34th Annual Meeting of the

Southeast Deer Study Group

All Dressed Up With No Place to Go:

The Issue of Access

Downtown Sheraton, Oklahoma City, OK

February 20-22, 2011

Hosted by the Oklahoma Department of Wildlife Conservation

Special thanks to the following for their support of the 34th Annual Southeast Deer Study Group Meeting

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Many people dedicated much time and effort towards the success of this meeting. While attempting to recognize each and every person and their contribution would be impossible, I will take this opportunity to extend my personal thanks to the following individuals. Without their hard work, assistance and support, this meeting would not have been possible.

Thank you!

--Jerry Shaw, Chair

34th Annual SDSG

Ken Gee- Chair, Paper Selection Committee

Luke Bell- Co-Treasurer

Becky Rouner- Chair, Registration

Kristen Gillman- Chair, Web Design

Terrah Jones, Registration & Door Prizes

Darren Hill- AV and Powerpoint

Robert Fleenor & Bill Hale- Event Security

Andrea Crews & Erik Bartholomew

Jack Waymire

Mike Sams, JD Ridge, Dr. John Skeen, Alan Stacey, Rex Umber, Ron Smith, & Steve Conrady

The McAlester AAP crew

Russell Stevens, Pres. OK Chapter of the Wildlife Society

Hard work spotlights the character of people: some turn up their sleeves, some turn up their noses, and some don't turn up at all. ~Sam Ewing

THE SOUTHEAST DEER STUDY GROUP

The Southeast Deer Study Group was formed as a subcommittee of the Forest Game Committee of the Southeastern Section of The Wildlife Society. The Southeast Deer Study Group Meeting is hosted with the support of the directors of the Southeastern Association of Fish and Wildlife Agencies. The first meeting was held as a joint Northeast-Southeast Meeting at Fort Pickett, Virginia, on September 6-8, 1977. Appreciating the economic, aesthetic, and biological values of the white-tailed deer (*Odocoileus virginianus*) 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. 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 in our region. The Deer Subcommittee was given full committee status in November, 1985, at the Southeastern Section of The Wildlife Society's annual business meeting. In 2006, Delaware was approved as a member.

PREVIOUS SOUTHEAST DEER STUDY GROUP MEETINGS

Year	Location	Meeting Theme
1977	Fort Pickett, VA	--
1979	Mississippi State, MS	--
1980	Nacogdoches, TX	--
1981	Panama City, FL	Antlerless Deer Harvest Strategies
1982	Charleston, SC	--
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 'Um, What Are We Going to Do With 'Um
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 Vs. 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?

Year	Location	Meeting Theme
2000	Wilmington, NC	Managing Deer in Tomorrow's Forests: Reality Vs. Illusion
2001	St. Louis, MO	From Louis 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

MEMBERS OF THE DEER COMMITTEE: SOUTHEASTERN SECTION OF THE WILDLIFE SOCIETY

State	Name	Employer
Alabama	Chris Cook	Alabama Department of Conservation and Natural Resources
Arkansas	Brad Miller	Arkansas Game and Fish Commission
Delaware	Joe Rogerson	Delaware Division of Fish and Wildlife
Florida	Cory R. Morea	Florida Fish and Wildlife Conservation Commission
Florida	Steve Shea	St. Joe Company
Georgia	Charlie Killmaster	Georgia Department of Natural Resources
Georgia	Karl V. Miller	University of Georgia
Kentucky	Tina Brunjes	Kentucky Department Fish and Wildlife Resources
Louisiana	Scott Durham	Louisiana Department of Wildlife and Fisheries
Louisiana	Emile LeBlanc	Louisiana Department of Wildlife and Fisheries
Maryland	Brian Eyler	Maryland Department of Natural Resources
Maryland	George Timko	Maryland Department of Natural Resources
Mississippi	Chad Dacus	Mississippi Department of Wildlife, Fisheries and Parks
Mississippi	Steve Demarais (Ch)	Mississippi State University
Missouri	Lonnie Hansen	Missouri Department of Conservation
Missouri	Jason Sumners	Missouri Department of Conservation
North Carolina	Evin Stanford	North Carolina Wildlife Resources Commission
North Carolina	David Sawyer	North Carolina Wildlife Resources Commission
Oklahoma	Kenneth L. Gee	The Noble Foundation
Oklahoma	Jerry Shaw	Oklahoma Department of Wildlife Conservation

State	Name	Employer
South Carolina	Charles Ruth	South Carolina Department of Natural Resources
Tennessee	Ben Layton	Tennessee Wildlife Resources Agency
Tennessee	Daryl Ratajczak	Tennessee Wildlife Resources Agency
Tennessee	Craig Harper	University of Tennessee
Texas	Alan Cain	Texas Parks and Wildlife Department
Texas	Bob Zaiglin	Southwest Texas Junior College
Virginia	W. Matt Knox	Virginia Department of Game and Inland Fisheries
Virginia	Nelson Lafon	Virginia Department of Game and Inland Fisheries
West Virginia	Jim Crum	West Virginia Division of Natural Resources

SOUTHEAST DEER STUDY GROUP DEER MANAGEMENT ACHIEVEMENT AWARDS

Career Achievement Award

1996— Richard F. Harlow

1997— Larry Marchinton

1998— Harry Jacobson

1999— David C. Guynn, Jr.

2000— Joe Hamilton

2002 – Robert L. Downing

2004 – Charles A. DeYoung

2005 – Kent E. Kammermeyer

2006 – William E. “Bill” Armstrong

2007 – Jack Gwynn

2008 – none

2009 – David E. Samuel

2010 – Bob K Carroll

SOUTHEAST DEER STUDY GROUP DEER MANAGEMENT ACHIEVEMENT AWARDS

Outstanding Student Oral Presentation Award

1996— Billy C. Lambert, Jr. (Texas Tech University)

1997— Jennifer A. Schwartz (University of Georgia)

1998— Karen Dasher (University of Georgia)

1999— Roel R. Lopez (Texas A&M University)

2000— Karen Dasher (University of Georgia)

2001 - Roel R. Lopez (Texas A&M University)

2002 - Randy W. DeYoung (Mississippi State University)

2003 – Bronson K. Strickland (Mississippi State University)

2004 – Randy W. DeYoung (Mississippi State University)

2005 – Eric Long (Pennsylvania State University)

2006 – Gino J. D'Angelo (University of Georgia)

2007 – Sharon Valitzski (University of Georgia)

2008 - Cory Van Gilder (University of Georgia)

2009 – Michelle Rosen (University of Tennessee)

2010 – Jeremy Flinn (Mississippi State University)

OUTSTANDING STUDENT POSTER PRESENTATION AWARD

2010 – Emily Flinn (Mississippi State University)

MEETING AND EVENT SCHEDULE

Sunday, February 20, 2011

Time:	Event:	Location:
12:00pm - 6:00pm	Check in and registration	Century Foyer
12:00 pm – 6:00pm	Poster set up and vendor display set up	Century Foyer
3:00pm – 4:00pm	SDSG Business Meeting	Frontier Room
7:00pm – 8:15pm	Welcome Social	Century Foyer

Monday, February 21, 2011

Time:	Event:	Location:
7:00am - 12:00pm	Registration	Century Foyer
7:00am - 8:00am	Poster and vendor display set up	Century Foyer
8:00am – 7:00pm	Poster session and vendor tables	Century Foyer
8:00am – 8:15am	Welcome/Announcements	Century Ballroom
	Richard Hatcher, Director, ODWC	
8:15am – 9:45am	Paper Session (4 papers)	Century Ballroom
	Moderated by Dr. John Skeen, Sr. Bio, SE Region	
9:45am – 10:00am	Break	Century Foyer
10:00am – 11:45am	Paper Session II (4 papers)	Century Ballroom
	Moderated by Ron Smith, Sr. Bio, SW Region	
11:45am – 1:15pm	Lunch	On Your Own
1:15pm – 2:45 pm	Paper session III (4 papers)	Century Ballroom
	Moderated by Rex Umber, Sr. Bio, Central Region	
2:45pm – 3:00pm	Break	Century Foyer
3:00pm – 4:35pm	Paper session IV (5 papers)	Century Ballroom
	Moderated by Steve Conrady, Sr. Bio, NW reg.	
4:35pm – 5:45pm	Poster presentations	Century Foyer
5:45pm - 7:00pm	Dinner	On Your Own
7:00pm – 10:00pm	Shoot From The Hip	Rocky's Event Center, Bricktown

