal." According to Aldo Leopold, an ethic is based on public support for right actions and opposition to wrong ones. Past surveys indicate that most of the general public, state wildlife agencies, and state wildlife agency deer biologists oppose hunting with bait. The major reason typically given by the general public is fair chase. Additionally, deer hunting over bait violates two principles of B&C's definition of fair chase. First, providing food habituates deer to humans, making them less wild to the point of being semi-tame. Second, bait gives the hunter an unfair advantage by training deer to show up at a specific time and place. Lastly, hunting deer over bait is not fair chase just because it is "appropriate given the circumstances," as written in the B&C position statement. The deer management objective does not determine fair chase. "Appropriate given the circumstances" renders the whole idea of fair chase meaningless. As noted by author Jim Posewitz, fair chase "addresses the balance between the hunter and the hunted," and when there is doubt about whether a hunting practice is fair chase, "advantage must be given to the animal being hunted." In my opinion, deer hunting over bait, regardless of the circumstances, is not fair chase.

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## NOTES:

# **BANNING BAITING AND SUPPLEMENTAL FEED BY AN INDUSTRIAL TIMBERLAND OWNER TO REDUCE CHRONIC WASTING DISEASE RISK FACTORS**

Jeremy Meares<sup>1</sup>, Ryan Basinger<sup>1</sup>, Kevin McKinstry<sup>1</sup>, Daniel Sellers<sup>1</sup>, Charles Todd<sup>1</sup>, Kelly Dunning<sup>2</sup>,

1: The Westervelt Company

2: Haub School of Environment and Natural Resources - University of Wyoming

## **ABSTRACT:**

The Westervelt Company owns over 600,000 acres of timberland across five Southeastern states. Prior to the 2022 hunting season, the use of bait, supplemental feed, and minerals was prohibited on Westervelt-owned property as a precaution to reduce risk for the spread of Chronic Wasting Disease (CWD). While the practice of baiting and feeding white-tailed deer does has not been proven to cause CWD, it can play a role in its spread when the disease agent is present. Despite many customer opinions shared, there have been minimal negative impacts on our hunting lease business. In fact, we had several instances of positive feedback and support for our decision. In the fall of 2023, we surveyed our hunting lease customers to determine deer hunting motivations, effectiveness of previous educational campaigns, general CWD knowledge, and future plans if CWD is discovered in the area they hunt. The survey was distributed by email to our customers (n = 1,500) with a response rate of 27% (406 respondents). We found knowledge of CWD to be high, customers to be reachable via email for educational materials, and motivated to hunt for experiencing nature and viewing wildlife. Our survey results can help determine best management practices for engaging hunters on CWD with future communication and outreach efforts.

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## **NOTES:**

# CAN HINGE-CUTTING CREATE THE DREAM BEDDING AREA FOR DEER?

\*Thomas Roverly<sup>1</sup>, Mark Turner<sup>1</sup>, Jacob Bones<sup>1</sup>, Spencer Marshall<sup>1</sup>, Craig Harper<sup>1</sup>

<sup>1</sup>: University of Tennessee

## ABSTRACT:

There is increased interest in creating cover specifically for deer bedding. Hinge-cutting has been used to create “bedding blocks,” but there has been no evaluation of deer use. Hinge-cutting creates visual obstruction not only via a directional fell but also via regenerating stems and increased ground cover. We established four sites in Tennessee, Mississippi, and Pennsylvania in 2021 to evaluate deer response to hinge-cutting and the effects on responding vegetation. Each site had a 5-acre treatment and 5-acre control unit with four camera traps in each unit. We measured visual obstruction and recorded midstory species in a 37-foot radius around each camera in September 2024. We collected pretreatment camera data from February 2022 to February–May 2023, when we implemented the treatment in the treatment units. We collected camera data through December 2023 to record relative deer use. Visual obstruction increased 154% and midstory stems per acre increased 33.7% following treatment. During fawning season in May–July 2022, average daily detections were 4.7 in the control and 2.4 in the treatment. Post-treatment detections from May–July 2023 were 4.4 in the control and 5.9 in the treatment. During hunting season in October–December 2022, average daily detections were 12.9 in the control and 9.8 in the treatment. Post-treatment detections from October–December 2023 were 9.8 in control and 17.4 in the treatment. Average daily deer detections increased 48% following treatment ( $p < 0.001$ ). Hinge-cutting to reduce overstory tree density can successfully enhance bedding areas for deer.

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## NOTES:

# LANDOWNERS' WILLINGNESS TO ACCEPT TARGETED REMOVALS AND FINANCIAL INCENTIVES: IMPLICATIONS FOR CHRONIC WASTING DISEASE SPREAD

\*Rachel Correia<sup>1</sup>, Sonja Christensen<sup>2</sup>, David Ortega<sup>3</sup>, Adam Zwickle<sup>4</sup>, Nathan Snow<sup>5</sup>

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## ABSTRACT:

Management of chronic wasting disease (CWD) in cervids is dependent upon landowner access to private property. When access is allowed, CWD management strategies such as targeted removal of cervids can decrease local prevalence. However, the decision to allow property access rests on the landowner's acceptance of wildlife management actions. Our objective was to evaluate the willingness of landowners to allow access and quantify acceptable financial incentives for targeted removals on their property. We distributed a survey containing a discrete choice experiment (CE) to elicit landowners' willingness to accept (WTA) payments. Landowners received eight choice questions, each with two targeted removal alternatives and an opt-out option (i.e., no management). The alternatives were composed of three attributes: removal restriction (sex/age of deer removed), implementing agency (state or federal agent), and payment per deer removed (\$0-\$150). The CE was distributed to landowners in 6 states across the USA with varying levels of CWD prevalence in white-tailed deer (*Odocoileus virginianus*) and mule deer (*Odocoileus hemionus*). We found that landowners require the highest payment for male deer removal conducted by a federal wildlife agent compared to a non sex/age specified removal by a state wildlife agent. We also found that landowners value no targeted removal management at \$227 per deer (95% CI; \$214.34-\$240.16). Significant differences in landowners' WTA were observed based on hunting status, region, state-level CWD prevalence, and county-level prevalence. The results from this research will inform resource managers tasked with conducting targeted removals to manage CWD as new detections of the disease emerge.

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## NOTES:

# WHITE-TAILED DEER ARE UNLIKELY A RESERVOIR FOR SARS-COV-2 IN WEST TENNESSEE, DESPITE MULTIPLE EXPOSURE EVENTS

Mark Wilber<sup>1</sup>, Justin Kosiewska<sup>1</sup>, Dailee Metts<sup>1</sup>, Cameron Mitchell<sup>1</sup>, Jacob Wyrick<sup>1</sup>, Allan Houston<sup>2</sup>, Daniel Grove<sup>1</sup>, Lisa Muller<sup>1</sup>

1: University of Tennessee School of Natural Resources

2: Ames Research and Education Center

## ABSTRACT:

During the COVID-19 pandemic, high seroprevalence of the viral pathogen SARS-CoV-2 (SCV<sub>2</sub>) was reported in white-tailed deer (*Odocoileus virginianus*) populations in multiple locations across the USA. This has led to widespread concern that white-tailed deer could act as a “reservoir” for SCV<sub>2</sub>, enabling the long-term persistence and spillback of SCV<sub>2</sub> into human populations. However, we lack an understanding of how white-tailed deer movements affect among-deer transmission of SCV<sub>2</sub>, hindering our ability to predict when populations might act as reservoirs. Focusing on a population in west Tennessee, we combined two years of movement data from 66 deer, landscape-level seroprevalence sampling of 173 deer, and epidemiological modeling to ask: Under what ecological and epidemiological conditions can white-tailed deer act a reservoir host for SCV<sub>2</sub>? We detected at least two strains of SCV<sub>2</sub> in our study population with seroprevalence ranging from 5%-10%, indicating multiple exposure events. Using our empirical movement data, we built an epidemiological model that accounted for empirically realistic, seasonally varying animal movements. We found that high site fidelity of animals and seasonally varying social interactions made it highly unlikely that SCV<sub>2</sub> could persist in the deer population for three or more years. These results held even with high levels of young male dispersal and simulated densities of deer up to 52 per mile squared. Thus, despite broad categorization of white-tailed deer as reservoir hosts for SCV<sub>2</sub>, spatial and social dynamics of west Tennessee deer make it very difficult for SCV<sub>2</sub> to persist without repeated spillover events from some external source.