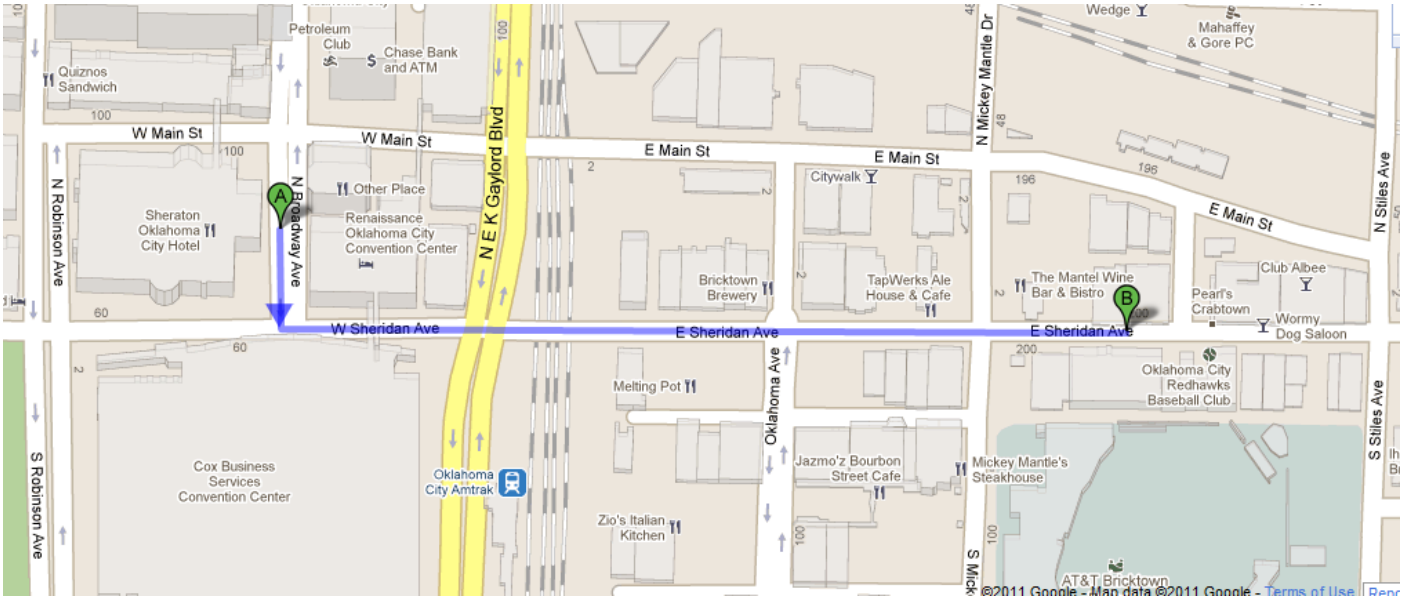
Tuesday, February 22, 2011

8:00am – 5:00pm	Poster session and vendor tables	Century Foyer
8:00am – 8:15am	Announcements	Century Ballroom
8:15am – 9:45am	Paper Session V (4 papers)	Century Ballroom
	Moderated by J D Ridge, Sr. Bio, Northeast Reg.	
9:45am – 10:00am	Break	Century Foyer
10:00am – 11:45am	Paper Session VI (4 papers)	Century Ballroom
	Moderated by Mike Sams, Sr. Bio, Private Lands	
11:45am – 1:30pm	Lunch	On Your Own
1:30pm – 3:30pm	Paper session VII (5 papers)	Century Ballroom
	Moderated by Alan Stacey, Sr. Bio, Wetland Dev.	
3:30pm – 4:30pm	SDSG Business Meeting	Frontier Room
6:00pm – 7:00pm	Pre-banquet Social	Century Foyer
7:00pm	Awards Banquet	Century Ballroom

Shoot from the Hip

Different Strategies for Obtaining Hunter Access

This event will be held at Rocky's Event Center in the Bricktown District of Downtown Oklahoma City. The event center is an easy 0.3 mile walk from the Sheraton Hotel. The map and walking directions below will lead you to the event which will begin at 7:00pm Monday evening.



Directions from Sheraton Hotel Lobby:

Travel south on Broadway Ave. to Sheridan Ave. Turn East on Sheridan Ave, continuing under the E.K. Gaylord Blvd Bridge, crossing Oklahoma Ave and then Mickey Mantle Dr. Rocky's Event Center is located on the North side of E. Sheridan Ave.

Uniformed Game Wardens from the Oklahoma Department of Wildlife Conservation will be stationed along the route.

PAPER SESSION SCHEDULE

(denotes student presentation)*

Monday, February 21, 2011

8:15am – 9:45am Paper Session I
Moderated by Dr. John Skeen, Sr. Bio, SE Region

Increased Hunting Opportunity for Sika Deer in Dorchester County Maryland*
David M. Kalb, University of Delaware; Jacob Bowman, University of Delaware; Brian Eyler, Maryland DNR

High Survival Rates of Subadult Male Sika Deer in Dorchester County Maryland*
David M. Kalb, University of Delaware; Jacob Bowman, University of Delaware; Brian Eyler, Maryland DNR

Addressing the Feral Porcine Invasion Via Educational Outreach: A Deer Manager's Guide
Billy J. Higginbotham, Texas AgriLife Extension Service; Tyler A Campbell, USDA-APHIS-Wildlife Services; Joshua A. Gaskamp, Samuel Roberts Noble Foundation; Kenneth L. Gee, Samuel Roberts Noble Foundation

An Automated Device for Training Deer to a Visual Stimulus*
Bradley S. Cohen, Warnell School of Forest Resources at the University of Georgia; David A. Osborn, Warnell School of Forest Resources at the University of Georgia; George R. Gallagher, Department of Animal Sciences, University of Georgia; Robert J. Warren, Warnell School of Forest Resources at the University of Georgia; Karl V. Miller, Warnell School of Forest Resources at the University of Georgia;

10:00am – 11:45am Paper Session II
Moderated by Ron Smith, Sr. Bio, SW Region

Modeling Resource Selection of Deer to Account for Non-Random Sampling with Distance Sampling*
David P. Stainbrook, Penn State Univerisity; Duane Diefenback, Penn State University

Factors Influencing and Stability of Adult Sex Ratios Amidst Widely Variable Harvest Strategies*
Gabriel R. Karns, Auburn School of Forestry and Wildlife Sciences; John C. McCoy, Auburn School of Forestry and Wildlife Sciences; Bret A. Collier, Texas A&M University; Stephen S. Ditchkoff, Auburn School of Forestry and Wildlife Sciences;

Integrated Population Models: Taking Advantage of All Available Data
Duane R. Diefenbach, USGS, Pennsylvania Cooperative Fish and Wildlife Research Unit, Penn State University

Measuring Deer Density at the Landscape Level Using Ground Based Thermal Imagery
Daryl R. Ratajczak, Tennessee Wildlife Resources Agency; R Gray Anderson, Tennessee Wildlife Resources Agency; Robert E. Kissel, University of Arkansas at Monticello

1:15pm – 2:45 Paper session III
Moderated by Rex Umber, Sr. Bio, Central Region

The Effects of Extreme Drought on Native Forage Nutritional Quality and White-Tailed Deer Diet Selection*
Marcus A. Lashley, North Carolina State University; Craig A Harper, University of Tennessee

Deer Forage Availability from Stand Initiation to Canopy Closure in North Carolina Loblolly Pine Stands*
Graham M. Marsh, Warnell School of Forestry and Natural Resources, University of Georgia; Karl V. Miller, Warnell School of Forestry and Natural Resources, University of Georgia; Steven B Castleberry, Warnell School of Forestry and Natural Resources, University of Georgia; Darren A Miller, Weyehaeuser NR Company; T Bently Wigley, National Council for Air and Stream Improvement, Inc.
Vanessa R. Lane, Warnell School of Forestry and Natural Resources, University of Georgia

Survival and Cause-Specific Mortality of White-Tailed Deer Fawns in the Coastal Plains of South Carolina*
Clint McCoy, Auburn University; Stephen S. Ditchkoff, Auburn University; Bret A. Collier, Texas A&M Institute of Renewable Natural Resources; Joshua B. Raglin, Northold Southern Railway

Deer Management in the Southeast: The Shifting Coyote-Fawn Paradigm*
Angela M. Jackson, Auburn University; Stephen S. Ditchkoff, Auburn University

3:00pm – 4:35pm Paper session IV
Moderated by Steve Conrady, Sr. Bio, NW reg.

Patterns of Reproductive Success in Male White-Tailed Deer*
Stephanie K. Irvin, Auburn University; Stephen S. Ditchkoff, Auburn; Chad Newbolt, Auburn University

Home Range Composition of White-Tailed Deer Fawns Compared to Does in Northeast Louisiana*
Stephanie K. Hasapes, Arthur Temple College of Forestry and Agriculture, Stephen F. Austin State University; Christopher E. Comer, College of Forestry and Agriculture, Stephen F. Austin State University

Levy Walks in Male White-Tailed Deer: Differences in Search Behaviors Between Individuals*

Aaron M. Foley, Caesar Kleberg Wildlife Research Institute, Department of Animal and Wildlife Sciences, Texas A&M University-Kingsville; Randy W. DeYoung, Caesar Kleberg Wildlife Research Institute, Department of Animal and Wildlife Sciences, Texas A&M University-Kingsville; David G Hewitt, Caesar Kleberg Wildlife Research Institute, Department of Animal and Wildlife Sciences, Texas A&M University-Kingsville; Mickey W. Hellickson, Orion Wildlife Services; Kenneth L. Gee, Samuel Roberts Noble Foundation

Demographic Effects on Distribution of Breeding Success Among Age Classes in Male White-Tailed Deer*

Aaron M. Foley, Caesar Kleberg Wildlife Research Institute, Department of Animal and Wildlife Sciences, Texas A&M University-Kingsville; Randy W. DeYoung, Caesar Kleberg Wildlife Research Institute, Department of Animal and Wildlife Sciences, Texas A&M University-Kingsville; David G Hewit, Caesar Kleberg Wildlife Research Institute, Department of Animal and Wildlife Sciences, Texas A&M University-Kingsville; Timothy e Fulbright, Caesar Kleberg Wildlife Research Institute, Department of Animal and Wildlife Sciences, Texas A&M University-Kingsville; Karl V. Miller, Warnell School of Forestry and Natural Resources, University of Georgia; Don Draeger, Comanche Ranch, Carizo Springs, TX; Charles A DeYoung, Caesar Kleberg Wildlife Research Institute, Department of Animal and Wildlife Sciences, Texas A&M University-Kingsville;

Causes of Morphological Variation in Male White-Tailed Deer In Mississippi*

Emily B. Flinn, Mississippi State University; Steve Demarais, Mississippi State University; Bronson Strickland, Mississippi State University; Chad Dacus, Mississippi Department of Wildlife, Fisheries, and Parks

Tuesday, February 22, 2011

8:15am – 9:45am Paper Session V

Moderated by J D Ridge, Sr. Bio, Northeast Reg.

Predicting Support for Intensive Deer Management in Southeastern States*

M. Colter Chitwood, North Carolina State University; M. Nils Peterson, Unorth Carolina State University; Robert D. Brown, North Carolina State University

The Future of Hunting Access

Kip P. Adams, Quality Deer Management Association; Brian Murphy, Quality Deer Management Association; Joe Hamilton, Quality Deer Management Association; Matt Ross, Quality Deer Management Association

Walnut Bayou Deer Management Association: Successful Management Through Education

Russell L. Stevens, The Samuel Roberts Noble Foundation; Kent Shankles, The Samuel Roberts Noble Foundation

The Role of the Forest Industry in Providing Hunter Access for Deer Hunting
Morgan L. Richardson, The Campbell Group

10:00am – 11:45am Paper Session VI
Moderated by Mike Sams, Sr. Bio, Private Lands

Assessing the Sensitivity and Precision of Lactation Rates for White-Tailed Deer Management*
Kamen L. Campbell, Mississippi State University; Bronson Strickland, Mississippi State University; Stephen Demarais, Mississippi State University; Guiming Wang, Mississippi State University; Chad Dacus, Mississippi Department of Wildlife, Fisheries, and Parks

GPS Collar Error and White-Tailed Deer Space Use in a Heterogeneous Landscape*
Blair Smyth, University of Arkansas at Monticello, Don White Jr. University of Arkansas at Monticello

Roadside Fences and Deer-Vehicle Collisions: Problem Solved or Redirected?*
William D Gulsby, Warnell School of Forestry and Natural Resources, University of Georgia; Daniel W. Stull, Warnell School of Forestry and Natural Resources, University of Georgia; George Gallagher, Berry College

Mark-Recapture of White-Tailed Deer Using DNA Sampling from Scat*
Matthew J. Goode, University of Tennessee; Jared Beaver, University of Tennessee; Lisa Muller, University of Tennessee; Joe Clark, US Geological Survey; Seth Basinger, University of Tennessee, Craig Harper, University of Tennessee; Rick McWhite, Arnold Air Force Base

1:30pm – 3:30pm Paper session VII
Moderated by Alan Stacey, Sr. Bio, Wetland Development

Comparison of Xylazine/Telazol With Medetomidine/Ketamine/Telazol for Immobilization of White-Tailed Deer*
Matthew J. Goode, University of Tennessee; Jared Beaver, University of Tennessee; Lisa Muller, University of Tennessee; Tom Doherty, University of Tennessee; Seth Basinger, University of Tennessee, Craig Harper, University of Tennessee; Wes Winton, Tennessee Wildlife Resources Agency; Rick McWhite, Arnold Air Force Base

Correlating Browse and Camera Surveys In Louisiana
Scott Durhan, Louisiana Department of Wildlife and Fisheries

Infrared Triggered Camera Surveys Using Spatial Detection Probabilities and Evaluation of Behavioral Changes from Baiting*
Jared T. Beaver, University of Tennessee; Seth Basinger, University of Tennessee; Matthew J. Goode, University of Tennessee; Craig A. Harper, University of Tennessee; Lisa I. Muller, University of Tennessee; Rick McWhite, Arnold Air Force Base

The Impact of Safety Zones for Creating Refuges for White-tailed Deer
Jacob L. Bowman, Department of Entomology and Wildlife Ecology, University of Delaware

Land Management Options for Central and Eastern Oklahoma
Jack Waymire, Oklahoma Department of Wildlife Conservation

Public Land Access in Oklahoma: Reasons and Results
Andrea Crews, Oklahoma Department of Wildlife Conservation
Erik Bartholomew, Oklahoma Department of Wildlife Conservation

Presentation Abstracts

(denotes student presentation)*

Increased Hunting Opportunities for Sika Deer in Dorchester County Maryland*

David M Kalb , University of Delaware

ABSTRACT:

Since their introduction in 1916, little information has been gathered on the growing population of sika deer in Maryland. Sika deer provide a unique hunting opportunity to sympatric white-tailed deer. With larger home range sizes than observed in white-tailed deer, and movement patterns that are more similar to elk, sika deer often use both public and private properties within a single season. Home range sizes for sika deer were estimated for 60 sub-adult stags from February 2008 to May 2010 from 12,994 locations and 246 home ranges. Twenty of the 60 deer dispersed from their natal home ranges of which 19 dispersed in their first year. Dispersal distance and direction were random (P = 0.899). Seasonal home range size varied from 3,763-33,409 acres. We classified deer home ranges as local (n=41; 1,441±199acres), migratory (n=14; 2,058±577acres), or nomadic (n=4; 6,142±2,540). Home ranges varied by seasons and deer movement types (P = 0.0001). All deer had reduced home ranges in the summer and increased home range sizes during the fall. New harvest regulations in 2010 changed both bag limits and hunting weapon that can be used with the intention of increasing sika annual harvest. This area of Maryland has >60,000 acres of public land, which draws hunters from all over Maryland and other states. Our study demonstrates that large sika deer home ranges will make these animals available for harvest on both public and private land.

NOTES:

High Survival Rates of Subadult Male Sika Deer in Dorchester County Maryland*

David M Kalb , University of Delaware

ABSTRACT:

Sika deer have been harvested in Dorchester County since shortly after their introduction in 1916. On Blackwater National Wildlife Refuge in eastern Maryland, subadult males are the most common age-class harvested and represent >50% of the annual harvest. We estimated survival rates for 60 sub-adult stags from February 2008 to May 2010. Subadult males had an annual survival rate of 0.87 (SE = 0.045). Survival rates did not differ among seasons (P = 0.060; spring = 0.98, SE = 0.019; summer = 1.00, SE = 0.000; fall = 0.93, SE = 0.034; and winter = 0.96, SE = 0.027). The greatest cause of mortality was hunting (88%; 63% rifle, 25% bow, 0% muzzleloader). One death was caused by vehicle collision (12%) and no animal deaths were attributed to natural causes or disease. Of the sika that dispersed, >30% died, whereas less than 10% of non-dispersals died. Our estimated survival rates were greater than previously reported in other native and introduced populations of sika deer, as well as other populations of cervids. Ancillary data from deer tagged during other studies and recaptured during our study demonstrate sika deer are surviving 15+ years and support a high survival rate in sika deer populations. Data from my study suggest that despite the harvest pressure, the sika harvest could be increased. New hunting regulations starting in 2010 will increases in harvest opportunities of sika deer on both public and private lands.

NOTES:

Addressing the Feral Porcine Invasion Via Educational Outreach: A Deer Manager's Guide

Billy L Higginbotham, Texas AgriLife Extension Service

ABSTRACT:

Wild pigs share habitats with white-tailed deer throughout much of the southeastern United States. Farmers and ranchers have historically considered the wild pig a liability because of the damage inflicted upon row crops, pastures and livestock operations. Wild pig range expansion has steadily progressed from 17 states in 1982, to 28 states in 2004, to 37 states today. Within this same three decade period, deer management efforts have also greatly intensified across the region. This has created a perfect storm where the wild pig has progressed from its initial status as a supplemental big game species to a liability capable of impacting deer management goals. Wild pigs can negatively impact deer management efforts in three ways: 1) competition for native foods, 2) competition for supplemental feeds/baits/forages where these practices are legal and 3) temporary displacement of deer because of their aggressive behavior. Therefore, deer managers and landowners are in need of information on Best Management Practices to abate both damage and inter-specific competition by reducing wild pig populations. Current legal control methods include shooting, snaring, trapping and dogging. In particular, the use of remote-sensing cameras has greatly enhanced the efficiency of both trapping and shooting efforts. Furthermore, the reduction of wild pig access to supplementation via excluder fencing > 28 inches high has proven successful without significantly limiting access by deer. These Best Management Practices have been made available to the public via a variety of delivery methods including websites (http://feralhogs.tamu.edu), publications, field days, seminars, demonstrations and one-on-one contacts.