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## NOTES:

# CURRENT BIOSECURITY PRACTICES IN THE HANDLING AND SAMPLING OF CERVIDS: A CROSS-SECTIONAL STUDY

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## ABSTRACT:

Effective biosecurity practices are essential for mitigating intraspecies and zoonotic disease transmission during human-wildlife interactions, yet it is unclear how infection control policies are put into action by those working with cervids. We evaluated biosecurity practices among professionals working with cervids in the U.S. and Canada via an electronic survey conducted between March 2024 and June 2024. Study objectives were to identify pathogens of concern, describe current biosecurity protocols, evaluate the effectiveness of disinfecting practices against pathogens of concern, and explore associations between practices and factors such as profession, regional endemic diseases, and the nature of interactions. Survey respondents were primarily composed of ecologists/biologists (n=37, 47.4%), veterinarians (n=36, 46.2%), and managers or wildlife capture professionals lacking those backgrounds (n=5, 5.4%). Respondents identified Chronic Wasting Disease (CWD) and SARS-CoV-2 as primary pathogens of concern, with CWD being the most frequently targeted for disinfection, even in non-endemic areas. Use of personal protective equipment was common. While most respondents indicated the existence of biosecurity protocols, adherence was inconsistent, particularly in free-ranging settings versus captive settings. Disinfection frequency also varied in association with professional background. Respondents in regions where CWD was endemic were more likely to have formal biosecurity policies and protocols compared to non-endemic areas. Our study also identified infection control gaps, with some respondents using ineffective disinfectants or suboptimal concentrations against reported pathogens of concern. These findings highlight the need for standardized, evidence-based guidelines when developing, implementing, and updating cervid biosecurity protocols, particularly regarding effective disinfectant use.

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## NOTES:

## T. GONDII PREVALENCE AND IMPACT ON SURVIVAL IN WHITE-TAILED DEER IN SOUTHERN TEXAS

\*Kendall Bancroft<sup>1</sup>, Alynn Martin<sup>2</sup>, Tyler Campbell<sup>3</sup>, Randy DeYoung<sup>2</sup>, Aaron Foley<sup>2</sup>, David Hewitt<sup>2</sup>, Miranda Hopper<sup>2</sup>, Kevin Lovasik<sup>1</sup>, Alfonso Ortega-Santos<sup>2</sup>, Landon Schofield<sup>3</sup>, Bryan Spencer<sup>2</sup>, Jason Sawyer<sup>3</sup>, Michael Cherry<sup>2</sup>

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### ABSTRACT:

Toxoplasmosis (causative agent *Toxoplasma gondii*) is a zoonotic disease that causes significant morbidity in animals and humans. In wildlife, *T. gondii* infection may influence reproduction and behavior, including induced abortion, increased aggression, and abnormal movement; however, prevalence and sublethal impacts are poorly understood. To investigate *T. gondii* influence on white-tailed deer population dynamics, we used four years of biological and known fate data from a deer population in southern Texas to determine *T. gondii* prevalence and survival of does and their offspring as a function of doe serostatus. Serology revealed 29 of 59 (49%) does had a titer of  $\geq 1:25$  on a modified agglutination test, and were considered seropositive for *T. gondii*. From 2020-2023, Kaplan-Meier annual survival of seropositive and seronegative does ranged from 70-100% and 85-100%, respectively. Adult survival was high except in 2022, a year with harsh winter and drought conditions, when survival of seropositive does was lower than that of seronegative does (70% vs. 85%, respectively). Across all years, survival of fawns from seropositive and seronegative does did not differ. However, in 2021, a year with above average rain, fawns born to seropositive does had lower survival (20% vs 46%). These trends suggest that *T. gondii* infection may compound the effects of external stressors on adult white-tailed deer when conditions are poor, but have a more noticeable influence on fawn survival when conditions are optimal. Further understanding of sublethal effects of *T. gondii* infection is needed to assess potential impact on survival and recruitment in wildlife populations.

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### NOTES:

# THE PHOTOLUMINESCENCE OF WHITE-TAILED DEER SIGNPOSTS

\*Daniel DeRose-Broeckert<sup>1</sup>, Billy Hammond<sup>1</sup>, Steven Castelberry<sup>1</sup>, Gino D'Angelo<sup>1</sup>

1: University of Georgia

## ABSTRACT:

White-tailed deer are crepuscular, short-day breeders that use rubs and scrapes (i.e., signposts) in the environment to communicate physiological status to conspecifics. Deer optical anatomy and visual capabilities are relatively well-understood including sensitivity to ultraviolet (UV) wavelengths. UV wavelengths are present during crepuscular hours but are not visible to humans. Previous studies have described signposts and their use by deer but quantification of the spectral characteristics, including photoluminescence (i.e., glow resulting from exposure to UV), and how the spectral characteristics of signposts shape deer environmental perception, is unknown. The goal of our study was to quantify the spectral characteristics of signposts, including visibility outside the human visual range and relate our findings to what is known about deer vision. We located 148 signposts (rubs = 110, scrapes = 38) from 8 September – 12 November 2024 in the Piedmont of Georgia. We exposed signposts to 365 and 395 nm UV lights while measuring reflectance/photoluminescence with a telescoping spectral radiometer. We collected spectral data at night to simulate laboratory conditions. We found that the contrast between signposts and the surrounding environment was relatively high including wavelengths outside of the human visual range (based on sources such as urine-based photoluminescence). These data suggest that deer behavior relative to signposts is likely based on visual cues, especially in low light conditions, that are not seen by human observers and gives a new perspective to deer behavior based on visual ecology.

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## NOTES:

# MAY THE FORCE (OF INFECTION) BE WITH YOU: MODEL-BASED ASSESSMENTS OF CHRONIC WASTING DISEASE MANAGEMENT STRATEGIES

Aniruddha Belsare, Auburn University

## **ABSTRACT:**

The continuing geographic spread of Chronic Wasting Disease (CWD) poses a significant threat to the long-term sustainability of cervid populations, hunting traditions, and private land management across North America. Despite extensive research, substantial uncertainty remains regarding the mechanisms and factors driving CWD transmission. Wildlife agencies are actively working to mitigate the risks posed by this disease, but effective responses require a better understanding of the disease dynamics and the impact of management actions. One promising approach for addressing these uncertainties is the integration of simulation models with policy decision-making processes.