NOTES:

An Automated Device for Training Deer to a Visual Stimulus*

Bradley S Cohen, Warnell School of Forest Resources, University of Georgia

ABSTRACT:

Few studies have evaluated white-tailed deer sensory perception because of difficulties in training deer to respond to external stimuli. We developed a system for training deer to associate a supra-threshold, white-light stimulus with a food reward through operant conditioning techniques. The "deer-training-apparatus" (DTA) automatically dispensed food, rang a start buzzer, randomly assigned a stimulus light above one of two food troughs, and recorded each deer's participation in each behavioral trial. When a deer attempted to eat from a trough associated with a positive stimulus (light on), a correct response was recorded. An incorrect response was recorded when a deer attempted to eat from a trough associated with a negative stimulus (light off). Each of six adult, captive does correctly identified the positive reward in about 75% of trials by day 19 and 88.2 ± 3.9% by day 25. We demonstrated that the DTA provided effective and efficient training of deer and its malleability makes it suitable for a variety of future research on behavior, perception, and preference among these animals.

NOTES:

Modeling Resource Selection of Deer to Account for Non-Random Sampling with Distance Sampling*

David P Stainbrook, Penn State University

ABSTRACT:

Distance sampling methods have been used to estimate population density of white-tailed deer (Odocoileus virginianus). A critical assumption of distance sampling is that transects are placed randomly with respect to the distribution of deer. Roads have been used as transects for distance sampling and are attractive for many reasons, but using roads can violate this critical assumption because habitat characteristics and deer distribution often are correlated with the location of roads. We used a model of resource selection for white-tailed deer to investigate the effect that using roads as transects for distance sampling had on abundance estimates. We modeled resource selection via data from 30 GPS-collared deer during the time when distance sampling surveys were conducted at Gettysburg National Military Park and Eisenhower National Historic Site in Pennsylvania. The distance sampling estimator was biased when roads were used as transects, with the magnitude of the bias varying depending on transect width and time of year. Distance sampling can be a useful estimator for monitoring deer abundance; however, if roads are used as transects, the magnitude of the bias is unknown unless information on the distribution of deer is available. We show how a resource selection function can be used to obtain unbiased estimates of abundance.

NOTES:

Factors Influencing and Stability of Adult Sex Ratios Amidst Widely Variable Harvest Strategies*

Gabriel R Karns, School of Forestry and Wildlife Services, Auburn University

ABSTRACT:

In published and gray literature, much ado has been made of population sex ratios that various management practices strive to achieve; however, very little information exists in the scientific literature concerning the population metric. We simulated effects of no harvest, traditional harvest, and selective harvest strategies on the pre-harvest adult sex ratio (females:males) of white-tailed deer. Using a deterministic population model built on 18 initial parameter values to simulate 10 years of population growth, we performed 10,000 runs for every paradigm. Within a simulation, initial parameter values were randomly selected (using ranges from peer-reviewed white-tailed deer studies across the southeastern United States) based on the harvest strategy of interest. We conducted a sensitivity analysis to determine which population parameters had the greatest impact on pre-harvest adult sex ratios. Mean pre-harvest adult sex ratios were .415 (1.4:1), .221 (3.5:1), and .490 (1.1:1) for no harvest, traditional harvest, and selective harvest. Interestingly, the fawn survival parameter had the greatest impact on pre-harvest sex ratios. High fawn survival swamped most of the effect of sex-biased harvest/natural mortality rates; however, when populations experienced low fawn recruitment, the harvest strategy had a much greater impact on pre-harvest adult sex ratios especially in traditional harvest schemes. Highly skewed pre-harvest sex ratios (>5 females:1 male) are not biologically or mathematically plausible without the effects of low recruitment and/or highly skewed fetal sex ratios. Pre-harvest adult sex ratios are more stable than originally thought, and highly skewed sex ratio estimates are likely not representative of the overall population.

NOTES:

Integrated Population Models: Taking Advantage of All Available Data*

Duane R Diefenbach, USGS, Pennsylvania Cooperative Fish and Wildlife Research Unit, Penn State University

ABSTRACT:

State agencies that manage white-tailed deer collect a host of data to aid in making management recommendations and decisions. These data may include harvest by age and sex, reproductive information, hunter harvest reporting rates, and survival and harvest rates. However, traditional models used to estimate deer abundance usually lack measures of precision and rely on incomplete counts to estimate a minimum population size (e.g., reconstruction models). Furthermore, some models (e.g., SAK model) do not take advantage of the information available by age cohort that is collected over time. I present two modeling approaches that incorporate sampling uncertainty, use model selection methods to assess model parsimony, and incorporate multiple sources of information to estimate abundance. One modeling approach uses weighted least squares and Akaike's Information Criterion to identify the most parsimonious model and another uses Bayesian methods to estimate population parameters. These modeling approaches use standard spreadsheet or freely available software. Public scrutiny by increasingly involved stakeholders necessitate that wildlife managers should use rigorous, objective methods to base management decision. I illustrate use of these models using data collected by a state agency deer management program.

NOTES:

Measuring Deer Densities at the Landscape Level Using Ground Based Thermal Imagery and Distance Sampling

Daryl R Ratajczak, Tennessee Wildlife Resources Agency

Abstract:

Wildlife agencies in charge of setting white-tailed deer (Odocoileous virginianus) hunting regulations may benefit from an accurate and scientific estimate of deer density at the landscape level. Oftentimes hunting regulations are based on harvest data or other indices that may not be representative of the true population. Population size and density can be measured using distance sampling, but its effectiveness at the landscape-scale has not been tested in the Southeast. We determined deer densities at the landscape scale, a scale appropriate for making regional management decisions, using distance sampling. An eight-county area in south-central Tennessee was surveyed along 40 randomly selected road-based transects ($\bar{x}$ = 12.2 mi, SE = 0.16) between 1 February and 31 March in 2009 and 2010. Deer were observed using hand-held thermal imaging devices and distances were recorded with range-finders. Densities were calculated using the program Distance 6.0. Density estimates for 2009 and 2010 were 19.5 deer/mi2 (C.I. = 13.3 – 28.5, C.V. = 0.191) and 19.1 deer/mi2 (C.I. = 15.0 – 24.5, C.V. = 0.124), respectively, and population estimates for the same time periods were 83,850 (C.I. = 57,361 - 122,572) and 82,343 (C.I. = 64,419 - 105,255), respectively. These estimates were supported by other indices and coefficients of variation were within the range desired by agency biologists (< 0.20). We present the first study of an approach that provides direct measures of deer density at the landscape level. The Tennessee Wildlife Resources Agency intends to implement this method for a full-scale statewide density measure in February 2011.

NOTES:

The Effects of Extreme Drought on Native Forage Nutritional Quality and White-Tailed Deer Diet Selection*

Marcus A Lashley, North Carolina State University

ABSTRACT:

Forage availability is often used as a measure of habitat quality for White-tailed Deer (Odocoileus virginianus; hereafter, deer). Many studies evaluated treatment effects on forage availability, but the effects of other abiotic factors, such as drought, on native forages and deer diet selection are poorly understood in the Southeast. Data indicate in other regions that drought may limit available nutrition and influence diet selection. We measured diet selection and nutritional quality of commonly occurring forages following extreme drought (2007) and normal rainfall years (2008) in four closed-canopied hardwood stands in the Central Hardwoods region. Six 20 ft2 plots were systematically placed within all 4 stands each year. Stems were counted by species and deer herbivory tallied to calculate selection. Samples of 19 forages were collected during mid-August of each year and crude protein (CP), acid detergent fiber (ADF), and neutral detergent fiber (NDF) were tested to indicate nutritional quality. Six species were selected in both years of the study. Within these six species, CP and ADF were not different, and NDF increased during the year of normal rainfall. Thirteen other commonly occurring forages showed a different trend with CP negatively affected by drought and ADF and NDF unaffected. Less-selected species in the drought year and a greater selection index cut-off value suggest deer were more selective of species consumed during extreme drought because fewer plants met their nutritional requirements. Our data support the selective quality hypothesis, predicting deer become more selective to meet nutritional requirements when resources are limited.

NOTES:

Deer Forage Availability from Stand Initiation to Canopy Closure in North Carolina Loblolly Pine Stands*

Graham M Marsh, Warnell School of Forestry and Natural Resources, University of Georgia

ABSTRACT:

In the southeastern United States, current intensive silvicultural regimes can boost loblolly pine (Pinus taeda) yields by more than 150% over unmanaged stands. However, there are gaps in our knowledge regarding white-tailed deer (Odocoileus virginianus) forage production in young plantations managed with these intensive regimes. Therefore, we examined response of deer food plants to six stand reestablishment treatments on six sites in the North Carolina Lower Coastal Plain. Treatments were designed to represent an intensity gradient of silvicultural regimes incorporating chemical site preparation (CSP), mechanical site preparation (MSP), herbaceous release (banded or broadcast), and row spacing. We established treatments in 2001, and measured percent cover of all vegetation during seven growing seasons. We classified growing season vegetation as preferred or non preferred using information from published literature and grouped plants into woody, herbaceous, and vines for analyses. All groups rebounded quickly following release treatments in the first growing season. Treatment differences were most pronounced for preferred woody cover due to effect of CSP. Treatments with the lowest woody cover had highest coverage of preferred herbaceous plants. Herbaceous food plants were greatest at 3 to 4 years post treatment and declined rapidly thereafter due to canopy closure with little difference among treatments. Wide spacing resulted in a greater abundance of preferred woody and vine cover, but not herbaceous cover. Woody vegetation was affected in all years, but all treatments produced abundant forage from stand initiation until canopy closure at the end of the study. Therefore, it appears that current management practices examined in this study promote forage for white-tailed deer during early rotation.