Here, we demonstrate the use of OvCWD, a published agent-based modeling framework, to evaluate and compare regional CWD management strategies. Specifically, we highlight how OvCWD models simulate disease spread in deer populations, enabling the comparison of various management interventions aimed at reducing the hazard rate of CWD (i.e., the force of infection). The force of infection metric allows for an estimation of disease burden and helps assess the effectiveness of management strategies. OvCWD models provide valuable insights into the potential outcomes of different interventions and can support the design of locally relevant CWD management strategies.

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## **NOTES:**

# **AUTOMATION OF DISTANCE MEASUREMENT AND ENHANCED DETECTION, CLASSIFICATION, RECOGNITION, AND IDENTIFICATION (DCRI) FOR WILDLIFE MONITORING USING DEPTH**

Joseph Porter<sup>1</sup>, Tanner Metzmeier<sup>1</sup>

1: Vale Outdoors LLC

## **ABSTRACT:**

The integration of depth, RGB, and Infrared (IR) sensors provides a transformative solution for wildlife management by automating distance measurements and enhancing Detection, Classification, Recognition, and Identification (DCRI) capabilities. Traditional wildlife monitoring methods require manual distance measurements, which are time-consuming and prone to error. This sensor package addresses these challenges by capturing depth, IR, and RGB data, enabling precise, automated distance calculations. By leveraging depth data, the system offers accurate distance measurements without the need for manual input, improving the efficiency and reliability of wildlife density estimation in large-scale studies.

In addition to distance measurement efficiency improvements, the system enhances DCRI capabilities through a machine learning (ML) model that processes fused depth, IR, and RGB data. The system's DCRI capabilities are more agnostic to geographic location, meaning that the model does not require geographically specific training data to perform effectively. By combining depth and standard (two dimensional) image information, the model can detect, classify, recognize, and identify animals in a wider range of environmental conditions. This flexibility ensures that the system can be applied in diverse ecosystems without the need for retraining or specialized data for specific regions, making it suitable for large-scale, real-time wildlife monitoring.

This system provides scalable, data-driven insights for wildlife population monitoring and conservation. By automating distance measurements and enhancing DCRI through ML, it significantly advances the efficiency and accuracy of wildlife management and conservation efforts.

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## **NOTES:**

# STRESS INDICATORS WITH DEER CAPTURE IN A HIGH PREVALENCE CWD AREA

Lisa Muller<sup>1</sup>, Justin Kosiewska<sup>1</sup>, Jacob Wyrick<sup>1</sup>, Cameron Mitchell<sup>1</sup>, Daniel Grove<sup>1</sup>, Mark Wilber<sup>1</sup>, Dailee Metts<sup>1</sup>, Allan Houston<sup>2</sup>

1: University of Tennessee, School of Natural Resources

2: Ames Research and Education Center

## ABSTRACT:

We work hard to minimize iatrogenic effects on deer during capture events. We have many ground capture options (e.g., darting, drop nets, and Clover traps) and helicopter net gunning to safely capture deer. However less is known about how these methods affect stress hormones (cortisol) and indicators of metabolic demand on the animals including serum concentrations of creatinine, blood urea nitrogen, creatine kinase, lactate dehydrogenase, and lactate. Understanding stressors is especially important in an area with high CWD prevalence. During winter of 2023-2024, we captured (ground and helicopter aided) 75 deer in West Tennessee in an area of high CWD to place collars and collect biological samples. We measured cortisol from deer in both years. We measured metabolic indicators in 2024 (mainly helicopter captures). Thirteen deer died within the first 30 days. We tested CWD status on 8 of the mortalities with 4 CWD+ and 4 CWD-. Although small sample size and high variability of the early mortalities with known CWD status, we found a mean cortisol of 6.5 ug/dl for CWD+ (n=3) and 4.4 ug/dl for CWD- (n=3). Cortisol was higher for helicopter captures (5.3 ug/dl, n=42) compared to Clover traps (4.6 ug/dl, n=3), drop nets (3.5 ug/dl, n=11), and darting (2.5 ug/dl, n=3). All physiological measures of metabolism were high for helicopter captures including lactate mean of 30.7 mmol/L. Helicopters with net gunning appeared to be the most stressful physiologically capture method. Stress may be higher in individuals in CWD enzootic areas and be exacerbated by capture events.

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## NOTES:

# INFLUENCE OF CLIMATE, LANDSCAPE, AND FORAGE AVAILABILITY ON DEER MORPHOLOGY ACROSS THE EASTERN US

Mark Turner<sup>1</sup>, Craig Harper<sup>1</sup>, Bronson Strickland<sup>2</sup>, Marcus Lashley<sup>3</sup>, Mark Wilber<sup>4</sup>

1: University of Tennessee

2: Mississippi State University

3: University of Florida

4: University of Tennessee School of Natural Resources

## ABSTRACT:

White-tailed deer body and antler size vary widely across their geographic distribution, and managers are interested in factors associated with larger morphometrics. Previous work has considered landscape and temperature effects on morphology, but there is limited information on how these factors interact with site-specific forage availability to determine body and antler size. We collected body mass, antler size, and site-specific growing-season forage availability from 35 properties across 21 eastern U.S. states. Average female body mass increased by 1.7 pounds for every 1°F decrease in average annual temperature and increased by 3.5 pounds for every 10-percentage point increase in landscape crop coverage. Mature male antler size also correlated with temperature and crop coverage, with antler size increasing by 1.1 inches for every 1°F decrease in temperature and increasing by 2.8 inches for every 10-percentage point increase in crop coverage. After controlling for landscape effects, adult female body mass increased by 0.13 pounds for every 1 deer day/acre increase in site-specific nutritional carrying capacity based on a 0.3% phosphorus constraint (PNCC). Mature male antler size was marginally correlated with PNCC as well, with antler size increasing by 0.1 inch for every 1 deer day/acre increase in PNCC. Our results indicate climate and landscape variables promoting growing-season forage have a consistent influence on morphology, and we found support for site-specific forage availability influencing female body and male antler size. We recommend managers increase site-specific nutritional availability within the context of landscape-level nutrition to help shape expectations if increasing deer morphometrics is an objective.

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## NOTES:

# DOE BETTER: ADDRESSING THE NATIONAL DECLINE IN ANTLERLESS HARVEST

Matthew Ross<sup>1</sup>, Kip Adams<sup>1</sup>, Nick Pinizzotto<sup>1</sup>, Ben Westfall<sup>1</sup>

<sup>1</sup>: National Deer Association

## ABSTRACT:

Hunters killed more antlerless deer than bucks for the first time in 1999. Doe harvests remained high many seasons afterwards; however, that trend faded by 2015, and we have since struggled to kill more antlerless than antlered deer. Our annual Deer Report contains evidence for renewed emphasis on doe harvest in the USA. We surveyed state wildlife agencies and collected data on the number of white-tailed deer harvested during the 2023-24 season and prior, the percentage of Wildlife Management Units (WMUs) currently at/above/below density goals, trends in fawn recruitment (FRR) and doe fawn breeding rates, depredation permits, and urban deer issues. In total, 21 of 37 states (57%) shot fewer antlerless deer in 2023 than their five-year average, and the combined harvest decreased 3% from 2022 in the Midwest, Northeast and Southeast regions. A quarter of all WMUs in these same regions maintained deer densities above goal five years ago, and that number has risen to 43% today. The Southeast had the largest increase, with the percentage of WMUs above goal rising from 19% in 2018 to 48% in 2023. Since 2014 the national FRR has decreased 10%, and the proportion of doe fawns breeding has declined from 13% to 10% since 2016. Twenty-one of 36 states (58%) issued more depredation tags than they did five years ago, while only six states (17%) reported issuing less. Because of this changing landscape, it is more urgent than ever that hunters do their part to harvest an appropriate number of antlerless deer.

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## NOTES:

# INCREASING AWARENESS OF THE BENEFITS OF DEER HUNTERS AND HUNTING IN THE SOUTHEAST

Kip Adams<sup>1</sup>, Matthew Ross<sup>1</sup>, Nick Pinizzotto<sup>1</sup>

1: National Deer Association

## ABSTRACT:

Hunters are our nation's original conservationists. To highlight the benefits of hunting and the importance of deer hunters to our wildlife programs the Southeast Deer Partnership initiated a multi-phase project in 2020 to increase awareness of the benefits of deer hunters and hunting to wildlife programs in the Southeast, including impacts to at-risk species. This "value of deer" project highlighted the economic, social and conservation benefits of deer hunting and included state-specific data on habitat management activities by deer hunters on private lands. The study area included the 15 states in the Southeastern Association of Fish and Wildlife Agencies (SEAFWA) region. Research 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. Southeast deer hunters spend \$183 million on wildlife plantings and over \$1 billion on land leased primarily for deer hunting. A public education and marketing campaign promoting the value of deer ensued during 2024. The campaign included a documentary titled Wildtail: American's Wildest Conservation Success Story and used print, digital and social media formats. The documentary was viewed over 1.1 million times on YouTube and received over 2.3 million Google ad impressions. The overall campaign received over 18.5 million impressions and was one of the largest value of deer promotions to date.

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## NOTES:

# POSTER ABSTRACTS

\*DENOTES STUDENT PRESENTATION

## MATURE WHITE-TAILED DEER BUCK WEIGHT LOSS DURING THE RUT IN THE SOUTH CAROLINA PIEDMONT

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3. Cedar Ridge Plantation, Bradley, SC

### ABSTRACT:

White-tailed deer (WTD) exhibit a scramble-competition polygyny (tending bond) breeding strategy. Although few empirical data exist, many references state that WTD bucks lose 15-30% of their body mass during the rut due to reduced foraging, fighting, and increased movements. We inferred weight loss of mature bucks ( $\geq 4.5$ -years old) during the rut on a 3,875-acre property in the Piedmont of South Carolina by regressing live weight on date of harvest during 2007-2024 hunting seasons. Similar to Strickland et al. (2017), our data did not follow the weight of individual deer through the season but assumed that weight of harvested bucks represented the simultaneous state of the population. A study including our study area reported parturition data for 65 fawns ranging from 10 April to 24 June (Muthersbaugh 2023). Assuming gestation of 200 days, conception dates for our study area ranged from 23 September to 7 December (76 days) with a mean of 29 October. Ninety-five bucks were harvested between 1 October and 27 December. Mean conception date was similar to the mean buck harvest date ( $\bar{x}$  = 31 October). A simple linear regression of harvest weight on harvest date ( $R^2 = 0.1061$ ,  $p = 0.001$ ,  $n = 95$ ) predicted a 13% weight loss, similar to the 13.8% reported in Mississippi (Strickland et al. 2017) and 12-18.1% in Texas (Foley et al. 2018). With long seasons across the Southeast that include most of the rut, this study can easily be replicated by landowners and managers without expensive or complex statistical studies.

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### NOTES:

# UNDERSTANDING WHITE-TAILED DEER MOVEMENT AND HABITAT USE IN AN URBAN LANDSCAPE

Matthew Payne<sup>1</sup>, Jennifer Mullinax<sup>1</sup>, Travis Gallo<sup>1</sup>

<sup>1</sup>: University of Maryland

## ABSTRACT:

White-tailed deer are one of the most abundant mammals in the Eastern United States. Due to a lack of predators and their ability to adapt to an increasingly urban world, white-tailed deer are increasingly becoming one of the primary causes of human-wildlife conflicts, such as vehicle collisions and property damage in urban spaces. While much attention has been drawn to these conflicts, more research needs to be conducted in highly urban environments. As such, the goal of this study is to answer the following research questions: 1) How do white-tailed deer utilize different urban spaces within their home ranges? 2) What urban corridors do white-tailed deer use to move through highly urban areas? 3) How does deer space use lead to potential human-wildlife conflicts? 4) Are there identifiable patterns to the frequency and proximity of white-tailed deer visits near residential homes and commercial areas of human usage? The deer in this ongoing study are captured using drop-nets in urban parks in the DC-Metropolitan area and fitted with GPS collars that record locations every thirty minutes. This initial spatial analysis of GPS data utilized a Brownian Bridge movement model and aggregated deer trajectory data by hexagon to match SafeGraph metrics.

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## NOTES:

# ARE SOLUNAR CHARTS AS PREDICTABLE AS THEY CLAIM?: COMPARING SOLUNAR RATINGS TO ACTIVITY PATTERNS OF MALE WHITE-TAILED DEER

\*Tristan Swartout<sup>1</sup>, Stephen Ditchkoff<sup>1</sup>

1: Auburn University

## ABSTRACT:

For decades, the hunting community has utilized solunar charts to predict activity patterns of white-tailed deer. However, scientific research on the accuracy of these charts is limited. The objective of our study was to examine movement patterns of male white-tailed deer in relation to solunar chart predictions. In December-February of 2009 through 2011 we examined activity patterns of 22 GPS-collared male deer at a high-fence property in Alabama in relation to a solunar chart day rating system. During the predicted movement periods of moonrise and moonset, deer were 0.31 and 0.38 times as likely to be active on the highest rated day versus the lowest rated day, respectively, and during moon underfoot and overhead deer were 2.97 and 2.75 times as likely to be active on the highest rated day versus the lowest rated day, respectively. Furthermore, we found during moonrise and moonset a decreasing probability of movement as day rating increased, while for moon overhead and underfoot we noted an increasing probability of movement as day rating increased. This study supports prior findings that deer activity patterns vary based on solunar events and phases, while also revealing inconsistencies in solunar chart predictions. However, we cannot fully disregard solunar charts and how deer activity may vary during different periods of the lunar cycle. We believe this warrants further research examining the predictability of solunar charts and lunar effects on activity patterns of deer while accounting for differences between regions, sex, and seasonality.