NOTES:

Survival and Cause-Specific Mortality of White-Tailed Deer Fawns in the Coastal Plain of South Carolina*

Clint M McCoy, Auburn University

ABSTRACT:

Knowledge of factors influencing fawn survival greatly increases understanding of the dynamics of white-tailed deer populations. In an ongoing study in South Carolina, we radio-collared 224 fawns between 2006 - 2010. We modeled fawn survival from birth through 150 days. The probability of fawns surviving the study during 2006 and 2007 was 0.70 (95% CI: 0.45 – 0.87) and 0.63 (95% CI: 0.36 – 0.83), respectively, but decreased considerably in 2008 (0.48; 95% CI: 0.32 – 0.64) and 2009 (0.35; 95% CI: 0.22 – 0.51). In 2010, survival increased to 0.63 (95% CI: 0.43 – 0.80), coincident with the first time predators had been trapped throughout the fawning season. Predation was the major cause of mortality (40.6%, n = 26), with coyotes, bobcats, and unknown predators accounting for 11, 7, and 8 mortalities, respectively. Malnutrition resulted in 15 (23.4%) mortalities, and cause of death could not be determined in 21 cases (32.8%). Concurrent with our study was an independently-operated predator control program where predators were removed as part of the management plan for the area. Using the trapping data from this program, we calculated a predator index (number caught/number of trap-nights) for the area. During 2006 and 2007, the number of coyotes/trap night was 0.005 and 0.007, respectively. However, there was a sharp increase in coyotes in 2008 (0.014 coyotes/trap night), which corresponds with the decrease in fawn survival. We hypothesize that this area is just beginning to be impacted by the high coyote predation that has been reported for other areas across the Southeast.

NOTES:

Deer Management in The Southeast: The Shifting Coyote-Fawn Paradigm*

Angela M Jackson, Auburn University

ABSTRACT:

Decreases in white-tailed fawn recruitment have been noted at several locations across the Southeast. Understanding the reason for these decreases is important for management of deer populations. We monitored fawns from birth until 4 months to examine age- and cause-specific mortality rates, at Fort Rucker, Alabama, a location that has experienced substantial decreases in fawn recruitment, deer population density, and hunter success. During 2009 and 2010, 14 fawns were captured immediately after birth and monitored: below average deer density resulted in low sample sizes during the study. Of the 14 fawns captured, 3 survived until 4 months of age. Six of 7 depredation events were attributed to coyote predation based on examination of bite patterns and remains left at the site. We determined coyote density in the study area during 2010 using DNA isolated from 44 opportunistically collected coyote scats. The median rarefication curve estimated density of coyotes at 1.0 coyotes/mi2, the range of 1000 curves was 0.84 to 1.5 coyotes/mi2. This study, like other recent studies in the Southeast, has found that low fawn recruitment seems to be driven by greater levels of coyote predation than originally believed. Coyotes are a recent addition to the predator community of the Southeast, but how their addition will ultimately affect deer populations remains ambiguous. Predator-prey theory predicts a variety of future scenarios concerning predation rates, deer density, and responses to alternative management strategies. We describe these alternative theories in regard to the current state of knowledge.

NOTES:

Patterns of Reproductive Success in Male White-Tailed Deer*

Stephanie K Irvin, Auburn University

ABSTRACT:

Relatively few studies have taken advantage of genetic sequencing technology to examine male reproductive success in white-tailed deer through paternity analysis. As a result, there are still large gaps in our knowledge base related to factors that influence reproductive success in male white-tailed deer. This study specifically examined the relationships between reproductive success in male white-tailed deer and body size, age, and antler characteristics. A total of 115 deer from inside a 430-acre high-fence facility in Alabama were sampled between December 2007 and August 2010, and subsequently genotyped. Approximately 80-90% of the reproductive population was sampled during the study period. Body measurements and Boone and Crockett antler measurements were also collected from sampled deer. Genetic technology was utilized to examine the relationships between physical characteristics, and reproductive success, and paternities were assigned using two programs (CERVUS and COLONY). Bucks 3.5 years and older sired the majority of offspring (44%), closely followed by 2.5 year olds (42%). Relatively few offspring were sired by yearling bucks (14%). The resulting paternity information was incorporated into a Poisson regression to examine relationships between reproductive success in male white-tailed deer and body size, age, and antler characteristics. A greater understanding of the physical factors that influence reproductive success in male white-tailed deer will be beneficial when making harvest decisions and developing population management plans.

NOTES:

Home Range Composition of White-Tailed Deer Fawns Compared to Does in Northeast Louisiana*

Stephanie K Hasapes, Arthur Temple College of Forestry and Agriculture, Stephen F Austin State University

ABSTRACT:

White-tailed deer (Odocoileus virginianus) fawn home range composition is a product of the doe's home range, habitat, terrain, food availability, and management programs. Doe home range and habitat selection is well documented in the southeastern United States; however, few studies have addressed the influence of maternal home range composition on fawning locations and fawn home range composition. Barksdale Air Force Base is located in Bossier Parish, Louisiana. The East Reservation (17,300 acres) on base is managed for timber harvest, hunting, fishing, recreation, and oil/gas production and is dominated by actively managed upland pine-hardwood forests and bottomland hardwood forests. We trapped 15 adult does and fitted them with Sirtrack global positioning system (GPS) collars and vaginal implant transmitters (VITs). GPS collars were programmed to obtain one location per hour for one year. The VITs aided in obtaining parturition site locations and locating neonates. Captured fawns (n = 12) were fitted with Sirtrack very high frequency (VHF) expandable collars. Fawn locations were obtained through triangulation ≥4 times a week until 3 months of age or mortality. Average fawn home range size was 61.69 acres (SE = 10.80). Average core area size was 14.44 acres (SE = 2.99). Following recovery of GPS collars in January 2011, we will compare fawn to doe home range composition for the first 3 months after parturition.

NOTES:

Levy Walks in Male White-Tailed Deer: Differences in Search Behaviors Between Individual*

Aaron M Foley, Caesar Kleburg Wildlife Research Institute, Department of Animal and Wildlife Sciences, Texas A&M University-Kingsville

ABSTRACT:

Distribution and abundance of mates can change over time. Measuring response of search patterns to change in mate availability is of interest because efficient searchers will enjoy greater gains. Levy walks indicate the same areas are revisited less often than random walks. Revisiting same areas frequently pays if the resource is stable, but becomes inefficient if the resource becomes depleted. We analyzed search paths of male white-tailed deer (Odocoileus virginianus) during the breeding season. Distribution of breeding success is skewed towards older males (≥3.5 years old). We hypothesized that Levy walks would be less prevalent during peak rut due to shift in targeted resources. In South Texas, we captured and fitted 74 ≥1.5 year old males with GPS collars during 2006-2008. We used hourly locations during peak rut, a period defined by estimated conception dates of fetuses from the study site. As predicted, proportion of males exhibiting random walks during the breeding season followed a bell curve that closely corresponded to frequency of conceptions by date. In the 1.5, 2.5, and ≥3.5 year old age classes, proportion of males that exhibited Levy walks during peak rut were 5/6 (83%), 10/22 (45%), and 16/33 (48%), respectively. It appears that the short estrus period of females requires males to revisit the same area. Our data indicates that males actively locating and tending females may not exhibit Levy walks because the resource has been discovered. Levy walks may help us understand how some individual males are better breeders than others.

NOTES:

Demographic Effects on Distribution Of Breeding Success Among Age Classes in Male White-Tailed Deer *

Aaron M Foley, Caesar Kleburg Wildlife Research Institute, Department of Animal and Wildlife Sciences, Texas A&M University-Kingsville

Abstract:

Distribution of mates and degree of competition for mates influence male breeding success in some species of ungulates. Effects of density and fixed resources, such as supplemental feed, on breeding success in white-tailed deer (Odocoileus virginianus) are unknown. We used an experimental design to evaluate effects of population density and resource availability on the distribution of male mating success. Twelve 200 acre enclosures were constructed on 2 ranches in south Texas. Each ranch had 3 pairs of density treatments: low (10 deer), medium (25 deer) and high (40 deer). One enclosure of each pair was provided supplemental feed ad libitum. During 2005-2009, sex ratio, male age structure, and population density were monitored via infrared cameras and population reconstruction. We used DNA samples to assign parentage of 384/488 (79%) offspring. In fed enclosures, 18 (7%), 29 (11%) and 227 (83%) of offspring were sired by 1.5, 2.5, and ≥3.5 year old males, respectively. In unfed enclosures, all offspring were sired by ≥3.5 year old males but number of young males (≤2.5 years old) was small and limited inferences. In fed enclosures, 75% of fetuses sired by young males occurred during peak rut. Young males were more successful when few mature males were present. Proportion of enclosures with ≥1 young sires was higher in populations skewed towards males (73%) and females (80%) but lower with equal sex ratios (57%). Young males may employ alternative breeding strategies when intraspecific competition is high or when females are abundant. This helps us understand how demographic factors influence sexual selection.