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## NOTES:

# REPRODUCTION AND SURVIVAL OF WHITE-TAILED DEER IN A HIGH PREVALENCE CWD AREA

\*Jacob Wyrick<sup>1</sup>, Justin Kosiewska<sup>1</sup>, Cameron Mitchell<sup>1</sup>, Daniel Grove<sup>1</sup>, Mark Wilber<sup>1</sup>, Dailee Metts<sup>1</sup>, Garrett Clevinger<sup>2</sup>, Allan Houston<sup>3</sup>, Lisa Muller<sup>1</sup>

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2: Tennessee Wildlife Resources Agency

3: Ames Research and Education Center

## ABSTRACT:

Chronic wasting disease (CWD), a fatal transmissible spongiform encephalopathy, can contribute to population declines in white-tailed deer. In 2018, CWD was detected in West Tennessee (Fayette and Hardeman counties), where Ames Research and Education Center (Ames REC) is located. During the 2023-2024 hunting season CWD+ rate was 46.6% (64.9% for males and 27.8% for females) at Ames REC. We know CWD kills deer, but we need to understand the possible effects on reproduction and recruitment. We have been monitoring reproduction in captured deer and found 87% pregnant females in 2023 and 91% in 2024. Although only three female fawns were captured, two were pregnant. This herd has a high reproductive potential, but we don't have recruitment information. In January 2024, we captured 23 pregnant deer, fitted them with iridium satellite GPS collars, and inserted vaginal implant transmitters (VITs). When we received a birth alert from the VIT, we searched the area for fawns. Once found, we recorded location, morphometric data, and placed a VHF proximity-based collar. We also conducted searches for opportunistic fawns. Adult female mortality was 35% before reaching parturition, possibly due to predation. One of these does was killed by late-season hunter harvest and had five fetuses. We were only able to find and collar four fawns, which were monitored twice daily for up to 20 days. We found collars with no carcasses. Although this population has a high reproductive potential, mortality in adults, and possibly fawns, from predation is likely facilitated by the elevated CWD prevalence.

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## NOTES:

# STANDARDIZATION AND AUTOMATION OF DMAP REPORTS IN ARKANSAS

Jeremy Brown<sup>1</sup>, Ralph Meeker<sup>1</sup>, Chris Middaugh<sup>1</sup>

<sup>1</sup>: Arkansas Game and Fish Commission

## ABSTRACT:

Since the inception of the Deer Management Assistance Program (DMAP) in Arkansas, biologists would summarize data collected by each club individually and provide a customized presentation or written report to the club members after each season. However, this process became time prohibitive as the number of DMAP clubs enrolled rose over the years and each biologist was responsible for assisting many clubs. This prohibitive work load led to the use of fifteen different report templates by thirteen biologists as well as some clubs not receiving reports. Therefore, AGFC staff designed a standardized report that incorporated many relevant metrics that each club collected data on as well as comparisons of DMAP club data to the corresponding deer zone and ecoregion in the state. Staff developed an R script using RMarkdown that summarized biological data into figures and tables and incorporated text that is standard to all clubs. A report for all 561 DMAP level 1, 2, and 3 clubs in Arkansas can now be created almost instantaneously. These reports link to Arkansas's CWD data to also give each club the most current CWD information for their county. Biologists then add personalized recommendations to each report, spending just minutes per report compared to hours per report previously. This standardization and automation greatly increased efficiency and has allowed more time for strengthening club relationships, all using this improved report. All software used is freely available and these methods could be transferred to programs in other states.

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## NOTES:

# NATURALLY MOCKED: A COMPARATIVE LOOK AT DEER SCRAPE PREFERENCES

\*Nathan Cowley<sup>1</sup>, Miranda Huang<sup>2</sup>, Steve Demarais<sup>1</sup>, Bronson Strickland<sup>1</sup>, Allan Houston<sup>3</sup>, Manuel Ruiz-Aravena<sup>1</sup>

1: Mississippi State University

2: University of Minnesota Twin Cities

3: Ames Research and Education Center

## **ABSTRACT:**

The Mississippi State University Deer Lab recently determined deer scrapes have the potential to serve as environmental sentinels for CWD. Sampling scrapes could improve surveillance efficiency, but it takes time to find scrapes on the landscape. In this study, our goal was to evaluate if mock scrapes, set up by agencies in convenient areas, could substitute for natural scrapes. We sought to understand if and how deer use these two types of scrapes differently. Key objectives in this study included examining weekly visitation rates by sex and age class, and patterns of revisitation, use over time, and scraping behaviors. We conducted our study at the Ames Research and Education Center in Grand Junction, Tennessee during 2023-2024 deer season. We monitored 27 natural scrapes and 25 mock scrapes using camera traps. Mock scrapes were distributed on field edges, along maintenance roads, and throughout the woods. To replicate the conditions of a natural scrape, we used dripper bags containing a mixture of two deer urine attractants to regularly add scent to the mock scrapes. We captured 1,056 total scrape interactions: 824 at natural scrapes and 232 at mock scrapes. Our preliminary results suggest natural scrapes are used more frequently and deer display more scraping interactions per visit. These results highlight the importance of natural scrapes for communication and social interactions.

## **CONTACT:**

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## **NOTES:**

# MOVEMENT ECOLOGY OF WHITE-TAILED DEER IN A HUMAN MODIFIED, DISTURBANCE-DRIVEN FLOODPLAIN

\*William Ellsworth<sup>1</sup>, Johnathan Bordelon<sup>2</sup>, Robert Kennon<sup>2</sup>, Michael Chamberlain<sup>1</sup>, Gino D'Angelo<sup>1</sup>

1: University of Georgia

2: Louisiana Department of Wildlife and Fisheries

## ABSTRACT:

Animal movement is a complex phenomenon with important implications for managing populations and understanding disease transmission. Further, ecological disturbances can influence animal movement indirectly, by modifying the distribution of resources across landscapes, and directly, by physically displacing individuals. Increasingly, anthropogenic landscape change impacts animal movements, as animals respond by altering their foraging efficiency or risk avoidance behaviors. In northeastern Louisiana, white-tailed deer inhabit an anthropogenically modified floodplain, predominately converted to row-crop agriculture following the clearing of bottomland hardwood forests and construction of levee systems along the Mississippi River. Lands inside the levees are unprotected from annual cycles of flooding, a cyclical ecological disturbance that typically occurs during the spring. Chronic wasting disease (CWD), a fatal, neurodegenerative prion disease, was first detected in deer in northeast Louisiana in 2022. The spread of CWD is intrinsically linked to space use and movement patterns of infected individuals, and understanding movement behaviors is critical for disease management. Across three years, we will capture and GPS-collar 180 adult and juvenile deer of both sexes. Of these, we will target 90 juvenile males, as longer distance movements like dispersal, may play outsized roles in transmitting CWD. Ultimately, we will develop movement models to predict the influence of flooding in agricultural landscapes on home range size, seasonal fidelity, and dispersal. Our work will contribute to the understanding of how anthropogenic landscape change and ecological disturbances impact animal movement, while furthering consequential management objectives for containing the spread of a disease with known population-level consequences.

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## NOTES:

# **SHE'S LEAVING HOME: EXCURSIONS BY FEMALE WHITE-TAILED DEER IN A WILDLIFE MANAGEMENT AREA**

\*Laura Franklin<sup>1</sup>, Elina Garrison<sup>2</sup>, Rebecca Peters<sup>2</sup>, Marcus Lashley<sup>1</sup>

1: University of Florida

2: Florida Fish and Wildlife Conservation Commission

## **ABSTRACT:**

Changes in movement behavior of female white-tailed deer (*Odocoileus virginianus*) often coincide with reproductive activity at the population level. One common movement behavior, excursions, are often described as a strategy to maximize mate selection during the mating season or increase safety for offspring during parturition. However, excursions that occur outside of the time periods associated with mating and parturition are not well understood. To explore potential drivers of excursive behavior at the individual level, we deployed GPS radiocollars on 22 adult female deer in the Osceola Wildlife Management Area in north Florida, USA. This low density, high risk population inhabits a landscape characterized by multiple predators, high pressure from both still- and dog hunting, and regular disturbances such as prescribed fire and timber harvesting. Throughout the three-year sampling period, multiple females made several excursions at least one mile outside of their home range, with some excursions exceeding three miles. We present spatial, temporal, and contextual factors associated with each individual's excursion activity.

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## **NOTES:**

# SUMMARY OF WHITE-TAILED DEER DATA COLLECTION IN THE SOUTHEAST

\*Conner Mills<sup>1</sup>, Robert Gitzen<sup>1</sup>, Stephen Ditchkoff<sup>1</sup>

1: Auburn University

## ABSTRACT:

White-tailed deer are one of the most sought-after game species in North America. Throughout the Southeast, the deer hunting industry is an important cultural and economic activity, generating billions of dollars in annual revenue. Data collection for deer management primarily occurs through hunter-harvest reporting. Data are needed to base population estimates, harvest estimates, and hunting seasons to further regulate the growth of the species. These evaluations can help guide professionals to make responsible management decisions. We will summarize publicly accessible white-tailed deer data collection methods throughout SEDSG states in an unbiased manner, and identify trends in data management, which can then be open for discussion. By examining state-specific deer management plans and analyzing yearly harvest reports, a detailed review will be conducted on how deer data are collected across the region and how it is used in population modeling/predictions. Our results will highlight deer data collection in SEDSG states and identify how these states are developing population estimates. By inspecting patterns across the Southeast, we aim to help states learn from each other's practices and enhance deer monitoring. From this summary, there can be opportunities for advancement in quantitative and qualitative research to more effectively record population trends and ensure the sustainable harvest of white-tailed deer for many years to come.

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## NOTES:

# MORPHOMETRICS OF SIKA HINDS AND CALVES

\*Charlie-Ann Perez<sup>1</sup>, Andrew Slear<sup>1</sup>, Jacob Bowman<sup>1</sup>, Angela Holland<sup>1</sup>, Jonathan Trudeau<sup>2</sup>

1: University of Delaware

2: Maryland Dept. of Natural Resources

## ABSTRACT:

In 1916, five sika deer (*Cervus nippon yakushimae*) were introduced to James Island in Dorchester County, Maryland. Today, the Delmarva Peninsula hosts the largest free-ranging sika deer population in the U.S.A., estimated at 10,000-20,000 individuals. Further research on sika deer reproductive ecology is vital as agricultural damage and hunting interest have increased over the past decade. Our research aims to collect and summarize baseline morphometric data for adult female sika deer and neonates. We captured adult female sika deer in Dorchester and Wicomico Counties Maryland from January - March 2024. We fitted 31 females with a GPS collar and vaginal implant transmitter (VIT). We capture calves using the VIT expulsion locations in May-August 2024. We process calves by ear tagging, collaring, and measuring weight, total length, and shoulder height. The average total length and weight of an adult female sika hind were 127.9 cm (50.4 in) and 39.5 kg (87.1 lbs), respectively. The neonate's average total length and weight are 53.9 cm (21.2 in) and 2.6 kg (5.7 lbs), respectively. One final field season remains for this study.

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## NOTES:

# BANG FOR YOUR BUCK: ECONOMICS OF FOOD PLOT AND OLD-FIELD MANAGEMENT FOR DEER AND WILD TURKEYS

\*Luke Resop<sup>1</sup>, Bronson Strickland<sup>1</sup>, Steve Demarais<sup>1</sup>, Craig Harper<sup>2</sup>, William McKinley<sup>3</sup>, Ashleigh McCullough<sup>4</sup>, Kevyn Wiskirchen<sup>4</sup>, Jason Isabelle<sup>4</sup>, Charlie Rewa<sup>5</sup>,

1: Mississippi State University

2: University of Tennessee

3: Mississippi Dept of Wildlife, Fisheries, and Parks

4: Missouri Dept of Conservation

5: USDA NRCS

## ABSTRACT:

Time and money are often limited for habitat managers. Planting food plots and managing old-fields for food and cover are two of the most common management strategies implemented for deer and wild turkeys, but it is unclear how the cost and production of these management strategies compare. An economic analysis of food plot and old-field management would benefit wildlife managers by increasing the efficiency of their management decisions. We implemented side-by-side food plot and old-field treatments on nine sites across Mississippi, Tennessee, and Missouri beginning in 2023 to evaluate the economics of food plot and old-field management. Food plot treatments included a regeneratively managed plot (RPU), a conventional warm-season plot (CWS), and a conventional cool-season plot (CCS). Regenerative treatments excluded tillage, herbicide, and fertilizer applications and included diverse seed blends to promote soil health. Conventional plots incorporated tillage, herbicide, fertilizer applications, and lower-diversity seed blends to maximize production. Old-field treatments included dormant-season prescribed fire (BFS) and disking (BDS) with selective herbicide applications to reduce undesirable plants and promote desirable plants for deer and wild turkeys. On an annual per acre basis, all treatments required similar time but CCS (\$583) and CWS (\$451) cost more than RPU (\$326) which was more expensive than BFS (\$25) and BDS (\$48). BFS had the most deer and turkey detections per dollar, but CCS attracted the most deer and RPU attracted the most wild turkeys. Our results will enable deer and wild turkey habitat managers to design properties and management plans more efficiently and effectively.

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## NOTES:

# THE EFFECTIVENESS OF GPS COLLARS AND VITS TO STUDY THE REPRODUCTIVE ECOLOGY OF SIKA DEER

\*Andrew Slear<sup>1</sup>, Jacob Bowman<sup>1</sup>, Angela Holland<sup>1</sup>, Jonathan Trudeau<sup>2</sup>

1: University of Delaware

2: Maryland Dept. of Natural Resources

## ABSTRACT:

In Maryland, native white-tailed deer (*Odocoileus virginianus*) and non-native sika deer (*Cervus nippon yakushimae*) inhabit the Delmarva Peninsula. Over 100 years after the initial release of five sika deer, the population is now estimated to be 10,000-20,000 individuals. This population is important as a game species, which requires management to ensure sustainable harvest. Our study aims to investigate the reproductive ecology, calf survival, and parturition movement of sika deer in Maryland. To achieve these objectives, we evaluate the success of vaginal implant transmitters for locating sika deer captures. We captured sika deer hinds using clover traps, rocket nets, and drop nets on private and public lands from January – March 2024. We fitted hinds with a GPS/VHF collar, VIT and uniquely numbered ear tags. We used VITs to locate neonates in May-August 2024. Neonates were fitted with a VHF collar and ear tags. We deployed 31 VITs and were able to locate 22 calves. We located 19 calves using VITs and three opportunistically. We did not find calves at five expelled VITs. Additionally, six VITs malfunctioned. We observed five calf mortalities: two drowning, one bacterial infection, one stillbirth, and one unknown. One more adult capture season and one calving season remain in this study.