NOTES:

Causes of Morphological Variation in Male White-tailed Deer in Mississippi*

Emily B Flinn, Mississippi State University

ABSTRACT:

Regional variation in white-tailed deer (Odocoileus virginianus) antler and body size in Mississippi may be related to habitat quality or genetic limitations. We compared body and antler growth from birth to 3 years of age in captive first-generation male white-tailed deer from three physiographic regions (Delta, a greater quality area with larger body and antler size; Thin Loess [Loess], a moderate quality area with moderate body and antler size; and Lower Coastal Plain [LCP], a lesser quality area with smaller body and antler size). All deer had access to a 20% crude protein diet to eliminate nutritional differences and allow expression of genetic potential. Body mass differed among all regions at 1 – 3 years of age, with LCP males averaging 22% and 13% smaller than Delta and Loess males, respectively. Antler scores of 1 – 3 year-old LCP males averaged 13% smaller than Delta and Loess antler scores. Body mass trends in research deer were similar to wild deer with Delta and LCP males being the largest and smallest, respectively. Morphological variation among regions could be caused by regional differences in genetic potential or may be lingering maternal effects. Determining the complete cause of regional morphological variation in white-tailed deer will require data collection through a second-generation of males raised on the controlled diet.

NOTES:

Predicting Support for Intensive Deer Management in Southeastern States*

M Colter Chitwood, North Carolina State University

ABSTRACT:

The futures of hunting and hunting access depend largely on the intensity of future deer management. Quality Deer Management (QDM) and Intensive Deer Management (IDM) represent two forms of manipulating deer populations with different implications. We surveyed registrants from the 2010 Southeast Deer Study Group meeting to quantify support for various deer management and hunting practices and achieved a 64% response rate (n = 208). We used individual questions and principal component analysis to develop three scales with high internal reliability (Cronbach's $\alpha > 0.7$): 1) "deer husbandry," 2) "deer management," and 3) "techno-hunting." We used 2-way analysis of variance with Tukey's HSD pairwise comparison to determine the role of job category (state agency, private biologist/consultant, university) and residency (Texas, other SE state) as predictors for all 3 scales. Private biologists from Texas consistently scored higher on all three scales than other paired combinations, indicating greater support for IDM and techno-hunting. On the "deer husbandry" scale, private biologists from Texas scored higher than all other pairs. On the "deer management" scale, private biologists from Texas again scored higher than all pairs, but state agency employees from Texas and private biologists from other SE states scored higher than pairs including university employees. On the "techno-hunting" scale, private biologists from Texas scored highest, while Texans working at universities scored lowest and all other pairs grouped in between. Our results suggest the stereotypical "Texas model" of intensive deer management may be more accurately described as the "Texas private biologist model."

NOTES:

The Future of Hunting Access

Kip P Adams, Quality Deer Management Association

ABSTRACT:

Access is a major challenge facing the future of hunting. In some western states agencies compensate landowners for providing public access, but similar programs remain uncommon in the eastern U.S. where most deer hunting occurs. Hunting leases are a common access strategy. Leases provide incentives to open lands for hunting and security for participating hunters, but can displace local hunters and provide opportunity to fewer participants. Surprisingly, only 6.9% of hunters in the U.S. leased land in 2006. Leasing varies considerably by region and is inversely related to availability of public land.

Current data suggest hunting by those with limited incomes will decline, and increasing costs of land ownership suggest access to private land will become more restricted. Fortunately, land ownership in North America is not restricted to the socially elite; the number of sportsmen owning land increased 56% from 1991 to 2006. Notably, the number leasing land during this period declined 11%.

Lack of access is an important constraint to hunting participation, and one that agencies and other organizations can influence. The Public Trust Doctrine requires governments to maintain resources for the public's use. This does little to ensure the quality of hunting experiences, but helps ensure continued access to lands.

Wildlife agencies and hunters must establish landowner education and outreach programs that emphasize safety and promote ethical hunting behavior to improve access. Given current trends, it is likely that social, economic and legal barriers will make future access to private land for hunting more difficult and costly.

NOTES:

Walnut Bayou Deer Management Association: Successful Management Through Education

Russell L Stevens, The Samuel Roberts Noble Foundation

ABSTRACT:

The limiting factor on buck (Odocoileus virginianus) size in south central Oklahoma is generally age. Most bucks are harvested at too young an age to express their genetic potential. Increasing buck age structure on small acreages is difficult due to harvest on neighboring lands. In 1996, the Walnut Bayou Deer Management Association (WBDMA) was formed, representing 7,750 contiguous acres and five landowners. The success of the WBDMA is evidenced by its growth (1703 acres in 1998, 1121 acres in 1999, 1115 acres in 2000, and 40 acres in 2002) to include ten ranches (nine in Oklahoma and one in Texas) and 12,516 contiguous acres today. Members agree to support self established WBDMA goals including protection of yearling bucks and limiting total annual buck harvest, increasing doe harvest, and improving buck: doe ratio. Exceptions to yearling buck harvest are allowed for youth and beginning hunters. Otherwise, there are no other rules or regulations regarding buck harvest. Spotlight estimated buck density has increased from 199 in 2002 to 253 in 2010 and the buck: doe ratio has improved from 1:2.7 to 1:1.6 since 1996. Average harvested buck dressed body weights have increased from 116 to 131, and average antler size has increased 6.7% since 1996. Hunter selection is most likely responsible for these increases. The WBDMA is a model for private land deer herd management on small acreages based upon voluntary cooperation and education.

NOTES:

The Role of the Forest Industry in Providing Hunter Access for Deer Hunting

Morgan L Richardson, The Campbell Group

ABSTRACT:

Forest industry lands account for about 12% of deer habitat in the southeastern USA. Almost all of this forestland is open to hunting primarily through lease agreements with local hunting clubs (86%) or through cooperative agreements with state wildlife agencies (13%). Many of local hunting clubs have leased the same tract for 20 or more years. Typically about 95% renew their leases annually. About 10% of southeastern hunters are a member of a hunting club. Hunting club members are demographically similar to other deer hunters. Lease rates average about $6 per acre. Lease rates are increasing about 5% annually. Lease rates vary widely across the southeast ranging from an average rate of about $2.50 per acre in Oklahoma to about $9.00 per acre in Georgia. Hunter density (hunters per square mile) and hunter incomes (household income) explain about half this variability. While measures of hunting quality did not help explain the variability in lease rates among states, hunting quality is a major factor in regional markets.

NOTES:

Assessing the Sensitivity and Precision of Lactation Rates for White-tailed Deer Management*

Kamen L Campbell, Mississippi State University

ABSTRACT:

Knowledge of site-specific reproductive dynamics is critical when making harvest recommendations for white-tailed deer populations. Lactation data are easy to collect and lactation rates are commonly used as indices of deer reproduction and fawn recruitment. To assess the utility of this metric, we developed a simulation model to evaluate lactation rates for sensitivity to variation in sample size of harvest, fecundity (fetal rate), and neonatal mortality. Additionally, we examined the temporal effects of lactation detection during the hunting season using historic harvest data from Mississippi. Variation in lactation rate increased up to 7 fold as sample size declined from 100 to 6 and increased with greater neonatal mortality, but changed minimally with varying fecundity. Neonatal mortality decreased fawn recruitment 10-20% more than it decreased the lactation rate, thus changes in fawn recruitment due to predation may not be detected as readily with lactation rates. Changes in fecundity caused a similar but more subtle change in lactation rate. Population lactation rate in states with 3-month deer seasons, lactation rate can vary up to 20% based on the timing of deer harvest alone. Biologists and managers should be aware of inherent variation in the lactation index as well as the disproportionate effect of fawn mortality on annual lactation rate estimates. Annual change in lactation should be qualified by adjusting for average date of harvest and recognizing the level of random variation associated with sample size.

NOTES:

GPS Collar Error and White-tailed Deer Space Use in a Heterogeneous Landscape*

Blair Smyth, University of Arkansas at Monticello

ABSTRACT:

Space use studies in heterogeneous landscapes with small habitat polygons are challenging because location error can exceed mean habitat polygon size. Our study area, Choctaw Island Wildlife Management Area, in eastern Arkansas, has an average polygon size of less than 5 ac. To properly assess white-tailed deer habitat use and selection, we must quantify the error in our GPS collars. This study quantifies GPS collar error and effects of canopy cover on error and fix rate of the GPS collars. We placed 12 GPS collars at static locations in different habitat types in August 2010. The collars were rotated through all cover types twice in an 18 day period. We found that our average error was over 43 yards, and error was not affected by canopy type. However, fix success of the GPS collar was significantly less under hardwood canopy. We also divided our data based on HDOP (horizontal dilution of precision) values, which are estimates of error based on satellite geometry and number of satellites present when a GPS fix was taken. We then compared habitat selection using high HDOP (≤5) to low HDOP (≤2) data. The difference are small but will help future studies decide whether smaller amounts of more accurate data are preferable to large amounts of less accurate data.