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## NOTES:

**Table 1. Southeastern state deer harvest summaries for the 2023-2024 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	147,880	158,212	314,496
AR	52,068	38,607	74	56	12	106,570	85,822	192,392
DE	1,954	1,592	81	15	10	6,587	7,954	14,541
FL	53,632	27,573	51	48	17	60,662	31,828	92,496
GA	57,800	38,674	67	67	6	134,929	153,942	288,871
KY	40,406	39,092	97	59	9	79,595	61,216	140,811
LA	41,406	26,562	64	52	9.5	144,320	118,080	262,400
MD	9,837	8,766	89	39	6	31,937	40,705	72,642
MO	69,561	63,910	92	31	4	176,944	149,504	326,448
MS	47,296	31,250	66	66	6	131,245	148,545	279,790
NC	52,660	36,154	67	57	6	93,037	70,794	189,803
OK	69,919	37,425	54	19	3	69,913	54,920	124,833
SC	30,207	21,920	73	63	7.5	104,353	93,818	198,171
TN	41,152	34,045	83	47	7	84,434	68,397	152,864
TX	261,914	177,272	58	40	<2	424,892	314,972	739,864
VA	39,925	37,295	93	61	9	118,750	87,836	206,586
WV	24,078	22,972	95	79	11	71,901	37,394	109,246
<b>Avg or Total</b>	<b>945,443</b>	<b>690,090</b>	<b>76.18</b>	<b>51.06</b>	<b>7.65</b>	<b>1,987,949</b>	<b>1,683,939</b>	<b>3,706,254</b>

**Table 1. Continued. Page 2**

State	Harvest / sq. mi. Deer Habitat	Method of Data Collection <sup>1</sup>	Estimated Pre season Population	Length of Season (Days) <sup>2</sup>			Method of Setting Seasons <sup>3</sup>	% Land Area Open to Dog Hunting
				Archery	Black Powder	Firearms		
AL	5.8	A, B, C, E, F	1,250,000	134 (C)	5 (A)	99 (A, C)	A, B	67
AR	4.9	A, C, F, G	750,000	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	3.4	E, F	-	35-38	14	74-79	A, B	20
GA	7.0	A, C, D, F, G	1,100,000	128-145 (C)	92 (A, C)	85 (C)	A, B, C	23
KY	3.7	A, C, D, F, G	990,000	136 (C)	2(A), 9(B)	16 (C) + 4 Jr	A, B, C	0
LA		A, B, C	650,000	119-138 (C)	14(A, B)	64-79	A, B, C	80
MD	8.7	B, C, D, F	237,000	112 (C)	3(A), 15 (B)	15(A), 3 (B), + 2 Jr Day	A, B, C	0
MO	5.1	D, F	1,700,000	112	11	11-28 + 5 Jr	A, B	0
MS	8.6	C, E	1,500,000	123 (C)	12 (A)	74	B, C	90
NC	5.2	A, B, C, D, F, G	1,111,000	21-117	14	20-78	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	700,000	16 (A)	10 (A)	70-140	C	60
TN	4.5	A, B, C, D, G, I	-	40 (C)	14 (C)	651-75(C)	A, B	0
TX	4.2	B	4.702 million <sup>4</sup>	35	14	72-86 (B, C)	A, B	0
VA	5.5	A, B, C, D, F	1.2 million-	42-77	14-36	15-50	A, B	55
WV	4.8	F	500,000	97 (C)	11 (C)	26 (C)	A, B, C	0
<b>Avg or Total</b>	<b>5.9</b>		<b>17,186,000</b>					<b>30.29</b>

**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?
<b>AL</b>	233,450	Stable	\$32.55	\$64.30-\$377.25	Hunter Log/Electronic Reporting	Mandatory	DMAP
<b>AR</b>	280,000	Stable	\$10.50 – 25	\$100 – 410	License Tag	Mandatory if not checked immediately upon harvest	DMAP & CWD Private Lands Program
<b>DE</b>	20,255	Up	\$22	\$199.50	Hunters Log	Mandatory	2 Antlered, Unlimited Antlerless
<b>FL</b>	132,320	Stable	\$22	\$156.50	Electronic Reporting	Mandatory	Private Lands Programs
<b>GA</b>	204,035	Stable	\$40	\$325	License Tag	Mandatory	DMAP, WMAs
<b>KY</b>	260,000	Stable	\$62	\$335	License Tag/ Hunter Log/Carcass Tag	Mandatory	Yes, select zones
<b>LA</b>	227,500	Stable	\$35	\$300	Physical or Electronic Tag	Mandatory	DMAP
<b>MD</b>	57,600	Up	\$47	\$210	Physical Tag or Electronic Proof of Registration	Mandatory	Antlered only
<b>MO</b>	480,463	Down	\$17	\$265	License Tag	Mandatory	DMAP
<b>MS</b>	170,832	Up	\$25-\$55	\$400-\$475	None	None	DMAP, FMAP, CMA
<b>NC</b>	234,494	Up	\$47	\$238	License Tag	Mandatory	DMAP, CDMAP, CWDMAP
<b>OK</b>	362,938	Stable	\$25	\$300	License Tag	Mandatory	DMAP
<b>SC</b>	154,715	Stable	\$25	\$235-375	Physical Tag	Mandatory	Yes & DMAP
<b>TN</b>	206,683	Up	\$68-166	\$305	Electronic Proof of Registration	Mandatory	Select WMAs and Unit CWD
<b>TX</b>	757,042	Stable	\$25	\$315	License Tag	Mandatory	MLDP tags
<b>VA</b>	184,275	Down	\$46-82	\$197-259	License Tag	Mandatory	Unlimited on private lands, antlerless only
<b>WV</b>	182,506	Stable	\$35	\$196	Physical Tag	Mandatory	Yes
<b>Total</b>	4,149,108						



**Table 1. Continued, Page 5**

State	Limits <sup>7</sup>			Antler Restrictions <sup>8</sup>		% Hunting Success <sup>9</sup>			Avg. Leasing Fees/Acre
	Season	Antlerless	Antlered	Antler Restrictions	Archery	Muzzle-loader	Firearms		
AL	3/None <sup>8</sup>	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 (24 WMAs and SOAs)	~15	~20	~45	\$6-20+	
AR	6	3-6	2	A, B, C No antler restrictions within CWD Management Zone counties	-----	48.8% combined	?	\$8-12	
DE	None	4+	2	One buck must have a spread ≥15"	?	?	?	\$5-20	
FL	5	Up to 2	Up to 5	A	-----	40.3% Combined	-----	\$10-25	
GA	12	10	2	A (One buck must be 4-points on 1 side or 15" outside spread) B (9 counties are more restricted)	13	2.1	49.1	\$5-25	
KY	None	Varies	1	None	-----	35% Combined	-----	\$5-40	
LA	6 statewide/3 in 2 of 10 deer areas	2-4	2-3	No	19	21	57	\$5-40	
MD	Varies	Varies	2 only 1 with fire-arm	3-pt restriction on two bucks	32	22	40	\$5-35	
MO	Varies	Varies	2; only 1 with fire-arm	B (40 counties) Doesn't apply to Jr.	21	?	44	?	
MS	14	10/5/2	4/3	C	36	35	58	?	
NC	6 <sup>8</sup>	4 <sup>8</sup>	2	NA	-----	51.6% Combined	-----	?	
OK	6	Up to 6	2	No	33	22	43	\$10-30	
SC	8+	3+	5	A (on 2 of buck bag limit) C (16 WMAs)	27	24	68	\$8-20	
TN	None	Varies	2	C (on select WMAs)	?	?	?	\$10	
TX	5	Up to 5	Up to 3	Yes, 117 counties	-----	67.8% Combined	-----	\$7-30	
VA	6 (east) & 5 (west)	6	3 (east)& 2 (west)	4 counties	30	33	44	UNK	
WV	11	Up to 8	2 statewide except 3 in CWD containment area or by XS license holders	5 WMAs & 2 State Forests	34	16	44	\$3-10	
<b>Avg.</b>					26	22	49		