NOTES:

Roadside Fences and Deer-Vehicle Collisions: Problem Solved or Redirected?*

William D Gulsby, Warnell School of Forestry and Natural Resources, University of Georgia

ABSTRACT:

Although roadside fences have been proven effective at reducing deer-vehicle collisions (DVCs), information on how these fences alter deer behavior is lacking. We evaluated the effects of a traditional and a novel fencing design, constructed alongside a roadway, on movements and home ranges of white-tailed deer (Odocoileus virginianus). From January to April 2009, we fitted 14 adult does with GPS collars, programmed to collect ≥ 24 locations/day. In June 2009, we constructed a 2-mi fence treatment that included a 1-mi section of 8-ft vertical-wire fence and a 1-mi section of a prototype outrigger fence. We retrieved collars between January and March 2010. We compared home ranges, fence crossings, and fence circumventions among deer that encountered the outrigger and 8-ft fences as well as for deer that encountered neither fence (i.e., controls), before and after fence construction. Actual crossings of the fence area were reduced, post construction, by 98% and 90% for the 8-ft and outrigger treatment groups, respectively, suggesting that the fences were sufficiently effective to simulate how deer respond to roadside barriers. Deer with pre-treatment home ranges that approached or encompassed the fence endings maintained a high degree of site fidelity by circumventing the endings. This study highlights the importance of incorporating information on deer behavior and resource usage into DVC-reduction strategies. If these factors are not accounted for, DVC frequency will likely stay the same, or increase, near fence endings. Thus, roadside fences should likely end at natural barriers to deer movements (i.e., heavy development) or incorporate some means of safe crossing into their endings.

NOTES:

Mark-Recapture of White-Tailed Deer Using DNA Sampling from Scat*

Matthew J Goode, University of Tennessee

Abstract:

Reliable wildlife density estimates are required for management and conservation policies. Mark-recapture techniques have been used to estimate density and are especially important for game and keystone species such as white-tailed deer. We used a noninvasive method of mark-recapture estimation, using DNA extracted from scat as the individual marker and for gender determination. We collected scat from 11-22 January 2010 at randomly selected sites within a 387-acre area located on Arnold Air Force Base in central Tennessee. We searched 702 plots (32.8 ft. radius), collecting 352 scat samples on 197 of the plots. We sent samples to Wildlife Genetics International (Nelson, British Columbia) for genetic analysis. One gender and 6 microsatellite markers with heterozygosity > 0.80 were selected for testing. Fifteen samples (4%) were not suitable for analysis, 2 (1%) showed evidence of > 2 alleles per marker (mixture of DNA), 114 (32%) failed during testing. We assigned individual identity and gender to 223 (63%) of the samples which included 39 individuals (18M:21F). We estimated density and animal movements using Program Density which uses spatially explicit capture-recapture locations to fit a model of the detection process. You can obtain estimates of population density unbiased by edge effects and incomplete detection. Calculated total deer density was 16.5 + 3.8 deer/mile2. Buck:Doe ratio was 1:1.5 based on density by gender (6.7 + 3.0 bucks; 10.1 + 3.5 does). We found DNA sampling from scat provided non-invasive mark-recapture analysis of deer density and determination of sex ratio useful for deer management decisions.

NOTES:

Comparison of Xylazine/Telazol with Medetomidine/Ketamine/Telazol for Field immobilization of White-Tailed Deer*

Matthew J Goode, University of Tennessee

ABSTRACT:

Improvements in drug combinations for animal immobilization are necessary to increase efficiency, recovery, and safety of animals and handlers. We immobilized 25 (14M:11F), free-ranging, white-tailed deer with a combination of either xylazine/telazol (XT; 2.3 mg/kg xylazine and 5.0 mg/kg telazol) or medetomidine/ketamine/telazol (MKT; 0.15 mg/kg of medetomidine, 1.5 mg/kg of ketamine, and 1.0 mg/kg of telazol) based on estimated weight by sex (70 kg males; 50 kg females). We darted deer at Arnold Air Force Base located in central Tennessee using an intramuscular injection via a 2.0 mL telemetry dart using CO2 powered dart rifles. Five females were accidentally immobilized with male dosage of MKT. We compared flight distances (location animal was darted to location recovered), physiological parameters, and induction and recovery times between the two drug combinations. We antagonized both drug combinations using a combination of atipamezole (0.35 mg/kg) and tolazoline (4.0 mg/kg) based on estimated weight by sex and injected intramuscularly. Both combinations provided effective immobilization and acceptable physiological parameters. Time to find animals and flight distances were not different by treatment. After antagonist injection, differences occurred in time to standing ($p=0.04$) between XT (22.3 + 6.1 min, $n = 6$) and MKT (11.0 + 2.3 min, $n = 16$); and, time to leaving area ($p=0.05$) for XT (27.7 + 6.4 min) and MKT (15.0 + 2.9 min). MKT was safe and effective in the females treated with high doses. The use of XT or MKT provided rapid and safe immobilization, acceptable physiological parameters, and quick recovery.

(Metric units used for drug doses and body weights according to standard veterinary practices)

NOTES:

Correlating Browse and Camera Surveys in Louisiana

Scott Durham- Louisiana Department of Wildlife and Fisheries

ABSTRACT:

We performed transect deer browse surveys and camera surveys (n=15) on various tracts of land in Louisiana to determine if the two deer density estimate techniques produced supporting results. There was a negative correlation ($r = -0.659$, $P = .007$) between the average number of plants browsed per transect, and the number of acres per deer estimated from the camera survey technique. The results of this preliminary study indicate that the browse survey technique employed by LDWF on public and private lands is a reliable method for determining deer herd density in relation to habitat quality and carrying capacity.

NOTES:

Infrared-Triggered Camera Surveys Using Spatial Detection Probabilities and Evaluation of Behavioral Changes from Baiting*

Jared T Beaver, University of Tennessee

ABSTRACT:

Infrared-triggered cameras (ITC) are used regularly by land managers to estimate white-tailed deer population parameters. However, current use of ITC does not provide a detection probability critical for accurate density estimation. Also, ITC surveys are affected by the number of cameras per area and behavioral changes associated with baiting. We conducted an ITC survey on two Wildlife Management Areas (WMA Unit 1 = 3,423 ac and WMA Unit 2 = 3676 ac) at Arnold Air Force Base, Tullahoma, TN, during August 2010. We used one camera for every 132 acres on Unit 1 and one camera per 153 acres on Unit 2. We used Program DENSITY to fit a spatial detection function of capture-recapture data from the ITC surveys of bucks. We used location and travel distance data from 5 deer fitted with Argos satellite GPS collars on the study area during and after baiting. Mean buck density estimates (bucks/mi2) obtained via traditional ITC sampling for Units 1 and 2 were 5.1 and 6.6, respectively. Density estimates and susceptibility to capture (g0) of bucks obtained via Program DENSITY were 1.9 (1.3-2.8; g0 = 0.57; Unit 1) and 2.9 (2.1-4.0; g0 = 0.45; Unit 2). We found a higher detection probability with higher camera density. Four of 5 deer had shorter distances to camera sites during baiting compared to afterwards. Density was lower when we included edge effects and detection probability using Program Density. Deer movement data indicated potential changes in behavior associated with baiting.

NOTES:

The Impact of Safety Zones for Creating Refuges for White-tailed Deer

Jacob L Bowman, Department of Entomology and Wildlife Ecology, University of Delaware

ABSTRACT:

Management of overabundant deer populations is exasperated by refuges. Traditionally, a refuge has been designated by local, state, or federal agencies specifically to protect animals from harvest or other causes of mortality. Refuges are also created unintentionally by a patchwork of landownership, and local and state laws. I investigated whether safety zone regulations would create unintended deer refuges. Safety zones are implemented to reduce the probability of a hunter's projectile from accidentally striking a building or its inhabitants. I used Delaware's landcover data to create buffers around each building to mimic current regulations and proposed reductions in the safety zone. I overlaid these buffers on deer habitat to determine the amount of deer habitat not available for harvest (i.e., refuge). The amount of deer habitat available for harvest was 39%, 71%, and 92% for the 200yrds, 100yrds, and 50yrds safety zones, respectively. For land in public ownership, the amount of deer habitat available for harvest was 55%, 81%, and 96% for the 200yrds, 100yrds, and 50yrds safety zones, respectively. The amount of deer habitat available for harvest on private land was 34%, 67%, and 91% for the 200yrds, 100yrds, and 50yrds safety zones, respectively. I recommend that the impact of refuges be carefully evaluated for its impact on harvest efficiency. My results suggest that allowing archery and carefully evaluating actual safety concerns will reduce the influence of refuges on deer management.

NOTES:

Poster Session

(denotes student poster)*

Prevalence and Seasonality of Baiting and Supplemental Feeding by DMAP Clubs in Arkansas

Richard J. Baxter, Arkansas Game and Fish Commission

ABSTRACT:

The legality of supplemental feeding and baiting deer varies across the southeastern United States. Baiting or supplemental feeding deer is legal in Arkansas, but the extent of the practice is relatively unknown. To determine the prevalence and seasonality of deer baiting and supplemental feeding in Arkansas, we surveyed hunting clubs enrolled in the Arkansas Game and Fish Commission's Deer Management Assistance Program (DMAP). There are currently 831 clubs enrolled in DMAP, and each club received a mail survey. Completed surveys were returned by 16% of clubs. Specifically, the survey provided data regarding bait/ feed type, feeding method, and months distributed. 89% of respondents used supplemental feed/ bait. Corn was used by 96% of respondents. Rice bran, soybeans, and protein pellets, were used by 58%, 23%, 28% respectively. However, 70% of respondents utilized a combination of feeds. Corn with rice bran (31% of respondents) was the most popular combination of feeds; however, no other combinations were used by more than 12% of respondents. Broadcast feeders were the most common type of feeding method (68% of respondents). Baiting during the hunting season was more common than supplemental feeding during non-hunting months. Of respondents that fed corn, 100% distributed corn during the hunting season, while only 45% fed corn during the summer months. The benefits of supplemental feeding, specifically corn, during the summer months are complex. However, supplemental feeding of corn during the spring and summer by DMAP clubs indicates that some clubs believe there are positive effects.

Use of Motion Triggered Cameras to Evaluate the Proportion of White-Tailed Deer Using Medicated Bait Sites*

Chase R Currie, Caesar Kleberg Wildlife Research Institute, Texas A&M University-Kingsville

ABSTRACT:

In March and September 2010, we captured 60 white-tailed deer on 3 study sites in Zapata County along the Rio Grande River to determine the proportion of the deer population using medicated bait sites designed to help control Cattle Fever Ticks. Each deer was uniquely marked with colored and numbered ear tags. One study site is surrounded by a high fence designed to limit deer movements and the other 2 are surrounded by a standard livestock fence. The normal operational density of medicated bait sites (1 bait site/88 acres) are distributed across all 3 study sites. Bait sites consist of corn either treated with ivermectin or used to bring deer into contact with a topical treatment device, depending on the time of year. Deer use of medicated bait sites was monitored with motion triggered cameras placed at each bait site for 1 week every month. Averaged across months, 82% of marked bucks, 21% marked does, and 7% marked fawns visited bait sites in the high fence study area, whereas 64% of bucks, 9% of does, and 2% of fawns visited bait sites in the low fence areas. Bait site visits were highest during March – June (bucks 78%, does 23%), and lowest during July and August (bucks 37%, does 0%). Low visitation during late summer may have occurred because abundant rainfall increased forage and reduced deer interest in bait. Decreased doe visitation during summer may also have been influenced by behavioral changes during fawning.

Influence Of Deer Density on Species Richness of White-Tailed Deer Diets*

D Justin Folks, Caesar Kleburg Wildlife Research Institute, Texas A&M University-Kingsville

ABSTRACT:

At high population density, white-tailed deer (Odocoileus virginianus) may forage less selectively and consume more plant species due to either decreased abundance of highly palatable forages or density-related behavioral factors. At the Comanche and Faith ranches near Carrizo Springs, TX, we used the bite count method with tame, female white-tailed deer to examine the effects of population density on foraging decisions. Two to 3 tame does resided permanently in each of 2 200 acre high-fenced enclosures at each ranch that represented low (10 deer/enclosure) and high (40 deer/enclosure) population densities. Bite counts were conducted seasonally from Summer 2009 to Spring 2010. Two hours of active foraging time were recorded for each deer and all plants consumed were identified to species. Plant species composition of individual deer diets within density treatments was similar. Although enclosures with high deer densities supported fewer plant species/64 ft2, deer in high density enclosures consumed about 20% more species than deer in low density ($P < 0.05$) enclosures. Preliminary results suggest an expansion in diet breadth and a decrease in diet selectivity as population density increases.

Effect of Deer Density on White-Tailed Deer Diet Composition*

Kory R Gann, Caesar Kleberg Wildlife Research Institute, Texas A&M University-Kingsville

ABSTRACT:

Deer population density may affect forage class composition of white-tailed deer diets in South Texas. Selective foraging by deer at high deer densities can lead to overutilization of higher quality forages, causing reduced biomass, abundance, and nutritional quality of available vegetation. We hypothesized that high deer density will cause a shift in deer diets toward less nutritious forage classes. We placed 2-3 tame female deer in 4 200-acre high fenced-enclosures on 2 ranches in South Texas. Each ranch had enclosures of low (10 deer) and high (40 deer) population densities. We recorded 2 hr/deer of active foraging to determine the number and size of bites taken of each plant species and plant part during each of 4 seasons. Representative bites of each plant species and plant part consumed were collected and dried at 40° C to determine the mass of each species consumed. Species were then divided into 9 forage classes: browse, cacti, flower, forb, fungi, grass, litter, mast, and sub-shrub. Deer in the high density treatment consumed 29% more browse ($P = 0.062$) and 35% less forbs ($P = 0.10$) than deer in the low density treatment. Deer in the high density treatment consumed 139% more cacti during winter ($P = 0.049$) than deer in the low density treatment. Preliminary results suggest that high deer densities may cause a shift in white-tailed deer diets in South Texas towards less nutritious forage classes.

Design and Use of Equipment for Locating White-Tailed Deer Radio-Collars Underwater*

Joshua A Gaskamp, The Samuel Roberts Noble Foundation

ABSTRACT:

Radio-collars (GPS and VHF) represent a significant investment of financial resources. In addition, loss of data also can impose analytical limitations from reduced sample sizes. Radio-collars on large, terrestrial mammals such as white-tailed deer (Odocoileus virginianus) are seldom lost in the water. However, several instances in Oklahoma necessitated a reliable and cost-effective technique for retrieving GPS collars from underwater. Disposal of a GPS collar into a pond prompted us to develop a system for locating the precise position of the lost collar underwater to salvage our financial investment and data. To further refine the underwater telemetry probe and techniques for finding collars, we replicated the probe under varying environmental and water conditions. We provide a list of materials along with instructions and considerations for building and using an underwater telemetry probe. We successfully used our telemetry probe to locate and retrieve our lost collar underwater, including all collars used for replication (n = 11). On average, search time for collars was 29.6 minutes. The design of our probe was inexpensive, easy to build and effective at locating lost collars in 2-10 ft of water and with varying water turbidity and substrates. Development of the underwater probe was minor (~$30) in comparison to the cost of GPS collars (~$3,000). Considering the increased use of GPS collars for wildlife research, additional instances will arise that require locating collars underwater, particularly in coastal and lowland areas prone to flooding and arid regions where animals spend more time near free-standing water.

The Effect of Land Ownership on Harvest Availability of White-Tailed Deer in Delaware*

Melissa M Miller, University of Delaware

ABSTRACT:

White-tailed deer (Odocoileus virginianus) thrive in agricultural landscapes due to the large quantity of high quality forage in a relatively small area. The decrease in crop yield as a result of deer damage is a problem facing private landowners and state biologists throughout the country. Local farmers believe deer are causing crop damage at night and therefore are unavailable for harvest even with crop damage permits. In order to better understand where deer are located during legal hunting times, information regarding local deer home ranges and habitat selection must be investigated. We captured 21 adult female deer, equipped them with radio collars, and collected telemetry locations throughout the crop season. We collected 2,410 locations evenly distributed among daytime and nighttime hours. In Delaware, legal hunting hours were ½ hour before sunrise to ½ hour after sunset, which we defined as daytime. Home range size did not differ between day (95%=365.1±39.37 acres, 50%=88.26±10.62 acres) and night (95%=343.46±50.11 acres, 50%=82.49±13.78 acres; 95%, P=0.736, 50% P=0.741). Based on the percentage of locations on private lands, deer spent equal time on private lands during the day (95%=66.06±5.726, 50%=66.98±6.14) and night (95%=71.4±4.36, 50%=74.64±4.57, 95%:P=0.462, 50%:P=0.323). We documented 8 harvest mortalities, all of which occurred on private lands. Additionally, our results suggest that deer remained in the area where they caused crop damage would be available for harvest during legal hunting hours.

Distribution of the Mule Deer (Odocoileus Hemionus) in Oklahoma: An Analysis of Harvest Data*

Paul D. Wade and Brandon K. McDonald, Department of Biological Sciences, Cameron University, Lawton, OK 73505

ABSTRACT:

The distribution of the mule deer (Odocoileus hemionus) in the southern Great Plains has been well documented. However, few specimen records exist for Oklahoma. The purpose of our study was to better estimate the current distribution of mule deer in Oklahoma. We surveyed eight years of harvest records (2001-2008) from 93 Oklahoma Department of Wildlife Conservation (ODWC) harvest regions in western Oklahoma. Mule deer were reported from 37 of the harvest regions (40%). Consistent harvest numbers among years for all regions indicate stable populations or steady immigration from permanent populations in the panhandle regions of Texas and Oklahoma. Abundance of mule deer reports followed a west to east gradient, with the highest abundance in the western most regions. This gradient of abundance was associated with the distribution of optimal and marginal habitats for the species. Our results give an approximated range boundary and help to identify specific regions where future research efforts might add to our knowledge of the species.