**Table 1. Continued. Page 6**

Private Lands Programs							
State	Type <sup>10</sup>	Min. Acreage Requirements	Fee	No. of Cooperators	Trailing wounded deer with dogs legal?	Supplemental feeding legal?	Baiting legal?
AL	A	None	None	120	Yes	Yes	Yes <sup>11</sup>
AR	A	500	None	712	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	110, 383, 16 (509)	No	Yes	Yes, Private
FL	A, C	640; 5000	None	817; 39	Yes	Yes (except CWD zone))	Yes, Private (except CWD zone)
GA	DMAP	250-1500	\$200-1,000	251	Yes	Yes, Private	Yes, Private
KY	B	None	None	1,000	Yes	Yes (except March – May, CWD Zones)	Yes, Private (Except CWD Zones)
LA	A	40/500/1,000	\$100-\$1500	760	Yes	Yes (Except CWD CA)	Yes, Private (Except CWD CA)
MD	None				Yes	Yes	Yes, Private Only.
MO	A, B	20 landowner tags; 500 DMAP (40 municipalities)	None	2,522 DMAP landowners	Yes	Yes (except CWD zone)	No
MS	A, D	Variable	None	534	Yes	Yes (except CWD zone)	Private land only
NC	DMAP, CWDMA P, CDMAP	DMAP, Regional 1,000/500 CWDMA P and CDMAP; none	None	91 (49 DMAP, 28 CWDMA P, 14 CDMAP)	Yes	Yes (except in CWD zone) where bait may only be used Sept 1-Jan 1)	Yes, Private (Except in CWD Zone where bait may only be used Sept 1-Jan 1)
OK	A	1,000	\$200-400	150	Yes	Yes	Yes, Private
SC	A	None	\$50	1,366-2.9 mil ac	Yes	Yes, Private	Yes, Private
TN	None				With officer approval	Yes (except in CWD zone)	No
TX	A (MLDP)	None	\$0-300	11,221 properties enrolled in MLDP (29.4 million acres)	Yes	Yes	Yes
VA	DCAP DMAP DPOP	None	None	768 622 13	Yes (weapon allowed)	Yes (Sept 1 – first Sat in Jan) statewide. Illegal year round in 44 of 95 counties.	No
WV	None				Yes	Yes <sup>12</sup>	Yes <sup>12</sup>

## **Table 1. Continued; footnotes. Page 7**

<sup>1</sup> 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.

<sup>2</sup> A–Early Season; B–Late Season; C–Full Season.

<sup>3</sup> A–Harvest & Biological; B–Departmental/Commission Regulatory; C–Legislative.

<sup>4</sup> Texas population estimates should not be compared to estimates prior to 2005 due to changed methodology.

<sup>5</sup> Asterisk if estimate includes landowner exempted hunters.

<sup>6</sup> A–Actual number based on reports; B–Estimated road kill; C–State Farm estimate

<sup>7</sup> 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 firearms 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.

<sup>8</sup> A–Statewide Antler Restrictions; B–County Antler Restrictions; C–Region or Area Antler Restrictions.

<sup>9</sup> Averages do not include combined reports.

<sup>10</sup> A–DMAP; B–Landowner tags; C–Antlered buck tags; D–Fee MAP.

<sup>11</sup> 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

<sup>12</sup> Hunting deer with bait illegal on all public lands and on private and public lands in CWD disease management area.

Notes:

1. All states require hunter education, permit handguns for use on deer, and do not permit use of drugged arrows on deer.
2. AL only provided updated data for page 1. All other Table 1 data for AL is not current or updated.

Table 1: Southeastern state summaries of chronic wasting disease (CWD) surveillance and management information for captive and wild cervids, Southeast Deer Study Group Annual Meeting, 2025.

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 <sup>1,C</sup>	2022	303*	0	3,629	1	2,367*	0	18,244	3	1	A, B, D	A, B, D, E, F, H, I, 4
AR <sup>1,C</sup>	2016	>75	0	8,691	242	>1000	0	59,681	1,787	20	A, B, C, D	A, B, C, D, E, F, G, H, I, J
DE <sup>1,A</sup>	NA	0	0	752	0	0	0	11,818	0	0	A, B	A B, E, F, I
FL <sup>1,B</sup>	2023	35	0	3,511	0	137	0	22,367	1	1	A, B, D	A, B, C, E, F, G, I
GA <sup>1,B</sup>	NA	0	0	1,887	0	0	0	17,785	0	0	A, B, D	A, B, C, D, E, F, I
KY <sup>2,B,4</sup>	2023	UNK	0	5,390	1	<2,751	1	53,585	1	2	A, B, D	A, B, C, D, E, F, G, I
LA <sup>1,A</sup>	2022	UNK	0	2,370	10	UNK.	0	18,511	22	1	A, B, D	A, B, C, E, F, G, H, I
MD <sup>1,C</sup>	2010	0	0	1,080	52	0	0	14,394	223	6	A, B, D	A, B, C, D, E, F, I
MS <sup>1,B</sup>	2018	523	2	8,528	108	4,352	2	56,232	317	16	A, B	A, B, C, D, E, F, G, H, I
MO <sup>1,C</sup>	2010	1,780	0	37,534	162	4,710	11	285,438	572	39	A, B, C, D	A, B, C, D, E, F, G, I, J
NC <sup>1,A</sup>	2022	UNK	0	36,146	13	>2,000	0	75,506	24	5	A, B, D	A, B, C, D, E, F, G, H, I
OK <sup>1,A</sup>	1998	UNK	0	150	2	UNK	3	>12,000	3	5	B, C	A, B, E, I
SC <sup>1,B</sup>	N/A	0	0	854	0	0	0	5,648	0	0	A, B, D	A, B, E, F, H, I
TN <sup>1,A</sup>	2018	UNK	0	16,301	741	UNK	0	104,285	3,521	18	A, B, C, D	A, B, C, E, F, G, H, I, J
TX <sup>2,C</sup>	2012	32,925	183	15,465	24	228,296	889	153,852	129	32	A, B, D	A, B, C, D, E, F, I
VA <sup>1,A</sup>	2009	19	0	7,941	71	755	0	47,686	252	14	A, B, D	A, B, C, D, E, F, G, H, I
WV <sup>1,A</sup>	2005	A	A	927	86	A	A	>22,500	724	6	A, B, C, D	A, B, C, F, G, I
<b>TOTAL</b>		35,660	185	151,156	1,513	244,001	906	979,532	7,579	166		

Notes:

-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.  
 -AL did not provide updated information in this reporting year; therefore, AL CWD Tale data is not current or updated.

**LEGEND**

- # S-Number Samples
- # P-Number Positive
- UNK-Unknown

\* For Herd Certification Program herds only.

### Sampling Period

<sup>1</sup> July 1 – June 30

<sup>2</sup> March 1 – February 28

<sup>3</sup> September 1 – August 31

<sup>4</sup> Included positive found post sampling period

### 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









# Special Thanks to the Following Contributors



Thank you to **Bucks-Bears-Stags, LLC** for contributing to the Deer Display!

Learn more about them here:  
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Thank you to the following organizations for donating Door Prizes!



**See you in  
Roanoke, Virginia  
in 2026!**